MICROCLIMATE PREDICTION MODEL FOR THERMAL CONDITIONS IN SHEET METAL CLAD RESIDENTIAL BUILDINGS - CASE STUDY OF UTHIRU, KIAMBU COUNTY

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JOMO KENYATTA UNIVERSITYOF

AGRICULTURE AND TECHNOLOGY

2021

Microclimate Prediction Model For Thermal Conditions In Sheet Metal Clad Residential Buildings -Case Study for Uthiru, Kiambu County

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A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in Construction Engineering and Management of the Jomo Kenyatta University of Agriculture and Technology

2021

DECLARATION

This thesis is my original work and has not been presented for a degree in any other University.

Signature..... Date.....

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This thesis has been submitted for examination with our approval as University supervisors.

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DEDICATION

This project is dedicated first, to God - provider of all on earth, secondly to my late father for encouraging me to be an innovative scientist, thirdly to my young family for their patience and fourthly to my classmates of class of ENC331-2017 May, for their spirit of determination to achieve. Finally a special dedication to my university lecturers for their mind opening inspiration that has enabled this research to take shape and be successfully completed.

ACKNOWLEDGEMENT

First and foremost, I would like to appreciate the Ministry of Public Service, Youth and Gender Affairs through the National Youth Service for their sponsorship towards my further studies for a Master's of Science in Construction Engineering and Management which has culminated with this research project. Secondly, I would like to appreciate my neighbor for allowing me to conduct this research in his sheet metal clad residential buildings. Finally, I would like to appreciate my supervisors and staff of the Sustainable Materials Research and Technology Centre (SMARTEC), Jomo Kenyatta University of Agriculture and Technology for their technical support towards the success of this research work.

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$\boldsymbol{\alpha}$	Absorbance for solar radiation.
ε	Surface emissivity for long-wave thermal radiation.
σ	Stefan-Boltzmann constant.
G	Solar radiation per unit area (beams + diffuses).
$\boldsymbol{h_c}$	Convective heat transfer coefficient between roof and ambient air.
$\boldsymbol{h_o}$	Outside total heat transfer coefficient between roof and ambient air.
$\boldsymbol{h_r}$	radiative heat transfer coefficient between roof surface and sky.
R	Heat resistance value.
$\mathbf{T_a}$	Ambient temperature (℃).
$\mathbf{T_d}$	Dew point temperature.
$\mathbf{T_i}$	Indoor temperature.
$\mathbf{T_o}$	Outdoor temperature.

LIST OF ABBREVIATIONS

AH	Absolute Humidity (g/m^3)
ASHRAE	American Society of Heating, Refrigeration and Air Conditioning Engineers.
MRT	Mean Radiant Temperature (°C).
M. T. I. H. & U. D	Ministry of Transport, Infrastructure, Housing & Urban Development.
PMV	Predicted Mean Vote
REM	Rapid Eye Movement
RH	Relative Humidity (%)
SET	Standard Effective Temperature (°C).
TSENS	Traditional Scales of Thermal Sensation.

ABSTRACT

Kenya has had an acute shortage of affordable housing which has led to low cost housing developments in the form of sheet metal clad residential building settlements around major urban centers. This study aimed at conducting a field investigation on sheet metal clad residential buildings' internal thermal comfort and humidity levels. This was to determine if their internal microclimates have acceptable levels of thermal comfort, are safe from internal condensation formation and if they can be predicted using a microclimate thermal prediction model. The study was done in the same geographical area of Uthiru, Kiambu County at an altitude of 1940 m above sea level. Data was collected using three temperature and humidity data loggers. A web based application software (Thermal Comfort Tool for ASHRAE-55) based on ASHRAE Standard 55-2020 was used to assess for thermal comfort in the naturally ventilated sheet metal clad residential buildings. The internal thermal conditions in the buildings at the time (8 pm) of 100% occupancy in the living room never fell below 20 °C and nor exceed 27 ℃. The thermal conditions met the requirements of ASHRAE Standard 55-2020. Condensation risk of the sheet metal clad residential buildings was found to be high in the warm season than in the cold season. This was at times of cooking, heating bathing water or occupants were shut in the buildings. The empirical microclimate predicting model derived from computer learning process using Microsoft Excel software predicted with over 69% accuracy. The model showed that poorly ventilated sheet metal clad residential buildings are less predictable than those with effective ventilation. The computer derived model overpredicted on an average of 1.8 ℃ while the standard mechanistic model underpredicted on an average of 1.4 ℃. It was recommended that sheet metal clad buildings are suitable for human habitation in the highland areas of Uthiru, Kiambu County. Occupants of sheet metal clad residential buildings in Uthiru, Kiambu County are recommended to open windows and doors when cooking or heating bathing water in the warm season so as to reduce the risk of condensation formation. The developed microclimate thermal prediction model can be adopted for predicting indoor thermal conditions expected in sheet metal clad residential buildings at Uthiru, Kiambu County.

CHAPTER ONE
INTRODUCTION

1.1 Background to the Study

The demand for affordable residential buildings in Kenya is high and this is not being met. The popularity of using galvanized sheet metal houses in Kenya for site accommodation, cheap rental housing and private homes has increased (Ministry of Transport, Infrastructure, Housing & Urban Development, 2016). These sheet metal structures have been mentioned by occupants for their bad thermal characteristics and can be a torture to be accommodated in one when it is located in a region of extremely hostile climate (Abrasheva, Senk, & Häußling, 2013). Sheet metal building structures come in different forms in Kenya; first, there is the simplest form constructed of a light wooden frame covered with light gauge galvanized sheet metal; secondly, there is the 'uni-hut' type made of heavy gauge galvanized structural sheet metal bolted together; and lastly, there is the shipping container building structure (M. T. I. H. & U. D., 2016). During a sunny day the metal structures transmit a lot of heat internally and during chilly nights they lose heat fast to the external environment (Abrasheva, Senk, & Häußling, 2012).

Simple sheet metal clad buildings are used as sheds and barns in the temperate countries and are not used for housing people. The simple sheet metal clad building is the most popular in tropical Africa and Kenya in particular where they are used as tenement houses in the informal settlements (M. T. I. H. & U. D., 2016). Tenement houses are buildings intended for domestic use of which any living room is intended for or is adapted for use by tenants (Government of Kenya, National Planning and Building Authority, 2009). Studies have shown that in Nairobi alone, 60% of the population lives in the informal settlements such Kibra as shown in Plate 1.1 (M. T. I. H. & U. D., 2016). The uni-hut type of buildings is more costly to build compared with the simple sheet metal clad building and has only been a popular mode of accommodation for government workers in the field. Lastly, by observation, the shipping container buildings at Uthiru, Kiambu County are being utilized for commercial purposes (business premises), site offices and site storage.

Plate 1.1: Sheet metal clad residential building settlement in Kibra, Kenya.

Source: (Ministry of Transport, Infrastructure, Housing & Urban Development, 2016)

Thermal comfort is a fundamental aspect of indoor environmental quality and is strongly related to occupant satisfaction and energy use in buildings. There are three relevant standards regarding thermal comfort namely; the international standard ISO 7730 (2005), the European standard EN 15251 (CEN 2007) and the ASHRAE-55 (2020) (Schiavon, Hoyt, & Piccioli, 2020). At the time of this study, there were no established local standards for thermal comfort in buildings. This study used the ASHRAE 55 (2020) adaptive model to check the thermal comfort standards of the case study buildings.

Thermal comfort research can be performed in either field settings using typical houses or in a climate chamber. Thermal comfort research by use of climate chamber methodology can permit an independent environmental variable to be manipulated directly while at the same time isolating the dependent variable, comfort level, from extraneous influences. Professionals of the built environment have sourced their data from controlled laboratory tests by use of climate chambers. Case studies of thermal comfort in the field tend to have greater external validity than the laboratory based methods (Dear, Foo, & Leow, 1991).

Past researches by Ogoli (2003) and Kariuki (2018) done in Kenya dealt with thermal performance of various materials when used in buildings. Their studies identified that there is need to research on the level of satisfaction of building users with indoor thermal environment in the tropical highland areas of Africa as available literature is based from studies from abroad. As at the time of doing this study, no local standards for thermal comfort for buildings in Kenya had been established.

1.2 Problem Statement

The supply of affordable housing in Kenya cannot meet the demand for the urban population. Hence the use of sheet metal clad residential houses in the informal settlements has grown to fill in the housing shortage gap.

There are health implications on occupants of buildings in regards to their ventilation effectiveness and temperatures. It is common knowledge that transmission of air-borne diseases within buildings is attributed to poor ventilation that affects their internal microclimate's thermal conditions and humidity levels (Africa Centre for Desease Control, 2020).

Past studies in Kenya have concentrated on thermal performance of various building materials when used in buildings. Those earlier studies did not investigate on the effectiveness of the buildings' ventilation and humidity levels when they were occupied so as assess environmental factors such as levels of risk of internal condensation forming.

At the time of this study there was no known documented local data on the problem of thermal conditions, condensation risk assessment and thermal comfort of sheet metal clad residential buildings for the tropical Kenyan climate. This study aimed at assessing the thermal comfort and humidity conditions of sheet metal clad residential buildings. With occupants in the buildings as opposed to using vacant buildings as climate chambers, this study accounted for user's influence on the internal thermal microclimate of the sheet metal clad houses.

1.3 Objectives

1.3.1 General Objective

This study aimed at investigating indoor thermal conditions and humidity levels and to establish a microclimate prediction model for thermal conditions in sheet metal clad residential buildings for Uthiru, Kiambu County.

1.3.2 Specific Objectives

(1) To assess the thermal conditions of the internal environment in sheet metal clad residential buildings in Uthiru, Kiambu County.

(2) To assess the risk of internal formation of condensation on external walls of the sheet metal clad residential buildings in Uthiru, Kiambu County.

(3) To develop a 24 hour microclimate thermal prediction model for sheet metal clad residential buildings in Uthiru, Kiambu County.

1.4 Research Questions

(1) What are the internal thermal conditions of single floor sheet metal clad residential buildings in Uthiru, Kiambu County?

(2) When are the sheet metal clad buildings in Uthiru, Kiambu County at risk of having internal condensation on external walls?

(3) Is it possible to predict the 24 hour microclimate thermal conditions in sheet metal clad residential buildings for Uthiru, Kiambu County?

1.5 Justification for Research

There is no information on standards of thermal conditions expected for buildings in Kenya. It was necessary for studies to be conducted to establish the actual thermal conditions being experienced on the ground in sheet metal clad residential buildings so as to provide data for their design improvements. This study aimed to reveal if there are particular problems of thermal discomfort on the occupants in the sheet metal clad residential buildings. The study's findings on thermal conditions in the case study buildings can inform on what degree of insulation that would be required to achieve the recommended thermal mass. This study also aimed to assess the internal thermal conditions experienced in the sheet metal clad residential buildings at Uthiru, Kiambu

County. This was to determine if they met the thermal standards set out in the ASHRAE-55 (2020). The study aimed to develop a 24 hour microclimate thermal prediction model by machine learning process using the collected data. This was to predict the sheet metal clad buildings' internal thermal conditions for any time in a day for any given season in a year at Uthiru, Kiambu County. The recommendations from this study should inform on ventilation adjustments to improve the internal thermal and humidity conditions in the sheet metal clad residential buildings and hence promote healthy living for their occupants.

1.6 Scope and Limitations

1.6.1 Scope

This research was done in the geographical area of Uthiru located in West of Kiambu County. The site was at an altitude of 1940 m above sea level with an extreme annual temperature range of between 10 ºC and 27 ºC. Theoretical review was dwelt on established methods of analyzing the collected data while empirical review looked at findings of similar past studies. The temperature and relative humidity levels were recorded for a period of seven months that covered both warm and cold seasons. The months covered were generally representative of the year's climatic conditions. Three data loggers were used and they only recorded temperature and relative humidity levels. One data logger was used for outdoor data logging while two were used for indoor data collection. Data was collected on a monthly basis.

1.6.2 Limitations

Although sheet metal clad buildings are the most common form of affordable housing in Kenya, this study was limited to the tropical highlands of Kenya at Uthiru, Kiambu County. Funding limitations coupled with lack of locally available reliable equipment meant only three data loggers were used for the study. The data loggers acquired could only record temperature and relative humidity levels. The number of data loggers available limited the number of buildings that could be studied at the same time. Also, funding limitations could not allow for studies to be conducted for long periods in the case study buildings. This limitation was tackled by setting up the equipment in advance before the beginning of the month and removing them after the end. This

ensured there was a full month's data set. The situation on the ground required oral interviews to be conducted at the end of every week to establish indoor occupant activities.

The computer based thermal model developed by machine learning process using data collected from the case study buildings can only be applied to sheet metal clad residential buildings of similar thermal mass and construction in Uthiru, Kiambu County. This study was organized to collect data through the warm and cold seasons of Uthiru, Kiambu County. The limitations did not affect the reliability and validity of the study as enough data was collected in the hot and cold seasons. The study houses used had living rooms of approximately same size and similar occupancy. This in effect maintained enclosed volume and occupancy as constants.

CHAPTER TWO
LITERATURE REVIEW

2.1 Theoretical Review

2.1.1 Energy and buildings

The art of building is as old as the logic of designing in a harmonious relationship with the environment. The inhabitants of old settlements have proven that people have always strived to adapt to their immediate surroundings through spatial organization (Daniel, Bianca, & Can, 2016). People have utilized climatic advantages of each geographical area to create comfortable living spaces in the most economical ways (Totaforti, 2020).

It has become necessary in the construction and reconstruction of existing buildings to implement effective measures for reducing their energy consumption as per requirements of European Union directive 2010/31/EU (Jiří, Hroudováa, & Zdeněk, 2013).

Currently all new buildings approved for construction in Europe are now energy efficient buildings (The Open University, 2020). These requirements have brought about the growth in consumption of thermal insulation materials by the construction of new and reconstruction of old existing structures (Department of Housing, Local Government and Heritage, 2021).

The 'bioclimatic' approach in building designs adopted the attitude for the sustainable organization of cities. This approach aimed at redefining architecture with directions and principles that are based on the harmonious coexistence of the man-made and natural environment (Okoye, Ogbuagu, Ohaedeghasi, & Ngwu, 2020). Use of renewable energy sources, mainly the low cost solar energy for natural lighting and heating of the buildings, use of natural air for cooling the building and applying environmental friendly construction methods are geared towards restoring the sought for balance between built and natural space (Zeghib & Chaker, 2016).

Studies on energy efficiency of buildings done in Kenya on closed unventilated buildings indicated there can be a reduction in temperatures in a building with a green

roof as compared to a similar building with a standard roof. From that study's results, it was also noted that the building with a green roof tended to have high relative humidity readings as compared to the building with a plain roof (Gulma, Ondimu, Ajwang, & Kariuki, 2014).

2.1.2 Solar radiation intensity

The average intensity of solar radiation normal to the sun's rays at the outer edge of the earth's atmosphere is 1362 W/m^2. In passing through the atmosphere, part of the heat is absorbed, part scattered into space, and part scattered back to earth by the atmosphere. The portion which comes directly through the atmosphere is termed direct radiation and the portion scattered back to earth from the atmosphere is termed sky diffuse radiation. For cloudless skies, the intensities of direct and diffuse radiation will depend upon the thickness of the layer of atmosphere traversed by the sun's rays and on the solar altitude and the height above sea-level. They also depend upon the proportions of water vapor, dust and ozone in the atmosphere, which scatter and absorb radiation (Abbas, Maleki, Hizam, & Gomes, 2017).

2.1.3 Steady-state temperature of a surface

The steady-state temperature of a surface is the condition where the temperature remains constant over a period of time (ASTM C518-17, 2017). The temperature of a roof surface depends on the environmental conditions such as solar radiation, ambient temperature, and wind velocity and sky temperature. Optical properties of the roof surface such as solar absorption and thermal emission affects a roof's surface temperature too. The underside insulation of a roof also influences a roof's surface temperature (Schock Isokorb, 2018). Absorbed solar radiation equals heat loss due to convection with the air and thermal heat radiation with the sky for a surface with perfect insulation on the underside and steady state (Suehrcke, et al., 2008). Past research has shown the position and size of ventilation in a room determines the rate of air circulation and the room temperatures maintained (Alizadeh, Maleki, & Mohamadi, 2017).

Thermal conductivity in concrete floors decreases with the increment in volume of coarse aggregate since it represents a reduction in the density of concrete. Lightweight

aggregates with greater porosity are more suitable for non-structural applications or the production of low strength concrete where the reduction of density and thermal conductivity are the relevant factors in the building's design (Real, Gomes, Bogas, & Ferrer, 2016).

2.1.4 Heat transmission through glass

The values of incident radiation provide an estimate of the quantity of heat incident on the outside surface of a structure. However, not all of this heat is transmitted into the building; some is reflected or absorbed by the glass. The thermal capacity of the building fabric also has an important effect on solar heat gains. The radiation is usually incident on the floor where part is absorbed and part is diffusely reflected, to be subsequently absorbed by the walls and the ceiling (Kumar, Saboor, Kumar, Kim, & Babu, 2018).

2.1.5 Heat gains through building structure

Heat gains through glass are instantaneous, whereas heat gains through the fabric of a building are delayed due to the thermal time-lag caused by the building material. Different building materials will produce different thermal time-lags. Heavy-weight constructed buildings have a high thermal capacity that makes it take a longer time to cool down or heat. A lightweight constructed building takes a short time to cool down or heat up. The building's thermal mass affects the time it takes to bring it back to thermal comfort level (Kontoleon & Zenginis, 2017).

The calculation of the maximum solar heat gain into a room includes the instantaneous heat gain through the window, plus the fabric heat gain at some previous time, depending upon the time-lag. To allow for this reduction in peak value, it is necessary to determine the gain to the external wall and then adjust it using a decrement factor. Some common building materials' decrement factors are shown in Table 2.1.

Table 2.1: Adjustment factors to solar heat gain through building fabric

Construction	Adjustments time-lag (hours)	Decrement factor
Light frame (internally lined)	½	1.0
105 mm brickwork (internally lined)	4	0.7
220 mm brickwork (internally lined)	8½	0.3
150 mm concrete (internally lined)	5½	0.5
200 mm concrete (internally lined)	6½	0.4

Source: (The Chartered Institution of Building Services Engineers , 2015)

2.1.6 Sol-air temperature

The calculation of the gain to the outside fabric is complicated by the fact that both the incidence solar radiation and the outside air temperature must be considered. This calculation is however simplified by the concept that is termed the 'sol-air' temperature.

The sol-air temperature is defined as the theoretical outside temperature which would result in the same rate of heat transfer through the structure as exists with the actual solar radiation and the outside air temperature. The sol-air temperature at a certain time may be calculated from the following expression:

$$t_e = t_{ao} + \frac{aI}{h_{so}} \qquad (2.1)$$

Where t_e = sol-air temperature

t_{ao} = actual outside temperature

a = absorption coefficient applied to the outside surface of the building material

I = intensity of direct plus diffused solar radiation on the outside surface

h_{so} = heat transfer coefficient for the external surface

Source: (The Chartered Institution of Building Services Engineers , 2015)

In practice, it is unnecessary to calculate the value of the sol-air temperature, as these are listed in the CIBSE Guide Book A, Section 6.

2.1.7 Casual heat gains

(a) Internal heat gains: In addition to heat gains from external sources, there are also sensible or latent heat gains (or both) within the space itself. These gains are due to occupants, lighting, electrical machinery, gas appliances and cooking. These gains are as follows:

(i). Occupants: The heat gain consists of sensible heat due to radiation and convection from the body, and latent heat gain due to respiration and the evaporation of moisture from the skin. The proportion of sensible latent heat emitted depends upon the age and sex of the occupant, the degree of activity, and the internal thermal environmental conditions.

Table 2.2 gives the total heat gain from an average adult male at different degrees of activity.

Table 2.2: Heat emission from the human body

Degree of activity	Total heat gain (W)
At rest	115
Sedentary work	140
Walking slowly	160
Light manual work	235
Medium manual work	265
Heavy manual work	440

Source: (The Chartered Institution of Building Services Engineers , 2015)

(ii). Lighting: This comprises a sensible heat gain to the room, and the quantity of heat emitted will depend upon the type of fitting installed and the extent of usage of the fitting. For normal light fittings 1 watt of lighting contributes 1 watt of heating.

(iii). Electrical machinery: Where electrical motors are installed in the room the heat gain to the room will depend on the efficiency of the motor; whether or not the machinery being driven is also in the room; and the frequency with which the motors will be used.

(iv). Gas appliances: The heat gain into the room will depend on the heat input to the appliance; the location of the appliance; whether it is connected to a flue or is flueless; and position of any flue.

(v). Cooking: The manufacturers of cooking equipment usually provide details of heat given out from their appliances. For quick reference, the thermal output of various appliances are summarized in the CIBSE Guide Book A, Section 7.

(b) Air infiltration (external heat gain): If the room is maintained at a positive pressure, there will be little air infiltration, since all losses would be outwards. Where air filtrates by natural un-controlled movement of air due to opening of doors and minute leakage through window frames, an allowance of one-half air change per hour is usually suitable (The Chartered Institution of Building Services Engineers , 2015).

2.1.8 Indoor air humidity, air quality, and health

Studies have found that dry air in an indoor environment contributes to eye (dry eyes) and nose irritations (ASHRAE Standard 62.1, 2007). Cold dry air desiccates the airways leading to hyperosmolarity, which causes a stimulation of the sensory nerves generating a reflex response and possibly a release of inflammatory biomarkers. Cold dry air causes the reduction of mucociliary clearance time and causes dryness of the mucocilia. This compromises its defense mechanism from influenza virus whereby the influenza viruses and others have a greater survival time at low humidity and low temperature (Bender, 2020). It has been found that with elevated relative humidity levels of greater than 40% greatly reduces the infectivity of viruses as compared to very dry conditions. High relative humidity may also improve sleep quality and reduce effects on vocal chords. Increase of relative humidity in a room has been found to significantly lower the concentration of respirable particles from 6 to 1$\mu g/m^3$ and similarly has also been observed for bacteria and mold (Wolkoff, 2018).

Studies have demonstrated the effects of temperatures and relative humidity on sleep quality of a building's occupants. With increased thermal stress at temperatures of

35℃ and a high relative humidity of 75%, it was found that it caused a significant reduction in rapid eye movement (REM) sleep (Okamoto-Mizuno, Mizuno, Michie, Maeda, & Iizuka, 1999). Most adults, REM takes 20 to 25 percent of sleep which is healthy during average sleep cycles. At lower temperatures (29℃) whether with high relative humidity (75%) or low relative humidity (50%), sleep quality was not affected much. It was also observed that at higher temperatures of 35℃ and a lower relative humidity of 50%, sleep quality was not affected much. Hence high temperatures combined with high humidity are disruptive to sleep patterns (Lappharat, Taneepanichskul, Reutrakul, & Chirakalwasan, 2018).

2.1.9 Thermal comfort models and analysis tools

(a) Climate Consultant

This is a graphic based stand-alone computer program that is freely available that helps users understand weather data that is used for building performance software. The main goal of this software is to enable users to create energy-efficient and sustainable buildings for particular climatic conditions. The weather file for building performance simulation is read by the program and a summary of the weather data is shown as an overview of the selected climate. In regard to thermal comfort visualization, the user is not allowed by Climate Consultant to control the level of air movement and does not include the Standard effective temperature (SET) model. It is difficult to apply changes on other parameters that can be controlled as they are in a separate screen. The three thermal comfort options available are ASHRAE Standard 55-2004, ASHRAE Fundamentals and California energy code (Schiavon, et al., 2014).

(b) The Ecotect Weather Tool

This is an add-on for Autodesk Ecotect that is flexible and interactive providing users with visualizations of weather data dependent on the location and the 3D model of the building, imported into or created in Ecotect. One can change the activity level of occupants from sedentary to heavy hence modify the position of the comfort region, whereas the rest of the parameters -clothing, insulation, air speed, and Mean radiant temperature (MRT) cannot be modified. The data can be partitioned in several ways allowing users to access how often outdoor air and relative humidity can be considered comfortable. In relation to thermal comfort standard compliance, the tool does not have

information. There are no references to standards and there is no public availability of the algorithm or basis of determining the comfort zones. As opposed to Climate Consultant, the Ecotect Weather Tool is not freely available and runs only on Microsoft Windows (Schiavon, Hoyt, & Piccioli, 2020).

The Climate Consultant and Ecotect Weather Tool focus on climate analysis rather than thermal comfort and do not reflect the latest standards. The two tools also do not properly account for MRT, air movement, nor allow the use of the SET method, which is included in the ASHRAE Standard 55-2010 (Schiavon, Hoyt, & Piccioli, 2020). There was not enough funding to purchase the software, hence it was not used.

(c) ASHRAE Thermal Comfort Tool

This tool was first published in 1997 to provide a consistent, simplified method for evaluating thermal comfort under a range of thermal conditions. The software was consistent with ASHRAE Standard 55-1992 and indicated whether a given set of environmental conditions complied with that standard. The tool operates only in computers using Microsoft Windows and has since had several updates to incorporate major ASHRAE revisions (e.g. 2004 and 2010) (American Society of Heating, Refrigeration and Air Conditioning Engineers, 2020). The tool had proven to be difficult to keep up to date with the new continuous-maintenance form of the standard and also did not provide visualizations of thermal comfort (Schiavon, et al., 2014). The tool was superseded Thermal Comfort for ASHRAE-55, hence it was of no use in this study.

(d) Thermal Comfort Tool for ASHRAE-55

This is a web based application for thermal comfort visualization and calculation in accordance to ASHRAE Standard 55-2010 and 2013. Compared to the other existing software, this web application is free, cross platform, and provides a visual and highly interactive accurate representation of the comfort zone as shown in Figure 2.1.

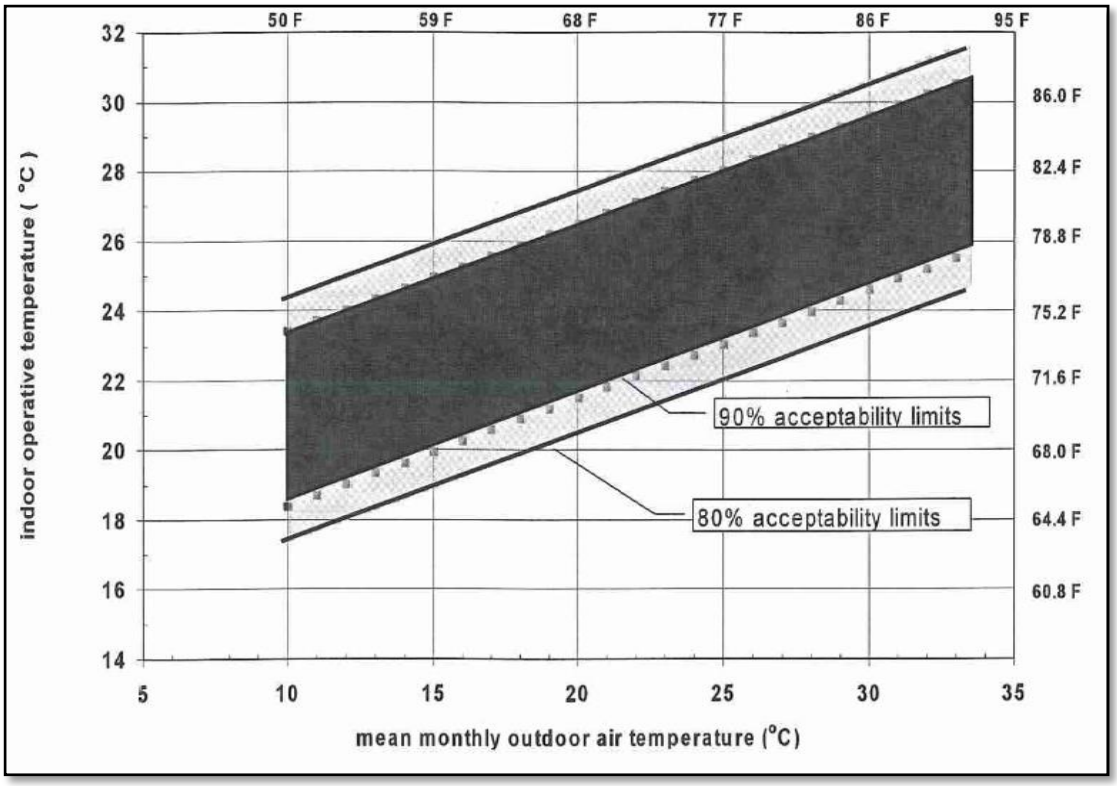

Figure 2.1: Interface of the CBE Thermal Comfort Tool for ASHRAE-55 web application (adaptive)

Source: (Schiavon, Hoyt, & Piccioli, 2020)

This tool is suited for use by engineers, architects, educators, building operators and students. This web application filled the gaps of the other existing software described in above sections a, b and c as it allows an accurate representation of the comfort zone. Being a web based tool, the user is not obligated to update it as it is done automatically when the standards are updated (Schiavon, Hoyt, & Piccioli, 2020). This study used the web based thermal comfort tool for ASHRAE-55 to assess the thermal comfort for the sheet metal clad residential buildings in Uthiru, Kiambu County.

(e) Microsoft Office

Experience is high with today's computer programs, typically programs such as Word, Excel, PowerPoint, Internet Explorer, and Photoshop. The possible operations that can be done with these programs can be combined in seemingly an infinite number of ways, only limited by the users' creativity and imagination (ACT Academy, 2020). Earlier, programs were difficult to use. This meant one had to go back to computer

programming to come up with codes that can translate the data into useful information that can either be analyzed with Excel or use the code in MATLAB to generate graphics. The time involved in generating the codes was saved by acquiring data loggers that converted data into Excel files or any format one wanted (Linge & Langtangen, 2016). With regards to this, the Elitech temperature and humidity data loggers were chosen as their data is downloadable as Excel files.

2.1.10 Statistical analysis - correlation

This measures the degree of association by which two distributions match each other. Measurements are made simultaneously on two variables neither of which can be controlled. The correlation is positive if 'large' values of both variables tend to occur together. The correlation is negative if large' values of one variable tend to occur with 'small' values of the other variable. The correlation is high if the observations lie close to a straight line and low if the observations are widely scattered. The variables are said to be uncorrelated if there does not appear to be any relationship between them (ACT Academy, 2020).

(a) The correlation coefficient or product moment (r) is the most important measure of the degree of correlation between two variables. The value of r must lie between -1 and +1. For r = 1, all the observed points lie on a straight line which has a positive slope; for r = -1, all the observed points lie on a straight line which has a negative slope (Freund & Perles, 2004). The coefficient of determination (R^2) for linear regression also turns out to be the square of the correlation coefficient. This quantity gives the proportion of the total variation in y which is accounted for by the linear variation in x (Walker, McLean, & Mathew, 2018).

(b) The F-test of overall significance in regression was a test of whether or not a linear regression model provided a better fit to a data set than a model with no predictor variables (ACT Academy, 2020).

2.2 Empirical Review

2.2.1 Thermal comfort assessment

2.2.1.1 Effects of solar reflectance on heat gain

Studies have found that solar absorption of a roof affects the thermal performance of a building. With clear sky conditions, between 20% and 95% of 1 kW/m^2 of solar

radiation incident on a roof surface is absorbed (Raptis, et al., 2017). Close to the equator, ambient temperatures and solar radiation levels are sufficiently high in locations such that during cold seasons, buildings do not require active heating (Soulayman, 2018). To reduce the downward heat flow from the roof, one can use light roof color, reflective foil and/ or insulation (Suehrcke, Peterson, & Selby, 2008). Surface orientation, solar position and atmospheric conditions influences solar reflectance variation with the spectral and angular distributions of incident sunlight (Levinson, Akbari, & Paul, 2010).

2.2.1.2 Heat loss calculations

Buildings loose heat to their surroundings by a combination of thermal conduction and air leakage through the building's structure which includes through the floor. These heat losses influence the level of thermal comfort a building can provide to its occupants and of concern to research are plane heat losses through the building's elements (Hyndman, 2020).

(a) Thermal conductivity ***(k)***

This is a measure of a materials ability to conduct heat. Heat transfer rate is high for a material of high thermal conductivity and the heat transfer rate is low for materials of low thermal conductivity (ASTM C518-17, 2017).

Thermal conductivity is the thermal transmission in unit time through unit area of a slab, or a uniform homogeneous material of unit thickness, when unit difference of temperature is established between its surfaces. The unit is W/m K. This is illustrated in Figure 2.2. The following definition was developed from the experimental for heat flow rate in a material;

$$Q/t = \frac{kA(\theta_1 - \theta_2)}{d} \qquad (2.2)$$

Where;

Q = quantity of heat, measured in joules, passing through the material in a fixed time

t = time in seconds

k = thermal conductivity

θ_1 and θ_2 = temperature of each face of the material (°C)

A = the cross-sectional area of the material through which the heat is passing (m^2)

D = thickness of the material (m)

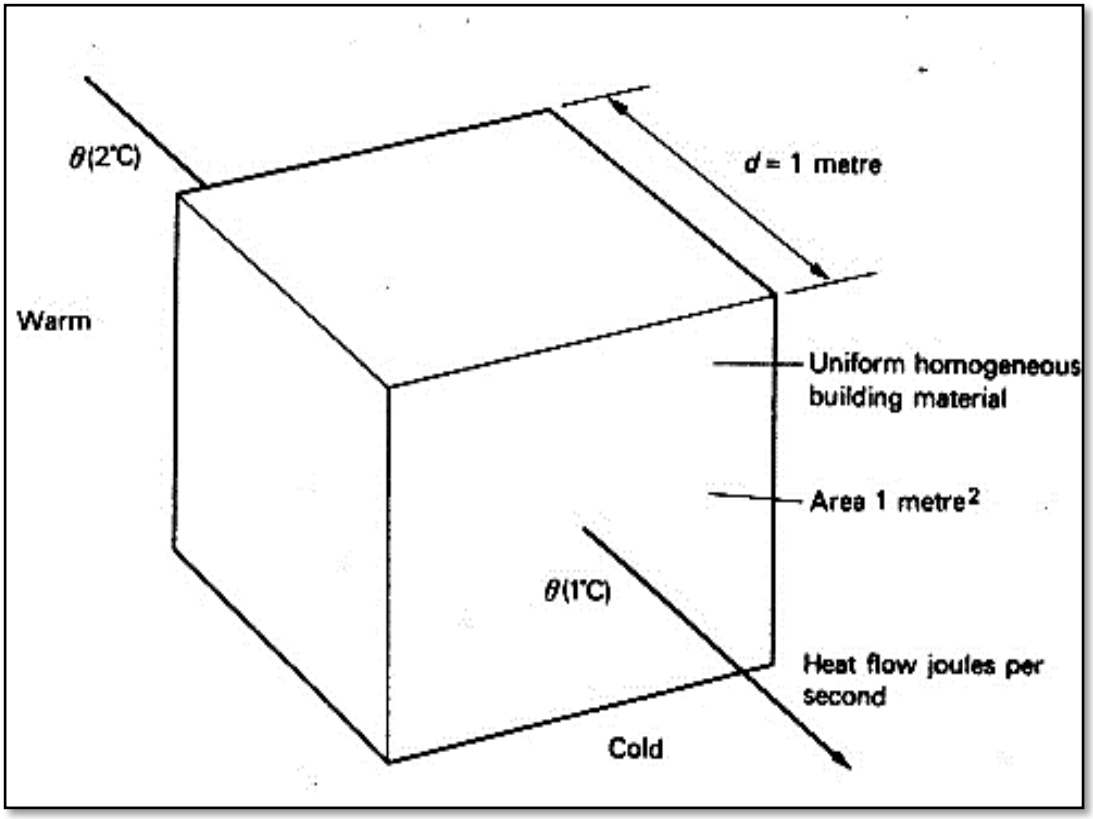

Figure 2.2: Thermal conductivity (*k* value)

Source: (Bhatt, Qureshi, & Shaikh, 2011)

In SI units, thermal conductivity is expressed as heat flow in watts per square metre of surface area, for a temperature difference of 1°C per metre thickness (Bhatt, Qureshi, & Shaikh, 2011).

If the SI units are substituted in the above equation, the units of *k* will be:

$$k = \frac{Jm}{m^2 sK} \qquad (2.3)$$

Since $W = \frac{J}{s}$ this becomes

$$k = \frac{Wm}{m^2K} \quad (2.4)$$

Values of thermal conductivity *k* for various types of common building materials have been summarized on table 2.1.

Table 2.3: Thermal conductivities (*k*) of common building materials

Materials	*k* value (W/mK)
Asphalt	1.200
Common brick	1.200
Dense brick	1.470
Aerated concrete	0.140
Structural concrete	1.400
Clinker block	0.050
Cork slab	0.400
Glass wool	0.034
Glass	1.020
Mineral wool	0.037
Gypsum plasterboard	0.150-0.580
Gypsum plaster	0.400
Polyurethane foam	0.020-0.025
Rendering (cement and sand)	0.530
Sandstone	1.300
Limestone	1.500
Clay tiles	0.830
Softwood	0.138
Wood-wool slabs	0.090
Chip board	0.108
Air	0.290
Soil	1.00-1.15
Steel	50.200
Vermiculite	0.065

Source: (American Society of Heating, Refrigeration and Air Conditioning Engineers, 2020)

(b) Thermal resistivity (r)

This is the reciprocal of the thermal conductivity and is used for calculating the total resistance or the conductance of a material:

$$r = \frac{1}{k} \quad (2.5)$$

When the thickness of the material is known, its thermal resistance (R) can be calculated. This is the product of thermal resistivity (1/k) and thickness expressed as m^2K/W. The thickness of the material must be in meters (The Engineering Tool Box, 2020)

(c) Thermal conductance (c)

This is the thermal transmission in unit time, through a unit area of a uniform structural component of thickness L per unit of temperature difference between the hot and cold surfaces:

$$c = k \times L \quad (2.6)$$

Source: (International Facility Management Association, 2014).

(d) Thermal resistance (R)

this is the reciprocal of thermal conductance:

$$R = \frac{L}{c} \quad (2.7)$$

Where L is expressed in meters.

For two or more materials in the same structure, the resistance of the individual materials may be added to obtain the resistance in the structure.

Total resistance = $R_1+R_2+R_3+\ldots$ (Suehrcke, Peterson, & Selby, 2008)

(e) Thermal transmission (U)

This is the thermal transmission in unit time through unit area of a given structure. The unit is W/m^2K.

The combinations of the thermal resistances of all components and the adjacent air layers gives the thermal transmission through a structure. The thermal transmission therefore is found by adding the thermal resistances and taking the reciprocal.

$$U = \frac{1}{R_{si}+R_{so}+R_1+R_2+R_3+\cdots+R_a} \quad (2.8)$$

Where:

U = thermal transmission (W/m^2K)

R_{si} = inside surface resistance (m^2K/W)

R_{so} = outside surface resistance (m^2K/W)

R_1, R_2, R_3 = thermal resistance of structural components (m^2K/W)

R_a = resistance of air space (m^2K/W)

In computation of U values the thermal resistance L/k is used.

Where k = thermal conductivity (W/mK)

L = thickness in metres of a uniform homogeneous material

$$\therefore \quad U = \frac{1}{R_{si}+R_{so}+\frac{L_1}{k_1}+\frac{L_2}{k_2}+\frac{L_3}{k_2}+R_a} \qquad (2.9)$$

Source: (Lymath, 2020).

The thermal transmittance values of commonly used building materials in Kenya are summarized in Table 2.4 overleaf.

(f) Surface effects

A layer of stationary air is formed on the inside and outside surfaces of the structure (see Figure 2.3) . These layers of stationary air act as insulators and must therefore be included in the calculation to find the total resistance of the structure. The symbols used to denote these surface resistances in Equation 2.8 are R_{si} and R_{so}.

Typical values for these surface resistances (m^2K/W) are:

Horizontal $R_{si} = 0.123$

Horizontal $R_{so} = 0.053$

Upwards $R_{si} = 0.110$

Downwards $R_{si} = 0.150$

Upwards $R_{so} = 0.045$

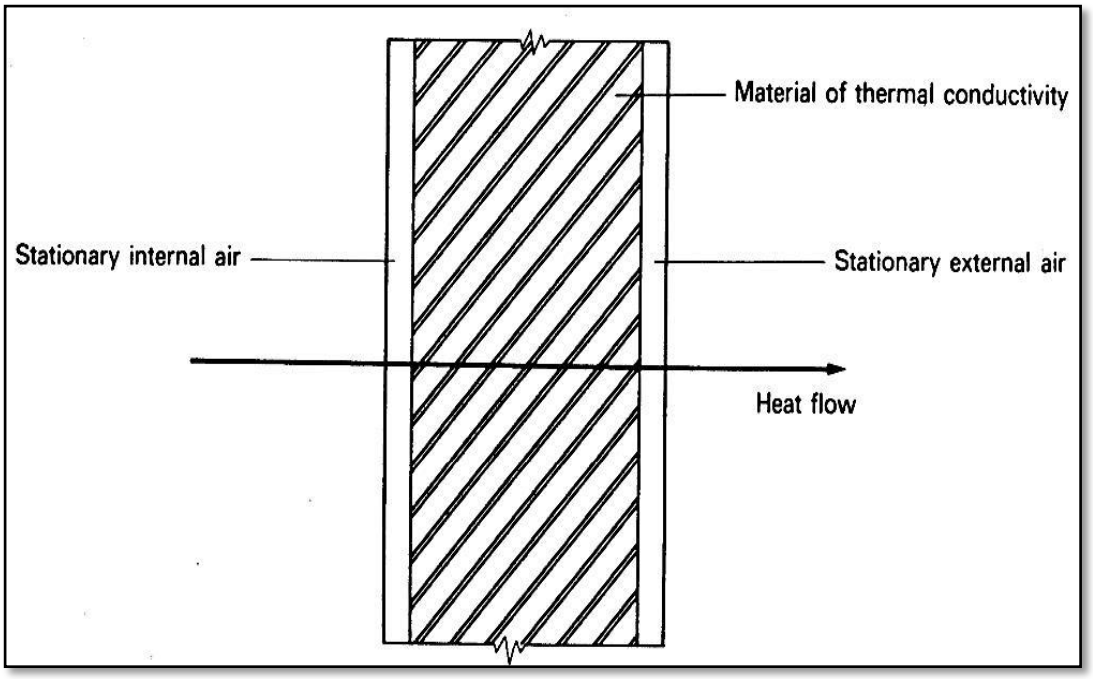

Figure 2.3: Surface – air effects

Source: (Lymath, 2020)

(g) Resistance of air space

Heat transmission in a cavity is by convection, conduction and radiation. Where a cavity is less than 20 mm wide, the air is considered as stationary and is dealt with as an extra layer of insulating material. If the cavity is greater than 20 mm wide it is usual to take the resistance of air space (R_a) as being about 0.18 m^2 K/W (Echarri, Espinosa, & Rizo, 2017).

Table 2.4: Thermal transmittance of locally used building materials

	Building material	Thermal transmittance (W/m^2K)
1	Natural stone	3.31
2	Rendered stone	3.17
3	Unlined galvanized sheet metal	5.62
4	Lined galvanized sheet metal	2.69
5	Concrete blocks	3.03
6	Fired clay bricks	2.48
7	300 mm rammed earth	2.21
8	400 mm rammed earth	1.87
9	Lined timber frame	1.76
10	Unlined timber frame	2.90
11	Single panel EPS	0.39
12	Double panel EPS	0.32

Source: (Kariuki, Mugwima, & Kaluli, 2018)

2.2.1.3 Principles of solar heat gains

In order to understand calculations involved in determining heat gains in a building due to solar radiation, knowledge of the relative movements of the earth and sun are essential (Soulayman, 2018).

Since four fixed positions of the earth are known, it is possible to calculate the latitudes on the earth where the sun will appear directly overhead at a given time of the year (see Figure 2.4). For the purposes of solar heat gain, a designer's interest is normally

on information for the period of maximum heat gain, which is when the sun is directly overhead or at its highest position (Meteorological Department of Kenya, 2019).

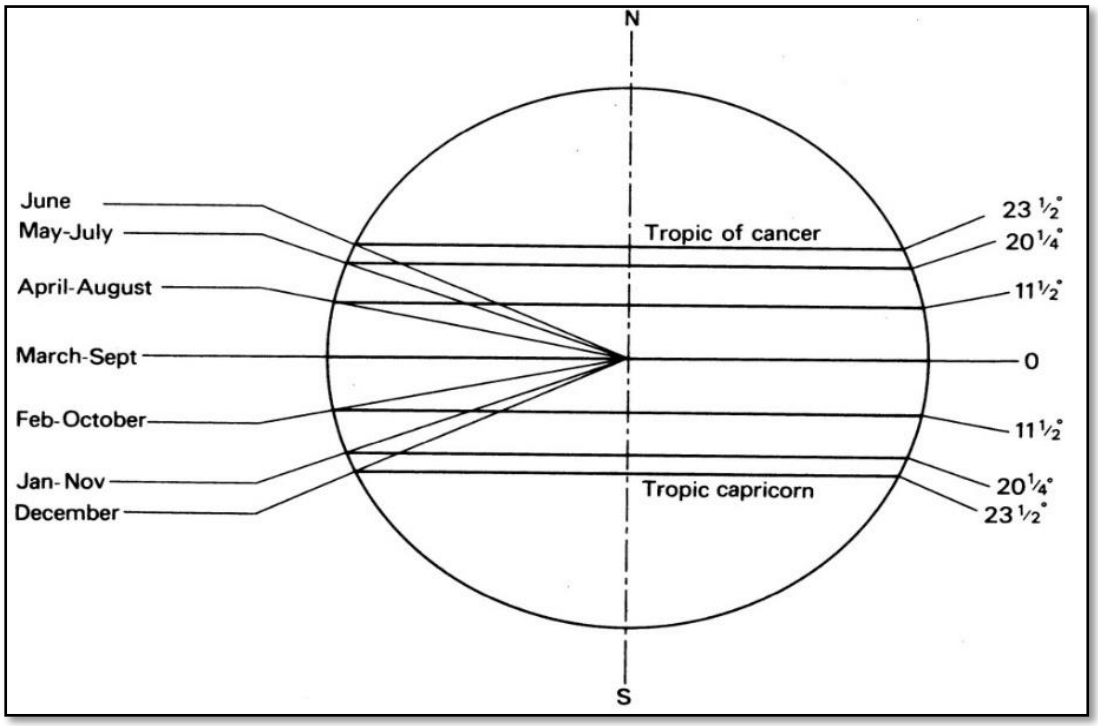

Figure 2.4: Approximate angles of declination on the 21st of each calendar month

Source: (Meteorological Department of Kenya, 2019)

2.2.1.4 Thermal comfort

Thermal comfort is the state of mind that expresses satisfaction with the thermal environment and is assessed by subjective evaluation (Alhaddad & T., 2013). The body losses heat in cold environments and gains heat in hot environments hence if it cannot regulate its temperatures, both the hot and cold scenarios will lead to discomfort (Srithongchai & Gadi, 2020). The main factors influencing thermal comfort are those that determine heat loss and heat gain such as metabolic rate, clothing insulation, air temperature, mean radiant temperature, relative humidity and air speed (ASHRAE Standard-55, 2020).

The Predicted Mean Vote (PMV) model is one of the most recognized thermal comfort models that was developed using principles of heat balance and experimental data collected in a controlled climate chamber under steady state conditions (Carlucci &

Pagliano, 2012). On the other hand, the adaptive model was developed based on hundreds of field studies with the knowledge that occupants dynamically interact with their environment (De Dear & Brager, 2001). It was considered that occupants have a control of their thermal comfort by means of clothing, opening windows, using fans, using personal heaters and sun shades. The adaptive model can be applied to naturally ventilated buildings while the PMV model can be applied to air-conditioned buildings (Schiavon, Hoyt, & Piccioli, 2020). Studies have also shown that people adjust themselves to maintain and improve their well-being through physiological, psychological and behavioral reactions to environmental stimuli (Han, et al., 2007).

2.2.2 Condensation risk assessment

2.2.2.1 Condensation

(a) Types of condensation

(i) Temporary condensation

This is condensation occurring on the internal surfaces when a sudden rise in the air temperature causes air in contact with surfaces to be temporarily at a much higher temperature than the surfaces. If the surface temperature is below the dew point of the air, condensation will occur (Larasati & Sahid, 2013).

(ii) Permanent condensation

In poorly insulated buildings, the inside surfaces are at relatively low temperatures and if the internal air is comparatively humid, the internal surface temperatures may be at all times below the dew point temperature of the air. In these conditions condensation will be permanent (Wolkoff, 2018).

(iii) Interstitial condensation

This is condensation occurring within a structure as illustrated in Figure 2.5. It is possible for interstitial condensation to occur although condensation on the internal surface is absent (Andersen Corporation, 2007).

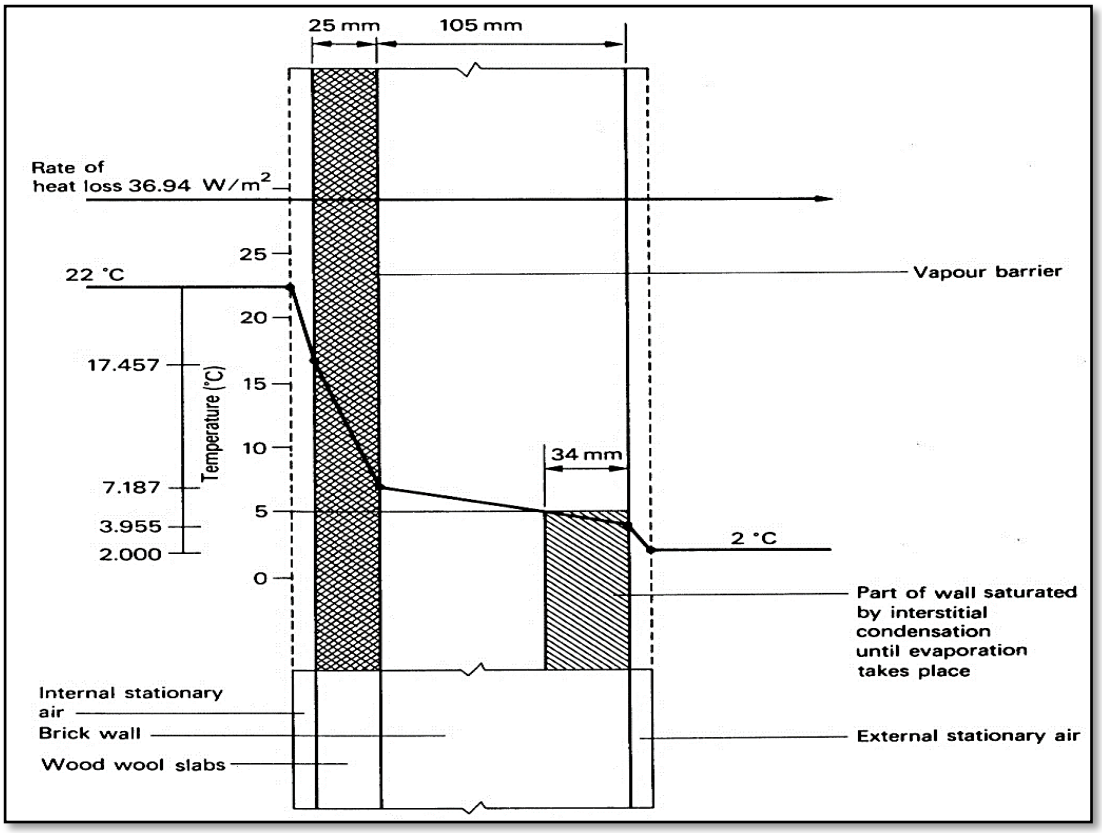

Figure 2.5: A typical graph of wall temperatures and interstitial condensation

Source: (Schock Isokorb, 2018)

(b) Estimating condensation risk

Recommendations made in the Building Research Establishment Digest 110 (Condensation) of 1969 formed a basis for design which takes into account moisture content and ventilation rates. At normal ventilation rates, the gain by the indoor air of body moisture from persons not engaged in physical exertion is roughly 4.5g per person per hour. This results in the indoor air having excess moisture content over outdoor air of 1.7g of water vapor per kg of dry air. Provided that ventilation rates are properly controlled, there would be a suitable design assumption for shops, offices, classrooms, assembly halls and dry industrial premises. For dwellings, taking into account the moisture produced by cooking, etc., and the possible restricted ventilation in cold weather, a safer design value for excess moisture may be 3.4 g/kg (4.3g/m^3) of dry air. Catering establishments and industrial workshops requiring humid atmospheres may contribute 6.8g/kg (8.6g/m^3) or more to the inside air. In naturally

ventilated premises, such design values may be added to assume a mixing ratio with the outdoor air. The principles used in the Digest are to predict the likelihood of condensation, and to design so as to avoid this. It may be applied to walls, floors, or roofs, but lightweight sheeted roofs present special problems (Building Research Establishment, 2016).

(c) Dew point temperature

In thick structural building elements, it is important to analyse their dew point temperature graph (Figure 2.6) to assess the risk of condensation formation.

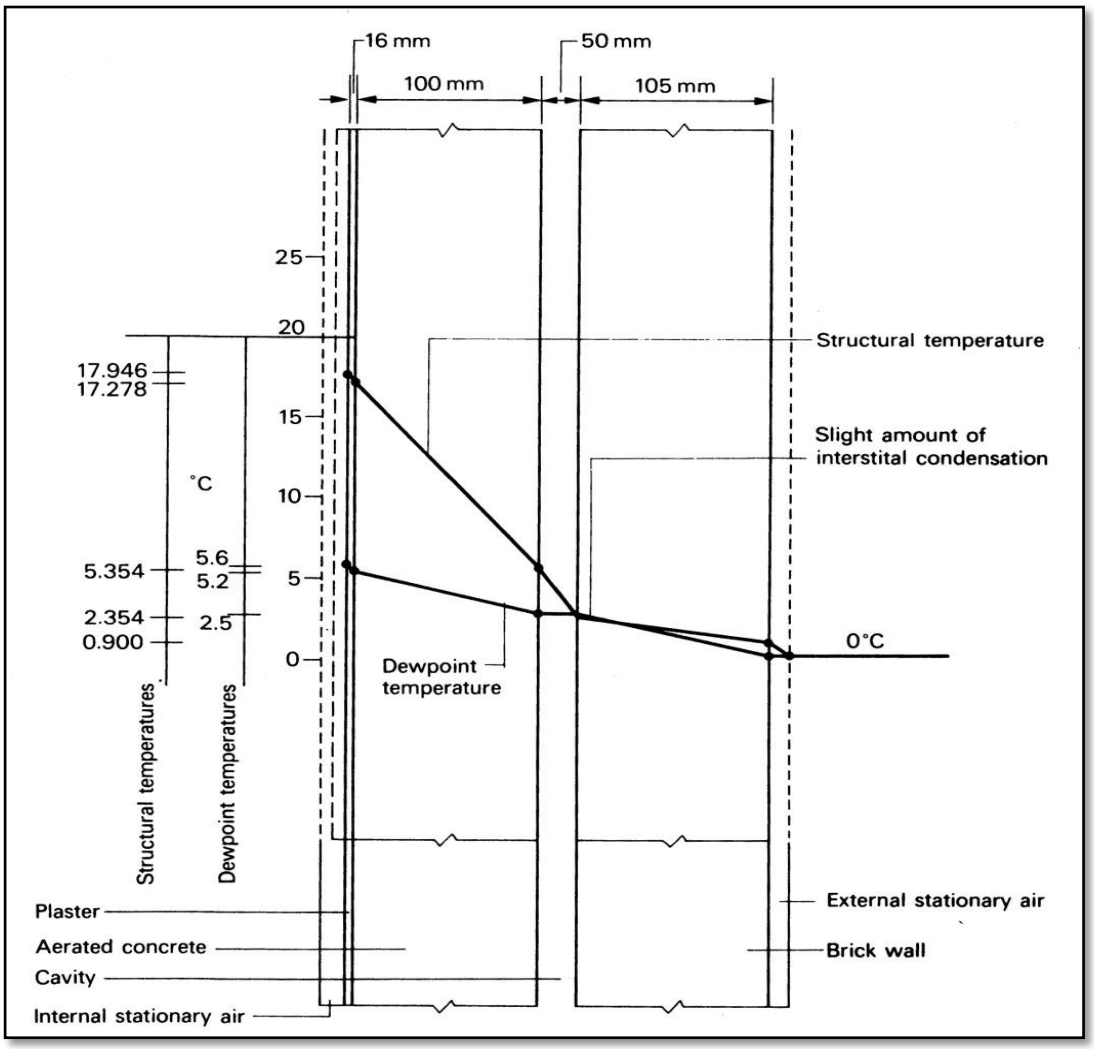

Figure 2.6: Typical graph of structural and dew point temperatures

Source: (Hall, 2015)

To estimate dew points at different temperatures, a psychrometric chart is used (see Figure 2.7). A psychrometric chart presents physical and thermal properties of moist air in a graphical form. The chart enables the effect of temperature changes and dew point temperatures across the wall to be predicted.

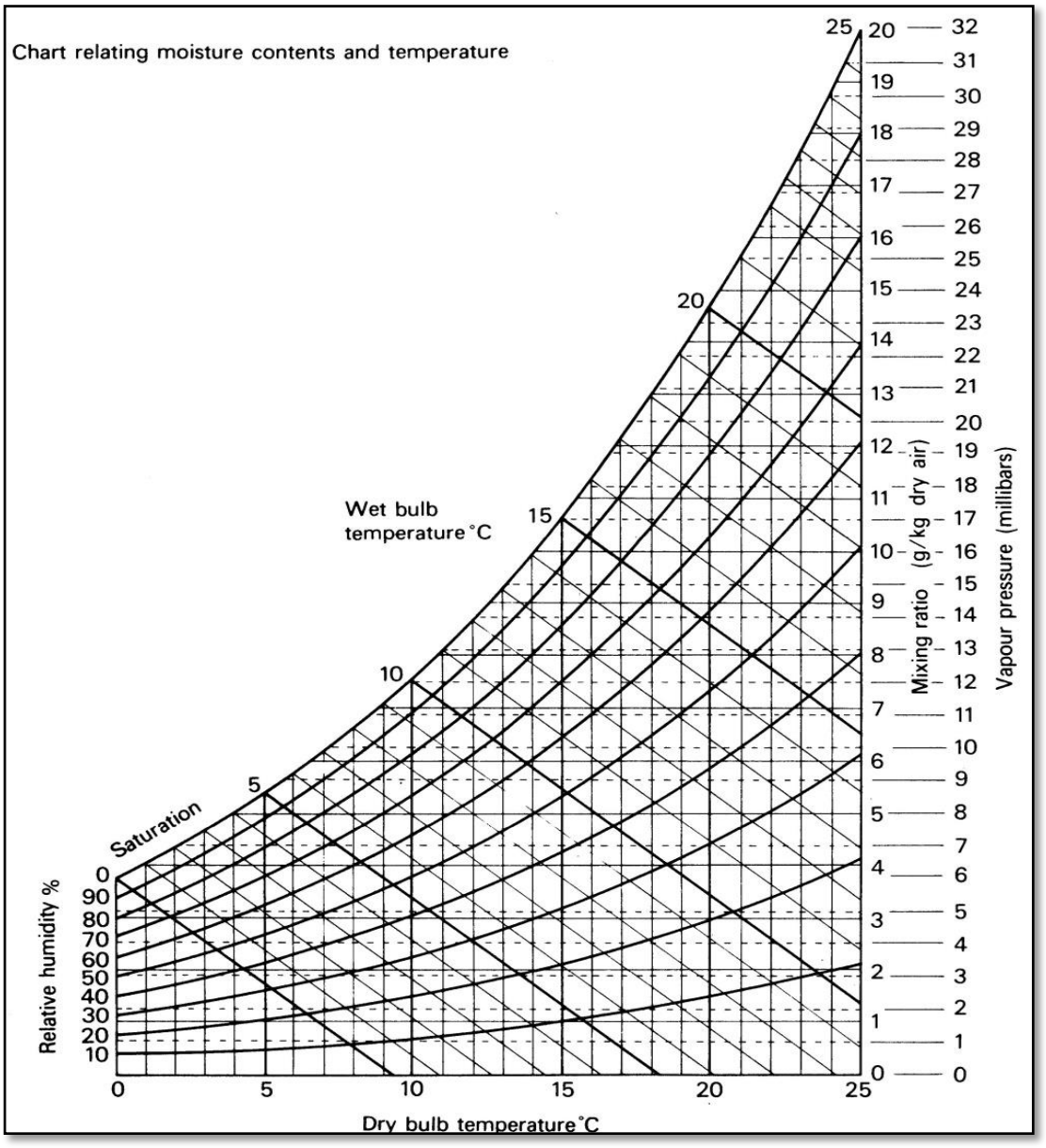

Figure 2.7: Psychrometric chart

Source: (Hyndman, 2020)

(d) Condensation risk

At any point where the estimated structural temperature is lower than the dew point temperature, condensation may occur. In order to find the vapor pressure drop and the corresponding dew point temperatures between points of the structure, the vapor resistivity of the various materials must be known. Table 2.5 gives both thermal and vapor resistivity of some common building materials (Hall, 2015).

Table 2.5: Thermal and vapor resistivity of some common building materials

Materials	**Thermal resistivity** (m^2K/W)	**Vapour resistivity** (MNs/g)
Brickwork	0.7-1.4	25-100
Concrete	0.7	30-100
Rendering	0.8	100
Plaster	2	60
Timber	7	45-75
Plywood	7	1500-6000
Fibre building board	15-19	15-60
Hardwood	7	450-750
Plasterboard	6	45-60
Compressed strawboard	10-12	45-75
Wood-wool slabs	9	15-40
Expanded polystyrene	30	100-600
Foamed urea-Formaldehyde	26	20-30
Foamed polyurethane (open or closed cell)	40-50	30-1000
Expanded ebonite	34	11 000-60 000

Source: (Hall, 2015)

Thermal resistivity is a measure of how poorly the material conducts heat and is the inverse of thermal conductivity *k*. Vapour resistivity is a measure of the materials resistance to passage of water vapour through it.

2.2.2.2 Converting relative humidity to absolute humidity

In Equation 2.10, temperature (T) is expressed in degrees Celsius, relative humidity (RH) is expressed in %, and e is the base of natural logarithms 2.71828 [raised to the power of the contents of the square brackets]:

$$\text{Absolute Humidity } \left(\frac{\text{grams}}{\text{m}^3}\right) = \frac{6.112 \times e^{\left(\frac{17.67 \times T}{T+243.5}\right)} \times RH \times 2.1674}{(273.15+T)} \quad (2.10)$$

This formula is accurate to within 0.1% over the temperature range -30°C to +35°C. When computing absolute humidity, defined as density in g/m^3 of water vapor, from temperature (T) and relative humidity (RH), water vapor is taken as a gas whose behavior approximates that of an ideal gas at normally encountered atmospheric temperatures (Bolton, 1980).

2.2.2.3 Calculating the dew point temperature (T_d)

A simple calculation that gives an approximation of dew point temperature where the observed temperature and relative humidity are known was developed as shown;

$$T_d = T - \left(\frac{(100-RH)}{5}\right) \quad (2.11)$$

Where T_d is dew point temperature (in degrees Celsius), and RH is relative humidity (in percent). This relationship is fairly accurate for relative humidity values above 50% (Lawrence, 2005).

2.2.3 Indoor microclimate prediction modeling

2.2.3.1 Admittance method of predicting indoor environmental temperature (mechanistic model)

The Chartered Institution of Building Services Engineers (CIBSE) developed the technique known as the admittance method, which enables the peak indoor environmental temperature to be assessed for any proposed building design.

Routine calculations

To apply the technique, the following Data is to be calculated in turn.

(a). Mean heat gains from all sources.

(b). Mean internal environmental temperature.

(c). Swing (deviation) from mean to peak in heat gains from all sources.

(d). Swing (deviation) from mean to peak internal environmental temperature.

(e). From (b) and (d), the peak internal environmental temperature.

Definitions

Many of the values for heat loss calculations are used but some new terms are involved in the mechanistic modeling calculations, namely:

(a). Admittance factor (Y): The factor which gives its name to the procedure, which is the amount of energy entering the surface for each degree of temperature swing at the environmental point. It is the reciprocal of the thermal resistance or impedance of an element to cyclic heat flow from the environmental temperature point and has the same units as U value (W/m^2°C).

(b). Environmental temperature: Its use is essential to the admittance method and its value takes into account both the air temperature and mean radiant temperature as shown below.

Environmental temperature = ⅔ mean radiant temperature + ⅓ air temperature.

(c). Decrement factor: The ratio of the cyclic transmittance to the steady-state U value.

(d). Mean solar heat gains: A function of the mean incident radiation intensity as read from the tables in the CIBSE guide book A.

(e). Mean casual heat gains: The mean heat gain from casual sources such as lighting, machinery and occupant activities which is found by multiplying the individual items by their duration and averaging over the 24 hour cycle.

(f). Peak indoor environmental temperature: The peak indoor environmental temperature is found by adding the mean-to-swing to the mean thus:

$$t''_{ei} = t'_{ei} + \tilde{t}_{ei} \qquad (2.12)$$

Where t''_{ei} = peak internal environmental temperature (°C)

t'_{ei} = mean internal environmental temperature (°C)

$\tilde{t}_{ei}$ = swing in internal environmental temperature (°C)

(The Chartered Institution of Building Services Engineers , 2015)

2.2.3.2 Predicting the thermal comfort temperature for naturally ventilated buildings in Europe (EN15251)

Experience from comfort surveys done in Europe has shown that the thermal comfort temperature of a freely running building is linearly related to the outdoor temperature

(Standard EN15251, 2007). The European standard EN15251 (2007) derived the following relationship between thermal comfort temperature and outdoor temperature;

$$T_{comf} = 0.33T_{rm} + 18.8 \quad (2.13)$$

Where;

T_{comf} = neutral temperature in ℃

T_{rm} = running mean outdoor temperature in ℃

Source: (Nicol & Humphreys, 2010)

2.2.3.3 Predicting the thermal comfort temperature in naturally ventilated buildings (ASHRAE)

Using data from world data base of field experiments, an adaptive equation underlying the ASHRAE standard was developed. The equation gives the thermal comfort temperature for naturally ventilated buildings. The adaptive equation is;

$$T_{comf} = 0.31T_{om} + 17.8 \quad (2.14)$$

Where;

T_{comf} = optimum comfort temperature in ℃

T_{om} = monthly mean outdoor temperature in ℃

Source: (de Dear & Brager, 2002)

The European standard, EN15251 neutral temperature and the American standard, ASHRAE optimum comfort temperature both refer to the most acceptable comfortable indoor thermal temperature (T_{comf}).

2.2.3.4 Predicting indoor temperatures of closed buildings (Kenya)

A study done in Kenya found that buildings made of high thermal mass material have long time lags and their internal temperatures are cushioned against external temperature swings. However low thermal mass building's (timber house roofed with iron sheets) internal temperatures closely followed the external temperature changes. The Expression for high thermal mass developed in this study was for calculating the maximum daily temperature using average temperatures, hence cannot be used to predict temperatures on a continuous 24 hour basis. The following linear regression expression was proposed for predicting the internal mean radiant temperatures (MRT) for low mass buildings;

$$\text{MRT} = 0.8372(\text{exterior temperature}) + 5.3648 \quad (2.15)$$

(Ogoli, 2003)

2.2.4 Critiques of the existing literature relevant to this study

(a). Han, et al., (2007) did a field study on occupants' thermal comfort and residential thermal environment in the hot-humid climate of China. The study aimed to know the thermal comfort inside residences of houses in three cities (Changsha, Guangzhou and Shenzen) found in typically hot-humid climate of central southern China. It was noted in the study that the three cities have very different winter climates as well as summer climates that are quite different with very hot and humid conditions. This study was performed in the summer of 2003 and 2004 where the mean daily maximum temperature was in the range of 30.5 - 35.5 °C from June to August and the mean daily maximum relative humidity was in the range of 78.2 - 89.0%. In two summer surveys and field measurements, a sample size of 110 subjects in 26 different residences in the three cities (Changsha n = 19, Guangzhou n = 5 and Shenzhen n = 2) were analysed. The thermal perception survey included the traditional scales of thermal sensation (TSENS) which was the ASHRAE seven-point scale of ranging from cold (-3) to hot (+3) with neutral (0) in the middle. Using the data from the survey questionairre and thermal variable measurements, the fountain model of TSENS and software were used to calculate environmental and comfort indices. Homes with air conditioning and those without air conditioning showed different occupant TSENS responses. This study's results support the notion that climatic differences affect comfort perception and the fact that people usually adapt to their thermal environment through adjusting other parameters in their heat balance such as using a fan, opening windows and the clothing they wear.

The research did not consider on the effects of occupants activities and the residential building materials' thermal mass on the temperatures experienced in the study houses which would have had an impact on the thermal perceptions of the occupants.

(b) A study was conducted in Thailand by Srithongchai and Gadi, (2020) to gain a better understanding of local peoples requirements for indoor thermal environments. This field research was conducted in temples with an aim of investigating users'

adaptive thermal comfort using 517 datasets. The datasets consisted of respondent personal information, subjective votes, adaptive actions and thermal environmental data of three naturally ventilated meditation halls in Thailand. The results of the study revealed the inacuracy of the predicted mean vote method. The respondents neutral temperatures were higher than their thermal preference. The 80% indoor acceptable thermal range in the study was slightly wider compared to the limit suggested by the ASHRAE-55 Standard. This study was conducted in public buildings hence it does not capture information on peoples thermal comfort and adaptation in their residential houses. The research concentrated on the thermal perceptions of the people ignoring humidity levels and condensation risks of the buildings in use.

(c). Suehrcke et al., (2008) did a research on the effects of the roof solar reflectance on the thermal performance of a building. In the paper, an equation for the average daily downward heat flow of a sunlit roof was derived. Temperature measurements of four successive days were taken from a house in Townsville, Australia before and after the application of a white reflective paint. It was shown that the application of the reflective white paint had reduced the roof temperatures by 20 K. Also the increased solar reflectance had reduced the interior temperatures relative to the ambient temperatures. This research analysis was limited to locations where there were no heating requirements. A classification of roof colours was made and the relative benefits were calculated for the case of downward roof heat transfer. Dark coloured roofs absorbed and transferred heat downwards during the cold months of the year keeping the interior warm. Bright coloured roofs in summer reflect much of the radiant heat from the sun hence reducing the cooling load required to maintain comfortable temperatures.

This research considered the downward flow of heat only, hence it is not known if a light colored roof would have had any benefits when the ambient temperatures dropped below those of inside the house. The temperature measurements were limited to within the ceiling space hence one cannot tell the actual thermal comfort of the living space in the building. This study did not address environmental relative humidity and the condensation risk assessment of the case study buildings when in use.

(d). Kariuki, et al., (2018) conducted a research on effects of walling material's thermal transmittance and thermal mass on indoor thermal comfort in Nairobi. The study was to develop a criterion for the selection of walling materials. The study was conducted on three buildings of different walling material; natural stone; timber; and expanded polystyrene (EPS) walls. The research simulated different scenarios by using the Auto desk Ecotect 2011 thermal simulation software. This study on thermal comfort had buildings located in different geographical regions at different altitudes, hence influences of altitude temperature difference effects on thermal comfort were ignored. It was determined that EPS walling systems gave the best thermal comfort conditions. Also external temperatures were based on general data from a meteorological station based at a different geographical location and altitude hence one cannot determine the actual influence of the individual site's temperatures.

This research by Kariuki, et al., (2018) investigated thermal conditions of houses whose walling was made of timber, stone and expanded polystyrene panels. These houses do not represent the most common mode of housing sheet metal clad houses) found in the urban and peri-urban areas of Kenya. The research also does not exclude the effects of occupants' adaptation to their environment on the recorded thermal data as opposed to researching on empty unoccupied buildings.

(e). Ogoli (2003) conducted a research within Nairobi area to determine indoor temperatures in closed unventilated model buildings composed of four test chambers; two with stone walls and two with timber walls. This research aimed at producing a model for predicting indoor temperatures in closed buildings with high thermal mass. Two chambers were roofed with heavy concrete tiles and the other two with lightweight galvanized corrugated iron (GCI) sheets. Each test chamber was tested with four different ceiling configurations by locating differently within the roof space: no ceiling, sloping ceiling, 2/3 ceiling and flat where the ceiling was made of coconut palm leaves woven mats. The thermal mass considered for influence on the internal temperature was that of the ceiling and roof.

This method simulated a situation in a modeled environment based on ASHRAE Standard 55-92 comfort zone. Since this research was conducted in closed unventilated chambers, there is no accounting for how occupants and their adaptive habits would have influenced the outcome of the internal temperatures measurements, thermal comfort and condensation risks. This research developed a general linear model for predicting the characteristics of internal temperatures for buildings of low thermal mass materials.

2.3 Summary of the Review and Research Gaps

The research by Han et al., (2007) in China concerned itself with the thermal comfort and thermal environment of the residential buildings without consideration of the building structure thermal mass. Research by Suehrcke et al., (2008) studied on the effects of roof color on solar reflectance and downward flow of heat and did not study the thermal comfort of the living spaces in the study buildings.

Srithongchai et al., (2020) study in Thailand was to gain an understanding on peoples requirements in their indoor thermal environments. His study was conducted in Temples which are public buildings. His results revealed the respondents neutral temperatures were higher than their thermal preference. The 80% indoor acceptable thermal range was slightly wider than that suggested by the ASHRAE-55 Standard. The study was in a public building and not a domestic building hence the variance of thermal comfort perceptions due to occupant activities cannot be accounted for. There was no study on the humidity levels in the buildings and the associated condensation risks.

The research on thermal mass of roof influence on internal temperatures done in Nairobi by Ogoli (2003) using closed, unventilated and unoccupied model buildings does not account for nor predict the possible influence of the buildings' internal thermal conditions by occupants' adaptation to the thermal conditions in them. Kariuki et al., (2018) did a research on occupied buildings of walling materials with different thermal masses where conclusions were drawn from recorded data and modelled predictions. The recorded data cannot inform on the additional effect on the internal

thermal conditions of the buildings by the occupants as opposed to data recorded from empty houses.

The researches closely related to this research have either worked on closed unventilated model houses for their predictions or occupied houses for their predictions. To the researcher's knowledge, researches done so far have not included the thermal conditions and condensation risk assessment of sheet metal clad buildings which are the most common mode of housing in Nairobi and its environs (M. T. I. H. & U. D., 2016). Considering the above gap in research data, this study aimed at investigating the internal thermal conditions and condensation risk assessment on occupied, open and naturally ventilated sheet metal clad residential buildings as well as an identical vacant, closed and unventilated sheet metal clad residential building.

Previous research works have developed linear correlation prediction models and have not tried out other correlation models to determine the best mathematical function that best fits the data. This research empirical model development chose to utilize the readily available Microsoft office tools to analyze the field data through machine learning process where the derived mathematical relationships were tested to determine which best described the data. The most representative relationship equation was chosen as the model for predicting the internal thermal conditions of galvanized sheet metal clad residential buildings at any time of day in Uthiru, Kiambu County.

2.4 Conceptual Framework

The conceptual framework in Figure 2.8 shows the independent, intervening and dependent variables that applied to the sheet metal clad residential buildings studied in Uthiru, Kiambu County.

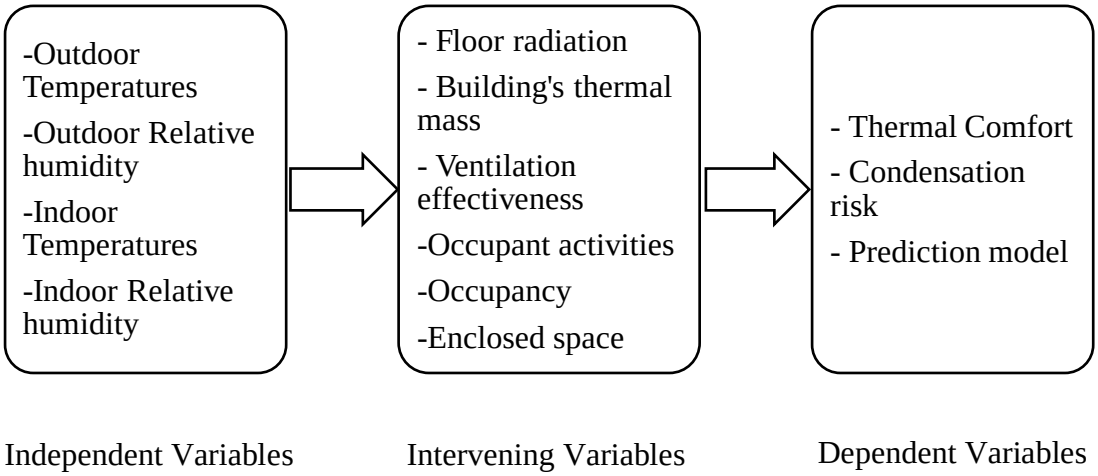

Figure 2.8: Conceptual framework variables

CHAPTER THREE
MATERIALS AND METHODS

3.1 The Research Design

The case study was done on existing buildings which are in use and are of similar sizes located in the same neighborhood. A survey was done to establish the most suitable settlement site with sheet metal clad residential buildings. The basis of choosing a site was informed by its accessibility, security of the equipment, uniformity in size of the buildings, willingness of landlords to have the study conducted in their buildings and cooperation by the building occupants. The choice of the study's location was to have data that is consistent, reliable and with constant intervening variables for that particular geographical location's climatic conditions, hence can be replicated in any other geographical location.

In a period of seven months that covered the warm and cold seasons, twelve data sets were collected, each consisting of 3000 recordings of temperatures and relative humidity per month. The period covered also included the wet and dry seasons and had no influence on the thermal modeling. A web based application (Thermal Comfort Tool for ASHRAE-55) based on ASHRAE Standard 55-2017 was used to check the levels of thermal comfort being experienced in the buildings when all residents are in. Using the relative humidity data and temperature data, the internal condensation formation risk was determined for the buildings and when it is most likely to happen. A microclimate predicting model was developed using Microsoft excel to predict the thermal conditions of the buildings at any given time of the day.

3.2 Research Approach

This study collected temperature and relative humidity data for sheet metal clad residential buildings. The data was for both indoor and outdoor conditions. The thermal conditions in the buildings were assessed using Thermal Comfort Tool for ASHRAE-55 which is a web based application that is used for checking thermal comfort in buildings. The application is programmed to use mean monthly outdoor temperatures and indoor operative temperatures as the inputs and it calculates whether the building meets the required thermal conditions set by the standard.

Absolute humidity values were calculated from the temperature and relative humidity values so as to estimate the effectiveness of the buildings' ventilation. The logic is that when the indoor absolute humidity values for the naturally ventilated buildings are equal or approximate to the outdoor values, then their ventilation is effective. If the indoor absolute humidity values for the naturally ventilated buildings are consistently higher than the outdoor values, then their ventilation is not effective. Dew point temperatures were calculated from the temperature and relative humidity data to assess condensation risks in the buildings. The logic is that the indoor dew point temperature must remain lower than the outdoor temperature for the building to remain safe from condensation formation on the internal surfaces of the external walls. Condensation can occur if the outdoor temperatures fell below the indoor dew point temperatures or if the indoor dew point temperatures rose above the outdoor temperatures.

Using Microsoft Excel, statistical data analysis was performed on the indoor and outdoor temperatures to established their causal or cause and effect relationships. Scatter diagrams were plotted and several regression analysis done to assess the best mathematical curve that best approximated the data using standard statistical tests. The values of product moment and coefficient of determination were evaluated to determine whether there was high a high or low correlation between the measured variables. An empirical model for predicting indoor thermal conditions of sheet metal clad residential buildings in Uthiru, Kiambu County was adopted from the most accurate model. The results of the empirical model were then compared with those of a mechanistic model.

3.3 Thermal Comfort in Sheet Metal Clad Residential Buildings

3.3.1 Experimental set-up

This research was conducted in Uthiru area located west of Kiambu County which is just North-west of Nairobi County. The following activities were carried out on the research site.

(a) Measurements were taken of outdoor temperatures and indoor temperatures using temperature data loggers.

(b) Information of the buildings' designs such as that shown on Plate 3.1 was collected.

(c) Details of the occupant activities in the buildings were gathered through oral interviews at the end of every week.

Plate 3.1: Two of the sheet metal clad buildings used in this study

3.3.2 Equipment

(a) An ELITECH RC-4HC data logger (see Plate 3.2) was used to measure indoor temperatures and outdoor temperatures.

Plate 3.2: The ELITECH RC-4HC data logger

(b) A laptop with the Elitech data logger operating software that was used to synchronize the data logger clocks, set the recording intervals and downloading the recorded temperature data.

3.3.3 Data collection procedures

3.3.3.1 Building assessment and equipment set up

The buildings were assessed to determine the most appropriate room to install the data loggers. The most appropriate room chosen was the front room which served both as the sitting room as well as the kitchen. This is where all activities took place between 7 pm and 11 pm with the room 100% occupied by all the occupants of the house.

3.3.3.2 Temperature measurements

The data loggers were synchronized using a laptop installed with their operation software. On site measurements of temperatures were taken for both the indoor and outdoor environments of the case study buildings. Data logger 1 was set under the shade away from direct sunlight and wind. Data logger 2 and 3 were set in the case study buildings. At the end of a given data collection month, the laptop was used to download the recorded temperature data.

3.3.3.3 Buildings' designs and layout plans

The building's sizes were measured then layout drawings of plans and sections were prepared. The Houses were given Alphabetical coding in the order of which they were assessed and also to protect the identity of the occupants. It was noted all houses other than House C had doors and windows on the front wall only (see Appendix 7). This layout did not provide for cross ventilation in the buildings hence contributed to poor ventilation.

(a) House A and B

House A was a vacant two roomed house with one entry door and one window at the front. House B was an occupied two roomed house that was identical in layout to House A (see Appendix 7). Both houses were made of galvanized sheet metal with no internal lining or insulation and covered with a gable roof. Both houses had a 500 by 500 mm glass fibred reinforced plastic roofing sheet on the inner room's roof for the provision of light.

(b) House C

The house was made of old galvanized sheet metal and had a lining of 3mm plywood board (see Appendix VII). The only exception in the house's construction materials was the shower/ toilet cubicle which was made of stone masonry. The house had five windows on three of its four sides but only the window in the kitchen and shower/ toilet cubicle that were opened during the research data collection period. The roof design was a lean-to roof.

(c) House D

The building was a single room dwelling with a lean-to roof design (see Appendix VII). The house was made of relatively new galvanized sheet metal and lined with three ply boards on the inside. The house had a door and window on the front wall only.

(d) House E

The house was a two roomed dwelling unit with one door and two windows on the front wall only. The house was made of relatively new galvanized sheet metal on the outside while the inside was lined with 3 mm plywood boards and it had a lean-to roof design (see Appendix VII).

3.3.3.4 Building occupant activity information

The building's occupants were interviewed orally on a weekly basis to establish their daily routines and activities when they were indoors. The survey questions were in line with the ASHRAE seven-points Thermal Sensation Scale (TSENS), current clothing garment and metabolic activity checklist.

(a) House A and B

House A was studied in a closed unventilated state as the doors and window remained closed throughout the data collection period. House B was studied with users free to adjust windows and door to suit their comfort. The house was occupied by three adults and three children. Occupants woke up at 5 am to heat bathing water and prepare breakfast for the father and a school going child. At 9 am breakfast is prepared for the small children who were at home and the occupants would open the door and window depending on the day's weather. At 12 noon, lunch was prepared and thereafter people

relaxed outside depending on the days weather. At 6 pm laundry was collected from outside and preparation of supper commenced at 7 pm. The door remained open and window shut when a gas stove was used until supper preparation ended at 9 pm. The door and window remained open when a charcoal stove was used for cooking thereafter it was removed outside at 9 pm. The occupants relaxed in the sitting area and by 11 pm they would have gone to sleep. One adult slept in the sitting area together with the children while the couple slept in the bedroom.

(b) House C

House C was an occupied three roomed self-contained house with a family of four -a mother and three grown-up children. The house was studied with its users free to adjust doors and windows to suit their comfort. The occupants woke up at 5 am to shower and prepared breakfast at 6 am. At 8 am the front window would be opened but the outside door remain shut much of the time unless on a hot day when some of the occupants were in. In the evening, all the occupants would be in the house by 7 pm when preparation of supper commenced using a two burner gas cooker. Cooking activities would be through by 8 pm and the occupants would relax in the sitting area until they would go to sleep 12 midnight. One occupant slept in the sitting area, two in the bedroom 1 and their mother in bedroom 2.

(c) House D

House D was a single room house occupied by a couple with no children. The house was studied with occupants free to open or close the window and door. The occupants woke up at 5 am when they heated their bathing water and made breakfast. The occupants would leave the house at about 7 am and would be back at 8 pm. Supper was prepared at 8.30 pm using a kerosene stove and all activities would wind up at 10.03 pm whereby the occupants would go to sleep.

(d) House E

House E was an occupied two roomed house with two adults and one child. The single mother slept with her child in the bedroom while the house help slept in the sitting room area. The house was studied with the occupants free to open the windows and door any time they wanted. The occupants woke up at 5 am to heat bathing water and

make breakfast. The mother would leave for work at 7 am while the house help would remain behind with the child where they would spend much of their time outside while the house remained closed with only the sitting room window open. The mother would be back at 6 pm and supper would be prepared at 7 pm using a gas stove. All cooking activities would end at 9 pm and the house occupants would relax in the sitting room then leave at their own pleasure so that by about 11 pm they would be asleep.

3.3.4 Data processing and analysis

(a) Temperatures recorded from the research site were analyzed to determine the average monthly outdoor temperatures and average indoor operative for the case study buildings. A web based application (Thermal Comfort Tool for ASHRAE-55) was used for thermal comfort assessment, visualization and compliance checks against set standards (ASHRAE Standard-55, 2020).

(b) Calculation of the thermo-physical properties of the case study building's structural materials for roof and walls was done using equation 2.9. These values were applied in the mechanistic prediction model for thermal conditions in the sheet metal clad residential buildings.

3.4 Condensation Risk on External Walls of Sheet Metal Clad Residential Buildings

3.4.1 Experimental set-up

The following activities were carried out on site.

(a) Indoor and outdoor relative humidity readings were taken using data loggers.

(b) Information of the buildings' designs was same as that in section 3.3.1 (2).

(c) Information on occupant activities was the same as that in section 3.3.1 (3).

3.4.2 Equipment

(a) An ELITECH RC-4HC data logger same as that in section 3.3.2 (a), was used to measure indoor relative humidity and outdoor relative humidity levels.

(b) A laptop Similar to section 3.3.2 (b) was used in down loading the relative humidity readings from the data loggers.

3.4.3 Data collection procedures

3.4.3.1 Building assessment and equipment set up

The buildings were assessed and equipment installed just as in section 3.3.3.1

3.4.3.2 Relative humidity measurements

The data loggers were synchronized and located just as in section 3.3.3.2. and similarly the relative humidity data was downloaded.

3.4.3.3 Buildings' designs and layout plans

The building's sizes, layout drawings of plans and coding are the same as in section 3.3.3.3.

3.4.3.4 Building occupant activity information

The building occupant activity information is just as that in section 3.3.3.4.

3.4.4 Data processing and analysis

(a) Using the downloaded relative humidity and temperature data, analysis for absolute humidity was done using Equation 2.10. The indoor and outdoor values were compared to assess the effectiveness of case study buildings' .

(b) The downloaded relative humidity values together with their corresponding temperature values were used in Equation 2.11 to analyze for the dew point temperatures. Indoor dew point temperatures were compared with outdoor temperatures to assess the indoor condensation risk on external walls of the sheet metal clad residential buildings.

3.5 24 Hour Microclimate Thermal Prediction Model for Sheet Metal Clad Residential Buildings in Uthiru, Kiambu County

3.5.1 Experimental set-up

The experimental set-up was just as in section 3.3.1.

3.5.2 Equipment

(a) The temperature data logger was just as that of section 3.3.2. (1).

(b) A laptop for data analysis equipped with Microsoft Excel.

3.5.3 Data collection procedures

The data collection procedures were as that of section 3.3.3.

3.5.4 Data processing and analysis

(a) Full month temperature data was collected on May 2019 for vacant House A and an identical occupied House B. Where House A represented an ideal house model with no thermal or relative humidity influence from occupants while House B represented a typically occupied house with the occupants free to adapt, influence and control their environment to suit their comfort.

(b) Mathematical regression functions from regression curves of best fit were derived from the data of House A which were referred to as Model As (Appendix IV).

(c) Similarly as in (2) above, the same was done with the data for House B to derive Model Bs.

(d). July 2019 temperature data for House B and C was used to validate regression Model As and Model Bs to determine the model that gave the closest predictions to the actual July temperatures (Appendix V).

(e) The most accurate model was selected then validated with August 2019 data for Houses B and C as well as October 2019 data for Houses D and E (Appendix VI).

(f) The average monthly predictions of the derived empirical model were compared with those of a mechanistic model.

3.7 Reliability and Validity of the Research

Data for temperature and relative humidity was collected using the same instruments which gave consistent and stable results. The rainy season and dry season had no impact on temperature readings but only influenced the relative humidity readings. The temperature data loggers conformed to the requirements of ISO 7726 (2012) on accuracy and range hence their data is reliable. The high reliability of field research data means measurements taken were valid (Dear, Foo, & Leow, 1991).

3.8 Research Ethics

This study aimed to add new knowledge that is true and free of errors by avoiding fabricating, falsifying, or misrepresenting research data. The study observed responsible publication, confidentiality, respect for intellectual property, openness, carefulness, integrity and objectivity in its conduct.

CHAPTER FOUR
DATA ANALYSIS AND INTERPRETATION

4.1 Instrument Calibration

The data collecting instruments (The ELITECH RC-4HC data logger**)** were calibrated using meteorological data from the Kabete Veterinary Laboratories, Nairobi, Kenya which was two kilometers away. The purpose of this calibration was to check the concurrence of the measurements taken between the study site and meteorological station. The temperatures were recorded, compared and analyzed with the degree centigrade scale since all other recorded measurements used the metric system. All temperature data from all sources was in the degree centigrade scale so for easier calculation of temperature differences and predictions the degree centigrade scale was maintained.

The temperatures recorded at 9 am, 12 noon and 3 pm on the research site (Outdoors temperatures) were compared with those recorded at the Kabete Veterinary Laboratories meteorological station for the same times of the day as shown in Figure 4.1 below. The trend line indicated that as the month progressed, the outdoor temperatures at the research site were dropping as the cold season approached. The temperatures were shown to have a high positive correlation (Figure 4.2) with a coefficient of determination of 0.9193, that is about 92 % of the recorded research site temperature data correlated to that of the Kabete Veterinary Laboratories meteorological station. The 8% difference could be attributed to the different localized climates of the two sites' environments.

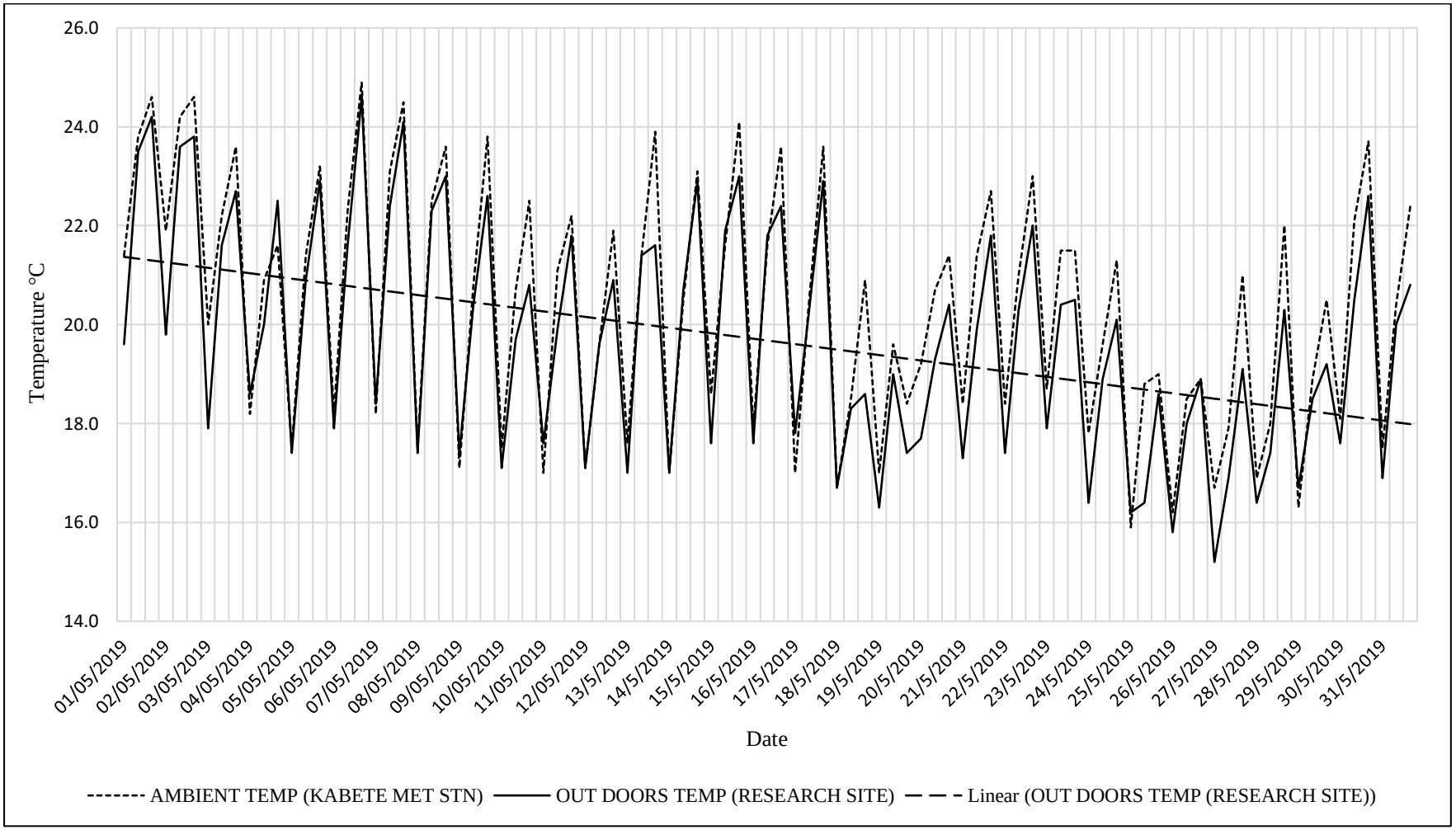

Figure 4.1: May 2019 temperatures -research site and Kabete meteorological station

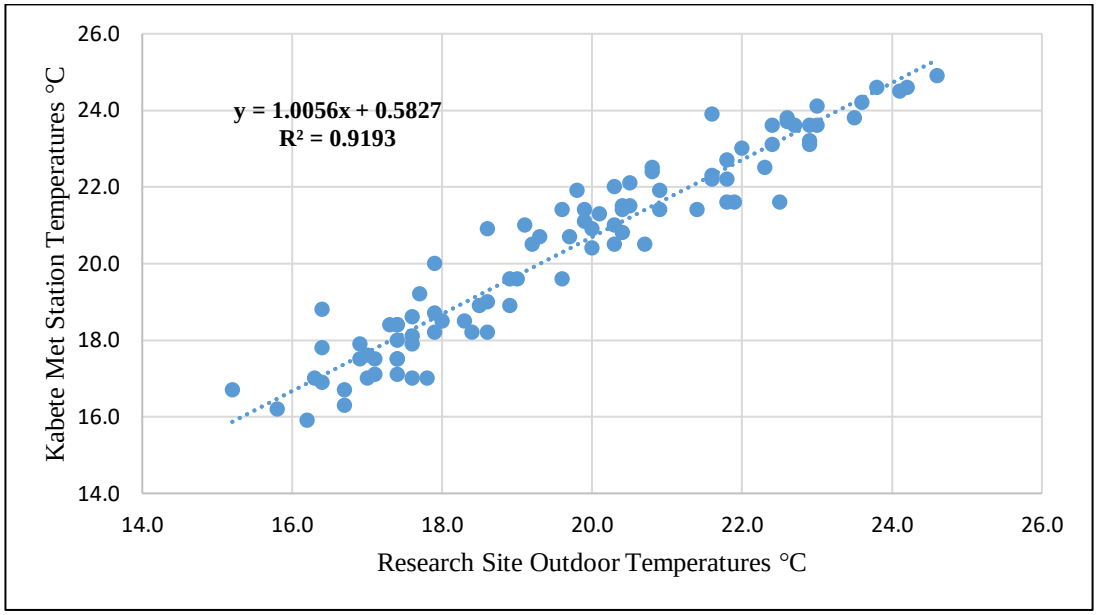

Figure 4.2: Correlation of research site data with that of Kabete meteorological station

4.2 Thermal Comfort in Sheet Metal Clad Residential Buildings

4.2.1 Building materials thermal properties

Using Equation 2.9 and values in Tables 2.1 and 2.2, the thermal transmittance (U) of House A and B which were made of unlined galvanized corrugated iron sheets was established as 5.68 W/m^{2}K which was comparable with 5.62 W/m^{2}K found by Kariuki et al., (2018). The thermal transmittance of House C, D and E which were made of galvanized corrugated iron sheets lined with a three ply wood board was established as 2.64 W/m^{2}K (see appendix 8) which was comparable with 2.69 W/m^{2}K found by Kariuki et al., (2018). The thermal transmittance values for all the houses was higher than the proposed recommended 0.700 W/m^{2}K by Kariuki et al., (2018) for Nairobi area. The unlined building requires an insulation with a U value of 0.80 W/m^{2}K while the lined building an insulation with a U value of 0.81 W/m^{2}K (see calculations in Appendix VIII) both of not more than 50 mm thick.

4.2.2 Observed thermal characteristics of sheet metal clad residential buildings

The results for building's thermal characteristics are as shown in Figure 4.3 and Figure 4.4 showing that the building's internal thermal environment responded almost instantaneously to external downward temperature fall or upward temperature rise.

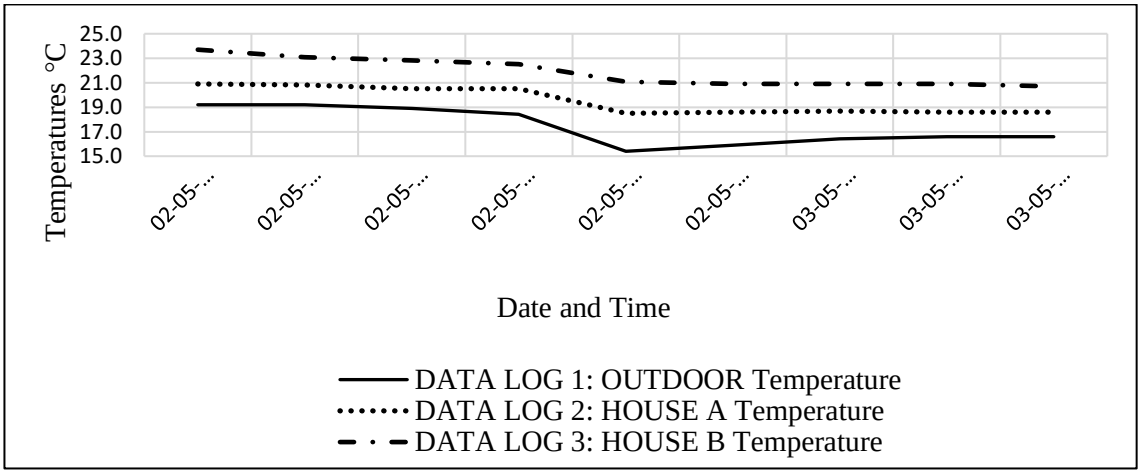

Figure 4.3: Temperature fall response

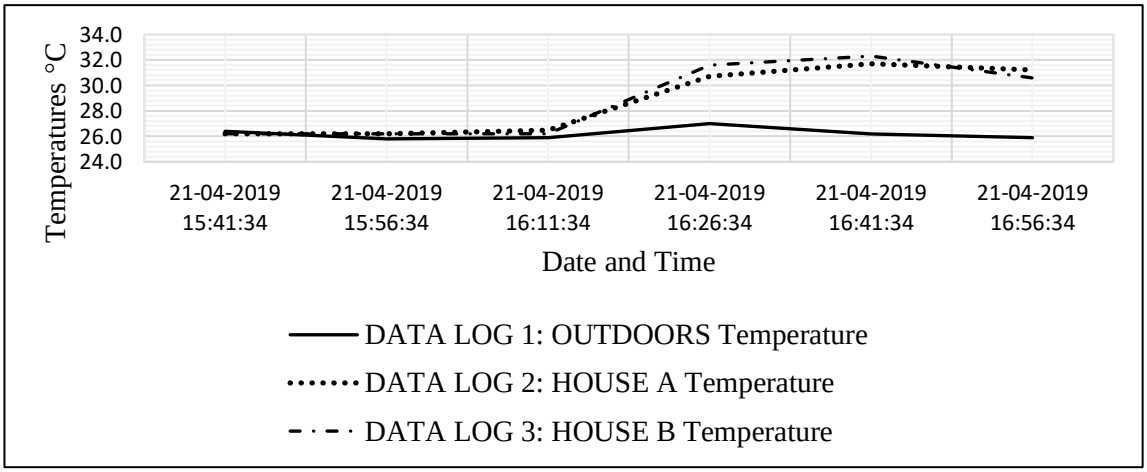

Figure 4.4: Temperature rise response

A light weight building takes a short time to cool down or heat up (Kontoleon & Zenginis, 2017). This confirms the thermal masses of the buildings were low. The above buildings had unlined walls hence a high thermal transmittance U value of 5.68 W/m^2K. Heat gains were through the walls, windows and roofs. Some heat was absorbed by the floor and other part diffusely reflected, to be subsequently absorbed by the walls and roof (Kumar, Saboor, Kumar, Kim, & Babu, 2018). In the warm season, the research site was subjected to heat waves in the afternoon where warm air would suddenly flow from the lower altitudes (Meteorological Department of Kenya, 2019).

4.2.3 Occupant and building fabric influence on internal thermal conditions

The method of cooking used (gas stove or charcoal stove) by the building's occupants released different amounts of heat as illustrated from the observation results shown in Figure 4.5 for charcoal stove (high energy output) and Figure 4.6 for gas stove (moderate energy output). From these results, it is notable that the cooking methods used by the occupants of House A greatly influenced the indoor thermal conditions as compared to the conditions of the vacant House B.

The use of a charcoal stove to cook released high amounts of heat within a short time hence raising the room temperatures to about 35 °C between 7.30 pm and 9.30 pm (see Figure 4.5). When temperatures in House B went this high, the cross-over effects could be seen in vacant House A by a rise of about 1 °C as the two shared a common wall. These temperatures in House B were beyond the ASHRAE-55 recommended maximum comfort temperature of 27° C (ASHRAE Standard-55, 2020).

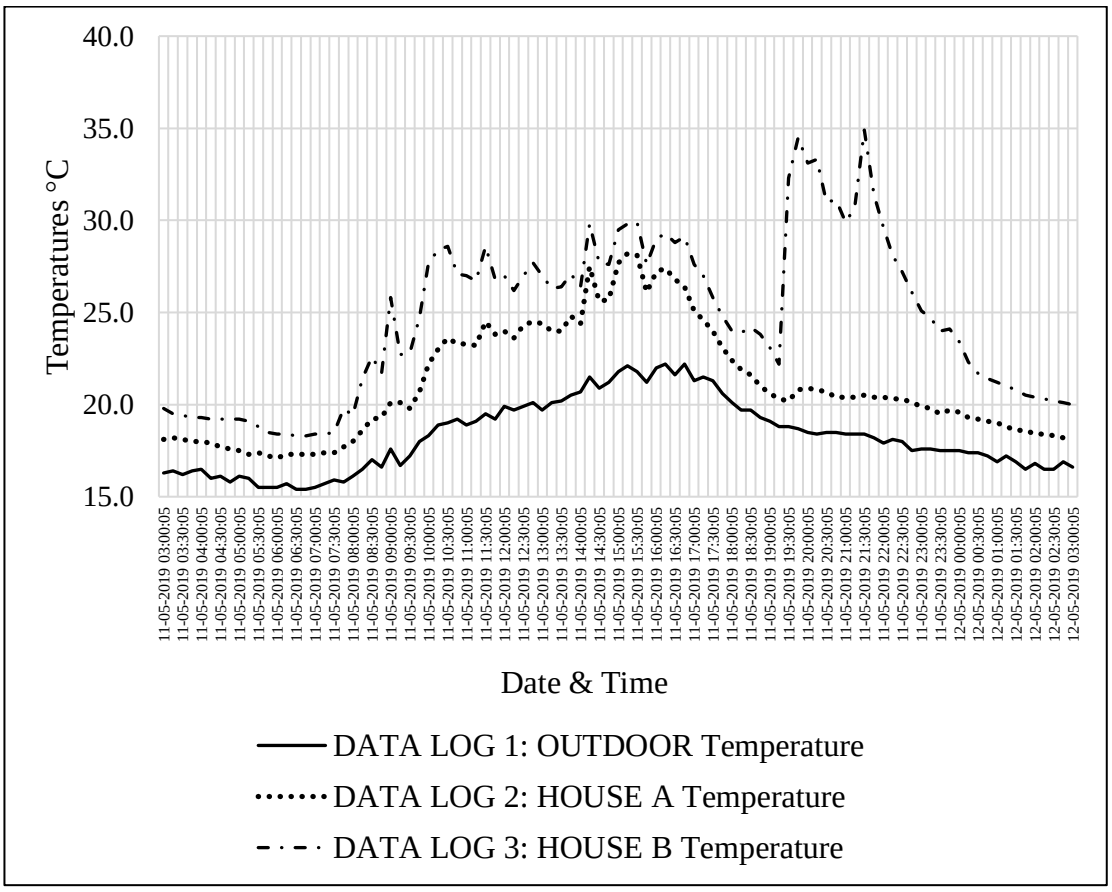

Figure 4.5: A typical day's results when a charcoal stove was used to cook

From Figure 4.6, it can be seen that the moderate energy output from a gas stove used for cooking between 7 pm and 9 pm did not raise the room temperatures beyond the ASHRAE-55 standard's recommended maximum comfort temperature of 27° C (ASHRAE Standard-55, 2020).

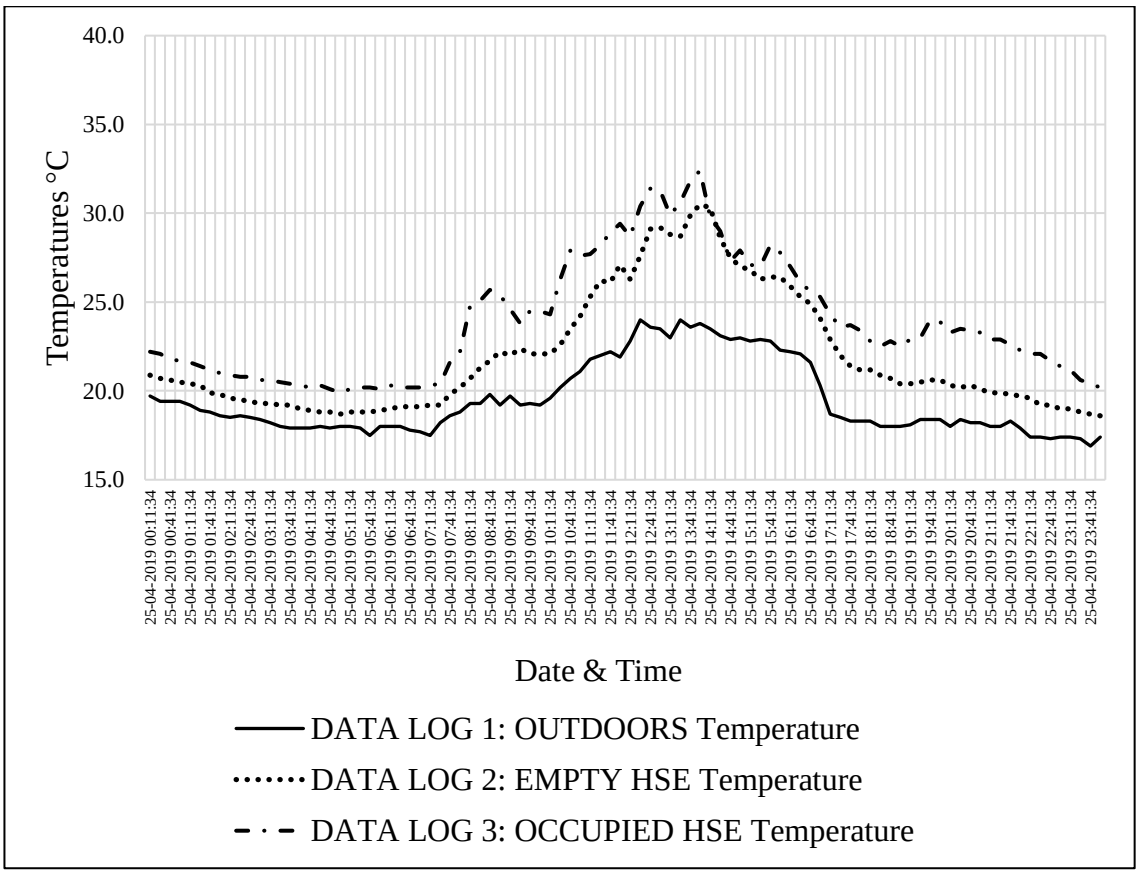

Figure 4.6: A typical day's results when a gas stove was used to cook

It is also noteworthy that furniture and the presence of occupants in the occupied building could have influenced the buildings thermal conditions through casual heat gains (The Chartered Institution of Building Services Engineers , 2015). The temperatures were on average 2 ℃ higher in House B than those of the vacant House A. From analyzed May 2019 data, it was noted that the empty house maintained a temperature of about 2 ℃ higher than the external night temperatures which could be attributed to the floor of the building releasing heat that had been absorbed during the day (Real, Gomes, Bogas, & Ferrer, 2016). The occupied house maintained a temperature of 4 ℃ higher than the external night temperatures. This could be

attributed to the floor of the building plus furniture releasing heat absorbed during the day from solar radiation and occupant activities (Kumar, Saboor, Kumar, Kim, & Babu, 2018).

4.2.4 Online compliance check of the case study buildings' thermal comfort

This section summarizes the output results of the online compliance check that was done using the CBC Thermal Comfort Tool for ASHRAE-55 (adaptive method of Equation 2.14, see Appendix X). The input parameters required for the tool to process results are the building's indoor operative temperature for that month (plotted on Y axis) and the mean monthly outdoor temperature for the same month (plotted on X axis). The plotted point (red dot) must fall within the 80% acceptable limits for the thermal conditions to be compliant with the standard. If the dot fell in the upper 80% limit zone, the tool commented 'too warm' as it was above and outside the 90% acceptable limits. If the dot fell in the lower 80% limit zone, the tool commented 'too cool' as it was below and outside the 90% acceptable limits. If the dot fell within the 90% acceptable limit zone, the tool reported 'comfortable' at all limits (Schiavon, Hoyt, & Piccioli, 2020). The process was repeated for all the case study buildings using their data that was recorded throughout the study period.

(a). House A compliance check, with May operative temperature as 20.2 ℃ and outdoor temperature as 18.3 ℃, was summarized in Table 4.1, Figure 4.7 and Figure 4.8.

Table 4.1: House A May 2019 online compliance check

Acceptable limits	Operative temperature (℃)	Comment
80%	20.0 to 27.0	Comfortable
90%	21.0 to 26.0	Too cool

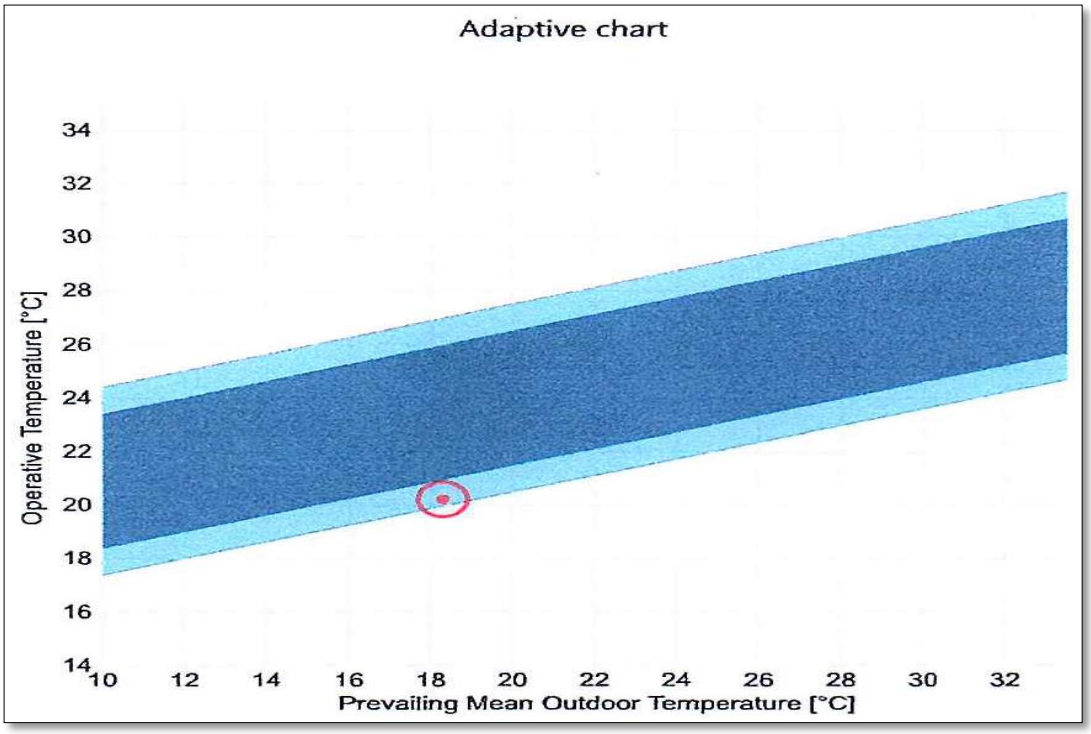

Figure 4.7: Adaptive chart for house A (May)

From the online check, House A complied with ASHRAE Standard 55-2020. The tool remarked for House A which was a vacant house as 'too cool' at the peak (8 pm) hour as it had no occupant activities to warm it up (The Chartered Institution of Building Services Engineers , 2015).

(b). House B compliance check, with May operative temperature as 24.2 °C and outdoor temperature 18.3 °C, was summarized in Table 4.2 and Figure 4.8.

Table 4.2: House B May 2019 online compliance check

Acceptable limits	**Operative temperature (°C)**	**Comment**
80%	20.0 to 27.0	Comfortable
90%	21.0 to 26.0	Comfortable

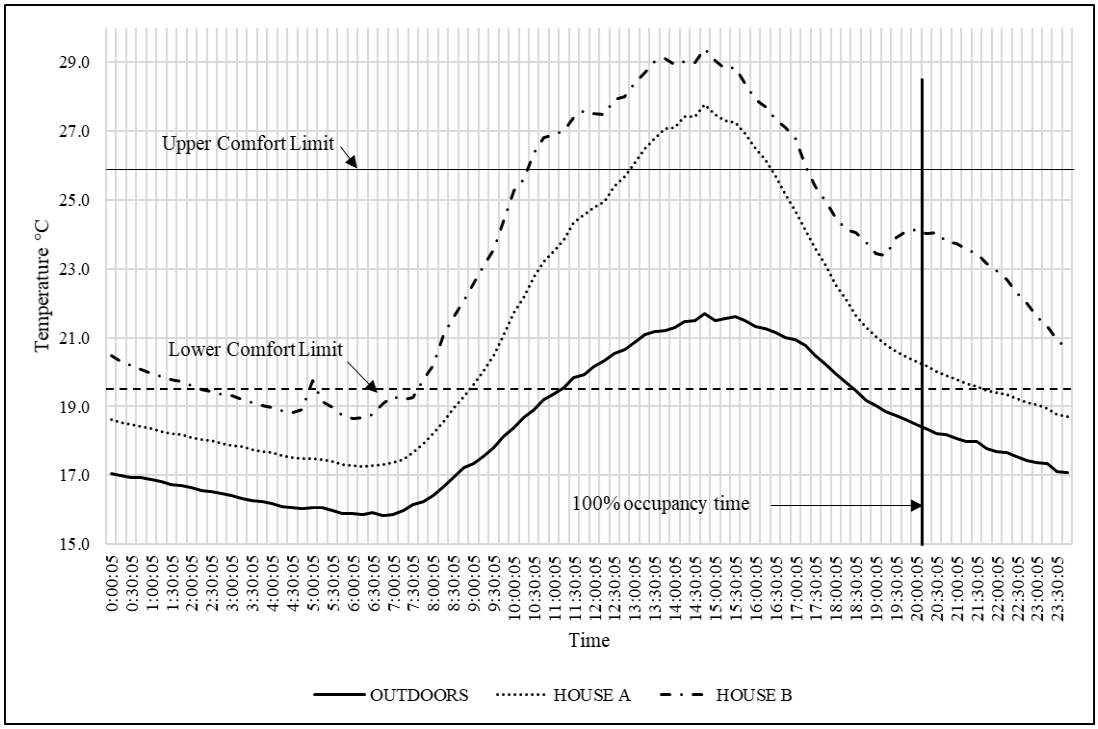

Figure 4.8: May 2019 average temperatures for House A and House B

From the online check, House B complied with ASHRAE Standard 55-2020.

(c). House B compliance check, with July operative temperature as 22.5 ℃ and outdoor temperature 18.1 ℃, was summarized in Table 4.3 and Figure 4.9.

Table 4.3: House B July 2019 online compliance check

Acceptable limits	**Operative temperature (℃)**	**Comment**
80%	19.9 to 26.9	Comfortable
90%	20.9 to 25.9	Comfortable

From the online check, House B complied with ASHRAE Standard 55-2020.

(d). House C compliance check, with July operative temperature as 23.6 ℃ and outdoor temperature 18.1 ℃, was summarized in Table 4.4, Figure 4.9 and Figure 4.10.

Table 4.4: House C July 2019 online compliance check

Acceptable limits	Operative temperature (°C)	Comment
80%	19.9 to 26.9	Comfortable
90%	20.9 to 25.9	Comfortable

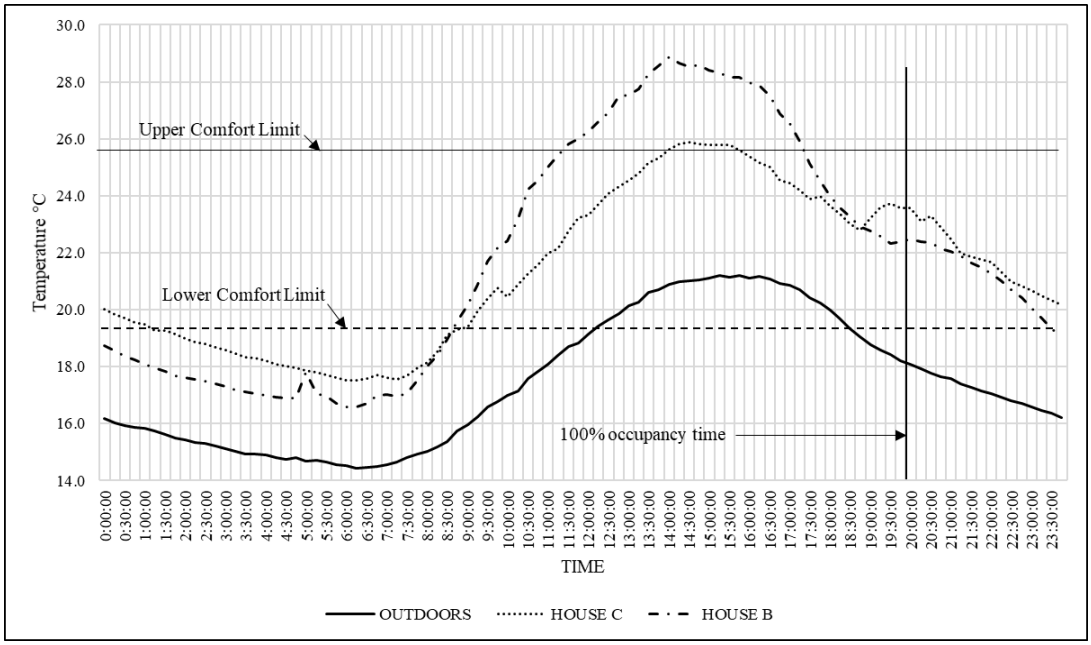

Figure 4.9: July 2019 average temperatures for House B and House C

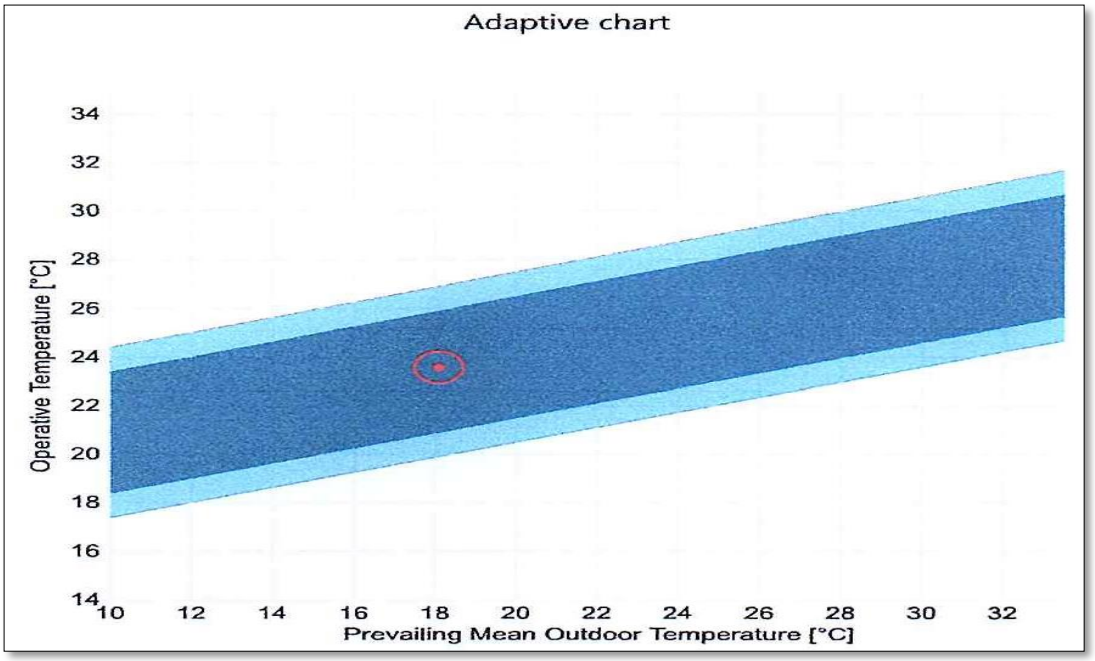

Figure 4.10: Adaptive chart for house C (July 2019)

From the online check, House C complied with ASHRAE Standard 55-2020.

(e). House B compliance check, with August operative temperature of 20.0 °C and outdoor temperature 18.3 °C, was summarized in Table 4.5 and Figure 4.11.

Table 4.5: House B August 2019 online compliance check

Acceptable limits	**Operative temperature (°C)**	**Comment**
80%	20.0 to 27.0	Comfortable
90%	21.0 to 26.0	Too cool

From the online check, House B complied with ASHRAE Standard 55-2020. House B in the cold month of August registered as too cool as compared with House C which were assessed at the same time. This result is most likely attributed to the fact that house C has a 3 mm plywood lining whereas House B has no lining at all hence it shows that a sheet metal clad residential building with no lining can be cold during the cold season despite the normal human activities inside it (Abrasheva, Senk, & Häußling, 2013).

(f). House C compliance check, with August operative temperature as 23.4 ℃ and outdoor temperature 18.3 ℃, was summarized in Table 4.6 and Figure 4.11.

Table 4.6: House C August 2019 online compliance check

Acceptable limits	Operative temperature (℃)	Comment
80%	20.0 to 27.0	Comfortable
90%	21.0 to 26.0	Comfortable

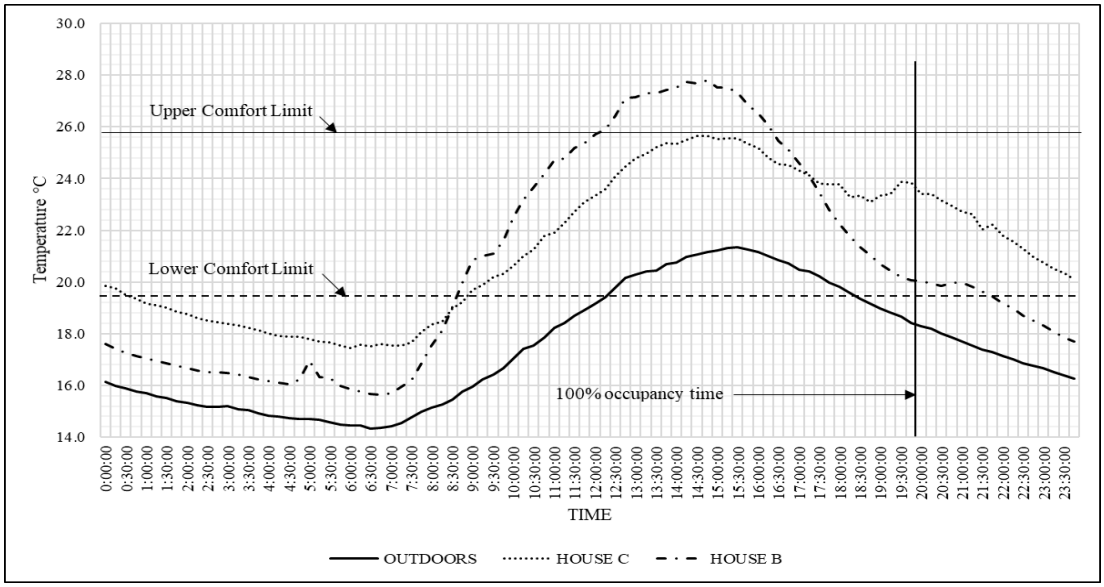

Figure 4.11: August average temperatures for House B and House C

From the online check, House C complied with ASHRAE Standard 55-2020.

(g). House D compliance check, with October operative temperature of 21.1 ℃ and outdoor temperature 18.0 ℃, was summarized in Table 4.7 and Figure 4.12.

Table 4.7: **House D October 2019 online compliance check**

Acceptable limits	Operative temperature (°C)	Comment
80%	19.9 to 26.9	Comfortable
90%	20.9 to 25.9	Comfortable

From the online check, House D complied with ASHRAE Standard 55-2020.

(h). House E compliance check, with operative temperature as 26.8 °C and outdoor temperature 18.0 °C was summarized in Table 4.8, Figure 4.12 and Figure 4.13.

Table 4.8: House E October 2019 online compliance check

Acceptable limits	Operative temperature (°C)	Comment
80%	19.9 to 26.9	Comfortable
90%	20.9 to 25.9	Too warm

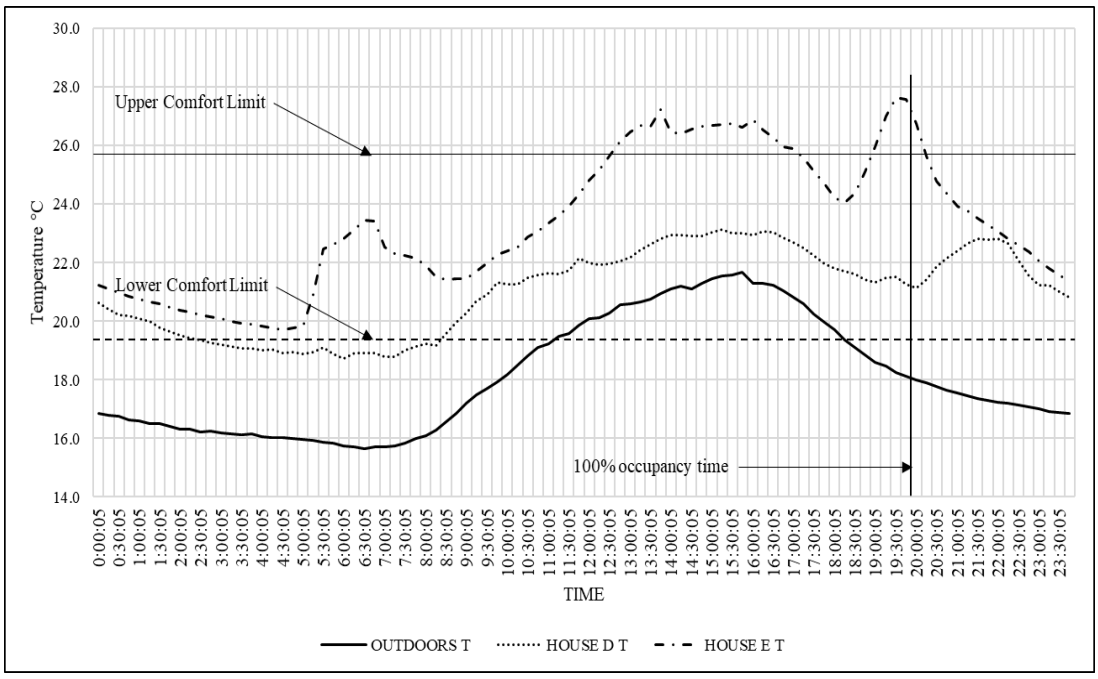

Figure 4.12: October average temperatures for House D and House E

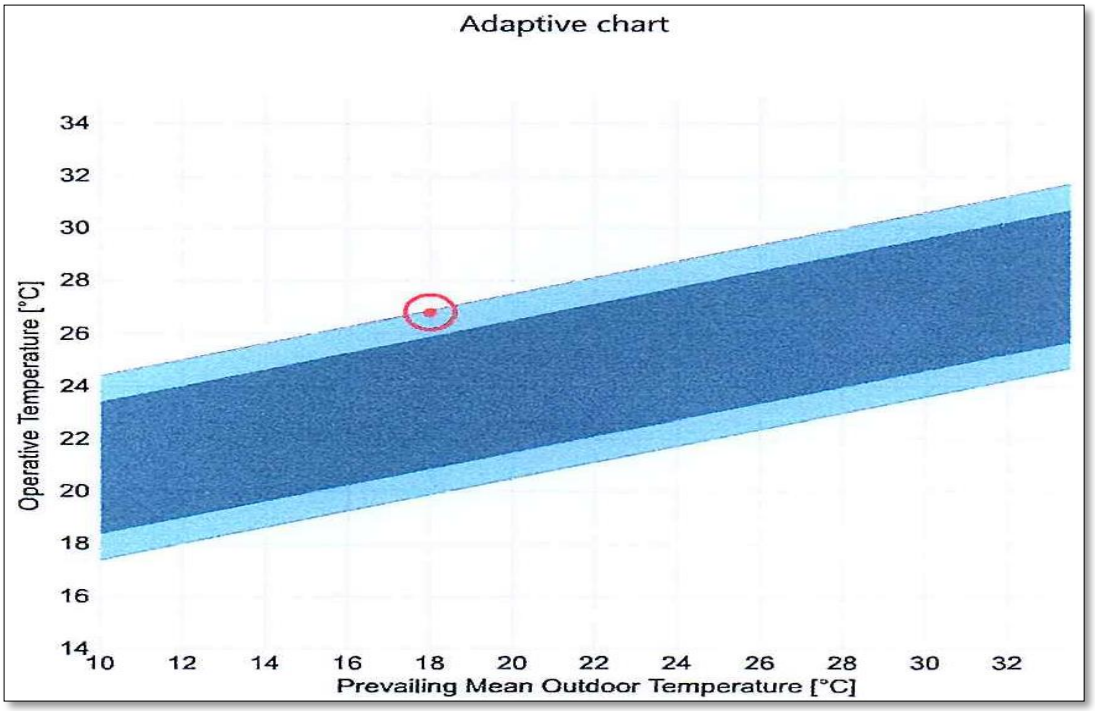

Figure 4.13: Adaptive chart for house E

From the online check, House E complied with ASHRAE Standard 55-2020. House E tended to be too warm as it had poor ventilation and air circulation due to its layout configuration (Alizadeh, Maleki, & Mohamadi, 2017) shown in Appendix VII. Houses D and E were accessed by a narrow corridor which further limited fresh air circulation into the two buildings.

The internal micro-climate of sheet metal clad residential houses has been shown to be heavily influenced by the occupants and their activities such that what would be a cold house is warmed up by basic normal activities of the occupants without the need to spend energy to warm the house (Soulayman, 2018). All the research buildings complied with the ASHRAE Standard 55-2020. The buildings had indoor temperature ranges that were within the 80% acceptable limits throughout the research period. This results confirm why people have adopted these buildings by taking advantage of the local climate (Totaforti, 2020).

4.3 Condensation Risk in External Walls of Sheet Metal Clad Residential Buildings

4.3.1 Relative humidity levels of the case study buildings

(a) Vacant House A and occupied House B May 2019 RH data correlation

The regression relationship of the outdoor relative humidity with that in House A illustrated in Figure 4.14 showed a high positive correlation of the two measured variables. The coefficient of determination (R^2) was 0.9746 meaning that the total proportion in the internal relative humidity levels of the vacant House A which is accounted for by the linear variation of the outdoors relative humidity is 97.46%.

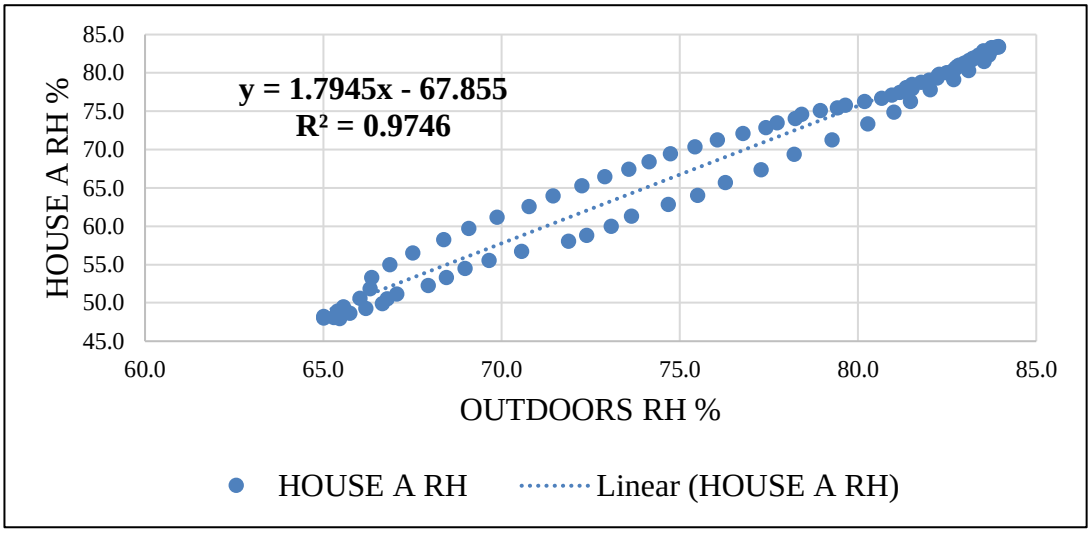

Figure 4.14: House A relative humidity regression results

The regression relationship of outdoor relative humidity with that for House B was illustrated in Figure 4.15, also showed high positive correlation of the two measured variables. The coefficient of determination (R^2) was 0.9359 meaning that the total proportion in the internal relative humidity levels in the occupied House B which is accounted for by the linear variation of the outdoors relative humidity is 93.59%.

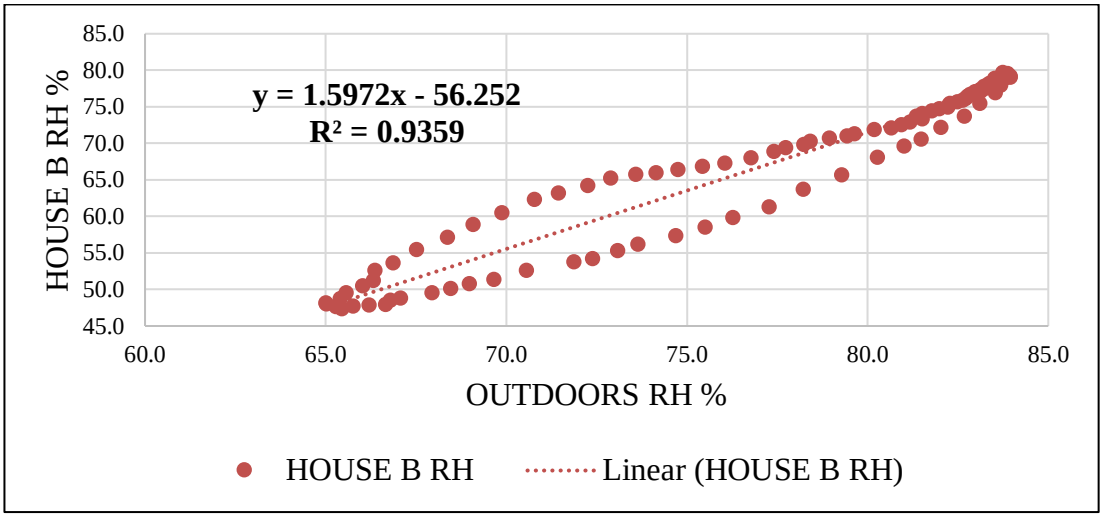

Figure 4.15: House B relative humidity regression results

From the comparison of the two results it can be shown that the relative humidity of House B had a lower correlation than that of House A. Hence it was deduced that the internal relative humidity levels of an occupied sheet metal clad residential building are less influenced by the external environment's relative humidity as compared to an vacant sheet metal clad building of the same size. At over 90% for both houses, their internal relative humidity levels are highly influenced by their external environment's relative humidity. This influence is also associated with the high influence of the external thermal environmental conditions.

(b) Changes of relative humidity of external environment with seasons

Research data was collected in 2019 for a period of seven months that covered the warm and cold seasons(also the wet and dry seasons). From Figure 4.16 below it is seen that the warm months of May and October had higher levels of relative humidity than those of the cooler months of July and August. From Appendix 2, the warm months of May and October had RH values of 76.8% and 80.5% respectively which were higher than those of the cold months of July and August that had RH values of 71.3% and 69.6% respectively. This shows that the natural air is more saturated with water vapor during the warmer months than in the colder months hence raising the risk of the sheet metal clad residential buildings forming internal condensation in the warm months than in the cold months.

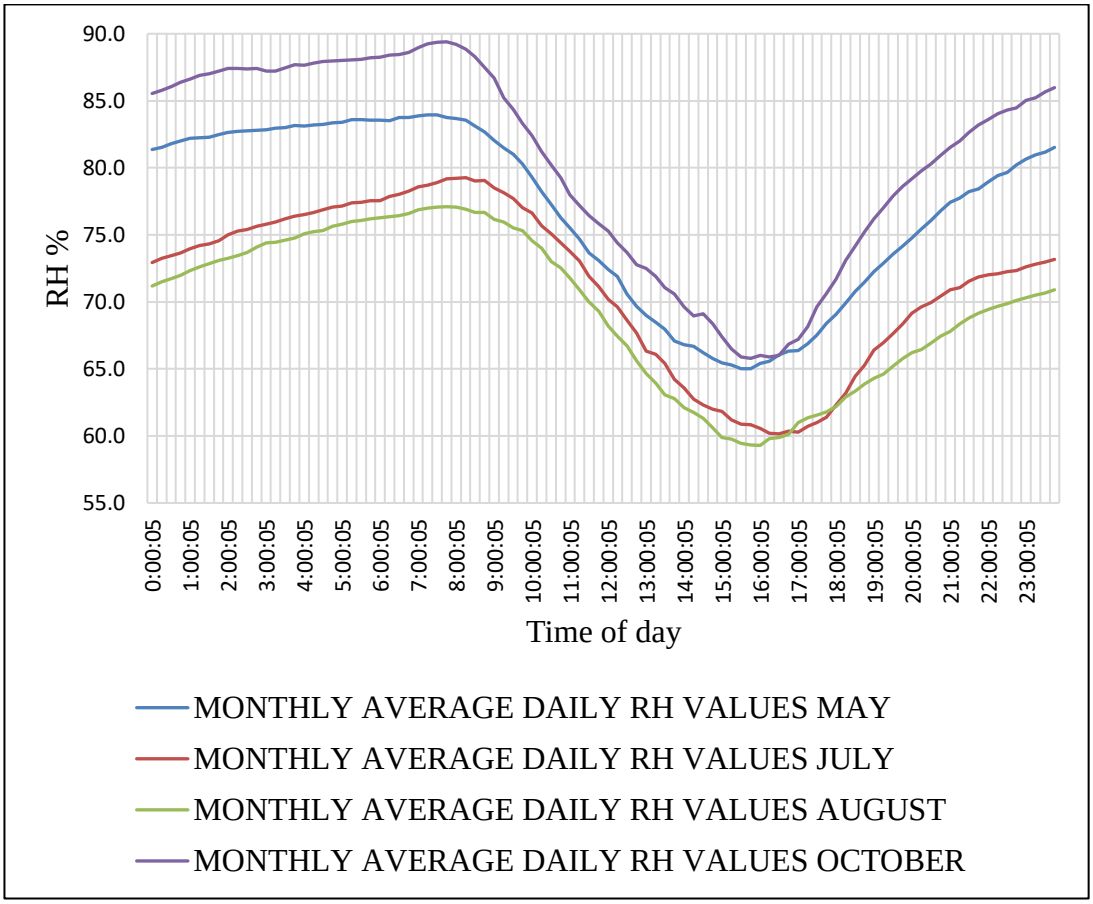

Figure 4.16: Average seasonal daily RH values for research period

As indoor relative humidity levels correlated at over 90% with the outdoor relative humidity levels, it then followed that the internal relative humidity levels in the sheet metal clad buildings varied similarly to the seasonal outdoor relative humidity levels.

4.3.2 Absolute humidity levels of the case study buildings

(a) Vacant House A and occupied House B May 2019 AH data correlation

The Equation 2.10, was used to convert the recorded values of relative humidity using temperatures from May 2019 data into absolute humidity values (Appendix III). The regression relationship of the outdoor absolute humidity levels with those of House A (Figure 4.17) showed a positive correlation of the two measured variables. The coefficient of determination (R^2) was 0.5593 meaning that the total proportion in the internal absolute humidity levels of the empty house A which was accounted for by the linear variation of the outdoors absolute humidity was 55.93%. This meant the

outdoor absolute humidity levels influenced about 56% of the indoors absolute humidity levels while the building fabric accounted for 44% of indoor absolute humidity levels (Hall, 2015). R is the correlation coefficient (product moment).

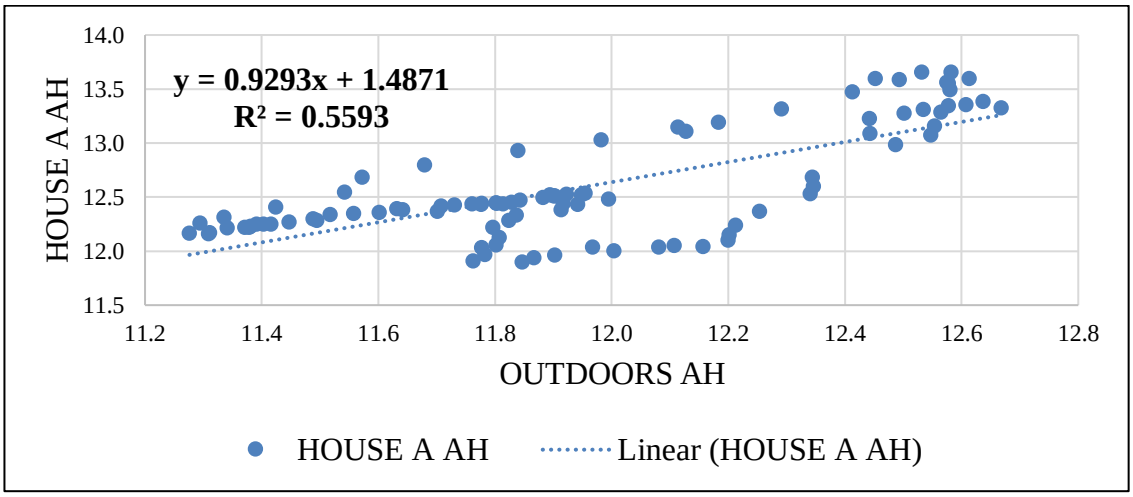

Figure 4.17: House A absolute humidity regression results

Analysis results for absolute humidity levels for the occupied House B illustrated in Figure 4.18, showed a positive correlation of the two measured variables. The coefficient of determination (R^2) was 0.4902 meaning that the total proportion in the internal absolute humidity levels of the occupied House B which was accounted for by the linear variation of outdoor absolute humidity levels was 49.02%. These results meant that outdoors absolute humidity values influenced about 49% of the indoors absolute humidity levels while occupant activities and the building fabric accounted for 51% of the indoor absolute humidity levels (Hall, 2015).

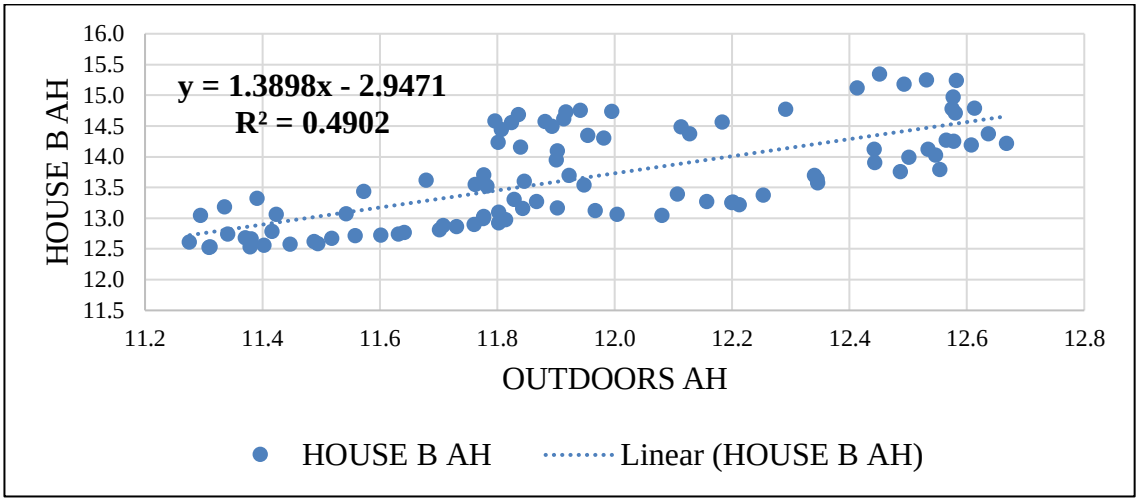

Figure 4.18: House B absolute humidity regression analysis

The F-test for House A gave an F-value of 0.035 and that for House B gave an F-value of 1.283×10^{-10}. The F-values for both houses are statistically significant as they are less than 0.05. Comparison of the two results show that the absolute humidity of House B has a lower F-value than that of House A. Hence it can be deduced that the internal absolute humidity levels of an occupied sheet metal clad residential building is less influenced by the external environment as compared to an empty sheet metal clad building of the same size. With outdoor absolute humidity levels accounting for 56% of that of house A and 49% of House B, both houses internal absolute humidity levels are moderately influenced by their external environments. This is likely to be attributed to poor ventilation of the buildings (Alizadeh, Maleki, & Mohamadi, 2017). Other sources of moisture in the buildings were such as that rising out of the floors, from occupant activities like cooking and body perspiration (Building Research Establishment, 2016). From Figure 4.19, it was observed that the absolute humidity levels of House A fell to the same level as the outdoors absolute humidity between 3 pm and 6 pm. This could have been attributed to the stack effect (Hall, 2015) and there being no resistance to movement of the warm air in the vacant house, it escaped through gaps in the roof and replaced by cooler external air through gaps in the walls.

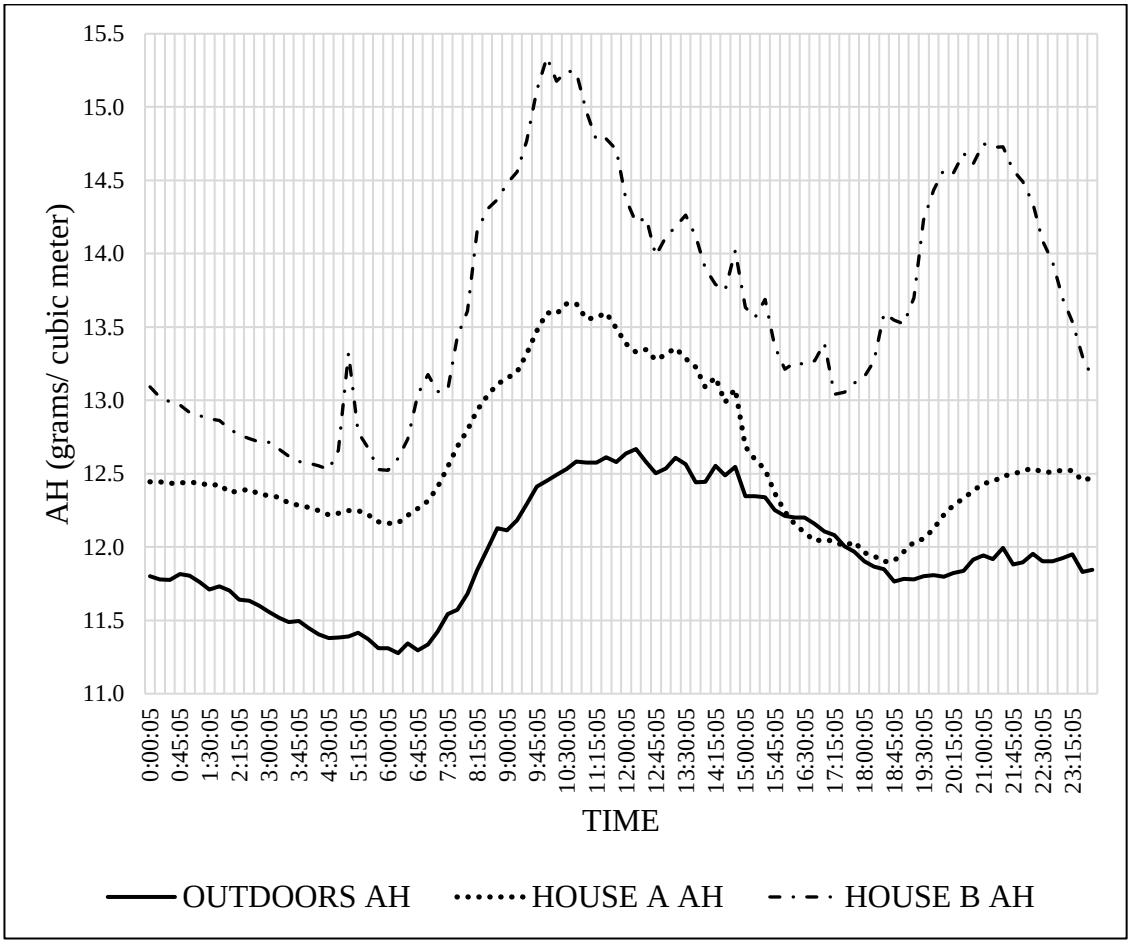

Figure 4.19: May 2019 absolute humidity levels

(b) House B and C July 2019 absolute humidity levels results

July was a month in the cold season which recorded low outdoor AH levels as compared to the warm month of May. Figure 4.20 shows that both Houses B and C maintained higher levels of AH than the external environment confirming that there is poor ventilation as the occupants locked themselves in the houses during the cold month of July.

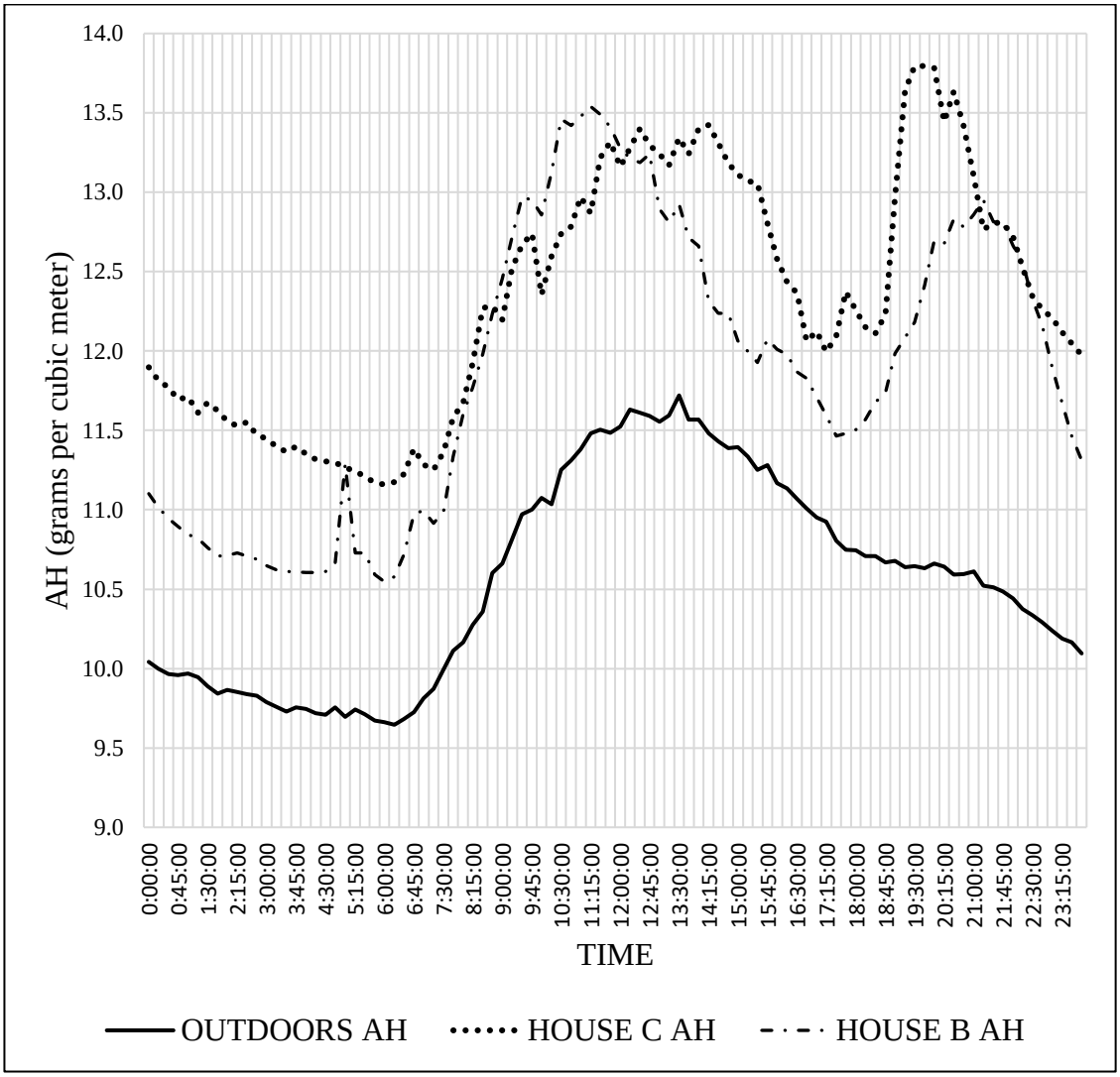

Figure 4.20: July 2019 absolute humidity levels

(c) House B and C August 2019 absolute humidity levels results

August was a month in the cold season of the year and it recorded lower values of outdoor AH than those of July. Figure 4.21 shows the AH levels of House B which was not sealed tended to balance with those of outdoors between 3pm and 6pm when the doors and windows were open showing the ventilation was momentarily effective. House C which was sealed maintained high levels of AH despite the windows being open hence showed its ventilation was not effective.

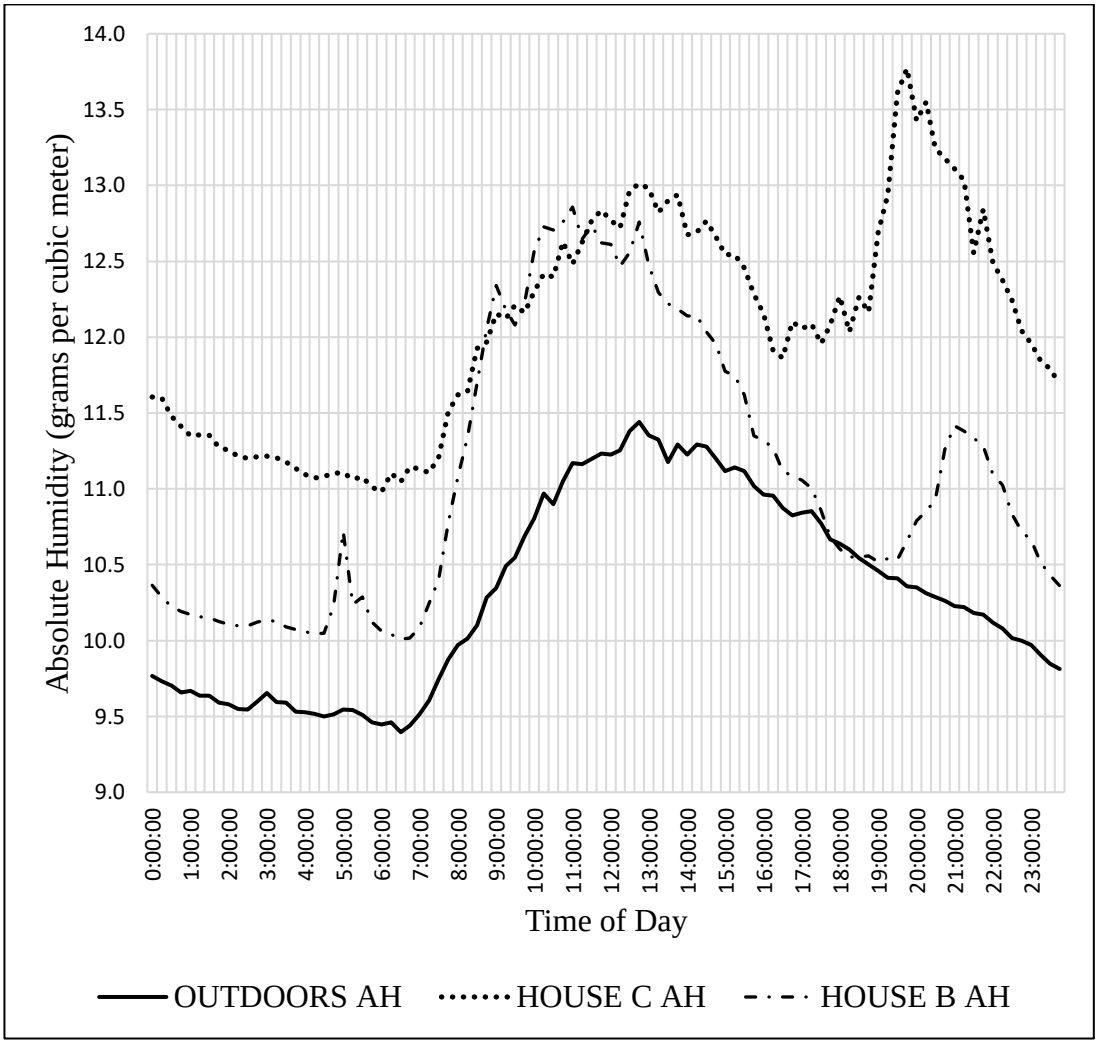

Figure 4.21: August 2019 absolute humidity levels

(d) House D and E October 2019 absolute humidity levels results

October was a warm month at the beginning of the warm season and it recorded higher values of AH compared to the cold months of July and August. Figure 4.22 shows that both Houses D and E which were sealed had poor ventilation. The houses' AH levels remained higher than those of outdoor throughout the 24 hour period. The peaks in the graph of House E AH levels show the effects of poor ventilation from 5 am to 8 am when bathing water was heated and breakfast prepared, from 12 noon to 2 pm when lunch was prepared and 6.30 pm to 8.30 pm when supper was prepared.

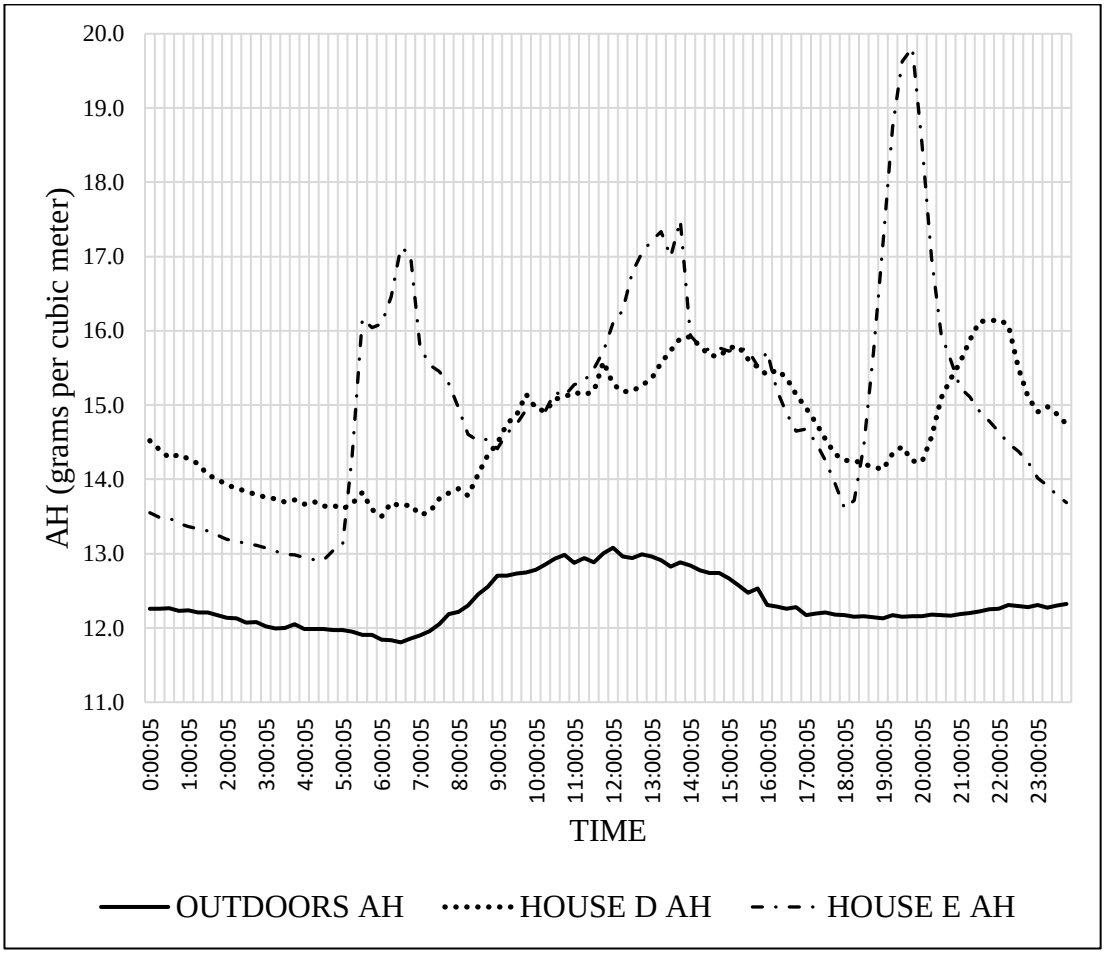

Figure 4.22: October 2019 absolute humidity levels

In Appendix 3, it is seen that the absolute humidity (AH) levels of the warm months of May and October were 12.0 g/ m^3 and 12.3 g/ m^3 respectively. These levels were higher than those of the cold months of July and August which were 10.6 g/ m^3 and 10.3 g/ m^3 respectively. The main effect of this is that also the absolute humidity levels in the houses are high during the warm months than in the cold months. Hence the air got saturated easily by any additional moisture from occupant activities in the warm months than in the cold months. The current standards (Europe) recommend absolute humidity level difference of 4.3 g/m^3 (Building Research Establishment, 2016) for residential houses when outdoor temperatures fall to 0 ℃ which in this case was not applicable to Uthiru, Kiambu County where temperatures did no fall below 10 ℃ in

the cold season. To the knowledge of the researcher there were no known recommended AH levels for residential houses in Kenya.

4.3.3 Dew point temperatures of the case study buildings

The importance of determining the dew point temperatures inside a building is to assess the risk of condensation formation on the inside of the external walls of the building. This occurs when the outdoor temperatures fall below the indoor dew point temperatures or the indoor dew point temperatures rise above the outdoor temperatures (Andersen Corporation, 2007). By using Equation 2.11, the dew point temperatures (T_d) were calculated (Appendix III) and graphs plotted for Houses A, B, C, D and E.

(a) House A and B May 2019 dew point temperature results

May 2019 dew point temperature results for House A are shown in Figure 4.23. May was a month at the end of the warm season. House A which was vacant showed no signs of being at risk of condensation formation. The outdoors temperatures did not fall below the internal dew point temperature (Larasati & Sahid, 2013). The peak at 2 pm corresponded to temperature rise from solar radiation.

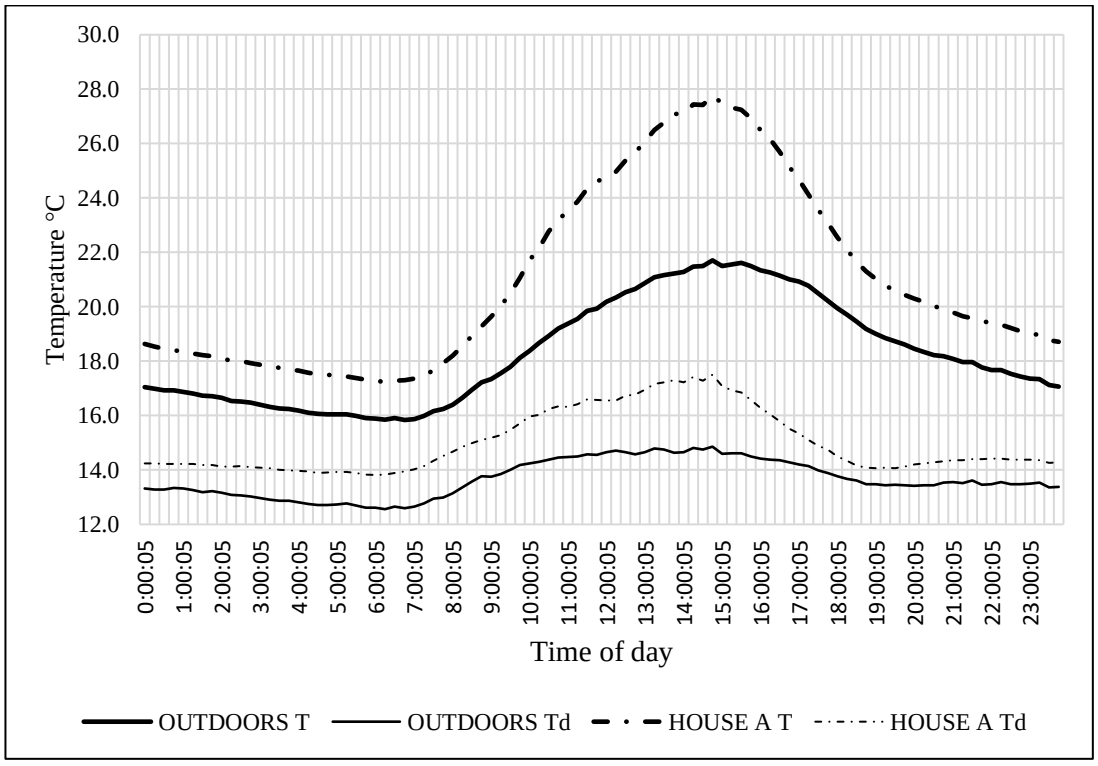

Figure 4.23: May 2019, House A dew point

May 2019 dew point temperature results for House B are shown in Figure 4.24. It can be seen that the house was at risk of condensation formation between 9 am and 10 am when some cooking took place. There was also a rise in the indoor dew point temperatures between 7 pm and 10 pm that corresponded to supper preparation. The sharp rise of indoor dew point temperatures between 4.30 am and 5.30 am corresponded to boiling of bathing water and preparation of breakfast.

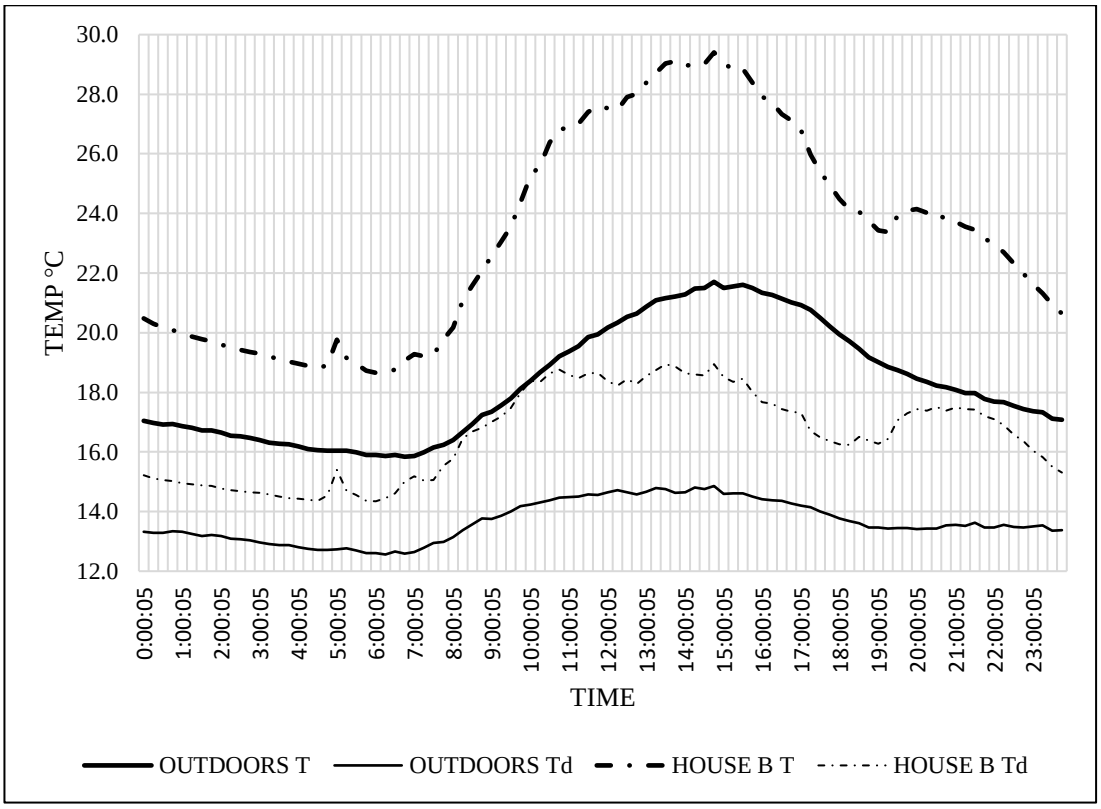

Figure 4.24: May 2019, House B dew point

(b) House B and C July 2019 dew point temperature results

July 2019 dew point temperature results for House B are shown in Figure 4.25. July was a month in the cold season and it can be seen that the house was at less risk of condensation formation.

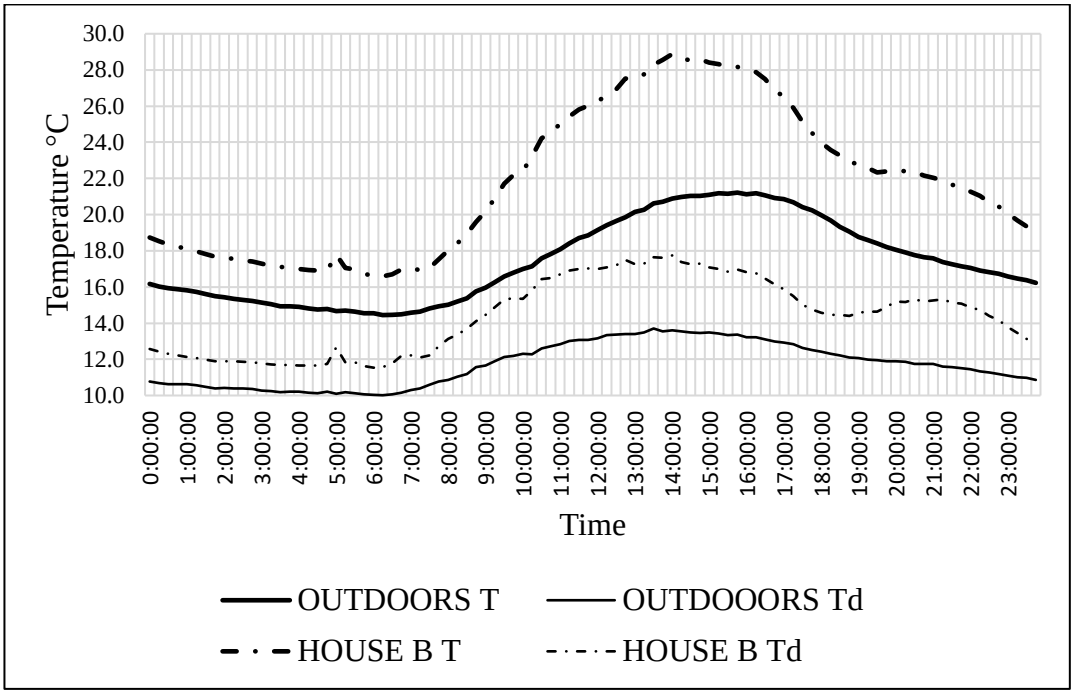

Figure 4.25: July 2019, House B dew point

July 2019 dew point temperatures for House C are shown in Figure 4.26. It can be seen that the house had less risk of condensation formation in the cold month of July.

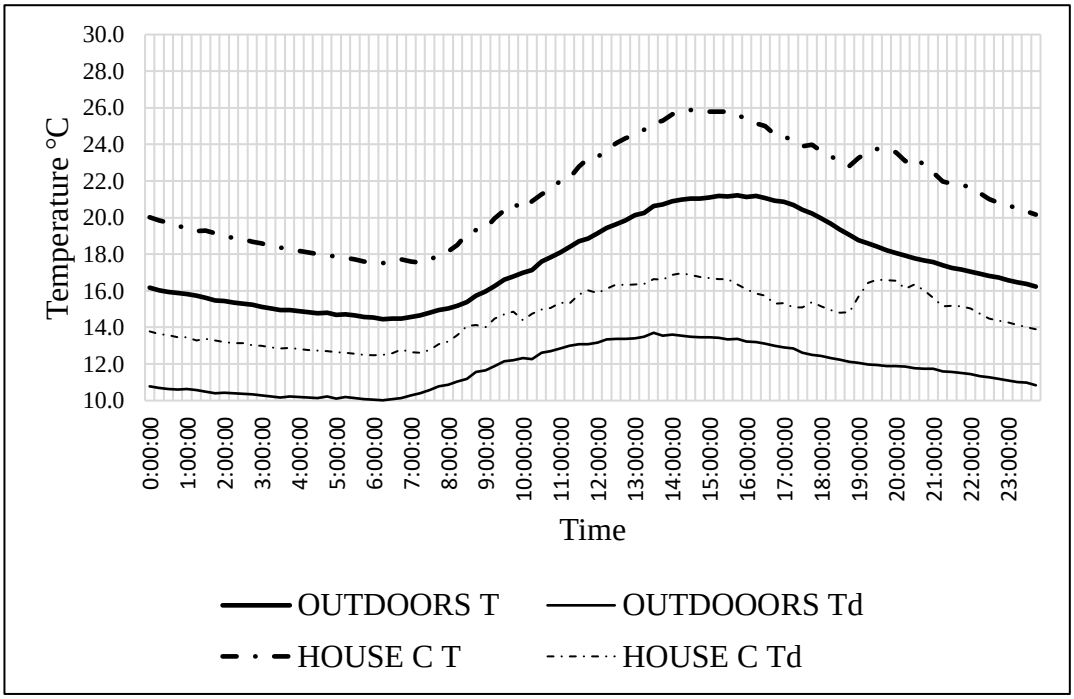

Figure 4.26: July 2019, House C dew point

(c) House B and C August 2019 dew point temperature results

August 2019 dew point temperatures for House B are shown in Figure 4.27. August was a month in the cold season and it can be seen that the house was at less risk of condensation forming.

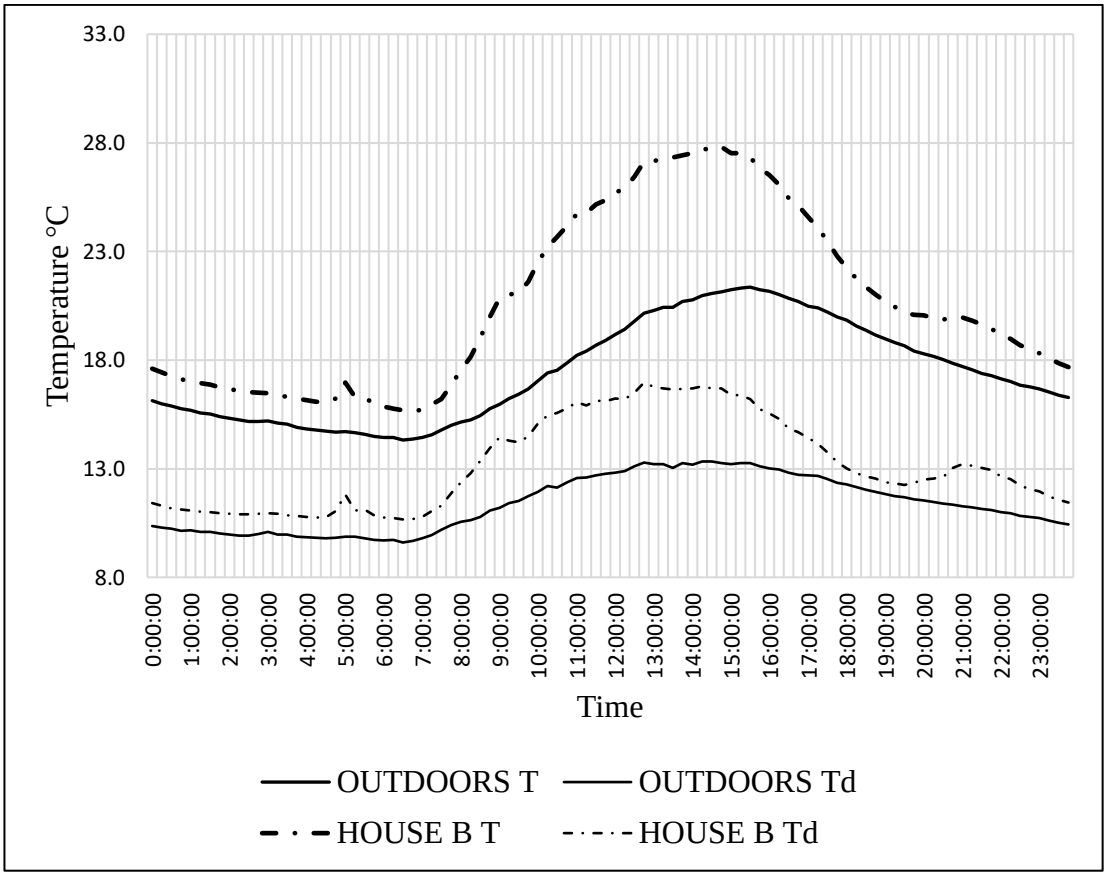

Figure 4.27: August 2019, House B dew point

August 2019 dew point temperatures for House C are shown in Figure 4.28. It can be seen that the risk of condensation formation was low.

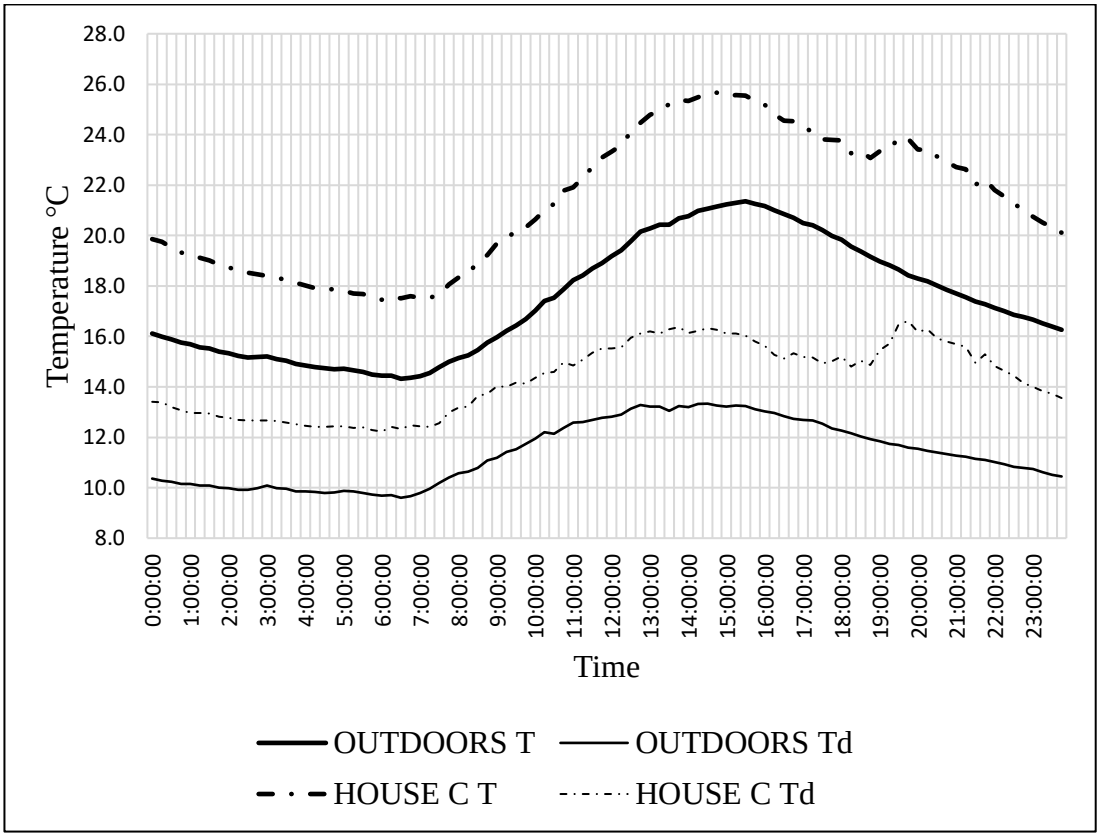

Figure 4.28: August 2019, House C dew point

(d) October 2019 House D and E dew point temperature results

October 2019 dew point temperature results for House D are shown in Figure 4.29. October was a warm month at the beginning of the warm season. It can be seen that the house is at a high risk of condensation formation on its external walls. The sharp rise in internal dew point temperatures between 9 pm and 11 pm corresponded to preparation of supper. The indoor dew point temperatures fell slightly below the outdoor temperatures after 12 am. When bathing water and breakfast were prepared between 5 am and 8 am, the indoor dew point temperatures rose to just about the same level as the outdoor temperatures. The indoor dew point temperature fell below the outdoor temperatures after 8 am after the occupants had left.

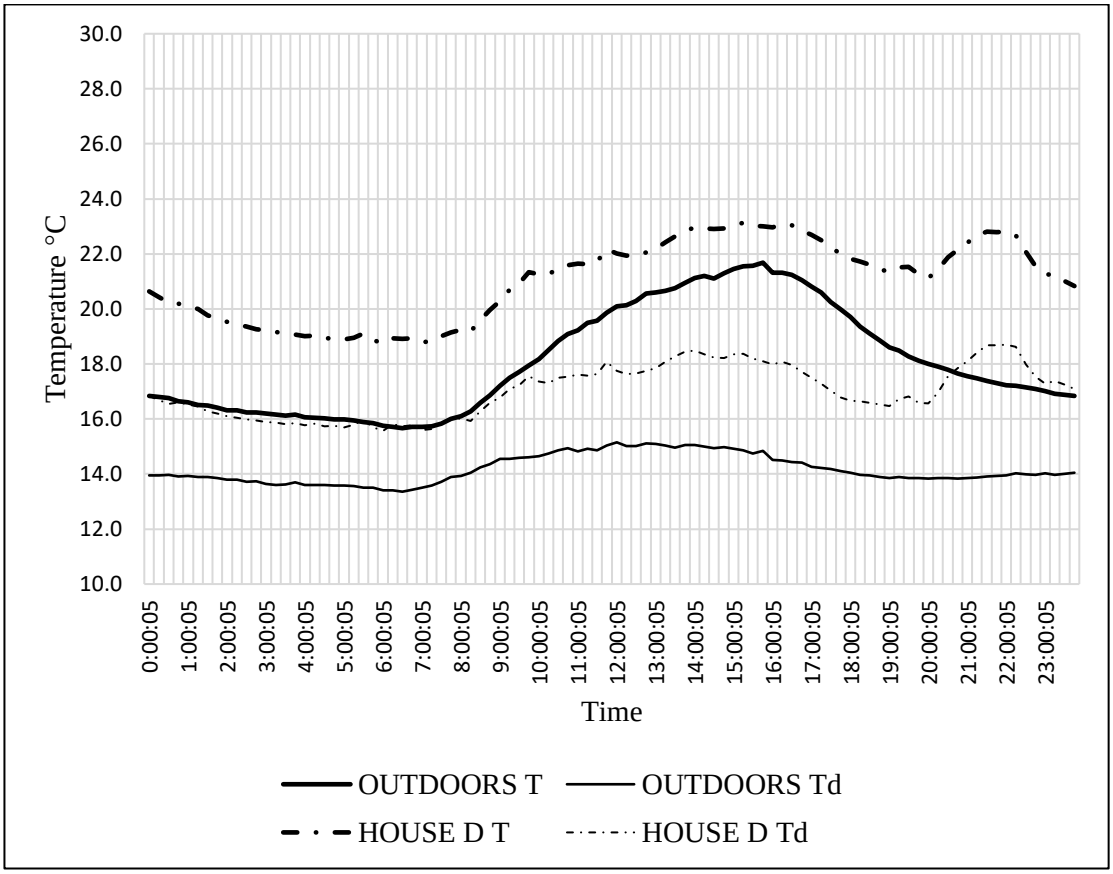

Figure 4.29: October 2019, House D dew point

October 2019 dew point temperature results for House E are shown in Figure 4.30. From the results, it can be seen that the house was at a high risk of condensation formation. The risk was highest between 5am and 9am when bathing water was heated and breakfast prepared. Also when lunch was prepared between 12 noon and 1.30 pm there was a heightened risk of condensation formation. In the evening between 7pm and 9pm during supper preparation there was a high risk of condensation formation.

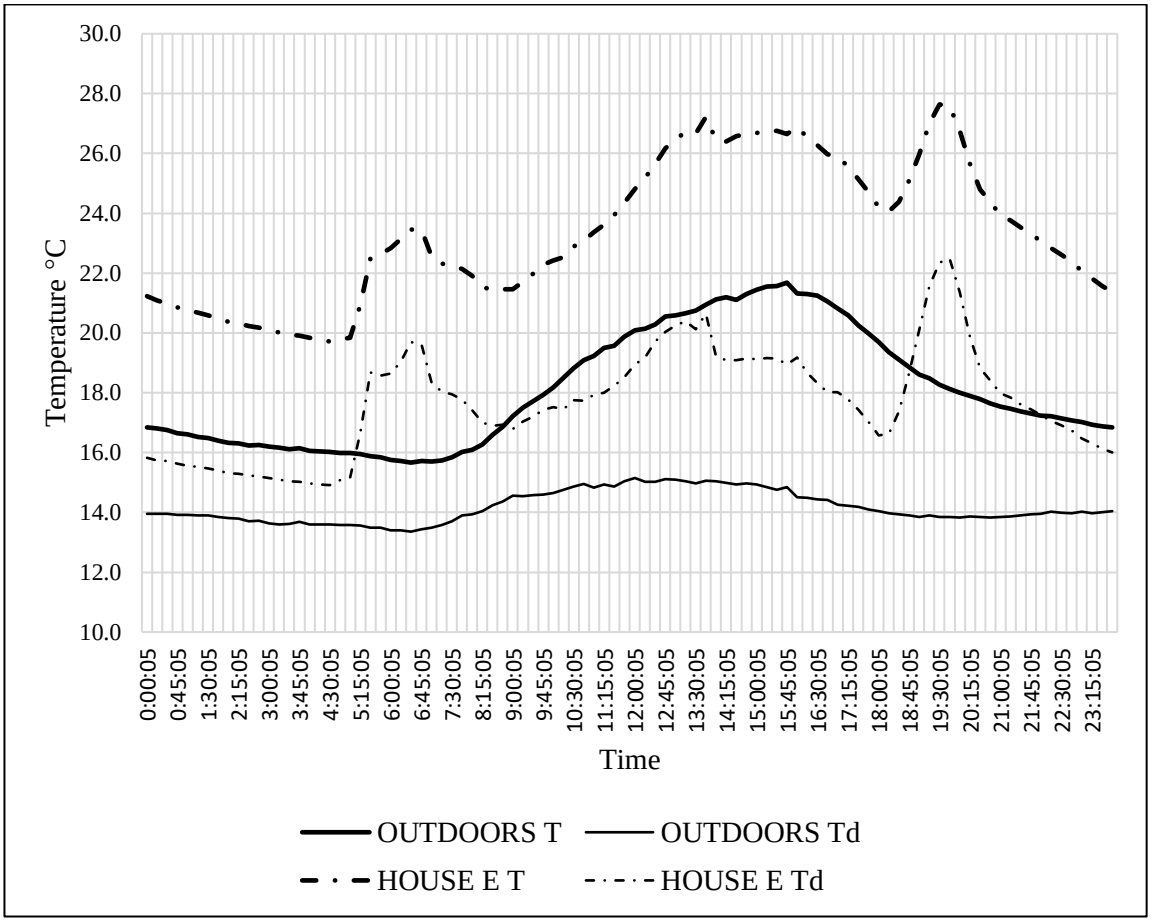

Figure 4.30: October 2019, House E dew point

There were no observations of condensation on inside surfaces of the buildings hence there was no permanent condensation (Wolkoff, 2018). Those buildings made of sheet metal lined with ply wood which could absorb water were at risk of interstitial condensation occurring inside their external walls (Andersen Corporation, 2007). There were sudden rises in temperature and absolute humidity during times high occupant activities. The air in contact with the surfaces of the buildings' external walls would be temporarily at a much higher temperature than the surfaces. If the surface temperature was below the dew point temperature of the air, temporary condensation would occur (Larasati & Sahid, 2013).

The warm months of May and October had higher levels of humidity than the cold months of July and August (Meteorological Department of Kenya, 2019). There was an elevated risk of temporary condensation forming indoors on external walls of the

buildings during the warm months of the year than in the cold months of the year. The gap between external temperatures and indoor dew point temperatures in the graphs was small in the warm months. A small rise of the indoor dew point temperature or a small fall of the outdoor temperature raised the risk of condensation. In the cold months, the gap between indoor dew point temperatures and outdoor temperatures in the graphs was wide. A rise in indoor dew point temperature or a fall in outdoor temperatures did not elevate the risk of condensation formation. The houses being made of sheet metal which has a lower surface temperature, risked condensation forming on their internal surfaces (Larasati & Sahid, 2013).

4.4 24 Hour Microclimate Thermal Predicting Model for Sheet Metal Clad Residential Buildings in Uthiru, Kiambu County

4.4.1 Regression analysis and simulation model derivation

The daily hourly outdoor temperatures and indoor temperatures for House A and B were recorded. The daily readings were then averaged (Appendix I) to come up with the daily average temperatures for May 2019 as shown in Figure 4.31. The data used for the machine learning process contained all the effects of variables for different times of the day. Hence effects of variables such as humidity, occupancy, ventilation, occupant activities, enclosed space, building's thermal mass were all accounted for in the developed microclimate predicting model's output.

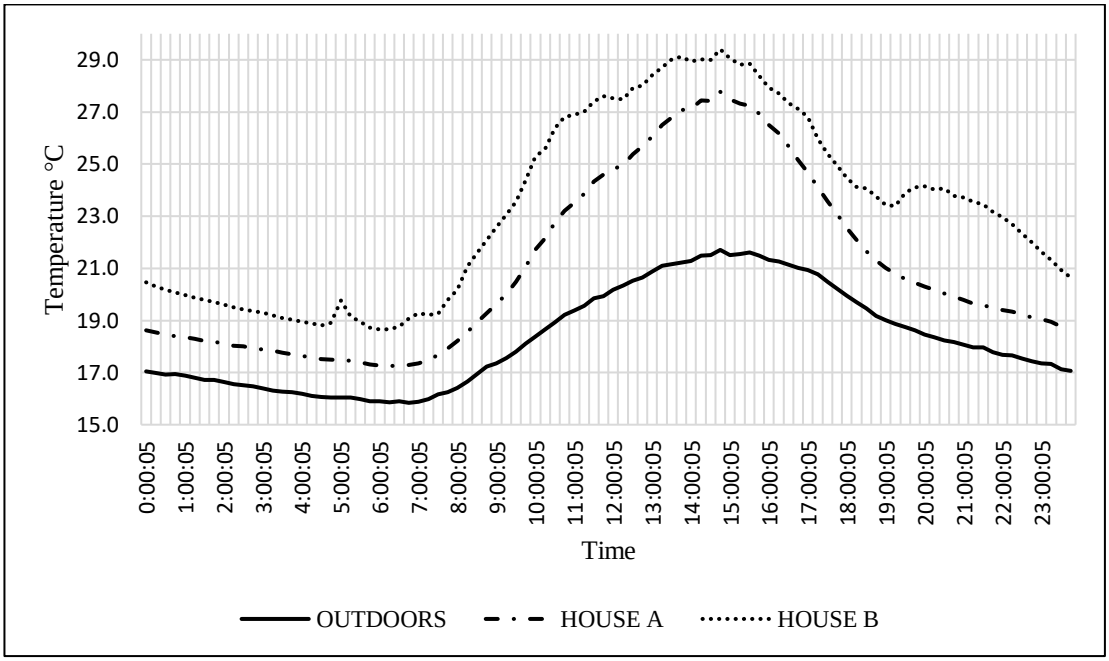

Figure 4.31: Average daily temperatures of May 2019

From the daily average temperatures of May 2019, linear regression analysis was done separately for each of the houses to determine the linear regression relationship of their outdoor temperatures and indoor temperatures. In Appendix IV, regression analysis for House A showed a high positive correlation of the two measured variables. The coefficient of determination (R^2) was 0.9626 which meant that the total proportion in the internal thermal conditions of the vacant House A which were accounted for by the linear variation of the outdoor temperature was about 96%. Regression analysis for the occupied House B in Appendix IV showed a high positive correlation of the two measured variables. The coefficient of determination (R^2) was 0.9388 meaning that the total proportion in the internal thermal conditions in the occupied house which was accounted for by the linear variation of the ambient temperature is about 94%. The regression results showed that House B has a lower correlation value than House A. Hence it was deduced that the internal thermal conditions of an occupied sheet metal clad residential building is less influenced by the external environment as compared to an empty sheet metal clad building of the same size. With 96% for House A and 94% for House B, both houses' indoor temperatures are heavily influenced by the outdoor temperatures. The 2% difference can be attributed to occupant activities in the house (The Chartered Institution of Building Services Engineers , 2015).

The best fitting model was chosen from Appendix V, Table 4, Model B, House C. The model is a polynomial 3 function as shown in Equation 4.1 with Coefficient of determination (R^2) of 0.9756, F-test value of 3.844×10^{-11} which was less than 0.05 hence significant and a T-test value of 0.5957 (ACT Academy, 2020);

$$y = 0.0119x^3 - 0.7711x^2 + 18.058x - 121.53 \quad (4.1)$$

Therefore the model for predicting the 24 hour internal thermal conditions in sheet metal clad residential buildings is the Equation 4.2;

$$T_i = 0.0119{T_o}^3 - 0.7711{T_o}^2 + 18.058T_o - 121.53 \quad (4.2)$$

Where:

T_i is the indoor temperature.

T_o is the outdoor temperature.

4.4.2 Validation of the 24 hour microclimate predicting model

Equation 4.2 was validated with data for August 2019 (House B & C), October 2019 (House D & E) and results plotted. The results were compared with EN 15251 Standard Equation 2.16, ASHRAE Standard's Equation 2.17 and Ogoli's Equation 2.18,. This study's model predicted (see Appendix 6) the internal thermal conditions as shown in Figure 4.32, 4.33, Figure 4.34 and Figure 4.35.

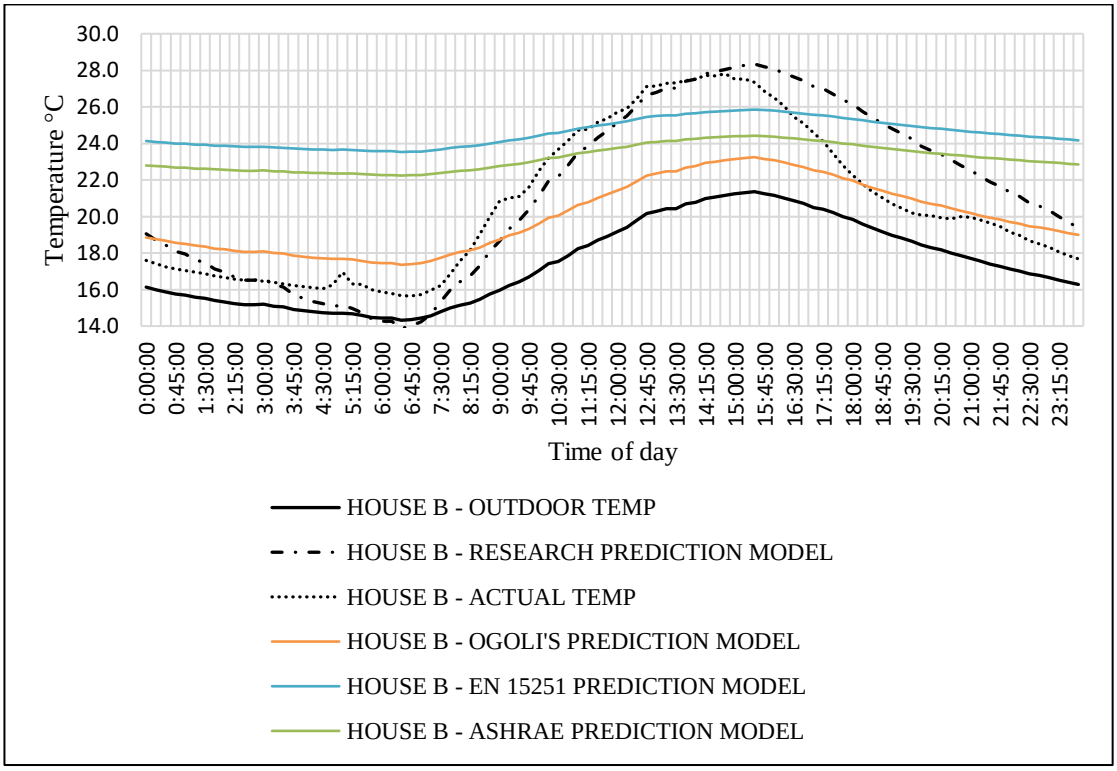

Figure 4.32: House B August predictions at 84.87% accuracy

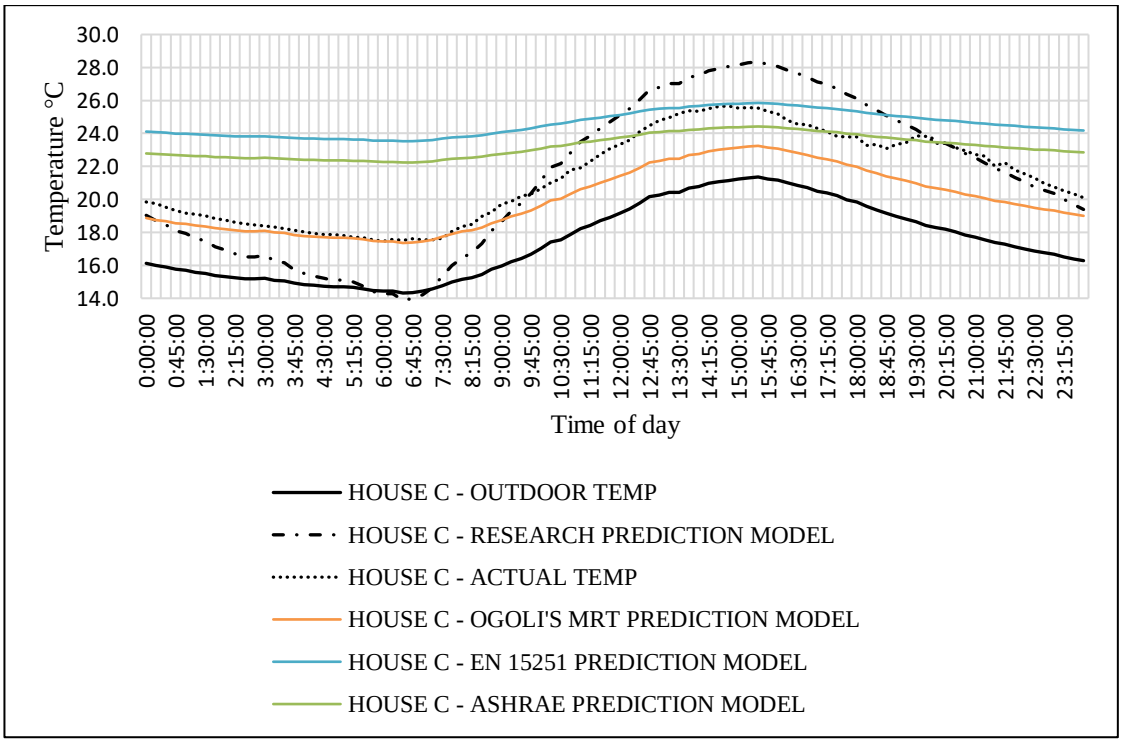

Figure 4.33: House C August predictions at 98.03% accuracy

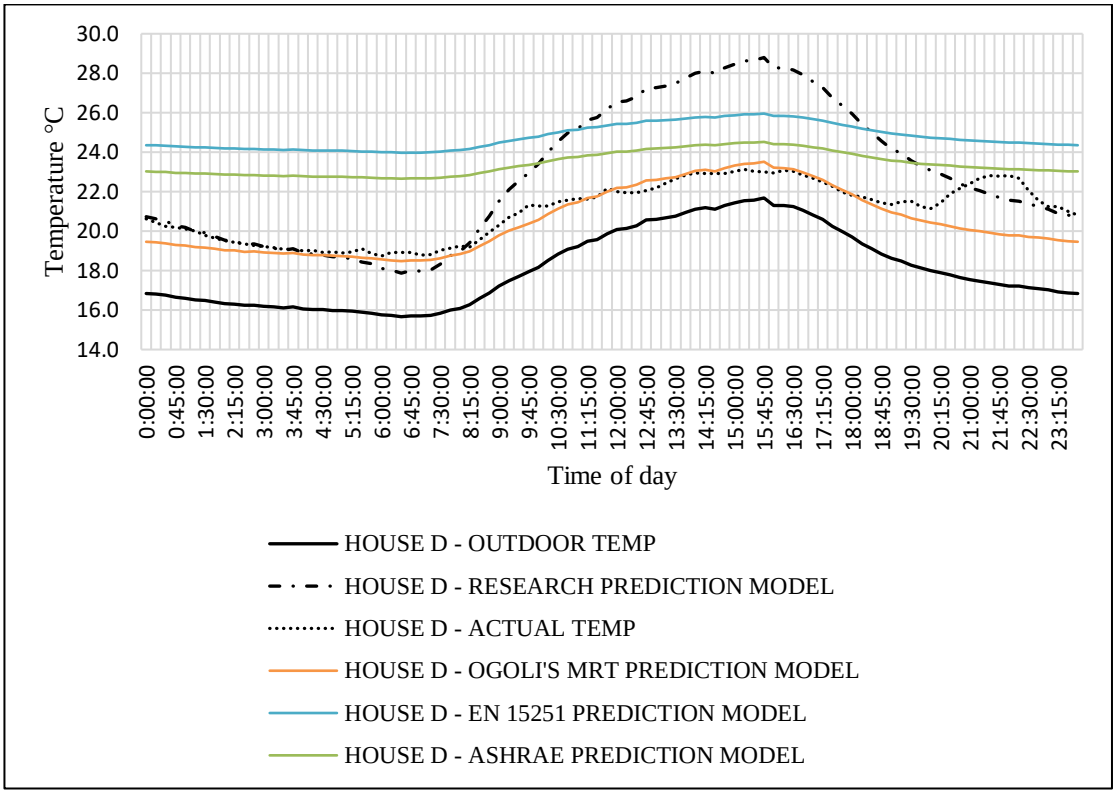

Figure 4.34: House D October predictions at 79.00% accuracy

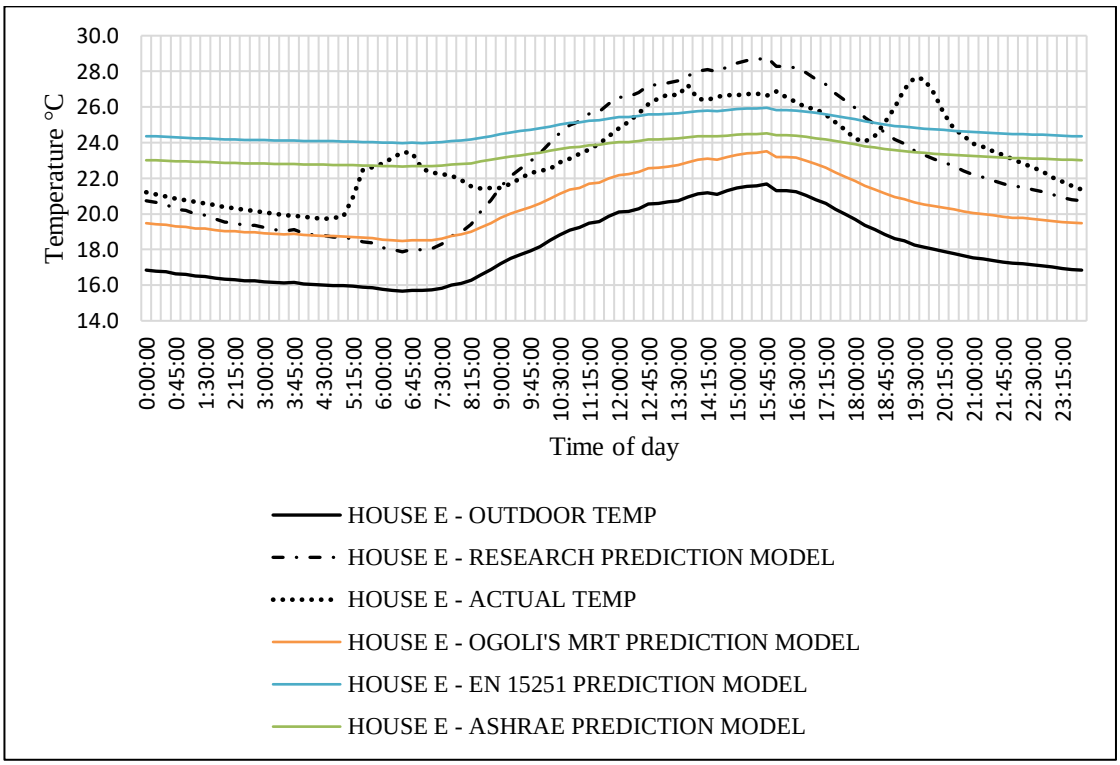

Figure 4.35: House E October predictions at 69.13% accuracy

Table 4.9: Research empirical model predictions

	Temperatures (°C)		
	Predicted	Actual	Difference
House B	Mean 22.0	20.7	+1.3
	Peak 28.3	27.8	+0.5
House C	Mean 22.0	21.3	+0.7
	Peak 28.3	25.7	+2.6
House D	Mean 23.2	21.0	+2.2
	Peak 28.8	23.1	+5.7
House E	Mean 23.2	23.4	-0.2
	Peak 28.8	27.2	+1.6
Average difference			+14.4/8 = **+1.8 °C**

This study's model overpredicted monthly temperatures on an average of 1.8 °C more (see Table 4.9). The study's 24 hour microclimate prediction model was able to predict the indoor temperature of sheet metal clad residential buildings. Prediction accuracies were 85%, 98%, 79% and 69% for houses B, C, D and E respectively. It was observed from the prediction results of House E (Figure 4.35) that a house with poor ventilation and high occupant activity levels was less predictable. From observations, House D and E whose prediction accuracies were less, had poor ventilation. Hence the modeling results can inform on the effectiveness of a building's ventilation.

Ogoli (2003), linear prediction model (Equation 2.15) for low thermal mass buildings, predicted lower daytime indoor temperature values than the actual ones recorded for Houses B, C and E. It can be seen from Figure 4.34 that the Ogoli's model obtained similar results to the daytime temperatures for House D between 8 am and 6 pm when the building was closed and there were no occupants. This demonstrates that Ogoli's model is best suited for closed unventilated low thermal mass buildings.

The prediction models for EN 15251 and ASHRAE Standards predicted temperatures that were generally higher than actual temperature. The models' predicted indoor temperatures were high. These models were developed from research that used high

thermal mass buildings, hence, they cannot be applied to predict the indoor temperatures of sheet metal clad residential buildings.

The EN 15251, ASHRAE Standard and Ogoli's models were derived specifically to predict average monthly indoor temperatures hence cannot predict daily indoor temperature runs. Hence the developed model is the best suited for predicting the 24 hour indoor thermal conditions of sheet metal clad residential buildings for Uthiru, Kiambu County.

4.4.3 Mechanistic model prediction results

The mechanistic model described in section 2.2.3.1 developed by CIBSE was used to estimate the monthly indoor temperatures for Houses B, C, D and E (See calculations in appendix IX). The model factored heat loss and gains from occupant activities, solar radiation and electrical equipment used in the buildings.

Table 4.10: Research mechanistic model predictions

	Temperatures (°C)		
	Predicted	Actual	Difference
House B	Mean 21.6	20.7	+0.9
	Peak 23.0	27.8	-4.8
House C	Mean 21.3	21.3	0.0
	Peak 23.3	25.7	-2.4
House D	Mean 22.2	21.0	+1.2
	Peak 22.7	23.1	-0.4
House E	Mean 21.8	23.4	-1.6
	Peak 23.4	27.2	-3.8
Average difference			-10.9/8 = **-1.4 °C**

The mechanistic model underpredicted monthly temperatures on an average of 1.4 °C less (see Table 4.10). The absolute difference in the predictions of the empirical and mechanistic models was 0.4 °C, fairly validating the model developed in this research.

CHAPTER FIVE
CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusion

The following conclusions have been drawn from the research in the sequence of the objectives.

(1) The thermal conditions in the sheet metal clad residential buildings at Uthiru, Kiambu County, complied with the ASHRAE Standard 55-2020 (ignoring the heating effects of occupant activities). All the research building's internal temperatures at the time (8 pm) of 100% occupancy in the living room fell within the 80% acceptable limits of the ASHRAE-55 standard's adaptive method for thermal comfort.

(2) The Sheet metal clad residential buildings were found to be at a high risk of temporary indoor condensation formation during the warm months of May and October which had relative humidity levels of 76.8% and 80.5% respectively. The risk of indoor condensation formation was lower during the cold months of July and August which had relative humidity levels of 71.3% and 69.6% respectively. Sheet metal clad residential buildings that have poor ventilation are at a high risk of temporary indoor condensation formation than those which have fairly efficient ventilation. With efficient ventilation, sheet metal clad residential buildings are safe from formation of temporary condensation on the interior side of their external walls.

(3) The developed 24 hour microclimate predicting model ($T_i = 0.0119{T_o}^3 - 0.7711{T_o}^2 + 18.058T_o - 121.53$) in this research can predict the internal thermal conditions of sheet metal clad residential buildings at Uthiru, Kiambu County at an accuracy of over 69% using the outdoor temperatures. The model gives better indoor temperature predictions for sheet metal clad residential buildings with efficient ventilation than those with poor ventilation.

5.3 Recommendations

Recommendations drawn from the conclusions are as follows;

(1) Sheet metal clad residential buildings are recommended for human habitation in Uthiru, Kiambu County. The unlined sheet metal clad residential buildings are recommended to be lined with an insulation material with a U value of 0.80 W/m2K while the lined buildings are recommended additional insulation material with a U value of 0.81 W/m2K so as to achieve Kariuki et al., (2018) recommended U value of 0.700 W/m2K.

(2) Sheet metal clad residential buildings are recommended to be opened windows and doors in the warm season when cooking or heating bathing water to reduce the risk of condensation formation on internal side of the exterior walls.

(3) The developed empirical microclimate predicting model should be adopted for predicting thermal conditions and assessing the efficiency of ventilation in sheet metal clad residential buildings of Uthiru, Kiambu County.

5.4 Area for further research

Research on thermal perception of occupants of residential houses made of different types of construction materials and designs across Kenya, with consideration given to investigation of all rooms.

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APPENDICES

Appendix I: Average Monthly Outdoors and Indoors Temperature Calculations

May 2019 average outdoors temperature calculation spreadsheet

DATA LOG 1: OUTDOORS																																
Time	**Temperatures**																															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	AV
0:00:05	16.9	17.5	16.4	18.0	18.0	18.5	17.1	18.5	17.4	17.7	17.0	17.5	17.4	17.6	17.7	17.8	17.6	17.7	15.9	16.0	16.3	16.9	17.5	16.8	16.7	16.0	15.6	16.4	16.0	15.7	16.4	17.0
0:15:05	16.9	17.7	16.6	18.0	18.0	18.2	17.4	17.6	17.6	17.7	16.7	17.4	17.3	17.4	17.6	17.9	17.4	17.5	15.9	15.8	16.3	16.9	17.5	16.7	16.7	16.0	15.5	16.3	15.8	15.9	16.2	17.0
0:30:05	16.7	17.4	16.6	18.0	17.9	18.2	17.5	18.5	17.4	17.7	16.6	17.4	17.4	17.3	17.4	17.5	17.3	17.6	15.7	15.7	16.3	17.1	17.5	16.5	16.1	16.0	15.4	16.4	15.7	15.8	16.1	16.9
0:45:05	16.9	17.4	17.1	17.8	17.8	18.6	17.6	17.9	17.6	17.4	16.7	17.2	17.3	17.1	17.4	17.8	17.4	17.5	15.6	15.7	16.7	16.7	17.3	16.8	16.1	16.0	15.4	16.4	16.0	15.7	16.1	16.9
1:00:05	17.1	17.3	16.7	18.0	17.6	18.6	17.6	18.0	17.8	17.4	16.7	16.9	17.2	17.1	17.2	17.6	17.3	17.3	15.7	15.7	16.5	16.5	17.4	16.7	16.5	15.8	15.3	16.3	15.7	15.6	16.0	16.9
1:15:05	16.7	17.4	16.8	17.6	17.8	18.0	17.4	18.0	17.4	17.1	16.7	17.2	17.3	17.3	17.2	17.6	17.0	17.0	16.0	15.7	16.3	17.0	17.2	16.3	16.2	15.9	15.3	16.0	15.8	15.5	16.3	16.8
1:30:05	16.5	17.1	16.9	17.4	17.8	18.1	17.7	17.9	17.4	17.2	16.6	16.9	17.4	17.3	17.0	17.5	17.1	17.3	15.6	15.6	16.0	16.4	17.1	16.1	16.1	16.0	15.1	16.0	15.8	15.4	16.2	16.7
1:45:05	16.5	17.4	16.9	17.5	17.6	18.0	17.7	18.0	17.2	17.2	16.8	16.5	17.3	17.0	17.5	17.2	17.2	17.3	15.4	15.6	16.0	16.4	17.0	15.9	16.4	15.9	15.3	15.9	15.8	15.8	16.0	16.7
2:00:05	16.7	17.3	16.8	17.5	17.7	17.4	17.4	18.0	16.5	17.1	16.7	16.8	17.5	17.0	17.4	17.4	16.8	17.0	15.4	15.5	16.0	16.5	17.1	16.0	16.0	15.8	14.9	15.8	15.8	15.8	16.4	16.6
2:15:05	16.7	17.0	17.1	17.3	17.3	17.5	17.2	17.6	16.9	17.1	16.5	16.5	17.1	17.0	17.1	17.0	17.2	17.0	15.3	15.3	16.0	16.2	17.2	15.9	15.9	15.8	15.1	16.0	15.6	15.6	15.9	16.5
2:30:05	16.9	16.8	16.9	17.4	17.3	17.3	17.3	17.8	16.8	17.2	16.5	16.5	17.4	16.9	17.0	17.1	16.9	17.0	15.4	15.0	15.8	16.5	16.9	16.0	16.0	15.6	15.1	15.8	15.5	15.6	16.0	16.5
2:45:05	17.0	16.7	17.0	17.6	17.4	17.3	17.5	17.7	15.2	17.3	16.5	16.9	17.0	16.7	17.2	17.0	17.1	16.9	15.3	15.4	15.7	16.0	16.8	16.3	15.6	15.6	15.1	15.8	15.3	15.7	16.1	16.5
3:00:05	17.1	16.7	17.1	17.8	17.0	17.1	17.4	16.6	15.7	17.2	16.3	16.6	17.3	17.2	16.9	17.0	16.7	16.8	15.3	15.4	15.8	16.1	16.7	16.1	15.9	15.6	14.9	15.5	15.1	15.6	15.9	16.4
3:15:05	16.3	16.6	17.1	17.5	16.9	16.9	17.4	16.7	15.5	17.2	16.4	16.4	16.9	16.8	16.7	17.0	16.6	17.0	15.4	15.0	15.5	16.0	17.4	15.6	15.9	15.6	15.0	15.7	15.4	15.4	16.0	16.3
3:30:05	15.9	16.4	17.1	18.2	17.4	16.9	17.2	16.6	15.4	16.9	16.2	16.1	16.7	16.8	16.7	16.9	16.7	16.9	14.8	15.4	15.5	16.2	16.7	15.7	16.0	15.6	15.1	15.6	15.4	15.4	16.0	16.3
3:45:05	15.6	16.0	16.9	17.4	17.2	16.9	17.4	16.6	15.9	17.0	16.4	16.5	16.6	16.9	17.0	17.0	16.6	16.7	15.1	15.3	15.4	16.1	16.7	16.3	15.8	15.5	15.3	15.5	14.8	15.4	15.9	16.2
4:00:05	15.4	15.9	17.3	16.9	17.1	16.9	17.2	16.3	16.1	16.9	16.5	16.2	16.7	16.9	17.0	16.9	16.7	16.7	15.1	15.2	15.4	16.1	16.7	15.5	15.7	15.4	15.2	15.6	15.0	15.4	15.8	16.2
4:15:05	14.7	16.0	17.1	16.8	17.2	16.8	17.0	16.4	16.2	16.7	16.0	16.4	16.4	16.7	16.7	16.9	16.6	16.6	15.2	15.0	15.6	15.9	16.7	15.4	15.6	15.4	15.2	15.7	15.0	15.4	15.9	16.1
4:30:05	14.7	15.8	17.1	17.2	17.1	16.7	16.7	16.2	16.5	16.9	16.1	16.6	16.5	16.6	16.7	17.0	16.5	16.4	15.0	15.3	15.5	15.8	16.4	15.4	15.6	15.4	15.1	15.4	15.0	15.2	15.6	16.1
4:45:05	15.0	15.5	17.0	16.9	17.2	16.7	16.8	16.4	16.5	17.0	15.8	16.2	16.5	16.7	16.7	16.7	16.6	16.7	14.9	15.2	15.7	15.7	16.5	15.1	15.5	15.3	15.0	15.4	15.2	15.2	15.8	16.0
5:00:05	14.7	15.8	16.8	17.0	17.0	16.8	16.6	16.2	16.2	16.9	16.1	16.4	16.4	16.7	16.7	16.8	16.5	16.5	14.9	15.3	15.5	15.9	16.7	15.5	15.6	15.3	15.2	15.4	15.0	15.2	15.9	16.0
5:15:05	14.6	15.8	16.9	17.4	17.0	16.7	16.7	16.6	16.1	17.1	16.0	16.2	16.2	16.7	16.8	16.8	16.4	16.6	14.9	15.0	15.4	16.0	16.5	15.4	15.4	15.4	15.3	15.4	15.1	15.3	15.8	16.0
5:30:05	14.4	15.6	16.9	16.8	17.3	17.1	16.5	16.0	16.6	16.7	15.5	16.2	16.1	16.7	16.5	16.6	16.4	16.2	15.2	15.1	15.5	16.0	16.7	15.4	15.5	15.2	15.1	15.4	15.1	15.3	15.9	16.0
5:45:05	14.8	15.6	16.4	16.7	16.7	16.9	16.5	16.0	16.3	16.7	15.5	16.0	16.0	16.4	16.4	16.5	16.0	16.2	15.3	15.1	15.5	15.9	16.3	15.7	15.6	15.2	15.1	15.4	15.1	15.3	15.8	15.9
6:00:05	15.0	15.4	16.3	16.8	16.9	17.0	16.7	15.7	16.2	16.8	15.5	16.1	16.0	16.5	16.2	16.6	16.4	16.0	15.1	15.1	15.4	16.0	16.2	15.5	15.7	15.3	15.1	15.3	15.0	15.3	15.7	15.9
6:15:05	15.1	15.4	16.1	16.7	16.9	17.0	16.7	15.6	16.2	16.7	15.7	16.3	16.0	16.1	16.5	16.4	16.4	16.1	15.0	15.1	15.5	15.6	16.3	15.4	15.5	15.2	15.1	15.4	14.7	15.3	15.5	15.9
6:30:05	15.6	15.3	16.1	17.4	16.7	16.9	16.7	15.9	16.3	16.7	15.4	16.0	15.9	16.4	16.3	16.3	16.2	16.4	15.2	15.2	15.4	16.0	16.5	15.7	15.5	15.3	15.1	15.1	14.8	15.3	15.5	15.9
6:45:05	15.7	15.4	15.8	16.8	16.7	16.9	16.8	15.9	16.4	16.7	15.4	16.0	16.0	16.0	16.3	16.5	16.0	16.3	15.0	15.1	15.4	15.5	16.6	15.5	15.5	15.1	15.0	15.2	14.6	15.2	15.7	15.8
7:00:05	16.0	15.5	15.8	17.0	16.7	17.1	16.6	16.1	16.4	16.8	15.5	16.1	15.9	16.2	16.3	16.2	16.1	16.3	15.0	14.7	15.5	15.4	16.6	15.4	15.6	15.1	15.2	15.1	14.7	15.4	15.7	15.9
7:15:05	16.5	16.0	16.4	17.0	16.5	17.1	16.9	16.2	16.1	16.5	15.7	16.3	16.0	16.2	16.2	16.2	16.3	16.4	15.3	15.1	15.6	15.6	16.2	15.5	15.9	15.3	15.2	15.3	14.9	15.4	15.8	16.0
7:30:05	16.8	16.4	16.6	17.1	16.4	17.3	17.3	16.2	16.4	16.7	15.9	17.1	16.0	16.1	16.7	16.6	16.7	16.3	15.4	15.6	15.5	15.8	16.2	15.6	15.8	15.3	15.1	15.4	14.7	15.6	16.3	16.2
7:45:05	17.4	17.4	16.7	17.2	16.2	17.4	17.2	16.5	16.5	16.9	15.8	16.5	16.0	16.1	16.5	16.8	16.6	16.3	15.4	15.6	15.6	16.0	16.7	15.6	16.0	15.2	15.0	15.4	15.0	15.9	16.0	16.2
8:00:05	17.6	17.9	17.0	17.4	16.6	18.0	17.4	16.7	16.7	16.8	16.1	16.4	16.3	16.3	16.7	16.7	16.5	16.4	15.6	15.9	15.8	16.0	16.6	15.9	15.9	15.3	15.1	15.7	15.4	15.9	16.0	16.4
8:15:05	17.8	18.1	17.2	18.1	16.7	17.5	18.2	16.5	16.8	16.7	16.5	16.7	17.0	16.2	16.9	17.1	16.7	16.5	15.7	16.4	15.8	16.8	17.0	16.4	16.3	15.6	15.4	16.0	15.4	16.0	16.5	16.7
8:30:05	18.7	19.1	17.5	18.8	17.2	17.8	17.7	16.8	17.0	17.0	17.0	16.7	16.9	16.6	17.1	17.4	17.0	16.6	16.2	16.4	16.0	16.7	17.3	17.0	16.5	16.0	15.2	16.0	15.8	16.7	16.6	16.9
8:45:05	19.3	19.6	17.6	18.2	17.4	18.0	19.1	17.6	17.3	17.2	16.6	16.9	16.9	16.7	17.4	18.0	17.2	17.0	15.9	17.3	16.4	17.0	18.0	16.8	16.4	15.9	15.4	16.3	16.9	17.2	16.7	17.2
9:00:05	19.6	19.8	17.9	18.6	17.4	17.9	18.4	17.4	17.4	17.1	17.6	17.1	17.0	17.0	17.6	17.6	17.8	16.7	16.3	17.7	17.3	17.4	17.9	16.4	16.2	15.8	15.2	16.4	16.7	17.6	16.9	17.3
9:15:05	20.1	20.9	17.8	18.6	18.1	18.0	18.7	17.7	17.1	17.3	16.7	17.6	17.2	17.2	18.6	18.1	17.3	16.8	16.5	17.4	17.1	18.6	18.2	17.3	16.0	16.0	15.2	16.8	16.8	17.8	16.7	17.6
9:30:05	21.3	21.5	18.4	18.7	17.6	18.2	19.1	18.2	17.6	17.6	17.2	17.0	17.7	17.4	18.6	18.1	17.4	16.8	16.8	18.5	17.3	18.5	18.0	17.0	16.1	16.4	15.6	16.6	17.0	18.2	17.4	17.8
9:45:05	21.5	22.1	18.7	19.0	18.5	19.2	20.4	18.1	17.7	18.0	18.0	17.1	17.6	17.7	18.6	18.8	17.2	17.0	17.4	18.5	17.6	18.8	18.4	17.7	15.8	16.8	15.5	16.4	17.3	18.7	17.6	18.1
10:00:05	21.5	22.3	19.3	19.3	18.2	19.2	20.3	19.6	17.6	18.0	18.3	17.7	18.6	17.8	19.7	18.7	17.6	17.2	17.4	19.3	17.9	19.0	18.4	17.4	15.9	17.0	15.7	16.5	17.6	19.0	17.8	18.4
10:15:05	22.3	23.1	19.8	19.3	19.5	19.9	20.9	19.4	18.0	18.6	18.9	17.4	18.6	17.6	19.4	18.6	19.1	17.8	17.5	18.6	17.7	18.5	18.4	18.3	15.9	16.9	15.9	16.8	17.9	19.4	18.6	18.7
10:30:05	22.8	22.8	19.6	19.2	20.6	19.9	21.1	20.1	18.7	18.3	19.0	17.8	18.9	17.8	19.8	19.1	18.6	17.9	17.8	19.5	17.9	18.9	18.6	17.4	16.3	17.5	16.5	16.9	18.0	19.9	19.3	18.9
10:45:05	23.3	23.4	20.7	19.8	20.1	20.9	21.4	20.3	18.8	18.6	19.2	18.6	19.2	18.4	19.6	19.3	19.8	17.4	17.8	19.4	18.5	19.2	19.3	18.0	16.6	17.5	16.9	16.9	18.2	19.8	18.6	19.2
11:00:05	22.9	24.1	21.0	19.6	20.2	21.2	21.7	20.1	19.5	18.7	18.9	18.3	19.7	18.2	19.9	19.8	20.5	17.2	17.9	19.3	18.6	19.5	19.4	18.3	16.8	17.6	16.7	17.7	18.8	20.3	18.3	19.4
11:15:05	23.1	23.6	21.1	19.8	20.3	20.8	21.5	19.9	19.2	18.9	19.1	19.6	19.9	18.7	20.9	19.6	20.7	17.3	18.2	19.4	18.9	19.2	19.2	18.0	17.5	18.0	17.1	18.3	19.2	20.8	18.5	19.6
11:30:05	23.4	24.0	20.9	19.8	21.1	20.8	22.0	21.4	19.5	19.7	19.5	18.7	20.6	19.5	20.7	20.7	20.9	17.5	18.5	19.4	19.7	19.8	19.5	18.1	17.0	18.0	17.3	18.0	19.2	21.4	18.7	19.8
11:45:05	23.4	23.7	21.4	20.1	20.9	20.9	22.0	21.8	20.0	20.4	19.2	19.3	21.0	19.8	21.1	21.2	20.4	18.0	18.6	19.2	19.6	20.0	19.9	18.3	16.3	18.0	17.1	17.9	18.9	20.9	18.7	19.9
12:00:05	23.5	23.6	21.6	20.0	20.9	21.6	22.4	22.3	20.4	19.7	19.9	19.6	21.4	20.7	21.9	21.8	20.3	18.3	19.0	19.3	19.9	20.3	20.4	18.9	16.4	18.0	16.9	17.4	18.5	20.5	20.0	20.2
12:15:05	23.6	23.6	21.6	20.1	20.8	22.6	22.1	22.0	20.6	20.5	19.7	20.3	21.4	20.3	22.3	21.5	21.3	18.2	18.9	19.3	19.8	20.2	20.4	18.7	17.2	18.1	16.7	18.5	18.8	21.1	20.3	20.3
12:30:05	24.0	23.9	21.7	20.0	21.7	23.0	22.7	21.6	20.5	20.4	19.9	20.0	21.5	20.9	22.3	22.3	20.8	17.5	19.0	19.9	20.0	19.8	21.2	19.3	18.4	18.2	17.3	19.1	18.7	21.0	19.9	20.5
12:45:05	24.2	24.3	22.6	20.5	21.5	22.9	22.9	22.3	20.6	20.1	20.1	20.0	21.8	20.2	23.3	21.7	22.0	17.5	18.5	19.8	20.1	20.4	20.4	19.8	18.4	17.9	17.4	18.4	19.2	21.1	20.2	20.6
13:00:05	24.0	23.6	22.3	20.9	22.3	23.8	24.0	22.3	21.3	20.9	19.7	19.3	22.2	20.5	21.7	22.5	21.9	18.5	18.5	20.9	21.1	20.9	19.9	19.8	18.9	17.6	17.7	18.7	19.5	22.0	19.6	20.9
13:15:05	24.3	23.8	23.0	21.4	21.9	23.2	23.6	22.8	21.9	20.5	20.1	19.8	22.3	20.9	22.3	22.8	22.4	19.2	17.8	20.9	21.0	21.7	19.8	19.8	18.6	18.0	18.4	19.7	19.9	22.2	19.9	21.1
13:30:05	24.6	24.2	22.2	22.0	23.2	23.2	24.0	22.0	22.5	20.5	20.2	19.9	22.5	21.1	22.9	22.4	21.5	19.6	18.0	20.3	21.3	22.0	19.7	20.3	18.3	17.6	18.6	19.2	19.8	22.2	20.3	21.2
13:45:05	23.5	24.1	22.6	22.8	22.6	23.7	23.4	22.8	22.9	20.9	20.5	20.7	21.5	22.1	23.4	22.9	22.6	18.2	17.7	20.0	21.9	21.5	20.2	20.1	18.2	17.4	18.3	19.3	19.6	21.5	20.9	21.2
14:00:05	23.9	24.1	23.4	22.6	23.2	24.0	23.8	23.8	22.5	21.0	20.7	20.3	21.0	22.1	23.8	22.9	22.2	17.5	17.2	20.2	21.7	22.5	20.3	20.4	17.4	17.4	18.6	19.7	19.5	21.5	20.8	21.3
14:15:05	24.0	24.6	23.0	22.9	23.1	24.3	23.6	23.4	22.6	20.6	21.5	21.5	21.7	22.2	23.6	23.4	22.9	19.0	16.7	20.5	22.2	21.5	20.4	20.4	17.6	17.5	18.9	20.1	19.1	22.2	20.8	21.5
14:30:05	24.0	25.0	23.0	22.2	22.9	24.3	23.7	23.8	23.2	20.7	20.9	21.5	21.5	22.6	23.3	23.1	23.6	18.1	16.7	20.5	21.9	22.7	20.4	20.3	18.0	17.7	19.2	20.1	18.9	22.2	20.7	21.5
14:45:05	24.1	24.2	23.4	22.8	22.8	24.9	23.9	23.6	22.9	20.8	21.2	22.4	22.4	22.9	23.5	23.1	23.0	18.6	17.1	20.5	22.2	21.3	20.6	20.6	19.2	18.4	19.5	20.2	19.5	22.4	20.9	21.7
15:00:05	24.2	23.8	22.7	22.5	22.9	24.2	24.1	23.0	22.6	20.8	21.8	20.9	21.6	22.9	23.0	22.4	22.9	18.6	17.4	20.4	21.8	22.0	20.5	20.1	18.6	18.9	19.1	20.3	19.2	22.6	20.8	21.5
15:15:05	24.0	24.0	22.8	23.1	22.7	24.7	24.0	23.3	23.5	21.1	22.1	21.5	22.0	22.1	22.9	22.8	22.6	18.6	17.5	20.1	21.6	21.5	20.3	19.9	18.0	17.9	20.0	20.3	19.5	22.4	21.2	21.5
15:30:05	23.9	24.0	22.4	23.0	23.5	23.3	24.5	23.7	23.9	21.8	21.8	22.3	22.6	21.8	23.1	22.9	22.8	18.6	17.8	19.9	21.6	21.9	20.3	20.3	18.0	17.3	19.6	20.3	19.2	22.4	21.5	21.6
15:45:05	24.0	24.2	22.9	22.8	23.2	24.0	23.9	20.2	22.9	22.0	21.2	22.0	23.2	22.1	22.8	22.6	23.1	19.0	17.6	19.8	22.1	21.8	20.3	19.8	18.7	17.0	20.0	20.2	19.3	22.3	21.3	21.5
16:00:05	23.9	24.2	22.4	21.5	22.9	23.5	23.5	19.8	23.5	21.5	22.0	22.2	22.1	22.2	23.2	22.7	22.4	19.3	17.8	19.7	22.0	21.4	20.3	19.5	19.2	17.1	19.5	20.2	18.9	21.7	21.2	21.3
16:15:05	23.1	23.9	22.2	21.9	21.9	23.1	23.2	20.1	23.7	21.5	22.2	21.6	23.0	22.0	22.9	22.7	22.8	18.7	18.2	19.6	21.3	21.0	20.1	19.6	19.4	17.3	19.6	20.0	19.3	21.9	21.6	21.3
16:30:05	23.2	24.0	22.0	22.5	22.0	23.5	22.9	20.3	23.2	22.0	21.6	21.4	22.2	21.6	23.0	22.8	22.1	19.0	17.4	19.1	21.0	21.3	19.0	20.0	19.2	17.4	19.8	19.8	19.2	22.2	20.9	21.1
16:45:05	23.3	23.7	21.7	21.9	22.3	23.1	22.8	20.8	23.4	21.4	22.2	21.7	22.4	21.8	23.0	22.5	22.7	19.3	17.3	18.6	21.1	21.0	18.2	19.7	17.7	17.4	19.4	19.3	19.2	21.6	20.9	21.0
17:00:05	23.0	23.5	22.0	21.7	22.2	22.9	22.7	20.4	22.9	21.8	21.3	21.4	22.4	21.4	22.6	22.3	22.5	20.1	17.4	18.9	21.0	21.4	18.3	19.5	17.4	17.8	19.5	19.0	19.2	21.6	20.8	20.9
17:15:05	22.6	23.3	21.8	21.6	22.5	22.6	22.7	20.6	22.4	21.3	21.5	21.4	22.2	21.3	22.3	22.0	22.2	19.8	17.3	18.9	20.9	21.5	18.0	18.8	17.4	18.0	19.2	19.0	19.1	21.2	20.3	20.8
17:30:05	22.4	22.9	21.5	21.4	22.0	22.2	22.2	20.1	22.0	21.3	21.3	21.2	21.5	21.1	21.9	21.6	21.8	18.0	17.3	19.2	20.9	21.6	18.2	17.8	17.4	17.8	18.9	19.0	19.1	21.3	20.3	20.5
17:45:05	22.1	22.7	21.3	21.1	21.6	21.8	21.6	19.7	21.5	20.9	20.6	20.9	21.4	20.9	21.9	21.3	21.5	17.6	17.2	19.1	20.6	20.9	18.5	17.8	17.4	17.5	18.9	18.9	18.9	20.8	19.9	20.2
18:00:05	21.7	22.5	20.8	20.7	21.4	21.6	21.6	19.5	21.1	20.3	20.1	20.7	20.9	20.5	21.4	21.0	21.3	17.6	17.3	18.9	20.6	20.5	18.3	17.7	17.5	17.3	18.7	18.6	18.8	20.1	19.5	20.0
18:15:05	21.4	22.1	20.6	20.3	21.0	21.4	21.5	19.0	20.9	19.8	19.7	20.3	20.4	20.2	21.1	20.8	20.9	17.7	17.2	18.7	20.5	20.1	18.1	17.8	17.3	17.2	18.7	18.4	18.4	19.8	19.5	19.7
18:30:05	21.1	21.8	20.4	20.2	20.9	21.0	21.1	18.8	19.8	19.6	19.7	20.0	20.1	19.9	20.9	20.6	20.5	17.4	17.1	18.6	20.1	19.8	18.1	17.4	17.4	16.8	18.5	18.2	18.0	19.8	19.6	19.5
18:45:05	20.9	21.6	20.3	19.9	20.6	20.6	20.5	17.9	18.8	19.6	19.3	19.8	19.8	19.4	20.7	20.3	20.2	17.5	16.9	18.5	19.7	19.6	18.1	17.3	17.2	16.7	18.5	18.1	17.9	19.0	19.3	19.2
19:00:05	20.6	21.4	20.1	19.8	20.3	20.4	20.5	17.2	19.2	19.5	19.1	19.6	19.6	19.2	20.4	20.3	19.9	17.4	16.7	18.5	19.3	19.2	18.2	17.2	17.2	16.7	18.2	17.9	17.7	18.8	19.4	19.0
19:15:05	20.3	21.2	20.1	19.7	20.2	20.2	20.2	17.5	19.0	19.3	18.8	19.4	19.5	19.3	20.3	19.9	19.8	17.3	16.7	18.3	19.0	19.1	18.2	17.2	17.0	16.8	18.0	17.9	17.4	17.8	19.2	18.9
19:30:05	20.2	21.2	20.0	19.4	20.2	19.8	20.3	17.6	18.6	19.2	18.8	19.2	19.2	19.4	20.1	19.8	19.3	17.1	16.7	18.2	18.6	19.2	18.0	17.2	16.9	16.8	18.0	17.8	17.1	17.7	19.2	18.7
19:45:05	20.0	21.0	19.8	19.3	19.9	19.5	19.6	18.0	18.6	18.9	18.7	19.0	19.0	19.3	19.9	19.8	19.1	17.0	16.5	18.2	18.7	19.0	17.8	17.2	16.8	16.9	18.0	17.8	17.1	17.5	19.1	18.6
20:00:05	19.6	20.0	19.8	19.2	19.8	19.5	19.4	17.9	18.2	18.6	18.5	18.8	19.2	19.2	19.8	19.3	18.9	17.0	16.4	18.2	18.6	18.8	17.6	17.3	16.9	16.7	18.0	17.7	17.1	17.4	18.9	18.5
20:15:05	19.6	19.9	19.8	18.9	19.8	19.2	19.2	18.0	18.2	18.3	18.4	18.7	18.3	19.2	19.6	19.2	18.7	17.4	16.0	18.2	18.6	18.6	17.7	17.1	16.5	16.8	17.8	17.4	17.4	17.4	18.9	18.3
20:30:05	19.2	19.5	19.4	18.7	19.6	19.2	18.9	17.9	18.1	18.2	18.5	18.5	18.3	19.1	19.4	19.2	18.6	16.7	16.0	18.0	18.4	18.7	17.7	17.4	16.7	16.7	17.6	17.0	17.4	17.5	18.9	18.2
20:45:05	19.3	19.8	19.2	18.9	19.5	19.1	18.8	18.1	18.2	17.8	18.5	18.2	18.4	19.0	19.4	19.2	18.7	16.9	15.7	17.8	18.4	18.5	17.7	17.5	16.5	16.5	17.5	17.1	17.2	17.3	18.8	18.2
21:00:05	19.0	19.3	19.2	18.8	19.6	18.9	18.7	18.1	17.9	17.8	18.4	18.2	18.7	18.9	19.2	18.9	18.6	17.1	15.4	17.4	18.5	18.6	17.9	17.2	16.5	16.4	17.5	16.7	17.1	17.2	18.7	18.1
21:15:05	19.1	19.6	19.2	18.7	19.5	18.7	18.6	17.9	17.8	17.6	18.4	18.0	18.8	19.1	19.3	18.8	18.2	16.8	15.5	17.4	18.0	18.4	17.4	17.0	16.5	16.3	17.4	16.9	17.0	17.0	18.3	18.0
21:30:05	18.9	19.6	19.6	18.6	19.2	18.8	19.4	17.9	17.9	18.0	18.4	18.1	18.6	18.8	19.2	18.6	18.2	17.3	15.8	17.4	18.1	18.4	17.5	16.8	16.4	16.3	17.4	16.5	16.8	16.7	18.0	18.0
21:45:05	18.7	19.4	19.2	18.4	19.1	18.0	18.2	17.4	18.0	17.7	18.2	17.6	18.4	18.3	19.1	18.6	17.8	16.9	16.0	17.4	18.1	18.4	17.6	16.7	16.4	16.2	17.1	16.5	16.7	17.0	18.0	17.8
22:00:05	18.7	19.4	17.7	18.5	18.8	18.2	18.4	17.3	17.8	17.4	17.9	17.5	18.2	18.2	19.2	18.5	18.1	16.7	16.0	17.4	18.1	18.2	17.3	16.7	16.3	16.3	17.1	16.6	16.9	16.7	18.0	17.7
22:15:05	18.4	19.3	17.5	18.2	19.0	18.2	18.0	17.4	18.2	17.5	18.1	17.4	18.1	17.9	19.0	18.5	18.0	16.7	16.1	17.3	17.9	18.3	17.2	16.9	16.6	16.2	17.3	16.8	16.9	16.7	18.0	17.7
22:30:05	18.4	19.2	17.7	18.1	19.0	18.1	18.6	17.5	17.9	17.4	18.0	17.5	18.2	17.7	18.8	18.2	18.0	16.4	16.1	17.0	17.8	18.1	17.1	16.7	16.4	16.0	16.7	16.2	16.8	16.7	17.6	17.5
22:45:05	18.3	19.2	17.9	18.4	18.7	18.0	18.5	17.6	18.0	17.2	17.5	17.4	18.0	17.6	18.5	18.0	17.9	16.7	16.1	16.7	17.6	17.8	16.8	16.8	16.1	15.8	16.7	15.9	16.5	16.7	17.4	17.4
23:00:05	17.9	18.9	17.9	18.3	18.8	18.1	18.2	17.4	17.8	17.4	17.6	17.4	17.7	17.4	18.6	18.0	17.5	16.6	15.9	16.3	17.8	17.9	17.0	16.8	16.1	16.0	16.7	15.6	16.3	16.7	17.6	17.4
23:15:05	17.8	18.4	18.0	18.3	18.5	17.7	18.8	17.6	17.9	17.4	17.6	17.4	17.8	17.4	18.3	18.0	17.7	16.1	15.9	16.7	17.7	17.9	16.8	16.7	16.2	16.2	16.7	16.0	16.2	16.4	17.4	17.3
23:30:05	17.7	15.4	18.0	18.1	18.3	17.5	18.2	17.7	17.7	17.3	17.5	17.2	17.6	17.6	18.3	17.7	17.7	16.1	16.1	16.3	17.4	18.0	16.6	17.0	16.0	15.7	16.4	16.0	16.0	16.3	17.4	17.1
23:45:05	17.5	15.9	17.5	18.0	18.5	17.4	18.0	17.8	17.8	17.2	17.5	17.1	17.5	17.4	17.8	17.5	17.5	16.3	16.0	16.8	17.1	17.9	16.7	16.8	16.0	15.8	16.5	15.9	15.9	16.3	17.4	17.1
DAY AV	19.6	20.0	19.1	19.1	19.3	19.6	19.7	18.7	18.7	18.5	18.3	18.3	18.8	18.6	19.3	19.2	18.9	17.3	16.5	17.5	18.1	18.5	18.0	17.4	16.7	16.5	16.8	17.2	17.1	18.1	18.0	18.3

May 2019 House A average indoors temperature calculation spreadsheet

DATA LOG 2: HOUSE A

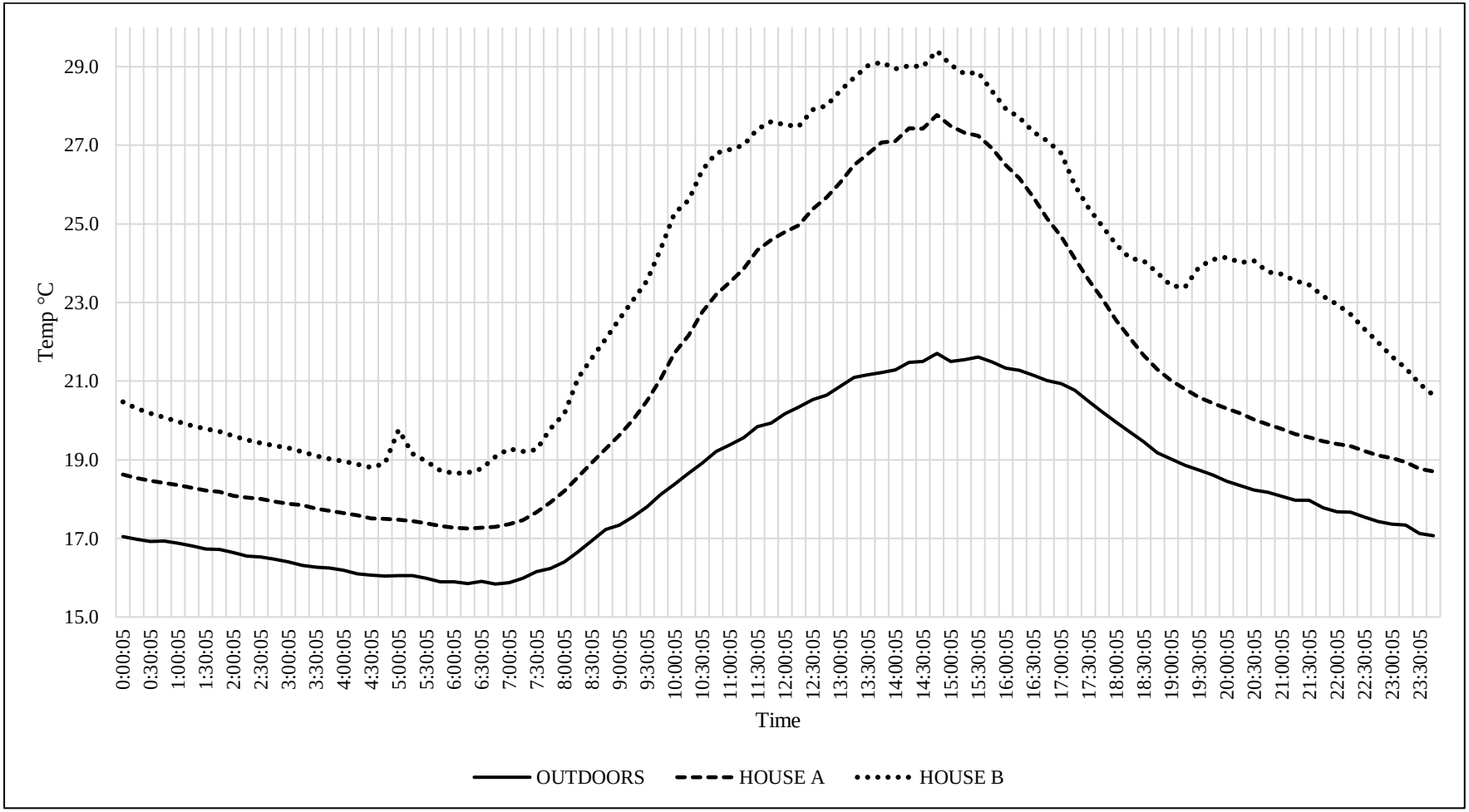
Time	Temperatures																															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	AV
0:00:05	17.7	18.4	18.7	19.8	19.6	19.9	18.4	19.4	19.2	19.5	19.2	19.6	19.0	19.2	19.2	19.8	19.2	19.3	17.6	17.3	18.0	18.5	19.3	18.1	17.8	17.8	17.4	17.8	17.4	17.1	18.2	18.6
0:15:05	17.6	18.3	18.6	19.7	19.5	19.9	18.7	19.4	19.0	19.5	19.1	19.3	19.0	19.2	19.2	19.8	18.8	19.3	17.5	17.1	18.0	18.4	19.3	18.0	17.7	17.8	17.2	17.7	17.2	16.9	18.0	18.5
0:30:05	17.5	18.2	18.6	19.6	19.5	19.8	18.9	19.3	19.0	19.4	19.1	19.2	18.9	19.2	19.1	19.5	18.6	19.2	17.5	17.1	18.0	18.3	19.2	17.8	17.6	17.6	17.0	17.7	17.1	17.0	18.0	18.5
0:45:05	17.5	18.1	18.6	19.4	19.5	19.6	18.9	19.3	18.9	19.4	18.9	19.1	18.9	19.1	19.0	19.5	18.8	19.2	17.4	16.9	17.8	18.1	19.2	17.8	17.5	17.4	17.0	17.6	17.2	17.0	18.0	18.4
1:00:05	17.7	18.1	18.7	19.5	19.3	19.5	18.9	19.2	18.8	19.3	18.8	19.0	18.9	18.9	18.8	19.4	18.7	19.2	17.4	17.0	17.8	18.0	19.1	17.8	17.4	17.4	16.8	17.5	17.1	16.9	18.0	18.4
1:15:05	17.4	18.0	18.6	19.3	19.2	19.4	18.7	19.2	18.6	19.2	18.8	18.8	18.9	18.9	18.9	19.4	18.7	19.1	17.3	17.0	17.7	18.1	19.0	17.7	17.4	17.3	16.7	17.6	17.1	16.8	18.0	18.3
1:30:05	17.3	17.9	18.6	19.2	19.3	19.3	18.8	19.1	18.6	19.2	18.6	18.6	18.9	18.8	18.9	19.4	18.8	19.1	17.3	17.0	17.6	17.9	18.8	17.5	17.1	17.3	16.7	17.5	17.1	16.7	17.8	18.2
1:45:05	17.0	17.8	18.7	19.4	19.0	19.3	18.9	19.0	18.7	19.2	18.6	18.6	18.8	18.8	18.9	19.2	18.8	19.0	17.2	17.0	17.5	18.0	18.8	17.5	17.3	17.2	16.6	17.3	17.1	16.8	17.7	18.2
2:00:05	16.9	17.8	18.7	19.2	18.9	19.1	18.7	19.0	18.6	18.9	18.6	18.4	18.7	18.7	18.8	19.2	18.9	18.9	17.1	17.0	17.4	17.6	18.4	17.4	17.2	17.1	16.6	17.2	17.1	16.8	17.8	18.1
2:15:05	16.9	17.6	18.7	19.1	18.8	19.0	18.8	18.9	18.7	18.8	18.5	18.4	18.7	18.7	18.7	19.1	18.8	18.8	16.9	16.8	17.4	17.4	18.5	17.4	17.2	17.2	16.7	17.1	17.1	16.8	17.6	18.0
2:30:05	16.9	17.5	18.6	19.3	18.8	18.9	18.7	18.8	18.5	18.8	18.4	18.3	18.8	18.6	18.7	19.0	18.8	19.0	17.1	16.8	17.4	17.5	18.3	17.4	17.2	17.1	16.6	17.2	16.9	16.8	17.6	18.0
2:45:05	16.9	17.4	18.6	19.2	18.9	19.0	18.9	18.8	17.9	18.8	18.2	18.2	18.7	18.6	18.6	18.8	18.6	18.9	17.0	16.8	17.3	17.5	18.3	17.1	17.2	17.2	16.5	17.0	16.7	16.9	17.5	17.9
3:00:05	17.0	17.2	18.6	19.1	18.8	18.9	18.9	18.5	17.9	18.8	18.1	18.1	18.6	18.5	18.6	18.9	18.6	18.7	17.0	16.8	17.2	17.7	18.3	17.0	17.1	17.0	16.5	17.0	16.5	16.9	17.4	17.9
3:15:05	16.9	17.2	18.6	19.1	18.6	19.0	18.9	18.4	17.6	18.7	18.2	18.2	18.5	18.6	18.6	18.8	18.6	18.7	16.7	16.7	17.1	17.7	18.2	16.9	17.1	17.1	16.6	17.0	16.6	16.8	17.4	17.8
3:30:05	16.7	17.0	18.6	19.0	18.7	18.8	18.6	18.2	17.7	18.7	18.1	18.0	18.3	18.6	18.4	18.8	18.3	18.6	16.6	16.7	16.9	17.6	18.2	16.9	17.1	17.0	16.6	16.9	16.7	16.7	17.5	17.8
3:45:05	16.4	16.8	18.6	19.0	18.7	18.7	18.7	18.1	17.6	18.6	18.0	17.9	18.2	18.4	18.4	18.7	18.3	18.6	16.7	16.7	16.9	17.6	18.1	16.9	17.0	16.8	16.7	16.9	16.5	16.8	17.3	17.7
4:00:05	16.1	16.7	18.5	18.7	18.6	18.8	18.5	18.2	17.7	18.7	18.0	17.9	18.1	18.3	18.4	18.7	18.4	18.4	16.7	16.7	17.1	17.5	18.1	16.7	17.0	16.8	16.6	16.9	16.4	16.7	17.2	17.6
4:15:05	15.8	16.6	18.6	18.6	18.7	18.7	18.3	18.1	17.9	18.5	17.9	17.9	18.0	18.3	18.2	18.6	18.2	18.3	16.7	16.7	17.0	17.4	18.0	16.7	17.0	16.8	16.6	16.9	16.4	16.6	17.1	17.6
4:30:05	15.6	16.4	18.6	18.6	18.6	18.5	18.1	18.0	17.9	18.6	17.7	17.8	17.9	18.2	18.1	18.6	18.2	18.3	16.6	16.7	17.0	17.2	18.0	16.7	17.0	16.8	16.5	16.8	16.3	16.5	17.1	17.5
4:45:05	15.5	16.3	18.6	18.6	18.6	18.6	17.9	17.9	17.8	18.6	17.6	17.7	17.9	18.3	18.2	18.6	18.2	18.2	16.6	16.7	17.0	17.2	18.0	16.7	16.9	16.8	16.5	16.7	16.4	16.6	17.1	17.5
5:00:05	15.4	16.3	18.2	18.5	18.5	18.6	17.7	18.0	17.9	18.6	17.5	17.6	18.0	18.3	18.2	18.6	18.3	18.0	16.5	16.7	17.0	17.4	18.0	16.7	16.7	16.7	16.7	16.8	16.3	16.7	17.3	17.5
5:15:05	15.1	16.1	18.4	18.5	18.4	18.6	17.9	18.0	17.8	18.7	17.3	17.7	17.8	18.2	18.3	18.4	18.2	18.1	16.5	16.5	17.0	17.5	17.8	16.7	16.8	16.7	16.7	16.8	16.3	16.7	17.3	17.4
5:30:05	15.1	16.0	18.1	18.3	18.4	18.6	17.9	17.6	17.9	18.6	17.4	17.6	17.5	18.1	18.2	18.3	18.2	17.9	16.4	16.6	17.0	17.5	17.9	16.7	16.8	16.7	16.6	16.8	16.4	16.7	17.2	17.4
5:45:05	15.0	15.9	17.8	18.3	18.4	18.5	17.9	17.4	17.8	18.4	17.2	17.5	17.5	18.0	18.0	18.2	18.0	17.9	16.5	16.6	16.9	17.5	17.9	16.7	16.9	16.7	16.6	16.7	16.3	16.6	17.2	17.3
6:00:05	15.1	15.8	17.8	18.1	18.3	18.4	17.9	17.4	17.7	18.5	17.1	17.6	17.3	18.0	18.0	18.0	18.0	17.7	16.4	16.6	16.9	17.5	17.8	16.7	16.9	16.6	16.6	16.7	16.2	16.6	17.2	17.3
6:15:05	15.4	15.6	17.5	18.2	18.4	18.5	17.9	17.1	17.5	18.4	17.3	17.5	17.3	18.0	18.0	18.0	17.9	17.7	16.5	16.7	17.0	17.4	17.8	16.7	16.8	16.7	16.5	16.7	16.2	16.6	17.0	17.3
6:30:05	15.8	15.7	17.3	18.3	18.2	18.5	18.0	17.1	17.5	18.3	17.3	17.5	17.5	18.0	18.0	18.0	18.0	17.9	16.5	16.7	17.0	17.3	17.8	16.7	16.8	16.7	16.5	16.8	16.1	16.7	17.0	17.3
6:45:05	16.1	15.7	17.1	18.2	18.4	18.6	18.1	17.0	17.6	18.4	17.3	17.6	17.6	17.9	18.0	18.3	17.7	17.9	16.5	16.6	17.0	17.4	17.7	16.7	16.8	16.7	16.5	16.9	16.2	16.7	17.1	17.3
7:00:05	16.4	16.0	17.1	18.3	18.3	18.8	18.1	17.1	17.7	18.5	17.3	17.7	17.6	18.0	18.1	18.3	18.0	17.8	16.5	16.7	16.9	17.4	17.6	16.8	16.9	16.7	16.5	16.8	16.3	16.7	17.2	17.4
7:15:05	16.6	16.3	17.4	18.4	18.2	19.0	18.2	17.1	17.7	18.4	17.4	17.9	17.7	18.1	18.4	18.1	18.2	17.9	16.8	16.8	17.0	17.3	17.7	16.9	17.0	16.7	16.6	16.9	16.5	16.9	17.4	17.5
7:30:05	17.3	16.8	17.7	18.5	18.3	19.1	18.7	17.2	18.0	18.4	17.4	18.3	17.6	18.2	18.5	18.4	18.3	18.0	17.0	17.1	17.1	17.4	17.6	17.2	17.3	16.9	16.7	17.1	16.7	17.1	17.9	17.7
7:45:05	18.0	17.6	18.0	18.6	18.1	19.3	19.1	17.9	18.3	18.6	17.7	18.5	17.8	18.1	18.6	18.7	18.6	18.0	17.3	17.5	17.3	17.9	17.8	17.4	17.6	16.9	16.6	17.4	16.8	17.4	18.1	17.9
8:00:05	18.8	18.6	18.4	19.2	18.3	19.8	19.2	18.0	18.6	18.7	18.0	18.6	18.2	18.4	18.8	19.0	18.8	18.3	17.5	17.9	17.4	18.2	17.9	17.6	17.9	17.3	16.7	17.5	17.1	17.6	18.0	18.2
8:15:05	19.3	19.4	18.9	19.9	18.8	19.7	20.0	18.4	19.2	18.8	18.6	18.6	18.6	18.4	19.2	19.3	19.2	18.3	17.8	18.4	17.5	18.8	18.4	17.9	18.0	17.9	16.9	17.7	17.3	18.0	18.3	18.6
8:30:05	20.2	20.3	19.4	20.6	19.1	19.9	19.9	18.6	19.3	19.2	19.2	18.8	18.9	18.6	19.4	19.8	19.6	18.5	18.0	18.5	17.8	19.0	19.1	18.8	18.1	18.2	16.7	18.1	17.8	18.5	18.9	18.9
8:45:05	20.7	21.0	19.6	20.3	19.3	20.3	20.4	19.0	19.3	19.3	19.3	19.1	19.0	18.7	19.8	20.1	19.8	19.0	18.2	19.3	18.3	19.3	19.9	18.8	18.2	18.4	16.7	18.4	19.6	19.6	19.0	19.3
9:00:05	21.4	21.5	20.1	20.3	19.6	20.2	20.9	19.4	19.6	19.6	20.1	19.3	19.3	19.2	20.0	20.2	20.6	18.8	18.6	20.2	19.4	20.3	20.4	18.7	18.1	18.3	16.7	18.6	19.8	20.3	19.0	19.6
9:15:05	22.5	22.9	20.6	20.7	20.0	20.4	21.5	19.7	19.7	19.4	20.1	20.0	19.6	19.4	21.2	20.8	20.2	18.7	19.1	21.2	20.2	20.9	20.9	19.0	18.0	18.2	16.7	18.9	20.0	20.9	19.2	20.0
9:30:05	23.5	24.2	21.5	21.3	20.3	20.6	21.4	20.2	20.3	19.9	19.8	19.8	20.7	19.7	22.5	21.5	20.1	18.7	19.8	22.0	20.3	22.3	20.9	19.4	17.9	18.6	17.1	19.0	20.3	22.1	19.6	20.5
9:45:05	24.7	25.2	22.1	22.0	21.5	22.1	22.5	20.4	20.5	20.6	20.7	19.7	21.2	20.0	22.4	22.3	20.0	19.2	20.6	22.8	20.5	22.1	21.6	19.9	17.9	19.1	17.4	19.1	20.7	23.1	20.9	21.1
10:00:05	25.4	26.3	23.2	22.6	21.6	22.2	25.0	22.5	20.9	20.7	22.2	20.0	21.5	20.3	24.3	22.6	20.2	19.3	21.0	23.9	21.8	23.8	21.5	20.4	18.0	20.0	17.4	18.9	21.2	23.8	20.7	21.7
10:15:05	26.0	26.9	24.0	22.7	22.6	23.6	25.5	22.6	21.3	21.8	23.0	20.4	22.4	20.5	23.9	22.2	21.3	19.8	21.2	23.5	21.8	23.1	21.3	21.3	18.0	19.9	18.0	19.3	21.7	24.4	23.1	22.2
10:30:05	26.4	27.8	24.5	22.9	24.6	24.5	26.7	24.3	22.3	21.7	23.6	21.3	22.4	20.6	24.1	22.2	22.2	20.5	21.0	24.5	21.5	23.6	21.7	21.3	18.4	20.5	18.2	19.4	22.9	25.9	24.2	22.8
10:45:05	26.8	28.0	25.7	23.0	25.0	25.8	27.7	24.1	23.5	21.7	23.3	21.8	22.9	21.5	24.2	22.6	23.1	20.2	20.9	25.4	22.9	23.5	23.9	21.2	19.2	21.2	18.6	19.6	22.5	26.7	22.8	23.2
11:00:05	27.2	28.7	26.1	23.0	25.3	26.4	27.0	24.0	24.0	22.1	23.3	22.4	24.0	21.8	24.2	24.6	24.9	19.8	20.9	25.1	22.9	24.8	22.9	21.6	19.4	20.7	19.0	20.4	22.9	27.4	22.2	23.5
11:15:05	27.7	29.1	26.7	23.3	24.7	26.5	27.3	23.7	24.3	21.5	23.2	24.1	23.6	22.0	25.1	24.4	26.2	19.7	21.7	24.2	23.9	24.8	22.7	21.9	19.9	21.6	19.3	21.4	25.0	28.2	22.0	23.9
11:30:05	27.8	29.0	26.2	23.2	26.7	25.3	27.8	25.3	24.6	23.2	24.5	23.2	25.5	23.4	26.8	25.2	26.0	19.8	22.2	25.3	23.9	24.6	22.9	21.9	19.6	22.5	19.9	22.3	24.6	28.7	22.5	24.3
11:45:05	28.4	28.5	26.9	23.3	26.2	25.7	28.2	27.0	25.0	24.5	23.8	23.3	26.3	24.7	26.0	26.2	26.1	20.3	22.3	24.1	24.7	26.1	24.4	22.2	19.0	22.3	19.8	21.9	24.2	28.0	22.9	24.6
12:00:05	28.1	28.5	27.7	23.8	26.2	27.0	27.7	28.0	25.0	24.0	24.0	24.2	26.2	25.1	27.1	26.8	25.0	21.3	22.8	23.9	25.8	26.1	25.5	22.7	18.7	21.9	19.3	21.3	23.3	26.8	24.8	24.8
12:15:05	28.5	28.5	28.1	23.5	25.5	26.8	28.2	27.2	26.1	24.9	23.6	25.5	25.9	25.4	27.3	27.3	25.9	20.8	22.6	23.7	26.4	25.7	25.3	23.0	19.5	22.0	19.2	22.2	23.2	26.1	25.9	25.0
12:30:05	28.5	29.2	28.0	23.3	27.0	28.0	27.2	26.1	26.5	25.4	24.3	25.6	26.8	26.2	28.4	28.2	26.5	20.3	23.5	24.2	26.6	25.2	25.8	23.4	22.1	21.9	19.3	23.4	23.3	27.3	25.4	25.4
12:45:05	29.2	29.7	28.3	24.0	26.3	29.3	29.5	28.0	26.9	24.5	24.5	24.5	27.9	24.8	28.7	28.5	27.5	19.9	22.0	25.1	27.3	25.9	25.5	24.5	21.6	21.3	19.8	23.6	23.9	28.1	25.3	25.7
13:00:05	29.6	29.7	28.8	24.7	27.2	30.3	30.5	27.7	27.2	25.4	24.4	23.5	28.5	25.5	28.9	28.5	28.6	20.6	21.5	25.5	27.7	26.2	24.2	25.5	23.7	21.4	20.5	23.9	24.5	29.1	24.5	26.1
13:15:05	29.9	30.1	29.1	26.2	28.2	29.5	30.0	28.8	28.2	25.3	24.0	23.5	29.1	26.0	28.2	28.9	29.4	23.1	20.9	27.0	28.7	27.7	23.5	25.8	22.2	21.5	21.5	25.4	24.7	29.9	25.3	26.5
13:30:05	30.7	30.7	28.7	27.9	28.5	29.9	31.4	28.5	29.2	24.4	24.0	25.0	29.7	25.8	29.0	29.4	29.3	23.6	20.9	26.0	29.3	29.0	23.5	24.9	22.0	21.3	22.0	24.3	25.1	30.7	25.4	26.8
13:45:05	30.5	31.3	29.5	29.1	29.7	30.5	31.6	29.5	30.4	24.7	24.8	25.7	27.6	28.2	29.9	30.1	29.7	22.2	20.8	24.7	30.0	28.2	24.2	26.1	21.9	20.8	22.4	24.4	25.7	28.6	26.6	27.1
14:00:05	30.3	32.0	30.0	30.2	29.6	31.0	30.9	30.6	30.5	24.7	24.4	27.3	25.6	28.7	30.2	29.6	29.7	21.1	20.0	24.6	30.1	29.3	24.8	26.2	20.9	20.6	22.3	24.9	24.8	27.9	27.5	27.1
14:15:05	29.4	31.8	30.5	29.1	30.0	32.1	31.1	31.2	30.3	24.5	27.5	27.9	28.2	29.4	30.3	30.0	30.7	22.8	19.5	26.2	30.4	28.5	25.4	25.1	21.0	20.4	23.4	25.3	24.1	27.8	26.6	27.4
14:30:05	30.3	31.8	30.5	29.5	29.7	32.3	31.1	29.8	30.8	24.7	25.6	28.1	26.2	29.5	29.9	30.4	31.1	22.2	19.4	25.6	30.1	29.1	25.7	25.1	21.5	20.6	24.3	25.4	23.5	29.3	27.0	27.4
14:45:05	30.4	31.2	31.6	30.6	28.7	32.7	31.3	30.8	30.5	25.2	25.7	29.5	28.5	29.8	30.1	29.4	31.0	21.9	19.7	25.8	29.4	27.8	24.9	25.8	24.7	22.3	25.3	26.6	24.3	29.0	26.4	27.8
15:00:05	30.1	29.9	31.2	30.0	30.2	32.2	31.4	29.7	29.3	25.1	27.7	27.1	26.6	30.3	29.8	28.0	30.5	22.6	19.8	24.7	29.5	28.1	24.8	24.7	24.7	23.4	25.4	26.3	24.0	28.9	26.1	27.5
15:15:05	30.3	29.5	30.3	30.2	29.0	32.7	30.4	30.2	30.7	25.4	28.2	27.9	26.6	29.4	28.7	28.5	30.5	22.2	20.1	24.7	29.8	27.0	24.6	24.6	22.4	21.8	25.2	26.0	24.5	29.5	26.0	27.3
15:30:05	29.6	30.0	30.5	30.2	30.5	30.5	31.4	31.1	30.9	25.4	28.1	28.4	27.7	28.4	28.5	29.0	29.4	22.2	20.6	24.0	28.9	26.7	24.7	24.8	22.0	20.7	25.4	25.6	23.6	28.5	27.1	27.2
15:45:05	29.5	30.0	30.0	29.5	30.0	29.8	30.9	26.2	30.2	26.4	26.1	28.0	27.3	28.5	28.2	28.0	29.5	23.2	20.3	23.5	28.8	27.9	24.5	23.8	24.6	20.0	25.3	25.2	23.4	28.8	27.3	26.9
16:00:05	29.2	29.6	29.3	27.2	29.3	28.8	30.4	25.4	29.5	25.3	27.2	27.5	26.4	28.1	28.6	28.0	28.8	23.6	20.3	23.1	28.8	27.0	24.2	23.3	25.0	19.8	24.7	25.1	23.1	27.0	27.8	26.5
16:15:05	28.0	29.0	28.7	27.7	27.4	28.7	29.0	24.9	29.5	25.4	27.4	27.2	27.6	27.7	28.5	27.8	28.6	22.5	21.2	22.8	26.9	25.5	23.6	22.8	25.0	19.8	23.9	24.9	23.7	27.0	28.4	26.2
16:30:05	27.5	28.6	28.2	27.7	26.6	28.0	27.7	24.8	29.4	25.3	26.8	25.4	26.5	27.3	27.9	27.6	27.6	22.1	20.4	22.2	25.7	25.1	23.2	23.6	24.7	19.9	24.5	24.2	23.9	27.6	26.3	25.7
16:45:05	27.1	28.0	27.3	26.7	27.1	27.7	26.9	24.6	28.4	25.0	26.4	26.1	26.3	26.5	27.7	27.0	27.1	22.2	20.3	21.5	25.4	25.0	22.0	23.0	21.9	20.2	23.6	23.4	23.1	26.6	25.5	25.1
17:00:05	26.7	27.6	26.7	26.1	26.5	26.5	26.6	24.1	27.4	24.7	25.1	25.3	26.2	25.3	27.0	26.5	26.5	23.2	20.3	21.2	25.1	24.7	21.6	22.6	21.2	20.9	23.0	22.9	23.1	25.8	24.7	24.7
17:15:05	25.6	26.7	26.1	25.4	26.0	25.8	26.2	23.8	26.9	24.0	24.6	24.5	25.1	24.6	25.8	25.8	25.7	23.0	20.2	21.2	24.2	24.4	21.5	22.0	20.9	20.7	22.7	22.4	22.4	25.0	24.4	24.1
17:30:05	25.0	25.8	25.3	24.7	25.4	25.0	25.9	23.2	26.0	23.7	24.0	23.9	24.4	24.0	24.8	25.1	24.9	21.6	19.9	21.3	24.1	24.4	21.3	21.1	20.6	20.5	22.0	22.3	22.2	24.8	23.8	23.6
17:45:05	24.4	25.2	24.7	24.3	24.3	24.3	25.2	22.9	25.3	23.4	23.1	23.5	23.8	23.5	24.6	24.5	24.2	20.8	19.8	21.3	23.6	23.7	21.2	20.9	20.3	20.3	21.4	22.0	21.8	24.1	23.4	23.1
18:00:05	23.8	24.7	24.0	23.7	23.8	23.8	24.8	22.3	24.5	22.4	22.4	22.9	23.1	22.9	24.0	24.0	23.6	20.7	19.5	20.9	23.1	23.1	20.9	20.6	20.1	20.1	21.0	21.3	21.3	23.0	22.9	22.6
18:15:05	23.2	24.2	23.4	22.9	23.1	23.4	24.1	22.0	24.0	21.9	21.9	22.3	22.6	22.3	23.5	23.5	23.0	20.6	19.3	20.5	22.8	22.4	20.6	20.2	19.8	19.8	20.7	20.9	20.9	22.6	22.7	22.1
18:30:05	22.7	23.6	22.9	22.4	22.7	22.7	23.6	21.5	23.0	21.6	21.6	21.8	22.1	21.8	22.9	23.0	22.5	20.3	19.2	20.1	22.3	21.8	20.3	19.8	19.6	19.4	20.5	20.4	20.4	22.2	22.6	21.7
18:45:05	22.2	23.3	22.5	22.0	22.2	22.2	22.9	20.7	22.2	21.7	21.0	21.3	21.7	21.3	22.6	22.8	21.9	20.1	19.0	20.2	21.6	21.4	20.2	19.6	19.5	19.2	20.3	20.1	20.3	21.7	22.4	21.3
19:00:05	21.7	23.0	22.2	21.9	21.7	21.8	22.8	20.3	21.8	21.6	20.6	21.0	21.5	21.3	22.2	22.4	21.5	20.1	18.7	20.0	21.1	21.0	20.1	19.4	19.2	19.1	20.1	19.8	20.1	21.4	22.2	21.0
19:15:05	21.5	22.9	22.1	21.7	21.5	21.5	22.3	20.2	21.5	21.4	20.3	20.8	21.1	21.4	22.0	22.3	21.1	19.9	18.5	19.9	20.7	20.9	20.1	19.3	19.0	19.0	19.8	19.8	19.7	20.7	21.8	20.8
19:30:05	21.4	22.9	21.8	21.1	21.5	21.2	22.2	20.1	21.0	21.2	20.2	20.6	20.7	21.1	21.5	22.0	20.9	19.8	18.1	19.8	20.3	20.9	20.0	19.3	18.9	19.0	19.8	19.6	19.3	20.4	21.5	20.6
19:45:05	21.1	22.8	21.5	20.9	21.1	20.9	21.9	20.2	21.1	20.9	20.8	20.3	20.4	21.1	21.2	21.7	20.5	19.8	17.8	19.7	20.2	20.9	19.9	19.3	18.8	19.0	19.8	19.6	19.1	20.1	21.4	20.4
20:00:05	20.9	22.1	21.4	20.8	20.9	21.0	21.5	20.2	20.9	20.6	20.9	20.3	20.6	21.0	21.0	21.5	20.3	19.8	17.7	19.7	20.0	20.6	19.7	19.3	18.8	18.6	19.7	19.4	19.2	20.0	21.2	20.3
20:15:05	20.6	21.9	21.6	20.7	20.9	21.0	21.3	20.0	20.8	20.4	20.8	20.1	20.4	21.0	20.9	21.3	20.2	19.3	17.6	19.6	20.0	20.4	19.7	19.2	18.5	18.6	19.4	19.0	19.2	20.0	21.1	20.2
20:30:05	20.3	21.6	21.5	20.5	20.8	21.0	21.2	20.0	20.6	20.3	20.7	19.8	20.3	20.8	20.6	21.4	20.0	18.8	17.4	19.6	20.1	20.1	19.4	19.2	18.5	18.5	19.2	18.9	19.1	19.8	20.9	20.0
20:45:05	20.3	21.6	21.1	20.3	20.9	20.6	21.2	20.1	20.5	20.0	20.4	19.8	20.6	20.8	20.6	20.9	20.0	18.8	17.2	19.4	19.8	19.8	19.3	19.2	18.4	18.4	19.1	18.6	18.8	19.7	20.8	19.9
21:00:05	20.2	21.5	21.1	20.2	20.7	20.4	21.1	19.7	20.3	19.8	20.4	19.7	20.6	20.7	20.7	20.7	19.7	18.8	16.9	19.2	19.9	19.9	19.2	19.0	18.5	18.4	19.0	18.4	18.5	19.6	20.6	19.8
21:15:05	20.1	21.5	21.3	20.2	20.3	20.2	20.9	19.6	20.3	19.9	20.4	19.5	20.5	20.5	20.7	20.4	19.6	18.7	16.8	19.3	19.7	19.8	19.0	18.7	18.4	18.3	18.9	18.2	18.0	19.3	20.3	19.7
21:30:05	19.9	21.5	21.2	20.0	20.2	20.0	20.6	19.4	20.3	20.0	20.5	19.3	20.5	20.3	20.8	20.3	19.4	18.6	17.2	19.3	19.8	19.9	18.8	18.7	18.3	18.3	18.8	17.8	18.0	19.2	20.0	19.6
21:45:05	19.8	21.4	21.3	19.9	20.1	19.6	20.4	19.4	20.1	19.8	20.4	19.1	20.3	19.8	20.8	20.4	19.2	18.6	17.3	19.2	19.8	19.9	18.7	18.6	18.3	18.2	18.7	17.6	17.9	19.2	19.8	19.5
22:00:05	19.6	21.2	20.6	19.9	20.2	19.6	20.3	19.3	20.1	19.8	20.4	19.0	20.1	19.9	20.6	20.1	19.3	18.4	17.4	19.2	19.8	19.8	18.6	18.5	18.3	18.2	18.6	17.8	18.0	19.0	19.8	19.4
22:15:05	19.3	21.0	20.4	20.0	20.2	19.4	20.1	19.2	19.9	19.8	20.3	18.8	20.1	19.8	20.5	20.1	19.6	18.2	17.4	19.1	19.8	19.8	18.6	18.4	18.4	18.0	18.6	18.0	18.1	19.0	19.7	19.3
22:30:05	19.2	20.9	20.3	19.8	20.3	19.6	20.1	19.1	19.8	19.6	20.3	18.9	19.9	19.4	20.5	19.8	19.6	18.0	17.4	19.0	19.6	19.7	18.5	18.3	18.2	18.0	18.5	17.4	18.0	18.7	19.6	19.2
22:45:05	19.1	20.8	20.3	19.9	20.3	19.5	20.0	19.2	19.8	19.3	20.1	19.0	19.8	19.2	20.3	19.5	19.5	18.0	17.4	18.7	19.3	19.4	18.4	18.2	18.2	18.0	18.3	17.1	17.9	18.6	19.4	19.1
23:00:05	18.9	20.5	20.3	19.9	20.3	19.4	19.8	19.2	19.8	19.4	19.9	19.1	19.8	19.0	20.1	19.6	19.4	18.0	17.3	18.5	19.2	19.5	18.4	18.1	18.0	18.0	18.2	17.1	17.7	18.6	19.3	19.0
23:15:05	18.8	20.5	20.2	19.9	20.2	19.2	19.7	19.3	19.7	19.3	19.8	19.0	19.6	19.0	19.7	19.5	19.5	17.8	17.3	18.3	19.1	19.5	18.2	18.0	18.0	17.9	18.0	17.3	17.4	18.4	19.2	18.9
23:30:05	18.6	18.5	19.9	19.8	19.9	18.9	19.6	19.2	19.7	19.2	19.5	19.0	19.5	19.2	19.8	19.3	19.3	17.7	17.4	18.1	18.9	19.4	18.2	17.9	17.9	17.8	17.7	17.4	17.0	18.4	19.1	18.8
23:45:05	18.5	18.6	19.8	19.8	20.0	18.6	19.5	19.2	19.6	19.2	19.7	19.0	19.3	18.9	19.8	19.2	19.4	17.6	17.4	18.0	18.6	19.3	18.2	17.9	17.9	17.6	17.8	17.4	16.9	18.2	19.0	18.7
DAY AV	21.8	22.6	22.4	21.9	22.1	22.6	22.8	21.5	22.0	21.0	21.1	21.0	21.5	21.4	22.3	22.2	21.9	19.6	18.6	20.1	21.2	21.3	20.5	19.8	19.0	18.8	19.0	19.7	19.7	21.4	21.0	21.0

May 2019 House B average indoors temperature calculation spreadsheet

DATA LOG 3: HOUSE B

Time	Temperatures																															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	AV
0:00:05	20.6	21.0	20.9	22.5	21.0	21.7	20.4	21.5	20.7	21.1	21.7	23.4	20.8	20.8	20.9	21.5	21.0	20.9	19.8	19.0	19.9	19.9	20.5	19.3	19.5	19.2	19.3	19.0	18.7	18.3	19.8	20.5
0:15:05	20.4	20.9	20.9	21.6	20.9	21.8	20.6	21.3	20.7	21.1	21.3	22.3	20.6	20.7	20.8	21.4	20.6	20.9	19.8	18.7	19.7	19.8	20.4	19.2	19.4	19.2	19.1	18.9	18.5	18.2	19.8	20.3
0:30:05	20.3	20.9	20.7	21.7	20.9	21.7	20.6	21.1	20.6	20.9	21.0	21.7	20.5	20.5	20.6	21.3	20.3	20.8	19.8	18.6	19.4	19.6	20.4	19.1	19.2	19.0	18.9	19.1	18.4	18.2	19.7	20.2
0:45:05	20.3	21.1	20.6	21.4	20.7	21.5	20.6	21.1	20.4	20.9	20.9	21.4	20.4	20.3	20.5	21.2	20.4	20.8	19.7	18.4	19.3	19.4	20.3	19.0	19.2	18.8	18.8	19.0	18.4	18.1	19.5	20.1
1:00:05	19.8	20.7	20.8	21.3	20.8	21.2	20.6	21.1	20.3	20.9	20.7	21.2	20.4	20.3	20.4	21.0	20.4	20.5	19.4	18.3	19.2	19.3	20.3	18.9	19.0	18.7	18.7	18.8	18.4	18.2	19.5	20.0
1:15:05	19.4	20.9	20.7	21.2	20.8	21.1	20.4	20.9	20.2	20.7	20.5	21.0	20.3	20.2	20.4	20.9	20.3	20.5	19.2	18.4	19.2	19.3	20.2	18.8	18.8	18.6	18.5	18.7	18.3	18.1	19.5	19.9
1:30:05	19.2	20.7	20.6	21.2	20.9	20.9	20.5	20.8	20.2	20.6	20.4	20.8	20.3	20.2	20.4	20.7	20.3	20.3	19.2	18.3	19.2	19.2	20.0	18.7	18.6	18.6	18.3	18.6	18.3	18.1	19.3	19.8
1:45:05	19.0	20.8	20.5	21.1	20.6	20.9	20.4	20.7	20.1	20.5	20.3	20.5	20.3	20.1	20.5	20.5	20.3	20.3	19.0	18.3	19.0	19.2	19.9	18.6	18.6	18.6	18.4	18.6	18.3	18.1	19.2	19.7
2:00:05	18.8	20.1	20.7	21.0	20.5	20.7	20.3	20.6	20.1	20.4	20.2	20.4	20.2	19.9	20.4	20.4	20.2	20.2	18.9	18.2	18.8	18.8	19.7	18.5	18.7	18.5	18.6	18.5	18.2	18.1	19.2	19.6
2:15:05	18.8	19.7	20.8	20.9	20.5	20.5	20.3	20.5	20.1	20.3	20.0	20.3	20.1	19.8	20.3	20.3	20.2	20.1	18.9	18.1	18.7	18.5	19.7	18.4	18.6	18.4	18.3	18.3	18.1	18.0	19.1	19.5
2:30:05	18.7	19.4	20.7	20.9	20.5	20.4	20.3	20.4	19.8	20.2	19.9	20.2	20.1	19.9	20.2	20.2	20.1	20.2	18.7	18.0	18.6	18.6	19.5	18.4	18.4	18.3	18.4	18.3	18.0	17.9	18.9	19.4
2:45:05	18.6	19.5	20.5	20.8	20.4	20.3	20.3	20.4	19.6	20.3	19.8	20.1	20.0	19.8	20.2	20.2	20.0	20.2	18.6	18.0	18.5	18.6	19.4	18.3	18.3	18.4	18.2	18.1	17.8	17.9	18.9	19.4
3:00:05	18.6	19.2	20.4	20.8	20.3	20.3	20.3	20.2	19.4	20.0	19.8	20.0	20.0	20.0	20.1	20.2	19.9	20.2	18.6	18.2	18.4	18.8	19.5	18.2	18.3	18.2	18.1	18.1	17.6	17.9	18.8	19.3
3:15:05	18.5	19.0	20.3	20.7	20.3	20.3	20.4	20.0	19.1	19.9	19.5	19.9	19.9	19.7	20.0	20.1	19.9	20.2	18.6	18.0	18.3	18.7	19.3	18.0	18.3	18.1	18.0	18.1	17.6	17.9	18.7	19.2
3:30:05	18.2	18.6	20.3	20.6	20.2	20.3	20.2	19.9	18.9	19.9	19.4	19.8	19.8	19.7	19.9	20.1	19.8	19.8	18.2	18.0	18.1	18.6	19.3	18.0	18.1	18.1	18.0	18.2	17.6	17.8	18.7	19.1
3:45:05	17.8	18.4	20.4	20.4	20.0	20.2	20.2	19.8	19.0	19.8	19.3	19.7	19.6	19.6	19.8	20.0	19.7	19.8	18.2	18.0	18.1	18.6	19.2	18.0	18.0	18.0	18.0	18.1	17.5	17.9	18.6	19.0
4:00:05	17.6	18.2	19.9	20.3	19.9	20.2	20.0	19.8	19.0	19.8	19.3	19.6	19.6	19.5	19.8	19.9	19.7	19.7	18.2	17.9	18.2	18.6	19.2	17.9	18.0	18.0	18.0	18.1	17.5	17.7	18.6	19.0
4:15:05	17.4	18.0	20.1	20.2	19.9	20.1	19.8	19.7	19.1	19.8	19.2	19.5	19.4	19.5	19.7	19.8	19.6	19.6	18.2	17.9	18.3	18.4	19.1	17.8	18.0	18.0	18.0	18.0	17.3	17.6	18.5	18.9
4:30:05	17.1	17.9	20.0	20.1	19.9	20.1	19.6	19.6	19.2	19.8	19.2	19.5	19.3	19.4	19.5	19.8	19.5	19.6	18.0	17.8	18.2	18.1	19.0	17.7	18.0	18.0	18.0	18.0	17.3	17.6	18.3	18.8
4:45:05	17.0	17.9	20.0	20.1	19.8	20.8	19.8	19.5	19.1	19.8	19.2	19.3	19.5	19.6	19.7	20.0	19.6	19.7	17.9	18.0	18.2	18.3	19.2	17.7	18.0	18.0	17.9	18.4	17.4	18.5	18.4	18.9
5:00:05	16.8	17.7	19.8	20.0	19.8	21.0	21.0	21.3	19.2	21.5	19.2	19.2	21.3	21.2	21.5	21.6	21.3	19.4	18.0	19.8	18.2	20.6	21.2	19.5	18.0	18.0	19.7	19.5	17.3	19.8	20.3	19.8
5:15:05	16.7	17.6	19.8	19.9	19.8	20.4	19.9	19.8	19.1	20.3	19.1	19.2	19.7	19.8	20.3	20.0	20.3	19.5	18.0	18.6	19.6	19.2	19.4	18.2	17.9	18.0	18.6	18.6	19.1	18.3	19.0	19.2
5:30:05	16.6	17.4	19.9	19.8	19.8	20.5	19.8	19.8	19.0	20.2	18.8	19.1	19.4	19.8	19.9	19.9	20.2	19.2	17.9	18.1	19.0	19.1	19.3	18.1	18.0	17.9	18.3	18.2	18.0	18.1	18.6	19.0
5:45:05	16.5	17.4	19.5	19.8	19.8	20.1	19.5	19.2	19.0	19.9	18.5	19.0	19.1	19.6	19.5	19.6	19.8	19.2	17.9	17.9	18.5	18.6	19.2	17.8	18.0	18.0	18.0	17.9	17.7	17.8	18.3	18.7
6:00:05	16.5	17.2	19.4	19.7	19.8	20.0	19.4	18.9	18.9	19.8	18.4	19.1	18.7	19.4	19.3	19.7	19.5	19.1	17.8	17.9	18.5	18.6	19.1	18.6	18.0	17.9	17.8	17.7	17.4	18.0	18.2	18.7
6:15:05	16.7	17.2	19.1	19.7	19.7	19.8	19.5	18.6	18.9	19.6	18.4	19.0	18.9	19.3	19.6	19.3	19.4	19.1	17.9	18.3	19.3	18.5	19.3	18.8	18.0	17.7	17.7	17.9	17.4	18.1	18.0	18.7
6:30:05	17.1	17.1	19.0	19.6	19.7	20.2	19.6	18.7	18.8	19.6	18.3	18.9	19.0	19.3	19.4	19.7	19.8	19.1	18.2	18.5	19.4	18.6	19.7	18.5	17.9	17.6	17.6	18.6	17.4	18.4	18.5	18.8
6:45:05	17.4	17.1	19.0	19.6	19.8	20.8	19.9	19.3	19.2	20.4	18.3	19.0	19.7	19.2	20.1	20.1	20.6	19.1	18.3	18.6	19.2	19.0	20.1	18.6	17.9	17.6	18.0	19.2	18.4	18.6	19.1	19.1
7:00:05	17.8	17.4	19.0	19.8	20.1	21.1	20.5	19.8	19.9	20.7	18.4	19.0	19.9	19.4	20.2	20.6	20.6	19.2	18.3	18.9	19.1	19.7	18.7	19.1	18.0	17.7	18.4	19.1	18.7	18.8	19.8	19.3
7:15:05	18.5	17.7	19.4	20.0	20.0	20.6	19.8	18.9	19.2	19.9	18.4	19.6	19.8	20.3	20.3	20.2	19.8	19.2	19.2	18.0	18.3	19.1	18.6	19.2	18.2	19.8	18.3	19.2	18.6	18.2	19.3	19.2
7:30:05	20.9	18.6	19.6	20.2	20.0	20.9	20.0	18.7	19.2	19.5	18.5	20.3	19.1	19.5	19.7	19.9	19.8	19.2	19.4	18.4	18.1	18.5	18.6	18.6	18.8	20.4	17.7	18.9	18.3	18.1	19.6	19.3
7:45:05	22.9	21.8	20.2	20.3	20.3	21.0	20.1	19.2	19.7	20.3	19.8	20.3	19.2	19.2	20.5	20.8	20.0	19.5	19.8	20.0	18.1	19.7	18.6	19.2	18.9	20.0	17.7	19.7	18.6	18.3	19.8	19.8
8:00:05	24.6	23.5	20.4	21.4	20.9	22.3	20.2	19.2	20.5	20.4	19.4	19.9	19.6	19.2	20.2	21.0	20.3	20.4	20.2	21.2	18.1	19.9	18.6	19.6	19.3	20.3	17.9	19.8	18.8	18.6	19.8	20.2
8:15:05	25.9	25.0	21.0	24.9	22.3	21.6	23.4	19.9	22.3	20.2	21.4	20.0	20.9	19.2	21.6	21.3	20.9	20.4	21.6	22.5	18.3	21.6	19.1	19.8	20.3	20.8	18.1	19.9	19.1	20.0	20.3	21.1
8:30:05	27.5	27.4	21.7	26.3	23.2	21.8	21.4	20.1	21.1	20.5	22.6	21.3	20.6	19.5	21.4	22.0	21.9	21.7	20.6	21.8	18.6	21.2	20.7	21.7	21.5	20.9	18.0	20.1	19.9	21.0	21.4	21.6
8:45:05	27.6	27.6	21.9	22.7	23.6	22.2	23.8	20.9	20.9	20.4	21.7	21.1	20.6	19.8	21.5	22.1	21.9	21.1	21.2	25.3	19.5	22.1	23.6	21.2	21.1	20.9	18.6	20.3	24.1	24.0	21.0	22.1
9:00:05	27.1	27.3	22.8	22.4	23.0	21.8	25.0	21.7	21.4	20.6	25.8	22.1	21.5	20.5	21.6	21.9	23.8	20.9	21.8	26.2	22.9	24.2	23.4	20.4	20.5	21.7	18.6	20.2	23.4	24.6	20.9	22.6
9:15:05	29.1	29.6	23.8	23.1	22.8	22.1	24.7	22.0	21.8	20.3	22.7	24.2	21.7	20.4	26.2	23.0	22.2	21.4	22.9	27.1	24.0	25.4	23.4	20.6	20.9	21.3	18.2	20.8	23.2	24.4	21.7	23.1
9:30:05	30.1	30.6	25.3	23.7	23.8	22.4	24.2	22.9	22.9	22.1	22.8	22.4	24.4	20.8	27.0	24.4	21.5	21.1	24.0	27.8	23.3	26.0	22.9	21.5	20.3	22.2	18.6	20.8	23.2	25.4	21.9	23.6
9:45:05	30.9	31.6	25.5	25.7	26.2	25.4	27.3	23.1	23.5	23.5	24.7	22.7	24.4	21.2	25.4	25.4	21.6	22.1	25.0	27.8	23.4	24.9	24.5	22.5	20.4	22.2	18.9	20.9	23.5	27.2	23.9	24.4
10:00:05	31.2	32.4	28.2	25.8	25.1	25.3	31.9	28.4	24.0	23.0	27.7	23.7	24.8	21.6	29.4	25.9	22.3	21.2	24.8	28.1	25.5	27.5	23.5	22.9	20.7	23.0	19.0	20.4	24.0	27.9	24.0	25.3
10:15:05	30.8	32.7	29.3	25.8	27.5	27.7	31.7	26.5	24.2	24.9	28.4	23.8	26.3	21.8	27.1	24.4	24.5	22.4	24.2	26.4	24.7	24.9	23.0	24.3	19.9	22.0	20.0	21.3	25.1	29.0	29.2	25.6
10:30:05	30.6	34.5	29.0	26.2	30.6	28.8	33.1	29.8	26.3	24.5	28.6	25.2	25.5	21.8	27.5	24.0	25.8	23.2	23.8	28.5	24.1	25.9	23.8	23.2	20.2	23.0	20.3	21.2	27.4	31.5	29.8	26.4
10:45:05	30.5	33.7	31.2	26.3	30.2	30.9	34.3	27.9	28.6	24.4	27.1	25.4	26.2	23.5	27.0	24.7	27.2	22.5	23.0	29.1	27.0	26.0	28.0	23.2	21.5	23.9	20.9	21.5	26.2	32.5	26.6	26.8
11:00:05	30.9	34.0	30.7	26.3	29.3	31.2	31.5	26.8	29.1	24.7	27.0	25.9	28.1	23.7	27.2	28.5	30.2	21.8	22.9	27.8	26.2	27.6	25.6	23.5	21.5	22.9	21.4	22.9	26.4	32.7	25.2	26.9
11:15:05	30.5	33.4	31.5	26.7	27.7	30.5	31.4	26.2	28.2	23.7	26.7	28.5	26.7	24.2	28.0	27.5	31.7	21.7	23.6	26.0	27.7	26.6	24.7	23.7	22.3	24.0	21.8	24.2	29.8	33.0	24.9	27.0
11:30:05	30.2	32.1	30.3	26.2	30.9	28.0	32.0	28.8	28.5	26.2	28.6	25.9	29.4	26.3	28.7	28.6	30.1	22.2	24.6	27.6	27.3	26.3	25.4	24.0	21.5	25.4	22.5	25.8	28.3	32.0	26.0	27.4
11:45:05	30.8	31.1	31.1	26.4	29.3	28.5	32.6	30.8	28.9	27.5	26.8	26.5	30.0	28.1	27.1	30.2	30.2	22.9	24.6	25.7	28.0	29.0	27.9	24.4	20.7	24.9	22.3	24.7	27.7	30.5	26.4	27.6
12:00:05	29.8	31.0	31.8	27.0	29.3	30.3	31.4	31.6	28.1	26.6	27.0	27.6	29.7	28.3	27.2	28.6	28.0	24.3	24.6	25.7	29.5	28.2	29.5	25.5	20.2	24.0	22.0	23.2	26.3	27.7	29.3	27.5
12:15:05	30.1	30.4	30.1	26.3	27.9	29.6	31.8	29.3	29.8	27.9	26.2	29.2	27.0	28.9	28.3	28.5	29.3	23.5	24.5	25.4	28.5	27.8	28.7	26.0	21.6	24.2	21.9	24.8	26.1	28.0	30.4	27.5
12:30:05	30.2	31.0	30.5	26.2	30.0	31.2	30.1	27.6	30.3	28.2	27.0	28.6	28.5	29.8	29.5	29.2	30.3	22.4	25.4	25.7	28.9	27.2	29.4	26.6	25.6	23.7	22.0	26.1	26.3	28.9	28.8	27.9
12:45:05	30.7	32.1	30.2	27.1	28.6	32.6	33.1	30.8	30.3	27.0	27.7	26.8	29.2	27.5	30.0	29.1	31.0	21.9	23.3	26.7	29.5	27.5	27.1	28.1	24.3	22.9	22.3	26.2	26.8	29.4	28.5	28.0
13:00:05	31.3	32.4	30.0	27.8	29.8	33.2	33.8	29.8	30.6	28.0	27.0	25.7	30.1	28.0	29.8	29.9	32.1	23.1	22.9	27.5	29.6	27.9	25.5	29.5	26.9	22.9	23.1	26.9	27.2	30.9	27.0	28.4
13:15:05	31.2	32.6	30.1	29.4	31.2	31.8	32.4	31.0	31.6	27.5	26.3	25.9	29.5	28.1	29.1	29.8	32.6	26.8	22.4	29.0	29.5	29.7	24.6	29.4	24.7	23.1	24.6	28.9	27.3	31.1	29.0	28.7
13:30:05	31.5	33.6	30.5	30.9	30.9	31.9	33.5	30.8	32.1	26.6	26.4	27.9	30.5	27.9	31.0	30.4	32.4	27.3	22.7	27.8	30.7	30.5	24.7	28.2	24.3	22.8	24.9	27.5	28.0	32.1	29.5	29.0
13:45:05	31.2	34.3	30.9	32.1	32.0	32.0	34.1	31.7	33.0	26.7	27.1	28.2	28.1	30.2	31.8	30.0	32.4	24.9	22.2	26.4	29.9	28.8	26.1	29.7	24.3	22.0	25.4	27.4	28.8	29.9	30.9	29.1
14:00:05	30.5	34.7	31.7	32.7	31.8	32.6	33.0	33.0	32.8	26.7	26.4	29.5	26.4	30.8	32.8	29.0	30.0	23.5	21.2	26.2	29.8	30.2	26.6	29.5	23.2	22.1	25.4	27.7	28.0	28.5	30.9	28.9
14:15:05	29.3	33.2	31.2	30.3	32.2	33.9	32.9	33.0	32.6	26.3	29.8	29.7	28.9	31.0	32.8	29.5	30.4	25.4	20.9	27.7	29.9	29.7	27.1	28.1	23.1	21.9	25.6	27.4	27.3	28.5	30.2	29.0
14:30:05	30.8	32.2	32.4	30.4	31.6	33.3	33.0	31.1	33.2	26.4	27.7	29.9	27.9	31.3	32.1	30.5	29.3	24.5	20.8	26.9	29.9	30.1	27.3	28.1	23.8	22.6	26.2	28.0	26.3	30.4	31.2	29.0
14:45:05	30.3	32.0	32.3	30.5	30.2	33.9	33.2	32.0	32.6	26.9	27.6	31.2	30.6	31.1	32.4	29.7	30.8	24.5	21.2	27.2	30.9	29.1	26.5	28.6	27.5	25.1	27.0	29.5	27.3	29.9	29.9	29.4
15:00:05	29.7	30.5	31.2	29.8	31.7	33.3	33.2	30.9	31.0	26.8	29.5	28.8	28.6	32.1	32.0	28.5	29.8	25.1	21.4	26.4	31.1	29.7	26.0	27.2	27.1	26.7	26.8	29.5	27.0	29.3	29.8	29.0
15:15:05	30.2	30.2	30.7	29.8	28.8	33.8	32.2	31.6	32.6	27.0	29.8	29.2	28.4	31.4	30.8	28.8	30.4	24.5	22.3	25.8	31.7	28.1	25.9	27.1	24.6	24.7	26.6	29.1	27.4	30.5	29.5	28.8
15:30:05	30.3	30.9	30.8	29.6	31.9	31.6	32.6	32.7	32.6	27.0	29.9	29.8	30.0	30.6	30.6	29.6	29.6	24.5	23.3	25.0	30.8	27.7	25.8	27.4	24.3	23.5	26.9	28.6	26.6	29.5	30.4	28.9
15:45:05	30.1	30.5	30.5	29.0	31.1	31.1	31.8	26.6	32.1	27.7	27.6	30.0	29.3	30.5	30.5	28.1	29.6	25.5	22.5	24.9	30.7	29.5	25.5	26.2	26.5	21.7	26.3	27.8	26.3	29.7	30.6	28.4
16:00:05	29.0	29.9	30.1	26.6	30.4	29.9	31.2	25.3	31.0	26.5	29.0	29.6	28.2	29.8	31.0	28.1	29.0	25.7	22.7	24.5	31.3	28.4	25.3	24.8	26.9	22.5	26.3	27.9	26.1	27.5	31.3	27.9
16:15:05	27.7	29.3	29.6	27.9	29.3	29.8	29.9	25.3	31.3	26.4	29.3	29.5	30.0	29.6	31.0	29.5	29.1	24.0	23.4	24.4	28.8	26.3	24.0	24.5	27.6	22.5	25.2	27.5	26.8	27.3	32.1	27.7
16:30:05	27.7	29.3	29.6	27.8	28.6	29.4	28.2	25.4	31.5	27.0	28.8	27.4	28.3	29.5	30.5	29.9	27.6	23.7	22.0	23.4	27.2	26.3	23.6	25.6	26.9	25.1	26.2	26.4	27.3	28.1	29.2	27.3
16:45:05	27.9	29.7	28.8	26.9	29.9	29.5	27.4	25.4	30.5	26.5	29.1	28.7	28.7	28.5	30.4	29.4	28.1	24.0	22.2	22.8	26.8	26.5	22.6	24.9	23.7	30.6	25.0	25.3	25.4	27.2	28.1	27.1
17:00:05	28.5	29.7	28.6	26.6	29.5	27.7	26.8	25.1	29.7	26.5	27.6	27.6	28.9	26.9	29.6	28.7	27.7	25.8	22.6	22.7	26.8	26.7	22.7	24.5	23.0	31.8	24.9	24.3	25.9	26.0	27.5	26.8
17:15:05	27.1	28.2	27.8	26.2	28.5	26.8	27.0	25.6	28.7	25.4	27.0	26.3	27.3	25.9	27.6	27.7	26.4	24.7	22.5	22.7	25.8	26.2	22.7	23.7	22.1	30.0	24.7	24.0	24.5	25.1	27.1	26.0
17:30:05	26.0	26.9	27.1	25.2	27.4	25.7	26.7	25.0	27.7	24.7	25.8	25.7	25.9	25.7	26.2	27.0	25.8	22.9	22.5	23.0	25.7	26.1	22.6	22.9	21.7	31.5	23.5	24.2	24.6	25.3	26.4	25.4
17:45:05	25.8	26.5	26.5	25.2	26.3	25.4	25.6	24.4	26.6	24.7	24.8	25.2	25.5	25.0	25.8	26.7	24.9	22.7	22.3	23.0	25.1	24.7	22.6	22.8	21.6	32.2	22.8	23.5	24.1	25.0	26.0	24.9
18:00:05	25.4	26.0	26.0	24.7	26.0	24.7	25.0	24.1	25.7	23.4	24.0	24.4	24.7	24.4	25.4	26.3	24.7	24.7	22.1	22.6	24.6	24.5	22.1	22.2	21.4	31.2	22.4	23.0	23.9	24.4	25.0	24.5
18:15:05	25.1	25.4	25.4	23.8	25.4	24.8	24.7	23.5	25.2	23.9	23.9	23.9	24.2	24.2	25.1	25.9	24.8	24.2	21.7	22.1	24.2	23.8	21.9	21.7	21.5	30.2	22.2	22.7	23.4	24.1	25.2	24.1
18:30:05	24.7	25.7	25.1	23.7	24.7	24.7	24.2	23.1	24.3	25.2	24.2	23.3	23.9	24.3	24.1	25.7	24.5	23.7	21.9	22.3	23.6	23.9	21.8	22.1	22.1	31.2	22.9	22.1	23.0	23.8	26.0	24.1
18:45:05	24.6	25.8	24.8	23.5	24.4	24.3	24.1	22.3	23.8	25.3	23.8	23.0	23.6	24.0	24.0	25.7	24.0	23.8	21.9	22.6	23.0	23.7	22.0	22.2	21.9	28.0	22.8	21.5	23.8	23.2	24.9	23.8
19:00:05	24.2	25.5	24.6	23.4	23.5	23.8	24.5	22.6	23.4	25.2	23.1	22.9	23.5	23.9	24.3	25.3	23.9	23.4	21.8	22.3	22.6	23.9	22.1	22.2	21.1	23.5	22.2	21.6	24.0	22.8	25.2	23.4
19:15:05	24.6	25.1	24.2	23.3	23.7	23.0	24.3	22.8	23.6	24.7	22.2	22.9	23.0	24.3	24.3	24.8	23.5	26.2	21.6	22.1	22.7	23.7	22.7	22.2	21.3	23.7	22.6	21.6	23.5	22.5	24.3	23.4
19:30:05	24.0	25.3	23.7	23.0	23.8	27.3	24.2	22.4	23.7	24.8	32.3	22.9	22.6	23.9	24.0	24.4	22.9	30.9	21.3	22.0	22.6	23.9	23.2	22.9	21.3	23.5	22.6	21.4	23.4	22.5	24.4	23.9
19:45:05	24.0	24.9	23.6	22.7	23.6	33.4	24.4	22.6	24.3	24.7	34.5	22.8	22.3	23.2	23.4	24.0	22.3	31.0	20.6	22.3	22.2	24.2	23.2	23.1	20.7	23.7	23.4	22.2	22.9	22.6	24.2	24.1
20:00:05	23.6	25.0	23.5	22.7	22.9	35.2	23.8	22.2	23.9	24.6	33.1	23.3	22.8	23.5	23.5	24.2	23.4	30.0	21.2	22.6	22.2	24.5	22.8	23.5	21.5	23.2	23.3	21.8	23.3	23.0	24.6	24.2
20:15:05	23.3	24.7	23.6	22.7	23.3	33.3	23.4	22.2	24.3	24.6	33.3	23.6	22.6	23.5	23.2	24.6	22.7	30.5	20.9	22.6	22.9	23.9	23.1	23.3	21.2	22.4	22.8	21.3	22.9	23.2	24.7	24.0
20:30:05	23.2	24.7	23.5	23.0	23.5	35.2	23.3	22.2	23.5	30.6	31.0	23.0	23.3	23.3	23.1	24.5	23.2	27.8	22.0	22.3	22.9	23.2	22.9	22.7	20.9	22.4	22.5	21.7	22.8	23.5	24.1	24.1
20:45:05	23.5	24.4	23.3	22.5	23.1	25.4	23.7	22.1	23.8	29.6	31.1	23.0	23.4	24.3	22.9	24.6	23.5	31.9	21.9	22.5	22.7	22.8	22.7	22.7	20.9	22.2	21.8	21.9	22.2	23.2	23.6	23.8
21:00:05	23.8	23.9	23.5	23.4	23.2	25.6	24.2	22.2	23.5	28.5	29.9	24.0	24.5	24.7	23.4	25.0	22.9	29.2	21.3	22.6	22.9	22.9	22.2	22.9	20.9	22.3	21.8	21.9	21.9	22.9	23.6	23.7
21:15:05	23.9	24.4	24.0	23.5	23.5	25.2	23.7	21.7	23.5	27.4	30.7	24.0	24.2	24.3	23.7	24.6	22.5	27.9	20.9	23.3	22.7	22.9	21.3	22.6	21.2	21.8	20.9	21.8	21.8	22.9	23.4	23.6
21:30:05	23.5	24.7	24.4	23.7	22.8	24.6	24.7	21.8	23.4	26.1	34.9	23.1	23.9	23.6	24.1	24.2	22.3	25.8	20.8	22.9	23.4	22.9	20.9	22.2	21.2	21.8	20.8	21.1	21.5	23.1	22.9	23.5
21:45:05	23.1	24.8	24.7	23.5	23.4	23.9	24.2	22.1	23.3	25.4	31.4	22.8	23.7	23.3	24.7	23.9	22.0	24.7	20.9	22.6	22.9	23.1	20.6	22.0	20.9	21.7	20.4	20.7	21.4	22.9	22.9	23.2
22:00:05	22.6	24.6	24.6	23.4	23.9	23.5	23.6	22.5	23.2	24.8	29.6	22.2	23.0	23.5	24.3	23.2	21.8	24.7	20.9	21.9	22.7	22.6	20.8	21.7	21.0	21.8	20.7	21.4	21.6	22.6	23.0	23.0
22:15:05	22.0	23.9	24.2	23.0	23.6	22.9	23.5	22.9	22.8	24.0	28.1	22.2	23.1	23.2	24.0	22.9	22.0	23.9	20.8	21.8	22.2	22.3	20.9	21.5	22.1	21.7	20.9	20.9	20.8	22.5	23.0	22.7
22:30:05	21.9	23.7	23.5	22.3	23.7	22.8	23.1	22.7	22.4	23.3	27.2	21.9	22.7	22.9	23.7	22.7	21.5	23.1	20.3	21.9	22.2	22.1	20.8	21.1	21.9	21.3	20.5	20.5	20.0	21.9	22.3	22.3
22:45:05	21.6	23.1	23.8	22.1	23.5	22.2	22.9	22.5	22.3	22.7	26.1	22.1	22.2	23.0	23.3	22.5	21.2	22.3	19.8	21.6	22.2	21.3	20.0	20.9	21.9	21.6	19.8	20.4	19.6	20.9	22.3	22.0
23:00:05	21.5	22.8	23.5	21.8	23.0	21.6	22.7	22.3	21.7	22.4	25.1	22.4	22.3	22.1	22.6	22.2	21.0	22.0	19.2	20.6	21.5	21.1	19.8	21.1	21.3	21.5	19.6	20.3	19.4	20.5	21.5	21.6
23:15:05	21.5	22.5	23.3	21.7	22.9	21.4	22.7	21.9	21.4	22.2	24.7	21.8	21.6	21.7	22.0	22.2	21.0	21.7	19.0	20.2	21.0	20.9	19.7	20.0	20.8	21.3	19.4	20.4	19.1	20.2	21.0	21.3
23:30:05	21.4	21.1	22.9	21.6	22.6	21.1	22.3	21.7	21.2	21.9	24.0	21.0	21.1	21.9	21.6	22.2	21.0	20.6	18.9	19.8	20.5	20.7	19.6	19.7	19.7	20.9	19.2	19.4	18.8	20.0	20.8	20.9
23:45:05	21.1	20.9	22.6	21.3	22.5	20.7	21.8	20.9	21.0	21.8	24.1	20.9	20.9	21.2	21.5	21.1	20.9	20.4	18.8	19.8	20.2	20.6	19.4	19.8	19.3	19.8	19.0	19.0	18.4	19.9	20.5	20.6
DAY AV	24.2	25.2	24.7	23.8	24.5	25.2	25.1	23.6	24.2	23.5	24.6	23.4	23.6	23.4	24.4	24.2	23.8	22.7	20.9	22.3	23.1	23.2	22.2	22.0	21.0	22.0	20.9	21.8	22.2	23.3	23.5	23.3

May 2019 graphical temperature plot



July 2019 average outdoors temperature calculation spreadsheet

DATA LOG 1: OUTDOORS

Time	Temperatures																															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	AV
0:00:00	16.6	16.2	16.0	17.0	17.3	16.8	15.6	15.3	16.1	17.2	17.5	17.2	16.2	15.9	17.0	15.6	15.6	15.4	14.2	15.9	15.3	17.3	15.4	17.7	15.7	16.1	15.8	15.6	16.7	16.0	15.4	16.2
0:15:00	16.6	16.3	15.7	17.1	17.1	16.6	15.9	14.9	15.9	17.2	17.2	17.0	16.1	15.2	16.6	15.6	15.4	15.1	14.1	15.7	15.6	17.1	15.5	17.7	15.2	16.0	15.2	15.3	16.7	15.8	15.6	16.0
0:30:00	16.8	16.5	15.4	16.8	16.9	16.7	15.7	14.8	15.5	17.2	17.3	17.0	15.5	15.2	16.3	15.5	15.6	15.3	13.8	15.8	15.2	16.9	15.4	17.5	15.3	15.7	15.5	15.2	16.6	15.9	15.2	15.9
0:45:00	16.6	16.6	15.9	16.7	16.7	16.5	15.7	14.8	15.7	17.1	17.1	16.9	15.3	15.2	16.4	15.3	15.4	15.1	14.3	15.9	15.0	16.5	15.3	17.4	15.0	15.7	15.1	14.9	16.8	15.8	15.7	15.9
1:00:00	16.7	16.2	15.4	16.6	16.6	16.5	15.5	14.7	15.6	17.2	17.0	16.5	15.3	15.5	16.4	15.3	15.2	15.1	14.5	15.7	15.0	16.4	15.2	17.3	15.3	15.2	15.9	14.9	16.5	15.6	15.7	15.8
1:15:00	16.6	15.7	15.7	16.5	16.2	16.2	15.7	14.7	15.9	16.9	17.0	16.9	15.3	15.2	16.2	15.5	15.1	15.4	14.1	15.4	15.0	16.2	15.1	17.1	15.2	15.2	15.3	14.9	16.6	15.6	15.5	15.7
1:30:00	16.6	15.6	15.4	16.4	16.1	16.1	15.7	14.4	15.9	16.7	16.6	16.5	15.2	14.7	16.1	15.3	15.1	15.4	13.9	15.7	15.0	15.9	15.2	16.8	15.1	15.2	15.2	14.4	16.5	15.8	15.5	15.6
1:45:00	16.5	15.0	15.5	16.3	16.0	16.0	15.6	14.3	15.8	16.8	16.8	16.4	15.1	14.7	15.9	15.4	14.9	15.0	14.0	15.3	14.9	15.9	14.9	16.5	15.0	14.8	15.1	14.4	15.9	15.6	15.6	15.5
2:00:00	16.4	15.3	15.9	16.4	16.0	16.1	15.5	15.1	15.5	16.7	16.6	16.2	15.2	14.8	15.6	15.2	14.8	14.8	14.4	15.2	14.8	15.9	14.4	16.4	14.6	14.5	14.6	14.3	15.9	15.5	15.7	15.4
2:15:00	16.4	15.7	15.8	16.1	15.6	15.9	15.4	15.2	15.5	16.6	16.5	16.5	15.2	15.0	15.5	14.9	14.5	14.7	14.5	15.1	14.6	15.6	14.0	15.8	14.7	14.8	14.5	14.5	15.7	15.4	15.4	15.3
2:30:00	16.2	15.5	15.9	15.8	15.7	15.9	15.5	15.1	15.4	17.2	16.5	16.2	14.9	15.7	15.9	14.8	14.5	14.6	14.3	15.3	14.5	15.5	13.9	15.3	14.5	14.5	14.4	14.2	15.8	15.3	15.4	15.3
2:45:00	15.6	15.7	15.9	16.3	15.6	16.0	15.3	15.0	15.2	16.8	16.3	16.0	14.7	15.5	15.8	14.9	14.8	14.5	14.2	14.9	14.5	15.2	13.8	15.4	14.5	14.5	14.2	14.2	15.9	15.3	15.4	15.2
3:00:00	16.3	15.8	15.7	15.6	15.6	15.5	15.3	14.7	14.7	16.6	16.3	16.0	14.5	15.3	15.5	14.7	14.7	14.8	14.0	14.9	14.4	15.1	13.5	15.6	14.6	14.6	14.2	14.1	15.6	15.2	15.6	15.1
3:15:00	16.1	15.6	15.8	15.2	15.3	15.6	15.3	14.5	14.5	16.5	16.0	16.2	14.5	15.3	15.7	14.8	14.7	14.7	14.3	15.2	14.1	14.7	13.2	15.9	14.5	14.5	13.9	13.8	15.2	15.1	15.4	15.0
3:30:00	16.3	15.3	15.7	15.2	15.3	15.8	15.3	14.4	14.2	16.5	16.2	16.1	14.6	15.2	15.4	14.6	14.7	14.6	14.2	14.8	13.8	14.9	13.1	15.5	14.6	14.5	13.9	13.3	14.8	15.0	15.3	14.9
3:45:00	15.9	15.2	15.6	15.1	15.3	15.3	15.2	14.6	14.4	16.3	16.1	16.3	15.0	15.3	15.3	14.4	14.7	14.5	14.3	14.6	13.7	15.1	13.1	15.3	15.2	14.4	13.7	13.7	15.2	14.9	15.4	14.9
4:00:00	16.0	15.1	15.6	14.9	15.2	15.6	15.2	14.6	14.1	16.5	16.1	15.9	15.2	15.3	15.3	14.5	14.8	14.5	14.1	14.8	13.3	15.4	13.0	15.4	14.8	14.4	13.6	13.4	15.1	14.8	15.3	14.9
4:15:00	15.9	15.0	15.5	14.2	15.2	15.3	15.2	14.7	14.1	16.5	16.0	16.0	14.9	15.3	15.3	14.6	14.5	14.5	14.3	14.8	13.2	14.9	13.6	15.2	14.7	14.3	13.4	13.4	14.7	14.8	15.3	14.8
4:30:00	15.9	15.2	15.5	13.8	15.2	15.6	15.1	14.5	13.9	16.4	16.1	16.0	14.8	15.3	15.3	14.5	14.7	14.5	14.2	14.6	13.5	14.8	13.5	15.3	14.5	14.4	13.1	12.9	14.5	14.7	15.2	14.8
4:45:00	15.9	15.3	15.6	14.1	15.1	15.6	15.0	14.8	13.8	16.4	16.0	15.8	14.6	15.4	15.3	14.5	14.5	14.5	14.3	14.7	13.6	14.9	14.0	15.5	14.4	14.4	13.0	12.9	14.6	15.0	15.2	14.8
5:00:00	15.8	15.2	15.6	14.4	15.0	15.4	14.9	15.0	13.7	16.3	16.2	15.9	14.6	15.4	15.1	14.5	14.5	13.9	14.1	14.5	13.5	14.8	13.2	15.0	14.0	14.4	13.0	12.7	14.5	14.7	15.2	14.7
5:15:00	16.2	15.1	15.3	14.5	14.8	15.3	14.9	15.1	13.8	16.4	16.0	15.8	15.0	15.4	15.1	14.4	14.5	14.2	14.3	14.5	13.5	15.1	13.5	14.9	14.0	14.6	12.5	12.7	14.3	14.7	15.4	14.7
5:30:00	15.8	14.8	15.4	14.4	14.6	15.4	14.9	15.2	13.9	15.9	15.9	15.8	15.0	15.2	15.2	14.5	14.7	14.1	14.4	14.5	13.5	14.8	13.2	14.7	13.9	14.4	12.8	13.0	14.2	14.7	15.3	14.6
5:45:00	15.6	14.5	15.6	14.4	14.3	15.2	14.6	15.1	14.0	16.2	16.2	15.8	14.7	15.3	15.0	14.4	14.5	14.1	14.2	14.5	13.2	14.7	13.0	14.8	13.6	14.1	12.9	13.1	13.8	14.6	15.3	14.6
6:00:00	15.7	14.5	15.3	13.9	14.6	15.3	14.8	15.2	14.0	15.9	16.2	15.7	14.8	15.2	14.9	14.1	14.6	13.9	14.3	14.4	13.4	14.5	12.7	15.1	13.9	14.0	13.1	13.1	13.5	14.8	15.2	14.5
6:15:00	15.5	14.2	15.2	14.2	14.2	15.3	14.9	15.1	13.9	15.8	16.0	15.6	14.7	15.4	14.7	14.5	14.5	13.8	14.2	14.2	13.3	14.5	12.5	15.2	13.9	14.0	12.6	12.6	13.6	14.6	15.1	14.4
6:30:00	15.2	14.5	15.1	14.3	14.2	15.2	14.7	15.0	14.0	16.3	15.9	15.6	14.7	15.2	14.9	14.5	14.4	13.7	14.1	14.2	13.4	14.8	13.1	15.1	14.0	13.9	12.5	12.9	13.5	14.6	15.1	14.5
6:45:00	15.7	14.9	14.8	14.1	14.5	15.1	14.8	14.9	14.1	15.7	16.0	15.5	15.0	15.2	15.0	14.3	14.6	14.0	14.0	14.2	13.3	14.8	13.2	14.9	14.0	13.9	12.4	13.2	13.5	14.4	15.2	14.5
7:00:00	15.5	15.2	14.6	14.2	14.5	15.3	14.8	15.1	14.5	15.7	15.9	15.5	14.9	15.3	15.1	14.3	14.4	13.9	14.0	14.1	13.5	15.2	13.5	14.6	14.3	14.3	12.8	13.3	13.8	14.5	15.2	14.6
7:15:00	15.6	15.7	14.7	14.3	14.6	15.5	14.8	15.2	14.5	15.6	16.0	15.8	14.8	15.2	15.0	14.4	14.4	13.8	14.0	14.2	13.4	15.3	13.7	14.8	14.9	14.5	12.8	13.0	14.1	14.3	15.2	14.6
7:30:00	15.8	15.3	15.1	14.4	14.6	15.3	15.0	15.2	14.3	15.9	16.4	15.9	15.0	15.2	15.0	14.4	14.5	14.0	14.2	14.3	14.0	15.3	14.2	14.9	15.6	14.5	13.7	13.2	14.5	14.5	14.9	14.8
7:45:00	15.9	15.8	15.5	14.8	14.6	15.6	15.1	15.3	14.1	16.2	16.5	15.8	15.6	15.4	14.9	14.4	14.5	13.9	14.2	14.5	14.6	15.4	14.7	15.3	15.6	14.6	13.8	13.2	14.1	14.4	14.9	14.9
8:00:00	15.8	16.1	15.7	15.3	14.8	15.2	15.2	15.6	14.1	15.9	16.5	15.7	15.8	15.4	14.7	14.3	14.5	14.0	14.7	14.3	15.2	15.3	14.9	15.3	16.2	15.0	13.5	13.5	14.4	14.0	14.7	15.0
8:15:00	15.8	16.2	15.9	15.2	14.8	15.5	15.2	15.6	14.2	16.2	16.5	16.0	16.0	15.7	15.5	14.3	14.4	14.0	14.5	14.2	15.7	15.7	15.4	15.3	16.5	15.2	13.9	13.8	14.4	14.2	15.0	15.2
8:30:00	16.1	16.4	15.9	15.9	15.1	15.2	15.3	15.8	14.4	16.4	16.7	16.1	16.5	15.2	14.6	14.4	14.5	14.2	14.8	14.3	15.9	15.8	16.3	15.5	17.4	15.3	14.4	13.8	14.8	14.4	15.1	15.4
8:45:00	17.3	16.5	16.5	16.6	15.2	15.4	15.9	16.0	14.4	16.9	17.3	17.2	16.5	15.5	15.2	14.5	14.8	14.5	15.2	14.6	15.9	16.1	16.2	16.3	18.4	15.6	15.0	14.1	15.0	14.4	15.1	15.7
9:00:00	17.3	17.3	16.7	16.5	15.5	15.7	15.6	16.2	14.8	16.9	17.6	16.6	16.6	15.9	14.9	14.9	15.4	14.8	15.2	14.4	17.2	16.1	17.0	17.2	18.4	15.6	14.8	14.2	15.3	14.9	15.2	16.0
9:15:00	17.3	17.2	16.9	17.2	16.0	15.9	15.9	16.6	15.3	17.5	17.7	17.3	17.9	16.5	15.4	14.7	15.8	15.2	15.4	14.1	17.1	15.9	17.3	17.1	18.6	15.7	15.9	14.3	16.5	14.5	15.3	16.3
9:30:00	17.9	18.1	17.2	18.5	16.9	16.0	16.0	17.0	15.8	17.5	18.2	18.2	17.5	16.7	15.0	15.1	15.6	16.3	15.2	14.0	17.7	15.9	17.9	18.0	19.1	15.8	15.9	14.5	17.2	14.5	15.3	16.6
9:45:00	17.6	17.5	17.3	18.3	17.1	16.1	16.1	17.4	16.3	17.5	17.9	18.5	18.5	16.8	15.3	15.6	16.0	15.9	15.4	14.3	18.2	15.8	18.7	17.9	18.5	16.2	17.1	14.9	17.8	14.7	15.2	16.8
10:00:00	17.4	17.8	17.2	18.6	17.0	16.3	16.3	17.5	17.2	17.9	18.7	19.1	18.2	17.0	16.1	15.0	16.3	15.6	15.5	14.5	18.5	16.4	18.5	18.4	18.5	16.7	16.5	15.4	18.4	14.5	15.5	17.0
10:15:00	17.7	18.3	17.5	18.4	17.0	16.4	16.5	17.5	17.7	18.1	18.8	18.8	19.0	17.4	16.0	14.5	16.4	15.8	15.8	14.5	19.0	15.7	19.1	18.5	19.3	16.7	16.9	14.9	18.9	14.6	15.5	17.1
10:30:00	17.8	18.8	17.9	18.8	16.9	16.9	16.7	18.0	18.7	18.2	19.5	19.9	18.1	18.3	16.1	14.7	16.6	16.8	16.5	14.3	20.0	16.3	19.7	19.0	19.3	18.5	17.2	15.2	20.0	14.8	15.8	17.6
10:45:00	17.8	19.1	17.9	18.5	17.3	16.7	16.9	18.5	19.0	18.5	19.6	20.3	18.5	17.4	16.4	15.0	17.2	16.8	16.8	14.7	20.3	16.2	20.0	19.9	20.0	18.7	18.0	15.5	19.8	15.0	16.5	17.8
11:00:00	17.9	19.3	17.5	18.6	17.4	17.4	17.3	18.8	20.2	18.5	19.1	20.4	18.5	17.4	17.2	15.2	16.9	16.8	17.5	14.5	21.2	16.1	20.3	20.3	20.3	19.5	18.4	16.3	20.1	15.3	16.4	18.1
11:15:00	17.9	19.1	17.3	19.2	18.8	17.5	17.3	19.2	20.0	18.9	20.3	20.7	19.1	17.7	17.2	15.4	17.2	16.6	17.0	14.8	21.1	16.5	20.8	22.0	20.9	19.5	19.2	16.6	20.1	15.9	16.5	18.4
11:30:00	18.1	19.5	17.4	19.1	19.4	17.3	17.8	20.0	20.6	18.7	21.0	20.8	19.0	18.3	17.8	15.9	17.2	16.5	17.9	15.0	21.2	16.4	21.3	22.7	21.0	19.7	19.7	16.7	21.2	15.9	16.5	18.7
11:45:00	18.5	19.1	17.4	19.3	19.2	17.6	17.9	19.9	20.3	18.8	20.8	20.7	19.2	18.5	17.6	16.0	17.1	16.7	18.1	15.0	21.8	16.6	21.5	22.5	21.7	20.9	19.4	17.6	20.8	16.5	17.2	18.8
12:00:00	18.9	19.3	17.6	19.3	19.7	17.5	17.9	20.7	20.3	19.0	21.4	20.2	20.3	18.7	17.3	16.5	17.2	17.0	17.8	15.4	22.1	16.9	21.7	22.4	21.9	21.3	20.4	17.8	22.0	16.7	18.0	19.1
12:15:00	19.7	19.2	17.9	20.0	20.2	17.6	18.3	20.5	21.4	19.5	20.5	21.1	20.1	18.6	17.4	16.3	17.3	17.4	17.9	15.4	23.2	17.7	22.3	22.3	22.6	21.4	20.2	19.1	21.9	17.2	18.0	19.4
12:30:00	19.5	20.2	18.5	19.6	19.9	18.2	18.9	20.1	21.7	19.4	20.8	21.9	19.8	19.4	17.3	16.2	17.4	17.5	18.5	16.1	22.6	18.3	22.8	22.5	22.5	22.4	20.3	19.1	21.3	17.5	18.5	19.6
12:45:00	20.5	19.7	18.4	20.0	19.9	17.9	18.5	20.7	20.8	20.2	21.7	22.1	20.4	19.6	17.9	16.0	17.9	17.9	18.5	16.9	22.6	18.1	22.3	23.4	23.6	22.4	20.7	19.2	22.0	17.2	18.4	19.9
13:00:00	19.8	20.4	18.7	20.9	21.2	18.3	19.7	20.5	21.5	19.8	21.7	21.9	21.2	19.5	17.5	16.1	17.4	18.0	19.7	17.1	23.4	18.9	22.7	23.3	24.3	22.8	20.9	19.5	21.1	18.0	18.6	20.1
13:15:00	19.9	19.7	19.1	20.5	21.3	18.1	19.8	20.4	21.7	20.1	21.1	22.2	20.0	19.6	18.6	16.4	18.4	18.4	18.9	17.7	24.1	19.0	23.0	23.6	24.5	22.9	20.6	19.7	21.1	18.9	18.8	20.3
13:30:00	21.3	20.1	19.5	20.8	21.0	18.8	19.5	20.5	22.0	20.4	22.3	22.3	21.0	20.3	19.7	16.6	18.3	19.1	19.2	18.0	24.0	19.3	23.7	23.4	24.5	23.5	21.1	20.1	21.3	18.5	19.1	20.6
13:45:00	20.6	21.2	19.7	20.7	20.6	18.8	19.4	20.8	22.0	21.1	21.7	22.2	21.4	20.7	19.8	17.4	18.0	19.7	19.4	18.7	23.0	19.5	23.8	23.0	24.2	23.5	21.2	20.7	21.6	18.5	19.1	20.7
14:00:00	21.5	20.3	19.8	21.2	21.3	19.2	19.7	20.9	21.3	20.6	22.7	22.6	20.8	21.2	19.5	17.9	18.5	19.8	20.2	19.3	24.2	20.1	23.1	23.2	24.4	23.6	20.9	20.2	21.6	18.8	19.1	20.9
14:15:00	20.7	20.7	19.8	20.5	21.2	19.3	19.1	20.9	22.3	22.3	22.0	22.6	21.4	21.0	20.0	18.3	18.2	19.9	20.3	19.4	24.6	20.8	22.5	22.9	25.0	23.4	21.2	20.9	21.0	18.7	19.7	21.0
14:30:00	21.6	21.5	19.4	20.7	20.8	19.1	19.6	21.7	22.6	20.9	21.9	22.8	22.0	21.1	19.8	17.9	18.8	20.3	20.2	19.9	24.0	21.1	22.3	22.6	24.8	24.2	20.6	20.7	20.8	18.7	19.5	21.0
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15:30:00	22.0	21.3	19.9	20.6	21.4	19.1	19.7	21.1	23.2	22.4	22.2	23.0	21.9	20.8	19.7	19.0	19.1	20.8	20.2	19.8	22.5	21.3	23.0	22.0	23.4	24.1	22.0	20.8	20.8	18.5	20.1	21.2
15:45:00	21.9	21.1	19.7	20.9	21.9	19.3	20.4	21.7	23.5	22.1	22.3	22.1	21.2	21.5	20.6	19.6	18.5	20.8	20.8	19.7	22.3	21.4	23.1	22.0	23.7	24.0	21.9	20.7	20.8	18.4	19.8	21.2
16:00:00	21.7	20.8	19.9	21.5	21.1	19.1	20.3	21.4	22.9	21.9	21.5	22.7	21.3	21.1	19.9	19.6	19.3	20.4	20.5	19.7	22.7	21.2	22.8	22.3	23.4	24.2	21.7	20.5	20.8	18.3	20.0	21.1
16:15:00	21.8	21.5	20.1	21.4	21.6	19.1	20.6	22.0	22.9	22.3	22.2	22.2	21.1	21.4	19.5	19.1	19.3	20.6	20.6	19.8	23.0	21.3	22.4	22.0	23.7	23.9	22.2	20.3	20.4	17.9	20.1	21.2
16:30:00	22.0	21.9	19.8	20.8	21.0	19.1	20.7	21.7	22.0	21.8	21.8	22.5	21.5	21.1	20.2	19.1	19.0	20.4	20.3	20.3	22.9	21.4	22.2	22.1	23.3	23.6	21.8	20.3	20.3	18.4	20.1	21.1
16:45:00	22.2	21.3	19.8	20.5	21.4	18.9	20.4	21.6	22.4	21.4	21.8	22.1	20.6	21.2	20.3	19.1	19.0	20.1	19.9	20.1	22.5	21.4	22.2	21.9	23.2	23.7	21.4	20.2	20.4	17.8	19.8	20.9
17:00:00	22.0	21.1	19.6	20.3	20.8	19.1	20.4	21.4	22.3	21.7	21.9	22.0	21.1	21.3	20.3	18.7	19.2	20.1	19.8	20.2	22.4	21.2	22.0	21.4	23.3	23.5	21.8	20.0	20.4	17.7	19.6	20.9
17:15:00	21.8	21.2	19.6	20.3	20.6	19.0	20.4	21.1	22.1	22.0	21.7	21.5	21.0	20.6	20.1	18.7	18.8	19.8	20.2	20.0	22.0	21.3	21.7	20.8	23.2	23.3	21.9	19.8	20.2	17.7	19.0	20.7
17:30:00	21.3	21.0	19.6	19.9	20.4	18.8	20.2	20.8	21.5	21.5	21.4	21.6	20.4	20.6	19.8	18.5	18.9	19.5	20.0	19.6	21.6	20.9	21.5	20.5	22.7	23.2	21.4	19.7	20.0	17.7	18.6	20.4
17:45:00	21.2	20.9	19.3	19.8	20.2	18.6	20.0	20.5	21.2	21.7	21.3	21.4	20.3	20.8	19.5	18.1	18.7	19.1	19.5	19.3	21.2	21.0	21.3	20.5	22.3	23.0	21.2	19.7	19.7	17.5	18.3	20.2
18:00:00	21.1	20.7	19.1	20.0	20.2	18.3	19.7	20.3	21.1	21.0	21.1	21.0	20.2	20.3	19.3	17.9	18.4	18.8	19.6	19.0	22.0	20.8	20.7	20.2	22.0	20.8	20.8	19.5	19.6	17.4	18.2	20.0
18:15:00	20.3	20.2	18.5	19.5	20.0	18.0	19.6	20.3	20.8	20.8	20.9	20.8	19.7	20.1	19.1	17.6	18.2	18.5	19.2	19.0	21.7	20.3	20.3	20.2	22.0	20.3	20.4	19.3	19.2	17.2	17.9	19.7
18:30:00	19.8	19.7	18.3	19.5	19.6	17.7	19.6	19.7	20.7	20.4	20.5	20.6	19.7	20.0	18.8	17.1	18.1	18.1	18.9	18.5	21.5	19.7	20.0	19.7	20.7	19.7	20.0	19.1	19.0	17.1	17.6	19.3
18:45:00	19.4	19.3	18.3	19.7	19.2	17.5	19.4	19.6	20.2	20.3	20.2	20.3	19.3	19.7	18.1	16.8	17.9	17.8	18.4	18.1	21.1	19.6	19.7	19.4	20.2	19.2	19.7	18.9	18.7	17.1	17.6	19.1
19:00:00	19.1	19.1	18.3	19.5	19.0	17.2	19.2	19.3	19.7	20.0	20.1	19.8	18.7	19.5	17.8	16.5	17.7	17.4	18.1	17.9	20.7	19.3	19.4	19.2	19.9	19.1	19.1	18.5	18.5	17.0	17.5	18.8
19:15:00	19.1	18.9	18.2	19.3	18.9	17.0	19.0	18.8	19.7	20.0	19.9	19.5	18.7	19.2	17.2	16.5	17.6	16.9	18.3	17.6	20.4	19.4	19.1	18.9	19.7	18.7	18.6	18.4	18.3	16.9	17.2	18.6
19:30:00	19.1	18.5	18.2	19.0	18.5	16.8	18.7	18.7	19.5	19.8	19.7	19.5	19.0	19.1	17.1	16.5	17.5	16.5	18.1	17.6	20.1	19.1	19.0	18.8	19.5	18.7	18.4	18.3	18.3	16.9	16.6	18.4
19:45:00	19.1	18.3	18.2	18.9	18.5	16.5	18.5	18.5	19.4	19.7	19.5	18.8	18.3	19.0	17.0	16.7	17.7	16.4	17.9	17.2	19.7	18.5	18.6	18.7	19.2	18.3	17.9	18.0	18.2	16.9	16.5	18.2
20:00:00	19.0	18.2	18.3	18.8	18.5	16.5	18.1	18.3	19.4	19.6	19.3	18.5	18.3	18.8	17.0	16.9	17.3	16.2	17.9	17.1	19.4	17.9	18.5	18.4	19.0	18.2	17.6	17.9	17.9	16.8	16.5	18.1
20:15:00	18.9	18.2	18.2	18.9	18.5	16.3	17.7	18.0	19.6	19.3	19.0	18.5	18.1	18.5	16.8	16.9	17.2	16.1	17.8	17.3	19.3	17.6	18.5	18.1	18.7	17.8	17.5	17.9	17.2	16.7	16.5	17.9
20:30:00	18.3	18.2	18.1	18.5	18.5	16.1	17.2	17.5	19.3	19.2	19.0	18.5	18.0	18.4	16.7	16.7	17.0	16.0	17.3	17.2	19.5	17.4	18.2	17.9	18.7	17.8	17.2	17.6	17.6	16.7	16.5	17.8
20:45:00	18.0	18.1	17.9	18.6	18.6	16.0	17.0	17.5	18.8	18.6	18.7	18.5	18.2	18.3	16.9	16.8	16.9	15.9	17.5	17.1	19.5	17.2	18.2	17.8	18.5	17.5	16.9	17.6	17.1	16.7	16.4	17.7
21:00:00	17.8	17.9	17.9	18.5	18.7	16.1	16.8	17.6	18.8	18.3	18.6	18.6	17.6	18.0	16.9	16.8	16.8	15.6	17.4	17.3	19.4	17.1	18.1	17.6	18.0	17.4	16.9	17.6	17.3	16.8	16.5	17.6
21:15:00	17.5	18.0	17.7	18.5	18.5	16.1	16.4	17.3	18.4	18.0	17.9	18.5	17.2	17.9	16.9	16.6	16.5	15.5	17.4	17.2	19.0	16.8	18.3	17.5	17.9	17.2	16.8	17.5	17.3	16.5	16.3	17.4
21:30:00	17.4	17.9	17.6	18.1	18.2	16.2	16.4	17.0	18.4	18.1	17.8	18.4	17.2	17.6	16.7	16.5	16.3	15.3	17.4	17.2	18.7	16.9	18.1	17.3	17.8	17.1	17.0	17.2	16.9	16.2	16.2	17.3
21:45:00	17.2	17.8	17.4	18.1	18.1	16.4	16.6	16.7	18.2	18.1	17.9	18.0	17.1	17.7	16.4	16.5	16.1	15.3	17.1	17.0	18.5	16.7	18.2	17.0	17.6	16.9	16.9	17.4	16.6	15.9	16.3	17.2
22:00:00	17.0	17.8	17.3	18.1	18.0	16.1	16.8	17.0	18.0	18.3	17.9	17.8	16.7	17.4	16.4	16.5	15.7	15.2	16.9	16.8	18.5	16.6	18.2	16.9	17.3	16.5	16.9	17.3	16.3	15.8	16.3	17.0
22:15:00	16.8	17.9	17.2	18.0	17.8	15.9	16.6	16.6	17.7	18.2	17.5	18.1	16.5	17.2	16.3	16.5	15.4	15.2	16.9	16.6	18.5	16.3	18.2	16.7	17.2	16.6	16.4	17.3	16.3	15.9	16.2	16.9
22:30:00	16.6	17.7	17.3	17.9	17.6	15.9	16.7	16.7	17.6	18.0	17.4	17.6	16.5	17.3	15.7	16.3	15.6	15.3	16.6	16.4	18.6	16.2	18.0	16.5	16.7	16.8	16.5	17.2	16.2	15.7	16.1	16.8
22:45:00	16.4	17.3	17.3	17.9	17.7	15.9	17.0	16.5	17.4	18.3	17.2	17.1	16.5	17.0	15.9	15.8	15.8	15.2	16.5	16.2	18.5	16.0	18.1	16.2	16.9	16.4	16.4	17.2	16.0	15.8	16.0	16.7
23:00:00	16.5	16.9	17.2	17.8	17.5	15.6	16.8	16.6	17.3	17.9	17.0	16.7	16.2	16.7	16.1	15.7	15.8	14.9	16.3	16.0	18.5	15.9	18.0	16.0	16.8	16.2	16.0	17.2	15.9	15.8	16.0	16.6
23:15:00	16.5	16.5	17.2	17.6	17.0	15.5	16.5	16.5	17.3	17.8	16.9	16.7	16.3	16.9	15.9	15.8	15.4	14.9	16.4	15.8	18.1	15.9	17.7	16.0	16.5	15.9	15.9	17.1	15.9	15.7	16.0	16.5
23:30:00	16.5	16.5	17.2	17.8	16.9	15.3	16.1	16.5	17.1	17.5	17.0	16.5	16.3	16.9	15.9	15.5	15.5	14.7	16.2	15.6	17.9	15.7	17.7	16.0	16.5	15.9	15.9	17.0	15.9	15.7	16.0	16.4
23:45:00	16.2	16.2	17.1	17.5	16.8	15.2	15.8	16.1	17.3	17.5	17.2	16.0	16.0	16.7	15.7	15.6	15.4	14.4	16.0	15.5	17.7	15.6	17.5	15.9	16.3	15.8	15.7	16.7	15.6	15.7	16.0	16.2
DAILY AV	18.0	17.8	17.3	17.8	17.7	16.8	17.1	17.6	18.0	18.5	18.6	18.6	17.7	17.6	16.9	16.0	16.4	16.3	16.7	16.4	18.4	17.3	18.0	18.4	18.6	18.0	17.1	16.6	17.6	16.1	16.7	17.4

July 2019 House B average indoors temperature calculation spreadsheet

DATA LOG 3: HOUSE B

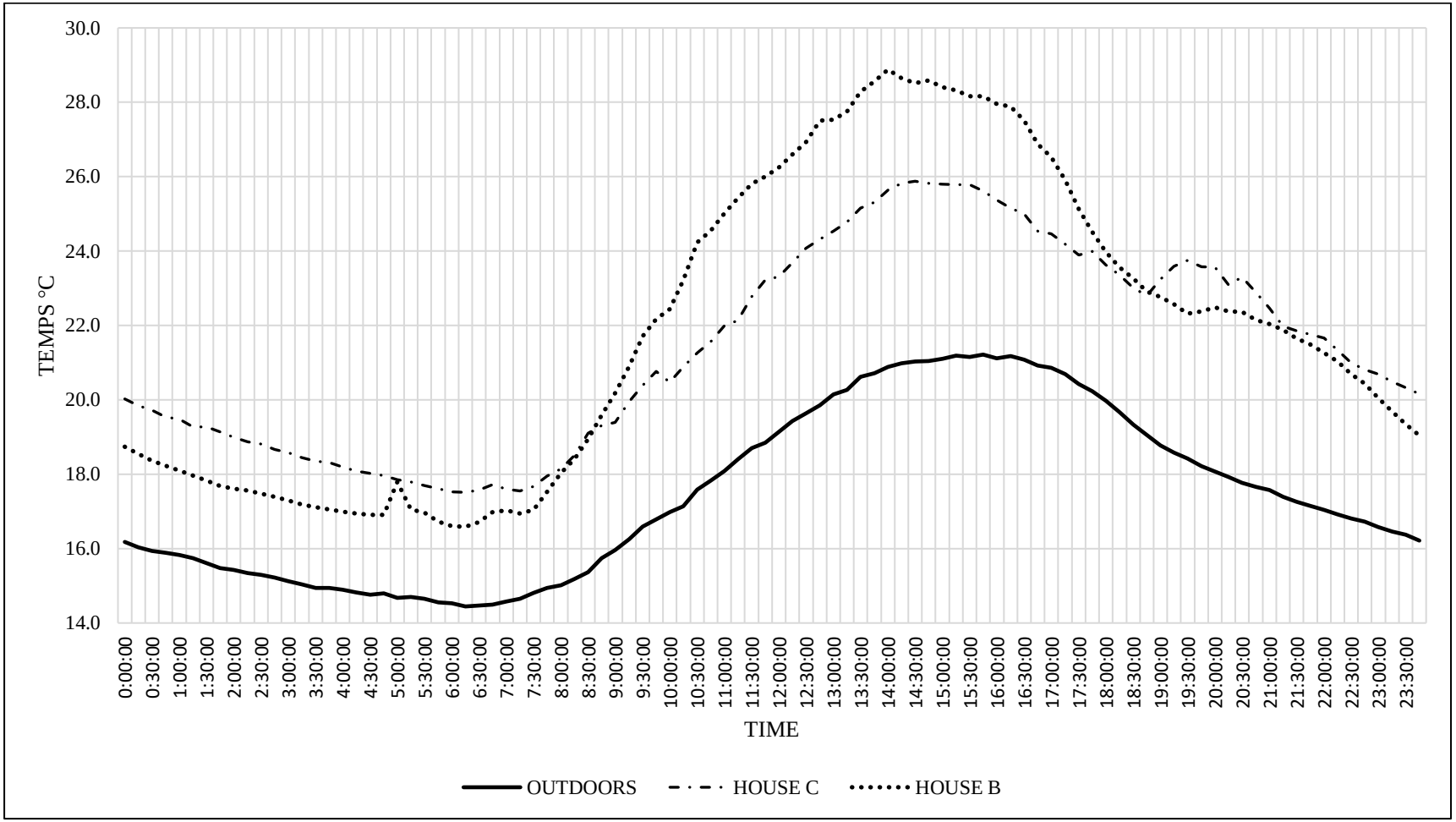
Time	Temperatures																															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	AV
0:00:00	19.2	18.2	18.1	19.7	19.8	19.8	18.8	18.0	18.5	19.5	20.1	20.2	18.4	18.5	19.5	18.2	17.9	17.9	16.2	19.3	17.6	19.6	17.6	20.2	18.4	18.4	19.0	18.0	19.0	19.1	18.2	18.7
0:15:00	19.2	18.0	18.0	19.4	19.6	19.4	18.9	17.5	18.3	19.5	20.0	19.8	18.3	18.1	19.3	18.1	17.8	17.9	16.1	19.1	17.4	19.3	17.5	20.2	18.0	18.2	18.5	17.7	18.9	18.8	18.0	18.5
0:30:00	19.1	18.3	17.7	19.2	19.3	19.3	18.6	17.2	18.0	19.3	19.7	19.6	18.1	17.8	19.2	18.0	17.7	17.8	15.8	18.8	17.2	19.1	17.3	20.0	17.7	18.3	18.3	17.5	18.8	18.6	17.9	18.4
0:45:00	19.0	18.2	17.4	19.1	19.1	19.2	18.4	16.9	18.0	19.3	19.4	19.6	17.9	17.6	19.2	18.0	17.6	17.6	15.9	18.6	17.1	18.8	17.1	19.8	17.6	18.0	18.0	17.4	18.7	18.6	18.0	18.2
1:00:00	19.0	18.0	17.5	18.7	18.8	19.1	18.2	16.7	17.9	19.3	19.2	19.4	17.7	17.4	19.1	17.9	17.6	17.5	16.1	18.2	17.0	18.5	16.9	19.8	17.5	17.7	18.0	17.1	18.6	18.5	17.9	18.1
1:15:00	19.0	17.7	17.5	18.6	18.7	18.9	18.0	16.6	18.0	19.1	19.2	19.2	17.6	17.3	18.9	17.9	17.5	17.4	16.0	18.0	16.9	18.3	16.7	19.5	17.2	17.5	18.0	16.9	18.5	18.4	17.9	18.0
1:30:00	19.0	17.4	17.4	18.4	18.6	18.8	18.1	16.3	18.0	18.9	19.0	19.1	17.4	17.1	18.8	17.9	17.4	17.1	15.8	17.9	16.7	18.1	16.7	19.1	17.1	17.4	17.9	16.7	18.3	18.4	17.9	17.8
1:45:00	18.8	17.1	17.3	18.2	18.4	18.8	18.0	16.2	18.0	18.7	18.9	19.0	17.3	17.0	18.7	17.8	17.2	16.9	15.7	17.8	16.5	18.0	16.5	19.1	16.9	17.2	17.7	16.5	18.0	18.2	17.8	17.7
2:00:00	18.8	17.1	17.4	18.1	18.2	18.7	18.0	16.3	17.9	18.9	18.8	19.0	17.4	16.8	18.6	17.8	17.2	16.8	15.8	17.6	16.3	17.7	16.4	18.7	16.8	17.0	17.4	16.5	17.9	18.1	17.8	17.6
2:15:00	18.6	17.4	17.5	18.1	18.1	18.6	17.9	16.4	17.5	18.8	18.7	19.0	17.4	17.2	18.5	17.6	16.9	16.8	16.5	17.5	16.4	17.6	16.2	18.4	16.7	16.9	17.1	16.7	17.8	18.0	17.7	17.6
2:30:00	18.4	17.5	17.5	17.9	18.1	18.6	17.9	16.4	17.5	18.8	18.6	18.9	17.1	17.3	18.4	17.5	16.8	16.9	16.1	17.5	16.1	17.4	16.1	18.1	16.7	16.7	17.0	16.7	17.6	18.0	17.7	17.5
2:45:00	18.1	17.8	17.5	17.6	18.0	18.5	17.8	16.4	17.3	18.8	18.5	18.8	17.0	17.2	18.3	17.4	16.9	16.8	16.0	17.4	16.0	17.2	15.9	18.1	16.6	16.7	16.9	16.6	17.6	17.9	17.6	17.4
3:00:00	18.1	17.6	17.4	17.4	17.9	18.4	17.6	16.2	16.9	18.8	18.3	18.7	16.8	17.3	18.2	17.4	16.9	16.8	16.1	17.3	15.8	17.1	15.7	18.1	16.5	16.7	16.8	16.5	17.4	17.8	17.5	17.3
3:15:00	18.0	17.4	17.4	17.2	17.6	18.2	17.5	16.0	16.7	18.5	18.1	18.7	16.7	17.3	18.1	17.4	16.9	16.8	16.0	17.3	15.8	16.9	15.4	18.1	16.6	16.7	16.7	16.1	17.3	17.7	17.5	17.2
3:30:00	18.0	17.2	17.5	17.0	17.4	18.1	17.4	15.9	16.4	18.4	18.0	18.6	17.0	17.4	18.0	17.3	16.9	16.8	16.0	17.2	15.5	16.8	15.3	18.1	16.7	16.6	16.7	15.8	17.1	17.7	17.6	17.1
3:45:00	18.0	17.2	17.5	16.7	17.4	18.0	17.4	16.0	16.2	18.4	18.0	18.5	17.2	17.4	18.0	17.2	16.9	16.7	16.1	17.2	15.4	16.8	15.2	18.0	16.7	16.6	16.4	15.6	16.9	17.4	17.5	17.0
4:00:00	18.2	17.0	17.4	16.5	17.4	18.0	17.4	16.1	16.0	18.4	18.0	18.4	17.2	17.4	18.0	17.1	16.9	16.7	16.1	17.1	15.2	16.9	15.2	17.9	16.6	16.6	16.2	15.4	16.7	17.3	17.4	17.0
4:15:00	18.2	16.9	17.4	16.2	17.4	18.0	17.4	16.3	15.9	18.5	18.0	18.2	17.3	17.4	17.9	17.0	16.9	16.5	16.1	17.0	15.2	16.7	15.4	17.7	16.6	16.6	16.0	15.4	16.5	17.2	17.4	16.9
4:30:00	18.2	17.1	17.4	16.0	17.4	18.0	17.4	16.2	15.8	18.4	18.0	18.2	17.1	17.4	17.9	17.0	16.8	16.4	16.1	17.0	15.2	16.7	15.6	17.8	16.4	16.5	15.8	15.4	16.5	17.2	17.2	16.9
4:45:00	18.6	17.4	17.5	16.0	17.4	17.9	17.2	16.4	15.7	18.2	18.0	18.0	16.8	17.4	17.9	17.1	16.8	16.4	16.2	16.9	15.3	16.9	15.6	17.8	16.1	16.5	15.7	15.1	16.5	17.4	17.6	16.9
5:00:00	20.0	18.6	19.6	18.0	18.8	17.7	17.2	18.9	17.3	20.3	18.0	19.8	16.9	17.4	19.7	18.6	18.8	18.4	16.3	17.0	15.3	19.2	15.4	17.4	16.0	16.5	15.4	15.0	16.4	19.2	18.4	17.8
5:15:00	18.6	17.1	18.0	16.8	17.5	17.5	17.1	17.4	15.8	19.1	18.0	18.6	17.0	17.4	18.4	17.4	17.3	16.8	16.1	16.9	15.3	17.8	15.1	17.1	15.8	16.5	15.4	14.9	16.3	18.0	17.8	17.1
5:30:00	18.6	17.0	18.0	16.7	17.5	17.6	16.9	17.3	16.0	18.9	17.9	18.6	17.0	17.4	18.2	17.4	17.3	16.7	16.1	16.7	15.2	17.5	14.9	16.9	15.6	16.4	15.3	14.7	16.0	17.9	17.7	17.0
5:45:00	18.1	16.5	17.6	16.5	16.8	17.6	16.7	16.9	15.8	18.5	17.8	18.4	17.1	17.3	17.9	17.0	16.9	16.3	16.1	16.7	14.9	17.1	14.7	16.7	15.5	16.3	15.3	14.7	15.9	17.4	17.4	16.7
6:00:00	17.9	16.2	17.4	16.2	16.5	17.7	16.7	16.7	15.9	18.2	17.8	18.1	17.0	17.5	17.7	16.9	16.7	16.2	16.1	16.7	14.9	16.8	14.6	16.7	15.4	16.2	15.2	14.5	15.6	17.3	17.3	16.6
6:15:00	17.7	16.1	17.3	16.2	16.3	17.6	17.2	16.7	16.0	18.1	17.8	18.0	17.1	17.3	17.6	16.8	16.7	16.4	16.2	16.6	14.9	16.8	15.2	16.8	15.3	16.1	15.0	14.6	15.4	17.1	17.3	16.6
6:30:00	17.8	16.5	17.2	16.3	16.2	17.5	18.7	17.3	16.0	18.1	17.8	18.0	17.1	17.2	17.5	16.7	16.7	16.3	16.3	16.6	14.8	17.0	15.1	17.7	16.5	16.1	14.8	14.8	15.2	16.9	17.3	16.7
6:45:00	18.6	17.2	17.4	16.9	17.4	17.4	18.5	16.7	16.0	18.0	17.8	17.9	17.2	18.0	17.5	16.7	16.7	17.0	16.4	16.6	14.8	17.8	16.8	18.0	16.9	16.9	14.7	15.3	15.2	16.7	17.3	17.0
7:00:00	18.9	17.6	17.5	17.4	17.8	17.4	18.6	17.3	16.1	17.9	17.7	17.9	17.1	18.3	17.5	16.6	16.6	16.1	17.8	16.6	14.8	17.7	16.2	17.0	16.7	17.5	14.7	15.2	15.5	16.7	17.3	17.0
7:15:00	18.4	17.8	17.0	16.7	17.7	17.5	17.9	17.3	16.2	17.8	17.8	18.0	17.0	19.7	17.4	16.6	16.5	16.0	17.7	16.6	14.8	17.2	15.8	16.8	16.4	16.7	15.1	15.3	15.6	16.9	17.2	16.9
7:30:00	18.1	17.1	16.9	16.8	17.1	17.6	18.7	16.9	16.3	18.0	18.1	18.0	17.2	20.8	17.4	16.6	16.5	15.9	18.3	16.6	15.4	17.1	15.7	17.0	16.6	16.6	15.4	15.8	15.8	17.0	17.0	17.0
7:45:00	18.8	17.4	17.2	17.9	18.0	17.8	18.5	17.6	16.4	18.6	18.4	18.6	18.1	20.8	17.3	16.6	16.9	15.9	17.8	16.6	17.9	17.2	16.3	18.0	17.6	17.4	15.8	17.3	16.7	17.0	17.0	17.5
8:00:00	19.4	18.8	17.6	19.3	17.6	17.9	19.3	17.7	16.8	18.8	19.2	18.7	19.8	20.9	17.2	16.6	16.9	16.0	18.0	16.6	20.4	17.4	17.2	19.2	18.6	17.5	17.0	17.5	17.2	16.9	17.0	18.0
8:15:00	18.6	19.2	17.9	20.1	18.3	18.0	19.2	18.2	17.0	19.8	20.3	19.5	20.3	19.6	17.6	16.6	16.7	16.0	19.0	16.7	22.0	17.6	18.4	21.0	19.2	17.9	16.6	17.4	18.0	16.9	17.1	18.4
8:30:00	18.9	19.9	18.4	21.0	18.4	18.1	19.5	18.6	17.4	20.3	21.3	19.4	21.1	19.8	17.4	16.7	16.9	16.1	19.5	16.7	22.8	17.9	21.2	21.4	21.5	18.4	17.7	17.9	18.7	17.1	17.2	18.9
8:45:00	20.3	20.1	18.8	22.2	18.9	18.3	20.3	19.2	18.4	21.1	21.8	21.3	21.4	20.9	17.1	17.1	17.0	16.4	18.3	16.9	22.9	18.1	22.1	23.3	23.5	18.8	20.3	17.7	20.3	17.2	17.3	19.6
9:00:00	23.6	20.5	19.5	22.9	20.5	18.8	20.6	19.3	18.8	21.7	22.8	20.9	21.5	21.1	17.0	17.2	17.4	17.5	18.2	17.2	24.6	18.2	23.1	23.7	24.9	19.3	19.1	18.1	22.6	17.3	17.9	20.2
9:15:00	23.6	22.0	20.3	24.0	21.5	19.4	20.3	19.8	20.0	21.5	23.5	22.3	23.4	22.7	17.4	17.6	18.3	18.5	18.0	17.4	24.9	18.3	23.5	24.6	25.5	19.7	20.8	18.7	24.2	17.7	18.3	20.9
9:30:00	23.3	22.8	21.2	25.4	22.6	20.0	19.7	20.7	21.9	22.4	23.4	25.0	22.2	21.0	18.3	19.2	18.8	21.8	17.8	17.8	26.2	18.6	25.7	25.8	27.0	19.8	22.7	19.5	25.9	18.2	18.4	21.7
9:45:00	23.6	23.7	21.4	24.7	24.4	20.3	19.2	23.6	23.5	22.6	22.6	25.7	24.0	20.9	18.6	18.2	19.7	22.4	18.3	18.2	27.0	18.3	25.7	25.6	26.6	20.5	24.2	19.6	27.0	18.6	18.6	22.2
10:00:00	22.9	22.5	21.4	25.4	23.3	20.6	19.2	22.9	26.0	23.5	23.6	26.6	24.5	20.9	19.4	18.1	19.6	20.9	19.0	18.8	28.2	18.1	23.5	27.6	26.8	23.6	23.3	19.2	28.4	19.0	18.6	22.4
10:15:00	23.5	25.4	21.4	24.2	22.9	21.4	19.5	23.2	27.9	24.0	25.4	28.8	27.1	22.1	20.5	17.7	20.2	22.6	20.3	19.2	28.9	18.5	24.9	27.9	27.2	24.7	23.4	19.0	29.9	19.2	18.6	23.2
10:30:00	23.2	27.4	22.2	25.1	22.7	22.2	20.4	25.4	29.7	25.2	29.4	30.5	25.2	23.8	21.5	17.9	20.2	24.5	21.9	18.6	30.2	19.8	27.0	28.9	28.5	27.4	24.4	19.5	30.1	19.4	18.9	24.2
10:45:00	23.4	28.6	23.0	25.4	22.8	22.8	20.9	25.3	30.4	24.4	27.2	30.9	23.9	22.6	22.4	18.0	21.5	24.2	21.7	18.8	31.4	19.9	28.1	28.3	29.5	29.0	26.4	20.2	30.5	19.8	19.8	24.6
11:00:00	23.8	27.8	21.9	25.4	23.3	23.7	21.1	26.7	31.4	24.7	25.4	31.9	25.0	21.8	24.7	18.3	22.1	24.1	23.1	19.1	31.8	19.8	29.2	28.5	29.8	29.7	27.0	23.5	30.2	20.1	20.2	25.0
11:15:00	23.5	28.0	20.9	25.7	26.1	23.7	21.5	28.3	31.7	25.5	29.1	32.4	26.0	21.4	24.2	18.7	22.2	22.5	22.5	19.9	32.8	19.9	30.4	29.6	31.0	28.8	27.7	23.4	28.3	21.3	20.9	25.4
11:30:00	23.7	28.2	20.8	25.6	28.7	23.6	22.2	30.0	31.5	24.5	30.3	31.9	26.3	22.4	25.4	19.0	21.7	22.7	23.5	21.0	30.3	20.3	30.5	31.9	31.7	28.3	27.4	23.1	30.5	22.2	20.9	25.8
11:45:00	25.1	26.9	20.9	26.7	29.3	23.6	22.9	30.0	31.9	24.7	30.1	31.5	25.6	23.3	23.7	20.0	21.6	23.6	25.0	20.8	29.5	20.7	30.5	31.1	32.1	28.9	28.5	24.0	29.1	22.4	22.2	26.0
12:00:00	25.6	27.4	21.3	26.6	29.2	23.5	23.3	31.7	31.2	25.2	30.2	29.6	27.7	24.2	23.8	22.2	21.5	24.1	25.2	20.5	28.8	21.6	30.2	30.7	31.0	28.9	28.4	25.3	28.8	23.0	22.9	26.2
12:15:00	28.1	26.2	21.5	27.4	29.9	23.4	24.2	30.9	31.9	25.9	28.7	31.3	27.5	24.1	23.0	22.2	21.9	24.2	24.2	20.4	31.7	22.6	30.4	29.7	31.4	29.3	27.4	27.7	29.7	24.1	23.7	26.6
12:30:00	26.2	29.9	22.3	26.6	31.5	23.3	25.0	29.2	32.4	27.5	28.7	31.4	27.2	24.7	22.3	21.5	22.1	24.0	25.4	21.8	31.3	23.8	31.3	29.9	31.7	29.8	27.9	27.4	29.7	25.1	23.7	26.9
12:45:00	29.3	27.5	23.3	27.9	30.6	23.5	25.5	29.7	32.0	28.9	30.8	32.1	28.4	25.3	23.4	20.7	23.2	25.0	26.1	23.3	31.8	24.1	30.8	30.7	32.1	30.9	28.9	28.0	30.3	24.7	24.1	27.5
13:00:00	27.6	27.6	24.0	28.9	30.5	23.5	27.7	29.8	31.5	27.8	30.8	31.5	27.5	26.7	22.9	20.8	22.8	24.4	27.2	23.6	31.8	25.3	31.3	30.4	32.0	30.7	29.1	28.5	28.7	24.7	24.0	27.5
13:15:00	28.3	27.1	25.1	29.1	30.6	23.8	28.7	29.6	31.7	27.4	29.5	31.7	25.9	25.9	25.8	21.2	24.0	24.9	25.6	23.5	33.2	25.6	32.3	31.9	31.9	31.4	27.6	29.4	27.2	26.3	24.2	27.8
13:30:00	30.4	27.1	26.4	29.2	31.4	24.0	27.0	28.2	31.3	28.2	29.6	32.5	27.7	26.5	27.7	21.9	24.3	27.4	26.2	25.5	34.1	26.3	32.4	30.5	32.2	31.5	28.9	29.6	27.8	25.5	25.4	28.3
13:45:00	28.8	29.5	26.9	30.8	28.5	26.2	26.1	28.9	31.0	28.5	30.6	32.8	28.3	27.0	28.4	22.9	24.0	27.7	26.1	26.2	33.2	27.6	32.8	29.6	32.4	32.0	28.4	30.1	28.5	26.2	25.5	28.6
14:00:00	31.4	28.2	27.0	32.4	29.5	24.8	26.9	29.4	30.1	28.7	31.7	32.6	27.5	29.2	27.2	24.4	23.6	27.7	28.2	28.1	34.7	28.6	30.6	30.3	32.1	32.2	28.9	29.2	27.4	27.2	25.5	28.9
14:15:00	30.8	27.7	26.5	30.5	30.4	24.8	25.9	29.0	30.5	29.2	30.2	32.7	28.3	27.6	27.8	25.8	23.4	29.8	28.2	27.5	32.2	29.7	30.0	29.8	32.7	32.1	28.0	28.5	26.1	25.9	26.3	28.6
14:30:00	31.3	30.2	26.0	29.1	28.5	24.6	27.1	28.8	31.4	27.4	30.0	33.0	27.1	29.0	27.8	25.8	24.7	29.3	27.7	27.5	31.4	29.9	28.7	29.8	32.6	32.2	27.8	27.7	25.6	26.4	25.7	28.5
14:45:00	30.6	30.9	25.5	31.1	28.2	25.1	27.0	29.2	31.4	29.2	29.5	32.3	26.7	27.6	26.6	25.2	26.3	28.9	27.0	27.5	30.4	30.6	29.2	29.2	32.8	32.2	29.4	28.5	26.2	26.7	25.3	28.6
15:00:00	30.9	28.4	24.3	30.8	30.4	25.3	26.2	29.6	31.7	25.8	29.7	32.7	28.6	27.1	27.4	24.7	27.2	28.5	25.3	27.4	29.5	30.8	30.5	28.6	32.1	32.3	29.2	27.4	26.3	26.0	25.7	28.4
15:15:00	30.0	29.0	24.0	29.1	28.7	25.2	25.8	29.5	31.4	27.7	28.6	32.7	28.2	27.9	28.8	25.4	26.1	29.3	26.2	27.1	28.6	30.7	31.1	27.8	30.2	32.6	29.5	27.4	26.1	26.3	26.8	28.3
15:30:00	30.7	28.7	25.0	27.0	28.1	24.2	25.7	29.1	30.8	29.1	28.9	32.5	28.5	26.8	26.7	26.5	26.7	29.3	25.8	27.7	27.9	30.7	30.8	27.8	29.8	32.4	29.9	27.7	25.4	26.6	26.4	28.2
15:45:00	30.4	28.4	25.1	28.1	29.4	23.6	27.5	29.1	31.6	28.5	29.5	30.4	28.5	26.9	27.6	27.3	25.6	29.5	27.7	27.0	27.7	30.7	31.8	27.8	29.8	32.0	29.9	26.3	24.8	24.9	25.7	28.2
16:00:00	30.2	27.0	24.8	30.8	28.7	24.2	26.8	28.7	30.8	29.2	29.2	30.6	27.5	27.2	27.6	27.0	26.5	27.8	27.5	27.0	28.3	30.3	30.3	27.7	29.2	31.6	29.7	25.8	24.6	24.8	25.4	28.0
16:15:00	30.6	28.5	27.0	28.7	27.7	24.4	27.1	30.0	31.0	29.2	30.5	30.0	27.3	27.2	25.5	26.7	27.0	28.5	28.0	26.7	28.1	30.5	29.0	27.4	30.0	31.0	28.5	25.6	24.6	23.4	24.8	27.9
16:30:00	30.9	29.0	26.7	26.9	27.5	23.5	27.9	29.1	29.9	28.4	29.6	29.3	27.7	26.6	26.5	26.0	25.9	28.0	27.7	26.3	28.4	28.7	28.1	27.5	28.6	30.5	28.5	25.2	24.4	24.4	24.9	27.5
16:45:00	30.4	27.2	25.5	25.5	27.7	23.5	26.5	28.5	28.6	26.3	29.1	29.4	26.0	27.5	26.9	26.1	24.7	27.6	25.6	25.4	27.7	28.8	27.6	27.0	28.3	30.5	27.7	24.9	24.7	23.4	24.6	26.9
17:00:00	29.4	26.8	24.9	24.6	27.2	23.7	25.6	28.4	29.3	27.0	27.7	28.1	26.5	27.6	26.9	25.2	25.6	27.3	25.1	26.2	27.7	28.1	26.7	26.5	28.2	29.4	27.4	24.2	24.2	22.9	24.0	26.5
17:15:00	28.6	26.4	24.0	24.0	26.4	24.5	25.3	27.5	28.5	27.5	27.7	26.7	26.1	25.6	25.8	24.1	23.6	26.2	25.4	25.7	27.2	27.0	26.4	25.2	28.4	29.3	27.4	23.7	23.6	22.5	22.8	25.9
17:30:00	27.2	26.0	23.1	24.0	25.9	24.1	24.5	26.4	26.9	25.9	26.2	26.5	25.2	25.1	24.9	23.4	23.2	24.9	25.3	24.0	27.1	26.2	26.2	24.4	27.7	27.7	26.2	23.4	23.3	22.0	22.2	25.1
17:45:00	26.0	25.7	22.8	23.7	25.5	23.4	23.9	25.9	25.9	25.3	24.8	25.8	24.9	24.8	23.8	22.0	22.7	23.4	24.0	23.2	27.0	24.9	25.6	24.1	27.0	27.8	25.5	23.5	23.5	21.6	21.7	24.5
18:00:00	25.4	24.9	22.1	23.4	25.2	22.8	23.5	25.4	25.6	25.5	24.2	25.1	24.7	23.9	23.0	21.4	21.7	22.6	23.5	22.9	26.4	25.1	24.4	23.5	26.5	27.0	24.6	23.1	23.2	21.1	21.5	24.0
18:15:00	24.2	24.4	21.7	23.4	24.2	22.2	23.5	24.9	25.2	25.1	23.5	24.9	23.6	26.6	22.5	20.9	21.3	22.0	22.9	22.9	25.2	24.7	24.1	22.9	25.9	26.0	24.1	22.6	22.7	20.9	21.4	23.6
18:30:00	23.6	24.0	21.0	22.9	23.0	21.4	22.7	24.5	25.0	24.6	23.5	24.2	22.7	33.0	21.8	20.0	21.1	21.4	22.3	22.0	25.8	23.7	24.0	22.4	25.2	25.1	23.7	22.4	22.4	20.6	21.3	23.3
18:45:00	23.6	22.9	20.9	23.0	22.9	20.8	22.4	23.8	24.8	24.3	23.1	23.7	22.6	32.3	21.2	20.3	20.4	20.8	21.5	21.9	25.8	22.8	23.5	22.8	24.7	24.2	23.3	22.0	22.3	20.4	21.3	22.9
19:00:00	23.5	22.5	21.3	22.9	23.1	20.5	22.1	23.6	24.3	24.1	22.8	23.0	22.7	33.2	21.1	19.8	21.2	20.3	22.2	21.4	25.3	22.3	23.0	22.5	24.5	24.0	22.8	22.1	21.8	20.3	21.7	22.8
19:15:00	23.1	22.2	21.1	23.1	22.8	20.9	21.7	22.4	24.0	23.6	23.0	22.6	22.6	33.3	20.8	19.8	21.4	20.1	21.8	20.9	25.2	22.4	22.7	22.2	24.5	23.5	22.8	22.4	21.5	20.1	21.3	22.6
19:30:00	24.3	22.1	21.0	23.0	22.4	21.0	22.2	21.8	23.4	24.2	22.7	23.2	22.1	25.5	20.4	20.3	22.1	19.7	21.5	20.9	24.8	23.0	23.1	22.2	24.7	23.0	22.2	22.2	21.9	20.0	21.0	22.3
19:45:00	24.5	22.1	21.9	23.4	22.8	20.7	22.6	25.1	23.9	23.9	22.6	23.1	21.8	24.7	20.7	20.5	22.1	19.3	21.3	21.1	24.5	22.2	22.4	22.6	24.0	22.6	21.7	22.6	22.3	20.1	20.6	22.4
20:00:00	24.0	22.0	21.6	23.8	23.0	20.2	22.0	30.0	24.0	23.5	22.3	22.4	22.2	24.5	21.7	20.7	22.2	20.3	21.1	21.3	24.0	21.9	22.8	22.6	23.7	22.4	21.4	22.9	22.2	20.2	20.3	22.5
20:15:00	23.4	21.9	21.9	23.5	22.9	19.7	21.6	29.5	24.5	23.3	21.7	22.7	21.7	24.4	21.4	20.4	22.2	20.5	21.0	21.4	23.6	22.4	23.4	21.9	23.3	22.7	21.3	22.7	21.6	20.3	21.0	22.4
20:30:00	22.9	22.6	22.2	23.2	22.8	20.1	21.0	29.6	24.0	23.2	21.6	23.0	21.7	24.2	20.9	20.3	21.5	20.6	20.9	21.8	23.5	22.5	24.0	22.2	22.9	22.5	20.9	22.3	22.0	20.3	22.2	22.4
20:45:00	22.5	23.1	23.1	23.0	22.9	20.0	20.3	24.1	23.4	22.5	21.8	22.7	22.2	23.8	21.1	20.9	21.4	20.7	21.1	22.4	23.4	21.9	23.3	22.3	22.5	22.4	20.9	22.2	22.2	20.4	22.0	22.1
21:00:00	22.4	22.7	22.6	22.9	23.0	20.2	20.6	23.5	23.0	22.2	21.5	22.7	22.3	23.3	21.5	21.8	21.2	20.1	21.1	22.2	23.3	21.7	22.8	22.7	22.0	22.6	20.5	21.5	22.5	21.2	21.7	22.0
21:15:00	21.7	22.2	22.0	22.9	23.3	21.6	20.5	23.6	22.3	22.2	20.9	22.3	21.9	22.8	21.2	21.5	20.8	20.8	21.3	22.0	22.2	21.5	22.8	22.1	21.5	22.3	21.2	21.5	22.5	21.4	21.5	21.9
21:30:00	21.2	22.5	21.7	22.7	23.4	22.1	20.3	23.0	22.2	22.5	20.9	22.2	21.4	22.2	20.5	21.1	20.8	20.7	21.2	21.5	21.6	20.9	22.5	21.5	21.2	22.0	21.5	21.5	22.2	21.0	21.1	21.6
21:45:00	20.9	22.4	21.8	22.6	22.7	22.1	20.1	22.2	21.9	22.2	20.9	22.1	21.5	22.2	20.1	20.9	20.6	20.2	21.3	20.9	21.3	21.1	22.3	21.4	21.0	22.7	22.2	21.4	21.7	20.9	20.7	21.5
22:00:00	20.7	21.9	21.9	22.5	22.1	21.5	21.2	21.4	21.5	22.1	21.8	21.5	21.1	21.7	19.7	21.3	20.1	19.8	21.1	21.1	21.5	20.3	22.2	21.0	20.9	22.1	21.7	20.9	21.4	20.5	20.6	21.3
22:15:00	20.4	21.6	21.2	21.9	21.5	21.0	20.9	21.5	20.9	21.6	22.4	21.1	20.9	21.5	19.6	20.9	19.9	19.2	21.6	20.6	21.5	20.0	22.3	20.7	20.9	21.8	21.2	20.6	21.3	20.7	20.6	21.0
22:30:00	20.0	21.2	21.1	21.8	21.7	20.7	20.3	20.8	20.1	21.7	21.9	20.3	20.5	21.4	18.7	20.9	20.1	18.7	21.2	19.8	21.0	19.7	22.0	20.5	20.7	21.5	20.9	20.5	20.9	20.6	20.3	20.7
22:45:00	19.7	20.1	21.3	21.4	22.0	21.1	20.9	20.4	19.7	21.7	21.4	19.8	20.4	20.8	18.6	20.0	19.9	18.6	20.7	18.9	20.9	19.2	21.7	20.6	20.1	21.3	20.5	20.2	20.7	20.6	20.2	20.4
23:00:00	19.3	19.5	21.6	20.7	21.7	20.9	21.5	20.3	19.8	21.4	20.8	19.4	20.2	20.4	18.5	18.6	19.1	17.4	21.0	18.4	20.7	18.6	21.3	20.2	19.4	20.6	20.1	19.8	20.7	19.4	20.3	20.1
23:15:00	18.8	19.1	21.4	20.4	21.1	19.9	20.5	20.3	19.8	21.3	20.9	19.2	20.3	20.0	18.5	18.2	18.5	17.0	20.3	18.2	20.3	18.1	20.9	19.9	19.2	20.3	19.2	19.5	19.9	19.3	20.1	19.7
23:30:00	18.6	18.9	20.7	20.1	20.6	19.1	19.2	19.6	19.5	20.7	20.7	18.8	19.9	19.8	18.4	18.3	18.3	16.7	19.7	18.1	20.1	18.0	20.5	19.8	19.0	19.7	18.8	19.3	19.3	18.7	20.8	19.3
23:45:00	18.2	18.5	20.2	19.9	20.3	18.8	18.6	19.0	19.5	20.3	20.6	18.6	18.9	19.7	18.3	18.0	18.1	16.5	19.4	17.8	20.0	17.8	20.3	19.2	18.7	19.1	18.3	19.2	19.2	18.5	20.9	19.0
DAY AV	22.8	22.2	20.8	22.4	22.6	20.8	21.2	22.5	23.0	22.6	23.1	23.8	21.9	22.2	21.1	19.9	20.2	20.7	20.7	20.4	23.1	21.2	22.6	22.9	23.2	22.9	21.8	20.7	21.9	20.4	20.4	21.8

July 2019 House C average indoors temperature calculation spreadsheet

DATA LOG 2: HOUSE C

Time	Temperatures																														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	AV
0:00:00	20.4	19.8	20.2	20.9	20.9	20.5	19.9	20.0	19.8	22.1	21.1	20.8	19.8	20.0	20.7	19.8	18.9	19.2	17.8	20.3	19.4	20.9	19.3	21.2	19.6	20.6	19.2	18.3	19.8	20.5	19.2	20.0
0:15:00	20.4	19.6	20.1	20.9	20.6	20.3	19.5	19.6	19.7	22.0	20.9	20.6	19.7	19.7	20.6	19.7	18.7	19.2	17.5	20.2	19.4	20.5	19.3	21.1	19.2	20.3	19.1	18.1	19.7	20.1	18.9	19.8
0:30:00	20.3	19.2	19.6	20.5	20.4	19.8	19.3	19.3	20.6	22.3	20.9	20.5	19.5	19.4	20.5	19.4	18.7	19.2	17.4	19.9	18.6	20.3	18.7	21.0	19.1	20.0	19.2	18.0	19.6	20.9	19.1	19.7
0:45:00	20.4	19.0	19.4	20.3	20.3	19.6	19.3	19.0	20.2	21.9	20.7	20.6	19.3	19.2	20.4	19.3	18.7	19.1	17.4	19.8	18.3	20.1	18.4	20.9	18.8	19.8	19.1	17.9	19.5	19.9	19.0	19.5
1:00:00	19.9	18.9	19.2	20.2	20.1	19.6	19.2	18.8	19.9	21.9	20.5	20.4	19.1	20.3	20.3	19.2	18.6	18.8	17.6	19.6	18.1	19.8	18.2	20.9	20.1	19.7	18.8	17.6	19.3	19.8	19.3	19.5
1:15:00	19.9	18.6	19.2	20.0	19.9	19.4	19.0	18.6	19.6	21.8	20.3	20.4	19.0	19.3	20.3	19.2	18.5	18.7	17.5	19.4	18.0	19.5	18.0	20.7	19.0	19.4	18.7	17.4	19.2	19.7	19.1	19.3
1:30:00	19.8	18.7	19.3	19.9	19.8	20.0	19.1	18.6	19.4	21.5	20.2	20.5	19.1	18.9	19.9	19.3	18.3	18.6	18.7	19.2	17.9	19.2	17.9	20.5	18.6	19.2	18.6	17.3	21.0	19.6	19.0	19.3
1:45:00	19.7	18.2	19.2	20.0	21.9	19.8	19.0	18.5	19.4	21.3	20.0	20.7	18.7	18.8	19.8	19.2	18.0	18.4	17.9	19.1	17.7	19.1	17.7	20.3	18.4	19.0	18.4	17.1	19.3	19.6	19.0	19.1
2:00:00	19.7	18.1	19.1	19.9	20.4	19.5	18.9	18.6	19.3	21.1	21.3	20.3	18.6	18.7	19.7	18.6	18.0	18.3	17.8	19.1	17.5	18.9	17.8	20.1	18.1	18.9	18.3	17.0	19.0	19.1	19.1	19.0
2:15:00	19.5	18.2	19.2	19.7	19.8	19.4	18.9	18.4	19.2	20.9	20.2	20.2	18.6	18.8	19.9	18.6	18.7	18.2	17.8	18.9	17.4	18.9	17.5	19.8	18.0	18.7	18.1	17.0	18.8	18.9	19.0	18.9
2:30:00	19.3	18.3	19.2	19.5	19.6	19.2	19.0	18.4	18.9	20.7	19.9	20.1	18.5	18.8	20.3	18.6	18.1	18.7	17.5	18.8	17.2	18.6	17.4	20.6	17.8	18.3	18.0	17.3	18.7	18.9	19.1	18.8
2:45:00	19.0	18.5	19.4	19.0	19.3	19.2	18.9	18.4	18.9	20.6	19.8	20.0	18.4	18.8	19.7	18.5	18.0	18.3	17.3	18.6	17.4	18.4	17.2	19.8	17.7	18.1	17.8	17.3	18.6	18.8	19.0	18.7
3:00:00	19.2	18.3	19.4	18.8	19.2	19.2	18.9	18.2	18.6	20.6	19.7	19.9	18.1	19.0	19.4	18.4	18.0	18.1	17.2	18.6	17.7	18.4	16.9	19.5	17.6	18.0	17.7	17.4	18.5	18.6	18.9	18.6
3:15:00	19.2	18.3	19.1	18.6	19.0	19.2	18.9	18.2	18.4	20.5	19.5	19.9	18.2	18.5	19.2	18.2	17.9	18.0	17.1	18.5	17.1	18.2	16.7	19.4	17.6	18.0	17.5	17.2	18.2	18.6	18.9	18.4
3:30:00	19.2	18.0	18.6	18.5	18.8	19.2	18.5	18.3	18.3	20.4	19.4	19.8	18.3	18.4	19.2	18.2	17.8	18.0	17.2	18.4	16.9	18.0	16.6	19.3	18.0	17.9	17.4	16.7	18.0	18.5	18.9	18.3
3:45:00	19.1	17.9	18.5	18.3	18.8	18.9	18.4	18.2	18.1	22.2	19.3	19.8	18.0	18.4	19.2	18.1	17.8	17.9	17.1	18.4	16.7	18.0	16.4	19.2	17.8	17.8	17.4	16.5	17.9	18.7	18.8	18.3
4:00:00	19.2	17.7	18.4	18.1	18.7	19.0	18.4	18.0	18.0	21.0	19.3	19.8	18.0	18.4	19.1	18.0	17.7	17.8	17.1	18.7	16.6	18.0	16.4	19.2	17.5	17.7	17.1	16.3	17.7	18.5	18.6	18.2
4:15:00	19.1	17.6	18.3	17.9	18.6	18.9	18.3	18.2	17.8	20.4	19.2	19.8	18.0	18.3	18.9	18.0	17.7	17.8	17.1	18.3	16.5	17.8	16.4	19.1	17.5	17.7	16.9	16.2	17.5	18.2	18.6	18.1
4:30:00	19.0	17.6	18.3	17.7	18.6	18.8	18.2	18.5	17.7	20.3	19.2	19.8	17.9	18.3	18.8	17.9	17.7	17.7	17.0	18.3	16.5	17.7	16.5	19.0	17.4	17.5	16.8	16.0	17.4	18.0	18.5	18.0
4:45:00	19.0	17.7	18.5	17.6	18.6	18.9	18.2	18.1	17.4	20.2	19.2	19.6	17.7	18.3	18.7	17.9	17.6	17.6	17.1	18.2	16.5	17.7	16.5	18.9	17.2	17.5	16.7	15.9	17.4	18.0	18.3	18.0
5:00:00	18.9	17.4	18.3	17.5	18.4	18.7	18.1	18.4	17.3	20.0	19.2	19.4	17.6	18.3	18.6	17.9	17.5	17.5	17.0	18.2	16.5	17.7	16.4	18.7	17.0	17.4	16.5	15.7	17.3	17.9	18.2	17.9
5:15:00	18.9	17.3	18.2	17.6	18.2	18.5	18.0	18.1	17.3	20.0	19.0	19.4	17.6	18.2	18.6	17.9	17.4	17.4	17.0	18.0	16.4	17.7	16.1	18.6	16.8	17.4	16.4	15.7	17.2	18.6	18.2	17.8
5:30:00	18.7	17.2	18.1	17.6	18.1	18.4	18.0	18.1	17.0	19.8	19.0	19.3	17.6	18.1	18.5	18.0	17.4	17.4	17.0	18.0	16.3	17.7	16.0	18.4	16.7	17.4	16.3	15.5	17.0	18.0	18.1	17.7
5:45:00	18.6	17.0	18.0	17.4	17.7	18.5	17.8	18.0	17.1	19.8	18.9	19.1	17.7	18.1	18.5	17.8	17.4	17.3	17.0	17.9	16.1	17.5	16.0	18.3	16.6	17.3	16.2	15.5	16.7	17.9	18.1	17.6
6:00:00	18.5	16.8	18.0	17.3	17.5	18.6	17.7	18.0	17.1	19.7	18.8	19.0	17.7	18.1	18.3	17.7	17.4	17.2	17.0	17.9	16.1	17.4	15.7	18.2	16.5	17.2	16.1	15.4	16.6	17.8	18.0	17.5
6:15:00	18.6	16.7	17.9	17.4	17.4	18.4	17.7	18.2	17.1	19.6	19.0	18.9	17.7	18.0	18.2	17.6	17.4	17.1	17.0	17.8	16.0	17.7	15.7	18.2	16.6	17.4	16.0	15.4	16.4	17.7	18.1	17.5
6:30:00	18.2	17.1	18.1	17.5	17.5	18.4	17.6	18.0	17.8	19.6	19.4	18.9	17.7	18.0	18.3	18.0	17.6	17.1	17.3	17.7	15.9	17.6	15.6	18.0	16.5	17.1	15.9	15.4	16.5	18.4	18.1	17.6
6:45:00	18.0	17.3	18.1	17.9	17.4	18.3	17.7	18.5	18.0	19.9	19.1	19.0	17.7	18.0	18.6	17.8	17.4	17.1	17.6	17.7	15.9	18.0	16.3	18.2	16.8	17.9	15.8	15.5	16.4	19.2	18.2	17.7
7:00:00	18.0	17.0	17.1	17.0	18.0	18.2	17.6	18.0	18.0	19.9	19.4	19.2	17.7	18.0	18.1	17.8	18.0	17.2	17.6	17.6	15.9	17.6	16.0	17.4	16.8	16.8	15.8	17.3	16.1	18.0	18.6	17.6
7:15:00	18.2	17.1	17.2	17.1	17.4	18.3	18.6	17.8	17.5	19.2	19.0	18.6	20.9	18.0	18.0	17.4	17.4	17.4	17.0	17.5	15.9	17.5	15.9	17.8	17.0	16.7	16.0	15.9	16.2	17.5	18.0	17.5
7:30:00	18.6	17.2	17.3	17.2	17.4	18.4	19.7	17.8	17.4	19.3	18.9	18.7	18.3	18.0	18.0	17.4	17.3	17.1	17.1	17.5	16.3	17.5	16.0	18.2	17.4	16.8	19.5	15.7	16.5	17.4	18.0	17.7
7:45:00	18.9	17.2	17.5	17.6	17.4	18.5	18.5	17.8	17.4	19.6	21.8	18.8	18.8	18.1	18.0	17.3	17.4	17.0	17.6	17.5	16.6	17.6	19.3	18.9	18.2	17.0	18.4	15.8	16.6	17.4	17.8	17.9
8:00:00	19.6	17.9	17.9	19.0	17.5	18.5	18.6	18.0	17.4	19.6	20.2	18.9	19.6	18.2	18.1	17.3	17.4	16.9	19.1	17.6	17.2	17.7	19.2	19.2	18.5	17.1	18.6	15.8	16.7	17.4	17.8	18.1
8:15:00	19.0	18.6	18.0	20.4	17.5	19.8	18.5	19.6	17.5	19.7	19.8	19.2	20.1	21.0	19.7	17.2	17.2	16.9	18.1	17.5	18.5	17.8	19.6	20.0	18.9	17.3	18.4	15.9	16.8	17.4	17.9	18.5
8:30:00	18.8	19.2	23.2	22.0	17.8	20.3	19.6	20.6	17.2	19.9	19.5	19.2	21.5	22.1	18.6	17.2	19.2	17.0	18.0	17.4	19.1	18.0	20.9	20.8	20.4	17.5	18.7	16.0	17.2	17.4	17.9	19.1
8:45:00	19.3	19.1	20.6	23.2	18.1	18.9	19.3	19.2	17.7	21.9	19.6	19.8	21.5	22.7	18.1	17.3	18.6	17.2	18.0	17.6	19.5	18.1	21.2	21.9	22.0	17.7	19.8	16.1	18.0	17.4	19.3	19.3
9:00:00	22.3	19.4	19.2	23.9	18.5	18.9	19.4	19.0	17.4	21.6	19.8	20.8	20.0	21.0	18.0	17.4	17.8	17.4	18.0	17.3	19.8	18.3	21.3	22.2	23.0	18.0	19.5	16.2	20.0	17.4	18.3	19.4
9:15:00	23.2	20.4	19.4	24.7	18.9	19.0	18.6	19.1	18.2	20.9	20.0	21.5	21.5	20.9	18.1	20.1	17.8	17.7	18.0	17.3	24.5	18.3	21.8	24.6	23.6	18.0	19.4	16.6	21.4	17.4	17.7	20.0
9:30:00	22.7	21.0	19.8	25.5	22.0	19.2	18.9	18.9	19.3	19.9	20.3	23.0	22.1	19.6	18.3	20.9	17.9	19.4	18.0	17.4	25.4	18.2	22.6	23.1	24.5	18.2	20.2	18.0	22.7	17.5	17.6	20.4
9:45:00	22.9	22.6	20.8	22.9	20.2	19.2	18.8	20.5	20.9	19.8	20.3	24.9	22.9	19.6	18.4	20.8	18.2	20.5	17.8	17.4	24.6	18.2	23.3	21.9	27.8	18.4	20.9	17.7	26.2	17.6	17.7	20.8
10:00:00	22.3	21.7	20.4	21.7	20.1	19.3	18.9	20.5	22.2	20.8	20.8	24.0	22.9	19.4	18.5	19.2	18.4	20.1	18.3	17.2	22.9	18.1	22.2	23.8	24.8	19.5	20.8	18.1	22.2	17.7	17.7	20.5
10:15:00	22.1	21.9	20.5	21.4	20.6	19.4	19.1	20.9	22.6	21.4	22.0	24.3	23.9	20.4	18.8	18.6	18.6	20.8	18.6	20.4	23.5	18.1	23.0	24.0	24.9	21.0	20.7	17.6	22.9	17.8	17.8	20.9
10:30:00	21.9	22.7	20.6	22.2	20.1	19.7	19.3	21.7	23.2	21.5	23.8	24.9	24.0	21.5	19.2	18.4	18.7	21.5	19.3	18.3	23.8	18.4	24.2	23.3	25.0	23.3	20.9	17.2	23.1	19.4	18.0	21.3
10:45:00	21.9	27.0	21.0	22.3	20.4	20.0	19.7	22.0	23.3	21.6	23.6	25.4	23.3	21.0	19.5	17.8	19.1	21.7	19.4	18.0	25.6	18.6	24.7	23.6	25.2	23.5	21.8	17.5	23.4	18.4	18.3	21.6
11:00:00	22.2	25.2	21.0	27.1	20.8	20.4	19.8	22.5	23.9	21.3	23.1	26.3	23.5	21.0	20.3	18.2	19.5	23.0	19.9	18.0	24.8	18.6	25.1	25.3	25.0	23.6	22.8	19.3	23.8	18.0	18.5	22.0
11:15:00	22.2	25.1	20.8	22.5	21.8	20.3	20.1	23.2	24.6	21.5	24.5	26.5	23.9	21.0	20.6	18.5	19.8	21.7	19.8	17.9	26.7	18.7	25.5	25.9	24.8	24.1	23.1	19.4	24.3	18.7	18.6	22.1
11:30:00	22.5	25.4	20.8	23.4	23.3	20.4	20.3	24.3	26.9	21.5	25.6	26.0	24.6	21.3	21.2	18.7	19.8	21.8	20.3	19.6	26.0	19.8	26.2	27.4	26.6	24.8	23.9	20.2	25.4	19.3	18.7	22.8
11:45:00	22.9	25.0	20.9	23.9	23.9	20.8	20.9	24.8	26.8	21.5	26.2	26.1	24.2	21.7	20.9	19.0	19.9	21.6	21.1	19.2	25.8	23.1	29.0	28.2	27.3	25.4	24.7	20.6	25.9	19.6	19.0	23.2
12:00:00	23.1	25.1	21.0	23.5	24.1	20.9	21.1	25.9	26.2	22.2	26.3	24.7	25.1	22.4	21.2	19.5	20.4	21.8	21.6	18.0	25.4	20.1	27.5	28.9	27.6	26.1	25.4	21.5	26.1	20.3	19.8	23.3
12:15:00	24.1	24.8	21.1	24.0	25.1	21.2	21.5	25.9	26.3	22.5	26.4	26.2	26.2	22.6	21.1	19.6	20.5	22.0	21.3	17.9	27.0	20.4	27.2	28.7	28.2	26.4	25.4	22.8	26.9	20.4	20.6	23.7
12:30:00	24.0	26.1	21.4	23.7	25.8	24.0	22.0	25.4	26.7	23.5	26.2	25.8	29.2	22.8	20.9	19.5	20.8	22.0	21.6	18.8	27.0	20.9	26.9	28.4	28.5	26.9	25.1	23.1	27.0	21.4	21.0	24.1
12:45:00	25.9	26.1	21.8	24.7	26.2	21.7	22.4	25.8	26.5	23.7	27.2	26.7	26.4	23.3	21.3	19.3	21.3	22.2	22.3	19.9	27.5	21.3	27.7	28.6	29.0	27.6	24.9	23.5	26.2	21.5	21.4	24.3
13:00:00	24.2	25.3	22.2	25.2	26.2	22.7	23.6	26.0	26.7	23.9	27.6	26.9	26.2	24.0	21.4	19.3	21.5	22.4	22.9	20.3	27.4	21.7	27.2	29.0	29.5	27.7	27.5	23.7	25.5	21.4	21.6	24.5
13:15:00	24.2	25.6	22.6	25.4	26.8	22.7	24.6	25.9	27.6	23.7	27.3	27.2	26.0	24.1	22.4	19.4	21.7	22.7	22.7	20.4	28.3	22.1	28.1	29.9	29.6	28.3	25.3	24.5	25.4	22.1	21.7	24.8
13:30:00	25.3	25.6	23.2	25.5	27.3	23.3	24.1	25.7	28.3	23.7	27.2	27.4	25.9	24.4	23.9	20.1	22.2	23.5	23.0	21.1	29.0	22.4	30.1	29.4	29.5	28.9	25.5	24.8	25.7	21.8	22.0	25.2
13:45:00	24.6	26.6	23.7	25.1	26.4	23.2	23.9	26.0	29.1	24.0	27.8	27.5	26.9	24.6	24.8	20.3	22.2	23.5	23.0	21.7	28.5	23.2	30.6	28.7	28.6	29.0	24.9	25.3	26.2	22.4	22.2	25.3
14:00:00	27.0	26.8	24.0	25.4	26.4	23.7	24.1	26.0	29.1	24.2	28.1	27.3	27.2	25.7	24.6	21.1	22.2	22.8	23.8	22.8	29.4	24.0	30.1	28.8	29.1	29.0	25.6	25.3	26.2	22.9	22.3	25.6
14:15:00	27.2	25.9	23.8	26.5	26.9	24.0	23.9	26.0	28.6	25.5	27.7	28.7	27.3	25.5	24.7	22.0	22.4	24.3	24.0	23.3	29.1	24.6	29.4	28.5	29.4	29.4	25.2	25.5	25.8	22.6	22.9	25.8
14:30:00	27.6	28.8	23.6	25.0	26.1	23.9	23.7	26.0	29.1	24.7	27.7	28.5	26.9	26.2	24.7	22.2	22.8	28.7	23.9	23.6	28.5	24.0	28.8	28.4	29.0	28.4	25.4	25.1	25.2	22.8	22.9	25.9
14:45:00	27.6	28.2	23.5	25.4	25.7	24.0	23.9	25.6	29.2	27.2	27.4	28.9	27.0	25.9	24.2	22.4	23.5	24.9	23.9	23.3	28.0	25.0	28.7	28.3	28.6	27.9	25.8	25.7	25.1	23.0	22.7	25.8
15:00:00	27.9	28.1	23.0	25.7	26.6	24.0	23.8	26.3	29.0	25.4	27.1	29.0	27.0	25.9	24.3	22.5	23.9	24.7	23.3	23.5	27.7	25.4	29.2	28.0	28.8	28.0	25.3	25.2	25.1	23.3	22.7	25.8
15:15:00	27.1	29.5	23.2	25.4	26.0	24.1	23.6	26.2	29.1	25.4	26.9	27.7	27.1	26.1	25.0	22.8	23.9	24.8	23.5	23.5	27.1	25.7	29.4	27.5	28.5	27.7	26.1	25.1	24.7	23.4	23.1	25.8
15:30:00	26.7	28.8	23.5	24.4	25.1	23.6	23.8	26.1	29.1	25.4	26.7	28.0	27.0	24.7	24.4	23.3	24.0	25.1	23.5	24.0	26.7	25.4	29.2	27.1	28.1	28.5	26.4	24.7	24.1	28.8	23.2	25.8
15:45:00	24.7	27.2	23.4	24.7	25.3	23.3	24.4	26.2	29.1	25.3	26.2	27.4	26.9	24.9	24.5	23.5	23.9	25.1	24.1	23.7	26.2	25.1	29.5	27.0	27.0	28.3	27.0	24.5	25.0	27.4	23.1	25.6
16:00:00	25.5	25.4	23.5	25.6	25.2	22.8	24.2	26.1	28.6	25.2	25.4	27.7	26.8	24.7	24.4	23.3	24.1	24.6	24.0	23.3	26.2	25.1	28.1	26.8	26.6	28.2	26.9	23.4	27.0	24.7	23.2	25.4
16:15:00	26.4	25.0	23.8	26.7	24.7	21.9	24.3	26.1	28.0	25.5	25.6	26.9	27.0	24.9	23.6	23.3	24.2	24.5	24.0	23.7	26.2	24.8	26.2	26.7	26.8	27.0	26.3	24.5	24.2	23.8	23.1	25.2
16:30:00	26.5	24.8	23.5	24.7	27.0	21.5	24.3	27.4	26.5	25.4	24.9	26.9	27.0	24.9	23.5	22.9	23.9	26.2	23.7	23.5	26.3	24.6	26.2	26.1	26.5	26.7	26.1	23.2	24.0	23.6	22.5	25.0
16:45:00	26.2	24.4	23.1	24.0	25.4	22.7	24.0	25.9	25.7	24.8	25.4	26.7	26.7	24.7	23.0	22.6	23.1	24.8	23.1	22.6	25.9	24.4	25.8	24.7	26.4	26.4	25.6	22.6	23.6	23.3	23.1	24.5
17:00:00	25.5	24.1	23.0	24.1	24.7	22.4	23.7	24.5	24.9	24.3	24.9	25.9	26.2	24.6	22.9	22.2	26.8	24.0	22.9	22.5	25.6	24.0	25.1	24.2	26.6	28.9	25.4	22.3	24.2	25.5	22.3	24.5
17:15:00	24.5	24.5	22.8	23.9	29.4	22.2	23.5	23.8	24.4	26.5	24.7	25.4	25.9	24.1	22.6	22.2	23.2	22.7	22.6	22.7	25.3	23.6	24.7	23.7	25.9	27.0	25.1	22.2	23.9	25.3	21.5	24.2
17:30:00	23.7	23.6	22.7	23.6	26.5	21.8	23.4	23.2	24.7	25.5	24.1	24.8	25.6	23.9	22.2	24.1	22.2	22.8	22.6	24.5	24.9	23.7	24.9	23.4	27.4	26.3	24.8	21.9	23.7	23.4	20.9	23.9
17:45:00	23.7	24.1	22.5	23.3	29.3	21.5	23.0	22.9	25.5	24.0	27.3	25.8	25.3	24.0	21.8	22.0	22.6	22.4	22.2	22.3	24.7	26.2	27.0	23.2	25.3	26.0	24.6	24.0	23.5	22.9	20.8	24.0
18:00:00	23.5	23.9	22.2	23.2	24.7	20.8	22.6	22.2	26.1	24.9	24.7	26.9	24.8	23.6	21.5	21.3	22.0	22.3	22.0	21.5	24.5	25.8	27.3	23.5	25.4	25.4	24.3	24.3	23.3	23.6	20.5	23.6
18:15:00	23.0	23.5	21.7	23.5	24.6	22.4	24.4	23.0	25.0	23.1	23.8	26.3	24.8	23.5	21.1	20.8	21.5	22.3	21.5	21.2	23.8	26.4	23.9	23.7	24.9	26.1	24.0	23.5	23.0	23.5	20.2	23.4
18:30:00	22.4	22.9	21.4	23.4	23.8	21.8	23.2	21.6	25.9	23.4	26.0	25.9	23.3	23.1	21.2	20.2	21.5	21.7	21.1	21.1	23.6	23.9	24.0	23.3	25.1	24.7	24.7	22.3	22.6	22.7	21.5	23.0
18:45:00	21.9	22.4	21.2	23.2	23.2	22.2	23.2	21.8	25.5	23.2	26.2	26.3	23.1	22.9	21.2	19.8	21.4	25.5	20.9	20.8	23.7	22.3	24.1	22.9	24.0	23.6	22.6	22.3	22.4	22.0	21.2	22.8
19:00:00	21.8	22.5	23.5	23.1	23.4	22.1	24.5	24.1	25.8	22.9	26.1	26.6	23.2	22.9	22.4	19.8	21.2	23.3	20.9	20.4	23.6	22.4	23.9	23.4	24.0	27.8	24.4	22.1	22.2	21.7	24.5	23.2
19:15:00	22.1	22.4	25.0	22.9	23.2	24.7	23.8	23.6	24.1	23.4	26.9	25.9	22.8	22.7	23.8	19.8	25.1	25.1	20.9	20.3	23.5	22.5	22.9	25.6	23.7	29.5	23.5	21.9	22.2	21.7	25.8	23.6
19:30:00	25.7	22.2	23.6	25.8	25.6	25.8	23.8	22.8	23.6	24.9	26.3	25.1	21.9	24.3	22.4	19.6	25.0	23.4	20.9	24.2	24.6	22.6	23.2	25.7	23.1	25.9	22.5	21.6	22.0	21.4	26.5	23.7
19:45:00	27.4	23.2	24.8	23.9	24.2	25.4	24.0	22.3	23.4	24.9	25.0	23.9	23.5	25.1	21.0	19.8	26.1	25.4	21.0	25.0	23.5	22.3	23.0	24.6	22.9	24.7	22.4	21.4	22.2	21.4	23.3	23.6
20:00:00	28.5	22.3	28.3	23.0	24.1	23.3	22.5	22.0	23.2	25.3	26.1	23.2	24.4	23.1	20.6	19.9	25.9	23.9	24.4	26.3	22.9	22.0	22.8	27.0	22.9	24.0	22.2	21.2	21.9	21.3	22.2	23.6
20:15:00	25.1	22.1	25.3	22.9	23.6	21.6	24.3	21.8	22.5	23.9	23.8	22.8	25.6	22.9	23.3	19.9	25.6	22.2	24.6	26.9	22.7	21.6	22.7	24.4	22.6	23.6	21.9	21.5	21.6	21.0	21.5	23.1
20:30:00	23.8	23.5	25.6	27.0	22.6	21.2	21.2	25.8	24.7	23.2	24.6	22.5	25.2	25.4	21.1	21.6	24.6	21.4	24.7	27.0	22.3	24.7	22.5	23.5	22.3	23.4	21.7	21.4	21.4	21.2	21.2	23.3
20:45:00	23.1	22.5	25.5	24.2	22.2	22.7	21.9	22.9	23.1	22.7	23.4	22.3	23.6	22.2	20.8	21.0	22.6	21.0	24.9	26.1	24.7	22.2	22.5	23.0	22.2	23.0	21.4	21.5	23.6	25.8	20.9	22.9
21:00:00	22.7	22.0	25.8	23.3	22.0	21.3	21.4	22.4	22.7	22.2	22.9	22.1	22.9	22.3	23.0	20.5	22.0	20.3	24.3	23.7	26.6	21.7	22.3	22.6	22.1	22.7	21.0	21.5	22.1	23.4	20.7	22.5
21:15:00	22.2	21.9	22.8	23.0	21.7	21.0	21.0	22.3	22.9	21.9	22.9	21.9	22.4	22.4	22.0	20.2	21.3	19.9	24.5	22.6	24.0	21.3	22.2	22.2	22.2	22.4	20.9	21.4	21.7	21.8	20.3	22.0
21:30:00	22.0	21.5	22.7	22.5	21.5	22.1	21.4	23.0	24.0	21.8	22.3	22.0	21.9	22.2	21.2	19.9	20.9	19.7	24.8	22.0	23.6	21.0	22.0	21.9	22.0	22.2	20.8	21.3	21.7	21.6	20.1	21.9
21:45:00	21.4	21.7	22.1	22.7	22.1	20.9	21.2	22.9	22.3	23.3	22.1	21.8	21.5	24.3	20.9	19.8	20.8	19.3	22.6	21.6	22.9	20.9	22.0	25.3	21.6	21.8	20.7	21.0	21.3	21.4	20.5	21.8
22:00:00	21.1	24.1	23.7	22.0	21.8	20.7	21.4	21.9	22.3	22.1	22.0	21.4	21.4	22.7	20.5	24.0	20.3	19.2	22.9	21.2	22.6	20.9	21.9	22.4	21.3	21.6	20.5	20.9	21.5	20.7	20.6	21.7
22:15:00	20.8	22.5	22.2	25.5	21.7	20.3	21.3	21.4	21.9	21.7	21.8	21.1	21.1	22.0	20.4	20.4	19.9	19.0	22.0	20.9	22.4	20.5	22.6	21.6	21.3	21.4	20.4	20.8	21.2	20.9	20.3	21.3
22:30:00	20.5	22.4	21.8	22.6	21.3	20.1	20.9	21.1	22.1	21.5	21.3	21.7	20.8	21.7	19.9	19.9	19.8	18.8	21.5	20.6	22.5	20.2	22.2	21.2	21.0	21.1	20.1	20.7	21.0	20.3	20.2	21.0
22:45:00	20.5	22.3	21.6	22.0	21.2	19.9	21.1	20.9	21.7	21.4	21.1	21.4	21.5	21.3	19.8	19.6	19.8	18.7	21.4	20.3	22.0	20.1	22.2	20.9	20.9	20.9	19.5	20.7	20.7	20.1	19.8	20.8
23:00:00	20.0	22.1	21.4	21.7	21.1	19.7	20.8	20.4	24.5	21.3	21.0	20.9	20.9	21.3	19.8	19.5	19.6	18.5	21.2	20.0	22.0	20.5	21.8	20.6	20.8	20.1	19.2	20.5	20.5	19.9	19.7	20.7
23:15:00	19.9	21.3	21.2	21.5	20.9	19.6	20.4	20.3	22.5	21.2	20.9	22.6	20.9	21.0	19.9	19.2	19.5	18.4	20.9	19.7	21.7	20.0	21.8	20.4	20.6	19.8	19.0	20.4	20.4	19.8	19.5	20.5
23:30:00	19.7	20.9	21.0	21.5	20.6	20.5	20.3	20.1	22.1	21.0	21.1	20.6	20.6	20.9	19.8	19.1	19.3	18.2	20.5	19.5	21.7	19.8	21.6	20.3	21.5	19.6	18.7	20.3	20.3	19.5	19.5	20.3
23:45:00	19.6	20.5	20.9	21.2	20.4	19.9	20.9	20.1	21.9	21.2	20.8	20.2	20.3	20.7	19.7	19.0	19.3	18.0	20.5	19.6	21.4	19.5	21.3	19.9	20.9	19.4	18.6	20.2	20.3	19.3	19.5	20.2
DAY AV	22.0	21.7	21.1	22.0	21.8	20.7	20.8	21.6	22.4	22.2	22.7	23.0	22.2	21.5	20.7	19.7	20.2	20.5	20.3	20.3	22.1	20.6	22.2	22.9	22.5	22.2	21.1	19.8	21.4	20.4	20.1	21.4

July 2019 graphical temperature plot



August 2019 average outdoors temperature calculation spreadsheet

DATA LOG 1: OUTDOORS

Time	Temperatures																															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	AV
0:00:00	15.8	16.0	15.9	15.5	15.0	16.1	18.0	17.8	15.9	15.8	16.5	14.8	14.9	15.4	16.1	15.9	15.1	17.1	16.7	14.7	16.0	16.9	17.5	17.5	15.8	16.1	15.3	17.0	15.8	16.5	16.4	16.1
0:15:00	15.8	16.0	15.9	15.2	15.0	15.9	18.0	17.4	15.9	15.6	16.4	14.6	14.7	15.1	15.8	16.1	14.8	16.6	16.7	14.8	15.9	16.8	16.9	17.2	16.0	16.0	15.1	17.0	15.7	16.2	16.5	16.0
0:30:00	15.8	15.9	15.8	14.9	14.9	15.9	17.9	17.5	15.5	15.5	16.0	14.2	14.5	14.9	15.4	15.7	14.5	16.1	16.5	15.1	16.1	16.9	16.8	17.1	16.2	16.2	15.1	17.0	15.8	16.3	16.4	15.9
0:45:00	15.7	15.8	15.8	14.9	14.6	15.5	17.4	17.3	15.6	15.4	15.9	14.9	14.1	14.7	14.9	15.8	14.1	15.6	16.6	15.2	15.9	16.5	16.5	16.9	15.9	16.2	15.2	17.2	15.5	16.3	16.4	15.8
1:00:00	15.5	15.8	16.1	15.2	14.6	15.4	17.1	17.3	15.1	15.6	16.0	14.6	14.2	14.5	14.7	15.6	14.3	15.4	16.6	15.2	15.8	16.4	16.5	17.0	15.9	16.5	14.8	17.0	15.4	16.3	16.1	15.7
1:15:00	15.2	15.8	15.8	15.2	14.5	15.2	17.1	17.2	15.2	15.9	16.0	14.7	13.8	14.5	14.2	15.6	14.1	15.2	16.4	15.2	15.5	16.1	16.5	16.8	15.9	16.2	14.8	16.7	15.4	15.9	16.2	15.6
1:30:00	15.4	15.6	15.9	15.1	14.3	15.1	16.8	17.2	15.1	16.1	15.9	14.8	13.8	14.2	13.9	15.5	14.2	15.2	16.2	14.8	15.7	16.2	16.5	16.5	15.9	16.2	15.2	16.6	15.2	15.9	16.1	15.5
1:45:00	15.3	15.3	15.9	15.1	14.5	14.5	16.9	17.0	14.5	16.3	15.8	14.7	13.1	14.0	13.5	15.3	14.5	14.9	16.0	14.8	15.0	16.3	16.2	16.3	15.9	16.2	15.1	16.5	15.5	16.0	16.2	15.4
2:00:00	15.3	15.1	15.8	14.6	14.0	14.4	16.9	17.0	14.5	16.0	15.4	14.8	13.7	14.1	13.5	14.8	14.5	14.7	16.0	15.0	15.2	16.0	16.4	16.3	15.9	15.7	15.4	16.1	15.6	16.2	16.2	15.3
2:15:00	15.2	14.7	15.9	14.5	13.9	14.6	17.1	17.0	14.2	16.0	15.6	14.8	13.8	14.2	13.4	14.8	14.6	14.3	15.9	14.6	14.8	15.9	16.0	15.9	15.4	15.7	15.7	15.9	15.6	16.2	16.1	15.2
2:30:00	15.3	15.1	15.8	14.3	13.9	14.1	17.0	16.9	14.2	16.0	15.5	14.7	13.7	14.5	13.8	14.8	14.2	14.1	15.8	14.6	14.7	15.9	16.1	15.7	15.0	15.9	15.5	15.9	15.5	15.9	15.9	15.2
2:45:00	15.2	15.2	15.8	14.6	13.9	14.5	16.5	16.8	14.5	15.7	15.4	14.6	14.2	14.5	13.9	14.7	14.1	14.1	15.7	14.5	14.7	15.7	15.9	16.2	15.2	16.1	15.3	15.5	15.3	16.0	16.1	15.2
3:00:00	15.2	15.2	15.7	14.6	13.8	14.3	16.8	17.0	14.2	15.8	15.5	14.6	14.2	14.7	13.8	14.5	14.2	14.5	15.7	14.6	15.0	15.7	16.0	16.1	15.7	16.2	15.3	15.3	15.3	15.9	16.0	15.2
3:15:00	15.2	15.0	15.7	14.7	13.9	14.4	16.7	16.7	13.9	15.8	15.5	13.9	14.2	14.7	13.6	14.4	14.3	14.8	15.6	14.5	14.9	15.6	15.9	16.1	15.1	16.0	14.7	15.1	15.1	15.9	15.9	15.1
3:30:00	15.2	14.6	15.7	14.3	13.9	14.3	16.5	16.6	14.2	15.8	15.7	13.6	14.3	14.6	13.3	14.5	14.2	14.5	15.7	14.5	15.0	15.9	15.9	16.2	15.1	15.8	14.4	15.1	15.2	15.9	15.9	15.0
3:45:00	15.2	14.5	15.7	14.3	13.9	14.1	16.6	16.2	14.0	15.8	14.8	13.5	14.0	14.5	13.3	14.5	14.2	14.5	15.5	14.5	14.6	15.4	15.9	16.3	15.0	15.8	14.2	15.1	14.5	15.9	15.9	14.9
4:00:00	15.3	14.3	15.6	13.8	13.6	13.7	16.5	16.5	14.0	15.7	15.2	13.7	13.8	14.6	13.4	14.5	13.9	14.3	15.6	14.2	14.5	15.3	15.8	16.0	15.1	15.9	14.3	14.5	14.5	15.9	15.9	14.8
4:15:00	15.2	14.1	15.6	13.5	13.2	13.8	16.8	16.5	14.1	15.4	15.0	13.7	14.1	14.4	13.4	14.5	13.5	14.6	15.3	14.0	14.5	15.2	15.8	16.0	14.6	16.0	14.6	14.7	14.5	15.8	15.9	14.8
4:30:00	15.2	14.1	15.6	13.3	13.4	13.7	16.6	16.4	14.0	15.4	15.0	13.8	14.2	14.5	13.8	14.5	13.9	14.5	15.3	13.7	14.4	15.0	15.7	15.8	14.5	15.7	14.7	14.2	14.5	15.7	15.8	14.7
4:45:00	15.2	14.5	15.5	13.3	13.4	13.5	16.7	16.4	14.0	14.7	15.0	13.4	13.9	14.5	13.7	14.5	13.9	14.5	15.2	13.8	14.4	14.9	15.5	15.9	14.5	15.5	14.7	14.4	14.5	15.9	15.7	14.7
5:00:00	15.2	14.3	15.6	13.4	13.3	13.2	16.7	16.4	14.0	14.6	15.2	13.8	14.3	14.5	13.6	14.5	13.9	14.4	15.2	13.7	14.4	14.8	15.7	15.9	14.6	15.6	14.7	14.5	14.6	15.9	15.5	14.7
5:15:00	15.2	14.2	15.5	13.3	13.7	13.4	16.5	16.2	13.8	15.2	14.9	14.0	13.7	14.4	13.2	14.3	13.9	14.5	15.2	13.9	14.4	15.2	15.7	15.6	14.6	15.4	14.6	14.0	14.5	15.9	15.6	14.7
5:30:00	15.2	14.2	15.1	13.2	13.7	13.6	16.3	16.2	13.5	15.2	14.7	13.9	13.9	14.5	13.2	14.2	13.7	13.9	15.1	13.7	14.2	14.7	15.5	15.6	14.3	15.8	14.4	14.4	14.7	15.9	15.6	14.6
5:45:00	15.3	13.8	15.2	12.7	13.9	13.2	16.2	16.2	13.8	14.9	14.4	13.9	13.8	14.4	13.0	13.9	13.7	14.2	14.9	13.6	14.4	14.7	15.5	15.2	14.2	15.6	14.3	13.8	14.6	15.8	15.7	14.5
6:00:00	15.2	13.6	15.1	13.0	13.8	13.1	16.4	16.0	13.4	14.8	14.7	13.8	13.9	14.4	12.9	14.0	13.6	14.2	14.8	13.6	14.4	14.7	15.4	15.2	14.1	15.4	14.4	13.6	14.6	15.8	15.8	14.4
6:15:00	15.2	13.6	14.8	12.7	13.7	13.4	16.0	16.1	13.7	14.8	15.2	13.9	13.6	14.1	13.2	13.9	13.7	14.0	14.9	13.5	14.5	14.5	15.4	15.2	14.1	15.6	14.4	13.8	14.7	15.9	15.6	14.4
6:30:00	15.2	13.5	14.7	12.6	13.4	13.2	16.1	15.8	13.3	14.6	14.5	13.9	13.9	14.3	12.7	13.6	13.8	13.8	14.9	13.2	14.1	14.7	15.7	15.4	13.9	15.6	14.3	13.4	14.6	15.8	15.4	14.3
6:45:00	15.3	13.6	14.8	12.5	13.4	13.2	16.1	15.8	13.2	14.8	14.9	13.9	14.1	14.1	12.7	13.7	13.7	14.3	14.9	13.4	14.3	14.7	15.5	15.5	13.8	15.1	14.2	13.5	14.7	15.9	15.4	14.4
7:00:00	15.2	13.9	15.0	12.7	13.7	13.2	16.1	15.7	13.3	14.6	15.0	14.1	14.0	14.5	13.1	13.6	13.5	14.4	14.8	13.5	14.4	14.6	15.4	15.4	14.0	15.4	14.3	13.9	14.7	15.9	15.3	14.4
7:15:00	15.2	13.9	14.7	13.2	14.4	13.9	16.3	15.9	14.2	14.7	14.8	13.9	13.9	14.5	12.9	13.9	13.6	14.0	14.9	13.6	14.4	14.5	15.3	15.3	13.9	15.7	14.5	14.7	14.9	15.9	15.7	14.6
7:30:00	15.2	14.5	14.6	14.2	15.5	14.7	16.1	16.1	15.1	14.8	14.8	13.8	14.1	14.7	12.9	13.8	14.0	14.3	14.9	13.6	14.4	14.8	15.4	15.3	13.9	15.5	15.0	15.4	15.1	15.9	15.7	14.8
7:45:00	15.3	14.9	14.6	14.9	16.2	15.8	16.2	16.0	15.6	15.2	15.1	13.6	14.0	14.7	12.7	13.8	14.6	14.4	14.7	14.0	14.5	14.8	15.5	15.4	14.3	16.0	15.3	15.3	15.1	15.8	16.4	15.0
8:00:00	15.4	15.0	14.7	15.6	16.7	15.9	16.2	16.5	15.9	15.2	15.1	13.9	14.5	14.8	12.6	13.9	14.8	14.5	15.1	13.9	14.5	15.1	15.8	15.5	14.8	15.9	15.2	15.4	15.0	15.8	16.4	15.1
8:15:00	15.6	15.1	14.7	15.3	16.3	16.0	16.2	16.8	15.9	15.4	15.3	13.5	14.5	14.8	12.9	13.7	15.1	14.8	15.1	14.2	14.7	15.3	16.3	15.6	14.7	15.9	15.9	16.0	15.0	15.8	16.6	15.3
8:30:00	16.0	15.5	14.3	15.9	16.9	16.5	16.1	17.1	16.7	15.5	15.7	14.1	14.8	14.9	13.1	13.8	15.2	15.2	15.1	14.3	14.9	15.4	16.2	15.6	15.0	15.5	16.0	16.9	14.8	15.7	16.4	15.5
8:45:00	16.5	15.6	14.3	16.5	17.2	17.0	16.2	17.9	16.5	16.2	14.9	14.3	14.5	15.2	14.4	13.6	15.8	16.4	15.0	14.9	15.2	15.6	16.2	15.4	15.3	15.7	16.2	16.7	15.2	16.1	17.8	15.8
9:00:00	16.5	16.5	14.7	17.2	17.8	17.3	16.3	17.7	17.0	16.8	15.1	13.9	14.8	15.5	14.5	13.9	16.0	16.3	14.9	14.9	14.7	15.6	16.1	15.5	16.4	15.5	17.0	17.2	15.6	16.0	17.7	16.0
9:15:00	16.7	16.2	14.7	17.7	18.7	16.8	16.2	18.2	17.2	16.8	15.6	14.8	14.9	15.4	16.2	13.9	15.9	16.5	15.0	15.1	15.9	15.8	15.9	15.5	16.5	15.8	17.0	18.2	15.8	16.3	17.9	16.2
9:30:00	16.8	17.0	15.2	17.5	19.0	17.2	16.4	18.5	17.9	17.5	15.1	14.6	15.0	15.5	15.2	13.9	16.5	16.7	14.9	15.2	15.6	15.9	16.3	16.4	16.0	16.0	17.9	19.3	16.2	16.2	17.7	16.4
9:45:00	16.8	17.3	15.2	17.9	19.3	18.3	16.4	18.5	18.6	17.9	15.4	15.3	15.0	15.6	15.6	13.2	16.5	17.3	15.3	15.2	16.5	16.0	16.4	17.7	16.0	16.6	17.7	19.5	16.3	16.0	17.8	16.7
10:00:00	17.9	17.7	15.9	17.8	19.7	18.8	16.5	19.7	19.1	18.3	15.5	16.2	15.2	15.5	15.9	13.4	16.8	17.1	15.3	15.2	17.0	16.3	17.0	17.3	16.8	16.7	18.4	20.1	16.3	16.5	18.0	17.0
10:15:00	17.9	18.0	16.0	17.8	19.7	19.4	16.9	19.0	19.5	19.2	15.7	16.5	15.7	15.9	16.6	13.7	16.7	17.6	15.2	16.1	17.0	17.1	17.0	17.1	17.5	18.1	19.2	21.2	16.7	16.7	19.0	17.4
10:30:00	18.2	17.8	15.9	18.7	20.3	19.9	17.1	19.7	19.8	18.2	15.9	16.2	16.3	16.3	16.2	14.5	17.0	17.5	15.6	16.0	17.1	17.1	16.6	17.0	17.2	18.7	18.6	21.0	17.3	17.0	18.7	17.5
10:45:00	18.5	18.0	16.5	19.0	20.2	20.8	17.6	19.9	19.5	18.5	15.9	16.5	15.9	16.5	16.4	15.0	17.2	17.9	15.6	15.9	17.3	19.1	17.3	17.2	17.7	18.8	19.3	21.1	17.9	17.7	19.2	17.9
11:00:00	18.8	17.6	17.5	19.1	21.1	21.2	18.6	20.6	19.7	18.8	16.5	16.9	17.2	16.5	16.0	15.7	17.0	18.5	16.2	16.5	17.6	18.5	16.7	17.0	19.0	18.5	20.0	21.9	18.7	17.7	19.3	18.2
11:15:00	19.5	17.5	17.1	19.4	21.4	21.7	18.4	20.6	20.4	19.5	16.4	16.4	17.9	16.7	16.5	15.2	17.2	18.6	15.9	16.8	17.6	19.0	17.0	17.2	18.9	19.6	20.4	22.0	18.4	17.6	20.3	18.4
11:30:00	19.6	17.9	17.9	19.8	21.4	22.4	18.9	20.0	20.7	19.8	16.5	16.7	18.3	16.8	16.5	15.5	17.0	18.5	15.8	16.7	17.8	18.5	17.7	17.7	19.2	19.5	21.3	23.6	18.9	18.0	20.6	18.7
11:45:00	20.8	18.0	18.3	20.2	22.0	22.0	19.2	20.8	20.8	19.6	16.4	17.4	18.5	17.0	15.9	15.9	17.3	18.6	15.9	16.5	17.8	19.4	18.5	18.6	19.7	20.3	20.2	22.4	19.9	18.1	20.3	18.9
12:00:00	19.9	17.9	18.7	20.3	22.7	21.8	19.1	21.4	21.8	20.3	16.0	18.0	19.2	17.8	16.7	16.4	17.2	19.3	16.7	17.0	18.0	19.2	18.4	18.5	19.8	20.3	20.9	22.0	20.0	18.6	20.5	19.2
12:15:00	19.9	18.1	19.3	20.7	23.2	21.5	19.3	21.9	21.3	20.4	16.4	18.1	20.3	17.9	17.3	16.3	17.2	19.5	17.6	17.4	18.4	19.4	18.6	18.6	20.6	20.3	19.9	21.7	20.8	18.9	21.0	19.4
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12:45:00	21.3	18.9	18.9	21.4	23.3	23.3	19.6	21.9	22.6	20.3	16.8	18.5	19.9	18.8	17.9	17.1	18.2	20.2	17.3	18.6	19.7	19.9	20.8	19.6	20.4	21.5	21.5	23.8	21.7	19.6	21.7	20.2
13:00:00	20.6	18.5	20.2	21.6	23.4	23.4	20.2	21.7	22.2	20.2	16.8	19.1	20.3	18.7	17.5	17.9	18.5	20.6	17.1	18.0	18.9	20.3	20.9	20.0	20.7	20.8	22.0	25.0	21.1	20.7	21.7	20.3
13:15:00	20.8	18.9	20.3	21.8	23.4	22.4	20.3	21.3	22.0	20.7	17.2	19.0	21.3	18.9	17.9	17.7	18.9	20.6	16.7	18.5	19.8	20.5	21.5	20.6	21.3	21.6	22.7	24.0	20.7	20.4	21.4	20.4
13:30:00	22.1	18.7	20.3	21.8	23.4	23.4	20.5	20.4	22.5	21.2	17.2	19.3	20.7	18.7	17.8	17.7	19.4	20.4	16.9	18.6	19.3	20.3	21.9	20.2	21.3	20.8	22.0	24.0	20.8	21.2	20.8	20.4
13:45:00	22.7	19.1	20.1	22.0	23.9	24.1	21.4	21.3	22.8	20.8	17.1	20.3	21.5	18.8	18.4	17.5	19.1	20.3	16.4	19.0	20.2	20.6	21.9	19.8	21.4	20.8	22.1	24.5	20.7	21.4	21.4	20.7
14:00:00	21.2	20.3	19.9	22.3	24.0	24.3	20.5	21.0	23.3	20.6	17.3	20.2	22.0	19.8	18.5	17.9	19.7	20.4	17.0	19.3	19.9	21.7	22.5	18.8	21.4	21.3	23.2	23.2	20.6	20.3	21.4	20.8
14:15:00	22.0	19.2	20.5	22.4	24.2	24.1	21.7	21.4	24.0	20.8	18.3	20.8	21.6	20.2	18.7	17.9	20.1	21.2	17.3	19.3	20.1	21.4	22.9	18.2	21.3	21.5	23.0	23.1	20.5	20.7	21.8	21.0
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14:45:00	21.8	20.6	21.6	22.6	23.5	24.3	21.4	21.3	23.1	21.1	18.5	21.6	22.1	19.8	18.5	18.5	20.2	21.5	17.1	19.5	20.8	22.3	22.5	18.4	21.9	22.1	23.2	22.7	20.8	20.9	21.4	21.1
15:00:00	22.7	20.3	20.6	22.7	24.5	24.0	21.0	21.5	23.1	21.9	18.6	20.6	22.0	20.8	18.7	18.4	19.9	20.9	17.4	19.7	21.6	22.8	22.8	18.5	21.5	22.0	23.5	22.8	20.8	21.1	21.5	21.2
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15:30:00	22.3	21.4	21.3	22.7	24.4	24.7	21.9	22.0	23.9	22.0	18.9	20.8	22.4	20.3	18.8	17.9	20.7	20.8	17.6	20.2	21.1	21.5	21.7	19.3	22.8	22.3	22.6	22.0	21.1	20.6	22.1	21.4
15:45:00	22.1	19.8	20.4	22.7	23.4	24.5	22.0	22.0	23.4	22.7	19.0	20.8	22.5	20.5	19.0	18.1	20.6	20.6	17.7	20.3	20.8	22.5	21.7	19.1	22.4	22.8	22.7	21.4	20.8	20.7	21.7	21.2
16:00:00	22.0	17.3	20.9	22.7	24.5	23.5	22.2	22.2	23.2	21.5	19.3	20.7	22.2	20.7	18.7	19.0	20.1	20.3	18.0	20.5	20.8	21.8	22.8	18.7	21.6	22.5	22.6	20.8	21.1	21.4	22.4	21.2
16:15:00	21.8	17.8	21.0	23.2	24.2	22.9	22.0	22.1	22.4	21.5	18.8	21.1	22.2	20.4	18.7	18.5	20.1	20.0	17.9	20.3	21.1	22.4	22.7	18.5	21.9	22.1	22.7	19.1	21.3	20.8	21.7	21.0
16:30:00	21.9	17.9	20.4	22.8	24.1	24.0	21.7	21.7	22.1	21.3	19.0	21.3	22.0	19.7	18.8	18.0	20.4	20.0	17.6	20.0	21.0	22.4	22.2	18.6	21.9	22.0	22.5	17.6	21.3	20.8	21.4	20.9
16:45:00	20.6	18.2	21.3	22.2	23.1	24.4	22.2	21.9	21.5	21.3	19.0	20.9	22.0	19.7	18.5	18.2	20.2	19.9	17.2	20.2	20.7	22.4	21.8	18.5	21.8	21.8	22.4	17.0	21.2	20.8	21.1	20.7
17:00:00	18.4	18.4	20.1	22.4	22.9	23.3	21.7	21.4	21.3	21.1	18.7	21.0	21.9	19.7	18.7	18.2	20.2	20.0	17.3	19.8	20.9	22.0	22.3	18.6	21.4	21.4	22.4	17.2	21.4	20.4	20.6	20.5
17:15:00	18.6	18.7	19.8	21.8	23.8	22.8	22.0	21.1	21.0	21.2	18.8	20.6	21.8	19.5	18.5	17.9	20.1	20.3	17.1	20.3	20.5	21.5	22.3	18.3	21.3	21.6	22.0	17.1	21.5	20.3	20.3	20.4
17:30:00	18.8	19.0	20.1	21.4	23.4	22.3	21.4	21.3	20.7	21.0	18.7	20.3	21.6	19.6	18.7	17.9	19.9	20.2	17.0	19.9	20.3	21.3	22.3	18.1	21.0	21.5	21.6	16.9	20.4	19.9	20.3	20.2
17:45:00	19.0	18.4	20.4	21.4	23.2	22.4	21.0	21.1	19.9	20.8	18.5	20.2	21.2	19.3	18.6	17.8	19.7	19.8	17.0	19.7	20.3	21.1	22.2	18.2	21.0	21.1	20.7	16.7	19.3	19.6	19.9	20.0
18:00:00	18.9	18.9	20.0	21.3	22.4	22.0	20.9	20.8	19.8	20.8	18.2	20.0	21.1	19.1	18.4	17.6	19.7	19.8	16.8	19.9	20.3	20.8	21.6	17.9	20.8	20.9	20.4	17.0	19.3	19.4	19.9	19.8
18:15:00	19.3	18.3	19.7	21.0	21.9	21.4	20.9	20.7	19.6	20.4	17.8	19.5	20.8	18.6	18.3	17.3	19.4	19.7	16.7	19.5	19.9	20.4	21.5	18.0	20.5	20.6	20.3	17.2	18.7	19.1	19.7	19.6
18:30:00	19.0	18.2	19.4	20.5	21.4	21.4	20.9	20.3	19.6	20.3	17.4	18.9	20.7	18.5	17.9	17.2	19.1	19.5	16.6	19.1	19.9	20.2	21.4	17.9	20.3	20.3	20.3	16.8	18.6	19.0	19.7	19.4
18:45:00	19.2	17.6	19.1	19.9	21.3	21.1	20.6	20.0	19.1	20.0	17.0	18.6	20.6	18.5	18.1	17.1	19.1	19.4	16.5	18.8	19.7	20.1	21.2	17.7	20.1	19.8	20.2	16.8	18.2	18.8	19.8	19.2
19:00:00	19.0	17.3	19.1	19.4	21.1	20.8	20.3	19.6	19.1	19.7	16.7	18.4	20.3	18.2	17.9	17.1	18.9	19.3	16.5	18.6	19.6	19.8	20.9	17.7	19.8	19.6	20.1	17.1	18.4	18.5	19.5	19.0
19:15:00	18.6	17.5	19.0	19.1	20.9	20.9	20.1	19.5	18.6	19.6	16.9	18.2	19.9	18.0	18.0	17.0	18.8	19.1	16.4	19.1	19.4	19.7	20.6	17.6	19.7	19.2	19.9	16.7	18.2	18.4	18.8	18.8
19:30:00	18.8	17.7	18.6	18.7	20.7	20.8	20.0	19.1	18.8	19.2	17.4	17.8	19.6	17.8	17.8	17.0	18.6	18.5	16.4	18.9	19.4	19.6	20.3	17.5	19.6	19.1	19.5	16.6	18.2	18.1	18.3	18.7
19:45:00	18.4	17.2	18.5	18.4	20.3	20.7	19.8	19.0	18.6	19.6	17.4	17.5	19.2	17.7	17.5	16.8	18.5	18.3	16.2	18.8	19.3	19.3	20.0	17.5	19.5	19.1	19.5	16.5	17.5	18.1	16.5	18.4
20:00:00	18.4	16.9	18.0	18.7	20.1	20.8	19.7	18.6	18.3	19.5	17.5	17.2	18.7	17.6	17.4	16.8	18.5	18.2	15.9	18.6	19.2	19.2	20.0	17.5	19.4	18.9	19.3	16.5	17.2	18.0	16.6	18.3
20:15:00	17.9	16.8	17.7	18.8	19.7	20.8	19.5	18.6	18.5	19.2	17.2	17.0	18.4	17.3	17.4	16.8	18.4	18.0	16.1	18.5	19.0	19.1	19.9	17.5	19.2	18.5	19.4	16.9	17.2	17.8	16.5	18.2
20:30:00	17.8	16.7	17.2	18.9	19.7	19.7	19.4	18.5	18.2	18.9	17.2	16.5	18.3	17.4	17.4	16.7	18.4	18.0	15.9	18.5	18.9	19.0	19.7	17.3	18.9	18.4	19.0	16.5	17.2	17.8	16.5	18.0
20:45:00	17.7	17.2	17.2	18.5	19.3	19.6	19.1	17.9	17.8	18.7	17.2	16.3	18.0	17.1	17.2	16.5	18.3	17.9	15.9	18.3	18.6	18.7	19.5	17.2	18.7	17.8	18.9	16.6	17.1	17.7	16.7	17.8
21:00:00	17.5	16.8	17.0	18.1	18.9	19.4	19.0	17.8	18.1	18.4	16.8	16.2	17.9	16.8	17.2	16.5	18.2	17.5	15.8	18.2	18.5	18.5	19.2	17.2	18.6	17.8	18.8	16.8	17.1	17.6	16.6	17.7
21:15:00	17.4	16.8	16.7	17.7	18.5	19.4	18.7	18.1	17.8	18.5	16.6	15.9	17.6	16.9	17.3	16.5	18.1	17.2	15.6	18.0	18.3	18.4	19.2	16.8	18.3	17.3	18.5	16.6	17.0	17.4	17.0	17.6
21:30:00	17.2	16.8	16.5	17.2	18.0	19.2	18.5	17.9	17.5	18.6	16.5	15.9	17.4	17.1	17.0	16.5	17.9	17.1	15.8	17.8	17.9	18.5	19.0	16.5	17.9	17.2	18.5	16.2	16.7	17.2	17.0	17.4
21:45:00	17.2	16.8	16.7	16.9	17.8	19.4	18.3	17.8	17.5	17.9	16.1	15.8	17.1	17.0	17.1	16.5	17.9	17.1	15.5	17.7	17.8	18.1	18.1	16.8	17.9	16.8	17.9	16.4	17.1	17.4	17.2	17.3
22:00:00	17.0	16.8	16.5	16.6	17.5	19.0	18.1	17.8	17.5	17.9	15.9	15.7	16.7	16.9	17.1	16.5	17.8	16.9	15.2	17.5	17.5	18.0	17.9	16.6	17.6	16.6	18.1	16.4	16.8	17.4	17.1	17.1
22:15:00	16.7	16.7	16.2	16.5	17.2	18.9	18.2	17.7	17.3	17.4	15.6	15.5	16.8	16.9	17.0	16.5	17.9	17.1	15.1	17.3	17.5	17.8	17.9	16.7	17.8	16.3	17.8	16.3	16.9	17.1	16.6	17.0
22:30:00	16.5	16.6	15.9	16.0	16.9	19.1	17.9	17.5	17.2	16.9	15.5	15.5	16.8	17.0	16.8	16.3	17.7	17.0	15.1	17.2	17.3	17.7	17.8	16.4	17.4	16.2	17.6	16.4	16.7	16.9	16.7	16.9
22:45:00	16.5	16.5	15.7	16.1	16.6	18.9	17.9	17.2	17.1	17.1	15.6	15.3	16.5	16.7	16.8	16.1	17.6	16.7	15.1	17.2	17.2	17.7	17.6	16.1	17.5	15.9	17.7	16.5	16.8	17.1	16.5	16.8
23:00:00	16.3	16.2	15.8	15.8	16.8	18.6	17.9	16.9	16.9	16.7	15.5	15.6	16.5	16.8	16.5	15.9	17.6	16.8	15.0	16.9	17.2	17.7	17.9	16.1	17.0	15.9	17.2	16.2	16.9	17.0	16.7	16.7
23:15:00	16.3	16.2	15.7	15.5	16.4	18.5	17.9	16.4	16.4	16.9	15.3	15.7	16.4	16.5	16.5	15.4	17.3	16.9	14.7	16.7	17.1	17.6	17.9	16.0	16.5	15.6	17.2	16.1	16.8	16.9	16.8	16.5
23:30:00	16.3	16.1	14.9	15.5	16.5	18.0	17.8	16.2	16.3	16.5	15.1	15.5	15.9	16.3	16.4	15.2	17.3	16.9	14.9	16.5	17.0	17.3	17.8	16.1	16.5	15.5	17.6	15.9	16.7	16.9	16.5	16.4
23:45:00	16.1	15.8	15.2	15.3	16.1	18.1	17.6	15.9	16.0	16.4	14.9	15.1	15.6	16.3	16.3	15.2	17.2	16.7	14.7	16.4	17.0	17.2	17.8	16.2	16.4	15.7	17.3	15.9	16.5	16.7	16.7	16.3
DAY AV	17.7	16.7	17.2	17.6	18.6	18.7	18.5	18.6	18.0	18.0	16.4	16.5	17.2	16.7	16.0	15.9	16.9	17.3	16.0	16.7	17.3	18.0	18.4	17.1	17.8	18.0	18.2	17.8	17.4	17.7	18.1	17.4

August 2019 House B average indoors temperature calculation spreadsheet

DATA LOG 3: HOUSE B

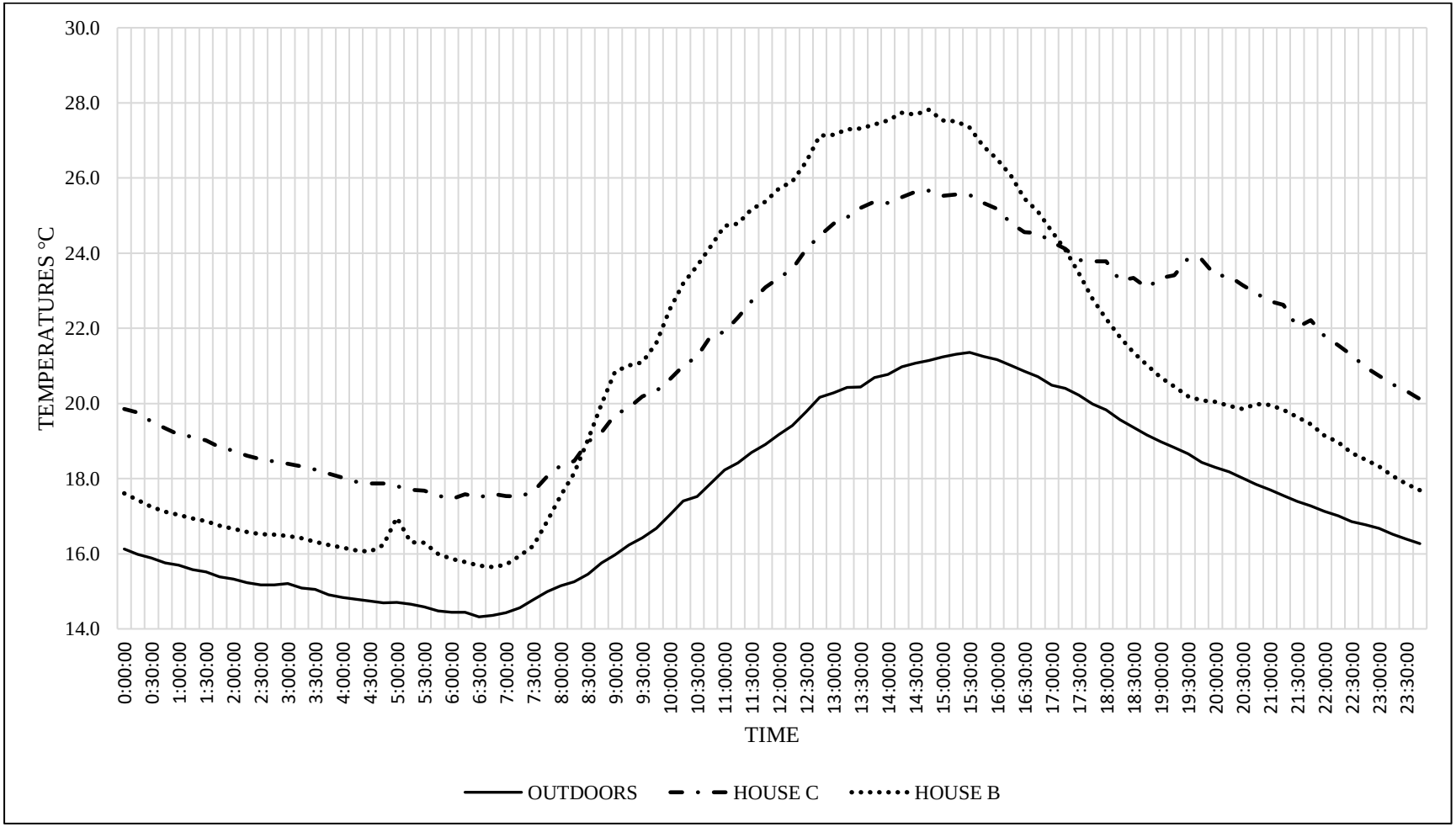
Time	Temperatures																														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	AV
0:00:00	20.7	17.5	17.5	16.7	16.4	17.5	19.1	19.0	17.4	17.7	18.7	16.4	16.0	16.6	17.2	17.4	16.7	17.8	18.1	16.1	17.0	18.2	18.5	18.5	17.1	17.2	16.3	18.3	17.4	18.2	18.6	17.6
0:15:00	19.6	17.4	17.5	16.5	16.2	17.3	19.2	18.8	17.3	17.4	18.6	16.1	15.8	16.4	17.0	17.3	16.5	17.4	18.0	16.1	16.9	18.0	18.3	18.5	17.0	17.1	16.1	18.0	17.1	18.1	18.6	17.4
0:30:00	18.9	17.3	17.4	16.2	16.1	17.1	19.0	18.8	17.1	17.2	18.1	15.9	15.6	16.2	16.7	17.1	16.1	17.1	17.9	16.1	16.9	18.0	18.0	18.4	17.0	17.0	16.0	18.0	17.0	18.0	18.6	17.3
0:45:00	18.6	17.1	17.4	16.2	16.0	16.9	18.7	18.6	16.9	17.1	18.0	15.8	15.4	16.1	16.4	17.0	15.9	16.7	17.8	16.2	16.9	17.9	18.0	18.3	16.9	17.0	15.8	18.1	16.7	18.0	18.4	17.1
1:00:00	18.4	17.1	17.4	16.4	15.8	16.7	18.5	18.6	16.7	17.3	17.9	15.9	15.3	16.0	16.1	16.8	15.7	16.5	17.7	16.2	16.8	17.8	17.8	18.2	16.9	17.2	15.7	18.0	16.7	17.9	18.0	17.0
1:15:00	18.2	17.0	17.4	16.4	15.7	16.5	18.4	18.6	16.6	17.4	17.8	15.9	15.1	15.8	15.9	16.7	15.7	16.2	17.6	16.1	16.6	17.7	17.8	18.0	16.8	17.3	15.7	18.0	16.6	17.8	17.9	16.9
1:30:00	18.3	17.1	17.3	16.4	15.5	16.3	18.2	18.3	16.4	17.4	17.7	16.0	14.9	15.7	15.6	16.7	15.9	16.0	17.5	16.0	16.5	17.6	17.7	17.8	16.8	17.3	16.0	17.8	16.5	17.7	17.8	16.9
1:45:00	18.1	16.7	17.3	16.2	15.4	16.1	18.2	18.3	16.3	17.4	17.5	16.0	14.7	15.5	15.4	16.4	16.0	15.8	17.4	16.0	16.2	17.5	17.6	17.7	16.8	17.2	16.0	17.6	16.6	17.7	17.7	16.8
2:00:00	17.9	16.5	17.2	16.1	15.3	16.0	18.3	18.2	16.1	17.4	17.4	16.0	14.7	15.4	15.2	16.0	16.2	15.6	17.4	16.0	16.1	17.5	17.5	17.6	16.7	16.8	16.0	17.4	16.7	17.7	17.6	16.7
2:15:00	17.8	16.3	17.1	15.9	15.1	15.8	18.4	18.2	16.0	17.4	17.4	16.0	14.8	15.4	15.0	16.0	16.0	15.4	17.3	16.0	15.9	17.4	17.4	17.4	16.7	16.7	16.1	17.1	16.7	17.6	17.6	16.6
2:30:00	17.7	16.2	17.0	15.7	15.0	15.6	18.5	18.0	15.9	17.4	17.4	16.0	14.9	15.6	15.2	16.0	15.7	15.3	17.2	15.9	15.8	17.4	17.4	17.1	16.6	16.8	16.2	16.9	16.7	17.5	17.5	16.5
2:45:00	17.7	16.4	17.0	15.9	14.9	15.5	18.5	18.0	15.9	17.3	17.3	16.0	15.2	15.8	15.4	16.0	15.4	15.3	17.1	15.8	15.9	17.3	17.3	17.2	16.5	16.9	16.0	16.7	16.5	17.5	17.4	16.5
3:00:00	17.4	16.5	17.0	15.9	14.8	15.4	18.4	18.0	15.7	17.2	17.2	15.9	15.3	15.9	15.4	15.9	15.4	15.5	17.0	15.8	16.0	17.2	17.3	17.3	16.5	17.0	16.0	16.5	16.2	17.5	17.4	16.5
3:15:00	17.4	16.2	16.9	15.9	14.7	15.3	18.4	18.0	15.5	17.2	17.2	15.5	15.4	16.0	15.3	15.9	15.4	15.7	17.0	15.8	16.0	17.1	17.2	17.3	16.4	16.9	15.8	16.4	16.0	17.4	17.4	16.4
3:30:00	17.4	16.0	16.9	15.6	14.6	15.2	18.3	17.8	15.4	17.1	17.1	15.3	15.4	16.0	15.1	15.9	15.4	15.7	16.9	15.7	16.0	17.0	17.2	17.3	16.3	16.8	15.5	16.2	15.9	17.4	17.3	16.3
3:45:00	17.3	15.8	16.9	15.3	14.6	15.0	18.3	17.8	15.3	17.0	17.0	15.1	15.5	16.0	15.0	15.9	15.2	15.6	16.9	15.5	16.0	16.9	17.2	17.3	16.2	16.8	15.4	16.0	15.7	17.4	17.3	16.2
4:00:00	17.3	15.6	16.8	15.1	14.5	14.9	18.2	17.8	15.4	16.9	16.9	15.1	15.4	16.0	15.1	15.9	15.0	15.6	16.8	15.4	15.9	16.8	17.1	17.3	16.2	16.8	15.4	15.7	15.6	17.3	17.3	16.2
4:15:00	17.2	15.4	16.8	14.8	14.4	14.7	18.1	17.8	15.3	16.9	16.8	15.3	15.4	16.0	15.1	15.8	14.8	15.6	16.8	15.2	15.9	16.7	17.0	17.2	16.1	16.8	15.5	15.5	15.4	17.3	17.2	16.1
4:30:00	17.2	15.3	16.7	14.7	14.4	14.7	18.2	17.7	15.2	16.7	16.8	15.2	15.4	16.0	15.1	15.8	15.0	15.7	16.7	15.0	15.9	16.7	17.0	17.1	15.9	16.7	15.7	15.4	15.3	17.2	17.2	16.1
4:45:00	17.2	15.5	16.7	14.5	14.5	14.7	18.5	17.8	15.4	16.4	16.7	15.3	15.4	16.0	16.2	16.7	15.1	15.6	16.7	15.1	16.9	17.9	17.5	17.2	15.8	16.7	15.9	15.5	15.5	17.4	17.0	16.2
5:00:00	17.2	15.5	16.7	14.4	16.2	16.0	20.2	19.5	17.1	16.2	16.7	15.4	16.9	18.0	16.6	17.5	15.1	15.5	17.1	15.4	17.4	17.5	18.9	17.1	15.7	18.2	18.3	16.6	16.9	19.1	16.8	17.0
5:15:00	17.2	15.4	16.6	14.2	15.0	15.2	18.8	18.1	15.9	16.3	16.7	15.4	16.3	16.8	15.5	16.3	15.1	15.5	17.0	15.2	16.4	17.3	17.5	17.0	15.6	17.0	16.3	15.5	15.9	17.8	16.8	16.3
5:30:00	17.2	15.2	16.5	14.0	15.2	15.1	18.6	18.4	15.7	16.3	16.5	15.4	16.2	16.8	15.6	16.3	15.0	15.3	16.9	15.3	16.4	16.8	17.6	17.0	15.5	17.3	16.4	15.6	16.0	17.9	16.9	16.3
5:45:00	17.2	15.1	16.4	13.8	14.7	14.7	18.4	17.9	15.1	16.2	16.3	15.4	15.7	16.3	15.2	15.9	15.0	15.3	16.5	15.0	15.9	16.4	17.2	16.7	15.5	16.9	15.8	15.1	15.8	17.5	16.9	16.0
6:00:00	17.1	14.8	16.5	13.7	14.5	14.4	18.2	17.7	14.8	16.2	16.3	15.4	15.4	16.0	15.0	15.7	15.0	15.4	16.4	14.8	15.8	16.2	17.0	16.5	15.4	16.8	15.7	14.9	15.8	17.4	16.9	15.9
6:15:00	17.1	14.7	16.4	13.5	14.3	14.3	18.1	17.6	14.7	16.2	16.4	15.4	15.4	15.8	14.9	15.6	14.8	15.3	16.4	14.8	15.7	16.1	16.9	16.4	15.4	16.7	15.6	14.7	15.8	17.3	16.7	15.8
6:30:00	17.0	14.6	16.4	13.4	14.1	14.2	18.0	17.3	14.5	16.1	16.4	15.4	15.3	15.7	14.8	15.5	14.9	15.1	16.3	14.7	15.6	16.0	16.7	16.6	15.3	16.7	15.4	14.6	15.7	17.2	16.6	15.7
6:45:00	17.0	14.5	16.3	13.3	14.0	14.1	17.9	17.2	14.4	16.1	16.4	15.4	15.3	15.7	14.7	15.4	14.8	15.1	16.3	14.7	15.6	15.9	16.7	16.7	15.7	16.5	15.3	14.5	15.7	17.2	16.6	15.6
7:00:00	18.1	14.8	16.3	13.4	14.1	14.1	17.8	17.2	14.5	16.2	16.4	15.4	15.2	15.8	14.7	15.4	14.6	15.2	16.3	14.7	15.6	16.0	16.7	16.7	15.7	16.5	15.4	14.6	15.8	17.1	16.8	15.7
7:15:00	19.2	15.0	16.3	13.7	14.6	14.5	17.7	17.3	14.8	16.7	16.5	15.4	15.4	15.9	14.7	15.4	14.7	15.9	16.3	14.9	15.7	16.0	16.7	16.7	15.6	17.2	15.6	16.1	15.9	17.1	16.9	15.9
7:30:00	19.7	15.3	16.2	14.0	14.9	14.9	17.7	17.4	16.0	16.8	16.6	15.4	15.5	16.1	14.7	15.4	15.2	15.7	16.3	15.0	15.7	16.1	16.9	16.8	15.7	17.2	15.9	19.0	16.0	17.2	17.1	16.2
7:45:00	20.1	16.7	16.1	17.0	18.1	18.0	17.7	18.0	18.9	17.3	16.8	15.5	15.8	16.4	14.8	15.4	15.6	15.8	16.4	15.2	15.8	16.2	17.2	17.1	15.9	17.1	16.1	20.3	16.1	17.1	18.4	16.9
8:00:00	20.0	17.4	16.0	20.3	21.5	20.9	17.7	20.0	21.2	17.0	18.3	15.7	16.0	16.7	14.8	15.4	16.8	16.0	16.4	15.5	16.0	16.5	17.6	17.2	19.6	17.1	16.7	18.2	16.2	17.2	18.2	17.6
8:15:00	20.3	17.8	16.0	21.9	21.5	22.8	17.7	20.4	22.7	17.4	18.8	15.9	16.5	17.2	14.9	15.3	18.2	16.9	16.4	16.1	16.0	16.7	19.0	17.4	20.4	17.4	17.8	20.9	16.4	17.2	18.5	18.1
8:30:00	21.1	18.4	16.1	24.0	24.6	24.3	17.8	24.4	24.6	17.8	19.0	16.1	16.9	17.5	15.8	15.4	19.5	19.1	16.5	16.6	16.2	16.9	18.6	17.6	20.0	17.4	18.4	25.4	16.5	17.2	20.4	19.0
8:45:00	22.4	19.8	16.2	25.2	26.0	24.0	17.8	26.3	26.2	19.5	18.7	16.8	17.0	17.7	17.0	15.3	20.2	22.2	16.5	17.4	16.4	17.2	18.3	17.2	22.4	17.5	20.3	27.0	16.7	17.4	27.0	20.0
9:00:00	22.0	23.4	16.5	26.4	27.2	24.3	17.9	24.3	27.1	22.9	17.9	17.3	17.1	17.7	20.3	15.4	21.5	22.3	16.6	18.0	16.7	18.1	18.3	17.1	26.9	17.5	24.9	28.1	17.2	17.5	27.7	20.8
9:15:00	21.6	20.8	16.7	27.4	28.0	23.0	17.9	27.6	28.1	24.8	17.7	18.3	17.2	17.6	23.3	15.4	22.1	21.2	16.7	18.9	17.7	18.1	18.1	18.0	24.3	17.6	24.8	29.2	17.6	17.7	23.9	21.0
9:30:00	22.0	22.9	17.3	27.9	29.0	21.9	18.0	26.2	28.9	22.4	18.9	19.5	17.1	17.5	21.2	15.5	20.8	21.5	16.7	18.3	18.6	18.5	17.9	20.3	22.9	17.8	25.4	29.7	18.6	17.8	23.0	21.1
9:45:00	21.9	23.0	18.4	28.5	29.8	26.7	18.0	25.5	29.5	24.8	18.3	21.3	17.3	17.5	19.8	15.4	19.8	24.8	16.9	18.1	20.3	18.7	18.1	24.0	22.4	18.8	23.5	29.9	18.7	17.7	22.4	21.6
10:00:00	26.1	23.6	20.6	29.0	30.6	29.1	18.3	29.7	28.3	24.8	18.1	21.6	18.1	17.8	22.9	15.4	19.7	22.2	17.0	18.7	23.1	18.8	19.1	21.3	23.3	21.8	27.9	31.1	18.7	18.3	22.5	22.5
10:15:00	26.0	24.0	22.2	30.3	31.5	30.5	18.7	27.2	29.0	25.2	18.0	22.0	19.3	18.6	22.4	15.7	20.1	23.1	17.3	19.2	23.4	20.6	19.3	19.6	25.5	22.7	28.5	32.7	20.1	18.9	27.4	23.2
10:30:00	26.8	23.5	20.9	30.7	31.7	31.6	19.3	29.5	31.3	25.7	18.2	21.0	20.5	19.2	21.8	17.7	20.5	22.5	17.3	20.2	22.0	25.2	19.6	18.9	25.2	26.2	26.0	34.0	21.6	20.2	24.8	23.7
10:45:00	27.0	22.5	23.3	31.3	32.5	32.4	20.9	29.2	31.6	25.2	18.6	20.8	20.6	19.3	20.7	18.9	20.5	22.7	17.7	20.5	22.9	28.0	19.7	18.7	26.3	27.9	29.2	28.8	24.3	21.2	26.2	24.2
11:00:00	27.0	22.0	26.1	31.3	31.6	32.4	24.4	30.5	31.5	25.7	19.2	21.5	20.8	20.1	20.3	19.1	20.6	23.3	18.0	20.7	22.3	25.3	19.3	18.5	28.3	28.6	31.2	32.1	26.4	22.0	26.5	24.7
11:15:00	27.5	20.9	24.6	31.2	32.1	33.2	25.2	30.1	31.0	26.5	19.6	21.0	22.9	20.7	20.8	18.8	19.8	25.4	18.1	20.9	21.8	25.4	19.8	18.8	28.8	27.7	30.5	29.6	26.1	22.2	27.3	24.8
11:30:00	28.1	21.4	27.1	30.8	31.7	33.1	24.1	28.5	31.0	25.4	19.0	21.9	26.2	20.6	20.4	18.7	19.7	24.7	18.3	21.1	22.1	24.8	21.0	19.2	28.9	28.7	31.6	33.5	26.2	22.9	29.5	25.2
11:45:00	27.9	21.8	26.1	30.7	32.4	33.3	27.0	31.1	31.2	24.9	19.1	22.9	25.5	21.1	20.0	19.3	19.8	24.4	18.9	21.2	22.5	25.6	23.3	20.7	28.9	27.4	30.2	30.8	27.5	22.9	28.1	25.4
12:00:00	28.5	22.1	27.0	30.6	32.5	32.3	25.4	31.5	32.0	26.4	18.9	23.5	26.7	22.1	20.7	19.9	20.3	25.9	19.4	21.1	22.8	25.8	23.8	22.2	29.5	28.5	30.0	28.3	28.6	23.8	27.1	25.7
12:15:00	28.4	21.9	27.1	30.2	32.3	28.9	26.1	32.0	32.0	25.7	19.1	24.2	28.2	22.2	23.1	20.4	20.2	26.6	22.1	22.2	23.5	27.1	24.1	22.3	28.9	26.9	27.2	27.7	30.1	24.7	27.9	25.9
12:30:00	27.6	22.5	26.6	30.5	32.9	32.1	25.3	31.8	30.7	27.7	19.8	24.7	28.5	23.0	23.3	20.0	20.9	27.2	22.9	23.8	24.5	27.0	24.4	23.3	28.7	28.3	27.7	29.5	29.1	25.8	29.3	26.4
12:45:00	29.5	23.4	25.8	31.3	33.0	33.4	25.4	31.1	32.0	27.0	20.5	25.0	28.8	23.5	23.8	21.6	22.0	27.1	22.2	24.5	26.7	26.7	27.3	23.9	28.9	29.6	30.4	32.2	29.0	26.5	28.7	27.1
13:00:00	28.6	22.9	26.2	31.2	32.4	34.4	25.7	31.0	32.6	26.9	20.9	24.6	29.4	23.9	23.3	22.2	22.2	28.0	21.2	24.3	24.9	27.0	28.2	24.1	29.9	27.3	30.5	33.7	29.4	27.0	27.8	27.2
13:15:00	28.5	23.3	27.7	30.9	33.2	30.7	26.6	29.4	30.8	27.0	20.9	24.6	29.7	24.2	23.7	23.6	23.2	28.4	20.3	24.2	26.3	27.0	29.0	26.2	30.2	27.4	32.3	32.4	27.4	29.2	27.7	27.3
13:30:00	29.4	22.7	27.2	31.2	33.3	32.4	26.9	28.5	32.0	29.1	21.5	27.6	29.8	23.9	23.6	22.6	24.4	27.0	19.9	24.5	25.6	27.5	29.0	25.4	30.4	27.4	30.3	32.9	26.5	28.9	25.4	27.3
13:45:00	30.3	24.0	27.6	31.6	34.2	34.4	28.3	29.8	31.7	26.6	21.2	27.6	30.0	24.2	24.3	22.7	24.7	26.0	20.0	25.3	25.6	26.9	29.7	23.8	30.8	26.3	29.0	31.7	25.9	29.9	26.0	27.4
14:00:00	29.4	26.5	26.2	31.5	34.0	34.0	26.9	29.2	33.0	26.3	21.8	27.2	30.8	26.2	24.6	24.1	25.6	25.5	20.0	25.9	27.0	28.5	29.4	21.2	29.5	26.7	31.9	31.1	25.9	27.1	26.4	27.5
14:15:00	29.0	25.1	26.2	31.8	33.9	34.2	29.3	29.7	33.6	26.1	22.9	27.7	30.9	27.1	24.0	24.2	25.2	26.8	20.6	26.1	26.3	29.9	30.0	20.8	29.6	27.7	31.2	28.5	25.2	28.5	27.6	27.7
14:30:00	28.3	26.1	28.7	31.4	34.0	33.8	27.5	29.0	33.1	26.3	23.6	28.7	30.7	27.0	24.0	24.1	25.2	27.3	22.2	25.3	28.4	29.4	29.2	21.0	29.3	28.8	29.5	27.4	25.3	26.6	27.1	27.7
14:45:00	28.7	26.6	29.0	30.9	33.5	34.1	27.9	29.0	32.7	25.9	22.9	29.0	30.8	26.5	23.4	25.1	25.5	28.2	21.8	25.2	28.2	30.1	29.7	21.3	29.9	30.2	31.8	26.5	25.3	26.8	25.8	27.8
15:00:00	29.8	26.0	27.0	31.0	33.0	33.4	27.2	28.6	30.5	28.3	24.1	27.1	29.8	27.8	24.6	24.7	25.4	27.4	21.6	25.5	28.1	30.3	29.7	21.4	28.5	27.8	30.5	25.9	25.4	26.8	26.2	27.5
15:15:00	30.9	26.9	28.2	31.0	33.0	30.2	28.0	29.5	33.0	26.2	23.9	27.3	29.0	28.3	24.3	24.3	24.7	26.3	22.2	27.0	27.0	28.7	29.3	21.5	30.3	28.3	30.5	25.7	25.4	26.1	25.9	27.5
15:30:00	30.5	27.3	28.6	30.7	33.0	31.4	28.5	29.2	33.4	28.5	23.5	27.0	29.6	27.1	24.0	23.3	26.2	25.8	22.4	26.4	26.5	26.5	26.9	21.5	30.4	27.2	29.5	25.4	25.4	24.8	27.0	27.3
15:45:00	28.8	27.4	25.0	30.5	30.7	32.5	28.8	29.2	30.7	28.0	23.5	26.6	28.6	27.5	23.5	22.7	26.2	24.8	22.1	27.0	26.1	28.1	26.0	21.4	30.1	28.7	27.8	24.5	25.3	24.5	25.4	26.8
16:00:00	27.9	22.7	26.8	30.3	31.7	30.3	28.9	29.4	30.2	27.1	24.2	26.3	29.5	27.3	23.5	23.9	24.6	24.1	21.8	26.0	25.4	26.2	27.7	21.1	28.7	27.4	27.3	23.8	24.9	26.6	26.2	26.5
16:15:00	27.5	22.2	26.9	30.4	31.0	28.2	27.4	28.2	27.9	25.9	24.6	27.0	28.9	26.7	22.6	23.5	23.9	23.5	22.0	25.4	26.1	27.1	27.6	21.2	28.5	27.8	27.9	23.0	25.1	25.4	24.7	26.1
16:30:00	27.0	22.3	24.7	29.6	30.9	29.2	27.0	26.9	26.4	25.4	23.5	25.9	27.3	24.7	22.4	23.4	24.2	23.0	21.5	24.7	25.5	26.9	26.2	20.6	28.3	27.3	27.0	22.2	25.1	24.9	25.0	25.5
16:45:00	25.6	22.4	25.7	29.3	28.9	30.3	27.4	27.5	25.4	25.3	22.9	25.0	27.1	24.2	21.8	22.3	23.7	22.7	20.7	25.0	25.6	26.9	25.0	21.3	28.5	26.6	26.4	21.3	24.7	24.7	24.2	25.1
17:00:00	24.4	22.2	24.0	28.5	27.7	28.3	26.1	26.8	24.8	25.0	23.4	25.1	27.3	23.5	21.5	22.0	23.4	22.8	20.6	23.4	24.7	26.4	25.7	21.2	27.8	25.2	26.6	20.8	24.5	24.1	24.3	24.6
17:15:00	24.1	22.2	22.9	27.3	28.9	26.4	26.2	25.5	24.6	24.5	22.5	24.7	26.1	23.0	21.4	21.4	23.2	23.3	20.0	23.7	24.1	25.0	25.4	20.9	26.3	25.4	25.2	20.5	24.7	23.4	24.0	24.1
17:30:00	23.3	22.8	23.5	25.5	27.9	25.7	25.2	25.1	24.1	24.0	21.9	23.3	24.8	22.7	21.2	20.9	22.9	23.3	19.6	22.9	23.2	24.4	24.6	20.7	25.5	24.2	24.3	20.2	23.8	22.6	23.4	23.5
17:45:00	23.0	21.6	23.2	24.3	26.5	25.2	23.9	24.5	23.5	23.0	20.5	22.9	24.0	22.3	20.9	20.5	22.5	22.6	19.4	22.1	22.7	23.7	24.0	20.4	24.9	23.5	23.5	19.9	22.7	21.9	22.5	22.8
18:00:00	22.6	21.2	22.4	23.5	25.5	24.3	23.3	23.8	23.1	22.6	20.0	22.4	23.4	21.6	20.3	20.0	22.2	22.8	19.2	21.9	22.4	22.9	23.1	19.7	24.0	23.0	23.0	19.8	22.2	21.5	22.1	22.3
18:15:00	22.0	20.4	21.7	22.9	24.8	23.5	23.0	23.1	22.8	22.7	19.5	22.2	22.9	21.0	19.9	19.3	21.1	23.0	18.9	21.3	21.9	22.5	22.6	19.3	23.5	22.2	22.6	19.6	21.6	21.0	21.7	21.8
18:30:00	21.4	20.0	21.2	22.3	23.9	23.1	22.8	22.6	22.3	21.9	19.2	21.5	22.5	20.6	19.3	18.9	20.9	22.6	18.6	20.6	21.5	22.0	22.3	19.7	22.9	21.7	22.2	19.5	21.2	20.7	22.0	21.4
18:45:00	20.8	19.5	20.9	22.0	23.5	23.1	22.5	22.4	22.0	21.5	18.8	20.9	22.0	20.3	19.5	18.6	20.9	22.6	18.3	20.0	21.0	21.6	21.9	19.2	22.4	21.1	22.0	19.2	20.7	20.3	22.4	21.0
19:00:00	20.6	19.1	20.5	21.3	23.2	22.6	22.3	21.7	21.7	20.9	18.6	20.3	21.6	20.1	19.5	18.6	20.3	22.7	18.1	19.6	20.7	21.3	21.5	18.9	21.9	20.5	21.7	19.2	20.4	20.0	22.0	20.7
19:15:00	20.4	19.0	20.3	20.8	22.9	22.4	21.6	21.4	21.4	20.8	18.5	19.8	21.4	20.3	19.5	18.4	20.7	21.2	17.9	19.6	20.5	21.0	21.1	18.6	21.5	20.1	21.5	19.0	20.4	20.9	20.9	20.4
19:30:00	20.0	18.8	20.1	20.3	22.6	22.2	21.5	21.1	21.0	20.5	18.6	19.6	21.4	20.2	19.0	18.3	20.1	20.3	17.8	19.6	20.3	20.8	20.8	18.5	21.6	19.8	21.0	18.8	20.1	20.9	20.3	20.2
19:45:00	19.8	18.5	19.8	20.8	22.3	22.2	21.3	20.8	20.8	20.4	18.7	19.3	21.2	20.0	18.8	18.1	20.0	19.8	18.4	19.9	20.2	20.6	20.4	18.9	22.0	19.8	20.7	18.7	19.7	20.7	19.9	20.1
20:00:00	19.4	18.1	19.7	21.6	22.2	22.3	22.0	20.5	20.6	20.6	18.7	19.4	20.6	19.8	19.6	18.0	19.8	19.5	18.3	20.4	20.0	20.4	20.5	19.1	21.7	19.7	20.6	18.6	19.5	20.5	19.8	20.0
20:15:00	19.2	17.9	19.4	22.3	22.0	22.1	21.3	21.7	20.4	20.7	18.7	19.4	20.1	19.2	19.2	18.0	19.8	19.2	18.1	20.3	19.8	20.6	20.5	18.6	21.3	19.2	20.7	18.5	19.3	20.3	20.2	19.9
20:30:00	18.9	17.7	19.1	20.9	21.6	21.6	22.2	21.9	20.1	20.6	18.6	19.9	20.9	19.8	20.3	17.8	19.8	19.1	18.3	19.6	19.7	20.5	20.2	18.7	21.0	19.0	20.4	18.4	19.2	20.0	19.8	19.9
20:45:00	18.7	17.9	19.0	20.3	21.4	21.9	22.6	21.2	19.9	20.8	20.0	19.3	21.5	20.1	21.5	17.7	21.3	18.9	17.7	20.6	20.8	20.3	20.0	19.2	20.7	19.2	20.1	18.3	19.2	19.8	19.7	20.0
21:00:00	18.6	17.8	18.7	19.6	20.9	22.6	21.7	20.8	21.0	20.9	19.8	18.6	20.1	20.0	22.2	17.6	20.4	19.2	17.3	20.8	21.9	19.9	22.6	19.2	20.5	18.6	20.4	18.2	19.8	19.7	19.5	20.0
21:15:00	18.5	17.6	18.5	19.2	20.3	21.8	21.3	20.4	20.3	20.4	20.1	18.3	19.6	19.5	20.3	18.9	19.8	19.3	17.3	20.7	22.2	19.7	23.5	19.2	20.1	18.6	21.0	19.2	19.8	19.8	19.4	19.8
21:30:00	18.4	17.6	18.3	19.0	20.3	21.6	20.9	20.3	20.0	20.3	19.0	18.1	19.4	19.3	19.6	19.9	19.4	19.8	18.6	19.7	21.7	20.0	21.2	19.1	19.8	18.8	20.5	19.2	19.7	19.8	19.4	19.6
21:45:00	18.4	17.6	18.1	18.5	20.5	21.3	20.5	20.0	19.8	19.9	18.3	17.8	19.1	19.2	19.2	20.2	19.4	21.3	18.1	19.4	21.7	19.6	20.1	18.9	19.6	18.9	20.3	18.6	19.8	19.5	19.3	19.4
22:00:00	18.2	17.6	17.9	18.1	20.0	21.2	20.1	19.8	19.7	19.5	17.9	17.6	18.7	19.2	19.0	20.3	19.1	19.8	17.4	19.2	20.1	20.5	19.4	18.6	19.2	18.5	20.4	18.7	19.3	19.3	19.3	19.1
22:15:00	18.0	17.7	17.6	17.8	19.6	20.9	19.8	19.9	19.2	19.2	17.6	17.4	18.5	19.0	18.6	21.1	19.0	19.2	17.3	19.1	19.8	20.9	19.2	18.6	19.1	18.2	19.8	18.9	19.1	19.2	18.9	19.0
22:30:00	17.9	17.7	17.5	17.5	19.2	20.4	19.7	19.4	19.0	19.1	17.4	17.2	18.1	18.9	18.7	19.2	19.0	19.1	17.1	18.9	19.7	20.1	19.1	18.3	18.7	17.9	19.3	18.6	18.8	19.1	18.7	18.7
22:45:00	17.9	17.7	17.3	17.3	19.0	20.3	19.5	19.1	18.8	19.2	17.4	16.8	17.8	18.7	18.2	18.6	18.9	19.0	17.2	18.7	19.1	19.9	18.6	18.1	18.4	17.5	19.0	18.7	19.1	19.0	18.6	18.5
23:00:00	17.8	17.6	17.0	17.1	18.9	19.9	19.3	18.6	18.6	19.1	17.4	16.7	17.5	18.6	18.0	17.8	18.7	19.1	17.8	18.2	18.7	19.6	18.6	17.7	18.1	17.4	19.2	18.5	19.0	19.1	18.5	18.3
23:15:00	17.8	17.5	16.8	16.9	18.4	19.5	19.3	18.2	18.3	19.0	17.0	16.7	17.3	18.3	17.8	17.3	18.6	18.5	16.8	17.9	18.6	19.4	18.6	17.5	17.8	16.9	18.9	18.3	19.0	19.0	18.3	18.1
23:30:00	17.6	17.5	16.6	16.7	18.0	19.2	19.2	17.9	18.3	18.9	16.8	16.5	17.1	17.6	17.6	17.0	18.4	18.3	16.5	17.7	18.4	19.0	18.6	17.4	17.5	16.7	18.7	18.1	18.6	18.9	18.3	17.9
23:45:00	17.5	17.5	16.7	16.6	17.7	19.1	19.1	17.6	18.1	18.8	16.6	16.2	16.8	17.4	17.5	16.9	18.1	18.2	16.3	17.4	18.3	18.6	18.6	17.2	17.4	16.5	18.6	17.6	18.3	18.9	18.2	17.7
DAY AV	21.8	19.4	20.3	22.2	23.1	23.0	21.5	22.9	22.6	21.2	19.0	19.7	20.5	19.6	19.0	18.5	19.4	20.4	18.3	19.4	20.2	21.1	20.9	19.1	21.8	20.9	21.8	21.6	20.3	20.5	21.4	20.7

August 2019 House C average indoors temperature calculation spreadsheet

DATA LOG 2: HOUSE C

Time	Temperatures																														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	AV
0:00:00	19.7	20.0	19.4	19.2	18.2	19.2	21.3	21.2	19.3	19.3	20.3	19.5	19.1	21.2	20.2	19.3	18.3	19.9	20.2	18.0	19.5	20.5	20.9	20.6	19.8	20.4	19.3	20.8	19.5	20.9	20.3	19.8
0:15:00	19.6	20.6	19.5	19.1	18.0	19.1	21.2	20.9	19.2	19.1	20.3	19.3	18.8	20.4	19.9	19.2	18.1	19.7	20.0	17.9	19.3	20.3	20.5	20.6	19.7	20.3	19.1	22.5	19.5	20.5	20.3	19.8
0:30:00	19.4	20.1	19.4	18.7	17.9	18.8	21.0	20.9	18.9	18.9	20.1	19.1	18.5	20.0	19.8	19.1	17.7	19.3	20.0	17.9	19.2	20.3	20.2	20.6	19.7	20.0	18.9	20.9	19.4	20.3	20.1	19.5
0:45:00	19.2	19.7	19.3	18.6	17.6	18.6	20.8	20.7	18.7	18.7	19.9	19.1	18.2	19.8	19.7	18.9	17.5	19.1	19.9	17.8	19.1	20.1	19.9	20.5	19.6	19.8	19.0	20.5	19.1	20.1	20.0	19.3
1:00:00	19.3	19.5	19.2	18.7	17.5	18.5	20.5	20.6	18.6	18.9	19.9	18.4	18.1	19.3	19.2	18.8	17.2	18.6	19.8	17.7	18.9	20.1	19.8	20.5	19.2	19.9	18.7	20.3	18.7	20.0	19.9	19.2
1:15:00	19.2	19.4	19.8	18.6	17.4	18.3	20.3	20.5	18.4	18.9	19.7	18.5	17.8	19.2	18.9	18.6	17.0	18.4	19.8	17.7	18.9	20.0	19.8	20.5	19.1	20.1	19.0	20.1	18.8	19.9	19.9	19.1
1:30:00	19.2	19.2	19.4	18.6	17.3	18.1	20.1	20.3	18.2	18.9	19.9	18.3	17.7	18.9	19.1	18.6	17.2	18.1	19.8	17.7	18.5	19.9	19.7	20.0	19.2	20.1	18.7	20.2	18.7	20.0	19.9	19.0
1:45:00	19.2	19.2	19.2	18.5	17.1	17.9	19.9	20.2	18.0	18.9	19.6	18.3	17.4	18.6	18.7	18.3	17.2	17.9	19.3	17.5	18.2	19.8	19.7	19.7	19.1	19.8	18.6	20.1	18.6	19.8	19.8	18.8
2:00:00	19.1	19.0	19.2	18.3	16.9	17.8	20.0	20.2	17.9	18.9	19.4	18.2	17.4	18.4	18.2	17.9	17.3	18.0	19.2	17.7	18.1	19.7	19.5	19.5	18.9	19.8	18.5	19.9	18.6	19.8	19.8	18.7
2:15:00	19.2	19.1	19.1	18.1	16.8	17.6	19.9	19.9	17.7	18.8	19.2	18.1	17.4	18.2	18.0	17.9	17.4	17.5	19.2	17.5	17.9	19.5	19.5	19.3	18.7	19.4	18.1	19.8	18.5	19.8	19.7	18.6
2:30:00	19.0	18.7	19.4	18.0	17.0	17.4	20.0	19.8	17.6	18.6	19.2	18.0	17.4	18.2	17.9	17.9	17.4	17.4	19.1	17.4	17.6	19.5	19.4	19.0	18.6	19.3	18.0	19.8	18.4	19.4	19.6	18.5
2:45:00	18.8	18.8	19.1	17.9	16.8	17.4	19.9	19.8	17.4	18.6	19.0	17.9	17.4	18.3	18.0	17.8	17.2	17.4	19.1	17.4	17.7	19.2	19.3	19.0	18.5	19.6	18.0	19.7	18.3	19.2	19.6	18.5
3:00:00	18.9	18.8	19.0	17.8	16.8	17.3	19.9	19.7	17.4	18.6	19.0	17.8	17.5	18.3	18.1	17.7	17.0	17.4	19.0	17.3	17.8	19.3	19.2	19.0	18.5	19.5	17.9	18.7	18.0	19.2	19.8	18.4
3:15:00	18.7	18.9	19.1	17.9	16.7	17.1	19.8	19.7	17.2	18.6	19.1	17.6	17.5	18.3	18.0	17.7	17.0	17.4	18.8	17.3	17.7	19.2	19.2	19.2	18.4	19.4	17.7	18.5	17.8	19.0	19.6	18.3
3:30:00	18.7	18.5	18.9	17.8	16.7	16.9	19.9	19.5	17.1	18.6	18.9	17.4	17.6	18.2	17.8	17.7	17.0	17.6	18.7	17.3	17.9	19.2	19.0	19.0	18.4	19.3	17.4	18.2	17.7	19.0	19.4	18.2
3:45:00	18.8	18.2	18.9	17.4	16.7	16.8	19.8	19.4	16.9	18.4	18.9	17.2	17.6	18.2	17.8	17.6	16.8	17.5	18.7	17.1	17.7	18.9	19.0	19.0	18.4	19.3	17.3	18.0	17.5	18.9	19.4	18.1
4:00:00	18.4	18.0	18.8	17.0	16.7	16.7	19.6	19.4	16.9	18.4	18.8	17.1	17.4	18.2	18.1	17.5	16.7	17.6	18.6	16.9	17.6	18.7	18.9	18.9	18.3	18.8	17.2	17.9	17.4	18.8	19.3	18.0
4:15:00	18.3	17.9	18.7	16.8	16.6	16.6	19.6	19.3	16.8	18.3	18.7	17.0	17.5	18.2	17.6	17.5	16.5	17.4	18.6	16.7	17.6	18.6	18.9	18.7	18.2	18.6	17.3	17.7	17.2	18.8	19.3	17.9
4:30:00	18.3	18.0	18.7	16.7	16.7	16.5	19.6	19.3	16.7	18.2	18.6	17.0	17.4	18.2	17.4	17.4	16.7	17.5	18.5	16.6	17.6	18.6	18.8	18.6	18.0	18.5	17.4	17.4	17.1	18.7	19.3	17.9
4:45:00	19.2	18.0	19.8	16.5	16.6	16.4	19.6	19.3	16.7	18.0	18.5	17.0	17.4	18.1	17.4	17.5	16.7	17.4	18.6	16.5	17.4	18.6	18.6	18.6	17.9	18.3	17.3	17.3	17.0	18.6	19.2	17.9
5:00:00	18.4	18.1	19.5	16.4	16.6	16.8	19.6	19.2	16.7	17.7	18.5	17.0	17.4	18.1	17.3	17.4	16.7	17.4	18.5	16.4	17.4	18.3	18.6	18.6	17.8	18.3	17.3	17.2	16.9	18.6	19.2	17.8
5:15:00	18.3	17.5	19.1	16.3	16.5	17.2	19.5	19.2	16.5	17.9	18.4	17.0	17.4	18.0	17.2	17.4	16.7	17.2	18.2	16.4	17.4	18.3	18.5	18.6	17.7	18.1	17.1	17.0	16.9	18.6	18.8	17.7
5:30:00	18.2	17.2	18.7	16.1	16.4	19.2	19.3	19.2	16.4	17.9	18.3	17.0	17.5	18.0	17.1	17.4	16.6	17.0	18.1	16.2	17.2	18.1	18.5	18.6	17.7	18.2	17.0	16.9	16.9	18.6	18.6	17.7
5:45:00	18.2	17.3	18.5	16.0	16.0	17.1	19.5	19.1	16.2	17.8	18.0	17.0	17.3	18.0	17.1	17.3	16.6	17.0	18.0	16.2	17.2	18.0	18.6	18.4	17.5	18.2	17.0	16.8	16.8	18.6	18.6	17.5
6:00:00	18.1	16.8	18.3	15.9	16.0	16.8	19.4	19.1	16.1	17.9	18.0	16.9	17.2	17.8	17.0	17.3	16.5	17.1	18.0	16.1	17.1	17.9	18.3	18.0	17.5	18.2	17.0	16.7	17.0	18.5	18.6	17.5
6:15:00	18.2	17.2	18.2	15.7	16.1	16.5	23.8	19.0	16.4	17.7	18.0	16.9	17.2	17.7	17.0	17.3	16.4	16.9	18.0	16.1	17.2	17.8	18.4	18.0	17.5	18.2	17.0	16.5	17.0	18.6	18.4	17.6
6:30:00	18.3	17.0	18.2	15.7	15.9	17.0	21.6	18.9	16.6	17.6	18.0	16.9	17.2	17.9	17.0	17.2	16.4	16.7	17.9	16.2	17.2	17.7	18.3	18.1	17.4	18.3	17.0	16.4	17.2	18.5	18.2	17.5
6:45:00	18.7	16.5	18.1	15.4	16.3	16.8	25.7	18.8	15.6	17.5	18.0	16.9	17.5	17.9	16.8	17.1	16.4	16.7	17.9	16.4	17.3	17.8	18.2	18.0	17.4	18.5	16.9	16.4	17.3	18.6	18.0	17.6
7:00:00	18.2	16.5	18.1	15.5	16.3	16.9	22.5	18.5	15.7	17.6	18.0	16.9	17.2	18.3	17.3	17.3	16.1	16.8	18.1	16.2	17.5	18.0	18.3	18.0	17.3	18.3	17.4	16.6	17.6	18.5	18.0	17.5
7:15:00	18.1	16.5	18.0	15.8	21.8	16.9	19.4	18.6	16.4	17.6	18.0	16.9	17.0	17.7	16.6	16.9	16.2	16.9	17.6	16.0	17.2	17.5	18.1	18.1	17.2	18.3	16.9	17.0	17.1	18.9	18.2	17.5
7:30:00	17.9	16.8	18.0	18.9	18.6	18.0	19.5	18.6	16.6	17.7	18.0	16.9	17.0	17.7	16.7	16.8	16.7	16.9	17.6	16.1	17.0	17.4	18.2	18.2	17.2	18.2	17.0	17.8	17.1	19.8	18.4	17.7
7:45:00	17.9	17.9	18.2	18.6	19.2	19.4	19.3	18.9	17.5	18.2	18.0	17.0	17.2	17.9	16.6	16.7	17.2	19.0	17.6	16.2	17.0	17.5	18.4	18.4	18.3	21.8	17.1	18.6	17.2	18.3	18.8	18.1
8:00:00	17.8	18.1	18.6	20.4	20.3	20.6	19.2	19.2	18.2	18.0	18.3	19.9	17.3	18.0	16.5	16.7	20.0	18.3	17.6	16.4	17.1	17.6	18.6	19.6	18.2	18.4	17.5	17.5	17.2	18.4	19.1	18.3
8:15:00	17.9	18.2	18.5	18.9	20.7	22.0	19.1	19.4	18.6	20.0	18.4	17.4	17.4	18.1	16.5	16.6	18.7	17.6	17.7	16.6	17.2	17.7	19.0	19.2	18.8	18.6	18.9	18.8	17.2	18.6	20.2	18.5
8:30:00	18.1	18.5	19.1	21.2	22.5	23.3	19.1	21.4	19.8	19.1	20.4	17.6	17.6	19.7	16.9	16.5	19.3	18.3	17.9	16.9	17.4	17.9	19.2	19.1	19.1	18.6	18.8	19.8	17.3	18.3	19.6	19.0
8:45:00	18.5	19.1	18.1	20.2	23.1	23.6	19.1	23.3	20.9	19.3	19.8	18.0	17.8	18.2	17.4	16.5	19.5	20.3	17.8	17.2	17.5	18.1	19.2	20.6	18.6	18.6	18.8	19.9	17.4	18.6	21.1	19.2
9:00:00	19.1	20.3	18.6	21.5	24.5	23.5	19.0	21.6	24.1	19.7	19.0	18.4	17.9	18.3	18.1	16.5	20.3	21.4	17.9	17.5	17.7	18.6	19.2	18.7	19.8	18.6	19.9	22.9	17.8	18.3	21.9	19.7
9:15:00	19.2	20.0	18.3	21.7	25.1	22.9	19.1	24.2	25.0	21.1	19.2	18.6	18.0	18.1	20.0	16.4	20.9	18.8	17.9	17.7	18.0	18.7	19.1	19.3	20.4	18.6	20.6	21.7	18.1	18.6	21.1	19.9
9:30:00	20.5	20.6	18.2	21.8	25.4	22.2	19.1	21.6	25.6	21.4	18.9	18.9	18.0	18.2	20.0	16.5	20.9	19.4	18.0	18.0	19.7	18.9	18.9	19.8	19.1	18.6	20.4	24.6	23.5	18.6	20.6	20.2
9:45:00	19.9	21.1	19.0	22.8	26.2	23.2	19.1	22.3	26.2	21.6	18.7	19.7	18.2	19.2	19.7	16.4	20.3	20.3	18.0	18.1	18.6	19.2	19.1	21.1	19.1	19.1	21.2	24.8	18.9	18.6	20.4	20.3
10:00:00	20.8	21.6	19.1	24.8	25.2	24.8	19.3	23.8	26.8	21.4	18.6	20.1	18.6	18.3	20.3	16.4	20.3	19.8	18.3	18.3	18.7	19.2	19.5	20.8	20.0	19.5	22.7	25.2	18.5	18.8	20.3	20.6
10:15:00	21.2	21.9	20.1	24.4	24.5	26.0	19.5	24.2	25.7	21.6	18.7	19.8	19.1	19.0	20.9	16.6	20.6	20.3	18.5	18.6	19.8	19.6	19.7	19.8	21.3	20.1	23.5	26.2	19.2	19.0	21.7	21.0
10:30:00	21.7	22.0	20.1	23.4	26.2	26.4	19.8	24.9	26.1	22.0	18.9	20.9	19.5	18.0	20.1	17.4	20.2	20.8	18.6	19.2	19.6	20.8	19.8	19.8	21.6	21.5	23.1	26.2	19.7	19.4	21.1	21.3
10:45:00	21.3	21.7	20.9	23.6	26.0	26.9	20.3	24.8	25.9	22.1	19.2	20.9	22.3	19.3	19.3	20.3	20.9	20.5	19.5	20.5	20.3	23.6	20.1	19.8	22.1	22.6	23.5	25.1	20.6	19.7	21.9	21.8
11:00:00	21.9	21.6	21.9	23.5	25.3	27.1	21.3	24.7	26.6	22.3	19.6	21.1	20.6	19.6	19.6	18.2	20.6	21.0	18.9	19.9	20.7	22.3	20.0	19.5	22.9	23.2	24.7	26.2	21.4	20.0	22.9	21.9
11:15:00	22.9	21.2	23.4	24.3	26.5	27.8	22.4	26.4	26.8	23.3	20.0	21.5	20.4	20.0	19.7	18.0	20.4	21.6	18.9	20.0	20.6	21.9	20.2	19.1	23.8	23.3	25.2	25.9	21.9	20.3	23.4	22.3
11:30:00	23.7	21.3	23.6	24.6	27.4	28.3	22.5	26.9	26.7	23.1	20.0	21.5	21.5	20.2	19.6	18.1	20.6	22.1	18.9	20.2	20.9	21.6	20.6	19.5	24.4	24.1	26.1	27.7	23.0	20.9	24.7	22.7
11:45:00	24.2	21.7	23.3	24.4	28.0	29.0	24.0	26.6	27.4	22.9	24.5	22.2	21.9	20.5	18.8	18.5	20.6	21.8	19.1	20.3	21.3	22.2	21.4	20.6	24.8	24.3	26.5	26.9	23.8	20.9	23.4	23.1
12:00:00	24.9	21.2	24.1	25.5	27.9	29.4	23.8	27.2	26.7	23.7	21.2	20.9	23.1	20.9	20.0	18.9	20.8	22.7	19.4	20.4	21.5	22.6	22.1	21.9	25.2	25.1	26.2	26.4	24.8	21.3	23.6	23.3
12:15:00	25.3	21.6	24.7	25.2	27.7	28.2	24.3	27.4	27.8	23.6	20.9	21.4	23.8	21.2	20.9	19.6	20.7	23.4	19.8	20.8	21.7	22.9	22.5	21.9	25.9	24.5	25.5	26.2	25.8	21.8	24.1	23.6
12:30:00	24.8	21.7	23.9	27.0	29.0	29.5	23.9	27.7	27.6	24.4	20.9	22.2	25.2	21.5	21.5	19.1	20.8	23.9	20.6	24.7	22.2	24.2	21.9	22.6	25.6	25.0	25.5	26.7	26.0	22.6	24.9	24.1
12:45:00	25.5	22.2	23.3	26.6	28.2	30.1	25.0	28.5	28.4	23.8	21.1	21.6	25.9	22.0	21.8	19.6	21.5	23.9	20.8	22.3	23.5	24.6	23.3	22.9	26.4	26.2	26.9	27.7	25.9	23.8	25.2	24.5
13:00:00	24.9	22.2	23.5	27.1	29.3	31.2	26.4	28.8	28.5	24.0	21.3	22.8	26.1	22.4	21.8	19.8	21.7	24.8	20.6	21.9	23.3	24.7	24.2	23.4	26.6	25.6	27.0	28.7	26.6	23.9	25.2	24.8
13:15:00	24.8	22.1	24.7	27.9	29.9	30.5	25.3	26.6	27.1	24.1	21.2	23.3	26.1	23.5	21.9	20.9	22.3	25.4	20.9	22.2	24.7	25.1	24.7	24.3	26.3	25.2	27.3	28.7	26.1	25.3	25.0	24.9
13:30:00	25.4	20.9	24.0	28.8	30.0	30.4	24.1	25.7	27.7	30.2	21.7	24.3	26.1	22.9	22.2	21.0	22.9	25.0	20.1	22.4	24.3	25.9	25.4	25.0	26.8	25.5	27.1	29.5	25.4	25.7	24.8	25.2
13:45:00	25.7	21.6	24.6	29.3	30.5	31.3	24.6	26.3	27.8	26.9	22.0	26.1	26.5	23.0	22.3	21.2	23.1	24.7	19.8	22.6	24.1	25.4	26.0	26.2	27.8	24.9	27.6	28.5	25.1	26.5	24.6	25.4
14:00:00	25.5	23.3	24.9	29.6	29.7	31.5	24.6	27.0	27.5	25.6	22.2	25.7	27.8	23.4	22.9	21.9	23.4	24.2	20.3	22.3	24.7	25.9	26.0	22.8	27.0	24.9	27.3	28.6	24.9	25.5	24.5	25.3
14:15:00	25.2	23.6	24.7	29.5	28.7	31.5	24.8	27.7	27.8	25.5	23.5	26.2	26.8	24.0	21.5	21.5	23.3	24.9	21.2	22.6	24.8	26.6	26.2	22.7	26.7	25.9	28.3	28.1	24.6	25.8	26.1	25.5
14:30:00	25.4	23.6	25.8	30.7	29.5	31.5	25.5	27.3	28.5	25.7	23.9	26.6	26.9	24.2	21.5	21.2	23.7	25.1	21.1	23.3	25.5	26.8	26.3	22.4	26.5	26.2	27.2	27.3	24.6	25.6	25.4	25.6
14:45:00	25.1	23.8	25.4	29.1	29.0	31.3	25.9	26.9	28.5	25.4	24.0	26.9	26.8	24.0	21.3	22.0	24.0	25.3	21.2	23.4	25.9	27.1	26.9	22.4	27.1	26.8	28.2	26.9	24.6	25.7	24.7	25.7
15:00:00	25.4	24.0	24.4	28.7	28.0	31.1	25.9	26.4	28.1	26.1	24.3	25.4	26.6	24.9	22.0	21.9	23.6	25.9	21.3	23.5	25.9	27.8	26.5	22.2	26.6	26.0	27.8	26.5	24.6	25.4	24.4	25.5
15:15:00	25.8	24.5	25.5	27.7	28.0	30.2	26.2	27.0	30.8	26.0	24.1	25.6	25.6	24.4	22.6	22.1	23.0	25.4	21.0	23.9	25.8	27.3	26.7	22.5	27.0	26.2	26.9	26.2	24.6	25.4	24.4	25.6
15:30:00	25.3	24.6	24.9	27.2	28.1	29.8	26.2	27.0	30.7	25.4	24.7	26.2	26.2	24.7	22.7	21.7	23.0	24.2	20.9	26.4	25.7	26.5	25.9	23.5	27.0	25.5	26.7	26.7	25.2	24.7	24.7	25.5
15:45:00	26.8	24.4	23.4	27.2	27.4	29.9	25.6	26.8	28.0	26.1	24.8	25.7	26.3	25.1	22.4	21.7	23.8	23.5	20.9	27.1	25.4	26.7	25.1	23.0	26.6	25.8	26.6	25.6	24.8	24.6	24.4	25.3
16:00:00	27.0	26.7	24.2	27.0	27.5	29.5	26.5	26.9	26.9	25.4	23.9	25.0	26.6	25.2	24.0	21.9	22.9	23.1	20.9	24.0	25.4	26.0	25.1	22.6	26.0	25.1	26.2	24.9	24.7	25.1	24.5	25.2
16:15:00	25.1	23.9	24.2	26.9	27.1	28.4	25.8	26.6	26.5	25.5	23.8	25.0	26.3	24.6	22.5	21.7	23.5	22.8	20.9	23.2	25.6	25.8	25.8	22.5	25.2	25.6	26.2	24.1	25.0	24.8	24.0	24.8
16:30:00	24.2	23.3	23.2	26.5	26.9	28.2	25.5	26.1	27.0	25.4	23.4	24.7	25.9	23.5	22.0	21.4	23.6	22.5	21.5	23.4	24.7	24.8	25.4	24.2	25.4	25.0	25.9	23.5	25.1	24.7	24.4	24.6
16:45:00	24.3	22.3	24.0	26.6	26.4	28.5	25.6	26.0	25.6	25.0	22.9	24.3	25.8	24.0	21.3	21.7	23.6	24.3	20.4	23.5	25.1	25.4	28.3	24.7	24.9	24.6	25.9	22.9	24.9	24.5	23.4	24.5
17:00:00	24.3	22.4	23.4	25.9	26.1	28.0	25.0	24.4	25.6	25.0	22.9	24.4	25.8	24.0	22.8	21.7	23.4	23.9	22.1	23.2	24.7	24.9	25.5	23.4	25.2	25.1	25.6	22.4	24.6	24.1	23.5	24.3
17:15:00	24.0	22.0	22.9	29.0	26.0	27.0	24.7	23.8	25.4	24.8	24.5	24.2	24.9	23.7	22.0	22.1	23.3	23.5	20.6	23.1	24.5	25.2	24.8	23.3	25.2	24.4	25.2	22.1	24.3	23.9	23.2	24.1
17:30:00	24.0	22.0	22.8	26.1	26.2	26.4	24.1	23.6	24.8	24.7	23.2	23.5	24.6	23.5	22.1	22.7	23.1	24.0	20.6	23.1	24.2	24.3	24.5	22.9	25.1	24.1	24.4	23.2	23.9	23.4	23.2	23.8
17:45:00	23.9	23.7	22.2	25.3	25.6	25.9	25.3	28.2	24.7	24.2	21.4	22.7	23.7	23.3	22.1	23.8	22.8	22.2	20.5	22.5	24.7	25.2	26.2	23.2	24.0	24.0	23.8	22.4	23.4	22.8	23.7	23.8
18:00:00	23.6	23.0	21.6	24.7	25.6	25.4	28.5	28.7	24.6	23.4	25.4	22.9	23.7	22.9	21.9	20.6	22.4	22.4	20.4	22.8	23.8	26.8	24.2	21.9	23.5	23.9	27.0	22.2	23.1	22.7	23.5	23.8
18:15:00	23.3	21.3	21.7	23.9	27.5	24.7	27.4	24.0	24.6	23.2	23.7	22.4	23.5	22.7	24.4	20.7	22.7	22.3	20.3	22.6	23.5	24.5	23.8	21.0	23.3	23.5	24.3	21.9	22.5	22.2	24.0	23.3
18:30:00	24.5	24.7	26.2	23.3	26.0	24.2	24.8	23.9	24.5	23.0	24.7	22.1	23.1	22.2	27.3	20.7	22.3	22.4	20.0	22.3	23.0	24.6	23.3	20.6	23.5	23.2	23.4	21.6	22.2	21.9	24.0	23.3
18:45:00	26.2	22.1	27.7	22.7	24.5	23.9	24.2	24.2	24.1	22.5	21.4	22.2	23.0	21.4	22.8	20.5	22.6	22.3	19.9	22.1	22.7	24.1	26.1	20.9	23.4	22.8	24.0	24.3	21.8	21.7	23.3	23.1
19:00:00	23.3	21.5	25.3	26.5	24.6	23.4	24.0	23.6	24.0	24.8	21.6	25.5	23.1	22.4	22.4	20.7	27.9	22.2	19.9	21.8	24.5	23.8	26.4	20.9	23.3	22.4	23.5	23.5	22.2	21.4	23.1	23.3
19:15:00	22.9	21.2	26.9	26.3	24.1	23.0	23.8	23.1	23.5	27.7	25.3	25.7	22.9	22.1	22.1	20.7	27.7	22.2	19.8	21.8	22.9	23.5	24.5	20.7	23.2	21.6	23.7	23.4	25.4	21.4	22.8	23.4
19:30:00	24.3	20.9	26.2	25.4	24.2	25.4	23.5	22.9	23.5	24.3	25.6	26.1	23.0	25.7	21.6	20.6	26.5	21.9	19.7	21.5	25.8	23.4	28.7	20.6	23.0	23.4	23.2	27.3	27.8	21.5	22.4	23.9
19:45:00	22.9	20.6	26.9	23.8	24.0	26.0	23.3	22.6	28.7	25.9	23.4	26.2	25.1	26.9	21.4	20.5	24.0	21.5	20.8	21.5	23.5	23.1	24.8	20.5	22.8	27.4	22.9	25.3	26.7	21.4	24.5	23.8
20:00:00	21.9	24.0	25.3	23.0	23.6	24.0	23.1	22.2	26.8	26.2	22.8	27.2	26.4	26.6	21.1	20.3	23.3	21.3	19.9	21.3	22.5	22.8	24.2	20.6	22.6	26.7	21.7	23.9	23.8	21.5	25.1	23.4
20:15:00	21.6	22.1	24.1	22.8	23.5	28.3	22.9	22.1	25.0	26.5	22.3	24.9	27.2	26.0	21.0	20.3	23.1	21.1	19.7	21.3	21.5	23.8	24.0	20.4	22.4	29.0	22.2	22.9	23.0	24.8	25.3	23.4
20:30:00	21.6	21.2	23.3	22.5	23.2	26.4	26.4	21.9	24.0	25.0	22.1	23.6	27.2	24.1	21.1	20.6	23.0	20.9	19.4	21.1	22.0	26.8	23.8	20.3	22.5	26.1	22.5	22.5	23.5	21.5	27.4	23.1
20:45:00	21.9	23.2	22.9	22.3	22.9	24.5	25.4	21.7	23.3	24.0	21.8	22.4	26.6	23.2	21.1	20.3	22.7	23.0	19.2	21.5	22.4	24.2	23.5	20.2	24.9	24.1	23.4	22.0	22.8	24.8	24.7	22.9
21:00:00	21.4	23.4	22.6	21.8	22.9	25.4	24.0	21.3	22.9	23.3	21.7	24.0	27.0	22.8	21.0	20.3	22.3	22.3	19.1	21.1	23.8	23.4	22.9	20.7	26.2	23.0	21.5	21.5	22.2	24.9	23.5	22.7
21:15:00	21.3	22.2	22.2	21.0	26.1	25.3	23.4	21.3	22.6	23.1	21.0	22.0	24.6	22.1	20.8	26.2	21.9	22.7	18.9	21.2	22.8	22.9	22.7	21.5	26.8	22.2	20.8	21.6	21.7	25.6	22.7	22.6
21:30:00	21.3	21.5	21.8	20.4	23.9	24.4	23.0	21.3	22.2	22.7	20.6	21.7	24.7	21.9	20.6	22.9	21.7	22.0	19.4	20.8	22.4	22.7	22.2	20.9	24.0	21.8	21.9	21.4	21.6	22.9	22.1	22.0
21:45:00	20.9	21.2	24.7	20.6	22.9	24.0	22.8	23.9	22.1	22.5	20.8	21.3	23.4	21.7	20.4	21.6	21.6	21.5	21.9	20.8	27.3	22.5	21.8	20.9	23.1	21.5	24.4	21.3	21.5	22.2	21.8	22.2
22:00:00	21.0	21.0	22.5	20.4	22.0	23.7	22.2	21.9	21.8	22.1	20.7	20.9	22.9	21.5	21.5	21.1	21.3	21.5	21.6	20.6	23.8	22.2	21.5	20.7	25.3	21.1	22.6	21.1	21.5	22.1	21.6	21.8
22:15:00	22.4	20.9	21.5	19.9	21.7	24.3	22.2	21.6	21.4	21.6	20.4	20.5	22.4	21.3	20.8	20.8	21.3	21.1	20.2	20.5	22.6	21.8	21.2	20.5	23.8	20.9	22.2	21.2	23.6	22.0	21.5	21.6
22:30:00	20.9	20.5	21.1	19.6	21.0	23.9	22.0	21.9	21.0	21.4	20.2	20.3	22.1	21.1	20.3	20.5	21.1	21.7	19.5	20.1	21.9	21.6	21.3	20.5	23.0	21.9	22.0	22.6	21.9	22.0	21.1	21.3
22:45:00	20.5	19.9	20.6	19.2	20.6	23.5	21.8	21.3	20.9	21.3	20.0	19.9	21.7	21.8	20.1	20.4	21.1	20.9	19.2	20.5	21.5	21.5	21.0	20.5	22.1	20.9	21.8	21.1	21.5	21.5	21.2	21.0
23:00:00	20.3	19.7	20.3	19.0	20.4	23.2	22.2	20.9	20.5	20.9	19.8	20.0	21.2	21.5	19.9	20.1	20.9	20.6	18.9	20.3	21.2	21.2	21.4	20.3	21.6	20.6	21.5	21.0	21.3	21.2	21.1	20.7
23:15:00	20.1	19.7	20.1	18.7	20.1	22.8	21.9	20.4	20.3	20.9	19.9	19.8	20.9	20.9	19.8	19.8	20.6	20.5	18.7	20.2	21.0	21.1	20.9	20.1	21.4	20.2	21.3	20.8	21.0	20.9	20.9	20.5
23:30:00	20.3	19.6	19.9	18.6	19.8	21.9	21.8	20.3	19.9	20.6	19.9	19.9	20.7	20.5	19.6	19.1	20.3	20.4	18.6	19.8	20.9	21.2	20.9	20.2	20.9	19.8	20.9	20.5	20.9	20.9	21.7	20.3
23:45:00	20.3	19.5	19.4	18.4	19.5	21.5	21.3	19.7	19.6	20.4	19.8	19.6	21.7	20.4	19.3	18.6	20.2	20.3	18.1	20.0	20.6	21.2	20.8	19.9	20.7	19.2	20.9	20.1	20.7	20.6	21.1	20.1
DAY AV	21.4	20.6	21.4	21.9	22.6	23.5	22.3	22.7	22.4	21.8	20.7	20.9	21.4	20.8	20.0	19.3	20.4	20.7	19.4	19.8	21.0	21.8	21.7	20.6	21.9	21.8	21.9	22.2	21.1	21.3	21.8	21.3

August 2019 graphical temperature plot



October 2019 average outdoors temperature calculation spreadsheet

DATA LOG 1: OUTDOORS TEMP

Time	Temperatures																														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	AV
0:00:05	19.2	16.7	17.9	17.2	16.6	17.2	15.5	15.5	18.6	17.6	16.6	15.6	16.0	15.8	16.2	16.5	17.5	17.4	16.2	16.8	17.2	17.5	17.4	16.9	17.1	16.8	16.4	17.1	16.1	16.6	16.5	16.8
0:15:05	18.9	16.5	17.7	17.1	16.5	17.1	15.8	15.3	18.2	17.4	16.5	15.7	16.1	15.6	16.1	16.5	17.5	17.3	16.3	16.8	16.9	17.4	17.6	16.7	17.2	16.7	16.5	17.1	16.5	16.8	16.5	16.8
0:30:05	18.9	16.8	17.6	16.8	16.6	17.2	15.6	15.2	18.0	17.2	16.4	15.8	15.9	15.5	16.1	16.5	17.5	17.0	16.2	16.8	16.9	17.4	17.3	16.7	17.3	16.7	16.5	17.2	16.6	16.7	16.4	16.8
0:45:05	18.6	16.4	17.4	16.4	16.6	17.0	15.6	15.2	17.8	17.2	16.3	15.6	15.9	15.7	16.1	16.5	17.5	17.0	16.2	16.7	16.7	17.3	17.0	16.5	17.0	16.6	16.7	16.9	16.5	16.6	16.3	16.6
1:00:05	18.4	16.5	17.6	16.2	16.5	16.5	15.5	15.0	17.9	17.1	16.3	15.9	16.0	15.8	16.2	16.4	17.4	17.1	16.3	16.6	16.6	17.1	17.0	16.3	17.1	16.7	16.6	16.8	16.6	16.5	16.3	16.6
1:15:05	18.3	16.7	17.4	16.3	16.6	16.5	15.7	14.9	17.5	17.0	16.3	15.8	15.8	15.8	16.0	16.3	17.4	16.8	16.2	16.5	16.5	16.9	16.9	16.0	17.0	16.4	16.4	16.5	16.6	16.5	16.4	16.5
1:30:05	18.5	16.3	17.6	16.1	16.5	16.3	15.7	14.8	17.7	16.5	16.4	15.8	15.9	15.7	16.0	16.5	17.3	16.7	16.1	16.6	16.5	17.1	17.0	15.9	16.7	16.4	16.6	16.8	16.6	16.5	16.1	16.5
1:45:05	18.5	16.2	17.4	16.0	16.6	16.5	15.4	14.6	17.4	16.1	16.2	15.8	15.8	15.7	16.0	16.2	17.4	16.8	16.3	16.5	16.2	17.0	16.9	15.7	16.6	16.3	16.5	16.5	16.7	16.4	16.3	16.4
2:00:05	18.4	16.1	17.2	15.9	16.5	16.5	15.2	14.4	17.5	16.1	16.2	15.7	15.7	15.6	15.9	16.4	17.3	16.6	16.0	16.5	16.1	16.9	16.9	15.9	16.5	16.2	16.2	16.4	16.7	16.3	16.2	16.3
2:15:05	18.3	16.1	17.2	15.9	16.4	16.5	15.4	14.5	17.3	15.8	16.1	15.8	15.9	15.8	15.9	16.5	17.2	16.6	16.1	16.3	16.0	16.7	17.1	15.9	16.3	16.2	16.1	16.5	16.7	16.4	16.1	16.3
2:30:05	18.1	15.9	17.1	15.9	16.5	16.3	15.3	14.1	17.4	15.6	16.0	15.8	15.6	15.9	15.9	16.5	17.2	17.0	16.1	16.3	16.0	16.7	16.9	15.5	16.4	15.9	16.1	16.3	16.8	16.2	16.0	16.2
2:45:05	18.3	15.8	17.2	15.8	16.4	16.5	15.3	14.2	17.8	15.4	16.2	15.6	16.0	15.8	16.1	16.5	17.2	16.8	15.9	16.2	16.3	16.6	16.8	15.5	16.1	15.9	16.1	16.2	16.8	16.0	16.3	16.2
3:00:05	18.3	16.1	17.1	16.0	16.1	16.3	15.2	14.1	17.7	15.4	16.2	15.5	15.5	15.9	15.9	16.5	17.2	16.7	15.9	16.3	16.2	16.7	16.8	15.6	15.9	16.0	15.9	16.2	16.9	15.8	16.2	16.2
3:15:05	17.9	16.0	17.0	16.3	16.3	16.1	15.2	14.4	17.0	15.4	16.0	15.4	15.6	15.8	15.9	16.5	16.9	16.5	15.9	16.4	16.3	16.5	17.0	15.7	16.1	15.9	16.0	16.2	16.5	16.1	16.1	16.2
3:30:05	18.1	15.9	17.2	16.0	16.1	16.3	15.3	14.4	16.7	15.2	16.1	15.3	15.4	15.8	15.9	16.5	16.7	16.7	15.9	16.4	16.1	16.5	16.6	15.7	16.0	15.9	15.9	16.3	16.7	16.2	15.9	16.1
3:45:05	18.1	15.9	17.3	15.9	16.4	16.5	15.3	14.7	17.2	15.3	16.1	15.5	15.6	15.7	15.9	16.3	16.5	16.3	16.0	16.3	16.1	16.5	16.6	15.6	15.9	16.0	16.0	16.1	16.5	16.4	16.2	16.2
4:00:05	17.7	15.7	16.9	15.8	16.4	16.5	15.2	14.8	17.0	15.4	15.9	15.6	15.6	15.8	16.0	16.1	16.7	16.1	15.9	15.9	16.1	16.4	16.6	15.4	15.9	15.9	16.1	15.9	16.6	16.3	15.8	16.1
4:15:05	17.8	15.8	17.1	15.9	16.3	16.1	15.3	14.8	16.7	15.1	15.9	15.4	15.6	15.8	15.9	15.9	16.7	16.4	16.0	16.2	15.9	16.3	16.7	15.4	15.8	15.8	16.0	15.9	16.5	16.2	15.9	16.0
4:30:05	17.8	15.8	17.0	15.9	16.5	16.3	15.2	14.6	16.6	15.2	15.8	15.2	15.5	15.7	15.9	16.0	16.7	16.4	16.1	16.4	16.0	16.4	16.4	15.1	16.1	15.9	16.1	15.7	16.6	16.0	15.6	16.0
4:45:05	17.8	15.6	16.6	15.9	16.3	16.4	15.2	14.5	16.5	15.3	15.9	15.2	15.6	15.6	16.0	15.9	16.9	16.4	16.0	16.2	16.0	16.4	16.5	15.0	15.8	15.9	16.1	15.5	16.5	16.2	15.8	16.0
5:00:05	17.9	15.4	17.0	15.9	16.5	16.2	15.0	14.6	16.3	15.4	15.8	15.3	15.6	15.6	15.9	15.8	16.6	16.3	16.1	16.0	15.9	16.4	16.4	15.2	15.8	16.0	16.2	15.7	16.6	16.1	15.8	16.0
5:15:05	17.6	15.7	16.7	16.1	16.2	16.1	15.0	14.5	16.5	15.3	15.5	15.3	15.5	15.7	16.0	15.9	16.7	16.3	16.0	15.9	15.9	16.4	16.4	15.1	15.9	15.9	16.1	15.7	16.5	16.1	15.8	15.9
5:30:05	17.9	15.8	16.7	15.9	16.0	15.9	14.9	14.3	16.4	15.2	15.4	15.3	15.6	15.3	16.0	15.9	16.6	16.2	16.0	15.8	15.8	16.2	16.4	15.1	15.9	15.9	15.9	15.7	16.4	16.0	15.9	15.9
5:45:05	17.8	15.4	16.8	16.1	16.1	15.9	14.6	14.1	16.5	15.3	15.4	15.2	15.5	15.1	16.0	15.8	16.7	16.2	15.9	15.9	15.8	16.2	16.4	15.2	15.9	15.9	15.9	15.4	16.5	16.1	15.8	15.9
6:00:05	17.5	15.3	16.7	16.0	15.8	15.7	14.7	14.1	16.4	15.2	15.4	15.2	15.5	15.0	16.0	15.7	16.7	16.2	16.1	16.0	15.4	16.2	16.2	14.9	15.7	15.9	15.9	15.1	16.3	15.9	15.8	15.8
6:15:05	17.5	15.1	16.5	15.8	16.0	15.5	14.5	14.0	16.6	15.3	15.4	15.3	15.4	15.2	15.9	15.5	16.6	16.4	16.0	15.6	15.7	16.2	16.2	14.8	15.7	15.9	15.8	15.4	16.2	15.7	15.7	15.7
6:30:05	17.8	15.0	16.5	15.8	15.9	15.9	14.5	14.0	16.5	15.2	15.2	15.2	15.4	15.1	15.8	15.3	16.2	16.3	15.4	15.7	15.7	16.1	16.3	14.8	15.8	15.8	15.8	15.6	16.0	15.5	15.5	15.7
6:45:05	17.9	15.3	16.6	15.4	15.9	15.5	14.5	14.2	16.6	15.3	15.4	15.3	15.4	15.2	15.9	15.3	16.1	16.2	15.5	15.6	15.8	16.2	16.5	15.0	15.9	15.8	15.9	15.9	15.9	15.5	15.6	15.7
7:00:05	17.7	15.2	16.7	15.8	15.9	15.2	14.4	14.4	16.6	15.4	15.1	15.3	15.6	15.0	15.9	15.4	15.9	16.2	15.4	15.9	15.8	16.2	16.3	14.8	16.0	15.9	15.8	15.9	16.1	15.5	15.6	15.7
7:15:05	17.7	14.7	16.5	15.7	16.1	15.5	14.3	14.5	16.6	15.1	15.2	15.3	15.5	15.2	15.9	15.5	15.6	16.1	15.4	16.0	15.8	16.4	16.3	15.2	15.9	15.9	15.9	15.9	16.6	15.4	15.9	15.7
7:30:05	17.7	15.1	16.4	16.1	15.8	15.2	14.5	15.2	16.7	15.2	15.4	15.4	15.9	15.2	15.9	15.9	15.2	16.1	15.5	16.4	16.1	16.5	16.1	15.7	15.9	15.9	16.0	15.9	16.5	15.7	15.8	15.8
7:45:05	17.7	15.2	16.6	16.7	15.8	15.4	14.8	15.6	16.5	15.3	15.6	15.4	15.9	15.2	16.1	16.5	15.6	15.1	15.5	16.2	16.2	17.1	16.1	16.3	16.5	16.0	16.2	16.5	16.9	16.0	15.9	16.0
8:00:05	17.7	15.2	16.7	16.7	16.0	15.3	14.9	16.2	16.8	15.6	15.3	15.4	15.9	15.5	16.1	16.9	15.8	15.0	15.6	16.1	16.3	16.7	16.4	16.3	16.6	16.2	16.4	16.7	16.7	16.0	15.9	16.1
8:15:05	17.9	15.2	16.5	16.7	16.1	15.4	15.1	16.8	16.8	15.6	15.9	15.4	15.9	15.7	16.5	17.5	16.0	15.2	15.6	16.3	17.0	17.1	16.5	16.4	16.8	16.2	16.3	17.2	16.7	16.0	16.1	16.3
8:30:05	18.0	15.9	16.6	17.6	17.1	15.5	15.2	17.5	17.2	15.9	15.6	15.7	16.0	15.8	17.0	18.1	16.7	15.2	15.6	16.6	17.3	17.4	16.5	16.8	16.6	16.3	16.7	17.5	16.8	16.3	17.1	16.6
8:45:05	19.5	16.2	17.2	18.2	16.8	15.7	15.3	17.5	17.4	16.1	15.8	15.6	16.0	15.8	17.4	18.5	16.7	15.6	15.5	17.2	17.5	17.5	16.7	17.2	17.0	17.0	17.2	18.1	16.9	16.5	17.1	16.9
9:00:05	20.3	16.8	17.6	18.3	17.2	15.9	15.7	17.9	17.7	16.9	16.0	16.3	16.1	16.1	17.2	19.1	17.5	15.7	15.5	17.2	18.2	17.9	17.2	17.7	17.4	17.1	17.7	18.5	17.0	16.7	17.2	17.2
9:15:05	19.6	17.9	17.8	18.2	17.0	16.2	15.9	18.1	19.1	16.6	16.7	16.5	16.1	15.9	17.8	19.3	17.9	16.1	15.9	17.7	18.4	18.9	17.3	17.2	18.1	17.1	18.7	18.2	17.5	17.3	17.5	17.5
9:30:05	19.9	18.1	18.4	18.8	17.6	16.4	16.6	18.8	18.8	16.9	16.5	17.0	16.6	16.2	18.1	19.8	17.8	16.3	16.1	17.7	18.0	18.3	17.9	17.7	18.6	17.1	18.0	18.5	17.6	17.3	17.7	17.7
9:45:05	19.7	19.0	18.7	19.3	17.9	16.0	16.8	19.3	18.5	17.4	16.5	16.9	16.6	16.6	17.9	19.9	17.6	16.2	16.0	17.9	18.9	18.5	19.1	17.9	19.7	17.3	18.5	18.5	17.8	17.4	17.7	17.9
10:00:05	20.5	19.3	19.6	19.5	18.1	16.3	16.9	19.7	18.7	17.3	16.5	16.9	16.7	16.5	19.1	19.7	18.6	16.7	16.5	18.3	18.0	19.4	19.0	17.9	18.6	17.4	18.6	19.8	17.9	17.5	17.9	18.2
10:15:05	20.3	19.9	19.4	19.3	18.7	16.4	17.9	19.5	18.7	17.3	16.9	17.0	17.1	16.7	19.4	20.1	19.2	16.6	16.4	19.2	19.6	19.6	18.8	18.8	19.1	17.7	18.6	19.9	19.5	18.4	17.7	18.5
10:30:05	21.9	19.4	20.0	20.3	18.7	16.4	17.7	20.0	19.9	17.8	17.8	16.8	16.9	16.9	19.8	20.3	18.4	17.0	16.8	19.1	19.6	19.7	19.8	19.5	19.7	17.6	19.0	20.5	19.2	19.5	17.7	18.8
10:45:05	22.0	19.7	20.3	19.8	19.4	16.4	19.1	20.3	19.1	17.9	18.3	17.9	16.7	17.2	19.0	21.3	19.4	17.1	17.3	18.7	20.8	20.6	19.4	19.1	20.0	17.1	19.3	20.8	20.1	20.5	17.3	19.1
11:00:05	22.6	20.9	20.9	19.1	19.4	16.7	19.1	20.8	20.6	18.0	18.9	18.0	17.1	17.3	18.7	21.6	19.1	17.0	17.7	19.3	19.7	21.6	20.3	19.1	20.2	16.8	19.0	19.9	19.7	19.5	17.5	19.2
11:15:05	23.2	20.2	21.9	18.7	20.2	16.3	19.4	20.7	20.0	18.2	18.0	18.1	18.2	17.9	20.1	21.4	19.1	16.5	17.6	19.2	20.3	21.3	20.2	20.6	20.8	17.2	20.0	20.5	20.8	19.9	17.7	19.5
11:30:05	22.2	21.2	22.0	18.8	19.3	16.7	19.1	20.9	20.7	19.3	18.1	18.9	18.4	18.2	18.9	21.5	19.6	16.6	17.9	19.7	20.9	21.6	19.4	19.2	20.7	17.1	20.5	20.5	21.2	20.0	17.8	19.6
11:45:05	24.0	21.1	22.8	18.5	20.3	17.2	19.0	21.4	21.8	19.1	18.7	19.4	18.5	17.7	19.5	21.8	19.6	16.9	18.1	20.1	20.9	22.7	18.4	19.5	21.5	16.9	20.5	20.4	21.4	20.1	18.2	19.9
12:00:05	24.2	21.3	23.3	18.5	21.3	16.8	20.2	21.8	21.5	19.7	18.6	18.7	18.5	18.0	19.1	21.8	19.6	17.7	18.9	20.6	21.8	21.4	18.3	20.3	21.3	16.6	20.9	20.3	21.9	20.9	19.1	20.1
12:15:05	22.9	21.7	22.7	17.7	20.9	16.1	19.7	22.2	21.1	18.7	18.0	18.9	18.4	17.9	20.4	21.8	19.9	17.9	19.2	21.5	20.8	21.4	18.7	20.7	22.0	17.5	20.3	21.6	22.5	20.2	20.8	20.1
12:30:05	24.0	21.2	23.2	17.4	21.7	16.3	20.2	22.0	22.2	19.6	18.4	18.8	18.0	18.0	20.0	21.9	19.7	18.4	19.7	20.4	21.5	22.1	19.0	20.7	21.0	17.4	20.9	22.0	22.5	19.8	20.8	20.3
12:45:05	23.7	21.4	23.4	18.3	21.6	17.2	20.7	21.2	22.6	20.2	19.2	18.5	19.1	18.4	20.0	22.6	19.7	18.2	19.7	20.8	21.1	22.9	19.5	21.6	21.1	18.2	21.4	22.0	22.2	19.8	21.0	20.6
13:00:05	24.0	22.3	23.5	19.3	20.3	17.2	20.3	22.0	21.9	20.0	19.8	17.6	18.9	18.7	19.9	22.4	19.7	18.9	19.5	21.0	21.6	23.2	20.7	20.7	20.5	18.0	20.5	22.1	22.6	20.7	20.6	20.6
13:15:05	24.0	22.2	22.5	20.8	19.7	17.9	20.6	22.2	21.6	19.2	19.0	18.9	18.4	18.6	19.7	22.9	19.5	19.1	19.8	20.6	21.5	22.3	21.4	21.0	20.2	17.8	21.4	22.5	22.1	21.8	21.4	20.7
13:30:05	25.8	22.0	23.4	21.2	19.8	18.4	20.9	22.7	21.6	19.1	19.5	19.8	18.5	18.5	19.9	22.8	18.5	19.1	19.2	20.1	22.0	22.8	21.6	20.4	20.2	18.0	20.8	22.6	21.6	20.8	21.6	20.7
13:45:05	24.1	22.0	22.8	19.9	21.1	18.0	20.8	22.9	22.6	20.7	20.4	19.7	18.5	19.8	19.9	23.4	18.4	19.1	19.7	18.8	22.0	22.7	21.8	22.3	20.7	17.9	21.4	22.8	23.2	21.0	20.7	20.9
14:00:05	25.8	23.0	23.3	19.8	21.4	17.8	20.7	23.2	22.8	20.3	19.9	19.4	19.3	20.1	20.6	22.7	18.9	19.6	19.4	18.2	21.1	22.5	21.8	21.1	21.3	19.6	22.5	22.7	22.8	21.0	22.1	21.1
14:15:05	25.7	23.4	23.6	19.4	20.4	18.0	20.7	23.8	22.1	21.4	20.0	19.6	18.7	19.4	20.3	23.5	18.8	19.7	18.7	19.0	22.1	23.5	22.4	20.4	20.3	19.0	23.2	23.1	22.5	22.1	22.2	21.2
14:30:05	26.0	23.2	23.9	19.7	20.8	18.5	20.8	23.2	22.7	20.3	18.5	19.7	19.1	19.1	19.4	22.2	18.7	19.9	18.0	19.5	22.3	23.0	21.8	21.3	21.2	18.9	21.5	23.2	23.1	22.6	22.3	21.1
14:45:05	25.6	23.6	23.4	19.8	21.4	18.8	21.0	23.4	23.0	21.2	17.2	20.4	19.7	19.7	19.7	22.9	19.1	20.3	18.1	19.8	21.9	23.3	22.5	22.1	21.6	19.1	22.2	22.1	23.4	21.9	22.0	21.3
15:00:05	25.7	23.7	23.8	20.2	21.2	19.1	21.8	23.3	22.4	21.6	17.5	19.9	19.6	20.8	20.3	22.2	19.3	20.5	17.7	21.0	22.4	23.1	22.7	21.2	22.0	19.2	22.4	22.8	22.5	22.1	22.8	21.4
15:15:05	26.0	23.4	24.1	20.1	22.5	19.1	21.2	23.7	24.0	20.8	18.9	19.7	19.2	20.6	21.4	23.4	19.6	20.3	17.7	20.8	22.6	22.3	22.4	21.6	22.1	19.2	22.5	22.8	22.3	21.6	22.2	21.6
15:30:05	26.3	23.0	23.6	19.9	21.0	18.7	21.2	23.4	24.0	20.7	19.4	20.5	20.2	20.1	21.8	23.0	20.1	21.1	17.6	20.3	23.0	22.4	22.4	21.9	21.7	19.4	22.4	23.0	22.8	22.0	21.9	21.6
15:45:05	25.6	23.3	23.6	19.8	22.5	19.1	21.6	23.4	23.4	21.4	19.2	20.8	19.6	20.6	21.5	23.5	20.1	21.3	17.2	19.8	22.2	23.5	22.5	21.4	22.3	20.2	21.8	23.4	22.8	22.3	22.4	21.7
16:00:05	25.9	23.4	23.3	19.7	21.9	19.5	21.3	23.2	22.8	21.0	19.3	19.8	19.0	19.5	21.4	23.2	19.5	20.3	16.4	19.7	22.1	22.7	22.4	21.4	21.6	19.1	22.3	22.5	22.9	21.5	22.0	21.3
16:15:05	25.9	23.5	23.5	19.7	20.7	18.9	21.6	23.4	22.8	20.8	19.8	19.1	19.2	20.3	21.4	23.0	20.1	20.2	16.7	19.4	23.0	22.2	21.9	21.5	21.9	18.8	22.4	22.5	22.3	21.8	22.2	21.3
16:30:05	25.2	23.7	23.4	19.7	22.0	18.2	21.3	23.3	23.4	20.4	19.9	19.5	18.6	20.0	21.0	22.7	19.3	20.2	17.1	19.5	22.1	23.1	22.2	21.9	21.7	19.4	22.2	21.8	22.0	21.5	22.1	21.2
16:45:05	25.1	22.7	23.1	19.6	21.9	17.9	21.0	22.9	22.7	20.3	19.7	19.4	17.0	19.8	20.8	22.2	19.2	20.5	17.4	20.2	22.6	22.9	22.0	22.1	21.4	19.1	22.2	22.2	21.4	21.3	21.9	21.0
17:00:05	24.8	22.6	23.3	19.4	21.8	18.2	20.8	22.5	22.3	19.8	19.7	19.3	16.5	19.6	21.0	22.7	19.5	20.3	17.2	20.4	21.5	22.5	21.3	21.4	21.1	19.1	21.6	21.9	21.0	20.8	21.2	20.8
17:15:05	24.3	22.4	22.5	19.3	21.9	18.4	20.7	22.3	22.6	19.4	19.1	19.1	16.5	19.3	20.8	22.4	19.5	19.7	17.2	20.3	21.9	22.4	21.5	20.1	21.2	18.4	21.4	21.5	20.7	20.3	21.3	20.6
17:30:05	21.7	22.4	22.5	19.3	21.6	18.6	20.6	22.2	22.4	19.6	18.4	19.0	17.0	18.8	20.8	22.0	19.0	19.4	17.2	19.7	21.3	20.0	21.2	20.1	20.8	17.9	21.1	21.4	20.5	20.2	21.1	20.3
17:45:05	20.8	21.7	22.1	19.3	21.0	18.5	20.5	22.0	22.4	19.8	18.2	18.7	16.8	18.5	20.6	21.5	18.5	19.4	17.2	19.1	21.4	19.5	20.8	19.7	20.3	17.9	20.9	21.0	20.2	20.0	20.9	20.0
18:00:05	19.3	21.4	21.7	18.9	20.8	18.3	20.2	21.6	22.0	18.7	18.1	18.5	16.9	18.5	20.1	21.3	18.9	18.5	17.1	18.9	21.1	20.2	20.7	19.3	20.2	18.1	20.6	20.6	19.8	19.7	20.7	19.7
18:15:05	19.4	21.4	21.4	18.5	20.6	16.5	19.9	21.5	21.7	18.5	17.8	18.3	16.8	18.2	20.0	20.8	18.3	17.4	17.1	18.7	20.6	19.9	20.3	19.1	19.7	18.1	20.2	20.3	19.4	19.3	20.2	19.4
18:30:05	19.2	21.0	21.3	18.4	20.3	16.4	19.7	21.3	21.3	18.2	17.7	18.3	16.7	17.9	18.8	20.6	18.3	17.6	17.1	18.5	20.2	19.7	19.9	18.8	19.2	18.0	19.8	20.3	19.1	19.0	19.8	19.1
18:45:05	19.3	20.7	21.1	18.1	20.2	16.4	19.2	21.1	21.1	18.1	17.4	17.1	16.5	17.6	18.4	20.4	18.0	17.3	17.0	18.6	19.9	19.3	19.6	18.5	18.7	17.9	19.5	20.2	18.9	18.8	19.5	18.9
19:00:05	18.4	20.4	21.1	18.0	19.8	16.5	19.0	20.8	19.2	17.9	17.4	16.8	16.5	17.2	18.3	20.1	17.8	17.4	16.7	18.5	19.6	19.4	19.3	18.2	18.5	17.6	19.5	20.1	19.0	18.6	19.3	18.6
19:15:05	18.9	20.3	20.8	17.8	19.6	16.4	18.6	20.7	18.7	17.8	17.3	16.6	16.5	17.3	18.3	19.8	17.5	17.3	16.8	18.5	19.2	19.2	19.1	18.0	18.4	17.3	19.2	20.0	19.5	18.5	19.1	18.5
19:30:05	18.5	20.0	20.6	17.9	19.1	16.1	18.3	20.5	18.5	17.7	17.3	16.5	16.4	17.2	17.8	19.7	17.5	17.2	16.8	18.5	19.0	19.1	18.9	17.9	18.4	17.4	19.1	18.5	18.5	18.4	18.9	18.3
19:45:05	18.1	19.9	20.4	17.9	19.1	16.2	17.9	20.4	18.6	17.5	16.8	16.4	16.4	17.1	17.5	19.5	17.6	17.4	16.8	18.3	18.9	19.1	18.6	17.7	18.4	17.3	18.9	18.5	18.0	18.1	18.6	18.1
20:00:05	17.9	19.7	20.3	17.5	19.1	16.0	17.6	20.3	18.2	17.3	16.9	16.4	16.4	17.0	17.6	19.4	17.7	17.2	16.8	18.3	18.7	19.0	18.4	17.6	18.0	17.2	18.7	18.3	18.0	18.0	18.6	18.0
20:15:05	17.8	19.4	20.3	17.5	18.5	15.9	17.2	20.3	18.7	17.3	16.7	16.2	16.3	17.2	17.3	19.1	17.4	16.9	16.9	18.3	18.7	18.9	18.4	17.6	18.1	17.1	18.5	18.2	17.8	17.8	18.6	17.9
20:30:05	17.7	19.5	19.9	17.2	18.1	15.9	16.9	20.2	19.0	17.2	16.5	16.1	16.4	17.1	17.6	19.1	17.6	16.5	16.8	18.3	18.7	18.8	18.3	17.5	18.0	17.1	18.3	17.2	17.7	17.6	18.6	17.8
20:45:05	17.6	19.4	19.5	17.2	18.5	15.5	16.6	20.1	18.8	17.2	16.5	16.1	16.4	17.0	17.5	18.9	17.5	16.3	16.7	18.2	18.4	18.7	18.5	17.6	17.9	17.0	18.2	15.8	17.7	17.3	18.5	17.6
21:00:05	17.7	19.1	19.1	17.1	17.9	15.8	16.7	19.9	18.9	17.1	16.7	15.9	16.1	16.8	17.6	18.9	17.5	15.9	16.6	18.1	18.2	18.5	18.3	17.5	17.9	16.8	17.9	16.3	17.7	17.1	18.3	17.5
21:15:05	17.6	19.1	18.8	16.5	18.3	15.2	16.5	19.8	18.6	17.1	16.5	15.9	16.2	16.9	17.5	18.8	17.7	15.9	16.7	18.0	18.2	18.6	18.2	17.3	17.9	16.8	17.9	16.6	17.4	16.8	18.2	17.5
21:30:05	18.0	19.0	18.7	16.5	17.9	15.2	16.4	19.8	18.5	17.1	16.2	15.9	16.1	16.7	17.3	18.8	17.6	16.1	16.8	17.9	18.1	18.0	18.1	17.4	17.8	16.8	17.6	16.3	17.4	16.7	18.0	17.4
21:45:05	17.8	18.5	18.0	16.5	17.7	15.5	16.4	19.8	18.4	17.0	16.2	16.0	16.0	16.8	17.2	18.8	17.5	16.3	16.9	17.9	18.0	17.8	18.2	17.3	17.7	16.6	17.6	16.0	17.3	16.7	17.9	17.3
22:00:05	17.8	18.2	17.7	16.6	17.3	15.7	16.4	19.3	18.2	17.0	16.3	15.9	16.0	16.6	17.2	18.7	17.8	16.2	16.8	17.9	17.9	17.6	18.0	17.3	17.7	16.6	17.7	15.9	17.1	16.7	18.0	17.2
22:15:05	17.7	18.1	17.8	16.6	17.7	15.6	16.3	19.3	17.9	16.8	16.1	15.9	16.0	16.5	17.3	18.7	17.7	16.2	16.7	17.8	17.9	17.5	17.9	17.3	17.7	16.6	17.7	16.4	17.2	16.8	17.8	17.2
22:30:05	17.5	18.1	17.8	16.6	17.6	15.6	15.9	19.3	17.9	16.9	16.0	15.9	16.0	16.5	17.3	18.5	17.4	16.4	16.8	17.6	17.7	17.4	17.9	17.3	17.6	16.5	17.6	16.2	17.0	16.8	17.7	17.1
22:45:05	17.5	17.9	18.1	16.6	17.4	15.7	15.9	19.1	17.9	16.6	16.1	16.0	15.6	16.5	17.3	18.4	17.2	16.5	16.8	17.5	17.6	17.4	17.9	17.1	17.2	16.5	17.5	16.2	17.1	16.6	17.8	17.1
23:00:05	17.4	17.9	17.6	16.5	17.4	15.7	15.8	19.0	17.4	16.7	16.1	16.2	15.7	16.5	17.2	18.1	17.3	16.4	16.9	17.4	17.5	17.4	17.5	17.1	17.0	16.6	17.4	16.5	16.9	16.6	17.8	17.0
23:15:05	17.2	17.7	17.5	16.5	17.8	15.5	15.5	18.8	17.2	16.5	15.9	16.0	15.5	16.6	17.2	18.2	17.3	16.4	16.8	17.3	17.3	17.4	17.5	17.2	16.7	16.5	17.2	16.4	16.8	16.5	17.7	16.9
23:30:05	17.1	17.8	17.4	16.5	17.6	15.3	15.5	18.7	17.3	16.5	16.0	15.9	15.6	16.5	17.0	17.8	17.4	16.2	16.8	17.3	17.6	17.2	17.2	17.1	16.6	16.6	17.2	16.1	17.1	16.5	17.8	16.9
23:45:05	16.9	17.8	17.2	16.6	17.4	15.4	15.5	18.6	17.4	16.5	16.0	15.9	15.6	16.5	16.7	17.5	17.3	16.3	16.8	17.3	17.5	17.5	17.2	17.2	16.6	16.5	17.2	16.3	16.9	16.5	17.5	16.8
DAY AV	20.1	18.8	19.5	17.6	18.4	16.6	17.4	18.7	19.2	17.5	17.1	16.9	16.7	17.0	17.9	19.1	17.9	17.3	16.8	18.0	18.6	19.0	18.6	17.9	18.4	17.1	18.5	18.5	18.6	18.1	18.2	18.1

October 2019 House D average indoors temperature calculation spreadsheet

DATA LOG 2: HOUSE D

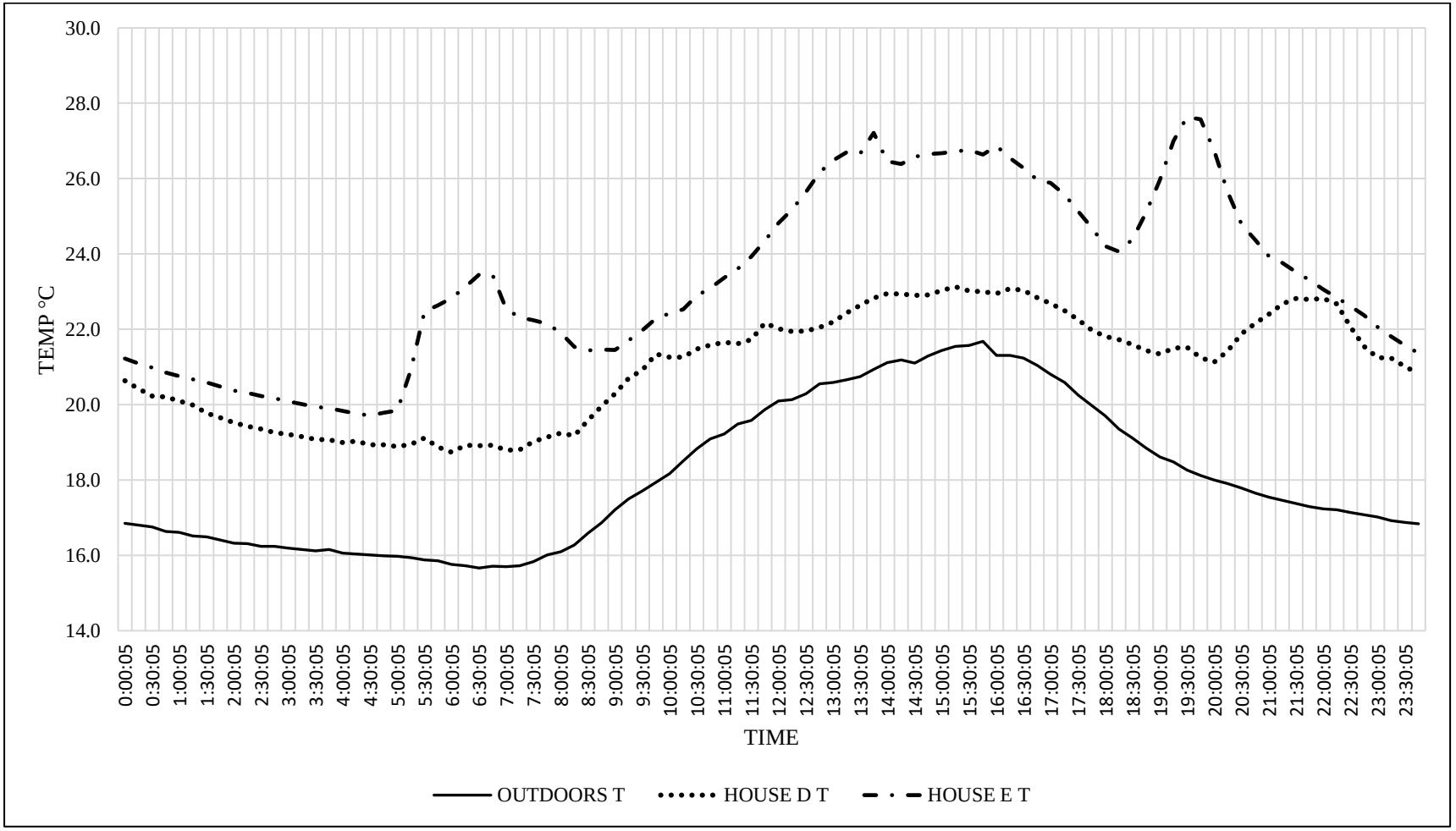
Time	Temperatures																															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	AV
0:00:05	22.2	20.9	21.9	21.1	19.3	20.9	19.0	19.4	21.3	21.3	20.4	19.3	19.3	18.6	19.7	26.5	20.5	20.9	20.7	19.8	20.3	22.2	20.6	22.7	20.9	20.3	19.8	19.9	19.8	20.3	19.9	20.6
0:15:05	22.1	21.1	21.9	20.9	19.3	20.8	19.0	18.8	21.0	21.0	20.4	19.3	19.2	18.6	19.5	25.4	20.2	20.7	20.5	19.8	19.8	21.8	20.5	22.0	20.6	19.9	19.6	19.8	19.5	20.1	20.0	20.4
0:30:05	21.9	20.6	21.6	20.8	19.3	20.6	18.9	18.5	20.9	20.9	20.2	19.0	19.2	18.5	19.4	24.4	19.9	20.5	20.3	19.7	19.6	21.6	20.3	21.5	20.3	19.8	19.6	19.7	19.5	20.3	19.9	20.2
0:45:05	21.7	20.3	21.5	20.8	19.2	20.3	18.8	18.2	20.8	20.8	20.1	19.1	18.6	18.5	19.3	26.5	19.8	20.3	20.1	19.6	19.5	21.4	20.1	21.2	20.3	19.6	19.6	20.2	19.6	20.2	20.2	20.2
1:00:05	21.6	20.3	21.4	20.6	19.2	20.0	18.7	18.2	20.8	20.7	20.1	19.1	18.5	21.3	19.3	24.0	19.8	20.3	19.7	19.6	19.3	21.1	20.0	20.8	20.1	19.5	19.8	19.7	19.5	20.1	20.1	20.1
1:15:05	21.9	20.1	21.3	20.5	19.2	19.9	18.7	18.0	20.7	20.8	19.9	19.0	18.5	22.6	19.2	22.2	19.7	20.2	19.5	19.5	19.2	20.8	20.1	20.6	20.0	19.4	19.5	19.5	19.5	19.9	19.9	20.0
1:30:05	21.6	20.2	21.2	20.3	19.2	19.8	18.7	17.8	20.6	20.4	20.0	19.2	18.4	19.9	19.1	21.3	19.7	20.1	19.3	19.5	19.1	20.3	20.0	20.3	19.8	19.2	19.5	19.4	19.6	19.8	19.7	19.8
1:45:05	21.5	20.2	21.2	20.3	19.2	19.7	18.6	17.6	20.6	20.3	19.9	19.0	18.3	19.2	18.9	20.9	19.6	19.8	19.2	19.4	19.3	20.1	19.9	20.1	19.8	19.2	19.3	19.3	19.5	19.9	19.4	19.7
2:00:05	21.5	20.0	21.2	20.1	19.3	19.5	18.5	17.5	20.5	20.0	19.8	18.7	18.2	18.8	18.8	20.7	19.6	19.4	19.1	19.4	19.0	19.9	19.9	19.9	19.8	19.1	19.3	19.2	19.5	19.6	19.4	19.5
2:15:05	21.4	19.7	21.0	19.9	19.2	19.3	18.6	17.4	20.4	20.0	19.7	18.8	18.1	18.6	18.8	20.5	19.5	19.2	19.0	19.1	19.0	19.8	19.8	19.9	19.6	19.1	19.2	19.4	19.5	19.6	19.3	19.4
2:30:05	21.4	19.6	20.9	20.3	19.3	19.2	18.5	17.2	20.4	19.9	19.4	18.8	18.1	18.5	18.7	20.2	19.5	19.1	19.0	18.8	18.9	19.6	19.8	19.4	19.4	19.1	19.5	19.2	19.4	19.5	19.3	19.4
2:45:05	21.1	19.6	20.9	20.1	19.4	19.2	18.3	17.1	20.4	19.8	19.3	18.7	18.0	18.7	18.7	20.0	19.5	19.1	18.8	18.6	18.8	19.5	19.7	19.0	19.3	19.0	19.1	19.2	19.5	19.3	19.5	19.3
3:00:05	21.1	19.4	20.8	20.0	19.3	19.1	18.3	17.0	20.3	19.6	19.3	18.9	18.4	18.6	18.7	20.0	19.3	19.1	18.8	18.6	18.8	19.4	19.7	18.8	19.2	19.0	19.0	19.1	19.3	19.2	19.5	19.2
3:15:05	21.1	19.3	20.7	20.0	19.3	19.0	18.2	17.0	20.3	19.5	19.2	18.9	18.0	18.5	18.9	19.8	19.2	19.0	18.8	18.6	18.8	19.3	19.6	18.8	19.2	18.9	19.0	19.0	19.3	19.1	19.5	19.2
3:30:05	21.1	19.2	20.6	19.9	19.3	19.0	18.2	17.0	20.1	19.3	19.1	18.7	18.0	18.4	18.9	19.5	19.2	19.0	18.7	18.5	18.8	19.3	19.6	18.7	19.1	18.8	18.9	18.9	19.2	19.1	19.3	19.1
3:45:05	21.1	19.2	20.5	20.3	19.2	19.0	18.2	17.0	20.0	19.2	19.1	18.7	18.6	18.4	18.8	19.2	19.0	18.9	18.6	18.5	18.7	19.3	19.6	18.6	19.1	18.8	18.9	18.9	19.3	19.2	19.3	19.1
4:00:05	21.0	19.2	20.5	19.9	19.3	19.0	18.1	17.1	19.9	19.5	19.1	18.7	18.0	18.3	18.7	19.1	18.9	18.8	18.6	18.4	18.6	19.2	19.5	18.6	18.9	18.8	19.1	18.7	19.2	19.1	19.2	19.0
4:15:05	20.9	19.1	20.5	20.0	19.2	19.5	18.0	17.4	19.8	19.2	19.1	18.7	17.9	18.2	18.7	19.0	18.9	18.7	19.0	18.7	18.6	19.2	19.5	18.5	19.2	18.7	19.2	18.6	19.6	19.1	19.2	19.0
4:30:05	20.9	19.1	20.3	19.6	19.5	19.3	18.1	17.4	19.8	19.0	19.1	18.5	17.9	18.1	18.6	18.9	18.8	18.6	18.8	18.4	18.6	19.2	19.5	18.5	19.0	18.6	18.7	18.6	19.3	19.0	19.2	18.9
4:45:05	20.9	19.2	20.3	19.6	19.6	19.4	17.9	17.2	20.0	19.5	19.3	18.6	17.8	18.2	19.0	18.7	18.9	18.6	18.5	18.4	18.6	19.1	19.3	18.3	19.3	18.6	18.6	18.4	19.2	18.9	19.1	18.9
5:00:05	20.8	18.9	20.3	19.9	19.5	19.1	18.0	17.1	20.1	19.3	19.2	18.3	17.8	17.9	19.2	18.7	18.9	18.5	18.5	18.3	18.6	19.1	19.2	18.2	19.1	18.6	18.7	18.3	19.3	19.0	19.0	18.9
5:15:05	20.9	19.5	20.2	19.8	19.4	18.9	17.9	18.5	20.1	19.3	19.2	18.3	17.7	17.7	19.2	19.1	18.8	18.6	18.4	18.2	18.5	19.0	19.2	18.1	18.9	18.6	18.6	18.6	19.2	20.1	19.0	19.0
5:30:05	21.4	19.2	20.2	19.4	19.3	18.8	17.8	21.9	19.6	19.0	18.8	18.5	18.3	17.6	18.8	19.1	18.8	18.5	18.4	18.0	18.7	18.9	19.1	18.1	18.7	19.2	19.2	18.7	19.2	22.1	19.2	19.1
5:45:05	21.5	19.1	20.2	19.1	19.0	18.7	18.3	20.4	19.2	18.6	18.7	18.6	17.9	17.5	18.6	18.9	18.8	18.4	18.4	18.0	18.8	19.3	19.2	18.0	18.7	18.7	18.6	18.2	19.1	19.8	18.8	18.9
6:00:05	21.7	19.0	20.3	19.0	18.8	18.6	18.2	19.1	19.2	18.5	18.6	18.5	17.8	17.5	18.6	18.4	18.8	18.4	18.3	17.8	18.9	19.1	19.4	18.0	18.6	18.6	18.5	17.8	18.9	19.2	18.8	18.7
6:15:05	25.9	18.7	20.0	19.0	18.8	18.6	18.1	17.8	19.2	18.4	18.5	18.5	17.9	17.4	18.5	18.2	18.8	18.3	18.3	17.9	22.9	18.8	19.3	18.0	18.6	18.6	18.5	17.6	18.8	19.5	19.4	18.9
6:30:05	22.8	18.7	19.9	19.0	18.7	19.1	18.2	17.3	19.1	18.3	18.4	18.3	17.6	17.5	18.5	18.0	19.5	18.6	18.2	18.3	22.5	19.2	19.1	17.9	19.1	18.5	18.5	17.6	18.7	19.1	22.0	18.9
6:45:05	21.9	18.7	19.9	18.9	18.6	18.6	22.4	17.1	19.0	18.2	18.3	18.3	17.6	17.5	18.4	18.0	18.9	21.7	18.2	18.1	20.1	19.2	18.9	18.1	19.2	18.4	18.4	17.6	18.6	19.0	21.0	18.9
7:00:05	21.5	18.6	20.2	18.8	18.7	18.4	19.8	16.9	19.0	18.2	18.2	18.3	17.6	17.4	18.4	17.9	18.7	21.8	18.6	18.5	20.0	19.2	19.2	18.0	19.2	18.4	18.5	17.7	18.6	18.6	19.8	18.8
7:15:05	21.4	18.6	20.2	18.9	18.7	18.3	18.9	16.8	19.0	18.2	18.3	18.4	17.6	17.4	18.3	17.9	18.5	19.8	18.8	18.5	19.9	23.3	19.3	18.0	19.2	18.5	18.3	17.7	18.7	18.4	19.2	18.8
7:30:05	20.9	18.8	20.2	19.0	19.2	18.3	18.6	17.1	19.0	18.3	18.4	20.6	17.7	17.4	18.3	18.0	18.9	19.3	18.4	18.5	19.1	23.2	23.8	18.2	19.1	18.4	18.3	17.8	19.2	18.5	19.0	19.0
7:45:05	20.9	18.7	20.1	19.0	18.9	18.5	18.5	17.6	19.1	18.3	18.3	22.9	17.8	17.4	18.4	18.5	19.1	19.2	18.4	18.6	18.7	21.5	24.4	19.2	19.2	18.6	18.4	18.0	19.2	19.1	18.9	19.1
8:00:05	20.9	18.6	20.2	19.6	19.2	18.6	18.6	18.6	19.2	18.5	18.4	21.9	17.9	17.6	18.6	19.3	19.4	18.5	18.0	18.6	18.7	21.1	21.5	22.6	19.4	18.9	18.5	18.2	19.4	19.2	19.0	19.2
8:15:05	20.8	18.6	20.3	19.6	20.0	18.4	18.3	19.7	19.2	18.5	18.5	19.6	18.3	17.5	18.6	20.3	19.6	18.2	17.9	18.6	19.0	20.5	20.7	20.8	19.2	18.8	18.8	18.5	19.4	19.2	19.1	19.2
8:30:05	21.4	18.8	20.3	20.8	22.9	18.2	18.5	20.5	19.9	18.7	18.4	19.1	18.2	18.2	20.0	21.3	22.1	18.0	17.8	18.6	19.8	20.1	19.9	20.4	19.1	18.8	18.8	20.1	19.5	19.3	19.5	19.6
8:45:05	22.0	19.2	20.5	21.5	20.5	18.3	18.4	20.9	19.6	19.1	18.4	19.2	18.4	18.6	20.5	21.8	25.3	18.0	17.7	18.5	20.9	20.1	19.7	20.4	19.3	22.9	19.9	20.0	19.7	19.3	20.1	20.0
9:00:05	23.1	20.9	20.9	21.5	20.0	18.4	18.6	21.6	19.7	20.2	18.5	19.3	18.4	18.6	23.0	22.2	25.3	18.1	17.7	18.7	21.2	20.1	19.6	20.8	19.5	22.7	20.0	21.3	19.6	19.6	20.0	20.3
9:15:05	24.2	21.7	20.9	21.7	19.8	19.2	18.9	22.1	20.7	20.4	18.9	19.8	18.5	18.7	23.2	22.6	25.4	18.1	17.8	18.8	22.2	20.9	19.7	20.7	19.8	20.6	21.2	21.4	23.7	19.9	20.2	20.7
9:30:05	23.6	22.2	21.2	21.6	20.1	19.3	19.2	22.3	21.0	20.3	19.1	19.8	18.8	18.8	22.9	22.9	27.8	18.2	18.0	19.0	22.3	20.7	20.3	20.6	20.9	19.9	21.7	21.5	24.7	19.8	20.3	20.9
9:45:05	23.8	22.8	21.4	25.2	20.8	21.7	19.5	22.6	21.5	20.6	20.4	22.9	18.9	18.6	22.3	23.0	25.3	18.5	17.9	19.0	22.5	20.9	21.0	20.6	21.7	19.6	21.7	21.2	24.0	21.2	20.4	21.3
10:00:05	23.8	23.3	21.9	26.0	20.6	21.1	19.7	22.7	21.2	20.7	19.8	22.8	19.0	18.8	22.5	23.0	23.5	18.9	18.2	19.2	22.0	21.6	21.4	20.4	21.4	19.4	21.6	21.2	21.7	21.4	20.2	21.3
10:15:05	23.8	23.1	22.0	26.0	20.6	19.8	21.5	22.6	21.1	20.5	20.0	21.0	18.9	18.9	22.9	22.7	23.1	19.0	18.3	20.3	22.0	22.2	21.4	20.6	21.0	19.5	21.7	22.0	22.2	20.5	20.0	21.3
10:30:05	23.9	23.1	25.6	25.3	21.2	19.7	23.4	22.6	21.8	20.5	19.9	20.4	19.0	18.6	22.5	22.7	23.4	19.2	18.4	20.5	22.4	21.7	21.5	21.1	21.1	19.4	21.5	22.2	22.4	20.9	19.9	21.5
10:45:05	25.7	23.1	24.5	26.9	20.9	20.1	24.6	22.2	21.8	20.5	20.1	20.1	19.0	18.6	22.2	22.7	22.7	19.2	18.5	20.5	22.4	22.2	21.6	20.9	21.3	19.2	21.5	22.3	22.2	21.6	19.8	21.6
11:00:05	24.6	23.1	23.4	27.3	21.1	20.2	25.6	22.1	22.2	20.6	22.8	20.2	19.0	18.8	21.7	22.8	22.7	19.1	18.8	20.3	22.5	22.3	21.5	20.9	21.5	19.2	21.5	22.1	21.8	21.7	19.8	21.7
11:15:05	24.9	23.1	23.5	27.8	21.2	19.6	23.9	22.0	22.9	20.9	20.7	20.5	19.2	19.2	21.4	22.6	22.5	19.0	18.9	20.5	22.4	22.4	21.6	21.2	21.6	19.2	21.9	22.1	21.9	21.5	20.0	21.6
11:30:05	24.8	23.3	23.4	27.5	21.2	20.1	22.3	21.9	23.4	20.9	20.4	23.5	19.6	19.5	21.5	22.6	22.3	19.0	19.0	20.6	22.4	22.4	21.5	21.2	21.7	19.2	22.0	22.0	22.4	21.8	20.2	21.7
11:45:05	24.8	23.3	23.4	28.7	21.1	19.9	22.0	21.9	23.1	26.2	20.2	25.4	19.8	24.5	21.1	22.5	22.5	19.2	19.2	20.8	22.5	22.4	21.2	21.2	21.8	19.2	22.2	22.1	22.8	21.8	20.4	22.2
12:00:05	24.9	23.5	23.4	27.6	21.3	19.9	21.8	22.0	23.2	24.9	20.3	24.0	20.3	20.9	20.9	22.7	22.5	19.4	19.8	20.9	22.6	22.4	20.9	21.1	22.0	19.0	22.2	22.2	23.0	21.9	20.8	22.0
12:15:05	24.9	23.5	23.6	25.7	21.5	19.4	21.9	22.1	23.3	25.0	20.3	22.2	20.2	20.1	21.0	22.6	22.4	19.7	20.1	21.1	22.6	22.5	21.1	21.2	22.1	19.0	22.2	22.1	23.4	22.2	21.1	21.9
12:30:05	25.2	26.1	24.0	23.2	21.8	19.1	21.6	22.2	23.2	23.0	20.2	21.7	20.1	19.8	21.4	22.7	22.4	20.1	20.4	21.4	22.6	22.6	21.5	21.4	22.1	19.4	22.3	22.2	23.6	22.0	21.4	22.0
12:45:05	25.2	26.8	24.0	22.8	22.0	19.1	22.0	22.2	23.6	22.5	20.3	21.3	20.0	19.8	21.3	22.8	22.5	20.3	20.6	21.5	22.8	22.9	21.7	21.6	22.3	19.5	22.4	22.3	23.7	22.2	21.6	22.1
13:00:05	25.4	24.6	24.2	22.8	21.7	19.7	21.6	22.4	24.0	22.5	20.8	20.8	20.2	20.3	21.2	22.9	22.7	20.4	20.8	21.5	22.8	23.3	21.8	21.8	22.2	19.6	22.4	22.6	26.7	22.3	21.9	22.2
13:15:05	25.4	24.4	24.7	23.0	21.5	19.5	21.5	22.6	24.0	22.2	20.8	20.7	19.9	20.9	21.2	23.0	22.4	20.7	20.8	21.6	23.0	23.5	22.1	21.8	21.9	19.7	26.2	22.9	28.6	22.6	22.2	22.4
13:30:05	25.7	24.2	27.7	23.2	21.4	19.7	21.5	22.9	23.7	21.7	21.0	20.9	20.0	20.5	21.2	23.1	22.2	20.9	21.0	21.5	23.0	23.6	22.4	21.8	21.7	19.7	28.5	23.2	28.6	22.8	22.6	22.6
13:45:05	26.0	24.6	29.6	23.3	21.5	19.8	21.8	23.2	24.7	21.5	21.3	21.2	20.1	20.5	21.4	23.5	21.8	21.0	21.2	21.2	23.3	23.8	22.6	22.0	21.9	19.8	29.1	23.5	27.0	22.8	22.7	22.8
14:00:05	26.4	24.8	28.0	23.0	22.2	19.6	21.8	23.4	28.8	21.9	21.3	21.4	20.3	20.6	21.5	23.4	21.8	21.0	21.2	20.8	23.4	23.9	22.6	22.0	22.3	19.9	28.8	23.8	26.2	22.7	22.8	23.0
14:15:05	26.8	25.1	27.5	22.5	22.1	19.5	21.8	23.5	29.4	22.0	21.6	21.5	20.3	20.7	21.7	23.6	21.7	21.1	21.0	20.8	23.4	24.0	22.7	22.0	22.5	20.4	26.5	23.9	25.2	22.9	23.2	22.9
14:30:05	27.1	25.3	26.7	22.2	22.1	19.5	21.8	23.7	28.4	22.2	23.3	21.4	20.4	20.5	21.5	23.8	21.6	21.3	20.6	21.1	23.5	24.1	22.9	22.0	22.3	20.3	24.9	23.9	25.2	23.1	23.4	22.9
14:45:05	27.4	25.0	25.9	22.2	22.2	19.6	21.7	23.9	28.2	22.2	23.5	21.3	20.5	20.6	21.4	23.8	21.5	21.5	20.3	21.4	23.5	24.2	23.1	22.2	22.5	20.4	24.6	23.9	25.0	23.4	23.5	22.9
15:00:05	31.0	25.4	25.5	22.1	22.5	19.8	21.8	24.0	28.1	22.3	21.5	21.3	20.9	20.9	21.5	23.7	21.6	21.6	20.2	21.6	23.8	24.4	23.4	22.6	22.7	20.3	24.0	23.7	25.1	23.4	23.5	23.0
15:15:05	31.4	25.4	25.6	22.1	22.8	19.8	21.8	23.8	28.8	22.4	21.5	21.2	21.5	21.2	21.8	23.7	21.9	21.7	20.1	22.0	23.5	24.0	23.4	22.5	22.9	20.6	23.9	23.9	24.7	23.4	23.7	23.1
15:30:05	29.3	25.4	25.7	22.1	23.0	19.8	21.7	23.7	26.7	22.3	21.4	21.2	21.8	21.4	22.0	24.0	22.2	21.6	19.9	21.9	23.8	23.9	23.3	22.3	23.0	20.7	23.6	24.0	24.7	23.9	23.5	23.0
15:45:05	28.4	25.4	25.6	21.7	22.8	19.6	21.9	23.7	26.3	22.4	21.5	21.3	21.6	21.5	22.2	23.9	22.1	21.8	19.7	21.8	23.9	24.0	23.4	22.4	23.2	20.7	23.5	24.1	24.7	24.1	23.7	23.0
16:00:05	28.3	25.4	25.3	21.6	23.2	19.8	21.8	23.8	26.0	22.2	21.3	21.4	21.8	21.3	22.2	24.0	22.0	21.8	19.3	21.8	23.8	23.9	23.3	22.5	23.1	20.9	23.4	24.2	24.8	23.9	23.5	23.0
16:15:05	28.3	25.2	25.1	21.5	22.8	19.8	21.8	23.7	25.4	22.2	21.2	21.0	25.9	21.1	22.2	23.6	22.0	21.6	19.2	21.7	23.8	23.6	23.2	22.4	23.1	20.6	23.4	24.1	24.7	27.9	23.4	23.1
16:30:05	27.9	25.2	25.0	21.4	22.7	19.8	21.7	23.6	25.4	22.2	21.3	21.0	25.9	21.2	22.1	23.5	21.8	21.5	19.1	21.6	23.6	23.5	23.0	22.5	23.1	20.6	23.2	24.0	24.5	29.0	23.2	23.0
16:45:05	27.5	25.0	24.7	21.3	22.9	19.6	21.7	23.5	25.6	22.1	21.1	20.9	25.3	21.0	21.9	23.5	21.5	21.5	19.2	21.7	23.5	23.5	22.9	22.6	23.0	20.6	23.0	23.7	24.1	26.1	23.6	22.8
17:00:05	27.0	27.3	24.6	21.1	22.8	19.5	21.5	23.5	24.7	22.1	21.1	20.9	23.7	20.9	21.8	23.2	21.3	21.5	19.2	21.8	23.3	23.4	22.9	22.4	22.9	20.5	22.9	23.6	23.9	24.4	23.5	22.7
17:15:05	26.5	29.5	24.4	21.0	22.7	19.5	21.4	23.2	24.1	21.8	20.8	20.7	21.7	20.7	21.7	23.1	21.2	21.4	19.1	21.9	23.1	23.3	22.7	22.2	22.7	20.3	22.8	23.4	23.6	23.6	23.3	22.5
17:30:05	25.6	29.2	24.0	20.9	22.6	19.4	21.2	22.9	23.9	21.5	20.4	20.5	21.3	20.5	21.6	22.9	21.1	21.3	19.0	21.7	22.9	23.0	22.6	21.9	22.4	20.1	22.5	23.5	23.2	23.3	23.1	22.3
17:45:05	25.3	25.9	23.7	20.9	22.3	19.3	21.0	22.7	23.6	21.3	20.5	20.3	20.7	21.1	21.5	22.7	20.8	21.1	19.6	21.4	22.6	22.6	22.3	21.7	22.1	20.0	22.3	23.4	22.9	22.8	22.8	22.0
18:00:05	24.4	25.3	23.4	20.9	22.1	19.2	20.8	22.4	23.3	21.0	20.4	20.1	20.4	20.9	21.3	22.3	20.6	20.9	19.5	24.5	22.4	22.2	22.0	21.4	21.8	19.8	22.2	23.0	22.8	22.3	22.6	21.8
18:15:05	25.5	25.2	23.0	20.7	21.9	19.1	20.6	22.5	23.0	20.8	20.1	20.0	20.2	20.9	21.1	22.1	20.4	20.5	19.5	25.6	22.1	22.0	21.8	21.1	21.6	19.8	22.0	22.9	22.7	22.3	22.4	21.7
18:30:05	25.8	25.0	22.8	20.6	21.5	18.8	20.4	22.4	22.7	20.5	20.1	19.8	20.1	20.8	20.9	21.8	20.3	20.2	19.9	25.9	21.7	22.3	21.5	20.9	21.4	19.7	22.2	22.5	22.7	22.2	22.2	21.6
18:45:05	24.6	24.6	22.5	20.5	21.4	18.8	20.2	22.2	22.4	20.3	20.9	19.6	20.0	20.4	20.6	21.5	20.1	20.0	20.0	26.1	21.5	22.3	21.3	20.6	21.2	19.6	22.2	22.5	22.4	22.1	22.2	21.4
19:00:05	23.5	24.1	22.3	20.3	21.3	19.1	19.9	22.1	22.2	20.1	23.9	19.4	19.8	20.2	20.4	21.2	19.9	19.8	20.0	26.0	21.2	22.2	21.0	20.3	20.9	19.5	21.5	22.5	22.3	22.2	22.6	21.3
19:15:05	23.1	24.0	22.1	20.1	21.3	19.2	19.7	22.0	21.8	19.9	26.0	19.2	19.7	24.4	20.3	21.0	19.8	19.7	19.7	25.7	20.9	22.1	20.9	20.2	20.7	19.6	21.1	21.9	22.4	22.0	26.0	21.5
19:30:05	27.5	23.5	22.0	20.0	21.4	19.0	19.4	21.5	21.5	19.8	26.7	19.1	19.6	25.4	20.1	20.8	19.6	19.6	19.4	22.7	21.3	22.0	20.9	19.9	20.5	19.6	21.7	21.5	22.2	21.8	27.1	21.5
19:45:05	29.2	23.0	21.8	19.9	20.9	19.1	19.2	21.6	21.4	19.6	23.2	19.0	19.5	22.5	19.8	20.6	19.4	19.4	19.1	22.0	20.8	25.6	21.0	19.8	20.3	19.8	21.4	21.3	21.5	21.6	25.5	21.3
20:00:05	28.7	23.3	21.9	19.7	21.1	19.1	19.1	21.8	21.2	19.5	22.0	18.8	19.4	21.5	19.8	20.8	19.3	19.3	18.9	21.2	21.0	26.4	21.0	19.6	20.3	20.1	21.3	21.2	21.6	21.3	24.7	21.1
20:15:05	24.6	27.5	22.0	19.6	24.9	18.8	18.9	23.8	21.0	19.6	21.4	18.7	19.4	21.0	19.9	20.9	19.3	19.2	20.9	21.3	20.8	26.4	20.9	19.5	20.1	20.1	21.1	21.2	24.5	23.8	23.1	21.4
20:30:05	24.1	28.6	21.7	19.9	26.6	19.0	19.3	26.5	20.9	19.9	21.2	18.6	19.3	21.2	19.8	20.8	19.9	19.1	23.2	21.2	21.4	26.6	20.9	19.8	20.0	20.1	21.1	22.7	25.8	26.7	22.4	21.9
20:45:05	23.5	28.9	21.6	20.2	27.3	18.8	19.2	26.7	20.7	20.3	25.0	18.5	19.3	21.1	20.0	20.9	20.1	19.8	24.1	21.1	21.7	26.1	20.9	20.1	19.9	23.6	21.0	25.3	23.0	26.0	22.2	22.2
21:00:05	23.2	25.9	24.0	22.3	27.8	20.3	19.0	27.0	20.6	20.3	24.9	18.5	19.2	20.9	20.2	21.1	20.0	21.4	24.4	21.0	25.0	23.5	20.8	24.0	19.8	24.1	20.9	25.8	22.0	24.0	22.3	22.4
21:15:05	23.0	24.4	24.7	24.1	28.6	22.8	19.0	25.4	20.7	23.3	22.2	18.8	19.2	20.6	20.1	20.8	23.9	25.2	21.5	20.9	25.9	22.7	20.7	25.4	20.2	25.5	20.9	26.8	21.5	22.0	22.0	22.7
21:30:05	23.0	23.3	25.6	21.9	28.0	24.3	19.0	23.5	21.2	25.4	21.5	18.8	19.3	20.4	20.0	20.8	26.2	27.6	20.9	20.9	26.7	22.2	20.6	26.4	20.6	25.6	20.9	27.6	21.5	21.5	22.1	22.8
21:45:05	22.2	23.4	26.7	21.0	27.0	22.6	18.9	23.0	23.9	26.3	20.9	19.1	19.2	20.7	19.9	20.9	26.3	26.3	20.5	20.8	27.6	21.8	20.5	26.6	21.2	26.2	20.9	28.0	21.0	21.2	22.0	22.8
22:00:05	22.0	23.1	24.2	20.7	26.0	20.2	18.7	22.7	26.7	26.1	20.8	20.7	19.2	20.4	19.8	23.7	26.6	26.5	20.3	23.5	27.8	21.5	20.5	26.0	24.3	22.7	24.7	24.3	20.8	20.9	21.9	22.8
22:15:05	21.8	23.0	23.1	20.6	23.4	20.1	18.6	22.6	27.7	27.7	20.3	23.2	19.1	20.3	19.8	25.8	25.9	26.8	20.1	21.4	27.7	21.5	20.5	26.6	25.4	21.9	22.5	22.5	20.5	20.9	21.6	22.7
22:30:05	21.6	22.8	22.4	20.4	22.6	20.0	20.2	22.2	27.0	26.4	20.0	20.7	19.0	20.2	19.8	23.3	23.0	26.1	20.0	21.0	27.7	21.4	20.4	24.4	23.9	21.4	21.5	21.5	20.7	20.8	21.6	22.1
22:45:05	21.5	22.8	22.2	20.4	22.0	20.1	23.8	22.0	23.9	22.3	19.7	20.2	18.9	20.1	19.8	21.9	22.0	23.7	19.9	20.7	27.8	21.2	20.4	22.7	22.2	20.9	21.4	21.0	20.7	20.3	21.6	21.6
23:00:05	21.4	22.5	21.9	20.2	21.5	19.8	25.6	21.8	22.9	21.6	19.5	20.0	18.7	20.1	19.8	21.3	21.5	22.4	19.9	20.6	25.1	21.2	21.4	22.2	21.5	20.3	21.1	20.7	20.7	20.0	21.5	21.2
23:15:05	21.3	22.4	21.8	19.6	21.4	19.8	24.4	21.6	22.3	21.3	19.4	19.7	18.7	20.1	25.0	20.9	21.3	21.7	19.8	20.5	23.6	21.0	25.4	21.8	21.1	20.1	20.4	20.3	20.5	19.8	21.2	21.2
23:30:05	21.1	22.2	21.6	19.5	21.3	19.1	20.9	21.6	22.2	21.2	19.3	19.4	18.6	20.2	25.2	20.8	21.1	21.0	19.8	20.5	22.9	20.8	26.8	21.5	20.8	20.1	20.2	20.2	20.4	19.9	21.0	21.0
23:45:05	21.0	22.1	21.5	19.4	21.1	19.1	20.0	21.6	21.7	20.9	19.2	19.4	18.6	19.8	26.2	20.6	20.9	20.9	19.8	20.7	22.5	20.7	25.1	20.9	20.6	20.0	20.0	20.0	20.3	20.0	20.9	20.8
DAY AV	23.8	22.5	22.6	21.4	21.3	19.5	20.1	21.1	22.2	20.9	20.4	20.0	19.4	19.7	20.5	21.7	21.2	20.3	19.5	20.5	21.8	21.8	21.1	20.9	20.8	20.0	21.2	21.3	21.7	21.3	21.2	21.0

October 2019 House E average indoors temperature calculation spreadsheets

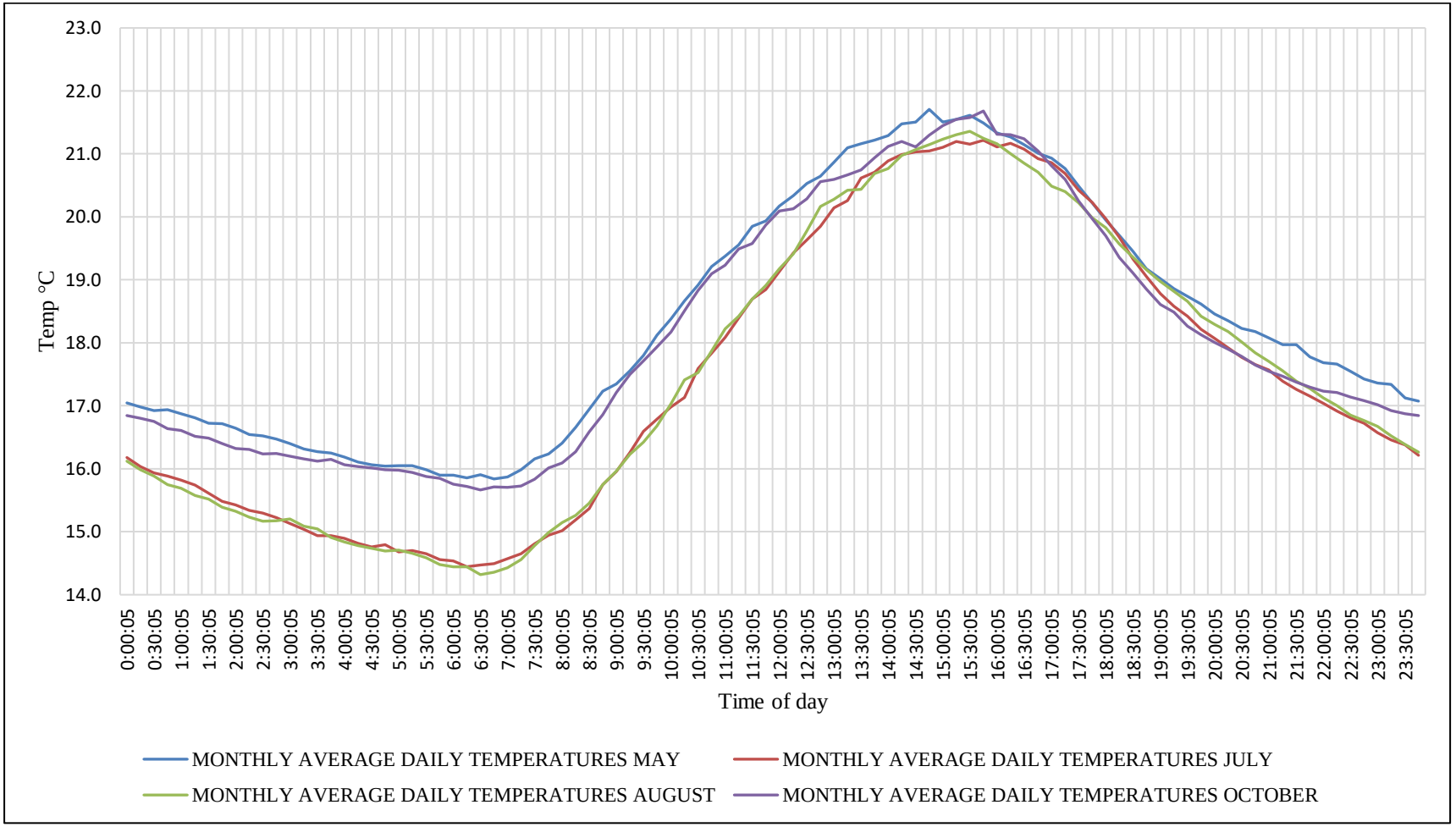
DATA LOG 3: HOUSE E

Time	**Temperatures**																															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	AV
0:00:05	22.9	21.1	23.0	22.6	20.5	22.0	19.8	19.5	22.8	22.0	21.1	20.6	20.6	19.7	20.5	21.1	22.2	20.6	20.6	20.3	21.3	21.4	21.2	21.7	21.5	21.5	20.5	21.5	21.5	21.4	20.8	21.2
0:15:05	22.9	20.9	22.9	22.2	20.4	21.9	19.7	19.2	22.7	21.8	21.1	20.3	20.5	19.6	20.4	21.1	22.1	20.6	20.4	20.3	21.1	21.2	21.2	21.6	21.5	21.4	20.4	21.4	21.2	21.2	20.7	21.1
0:30:05	22.9	20.8	22.4	22.1	20.3	21.8	19.6	19.1	22.6	22.1	21.0	20.3	20.4	19.5	20.3	20.9	22.0	20.5	20.3	20.1	20.9	21.1	21.1	21.5	21.5	21.2	20.3	21.2	21.1	21.1	20.6	21.0
0:45:05	22.9	20.6	22.4	21.8	20.4	21.6	19.5	18.9	22.3	21.7	21.0	20.0	20.3	19.4	20.2	20.9	21.9	20.4	20.3	20.0	20.8	21.0	21.0	21.3	21.4	21.0	20.2	21.1	20.9	20.9	20.5	20.9
1:00:05	22.6	20.5	22.2	21.5	20.5	21.5	19.3	18.7	22.3	21.7	20.9	20.0	20.3	19.4	20.1	20.7	21.9	20.3	20.2	19.8	20.7	20.9	21.0	21.1	21.3	21.0	20.1	21.0	20.9	20.7	20.4	20.8
1:15:05	22.5	20.3	22.2	21.4	20.4	21.4	19.2	18.6	22.3	21.6	20.8	20.2	20.3	19.3	19.8	20.8	21.8	20.2	20.0	19.8	20.5	20.9	20.9	20.9	21.2	20.9	20.1	20.9	20.7	20.5	20.3	20.7
1:30:05	22.4	20.3	22.1	21.4	20.3	21.1	19.2	18.5	22.2	21.5	20.7	20.4	20.1	19.2	19.8	20.7	21.6	20.1	19.9	19.8	20.4	20.6	20.9	20.9	21.3	20.8	20.1	20.8	20.6	20.3	20.3	20.6
1:45:05	22.4	20.0	22.0	21.5	20.3	21.1	19.1	18.3	22.2	21.3	20.5	20.0	20.0	19.2	19.7	20.6	21.6	20.0	19.9	19.8	20.3	20.5	20.7	20.7	21.2	20.7	19.9	20.7	20.5	20.2	20.1	20.5
2:00:05	22.3	19.8	21.9	21.3	20.0	21.0	19.0	18.1	21.9	21.3	20.4	20.0	19.9	19.2	19.8	20.4	21.5	19.9	19.8	19.7	20.3	20.5	20.6	20.5	21.2	20.5	19.8	20.5	20.4	20.1	19.9	20.4
2:15:05	22.3	19.7	21.8	21.1	20.2	21.1	19.0	18.0	21.8	21.1	20.4	19.8	19.9	19.1	19.7	20.3	21.8	19.8	19.8	19.6	20.2	20.3	20.7	20.4	20.9	20.4	19.8	20.4	20.4	20.0	20.0	20.3
2:30:05	22.2	19.5	21.7	21.1	20.1	20.9	18.8	17.8	21.7	20.9	20.3	19.8	19.9	19.1	19.6	20.1	21.7	19.8	19.8	19.6	20.2	20.3	20.6	20.3	20.9	20.3	19.7	20.4	20.3	20.0	19.8	20.2
2:45:05	22.2	19.3	21.8	21.0	20.2	20.9	18.7	17.6	21.7	20.9	20.3	19.8	19.8	19.3	19.5	20.0	21.6	19.8	19.7	19.5	20.2	20.3	20.4	20.2	20.7	20.3	19.6	20.3	20.3	19.6	19.8	20.2
3:00:05	22.1	19.2	21.7	20.9	20.1	20.7	18.6	17.6	21.5	20.8	20.3	19.7	19.6	19.2	19.3	20.3	21.5	19.7	19.6	19.5	20.2	20.3	20.4	20.1	20.5	20.1	19.6	20.2	20.3	19.5	19.7	20.1
3:15:05	22.0	19.2	21.5	20.8	20.0	20.8	18.6	17.5	21.5	20.6	20.2	19.6	19.5	19.0	19.4	20.2	21.4	19.7	19.5	19.4	20.1	20.3	20.3	20.0	20.5	20.1	19.6	20.0	20.1	19.3	19.6	20.0
3:30:05	22.0	19.2	21.5	20.7	19.9	20.7	18.6	17.5	21.4	20.5	20.2	19.5	19.6	19.0	19.3	19.9	21.1	19.6	19.5	19.3	20.0	20.2	20.3	19.9	20.4	20.0	19.5	19.9	20.0	19.3	19.6	19.9
3:45:05	22.0	19.2	21.5	20.8	19.9	20.6	18.6	17.5	21.3	20.3	20.1	19.6	19.6	19.0	19.3	19.9	20.8	19.6	19.4	19.3	19.9	20.3	20.3	19.9	20.3	19.9	19.4	19.7	20.0	19.4	19.5	19.9
4:00:05	22.0	19.0	21.4	20.6	19.9	20.6	18.6	17.6	21.2	20.5	20.0	19.4	19.4	19.0	19.3	19.9	20.6	19.4	19.4	19.3	19.8	20.2	20.2	19.8	20.3	19.9	19.3	19.5	20.0	19.4	19.3	19.8
4:15:05	22.0	19.0	21.2	20.5	19.8	20.4	18.5	17.6	21.2	20.3	20.0	19.4	19.4	18.8	19.2	19.8	20.4	19.4	19.4	19.1	19.9	20.1	20.2	19.8	20.3	19.8	19.3	19.3	19.9	19.4	19.3	19.8
4:30:05	21.6	18.9	21.2	20.5	19.8	20.5	18.5	17.6	20.9	20.0	19.9	19.4	19.4	18.8	19.2	19.8	21.0	19.3	19.4	19.0	19.9	20.0	20.1	19.6	20.2	19.7	19.3	19.1	19.9	19.3	19.3	19.7
4:45:05	21.5	18.9	21.2	20.3	19.8	20.4	18.3	17.6	20.9	19.9	19.8	19.3	19.2	18.7	19.2	19.8	25.0	19.3	19.2	19.1	19.9	19.9	20.0	19.5	20.2	19.7	19.2	19.0	19.9	19.3	19.3	19.8
5:00:05	21.5	18.8	21.1	20.3	19.7	20.3	18.5	17.5	20.9	19.8	19.8	19.5	19.2	18.6	19.2	19.8	27.9	19.3	19.2	19.0	19.8	19.9	20.0	19.4	20.1	19.7	19.2	18.9	19.8	19.2	19.3	19.8
5:15:05	23.5	18.6	21.8	20.8	19.7	20.3	19.2	19.9	20.6	23.0	19.7	24.1	19.2	20.2	19.1	20.4	26.7	19.2	19.2	22.2	19.8	22.2	21.7	22.9	20.1	22.1	19.2	20.6	22.5	19.3	20.9	20.9
5:30:05	25.8	18.6	24.9	25.0	23.5	20.3	25.1	21.0	20.6	25.4	19.6	24.8	19.1	22.9	19.0	24.0	26.5	19.2	19.2	24.9	19.8	24.7	24.7	23.7	20.1	24.1	19.2	22.2	25.6	19.2	24.0	22.5
5:45:05	26.6	18.5	24.5	25.6	25.1	20.3	24.0	22.7	21.0	21.5	19.5	23.6	19.0	24.2	19.0	25.5	27.1	19.2	19.2	24.5	19.6	25.5	25.8	23.3	20.0	24.8	19.2	22.5	26.4	19.2	24.7	22.6
6:00:05	27.9	18.4	22.5	27.3	26.3	20.3	23.8	25.1	24.1	21.5	19.5	24.7	18.9	23.2	19.0	24.7	26.9	19.2	19.2	24.9	19.6	26.1	27.4	21.2	20.0	24.7	19.1	24.0	23.1	19.2	25.8	22.8
6:15:05	26.7	20.3	21.9	25.9	25.8	20.3	20.9	22.6	27.5	24.2	20.7	24.9	19.0	24.8	21.0	26.1	25.4	19.3	19.2	24.5	20.1	26.5	28.8	20.3	23.1	25.3	21.0	20.6	21.5	21.6	27.2	23.1
6:30:05	23.8	21.7	21.5	22.9	26.3	24.2	20.1	22.2	26.2	24.6	24.4	25.1	18.9	25.4	23.5	27.3	22.6	20.9	21.1	24.7	25.9	25.9	25.1	19.8	24.8	25.4	24.1	20.1	20.4	24.8	23.5	23.5
6:45:05	22.9	23.2	21.1	22.1	24.7	26.6	19.8	19.7	26.3	24.9	26.5	25.9	18.7	21.4	27.8	23.6	21.7	24.2	24.1	27.3	25.0	22.8	22.7	19.7	26.2	26.2	25.4	19.8	20.0	24.7	21.5	23.4
7:00:05	22.5	22.9	20.9	21.5	22.5	26.8	19.5	19.2	26.3	22.5	25.6	21.7	19.3	20.2	25.6	21.8	21.5	25.4	25.1	22.8	24.8	21.9	21.9	19.3	22.8	23.8	24.6	19.8	19.8	25.7	20.9	22.5
7:15:05	22.3	24.3	20.9	21.5	21.5	25.8	19.2	19.1	26.7	21.5	25.2	21.0	23.7	19.7	26.0	21.1	21.2	24.5	25.4	21.4	24.9	21.5	21.5	19.3	21.3	22.0	24.2	19.8	19.8	24.8	20.6	22.3
7:30:05	22.2	25.0	20.9	21.3	21.1	25.5	19.1	19.2	23.5	21.1	25.8	20.5	26.2	19.4	26.2	20.9	21.0	24.8	26.6	20.9	24.2	21.3	21.0	19.3	21.0	21.3	24.8	19.8	20.0	25.4	20.3	22.2
7:45:05	22.1	24.3	20.8	21.4	20.9	25.5	19.0	19.3	22.4	20.9	25.1	20.3	26.0	19.3	25.6	20.9	20.8	25.3	26.3	20.5	24.6	21.3	20.9	19.6	21.2	20.9	25.2	20.0	20.1	25.7	20.2	22.1
8:00:05	22.0	23.0	20.9	21.5	21.1	22.5	19.1	19.6	22.3	20.9	22.8	20.1	25.2	19.3	25.4	21.2	20.6	26.1	25.7	20.3	26.1	21.5	20.8	19.8	21.4	20.8	23.4	20.1	20.1	25.3	20.2	21.9
8:15:05	21.9	21.4	20.9	21.6	21.1	21.7	19.1	20.0	22.2	20.9	21.3	19.9	25.5	19.2	22.2	21.5	20.7	25.9	25.8	20.0	24.5	21.4	20.9	20.0	20.8	20.7	22.6	20.5	20.2	22.9	20.2	21.5
8:30:05	22.2	20.9	20.8	21.8	21.4	21.5	19.2	20.3	22.4	20.9	21.0	19.9	25.2	19.3	21.7	21.8	20.9	24.4	27.2	19.9	22.3	21.5	20.8	20.1	20.7	20.6	22.2	20.9	20.3	22.2	20.3	21.4
8:45:05	22.3	20.8	20.8	22.1	21.3	21.5	19.2	20.7	22.2	21.1	21.7	20.0	22.9	19.4	21.9	22.1	21.2	22.2	22.9	20.1	24.8	21.6	20.8	20.4	24.6	20.9	22.7	21.1	20.3	21.3	20.6	21.5
9:00:05	22.8	21.2	21.1	22.3	21.1	21.4	19.5	21.2	22.0	21.3	21.3	19.9	21.6	19.5	21.9	22.5	21.6	21.5	21.7	20.4	22.8	21.8	21.0	20.9	25.6	20.9	22.0	21.7	20.4	21.4	20.8	21.5
9:15:05	23.8	21.2	23.8	22.3	21.3	21.3	19.8	21.7	22.3	21.6	21.5	20.7	21.4	19.6	21.8	22.9	22.2	21.4	21.4	20.6	22.8	22.4	21.2	21.3	23.5	21.0	22.5	22.1	20.7	21.5	21.2	21.7
9:30:05	23.7	21.8	25.5	22.7	21.5	21.3	20.3	22.3	22.3	21.9	21.7	20.7	21.5	19.6	22.3	23.3	22.9	21.4	21.2	21.0	22.9	22.7	21.8	21.5	22.9	21.0	22.8	22.0	21.1	22.7	21.2	22.0
9:45:05	23.7	22.2	25.5	23.1	22.2	21.4	20.9	22.5	22.5	22.1	21.6	20.8	21.4	19.5	22.3	23.7	22.5	21.4	21.1	20.9	23.3	22.8	22.1	21.8	22.8	21.3	22.9	22.0	26.9	21.8	21.9	22.3
10:00:05	23.9	22.2	26.8	23.6	22.0	21.5	21.2	22.9	22.8	22.4	21.8	20.9	21.4	19.9	22.4	24.3	22.7	21.5	20.9	21.5	23.2	23.2	22.3	21.9	23.3	21.8	22.9	22.1	24.2	21.8	21.7	22.4
10:15:05	24.0	22.7	24.2	23.7	22.2	21.6	21.8	23.2	22.9	22.6	21.9	20.7	21.5	20.1	23.5	24.5	23.4	21.7	21.0	22.2	23.4	23.6	22.2	22.0	23.4	21.8	23.0	22.9	23.2	21.9	21.5	22.5
10:30:05	24.2	23.3	27.0	23.8	22.9	21.7	22.2	23.6	23.3	22.9	21.9	20.3	21.4	19.9	26.3	24.2	23.9	21.8	21.1	22.5	23.9	23.8	22.7	23.1	23.0	21.3	23.1	23.1	23.4	22.5	21.6	22.9
10:45:05	25.2	23.9	25.0	24.2	23.0	21.7	22.9	24.0	23.5	23.4	22.2	20.8	21.5	19.9	24.7	24.8	23.8	22.2	21.2	22.7	24.5	24.2	23.0	23.2	23.4	21.0	23.3	23.8	23.8	23.4	21.5	23.1
11:00:05	26.4	24.5	24.7	23.1	23.5	21.5	23.1	24.3	24.1	23.5	23.3	21.1	21.3	20.3	24.0	25.5	24.0	22.2	21.4	22.8	25.0	27.0	23.5	23.0	24.0	20.9	23.3	24.1	24.0	23.9	21.1	23.4
11:15:05	27.4	25.5	25.5	22.5	23.8	21.5	23.4	24.2	24.4	23.6	23.3	21.5	21.7	20.8	24.1	25.9	24.1	22.1	21.5	23.3	25.3	25.8	24.0	23.5	24.7	20.9	23.7	24.3	24.4	23.9	21.3	23.6
11:30:05	27.2	25.9	25.8	22.6	24.1	21.5	24.0	24.7	24.8	23.9	23.2	21.9	22.2	21.1	24.1	26.5	24.1	22.2	21.7	23.5	27.5	25.8	23.7	23.8	25.4	20.9	24.4	24.3	25.0	24.4	21.6	23.9
11:45:05	27.9	26.2	26.0	22.3	24.0	21.6	23.8	25.8	25.4	24.7	23.2	22.7	22.6	21.5	23.4	27.0	24.5	22.1	22.0	24.0	33.3	25.7	23.4	23.5	25.8	20.7	25.1	24.7	25.1	24.6	22.2	24.3
12:00:05	28.0	26.6	26.7	22.3	28.8	21.8	24.3	26.2	26.2	26.3	23.5	23.2	23.3	21.5	23.5	26.9	25.0	22.2	22.5	24.2	33.0	25.6	23.3	23.7	26.1	20.5	25.4	25.0	25.6	24.7	23.3	24.8
12:15:05	28.2	26.5	27.1	22.3	31.8	21.6	24.4	26.8	27.0	25.4	26.7	23.2	22.9	21.8	23.7	27.5	24.7	22.3	23.4	25.1	28.1	25.7	27.5	25.4	26.1	20.5	25.3	24.9	25.8	24.7	24.1	25.2
12:30:05	33.1	27.2	27.2	22.6	29.7	21.5	24.0	27.0	27.5	30.6	28.6	22.5	22.9	22.0	24.2	27.7	24.1	24.5	24.6	25.5	27.7	26.4	24.1	25.4	26.3	20.9	24.8	25.6	26.6	24.9	25.2	25.6
12:45:05	33.3	26.9	27.8	22.9	27.5	21.4	24.9	28.2	27.9	32.8	30.2	23.0	23.1	22.3	24.3	27.7	24.2	23.2	32.2	25.4	27.7	27.3	24.0	25.3	26.9	21.0	25.2	26.0	28.6	24.9	25.0	26.2
13:00:05	31.4	27.3	28.2	23.7	26.3	21.9	29.2	27.0	28.6	29.3	28.4	21.5	24.1	22.8	24.2	28.2	24.5	23.4	33.5	25.1	27.7	27.9	24.4	25.7	26.4	21.3	28.4	26.3	27.4	30.6	26.2	26.5
13:15:05	30.8	27.6	28.5	24.7	27.0	22.0	31.7	26.9	28.4	27.2	26.2	22.1	23.7	23.2	24.2	28.2	24.7	23.8	30.0	25.4	28.8	28.5	25.4	26.1	25.8	21.5	30.7	26.9	27.2	34.0	26.3	26.7
13:30:05	30.8	27.8	27.9	27.2	26.2	25.7	27.3	27.2	27.4	26.3	25.8	22.9	23.4	25.8	24.2	28.1	29.3	24.2	27.0	25.0	28.4	30.5	26.0	25.9	25.1	21.3	27.3	27.1	27.5	31.5	26.6	26.7
13:45:05	30.2	29.9	28.6	26.2	31.3	27.0	26.8	27.0	29.3	26.2	26.1	23.5	28.0	24.2	24.4	32.3	30.2	25.1	26.1	24.5	28.6	29.0	26.1	25.9	25.1	21.3	26.8	31.4	27.7	28.6	26.4	27.2
14:00:05	30.3	28.1	31.3	25.6	27.9	24.5	25.7	27.3	28.1	26.0	25.8	23.1	25.3	24.5	24.8	29.0	25.6	24.4	25.8	23.2	28.2	28.5	26.3	25.8	25.4	21.7	26.7	28.4	28.5	27.9	26.5	26.5
14:15:05	30.4	27.7	31.9	24.7	27.1	23.2	25.8	28.3	28.4	26.4	26.2	23.4	24.4	24.2	25.5	27.9	24.6	24.4	25.1	22.9	28.0	28.0	26.6	25.4	25.1	22.8	27.3	28.6	28.5	28.1	27.3	26.4
14:30:05	30.8	27.7	32.3	24.2	26.1	22.7	25.3	27.5	28.5	25.9	25.5	23.5	24.7	23.7	26.5	27.6	24.3	24.2	25.1	23.3	28.2	28.2	27.0	25.7	24.9	25.3	27.2	34.1	28.4	28.2	27.4	26.6
14:45:05	30.8	27.5	33.5	24.3	25.6	22.4	25.4	28.2	29.3	25.5	24.8	24.0	24.7	24.1	25.2	27.8	24.2	24.4	24.0	26.7	29.1	28.2	27.1	26.5	25.6	23.4	27.2	31.8	28.5	28.5	27.8	26.6
15:00:05	30.7	27.7	29.7	24.2	26.1	22.5	25.3	28.4	28.8	26.2	24.4	27.7	24.7	29.5	25.2	27.3	24.5	25.0	23.6	25.1	28.3	28.3	27.7	27.0	25.8	23.1	26.8	28.6	28.5	28.1	28.2	26.7
15:15:05	30.5	28.1	28.8	24.6	26.3	22.2	25.4	27.7	29.0	25.4	24.4	28.0	24.3	30.3	26.6	27.3	24.8	25.1	23.4	25.2	28.2	27.9	27.4	27.0	25.7	23.6	27.7	28.5	28.6	28.1	28.5	26.7
15:30:05	30.7	27.9	28.0	24.6	26.8	22.6	25.4	27.2	29.3	26.0	27.9	25.3	24.7	29.8	26.4	27.5	25.1	25.2	23.2	24.7	28.4	27.7	27.3	26.3	27.3	23.8	27.5	27.9	28.8	28.1	28.1	26.8
15:45:05	31.1	28.2	28.0	24.1	26.5	22.6	25.4	27.9	29.5	26.3	25.1	24.6	25.0	27.3	26.3	27.7	25.3	25.2	23.0	24.5	28.0	27.8	28.5	26.5	27.5	23.9	27.1	28.0	28.9	27.8	28.3	26.6
16:00:05	31.5	27.6	27.8	23.8	27.1	23.2	25.5	28.2	29.4	26.1	24.3	25.0	24.1	30.3	26.1	27.9	25.4	25.0	22.9	24.5	27.5	27.8	28.5	26.3	27.1	24.1	27.0	27.9	35.0	27.7	28.4	26.9
16:15:05	31.4	27.5	27.9	23.6	25.8	23.3	25.4	28.2	28.2	25.2	24.5	24.2	23.6	27.4	25.9	27.0	25.1	24.6	22.6	24.4	27.6	27.2	27.4	26.3	26.9	23.6	27.0	27.9	36.9	27.8	28.3	26.5
16:30:05	30.8	27.8	27.6	23.4	25.9	22.9	25.4	28.1	28.1	25.5	24.6	24.4	23.7	26.3	25.8	27.3	24.7	24.2	22.5	24.0	27.1	27.0	27.7	26.8	26.7	23.5	28.3	27.2	32.2	27.3	27.7	26.3
16:45:05	30.0	27.0	27.3	23.2	26.3	22.7	24.7	27.9	28.0	25.0	24.5	24.7	22.8	25.1	25.8	27.2	24.7	24.1	22.4	24.3	27.0	27.3	27.5	27.0	26.8	23.5	27.3	26.7	29.8	27.1	27.4	26.0
17:00:05	29.5	27.8	27.1	22.9	26.4	22.4	24.6	27.7	27.1	25.9	24.3	24.3	22.1	24.1	26.4	27.0	24.0	24.2	22.7	24.6	26.6	26.9	26.9	26.6	26.4	23.2	27.1	31.2	28.5	26.6	27.3	25.9
17:15:05	28.8	27.5	26.8	22.9	26.5	22.5	24.4	26.3	26.7	25.5	24.0	24.2	21.8	23.8	25.5	27.0	23.9	24.0	22.6	24.5	26.4	26.7	26.3	26.2	26.6	22.9	26.6	31.5	27.4	26.0	26.8	25.6
17:30:05	27.7	26.8	26.3	22.8	26.2	22.4	24.3	25.8	26.9	25.5	23.5	24.0	21.5	24.0	24.9	26.5	23.5	23.8	22.2	24.2	26.1	26.1	25.6	25.6	25.4	22.5	26.2	30.9	26.9	25.0	26.0	25.1
17:45:05	27.6	27.3	26.2	22.7	25.8	22.2	24.2	25.7	26.8	24.7	23.1	23.8	21.9	24.0	24.7	26.0	22.9	23.5	22.1	23.9	25.5	25.3	25.0	25.0	24.7	22.1	25.5	27.3	26.4	24.4	25.5	24.7
18:00:05	26.7	26.3	25.7	22.7	25.6	22.1	23.6	25.4	26.3	24.0	23.1	23.4	21.5	23.7	24.3	24.9	22.6	23.0	21.8	23.5	24.8	24.8	24.7	24.5	24.3	22.2	25.2	25.2	25.2	24.3	24.9	24.2
18:15:05	25.9	25.9	25.2	23.0	24.7	22.2	24.0	29.2	25.5	23.4	23.1	23.3	21.6	23.2	24.1	24.4	22.4	22.7	21.9	23.0	24.2	24.6	24.7	24.4	24.0	22.0	24.5	24.8	24.8	24.3	25.1	24.1
18:30:05	25.5	25.4	24.8	23.0	24.1	21.8	27.1	31.2	25.3	25.1	23.5	23.5	21.6	24.4	24.2	24.3	22.4	22.7	22.1	22.7	24.2	24.4	24.5	29.5	23.9	22.2	24.0	24.7	24.9	24.0	25.0	24.4
18:45:05	28.9	24.9	25.2	25.7	26.4	21.4	27.2	26.3	25.5	27.3	27.6	25.4	21.7	26.6	26.2	24.5	22.4	26.7	22.0	22.9	24.2	25.4	24.2	28.6	23.9	22.5	24.0	24.7	24.7	26.3	24.7	25.1
19:00:05	27.7	25.1	28.8	26.7	28.6	21.0	27.2	28.6	25.1	25.2	25.8	28.0	23.4	25.1	30.6	24.4	25.0	26.3	25.0	23.0	26.4	28.0	26.3	29.6	24.3	22.5	24.0	27.6	24.6	27.1	24.1	26.0
19:15:05	26.7	27.5	32.1	24.1	30.4	21.5	25.6	26.5	25.8	29.9	27.7	27.0	26.4	27.0	30.5	24.3	26.0	29.5	27.2	22.9	28.0	26.5	28.7	31.3	26.6	22.8	24.0	27.6	29.1	27.5	26.2	27.0
19:30:05	30.2	27.3	31.1	26.3	30.5	22.7	28.2	25.8	28.2	25.7	26.4	32.8	27.0	29.3	30.7	24.0	28.3	29.3	29.1	23.9	29.9	24.6	27.4	26.5	29.3	26.2	26.0	29.0	28.8	26.6	25.7	27.6
19:45:05	28.5	28.0	30.5	25.1	26.3	24.6	26.8	25.4	30.0	24.4	24.3	30.5	26.7	25.0	30.1	24.0	28.7	29.4	27.8	28.5	28.6	27.0	28.6	25.4	28.6	28.4	29.5	29.6	30.3	25.0	29.1	27.6
20:00:05	26.6	30.3	26.9	23.2	25.2	23.7	26.6	25.2	30.0	23.9	23.8	27.6	24.3	23.7	28.3	27.0	27.7	28.8	26.7	29.1	27.4	25.9	28.4	24.4	31.3	24.8	30.3	26.5	26.4	24.5	30.8	26.8
20:15:05	25.6	28.4	26.1	22.9	24.9	23.9	24.9	24.9	26.8	23.5	23.4	24.7	23.2	23.3	25.4	29.1	24.3	25.3	25.4	27.3	25.3	28.2	25.7	24.2	27.0	25.7	26.4	28.8	25.3	24.1	30.9	25.6
20:30:05	24.8	28.5	25.5	22.6	24.4	23.1	23.9	24.7	25.8	23.3	23.6	23.8	22.8	23.1	24.7	27.1	23.4	24.1	23.5	24.4	24.7	25.1	24.7	23.8	25.4	26.8	24.9	29.4	24.9	23.8	27.8	24.8
20:45:05	24.4	28.5	25.6	22.6	24.7	21.9	23.4	24.7	25.3	23.4	23.0	23.3	22.8	22.9	24.2	25.1	22.7	23.6	22.9	23.9	24.3	24.5	24.5	24.2	24.9	25.1	24.4	27.0	26.5	24.8	26.7	24.4
21:00:05	24.0	26.2	24.9	22.6	24.2	21.8	22.7	24.5	25.0	23.2	22.8	22.9	22.1	22.7	25.1	24.5	22.7	23.6	22.4	23.4	24.1	24.4	24.3	23.9	24.6	23.8	24.0	24.6	27.8	23.7	25.6	23.9
21:15:05	23.7	25.6	24.9	22.5	24.0	21.4	22.6	24.3	24.8	23.0	22.6	22.6	21.9	22.7	24.0	24.2	22.5	23.0	22.3	24.6	24.0	23.8	24.7	23.6	25.2	23.2	23.7	26.3	26.8	23.1	25.1	23.8
21:30:05	23.7	25.2	24.8	22.5	23.6	21.5	22.2	24.1	24.6	23.0	22.5	22.2	21.9	22.6	23.8	23.9	22.4	22.8	22.2	23.4	23.9	23.9	24.0	23.3	24.5	22.9	23.2	28.0	24.9	23.1	24.7	23.5
21:45:05	23.1	24.9	24.7	22.2	23.4	21.3	21.8	24.1	24.3	22.9	21.9	22.1	21.7	22.5	23.0	24.1	22.5	22.6	22.1	23.2	23.7	23.6	24.0	23.2	24.0	22.9	23.2	28.1	24.2	22.8	24.4	23.3
22:00:05	22.7	24.1	24.3	21.9	23.4	21.2	21.6	23.8	24.1	22.8	21.5	23.1	21.6	22.3	22.7	24.0	22.3	22.4	21.9	22.9	23.3	23.3	23.9	23.0	23.6	22.5	23.0	27.3	23.8	22.4	24.2	23.1
22:15:05	22.3	24.0	24.0	21.5	23.4	21.1	21.6	23.7	23.9	22.7	21.3	22.3	21.5	22.2	22.8	24.0	22.1	22.4	21.9	22.7	23.1	23.3	23.5	23.0	23.7	22.2	22.9	25.2	23.7	21.9	24.0	22.8
22:30:05	22.2	24.6	23.9	21.3	23.2	20.9	21.5	23.4	23.7	22.3	21.0	22.0	20.9	22.0	22.5	23.8	21.7	22.4	21.8	22.6	22.8	22.7	23.3	22.8	23.4	22.2	22.8	24.7	23.3	21.5	23.8	22.6
22:45:05	21.9	24.3	23.7	21.0	23.0	20.6	21.2	23.2	23.6	21.9	20.9	21.6	20.4	21.8	22.4	23.6	21.5	22.2	21.7	22.4	22.8	22.2	23.2	22.8	23.3	21.7	22.8	24.2	22.9	21.4	23.4	22.4
23:00:05	21.8	24.0	23.4	20.9	22.8	20.8	20.6	23.1	23.3	21.7	20.8	21.4	20.2	21.3	22.2	23.5	21.2	21.8	21.1	22.2	22.3	22.0	22.8	22.2	23.0	21.4	22.5	22.9	22.4	21.3	22.9	22.1
23:15:05	21.6	23.9	23.0	20.8	22.4	20.3	20.2	23.9	23.0	21.5	20.8	21.1	19.9	21.1	21.7	23.3	20.9	21.3	20.8	22.0	21.9	21.9	22.4	21.8	22.4	21.1	22.3	22.9	22.2	21.1	22.6	21.8
23:30:05	21.5	23.6	22.7	20.9	22.2	20.0	19.9	23.0	22.4	21.5	20.5	20.9	19.9	20.9	21.5	22.7	20.9	21.0	20.6	21.9	21.7	21.6	22.2	21.7	22.0	20.9	22.0	22.7	21.9	21.0	22.5	21.6
23:45:05	21.2	23.2	22.8	20.7	22.2	19.8	19.8	23.0	22.2	21.4	20.4	20.8	19.8	20.7	21.2	22.4	20.8	20.8	20.5	21.5	21.5	21.5	22.0	21.6	21.7	20.7	21.7	21.7	21.7	20.9	22.2	21.4
DAY AV	25.4	23.9	24.8	22.7	23.8	22.0	22.4	23.2	24.7	23.5	22.9	22.5	22.0	22.1	23.3	24.1	23.4	22.7	22.6	22.6	24.2	24.0	23.7	23.1	23.7	22.1	23.5	24.1	24.2	23.6	23.5	23.4

October 2019 graphical temperature plot



Research period seasonal outdoors temperature plot



Appendix II: Average Monthly Outdoors and Indoors Relative Humidity

May 2019 outdoors average relative humidity (RH) calculation spreadsheet

DATA LOG 1: OUTDOORS

Time	Relative Humidity																															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	AV
0:00:05	74.6	68.1	76.3	79.4	81.4	79.9	73.0	79.1	80.6	81.8	86.7	82.9	84.9	85.2	82.8	78.9	75.0	80.5	87.3	84.9	85.8	79.5	80.5	83.7	84.4	89.9	89.4	82.6	78.5	81.8	82.8	81.4
0:15:05	75.0	68.6	76.3	79.4	81.8	80.3	73.9	79.9	81.4	81.4	86.6	82.9	85.2	84.1	82.9	79.3	75.4	80.9	88.4	84.9	86.2	79.5	80.5	82.5	84.4	89.9	89.4	82.6	78.9	81.8	82.8	81.5
0:30:05	75.0	69.4	77.2	79.8	81.8	80.6	73.9	79.9	80.6	81.8	87.4	82.1	85.2	84.1	82.8	80.5	75.9	81.7	88.8	85.3	86.6	80.7	80.5	82.4	84.3	89.5	89.4	83.4	79.7	81.8	83.2	81.8
0:45:05	75.0	70.3	76.8	79.8	81.8	81.8	74.7	79.9	81.8	82.1	87.4	82.8	85.2	83.6	82.5	80.1	77.1	81.7	89.1	85.7	87.0	79.9	82.1	83.6	84.3	88.4	89.3	83.0	79.3	82.6	83.2	82.0
1:00:05	74.6	70.8	76.4	80.2	82.2	80.7	75.2	79.9	81.8	83.3	87.0	83.6	85.2	84.4	82.8	80.5	77.5	82.5	89.4	85.7	86.6	80.3	82.9	83.6	84.7	88.4	89.3	83.4	80.1	82.6	83.2	82.2
1:15:05	73.3	70.8	76.8	81.0	82.6	80.3	75.2	79.9	81.4	83.3	87.4	84.4	85.2	84.4	83.6	79.7	77.9	82.8	87.4	86.1	86.5	81.1	82.9	82.8	84.3	89.1	90.1	83.4	80.1	82.6	83.6	82.3
1:30:05	72.8	70.8	77.3	82.2	82.6	80.6	75.6	79.9	82.2	83.7	87.0	83.6	84.8	83.7	83.6	79.7	78.4	83.6	87.3	86.4	86.5	80.7	83.6	83.2	83.9	88.8	89.3	83.4	80.1	82.6	83.1	82.3
1:45:05	71.9	71.2	77.3	82.6	82.2	80.2	76.4	79.9	82.5	84.1	87.4	83.5	84.4	83.6	84.0	80.5	78.8	82.1	87.2	87.2	86.9	81.5	83.6	83.5	84.7	89.1	90.0	84.9	80.1	83.4	82.7	82.5
2:00:05	71.5	71.2	77.7	82.6	82.9	80.6	76.4	79.5	82.1	84.4	87.4	84.7	84.4	84.0	84.0	80.9	78.8	82.8	87.9	87.2	86.9	81.1	84.0	83.5	83.9	89.1	89.3	85.3	80.5	83.4	83.9	82.6
2:15:05	71.9	71.2	78.1	82.6	82.9	79.8	76.8	79.9	82.1	84.8	87.7	84.3	84.4	84.4	83.6	80.8	79.6	82.8	87.9	87.8	86.5	80.7	84.1	83.5	84.2	89.5	90.0	85.7	80.9	83.0	82.8	82.7
2:30:05	71.0	71.2	78.1	83.4	82.9	79.8	77.2	80.6	81.6	84.8	88.5	83.5	84.4	84.4	82.8	81.6	79.6	82.8	87.9	88.2	86.1	81.2	83.6	84.3	83.8	89.8	89.4	85.7	80.9	83.4	83.1	82.8
2:45:05	71.4	71.2	78.5	82.6	82.9	79.8	77.7	80.6	80.7	84.5	88.1	83.6	84.8	84.3	83.2	81.6	80.1	82.8	87.9	87.9	85.7	81.5	83.6	84.3	83.4	90.2	89.0	87.2	81.2	83.4	82.7	82.8
3:00:05	71.0	71.6	78.9	82.2	82.9	80.1	77.3	79.3	80.3	84.5	88.8	83.5	84.4	85.5	83.2	81.3	80.4	82.8	87.9	87.9	85.7	81.8	84.4	83.5	85.0	90.1	89.3	86.4	81.2	83.8	83.1	82.8
3:15:05	71.4	71.6	78.5	82.2	83.2	81.3	77.7	79.7	80.3	84.4	88.8	83.1	84.4	84.4	83.6	81.3	81.2	82.8	87.6	88.2	85.7	82.6	84.8	83.4	84.6	90.1	89.3	86.8	82.0	83.7	83.5	83.0
3:30:05	71.0	72.0	78.9	83.0	83.3	81.3	77.3	79.7	80.3	84.8	88.8	82.7	84.4	84.4	83.6	81.3	81.6	82.8	86.3	88.6	85.7	82.7	83.3	84.2	84.6	90.2	89.3	86.4	82.4	84.1	83.5	83.0
3:45:05	71.8	71.9	79.3	82.9	82.1	82.1	78.1	79.6	81.5	85.2	88.1	83.1	85.5	84.4	84.0	80.8	81.9	83.6	87.1	87.9	85.7	82.3	83.6	85.0	84.2	90.1	89.3	86.4	82.4	84.1	83.5	83.1
4:00:05	72.2	72.4	79.7	82.5	82.1	81.3	77.3	79.2	82.4	85.2	88.1	82.7	85.9	84.8	83.6	80.8	81.6	84.4	86.7	87.9	85.6	82.3	84.0	84.2	84.2	90.1	89.3	86.4	82.8	84.1	83.1	83.1
4:15:05	72.2	72.4	79.8	83.6	82.5	81.3	77.3	79.2	82.4	85.2	88.1	82.7	85.5	85.1	84.7	80.8	81.2	84.4	86.4	87.5	86.4	82.2	83.6	83.8	84.6	90.1	89.3	86.4	83.2	84.1	83.5	83.2
4:30:05	72.6	72.8	79.7	83.6	82.9	81.6	77.2	78.8	82.4	84.8	87.7	82.8	85.1	84.4	84.7	81.3	80.7	84.3	86.4	87.9	86.4	82.6	84.3	84.2	84.9	90.1	89.3	85.7	83.2	84.1	83.5	83.2
4:45:05	73.0	72.8	80.5	82.9	82.9	81.7	77.2	79.2	82.0	85.2	87.6	82.7	85.1	85.5	84.7	82.4	81.1	84.4	86.3	87.5	86.4	82.6	84.3	84.8	84.9	89.7	89.3	85.3	83.6	84.5	83.5	83.3
5:00:05	73.0	73.2	80.5	82.5	83.7	81.7	77.2	80.0	82.0	84.8	88.0	83.4	84.7	85.1	84.4	82.4	80.4	84.4	86.3	87.1	86.8	82.6	84.4	84.9	84.9	90.1	89.3	85.6	83.2	84.8	83.9	83.4
5:15:05	73.0	72.7	81.7	83.2	84.1	81.3	78.0	80.0	82.0	85.2	87.9	83.4	84.3	85.1	84.3	82.4	80.3	84.4	87.1	87.1	86.8	83.4	83.6	85.3	85.2	90.4	90.1	86.0	83.6	84.8	84.3	83.6
5:30:05	73.4	72.7	80.5	82.8	84.0	81.7	78.0	79.5	82.8	85.2	87.9	83.8	84.3	86.2	84.7	82.4	81.1	84.0	86.8	87.5	86.8	83.4	83.2	84.1	85.6	90.7	89.4	85.6	83.9	84.9	83.9	83.6
5:45:05	73.4	72.7	79.2	82.8	84.0	80.5	78.4	79.5	82.4	85.9	87.9	84.2	84.7	85.8	85.1	82.0	81.9	84.3	86.4	87.8	86.4	83.4	83.2	84.6	85.3	90.4	89.4	85.6	84.3	84.9	83.9	83.6
6:00:05	73.4	72.7	78.8	82.8	84.4	80.9	78.8	79.1	82.8	85.9	87.9	84.2	84.3	85.8	85.1	82.0	81.9	84.3	86.1	87.5	86.8	83.8	83.5	84.2	85.3	90.1	89.3	85.6	84.7	84.9	83.5	83.6
6:15:05	73.0	72.7	78.0	82.4	84.1	80.5	78.8	78.7	82.8	85.9	87.9	83.8	84.6	85.8	85.1	83.1	81.9	84.3	86.4	87.5	87.2	83.4	83.9	83.8	84.9	90.1	89.4	85.6	85.4	84.8	83.5	83.5
6:30:05	75.2	73.1	77.5	83.2	83.6	80.1	78.8	78.7	82.8	86.3	87.5	83.4	85.0	86.2	85.8	83.5	81.9	84.7	86.4	87.8	86.8	84.6	84.3	84.2	84.9	90.4	89.7	85.2	86.2	84.8	83.5	83.7
6:45:05	76.9	73.1	77.5	81.7	84.4	80.9	78.9	78.8	83.2	85.9	87.9	83.4	85.0	85.8	86.2	83.5	81.9	84.4	86.4	87.8	86.4	83.4	83.2	83.4	84.9	90.8	89.3	85.2	86.9	85.2	83.8	83.7
7:00:05	78.6	74.0	77.5	81.3	84.0	81.3	78.8	78.8	83.2	85.9	87.5	84.2	85.0	85.7	86.2	83.9	81.9	84.4	86.4	87.8	87.2	83.8	83.6	83.7	84.9	90.8	89.3	85.5	86.6	85.2	83.4	83.9
7:15:05	78.6	74.4	78.4	81.7	84.4	81.3	78.1	78.8	82.8	85.9	87.2	83.8	84.6	85.8	85.8	83.9	81.9	84.0	86.4	87.8	86.4	84.1	83.9	84.1	85.3	90.5	90.1	86.3	86.6	85.6	83.9	83.9
7:30:05	78.3	74.5	78.8	81.3	84.3	81.7	78.1	79.2	83.2	85.5	87.2	83.9	84.7	86.5	85.4	83.5	82.3	83.6	86.8	87.9	86.4	84.5	83.9	83.8	84.9	90.1	90.1	86.3	86.2	85.6	83.9	83.9
7:45:05	76.2	74.6	78.8	80.9	83.9	81.3	78.1	80.8	82.4	85.9	86.5	82.6	85.0	86.5	85.0	83.9	81.5	84.3	87.1	87.1	86.4	84.5	84.3	84.2	85.0	90.1	89.3	86.0	86.3	84.9	83.1	83.8
8:00:05	74.5	74.2	78.8	80.5	84.3	81.7	77.3	81.3	82.0	85.9	86.5	83.0	85.4	86.5	84.3	84.3	81.9	84.4	86.8	86.4	86.4	84.2	84.3	83.8	84.9	90.4	90.0	85.6	86.6	84.9	83.0	83.7
8:15:05	73.7	74.2	78.8	79.3	83.2	80.9	76.9	81.2	82.0	86.2	85.8	83.4	85.5	86.5	83.9	83.5	81.9	84.3	86.4	86.4	86.1	84.3	84.4	83.8	86.1	90.5	90.1	86.4	86.3	84.2	83.5	83.5
8:30:05	72.4	73.4	78.5	77.7	82.9	81.7	76.4	81.3	81.3	86.6	85.1	82.7	85.5	86.5	83.5	83.2	81.5	84.4	86.5	86.1	86.1	83.5	82.8	83.5	85.7	89.8	89.4	85.3	86.3	84.2	82.7	83.1
8:45:05	71.2	71.3	78.5	78.1	82.9	80.9	76.1	82.2	81.7	86.7	83.9	82.7	85.1	86.6	82.8	82.9	81.6	85.2	84.5	85.4	85.7	82.8	82.1	82.7	85.0	89.0	89.4	84.9	85.3	83.5	82.7	82.7
9:00:05	68.1	69.6	78.9	78.9	82.1	80.5	75.1	81.0	80.9	85.9	84.3	81.9	84.0	85.8	82.0	81.2	81.2	85.2	84.5	83.1	85.1	82.0	80.5	82.6	84.9	89.0	89.4	84.9	84.5	82.8	83.2	82.0
9:15:05	65.0	67.8	78.9	78.1	81.4	80.5	74.8	80.6	80.0	85.2	82.7	82.0	84.4	85.8	79.7	79.7	80.4	85.2	84.2	82.7	83.5	81.7	80.5	83.5	84.9	88.7	89.4	85.3	84.2	82.4	82.8	81.5
9:30:05	65.5	64.2	79.7	77.7	80.5	81.0	74.0	79.4	80.4	85.2	83.5	81.5	83.6	85.1	78.9	78.9	80.8	84.8	83.1	82.4	82.6	79.7	79.6	81.9	86.5	88.0	89.4	84.9	83.8	82.0	82.8	81.0
9:45:05	59.9	60.5	79.0	77.7	80.6	80.7	73.2	79.4	79.6	85.2	83.2	82.3	81.6	85.2	78.9	77.7	80.0	85.2	83.1	80.0	80.3	78.8	79.7	82.4	86.8	87.7	89.4	84.5	83.4	81.3	81.2	80.3
10:00:05	56.6	56.2	78.2	77.4	80.2	78.2	70.1	78.2	78.8	84.5	79.6	82.0	82.1	84.4	76.5	76.8	80.4	84.5	82.4	78.8	79.1	78.5	79.3	81.6	87.2	86.6	89.4	85.7	83.1	80.2	81.2	79.3
10:15:05	53.1	52.7	77.0	75.7	79.0	76.6	66.5	76.6	79.2	83.0	79.3	81.2	80.1	84.0	74.8	76.0	79.7	85.3	81.6	78.8	79.1	77.2	78.0	82.0	87.2	85.8	89.4	85.7	81.2	79.4	79.7	78.2
10:30:05	51.2	46.6	74.0	75.3	77.5	74.9	65.2	74.9	78.9	83.0	78.1	80.4	79.7	83.6	74.4	76.8	77.2	84.5	82.0	78.1	80.4	77.3	78.1	80.0	87.6	85.1	89.5	85.7	79.6	77.3	79.0	77.3
10:45:05	49.7	45.1	73.7	76.1	74.1	74.6	65.7	73.7	76.9	82.6	76.0	79.2	78.5	82.1	73.1	75.6	75.6	84.1	81.6	76.5	78.8	76.0	76.0	80.8	87.6	82.8	89.5	85.0	79.6	75.2	78.9	76.3
11:00:05	46.1	43.0	72.4	76.5	74.1	72.4	66.2	73.2	76.9	82.2	74.2	76.3	75.2	81.7	73.6	73.1	71.4	84.8	81.2	76.9	78.8	75.2	77.8	80.8	86.5	84.0	88.1	84.7	80.4	74.0	78.9	75.5
11:15:05	47.1	43.0	72.4	74.8	74.1	72.0	66.2	71.9	75.2	80.6	74.7	76.4	76.1	81.7	72.3	72.2	66.5	86.0	79.6	76.4	77.2	74.8	76.5	80.0	86.6	81.2	87.3	84.3	78.1	70.5	79.7	74.7
11:30:05	46.1	41.4	71.1	74.4	71.6	73.7	63.0	68.8	74.0	80.7	73.0	76.4	73.6	79.0	68.0	71.4	66.9	85.3	78.8	74.8	78.1	74.8	74.8	79.6	86.3	80.8	87.4	82.8	77.2	70.1	79.3	73.7
11:45:05	48.2	43.0	71.2	74.5	70.2	70.2	63.0	65.7	74.0	78.7	73.4	77.3	71.9	77.4	70.2	67.9	65.1	85.7	78.0	76.4	75.6	73.6	73.5	79.2	86.6	81.2	86.6	82.0	77.2	70.1	78.1	73.1
12:00:05	44.5	43.0	69.8	72.7	69.7	66.2	63.5	64.4	72.7	77.0	73.0	76.1	71.5	77.0	67.5	65.7	66.5	85.4	78.1	75.5	74.3	73.2	73.2	78.8	87.7	81.2	87.0	81.9	77.6	70.5	79.1	72.4
12:15:05	44.6	44.0	67.6	73.6	69.3	65.3	58.7	66.7	71.9	76.2	72.6	74.9	71.5	74.9	67.1	63.8	66.5	85.3	78.0	75.5	72.6	73.2	72.7	77.2	88.1	81.6	86.5	82.4	77.6	70.1	78.3	71.9
12:30:05	40.9	44.1	66.7	72.7	68.5	63.5	61.1	63.4	71.0	75.0	70.9	73.6	69.3	71.9	64.4	61.5	62.8	84.6	78.1	74.7	71.8	71.8	71.0	77.3	86.0	82.4	86.6	80.5	76.7	67.4	77.4	70.6
12:45:05	43.0	44.1	66.3	73.2	68.5	60.2	55.3	61.6	68.4	74.0	69.5	75.3	67.6	73.6	63.0	59.6	62.9	84.6	78.8	73.5	69.6	71.0	70.5	74.8	85.6	82.8	85.8	78.8	76.4	64.7	76.6	69.7
13:00:05	43.0	43.6	63.5	71.1	67.6	59.3	57.9	61.1	67.5	74.1	70.4	73.5	66.7	72.3	63.0	61.6	59.6	84.6	79.6	72.2	70.5	69.6	70.5	73.1	81.4	82.8	85.1	78.0	74.3	64.7	76.1	69.0
13:15:05	45.1	42.0	64.0	68.4	63.9	57.3	55.3	61.1	68.0	72.8	70.8	73.9	65.3	71.5	62.5	61.1	59.6	83.2	79.6	71.0	68.4	69.3	73.1	73.1	83.0	83.2	84.8	78.1	73.9	63.4	75.7	68.5
13:30:05	46.7	44.1	62.1	66.7	65.4	58.3	53.9	59.6	67.1	72.3	69.5	72.7	64.0	70.6	62.5	58.2	58.2	82.5	79.6	71.4	68.8	66.6	74.8	74.8	82.5	82.8	82.8	76.4	74.3	61.5	75.7	67.9
13:45:05	47.3	42.5	61.6	66.8	62.6	55.4	52.9	57.7	63.5	71.5	67.3	71.9	66.2	66.6	58.3	57.3	59.2	82.4	80.8	70.9	67.1	64.3	75.7	73.1	82.9	83.9	81.2	74.7	73.1	65.2	75.4	67.1
14:00:05	49.8	43.6	60.2	64.4	64.5	54.4	52.9	57.8	62.5	71.5	67.3	69.7	67.5	65.3	57.3	57.8	57.7	81.8	81.5	71.3	65.7	63.4	73.6	72.7	83.2	84.3	80.4	74.3	74.7	66.1	73.7	66.8
14:15:05	49.3	45.2	58.3	65.4	63.1	53.0	53.4	58.3	59.2	73.3	65.1	70.2	66.2	63.9	58.3	58.3	56.8	84.3	83.5	70.5	67.1	63.4	72.3	71.4	84.4	84.7	80.1	73.9	76.0	64.3	73.6	66.7
14:30:05	47.2	44.7	58.8	64.5	63.1	52.5	51.4	59.8	60.6	73.7	65.1	67.5	66.6	61.6	56.8	57.3	55.3	83.1	85.1	72.3	63.9	63.4	71.0	71.4	84.0	85.1	79.7	74.3	77.2	63.4	71.9	66.2
14:45:05	44.1	45.2	58.8	64.0	62.6	50.4	52.4	56.4	60.7	73.3	63.7	65.7	66.7	59.7	55.3	59.2	54.3	84.2	85.1	71.8	64.3	64.8	73.2	71.9	83.0	84.4	76.4	71.3	78.1	65.2	72.3	65.8
15:00:05	43.0	46.2	58.8	64.0	60.7	51.5	52.4	55.8	60.1	70.6	61.9	66.1	66.6	59.7	56.3	58.2	55.8	84.2	85.5	72.7	63.8	64.8	73.6	71.8	81.4	83.4	75.6	72.2	77.7	63.9	71.0	65.5
15:15:05	44.1	45.6	60.7	63.6	61.7	51.0	52.4	56.3	58.3	70.2	61.0	66.1	64.3	60.1	55.8	58.2	54.8	84.2	84.3	72.2	63.9	64.7	73.2	71.8	82.9	83.7	76.4	71.8	76.0	63.9	71.0	65.3
15:30:05	40.9	46.2	60.7	63.6	60.3	52.9	52.9	57.4	58.3	68.9	59.1	65.7	62.0	60.6	58.2	56.8	55.3	84.2	83.6	72.6	62.9	65.2	71.9	72.2	84.0	84.3	75.1	68.6	76.4	63.9	71.1	65.0
15:45:05	41.9	43.6	62.6	63.1	60.7	55.4	51.4	67.2	56.3	64.8	60.0	64.8	61.1	60.1	55.3	57.7	54.8	83.1	83.6	73.1	63.4	64.3	71.9	72.6	82.9	84.7	75.6	70.4	77.3	62.0	69.7	65.0
16:00:05	41.4	42.0	63.5	64.4	62.6	55.4	53.4	71.1	57.8	64.7	59.5	62.9	61.5	61.0	54.8	56.7	52.8	83.1	83.2	73.5	63.8	66.1	73.2	74.4	82.2	85.1	74.7	72.6	77.6	63.8	68.8	65.4
16:15:05	40.8	44.6	64.4	64.8	63.9	53.8	52.4	76.0	57.3	62.9	59.6	63.4	61.6	61.0	54.3	55.7	54.3	82.3	82.8	73.4	64.2	66.6	74.5	75.7	80.6	86.6	74.2	73.1	77.7	63.4	67.0	65.6
16:30:05	40.8	45.7	64.4	64.9	63.9	54.3	52.8	77.2	56.8	64.8	59.5	64.7	62.5	61.0	55.3	57.2	53.7	83.1	84.8	75.2	66.1	67.0	75.3	73.1	79.0	86.7	74.3	71.7	77.3	65.2	68.8	66.0
16:45:05	41.9	46.7	63.9	64.9	63.9	53.8	54.8	73.7	58.3	64.3	60.0	64.3	61.5	61.5	54.3	57.2	54.2	81.9	84.7	78.5	67.0	66.5	80.6	74.4	82.5	85.9	73.4	73.0	76.8	64.3	67.4	66.3
17:00:05	42.9	47.2	63.9	65.3	63.0	55.8	55.8	72.4	58.7	64.3	59.5	64.3	62.0	61.4	53.3	57.2	52.7	80.8	84.4	77.2	65.1	66.5	82.6	73.9	84.8	85.6	74.7	73.0	76.4	64.7	67.9	66.4
17:15:05	44.0	47.7	64.8	64.8	63.9	56.3	57.3	69.7	60.2	65.2	60.9	64.7	61.5	61.4	54.2	58.2	52.7	80.0	84.7	78.1	65.6	65.6	83.4	75.6	85.9	85.6	73.8	73.8	77.2	65.6	70.5	66.9
17:30:05	45.5	48.7	64.3	66.2	63.0	57.2	56.8	71.9	61.5	65.6	61.9	65.2	61.0	63.3	53.7	59.1	53.7	81.5	84.7	77.2	66.9	65.2	85.0	79.3	85.9	85.6	75.5	75.1	77.2	66.1	69.2	67.5
17:45:05	46.0	49.2	66.2	67.0	62.4	57.7	61.1	72.3	63.9	66.1	62.8	66.1	62.4	63.2	56.1	61.5	56.6	84.6	85.1	76.4	66.4	64.7	85.4	80.9	85.9	85.9	74.6	74.2	77.2	66.5	71.4	68.4
18:00:05	46.5	50.2	66.6	67.5	62.9	58.1	63.0	73.6	65.2	66.9	64.6	66.5	63.7	63.7	58.1	61.9	57.1	85.3	85.1	76.0	66.4	66.5	84.6	81.7	86.3	85.9	75.0	72.9	78.0	70.1	71.8	69.1
18:15:05	48.0	50.7	67.5	68.3	63.3	58.6	63.9	72.7	67.5	70.0	66.8	67.4	66.0	64.1	59.0	62.8	57.5	86.1	85.1	77.2	66.4	68.3	84.6	81.3	85.9	85.5	74.6	73.7	78.8	71.8	73.1	69.9
18:30:05	48.5	52.7	67.9	69.7	64.2	59.5	63.9	73.5	70.6	71.8	67.7	68.3	68.3	65.5	60.4	63.3	59.0	86.1	85.1	76.7	67.3	70.0	84.6	81.7	85.9	85.9	75.8	73.2	79.6	72.7	74.8	70.8
18:45:05	48.5	54.7	68.4	70.5	64.7	60.0	64.3	73.0	72.7	73.1	67.7	69.1	70.0	66.4	62.3	63.7	60.4	86.1	85.5	75.9	68.6	70.9	85.4	82.8	86.3	86.2	75.4	74.1	80.4	73.5	74.4	71.5
19:00:05	50.0	56.7	68.8	71.0	65.1	60.9	65.3	74.7	74.1	73.1	68.1	70.4	71.3	67.3	62.8	65.1	60.8	86.8	85.5	75.9	69.9	71.3	85.4	83.6	86.6	86.6	77.1	74.1	81.2	75.7	74.8	72.3
19:15:05	51.0	59.1	68.8	71.8	65.6	61.9	68.0	76.4	75.8	72.6	69.0	71.3	72.2	68.2	63.7	64.1	61.8	86.8	85.1	76.7	70.8	71.3	84.6	83.2	86.6	86.6	77.9	73.6	81.6	79.0	74.8	72.9
19:30:05	52.0	59.5	69.2	72.3	66.5	62.3	69.3	77.3	76.6	72.6	69.4	72.2	73.1	69.5	64.6	65.5	62.2	87.5	84.6	77.1	72.5	72.6	84.5	83.2	87.0	87.4	78.3	74.5	82.0	80.6	75.2	73.6
19:45:05	54.0	60.5	69.7	73.5	66.4	62.8	71.1	78.1	77.8	73.4	70.8	73.0	73.9	70.0	65.5	65.5	62.2	87.5	84.6	77.5	72.5	73.0	85.3	83.2	87.0	87.4	78.7	74.0	82.4	81.0	76.4	74.2
20:00:05	54.5	63.8	71.4	74.0	67.8	63.2	72.4	78.1	77.8	76.0	71.2	73.9	74.8	70.9	67.3	65.5	63.6	87.1	84.2	77.9	72.5	73.0	84.5	83.6	87.7	88.1	77.9	73.6	82.8	81.8	76.4	74.8
20:15:05	55.9	65.7	72.3	74.8	68.7	64.6	73.7	77.7	78.2	78.5	72.1	74.7	75.1	71.7	69.1	65.5	64.5	87.6	84.2	78.0	72.5	73.4	84.5	83.6	88.8	88.8	79.5	74.0	82.8	81.4	76.5	75.4
20:30:05	56.9	67.5	72.8	75.6	69.2	65.5	74.5	79.0	78.6	79.7	72.5	76.0	77.2	72.2	69.6	65.9	65.9	88.2	84.6	77.9	73.4	74.3	84.9	83.2	89.6	88.2	78.7	74.4	82.8	82.2	76.9	76.1
20:45:05	58.8	69.7	74.9	76.5	70.5	66.4	75.8	78.2	78.6	80.9	74.2	76.4	77.3	73.0	70.9	67.3	68.2	87.5	84.6	78.7	73.4	75.6	85.3	83.3	89.9	88.1	79.1	74.8	82.8	83.0	76.4	76.8
21:00:05	59.8	72.4	75.8	76.9	71.4	66.9	77.9	79.0	79.5	81.3	75.6	77.2	77.7	73.5	71.3	67.7	69.5	87.6	84.2	79.1	74.2	75.6	85.3	83.6	90.3	88.8	79.5	75.7	82.4	82.1	78.1	77.4
21:15:05	61.2	73.2	75.8	77.3	72.3	67.8	78.3	79.0	79.8	82.5	75.6	78.5	78.2	74.8	72.2	68.6	69.1	87.5	84.5	80.0	73.7	75.6	84.9	84.0	90.3	89.5	79.5	75.7	81.9	82.1	76.4	77.7
21:30:05	61.7	74.1	75.8	77.7	73.2	68.7	77.6	78.6	81.1	83.3	76.8	78.9	78.2	75.6	73.1	69.0	70.0	87.9	85.3	80.0	74.6	75.6	84.9	84.3	90.3	89.9	80.3	76.1	81.5	82.5	78.9	78.2
21:45:05	62.6	74.5	75.4	78.5	73.6	69.5	77.5	77.8	81.5	83.7	76.8	78.5	79.4	76.4	73.5	69.9	70.4	87.5	85.7	80.8	75.5	75.6	84.5	84.4	90.3	89.6	79.5	75.2	81.9	82.1	78.9	78.4
22:00:05	63.5	74.9	76.0	78.9	74.4	71.3	77.9	77.3	81.5	84.4	77.2	79.7	80.6	78.8	74.4	70.3	73.0	87.5	85.7	82.0	75.5	76.4	84.1	84.3	90.3	89.2	79.9	75.6	81.5	82.1	79.3	79.0
22:15:05	64.0	74.9	78.0	79.0	76.5	71.3	78.3	78.1	80.2	84.8	78.9	80.5	81.0	79.7	74.8	71.2	74.3	87.5	85.7	82.4	75.9	77.7	83.3	85.5	90.0	88.8	81.9	75.6	81.1	82.1	79.3	79.4
22:30:05	64.5	74.5	78.9	78.9	77.0	71.3	78.3	78.6	79.8	84.8	79.3	81.7	80.6	80.5	75.2	71.6	76.4	87.4	85.8	83.9	77.1	77.2	83.7	84.4	89.9	88.8	80.2	76.0	81.1	82.0	79.7	79.6
22:45:05	65.0	74.5	79.0	79.4	77.4	71.8	78.7	79.4	80.2	85.9	79.7	82.5	82.2	80.8	75.6	72.5	76.8	87.8	85.0	85.8	77.5	78.0	83.6	84.8	90.3	89.5	81.0	76.4	81.1	82.8	81.0	80.2
23:00:05	65.4	74.9	79.0	80.2	78.2	72.2	79.1	79.8	80.6	85.6	80.9	83.6	82.5	80.5	76.9	72.9	78.0	88.2	85.4	85.8	78.8	78.4	84.1	84.4	90.2	89.9	81.4	77.3	81.1	83.2	82.2	80.7
23:15:05	65.9	75.8	79.0	79.8	79.0	72.6	79.6	80.2	81.0	85.2	81.3	84.4	82.9	81.6	77.3	73.8	79.3	87.4	85.3	85.8	78.4	78.9	83.7	84.4	90.3	90.2	82.6	78.1	81.1	83.2	81.3	80.9
23:30:05	66.8	75.7	79.0	80.6	79.8	72.6	79.1	80.6	81.4	86.0	82.5	84.4	83.3	82.0	77.3	74.6	79.7	87.0	85.8	85.8	78.8	78.9	83.6	84.8	89.9	89.1	82.2	78.5	81.5	83.6	81.7	81.2
23:45:05	67.2	77.4	79.0	80.6	80.7	73.0	79.5	80.6	81.8	86.3	82.5	84.8	83.7	82.8	78.1	75.0	80.9	87.8	84.9	86.2	78.7	79.7	84.0	84.4	90.2	89.5	82.6	78.9	81.4	83.2	81.7	81.5
DAY AV	60.0	61.6	73.1	75.7	74.6	70.5	69.6	74.8	75.5	79.5	77.3	77.5	77.1	77.0	72.9	71.9	70.9	84.6	84.7	81.0	77.5	75.9	80.9	81.1	85.7	87.5	84.2	80.1	80.7	77.4	78.8	76.8

May 2019 House A average RH calculation spreadsheet

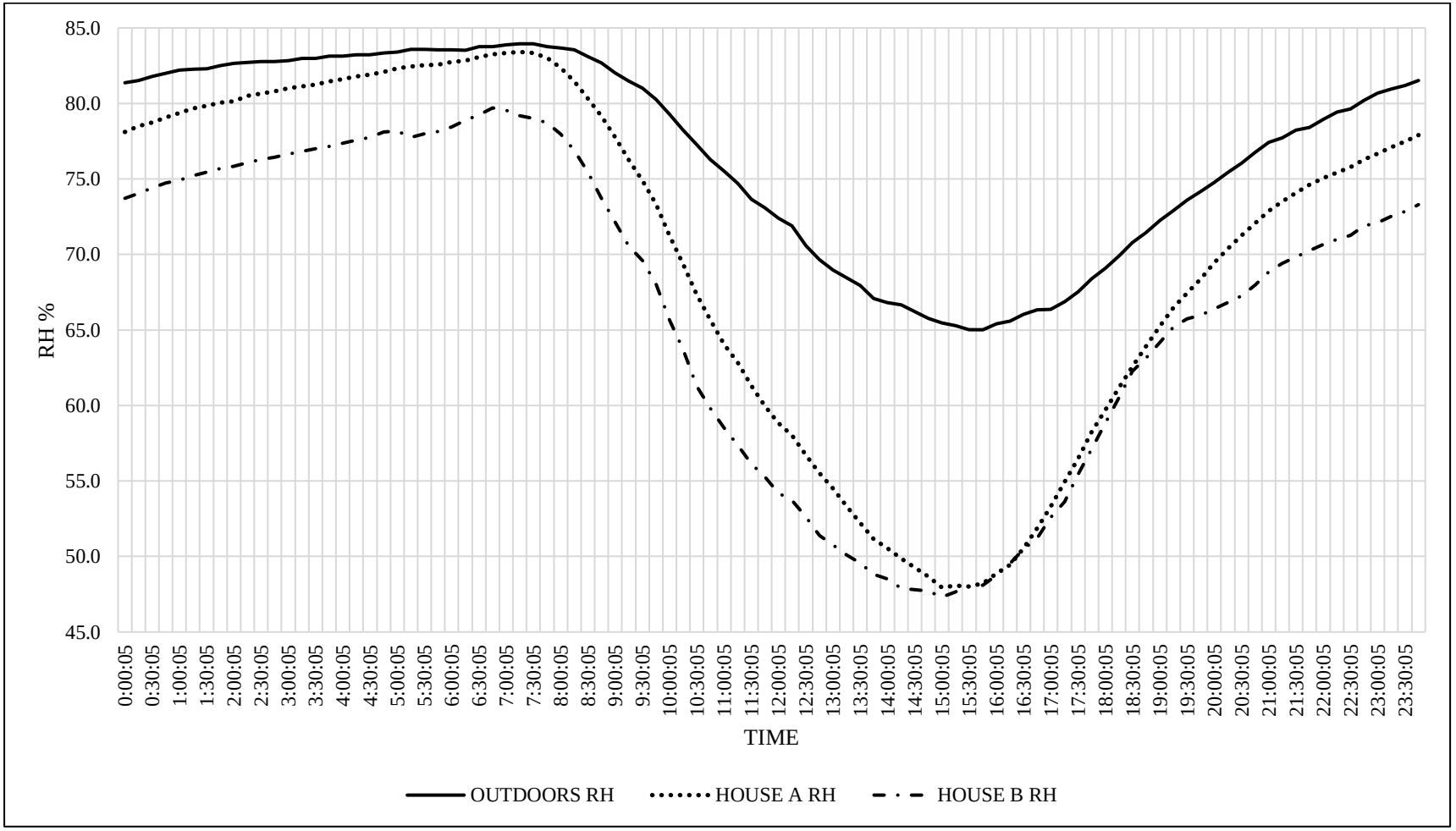
DATA LOG 2: HOUSE A

Time	Relative Humidity																															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	AV
0:00:05	74.7	67.8	73.6	74.7	76.4	75.2	73.2	78.5	78.8	78.0	80.1	76.8	79.6	78.0	77.1	73.4	71.5	75.1	85.7	84.9	81.9	75.3	75.5	82.7	82.6	85.4	85.3	79.4	78.0	81.2	80.7	78.1
0:15:05	75.1	68.7	74.1	75.1	77.2	75.6	74.5	78.9	79.6	78.5	80.5	76.8	80.0	78.4	77.6	73.8	71.9	75.5	86.1	84.8	81.9	76.2	75.9	82.7	83.0	85.4	85.7	79.8	78.0	81.2	80.7	78.5
0:30:05	75.5	69.1	74.9	75.5	77.6	76.4	74.5	78.9	79.6	78.4	80.4	77.2	80.0	78.8	77.5	74.2	72.7	75.9	86.1	85.2	82.6	76.1	76.3	82.6	83.0	85.4	85.6	80.2	78.4	81.6	81.1	78.8
0:45:05	75.9	70.0	75.4	75.9	78.0	76.8	74.5	78.9	80.4	78.9	80.4	78.0	80.4	78.8	77.9	74.7	73.6	76.3	86.1	84.8	82.6	76.9	76.7	83.0	83.0	85.3	85.6	80.2	78.8	81.6	81.5	79.1
1:00:05	76.4	70.4	75.8	76.4	78.4	77.2	74.5	79.3	80.4	79.3	80.8	78.4	80.4	78.8	77.9	75.1	74.1	76.3	86.5	85.6	83.0	77.4	77.1	82.6	83.3	85.7	86.0	80.5	78.8	82.0	81.5	79.4
1:15:05	76.0	71.3	76.2	77.2	78.8	77.6	75.4	79.7	80.8	79.2	81.2	78.8	80.4	79.2	78.3	75.5	74.5	76.7	86.1	85.6	83.4	77.8	78.0	82.6	83.3	85.7	86.3	80.5	79.2	82.0	81.9	79.7
1:30:05	75.9	71.3	76.2	77.6	78.8	78.0	75.4	79.6	81.2	79.6	81.2	78.7	80.8	79.2	78.8	75.5	74.9	77.1	86.4	85.6	83.4	77.8	78.8	83.4	83.3	86.1	86.3	80.9	79.2	82.4	81.8	79.8
1:45:05	75.9	72.1	76.6	78.0	78.8	78.0	75.8	79.6	81.2	80.1	81.2	79.1	80.4	79.6	78.8	75.9	75.4	77.1	86.0	85.6	83.4	78.2	79.2	83.4	83.7	86.4	86.3	81.7	79.2	82.8	81.8	80.0
2:00:05	75.8	72.1	77.0	78.4	79.6	78.0	75.8	80.0	81.2	80.0	81.6	79.1	80.4	79.6	78.7	76.3	75.4	77.5	86.0	86.0	83.4	77.7	79.5	83.3	83.7	86.4	86.3	82.1	79.2	82.8	81.8	80.2
2:15:05	75.8	72.5	77.5	78.8	79.6	78.4	76.2	80.0	81.2	80.4	82.0	79.5	80.8	80.0	79.1	76.3	75.8	77.9	86.0	86.0	83.7	78.5	80.3	83.7	84.1	86.8	86.7	82.5	79.6	83.2	82.2	80.5
2:30:05	75.8	73.0	77.4	79.2	79.6	78.4	76.6	80.4	80.7	80.8	82.4	79.5	81.2	80.4	79.1	76.7	76.2	77.9	86.4	86.3	83.3	79.3	80.3	84.1	84.1	86.4	86.7	82.9	79.6	83.2	82.6	80.7
2:45:05	75.8	72.9	77.9	79.7	79.6	78.8	76.6	80.4	80.3	80.8	82.7	79.5	81.2	80.4	79.5	77.1	76.6	77.9	86.4	86.3	83.3	79.7	80.7	84.1	84.1	86.8	87.0	83.3	80.0	83.2	82.6	80.8
3:00:05	76.2	73.3	78.3	79.7	80.0	78.8	77.1	80.4	80.6	81.2	83.1	79.9	81.2	80.4	79.5	77.5	77.0	78.3	86.3	86.3	83.7	80.1	80.7	84.1	84.1	86.8	87.0	84.0	80.3	83.2	82.5	81.0
3:15:05	75.8	73.8	78.3	79.6	80.0	78.8	77.1	80.3	80.2	81.2	83.5	79.9	81.6	81.2	79.5	77.5	77.5	78.7	86.3	86.3	83.7	80.2	81.1	84.0	84.1	87.1	87.0	84.0	80.7	83.2	82.5	81.1
3:30:05	75.8	73.7	78.7	80.0	80.4	79.2	77.1	80.7	81.0	81.6	83.5	79.9	81.9	80.7	79.9	77.9	77.4	78.7	85.9	86.3	84.0	80.2	81.1	84.0	84.0	87.1	87.0	84.0	80.7	83.6	82.9	81.3
3:45:05	75.7	74.1	79.1	80.0	80.4	79.6	77.9	81.1	81.8	81.6	83.5	80.2	82.3	80.3	80.3	77.9	77.8	79.1	85.9	86.7	84.4	80.1	81.5	84.4	84.0	87.1	87.4	84.0	80.7	83.6	82.9	81.5
4:00:05	76.1	74.1	79.1	80.0	80.4	79.6	77.9	81.1	81.8	82.0	83.5	80.2	82.7	81.1	80.3	77.9	78.2	79.5	86.3	86.7	84.8	80.1	81.5	84.4	84.4	87.1	87.0	84.0	81.5	83.6	82.9	81.6
4:15:05	76.1	74.5	79.5	80.4	80.4	79.6	77.8	81.1	82.2	82.0	83.8	80.6	82.7	81.5	80.7	78.3	78.2	80.3	86.3	87.0	84.8	80.1	81.5	84.4	84.4	87.1	87.0	84.0	81.5	83.9	83.3	81.8
4:30:05	76.4	74.9	79.5	80.4	80.4	79.5	78.2	81.1	82.6	82.0	83.8	80.6	82.6	81.5	81.1	78.3	78.2	80.7	86.3	87.0	84.8	80.5	81.9	84.8	84.8	87.1	87.4	84.0	81.9	83.9	83.3	81.9
4:45:05	76.8	74.9	79.5	80.8	80.8	80.0	78.2	81.0	82.6	82.0	83.8	80.6	83.0	81.9	81.1	78.7	78.2	80.7	86.3	87.0	84.8	81.3	82.2	84.7	84.8	87.1	87.4	84.0	82.3	84.3	84.0	82.1
5:00:05	76.8	75.3	79.9	80.8	81.2	79.9	78.5	81.8	82.6	82.4	84.2	81.0	83.0	81.9	81.5	79.1	78.6	81.1	86.3	87.0	84.8	81.7	81.9	84.8	84.8	87.5	87.8	84.4	82.3	84.7	84.1	82.3
5:15:05	76.8	75.7	80.3	80.8	81.6	80.3	78.9	81.8	83.0	82.8	84.1	81.0	82.6	81.9	81.5	79.5	78.6	81.9	86.3	87.0	84.8	81.7	81.8	84.8	84.8	87.5	87.8	84.8	82.7	84.7	84.1	82.4
5:30:05	77.1	75.7	80.3	81.1	82.0	80.4	79.4	81.0	83.4	82.8	84.1	81.0	83.0	82.3	81.5	79.5	78.6	81.9	86.3	87.0	84.8	81.7	82.2	84.8	84.8	87.4	87.8	84.8	83.1	84.7	84.1	82.5
5:45:05	77.5	75.6	79.8	81.1	81.9	80.3	79.8	81.4	83.4	82.8	84.1	81.4	83.4	81.9	81.5	79.5	79.0	81.8	86.2	87.0	84.8	81.7	82.2	85.1	84.8	87.4	87.8	84.7	83.1	84.7	84.1	82.6
6:00:05	77.9	76.0	80.2	81.1	81.9	80.3	80.2	81.3	83.4	82.7	84.1	81.4	82.9	82.7	81.9	79.9	79.4	81.8	86.6	87.0	85.2	82.2	82.6	85.1	84.8	87.4	87.8	84.7	83.1	85.1	84.1	82.7
6:15:05	78.4	76.0	80.1	81.1	81.9	80.3	80.2	81.3	83.4	82.7	84.5	81.4	83.7	82.7	81.9	80.3	79.4	82.2	86.6	87.4	85.6	81.7	82.6	85.1	84.8	87.8	87.8	84.7	83.4	85.1	84.1	82.8
6:30:05	79.3	76.4	79.7	81.1	82.3	80.7	80.6	81.7	83.3	83.1	84.5	81.4	84.1	82.7	82.7	80.3	79.8	82.6	87.0	87.8	85.6	81.7	82.6	85.1	84.8	87.8	87.8	85.1	83.8	85.5	84.4	83.1
6:45:05	79.8	76.8	80.0	81.1	82.7	81.2	81.1	81.6	84.2	83.1	84.5	81.4	84.1	82.6	82.7	81.1	79.8	82.6	87.0	87.4	85.6	82.5	82.6	85.1	85.2	87.8	87.8	85.2	84.2	85.5	84.8	83.3
7:00:05	80.2	77.3	80.0	81.1	82.3	81.2	80.7	82.0	84.2	83.1	84.5	81.8	84.2	82.7	82.7	80.7	80.2	82.6	87.0	87.4	85.6	82.5	82.6	85.5	85.2	87.8	88.2	85.2	84.6	85.5	84.8	83.3
7:15:05	81.1	77.8	80.9	81.1	82.3	80.8	80.7	82.4	84.6	83.1	84.5	81.4	84.2	82.7	82.3	80.3	79.8	83.0	87.1	87.4	85.6	82.5	83.0	85.2	85.2	87.8	88.2	85.2	84.7	85.9	84.9	83.4
7:30:05	81.6	77.9	81.4	81.1	82.3	80.5	80.4	82.5	84.2	82.7	84.1	81.1	84.2	82.7	81.9	80.7	79.5	83.0	87.1	87.1	85.2	82.5	82.6	85.2	85.2	87.9	88.5	85.2	85.1	85.6	84.2	83.3
7:45:05	79.4	78.0	81.4	80.8	82.3	80.1	79.2	83.4	83.5	82.8	84.2	80.3	84.2	82.3	81.6	80.4	79.1	83.4	86.8	86.5	85.2	82.6	82.6	84.9	84.9	87.9	88.2	84.9	84.8	84.9	83.1	83.0
8:00:05	76.6	75.3	81.5	80.5	82.3	78.9	78.4	83.4	82.8	82.8	83.4	79.5	83.9	82.3	80.8	79.6	78.7	83.1	86.1	85.4	84.9	81.5	82.2	84.2	83.8	87.6	88.6	84.1	84.0	84.2	82.3	82.3
8:15:05	73.8	72.9	80.4	78.2	82.0	78.5	76.9	82.7	80.9	82.4	82.4	79.1	82.8	81.9	79.3	78.9	78.0	83.1	85.4	84.0	84.5	80.4	82.3	83.5	83.5	86.5	88.6	83.4	83.3	83.5	81.9	81.5
8:30:05	70.9	70.5	78.9	74.5	81.3	78.2	75.2	82.0	80.1	81.7	80.5	78.8	81.7	81.6	78.1	77.7	76.4	83.6	84.7	82.8	84.2	79.2	80.9	81.6	83.1	85.1	87.8	82.7	82.6	82.0	81.2	80.3
8:45:05	68.3	67.9	78.1	74.0	80.5	77.4	74.0	81.3	79.3	81.4	79.3	78.0	80.9	81.2	76.9	76.5	75.6	82.9	83.6	81.0	83.1	78.1	79.0	80.1	82.7	83.6	88.2	82.0	79.3	79.3	80.1	79.1
9:00:05	65.2	66.6	77.0	74.4	79.4	76.5	71.5	80.5	78.6	80.2	77.4	77.2	79.7	80.5	75.7	74.8	73.2	82.4	82.4	77.8	81.4	75.7	76.2	79.2	82.7	83.6	88.2	80.8	76.5	76.2	79.7	77.8
9:15:05	62.6	62.6	74.9	73.2	78.2	75.7	68.5	79.4	77.8	79.8	75.7	75.6	78.6	79.3	73.3	73.2	72.7	82.8	80.5	74.2	78.3	73.7	74.1	78.8	82.3	83.6	87.8	79.6	74.8	74.1	78.9	76.3
9:30:05	58.9	58.5	73.4	71.6	77.4	75.8	68.4	77.8	76.2	79.0	75.7	74.8	76.7	78.6	70.0	70.7	73.1	82.8	79.0	72.6	74.9	70.0	72.4	77.7	83.0	82.8	87.9	78.8	73.6	71.2	78.1	74.9
9:45:05	55.6	54.6	71.3	71.2	74.2	72.6	66.7	75.8	74.5	78.3	74.5	75.6	74.2	77.4	67.7	69.0	72.6	82.9	76.7	69.6	73.2	69.0	71.6	76.5	83.4	81.8	87.2	78.9	72.3	68.7	75.4	73.3
10:00:05	51.1	50.7	68.3	68.2	73.0	70.4	60.5	72.7	72.8	76.7	70.8	75.2	73.4	76.2	64.3	65.9	72.6	82.2	75.0	66.6	70.8	65.1	71.2	74.9	83.4	79.1	86.5	78.8	71.5	66.1	74.1	71.2
10:15:05	47.6	46.6	65.2	67.3	71.8	67.0	56.7	69.6	72.0	74.3	67.4	73.6	70.0	74.9	62.8	65.4	71.1	81.1	73.0	65.2	69.0	63.7	70.7	72.9	83.9	78.2	85.8	78.5	69.9	64.8	70.1	69.4
10:30:05	45.0	43.0	62.4	66.0	66.2	63.4	53.4	66.2	70.0	73.4	64.7	71.5	68.7	74.5	61.0	65.4	67.2	79.2	72.9	63.9	69.0	63.3	70.3	71.2	83.5	77.5	85.2	77.7	66.4	60.7	65.2	67.4
10:45:05	42.9	39.7	59.7	65.5	63.0	61.2	49.9	63.4	66.5	73.4	63.7	70.3	67.8	72.9	60.0	65.4	65.5	78.3	73.3	61.2	66.9	62.8	66.0	71.2	82.1	74.2	84.1	77.3	65.5	56.9	65.6	65.7
11:00:05	41.3	37.0	57.8	65.0	59.7	57.4	49.9	62.4	64.3	72.2	62.3	67.2	65.2	71.2	59.5	61.4	59.6	79.9	72.4	59.7	65.5	59.1	65.5	69.9	80.6	74.2	82.5	75.8	65.5	54.0	66.8	64.0
11:15:05	39.7	36.0	56.4	64.1	59.6	56.4	49.3	62.3	61.5	72.1	61.8	64.2	64.2	70.4	58.6	59.0	54.8	80.6	70.8	61.0	63.8	57.7	65.9	69.0	79.0	72.5	81.8	73.8	61.6	52.1	67.7	62.8
11:30:05	38.1	34.3	56.4	63.7	57.4	57.7	48.3	59.6	60.6	70.1	60.0	63.2	60.6	67.4	54.4	57.6	52.8	81.1	69.5	58.7	62.9	58.1	65.0	69.0	79.0	69.1	79.9	70.0	59.6	49.6	66.8	61.3
11:45:05	39.2	34.2	54.9	63.2	55.3	56.8	46.8	55.4	58.2	65.8	59.5	64.1	58.3	63.4	54.3	53.8	50.8	79.9	67.7	60.5	60.1	55.8	61.4	67.7	79.7	68.2	79.5	69.5	60.0	48.9	66.0	60.0
12:00:05	36.4	34.8	53.5	62.3	54.3	52.9	47.3	51.5	58.7	63.9	59.4	62.4	56.4	61.6	51.9	50.8	51.6	77.6	66.4	61.4	57.8	54.3	58.7	66.8	81.3	68.1	79.4	69.0	60.4	49.4	63.0	58.8
12:15:05	36.5	34.8	50.0	62.3	54.7	51.9	45.7	51.0	56.8	63.0	58.9	58.7	55.4	59.2	49.9	48.8	51.2	77.2	65.9	61.8	54.9	54.3	58.2	65.1	81.4	68.1	79.7	69.5	61.3	51.8	60.3	58.0
12:30:05	33.7	34.8	50.0	62.2	53.4	48.9	45.1	52.8	54.4	60.7	57.5	56.8	53.9	56.9	48.4	46.3	49.2	77.9	65.6	60.5	53.4	55.2	56.8	64.2	76.9	68.6	79.7	65.6	61.3	48.8	58.8	56.7
12:45:05	32.6	33.7	49.0	61.3	53.3	45.3	42.1	48.9	53.4	61.5	57.5	57.6	51.5	57.7	46.9	44.7	47.2	79.1	66.3	57.7	52.5	54.3	55.2	61.5	73.5	69.8	78.6	63.3	59.4	46.8	58.7	55.5
13:00:05	33.2	33.2	46.9	59.0	52.4	42.7	40.5	47.8	52.9	60.2	56.6	58.9	49.0	56.7	44.8	44.7	44.2	79.2	68.0	56.7	51.0	53.8	57.1	57.8	68.9	70.3	77.1	62.4	57.6	45.8	59.6	54.5
13:15:05	33.8	32.6	45.9	56.8	48.4	42.7	38.9	45.8	50.5	57.7	57.0	60.3	47.0	55.3	45.8	43.7	42.6	75.4	69.8	54.4	48.0	50.9	59.4	55.8	69.1	69.8	75.5	60.6	57.6	43.8	58.2	53.3
13:30:05	33.3	31.5	44.8	52.0	47.9	41.1	36.2	44.7	47.5	59.5	57.5	58.1	45.4	54.3	45.3	42.1	40.5	71.6	70.6	54.3	47.0	47.4	61.3	57.7	70.4	70.3	71.7	58.6	56.7	41.7	58.2	52.2
13:45:05	33.3	31.0	43.8	49.5	44.8	39.5	35.1	43.7	44.4	59.5	55.1	55.7	46.8	51.5	42.1	40.5	39.9	71.0	71.5	56.2	44.9	44.8	61.9	54.9	70.4	71.5	70.5	59.1	53.8	42.7	56.3	51.2
14:00:05	33.9	30.5	42.7	46.0	44.8	37.3	35.0	41.7	42.8	59.1	55.6	51.4	51.3	47.4	39.5	39.9	39.4	73.4	73.1	57.6	42.8	43.7	59.5	53.9	71.6	72.8	70.0	57.6	55.7	44.1	52.5	50.5
14:15:05	34.9	30.5	39.5	45.9	43.8	36.3	34.5	39.6	41.1	60.0	50.8	50.4	48.9	44.8	38.9	39.4	38.4	74.0	75.2	54.8	41.7	43.7	57.7	55.2	72.9	73.6	67.4	56.2	57.5	45.7	52.9	49.9
14:30:05	33.8	30.5	39.5	44.3	42.7	34.0	34.5	41.6	40.6	60.5	49.2	47.9	50.3	43.2	38.3	39.5	36.2	72.7	76.8	54.8	42.2	43.2	55.3	54.7	72.5	74.1	64.3	55.7	59.4	43.7	51.4	49.3
14:45:05	32.7	31.0	37.9	42.8	44.8	33.5	35.1	39.0	39.5	59.1	49.7	44.3	48.4	41.6	38.3	39.4	35.1	73.9	77.7	54.3	43.8	43.7	56.7	54.8	67.1	72.6	61.6	53.8	60.4	43.7	52.3	48.7
15:00:05	31.5	32.1	37.4	42.8	42.7	32.9	34.0	38.3	40.5	58.6	47.3	45.7	49.8	40.0	38.3	41.4	35.1	72.3	77.3	56.2	41.6	46.3	57.1	55.6	61.6	66.5	57.8	51.3	59.5	42.6	52.3	47.9
15:15:05	31.0	33.2	38.4	41.7	41.0	32.9	34.5	40.0	39.0	56.2	44.7	47.3	50.8	40.5	39.3	41.4	35.1	72.3	76.5	55.7	41.1	45.6	58.1	56.6	64.6	68.2	58.2	52.3	59.0	41.1	53.8	48.1
15:30:05	30.4	32.6	38.4	40.6	40.6	33.9	34.0	37.3	37.9	56.7	43.1	45.3	46.8	41.5	40.4	41.5	36.1	71.8	75.4	57.0	41.6	47.7	58.1	57.1	67.7	70.2	56.8	52.7	59.4	43.6	52.4	48.0
15:45:05	30.4	32.1	39.5	40.6	40.6	37.7	33.4	47.8	37.3	52.3	44.5	44.7	47.8	42.6	40.3	40.9	36.6	70.6	75.8	59.8	43.2	45.2	58.5	58.0	63.0	72.3	55.7	52.2	60.3	42.1	49.4	48.2
16:00:05	30.3	30.9	40.0	43.6	42.1	38.8	34.4	56.3	38.3	51.7	44.6	45.7	47.1	42.6	39.3	41.4	36.0	67.1	76.2	61.2	43.7	46.7	59.0	60.3	59.7	74.3	56.2	54.2	61.3	44.6	47.9	48.9
16:15:05	30.2	31.5	41.6	44.7	44.1	38.2	36.0	60.1	38.3	51.7	43.5	44.6	46.2	42.5	38.7	41.4	37.1	69.2	74.6	61.6	44.6	49.7	60.4	62.6	58.3	76.5	57.5	54.6	60.9	45.6	46.3	49.4
16:30:05	32.4	33.1	43.1	44.7	47.1	39.2	38.1	62.0	39.4	52.2	44.0	48.6	47.2	43.5	40.3	42.4	37.0	71.8	74.9	63.5	48.1	51.6	61.7	61.3	57.8	76.9	56.6	56.0	58.5	45.6	48.7	50.6
16:45:05	32.4	34.2	44.6	46.2	46.7	39.7	41.3	62.0	40.4	52.1	45.0	49.2	47.6	46.1	40.3	43.4	39.1	71.8	75.7	66.6	50.6	52.6	66.3	61.7	63.6	77.4	56.5	56.9	60.3	46.6	50.7	51.9
17:00:05	34.0	36.4	46.6	48.1	47.6	42.8	43.3	61.9	43.0	53.1	47.5	50.1	48.6	47.5	41.3	44.4	40.1	69.6	76.2	67.5	51.1	53.6	69.8	62.1	68.5	75.4	59.8	58.3	60.8	49.1	54.1	53.3
17:15:05	35.6	37.9	48.6	50.6	49.6	45.4	44.9	60.9	45.6	55.0	50.0	52.5	50.6	50.0	43.3	45.9	42.2	68.7	76.5	68.3	54.0	54.0	71.1	64.4	71.1	75.8	61.2	59.7	62.6	51.6	56.0	55.0
17:30:05	37.7	40.0	51.1	52.6	50.6	47.4	45.9	61.3	47.6	56.4	52.4	54.5	52.5	51.9	45.8	48.0	44.2	70.4	76.9	68.8	55.0	54.5	72.9	66.6	72.7	75.8	63.0	61.1	64.4	52.0	57.4	56.5
17:45:05	40.4	41.6	53.0	54.5	51.5	48.9	48.5	62.6	51.1	57.8	54.4	56.4	54.4	53.9	48.4	50.5	46.8	74.2	77.7	68.4	56.9	54.9	73.7	69.2	74.0	76.6	65.7	61.5	64.8	54.0	59.8	58.3
18:00:05	41.4	43.1	54.5	55.4	53.4	50.4	51.5	63.5	53.0	59.7	55.7	57.3	55.3	54.8	49.9	52.4	48.3	76.2	78.1	68.8	58.3	57.3	74.6	70.9	74.8	77.8	66.5	61.9	67.0	57.3	61.6	59.7
18:15:05	42.4	44.1	56.4	57.3	54.8	51.3	51.9	64.8	54.9	62.0	58.1	58.7	57.7	56.2	51.8	53.4	50.3	77.5	78.9	68.7	59.2	59.2	75.3	72.2	75.6	78.5	67.8	63.2	68.8	61.1	63.9	61.2
18:30:05	43.9	46.2	57.8	59.2	56.2	52.8	53.9	65.2	58.3	64.7	59.5	60.0	59.6	57.6	52.8	55.8	51.7	78.7	79.3	70.0	59.1	60.5	76.1	73.0	76.4	79.3	69.1	64.1	70.5	62.5	65.3	62.6
18:45:05	44.9	47.7	59.2	60.6	57.6	54.2	55.8	66.0	61.1	66.1	60.9	61.4	61.4	59.5	54.2	57.2	53.1	79.5	79.6	70.8	60.5	62.8	76.9	74.7	77.2	79.7	69.5	65.9	72.7	63.4	67.2	63.9
19:00:05	46.5	49.7	60.1	61.9	59.0	55.6	57.2	67.8	64.3	67.0	61.7	63.2	63.3	61.3	56.2	58.7	55.1	80.3	80.0	70.8	61.8	64.6	77.8	75.9	78.0	80.4	70.8	66.7	73.9	65.6	68.0	65.3
19:15:05	48.5	52.2	61.0	62.9	60.4	57.0	59.6	69.1	66.6	67.0	63.6	64.1	64.6	63.2	57.1	59.6	56.5	81.1	80.3	71.2	63.7	66.0	78.2	77.2	78.4	81.3	72.1	67.2	74.7	68.3	68.0	66.5
19:30:05	50.5	53.2	61.9	64.2	60.9	58.9	61.0	70.4	68.4	67.4	64.5	65.0	66.0	64.2	58.0	60.5	57.4	81.4	80.7	71.6	65.0	66.9	79.0	78.0	78.8	81.6	73.0	67.1	75.5	70.9	68.8	67.4
19:45:05	51.5	54.2	62.8	65.5	61.8	59.9	62.4	70.8	70.1	68.7	65.4	66.4	67.3	65.1	59.4	61.4	58.3	81.4	81.0	72.1	66.3	67.3	79.0	78.9	79.6	82.0	73.8	68.9	76.7	72.6	68.8	68.4
20:00:05	52.0	56.2	64.2	66.9	62.7	62.2	64.3	72.2	71.0	70.0	66.4	69.5	68.2	66.0	61.3	62.3	60.2	81.8	81.8	72.5	67.2	67.3	79.8	79.3	80.0	82.4	74.2	69.4	77.6	74.3	69.7	69.4
20:15:05	52.9	58.1	64.7	68.2	63.6	64.1	66.5	72.6	72.3	71.8	67.8	70.4	69.1	66.9	63.6	63.2	61.6	81.8	82.2	72.9	68.1	68.2	79.8	79.2	80.8	83.2	74.2	69.8	78.0	75.6	70.1	70.4
20:30:05	54.4	60.0	66.1	68.7	64.6	66.0	67.9	73.4	72.7	72.6	68.2	71.7	70.0	67.8	64.5	64.7	64.0	82.1	82.5	73.4	69.5	68.6	79.7	79.7	82.0	83.2	74.2	71.9	78.4	76.0	70.5	71.3
20:45:05	56.8	61.9	67.4	69.5	66.0	65.9	69.7	73.9	73.5	73.5	69.1	73.0	71.3	68.2	65.4	65.1	64.9	83.3	82.5	74.2	69.9	69.4	80.5	80.5	82.4	83.6	74.2	72.8	78.3	76.4	71.4	72.1
21:00:05	57.8	63.8	69.2	71.3	66.9	66.8	71.5	74.3	74.0	74.7	69.5	73.8	72.2	68.7	67.3	65.5	65.3	83.7	82.4	75.5	71.2	70.3	80.5	80.5	83.2	83.5	74.6	73.6	78.7	77.2	71.4	72.9
21:15:05	58.7	66.1	70.6	72.6	67.7	67.2	72.8	74.7	74.4	75.6	70.0	74.7	72.7	68.7	68.7	65.9	66.2	83.6	82.8	76.3	72.1	70.8	80.9	80.4	83.6	83.9	75.4	73.6	78.6	77.2	71.8	73.5
21:30:05	59.7	67.9	71.0	73.0	69.0	67.6	73.6	75.5	74.8	76.4	70.9	74.6	72.7	69.5	69.6	66.3	67.1	84.0	83.6	76.7	72.5	71.2	81.2	81.2	83.5	84.3	75.8	73.5	78.6	78.0	72.6	74.1
21:45:05	60.6	68.4	71.9	73.4	70.8	68.5	74.4	75.9	75.2	76.4	71.3	75.0	73.5	70.8	70.0	66.8	67.9	84.4	84.1	77.2	72.1	71.2	81.2	81.2	83.9	84.3	76.2	74.3	79.4	78.4	73.9	74.6
22:00:05	61.5	68.8	71.4	73.9	72.2	69.4	74.8	76.3	75.6	77.3	71.7	75.4	73.9	72.1	70.0	67.2	69.3	84.4	84.1	77.6	72.1	71.6	81.6	81.6	84.3	84.3	76.6	75.2	79.8	78.4	74.3	75.1
22:15:05	62.4	69.2	71.4	74.3	72.6	69.8	75.7	77.2	75.6	77.3	72.2	76.2	74.8	72.5	70.0	67.7	70.3	84.3	84.1	78.0	72.1	72.1	82.0	81.9	84.7	84.3	76.6	75.2	79.8	78.8	74.7	75.4
22:30:05	63.4	69.6	72.2	74.7	72.6	70.7	76.1	77.1	76.0	77.7	72.6	77.1	75.2	73.4	70.4	68.1	70.7	84.7	84.5	78.4	72.5	72.5	82.0	81.9	84.7	84.3	77.0	75.1	79.8	78.8	75.5	75.8
22:45:05	63.8	70.1	72.6	74.7	73.1	71.2	76.5	78.0	76.4	78.1	73.0	77.9	76.0	74.2	70.9	68.9	71.6	85.0	84.5	79.6	72.5	73.8	82.0	81.9	85.1	84.6	77.8	75.9	80.2	79.1	75.9	76.3
23:00:05	64.7	70.5	73.1	75.2	73.5	71.1	76.9	78.0	76.8	78.9	73.9	78.4	76.4	75.0	70.8	69.4	72.5	85.0	84.5	80.4	73.3	73.8	82.3	82.3	85.0	84.6	78.2	76.7	79.8	79.5	76.7	76.7
23:15:05	65.6	71.3	73.5	75.6	73.9	71.5	77.3	78.4	77.2	78.9	74.7	78.8	76.8	75.8	72.1	69.8	73.3	85.0	84.9	80.3	73.7	74.2	82.3	82.3	85.0	85.0	78.2	77.6	79.7	79.9	77.6	77.1
23:30:05	66.0	70.7	73.9	75.6	74.3	72.4	77.7	78.4	77.6	79.7	75.5	79.2	77.2	76.7	72.5	70.2	73.8	85.4	84.9	81.1	74.1	74.6	82.7	82.7	85.0	85.0	79.0	77.6	80.0	80.3	78.0	77.5
23:45:05	66.9	72.8	74.3	76.0	74.8	72.3	78.1	78.8	78.1	79.7	76.4	79.6	77.6	76.7	73.0	71.1	74.6	85.8	85.3	81.5	74.9	75.1	82.7	82.6	85.4	85.0	79.4	77.6	80.4	80.3	78.3	77.9
DAY AV	57.1	57.0	65.3	67.8	66.9	64.1	63.0	69.7	68.3	72.3	69.3	69.5	69.4	68.8	64.7	64.1	63.2	79.0	80.6	74.3	69.4	67.6	74.1	75.4	79.4	80.9	78.3	73.3	73.2	69.0	71.5	69.9

May 2019 House B average RH calculation spreadsheet

DATA LOG 3: HOUSE B																																
Time	**Relative Humidity**																															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	AV
0:00:05	72.6	65.5	68.7	70.8	74.1	72.0	67.7	73.7	75.3	74.9	73.3	65.4	74.0	74.9	72.7	69.7	66.4	70.5	76.4	80.8	77.7	73.0	72.6	79.7	78.4	82.5	78.0	76.2	74.5	76.5	76.4	73.7
0:15:05	72.6	66.4	69.1	70.7	74.5	73.3	68.6	74.1	75.7	74.9	73.2	66.2	74.4	75.3	73.1	70.1	66.8	70.5	76.8	80.3	77.6	73.4	73.1	79.6	78.8	82.9	78.8	76.2	74.9	76.9	76.4	74.0
0:30:05	73.0	66.4	69.5	72.0	74.9	73.7	69.1	74.1	76.1	74.9	73.6	67.5	74.8	75.7	73.5	70.1	67.7	70.9	77.6	80.3	78.0	73.8	73.5	79.6	78.4	82.9	79.2	76.2	75.2	77.3	76.8	74.4
0:45:05	73.0	66.8	70.4	72.3	75.3	74.1	69.5	74.5	76.5	75.3	74.0	68.4	74.8	75.6	73.9	70.5	68.6	70.9	77.6	80.7	78.0	73.7	73.9	80.0	78.8	82.8	79.5	76.6	76.1	77.7	76.7	74.7
1:00:05	72.5	66.8	70.4	72.8	75.7	74.1	70.0	74.0	76.5	75.3	74.4	69.2	75.2	75.6	74.4	70.5	68.6	71.3	77.6	81.1	78.4	74.2	73.9	80.0	78.7	82.8	79.9	76.6	76.1	78.1	77.2	74.9
1:15:05	72.9	67.7	70.4	73.2	76.1	74.1	70.0	74.4	76.9	75.3	74.8	70.1	75.6	75.6	74.8	70.9	69.0	71.7	78.0	81.1	78.8	74.6	74.7	80.4	78.7	83.2	80.3	77.0	76.1	78.1	77.1	75.2
1:30:05	72.8	67.7	70.9	74.0	76.1	74.5	70.4	74.9	76.9	75.7	74.8	70.9	75.6	76.0	74.8	71.3	69.5	72.2	78.4	81.1	78.8	74.6	75.1	80.3	79.1	83.1	80.3	77.0	76.1	78.5	77.1	75.4
1:45:05	72.7	68.1	71.3	74.5	75.7	74.9	70.9	74.8	76.9	76.1	75.2	71.3	76.0	76.0	74.8	71.8	70.4	72.6	78.7	81.4	78.7	74.5	75.6	80.7	79.1	83.5	80.2	77.8	76.1	78.5	77.5	75.7
2:00:05	72.7	68.1	71.3	74.5	76.1	74.4	71.3	74.8	77.3	76.1	75.6	71.7	76.0	76.0	74.8	72.2	70.4	73.0	79.1	81.4	79.1	74.9	75.5	81.1	79.5	83.5	80.6	78.2	76.0	78.5	77.5	75.8
2:15:05	72.7	68.9	71.3	74.4	76.1	74.8	71.3	74.8	77.3	76.5	76.0	72.1	76.0	76.0	74.7	72.6	70.8	73.4	79.5	81.8	79.1	75.3	76.4	81.1	79.5	83.5	80.6	78.6	76.5	78.5	77.9	76.1
2:30:05	72.7	69.3	71.3	74.9	76.5	74.8	71.7	75.2	77.2	76.5	76.4	72.1	76.4	76.8	75.2	72.6	71.2	73.4	79.5	81.8	79.1	76.1	76.3	81.1	79.9	83.9	80.6	79.4	76.0	78.9	77.9	76.3
2:45:05	72.7	69.3	72.2	74.8	76.1	75.2	72.2	75.6	76.8	76.9	76.8	72.6	76.4	76.4	74.7	73.0	71.7	73.4	79.5	81.8	79.5	76.6	76.7	81.1	79.8	83.9	80.6	79.4	76.8	79.3	77.9	76.4
3:00:05	72.7	69.2	72.2	75.7	76.5	75.2	72.2	75.6	77.2	77.3	77.2	73.0	76.4	76.4	75.1	73.4	72.1	73.9	79.9	82.2	79.4	76.6	77.2	81.1	80.3	83.9	80.6	79.4	76.8	79.3	78.3	76.7
3:15:05	72.6	69.2	72.6	75.7	76.5	75.6	72.6	75.6	77.1	77.3	77.2	73.0	76.8	76.8	75.1	73.4	72.5	74.3	79.9	82.2	79.4	76.6	77.1	81.0	80.3	84.2	81.0	80.2	77.6	79.3	78.7	76.8
3:30:05	73.1	69.6	73.0	76.1	76.9	75.6	72.6	75.5	77.5	77.7	77.6	73.4	77.2	76.8	75.5	73.9	72.5	74.3	79.8	82.2	79.4	77.0	77.1	81.4	80.2	84.2	81.0	80.2	77.6	79.7	78.7	77.0
3:45:05	73.0	70.0	73.0	76.1	77.3	75.6	73.0	76.0	77.9	77.7	78.0	73.3	77.6	77.2	75.5	73.8	72.9	74.7	79.8	82.2	79.8	77.0	77.1	81.4	80.2	84.2	81.0	80.2	77.6	79.7	78.6	77.1
4:00:05	72.9	70.4	73.4	76.5	77.2	76.0	73.0	75.9	77.9	78.1	78.0	73.7	77.6	77.6	75.9	73.8	72.9	75.5	79.8	82.6	80.2	77.0	77.5	81.4	80.6	84.2	81.4	80.2	78.0	79.7	79.0	77.4
4:15:05	73.3	70.8	74.3	76.5	77.7	76.0	73.4	75.9	78.3	78.5	78.4	73.7	77.6	77.6	75.9	74.2	73.3	75.5	80.2	82.6	80.2	77.4	77.5	81.8	80.6	84.2	81.4	80.6	78.4	80.1	79.0	77.6
4:30:05	73.3	70.8	74.3	76.9	77.7	76.4	73.8	75.9	78.3	78.5	78.8	74.2	78.0	78.0	76.3	74.7	73.3	76.3	80.2	82.6	80.2	77.3	77.9	81.8	80.6	84.6	81.4	80.2	78.8	80.1	79.4	77.8
4:45:05	73.7	71.2	74.7	76.9	77.7	76.9	74.2	76.3	78.8	78.9	78.8	74.6	78.0	78.0	76.8	75.1	73.7	76.3	80.2	82.6	80.2	78.2	78.8	82.1	81.0	84.6	81.8	80.6	79.2	81.3	79.8	78.1
5:00:05	73.6	71.7	74.7	76.4	78.1	75.3	74.8	76.9	79.2	78.7	78.8	74.6	78.2	78.2	77.0	74.4	74.3	76.3	80.2	83.6	80.2	78.4	79.0	83.5	81.4	84.6	82.8	79.6	79.2	80.0	79.7	78.2
5:15:05	74.0	71.6	75.1	76.8	78.5	75.7	73.9	75.6	79.2	77.4	78.7	75.0	76.8	77.3	75.3	73.9	73.5	77.2	80.6	82.4	81.9	76.7	77.2	81.5	81.4	84.6	81.2	79.5	81.0	78.6	78.4	77.8
5:30:05	74.0	71.6	75.9	77.2	78.5	76.1	74.7	76.4	79.2	78.2	78.7	75.4	77.6	78.1	76.0	74.7	73.4	77.1	80.6	82.3	80.4	77.5	78.0	81.8	81.4	84.9	81.5	79.5	78.6	79.4	78.7	78.0
5:45:05	74.4	71.6	75.1	77.2	78.9	76.0	75.5	76.7	79.1	78.5	78.7	75.4	77.9	78.4	76.8	75.1	73.8	77.5	80.6	82.6	80.3	77.5	78.0	81.8	81.4	85.0	81.9	79.8	78.5	79.8	78.6	78.1
6:00:05	74.8	72.0	75.0	77.2	78.9	76.4	75.9	76.6	79.6	78.9	79.0	75.8	78.3	78.4	77.2	75.5	73.8	77.5	81.0	82.6	80.7	77.8	78.3	83.1	81.4	84.6	82.2	80.2	79.3	80.6	79.4	78.5
6:15:05	74.9	72.4	75.4	77.2	78.9	76.8	76.3	77.0	80.0	78.9	79.4	76.2	79.1	78.8	78.0	75.9	74.6	77.9	81.0	83.0	82.0	78.7	79.2	83.5	81.8	84.5	82.6	81.8	79.6	81.0	79.4	78.9
6:30:05	75.4	72.4	75.8	77.6	78.9	78.1	77.2	78.2	79.5	80.1	79.4	76.2	79.6	78.8	77.6	75.9	75.1	77.9	81.0	83.9	81.2	78.2	79.7	82.7	81.8	84.9	82.6	83.1	80.0	82.7	81.5	79.3
6:45:05	75.8	72.4	75.8	77.2	79.3	79.0	77.2	78.7	80.4	80.6	79.8	76.2	80.4	78.8	79.4	77.7	76.0	77.9	81.8	83.5	80.8	79.5	79.3	83.1	81.8	84.9	83.4	82.8	83.0	81.5	82.8	79.7
7:00:05	76.7	73.3	76.2	77.6	79.7	77.4	76.5	77.6	80.9	79.9	80.2	76.6	79.3	80.1	78.9	77.7	75.2	78.3	81.9	83.6	80.8	79.7	78.0	82.8	81.8	84.9	83.4	81.6	82.3	82.0	81.3	79.6
7:15:05	76.9	73.8	76.7	78.1	79.3	76.6	75.5	77.1	79.6	79.0	80.3	77.5	78.9	79.8	78.1	76.5	74.7	78.8	81.5	82.7	80.3	78.0	78.3	82.4	81.8	85.5	83.1	81.2	81.1	81.1	80.1	79.2
7:30:05	74.2	73.9	75.9	78.1	79.3	77.4	75.6	77.4	79.6	78.9	79.9	78.5	78.8	78.9	77.2	76.4	74.2	79.6	81.2	83.1	80.6	78.3	78.7	81.6	81.9	84.5	82.6	81.2	81.1	81.1	79.7	79.0
7:45:05	69.7	70.8	76.4	77.7	79.4	77.0	74.7	77.5	79.7	80.6	81.7	76.9	79.6	78.4	77.7	76.5	74.7	79.6	80.5	82.1	80.6	79.2	78.7	82.0	80.7	83.0	83.4	81.7	81.1	80.3	78.1	78.7
8:00:05	64.0	65.7	76.0	77.0	78.6	76.8	74.3	77.5	78.6	79.4	79.6	76.4	78.8	78.8	76.5	75.7	74.3	81.1	79.8	80.7	80.6	78.0	78.7	81.3	80.4	85.1	84.2	80.5	80.7	79.9	77.6	78.0
8:15:05	60.4	61.7	74.8	72.6	77.6	74.6	72.4	78.0	75.4	79.0	80.7	76.8	78.9	78.8	76.2	74.9	73.5	79.1	78.7	76.8	80.2	77.0	78.7	81.3	81.4	82.0	84.2	80.5	80.0	79.6	77.3	76.9
8:30:05	56.2	57.6	74.1	65.2	78.2	74.2	70.6	77.3	75.0	78.6	80.3	77.4	76.5	78.4	74.1	73.3	71.9	78.4	77.4	75.5	80.3	75.3	78.1	77.9	82.8	80.0	84.2	78.1	79.7	76.5	75.7	75.4
8:45:05	52.2	53.7	72.4	65.9	77.9	73.4	69.4	79.9	74.5	78.2	73.4	75.0	76.1	78.4	73.7	72.4	70.6	77.5	77.0	71.9	79.6	74.6	74.6	75.8	78.3	78.3	84.3	77.7	73.8	70.8	74.0	73.7
9:00:05	49.7	53.7	72.5	67.6	74.4	73.3	66.5	77.1	74.6	77.0	68.7	74.6	75.8	78.1	72.9	71.6	68.1	77.9	76.3	66.2	76.7	70.4	69.9	75.3	78.3	80.0	83.9	76.0	70.0	66.0	73.6	72.2
9:15:05	47.2	49.8	70.0	67.7	73.5	72.9	61.0	75.5	73.8	77.0	66.4	73.5	74.1	76.5	67.4	69.0	67.1	78.7	75.1	62.6	70.9	67.4	68.6	75.7	79.5	80.8	83.5	76.1	68.6	64.2	73.7	70.6
9:30:05	46.2	45.8	67.0	67.3	74.9	72.5	61.8	73.9	76.5	76.7	69.5	70.8	71.3	76.6	62.5	66.4	68.0	78.7	73.6	62.2	69.6	62.0	67.7	74.5	79.0	80.9	83.5	76.1	67.7	61.9	72.4	69.6
9:45:05	43.7	43.7	64.3	67.0	70.4	68.4	61.0	72.2	72.7	75.6	69.7	71.7	67.9	74.5	61.5	64.2	68.4	79.3	71.1	59.4	68.2	61.9	66.0	72.9	80.2	78.9	82.8	75.3	67.3	59.2	69.6	68.0
10:00:05	40.5	41.7	61.8	62.1	68.5	65.7	51.6	66.4	70.6	73.5	63.5	72.2	67.9	73.7	56.9	61.5	69.8	77.6	67.9	55.0	63.8	58.8	65.9	71.3	80.3	76.1	82.4	75.7	66.4	56.9	68.7	65.6
10:15:05	40.5	38.4	56.6	63.5	67.7	61.7	49.1	61.2	69.3	72.1	58.9	70.9	63.0	72.5	56.9	60.9	68.2	78.1	63.8	53.4	63.3	55.7	65.9	69.2	79.8	74.7	81.7	75.3	65.6	55.0	61.8	63.7
10:30:05	36.0	35.1	53.1	63.1	60.1	57.5	45.0	56.1	65.8	70.3	56.5	68.4	62.0	72.0	55.9	61.3	62.0	75.7	64.6	52.9	63.7	55.7	65.4	66.0	79.4	73.9	80.6	74.5	62.1	50.1	55.1	61.3
10:45:05	35.0	34.0	50.2	63.1	57.2	53.7	41.9	55.1	59.9	69.3	56.4	66.6	61.1	70.5	54.4	61.3	60.2	74.4	65.5	51.0	61.1	57.7	60.2	67.8	78.3	71.0	79.5	74.1	60.7	47.1	55.9	59.8
11:00:05	35.0	33.5	49.2	62.6	53.2	51.2	43.9	54.4	57.1	68.4	56.3	62.5	58.8	68.7	55.3	56.9	54.6	75.5	65.9	50.5	59.7	53.4	59.1	65.5	76.2	70.9	78.3	72.5	60.6	45.1	58.6	58.5
11:15:05	32.7	32.9	48.2	62.1	53.0	50.2	42.2	53.8	55.6	68.3	57.3	57.4	57.8	68.4	53.9	54.9	50.2	76.8	64.1	52.3	57.3	51.3	60.0	65.1	75.1	69.7	77.1	69.6	56.1	43.0	61.9	57.4
11:30:05	31.6	31.7	49.2	62.1	51.2	51.5	41.7	52.4	54.6	65.8	55.5	56.7	54.6	64.4	47.9	53.4	49.1	78.5	63.3	50.4	56.8	51.8	60.5	64.6	74.1	66.7	76.0	64.4	54.1	41.9	63.5	56.1
11:45:05	32.7	31.6	48.6	61.6	51.6	51.5	41.8	48.1	52.6	60.8	55.9	58.7	52.1	58.9	49.3	50.0	48.0	77.8	61.9	52.2	55.5	49.9	58.9	63.3	75.3	65.7	76.0	64.8	55.0	40.6	62.6	55.3
12:00:05	31.6	31.6	48.2	60.7	51.1	48.0	41.7	43.9	53.0	58.9	55.8	57.3	51.1	57.0	46.8	45.9	48.3	74.6	60.0	54.7	52.1	48.9	56.1	62.9	77.8	66.1	76.8	64.6	55.8	42.1	57.1	54.2
12:15:05	31.6	32.7	42.8	60.6	52.5	48.5	41.7	43.8	51.6	56.9	57.3	53.0	49.0	55.1	45.8	44.2	49.4	73.2	61.4	55.1	49.0	48.4	56.5	61.1	78.3	66.1	76.8	65.1	58.7	46.8	52.7	53.7
12:30:05	29.8	32.2	44.4	60.6	50.1	44.9	42.7	45.7	49.7	56.0	55.8	51.0	48.5	54.7	43.8	41.6	48.5	73.5	59.6	54.7	48.5	49.8	54.1	61.1	74.2	66.5	76.3	59.6	58.7	43.2	51.1	52.6
12:45:05	29.9	31.0	43.8	60.2	51.0	41.8	38.5	43.8	48.1	56.9	55.9	52.9	45.4	54.5	42.7	40.5	46.5	75.1	60.4	51.8	47.5	48.8	49.8	58.9	68.9	67.3	74.7	57.3	56.8	39.9	52.0	51.4
13:00:05	31.1	31.7	42.2	58.4	50.6	38.5	37.5	42.7	48.6	56.4	55.9	54.2	43.8	54.0	40.6	40.5	45.0	75.6	62.6	51.3	46.4	49.8	51.7	54.1	63.6	68.2	73.5	57.3	54.3	40.0	53.4	50.8
13:15:05	31.6	30.5	40.6	55.6	47.1	39.6	37.4	41.7	47.1	55.0	57.8	56.6	41.7	52.0	42.6	40.0	42.9	71.3	64.9	48.9	43.8	47.4	55.6	53.6	64.3	68.2	72.3	55.5	53.3	38.4	56.1	50.1
13:30:05	30.5	30.6	40.0	49.1	46.5	38.5	35.8	41.7	45.6	56.8	58.2	54.3	41.2	51.4	43.8	40.6	40.7	67.0	66.7	49.4	43.9	43.8	58.5	55.5	66.1	68.2	68.9	55.5	52.4	36.8	58.1	49.6
13:45:05	31.6	28.9	40.1	46.6	44.0	37.9	35.3	41.7	43.5	56.8	54.9	52.9	43.7	49.0	42.3	38.4	40.7	65.4	66.7	51.8	41.2	42.1	61.1	53.1	66.5	69.4	67.1	56.4	50.0	37.8	56.3	48.8
14:00:05	32.2	28.4	39.5	44.1	44.5	37.4	35.2	40.7	42.4	56.3	53.8	49.0	47.7	47.0	41.8	37.7	38.4	68.8	69.3	52.7	40.6	41.6	57.3	52.6	68.2	71.6	69.0	56.5	51.9	39.3	48.2	48.5
14:15:05	33.2	29.5	36.8	45.0	42.9	35.2	35.2	37.4	41.9	57.2	50.0	47.9	45.8	44.4	40.7	38.3	37.2	70.7	71.4	50.8	40.1	41.6	54.9	54.0	70.0	71.1	63.5	53.4	55.9	41.4	47.5	47.9
14:30:05	33.3	29.4	37.4	43.9	43.4	34.1	34.5	39.5	40.2	57.2	49.4	45.9	49.3	43.9	41.8	38.3	35.0	71.7	72.7	49.8	40.5	41.6	52.4	53.9	70.1	72.5	61.2	52.9	57.8	39.4	49.2	47.8
14:45:05	31.6	31.1	35.8	41.7	44.9	34.7	36.3	37.3	40.8	56.3	50.4	43.8	46.9	42.2	41.8	38.8	35.6	72.0	73.6	50.3	43.2	42.6	53.8	53.5	66.9	71.9	59.3	51.0	58.8	39.9	52.2	47.7
15:00:05	30.4	32.7	35.7	42.2	43.9	34.1	36.9	38.4	42.8	56.8	48.4	44.8	47.9	40.7	40.6	40.4	36.1	70.3	74.1	52.8	42.8	45.8	53.8	54.9	60.3	66.8	55.4	50.6	57.8	39.3	49.0	47.3
15:15:05	30.4	33.8	37.9	41.6	40.6	33.5	37.4	39.5	42.9	54.8	46.9	46.8	49.3	41.7	41.6	41.4	36.1	68.9	73.3	53.3	42.8	45.7	54.7	55.8	63.9	67.1	55.8	52.1	58.3	38.3	51.1	47.7
15:30:05	30.4	32.7	37.9	41.6	43.4	35.1	36.3	37.9	42.9	55.8	45.3	45.8	46.9	44.9	42.7	41.5	37.7	68.4	72.1	53.6	44.4	47.2	54.7	56.8	66.1	69.2	55.3	53.0	58.3	41.5	49.0	48.0
15:45:05	30.3	31.5	39.5	41.6	41.7	39.4	36.8	45.8	41.3	51.8	47.3	45.3	47.9	47.0	42.6	40.3	37.1	67.1	69.9	57.5	44.8	45.8	54.6	57.2	62.6	69.5	54.8	53.4	59.7	39.3	48.0	48.1
16:00:05	29.1	30.3	41.1	44.6	42.2	40.5	37.3	52.8	41.7	51.2	47.8	47.4	48.3	44.3	42.7	40.9	37.7	64.5	69.9	57.5	45.4	46.8	55.6	58.6	61.2	73.4	55.8	54.4	60.1	41.4	46.5	48.7
16:15:05	30.2	32.6	42.6	47.3	44.8	40.4	37.7	57.2	41.6	51.7	46.8	46.9	47.4	44.7	42.1	45.2	38.1	64.3	68.2	58.9	46.9	48.2	57.0	61.4	59.8	74.7	56.1	54.4	60.2	42.4	45.5	49.5
16:30:05	32.4	34.8	44.8	46.7	48.9	40.9	38.7	59.1	41.1	51.2	46.8	48.8	47.8	45.2	43.2	49.0	38.1	66.5	68.1	60.3	48.7	50.7	58.9	61.0	57.9	75.3	55.7	55.8	58.3	43.5	46.9	50.5
16:45:05	32.4	34.8	45.8	46.7	46.9	40.3	41.3	59.1	40.5	50.7	48.4	48.8	47.8	47.8	42.6	46.8	39.1	67.4	69.0	64.0	51.2	52.7	64.5	60.9	63.8	73.2	54.6	56.6	58.1	44.0	47.8	51.2
17:00:05	34.7	37.0	45.2	47.7	50.0	42.9	43.4	59.1	43.7	51.7	50.9	48.2	47.8	50.8	43.7	46.7	40.2	64.8	69.9	65.3	52.3	52.7	67.7	62.8	69.2	66.8	60.0	57.0	58.6	46.0	52.9	52.6
17:15:05	36.9	36.9	46.7	49.1	51.0	45.5	45.5	59.6	45.7	52.1	51.8	50.2	48.7	51.7	45.1	47.7	40.7	63.4	70.3	66.7	54.7	51.2	69.5	64.6	70.8	64.9	59.5	59.4	59.5	48.5	54.3	53.6
17:30:05	37.8	39.0	50.2	51.6	51.9	48.6	46.5	60.5	48.3	54.0	53.2	53.1	49.6	55.1	47.6	49.7	43.2	66.0	72.1	67.2	56.6	52.1	70.8	66.3	72.9	64.4	59.8	61.8	61.3	51.6	55.8	55.4
17:45:05	41.0	41.1	52.7	54.1	53.3	50.5	48.5	61.8	51.2	58.0	55.6	54.1	53.1	56.6	49.5	51.7	45.8	70.9	72.5	66.7	57.5	52.5	71.7	68.6	74.2	60.7	62.1	62.2	61.8	54.1	57.2	57.1
18:00:05	43.7	42.7	55.2	56.0	56.7	51.5	51.0	62.7	53.7	59.3	57.4	55.5	55.0	57.9	51.6	52.2	48.4	79.0	73.8	66.7	59.4	55.0	72.1	69.9	75.0	56.6	63.4	63.0	63.2	57.4	59.1	58.8
18:15:05	45.2	44.8	57.6	57.4	57.6	56.5	52.5	63.6	56.6	62.2	59.8	57.4	56.9	59.3	53.5	54.1	51.4	75.6	74.2	67.5	60.9	58.4	73.4	70.7	75.8	54.5	65.2	63.9	64.1	60.3	64.8	60.5
18:30:05	47.3	50.0	59.0	59.3	59.0	57.9	53.9	64.9	59.9	66.1	61.2	58.7	59.8	60.8	53.9	56.6	53.4	74.6	75.9	68.9	61.7	60.3	74.7	72.0	77.6	55.1	69.0	64.8	66.8	61.7	65.4	62.3
18:45:05	48.3	51.5	60.9	61.2	59.9	58.4	56.4	65.8	62.2	65.3	62.2	60.6	61.7	61.7	55.4	58.1	54.9	75.5	75.9	68.5	63.1	61.7	76.0	72.0	77.6	53.6	69.9	65.2	68.2	62.6	62.9	63.1
19:00:05	48.8	52.5	61.3	62.6	60.3	59.3	58.4	67.6	65.0	64.3	63.0	62.0	62.6	61.2	57.8	59.5	56.3	73.7	75.9	68.4	64.9	62.2	76.8	73.4	77.1	59.0	69.8	67.4	68.7	63.9	66.2	64.2
19:15:05	50.3	53.5	61.3	64.0	61.7	59.2	59.3	69.0	68.3	63.3	62.9	63.4	64.0	63.2	58.3	60.5	57.3	73.7	76.7	68.9	65.3	62.6	77.3	73.4	78.3	64.6	71.2	68.3	68.2	67.6	65.6	65.2
19:30:05	49.3	54.5	63.1	64.9	62.1	62.3	60.8	69.4	68.3	64.7	60.7	64.4	67.2	62.7	58.8	60.4	58.2	67.0	77.5	69.3	66.2	63.6	76.5	76.2	78.3	67.8	71.2	67.8	68.6	69.9	66.5	65.7
19:45:05	51.3	54.5	63.6	66.2	62.6	56.6	63.2	70.3	68.3	67.1	50.2	65.3	69.0	63.1	59.7	60.3	58.6	61.0	77.8	70.7	67.1	66.4	75.7	74.5	78.7	71.4	75.3	67.9	70.9	70.8	67.0	66.0
20:00:05	52.3	57.5	64.5	67.6	63.0	48.1	64.1	71.2	67.4	68.9	45.9	64.9	69.4	64.5	61.6	62.7	61.1	60.5	77.5	71.1	68.0	68.8	75.7	78.0	78.7	71.8	74.4	66.5	72.7	71.3	68.8	66.4
20:15:05	53.7	58.4	65.0	68.5	64.9	46.0	65.4	71.6	70.6	68.5	45.9	65.4	68.5	64.5	62.6	66.5	60.6	60.0	77.9	71.6	67.6	67.8	78.7	77.5	79.6	72.1	72.6	67.4	72.6	70.5	68.4	66.8
20:30:05	54.7	61.3	65.4	71.3	65.8	41.7	66.8	72.5	71.0	61.4	46.9	65.4	69.5	65.0	64.4	65.6	63.9	59.3	80.9	72.0	68.1	67.3	78.7	76.1	79.9	73.4	72.1	69.7	72.6	74.5	67.9	67.3
20:45:05	55.7	62.7	66.8	70.8	65.8	48.7	68.2	72.9	71.4	57.0	47.9	69.1	70.5	68.7	64.4	65.6	64.5	58.6	80.5	71.6	68.5	69.0	78.6	76.1	80.3	73.8	72.5	73.3	72.9	73.5	67.8	68.0
21:00:05	59.7	62.7	66.8	71.7	66.8	56.7	68.3	73.8	71.8	56.9	51.9	70.5	72.4	69.7	65.8	65.2	64.4	56.5	80.0	72.1	69.9	69.4	78.6	76.9	80.8	75.1	72.9	72.4	73.3	73.5	67.8	68.8
21:15:05	60.2	63.7	67.8	71.4	69.5	59.1	68.3	73.7	72.3	59.8	56.6	71.0	71.5	67.9	67.3	63.3	65.3	58.8	79.5	75.3	69.0	69.9	78.4	76.9	80.8	75.1	72.8	72.4	72.8	73.5	67.7	69.4
21:30:05	60.2	65.1	67.9	73.6	68.5	59.5	73.8	73.7	72.7	63.0	48.1	70.0	70.6	67.8	70.2	62.7	66.2	60.6	79.9	74.4	71.3	70.3	78.4	76.9	81.2	75.9	73.6	72.3	73.7	73.9	68.6	69.8
21:45:05	60.1	68.0	68.4	74.5	69.0	61.3	72.9	74.2	73.1	64.3	47.5	70.4	70.5	68.2	69.3	62.7	66.1	63.3	79.9	73.9	70.9	70.4	78.7	76.8	81.6	76.3	74.0	72.6	74.1	74.3	70.4	70.2
22:00:05	60.1	67.0	69.3	73.1	70.0	62.6	71.9	73.4	74.0	65.7	50.5	70.7	71.8	68.6	68.8	63.1	66.1	67.4	79.9	72.5	70.8	69.9	79.1	76.7	84.5	76.3	74.4	73.1	74.9	73.9	70.8	70.7
22:15:05	60.9	66.0	69.3	72.6	71.8	64.0	72.3	75.6	73.5	66.9	52.9	71.1	72.2	69.0	67.8	63.5	67.0	69.2	79.9	73.8	70.3	70.3	79.1	77.6	83.0	76.3	74.8	72.7	74.0	73.8	69.9	71.0
22:30:05	61.4	66.9	67.8	73.0	72.3	63.5	72.2	75.6	73.9	67.7	55.8	72.0	72.6	69.0	67.8	63.9	67.0	70.0	79.8	74.6	71.1	70.7	78.7	77.5	83.0	76.7	73.9	72.6	73.9	73.8	70.7	71.3
22:45:05	62.3	66.3	69.2	72.9	72.7	63.9	72.6	75.2	73.8	69.5	58.6	72.9	72.5	70.3	68.2	64.8	67.8	71.7	79.7	75.4	71.6	71.5	78.2	77.9	82.6	78.0	74.3	73.4	74.2	74.1	72.5	71.9
23:00:05	63.2	66.2	69.1	72.9	71.8	64.7	73.0	74.7	73.3	70.8	60.0	73.3	72.9	70.3	67.7	65.2	68.3	72.9	79.7	75.3	71.5	71.4	78.9	78.3	82.1	77.5	74.7	73.4	74.6	74.8	72.4	72.1
23:15:05	64.1	67.1	69.5	73.7	71.7	66.1	73.4	74.7	73.7	71.6	62.3	72.4	72.4	71.5	68.5	65.7	68.7	74.2	80.0	75.7	71.4	71.8	78.9	77.3	81.6	77.9	75.1	73.9	75.0	75.2	72.8	72.5
23:30:05	64.6	66.1	69.9	74.2	72.1	66.5	73.0	74.2	74.5	72.0	63.6	73.2	73.2	72.0	68.8	66.1	69.1	74.9	80.4	76.0	71.4	72.2	79.7	77.7	81.9	77.5	75.4	73.3	75.8	75.6	73.6	72.9
23:45:05	65.0	67.8	70.8	73.7	72.1	66.9	72.9	74.5	74.5	72.9	65.0	74.0	74.0	71.9	69.3	65.6	69.6	75.7	80.8	77.2	72.2	72.6	79.7	78.5	82.2	77.3	75.8	74.1	76.1	76.0	73.9	73.3
DAY AV	53.9	53.9	61.6	65.6	65.2	60.6	59.9	66.0	65.9	68.1	63.6	65.2	65.9	66.7	62.3	61.5	60.5	72.3	75.0	69.6	66.6	64.6	70.8	72.7	76.8	75.5	74.6	70.5	69.4	64.5	67.5	66.3

May 2019 graphical RH plot



July 2019 outdoors average RH calculation spreadsheet

DATA LOG 1: OUTDOORS																																
Time	**RELATIVE HUMIDITY**																															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	AV
0:00:00	70.9	73.5	73.0	75.2	68.7	70.0	80.4	75.1	74.7	70.1	73.1	73.6	65.0	71.3	75.2	76.2	72.0	77.1	69.2	74.2	78.4	73.7	75.1	69.3	68.6	68.8	68.7	67.7	69.1	79.3	84.0	72.9
0:15:00	71.3	73.9	73.5	74.4	68.2	70.9	80.4	75.0	75.0	71.0	73.1	74.8	65.5	71.3	75.6	77.0	74.1	77.9	69.7	74.7	78.8	73.6	75.1	70.2	69.1	68.7	68.2	67.7	69.1	79.7	83.7	73.3
0:30:00	71.3	73.9	73.9	73.9	67.3	70.9	80.0	75.8	75.5	72.7	73.9	75.2	66.4	71.7	74.8	77.4	75.8	78.3	70.5	75.1	78.4	73.2	75.5	68.8	69.5	68.3	68.7	67.2	69.6	79.7	83.6	73.4
0:45:00	72.2	73.9	73.8	73.9	68.2	71.3	80.0	76.2	76.7	73.5	74.4	75.2	66.8	72.1	75.1	77.4	75.8	77.9	73.1	75.5	78.4	72.7	75.1	67.4	69.5	67.8	68.7	67.2	69.1	80.1	84.1	73.6
1:00:00	72.6	73.5	73.8	75.2	68.6	72.6	80.0	76.6	76.7	73.6	73.9	75.6	67.3	72.5	75.2	78.2	76.6	78.3	75.7	75.9	78.3	72.3	75.5	67.0	69.9	67.3	70.0	67.2	69.1	80.5	83.7	74.0
1:15:00	73.5	73.4	74.7	76.0	69.4	73.4	80.0	76.6	77.2	74.8	75.2	76.5	67.7	72.5	76.0	78.3	76.6	78.3	75.6	75.9	78.3	72.2	75.5	66.0	70.3	67.7	69.9	66.7	67.8	80.5	83.3	74.2
1:30:00	73.5	74.3	74.2	76.4	70.7	74.7	80.4	76.6	77.6	75.6	75.1	76.8	68.1	72.5	75.5	78.7	76.6	78.8	75.7	76.7	77.5	72.2	75.9	65.1	70.3	67.7	69.5	66.2	67.3	80.1	83.6	74.3
1:45:00	75.6	74.2	74.6	76.4	72.5	76.3	80.8	77.4	78.4	76.1	76.0	77.2	68.6	72.9	75.1	79.5	77.0	77.5	76.1	75.9	77.5	72.2	75.5	65.1	70.3	67.7	69.0	66.2	65.9	80.5	84.0	74.6
2:00:00	77.3	75.5	75.1	76.9	72.5	77.2	80.8	78.6	78.8	75.7	76.4	78.5	69.5	73.3	75.9	79.5	77.4	78.3	77.3	76.7	77.1	72.2	75.8	65.1	70.3	67.7	67.2	67.1	65.9	80.5	84.4	75.0
2:15:00	78.1	76.7	75.5	76.8	73.7	77.6	81.2	80.2	78.8	76.1	76.0	78.5	69.9	74.2	76.7	79.4	77.4	79.1	78.2	76.7	76.6	72.2	75.8	65.5	70.3	68.1	66.7	67.1	66.3	80.1	84.0	75.3
2:30:00	76.9	77.6	75.5	75.5	74.2	78.4	81.6	80.3	78.8	76.5	76.0	78.5	69.9	74.6	76.7	79.4	77.4	79.8	79.0	77.1	76.6	72.6	75.8	66.4	70.3	67.6	66.7	67.1	66.7	79.7	84.0	75.4
2:45:00	76.8	78.4	75.5	76.8	74.6	78.4	81.6	80.7	79.2	75.7	76.0	79.3	70.3	73.8	77.1	79.4	77.8	81.0	79.0	77.5	76.6	72.5	75.7	67.3	70.7	68.1	66.7	67.5	67.2	80.1	84.0	75.7
3:00:00	78.1	78.9	75.9	74.2	75.4	79.2	82.4	80.6	79.1	75.7	76.0	79.3	70.3	74.2	76.7	79.8	77.9	81.4	80.2	78.2	76.6	72.9	74.8	67.3	70.7	68.0	67.1	67.5	66.7	79.7	84.4	75.8
3:15:00	78.5	80.1	76.3	74.2	75.8	80.0	82.4	80.6	78.7	75.7	76.5	79.3	71.1	74.2	77.1	80.3	78.3	80.6	80.9	77.9	76.6	73.3	74.0	67.7	71.1	68.5	66.7	67.9	66.7	79.7	84.4	76.0
3:30:00	79.3	79.7	77.1	74.2	76.3	80.0	83.1	80.6	79.1	75.7	76.8	79.3	71.6	74.6	77.9	80.7	79.4	81.4	80.5	77.5	76.5	73.8	73.5	67.7	71.6	67.6	67.1	68.3	66.7	79.6	84.4	76.2
3:45:00	79.3	80.1	77.6	74.2	76.7	80.8	83.1	81.1	79.5	75.6	76.9	79.3	72.5	74.6	78.8	81.4	79.8	80.6	80.2	77.5	76.5	74.6	73.5	67.7	71.6	67.6	67.1	68.8	66.7	80.0	84.4	76.4
4:00:00	80.1	80.0	77.6	74.2	77.1	80.8	83.5	81.5	79.0	76.1	76.9	79.3	72.4	75.1	78.8	82.2	79.9	80.6	80.2	78.2	76.5	74.7	73.9	68.1	71.2	67.6	67.9	68.4	66.3	80.0	84.0	76.5
4:15:00	80.1	80.4	78.0	74.5	77.5	80.8	83.9	81.5	79.4	76.5	77.7	79.7	72.4	75.1	78.4	82.2	79.8	80.7	80.2	79.0	76.9	74.2	74.8	68.1	71.2	67.6	67.5	68.4	66.7	80.0	84.0	76.7
4:30:00	80.5	81.2	78.4	74.9	77.9	80.8	84.3	81.5	79.0	76.1	77.7	79.7	72.4	75.1	79.2	81.8	80.6	80.7	80.6	79.0	77.3	74.6	74.8	69.0	71.2	67.6	67.9	67.9	67.5	80.0	84.0	76.9
4:45:00	80.9	81.2	78.4	75.7	78.3	80.8	83.9	81.9	78.6	76.5	78.1	79.7	72.4	75.1	79.6	81.4	81.0	81.0	81.3	79.1	77.7	75.0	75.3	68.6	71.1	67.6	67.9	68.7	68.4	80.0	84.0	77.1
5:00:00	81.7	80.8	78.4	76.5	77.9	80.8	84.3	82.3	78.5	76.5	78.1	80.1	72.9	75.9	80.3	81.4	81.0	80.2	81.7	78.7	78.1	75.0	74.4	68.1	70.7	67.6	68.3	68.7	68.4	80.0	84.4	77.2
5:15:00	82.2	80.0	78.8	76.6	78.3	81.2	83.9	82.3	78.9	77.3	78.1	80.1	73.7	75.9	80.7	81.8	81.4	80.6	82.9	78.3	78.1	75.4	74.8	68.6	71.1	67.6	68.3	68.7	68.8	80.4	84.4	77.4
5:30:00	81.7	79.6	78.4	76.6	78.3	81.6	83.8	82.3	79.4	76.4	78.5	80.1	73.7	76.3	80.7	81.8	81.9	80.6	82.9	78.2	77.7	75.4	74.4	69.0	70.6	67.6	69.2	69.6	68.8	80.0	84.8	77.4
5:45:00	82.1	79.5	78.4	77.0	77.9	82.4	83.5	82.7	80.2	77.2	78.9	80.1	74.1	76.3	81.1	81.5	81.5	81.0	82.9	78.7	77.7	75.4	73.9	69.5	70.6	68.0	69.2	69.2	68.4	80.0	84.7	77.5
6:00:00	82.1	79.1	78.8	76.5	78.2	81.9	83.9	82.7	80.6	77.2	78.5	80.1	74.6	76.7	80.7	80.6	82.3	81.4	82.9	78.6	78.1	75.4	73.5	69.4	71.1	68.0	69.6	68.3	68.8	80.0	84.7	77.6
6:15:00	82.5	79.5	79.2	77.3	78.2	81.6	83.9	83.1	81.4	78.0	78.5	80.5	75.0	77.1	81.5	81.0	82.2	81.3	83.3	79.4	78.1	75.8	73.0	70.3	70.6	68.4	69.6	68.7	69.2	80.0	85.1	77.8
6:30:00	82.1	80.7	78.8	77.8	78.2	80.8	83.9	83.1	81.8	79.3	78.1	80.9	75.0	77.1	81.5	80.6	82.6	81.4	82.9	79.4	77.7	77.1	73.5	69.4	70.6	68.9	70.0	70.0	69.6	80.0	85.5	78.0
6:45:00	82.5	81.5	79.1	78.1	79.5	80.0	84.2	83.4	82.6	77.7	78.5	80.9	75.4	76.7	81.5	81.4	83.0	81.4	83.7	80.6	77.7	77.6	73.9	69.4	70.6	69.3	69.6	71.3	69.7	79.5	85.8	78.3
7:00:00	82.1	82.8	79.5	78.6	79.9	80.4	84.3	83.9	83.0	78.0	78.9	81.3	75.0	76.7	81.2	81.7	83.0	81.4	83.7	80.6	78.1	77.6	74.4	69.9	71.5	69.8	70.0	71.7	70.5	79.9	86.2	78.6
7:15:00	82.1	83.2	80.3	78.6	80.3	80.4	83.9	83.5	83.4	77.6	79.3	82.0	75.4	77.6	80.3	81.4	83.8	81.3	83.7	80.2	78.5	77.6	73.9	70.3	71.6	69.4	70.5	71.3	71.4	81.1	85.8	78.7
7:30:00	81.7	82.8	80.7	79.0	80.6	80.8	83.5	83.5	83.8	77.7	79.7	82.5	75.8	78.3	79.9	81.8	84.2	81.4	83.7	79.8	78.9	77.6	74.8	70.7	71.2	68.9	71.0	71.7	71.9	81.5	86.2	78.9
7:45:00	81.7	82.9	81.5	79.0	81.4	82.0	83.1	83.5	83.8	78.1	79.8	82.4	76.7	78.3	80.3	81.4	84.2	81.0	83.7	80.6	79.0	77.6	74.9	71.5	70.7	68.9	72.2	72.6	72.8	81.9	86.5	79.2
8:00:00	80.9	83.3	81.5	79.1	81.4	82.3	83.9	83.9	83.8	77.6	79.0	82.4	76.3	78.4	80.6	82.9	84.2	81.0	83.7	80.6	78.2	77.2	74.1	71.5	71.7	69.8	70.6	73.5	73.2	82.2	86.6	79.2
8:15:00	81.3	82.6	81.6	78.6	81.8	83.1	83.1	83.9	83.8	78.1	79.0	82.0	77.1	78.8	80.4	82.9	84.1	80.9	83.3	81.4	78.3	77.6	74.1	71.1	71.3	69.8	70.6	73.5	73.6	82.6	86.9	79.3
8:30:00	81.7	81.8	81.2	78.3	81.1	83.9	83.1	83.1	83.8	78.5	78.6	81.6	75.6	78.4	79.9	82.9	83.8	81.0	82.9	81.4	77.5	77.6	74.1	71.5	70.0	69.4	71.0	73.5	73.7	82.6	86.2	79.0
8:45:00	83.0	81.8	81.2	78.4	80.7	83.9	84.0	83.5	83.8	77.8	78.2	80.1	74.7	79.1	80.3	82.9	83.4	81.0	82.6	81.4	77.1	78.5	73.4	72.0	70.5	69.9	70.7	74.0	74.1	82.7	86.2	79.1
9:00:00	79.8	82.2	81.3	76.4	80.3	83.5	83.2	83.2	83.0	76.9	77.9	78.4	74.8	78.4	79.1	82.2	83.1	79.8	82.2	82.2	78.0	77.7	73.9	72.1	68.8	69.5	69.4	73.6	73.7	82.7	85.9	78.5
9:15:00	78.6	81.0	80.9	76.4	79.6	82.4	83.2	83.2	82.7	78.6	77.0	77.7	74.4	78.0	79.9	82.2	82.4	80.7	80.6	82.6	77.2	77.2	73.5	69.5	67.9	69.0	70.3	72.8	74.2	83.0	85.9	78.1
9:30:00	79.9	81.1	80.9	76.1	79.6	80.8	82.4	82.5	82.3	77.0	76.6	75.3	73.5	78.1	78.2	80.7	80.4	79.9	80.6	83.7	76.9	76.8	73.1	70.1	67.5	69.0	69.4	73.6	73.8	83.8	85.5	77.7
9:45:00	77.8	79.1	79.8	74.0	77.6	80.4	82.8	79.8	81.6	76.6	75.4	73.2	72.7	76.9	78.2	81.1	80.4	77.9	79.9	84.5	75.7	76.8	73.2	69.2	68.8	69.5	69.5	73.6	73.0	83.8	85.5	77.0
10:00:00	76.6	79.4	78.5	74.0	76.8	79.6	83.2	79.3	81.3	77.0	76.6	71.1	71.9	76.0	78.3	79.9	80.8	77.9	79.1	84.1	75.3	77.6	72.3	68.8	69.3	69.1	68.2	73.3	71.0	83.4	85.9	76.6
10:15:00	76.6	78.3	79.8	74.0	76.9	80.1	82.4	78.1	79.0	74.9	73.7	69.8	70.7	75.2	76.7	80.2	78.0	75.4	77.8	83.8	74.5	76.0	71.1	68.4	68.9	67.4	68.2	71.6	69.3	83.0	85.9	75.7
10:30:00	77.0	77.5	79.4	73.6	76.0	79.3	81.3	77.0	77.9	73.7	69.8	69.9	71.1	76.2	75.9	80.2	78.4	75.5	77.1	84.1	73.7	76.4	69.8	67.5	66.2	68.4	66.9	71.1	68.0	83.0	85.6	75.1
10:45:00	76.6	76.3	79.4	71.9	76.1	79.3	80.9	76.2	75.4	74.1	72.5	67.2	70.6	73.5	75.9	80.6	77.7	74.6	76.7	83.8	71.6	76.0	68.5	67.6	65.4	66.6	66.5	70.6	65.8	83.0	85.6	74.4
11:00:00	76.2	75.9	79.5	72.8	75.2	78.5	80.9	74.5	74.7	73.7	72.1	63.5	70.6	73.5	74.3	79.9	76.8	74.2	76.8	83.4	71.3	75.1	67.6	65.8	64.9	66.2	66.1	69.4	65.4	82.3	85.3	73.8
11:15:00	75.8	73.4	79.5	71.9	76.2	77.3	80.1	72.9	72.1	72.0	69.9	64.5	71.1	74.0	75.1	79.1	75.6	74.2	75.1	83.8	69.5	76.4	66.3	63.1	64.1	64.9	65.7	68.6	64.9	82.0	84.9	73.0
11:30:00	74.4	73.4	79.9	71.5	74.2	76.9	79.0	72.1	70.8	73.3	64.6	61.3	68.5	74.5	71.8	78.7	76.4	74.2	73.9	82.7	69.1	75.2	65.5	59.0	62.7	64.0	64.8	67.2	63.6	81.6	83.7	71.9
11:45:00	74.5	72.5	80.2	71.1	72.0	76.1	78.2	69.9	67.7	72.4	63.6	60.8	69.3	72.7	73.9	78.3	74.7	73.3	72.6	83.4	67.3	75.1	65.1	56.6	62.7	64.1	63.0	67.8	61.2	81.6	83.4	71.1
12:00:00	73.7	72.9	79.8	69.8	71.6	75.3	77.4	67.7	68.2	72.4	62.3	60.3	66.8	71.5	72.6	78.4	74.7	73.4	70.9	83.9	65.5	75.1	63.2	56.1	59.0	62.2	62.6	66.0	59.4	80.1	82.6	70.2
12:15:00	71.2	74.2	79.8	70.7	71.2	75.7	77.4	67.7	65.9	71.2	63.2	57.4	64.5	71.1	72.6	78.3	74.7	73.0	71.8	83.1	64.2	75.2	62.4	53.1	60.5	60.4	62.6	65.6	59.4	80.1	80.3	69.6
12:30:00	72.9	72.6	79.5	69.4	68.1	76.1	77.0	67.2	63.7	69.9	62.2	56.0	62.2	70.2	73.0	78.3	73.4	72.1	70.9	83.1	62.8	74.0	61.4	52.6	57.6	58.5	61.7	64.8	58.4	78.6	79.9	68.6
12:45:00	69.5	72.5	77.5	68.5	67.7	74.9	76.2	67.7	61.3	69.9	60.4	55.1	62.7	69.8	71.8	77.9	72.6	69.5	70.1	81.6	60.9	72.7	60.0	52.1	57.2	57.6	61.7	63.9	59.0	77.7	77.8	67.7
13:00:00	69.4	73.0	77.1	67.7	68.7	74.9	70.7	66.3	59.9	68.1	60.4	51.6	59.9	67.6	70.5	78.3	70.8	67.3	68.4	80.1	59.5	72.0	58.6	51.2	50.2	55.7	60.3	63.0	58.9	78.2	77.9	66.3
13:15:00	69.5	71.6	75.9	67.7	68.7	75.3	70.3	66.4	58.0	69.5	59.0	53.1	60.7	67.2	68.8	77.5	71.4	66.4	68.8	80.2	58.6	71.1	58.1	50.2	52.3	56.2	61.2	60.7	59.4	77.1	77.9	66.1
13:30:00	68.2	72.1	75.1	66.8	67.8	74.5	70.3	67.7	58.0	68.1	59.4	53.1	60.8	68.6	68.5	76.7	71.8	62.4	66.1	78.6	56.2	70.7	58.1	50.7	50.3	55.2	59.4	60.2	59.9	76.6	76.2	65.4
13:45:00	65.9	70.9	72.9	65.9	67.3	72.9	70.7	67.3	57.6	67.3	57.5	52.1	59.9	66.8	65.3	76.0	70.0	62.9	65.2	77.8	55.7	69.4	55.2	49.6	47.7	52.7	59.4	58.8	58.9	75.4	76.3	64.2
14:00:00	63.6	71.8	73.0	64.1	66.9	72.9	71.6	65.0	55.5	66.4	58.1	50.6	59.4	65.9	64.9	73.9	70.5	60.6	64.8	75.8	54.7	67.6	56.1	50.1	48.7	52.2	57.9	59.3	58.5	74.6	75.8	63.6
14:15:00	62.2	69.5	72.1	63.1	66.4	72.0	71.1	65.9	56.1	62.8	56.1	49.1	56.0	62.7	64.9	72.2	69.2	58.7	64.8	74.6	55.7	67.2	56.1	48.1	47.2	53.3	58.4	59.3	58.9	75.8	75.0	62.7
14:30:00	61.8	69.6	71.6	65.9	67.8	71.6	71.5	65.9	55.1	63.7	57.5	49.1	56.5	60.8	62.5	71.8	68.8	56.8	61.6	73.8	53.2	65.9	56.6	50.1	44.6	51.2	58.4	58.8	59.3	75.4	74.2	62.3
14:45:00	62.7	66.0	73.8	64.6	65.9	71.1	70.2	64.1	54.1	62.8	56.5	49.1	56.5	62.7	64.4	72.3	67.0	57.8	61.6	73.3	55.2	63.6	56.6	49.6	46.2	49.2	57.5	58.4	59.8	75.4	74.2	62.0
15:00:00	63.2	66.4	73.8	63.6	65.1	70.7	69.8	64.2	53.7	62.2	56.6	47.5	57.0	59.3	64.4	71.8	67.0	55.8	63.4	74.2	55.2	63.6	55.1	51.1	46.1	48.7	58.9	58.8	59.3	76.2	74.2	61.8
15:15:00	62.3	66.9	72.9	63.6	63.2	71.1	69.4	63.7	52.1	62.2	56.0	46.5	57.0	58.0	60.7	69.6	66.5	56.3	62.0	73.8	54.6	64.1	55.2	50.6	47.1	48.2	57.0	57.9	59.3	76.2	73.0	61.2
15:30:00	59.4	65.5	72.5	62.6	64.1	71.1	68.5	63.7	52.1	59.9	54.6	49.1	56.5	57.9	60.2	69.7	65.6	55.8	62.5	72.9	56.1	63.6	54.2	53.6	48.1	47.6	56.5	55.9	59.8	75.4	72.5	60.9
15:45:00	59.9	64.6	72.5	65.9	63.7	72.0	67.2	63.2	51.2	60.4	56.6	49.0	55.5	57.4	60.2	69.3	64.2	55.9	61.1	72.1	57.0	60.8	54.2	55.1	47.1	47.1	56.5	57.3	59.3	76.2	72.9	60.8
16:00:00	58.5	66.4	73.8	65.0	62.8	71.1	67.2	62.7	49.6	58.5	56.1	48.0	57.0	57.4	60.7	68.9	65.6	56.8	60.7	71.6	57.5	60.3	52.2	55.1	47.1	46.0	54.5	57.8	59.8	76.2	72.9	60.6
16:15:00	56.5	65.1	70.8	62.2	63.2	71.1	66.8	62.3	49.6	60.9	55.1	47.0	57.0	58.9	58.7	67.5	64.7	55.9	58.8	71.6	56.5	61.7	52.1	55.1	47.1	46.0	55.0	58.3	60.7	76.6	73.4	60.2
16:30:00	57.5	63.2	69.9	61.7	62.7	72.0	66.4	60.8	50.1	59.5	54.6	48.5	58.9	58.4	59.2	67.9	62.9	55.9	59.2	71.2	55.6	61.3	53.6	57.1	47.6	45.5	54.5	57.8	61.7	76.6	72.9	60.2
16:45:00	55.5	64.1	70.8	63.1	63.7	72.0	66.3	60.8	52.6	58.9	54.6	48.0	56.9	56.5	59.7	66.6	65.2	56.8	60.1	70.7	56.1	61.7	55.6	55.6	47.0	45.0	56.0	58.7	63.1	77.0	72.9	60.4
17:00:00	54.0	63.2	71.2	62.6	62.2	72.4	65.4	61.3	51.6	60.9	56.0	49.0	57.4	57.5	57.8	65.6	62.4	57.3	58.7	70.3	56.0	62.2	56.5	58.0	47.0	44.4	55.5	58.2	62.6	77.8	73.8	60.3
17:15:00	54.0	62.7	71.6	62.6	63.6	72.4	65.4	61.8	52.1	59.0	57.0	49.5	59.9	58.4	58.7	68.4	62.8	57.7	59.6	69.4	56.5	60.8	57.0	59.4	48.1	45.0	56.0	58.2	63.5	78.2	73.3	60.7
17:30:00	55.5	63.2	72.9	63.5	63.5	72.4	65.8	62.2	52.0	57.9	55.5	50.0	59.3	58.8	59.7	66.5	62.4	58.7	60.1	70.2	57.9	62.6	58.0	60.3	48.1	44.4	54.5	58.7	64.0	78.2	74.5	61.0
17:45:00	56.9	64.6	73.4	63.5	64.9	73.2	65.3	62.6	52.5	58.0	56.0	51.0	59.3	57.4	59.2	66.0	63.3	59.6	60.6	72.0	59.9	58.8	58.4	60.8	48.0	44.9	55.5	59.6	63.0	78.6	76.2	61.4
18:00:00	58.4	64.5	74.2	63.0	64.9	74.1	67.1	64.0	53.0	59.4	56.9	51.5	60.2	57.8	60.1	66.9	64.7	61.0	61.0	72.8	57.4	59.8	60.3	60.7	48.0	54.1	55.9	60.1	63.5	78.6	77.0	62.3
18:15:00	60.7	66.3	73.3	65.3	64.9	74.9	67.6	63.5	54.4	60.3	56.4	51.4	61.7	58.8	61.0	67.3	65.1	61.9	61.5	73.2	58.4	60.2	62.2	61.2	46.9	58.9	57.4	60.6	67.1	79.0	77.0	63.2
18:30:00	63.1	67.7	73.7	66.7	66.7	75.7	68.0	64.0	53.9	61.2	59.8	52.4	61.6	61.6	61.9	68.6	65.5	63.3	62.9	74.1	57.9	60.6	63.6	62.1	56.5	60.7	57.4	61.5	68.5	79.4	77.4	64.5
18:45:00	65.4	69.4	75.0	63.9	68.5	76.5	67.5	64.4	55.4	62.6	58.8	52.9	63.5	61.6	63.3	69.9	65.0	63.7	63.7	74.9	61.3	62.0	64.4	63.0	58.4	62.1	56.8	62.0	69.3	79.4	78.6	65.3
19:00:00	65.8	70.3	74.9	66.2	69.4	76.9	67.1	64.8	57.3	62.6	61.2	54.4	67.6	62.5	63.8	70.8	65.5	64.1	65.6	76.1	64.6	60.6	65.3	64.9	59.8	63.5	60.2	63.8	70.2	79.4	79.4	66.4
19:15:00	65.8	71.2	74.5	65.7	69.8	77.8	68.4	65.7	58.3	63.1	60.7	54.4	68.5	62.0	64.6	71.7	66.4	65.0	66.0	77.0	65.9	60.6	65.8	65.8	60.7	64.4	61.5	64.3	69.7	79.8	80.6	67.0
19:30:00	66.7	72.0	74.9	66.2	70.3	78.1	67.9	67.1	59.2	64.0	61.1	54.8	67.6	62.9	65.1	72.5	66.8	65.9	66.9	78.2	67.3	60.6	66.7	66.2	61.7	65.3	62.9	64.7	70.2	79.8	82.6	67.6
19:45:00	67.1	72.9	74.5	67.5	70.2	78.5	69.2	67.5	59.7	64.4	61.1	55.8	69.4	64.3	66.0	72.5	67.3	66.8	67.4	78.2	68.6	64.7	67.1	66.7	62.1	65.7	64.3	65.6	70.2	80.2	83.8	68.4
20:00:00	67.6	74.6	75.4	68.0	70.7	78.9	69.2	67.9	60.6	64.4	63.5	55.8	69.8	67.0	66.4	71.7	68.2	67.7	67.8	78.6	69.5	68.8	67.6	66.7	63.0	66.6	65.6	66.5	71.4	80.2	84.2	69.2
20:15:00	68.0	75.0	75.4	69.8	71.1	79.3	70.1	68.3	61.1	65.3	63.4	56.3	69.8	65.2	66.9	71.7	69.1	67.7	68.3	79.0	70.4	71.0	68.0	66.6	63.5	67.1	66.1	67.4	72.7	80.1	85.0	69.6
20:30:00	69.3	75.5	75.4	69.8	70.2	79.3	71.4	68.8	60.1	65.3	64.4	57.7	69.3	66.1	67.3	71.7	69.5	67.7	68.7	78.6	71.2	71.9	68.4	66.6	64.0	67.5	66.5	67.8	73.1	80.1	85.0	69.9
20:45:00	70.6	75.4	75.4	69.8	69.3	79.3	72.2	69.6	60.6	66.2	64.8	58.7	70.6	66.6	68.2	71.2	71.7	68.1	68.2	79.0	72.1	72.7	69.3	67.0	63.9	67.9	67.0	68.3	73.9	80.5	85.4	70.4
21:00:00	71.5	76.3	74.9	71.1	68.8	79.3	73.1	70.1	62.5	66.6	66.6	59.6	70.2	67.0	68.2	71.2	71.7	68.5	69.6	78.6	71.6	73.6	69.7	67.5	64.4	67.9	67.4	68.7	74.8	80.9	85.8	70.9
21:15:00	72.4	76.3	74.4	70.6	68.8	79.7	73.5	70.5	62.4	67.1	67.5	60.1	69.7	67.9	69.1	70.8	71.7	69.0	69.1	78.6	72.1	74.4	70.2	67.0	65.3	67.9	68.3	69.2	74.4	80.5	84.6	71.1
21:30:00	72.8	76.7	74.4	71.1	68.4	79.7	74.3	70.9	63.3	67.0	69.2	60.6	70.1	69.2	69.9	71.6	72.1	68.9	69.6	78.6	72.1	74.8	69.8	67.5	65.7	67.9	68.7	69.6	75.6	82.5	85.3	71.5
21:45:00	73.2	76.7	74.4	71.1	68.3	79.7	75.2	71.4	63.8	68.4	70.1	60.5	70.1	70.5	70.8	71.6	72.9	68.9	69.5	78.6	72.5	74.8	69.3	67.9	65.7	67.9	68.7	69.2	76.4	83.3	85.7	71.8
22:00:00	73.6	76.2	74.4	71.1	68.8	79.3	75.2	71.8	65.2	68.4	71.0	60.5	70.5	70.5	71.2	71.7	73.3	68.5	70.4	78.6	72.5	74.8	69.3	67.9	66.2	67.9	68.3	69.2	76.8	83.3	85.7	72.0
22:15:00	74.0	75.4	74.0	70.2	67.8	79.3	75.2	71.8	65.6	68.4	71.0	62.4	70.5	71.3	72.1	71.2	73.7	68.0	71.7	78.5	72.5	75.2	68.9	67.9	66.6	67.8	68.7	68.7	77.2	83.3	85.7	72.1
22:30:00	74.0	74.5	74.4	70.6	67.8	79.7	75.2	73.0	66.5	68.8	71.4	61.9	70.9	71.8	72.1	71.7	74.1	68.0	72.1	78.5	72.4	75.2	68.9	67.9	66.6	67.9	68.7	68.7	77.7	83.7	85.7	72.3
22:45:00	74.0	73.6	74.4	70.2	68.2	79.7	75.2	72.6	67.4	69.7	71.9	61.9	70.9	72.6	72.9	71.2	74.1	68.0	72.5	78.5	72.4	75.2	68.8	67.8	66.6	67.4	68.2	68.7	78.5	84.1	85.7	72.4
23:00:00	74.8	73.6	74.9	70.1	68.7	79.6	74.3	73.0	68.3	70.1	72.3	62.4	71.4	73.4	74.2	71.2	74.6	68.4	72.9	78.5	72.4	75.2	68.8	67.8	66.6	67.4	68.2	68.7	79.3	84.1	85.7	72.6
23:15:00	73.9	73.1	75.3	69.2	68.7	79.6	74.3	74.3	67.9	70.6	72.7	63.3	71.4	73.9	74.6	72.0	75.4	68.4	73.4	78.4	72.4	75.6	69.3	67.8	67.0	67.8	68.2	69.1	79.3	84.1	85.7	72.8
23:30:00	73.9	73.1	75.7	67.4	69.1	79.6	74.3	73.8	68.8	72.2	72.7	64.2	71.3	73.9	75.4	72.0	76.2	68.8	73.8	78.4	72.4	75.1	68.9	68.2	67.9	68.2	68.2	69.1	79.3	84.1	85.7	73.0
23:45:00	73.9	72.6	75.7	67.4	69.5	80.0	75.1	74.2	69.7	72.7	72.7	64.1	71.3	74.8	75.8	72.5	76.6	68.8	73.8	78.4	72.8	75.1	69.3	68.2	68.3	68.3	68.2	69.1	79.3	84.0	85.6	73.2
DAY AV	72.3	74.6	76.2	71.2	71.7	77.4	76.6	73.4	68.9	70.4	68.8	65.7	67.9	70.1	72.1	76.0	74.4	71.6	72.8	78.0	69.9	71.5	67.8	64.0	62.9	63.1	65.0	66.4	67.9	80.1	82.2	71.3

July 2019 House B average RH calculation spreadsheet

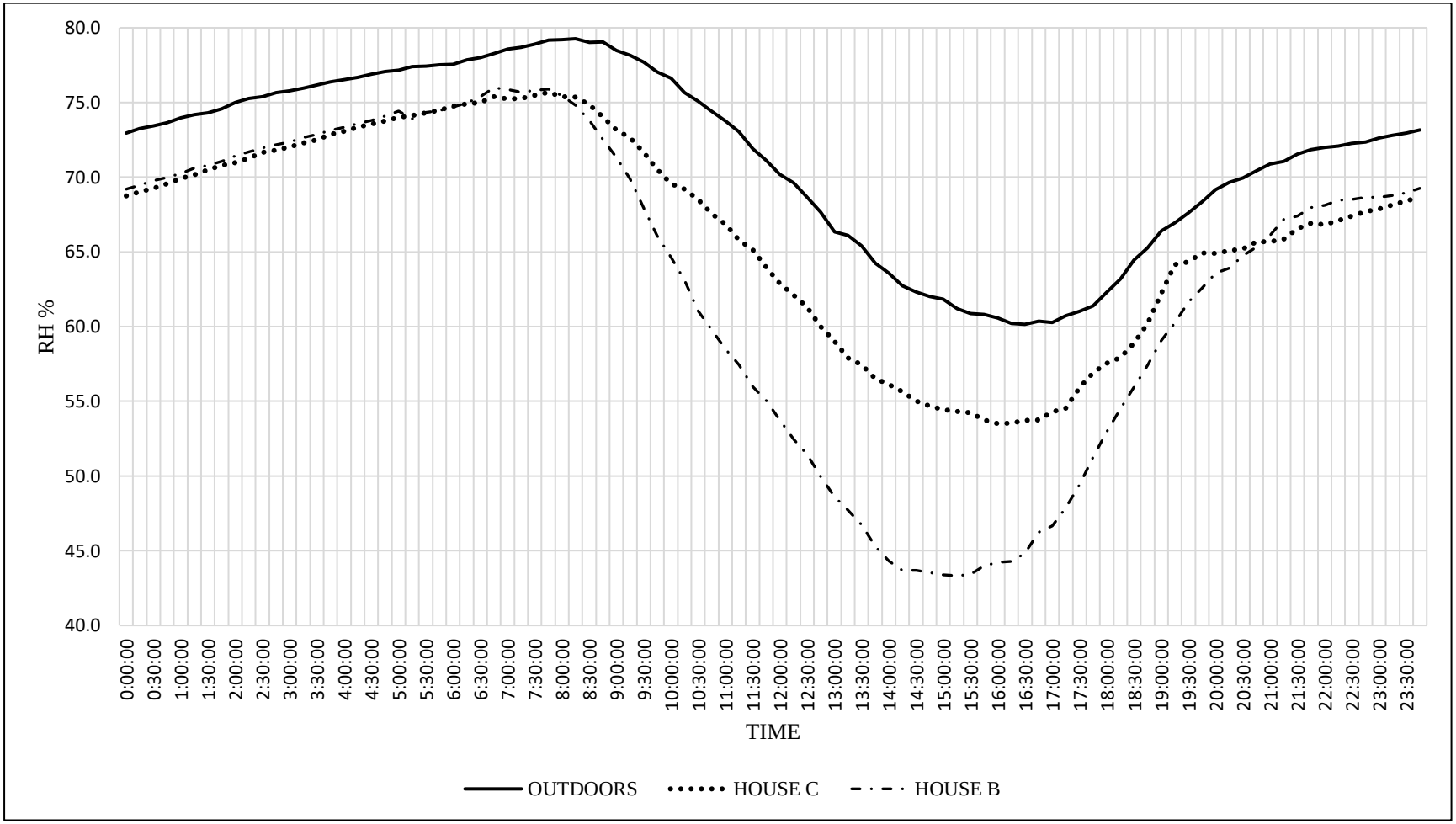
DATA LOG 3: HOUSE B

Time	RELATIVE HUMIDITY																														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	AV
0:00:00	69.7	71.3	72.6	71.6	66.6	67.1	73.7	72.2	68.3	64.3	65.8	67.2	63.2	71.0	66.2	69.1	71.3	70.8	70.5	71.1	75.1	66.6	71.6	66.2	66.9	64.6	66.0	66.8	67.0	72.4	78.2	69.2
0:15:00	69.7	71.7	72.6	71.6	66.6	67.5	74.1	72.5	69.1	64.8	66.2	67.1	63.6	71.3	66.6	69.1	71.2	71.3	70.5	71.0	75.0	67.5	72.1	66.7	67.3	65.5	66.0	67.2	67.4	72.3	78.5	69.5
0:30:00	69.7	72.2	73.0	71.5	66.6	67.9	74.5	72.9	70.0	65.2	66.6	67.5	64.1	71.7	67.0	69.5	71.2	72.1	70.9	71.0	75.4	67.4	72.0	66.7	67.7	65.9	65.9	67.6	67.4	72.7	78.9	69.8
0:45:00	69.7	72.2	73.4	71.0	67.0	67.9	74.9	73.3	70.4	65.7	67.1	67.5	64.0	71.7	67.0	69.5	71.6	72.5	71.3	71.4	75.8	67.9	72.4	66.2	68.5	65.9	65.9	67.6	67.8	73.6	78.9	70.0
1:00:00	70.1	72.2	73.8	71.4	67.4	67.9	74.8	73.6	70.8	66.1	67.0	68.0	64.5	72.1	67.4	69.9	72.1	72.9	72.2	71.3	75.8	68.3	72.8	65.7	68.5	65.8	66.8	68.0	67.8	73.6	79.3	70.3
1:15:00	70.5	72.5	74.2	72.3	67.8	68.3	75.2	74.0	71.7	66.5	67.9	68.4	64.9	72.5	67.9	70.4	72.1	73.3	72.6	71.3	75.8	68.7	72.8	65.7	68.9	66.2	67.2	68.0	67.3	74.0	79.7	70.6
1:30:00	70.5	72.5	74.2	72.7	68.3	69.2	75.6	74.0	71.7	67.4	67.9	68.8	65.3	72.4	67.9	70.8	72.5	73.3	73.0	71.7	75.7	68.6	73.2	65.2	69.3	66.7	67.2	67.9	67.3	74.4	79.7	70.8
1:45:00	71.0	72.9	74.2	73.1	68.7	69.2	76.0	74.8	72.1	67.8	68.3	69.2	65.8	72.4	68.3	70.8	72.9	74.1	73.4	71.7	76.1	69.0	73.2	65.6	69.3	66.6	67.2	68.3	66.8	74.4	79.7	71.1
2:00:00	71.4	73.3	74.6	73.5	69.1	69.6	76.0	75.2	72.6	68.3	68.7	69.7	66.7	72.8	68.7	70.8	73.3	74.5	74.3	72.1	76.1	69.5	73.2	65.6	69.7	67.1	67.2	68.8	67.2	74.3	79.7	71.4
2:15:00	72.2	74.2	75.0	73.9	69.5	70.1	76.0	75.7	72.5	68.3	69.2	70.1	66.7	73.3	69.2	71.2	73.3	74.9	75.6	72.5	76.5	69.4	73.6	65.5	69.7	67.0	66.7	68.8	67.6	74.8	79.7	71.7
2:30:00	73.1	74.2	75.0	74.3	70.4	70.5	76.4	76.1	72.9	68.8	69.6	70.5	67.1	73.3	69.1	71.6	73.7	74.9	75.6	72.5	76.1	69.8	73.5	66.4	69.7	67.5	66.6	68.8	67.6	74.7	80.1	71.9
2:45:00	73.5	74.6	75.0	74.2	70.8	70.9	76.4	76.5	73.3	68.8	70.0	71.0	67.5	73.7	69.6	71.6	74.1	74.9	75.6	72.5	76.0	70.2	73.9	66.8	70.1	67.5	66.6	68.8	67.6	75.1	80.1	72.2
3:00:00	73.5	74.7	75.5	74.2	70.8	70.9	76.8	76.5	73.7	69.2	70.4	71.0	67.9	74.2	69.5	72.0	74.1	75.3	76.0	72.9	76.0	70.2	73.9	67.3	70.1	67.9	67.0	68.8	67.6	75.1	80.1	72.4
3:15:00	74.3	74.6	75.5	74.6	71.6	71.8	77.2	76.5	73.6	69.2	70.8	71.4	68.4	74.2	70.0	72.5	74.5	75.3	76.5	73.3	76.4	70.6	73.8	67.2	71.0	67.9	67.0	69.2	68.0	75.1	80.1	72.6
3:30:00	74.8	75.0	75.9	74.6	72.0	72.2	77.6	76.8	74.0	70.0	71.3	71.8	68.9	74.2	70.4	72.9	74.5	75.8	76.5	73.3	76.3	70.6	73.8	67.3	71.0	67.9	67.0	69.1	68.0	75.1	80.5	72.9
3:45:00	75.2	75.4	75.9	74.9	72.5	72.6	77.6	77.3	74.0	70.5	71.3	71.8	68.9	74.6	70.8	73.3	74.5	75.8	76.9	73.7	76.7	71.0	73.8	67.2	71.4	68.3	67.0	69.5	68.4	75.5	80.5	73.1
4:00:00	75.6	75.8	76.3	74.9	72.9	72.6	78.4	77.7	74.4	70.5	71.7	71.8	69.3	74.6	71.3	73.3	75.0	75.7	76.9	73.7	76.3	71.5	74.2	67.7	71.4	68.3	67.4	69.9	68.4	75.9	80.5	73.4
4:15:00	75.6	75.8	76.7	75.2	73.3	73.0	78.4	78.2	74.8	70.9	72.1	72.6	69.4	74.6	71.3	74.1	75.0	75.7	76.9	74.1	76.7	71.5	74.2	67.6	71.9	68.3	67.4	70.3	68.8	75.9	80.5	73.6
4:30:00	76.0	76.7	76.7	75.2	73.3	73.0	78.8	78.2	74.7	71.3	72.1	72.6	69.4	75.1	71.7	74.1	75.4	76.1	77.3	74.1	76.7	71.9	74.7	68.1	71.8	68.3	67.8	70.3	69.2	75.9	80.8	73.8
4:45:00	76.5	76.7	76.7	76.1	73.7	73.4	78.8	78.6	75.1	71.3	72.6	73.0	69.8	75.1	72.1	74.5	75.8	76.5	77.3	74.1	77.1	72.8	74.7	68.5	71.8	68.8	67.8	70.3	69.7	76.3	81.7	74.1
5:00:00	76.3	76.4	78.6	76.7	74.8	73.8	79.2	78.4	75.3	72.4	72.6	74.0	70.2	75.0	73.2	73.9	76.8	77.6	77.3	74.5	77.1	73.0	74.7	68.5	71.8	68.8	68.2	70.7	69.7	76.9	80.6	74.4
5:15:00	75.3	75.5	76.1	75.4	73.8	74.2	79.6	76.8	74.4	72.0	73.0	73.1	70.6	75.5	71.8	73.8	75.1	76.2	77.3	74.5	77.5	71.7	74.6	68.5	71.7	68.8	68.2	70.7	69.6	75.2	80.6	73.9
5:30:00	76.2	76.3	76.5	76.2	74.7	74.7	79.1	78.0	75.2	71.9	73.0	73.6	70.6	75.5	72.7	74.6	76.3	76.6	77.7	74.5	77.5	72.1	75.0	68.9	71.7	69.2	68.6	71.1	70.0	76.0	80.5	74.3
5:45:00	76.5	76.6	76.4	76.1	74.1	75.1	79.5	77.5	75.6	71.4	73.0	73.5	70.7	75.9	73.0	75.0	76.7	76.5	78.1	74.9	77.5	72.4	75.0	69.3	72.1	69.2	68.6	71.5	70.0	75.9	80.9	74.5
6:00:00	76.9	76.5	76.8	76.5	74.9	75.1	79.9	77.9	76.0	71.3	73.4	73.5	71.1	75.9	73.4	75.0	77.1	77.3	78.1	74.9	77.5	72.8	74.9	69.7	72.1	69.2	69.0	71.1	70.4	76.3	80.9	74.7
6:15:00	77.7	76.9	76.7	76.5	75.3	75.1	80.0	78.3	76.4	71.7	73.4	73.9	71.1	75.9	73.8	75.4	77.5	77.8	78.6	74.9	77.9	73.2	75.8	70.1	72.1	69.6	69.0	71.9	70.4	76.3	80.8	75.0
6:30:00	78.5	77.4	77.1	76.9	75.7	75.1	80.2	79.1	76.9	72.2	73.8	74.3	71.6	76.3	74.2	75.4	77.9	79.0	78.6	75.3	77.4	73.7	75.4	72.4	73.0	70.0	69.4	71.9	70.8	76.7	81.2	75.4
6:45:00	78.6	79.9	79.6	77.8	78.7	75.5	79.4	78.7	77.3	72.2	73.8	74.3	71.6	77.6	74.2	75.8	78.2	78.7	79.8	75.7	77.8	75.5	77.3	72.1	74.0	70.6	69.4	72.4	71.2	76.6	81.2	76.0
7:00:00	79.1	80.0	79.3	76.7	78.0	75.5	78.6	79.6	77.3	72.1	74.3	74.7	72.0	76.9	74.6	75.7	78.2	77.8	81.2	75.7	77.8	75.1	75.6	70.7	72.3	70.7	69.8	72.5	71.6	77.0	81.2	75.9
7:15:00	77.8	79.3	78.4	76.6	77.2	75.5	77.7	79.2	77.3	72.5	74.3	75.1	72.0	76.6	74.6	75.7	78.2	78.1	79.2	75.7	78.3	74.2	75.2	71.1	73.1	69.7	70.3	72.9	71.7	77.5	81.6	75.7
7:30:00	77.4	78.8	78.3	77.0	76.7	75.9	79.5	78.7	77.3	72.6	74.7	75.2	72.4	76.8	74.6	76.2	78.6	78.1	78.5	75.7	78.7	74.1	75.1	71.5	73.6	70.1	70.3	72.5	72.1	77.5	81.6	75.8
7:45:00	77.0	79.2	78.8	76.7	76.8	75.5	79.5	79.2	77.8	72.2	74.4	75.2	72.5	76.5	74.6	76.6	78.7	78.1	78.1	76.1	79.8	74.1	75.6	71.6	73.2	70.6	70.8	71.9	72.7	77.5	82.0	75.9
8:00:00	76.3	79.4	78.4	74.9	76.4	75.6	80.0	78.9	77.8	71.8	74.9	74.4	71.0	74.8	74.6	76.6	78.7	78.1	78.9	76.1	78.7	74.2	74.5	70.9	70.8	69.4	68.8	72.4	71.9	77.5	82.0	75.4
8:15:00	76.2	77.8	77.7	72.4	76.4	75.6	78.8	78.5	77.5	72.4	73.8	73.7	68.1	73.0	75.5	77.0	78.7	78.1	79.0	76.6	74.3	74.2	74.2	67.6	69.6	69.0	68.8	72.9	72.0	78.3	82.0	74.8
8:30:00	76.2	75.9	76.9	70.4	75.2	75.6	78.8	77.8	77.1	70.8	72.7	72.8	65.5	73.4	75.1	77.0	78.7	78.1	77.5	76.6	70.6	73.8	70.7	64.1	66.8	68.2	68.4	71.7	71.3	77.9	82.0	73.8
8:45:00	75.9	74.7	76.2	67.0	74.0	75.6	79.7	77.0	76.4	69.6	71.9	71.7	62.8	74.3	74.6	77.1	78.3	77.4	75.3	77.0	68.1	73.5	65.9	61.4	62.4	67.3	63.3	71.2	69.2	77.9	82.0	72.5
9:00:00	70.3	73.5	74.6	64.4	72.9	74.9	78.5	76.3	75.2	68.8	72.0	67.8	63.2	73.1	75.0	77.1	78.0	77.1	74.8	77.1	68.3	72.6	61.9	58.2	58.3	67.0	63.8	71.7	64.1	78.0	82.5	71.3
9:15:00	66.8	71.4	73.4	62.2	70.9	74.1	76.9	75.5	73.7	67.0	69.9	66.1	61.0	70.2	74.2	76.3	78.9	74.8	74.3	77.5	63.3	73.5	60.1	57.3	54.5	66.1	63.8	71.3	60.1	78.0	82.2	69.8
9:30:00	65.8	69.3	70.9	59.0	68.8	72.9	75.5	74.3	70.5	69.0	67.7	60.3	59.1	66.9	73.4	74.9	76.1	72.1	74.3	77.6	61.0	73.1	57.9	53.5	51.6	65.7	59.0	71.0	56.4	77.7	81.0	67.9
9:45:00	64.1	65.9	69.7	57.5	65.4	72.1	74.6	69.8	66.7	66.2	65.3	55.6	58.3	67.4	72.7	72.7	74.2	66.5	75.6	77.2	57.3	72.2	55.6	51.5	50.1	65.7	57.1	69.7	53.1	77.3	81.1	66.1
10:00:00	63.1	65.8	68.8	57.0	63.1	71.7	74.6	67.2	60.9	64.0	64.4	52.7	55.0	66.5	71.9	72.2	72.0	66.0	74.8	77.3	54.9	72.2	54.5	49.1	49.6	62.4	55.3	68.4	50.7	76.5	80.7	64.6
10:15:00	63.1	64.2	67.9	57.0	63.9	70.9	74.6	64.9	56.3	60.8	59.4	49.3	51.7	65.2	70.3	73.4	71.6	63.4	72.9	77.0	50.9	72.6	53.0	47.1	48.1	57.8	55.8	68.3	47.8	75.7	81.1	63.1
10:30:00	63.0	59.7	67.0	57.5	63.0	68.4	73.0	61.4	52.5	58.5	52.4	47.9	49.6	63.0	67.8	74.3	70.3	59.8	71.3	76.1	47.9	72.8	49.7	45.1	45.6	52.6	53.4	67.9	45.2	75.4	80.7	61.1
10:45:00	63.5	55.9	65.8	57.1	63.0	67.5	71.8	60.0	49.5	58.4	51.8	46.4	50.5	62.0	66.1	74.3	69.1	57.9	68.3	75.7	45.4	71.6	46.7	45.7	43.5	49.3	51.6	67.1	43.2	74.2	80.0	59.8
11:00:00	62.7	54.5	65.7	55.6	61.1	66.3	70.1	58.2	47.0	58.4	53.2	43.9	51.6	62.4	63.6	73.9	66.5	57.4	66.6	76.1	43.9	70.2	44.7	45.7	42.5	46.8	47.6	62.4	42.6	73.8	78.9	58.5
11:15:00	63.1	51.9	67.0	55.6	59.0	62.6	69.2	54.9	46.0	56.6	50.4	42.3	51.7	62.8	62.3	72.7	65.2	57.7	64.8	75.9	41.8	70.7	43.2	44.1	41.5	44.7	47.7	59.2	43.5	74.4	78.2	57.4
11:30:00	61.2	51.9	67.8	54.6	54.9	61.2	68.0	51.5	44.9	55.5	46.9	41.2	49.2	62.4	60.0	71.0	64.7	59.6	63.4	76.5	42.2	72.1	40.5	39.5	40.6	42.5	44.5	57.7	40.5	71.5	77.4	56.0
11:45:00	61.4	53.9	68.3	54.2	52.0	58.4	65.8	49.0	43.9	56.0	43.7	39.6	50.6	61.1	58.4	71.1	63.7	60.2	60.8	74.4	43.7	74.8	38.3	36.1	40.6	40.4	42.5	57.3	39.9	68.9	77.2	55.0
12:00:00	61.0	53.9	67.9	53.2	49.9	58.4	64.5	47.1	42.8	55.5	43.1	38.8	50.8	58.8	57.4	72.8	63.7	59.3	58.0	73.5	44.1	72.3	37.2	32.7	38.4	39.3	40.4	54.5	38.7	66.7	72.1	53.8
12:15:00	56.3	55.3	67.4	50.2	47.9	59.8	63.1	46.5	42.8	55.1	42.0	40.0	45.2	57.4	58.3	68.9	63.3	58.4	58.4	72.2	41.6	68.9	36.1	31.5	37.3	38.2	40.3	51.2	38.3	65.0	69.6	52.5
12:30:00	53.8	52.0	66.6	51.7	45.9	59.8	61.4	47.4	40.2	52.3	42.5	37.3	43.6	57.0	58.1	68.4	63.8	58.8	57.5	71.4	40.0	64.5	36.7	33.2	35.6	37.2	40.3	49.7	39.4	61.8	66.4	51.4
12:45:00	51.4	51.4	64.9	49.8	44.4	58.3	59.5	47.9	40.7	49.9	40.5	35.1	42.6	55.6	56.7	67.8	62.5	57.4	55.6	67.1	38.4	62.2	35.0	32.6	34.0	36.1	38.2	47.7	40.5	60.9	64.6	50.0
13:00:00	51.9	52.4	63.1	45.7	44.3	56.4	55.8	47.4	39.6	49.3	39.4	33.9	41.5	52.2	56.7	68.2	60.6	54.5	55.7	63.1	38.4	59.5	33.9	30.4	30.5	33.9	37.6	45.7	40.4	61.3	63.7	48.6
13:15:00	51.4	54.4	60.9	43.6	43.2	56.4	51.9	47.4	36.2	49.7	39.9	32.8	44.5	51.7	53.5	67.8	60.7	51.4	53.1	63.1	36.8	56.6	32.9	30.5	28.8	32.8	38.1	44.7	41.3	58.7	64.6	47.7
13:30:00	47.9	54.3	59.1	44.6	40.6	55.4	51.8	46.7	35.6	48.8	40.4	32.8	47.2	51.2	49.2	66.1	59.9	47.5	51.1	59.5	35.2	54.7	32.8	30.4	28.2	31.6	38.1	43.1	43.5	58.1	64.3	46.8
13:45:00	46.3	51.0	56.3	42.7	42.5	53.1	52.7	47.8	35.0	48.3	37.1	32.8	41.4	50.7	45.1	63.4	60.3	44.5	49.6	58.1	34.0	51.8	30.6	30.3	27.0	31.1	37.6	41.5	40.3	57.7	63.4	45.3
14:00:00	44.8	49.9	54.3	41.7	42.5	52.1	52.7	47.8	35.0	46.2	37.2	34.5	41.4	46.8	43.5	59.3	57.8	44.0	48.7	54.8	34.1	49.9	30.5	30.3	27.0	30.5	35.9	41.5	39.7	56.3	63.4	44.3
14:15:00	43.3	50.8	55.8	42.8	41.5	50.6	53.7	47.8	36.0	43.7	37.1	32.8	40.4	46.7	43.4	55.1	55.8	42.5	47.7	52.8	31.7	46.9	32.6	32.6	26.5	30.5	35.9	38.2	40.7	56.2	62.1	43.7
14:30:00	42.7	48.9	58.2	44.8	43.6	50.1	56.2	47.8	34.4	41.4	37.1	32.8	40.2	44.7	43.5	52.6	56.9	43.6	46.1	51.8	31.6	44.8	33.7	32.6	25.9	30.5	37.0	39.2	43.2	57.2	61.6	43.7
14:45:00	42.7	45.9	58.6	43.2	44.6	51.1	55.8	46.8	32.7	40.4	37.1	32.3	39.1	45.6	45.0	52.6	53.1	45.8	46.1	51.8	33.8	43.8	34.8	32.5	26.5	28.2	37.1	38.1	44.3	58.8	61.5	43.5
15:00:00	42.7	46.8	57.0	43.2	43.1	51.6	55.2	45.8	32.8	40.2	38.1	30.5	39.2	43.5	45.5	53.0	49.7	44.6	48.0	53.3	33.8	42.7	33.8	33.6	27.0	29.4	36.5	38.0	44.3	57.7	64.0	43.4
15:15:00	42.7	47.8	57.4	43.7	42.5	50.5	54.1	44.7	31.6	43.4	39.2	32.2	38.6	43.5	42.4	52.5	51.7	44.1	48.0	52.8	33.7	41.6	32.7	35.8	29.2	28.2	34.9	38.5	45.4	57.2	62.6	43.3
15:30:00	42.7	48.3	57.0	46.7	43.5	52.0	51.6	45.2	31.0	40.3	39.2	32.8	40.3	41.3	43.4	50.6	52.8	43.0	48.5	51.9	36.9	41.6	32.7	37.4	30.3	28.2	34.9	40.8	45.3	56.3	59.7	43.4
15:45:00	42.6	47.8	56.5	47.7	43.0	53.4	50.7	46.8	31.6	39.8	39.8	36.1	39.7	43.3	44.4	49.7	51.7	42.5	46.6	51.8	40.2	41.6	33.9	41.2	32.5	28.1	36.0	41.2	46.3	57.6	59.1	44.0
16:00:00	45.4	49.7	56.5	44.7	42.5	53.9	49.2	46.2	31.5	39.2	39.2	36.0	41.3	41.2	44.5	51.3	49.6	43.5	44.4	53.8	41.3	42.6	32.7	42.3	32.5	29.3	36.5	45.9	46.8	58.0	59.6	44.2
16:15:00	42.6	48.8	53.7	44.7	44.5	54.5	48.6	45.8	32.6	38.7	38.2	34.8	42.3	46.0	47.0	49.2	47.6	42.9	43.4	53.8	41.3	42.6	34.2	42.3	30.3	29.2	35.3	48.4	49.9	59.8	60.0	44.3
16:30:00	41.6	47.8	51.7	47.7	46.6	54.4	49.7	48.4	36.0	38.7	40.9	35.9	41.3	44.9	48.5	50.1	48.0	42.4	43.4	52.2	39.1	40.4	36.9	44.4	31.3	29.2	35.9	49.4	51.4	59.8	61.4	44.8
16:45:00	42.1	51.3	53.1	49.1	47.6	55.4	51.2	48.8	40.3	42.8	42.5	35.9	41.7	47.6	46.5	49.6	52.0	43.4	46.9	51.6	39.6	41.4	42.3	45.5	33.5	30.3	36.9	49.9	52.4	60.2	62.3	46.2
17:00:00	41.5	52.3	54.1	49.9	48.6	55.9	51.6	49.3	41.4	44.9	42.4	35.8	43.8	45.6	47.0	50.5	50.5	43.4	49.4	52.6	38.0	41.9	42.8	46.5	32.4	30.2	38.5	51.4	50.8	60.6	63.2	46.7
17:15:00	44.1	54.2	55.9	52.4	51.7	57.4	51.5	50.3	41.3	43.4	41.2	37.9	44.3	46.4	46.4	51.9	51.9	44.3	49.9	52.6	41.3	42.3	46.5	47.9	32.4	31.9	39.0	52.3	53.8	62.5	64.5	47.9
17:30:00	46.1	55.7	56.8	54.4	53.1	58.3	54.0	52.7	44.4	44.3	41.7	38.9	47.9	49.4	48.4	53.3	53.3	45.3	51.5	54.5	42.3	42.8	48.5	49.4	35.7	33.5	39.5	51.8	55.3	63.4	65.8	49.4
17:45:00	49.6	56.1	58.7	55.3	54.1	59.7	56.4	55.7	46.4	44.2	44.2	41.0	50.9	49.4	51.4	54.7	54.2	47.7	52.4	56.3	46.5	43.2	50.5	50.4	37.9	39.1	41.0	53.3	57.3	65.2	66.6	51.3
18:00:00	51.6	57.0	60.0	55.8	55.5	61.6	58.3	57.1	49.0	49.5	46.2	42.1	52.4	48.8	53.3	56.5	55.1	50.7	54.3	59.7	46.5	47.4	49.4	50.8	40.5	42.8	43.6	54.2	57.2	66.0	68.4	52.9
18:15:00	51.4	59.4	62.4	56.8	55.4	62.9	60.7	58.5	48.4	51.5	46.2	45.2	52.4	52.0	54.7	58.4	57.0	53.6	56.2	61.1	44.3	49.9	52.9	51.2	43.2	46.4	47.8	54.2	58.1	67.8	69.7	54.5
18:30:00	54.4	61.7	63.7	57.7	55.8	63.7	61.1	59.4	50.9	53.4	49.7	45.7	53.2	48.3	56.6	59.2	57.9	55.5	58.1	61.5	49.0	51.4	54.4	52.2	46.3	49.4	50.3	55.6	59.1	68.6	70.5	55.9
18:45:00	57.3	61.6	65.5	60.1	58.2	65.0	62.4	60.8	52.4	54.9	51.2	47.2	54.7	44.8	57.9	62.1	57.8	56.9	58.5	63.3	51.0	53.2	55.8	54.7	49.4	50.4	53.3	57.1	60.5	69.5	71.8	57.4
19:00:00	59.2	63.0	67.4	61.1	60.6	66.3	63.3	62.1	53.9	56.3	53.2	50.2	57.2	45.8	60.3	63.4	60.3	58.8	62.4	64.2	53.0	54.7	56.7	56.1	51.9	52.9	53.2	59.9	60.9	69.9	73.2	59.1
19:15:00	60.1	64.3	67.8	63.5	61.5	68.6	63.8	61.5	54.4	56.8	54.7	51.7	59.1	44.3	62.2	64.8	62.2	60.7	63.2	65.5	56.5	56.1	58.2	58.1	52.4	54.3	55.2	61.9	61.3	70.8	72.3	60.3
19:30:00	62.2	66.1	67.8	63.5	62.0	69.5	65.6	62.4	55.3	57.3	54.7	55.2	60.0	47.6	63.0	67.1	62.3	62.5	62.8	67.3	57.5	58.1	60.1	60.5	57.4	55.2	56.6	61.9	63.3	71.2	74.0	61.6
19:45:00	63.2	67.1	69.2	63.5	62.4	70.4	65.7	66.3	56.3	57.3	55.6	57.2	61.9	52.0	63.1	66.7	62.8	63.4	63.7	69.1	58.4	58.1	59.6	62.9	57.8	56.2	57.5	62.4	63.3	72.1	75.2	62.6
20:00:00	64.1	67.9	67.9	66.4	63.0	70.8	64.7	63.0	57.3	57.8	56.6	56.1	63.3	54.5	66.9	66.7	66.6	65.7	64.1	70.1	59.3	60.0	61.0	64.3	58.3	58.5	58.4	66.2	63.3	72.1	76.1	63.6
20:15:00	63.1	68.8	67.9	65.9	63.0	71.6	65.2	54.3	61.3	59.2	57.0	55.6	63.7	56.9	66.0	66.7	67.0	65.3	64.5	71.4	60.7	61.4	63.5	62.4	58.2	59.1	59.4	66.2	64.7	73.0	78.2	63.9
20:30:00	64.4	70.3	69.3	65.8	63.9	71.6	65.1	53.4	60.3	60.1	58.5	59.1	64.2	58.9	65.5	67.6	65.6	64.9	65.4	71.9	61.2	66.6	66.0	61.9	60.1	59.1	59.8	66.2	66.6	73.4	80.1	64.7
20:45:00	65.3	72.2	72.1	65.8	64.4	71.6	64.6	53.1	59.2	61.0	59.4	60.5	65.2	59.8	65.4	68.2	65.5	65.9	66.4	73.4	62.1	66.6	66.8	63.9	60.0	59.6	60.7	66.6	67.5	73.4	78.5	65.3
21:00:00	65.7	70.8	70.3	66.2	63.5	73.0	68.2	58.3	59.6	61.4	61.8	60.0	69.8	59.2	64.6	71.4	65.9	64.9	66.8	74.7	62.1	67.0	66.3	66.7	60.4	61.0	60.7	65.6	68.5	75.7	79.3	66.1
21:15:00	66.6	70.3	69.8	66.7	66.8	76.6	69.5	62.2	60.0	65.2	63.2	60.5	69.8	59.1	65.0	72.3	66.3	71.7	67.3	74.6	62.0	67.8	66.2	66.1	60.8	60.5	62.7	66.5	70.8	77.1	78.8	67.2
21:30:00	67.4	70.7	69.7	67.1	65.9	75.9	69.5	63.0	60.9	65.7	64.1	60.4	68.8	60.5	65.4	70.9	67.2	72.6	67.8	74.1	62.8	67.8	65.7	66.1	61.3	61.0	63.7	66.9	70.7	76.6	78.7	67.4
21:45:00	68.2	71.6	69.7	67.1	65.8	74.2	70.8	63.9	61.8	65.6	65.4	60.9	69.2	61.4	66.7	70.9	68.1	71.7	68.2	74.5	63.2	69.6	66.2	66.0	61.7	65.7	67.5	66.5	69.3	76.6	78.7	68.0
22:00:00	68.6	72.0	69.3	67.5	65.2	73.3	71.3	64.2	61.8	65.2	66.9	61.3	69.6	62.8	66.6	70.9	69.0	70.7	67.8	74.9	64.1	69.0	66.1	65.9	62.1	65.2	67.4	66.8	70.1	76.5	79.1	68.1
22:15:00	69.0	72.4	68.8	67.0	65.1	72.7	70.9	65.6	61.7	65.6	68.9	61.3	70.0	63.2	67.1	70.9	69.8	70.2	70.1	74.4	64.6	69.9	66.6	66.3	62.6	65.6	66.9	67.3	70.5	77.4	79.5	68.4
22:30:00	69.4	71.4	69.6	67.9	66.0	73.1	71.7	65.5	62.1	66.0	68.4	60.7	70.4	63.7	67.0	71.3	69.8	69.2	69.2	73.8	64.6	70.2	66.1	66.8	62.6	65.1	67.3	67.7	70.5	76.9	79.4	68.5
22:45:00	69.8	70.8	70.5	67.4	66.1	73.1	73.1	66.3	63.0	65.6	67.4	60.6	70.4	64.1	67.8	71.2	70.7	70.0	68.2	73.3	64.5	70.2	66.0	67.2	62.5	65.0	67.7	67.2	71.3	77.3	79.8	68.6
23:00:00	69.8	71.2	71.4	66.8	66.0	72.7	72.7	66.7	63.4	65.5	67.3	61.5	71.2	64.0	68.2	70.1	69.3	69.0	68.2	73.6	65.0	70.1	65.5	67.6	63.4	64.9	67.6	67.1	71.3	76.4	80.6	68.6
23:15:00	70.1	71.5	71.4	67.2	66.0	71.8	71.8	67.2	63.4	65.5	67.7	61.9	71.6	64.4	68.2	70.5	69.6	69.4	68.6	74.4	65.4	70.4	65.9	68.0	63.8	65.3	66.1	66.6	70.8	77.1	80.6	68.8
23:30:00	70.5	71.9	71.8	67.2	66.3	72.1	71.6	67.5	63.8	65.5	67.7	62.3	70.7	64.8	68.2	70.4	69.6	69.7	68.9	74.3	65.8	70.8	65.9	68.4	64.2	65.3	66.1	66.6	71.1	77.0	81.5	69.0
23:45:00	70.9	72.3	72.2	66.7	67.2	72.8	71.9	67.5	64.3	65.4	67.7	62.3	70.6	65.7	68.7	70.8	70.0	70.1	70.2	74.7	66.2	71.2	66.3	67.5	64.6	65.2	66.4	66.5	71.9	77.8	81.1	69.2
DAY AV	63.7	65.8	68.9	63.0	62.3	67.1	68.6	64.2	58.9	60.3	59.0	56.3	59.3	62.3	63.4	68.0	67.3	64.6	66.1	69.2	59.5	63.9	58.7	56.4	54.6	55.1	56.5	61.9	60.0	71.2	75.3	62.9

July 2019 House C average RH calculation spreadsheet

DATA LOG 2: HOUSE C																																
Time	**RELATIVE HUMIDITY**																															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	AV
0:00:00	71.8	70.7	70.0	74.0	68.2	66.8	74.7	73.0	69.4	62.8	66.9	67.3	62.5	68.1	66.8	70.3	71.9	72.9	70.4	69.9	76.7	67.8	70.6	64.2	66.2	61.2	63.4	64.1	64.9	67.7	75.9	68.7
0:15:00	72.2	71.1	70.8	74.0	68.7	67.2	74.7	73.4	69.8	63.3	67.3	67.3	63.0	68.1	66.8	70.7	72.3	72.8	70.8	69.9	76.7	68.2	69.4	64.1	67.1	62.1	63.8	64.6	65.7	67.2	76.2	69.0
0:30:00	72.2	71.1	70.8	74.0	68.6	67.6	75.1	73.3	68.7	63.4	67.8	67.7	63.4	68.5	67.3	70.2	72.3	73.3	70.7	70.3	77.1	68.6	70.1	64.6	67.5	62.1	64.7	65.0	66.2	68.6	76.6	69.3
0:45:00	72.2	71.5	71.2	73.9	69.0	68.5	75.5	73.7	69.1	63.8	67.8	67.7	63.8	68.9	67.2	70.6	72.7	73.3	71.2	70.7	77.4	69.0	71.0	64.6	67.9	62.5	64.7	65.4	66.6	68.1	76.6	69.6
1:00:00	72.1	71.9	71.1	74.4	69.0	69.4	75.4	74.1	69.9	64.7	68.2	68.2	64.3	70.7	67.7	70.6	73.2	73.7	71.6	70.7	77.8	69.4	71.8	64.6	67.6	62.9	65.1	65.4	67.0	68.5	76.3	69.9
1:15:00	73.8	71.9	71.5	74.8	69.4	69.8	75.8	74.5	70.3	64.7	69.0	68.2	64.7	68.9	67.7	70.6	73.5	74.5	71.6	71.1	78.2	69.8	72.2	64.5	67.5	62.9	65.6	65.4	67.0	68.9	76.3	70.1
1:30:00	74.3	71.5	72.0	74.7	69.4	71.1	75.8	74.4	70.7	65.2	69.5	68.6	64.7	69.3	68.1	71.5	74.0	74.4	72.2	72.0	78.5	70.2	72.6	64.5	67.9	63.3	65.5	65.8	67.7	69.4	76.7	70.5
1:45:00	74.7	71.8	71.9	75.2	71.4	69.9	76.3	74.9	71.1	65.6	69.9	68.2	65.1	69.7	68.5	71.5	74.3	75.3	71.7	72.4	78.9	70.6	73.0	64.9	68.7	63.8	66.0	65.8	66.6	69.8	76.7	70.8
2:00:00	75.1	73.1	71.9	74.7	69.1	70.7	76.2	75.3	71.5	66.0	70.1	68.2	65.6	69.2	69.4	71.4	74.8	75.6	72.1	72.8	78.9	71.0	73.4	64.9	69.1	64.2	65.9	66.2	67.0	69.8	76.7	71.0
2:15:00	75.5	73.9	72.4	75.1	69.4	71.1	76.2	75.7	72.0	66.4	70.0	69.0	66.0	69.7	68.9	72.3	73.7	76.0	72.5	73.2	79.2	71.4	73.8	64.9	69.5	64.2	65.9	66.6	67.9	70.1	76.7	71.3
2:30:00	75.9	74.4	72.4	75.1	70.3	71.5	76.6	75.7	71.9	66.9	70.3	69.5	66.5	70.1	70.9	72.7	74.4	76.2	73.0	73.2	79.2	71.4	73.8	65.9	69.9	64.2	66.3	67.1	68.3	71.0	77.1	71.7
2:45:00	75.8	74.8	72.0	75.0	70.7	71.9	76.2	76.1	72.3	67.3	70.7	69.9	66.4	70.1	69.9	73.1	75.2	76.1	73.3	73.6	79.2	71.8	74.2	65.8	70.3	64.6	66.3	66.7	68.3	71.4	77.1	71.8
3:00:00	76.6	75.2	72.0	75.4	71.1	72.4	76.6	76.1	72.3	67.3	71.1	70.3	66.9	70.1	70.2	73.5	75.1	76.5	73.7	73.6	78.5	72.2	74.1	66.2	70.3	65.0	66.3	66.7	68.7	71.8	77.1	72.0
3:15:00	77.1	75.2	72.0	76.2	71.5	72.8	76.6	76.5	73.1	67.7	71.5	70.3	66.8	70.1	70.6	73.5	75.6	76.9	74.2	74.0	78.8	71.8	74.5	66.2	70.8	65.9	66.7	66.2	68.7	71.8	77.5	72.3
3:30:00	77.1	75.2	71.9	76.6	71.9	73.2	77.0	76.1	73.1	68.2	72.0	70.3	67.3	70.9	71.0	73.9	76.0	76.9	74.6	74.0	79.1	72.2	74.5	66.6	70.8	65.9	66.7	66.6	68.6	72.2	77.5	72.5
3:45:00	77.5	75.6	72.7	76.9	72.3	73.2	77.8	76.5	73.5	69.7	72.4	70.7	67.7	71.3	71.5	74.3	76.0	77.3	75.0	74.4	79.5	72.6	74.4	66.6	70.4	66.3	67.2	67.0	69.0	72.3	77.5	72.9
4:00:00	77.9	76.0	73.6	77.7	72.7	73.6	78.2	76.9	73.9	68.3	72.4	70.7	68.2	71.8	71.4	74.3	76.4	77.2	75.0	74.4	79.9	73.0	75.3	67.0	70.8	66.3	67.1	67.4	69.0	71.8	77.4	73.1
4:15:00	77.9	76.0	73.5	77.3	72.7	74.0	78.6	77.3	73.9	68.7	72.8	71.2	68.6	71.8	71.9	74.7	76.8	77.7	75.4	74.4	79.9	73.4	75.7	67.0	71.2	66.7	67.5	67.9	69.4	72.2	77.4	73.3
4:30:00	78.3	76.8	74.4	77.6	73.1	74.0	78.6	77.3	74.3	69.1	72.8	71.2	68.6	72.2	72.3	75.1	76.8	77.6	75.4	74.4	79.9	73.4	75.7	67.5	71.6	66.7	67.5	67.8	69.8	72.6	77.4	73.5
4:45:00	78.3	76.8	74.8	77.6	73.1	74.5	79.0	77.3	74.2	69.9	73.2	71.1	69.0	72.6	72.3	75.1	76.8	77.6	75.8	74.8	79.9	73.8	75.7	67.9	71.6	67.2	67.9	68.2	69.8	73.0	77.8	73.8
5:00:00	78.7	76.8	74.8	78.0	73.1	74.5	79.0	77.7	74.6	70.4	73.2	71.6	69.4	72.6	72.7	75.1	77.2	78.0	75.8	75.2	80.3	74.3	75.7	67.9	72.0	67.2	68.4	68.7	69.8	73.4	78.2	74.0
5:15:00	78.7	76.7	75.2	78.4	73.5	74.4	79.4	77.7	74.6	70.3	73.2	71.5	69.9	72.6	72.7	75.6	77.2	78.0	75.8	75.2	80.2	74.3	75.7	67.8	72.4	67.6	68.3	68.6	70.2	73.6	78.6	74.1
5:30:00	78.7	77.1	75.2	78.8	73.9	74.8	79.4	77.7	75.0	70.3	73.6	72.0	69.9	73.0	73.1	75.2	77.6	78.0	76.2	75.1	80.2	74.2	76.1	68.3	72.4	67.6	68.8	69.1	70.2	73.5	78.6	74.3
5:45:00	78.6	77.1	75.6	78.8	73.9	75.2	79.3	78.5	75.4	70.3	73.6	71.9	70.3	73.0	73.1	75.6	77.6	78.4	76.7	75.6	80.2	74.7	76.0	68.2	72.3	67.6	68.7	69.5	70.6	73.9	79.0	74.5
6:00:00	79.0	77.1	76.0	78.8	74.2	75.2	80.1	78.5	75.9	70.7	73.6	72.8	70.8	73.0	73.5	76.0	78.0	78.4	76.7	76.0	80.6	74.6	76.0	68.7	72.7	68.0	69.2	69.5	70.6	74.3	79.0	74.8
6:15:00	78.6	77.5	76.0	78.4	74.6	75.2	80.1	78.5	76.3	71.2	74.0	72.8	70.8	73.5	73.5	75.9	78.0	78.3	76.7	76.0	80.6	75.1	76.4	69.1	73.2	68.0	69.1	69.9	71.0	74.7	79.4	74.9
6:30:00	78.2	77.5	75.6	78.8	74.2	75.2	80.1	78.5	76.8	71.6	74.1	73.6	70.8	73.4	73.5	76.0	78.0	78.7	76.7	76.0	80.6	75.5	76.0	69.1	72.7	68.5	69.6	69.9	71.0	75.2	79.4	75.0
6:45:00	78.2	78.4	76.4	78.5	75.1	75.6	80.1	79.4	77.2	72.1	73.3	73.6	71.2	73.9	74.8	76.4	78.4	78.7	75.9	76.0	80.5	75.6	76.9	70.0	74.1	69.4	69.6	70.4	72.3	75.0	80.2	75.4
7:00:00	78.5	78.4	75.1	77.2	75.6	76.0	80.1	79.0	76.8	72.1	74.2	74.1	71.2	73.9	74.0	76.0	78.9	79.2	76.8	76.4	80.9	75.6	76.1	68.6	73.2	67.6	70.0	72.0	71.4	74.4	79.5	75.3
7:15:00	79.4	78.4	75.9	78.0	75.1	76.1	81.8	79.0	76.8	71.2	73.7	73.6	73.3	73.9	73.5	75.1	77.7	79.2	76.3	76.4	81.0	75.5	76.5	69.5	72.8	68.9	70.0	69.6	71.8	74.3	79.0	75.3
7:30:00	78.6	78.8	76.3	78.4	75.5	76.1	81.4	79.4	76.8	71.6	74.1	74.0	70.5	74.3	73.9	75.5	78.4	78.8	76.7	76.8	81.4	75.5	76.5	69.1	72.9	68.9	72.6	70.5	72.3	74.7	79.4	75.5
7:45:00	78.3	78.8	76.7	78.4	75.9	76.5	80.0	79.4	77.2	71.6	77.2	74.5	71.8	74.3	74.3	75.9	78.4	79.2	77.6	76.8	80.3	76.0	80.0	68.7	72.1	68.9	69.1	70.9	72.3	75.1	79.7	75.7
8:00:00	77.1	79.3	77.2	78.2	75.9	76.1	81.2	79.8	77.2	71.6	73.5	74.5	71.5	73.9	74.7	75.9	78.4	79.2	76.7	76.8	79.1	76.0	75.7	67.9	71.8	68.9	70.5	71.3	72.3	75.1	79.7	75.4
8:15:00	76.7	78.6	77.7	75.5	75.9	78.7	80.3	81.1	77.6	71.6	71.8	74.5	70.3	77.2	77.6	75.9	78.4	79.2	76.1	77.2	77.0	76.0	75.4	67.5	71.0	68.9	69.6	71.3	72.4	75.1	79.7	75.3
8:30:00	77.1	77.1	78.6	72.7	76.0	77.8	79.3	77.9	77.2	72.1	72.5	74.2	69.6	74.5	74.9	76.3	80.9	79.2	76.1	76.8	75.3	76.0	73.8	65.9	70.2	69.0	69.6	71.4	72.9	75.5	80.1	74.9
8:45:00	77.1	76.7	76.2	69.8	76.0	75.1	80.1	76.4	75.8	72.7	73.4	73.8	67.4	71.7	74.8	76.7	77.9	79.2	76.0	78.1	73.7	75.6	71.3	64.6	67.8	69.0	67.9	71.4	72.5	75.5	80.5	74.0
9:00:00	74.9	76.3	73.4	67.7	75.7	75.8	78.9	76.3	75.2	72.0	73.8	72.2	65.5	69.3	75.2	76.7	77.8	79.2	76.0	77.6	72.1	75.7	68.7	62.8	65.2	69.1	67.5	71.8	70.6	75.5	79.5	73.2
9:15:00	71.6	75.6	74.2	65.5	75.3	76.2	77.5	76.3	76.5	68.0	73.4	71.0	65.1	68.3	75.2	77.9	77.7	79.3	76.0	77.6	72.1	75.3	66.0	65.0	63.5	69.1	67.0	71.9	68.2	75.5	79.8	72.6
9:30:00	70.3	74.0	74.3	62.8	74.3	76.3	78.8	75.4	75.0	67.8	72.6	68.5	62.9	66.8	75.2	77.3	77.7	78.2	76.0	77.6	67.1	75.2	65.2	61.2	60.8	68.7	66.3	73.3	65.6	75.9	80.2	71.7
9:45:00	68.1	72.1	74.0	59.4	67.0	75.8	77.9	76.0	73.0	67.3	72.2	64.2	62.9	68.1	74.8	73.2	77.3	75.1	75.2	77.6	65.6	75.2	64.4	58.7	66.3	68.7	64.5	69.5	64.9	76.0	80.9	70.5
10:00:00	67.6	71.1	73.1	60.6	67.8	75.9	78.8	74.0	70.2	67.8	71.8	61.8	61.1	67.7	74.0	73.4	77.4	73.4	74.8	77.6	62.8	75.2	63.0	58.3	59.5	67.9	64.1	69.6	59.2	76.0	81.0	69.6
10:15:00	68.5	71.1	72.7	60.2	70.0	75.5	78.8	73.6	67.6	67.4	70.6	60.8	60.8	68.6	74.0	73.7	77.0	72.2	73.6	78.6	61.8	75.2	63.5	57.4	58.5	65.9	63.1	69.5	58.3	76.0	81.0	69.2
10:30:00	69.3	68.5	72.7	61.9	68.2	75.5	78.8	72.4	65.0	66.1	68.6	59.9	58.9	68.3	74.1	74.4	76.6	71.9	73.7	76.2	60.8	75.3	61.7	55.9	58.0	65.6	62.2	69.0	56.3	76.3	81.4	68.5
10:45:00	69.3	70.4	72.3	62.0	69.1	75.1	78.1	71.6	62.2	65.7	65.9	56.2	58.8	66.5	73.3	74.3	76.3	70.2	73.3	76.5	59.5	75.3	59.9	55.4	57.0	60.2	61.4	68.6	54.4	73.8	81.1	67.5
11:00:00	68.9	64.8	71.9	60.5	68.2	74.8	77.3	70.8	60.9	64.8	65.0	56.7	59.3	65.1	72.1	75.2	75.5	72.5	72.5	76.9	56.6	74.9	58.5	57.0	55.6	58.3	60.6	68.3	54.4	73.6	81.1	66.9
11:15:00	69.4	64.3	71.8	57.4	67.9	70.9	76.9	68.7	58.1	63.8	65.5	53.7	58.4	66.0	70.9	75.3	74.7	69.4	70.8	76.9	57.7	74.9	56.6	56.6	53.6	57.4	58.7	64.8	53.9	74.0	80.7	65.8
11:30:00	69.9	62.9	72.7	58.3	65.8	70.5	76.5	67.9	56.8	63.3	63.4	51.7	57.5	67.0	69.6	75.3	73.9	69.5	70.4	79.0	56.2	73.5	55.2	54.8	53.2	55.5	57.3	63.5	53.5	74.1	80.4	65.1
11:45:00	69.0	62.4	72.7	58.3	63.6	68.7	75.3	65.2	54.4	62.9	60.6	50.7	56.5	66.6	68.3	74.9	73.4	68.0	69.2	75.1	54.7	75.4	54.4	52.8	52.2	54.6	55.4	63.1	51.6	72.9	80.4	64.0
12:00:00	67.7	62.5	72.7	57.3	61.8	68.7	74.5	63.0	52.8	62.4	59.2	48.5	56.5	66.2	68.3	74.6	73.0	66.6	67.9	74.5	53.6	71.4	50.3	50.4	51.8	53.6	54.6	62.3	50.6	72.1	79.7	62.9
12:15:00	67.4	62.9	72.3	56.9	60.4	68.8	73.7	60.6	52.2	62.5	57.8	49.1	55.7	64.9	67.4	74.2	72.2	65.7	66.5	74.9	54.2	70.9	50.3	48.3	49.8	52.2	53.1	61.5	50.7	70.9	77.4	62.1
12:30:00	62.4	64.0	72.4	56.4	58.6	71.5	72.5	59.6	50.2	61.7	56.7	47.0	59.5	64.9	67.8	73.3	71.8	64.8	65.6	75.8	51.7	70.9	47.6	47.7	48.8	49.6	52.1	59.2	50.2	70.1	76.2	61.3
12:45:00	60.1	63.5	72.0	56.0	57.2	66.2	71.7	59.6	48.7	59.9	56.3	46.5	50.8	64.5	67.8	73.3	71.0	64.3	64.8	75.1	50.8	68.8	47.1	48.3	46.8	48.7	50.6	57.8	48.6	68.4	75.0	60.0
13:00:00	58.5	61.5	70.7	55.0	57.7	67.6	70.5	59.2	48.2	58.9	54.9	44.4	49.2	62.7	67.4	73.3	69.7	62.4	63.9	73.1	49.7	67.5	45.5	46.7	43.6	46.6	54.8	56.4	48.5	67.9	73.7	59.0
13:15:00	57.0	61.0	69.4	53.6	56.3	67.2	67.5	57.7	47.7	58.9	53.8	43.9	48.6	61.8	67.1	73.8	68.8	61.0	62.5	71.4	49.2	65.2	44.6	45.7	41.4	45.6	49.6	54.9	49.5	67.1	72.9	57.9
13:30:00	56.5	61.5	69.1	53.1	55.4	67.7	66.1	57.7	47.8	57.9	53.8	43.9	48.5	61.3	64.5	73.4	68.0	60.2	62.1	70.6	47.3	64.8	46.8	44.7	40.4	44.6	49.5	53.5	51.1	66.6	72.5	57.4
13:45:00	54.0	62.6	67.4	52.1	54.8	64.5	65.1	57.2	48.9	57.4	52.9	43.4	48.6	61.3	61.3	71.7	67.1	56.9	60.2	69.3	46.2	63.0	46.9	45.2	37.0	43.6	48.1	52.0	51.1	70.3	72.1	56.5
14:00:00	56.1	60.2	65.5	51.6	54.2	63.1	65.6	56.7	49.4	56.0	51.8	42.4	48.2	60.0	59.9	71.4	67.5	54.3	60.2	69.0	44.6	62.2	45.8	45.7	38.1	42.5	48.6	51.5	50.6	75.7	71.7	56.1
14:15:00	54.8	59.7	64.6	53.3	54.8	62.7	65.1	56.7	49.9	55.6	51.3	43.5	47.6	59.1	59.4	69.7	66.7	55.4	59.8	66.8	44.1	60.8	46.8	45.1	37.0	42.5	47.5	50.5	50.6	73.1	70.8	55.7
14:30:00	55.3	60.3	64.6	50.6	54.2	61.3	65.1	56.7	50.0	53.1	51.8	44.6	47.6	58.2	58.0	68.0	65.8	56.2	57.4	65.5	43.5	57.9	47.8	46.2	35.9	39.7	47.5	50.5	51.5	70.9	70.0	55.0
14:45:00	54.8	59.5	63.6	51.1	54.7	61.3	65.1	55.7	49.4	51.3	51.8	43.5	47.6	57.6	57.5	66.7	65.4	54.1	57.4	64.5	44.0	57.9	48.3	46.1	36.4	39.1	47.5	51.6	52.5	69.5	69.5	54.7
15:00:00	54.9	55.5	64.0	50.6	54.7	60.3	65.1	56.2	48.4	51.7	51.7	43.5	47.6	57.1	57.9	65.8	65.5	54.5	57.3	64.1	44.5	58.5	48.4	46.6	35.8	39.1	46.4	50.5	53.0	69.1	69.5	54.4
15:15:00	54.3	55.5	64.0	51.1	54.2	60.8	64.6	55.7	47.8	52.6	51.7	41.3	48.1	57.6	58.0	65.8	65.0	53.5	57.3	64.6	43.9	57.6	47.8	47.6	38.0	38.0	46.9	50.5	53.0	68.2	69.1	54.3
15:30:00	53.8	52.0	63.6	51.5	52.2	60.8	64.6	55.2	47.8	50.5	51.7	41.2	48.6	52.6	57.5	65.8	64.1	54.0	57.8	64.1	45.4	55.5	47.8	48.7	40.2	39.1	46.4	49.4	51.4	79.7	68.7	54.2
15:45:00	49.5	50.4	62.6	52.0	52.6	61.7	64.2	55.2	47.8	50.0	49.6	44.5	47.6	52.5	56.9	65.4	63.6	53.5	56.9	63.2	47.0	54.5	48.4	49.7	37.4	39.1	46.5	50.4	54.5	70.5	68.2	53.7
16:00:00	50.0	51.2	63.6	52.1	52.6	61.7	62.7	54.7	47.2	50.0	48.5	45.0	50.7	51.5	56.9	63.5	64.1	53.0	55.9	62.2	47.5	55.0	45.1	49.6	37.3	39.1	47.0	49.8	55.7	67.2	68.2	53.5
16:15:00	50.6	52.1	63.2	54.6	53.0	60.6	63.2	55.2	45.6	49.5	48.0	44.4	53.8	54.0	57.3	63.0	64.6	52.9	56.4	63.1	48.5	54.0	43.4	50.7	36.8	36.8	46.4	50.8	52.5	67.0	67.7	53.5
16:30:00	52.6	52.5	62.6	51.5	57.6	61.5	63.2	56.3	45.5	51.0	47.9	43.8	53.8	54.5	57.8	62.5	64.1	54.5	54.8	62.2	48.5	54.5	43.8	50.6	37.3	37.3	46.4	49.8	53.4	67.8	65.4	53.7
16:45:00	52.1	53.5	63.1	52.5	54.1	65.3	63.2	56.2	45.4	51.5	49.5	44.3	53.3	55.0	55.8	62.0	64.0	52.5	55.8	61.6	49.5	54.4	45.4	47.4	37.8	36.7	46.9	49.7	54.9	67.8	65.5	53.8
17:00:00	52.6	54.9	64.0	53.4	56.5	63.4	63.6	54.1	45.3	51.4	50.5	45.4	53.7	55.0	55.2	61.5	64.3	52.9	56.7	62.0	50.5	54.4	46.4	48.9	38.4	38.4	47.9	50.7	56.4	69.7	64.9	54.3
17:15:00	50.4	53.5	64.9	54.4	58.8	63.4	62.6	54.4	45.7	54.5	51.5	45.8	54.2	55.9	56.7	62.4	61.7	52.3	57.2	63.0	50.5	54.8	47.4	49.9	38.4	37.9	48.4	51.1	56.4	66.7	65.7	54.5
17:30:00	50.3	54.4	64.4	55.4	61.7	64.3	63.1	54.8	49.9	54.7	52.9	46.3	54.6	57.4	56.6	67.8	61.6	53.2	58.1	67.7	51.5	55.8	51.0	50.8	45.5	38.9	49.9	51.6	56.3	65.5	67.0	55.9
17:45:00	51.8	55.4	63.9	56.8	63.8	64.7	64.0	55.3	53.1	51.5	62.1	49.6	54.6	56.9	57.1	62.5	62.5	54.2	58.1	63.5	51.9	59.5	53.2	51.8	40.0	40.0	50.4	62.6	57.3	67.2	68.7	56.9
18:00:00	52.3	55.9	63.9	56.3	56.7	65.5	65.8	56.2	56.7	55.6	54.1	50.5	55.5	56.3	58.0	62.8	61.9	56.1	59.0	63.8	53.4	63.0	60.3	53.3	41.5	42.1	50.9	59.9	57.3	69.1	69.6	57.5
18:15:00	53.3	56.3	64.7	58.3	57.5	67.2	70.7	56.4	50.0	53.4	52.4	52.2	56.5	57.3	58.4	63.6	61.9	58.1	58.5	64.7	53.4	60.7	51.6	54.3	44.2	47.4	51.8	59.9	57.2	74.1	70.0	57.9
18:30:00	54.7	56.7	65.1	59.2	57.9	67.5	67.8	55.7	55.6	55.3	61.9	54.6	54.4	57.7	59.9	64.0	62.3	58.0	58.9	65.5	53.3	60.4	53.9	53.8	50.5	50.0	54.6	55.2	57.2	72.7	71.4	58.9
18:45:00	56.1	58.6	66.5	59.2	59.3	71.6	69.1	57.6	55.1	57.3	66.3	58.1	54.8	59.2	61.3	64.9	63.7	65.6	59.8	66.4	54.8	58.3	55.4	53.7	48.4	51.4	49.8	59.1	57.6	71.2	75.1	60.2
19:00:00	58.0	61.5	70.9	60.7	60.7	73.4	73.3	63.2	56.1	58.2	66.8	56.8	56.3	59.1	65.1	66.2	64.6	62.7	60.8	67.3	56.3	59.1	55.9	57.2	50.3	63.9	53.3	58.6	59.1	71.6	82.2	62.2
19:15:00	59.0	62.9	72.9	61.1	61.6	81.5	74.7	58.8	54.9	60.1	70.1	60.1	56.7	59.6	71.8	67.1	74.6	71.4	61.7	69.1	58.3	62.0	56.3	59.4	50.8	66.7	53.3	59.0	60.0	72.0	81.3	64.2
19:30:00	67.8	63.9	67.8	66.5	66.1	73.0	75.1	60.6	55.8	65.6	69.1	56.6	58.6	62.1	64.9	68.0	68.9	64.2	62.2	80.5	59.9	63.4	58.2	61.6	51.8	57.3	54.2	59.0	60.0	71.9	79.4	64.3
19:45:00	71.4	65.0	71.0	62.3	62.7	73.1	76.4	62.0	56.3	67.6	62.5	55.9	63.1	65.7	64.7	68.5	76.2	67.1	63.1	83.2	59.8	63.9	58.2	58.5	53.2	56.6	55.2	59.9	61.4	71.9	76.4	64.9
20:00:00	70.8	65.3	77.8	61.7	63.6	70.2	71.3	62.9	57.7	69.9	63.9	56.8	64.1	60.2	65.9	68.5	71.3	63.3	65.9	82.6	60.7	64.3	59.2	59.7	53.7	56.4	56.1	59.9	61.0	71.9	75.7	64.9
20:15:00	65.9	66.2	71.5	63.0	63.2	70.4	74.1	63.8	56.7	63.7	61.8	57.2	72.1	61.1	72.6	68.9	68.2	63.9	70.2	77.7	62.1	64.7	59.6	59.5	54.2	57.3	57.1	61.3	61.4	71.9	76.0	65.1
20:30:00	65.1	66.9	73.2	63.5	63.5	71.5	66.3	67.8	57.9	63.1	63.2	57.7	68.1	61.5	68.4	72.7	65.3	64.7	68.4	80.8	62.0	65.8	60.1	60.3	55.2	57.3	58.0	61.8	62.3	72.3	76.3	65.2
20:45:00	65.5	67.2	77.1	61.9	63.9	75.9	69.3	61.7	58.3	63.0	61.7	58.1	65.1	56.9	68.3	69.7	66.4	65.5	73.4	80.3	65.4	65.3	60.0	60.7	56.1	57.7	59.4	62.8	65.7	77.1	76.7	65.7
21:00:00	65.8	67.6	75.4	62.2	64.3	72.8	70.2	62.5	58.2	63.4	62.1	58.6	64.9	59.6	67.7	69.6	67.6	65.5	74.7	76.5	66.3	65.6	61.0	61.1	57.1	58.7	59.4	62.3	63.8	75.4	76.6	65.7
21:15:00	66.2	68.0	71.1	63.5	64.2	72.8	71.0	64.3	59.1	63.3	63.5	59.0	65.3	61.5	66.6	69.5	67.9	66.3	76.9	75.3	64.2	66.5	61.0	61.5	58.1	59.1	60.3	63.2	63.8	72.1	77.0	65.9
21:30:00	67.1	68.4	72.2	63.5	64.7	75.4	71.9	67.1	61.6	63.8	63.4	59.5	65.2	62.9	67.4	69.9	68.8	67.2	76.9	76.1	64.1	66.9	61.9	62.4	58.0	59.1	60.8	62.7	64.2	72.4	77.3	66.5
21:45:00	67.5	69.3	72.6	64.4	65.2	73.2	71.9	64.4	58.6	67.6	63.9	60.0	65.6	68.6	67.8	70.3	69.1	67.5	69.6	76.4	64.5	67.3	61.9	69.3	58.0	60.0	61.2	62.7	64.2	72.8	78.6	66.9
22:00:00	67.9	67.9	71.5	64.3	65.2	73.1	71.9	65.2	59.5	66.2	64.8	59.9	66.0	64.4	68.2	74.6	70.0	67.9	68.6	76.3	65.3	67.8	61.9	64.0	58.4	60.4	61.7	63.2	64.6	72.7	78.2	66.8
22:15:00	68.3	67.7	71.7	69.6	65.2	73.5	71.9	66.1	60.5	66.1	65.2	60.4	66.5	64.3	68.2	69.6	70.4	68.4	68.0	76.7	65.8	68.2	62.5	63.8	59.4	60.4	61.6	63.6	64.6	73.6	78.2	67.1
22:30:00	68.7	68.5	72.5	66.8	65.6	73.9	71.9	66.5	61.4	66.0	65.6	62.2	66.4	64.7	68.6	69.9	71.2	68.8	67.9	76.6	66.2	68.6	62.4	64.7	59.9	60.8	62.1	64.1	65.1	73.5	78.2	67.4
22:45:00	69.5	68.5	72.9	66.2	65.6	74.3	72.7	66.9	61.9	66.0	66.0	61.4	68.8	64.7	69.0	70.7	71.2	68.7	68.3	76.5	65.7	69.0	62.9	65.1	60.3	60.8	62.5	64.5	65.5	73.9	78.1	67.7
23:00:00	69.9	68.5	73.3	66.6	66.0	74.7	72.7	67.7	60.7	66.0	66.5	60.8	67.8	65.5	69.4	71.1	71.6	69.2	68.3	76.5	66.1	69.1	63.3	65.0	60.7	61.2	62.5	64.5	65.9	74.3	78.5	67.9
23:15:00	70.4	68.8	73.2	66.5	65.9	74.7	72.7	68.2	61.1	66.4	66.4	61.4	67.8	66.0	69.8	71.1	72.0	69.1	69.2	76.8	67.0	69.4	63.3	65.4	61.2	61.6	62.9	64.5	66.3	74.7	78.9	68.2
23:30:00	70.8	69.2	73.6	67.0	66.4	74.8	73.1	69.0	61.5	66.4	66.9	61.3	67.8	66.4	69.8	71.5	72.0	69.5	69.1	76.8	67.5	69.8	63.3	65.8	59.9	62.5	63.3	64.5	67.2	75.1	78.9	68.4
23:45:00	70.7	69.6	73.6	67.8	66.3	74.7	72.7	69.0	62.4	66.4	66.9	62.1	67.7	66.4	69.8	71.9	72.9	70.0	69.5	76.8	67.4	70.2	63.7	65.8	60.8	62.9	63.7	64.4	67.2	75.5	79.3	68.6
DAY AV	67.6	67.7	71.3	65.5	65.8	71.0	73.5	67.9	62.6	63.6	64.7	60.0	61.8	65.5	67.7	71.4	71.9	68.7	68.8	73.0	65.0	68.2	62.4	59.6	57.7	57.7	59.9	62.8	62.2	72.1	76.2	66.2

July 2019 graphical RH plot



August 2019 outdoors average RH calculation spreadsheet

DATA LOG 1: OUTDOORS

Time	RELATIVE HUMIDITY																															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	AV
0:00:00	85.6	76.7	86.7	78.4	64.9	63.7	65.3	74.5	66.4	66.5	68.7	69.4	68.5	65.0	64.0	64.4	72.0	61.8	75.6	79.5	66.3	69.1	66.9	65.1	80.9	67.8	64.5	70.2	77.8	83.0	77.7	71.2
0:15:00	86.3	77.5	87.1	78.4	65.4	64.2	66.2	74.5	66.8	66.5	68.7	69.8	68.5	65.4	62.6	64.4	72.4	63.1	74.8	79.5	67.1	69.5	66.4	67.4	80.9	68.7	65.4	70.2	77.8	82.6	78.5	71.5
0:30:00	86.3	77.5	87.8	78.3	65.8	64.2	66.6	74.5	67.3	66.9	69.1	69.3	68.4	65.8	63.9	63.9	72.8	63.6	74.3	79.5	68.0	70.4	66.4	68.7	80.9	68.7	65.8	69.7	77.8	83.4	78.5	71.7
0:45:00	86.7	77.9	88.5	79.1	66.3	64.1	68.0	74.5	67.7	67.3	69.1	69.8	68.4	66.3	64.8	63.9	72.7	64.0	73.9	79.5	68.1	70.8	66.4	69.6	80.1	69.1	66.7	68.8	77.8	83.0	78.5	72.0
1:00:00	86.3	78.7	89.3	79.6	66.7	65.1	68.8	75.4	68.2	67.8	69.6	69.3	68.8	66.7	65.7	63.4	73.1	64.9	73.5	79.1	68.0	71.3	67.3	69.6	80.1	69.5	67.2	68.8	77.7	83.4	78.9	72.3
1:15:00	86.3	79.1	88.2	80.4	67.1	64.6	70.2	75.3	68.6	66.9	69.6	69.7	68.8	67.6	66.6	63.4	73.6	66.2	73.4	79.1	68.5	72.5	68.1	70.0	80.5	69.6	68.1	68.3	77.8	83.7	79.3	72.6
1:30:00	86.3	79.1	87.9	80.7	67.1	65.0	70.6	75.8	68.6	66.4	69.1	69.7	69.2	68.0	67.0	64.3	74.4	67.1	73.4	79.1	68.9	72.9	68.6	71.3	80.5	69.6	68.5	68.3	77.7	83.8	78.9	72.8
1:45:00	85.9	79.5	87.5	80.4	68.0	65.4	71.9	75.8	68.6	66.4	69.1	69.7	69.2	68.9	67.4	63.9	74.4	68.0	73.8	79.1	68.9	73.8	68.6	72.2	80.5	69.6	69.0	68.3	78.6	84.2	78.9	73.1
2:00:00	85.9	79.5	87.1	79.9	68.0	65.4	72.3	76.2	69.0	66.0	69.1	69.7	70.5	69.3	67.9	64.3	74.4	68.9	74.2	79.5	68.9	73.4	68.6	73.4	80.9	70.0	69.4	68.3	78.6	83.8	78.9	73.3
2:15:00	85.5	79.1	87.1	80.3	68.4	65.4	72.8	76.6	69.0	65.9	69.5	70.2	71.4	69.7	67.9	64.7	74.4	69.3	74.2	77.4	69.3	73.8	68.6	73.5	81.6	70.4	70.3	68.7	79.0	83.4	78.9	73.4
2:30:00	85.9	79.9	86.3	80.3	68.8	65.8	73.7	76.6	69.4	65.5	69.9	70.2	72.7	70.6	68.7	65.2	74.4	69.7	74.2	75.7	70.2	74.2	68.2	73.5	82.4	70.8	71.2	68.7	79.4	83.8	78.9	73.7
2:45:00	85.9	79.9	86.3	80.7	68.8	66.3	75.3	77.0	69.8	65.0	70.3	70.6	74.8	71.5	68.8	65.2	74.4	70.6	75.1	74.8	70.6	74.2	69.0	73.9	83.9	71.3	71.2	69.1	79.0	84.2	79.3	74.1
3:00:00	86.3	80.3	86.3	80.7	69.3	66.3	76.1	77.5	69.8	64.5	70.8	70.6	74.9	72.4	69.6	65.6	74.4	72.3	75.4	74.9	71.5	74.6	69.5	73.9	84.0	71.7	71.6	69.1	78.5	84.2	79.3	74.4
3:15:00	86.3	80.7	86.3	81.1	69.2	66.3	76.1	77.0	70.2	64.1	70.4	71.0	74.5	72.4	70.0	66.0	74.4	73.2	75.5	74.4	71.5	75.4	70.3	73.9	83.2	71.7	71.6	69.1	78.1	83.8	79.7	74.4
3:30:00	86.3	81.0	86.7	80.7	69.7	66.3	76.9	77.4	70.2	64.5	71.3	71.0	74.9	73.3	69.6	66.5	74.4	72.3	75.5	74.0	71.9	75.5	70.4	74.3	83.2	72.2	71.6	69.5	78.5	83.4	80.1	74.6
3:45:00	86.2	80.7	86.7	80.2	69.7	66.3	77.3	79.0	69.8	64.1	71.2	71.4	75.7	74.5	69.6	66.1	74.4	72.3	75.5	74.4	72.8	75.9	70.8	74.7	82.8	72.6	72.0	69.5	77.6	83.7	80.1	74.8
4:00:00	86.6	80.2	86.7	79.8	69.7	66.2	77.7	79.0	70.7	64.5	71.6	72.2	75.3	74.9	69.6	66.5	74.3	73.6	75.9	74.4	74.0	77.1	71.6	75.1	82.4	73.9	72.4	69.4	77.6	83.8	80.9	75.1
4:15:00	86.6	79.8	86.7	79.4	69.7	66.7	77.8	78.6	70.3	64.1	71.6	72.2	74.8	75.8	69.6	67.0	74.3	74.4	75.4	74.0	74.8	78.3	72.5	75.6	82.0	74.3	73.7	69.9	77.6	84.1	80.9	75.2
4:30:00	86.6	80.2	86.3	79.3	70.1	67.1	77.4	78.6	70.7	64.1	71.6	72.6	74.4	76.2	70.0	67.0	74.7	74.9	75.4	74.0	74.9	77.9	72.5	75.5	82.3	73.8	75.0	69.4	77.2	84.1	80.9	75.3
4:45:00	86.6	81.4	86.3	79.7	70.5	67.1	77.8	78.6	71.5	64.1	71.6	72.6	74.8	76.6	70.1	67.4	75.1	74.9	75.4	74.8	74.9	77.9	73.4	76.4	82.3	74.3	75.0	69.9	77.6	84.5	81.3	75.6
5:00:00	86.6	81.5	86.3	79.3	70.5	67.5	77.8	78.2	72.0	64.9	72.0	73.1	74.4	77.0	70.1	69.6	75.2	74.9	75.8	74.8	75.3	77.5	73.0	76.4	81.9	74.7	75.4	70.7	78.0	84.1	80.9	75.8
5:15:00	87.0	81.4	86.3	79.3	71.0	68.4	78.2	78.2	71.5	65.4	72.4	73.1	74.4	77.8	70.4	70.9	74.7	75.3	75.8	75.2	76.1	77.9	73.0	76.4	81.5	74.7	75.4	70.7	78.4	84.1	80.9	76.0
5:30:00	87.0	81.4	86.2	78.9	70.6	68.4	79.8	77.8	71.5	65.4	72.0	73.5	74.4	78.6	70.9	71.8	75.2	75.3	75.4	74.8	76.1	76.7	73.0	76.8	81.5	75.5	75.0	71.1	78.8	84.5	80.9	76.1
5:45:00	87.0	81.4	86.2	78.5	71.0	68.4	80.3	78.2	71.1	64.9	72.0	73.5	74.4	78.2	71.7	72.6	75.2	75.7	75.4	75.2	76.5	76.7	73.0	77.5	81.5	75.5	75.4	70.7	79.3	84.1	81.3	76.2
6:00:00	86.7	81.0	86.6	77.6	70.6	68.8	80.3	78.2	71.0	64.9	72.4	73.1	74.4	77.4	72.1	73.4	75.2	76.1	75.8	75.2	76.5	76.7	73.0	77.5	81.5	75.5	75.8	71.5	79.7	84.1	81.7	76.3
6:15:00	86.6	80.5	86.9	77.2	71.0	69.3	80.6	78.2	71.0	65.4	72.9	73.5	74.4	76.6	72.1	73.0	75.2	76.1	76.7	76.0	76.5	76.6	73.0	77.6	81.5	76.3	75.8	71.9	79.6	84.1	81.3	76.4
6:30:00	87.0	80.5	86.9	76.3	71.0	68.8	80.6	77.7	71.0	65.4	73.3	73.6	74.4	76.6	72.1	73.5	75.2	76.5	76.6	76.0	76.5	77.1	73.8	77.6	81.4	76.8	75.8	71.9	79.6	84.1	81.3	76.4
6:45:00	87.0	80.9	86.9	75.9	71.4	69.2	81.0	78.1	71.0	66.3	73.3	73.1	74.4	76.2	72.5	73.9	75.2	76.5	77.1	76.4	76.6	77.1	73.8	78.0	81.4	77.6	75.4	72.3	79.7	84.9	81.3	76.6
7:00:00	87.4	81.7	86.6	76.3	72.3	69.7	81.0	78.5	71.8	65.8	73.3	74.0	74.0	76.6	73.0	74.6	75.2	76.9	77.5	76.4	76.6	77.5	73.8	78.4	81.4	77.6	75.4	72.8	80.0	84.9	81.7	76.9
7:15:00	87.4	82.2	86.5	76.4	72.7	70.6	81.8	79.0	72.4	65.8	73.7	73.1	73.9	76.6	73.0	75.5	76.0	76.9	77.5	76.4	76.1	77.8	73.4	79.6	81.0	76.8	75.8	72.9	80.1	84.6	81.7	77.0
7:30:00	87.4	83.0	86.2	76.5	72.8	70.7	81.0	78.6	73.3	66.3	74.9	72.7	74.4	76.6	72.6	75.1	76.4	77.3	77.1	76.4	76.6	78.2	73.4	79.6	81.0	76.4	75.8	72.5	80.1	85.0	81.7	77.1
7:45:00	87.4	83.4	86.9	74.8	71.6	70.3	80.6	78.5	73.8	66.7	74.5	72.7	74.4	76.6	72.1	75.9	76.9	77.4	76.6	77.3	76.6	78.2	73.4	80.0	81.5	76.8	75.8	72.5	80.1	84.9	81.8	77.1
8:00:00	87.4	83.4	87.3	72.3	70.8	70.3	80.7	78.5	74.2	66.3	75.0	73.1	75.2	77.4	72.1	77.2	76.5	77.4	77.4	76.9	76.5	78.3	73.0	80.4	80.3	76.4	75.4	72.5	80.4	85.7	81.3	77.1
8:15:00	87.1	83.5	86.2	73.7	70.3	69.9	80.7	77.7	73.5	65.9	74.2	73.0	75.2	77.8	72.5	77.1	76.1	77.4	76.6	76.9	77.0	78.3	73.0	80.8	79.5	75.1	75.1	72.1	80.4	85.7	81.3	76.9
8:30:00	86.7	83.1	85.8	73.7	71.2	69.9	80.3	76.1	73.1	66.3	73.4	73.9	75.3	77.4	72.6	77.6	75.8	77.4	76.7	76.9	77.0	77.5	72.1	80.8	78.3	74.6	74.7	73.0	80.4	84.9	80.1	76.7
8:45:00	85.6	82.7	86.1	73.4	71.3	70.4	80.3	75.8	73.4	66.8	73.3	73.5	75.7	77.4	73.5	77.2	75.8	77.5	76.7	77.3	77.0	77.1	72.6	80.8	77.1	74.6	74.2	71.8	81.6	85.7	80.2	76.7
9:00:00	84.5	82.4	86.5	73.4	70.4	70.4	80.7	74.0	73.0	66.4	73.3	72.2	75.7	77.1	72.6	78.0	75.0	76.3	76.2	76.5	76.5	76.7	72.2	81.2	76.7	75.0	72.2	71.8	80.5	85.0	77.8	76.1
9:15:00	84.5	81.6	85.8	72.6	70.1	69.5	81.1	74.1	73.1	65.5	73.0	73.2	76.2	76.2	72.8	78.0	74.2	75.5	77.0	76.5	77.8	77.1	71.7	81.6	76.3	75.0	70.4	71.0	80.5	85.0	78.3	76.0
9:30:00	84.1	80.8	86.2	70.4	69.2	69.5	81.8	73.3	72.3	66.0	72.4	73.1	76.2	75.8	70.6	78.0	73.8	74.7	77.4	76.9	76.6	76.7	73.0	81.3	73.0	74.6	70.5	70.2	81.0	84.2	77.0	75.5
9:45:00	83.3	80.1	86.2	70.0	67.9	70.1	81.5	72.4	71.0	66.0	73.3	73.6	76.6	76.3	70.6	78.0	73.3	73.9	78.3	76.6	75.9	76.7	73.8	80.2	70.7	75.5	70.5	69.8	80.6	85.0	77.4	75.3
10:00:00	82.6	78.1	85.5	66.9	67.1	67.5	81.5	72.5	70.7	65.1	73.3	72.8	77.0	75.4	69.3	78.4	73.8	73.5	77.5	76.5	75.9	76.7	73.5	77.8	71.1	71.7	69.2	68.6	80.6	84.6	77.0	74.6
10:15:00	81.1	76.5	84.8	68.3	65.3	65.7	81.5	70.2	70.3	65.7	72.5	72.4	76.6	74.6	69.0	78.4	72.5	72.6	77.1	76.6	74.2	76.4	72.6	76.5	71.7	71.8	68.8	68.2	80.6	84.3	77.1	74.0
10:30:00	80.3	75.6	84.0	67.9	65.3	64.9	81.1	69.0	68.6	62.4	72.9	70.7	76.3	75.1	67.6	77.6	72.5	71.8	77.1	75.8	73.8	73.5	71.3	76.5	69.5	67.4	68.0	65.1	81.5	84.3	75.8	73.0
10:45:00	79.5	76.1	83.3	67.5	60.7	65.4	80.7	68.6	66.8	62.9	72.5	70.7	75.4	75.1	67.6	76.1	72.5	71.8	76.7	74.1	73.0	73.2	72.2	76.1	70.0	66.1	65.7	66.9	81.2	84.4	75.9	72.5
11:00:00	79.1	75.6	83.0	65.2	62.6	64.1	79.6	69.1	66.4	62.0	73.0	70.8	74.7	73.9	67.1	74.4	71.2	71.8	76.7	74.5	73.4	71.0	71.3	76.5	68.8	63.4	64.0	63.3	80.4	82.8	75.5	71.8
11:15:00	78.3	76.8	79.8	62.9	61.3	61.8	78.0	67.8	66.4	60.6	71.2	69.9	73.8	74.3	67.6	73.1	71.7	71.0	76.3	74.6	71.7	70.6	71.3	75.6	65.7	63.4	62.1	62.8	79.6	81.2	76.4	70.9
11:30:00	76.3	76.5	78.6	57.2	59.4	60.4	78.0	66.3	64.6	61.6	71.3	69.0	71.4	75.1	67.6	72.7	71.2	70.6	76.7	73.3	71.8	69.3	71.3	75.2	62.9	62.1	61.3	61.1	79.6	82.4	74.8	70.0
11:45:00	75.1	76.1	76.6	57.7	58.9	58.5	76.4	64.6	63.7	61.1	71.2	68.6	70.1	73.5	67.6	71.9	71.7	70.1	77.1	72.9	70.0	69.3	71.0	75.7	62.5	60.2	60.3	60.0	78.9	82.8	74.4	69.3
12:00:00	72.6	75.7	71.0	55.8	54.6	59.0	75.5	63.7	63.3	60.2	70.8	68.7	68.9	72.2	68.5	71.5	71.2	69.3	76.8	72.5	69.6	67.1	69.2	74.1	57.8	57.8	62.2	61.9	75.6	82.8	74.4	68.2
12:15:00	73.0	75.7	68.8	57.8	53.1	59.9	73.0	61.9	62.3	59.7	70.8	67.4	67.6	72.2	66.8	69.8	70.4	68.4	75.6	72.1	68.7	65.3	68.4	73.2	58.8	56.8	60.2	61.9	74.4	81.7	74.4	67.4
12:30:00	73.8	75.3	68.4	56.4	52.6	57.1	73.4	62.8	61.4	58.8	70.4	67.4	66.3	71.9	66.8	69.4	70.8	67.1	74.8	70.9	67.4	66.3	66.1	71.6	57.8	54.9	60.8	61.5	72.2	80.5	73.2	66.7
12:45:00	73.5	75.3	65.7	50.9	47.0	55.7	72.6	60.9	60.9	58.8	70.4	66.1	64.4	71.4	65.5	68.5	70.0	66.7	73.9	70.0	67.1	65.3	64.4	70.7	58.8	55.0	59.9	60.1	71.8	79.8	72.3	65.6
13:00:00	70.0	74.5	63.4	53.0	42.9	54.8	72.6	60.5	57.6	58.3	69.1	66.1	63.1	70.1	64.6	68.1	69.2	66.3	73.5	68.7	66.6	65.8	62.2	69.4	60.3	55.4	58.5	57.8	71.4	79.9	70.6	64.7
13:15:00	70.9	74.5	63.0	50.5	47.1	52.2	70.4	61.4	57.6	59.3	70.0	64.7	60.8	70.2	65.0	65.0	68.3	65.0	74.7	69.2	66.2	64.0	59.8	65.9	56.9	55.9	56.6	57.8	71.8	76.2	71.0	63.9
13:30:00	67.8	74.9	61.1	49.0	42.9	54.7	68.6	62.7	57.1	57.4	70.0	63.4	59.8	68.8	64.1	65.4	67.0	65.4	74.3	68.8	65.7	63.1	59.4	66.8	55.5	51.5	54.6	55.8	72.3	75.8	71.0	63.1
13:45:00	66.1	73.7	61.6	50.5	47.1	52.8	68.3	62.8	55.7	57.4	69.5	63.9	59.4	67.9	65.1	65.0	65.7	64.9	73.9	68.3	65.7	61.2	57.0	66.3	54.0	52.4	56.1	54.8	72.7	74.5	71.9	62.8
14:00:00	65.1	73.8	59.7	49.5	41.8	50.8	66.9	61.8	55.2	56.9	69.1	62.6	58.9	67.5	64.2	63.7	66.2	64.4	75.1	67.5	64.4	60.3	56.1	69.8	53.0	52.5	54.7	56.3	72.2	74.9	71.0	62.1
14:15:00	65.1	72.4	59.7	46.4	42.3	52.8	66.1	60.9	54.7	57.9	68.3	62.1	56.5	66.7	64.2	63.7	65.3	64.5	75.1	66.1	64.8	58.4	55.6	72.4	53.5	54.0	54.2	56.2	72.2	72.8	69.3	61.7
14:30:00	66.0	72.1	58.8	43.8	46.1	51.8	65.5	62.8	55.2	56.4	67.0	61.2	56.5	64.9	63.3	63.7	64.4	64.0	73.9	66.6	62.6	58.9	53.6	72.9	53.0	51.0	53.6	55.2	73.1	74.5	68.8	61.3
14:45:00	65.5	71.2	58.4	41.2	46.1	50.3	66.0	61.8	53.7	55.4	66.6	60.3	55.0	64.4	63.2	63.3	63.5	62.7	73.5	66.6	61.7	58.0	52.6	70.6	53.1	50.1	55.2	54.7	72.2	73.6	68.3	60.6
15:00:00	64.2	70.8	57.8	40.6	41.3	50.3	64.2	60.9	53.2	53.5	65.2	57.8	55.5	64.5	62.3	63.2	63.4	60.8	73.9	65.7	61.2	56.6	52.1	71.0	55.0	49.5	53.2	54.2	72.7	73.2	68.3	59.9
15:15:00	63.3	69.9	56.9	43.3	42.9	48.1	64.2	60.0	51.7	53.5	64.8	59.8	56.5	62.2	62.8	63.3	64.4	61.7	73.5	64.8	59.8	55.1	52.6	70.6	55.0	48.5	54.2	54.2	72.7	73.6	68.8	59.8
15:30:00	60.5	69.1	56.9	43.3	41.9	48.2	62.8	59.5	51.2	54.5	64.8	59.8	54.6	62.1	62.4	62.7	61.1	62.6	73.1	63.9	60.7	57.0	55.1	70.6	52.1	48.5	51.2	59.6	72.3	73.1	67.9	59.5
15:45:00	61.4	68.6	57.8	45.4	45.0	48.2	62.8	57.5	52.2	53.1	66.1	57.8	51.6	62.6	62.4	64.1	61.6	61.2	73.1	63.5	59.3	56.1	54.1	69.8	50.6	47.5	52.1	60.0	71.4	73.1	68.4	59.3
16:00:00	62.8	73.3	57.8	42.8	42.4	49.2	62.8	56.1	52.2	52.6	65.7	57.4	53.1	61.7	61.9	64.2	62.1	62.1	73.5	63.5	58.8	55.5	52.1	71.5	49.5	46.5	52.1	61.9	71.4	72.3	69.3	59.3
16:15:00	62.8	77.9	58.3	44.3	42.9	51.7	60.9	56.6	54.7	53.5	64.3	57.9	52.6	62.1	62.3	64.2	60.6	62.1	73.5	63.0	59.3	54.6	52.1	71.5	50.0	47.5	51.7	69.2	71.0	71.4	68.8	59.8
16:30:00	62.3	81.2	59.3	43.8	42.9	49.1	60.9	56.0	53.1	56.5	64.8	56.4	51.0	62.1	62.8	64.6	60.6	62.5	73.1	62.5	58.8	56.1	51.1	72.4	50.0	46.4	52.6	71.2	71.0	72.3	68.8	59.9
16:45:00	64.1	82.1	59.8	44.8	44.4	48.7	60.4	56.1	58.0	53.0	64.3	56.4	50.5	63.0	60.9	65.5	59.7	63.0	74.3	62.5	58.8	54.6	51.0	72.8	49.0	46.9	53.1	72.0	71.0	72.3	70.1	60.1
17:00:00	73.0	81.2	61.2	44.8	46.5	50.7	59.5	56.0	59.9	54.0	63.8	56.4	51.0	63.4	62.8	65.5	60.6	63.5	75.2	63.4	58.8	54.6	50.5	73.2	51.0	47.4	52.6	74.9	70.5	72.7	72.3	61.0
17:15:00	78.1	80.4	62.1	47.4	43.9	51.7	59.9	56.5	61.3	55.0	64.7	55.4	50.0	63.4	60.9	65.0	61.1	63.0	75.6	63.9	58.8	56.0	50.1	72.8	51.0	47.9	53.6	77.0	70.1	72.6	73.1	61.4
17:30:00	80.5	77.9	62.5	47.9	45.0	52.1	60.9	55.5	63.2	54.0	65.2	57.8	51.0	63.4	60.9	65.5	60.6	62.6	76.0	63.4	58.8	57.0	50.0	71.4	52.0	47.9	54.1	76.3	68.7	73.1	73.1	61.6
17:45:00	81.0	79.6	60.6	47.4	45.5	51.6	61.8	56.0	65.5	54.0	65.2	59.2	52.0	63.9	61.9	65.5	61.5	63.0	76.4	63.9	59.2	56.4	49.5	72.3	52.5	48.4	57.0	75.4	69.5	73.4	66.3	61.8
18:00:00	80.5	78.3	61.6	46.8	50.1	52.1	62.7	55.5	66.8	54.5	65.2	60.2	50.9	63.4	61.4	65.5	60.6	63.5	76.8	63.4	58.7	57.9	50.0	71.4	52.9	49.9	58.4	76.3	70.3	73.9	68.2	62.2
18:15:00	78.0	78.3	62.5	46.8	52.6	55.6	63.2	55.4	66.8	55.4	66.1	61.1	51.9	66.1	62.3	65.4	61.5	63.4	76.8	62.9	60.6	58.8	51.0	71.9	53.9	49.4	59.8	76.4	72.9	74.2	69.1	62.9
18:30:00	74.6	77.9	64.3	47.3	54.1	56.5	63.2	55.9	67.7	54.9	66.5	62.5	50.9	66.1	62.3	65.9	61.5	63.9	76.8	63.8	60.2	59.7	51.0	72.3	54.4	50.9	59.8	76.0	75.1	74.2	73.5	63.3
18:45:00	71.1	78.6	66.2	48.3	55.0	57.0	63.2	56.4	67.6	55.4	66.9	63.8	51.4	65.2	63.2	66.3	61.9	64.4	77.2	65.2	60.1	60.7	52.0	72.7	54.9	52.4	60.3	75.5	76.3	75.1	74.8	63.8
19:00:00	70.6	79.4	66.6	49.3	56.0	55.0	64.1	57.3	67.6	55.9	67.8	64.2	54.9	66.5	63.2	66.8	63.3	64.3	77.2	64.7	60.6	60.7	52.0	73.2	55.3	52.8	61.2	76.4	77.2	74.6	73.9	64.3
19:15:00	71.1	79.4	66.1	51.3	55.5	56.0	65.0	57.8	67.1	55.8	68.2	65.1	56.8	66.9	63.7	66.8	62.4	65.2	77.2	62.4	61.5	61.1	52.9	73.2	56.3	53.8	61.7	76.3	77.5	75.0	73.4	64.6
19:30:00	69.3	78.6	67.9	52.8	56.5	56.5	65.4	58.7	67.6	56.8	67.3	65.6	57.2	68.3	63.2	66.8	63.8	68.9	77.6	62.8	60.6	62.0	53.9	73.6	57.3	54.3	64.5	76.3	78.0	75.0	74.3	65.2
19:45:00	69.7	79.0	69.7	53.8	57.9	57.9	65.4	59.2	66.7	56.8	66.9	66.0	58.2	69.2	64.1	67.7	62.8	70.2	78.4	62.8	60.6	62.0	54.9	74.0	57.7	54.3	65.0	76.4	79.6	75.0	77.2	65.8
20:00:00	69.2	79.4	71.0	53.8	58.4	58.9	66.3	59.2	65.7	56.3	66.4	66.5	61.0	70.0	64.6	67.7	63.3	70.6	78.8	64.2	61.0	62.5	54.9	74.4	57.7	54.8	64.9	76.0	81.2	75.0	79.2	66.2
20:15:00	69.6	79.4	72.2	55.2	58.3	58.4	65.4	59.6	66.2	56.8	65.9	67.3	62.4	70.0	65.0	68.1	63.3	70.6	79.2	63.7	61.5	62.9	54.9	74.9	57.7	55.7	64.5	75.5	81.2	74.9	79.6	66.4
20:30:00	70.5	79.8	74.0	55.2	59.3	59.9	66.3	59.6	65.3	57.2	65.9	68.2	63.8	70.9	65.9	68.6	62.8	70.6	79.2	64.2	61.9	62.9	54.8	75.3	59.1	56.2	66.7	75.5	80.4	75.4	79.6	66.9
20:45:00	70.9	79.8	75.2	56.7	58.8	62.2	67.6	60.1	64.8	57.7	66.8	69.1	64.3	71.7	66.4	69.0	62.8	71.0	79.2	64.2	62.4	62.9	55.8	75.3	60.1	56.7	67.2	76.3	80.8	75.4	79.6	67.4
21:00:00	71.4	80.2	76.0	57.7	59.2	62.2	68.5	61.5	66.1	57.7	65.9	70.0	64.2	72.2	65.9	68.6	61.4	72.3	79.2	64.6	63.8	62.9	55.8	75.7	61.0	57.6	66.7	77.2	81.1	76.2	78.9	67.8
21:15:00	71.8	80.2	76.9	57.6	59.7	62.7	69.4	62.0	65.2	58.7	66.4	69.9	65.2	72.6	66.4	69.4	61.4	74.0	79.2	64.2	64.2	63.8	57.7	77.7	63.4	58.1	68.1	77.2	81.6	76.2	78.6	68.4
21:30:00	72.6	80.6	77.2	59.5	60.2	62.2	70.3	62.9	65.2	58.7	66.8	69.9	65.6	73.0	66.4	69.4	61.4	74.4	79.2	64.6	65.1	65.2	58.2	79.3	63.3	59.1	68.6	76.7	81.6	76.6	78.5	68.8
21:45:00	73.9	81.0	77.7	60.0	60.6	63.1	70.7	63.3	65.2	59.6	67.2	70.4	66.0	72.6	66.4	69.9	61.4	74.8	79.2	65.1	66.0	64.2	58.7	80.2	63.8	59.5	68.1	77.1	82.8	76.2	79.3	69.2
22:00:00	73.4	81.4	77.7	61.4	61.1	63.1	71.6	64.2	65.2	60.5	67.2	69.9	66.0	72.2	66.4	69.4	60.9	74.8	79.2	65.0	66.4	64.2	59.1	81.0	64.7	60.0	68.6	77.5	83.1	76.6	80.5	69.4
22:15:00	73.8	82.2	77.2	61.8	61.5	63.1	72.0	64.7	65.2	62.4	67.6	69.5	66.5	70.9	65.9	70.3	61.3	74.8	79.1	64.5	66.9	64.7	60.0	80.2	66.0	60.4	68.5	77.5	84.3	76.1	80.8	69.7
22:30:00	74.2	82.6	77.6	62.7	62.0	62.6	72.0	64.7	65.7	63.8	68.1	69.4	66.0	71.3	65.0	70.3	60.4	74.8	79.1	65.0	66.9	64.6	60.5	81.0	66.5	60.9	68.5	77.5	83.9	76.5	81.2	69.8
22:45:00	74.2	81.8	77.6	63.2	62.4	62.6	72.4	65.6	65.6	65.1	69.0	69.9	65.0	69.5	64.9	70.7	60.4	74.8	79.5	65.4	67.7	65.1	61.4	81.0	67.4	61.8	69.0	77.1	83.9	77.3	82.0	70.1
23:00:00	74.6	82.1	77.6	63.6	63.3	63.0	72.9	65.1	65.2	66.5	69.0	69.9	64.5	69.0	64.9	70.3	60.8	75.2	79.5	65.4	68.2	65.6	62.9	80.9	66.9	61.8	69.8	77.9	83.5	77.3	82.4	70.3
23:15:00	75.0	83.3	77.6	64.1	63.3	63.9	72.8	65.1	65.2	67.8	69.0	69.4	64.5	68.6	65.4	70.3	61.3	75.2	79.1	66.3	67.8	65.5	62.8	81.3	66.9	62.2	70.2	77.9	83.5	77.7	82.4	70.5
23:30:00	75.5	84.4	77.2	64.1	63.3	63.9	72.8	65.1	66.1	68.2	69.4	69.4	64.5	67.7	64.4	70.7	62.7	75.2	79.5	66.3	68.2	65.5	63.3	81.7	67.3	63.1	70.2	77.9	82.6	77.8	82.4	70.7
23:45:00	75.9	85.2	78.0	64.5	63.3	64.4	73.6	66.0	66.5	68.7	69.4	68.9	64.5	65.8	64.9	71.5	62.2	75.2	79.5	66.7	68.6	66.0	63.8	81.3	67.8	64.1	70.2	77.8	82.6	77.7	82.8	70.9
DAY AV	77.9	78.9	76.5	63.7	60.2	61.5	72.1	67.9	65.9	61.5	69.5	67.9	66.3	70.7	66.8	69.0	68.7	70.0	76.2	70.8	68.3	68.1	63.8	74.9	67.9	63.0	65.8	69.5	77.6	79.7	76.8	69.6

August 2019 House B average RH calculation spreadsheet

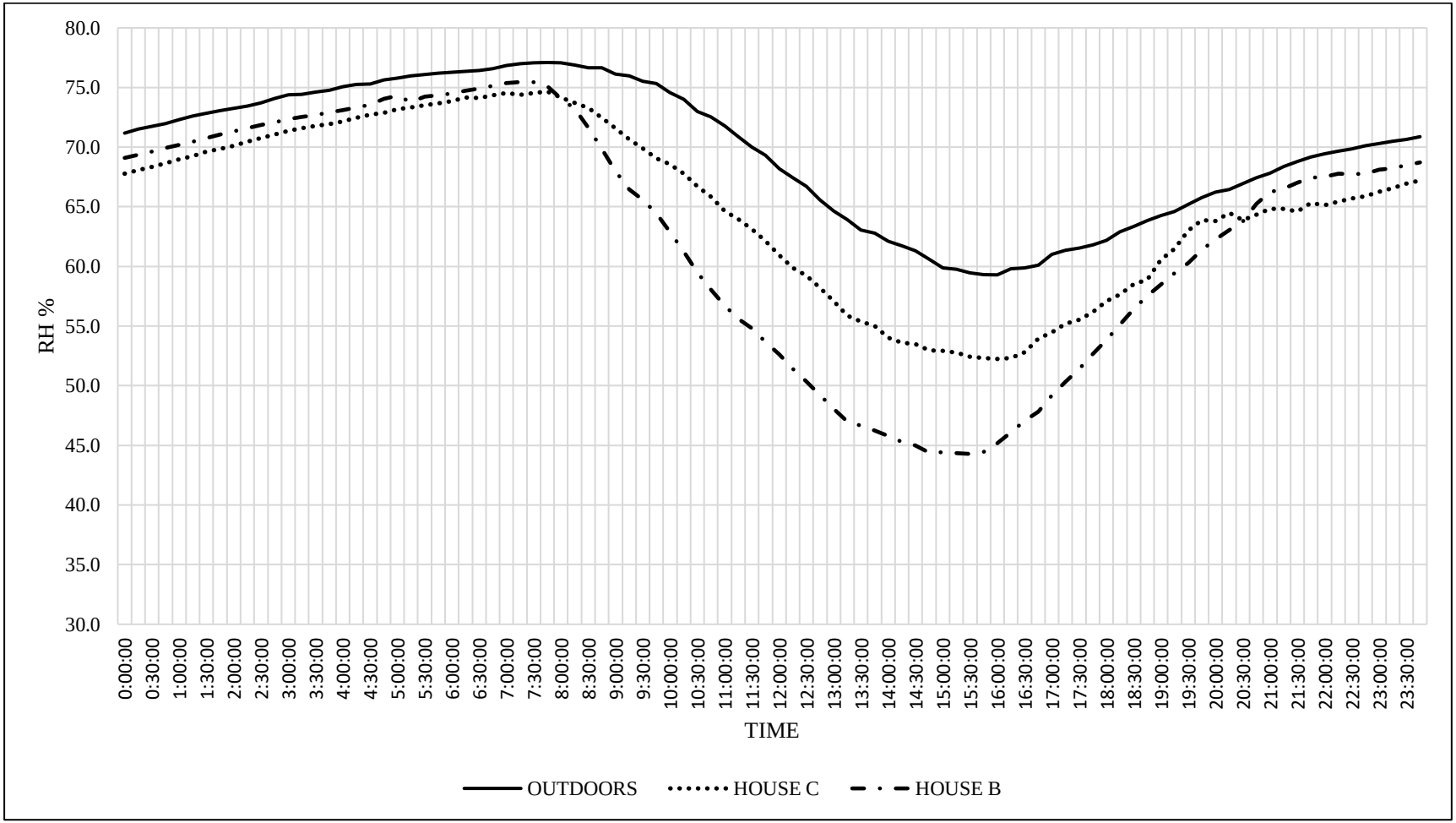
DATA LOG 3: HOUSE B

Time	RELATIVE HUMIDITY																															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	AV
0:00:00	80.7	73.8	78.4	74.5	64.3	63.1	62.4	68.8	64.9	64.9	65.6	69.7	68.7	64.8	66.2	64.4	70.6	64.5	71.3	76.5	66.2	65.5	63.2	63.2	78.0	65.8	65.2	68.3	75.9	78.2	74.9	69.1
0:15:00	79.4	74.2	78.9	74.9	64.7	63.5	62.4	69.2	65.8	65.3	65.5	70.1	68.7	65.6	65.7	64.4	71.0	64.9	71.3	76.5	66.6	65.9	63.7	63.7	78.4	66.2	65.6	68.2	75.9	78.2	75.3	69.3
0:30:00	79.6	74.2	79.3	75.3	65.1	63.9	62.8	69.7	66.2	65.8	65.5	70.0	69.1	65.6	65.7	64.4	71.0	65.3	71.3	76.9	67.1	66.4	64.1	64.6	78.4	66.6	66.0	68.6	76.3	78.6	75.3	69.6
0:45:00	80.4	74.6	79.3	75.7	65.5	64.3	63.3	70.1	66.6	66.2	65.9	70.4	69.1	66.0	66.1	64.4	71.3	66.2	71.3	76.9	67.1	66.8	64.5	65.0	78.3	67.5	66.9	68.2	76.2	78.5	75.7	69.9
1:00:00	80.7	75.0	79.7	75.7	66.0	64.3	64.1	70.5	67.0	66.7	66.4	70.4	69.0	66.5	66.5	64.3	71.7	66.6	71.2	76.9	67.5	67.3	65.0	65.5	78.3	67.6	66.9	68.2	76.6	78.5	75.2	70.2
1:15:00	81.1	75.4	79.7	76.1	66.4	65.2	65.0	70.9	67.0	66.7	66.3	70.9	69.4	66.9	66.9	64.3	72.1	67.0	71.2	76.9	67.5	67.7	64.9	65.9	78.7	67.6	67.8	68.2	76.6	78.9	75.2	70.5
1:30:00	81.1	75.4	80.1	76.1	66.8	65.2	65.9	71.4	67.4	66.7	66.8	70.4	69.4	67.3	67.3	64.3	72.6	67.8	71.2	77.3	67.9	68.1	65.4	66.8	78.7	68.0	67.8	68.2	77.0	79.3	75.6	70.8
1:45:00	81.0	75.8	80.0	76.5	67.3	65.6	66.4	71.8	67.9	66.7	67.2	70.5	69.8	67.7	67.7	64.7	73.0	68.3	71.2	77.3	68.3	68.5	65.8	67.7	79.1	68.0	68.3	68.6	77.0	79.3	75.6	71.1
2:00:00	81.4	76.2	80.4	76.5	67.7	66.0	66.8	72.2	68.3	66.2	67.2	70.5	70.2	68.2	68.1	65.1	73.5	68.7	71.2	77.3	68.7	69.0	65.8	68.1	79.1	68.4	68.7	68.5	77.5	79.3	76.0	71.3
2:15:00	81.8	76.5	80.8	76.9	67.6	66.4	67.3	72.6	68.3	66.2	67.6	70.5	70.7	68.6	68.5	65.6	73.1	69.1	71.6	77.3	69.1	69.0	66.3	69.0	79.5	68.8	68.7	68.9	77.5	79.7	76.0	71.6
2:30:00	81.7	76.9	80.8	77.3	68.1	66.9	67.8	72.6	68.7	66.2	68.1	70.5	71.1	69.1	69.0	65.6	73.0	69.5	71.6	76.9	69.6	69.4	66.3	69.4	79.5	69.3	69.2	69.3	77.9	79.7	76.4	71.9
2:45:00	81.7	77.4	80.8	77.7	68.5	66.8	68.2	73.0	69.1	66.2	68.0	70.5	71.6	69.5	69.5	65.6	73.0	69.9	72.0	76.4	70.0	69.8	66.7	69.8	79.9	69.3	69.6	69.8	78.3	80.1	76.4	72.1
3:00:00	81.7	77.4	80.8	77.7	68.9	67.3	68.7	73.5	69.1	66.2	68.5	70.9	72.1	69.6	69.5	66.0	73.0	70.8	72.0	76.0	70.5	70.3	67.1	70.3	80.3	69.8	70.0	70.1	78.2	80.1	76.8	72.4
3:15:00	82.1	77.4	81.2	78.1	68.9	67.7	69.1	73.9	69.5	65.7	68.5	70.8	72.1	70.0	69.5	66.0	73.4	71.3	72.4	76.0	70.5	70.7	67.6	70.7	80.3	69.8	70.5	70.1	78.2	80.1	76.8	72.5
3:30:00	82.5	77.7	81.2	78.1	69.3	67.7	69.6	74.3	69.5	65.7	68.9	71.2	72.6	70.0	69.4	66.0	73.4	71.3	72.4	75.6	70.5	71.1	67.6	70.7	80.7	70.2	70.9	70.5	78.1	80.1	76.8	72.7
3:45:00	82.5	78.1	81.2	78.0	69.8	68.1	70.0	74.3	69.9	65.7	68.9	71.6	72.6	70.5	69.9	66.4	73.4	71.3	72.8	75.6	70.9	71.1	68.0	70.7	80.7	70.6	70.8	70.9	78.5	80.5	77.2	72.9
4:00:00	82.9	78.1	81.2	78.0	70.2	68.5	70.0	74.7	70.3	65.7	69.3	72.0	73.0	70.9	69.9	66.4	73.4	71.7	72.8	75.5	71.3	71.5	68.5	71.2	80.6	70.6	71.2	70.9	78.5	80.5	77.2	73.1
4:15:00	83.2	78.0	81.6	78.3	70.2	68.5	70.4	75.1	70.3	65.7	69.8	72.0	73.0	70.9	69.9	66.4	73.7	72.2	73.2	75.9	71.8	72.4	68.9	71.1	80.6	71.1	71.7	71.3	78.4	80.5	77.6	73.3
4:30:00	83.2	78.4	81.6	78.3	70.6	68.9	70.9	75.1	70.8	65.7	69.7	72.5	73.0	71.4	69.9	66.9	73.7	72.2	72.8	75.9	71.8	72.8	69.3	71.6	80.6	71.5	72.2	71.7	78.8	80.5	77.6	73.5
4:45:00	83.6	78.8	81.5	78.6	71.0	68.9	71.3	75.5	71.2	66.1	69.7	72.5	73.0	71.8	71.2	68.7	73.8	72.6	73.2	76.3	73.5	75.0	70.7	71.6	81.0	71.9	72.6	72.1	78.8	80.9	78.0	74.0
5:00:00	83.6	78.8	81.5	78.6	71.6	70.3	70.7	75.3	72.2	66.5	70.2	72.5	75.2	73.7	69.2	69.3	73.8	73.0	73.7	77.9	72.0	72.9	71.3	72.0	80.9	72.1	73.3	72.3	79.0	81.5	78.3	74.3
5:15:00	84.0	79.2	81.9	78.6	69.9	68.6	70.6	74.0	70.9	66.9	70.2	72.5	72.3	71.5	69.5	67.5	73.8	73.0	74.5	76.7	72.3	74.2	69.9	72.4	80.9	71.6	71.5	71.7	78.1	80.2	78.3	73.8
5:30:00	84.4	79.6	81.9	78.6	71.6	69.4	71.0	75.2	71.7	67.0	70.1	72.5	72.7	71.9	70.4	68.3	73.8	73.4	74.1	77.2	72.7	73.7	70.3	72.4	80.9	72.9	72.7	72.6	78.9	80.6	78.8	74.2
5:45:00	84.8	79.6	82.3	78.5	71.1	69.4	71.8	75.2	71.6	67.4	70.5	72.5	72.6	72.3	70.4	68.7	74.2	73.8	74.1	77.1	73.1	73.6	70.3	72.4	80.9	72.4	73.1	72.5	78.9	80.5	78.8	74.3
6:00:00	84.8	79.5	82.3	78.5	71.5	69.3	72.2	75.1	71.6	67.4	71.0	73.0	72.6	72.3	70.8	69.1	74.2	73.8	74.0	77.1	73.1	74.0	70.7	73.2	81.3	72.8	73.0	72.5	78.9	80.9	78.8	74.5
6:15:00	84.8	79.5	82.3	78.4	71.9	69.7	72.6	75.5	72.0	67.4	71.4	73.0	73.0	72.6	70.7	69.5	74.2	74.2	74.4	77.1	73.5	74.4	71.1	73.6	81.3	73.2	73.4	72.9	79.3	80.9	79.1	74.7
6:30:00	84.8	79.5	82.3	78.4	71.9	70.1	73.5	75.5	72.4	67.4	71.4	73.0	73.4	73.0	71.1	70.0	74.6	74.2	74.4	77.1	73.9	74.8	71.1	73.6	81.2	73.2	73.9	72.8	79.7	81.3	79.1	74.9
6:45:00	84.8	79.9	82.3	78.4	72.3	70.5	73.9	75.9	72.3	67.4	71.4	73.0	73.4	73.5	71.1	70.0	74.6	74.6	74.9	77.0	74.3	74.8	71.5	74.1	81.7	73.6	73.8	73.2	79.7	81.7	79.9	75.1
7:00:00	86.0	80.3	82.3	78.8	72.7	70.5	74.3	76.3	72.8	67.4	71.9	72.9	73.4	73.5	71.5	70.4	74.5	74.6	74.8	77.5	74.3	75.2	71.5	74.1	80.9	74.0	74.2	73.7	79.7	81.7	80.3	75.4
7:15:00	85.9	80.3	82.3	78.4	72.8	70.6	74.3	76.3	72.8	67.9	71.9	73.0	73.4	73.5	71.5	70.8	75.0	76.4	74.8	77.5	74.3	75.2	71.9	74.1	80.5	74.1	74.3	74.2	79.7	81.6	80.0	75.5
7:30:00	85.2	80.4	82.6	78.9	73.2	71.5	74.7	76.3	73.4	67.5	72.3	73.0	73.4	73.5	72.0	70.8	75.0	76.0	74.8	77.1	74.3	75.2	72.0	74.1	80.5	73.7	74.3	71.5	79.8	81.6	80.0	75.4
7:45:00	84.5	80.6	82.6	78.8	72.3	70.5	75.1	76.0	71.5	67.1	71.9	72.6	73.0	73.1	72.0	71.3	74.7	76.4	74.9	76.7	74.3	75.3	71.6	74.6	80.6	73.3	73.9	67.4	79.8	81.7	80.1	75.1
8:00:00	82.9	78.7	82.6	72.6	66.1	65.6	75.1	73.7	67.0	66.2	72.0	72.6	72.6	72.8	72.0	71.7	74.4	77.3	74.9	76.4	74.3	75.3	71.2	74.2	80.9	73.3	73.6	67.3	79.8	81.7	78.1	74.1
8:15:00	82.6	77.6	82.6	67.1	62.5	60.3	75.1	72.8	63.1	66.7	73.5	72.2	72.3	72.8	72.0	72.1	72.4	77.4	74.5	76.0	73.9	74.9	70.5	74.6	78.3	72.9	72.5	67.4	79.8	81.7	77.8	73.2
8:30:00	83.1	76.4	82.6	62.3	58.1	56.6	75.5	67.0	59.6	66.7	71.4	71.8	71.5	72.1	71.7	72.1	69.2	77.2	74.5	74.9	74.0	74.1	69.2	74.7	73.8	72.1	70.8	61.4	79.5	81.7	75.5	71.6
8:45:00	83.3	74.9	82.6	58.2	53.9	53.8	75.6	61.2	55.9	64.6	70.1	71.0	71.1	70.8	70.1	72.5	67.5	71.0	74.5	74.1	73.6	74.2	68.3	74.6	70.5	71.6	69.2	56.4	79.1	81.7	69.0	69.8
9:00:00	77.6	71.4	82.7	54.4	50.5	53.3	76.0	60.2	52.5	59.8	68.6	70.3	70.7	70.4	67.3	73.0	64.9	70.2	74.5	72.5	73.6	73.0	68.3	75.0	66.4	71.2	64.2	53.1	78.8	81.7	61.9	68.0
9:15:00	75.9	70.0	82.3	51.5	47.5	53.2	76.0	55.6	50.6	55.2	69.0	68.6	70.7	70.4	61.7	73.0	61.9	67.5	74.1	70.5	72.5	72.2	68.7	78.5	62.6	71.2	58.3	50.1	78.4	81.3	61.3	66.5
9:30:00	75.4	67.9	82.0	49.0	45.5	54.7	76.0	54.6	48.1	54.2	70.5	67.0	70.7	70.3	58.9	73.0	59.9	66.0	74.1	70.5	70.9	71.4	69.1	75.4	62.0	70.8	57.3	48.2	76.9	81.0	62.1	65.6
9:45:00	74.6	65.7	80.2	47.1	43.0	52.8	76.0	54.6	45.6	52.3	68.7	65.4	70.7	70.8	59.2	73.0	60.3	62.6	74.1	70.0	68.9	70.6	69.1	69.7	60.5	70.0	55.8	46.2	75.7	81.0	63.5	64.4
10:00:00	72.4	63.1	78.8	44.5	40.9	46.5	76.1	51.8	45.1	49.8	68.2	63.2	70.4	70.8	57.5	73.0	61.2	61.6	73.7	69.6	65.1	70.1	68.3	65.2	59.1	65.9	53.5	44.7	75.3	81.0	63.9	62.9
10:15:00	70.4	61.7	73.3	43.6	39.3	42.5	75.7	50.2	45.1	47.9	68.2	60.4	68.4	69.6	55.6	73.0	61.6	59.2	73.3	68.8	61.0	69.0	67.5	65.9	55.4	63.7	49.7	42.1	74.6	80.3	61.4	61.2
10:30:00	66.9	61.2	72.8	41.5	37.7	39.9	74.5	47.7	42.6	46.4	68.2	59.4	66.3	68.4	55.2	72.0	60.7	59.2	73.3	66.7	60.5	61.7	66.7	67.6	54.0	56.5	48.6	39.0	71.8	78.5	59.5	59.5
10:45:00	66.4	62.1	69.0	40.5	36.1	37.8	73.5	47.7	40.5	46.4	67.8	59.3	64.1	67.1	56.0	68.3	59.4	58.7	73.0	65.4	59.2	55.2	65.8	68.4	51.6	50.7	47.6	40.4	67.3	76.1	58.6	58.1
11:00:00	66.9	62.5	64.3	39.4	36.1	37.3	68.6	45.3	40.0	45.3	67.0	58.5	63.6	66.3	56.9	66.1	58.9	58.2	72.2	64.1	58.6	53.7	65.3	69.3	49.7	47.7	43.1	39.5	63.4	73.7	56.2	56.7
11:15:00	62.7	63.7	62.9	38.3	36.2	36.2	63.3	44.7	39.5	43.3	65.7	56.5	61.0	65.0	56.9	65.2	58.8	54.6	71.8	63.6	59.0	52.6	65.3	69.7	47.8	47.1	42.6	40.9	60.1	72.0	56.3	55.6
11:30:00	61.4	64.2	58.8	38.4	36.7	36.3	63.2	45.3	40.6	44.3	65.2	57.1	55.1	64.1	56.9	64.7	60.2	54.5	71.3	62.3	58.6	53.1	64.0	68.9	46.3	45.7	41.1	38.5	58.7	70.4	53.0	54.8
11:45:00	58.0	63.8	58.2	37.2	35.7	35.2	57.8	42.7	39.5	43.2	65.2	55.3	52.6	63.2	57.8	64.3	60.7	54.0	70.6	62.3	57.7	52.6	60.1	67.7	46.3	45.0	39.4	39.4	57.4	69.0	52.5	53.7
12:00:00	57.1	63.4	55.9	36.1	35.1	34.0	57.2	41.2	38.4	42.2	65.2	53.8	49.7	61.4	57.9	63.0	61.2	52.6	69.8	61.8	57.2	51.1	57.3	63.0	44.8	43.5	40.4	41.4	54.6	67.8	52.9	52.6
12:15:00	55.0	63.4	53.4	36.1	34.0	37.1	56.2	39.6	37.4	42.2	65.2	51.9	46.2	60.0	54.2	61.2	60.2	50.2	66.9	60.5	56.3	49.2	55.4	61.6	42.6	43.4	41.3	43.5	51.7	66.1	52.4	51.4
12:30:00	57.4	62.9	52.9	35.6	31.7	36.2	56.1	39.0	38.4	41.2	64.4	50.4	44.7	58.7	52.8	60.7	59.4	48.7	62.5	57.8	54.4	47.6	54.5	59.7	41.5	43.0	43.4	42.5	49.5	63.0	50.0	50.3
12:45:00	56.1	62.1	52.3	35.0	31.8	34.0	56.1	38.4	37.3	43.4	63.1	49.0	42.6	57.3	51.3	58.9	57.5	48.1	61.5	55.4	50.6	47.6	50.7	58.3	42.5	40.9	40.4	40.6	50.0	60.7	52.0	49.2
13:00:00	52.1	61.6	52.7	34.5	30.6	31.8	55.6	39.5	35.7	42.3	61.7	47.9	42.1	55.9	50.8	57.1	55.2	47.2	61.9	54.5	51.0	47.1	46.8	56.0	42.6	41.3	39.9	37.4	47.9	60.3	48.4	48.0
13:15:00	53.0	61.2	49.8	33.9	29.4	32.8	53.7	40.4	36.1	40.2	61.3	46.4	40.5	54.4	50.3	53.8	53.3	44.6	62.7	53.9	50.1	47.1	43.7	51.7	41.5	41.2	37.3	36.8	49.8	55.6	49.9	47.0
13:30:00	52.0	61.6	49.3	33.9	29.5	33.9	52.7	41.5	35.6	39.2	59.9	46.1	39.4	54.4	50.3	53.3	51.4	45.5	64.0	53.5	49.1	46.1	42.1	49.6	39.4	41.3	37.2	36.3	51.8	54.6	51.2	46.6
13:45:00	51.7	60.3	47.8	32.8	28.3	31.8	50.8	42.6	35.1	38.5	59.9	43.5	39.4	53.9	49.8	53.7	49.5	47.5	64.9	52.5	49.5	46.0	40.5	50.0	38.3	41.2	38.2	36.2	53.7	52.2	53.2	46.2
14:00:00	52.7	57.7	48.7	32.8	28.3	31.2	50.8	42.0	33.5	39.0	59.9	40.3	37.8	52.1	48.4	51.9	47.5	48.5	64.9	51.1	47.6	44.6	39.9	54.3	38.8	41.7	37.2	36.1	54.2	53.0	52.8	45.8
14:15:00	51.0	56.1	49.7	31.6	28.3	30.7	47.9	42.0	32.4	40.0	56.3	39.2	37.3	49.7	48.8	50.4	46.4	48.1	64.5	50.6	47.5	41.5	38.8	60.9	39.3	40.2	37.2	38.7	55.1	52.5	50.9	45.3
14:30:00	48.4	55.2	46.8	31.6	28.3	30.6	47.8	42.5	32.9	40.6	53.4	38.2	36.7	47.1	49.3	50.4	46.4	47.6	62.8	50.6	45.1	41.5	39.3	63.7	38.7	40.2	37.6	41.3	56.1	54.4	49.8	45.0
14:45:00	48.9	53.8	44.7	31.6	27.7	30.6	46.7	42.0	32.3	40.6	52.8	36.6	36.1	47.1	49.8	48.4	44.9	44.6	61.9	50.5	43.5	39.4	38.8	63.7	39.3	37.6	36.1	43.3	56.1	53.9	52.2	44.4
15:00:00	47.3	53.2	44.6	31.6	28.8	30.0	47.7	42.5	34.4	38.0	51.4	37.0	36.6	46.6	48.9	48.4	46.4	44.0	61.4	50.6	43.5	38.9	38.8	62.8	39.2	38.1	36.1	44.3	56.1	54.8	54.7	44.4
15:15:00	46.4	52.8	44.6	31.6	28.2	32.1	47.7	42.5	33.4	37.9	50.9	39.1	37.6	44.6	48.4	48.4	47.4	43.9	61.0	48.7	44.0	39.3	38.2	61.8	39.3	38.6	36.6	45.3	56.1	55.3	52.7	44.3
15:30:00	45.9	51.8	44.1	32.1	28.2	33.8	45.7	41.4	32.3	37.5	48.4	38.5	37.7	45.1	48.3	49.3	45.9	45.9	60.1	47.6	45.5	42.9	41.3	60.9	37.2	38.5	36.0	45.8	56.1	57.1	51.8	44.3
15:45:00	46.9	49.8	46.0	32.1	30.4	32.2	45.7	41.5	32.7	35.3	49.4	38.5	37.6	44.0	49.3	50.8	43.8	46.9	60.1	47.1	46.0	42.4	43.3	60.0	37.1	38.0	38.0	47.9	56.1	58.5	51.2	44.5
16:00:00	51.4	53.5	46.0	32.6	30.4	33.3	45.2	40.9	34.9	35.8	49.9	38.5	37.1	44.5	49.8	50.8	44.2	50.4	60.0	47.5	46.4	43.4	42.4	60.9	37.0	38.0	39.6	49.9	56.5	56.7	53.2	45.2
16:15:00	54.9	59.2	46.6	32.6	30.4	36.4	45.6	41.4	37.5	37.9	47.9	39.1	37.0	44.5	50.2	50.3	46.2	53.3	60.0	48.5	47.0	43.4	41.3	64.2	38.1	38.0	40.2	52.8	56.5	56.2	51.6	46.1
16:30:00	55.9	62.0	49.0	32.6	31.5	37.5	46.1	43.4	39.6	38.9	48.3	39.0	38.6	46.9	51.2	50.3	46.7	54.8	60.5	49.5	46.4	43.4	42.3	63.7	38.0	39.0	40.7	55.7	56.6	57.1	54.1	47.1
16:45:00	55.2	63.0	50.5	33.7	32.5	36.0	46.6	42.9	42.2	40.0	49.3	40.5	39.1	48.9	52.1	51.2	46.7	55.7	61.8	49.5	46.4	43.4	44.3	64.2	38.6	39.0	41.7	58.1	57.0	58.0	55.0	47.8
17:00:00	62.4	64.3	49.9	34.2	34.7	37.5	47.6	43.4	44.8	41.5	49.8	41.0	39.6	50.4	53.1	52.7	47.2	56.2	62.7	51.4	48.4	44.4	44.3	66.5	39.1	41.0	42.2	59.9	57.5	58.5	58.0	49.2
17:15:00	65.1	65.3	52.3	33.5	34.7	39.0	48.6	44.9	46.8	43.1	50.7	41.6	40.6	51.3	53.6	54.1	48.2	55.7	63.6	52.4	49.4	45.9	45.3	66.4	42.2	42.1	44.3	61.7	57.5	60.3	59.4	50.3
17:30:00	65.1	64.4	53.3	33.4	35.2	41.6	49.5	46.4	48.3	45.7	51.7	43.6	42.7	52.8	53.5	55.0	49.2	55.3	64.4	53.8	51.3	48.4	46.3	66.8	45.3	42.6	45.2	63.1	57.9	61.6	60.8	51.4
17:45:00	65.5	65.2	54.8	35.5	36.8	43.2	51.4	47.3	50.3	46.1	53.0	47.7	44.1	53.7	54.0	55.9	49.1	55.7	65.8	55.2	52.3	49.3	47.3	68.6	46.8	44.1	47.2	64.0	59.2	63.0	60.2	52.7
18:00:00	66.3	67.0	55.7	37.6	38.9	45.2	53.4	48.3	51.8	47.1	54.9	49.2	45.1	54.6	54.9	56.9	50.1	58.1	66.2	56.6	52.7	50.3	48.2	68.1	47.3	46.1	49.2	64.9	60.6	64.3	59.6	53.8
18:15:00	67.1	68.3	57.1	39.7	41.0	47.2	54.8	48.2	53.3	49.1	56.8	52.7	46.1	56.0	56.3	57.7	51.0	58.6	67.0	57.0	54.1	51.7	49.7	68.5	48.2	47.1	50.2	65.8	61.9	65.6	61.0	55.1
18:30:00	67.5	69.1	58.5	41.8	44.1	48.2	55.7	48.7	54.2	50.1	58.6	53.6	47.1	57.4	57.2	59.1	53.5	59.6	67.9	58.4	55.1	53.2	50.7	70.3	49.2	48.0	51.7	66.6	64.2	66.4	63.8	56.4
18:45:00	67.8	70.3	59.9	43.8	45.6	49.7	57.2	50.1	55.1	51.6	61.0	55.0	48.1	58.3	58.7	60.0	54.0	59.1	68.7	59.8	56.0	54.1	51.6	70.7	50.1	49.5	52.6	67.5	65.5	67.3	65.2	57.5
19:00:00	68.2	71.1	60.8	45.9	47.2	50.2	57.6	51.1	56.1	53.0	61.8	55.9	49.0	59.3	59.1	60.9	55.4	60.0	69.6	61.1	56.9	54.5	52.1	70.6	51.1	50.9	53.6	67.9	67.8	68.1	65.7	58.5
19:15:00	68.6	72.4	61.7	47.9	48.1	50.6	58.5	52.5	56.5	54.4	62.8	57.3	51.0	60.2	59.6	61.4	58.3	59.4	70.0	61.6	57.9	55.5	53.0	71.0	52.1	52.4	54.6	68.8	69.1	70.0	65.1	59.4
19:30:00	69.0	72.8	62.1	49.3	49.1	51.6	59.0	54.0	57.4	55.4	63.2	59.2	53.0	61.1	60.0	62.3	58.8	61.2	70.8	61.5	57.8	56.4	54.0	71.8	52.1	53.8	56.0	69.2	69.5	72.2	65.5	60.3
19:45:00	69.4	73.6	63.0	53.4	50.6	52.1	60.4	54.9	57.9	56.4	64.2	60.6	54.0	61.6	60.5	62.7	60.2	63.0	72.6	63.0	58.3	57.4	54.9	72.3	54.6	54.3	57.4	70.1	70.3	71.8	67.3	61.4
20:00:00	70.2	74.0	63.9	56.0	52.1	53.1	61.8	55.4	58.3	56.8	64.2	62.4	53.9	62.0	61.9	63.2	60.6	64.4	72.2	65.3	58.7	57.8	55.9	73.6	55.6	54.8	59.3	70.5	71.6	72.2	68.6	62.3
20:15:00	70.6	74.3	64.8	59.5	53.1	53.1	61.3	59.9	58.8	57.3	64.6	65.2	55.9	62.4	61.0	63.6	62.0	64.8	72.6	64.0	59.7	58.8	55.9	73.2	55.0	55.7	60.3	71.0	72.4	71.7	71.8	63.0
20:30:00	71.0	75.1	65.7	57.5	54.1	53.6	62.4	59.5	59.2	57.8	64.6	67.6	61.7	65.7	65.3	64.0	63.4	65.2	73.0	63.0	60.1	58.8	55.9	72.3	55.5	56.6	60.7	71.4	72.8	72.1	71.3	63.8
20:45:00	71.4	75.2	67.0	55.9	55.0	56.5	63.4	59.0	59.7	59.8	70.6	69.4	62.7	66.3	70.9	64.5	71.3	65.6	72.6	65.8	63.5	58.8	58.2	73.7	56.4	57.6	61.1	71.8	73.7	72.1	72.5	65.2
21:00:00	71.8	75.6	67.9	55.8	54.5	57.2	63.8	62.3	64.0	63.6	72.5	67.4	62.1	68.6	73.3	64.9	66.8	67.4	72.9	65.9	70.1	58.7	62.2	75.0	57.4	57.5	62.1	72.2	73.8	72.0	73.4	66.2
21:15:00	71.8	76.0	68.7	57.2	54.9	59.0	63.7	61.2	63.1	61.7	71.7	67.3	62.0	68.0	68.7	70.9	63.5	68.8	74.2	68.7	69.3	59.2	64.8	75.4	58.3	59.4	63.1	73.6	72.6	71.6	74.2	66.5
21:30:00	71.8	76.0	69.6	57.6	56.8	58.5	64.1	61.2	62.5	60.7	70.7	67.3	62.5	67.5	66.3	75.9	62.5	71.1	80.2	66.7	67.0	61.6	64.3	75.8	59.2	60.4	62.7	74.5	73.9	73.8	74.6	67.0
21:45:00	72.2	76.4	70.4	58.5	60.7	58.5	64.5	61.1	62.5	60.6	68.7	67.7	62.9	67.5	64.8	76.8	63.4	75.3	79.0	65.7	67.5	60.6	63.1	76.2	60.1	63.3	63.2	73.6	76.4	73.8	75.5	67.4
22:00:00	72.2	76.8	70.9	59.4	59.7	59.4	64.9	62.0	62.5	60.6	68.6	67.7	63.7	67.5	64.7	75.6	63.8	73.9	77.2	65.2	65.9	63.9	62.0	76.2	61.0	62.8	65.9	74.1	75.5	73.7	75.9	67.5
22:15:00	72.6	76.8	71.2	60.3	59.6	59.3	65.3	62.5	62.4	61.5	69.0	68.5	64.2	67.5	64.7	78.3	64.2	72.0	76.7	64.7	64.4	66.4	62.0	76.2	61.9	63.2	64.9	75.8	75.5	73.7	75.8	67.8
22:30:00	73.0	76.8	72.1	61.2	60.5	59.3	66.2	62.4	62.4	62.4	69.0	68.0	64.1	67.0	65.1	72.5	64.2	71.5	77.1	65.1	64.4	63.5	61.9	77.0	62.3	63.6	65.3	74.9	76.3	74.1	76.2	67.7
22:45:00	73.0	77.2	72.5	61.6	60.9	59.3	66.6	62.9	62.8	62.8	69.4	68.0	64.1	67.0	64.1	70.6	64.2	71.0	76.7	65.1	63.8	62.5	61.9	76.9	62.8	63.6	66.1	75.7	77.5	74.1	76.6	67.8
23:00:00	73.0	77.2	72.9	62.1	61.9	59.7	67.1	63.3	63.2	63.8	69.4	68.4	64.0	66.9	64.1	69.6	64.6	71.5	78.0	64.6	64.2	62.5	62.8	76.9	63.2	64.0	67.5	75.3	77.9	74.5	77.0	68.1
23:15:00	73.4	77.6	73.2	63.0	61.3	60.1	67.5	63.7	63.7	64.2	69.3	68.4	64.4	67.3	64.0	69.4	64.2	70.5	75.8	65.0	64.2	62.4	62.8	77.2	64.1	63.9	67.9	75.7	78.7	74.5	77.4	68.2
23:30:00	73.4	77.6	73.6	63.4	61.7	61.0	67.9	64.1	64.6	64.7	69.8	68.8	64.4	67.2	64.5	69.8	64.6	70.9	76.2	65.4	64.6	62.4	62.8	77.6	64.5	64.3	67.9	75.7	77.9	74.5	77.8	68.5
23:45:00	73.4	78.0	74.1	63.8	62.2	61.9	68.4	64.5	65.0	65.1	69.7	68.8	64.8	67.2	64.5	70.2	64.1	70.9	76.1	65.4	65.1	62.8	63.2	77.6	65.3	64.8	67.8	75.6	77.8	74.9	77.8	68.7
DAY AV	70.9	70.6	68.5	56.0	51.9	52.9	63.2	58.7	55.7	55.7	64.7	61.2	59.6	63.6	61.9	64.1	62.7	63.4	70.6	66.1	62.3	60.7	59.6	69.0	61.1	58.3	57.9	61.2	69.8	72.2	67.5	62.6

August 2019 House C average RH calculation spreadsheet

DATA LOG 2: HOUSE C																																
Time	**RELATIVE HUMIDITY**																															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	AV
0:00:00	79.7	71.2	76.7	72.4	64.6	60.1	61.3	67.8	62.5	62.9	64.4	68.4	67.9	64.7	68.1	66.6	67.8	67.2	68.6	73.9	67.1	66.8	63.7	63.1	72.5	64.5	64.7	65.5	71.7	72.7	71.8	67.8
0:15:00	80.1	71.8	77.1	72.8	64.5	60.5	61.8	68.2	63.3	63.8	64.9	68.9	68.3	64.5	67.6	66.5	68.7	67.6	68.6	74.7	67.1	67.2	64.1	63.6	72.9	64.5	65.2	64.8	72.5	72.6	72.2	68.1
0:30:00	79.7	71.7	77.6	73.2	65.0	60.9	62.2	68.7	63.8	64.2	65.3	68.8	68.3	64.5	67.6	66.1	69.0	67.5	69.0	75.1	67.0	68.1	64.9	63.6	73.4	64.9	65.2	65.1	72.9	73.1	72.1	68.3
0:45:00	79.7	72.1	77.9	74.0	65.4	61.4	62.2	69.1	64.2	64.6	65.3	69.2	68.7	64.9	67.6	66.5	69.4	68.4	69.0	75.1	67.5	68.1	65.3	64.0	73.3	65.3	65.6	65.5	72.9	73.5	72.6	68.7
1:00:00	79.7	72.5	77.9	74.4	65.8	61.8	63.1	70.0	64.6	65.1	65.7	69.2	68.6	64.8	67.5	66.9	70.3	68.8	69.0	75.5	67.5	68.9	66.2	64.5	72.9	65.8	66.1	65.9	73.2	73.4	72.5	69.0
1:15:00	79.6	72.9	77.3	74.9	66.3	62.2	63.5	69.9	65.1	65.6	66.2	69.6	69.0	65.2	67.9	66.9	70.7	69.2	69.0	75.5	67.9	68.9	66.7	64.5	73.7	66.2	66.0	66.3	73.2	73.8	73.0	69.2
1:30:00	80.0	73.3	77.2	74.9	66.7	62.7	64.4	70.4	65.5	65.6	66.6	69.6	69.4	65.6	68.3	67.8	71.5	69.6	69.4	75.9	68.3	69.4	67.1	64.5	74.5	66.2	66.5	66.8	73.2	74.3	73.0	69.6
1:45:00	80.0	73.3	78.0	75.3	66.7	62.7	64.9	70.3	65.9	65.6	66.6	69.6	69.9	66.5	68.3	67.8	71.6	69.9	69.4	75.9	69.1	69.8	67.5	64.8	75.3	66.2	66.9	66.7	74.0	74.3	72.9	69.9
2:00:00	79.6	73.3	78.3	75.2	67.1	63.1	65.3	70.8	66.3	65.6	67.0	70.0	70.3	66.9	68.2	67.7	72.0	70.4	70.2	75.9	69.5	70.2	68.0	65.7	75.3	66.2	66.9	66.7	74.4	74.3	73.4	70.1
2:15:00	79.6	73.7	78.7	75.6	67.5	63.5	65.8	71.2	66.8	65.6	67.0	70.4	70.3	67.3	68.2	68.6	72.4	70.8	70.6	75.9	70.0	70.2	68.4	66.6	75.7	66.6	67.3	67.1	74.8	74.7	73.4	70.5
2:30:00	79.6	74.1	78.5	76.0	68.0	64.0	66.2	71.2	67.2	66.0	67.4	70.4	70.7	68.2	69.0	69.0	72.4	71.1	71.0	75.9	70.3	70.6	68.4	67.0	76.1	67.1	67.7	66.7	75.3	74.6	73.8	70.8
2:45:00	79.6	74.5	78.8	76.0	68.0	64.4	66.7	71.6	67.2	66.0	67.4	71.3	71.6	69.1	69.0	68.6	72.4	71.6	71.5	75.9	71.2	71.0	68.8	67.9	76.1	67.5	68.2	67.1	75.2	75.0	73.8	71.1
3:00:00	80.0	74.9	79.1	76.4	68.0	64.4	67.1	72.0	67.6	66.0	67.9	71.7	71.6	69.1	69.5	69.0	72.4	72.4	71.9	75.9	71.6	71.0	69.2	68.3	76.5	67.5	69.0	67.0	75.6	75.4	73.8	71.3
3:15:00	80.4	74.9	79.5	76.8	68.4	64.8	67.1	72.0	68.0	66.0	67.8	71.7	72.1	69.6	69.1	69.4	72.4	72.4	72.3	75.8	71.6	71.4	69.2	68.8	76.9	68.0	69.0	67.9	76.0	75.8	73.8	71.6
3:30:00	80.4	74.4	79.5	76.8	68.4	65.7	67.6	72.4	68.0	66.0	68.3	71.6	72.5	70.0	69.0	69.4	72.8	72.5	72.3	75.8	72.1	71.9	69.7	69.2	76.9	68.0	69.4	68.2	76.0	76.2	74.2	71.8
3:45:00	80.4	74.8	79.9	76.7	68.8	65.7	67.6	72.4	68.4	66.4	68.3	72.5	72.5	70.5	69.0	69.4	72.8	72.4	72.7	75.8	72.5	71.8	69.7	69.2	76.9	68.0	69.8	68.6	75.9	76.6	74.2	71.9
4:00:00	79.9	75.2	79.9	77.1	68.8	66.1	68.0	72.8	68.8	66.4	68.7	72.9	72.5	70.9	69.5	69.4	73.2	72.9	72.7	75.8	72.5	72.3	69.6	69.7	77.3	67.9	70.2	69.0	76.3	77.0	74.2	72.2
4:15:00	80.3	75.2	80.3	77.1	68.8	66.1	68.4	73.3	69.3	66.4	68.7	73.3	73.4	71.3	69.5	69.8	73.2	72.9	73.1	75.8	72.5	72.2	70.1	69.6	77.7	68.8	71.1	69.4	76.3	77.4	74.6	72.4
4:30:00	81.1	75.6	80.3	77.4	68.8	67.0	68.4	73.3	69.3	66.8	69.1	73.3	73.8	71.3	69.9	69.8	73.6	73.3	73.1	75.7	72.9	72.7	70.5	70.1	77.7	69.2	71.6	69.9	76.7	77.8	74.6	72.7
4:45:00	80.4	75.2	80.4	77.4	69.3	66.5	68.9	73.7	70.1	66.8	69.1	74.1	73.8	71.3	70.3	70.3	73.6	73.3	73.5	76.1	72.9	72.6	70.5	70.5	77.7	69.6	71.6	70.3	76.7	77.8	74.6	72.9
5:00:00	80.7	76.0	81.6	78.2	69.2	68.8	69.3	73.7	70.1	66.8	69.1	74.1	73.8	71.8	70.7	70.2	73.6	73.3	73.9	76.1	73.3	73.1	70.9	70.5	77.6	70.0	72.0	70.7	77.1	77.8	74.6	73.2
5:15:00	81.5	75.6	80.5	78.2	69.7	68.4	69.3	73.7	70.1	67.2	69.5	74.1	74.2	71.7	70.7	70.7	73.6	73.7	73.9	76.5	73.3	73.5	70.9	70.9	77.6	70.4	72.0	70.6	77.5	78.2	75.4	73.3
5:30:00	81.9	75.5	80.4	78.1	69.7	69.1	69.8	74.1	70.5	67.6	69.5	74.1	74.2	71.7	71.1	70.7	73.6	74.1	73.9	76.5	73.7	73.4	71.3	70.9	78.0	71.3	72.4	70.6	77.5	78.6	75.8	73.5
5:45:00	81.8	76.3	80.7	78.5	69.6	66.7	70.2	74.1	70.5	67.6	69.9	74.1	74.2	71.7	71.5	71.1	74.0	74.1	73.9	76.5	74.1	73.8	71.8	71.3	78.0	71.3	72.8	71.5	77.5	78.2	76.6	73.7
6:00:00	82.2	76.3	80.7	78.5	70.0	67.1	70.2	74.5	70.9	67.6	70.4	74.1	75.0	71.7	71.5	71.5	74.0	74.1	73.8	76.5	74.1	73.8	71.8	71.3	78.4	71.7	73.2	71.4	77.9	78.6	77.0	73.9
6:15:00	82.2	77.5	81.1	78.9	70.5	67.5	72.2	74.5	70.9	67.6	70.4	74.5	74.6	72.1	72.0	71.5	74.0	74.5	74.3	76.9	74.5	74.2	72.2	71.7	78.4	71.7	73.2	71.4	77.9	78.6	77.0	74.1
6:30:00	81.9	77.5	81.0	78.8	70.5	67.9	68.8	74.1	71.8	68.1	70.8	74.5	74.2	72.6	72.0	71.5	74.4	74.5	74.3	76.5	74.5	74.2	72.2	72.1	78.4	71.8	73.2	71.8	77.9	78.6	77.3	74.1
6:45:00	82.3	77.0	81.0	78.8	71.8	68.9	69.7	74.9	70.5	68.1	70.8	74.5	75.0	73.0	71.9	72.4	74.4	74.9	74.3	77.4	74.2	75.1	72.6	72.1	78.3	72.6	72.8	72.3	77.5	78.6	77.7	74.4
7:00:00	81.9	77.8	81.4	79.2	71.4	68.9	66.4	74.5	70.9	68.1	70.8	74.5	74.2	73.5	72.9	72.0	74.8	75.3	75.6	76.9	75.5	75.1	73.5	72.6	78.3	72.7	74.1	72.3	79.2	78.6	78.1	74.5
7:15:00	81.8	78.2	81.4	78.4	74.4	68.4	66.9	74.9	70.9	68.1	71.2	74.5	74.1	73.0	71.5	71.5	74.8	75.3	74.3	76.5	74.2	74.7	72.2	72.6	78.3	72.2	73.3	72.4	78.4	79.5	78.5	74.4
7:30:00	82.2	78.7	81.8	78.2	69.2	67.6	70.4	74.9	72.3	68.5	71.2	74.5	74.6	73.0	71.9	71.5	75.2	75.3	74.7	76.9	74.6	74.7	72.6	73.0	78.3	72.2	73.3	71.6	78.4	80.3	78.6	74.5
7:45:00	82.6	79.2	81.8	74.4	68.3	66.5	71.6	74.5	72.5	69.0	71.7	74.5	74.6	73.0	72.3	71.9	75.7	77.6	74.7	76.9	75.0	75.1	72.6	73.5	80.0	74.8	73.7	70.3	78.4	78.8	79.0	74.7
8:00:00	82.6	78.1	81.8	71.8	66.2	64.3	72.0	73.7	70.9	68.6	71.7	73.6	74.6	73.0	72.3	72.3	78.3	75.7	75.1	77.4	75.0	75.1	72.6	73.7	76.6	71.1	73.8	70.0	78.4	79.5	78.7	74.1
8:15:00	83.0	77.7	80.3	69.0	64.0	62.2	72.8	72.9	69.3	69.9	71.7	71.6	74.2	73.1	72.3	72.3	74.5	74.8	75.1	77.0	75.4	75.1	72.7	73.3	76.1	72.3	74.0	71.4	78.4	79.9	79.2	73.7
8:30:00	83.0	77.4	82.4	69.1	62.8	60.0	73.2	70.5	67.6	68.4	72.4	72.9	74.2	74.0	72.8	72.7	73.2	76.0	75.1	77.5	75.4	75.1	72.3	72.8	74.1	72.2	73.2	68.5	78.4	79.9	74.8	73.3
8:45:00	83.5	77.0	80.3	66.4	60.6	57.2	73.7	66.6	64.6	67.5	71.2	73.3	74.3	70.2	72.4	73.2	72.8	74.2	75.1	77.5	75.5	75.2	71.9	75.9	72.8	71.8	72.8	66.3	78.4	80.3	74.0	72.5
9:00:00	82.8	76.8	80.7	65.6	58.8	56.7	74.1	64.3	62.0	64.8	69.8	73.9	73.9	71.0	71.7	73.2	71.2	72.2	75.1	76.8	75.5	75.2	71.9	73.3	70.8	72.2	70.7	64.2	78.5	80.3	71.6	71.6
9:15:00	82.1	74.7	80.3	62.9	55.4	56.2	74.5	67.4	59.3	63.6	69.7	73.1	73.9	71.4	69.7	73.2	69.1	69.0	75.1	76.4	75.5	74.8	71.9	73.3	67.8	72.2	67.3	61.6	78.5	80.7	68.9	70.6
9:30:00	81.0	73.9	80.3	60.5	54.5	57.6	74.5	62.1	57.5	64.1	69.3	71.0	73.9	71.3	67.6	73.6	66.9	69.4	75.1	76.1	73.7	74.4	71.9	73.8	66.7	71.8	65.9	60.2	79.6	80.7	67.4	69.9
9:45:00	76.5	72.7	80.0	59.6	53.6	58.1	74.5	62.1	56.1	59.9	69.2	70.2	73.9	71.6	66.7	73.1	66.8	69.9	75.1	75.2	71.4	74.5	71.9	73.1	66.6	71.9	64.6	57.9	75.2	80.3	68.3	69.0
10:00:00	77.0	71.9	79.6	57.4	53.1	56.8	74.6	61.7	58.1	58.5	67.9	68.5	74.0	70.5	65.8	73.6	68.2	67.2	75.1	75.3	70.6	74.1	72.4	70.1	67.1	70.6	63.8	57.0	75.9	80.7	68.7	68.6
10:15:00	75.8	70.2	77.3	56.0	49.5	55.0	74.6	59.9	56.2	58.1	68.7	65.8	73.6	71.0	64.5	73.6	69.5	66.8	75.2	74.9	70.3	74.2	72.0	68.6	65.0	69.9	62.1	56.1	76.7	80.8	69.3	67.8
10:30:00	74.2	68.9	75.6	53.4	49.6	53.6	74.7	59.0	54.7	56.1	69.2	66.5	72.9	70.1	62.7	74.1	66.8	66.4	75.2	74.5	68.1	72.2	71.6	69.0	63.3	67.4	60.7	54.7	76.3	80.4	66.1	66.7
10:45:00	72.0	68.9	74.9	53.4	47.5	53.2	74.7	58.5	53.2	55.7	69.3	65.0	70.8	71.0	61.6	72.8	66.0	65.5	73.8	70.1	68.6	69.8	71.6	69.5	61.9	65.7	60.2	53.7	76.1	79.7	67.1	65.9
11:00:00	72.5	69.8	72.9	50.4	45.4	51.8	73.2	56.6	53.2	54.2	68.9	64.1	67.9	70.2	61.6	68.8	65.0	65.5	73.7	69.1	67.8	64.0	71.2	69.4	61.6	62.6	59.9	53.7	74.1	79.4	65.8	64.7
11:15:00	71.7	69.3	73.5	47.3	49.1	51.8	71.1	57.7	51.2	52.8	68.5	63.2	66.4	69.4	61.6	68.2	65.0	64.7	73.2	68.6	67.3	62.5	71.2	69.3	59.8	60.7	57.5	53.7	72.1	78.2	66.4	64.0
11:30:00	70.5	68.8	69.6	45.8	46.6	49.9	69.9	56.8	50.7	52.8	68.1	62.8	64.7	68.6	61.1	67.8	65.4	63.8	72.8	67.7	67.8	61.0	71.3	69.8	58.4	59.8	57.2	54.3	70.0	77.9	65.1	63.1
11:45:00	70.6	68.8	66.9	45.3	46.1	49.4	68.7	53.3	49.7	52.3	71.0	61.9	62.9	67.7	61.1	68.2	65.0	62.9	72.8	67.3	67.4	59.2	70.9	70.0	56.0	58.4	54.3	50.7	68.3	76.7	62.3	62.1
12:00:00	68.5	67.5	64.1	44.3	44.6	47.9	66.4	50.8	48.7	51.3	67.0	59.5	62.5	66.4	62.1	67.9	64.5	63.4	72.4	66.4	67.0	58.7	68.4	68.8	54.1	55.5	53.2	51.2	67.5	76.3	62.3	60.9
12:15:00	67.1	67.5	62.8	42.2	42.4	47.8	64.6	50.3	48.2	51.3	66.4	59.0	59.7	66.0	60.8	67.1	63.6	61.6	71.6	66.4	66.1	56.8	63.1	66.6	53.6	54.0	52.7	52.7	65.8	75.1	62.8	59.9
12:30:00	66.2	67.5	60.9	43.8	41.9	48.3	63.2	49.7	47.7	50.9	66.4	59.6	59.5	64.7	60.4	65.7	62.7	60.3	70.0	67.6	65.7	57.4	61.5	66.2	50.6	53.5	53.6	53.2	62.6	74.4	61.0	59.2
12:45:00	67.2	68.0	59.8	41.2	39.2	47.4	64.7	49.8	47.7	49.3	66.0	56.7	57.6	63.8	59.5	64.8	62.8	58.9	68.2	62.5	64.0	56.5	60.1	64.4	51.1	53.6	53.2	52.3	61.6	72.8	60.5	58.2
13:00:00	63.0	66.2	59.3	41.2	38.1	45.9	64.5	49.9	47.3	49.3	65.5	57.2	55.7	62.9	58.1	62.0	60.9	58.5	67.3	61.5	62.2	56.0	58.4	63.1	49.6	52.1	52.2	49.8	60.7	71.5	59.1	57.1
13:15:00	61.5	65.7	59.9	40.2	37.0	44.8	61.5	48.2	45.1	49.4	64.2	57.3	52.2	61.7	57.6	62.6	60.0	56.6	68.2	60.5	63.8	55.0	54.5	61.3	49.1	51.0	47.1	48.3	59.7	69.4	58.1	55.9
13:30:00	61.0	64.7	56.4	40.3	36.5	44.8	58.4	49.1	45.0	58.0	64.2	55.4	51.2	61.1	57.1	61.3	60.1	56.1	67.3	61.0	61.4	55.1	53.6	59.9	47.6	50.0	46.6	48.9	59.6	67.2	58.5	55.4
13:45:00	58.1	65.6	56.5	40.8	37.1	44.8	58.5	50.1	44.0	51.9	64.2	57.5	50.7	60.6	57.2	59.9	58.7	56.0	67.7	60.6	61.3	53.1	51.6	62.5	47.7	50.0	47.1	46.2	60.5	65.9	59.0	55.0
14:00:00	56.7	66.7	56.5	41.4	34.3	43.8	58.0	49.7	41.9	49.6	64.3	54.1	49.9	59.7	57.2	59.0	57.8	56.0	68.1	58.7	60.4	52.6	49.5	58.4	46.0	50.0	45.0	46.2	61.0	63.5	58.5	54.0
14:15:00	56.1	64.5	56.5	40.9	33.6	43.3	56.0	49.2	41.8	49.5	63.9	53.2	46.6	58.8	54.2	57.5	56.8	56.0	67.9	58.2	60.0	52.2	49.6	61.7	46.5	50.5	46.1	47.2	60.9	63.5	59.5	53.6
14:30:00	56.6	63.1	57.1	42.5	34.7	43.3	56.6	49.7	42.4	50.5	62.1	51.7	46.5	57.0	54.6	56.0	56.8	55.5	67.0	59.2	59.0	51.7	49.0	62.5	45.5	50.0	46.1	47.7	61.4	63.5	58.6	53.5
14:45:00	56.1	62.2	53.1	40.3	34.2	43.2	57.6	49.2	42.4	49.5	62.2	51.2	45.5	56.0	55.1	56.1	55.4	55.0	66.5	57.8	58.1	50.7	49.6	62.0	46.5	46.9	47.7	48.6	61.9	63.0	58.5	53.0
15:00:00	55.1	61.7	52.0	40.3	33.5	43.2	57.1	49.1	44.0	49.5	61.3	49.5	46.0	56.0	55.1	55.6	55.4	56.1	67.4	58.3	57.6	51.3	48.6	62.0	46.5	46.9	47.7	49.6	61.9	63.4	58.5	52.9
15:15:00	54.6	61.3	52.6	39.1	34.6	43.7	56.7	49.7	47.5	49.0	61.3	50.5	45.4	53.5	55.2	56.1	54.3	55.6	66.0	58.3	57.7	50.2	48.5	62.0	46.5	47.4	44.9	50.6	61.9	62.9	58.9	52.8
15:30:00	53.6	61.8	50.5	36.8	34.6	43.6	55.7	49.7	49.7	46.4	58.9	51.1	45.4	55.0	54.7	55.6	52.3	54.5	64.7	59.4	57.6	50.1	48.4	63.0	46.0	46.3	45.4	50.6	62.3	63.3	59.0	52.5
15:45:00	55.8	61.4	49.8	37.9	35.7	43.6	54.1	48.6	42.5	46.4	60.4	50.5	44.8	54.5	54.7	56.6	54.3	52.9	64.6	61.7	57.6	50.6	47.3	61.7	45.9	46.3	47.5	50.6	61.5	63.3	59.4	52.3
16:00:00	54.3	68.0	50.9	37.3	35.1	43.6	54.7	47.5	42.3	46.3	57.4	49.9	46.4	54.5	54.3	56.6	53.8	53.8	65.1	55.5	57.6	50.6	47.3	61.6	45.4	45.2	47.5	51.5	62.4	63.8	59.4	52.2
16:15:00	54.6	63.2	51.9	36.8	35.1	44.0	54.1	48.1	44.4	46.9	56.9	49.4	46.4	54.5	53.7	56.1	54.3	55.2	65.0	54.9	57.6	49.5	48.4	62.0	45.3	46.8	46.9	54.0	62.9	63.3	59.4	52.3
16:30:00	53.5	65.0	51.3	37.8	35.6	45.0	54.6	48.5	44.9	47.4	55.8	48.9	46.9	54.9	54.7	56.5	55.3	55.7	66.7	56.3	57.0	48.9	48.4	66.3	46.3	45.2	47.5	55.9	62.9	63.3	60.3	52.8
16:45:00	55.4	67.6	54.3	40.0	36.7	46.6	56.1	48.5	47.0	47.3	55.3	48.8	46.9	57.4	54.1	57.5	56.8	61.2	64.6	56.3	57.5	50.0	50.7	71.1	44.7	45.7	49.5	57.3	62.9	63.7	60.8	53.9
17:00:00	59.9	67.6	53.8	40.0	38.9	46.1	55.5	47.9	48.5	48.4	56.2	49.3	48.4	58.8	58.1	58.0	56.8	60.3	66.5	56.3	58.5	49.5	49.0	66.5	45.7	46.3	49.5	58.7	63.3	64.2	62.1	54.5
17:15:00	61.8	67.6	56.2	46.5	37.8	45.5	55.0	48.3	49.5	48.3	57.9	49.3	48.4	59.3	57.1	59.0	56.8	61.2	65.5	56.7	58.4	52.5	46.8	70.2	47.3	46.2	48.9	61.0	63.8	64.1	64.0	55.2
17:30:00	63.2	68.4	55.2	45.4	38.9	45.9	55.4	49.3	50.5	48.3	57.8	49.3	48.3	60.2	59.1	58.2	58.2	58.4	65.5	56.7	58.9	52.4	46.8	72.3	49.4	46.7	49.4	63.1	62.3	64.1	64.0	55.5
17:45:00	63.6	78.6	54.2	45.3	38.3	46.4	57.4	55.1	51.4	47.8	56.1	51.2	47.7	60.2	59.1	61.6	57.2	56.7	66.4	56.7	58.9	57.5	48.9	66.8	47.8	47.2	51.4	63.5	62.7	64.0	62.1	56.2
18:00:00	64.5	69.4	55.1	45.7	42.1	47.4	68.4	53.9	52.4	49.2	68.7	52.2	48.7	60.6	59.5	56.2	57.7	57.2	66.4	58.6	58.8	57.7	48.3	68.1	47.7	48.7	54.8	63.4	62.6	64.4	61.7	57.1
18:15:00	65.0	67.1	56.6	46.2	50.7	48.9	65.8	48.5	53.4	50.2	63.8	54.2	48.7	60.6	59.6	57.9	62.1	57.6	66.8	59.6	59.3	55.5	48.8	64.3	48.2	49.2	61.1	63.8	63.0	64.8	66.0	57.7
18:30:00	67.3	76.1	59.4	45.6	50.1	49.4	59.6	50.4	54.0	49.7	67.9	55.7	48.7	61.0	64.4	59.8	62.0	59.1	66.7	60.5	59.2	57.5	49.2	65.1	50.8	50.2	53.5	64.7	63.9	64.7	67.8	58.5
18:45:00	70.9	69.4	68.7	46.6	46.3	50.3	58.9	51.4	54.4	50.1	61.1	57.6	50.2	59.9	58.8	60.7	68.1	59.6	67.2	60.5	59.2	58.4	51.9	65.9	52.3	51.2	54.4	66.4	64.8	65.2	65.9	58.9
19:00:00	65.1	70.2	66.4	57.4	46.8	50.3	61.3	52.8	54.9	53.3	63.8	66.0	50.2	61.4	61.1	61.7	75.6	60.0	67.6	60.9	64.0	58.3	57.6	66.9	52.3	52.2	54.3	68.3	65.7	65.1	65.9	60.6
19:15:00	66.3	70.6	68.1	63.4	47.8	51.8	61.2	53.3	55.4	65.4	74.2	64.7	51.2	62.4	61.0	62.2	68.1	61.0	68.0	61.4	61.1	57.8	52.0	66.9	52.2	52.1	55.3	68.2	70.6	66.0	65.8	61.5
19:30:00	68.0	71.4	69.5	60.6	48.8	55.3	61.7	54.2	55.8	57.0	76.3	72.7	52.7	70.1	61.4	62.6	66.0	61.0	68.9	61.8	67.6	58.7	60.7	67.3	53.2	54.2	55.8	74.8	72.4	67.0	65.8	63.0
19:45:00	66.4	71.4	76.0	56.9	48.8	61.4	62.1	55.2	61.1	64.3	69.2	72.7	55.3	78.9	61.8	62.6	63.8	61.4	71.2	62.3	59.4	59.7	56.1	68.2	53.7	62.5	57.2	71.0	68.6	67.4	73.7	63.9
20:00:00	65.8	73.7	71.9	56.3	49.3	56.0	62.6	55.7	54.8	66.3	69.0	74.1	62.9	72.3	62.3	63.1	63.6	62.3	69.9	62.3	61.6	60.1	55.9	68.2	54.2	65.4	57.2	69.8	66.5	68.8	76.5	63.8
20:15:00	66.1	70.4	68.0	56.2	50.3	67.4	63.0	56.1	54.6	68.2	68.5	68.1	66.0	70.4	62.7	63.0	63.5	62.7	69.9	62.7	60.0	61.6	57.4	68.6	54.6	70.7	58.6	68.2	67.3	75.5	78.3	64.5
20:30:00	67.9	71.1	67.4	56.7	51.2	60.7	68.8	56.6	55.4	63.4	67.5	66.0	64.6	68.4	63.2	63.5	63.5	62.7	70.2	62.7	61.4	59.1	57.8	68.6	55.7	63.7	59.1	68.6	69.1	65.9	80.2	63.9
20:45:00	68.4	75.5	67.7	57.1	51.7	59.0	64.9	57.5	56.8	60.8	67.5	66.3	69.7	66.8	63.2	64.0	63.9	66.0	70.2	63.7	62.9	56.5	57.8	69.0	61.1	60.4	63.5	68.9	68.6	71.5	74.1	64.4
21:00:00	68.8	77.0	67.6	58.1	53.2	60.4	63.7	58.0	57.2	59.7	67.5	66.4	73.8	66.7	63.6	64.0	63.9	66.2	71.1	63.7	64.9	57.8	57.7	70.0	65.7	59.7	61.0	69.3	68.5	72.1	72.4	64.8
21:15:00	69.2	74.8	68.0	58.0	55.1	59.5	64.1	58.4	58.2	59.7	66.9	65.7	64.8	66.7	63.6	68.6	64.3	66.7	71.5	64.1	63.4	59.7	58.2	70.2	64.5	60.1	61.8	70.6	69.3	70.8	72.7	64.8
21:30:00	69.7	74.2	68.0	58.4	53.4	59.4	64.5	58.9	58.6	59.6	67.3	66.1	64.7	66.6	64.1	64.0	64.2	66.1	72.3	64.6	62.9	60.6	58.6	70.1	59.9	61.0	63.3	70.6	70.2	67.8	73.0	64.6
21:45:00	69.6	74.1	73.9	59.3	54.3	58.8	64.9	61.5	59.0	60.1	67.7	66.5	62.6	67.0	64.0	63.3	64.2	66.1	74.8	65.0	68.6	61.0	59.0	70.0	59.7	61.4	65.7	70.6	70.2	68.5	73.8	65.3
22:00:00	70.1	74.1	69.0	60.2	54.7	59.3	65.3	60.0	59.0	60.0	67.7	66.4	62.6	67.0	64.7	64.2	64.6	66.9	70.7	64.5	62.3	61.5	59.4	70.5	65.1	61.8	63.0	70.6	70.6	69.4	73.7	65.1
22:15:00	69.9	74.0	68.9	60.2	56.1	61.3	65.7	59.9	59.4	60.5	67.7	66.8	62.9	67.4	64.6	64.6	65.1	66.5	70.4	65.4	62.1	61.4	59.9	70.4	64.2	61.7	63.4	71.0	73.1	69.8	74.1	65.4
22:30:00	70.1	74.0	69.7	61.1	56.0	60.3	66.1	60.4	60.3	60.9	67.7	67.2	63.4	67.4	64.5	65.4	65.1	68.3	71.2	64.9	63.4	61.9	60.8	71.3	62.6	63.2	63.3	71.2	71.2	70.2	74.1	65.7
22:45:00	70.5	74.3	70.1	61.5	56.9	59.7	66.6	59.9	60.8	61.3	68.1	67.6	63.3	68.3	64.9	65.9	65.0	66.9	72.0	65.9	63.7	62.8	61.3	71.3	61.0	62.2	63.8	70.6	71.5	70.2	74.5	65.9
23:00:00	70.9	74.7	70.9	62.4	57.8	60.2	67.1	60.8	61.7	61.8	68.1	68.1	62.8	68.8	64.4	65.8	64.6	67.3	72.4	65.8	64.2	63.2	61.8	71.7	61.9	62.6	64.2	71.0	71.5	71.0	74.9	66.3
23:15:00	70.8	75.5	71.3	62.8	58.3	60.1	67.1	61.2	62.1	62.7	68.5	68.0	63.2	68.3	64.8	66.2	65.0	67.7	72.7	65.8	64.6	63.7	61.8	72.1	62.8	63.0	64.6	70.9	71.9	71.4	74.9	66.6
23:30:00	71.3	75.9	71.2	63.2	59.2	60.0	67.0	61.6	62.5	63.1	68.9	68.0	63.6	68.2	65.7	66.6	65.9	67.7	73.1	65.8	65.0	64.1	62.7	72.6	63.2	63.5	65.1	71.4	72.3	71.8	75.0	66.9
23:45:00	71.3	76.3	71.6	63.7	59.6	60.4	67.0	62.1	62.5	64.0	68.5	67.6	65.4	67.7	66.2	67.0	66.7	68.1	73.5	66.7	66.4	64.1	62.7	72.5	63.6	63.4	65.0	71.3	72.2	71.8	74.9	67.2
DAY AV	71.8	71.9	70.3	59.8	54.2	56.7	65.2	61.2	58.4	59.4	66.7	65.1	63.5	66.5	64.3	65.9	66.4	65.9	70.8	68.3	66.5	64.0	62.5	68.2	63.0	61.3	61.3	63.3	70.8	72.5	69.6	65.0

August 2019 graphical RH plot



October 2019 outdoors average RH calculation spreadsheet

DATA LOG 1: OUTDOORS RH

Time	Relative Humidity																														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	AV
0:00:05	68.1	72.8	83.6	74.9	81.7	82.3	90.7	74.0	74.5	85.1	91.3	92.9	90.8	91.5	92.3	87.5	80.7	87.0	89.1	90.2	86.5	83.9	86.6	89.6	90.3	91.3	92.7	88.8	86.5	84.6	90.5	85.6
0:15:05	69.8	72.8	84.3	75.3	82.1	81.9	90.7	75.3	75.4	85.0	91.3	92.9	90.5	91.4	92.6	87.9	81.9	87.0	89.1	90.2	86.5	83.9	86.3	89.5	90.3	90.9	93.0	88.8	86.9	84.5	90.9	85.8
0:30:05	70.3	73.1	85.1	78.5	82.1	81.9	90.0	76.1	76.2	85.0	90.5	92.2	90.1	91.4	92.6	88.7	83.5	88.0	88.7	90.2	87.2	84.2	86.6	89.9	90.3	91.3	93.1	88.8	86.9	84.9	90.2	86.1
0:45:05	70.7	72.3	85.1	80.5	82.5	81.9	90.0	76.5	77.8	85.4	91.2	92.8	90.4	92.1	93.0	89.0	84.3	87.7	88.7	90.5	87.2	84.2	88.1	90.2	90.3	92.0	92.4	88.8	87.6	84.9	90.1	86.4
1:00:05	70.7	71.8	85.1	82.1	82.1	82.6	90.3	76.9	78.3	85.1	92.3	93.6	90.8	92.2	92.9	89.4	83.9	87.3	88.7	90.9	87.9	84.2	88.8	90.2	90.6	91.7	91.7	89.5	87.6	85.3	90.1	86.6
1:15:05	71.2	71.8	85.8	82.8	82.1	84.1	90.7	77.7	79.5	85.5	91.9	92.9	91.2	92.5	92.9	89.8	84.7	87.3	88.7	91.2	87.9	84.9	89.5	90.1	91.0	90.9	92.3	89.1	88.0	86.0	90.1	86.9
1:30:05	71.6	71.4	85.8	82.9	81.0	83.0	90.3	78.1	79.5	88.0	92.0	92.9	91.2	92.9	93.3	89.8	85.1	87.0	88.7	91.6	88.6	84.9	90.3	90.0	91.7	91.3	92.4	88.7	88.0	86.0	89.4	87.0
1:45:05	72.9	70.9	85.1	83.2	82.1	83.7	89.9	78.5	80.7	87.9	91.6	92.2	92.2	92.9	92.9	90.1	85.8	87.3	88.7	91.3	88.6	85.0	91.0	90.7	91.7	90.9	92.3	89.5	88.8	85.7	89.4	87.2
2:00:05	74.6	70.0	85.1	82.4	81.8	84.5	90.2	78.9	80.3	88.6	92.3	92.2	92.2	92.9	93.2	90.1	85.8	87.6	88.7	91.6	89.7	85.3	91.0	90.1	92.4	91.6	93.0	89.8	88.8	85.7	89.0	87.4
2:15:05	74.6	70.0	85.0	81.6	82.1	84.1	90.6	78.9	81.1	87.8	92.3	92.1	91.8	93.2	93.2	89.8	86.6	87.7	88.7	92.3	90.0	85.7	91.0	89.4	91.6	91.6	93.3	89.8	88.5	86.1	89.4	87.4
2:30:05	74.6	70.0	85.4	81.2	82.5	83.7	89.9	78.5	81.5	87.7	92.3	92.8	91.5	93.2	92.9	89.4	86.6	88.1	88.3	92.6	90.4	86.4	90.3	90.0	91.6	90.8	93.7	89.8	88.8	85.3	88.6	87.4
2:45:05	75.5	70.4	84.7	82.3	83.3	84.1	90.6	78.9	81.2	87.0	92.3	92.2	90.8	92.9	92.9	89.4	87.0	87.7	88.3	92.3	90.4	87.2	90.2	90.0	91.9	91.2	93.7	89.4	88.8	84.5	88.6	87.4
3:00:05	75.9	70.0	84.7	81.2	84.1	83.3	89.9	79.7	81.2	86.3	91.6	92.1	90.7	92.9	92.2	89.1	85.0	87.3	88.3	92.6	90.8	86.8	89.5	90.0	91.1	91.9	93.6	89.7	89.2	84.9	87.9	87.2
3:15:05	75.9	70.4	85.0	80.5	84.1	84.0	89.5	81.2	81.1	86.2	91.5	92.1	91.1	92.9	92.2	88.7	82.7	87.7	87.9	92.6	90.8	86.8	89.2	90.3	91.5	92.2	94.0	89.4	88.8	85.3	87.5	87.2
3:30:05	75.9	70.0	84.3	80.8	86.0	84.8	89.2	81.3	82.3	86.9	92.2	92.1	91.4	92.6	92.2	89.4	82.6	88.0	88.3	92.3	90.8	87.9	90.2	90.7	91.5	92.2	93.6	88.7	88.8	85.7	88.6	87.5
3:45:05	76.3	70.4	84.7	81.2	85.6	84.8	88.8	81.3	82.7	89.2	92.2	92.8	92.1	92.6	92.2	89.8	84.5	88.0	88.3	91.9	91.5	87.9	90.6	90.4	91.5	92.2	93.6	87.9	89.2	85.7	88.2	87.7
4:00:05	75.9	70.4	84.2	80.8	85.3	84.9	88.4	81.7	82.7	88.5	92.2	92.1	91.8	92.9	92.2	90.1	84.9	88.7	88.6	91.6	90.8	88.6	90.9	89.9	91.8	92.2	93.7	87.5	89.6	86.1	88.2	87.7
4:15:05	77.9	71.3	85.0	81.2	84.9	84.1	89.2	82.1	81.9	87.7	91.9	92.1	92.1	92.6	92.2	90.8	85.7	89.4	88.3	91.6	91.8	89.0	91.0	89.5	92.2	92.2	93.0	87.1	89.5	86.8	88.6	87.8
4:30:05	78.3	70.8	85.0	81.6	84.9	85.3	88.4	82.9	81.9	86.2	92.2	92.8	92.1	92.2	92.2	90.8	85.7	89.4	88.6	92.3	91.5	89.4	91.6	89.1	92.2	92.2	93.0	86.8	89.9	87.1	88.9	87.9
4:45:05	78.8	71.3	85.7	81.9	84.9	84.9	88.1	83.6	81.5	86.2	91.5	93.1	92.1	92.2	92.2	90.8	86.1	89.0	89.0	91.2	91.8	89.4	91.6	89.5	92.2	92.2	93.0	86.7	90.2	87.2	89.3	88.0
5:00:05	79.6	71.7	85.8	80.0	85.3	85.3	88.4	82.9	81.1	85.5	92.1	93.5	92.1	91.8	92.2	91.1	86.1	88.7	89.4	91.2	92.2	89.4	92.3	89.1	92.2	92.3	93.0	87.1	90.6	87.5	89.3	88.0
5:15:05	80.0	71.7	86.1	79.6	84.9	85.7	89.8	82.9	81.9	85.2	91.7	93.5	91.8	92.2	91.9	90.8	86.5	88.7	89.4	91.1	91.8	88.7	92.7	88.4	92.2	92.2	93.0	87.1	90.9	87.9	89.3	88.1
5:30:05	80.4	72.5	85.7	79.2	85.3	86.4	90.5	82.9	81.8	84.8	92.1	93.5	91.8	91.4	91.9	90.8	86.5	88.7	89.4	91.5	92.2	89.0	92.7	87.7	92.2	92.9	92.9	86.3	90.3	88.6	88.6	88.1
5:45:05	80.4	73.0	86.1	78.8	86.7	86.8	91.2	83.6	82.3	84.0	92.1	93.4	91.7	91.7	91.9	90.8	86.9	89.0	90.1	91.5	92.2	89.0	93.0	87.0	91.8	92.9	92.9	85.9	90.3	89.3	88.6	88.2
6:00:05	81.6	73.4	86.1	78.4	86.3	87.4	90.8	84.3	82.6	84.7	92.1	93.5	91.7	92.0	91.9	90.7	86.5	88.7	90.5	91.5	92.5	88.7	93.0	86.6	91.4	92.9	92.9	85.5	89.5	89.3	88.3	88.2
6:15:05	81.2	73.8	86.4	78.4	86.7	87.8	91.1	84.0	82.7	85.1	92.1	93.1	91.7	92.4	91.5	90.7	87.2	88.7	90.8	91.4	92.1	88.6	93.0	86.2	92.1	92.9	92.9	86.3	89.5	91.1	88.6	88.4
6:30:05	81.3	75.5	86.1	78.8	86.4	88.2	91.2	83.6	82.6	84.7	92.1	93.1	91.7	92.4	91.5	91.4	86.4	88.0	90.7	92.2	92.1	88.6	93.0	86.2	92.2	92.9	92.2	87.1	88.7	91.4	90.0	88.5
6:45:05	81.3	76.8	86.1	80.0	86.3	86.7	91.1	83.7	83.8	85.4	92.1	93.5	91.4	92.7	91.8	91.3	86.4	87.9	91.4	91.5	92.2	89.0	92.3	86.2	91.8	92.9	92.2	87.8	89.1	91.4	90.7	88.6
7:00:05	82.8	78.7	86.5	80.8	87.1	86.6	91.5	84.4	83.8	86.2	91.3	92.8	91.8	92.7	91.9	91.4	87.1	88.7	92.1	91.5	91.8	89.7	92.3	86.2	91.5	92.9	92.2	89.3	89.1	91.4	91.4	89.0
7:15:05	83.2	80.7	86.4	80.8	87.1	87.0	91.1	84.8	84.2	86.9	92.0	93.1	91.4	93.1	92.2	91.4	87.0	89.0	92.8	91.5	91.5	90.1	93.0	86.9	91.8	92.9	92.2	89.7	89.5	92.1	91.4	89.3
7:30:05	83.6	81.2	86.4	81.2	87.4	87.7	90.4	84.1	84.9	87.3	92.4	92.8	92.1	92.7	92.2	91.1	87.0	89.0	92.8	91.6	92.2	89.4	92.6	87.4	92.2	92.6	92.6	90.0	89.5	92.5	91.4	89.4
7:45:05	84.0	81.5	86.4	80.9	88.5	87.8	90.8	83.4	84.9	87.7	92.8	92.8	91.8	92.7	91.9	89.7	87.7	88.9	92.5	90.8	91.9	89.5	92.6	87.8	92.3	92.9	92.2	90.5	89.5	92.5	92.2	89.4
8:00:05	84.4	82.7	85.7	80.1	87.8	87.7	89.7	81.9	85.7	88.5	92.8	92.8	91.8	92.8	91.5	87.9	87.4	89.8	92.9	90.8	91.5	87.9	93.0	87.5	91.6	93.0	93.0	89.4	89.5	92.2	92.2	89.2
8:15:05	83.6	82.3	86.4	80.9	87.9	87.7	89.0	79.6	84.5	88.5	92.8	92.1	90.7	92.1	91.2	85.7	87.8	90.6	92.8	91.2	91.6	87.2	93.1	87.1	90.9	93.0	91.5	89.5	89.5	92.2	91.5	88.9
8:30:05	82.9	82.0	86.4	78.9	86.8	88.5	88.3	77.6	85.0	88.9	92.1	92.1	90.7	92.1	89.4	83.9	87.9	91.0	92.9	91.2	89.9	86.5	93.0	87.1	90.5	92.6	91.2	86.6	88.7	91.5	90.2	88.3
8:45:05	82.2	81.6	85.8	76.1	85.7	89.2	87.9	75.5	83.8	89.0	92.1	91.4	90.8	92.1	88.0	79.9	85.7	91.4	92.8	90.6	88.4	85.4	93.1	86.1	89.8	92.7	90.3	86.6	89.5	90.8	88.4	87.5
9:00:05	79.9	79.7	84.3	74.0	84.9	88.5	86.9	73.5	82.7	89.5	91.8	92.2	90.8	91.8	87.7	80.4	85.4	91.4	92.4	89.5	88.8	85.0	92.4	85.0	89.5	91.7	89.6	82.8	89.5	90.9	85.3	86.7
9:15:05	74.9	78.6	83.1	73.6	84.9	88.6	85.0	70.0	81.2	88.0	91.9	89.7	90.7	90.7	87.3	74.6	82.0	91.5	92.1	88.8	85.5	83.7	88.8	85.4	88.1	91.0	86.0	82.8	89.9	89.5	84.2	85.2
9:30:05	75.7	75.8	82.0	71.5	83.4	87.8	84.0	68.3	79.6	88.0	89.8	90.1	90.8	91.1	85.5	75.9	82.4	91.5	91.5	88.8	83.6	82.8	87.0	85.8	84.4	89.5	84.4	82.0	88.9	88.8	83.8	84.3
9:45:05	74.0	75.0	79.6	70.2	81.9	87.1	81.2	67.9	77.9	88.1	90.1	88.6	90.8	90.8	84.3	72.1	83.1	90.1	91.8	88.1	81.2	82.8	84.5	85.5	82.9	89.5	84.0	81.2	87.4	87.7	83.5	83.3
10:00:05	75.7	71.2	78.0	68.0	78.7	87.1	80.9	63.4	78.4	86.5	90.1	88.0	90.9	90.0	86.0	70.8	83.6	88.7	91.5	85.1	81.1	81.0	82.1	85.1	79.6	89.6	82.4	82.1	87.4	87.3	84.3	82.4
10:15:05	73.1	70.8	75.9	66.2	77.5	87.1	79.8	62.0	77.5	86.9	89.8	86.4	89.5	89.0	84.2	73.0	80.5	88.3	90.8	83.7	80.1	77.7	81.7	83.2	80.9	89.6	81.2	75.2	85.3	87.0	83.9	81.2
10:30:05	70.1	70.8	73.4	64.0	75.5	87.1	74.4	62.1	74.7	85.1	88.0	86.8	88.7	88.3	83.8	68.6	80.0	86.4	91.2	83.7	78.1	79.7	81.1	82.1	80.1	90.4	81.6	75.3	84.2	84.5	86.2	80.2
10:45:05	63.8	69.0	73.0	62.1	76.3	88.6	74.5	62.1	73.8	84.0	86.6	87.3	90.2	88.3	83.3	68.7	81.3	87.2	91.3	81.2	75.2	74.9	77.7	82.9	76.5	91.4	80.1	74.9	83.1	81.4	86.1	79.3
11:00:05	61.1	69.1	70.0	63.0	75.1	88.7	69.3	61.2	71.8	82.8	84.9	86.6	90.2	86.5	82.8	65.5	78.1	87.6	89.6	80.9	72.2	73.2	79.0	82.2	74.5	91.7	78.8	74.8	81.1	78.9	86.1	78.0
11:15:05	60.2	67.3	64.7	66.1	73.9	87.9	70.3	55.9	70.4	82.8	82.8	84.3	89.3	85.7	81.7	65.1	79.2	87.9	88.8	80.5	75.2	71.5	78.6	79.5	75.8	91.7	78.9	75.2	79.2	78.5	83.5	77.2
11:30:05	58.2	66.0	63.3	67.5	72.1	88.7	67.5	58.4	71.3	82.5	83.1	81.2	86.7	85.8	79.6	65.1	78.9	88.7	88.1	80.5	71.8	67.9	79.4	79.7	74.5	92.8	76.5	73.5	79.2	76.1	84.7	76.4
11:45:05	56.4	66.0	62.8	69.3	70.3	87.3	69.3	58.9	70.1	80.5	82.4	80.4	86.7	85.4	79.6	64.7	76.4	89.5	87.4	75.6	69.7	70.2	83.7	79.0	73.7	92.4	74.8	72.3	77.6	73.9	84.3	75.8
12:00:05	52.9	65.6	62.0	68.8	69.6	88.0	71.2	56.0	67.9	80.2	81.6	78.8	85.2	85.8	79.7	65.2	76.4	89.5	85.9	74.4	69.7	68.8	86.0	80.7	72.4	92.4	74.0	72.2	77.6	74.9	80.5	75.3
12:15:05	54.3	63.7	56.7	72.7	66.9	87.8	68.5	54.1	62.3	79.6	82.3	80.0	84.0	85.0	79.4	62.8	76.0	88.9	85.2	74.1	68.8	66.9	88.3	77.4	72.8	93.9	73.5	71.8	76.0	74.0	79.4	74.4
12:30:05	47.3	61.9	59.1	76.1	66.0	88.7	62.5	56.0	62.4	78.5	83.9	77.1	85.5	84.3	79.4	62.8	76.0	88.6	83.0	74.8	70.6	65.2	86.1	75.8	70.1	92.6	74.8	67.9	73.8	76.0	77.0	73.7
12:45:05	48.3	63.3	59.2	76.1	63.7	90.2	61.6	56.0	60.5	75.6	80.9	79.6	86.4	84.3	76.4	61.5	79.0	85.1	80.6	73.6	68.7	62.9	81.4	76.3	67.9	93.0	73.2	65.2	73.0	76.4	76.6	72.8
13:00:05	49.3	61.5	58.2	69.3	65.9	88.8	62.6	55.6	61.5	74.4	77.3	84.2	83.3	83.2	76.4	58.1	78.2	85.2	80.6	76.6	71.4	63.5	82.4	74.5	73.1	92.2	72.2	65.2	71.2	75.7	75.3	72.5
13:15:05	48.3	58.2	55.7	64.5	69.9	88.9	61.2	54.1	60.5	77.2	79.7	83.6	84.4	83.2	76.0	60.1	78.5	84.1	81.8	75.7	68.8	63.4	79.2	75.8	70.4	91.5	71.9	63.9	71.6	74.1	72.3	71.9
13:30:05	46.3	58.6	56.7	61.3	70.4	87.1	61.7	50.1	61.9	78.0	81.0	76.4	86.8	82.8	76.8	57.2	83.0	82.1	82.2	76.0	69.3	63.0	74.2	74.9	73.0	91.5	70.1	59.6	71.1	70.5	69.7	71.1
13:45:05	49.3	58.1	52.2	63.6	70.9	85.9	61.7	51.2	59.6	77.3	75.7	76.0	86.8	81.3	76.4	56.2	84.5	82.1	82.2	79.3	67.0	62.5	72.0	73.7	74.0	91.2	68.8	60.6	69.9	71.0	66.9	70.6
14:00:05	44.7	56.7	48.7	64.4	66.1	85.9	58.8	50.7	62.4	70.9	77.7	75.1	86.4	81.4	75.2	56.7	84.5	80.9	82.2	81.2	66.9	61.5	71.6	72.8	73.7	90.6	67.0	57.7	65.8	71.0	69.3	69.6
14:15:05	45.2	57.7	46.0	65.3	66.4	85.1	58.8	47.1	60.0	69.7	74.4	76.0	86.0	80.5	74.4	56.7	85.4	81.4	83.7	83.7	65.6	60.6	69.8	71.8	74.0	87.6	65.3	57.2	65.8	70.7	66.1	69.0
14:30:05	44.2	58.2	47.1	65.8	68.2	82.8	55.9	45.0	59.6	69.1	78.9	75.6	86.1	82.5	78.5	57.6	84.9	79.8	86.3	83.0	64.8	60.6	67.5	72.8	75.7	87.6	64.3	60.6	64.9	67.1	67.1	69.1
14:45:05	43.1	57.2	43.4	65.3	66.9	81.6	56.9	48.2	56.2	69.2	85.1	75.6	83.4	80.6	78.9	55.2	85.0	79.4	87.5	81.4	63.8	61.1	68.0	71.1	70.6	85.3	62.9	60.0	64.4	65.7	66.6	68.4
15:00:05	41.0	57.7	43.4	63.5	65.6	79.7	52.5	47.1	57.6	68.8	87.3	76.0	83.0	78.2	75.6	56.6	83.8	75.2	88.6	80.7	62.9	60.2	67.6	69.8	67.0	85.3	62.4	59.6	63.0	65.2	64.8	67.4
15:15:05	41.0	56.8	45.1	61.2	63.8	78.8	51.5	45.5	54.8	68.7	89.0	77.3	84.1	76.1	71.8	52.2	83.1	74.4	89.6	75.7	62.4	60.5	66.2	69.7	65.7	84.2	59.1	59.7	63.9	65.2	64.3	66.5
15:30:05	41.0	56.3	45.1	62.1	63.3	78.8	53.0	45.5	54.3	66.4	85.3	73.9	83.8	75.6	71.0	52.3	81.5	69.6	90.0	74.4	60.5	61.0	64.3	68.4	64.7	83.0	60.5	59.2	66.2	65.7	65.7	65.9
15:45:05	41.0	55.8	41.9	62.1	62.4	78.8	53.0	46.1	54.3	65.6	85.3	74.0	81.8	76.5	67.4	52.3	80.7	71.4	90.7	77.7	61.0	60.6	65.3	68.8	63.4	83.9	61.4	60.1	63.4	67.9	64.7	65.8
16:00:05	39.9	55.8	43.4	63.0	61.9	78.9	50.4	45.5	54.3	68.7	80.9	75.6	82.9	76.4	68.8	52.3	79.4	71.3	90.2	78.1	60.5	59.1	64.8	68.9	71.1	83.4	62.9	61.5	65.8	68.3	62.4	66.0
16:15:05	39.9	54.8	46.1	62.5	64.6	77.1	47.9	45.0	56.7	66.0	79.8	78.4	84.5	75.1	67.9	53.2	77.3	73.0	90.9	78.9	61.5	61.0	65.2	68.4	66.1	85.3	60.5	62.0	64.8	66.6	61.4	65.9
16:30:05	41.0	55.8	42.9	63.5	63.7	80.4	53.0	46.0	56.3	66.9	79.8	77.2	84.1	75.2	66.9	53.7	77.3	72.1	91.0	79.7	62.4	61.5	63.4	65.6	64.2	83.4	60.9	62.9	64.3	69.7	61.9	66.0
16:45:05	42.0	56.7	43.9	63.0	60.9	82.7	51.4	46.5	55.7	74.0	77.2	78.0	88.4	76.8	69.6	53.7	78.5	73.5	91.0	78.9	61.9	61.5	63.8	66.1	66.5	84.5	62.8	64.3	67.0	67.8	63.7	66.8
17:00:05	42.5	57.7	42.9	64.4	59.0	81.9	51.9	47.0	55.1	75.6	74.7	78.0	88.7	78.1	68.2	56.2	78.1	74.0	91.0	76.4	63.8	61.0	68.4	67.5	68.8	84.1	62.8	65.2	69.7	67.8	63.2	67.2
17:15:05	43.0	58.1	45.0	64.4	59.5	81.6	53.9	49.1	55.6	76.4	76.3	78.4	90.2	79.3	68.7	55.7	77.6	77.7	90.6	76.1	62.3	61.0	67.9	74.4	70.1	82.8	66.1	67.9	70.5	67.7	65.1	68.2
17:30:05	54.8	58.1	46.0	65.3	60.4	79.5	54.9	49.1	56.2	75.1	82.0	77.5	90.9	82.1	69.1	56.6	78.9	78.1	90.3	79.0	62.8	71.9	68.8	76.1	67.8	84.0	68.8	68.8	70.9	68.6	66.4	69.6
17:45:05	61.5	58.6	47.5	66.2	60.8	77.9	53.9	50.1	55.6	76.4	82.8	79.6	90.9	82.4	70.0	58.5	80.9	78.9	90.6	80.1	63.7	74.8	70.5	75.6	67.3	85.9	69.2	68.3	72.2	71.7	66.4	70.6
18:00:05	68.3	59.9	47.5	68.9	61.8	78.3	54.8	52.1	56.6	78.4	82.8	79.2	91.0	83.2	72.6	58.4	81.3	79.6	91.0	80.1	63.7	73.9	70.5	76.8	70.9	87.1	70.0	69.6	73.9	73.0	67.3	71.7
18:15:05	72.2	61.9	48.5	70.6	62.2	84.2	55.8	51.5	58.0	79.6	83.5	79.9	91.7	84.4	73.4	60.3	81.3	82.3	91.0	80.4	65.0	74.8	71.4	77.2	74.3	87.9	71.3	70.9	75.6	73.8	70.4	73.1
18:30:05	71.4	62.3	47.9	71.9	63.6	86.4	55.8	52.5	60.9	80.8	84.6	80.3	91.7	85.1	75.1	61.7	81.3	83.9	91.0	81.6	65.4	74.3	72.6	78.4	78.1	88.6	73.0	72.6	76.9	76.3	73.0	74.2
18:45:05	72.2	63.7	49.5	73.2	64.5	87.6	56.7	53.5	62.3	81.2	85.0	83.9	91.6	85.0	78.3	62.2	82.1	84.7	91.0	82.0	66.3	75.6	74.3	79.6	79.7	88.2	74.7	73.1	78.1	77.6	74.3	75.2
19:00:05	72.1	64.6	50.0	73.6	69.1	87.9	57.6	55.0	68.3	81.5	85.4	86.5	91.6	85.4	79.6	63.6	82.4	85.1	90.9	81.6	67.6	75.1	75.1	81.2	80.8	88.9	75.5	73.9	78.9	77.5	75.5	76.2
19:15:05	71.7	65.9	53.5	74.4	71.7	87.9	58.6	55.4	73.4	81.9	85.8	87.6	91.6	86.2	79.6	64.5	82.8	85.5	90.9	82.0	68.9	76.0	75.1	81.6	82.4	89.2	76.4	75.2	78.9	77.9	75.9	77.0
19:30:05	71.3	67.3	55.5	74.4	72.1	87.9	59.5	56.4	75.6	82.3	86.1	88.7	91.6	86.5	82.7	65.3	83.2	86.3	90.6	82.8	69.8	75.9	75.5	81.9	82.0	89.9	77.6	80.9	80.9	77.9	76.3	77.9
19:45:05	72.1	67.7	57.4	74.4	72.9	88.3	60.4	57.4	76.0	82.7	88.0	89.4	91.9	86.9	84.3	66.3	83.6	86.3	90.2	83.6	70.7	76.4	75.4	81.9	82.0	90.0	79.2	82.6	82.4	79.1	77.5	78.6
20:00:05	71.7	68.6	57.9	74.8	73.8	87.9	61.3	58.3	76.8	83.4	89.1	89.4	91.6	86.9	84.3	66.7	84.0	85.9	90.2	84.0	72.0	77.2	76.7	81.9	82.8	90.4	79.2	84.5	83.6	79.9	79.2	79.2
20:15:05	71.6	69.0	59.8	74.8	75.1	88.2	62.2	59.3	76.4	84.2	88.8	89.7	92.3	88.0	84.3	67.6	84.4	88.0	90.2	84.0	73.7	77.6	77.9	82.7	82.8	91.0	79.6	84.9	83.6	80.3	81.2	79.8
20:30:05	71.2	70.3	59.3	74.0	77.2	88.6	63.2	60.2	75.9	85.0	89.1	89.7	92.7	88.0	85.1	68.0	84.4	88.0	89.9	84.4	75.0	78.4	79.1	82.7	84.3	92.1	80.4	85.6	84.3	80.3	82.5	80.3
20:45:05	71.2	70.3	62.1	75.6	78.0	88.5	64.1	60.2	75.5	85.8	89.4	89.7	92.7	88.8	85.1	69.3	84.4	88.7	89.9	84.7	77.1	79.7	80.4	82.7	85.9	92.1	81.2	86.5	84.4	81.1	83.7	80.9
21:00:05	70.7	72.5	65.3	76.9	80.4	88.9	65.0	63.1	75.9	86.5	90.2	90.0	92.3	89.5	85.1	70.2	84.4	87.8	89.8	85.1	78.3	79.3	81.2	82.7	86.7	92.4	81.2	86.4	84.3	81.0	84.4	81.5
21:15:05	70.3	73.8	68.5	79.7	80.8	88.8	65.9	61.6	77.2	86.5	90.2	90.0	93.0	90.2	85.5	71.1	84.4	86.8	90.2	84.7	79.5	80.0	82.0	82.6	86.7	92.4	81.6	87.3	84.3	81.4	85.2	82.0
21:30:05	68.9	75.1	70.7	80.9	82.0	89.2	66.7	62.1	79.3	86.5	90.5	90.0	92.6	90.9	85.8	71.5	84.4	86.8	90.2	84.7	80.4	82.0	83.2	82.6	87.4	92.4	82.7	88.7	85.1	83.0	85.2	82.6
21:45:05	70.7	77.2	72.9	81.7	81.6	88.5	66.7	64.4	81.3	87.3	90.8	89.7	92.6	90.9	85.8	72.0	84.4	86.8	90.2	84.3	81.2	83.9	83.6	83.4	87.8	92.4	84.3	88.6	85.1	83.4	85.1	83.2
22:00:05	70.3	78.8	73.6	80.9	81.6	88.2	68.0	65.3	82.1	88.0	91.2	90.1	92.9	90.9	85.8	72.4	85.2	86.8	90.2	83.9	82.0	84.3	84.4	84.6	87.8	92.4	85.1	89.0	85.8	84.1	85.9	83.6
22:15:05	70.3	80.4	73.2	80.9	81.6	87.8	68.9	66.7	84.0	88.4	91.9	90.8	92.9	91.6	85.0	72.8	85.2	87.2	90.6	84.3	82.7	85.9	85.1	85.0	88.2	92.4	86.2	87.9	86.6	84.9	85.9	84.0
22:30:05	70.3	82.0	73.2	79.7	81.6	87.8	69.8	68.0	84.0	88.1	92.2	90.7	92.2	92.0	85.4	74.1	85.2	88.0	90.6	84.6	83.1	86.2	85.5	86.6	88.2	92.3	86.6	87.2	85.8	85.7	86.3	84.3
22:45:05	70.7	82.8	72.8	80.1	81.9	87.8	70.3	68.5	82.8	89.1	92.2	91.1	92.2	92.0	85.0	75.4	85.1	88.0	90.2	85.0	83.5	86.6	85.9	87.7	87.3	92.0	87.4	87.3	85.8	86.5	85.9	84.5
23:00:05	71.5	83.6	74.1	80.1	82.7	87.8	70.7	70.2	83.1	89.5	92.3	91.2	91.5	92.0	85.3	77.0	85.9	88.7	90.2	85.4	83.9	87.7	87.4	88.0	89.5	92.0	87.7	86.9	85.5	88.7	86.0	85.0
23:15:05	71.5	83.6	74.5	80.1	82.3	88.5	71.5	71.5	84.2	90.2	92.2	91.5	91.4	92.0	85.7	77.5	85.9	88.7	90.2	85.7	83.5	87.4	87.5	88.1	89.5	91.6	88.5	86.9	85.1	89.4	86.3	85.2
23:30:05	72.0	83.6	75.3	80.9	82.7	89.2	72.4	72.4	84.6	91.6	92.2	91.5	91.5	91.6	86.5	77.9	86.7	89.0	90.2	86.1	83.9	87.0	88.5	89.2	90.2	92.0	88.8	86.5	85.4	89.8	86.7	85.7
23:45:05	72.4	83.6	75.3	81.3	82.4	89.9	73.2	73.7	85.0	91.6	92.6	91.5	91.5	92.0	86.8	79.5	86.6	89.4	90.2	86.5	83.5	86.6	89.6	89.6	90.9	92.4	88.8	86.5	85.0	90.5	87.4	86.0
DAY AV	66.9	69.5	69.4	74.2	76.7	85.7	73.6	65.9	73.6	82.7	87.9	87.1	89.9	88.0	84.1	73.9	83.3	85.7	89.3	85.2	79.0	78.3	82.6	82.5	82.8	90.5	81.9	79.4	81.8	81.4	81.5	80.5

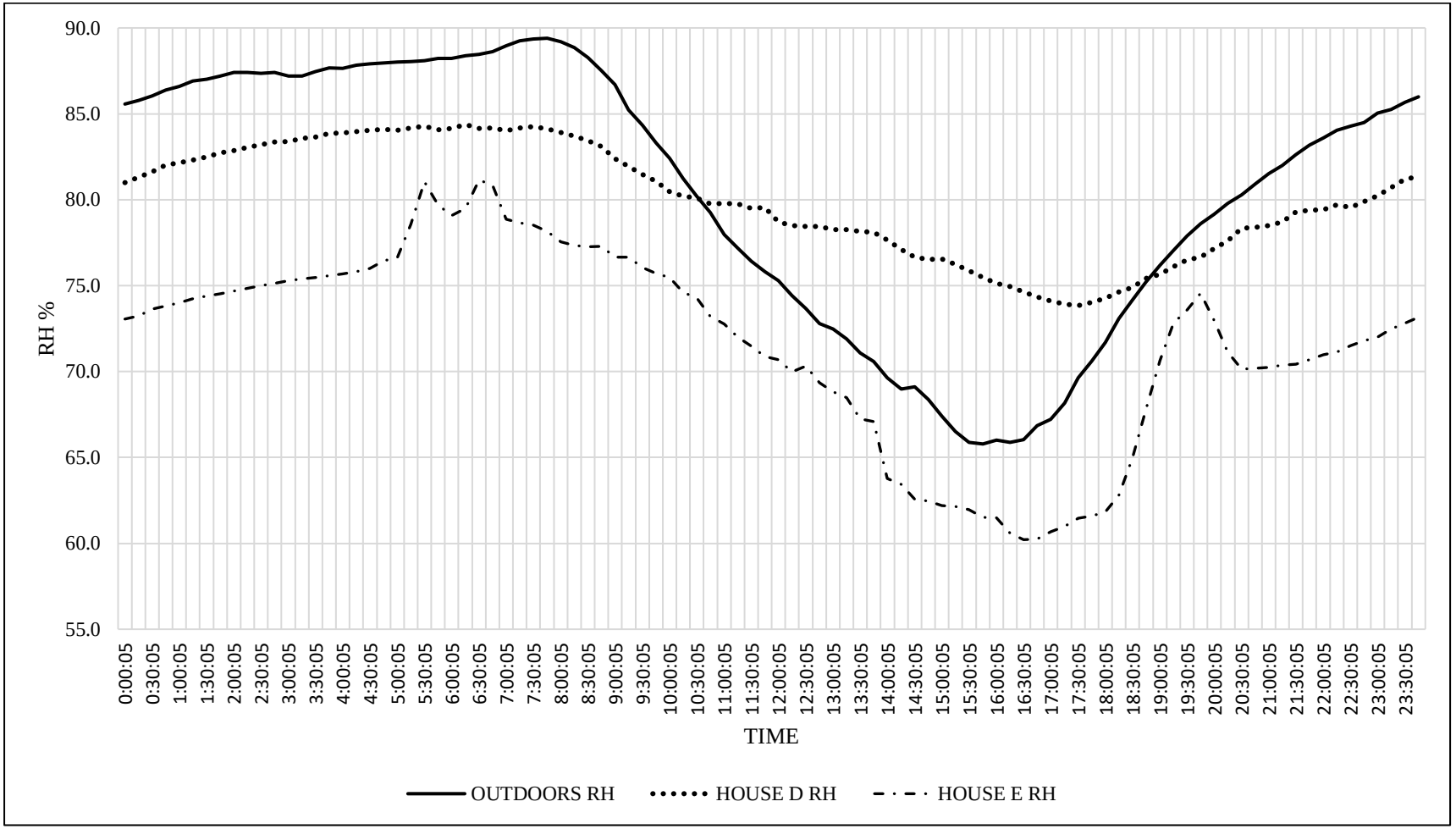
October 2019 House D average RH calculation spreadsheet

DATA LOG 2: HOUSE D																																
Time	**Relative Humidity**																															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	AV
0:00:05	65.7	72.2	72.0	71.8	76.7	80.0	84.4	76.8	71.9	76.7	82.0	86.1	85.3	86.3	86.9	83.4	79.9	83.3	84.8	86.2	83.1	84.4	82.4	80.5	85.3	81.9	87.7	83.1	85.4	82.3	82.2	81.0
0:15:05	66.6	72.7	72.4	72.7	77.1	79.9	84.8	77.9	72.3	77.5	82.3	86.4	85.3	86.3	86.9	84.2	80.3	83.2	84.8	86.2	83.0	83.9	82.4	81.5	85.2	82.7	88.1	83.4	85.4	83.1	82.2	81.3
0:30:05	67.0	73.1	72.8	72.7	77.1	79.9	85.2	78.3	73.2	77.9	82.7	86.4	85.2	86.6	87.3	84.3	80.6	83.2	84.7	86.2	83.8	84.2	82.7	82.6	86.0	83.0	88.5	83.8	85.7	83.1	82.2	81.6
0:45:05	67.9	73.0	73.7	73.1	77.5	80.3	85.2	79.0	73.6	78.3	83.5	86.8	85.2	86.6	87.6	87.4	81.0	83.2	85.1	86.5	84.2	84.2	83.1	83.0	86.3	83.4	88.4	83.8	86.1	83.1	82.2	82.0
1:00:05	68.3	73.4	74.1	73.5	77.9	80.6	85.1	79.4	74.0	78.7	83.9	86.8	85.9	87.6	88.0	84.1	81.4	83.5	85.4	86.5	84.5	84.1	83.1	83.3	86.3	83.8	88.1	83.8	86.1	83.0	82.2	82.1
1:15:05	68.8	73.8	74.1	73.9	77.9	81.0	85.1	79.4	74.4	79.1	83.8	86.8	85.9	86.6	88.0	85.3	81.8	83.5	86.1	86.5	84.5	84.1	83.5	83.2	86.2	84.1	88.4	84.2	86.1	83.0	82.2	82.3
1:30:05	68.8	73.8	74.5	74.3	77.9	81.0	85.1	79.7	74.8	79.1	84.2	86.8	86.2	85.9	88.3	85.9	81.8	83.5	86.5	86.9	84.9	84.8	83.9	83.1	86.6	84.5	88.4	84.1	86.1	83.0	82.6	82.5
1:45:05	69.2	73.8	74.9	74.7	78.3	81.3	85.1	80.1	75.2	79.4	83.8	86.8	86.6	86.5	88.3	86.5	82.2	83.8	86.8	86.9	84.9	85.1	83.8	83.5	86.6	84.5	88.4	84.5	86.1	83.8	82.9	82.7
2:00:05	69.7	73.8	74.9	74.7	78.3	81.3	85.1	80.1	75.7	79.8	84.2	86.7	86.6	87.2	88.3	86.8	82.2	84.2	86.8	86.8	85.2	85.5	83.8	83.8	87.0	84.5	88.4	84.5	86.1	83.4	83.3	82.9
2:15:05	69.6	73.8	75.3	75.1	78.3	81.7	85.5	80.0	76.1	80.2	84.2	87.1	86.6	87.5	88.3	87.1	82.1	84.5	87.2	86.8	85.2	85.8	84.2	83.8	86.9	85.2	88.4	84.5	86.1	83.7	83.7	83.0
2:30:05	70.1	74.2	75.3	75.5	78.8	81.7	85.5	80.4	76.5	80.1	84.5	87.1	86.6	87.8	88.6	87.1	82.5	85.3	87.2	86.8	85.2	86.2	84.2	83.8	86.9	85.2	88.4	84.5	86.1	83.7	83.7	83.2
2:45:05	70.5	74.2	75.7	75.5	78.8	82.1	85.4	80.8	76.5	80.1	84.5	87.5	86.9	87.8	89.0	87.0	82.5	85.2	87.5	87.1	85.6	86.1	84.2	84.5	86.9	85.2	88.3	84.9	86.1	83.7	84.1	83.4
3:00:05	70.9	74.1	75.7	75.5	78.4	82.0	85.4	80.8	76.9	80.5	84.9	86.7	86.6	87.4	89.0	87.0	82.5	85.6	87.5	87.5	85.9	86.1	84.2	84.8	86.8	85.2	88.3	84.9	86.1	84.1	83.7	83.4
3:15:05	70.9	74.6	75.7	75.5	78.3	82.0	85.8	81.2	76.9	80.9	85.3	87.1	87.0	87.4	89.0	87.0	82.9	85.6	87.5	87.8	85.9	86.5	84.6	85.2	87.2	85.2	88.7	85.2	86.1	84.0	83.7	83.6
3:30:05	71.4	74.5	76.1	75.5	78.8	82.0	85.8	81.2	77.3	80.9	85.2	87.1	86.9	87.4	88.6	86.9	82.9	85.6	87.5	88.2	85.9	86.5	84.6	85.5	87.2	85.6	88.7	85.2	86.4	84.4	83.7	83.7
3:45:05	71.4	74.5	76.5	75.9	78.8	82.4	85.8	81.6	77.3	81.2	85.6	87.5	87.3	87.8	88.6	87.7	83.3	86.0	87.5	88.2	85.9	86.8	84.5	85.9	87.6	85.5	88.7	85.2	86.5	84.4	84.1	83.9
4:00:05	71.8	74.5	76.5	75.5	78.8	82.4	85.8	81.6	77.3	81.3	86.0	87.5	87.3	87.8	89.0	87.6	83.2	86.0	87.5	88.2	85.9	86.8	84.5	85.9	87.5	85.9	88.7	85.2	86.4	84.4	84.1	83.9
4:15:05	72.2	74.9	76.5	76.3	78.7	82.0	86.2	82.0	77.6	81.2	86.0	87.5	87.3	87.8	88.6	87.9	83.6	85.9	87.5	88.2	85.9	86.8	84.5	85.9	87.5	85.5	88.7	85.1	86.1	84.4	84.4	84.0
4:30:05	72.7	75.4	76.9	76.3	79.2	82.0	85.8	81.3	78.1	81.6	86.0	87.4	87.3	87.7	89.0	88.3	83.6	85.9	87.5	88.2	85.9	86.8	84.5	85.9	87.5	85.9	88.3	85.5	86.1	84.4	84.4	84.0
4:45:05	72.7	75.4	76.9	76.7	78.4	82.1	86.1	81.6	78.1	81.6	85.6	87.4	87.3	87.7	89.0	88.3	83.6	86.3	87.5	88.5	86.3	86.8	84.9	85.8	87.2	85.9	88.6	85.5	86.1	84.8	84.4	84.1
5:00:05	72.7	74.9	77.3	76.7	78.4	81.6	86.1	81.6	78.1	81.2	84.9	87.4	87.3	87.7	88.3	88.3	83.6	86.3	87.4	88.5	86.3	86.8	84.9	86.2	87.2	85.9	89.0	85.8	86.1	84.8	84.4	84.1
5:15:05	73.1	75.3	77.3	76.3	78.8	82.0	86.1	81.3	78.1	81.7	85.6	87.4	87.3	88.0	88.3	88.6	83.6	86.3	87.8	88.5	86.3	86.8	85.3	86.2	87.1	85.9	89.0	85.5	86.0	85.3	84.8	84.2
5:30:05	73.2	74.9	77.3	76.3	78.8	82.0	86.1	85.0	78.1	81.2	85.2	87.8	87.3	88.0	88.3	87.9	84.0	86.7	87.8	88.5	86.6	86.8	85.2	86.6	87.5	85.9	89.0	85.5	86.0	84.8	84.8	84.3
5:45:05	72.8	74.9	77.3	76.7	78.7	82.4	85.8	79.5	78.8	81.1	85.5	87.8	87.3	88.0	88.2	87.9	84.0	86.6	88.2	88.8	85.9	87.1	85.2	86.5	87.5	85.5	88.6	85.1	86.4	83.1	84.8	84.1
6:00:05	72.8	75.3	77.3	76.6	79.1	82.4	85.8	79.6	78.8	81.5	85.5	87.4	87.3	88.0	88.2	87.8	84.4	86.6	88.2	88.8	86.3	86.8	85.3	86.5	87.5	85.9	89.0	85.0	86.4	83.7	85.1	84.2
6:15:05	76.3	75.3	77.7	76.6	79.5	82.7	85.8	79.8	79.2	81.9	85.5	87.4	87.3	88.3	88.2	88.2	84.4	86.6	88.1	88.8	86.1	86.7	85.3	86.5	87.4	85.9	88.9	84.9	86.7	84.5	85.2	84.4
6:30:05	71.8	75.7	78.1	77.0	79.5	83.1	85.0	80.5	79.2	81.9	85.9	87.4	87.2	88.3	88.2	88.1	84.4	86.3	88.1	88.5	83.5	86.4	84.9	86.5	87.5	85.9	88.9	85.3	86.7	84.5	84.4	84.2
6:45:05	72.5	76.1	78.5	77.0	79.5	82.4	86.0	80.8	79.6	81.8	85.8	87.4	87.6	88.0	88.2	88.1	84.0	86.9	88.1	88.5	84.4	86.0	85.2	86.1	86.8	85.9	88.9	85.7	86.7	84.4	82.5	84.2
7:00:05	72.8	76.1	78.1	77.0	79.9	82.7	80.3	81.2	79.6	81.8	85.8	87.7	87.6	88.3	88.2	88.1	84.0	84.1	87.8	88.1	85.5	86.0	85.6	85.7	86.8	86.2	88.9	85.7	86.7	85.1	83.1	84.0
7:15:05	73.7	76.9	78.1	77.0	80.3	82.7	81.7	81.6	80.0	82.2	85.8	87.8	88.0	88.7	88.2	88.4	83.9	83.4	87.4	88.1	85.8	85.6	85.3	85.7	86.4	86.2	88.9	85.7	86.7	85.5	83.4	84.2
7:30:05	74.0	77.0	78.1	77.0	79.9	82.7	82.0	82.0	80.0	82.3	85.8	89.0	88.0	88.7	88.5	88.8	84.3	83.7	87.0	88.2	85.7	82.4	86.6	85.4	86.0	86.6	88.9	85.7	86.8	85.9	84.5	84.2
7:45:05	74.5	77.0	78.1	77.0	79.9	82.7	82.7	81.3	80.0	82.3	85.8	87.3	88.0	88.7	88.5	88.2	84.0	84.5	87.4	88.2	86.0	82.6	83.8	85.1	86.4	85.9	89.3	86.1	86.4	85.5	84.4	84.1
8:00:05	74.4	77.0	78.1	77.1	80.0	82.7	82.7	79.9	80.4	82.3	85.8	84.3	88.0	88.7	88.2	87.2	83.7	84.4	87.4	88.2	86.4	82.9	83.1	84.8	86.0	85.9	89.3	85.8	86.1	85.2	85.2	83.9
8:15:05	74.9	77.0	77.3	76.3	80.4	82.7	81.9	78.5	80.0	82.3	85.9	84.3	87.7	88.7	88.2	86.3	83.3	85.1	87.3	88.2	86.8	83.2	84.1	82.0	86.0	85.5	89.0	85.8	86.1	85.2	84.8	83.7
8:30:05	74.5	77.0	77.3	75.6	77.6	83.0	82.3	76.6	79.7	82.3	85.8	84.5	87.4	88.8	88.4	84.5	83.2	85.4	87.7	87.8	86.5	83.9	84.3	82.0	85.6	85.6	89.0	84.5	86.1	84.5	85.3	83.4
8:45:05	74.1	77.0	77.3	74.1	75.8	83.1	82.3	75.4	79.3	82.0	85.9	85.3	87.4	88.2	87.4	82.7	82.1	85.8	87.7	88.2	84.8	83.9	85.0	81.6	86.1	85.6	89.2	83.9	85.7	84.5	85.0	83.1
9:00:05	72.6	76.0	77.4	72.8	76.5	83.5	82.3	73.8	79.3	82.1	85.9	85.7	87.0	88.2	84.7	81.2	78.1	85.8	87.6	87.5	83.8	84.3	85.4	81.6	85.3	82.3	88.5	82.4	85.7	84.1	83.0	82.4
9:15:05	71.0	73.6	76.1	72.0	76.8	83.2	82.4	72.6	79.4	80.6	85.9	85.7	87.0	87.8	83.2	80.4	77.8	86.2	88.0	87.5	82.7	84.8	85.4	80.9	85.8	81.6	87.9	80.9	86.8	83.8	82.2	81.9
9:30:05	69.7	71.5	75.3	71.1	77.7	82.9	82.0	71.3	77.9	80.3	85.2	85.4	86.7	87.8	83.2	79.7	80.3	86.2	88.1	87.2	81.2	83.6	85.5	80.8	85.1	82.7	86.9	80.6	84.6	83.8	81.5	81.5
9:45:05	69.7	69.9	74.5	70.1	77.4	83.0	81.3	70.9	77.5	81.1	86.1	86.1	86.7	87.1	86.8	78.8	73.2	86.2	88.1	86.8	80.8	83.6	84.8	80.8	84.1	83.8	86.2	80.1	83.0	83.9	81.1	81.1
10:00:05	69.7	68.6	74.1	70.8	77.0	80.0	80.5	70.4	77.1	81.6	84.6	83.5	86.4	86.7	87.2	78.4	72.9	86.3	88.1	86.8	79.5	83.3	84.1	80.8	82.5	84.2	84.2	80.1	81.5	82.5	81.1	80.5
10:15:05	68.3	67.7	73.3	69.0	76.6	79.8	79.8	70.0	77.1	81.6	85.8	82.2	86.0	86.0	86.1	78.0	74.1	85.6	87.8	87.0	80.3	83.0	83.0	80.8	82.5	84.6	84.2	80.2	82.7	82.0	81.5	80.2
10:30:05	67.4	67.7	72.7	70.8	76.2	80.5	78.9	69.5	77.1	80.7	85.4	84.0	85.6	86.7	84.5	78.3	74.1	85.6	87.8	86.3	80.3	82.6	82.6	80.9	82.9	84.5	84.2	79.8	82.3	81.6	81.5	80.1
10:45:05	65.7	67.2	67.5	68.6	75.8	80.6	81.7	69.5	76.3	80.8	85.4	85.1	85.2	87.1	84.5	78.3	73.5	85.2	87.4	85.6	80.3	82.3	82.2	80.9	82.9	84.5	83.8	80.3	81.9	81.3	81.4	79.8
11:00:05	65.6	66.7	67.8	66.8	75.4	80.6	86.0	69.9	76.8	81.2	84.2	85.5	85.2	87.5	83.9	78.7	74.4	85.2	87.5	85.6	80.3	81.9	82.2	80.9	82.6	84.9	83.4	79.8	81.0	80.1	81.8	79.8
11:15:05	66.6	66.3	67.3	71.6	75.8	80.2	81.9	70.3	76.1	81.6	82.9	85.5	85.6	87.6	84.3	78.7	74.8	84.9	87.5	85.6	80.3	81.5	82.2	80.9	82.6	85.3	82.6	79.8	81.0	79.3	81.8	79.8
11:30:05	65.6	66.3	66.3	72.9	75.4	80.6	79.6	70.7	75.3	80.8	83.2	83.9	85.3	87.6	83.9	78.7	75.6	85.2	87.2	85.2	80.3	81.5	81.8	80.9	82.6	85.3	81.0	79.8	81.1	78.5	81.9	79.5
11:45:05	65.6	66.3	65.4	75.3	74.9	80.6	79.4	70.7	74.4	84.3	82.7	84.2	84.6	88.7	84.2	78.7	76.1	85.3	87.2	84.8	80.3	81.5	81.8	80.9	82.2	85.3	80.2	79.8	80.3	78.1	81.9	79.5
12:00:05	64.7	65.4	64.5	71.1	75.0	80.6	77.6	70.7	74.4	78.1	82.3	81.5	83.9	84.2	84.2	78.7	76.1	84.9	86.9	84.9	80.3	81.1	81.7	80.9	82.2	85.3	79.0	79.8	80.0	77.6	82.0	78.7
12:15:05	64.2	65.4	64.5	65.9	74.5	80.5	77.6	70.7	74.5	76.9	82.3	81.6	83.9	85.2	84.1	78.7	76.5	85.0	86.6	84.9	80.3	80.7	82.5	80.9	81.9	85.2	80.2	79.4	79.2	77.7	81.6	78.5
12:30:05	63.8	65.1	63.6	67.9	74.1	80.9	77.6	70.7	73.6	76.7	82.3	82.7	83.5	85.9	84.2	78.7	76.5	84.6	86.3	84.5	80.3	80.7	82.5	80.9	81.5	85.3	80.2	79.4	78.4	77.7	81.7	78.4
12:45:05	62.8	63.5	63.1	69.1	73.7	81.7	77.6	70.7	74.0	78.3	81.9	83.4	83.9	86.2	84.2	78.7	76.5	84.7	86.0	84.2	80.0	80.4	82.6	80.9	81.1	85.3	80.3	79.4	78.8	77.2	81.8	78.5
13:00:05	62.4	61.9	62.7	70.0	73.3	82.5	77.2	70.7	73.7	78.7	81.6	83.7	84.3	86.3	83.8	78.3	76.5	84.3	85.6	84.2	79.9	80.4	82.2	80.2	81.1	85.4	80.3	79.5	76.6	76.9	81.8	78.3
13:15:05	62.9	61.8	63.7	70.9	73.3	82.2	77.6	70.8	72.8	78.2	81.2	84.5	83.9	85.6	83.8	78.3	76.5	84.0	85.6	84.2	80.0	80.1	82.3	80.2	80.6	85.0	79.8	79.5	78.7	76.0	81.9	78.3
13:30:05	63.9	61.3	63.0	70.9	73.2	81.8	77.6	70.8	72.3	77.7	81.2	84.9	84.7	85.6	83.7	77.9	76.5	84.0	85.7	83.8	79.6	79.7	82.3	80.2	80.6	85.0	84.5	79.6	73.1	76.1	81.5	78.2
13:45:05	63.4	61.8	63.3	70.5	73.3	81.4	77.6	70.0	72.8	78.5	80.8	84.9	84.7	86.0	83.8	77.9	76.4	83.7	85.3	83.4	79.6	79.7	82.0	80.2	81.0	85.0	86.0	79.6	72.1	75.6	81.1	78.1
14:00:05	64.4	62.3	59.9	70.0	73.3	81.4	77.2	69.5	71.5	78.5	80.0	84.2	84.3	86.0	83.4	77.5	76.8	83.3	84.9	83.3	78.8	79.3	82.0	79.8	81.1	85.0	80.6	79.3	73.7	75.2	81.2	77.7
14:15:05	63.0	61.4	58.8	69.9	72.9	81.4	77.2	69.1	71.3	78.5	79.7	83.4	83.9	85.6	83.4	77.1	76.8	83.3	84.9	83.7	79.2	78.9	81.6	79.8	80.3	85.1	74.7	78.9	70.8	75.2	80.8	77.1
14:30:05	62.1	60.9	59.7	69.9	72.5	81.3	76.8	68.7	65.7	78.1	78.6	83.4	84.4	85.6	83.0	76.7	77.2	83.3	84.5	83.7	78.8	78.9	81.6	79.8	80.3	84.8	71.7	78.5	70.8	73.9	80.9	76.6
14:45:05	61.2	59.5	62.0	70.3	72.9	81.4	76.8	68.2	65.2	77.7	78.7	83.4	84.0	85.6	83.0	76.3	77.2	83.4	84.0	83.7	78.0	78.5	81.3	79.8	80.7	84.8	73.9	77.2	70.3	73.6	80.0	76.5
15:00:05	63.4	59.0	61.5	69.8	73.0	81.4	76.8	67.8	64.7	77.7	80.2	83.4	84.4	85.7	83.0	75.9	77.6	83.0	84.3	83.8	78.4	78.1	81.3	79.5	80.8	84.4	74.7	77.6	68.9	73.1	79.7	76.5
15:15:05	57.7	58.5	60.5	69.8	72.6	81.0	75.9	67.8	67.1	77.3	81.8	83.4	83.3	85.7	83.0	76.3	77.6	82.6	84.3	83.5	78.0	77.3	80.9	79.5	80.4	84.8	74.6	77.2	69.4	72.2	79.7	76.2
15:30:05	57.2	58.0	60.5	69.8	72.2	80.6	75.5	66.9	65.1	76.9	81.8	83.4	83.0	85.4	82.7	75.9	77.7	82.6	84.7	83.5	78.0	77.2	80.5	79.0	80.0	84.4	76.3	76.8	68.4	72.7	75.4	75.9
15:45:05	57.0	57.5	60.5	69.3	71.7	80.6	75.1	66.9	65.5	76.9	81.8	83.0	82.6	85.0	82.3	75.0	77.3	82.6	84.6	82.6	77.6	77.2	79.6	79.0	79.6	84.0	77.1	76.3	67.5	71.9	72.3	75.5
16:00:05	56.9	57.0	60.0	69.3	71.3	80.6	74.2	66.4	64.0	76.0	80.9	82.6	82.6	84.6	82.3	74.6	77.3	81.8	84.6	82.6	77.2	76.4	79.2	78.6	79.2	84.1	77.6	76.4	67.0	71.9	71.8	75.1
16:15:05	55.9	56.5	60.4	69.3	70.8	80.6	74.2	66.4	63.9	76.0	80.1	82.5	83.9	84.6	81.9	74.6	77.3	81.8	84.5	81.0	77.2	75.9	78.4	78.6	78.8	83.6	77.5	75.5	67.0	74.9	69.6	74.9
16:30:05	54.4	56.5	60.4	69.7	70.8	80.6	73.7	65.9	63.9	76.0	80.1	82.5	82.1	84.2	81.1	74.5	77.3	81.4	85.3	80.6	76.3	76.3	78.3	78.6	78.3	83.6	77.5	75.1	66.5	73.1	68.6	74.6
16:45:05	53.3	56.5	60.4	69.7	70.8	80.6	73.7	65.9	64.3	75.6	79.2	82.5	82.1	84.1	81.0	73.6	77.2	81.4	85.3	80.1	76.3	76.3	77.9	78.2	77.9	83.6	77.5	74.6	67.0	70.6	67.7	74.4
17:00:05	52.8	58.1	60.4	69.6	70.4	80.5	73.7	65.9	63.8	75.6	78.4	82.5	81.5	84.1	81.0	74.1	77.6	81.4	85.7	78.5	75.8	75.4	77.4	77.8	77.4	83.2	77.0	74.6	67.8	68.5	66.4	74.1
17:15:05	52.2	57.4	60.3	69.6	70.4	80.5	73.7	65.4	64.2	75.1	78.3	82.0	82.4	83.3	81.0	74.0	77.6	80.9	85.7	78.1	75.3	75.4	77.4	77.3	77.0	83.2	77.0	74.1	68.3	68.3	66.3	73.9
17:30:05	52.6	53.0	59.8	69.6	69.9	80.5	73.7	65.9	64.6	75.5	79.1	82.0	83.4	83.2	80.6	73.6	77.6	80.9	85.6	78.1	75.3	74.5	77.4	77.3	77.0	83.1	77.0	74.1	68.7	68.2	67.2	73.8
17:45:05	54.6	54.2	60.2	70.0	69.4	80.5	73.6	65.8	65.0	75.4	79.5	82.0	84.1	82.9	80.1	74.0	77.5	80.5	86.1	78.0	75.2	74.8	76.9	77.2	76.9	83.1	76.9	73.6	69.1	69.5	68.1	74.0
18:00:05	57.5	56.1	60.2	70.0	69.4	80.5	73.6	65.8	65.0	75.8	79.1	82.3	84.8	82.9	80.1	73.5	77.9	80.4	86.1	77.0	75.2	75.2	76.9	77.6	76.8	83.5	76.5	73.1	69.9	70.8	68.5	74.3
18:15:05	61.4	58.5	60.2	70.0	69.3	80.5	73.6	65.3	64.9	76.2	79.0	82.3	85.1	83.3	80.1	73.8	78.3	80.4	85.7	79.1	75.2	75.6	77.3	77.6	76.8	83.9	75.6	73.5	70.8	71.6	69.0	74.6
18:30:05	62.9	59.9	60.6	70.4	69.7	80.8	73.5	64.3	64.9	76.6	79.4	82.3	85.5	83.2	80.0	73.8	78.7	80.7	85.8	78.7	75.5	76.0	77.2	77.9	77.2	83.8	75.1	73.5	71.3	72.9	69.9	74.9
18:45:05	68.0	60.4	61.0	70.4	69.7	82.0	73.9	63.8	65.3	77.0	80.7	82.2	85.5	83.6	80.4	74.2	79.0	81.1	85.4	77.4	75.9	76.5	77.6	78.3	77.6	83.8	76.4	73.9	72.5	73.4	71.2	75.4
19:00:05	67.4	61.3	61.0	70.8	70.1	82.4	73.9	63.8	65.7	77.3	80.7	83.0	85.4	83.9	80.8	74.6	79.4	81.4	85.1	74.4	75.8	76.9	78.0	78.7	77.9	84.2	76.8	74.7	73.4	74.2	72.1	75.6
19:15:05	67.7	62.2	61.4	71.3	71.0	82.9	73.8	63.8	66.6	77.7	84.8	82.9	85.8	84.1	80.7	75.0	79.8	81.8	85.0	75.3	76.2	76.8	78.3	79.0	78.3	84.2	77.1	74.3	74.3	74.6	72.9	76.1
19:30:05	67.1	62.1	61.9	71.7	71.0	82.8	74.2	64.7	67.9	78.1	82.6	83.3	85.8	86.8	81.1	75.4	79.8	82.2	85.3	74.1	77.1	77.2	78.3	79.4	78.3	84.6	78.0	74.6	75.6	75.0	75.8	76.5
19:45:05	69.8	62.6	62.3	71.7	71.0	82.8	74.2	65.1	68.8	78.5	81.0	83.7	85.7	83.0	81.5	75.7	80.1	82.2	85.3	76.0	76.6	78.4	78.7	79.8	78.7	85.4	78.0	75.4	76.4	75.0	73.1	76.7
20:00:05	71.3	63.9	62.8	72.1	72.3	82.8	74.6	66.1	69.7	78.9	82.0	83.6	86.1	83.9	82.2	75.7	80.5	82.5	85.6	77.2	77.0	77.0	78.8	80.2	79.0	85.8	78.4	77.1	76.8	75.8	72.1	77.2
20:15:05	64.4	69.1	61.9	72.5	72.6	82.8	75.0	67.6	70.5	79.3	82.6	84.0	86.1	84.5	82.3	76.2	80.9	82.9	86.9	78.8	77.5	77.6	79.1	80.5	79.4	85.5	78.8	79.2	77.0	76.9	73.2	77.6
20:30:05	64.7	70.2	61.4	72.9	80.8	82.8	74.5	73.9	71.0	79.3	81.7	84.4	86.1	84.9	82.2	76.6	81.4	82.9	84.7	79.6	77.5	76.7	79.1	80.5	79.8	85.5	79.2	81.0	79.9	78.6	74.4	78.3
20:45:05	66.4	68.1	61.8	73.0	82.3	82.4	74.5	68.1	70.9	79.4	85.7	84.3	86.1	84.9	83.0	76.6	81.4	83.4	86.9	80.0	78.0	77.2	79.1	81.0	79.8	85.8	79.2	83.0	76.3	75.7	76.0	78.4
21:00:05	66.9	65.5	64.4	74.0	83.7	83.6	74.5	65.4	71.3	79.4	84.3	84.3	86.0	84.9	83.1	77.0	81.4	83.5	86.3	80.4	78.3	78.6	79.1	84.7	80.2	82.0	79.6	83.2	76.1	75.1	76.5	78.5
21:15:05	66.8	66.1	63.2	74.0	81.3	82.9	74.1	62.0	71.8	80.5	81.2	84.8	86.0	85.2	83.1	77.0	82.6	86.2	84.4	80.8	82.8	78.8	79.5	87.1	80.6	84.0	79.5	85.1	77.2	74.3	76.9	78.7
21:30:05	66.8	65.5	64.7	72.5	83.4	83.7	73.6	61.7	72.7	82.6	82.2	84.4	86.1	85.6	83.1	77.4	86.5	86.6	84.9	80.8	85.5	79.5	79.9	88.2	80.7	85.3	80.0	82.8	78.0	76.3	77.2	79.3
21:45:05	68.0	67.3	67.7	73.7	79.5	81.1	74.0	64.4	74.2	82.5	82.5	84.8	86.0	85.6	83.0	77.4	85.0	82.2	85.6	81.2	84.5	80.2	79.9	87.1	81.6	85.8	80.0	82.4	78.8	77.6	77.7	79.4
22:00:05	69.3	68.1	68.0	74.0	78.9	80.7	74.0	66.3	78.7	80.0	83.2	84.5	86.0	85.6	83.0	78.5	82.2	83.4	86.0	81.5	82.9	80.2	79.9	84.2	79.9	84.6	82.8	80.0	79.6	78.3	77.6	79.4
22:15:05	70.2	69.0	68.7	74.4	77.7	82.3	74.0	67.6	75.5	81.9	83.6	84.3	86.0	85.9	83.4	79.8	81.3	81.9	86.3	81.0	84.5	80.9	80.3	85.1	81.5	85.2	79.9	80.8	80.3	78.7	78.5	79.7
22:30:05	70.6	69.4	69.0	74.8	78.3	83.0	75.8	68.5	75.5	77.2	84.3	83.3	86.0	86.3	83.4	77.2	81.0	82.6	86.3	81.7	84.1	80.9	80.3	82.0	77.6	85.4	80.6	82.7	81.1	79.1	78.4	79.6
22:45:05	71.0	69.9	69.8	74.8	79.0	83.0	78.1	69.3	72.1	76.2	84.6	83.9	86.0	86.3	83.4	78.2	81.6	81.5	86.2	82.0	85.4	80.9	80.7	83.4	79.5	86.1	80.5	83.7	81.1	79.5	78.9	79.9
23:00:05	71.0	70.3	70.2	74.7	79.3	83.0	75.5	70.2	73.1	77.7	85.4	84.3	85.9	86.2	83.8	78.9	82.3	82.9	86.2	82.4	82.7	81.7	81.6	84.4	80.2	86.8	80.8	84.4	81.6	80.2	79.2	80.2
23:15:05	71.4	70.7	71.1	75.5	79.7	83.4	75.9	70.6	74.8	79.3	85.3	84.6	86.3	86.2	83.0	79.2	82.6	83.5	86.2	82.4	83.1	81.6	84.7	84.3	80.9	87.1	81.6	84.8	81.5	80.6	79.6	80.7
23:30:05	71.4	71.1	71.5	76.3	80.1	83.7	75.5	71.0	76.0	80.5	85.7	84.9	86.3	86.6	87.1	79.6	82.9	84.2	86.2	82.8	83.8	82.0	84.2	84.6	81.2	87.8	82.3	84.7	81.9	81.4	80.4	81.2
23:45:05	71.8	71.6	71.5	76.7	80.0	84.4	76.1	71.5	75.9	81.2	86.1	84.9	86.3	86.6	86.9	79.5	82.9	84.5	86.2	82.8	84.1	82.0	80.9	84.9	81.6	87.8	82.7	85.1	82.3	81.8	80.8	81.3
DAY AV	67.1	68.1	69.1	72.9	76.2	81.8	79.6	72.7	73.4	79.4	83.3	84.9	85.7	86.3	85.0	80.7	80.1	84.0	86.4	84.2	81.7	81.6	82.1	82.2	82.8	84.9	83.1	81.1	79.9	79.3	79.6	80.0

October 2019 House E average RH calculation spreadsheet

DATA LOG 3: HOUSE E																																
Time	**Relative Humidity**																															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	AV
0:00:05	59.6	62.2	66.7	62.3	69.5	70.1	77.2	69.3	61.5	70.2	73.1	78.1	78.2	81.3	78.6	76.6	69.8	76.5	78.2	82.3	78.4	73.2	73.6	72.8	75.0	74.1	79.9	73.7	73.7	73.6	75.7	73.1
0:15:05	59.6	62.6	66.6	62.3	69.4	70.5	77.6	69.3	61.9	70.1	73.1	78.1	78.2	81.3	79.0	77.0	70.2	76.5	78.6	82.3	78.3	73.6	74.0	73.2	74.9	74.5	79.8	74.1	74.1	73.6	75.7	73.2
0:30:05	60.0	62.6	67.1	62.8	69.9	70.5	78.0	70.1	62.9	70.6	73.5	78.1	78.6	81.7	79.0	77.4	70.6	76.5	79.0	82.7	79.1	74.0	74.5	73.7	75.4	74.9	80.2	74.5	74.9	74.0	75.7	73.6
0:45:05	60.0	63.1	67.5	63.2	69.9	70.9	78.0	70.1	62.8	71.0	73.9	78.1	78.5	81.7	79.4	77.4	71.1	76.9	79.0	83.0	79.1	74.0	74.9	73.6	75.4	75.3	80.2	74.9	74.9	74.4	76.1	73.8
1:00:05	60.0	63.0	67.5	63.6	69.9	70.9	77.9	70.9	63.3	71.0	73.9	78.1	78.5	82.1	79.4	78.2	71.5	76.9	79.4	83.0	79.1	74.4	75.3	74.0	75.8	75.3	80.2	74.9	75.3	74.4	76.1	74.0
1:15:05	60.4	63.5	67.9	64.1	69.9	70.9	78.4	70.9	63.8	71.4	73.9	78.5	78.9	82.1	79.7	78.2	71.5	77.3	79.8	83.4	79.4	74.4	75.3	74.4	75.7	75.3	80.6	74.9	75.7	74.8	76.5	74.2
1:30:05	60.9	63.5	67.9	64.1	70.3	71.3	78.3	70.9	64.2	71.4	74.3	79.3	78.9	82.1	79.7	78.2	71.5	77.3	79.7	83.4	79.8	74.4	75.3	74.4	75.7	75.7	80.6	75.3	76.1	75.2	76.4	74.4
1:45:05	61.4	63.4	67.9	64.5	70.3	71.3	78.7	71.3	64.7	71.4	74.3	78.5	78.9	82.1	79.7	78.6	71.9	77.3	79.7	83.4	79.8	74.8	75.7	74.8	76.1	75.6	80.6	75.7	76.1	75.6	76.4	74.5
2:00:05	61.4	63.4	68.3	64.5	70.3	71.7	78.7	71.3	64.7	71.8	74.3	79.3	78.9	82.1	80.1	78.6	72.3	77.2	80.1	83.8	79.8	75.2	75.7	74.8	76.6	76.1	80.5	75.7	76.5	75.5	76.4	74.7
2:15:05	61.4	63.4	68.3	64.5	70.7	71.7	78.7	71.7	65.6	71.8	74.3	78.8	79.3	82.0	80.1	78.6	72.8	77.7	80.1	83.8	80.2	75.2	76.5	74.8	76.5	76.0	80.9	75.6	76.5	76.0	76.8	74.8
2:30:05	61.8	63.8	68.3	64.9	71.2	71.3	79.1	71.6	65.5	72.2	74.7	78.8	79.7	82.0	80.1	79.0	72.8	77.6	80.1	83.8	80.2	75.6	76.5	75.2	76.5	76.4	80.9	76.0	76.5	75.9	76.8	75.0
2:45:05	62.3	63.8	68.7	64.9	70.7	71.7	79.1	72.0	66.0	72.2	74.7	79.2	79.2	82.8	80.5	78.9	72.3	78.1	80.5	83.7	80.6	75.6	76.5	75.1	76.9	76.9	80.9	76.0	76.5	75.9	76.8	75.1
3:00:05	62.3	64.2	68.7	65.4	70.7	71.7	79.5	72.4	66.5	72.1	75.1	79.2	79.6	82.9	80.5	78.9	72.3	78.0	80.5	83.7	80.6	76.1	76.5	75.5	76.9	76.8	81.3	76.4	76.9	76.3	76.8	75.3
3:15:05	62.8	64.7	68.7	65.4	71.1	71.7	79.5	72.4	66.4	72.1	75.1	79.6	79.6	82.8	80.5	78.9	72.3	78.0	80.5	84.1	80.6	76.0	76.9	75.5	77.3	76.8	81.3	76.4	76.8	76.3	77.2	75.4
3:30:05	62.8	64.7	68.7	65.3	71.1	71.7	79.4	72.9	66.9	72.5	75.1	79.6	79.6	82.8	80.5	78.9	72.2	78.0	80.5	84.1	80.6	76.0	76.9	75.5	77.3	77.2	81.3	76.4	77.3	76.7	77.2	75.5
3:45:05	63.2	64.7	69.1	65.3	71.1	71.7	79.4	72.9	66.9	73.0	75.1	79.6	80.0	82.8	80.4	79.3	72.2	78.0	80.5	84.1	80.6	76.0	77.3	75.9	77.3	77.7	81.3	76.3	77.3	77.1	77.2	75.6
4:00:05	63.2	64.6	69.1	65.3	71.1	72.1	79.4	73.3	67.8	72.9	75.5	79.6	80.0	82.8	80.4	79.3	72.6	78.0	80.5	83.7	80.9	76.0	77.3	75.9	77.7	77.2	81.3	76.7	77.2	77.1	77.6	75.7
4:15:05	63.2	65.1	69.6	65.8	71.1	72.1	79.4	73.3	67.7	72.9	75.5	79.6	80.0	83.2	80.4	79.7	72.6	78.4	80.9	84.1	80.9	76.4	77.3	75.9	77.7	77.6	81.2	76.7	77.7	77.1	77.5	75.8
4:30:05	63.7	65.6	69.6	65.8	71.6	72.1	79.4	73.3	68.2	72.9	75.5	79.6	80.4	83.2	80.4	79.7	73.5	78.8	80.5	84.0	81.3	76.8	77.3	75.9	77.7	78.0	81.6	77.1	77.7	77.1	77.5	76.0
4:45:05	64.1	65.5	70.0	66.2	71.5	72.5	79.4	73.3	68.2	73.3	75.9	79.6	80.4	83.2	80.4	79.7	84.4	78.8	80.8	84.0	81.3	76.8	77.3	76.3	77.6	78.0	81.7	77.0	77.6	77.5	77.9	76.5
5:00:05	64.1	65.5	70.0	66.2	72.0	72.5	79.4	73.3	68.6	73.3	75.9	79.6	80.4	83.5	80.8	79.7	86.7	78.8	81.3	84.0	80.9	76.8	77.7	76.2	78.1	78.0	81.6	77.4	78.1	77.5	77.9	76.6
5:15:05	70.7	65.5	72.7	69.0	72.4	72.5	80.3	77.7	68.6	81.6	75.8	88.7	80.4	84.4	80.8	80.6	78.9	78.8	81.3	88.6	81.3	80.3	80.3	88.3	78.1	81.1	81.6	79.6	79.0	77.5	79.7	78.6
5:30:05	71.5	65.9	77.5	75.7	86.1	72.9	93.2	78.1	69.0	88.3	76.3	91.3	80.4	86.5	80.8	84.3	76.7	78.8	81.3	88.5	81.3	81.2	83.2	86.5	78.1	84.8	82.0	87.6	84.1	77.5	83.4	81.1
5:45:05	70.3	65.9	72.4	72.9	90.1	72.9	89.7	78.3	69.1	75.1	76.2	84.9	80.7	85.2	80.8	83.4	75.8	78.7	81.2	85.4	81.3	79.8	81.1	82.9	78.0	81.8	82.0	89.0	87.2	77.5	81.3	79.7
6:00:05	71.9	65.9	69.5	75.7	81.6	72.9	90.5	75.6	81.6	75.8	76.2	83.8	81.1	82.4	81.2	80.2	75.0	78.7	81.6	84.3	81.3	80.8	80.5	77.6	78.9	79.7	82.0	88.8	77.9	77.9	80.7	79.1
6:15:05	77.7	67.8	69.3	76.7	77.4	74.2	82.2	76.1	88.3	78.2	81.3	82.3	81.1	84.6	83.7	79.9	69.9	79.6	82.0	83.0	82.9	77.0	79.8	77.0	87.4	80.2	83.8	79.2	76.8	80.6	84.3	79.5
6:30:05	66.6	75.6	69.7	68.2	77.0	89.0	81.9	77.4	76.6	77.1	92.2	80.6	81.5	91.8	89.8	84.7	70.5	83.8	84.6	82.6	90.4	83.5	77.6	77.3	90.1	79.0	92.9	79.0	77.0	90.0	77.7	81.2
6:45:05	66.8	83.5	70.0	68.0	71.7	91.2	81.8	73.5	75.7	76.8	88.0	81.7	81.5	82.7	94.8	79.1	72.1	90.3	90.7	88.3	90.0	75.8	76.3	77.6	85.7	83.3	90.2	79.3	77.7	84.6	77.3	80.8
7:00:05	67.2	75.2	70.4	68.8	70.9	81.3	82.1	73.7	75.3	71.7	82.0	77.4	82.0	82.4	86.6	78.2	72.8	90.1	90.2	83.1	87.6	76.0	76.9	78.0	78.8	79.0	86.7	79.7	78.1	84.4	78.0	78.9
7:15:05	67.5	78.3	70.9	69.2	72.0	78.7	82.0	74.5	73.1	72.4	80.3	78.8	91.9	83.0	84.5	78.4	73.6	84.8	86.5	82.3	83.9	76.8	77.6	78.8	76.8	77.8	84.3	79.7	79.3	81.5	78.7	78.6
7:30:05	68.0	75.8	70.8	69.1	72.3	77.3	82.4	74.9	69.2	72.3	80.7	79.9	92.0	83.8	83.7	80.0	74.0	83.1	85.8	83.3	82.3	77.6	78.4	78.8	77.1	77.6	83.8	80.1	79.8	81.1	79.4	78.5
7:45:05	68.4	72.3	70.8	69.1	72.7	76.0	82.4	74.5	68.6	72.6	78.2	80.6	84.5	84.5	82.5	80.8	74.8	82.3	83.4	83.6	82.3	78.4	79.2	79.2	78.3	78.3	84.3	79.7	79.8	80.7	79.8	78.1
8:00:05	68.4	68.2	71.3	68.7	73.5	74.4	82.0	74.6	71.2	73.5	73.1	81.0	81.5	84.5	79.6	80.9	74.8	81.6	83.3	84.3	82.8	78.4	79.5	78.9	78.3	79.1	80.1	79.7	79.4	76.5	80.6	77.5
8:15:05	67.9	67.9	71.3	68.7	73.5	74.6	82.0	74.2	72.0	73.9	74.2	81.4	81.5	84.9	76.6	80.5	75.2	80.8	82.0	85.1	77.7	78.0	80.0	78.9	77.0	79.9	81.2	80.2	79.4	76.2	80.6	77.3
8:30:05	68.4	69.2	71.3	68.3	74.0	75.4	81.6	73.5	72.5	74.4	75.3	81.8	80.3	85.3	77.3	80.2	75.3	77.3	81.7	85.4	76.6	78.0	79.9	79.0	76.5	79.9	81.1	79.5	79.4	76.4	80.7	77.3
8:45:05	68.0	69.1	71.3	67.9	73.2	76.2	81.2	72.2	71.6	74.8	77.5	81.8	76.6	84.9	78.1	79.4	75.3	77.0	78.0	85.8	81.3	77.6	79.9	79.0	81.1	80.3	82.4	77.9	79.4	76.3	80.7	77.3
9:00:05	67.1	69.6	71.3	67.1	71.8	75.7	81.3	71.4	70.7	74.9	77.4	82.2	76.0	84.5	77.2	79.5	75.0	77.6	78.5	85.5	76.2	77.6	80.0	79.1	77.2	80.0	79.0	76.7	79.0	76.7	80.3	76.6
9:15:05	67.3	66.9	75.9	66.6	72.3	75.3	80.9	70.2	70.7	75.0	77.9	82.7	76.7	84.5	76.8	78.7	75.1	78.8	80.5	85.6	75.3	79.9	80.0	78.4	73.2	80.0	79.9	74.7	79.1	77.5	80.0	76.7
9:30:05	65.5	65.7	73.7	65.7	72.3	74.9	81.0	67.6	69.8	74.1	77.5	81.5	77.9	84.1	77.7	78.0	72.6	79.6	81.2	84.4	73.1	78.7	79.7	78.0	74.0	79.6	79.5	73.4	80.0	78.9	77.9	76.1
9:45:05	64.1	64.8	74.3	65.8	72.5	75.3	80.7	64.4	68.1	74.2	77.5	80.3	78.4	82.9	76.9	77.2	70.4	79.6	81.6	82.8	74.9	78.7	80.6	77.6	72.2	80.0	79.6	72.1	84.4	77.2	78.0	75.7
10:00:05	63.6	62.0	77.9	63.5	69.3	75.4	79.1	65.4	67.6	73.8	77.1	79.9	79.2	83.0	77.3	79.0	70.4	79.6	80.8	83.3	76.2	79.6	81.1	76.8	74.0	80.1	78.7	71.6	81.9	76.8	75.9	75.5
10:15:05	62.2	61.6	68.0	62.6	68.9	75.0	79.3	63.6	67.2	73.4	76.7	77.0	79.2	82.2	77.9	77.3	70.5	79.3	80.4	83.5	78.8	80.1	77.8	75.1	74.0	78.4	79.1	72.1	79.7	77.2	75.0	74.6
10:30:05	60.8	61.2	75.5	62.2	69.9	74.5	74.7	63.7	67.2	73.0	76.7	76.1	78.4	82.6	81.6	70.7	70.1	78.9	80.4	81.1	79.8	78.5	77.8	76.1	73.1	77.6	78.3	70.0	78.0	79.5	75.0	74.3
10:45:05	59.5	63.1	65.3	58.9	68.1	74.1	71.3	63.2	66.4	72.2	76.4	77.4	78.8	82.2	74.3	73.9	69.7	78.5	80.4	79.5	79.5	76.4	74.9	73.6	74.9	77.5	78.4	71.0	76.3	79.6	74.6	73.2
11:00:05	59.7	62.8	65.2	54.9	70.5	73.6	67.3	61.4	69.3	71.3	76.5	76.2	79.2	83.1	73.8	73.6	67.9	77.7	80.0	79.9	74.9	79.6	74.1	71.4	77.2	77.9	78.0	72.0	74.6	78.5	73.7	72.8
11:15:05	60.8	64.3	67.7	55.3	67.8	73.6	67.4	57.0	66.6	70.9	74.4	78.8	79.2	82.8	75.1	73.7	66.1	77.2	79.3	79.6	70.9	73.2	72.4	70.1	76.5	77.9	78.4	71.5	72.5	76.8	74.1	72.0
11:30:05	53.4	63.5	64.4	57.2	68.3	74.5	67.0	55.1	68.5	71.0	73.5	80.2	78.5	80.0	73.4	73.4	65.1	77.6	78.4	78.8	75.1	72.3	70.6	68.8	75.8	78.3	80.3	72.5	71.2	76.0	73.3	71.5
11:45:05	51.4	61.6	61.6	57.6	67.4	74.1	65.6	58.7	68.5	71.6	73.1	81.2	78.1	79.3	70.1	72.6	64.2	77.6	78.5	81.5	75.2	68.2	69.7	67.9	75.0	77.9	80.4	72.1	68.1	74.3	73.8	70.9
12:00:05	48.3	61.7	60.7	59.0	72.7	74.1	69.3	56.8	68.7	71.8	72.7	80.1	78.7	79.3	72.8	65.7	67.6	78.1	79.5	79.0	75.0	65.9	71.0	67.4	75.5	77.8	80.1	69.9	65.9	72.6	73.5	70.7
12:15:05	46.7	57.8	59.3	59.5	76.0	73.6	62.4	56.3	70.2	68.6	78.1	79.2	75.7	77.6	75.9	67.1	63.8	77.7	80.0	77.5	66.4	67.7	76.0	71.2	74.6	78.6	77.1	68.1	64.5	69.5	72.8	70.0
12:30:05	60.9	58.3	57.4	61.0	70.7	74.1	59.9	55.9	68.9	73.9	82.3	72.3	75.2	76.8	76.9	65.7	61.9	80.8	82.4	78.4	65.8	71.5	73.3	69.9	74.2	79.1	69.9	72.3	63.2	71.3	76.1	70.3
12:45:05	55.0	55.3	57.4	62.0	66.7	74.0	60.5	54.4	68.1	74.8	83.1	74.5	77.0	76.4	76.5	64.3	63.3	77.0	83.0	78.4	64.3	71.7	72.9	64.9	74.7	78.7	69.0	66.4	65.3	71.7	68.5	69.3
13:00:05	52.3	56.4	54.4	62.1	64.1	74.5	66.5	50.3	68.2	70.6	76.5	71.3	77.6	76.9	75.1	65.3	64.2	77.0	88.4	73.1	64.3	72.7	73.8	64.0	71.5	79.2	71.1	61.7	59.9	80.5	70.0	68.8
13:15:05	51.2	57.4	54.0	62.2	64.1	74.6	70.5	48.7	66.8	66.1	72.4	73.4	75.0	77.0	74.7	65.8	66.6	76.2	79.3	77.1	66.2	70.5	75.3	65.0	69.6	79.3	77.2	59.8	59.9	82.4	64.6	68.5
13:30:05	53.3	55.4	51.4	64.0	64.5	77.8	64.7	47.7	58.9	66.0	72.3	77.0	75.0	83.4	73.8	64.8	70.6	75.9	73.6	76.6	63.8	70.2	72.8	65.4	68.1	78.0	67.1	57.9	59.0	73.5	61.7	67.2
13:45:05	45.4	57.5	49.9	60.6	68.5	77.7	61.3	45.6	62.4	68.7	74.1	77.1	80.1	76.0	74.7	62.6	77.7	76.5	74.2	74.8	64.3	68.8	66.4	66.4	66.7	78.0	64.6	67.0	61.4	71.0	59.8	67.1
14:00:05	42.6	50.9	51.0	59.1	63.3	73.3	54.7	45.6	58.9	63.1	70.9	70.5	75.3	73.8	75.7	55.2	65.5	74.3	74.1	72.4	64.8	63.5	64.5	63.0	65.4	80.1	61.7	55.1	60.5	69.5	58.8	63.8
14:15:05	38.8	47.7	59.8	56.5	61.2	72.3	54.7	49.8	61.4	62.6	73.7	73.6	73.9	71.1	74.4	52.0	65.3	73.4	74.0	72.7	65.3	59.0	64.1	62.5	63.5	79.9	60.8	55.1	58.5	70.4	58.4	63.4
14:30:05	39.4	47.2	60.3	56.4	57.2	72.1	53.1	44.6	62.9	58.7	69.1	70.6	75.2	69.7	72.7	50.9	66.1	69.8	74.3	75.4	66.7	56.5	65.1	66.3	62.9	80.1	56.9	54.8	56.0	71.3	57.4	62.6
14:45:05	37.2	46.7	59.9	58.4	56.2	71.2	54.6	45.6	62.5	58.2	69.4	68.8	75.6	71.1	71.3	51.9	67.0	69.3	72.4	78.3	65.8	55.5	61.8	69.2	63.0	76.2	56.4	52.8	57.6	71.4	60.9	62.5
15:00:05	37.2	47.2	49.5	57.4	56.2	70.3	53.6	45.7	58.1	59.7	70.2	73.4	75.6	80.4	72.2	49.8	68.0	72.6	72.8	74.8	62.0	57.5	63.3	67.4	59.6	75.7	54.8	52.0	57.1	69.0	64.8	62.2
15:15:05	37.7	47.7	48.3	58.9	56.7	69.4	56.1	43.4	60.1	57.2	71.5	71.1	73.8	79.7	71.8	50.3	67.5	72.6	73.6	70.8	61.9	57.5	59.4	66.0	57.7	78.4	59.8	53.5	59.1	68.5	66.3	62.1
15:30:05	37.7	46.7	46.7	58.9	58.2	69.8	57.6	42.3	59.1	58.6	76.1	67.7	76.5	79.4	70.5	50.8	67.1	71.7	74.0	67.6	64.8	57.9	60.4	62.6	59.2	77.2	59.8	51.9	59.5	68.1	62.4	62.0
15:45:05	41.0	47.7	45.6	58.3	57.2	69.8	58.0	45.5	57.6	60.6	69.0	65.3	75.3	75.3	70.5	52.8	68.1	69.0	74.9	67.1	60.0	59.4	60.4	62.1	60.3	75.4	59.8	51.9	59.0	66.2	63.9	61.5
16:00:05	42.7	46.6	45.6	58.8	58.8	70.8	58.1	45.6	55.1	59.6	68.4	67.6	71.6	73.9	69.6	53.4	66.7	68.5	76.1	67.5	56.4	57.9	59.9	62.1	59.8	75.5	60.7	51.4	71.5	64.2	61.9	61.5
16:15:05	42.2	46.6	46.1	59.2	54.7	70.0	57.6	46.1	53.0	57.1	69.3	66.1	72.4	67.0	69.1	49.2	65.3	66.6	76.9	68.0	56.4	56.8	58.4	60.6	60.2	73.7	59.3	51.9	72.8	64.2	61.4	60.6
16:30:05	40.5	48.2	46.0	59.2	55.1	69.9	57.0	45.5	51.9	57.6	68.8	67.0	73.2	67.3	67.2	50.7	63.3	67.5	78.1	68.4	56.8	56.8	59.3	61.1	58.8	72.7	58.9	51.8	63.5	64.6	59.9	60.2
16:45:05	39.9	47.6	44.9	59.2	56.7	70.3	53.5	46.1	51.9	58.6	68.8	67.5	73.1	67.2	67.2	53.8	64.7	67.4	78.6	69.3	56.8	57.3	59.3	61.2	58.7	72.3	58.3	52.3	61.2	64.6	59.3	60.2
17:00:05	39.8	49.7	44.4	59.6	58.6	70.7	52.9	46.6	51.3	60.5	68.8	67.0	74.3	65.2	67.3	53.8	64.6	67.9	79.4	70.2	56.7	56.8	57.8	60.6	59.7	71.8	58.3	63.0	61.0	63.6	58.8	60.7
17:15:05	39.2	51.3	44.3	60.1	59.1	70.7	54.9	45.4	51.2	60.5	69.2	69.3	75.1	66.5	65.8	54.2	65.5	68.3	79.0	68.8	58.2	56.7	57.7	61.1	62.1	70.8	58.7	65.1	60.4	63.5	58.2	61.0
17:30:05	42.4	49.6	45.4	60.1	60.6	70.7	56.4	44.3	55.8	61.9	69.6	68.3	75.9	68.7	65.7	55.2	66.4	68.7	78.1	69.3	58.6	59.2	58.6	61.5	59.1	70.8	59.1	63.6	60.7	63.4	57.2	61.4
17:45:05	43.9	50.7	46.9	60.6	59.1	70.7	56.4	45.3	55.7	61.4	70.0	68.2	76.3	71.0	65.6	55.2	66.3	68.7	78.1	70.1	59.1	60.1	59.0	62.4	58.5	71.2	59.5	57.0	61.1	63.8	57.6	61.6
18:00:05	46.5	49.6	47.9	61.0	59.0	70.6	54.3	47.4	55.2	61.8	70.4	68.2	76.7	71.0	65.1	54.6	66.7	69.1	78.0	71.0	59.0	60.9	59.5	62.8	58.9	72.5	60.5	55.2	61.0	64.2	58.0	61.8
18:15:05	48.5	51.6	48.4	62.0	57.0	70.6	56.3	55.2	54.1	62.2	70.4	69.5	76.7	70.9	64.6	55.0	67.2	69.0	78.4	70.9	59.9	62.3	61.9	64.2	60.3	73.4	61.4	57.1	61.5	65.6	60.4	62.8
18:30:05	50.5	51.5	49.4	63.4	57.4	71.0	67.6	60.6	54.5	71.0	71.4	70.4	76.7	75.3	65.5	56.4	68.0	69.9	78.5	70.4	61.3	62.8	62.3	80.0	61.7	74.7	61.8	58.5	62.8	66.0	62.3	65.0
18:45:05	69.4	52.5	50.9	67.9	68.4	71.4	68.7	48.7	56.5	75.9	82.5	75.4	76.3	81.7	72.6	58.9	68.5	84.3	78.0	70.8	62.2	67.5	62.7	73.6	62.6	75.1	63.2	59.4	64.2	69.2	62.8	67.8
19:00:05	58.8	54.0	67.5	78.0	75.2	72.3	67.8	61.4	56.5	68.5	74.9	80.6	80.2	77.4	83.1	59.8	73.2	79.2	83.0	71.7	69.4	74.6	69.4	76.8	65.0	75.6	64.6	63.9	65.1	79.4	62.7	70.6
19:15:05	56.7	69.1	69.7	66.5	69.4	74.9	64.7	53.7	61.4	79.2	84.8	76.9	84.7	76.7	77.8	61.3	80.8	87.1	90.6	72.1	72.8	68.3	80.1	80.9	71.4	78.1	65.5	66.8	71.6	75.1	68.4	72.8
19:30:05	67.5	64.6	65.0	77.8	72.9	77.6	72.8	55.1	69.3	68.7	76.8	86.6	85.9	87.1	74.7	61.2	79.9	81.9	91.4	75.7	70.7	65.3	71.1	70.3	73.8	84.0	70.2	73.5	71.2	71.0	67.2	73.6
19:45:05	63.3	65.5	67.9	67.1	65.5	78.0	75.4	55.5	77.7	66.6	73.9	82.2	87.5	75.9	77.8	61.2	84.3	86.5	89.5	86.7	75.8	73.6	76.1	69.1	73.5	86.9	73.5	76.3	75.5	69.4	73.4	74.6
20:00:05	57.7	77.2	59.8	64.5	64.8	81.3	66.4	55.5	75.6	67.4	74.1	77.2	80.3	74.7	72.8	74.0	80.5	79.4	87.0	84.6	70.3	70.0	76.3	68.9	77.3	80.4	78.1	67.0	68.8	69.3	80.8	73.0
20:15:05	58.6	71.8	58.6	64.9	66.1	84.2	64.3	56.0	65.1	67.7	74.9	73.6	78.4	75.4	70.1	75.7	73.5	75.9	82.2	75.9	66.8	71.6	70.1	69.7	71.6	84.6	68.8	72.1	68.1	69.7	79.2	71.1
20:30:05	58.0	69.4	58.5	65.3	66.0	78.3	64.6	55.9	64.5	68.6	74.9	74.2	78.7	76.1	70.3	66.1	72.8	75.2	80.6	74.8	66.6	67.7	69.0	70.1	70.0	86.8	67.6	75.5	68.0	69.6	70.9	70.1
20:45:05	58.4	70.0	59.5	66.2	68.3	76.3	63.5	56.4	64.3	69.0	74.4	74.5	79.9	76.1	71.6	63.9	72.2	75.4	80.8	75.1	67.4	68.0	70.7	71.0	68.9	79.2	68.4	70.8	73.1	72.8	69.7	70.2
21:00:05	58.4	64.1	58.9	66.1	66.9	78.4	63.0	56.9	64.2	69.5	74.8	74.4	79.0	76.1	75.6	65.2	73.0	77.1	80.7	75.4	68.3	68.8	71.1	70.5	68.8	77.6	68.7	68.6	77.7	71.0	68.6	70.2
21:15:05	58.3	62.4	59.4	66.6	67.3	77.5	64.8	57.4	64.6	69.5	75.2	74.7	78.5	76.0	72.8	65.5	73.4	76.1	81.5	79.2	68.3	68.3	71.1	70.0	72.0	77.9	69.1	71.6	72.0	70.9	69.9	70.4
21:30:05	58.8	62.4	59.3	67.0	67.7	79.1	64.7	57.3	65.1	69.9	75.6	75.5	79.3	76.4	73.2	65.5	72.9	76.1	81.0	76.2	68.7	69.6	70.6	70.0	70.6	78.2	69.1	72.3	69.0	71.7	70.2	70.4
21:45:05	58.7	62.8	59.8	67.0	68.2	78.3	65.1	57.3	65.0	70.3	75.5	76.8	79.7	76.9	72.3	67.8	73.8	76.0	81.0	76.1	68.7	69.6	70.1	70.4	70.1	78.6	70.4	74.1	69.3	71.7	70.2	70.7
22:00:05	59.6	63.7	60.3	67.0	68.6	77.4	65.6	57.8	65.9	70.8	75.8	79.6	79.7	76.8	72.6	67.8	73.8	76.0	81.4	76.1	69.1	70.9	70.1	70.8	69.6	77.7	70.8	73.1	69.6	72.1	70.1	71.0
22:15:05	60.0	65.0	60.2	67.4	68.1	76.5	65.5	58.2	66.4	70.7	76.6	77.7	79.6	76.8	73.9	67.8	74.2	76.9	81.4	76.0	69.5	70.9	70.0	71.7	70.5	77.6	71.2	70.8	70.5	72.4	71.0	71.1
22:30:05	60.5	66.5	60.2	67.8	69.0	75.6	67.3	58.2	67.2	71.2	76.6	77.2	80.0	76.8	74.3	67.8	74.6	76.9	81.4	76.0	69.9	71.2	70.9	72.5	70.9	78.5	71.7	70.2	71.8	73.2	70.5	71.5
22:45:05	60.9	65.5	60.1	68.2	69.0	76.1	67.3	58.7	68.1	71.5	77.4	77.1	80.3	77.2	75.1	68.2	75.0	76.4	81.3	76.4	70.8	71.6	71.3	73.0	71.3	78.4	72.1	70.2	71.7	74.1	70.9	71.8
23:00:05	60.9	65.5	60.6	68.6	68.9	76.5	67.7	59.1	68.5	71.5	77.4	77.5	80.6	77.5	75.1	68.6	74.9	76.8	81.3	75.9	70.7	72.0	71.7	73.4	71.7	78.4	72.5	70.9	72.1	74.1	71.3	72.0
23:15:05	61.3	66.4	61.0	68.6	69.3	76.4	68.1	60.6	69.0	72.3	77.3	77.4	80.6	77.5	75.4	69.1	75.3	77.1	81.6	77.6	71.5	72.9	72.1	73.3	72.1	78.7	72.9	72.6	72.5	74.9	71.7	72.5
23:30:05	61.8	66.8	61.4	69.0	69.7	76.4	68.5	60.6	69.3	72.3	77.7	77.8	81.0	77.9	75.8	69.0	75.7	77.5	82.0	77.6	71.9	72.8	72.5	74.1	72.4	79.1	73.3	72.6	72.9	75.8	72.5	72.8
23:45:05	62.2	66.8	61.9	69.0	70.1	76.8	68.9	61.0	69.7	72.7	77.7	78.2	81.4	78.2	76.6	69.4	76.1	78.3	82.3	78.0	72.3	73.2	72.4	74.5	73.3	79.5	73.7	72.5	73.2	75.3	72.9	73.2
DAY AV	57.7	61.8	62.5	64.6	68.2	74.2	70.8	61.5	65.6	70.0	75.3	77.0	78.9	79.2	76.1	69.7	71.5	77.0	80.5	79.0	72.7	71.2	72.3	72.2	72.1	77.8	73.8	70.2	71.6	73.9	71.9	71.6

October 2019 graphical RH plot



Appendix III: Absolute Humidity and Dew point Calculations

May 2019 Absolute humidity and dew point calculation spreadsheet

TIME	OUTDOORS RH	OUTDOORS T	OUTDOORS AH	OUTDOORS Td	HOUSE A RH	HOUSE A T	HOUSE A AH	HOUSE A Td	HOUSE B RH	HOUSE B T	HOUSE B AH	HOUSE B Td
0:00:05	81.4	17.0	11.8	13.3	78.1	18.6	12.4	14.2	73.7	20.5	13.1	15.2
0:15:05	81.5	17.0	11.8	13.3	78.5	18.5	12.4	14.2	74.0	20.3	13.0	15.1
0:30:05	81.8	16.9	11.8	13.3	78.8	18.5	12.4	14.2	74.4	20.2	13.0	15.1
0:45:05	82.0	16.9	11.8	13.3	79.1	18.4	12.4	14.2	74.7	20.1	13.0	15.0
1:00:05	82.2	16.9	11.8	13.3	79.4	18.4	12.4	14.2	74.9	20.0	12.9	15.0
1:15:05	82.3	16.8	11.8	13.3	79.7	18.3	12.4	14.2	75.2	19.9	12.9	14.9
1:30:05	82.3	16.7	11.7	13.2	79.8	18.2	12.4	14.2	75.4	19.8	12.9	14.9
1:45:05	82.5	16.7	11.7	13.2	80.0	18.2	12.4	14.2	75.7	19.7	12.9	14.9
2:00:05	82.6	16.6	11.7	13.2	80.2	18.1	12.4	14.1	75.8	19.6	12.8	14.8
2:15:05	82.7	16.5	11.6	13.1	80.5	18.0	12.4	14.1	76.1	19.5	12.8	14.7
2:30:05	82.8	16.5	11.6	13.1	80.7	18.0	12.4	14.1	76.3	19.4	12.7	14.7
2:45:05	82.8	16.5	11.6	13.0	80.8	17.9	12.4	14.1	76.4	19.4	12.7	14.6
3:00:05	82.8	16.4	11.6	13.0	81.0	17.9	12.3	14.1	76.7	19.3	12.7	14.6
3:15:05	83.0	16.3	11.5	12.9	81.1	17.8	12.3	14.1	76.8	19.2	12.7	14.6
3:30:05	83.0	16.3	11.5	12.9	81.3	17.8	12.3	14.0	77.0	19.1	12.6	14.5
3:45:05	83.1	16.2	11.5	12.9	81.5	17.7	12.3	14.0	77.1	19.0	12.6	14.5
4:00:05	83.1	16.2	11.4	12.8	81.6	17.6	12.3	14.0	77.4	19.0	12.6	14.4
4:15:05	83.2	16.1	11.4	12.7	81.8	17.6	12.2	13.9	77.6	18.9	12.6	14.4
4:30:05	83.2	16.1	11.4	12.7	81.9	17.5	12.2	13.9	77.8	18.8	12.5	14.4
4:45:05	83.3	16.0	11.4	12.7	82.1	17.5	12.2	13.9	78.1	18.9	12.7	14.5
5:00:05	83.4	16.0	11.4	12.7	82.3	17.5	12.2	13.9	78.2	19.8	13.3	15.4
5:15:05	83.6	16.0	11.4	12.8	82.4	17.4	12.2	13.9	77.8	19.2	12.8	14.7
5:30:05	83.6	16.0	11.4	12.7	82.5	17.4	12.2	13.9	78.0	19.0	12.7	14.6
5:45:05	83.6	15.9	11.3	12.6	82.6	17.3	12.2	13.8	78.1	18.7	12.5	14.4
6:00:05	83.6	15.9	11.3	12.6	82.7	17.3	12.2	13.8	78.5	18.7	12.5	14.3
6:15:05	83.5	15.9	11.3	12.6	82.8	17.3	12.2	13.8	78.9	18.7	12.6	14.4
6:30:05	83.7	15.9	11.3	12.7	83.1	17.3	12.2	13.9	79.3	18.8	12.7	14.6
6:45:05	83.7	15.8	11.3	12.6	83.3	17.3	12.3	14.0	79.7	19.1	13.0	15.0
7:00:05	83.9	15.9	11.3	12.6	83.3	17.4	12.3	14.0	79.6	19.3	13.2	15.2
7:15:05	83.9	16.0	11.4	12.8	83.4	17.5	12.4	14.1	79.2	19.2	13.1	15.0
7:30:05	83.9	16.2	11.5	12.9	83.3	17.7	12.5	14.3	79.0	19.3	13.1	15.1
7:45:05	83.8	16.2	11.6	13.0	83.0	17.9	12.7	14.5	78.7	19.8	13.4	15.5
8:00:05	83.7	16.4	11.7	13.1	82.3	18.2	12.8	14.7	78.0	20.2	13.6	15.8
8:15:05	83.5	16.7	11.8	13.4	81.5	18.6	12.9	14.9	76.9	21.1	14.1	16.5
8:30:05	83.1	16.9	12.0	13.6	80.3	18.9	13.0	15.0	75.4	21.6	14.3	16.7
8:45:05	82.7	17.2	12.1	13.8	79.1	19.3	13.1	15.1	73.7	22.1	14.4	16.8
9:00:05	82.0	17.3	12.1	13.8	77.8	19.6	13.1	15.2	72.2	22.6	14.5	17.0
9:15:05	81.5	17.6	12.2	13.9	76.3	20.0	13.2	15.3	70.6	23.1	14.6	17.2
9:30:05	81.0	17.8	12.3	14.0	74.9	20.5	13.3	15.5	69.6	23.6	14.8	17.5
9:45:05	80.3	18.1	12.4	14.2	73.3	21.1	13.5	15.7	68.0	24.4	15.1	18.0
10:00:05	79.3	18.4	12.5	14.2	71.2	21.7	13.6	16.0	65.6	25.3	15.3	18.4
10:15:05	78.2	18.7	12.5	14.3	69.4	22.2	13.6	16.0	63.7	25.6	15.2	18.3
10:30:05	77.3	18.9	12.5	14.4	67.4	22.8	13.7	16.2	61.3	26.4	15.2	18.6
10:45:05	76.3	19.2	12.6	14.5	65.7	23.2	13.7	16.3	59.8	26.8	15.2	18.8
11:00:05	75.5	19.4	12.6	14.5	64.0	23.5	13.6	16.3	58.5	26.9	15.0	18.6
11:15:05	74.7	19.6	12.6	14.5	62.8	23.9	13.6	16.4	57.4	27.0	14.8	18.5
11:30:05	73.7	19.8	12.6	14.6	61.3	24.3	13.6	16.6	56.1	27.4	14.8	18.6
11:45:05	73.1	19.9	12.6	14.6	60.0	24.6	13.5	16.6	55.3	27.6	14.7	18.7
12:00:05	72.4	20.2	12.6	14.7	58.8	24.8	13.4	16.6	54.2	27.5	14.4	18.4
12:15:05	71.9	20.3	12.7	14.7	58.0	25.0	13.3	16.6	53.7	27.5	14.2	18.2
12:30:05	70.6	20.5	12.6	14.6	56.7	25.4	13.3	16.7	52.6	27.9	14.2	18.4
12:45:05	69.7	20.6	12.5	14.6	55.5	25.7	13.3	16.8	51.4	28.0	14.0	18.3
13:00:05	69.0	20.9	12.5	14.7	54.5	26.1	13.3	17.0	50.8	28.4	14.1	18.5
13:15:05	68.5	21.1	12.6	14.8	53.3	26.5	13.4	17.2	50.1	28.7	14.2	18.7
13:30:05	67.9	21.2	12.6	14.8	52.2	26.8	13.3	17.2	49.6	29.0	14.3	18.9
13:45:05	67.1	21.2	12.4	14.6	51.2	27.1	13.2	17.3	48.8	29.1	14.1	18.9
14:00:05	66.8	21.3	12.4	14.7	50.5	27.1	13.1	17.2	48.5	28.9	13.9	18.6
14:15:05	66.7	21.5	12.6	14.8	49.9	27.4	13.2	17.4	47.9	29.0	13.8	18.6
14:30:05	66.2	21.5	12.5	14.7	49.3	27.4	13.0	17.3	47.8	29.0	13.7	18.6
14:45:05	65.8	21.7	12.5	14.9	48.7	27.8	13.1	17.5	47.7	29.4	14.0	18.9
15:00:05	65.5	21.5	12.3	14.6	47.9	27.5	12.7	17.1	47.3	29.0	13.6	18.5
15:15:05	65.3	21.5	12.3	14.6	48.1	27.3	12.6	16.9	47.7	28.8	13.6	18.4
15:30:05	65.0	21.6	12.3	14.6	48.0	27.2	12.5	16.8	48.0	28.9	13.7	18.5
15:45:05	65.0	21.5	12.3	14.5	48.2	26.9	12.4	16.6	48.1	28.4	13.4	18.0
16:00:05	65.4	21.3	12.2	14.4	48.9	26.5	12.2	16.3	48.7	27.9	13.2	17.7
16:15:05	65.6	21.3	12.2	14.4	49.4	26.2	12.2	16.1	49.5	27.7	13.3	17.6
16:30:05	66.0	21.1	12.2	14.4	50.6	25.7	12.1	15.8	50.5	27.3	13.2	17.4
16:45:05	66.3	21.0	12.2	14.3	51.9	25.1	12.0	15.5	51.2	27.1	13.3	17.4
17:00:05	66.4	20.9	12.1	14.2	53.3	24.7	12.1	15.3	52.6	26.8	13.4	17.3
17:15:05	66.9	20.8	12.1	14.1	55.0	24.1	12.0	15.1	53.6	26.0	13.0	16.7
17:30:05	67.5	20.5	12.0	14.0	56.5	23.6	12.0	14.9	55.4	25.4	13.1	16.5
17:45:05	68.4	20.2	12.0	13.9	58.3	23.1	12.0	14.7	57.1	24.9	13.1	16.4
18:00:05	69.1	20.0	11.9	13.8	59.7	22.6	12.0	14.5	58.8	24.5	13.2	16.3
18:15:05	69.9	19.7	11.9	13.7	61.2	22.1	11.9	14.3	60.5	24.1	13.3	16.2
18:30:05	70.8	19.5	11.8	13.6	62.6	21.7	11.9	14.2	62.3	24.1	13.6	16.5
18:45:05	71.5	19.2	11.8	13.5	63.9	21.3	11.9	14.1	63.1	23.8	13.5	16.4
19:00:05	72.3	19.0	11.8	13.5	65.3	21.0	12.0	14.1	64.2	23.4	13.5	16.3
19:15:05	72.9	18.9	11.8	13.4	66.5	20.8	12.0	14.1	65.2	23.4	13.7	16.4
19:30:05	73.6	18.7	11.8	13.5	67.4	20.6	12.1	14.1	65.7	23.9	14.2	17.1
19:45:05	74.2	18.6	11.8	13.4	68.4	20.4	12.1	14.1	66.0	24.1	14.4	17.3
20:00:05	74.8	18.5	11.8	13.4	69.4	20.3	12.2	14.2	66.4	24.2	14.6	17.4
20:15:05	75.4	18.3	11.8	13.4	70.4	20.2	12.3	14.3	66.8	24.0	14.6	17.4
20:30:05	76.1	18.2	11.8	13.4	71.3	20.0	12.3	14.3	67.3	24.1	14.7	17.5
20:45:05	76.8	18.2	11.9	13.5	72.1	19.9	12.4	14.3	68.0	23.8	14.6	17.4
21:00:05	77.4	18.1	11.9	13.6	72.9	19.8	12.4	14.4	68.8	23.7	14.7	17.5
21:15:05	77.7	18.0	11.9	13.5	73.5	19.7	12.4	14.4	69.4	23.6	14.7	17.4
21:30:05	78.2	18.0	12.0	13.6	74.1	19.6	12.5	14.4	69.8	23.5	14.7	17.4
21:45:05	78.4	17.8	11.9	13.5	74.6	19.5	12.5	14.4	70.2	23.2	14.6	17.2
22:00:05	79.0	17.7	11.9	13.5	75.1	19.4	12.5	14.4	70.7	23.0	14.5	17.1
22:15:05	79.4	17.7	12.0	13.6	75.4	19.3	12.5	14.4	71.0	22.7	14.3	16.9
22:30:05	79.6	17.5	11.9	13.5	75.8	19.2	12.5	14.4	71.3	22.3	14.1	16.6
22:45:05	80.2	17.4	11.9	13.5	76.3	19.1	12.5	14.4	71.9	22.0	13.9	16.4
23:00:05	80.7	17.4	11.9	13.5	76.7	19.0	12.5	14.4	72.1	21.6	13.7	16.0
23:15:05	80.9	17.3	11.9	13.5	77.1	18.9	12.5	14.4	72.5	21.3	13.5	15.8
23:30:05	81.2	17.1	11.8	13.4	77.5	18.8	12.5	14.3	72.9	20.9	13.3	15.5
23:45:05	81.5	17.1	11.8	13.4	77.9	18.7	12.5	14.3	73.3	20.6	13.2	15.3
avge	76.8	18.3	12.0	13.7	69.9	21.0	12.6	15.0	66.3	23.3	13.7	16.6

July 2019 Absolute humidity and dew point calculation spreadsheet

TIME	OUTDOORS RH	OUTDOORS T	OUTDOORS AH	OUTDOOORS Td	HOUSE C RH	HOUSE C T	HOUSE C AH	HOUSE C Td	HOUSE B RH	HOUSE B T	HOUSE B AH	HOUSE B Td
0:00:00	72.9	16.2	10.0	10.8	68.7	20.0	11.9	13.8	69.2	18.7	11.1	12.6
0:15:00	73.3	16.0	10.0	10.7	69.0	19.8	11.8	13.6	69.5	18.5	11.0	12.4
0:30:00	73.4	15.9	10.0	10.6	69.3	19.7	11.8	13.6	69.8	18.4	10.9	12.3
0:45:00	73.6	15.9	10.0	10.6	69.6	19.5	11.7	13.4	70.0	18.2	10.9	12.2
1:00:00	74.0	15.8	10.0	10.6	69.9	19.5	11.7	13.5	70.3	18.1	10.8	12.1
1:15:00	74.2	15.7	9.9	10.6	70.1	19.3	11.6	13.3	70.6	18.0	10.8	12.1
1:30:00	74.3	15.6	9.9	10.5	70.5	19.3	11.7	13.4	70.8	17.8	10.8	12.0
1:45:00	74.6	15.5	9.8	10.4	70.8	19.1	11.6	13.3	71.1	17.7	10.7	11.9
2:00:00	75.0	15.4	9.9	10.4	71.0	19.0	11.6	13.2	71.4	17.6	10.7	11.9
2:15:00	75.3	15.3	9.9	10.4	71.3	18.9	11.5	13.1	71.7	17.6	10.7	11.9
2:30:00	75.4	15.3	9.8	10.4	71.7	18.8	11.5	13.1	71.9	17.5	10.7	11.9
2:45:00	75.7	15.2	9.8	10.4	71.8	18.7	11.5	13.0	72.2	17.4	10.7	11.8
3:00:00	75.8	15.1	9.8	10.3	72.0	18.6	11.4	13.0	72.4	17.3	10.6	11.8
3:15:00	76.0	15.0	9.8	10.2	72.3	18.4	11.4	12.9	72.6	17.2	10.6	11.7
3:30:00	76.2	14.9	9.7	10.2	72.5	18.3	11.4	12.8	72.9	17.1	10.6	11.7
3:45:00	76.4	14.9	9.8	10.2	72.9	18.3	11.4	12.9	73.1	17.0	10.6	11.7
4:00:00	76.5	14.9	9.7	10.2	73.1	18.2	11.4	12.8	73.4	17.0	10.6	11.7
4:15:00	76.7	14.8	9.7	10.2	73.3	18.1	11.3	12.8	73.6	16.9	10.6	11.7
4:30:00	76.9	14.8	9.7	10.1	73.5	18.0	11.3	12.7	73.8	16.9	10.6	11.7
4:45:00	77.1	14.8	9.8	10.2	73.8	18.0	11.3	12.7	74.1	16.9	10.7	11.7
5:00:00	77.2	14.7	9.7	10.1	74.0	17.9	11.3	12.7	74.4	17.8	11.3	12.7
5:15:00	77.4	14.7	9.7	10.2	74.1	17.8	11.2	12.6	73.9	17.1	10.7	11.8
5:30:00	77.4	14.6	9.7	10.1	74.3	17.7	11.2	12.6	74.3	17.0	10.7	11.8
5:45:00	77.5	14.6	9.7	10.1	74.5	17.6	11.2	12.5	74.5	16.7	10.6	11.6
6:00:00	77.6	14.5	9.7	10.0	74.8	17.5	11.2	12.5	74.7	16.6	10.5	11.5
6:15:00	77.8	14.4	9.6	10.0	74.9	17.5	11.2	12.5	75.0	16.6	10.6	11.6
6:30:00	78.0	14.5	9.7	10.1	75.0	17.6	11.2	12.6	75.4	16.7	10.7	11.8
6:45:00	78.3	14.5	9.7	10.1	75.4	17.7	11.4	12.8	76.0	17.0	11.0	12.2
7:00:00	78.6	14.6	9.8	10.3	75.3	17.6	11.3	12.7	75.9	17.0	11.0	12.2
7:15:00	78.7	14.6	9.9	10.4	75.3	17.5	11.3	12.6	75.7	16.9	10.9	12.1
7:30:00	78.9	14.8	10.0	10.6	75.5	17.7	11.4	12.8	75.8	17.0	11.0	12.2
7:45:00	79.2	14.9	10.1	10.8	75.7	17.9	11.6	13.1	75.9	17.5	11.3	12.7
8:00:00	79.2	15.0	10.2	10.9	75.4	18.1	11.7	13.2	75.4	18.0	11.6	13.1
8:15:00	79.3	15.2	10.3	11.0	75.3	18.5	11.9	13.6	74.8	18.4	11.8	13.4
8:30:00	79.0	15.4	10.4	11.2	74.9	19.1	12.3	14.1	73.8	18.9	12.0	13.7
8:45:00	79.1	15.7	10.6	11.6	74.0	19.3	12.3	14.1	72.5	19.6	12.2	14.1
9:00:00	78.5	16.0	10.7	11.7	73.2	19.4	12.2	14.0	71.3	20.2	12.5	14.5
9:15:00	78.1	16.3	10.8	11.9	72.6	20.0	12.5	14.5	69.8	20.9	12.7	14.9
9:30:00	77.7	16.6	11.0	12.1	71.7	20.4	12.7	14.7	67.9	21.7	13.0	15.3
9:45:00	77.0	16.8	11.0	12.2	70.5	20.8	12.7	14.9	66.1	22.2	12.9	15.4
10:00:00	76.6	17.0	11.1	12.3	69.6	20.5	12.4	14.4	64.6	22.4	12.9	15.4
10:15:00	75.7	17.1	11.0	12.3	69.2	20.9	12.6	14.7	63.1	23.2	13.1	15.8
10:30:00	75.1	17.6	11.3	12.6	68.5	21.3	12.7	15.0	61.1	24.2	13.5	16.4
10:45:00	74.4	17.8	11.3	12.7	67.5	21.6	12.8	15.1	59.8	24.6	13.4	16.5
11:00:00	73.8	18.1	11.4	12.8	66.9	22.0	13.0	15.4	58.5	25.0	13.5	16.7
11:15:00	73.0	18.4	11.5	13.0	65.8	22.1	12.9	15.3	57.4	25.4	13.5	16.9
11:30:00	71.9	18.7	11.5	13.1	65.1	22.8	13.2	15.8	56.0	25.8	13.5	17.0
11:45:00	71.1	18.8	11.5	13.1	64.0	23.2	13.3	16.0	55.0	26.0	13.4	17.0
12:00:00	70.2	19.1	11.5	13.2	62.9	23.3	13.2	15.9	53.8	26.2	13.3	17.0
12:15:00	69.6	19.4	11.6	13.4	62.1	23.7	13.3	16.1	52.5	26.6	13.2	17.1
12:30:00	68.6	19.6	11.6	13.4	61.3	24.1	13.4	16.3	51.4	26.9	13.2	17.2
12:45:00	67.7	19.9	11.6	13.4	60.0	24.3	13.3	16.3	50.0	27.5	13.2	17.5
13:00:00	66.3	20.1	11.6	13.4	59.0	24.5	13.2	16.3	48.6	27.5	12.9	17.3
13:15:00	66.1	20.3	11.6	13.5	57.9	24.8	13.2	16.4	47.7	27.8	12.8	17.3
13:30:00	65.4	20.6	11.7	13.7	57.4	25.2	13.3	16.6	46.8	28.3	12.9	17.6
13:45:00	64.2	20.7	11.6	13.6	56.5	25.3	13.2	16.6	45.3	28.6	12.7	17.6
14:00:00	63.6	20.9	11.6	13.6	56.1	25.6	13.4	16.9	44.3	28.9	12.7	17.7
14:15:00	62.7	21.0	11.5	13.5	55.7	25.8	13.4	17.0	43.7	28.6	12.3	17.4
14:30:00	62.3	21.0	11.4	13.5	55.0	25.9	13.3	16.9	43.7	28.5	12.2	17.3
14:45:00	62.0	21.0	11.4	13.4	54.7	25.8	13.2	16.8	43.5	28.6	12.2	17.3
15:00:00	61.8	21.1	11.4	13.5	54.4	25.8	13.1	16.7	43.4	28.4	12.1	17.1
15:15:00	61.2	21.2	11.3	13.4	54.3	25.8	13.1	16.6	43.3	28.3	12.0	17.0
15:30:00	60.9	21.2	11.3	13.3	54.2	25.8	13.1	16.6	43.4	28.2	11.9	16.9
15:45:00	60.8	21.2	11.3	13.4	53.7	25.6	12.8	16.4	44.0	28.2	12.1	17.0
16:00:00	60.6	21.1	11.2	13.2	53.5	25.4	12.6	16.1	44.2	28.0	12.0	16.8
16:15:00	60.2	21.2	11.1	13.2	53.5	25.2	12.4	15.9	44.3	27.9	12.0	16.7
16:30:00	60.2	21.1	11.1	13.1	53.7	25.0	12.4	15.7	44.8	27.5	11.9	16.5
16:45:00	60.4	20.9	11.0	13.0	53.8	24.5	12.1	15.3	46.2	26.9	11.8	16.1
17:00:00	60.3	20.9	11.0	12.9	54.3	24.5	12.1	15.3	46.7	26.5	11.7	15.9
17:15:00	60.7	20.7	10.9	12.8	54.5	24.2	12.0	15.1	47.9	25.9	11.6	15.5
17:30:00	61.0	20.4	10.8	12.6	55.9	23.9	12.1	15.1	49.4	25.1	11.5	15.0
17:45:00	61.4	20.2	10.7	12.5	56.9	24.0	12.4	15.4	51.3	24.5	11.5	14.8
18:00:00	62.3	20.0	10.7	12.4	57.5	23.6	12.3	15.1	52.9	24.0	11.5	14.6
18:15:00	63.2	19.7	10.7	12.3	57.9	23.4	12.2	14.9	54.5	23.6	11.6	14.5
18:30:00	64.5	19.3	10.7	12.2	58.9	23.0	12.1	14.8	55.9	23.3	11.7	14.5
18:45:00	65.3	19.1	10.7	12.1	60.2	22.8	12.2	14.8	57.4	22.9	11.7	14.4
19:00:00	66.4	18.8	10.7	12.1	62.2	23.2	13.0	15.7	59.1	22.8	12.0	14.6
19:15:00	67.0	18.6	10.6	12.0	64.2	23.6	13.6	16.4	60.3	22.6	12.1	14.6
19:30:00	67.6	18.4	10.6	11.9	64.3	23.7	13.8	16.6	61.6	22.3	12.2	14.6
19:45:00	68.4	18.2	10.6	11.9	64.9	23.6	13.8	16.6	62.6	22.4	12.4	14.9
20:00:00	69.2	18.1	10.7	11.9	64.9	23.6	13.8	16.6	63.6	22.5	12.7	15.2
20:15:00	69.6	17.9	10.6	11.8	65.1	23.1	13.4	16.1	63.9	22.4	12.7	15.2
20:30:00	69.9	17.8	10.6	11.8	65.2	23.3	13.6	16.3	64.7	22.4	12.8	15.3
20:45:00	70.4	17.7	10.6	11.7	65.7	22.9	13.4	16.0	65.3	22.1	12.8	15.2
21:00:00	70.9	17.6	10.6	11.7	65.7	22.5	13.1	15.6	66.1	22.0	12.9	15.3
21:15:00	71.1	17.4	10.5	11.6	65.9	22.0	12.8	15.1	67.2	21.9	12.9	15.3
21:30:00	71.5	17.3	10.5	11.6	66.5	21.9	12.8	15.2	67.4	21.6	12.8	15.1
21:45:00	71.8	17.2	10.5	11.5	66.9	21.8	12.8	15.1	68.0	21.5	12.8	15.1
22:00:00	72.0	17.0	10.4	11.4	66.8	21.7	12.7	15.0	68.1	21.3	12.7	14.9
22:15:00	72.1	16.9	10.4	11.3	67.1	21.3	12.5	14.8	68.4	21.0	12.6	14.7
22:30:00	72.3	16.8	10.3	11.3	67.4	21.0	12.3	14.5	68.5	20.7	12.3	14.4
22:45:00	72.4	16.7	10.3	11.2	67.7	20.8	12.3	14.4	68.6	20.4	12.2	14.2
23:00:00	72.6	16.6	10.2	11.1	67.9	20.7	12.2	14.3	68.6	20.1	11.9	13.8
23:15:00	72.8	16.5	10.2	11.0	68.2	20.5	12.1	14.1	68.8	19.7	11.7	13.4
23:30:00	73.0	16.4	10.2	11.0	68.4	20.3	12.0	14.0	69.0	19.3	11.5	13.1
23:45:00	73.2	16.2	10.1	10.8	68.6	20.2	12.0	13.9	69.2	19.0	11.3	12.9
avge	71.3	17.4	10.6	11.7	66.2	21.4	12.3	14.6	62.9	21.8	11.9	14.4

August 2019 Absolute humidity and dew point calculation spreadsheet

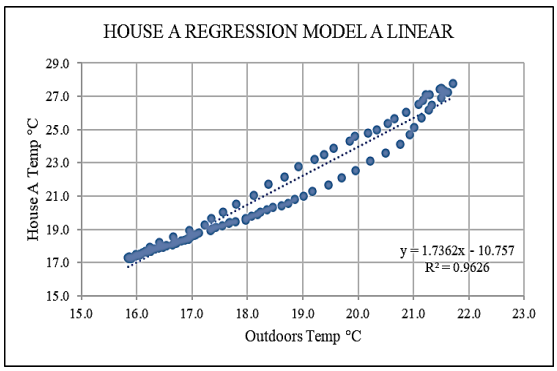
TIME	OUTDOORS RH	OUTDOORS T	OUTDOORS AH	OUTDOORS Td	HOUSE C RH	HOUSE C T	HOUSE C AH	HOUSE C Td	HOUSE B RH	HOUSE B T	HOUSE B AH	HOUSE B Td
0:00:00	71.2	16.1	9.8	10.4	67.8	19.8	11.6	13.4	69.1	17.6	10.4	11.4
0:15:00	71.5	16.0	9.7	10.3	68.1	19.8	11.6	13.4	69.3	17.4	10.3	11.3
0:30:00	71.7	15.9	9.7	10.2	68.3	19.5	11.5	13.2	69.6	17.3	10.2	11.2
0:45:00	72.0	15.8	9.7	10.1	68.7	19.3	11.4	13.1	69.9	17.1	10.2	11.1
1:00:00	72.3	15.7	9.7	10.2	69.0	19.2	11.4	13.0	70.2	17.0	10.2	11.1
1:15:00	72.6	15.6	9.6	10.1	69.2	19.1	11.4	13.0	70.5	16.9	10.2	11.0
1:30:00	72.8	15.5	9.6	10.1	69.6	19.0	11.4	12.9	70.8	16.9	10.1	11.0
1:45:00	73.1	15.4	9.6	10.0	69.9	18.8	11.3	12.8	71.1	16.8	10.1	11.0
2:00:00	73.3	15.3	9.6	10.0	70.1	18.7	11.3	12.8	71.3	16.7	10.1	10.9
2:15:00	73.4	15.2	9.5	9.9	70.5	18.6	11.2	12.7	71.6	16.6	10.1	10.9
2:30:00	73.7	15.2	9.5	9.9	70.8	18.5	11.2	12.7	71.9	16.5	10.1	10.9
2:45:00	74.1	15.2	9.6	10.0	71.1	18.5	11.2	12.7	72.1	16.5	10.1	10.9
3:00:00	74.4	15.2	9.7	10.1	71.3	18.4	11.2	12.7	72.4	16.5	10.1	10.9
3:15:00	74.4	15.1	9.6	10.0	71.6	18.3	11.2	12.6	72.5	16.4	10.1	10.9
3:30:00	74.6	15.0	9.6	10.0	71.8	18.2	11.2	12.6	72.7	16.3	10.1	10.9
3:45:00	74.8	14.9	9.5	9.9	71.9	18.1	11.1	12.5	72.9	16.2	10.1	10.8
4:00:00	75.1	14.8	9.5	9.9	72.2	18.0	11.1	12.5	73.1	16.2	10.1	10.8
4:15:00	75.2	14.8	9.5	9.8	72.4	17.9	11.1	12.4	73.3	16.1	10.0	10.8
4:30:00	75.3	14.7	9.5	9.8	72.7	17.9	11.1	12.4	73.5	16.1	10.0	10.8
4:45:00	75.6	14.7	9.5	9.8	72.9	17.9	11.1	12.4	74.0	16.2	10.2	11.0
5:00:00	75.8	14.7	9.5	9.9	73.2	17.8	11.1	12.4	74.3	17.0	10.7	11.8
5:15:00	76.0	14.7	9.5	9.9	73.3	17.7	11.1	12.4	73.8	16.3	10.2	11.1
5:30:00	76.1	14.6	9.5	9.8	73.5	17.7	11.1	12.4	74.2	16.3	10.3	11.1
5:45:00	76.2	14.5	9.5	9.7	73.7	17.5	11.0	12.3	74.3	16.0	10.1	10.9
6:00:00	76.3	14.4	9.4	9.7	73.9	17.5	11.0	12.2	74.5	15.9	10.1	10.8
6:15:00	76.4	14.4	9.5	9.7	74.1	17.6	11.1	12.4	74.7	15.8	10.0	10.7
6:30:00	76.4	14.3	9.4	9.6	74.1	17.5	11.0	12.3	74.9	15.7	10.0	10.7
6:45:00	76.6	14.4	9.4	9.7	74.4	17.6	11.1	12.5	75.1	15.6	10.0	10.7
7:00:00	76.9	14.4	9.5	9.8	74.5	17.5	11.1	12.4	75.4	15.7	10.1	10.8
7:15:00	77.0	14.6	9.6	10.0	74.4	17.5	11.1	12.4	75.5	15.9	10.2	11.0
7:30:00	77.1	14.8	9.7	10.2	74.5	17.7	11.2	12.6	75.4	16.2	10.4	11.3
7:45:00	77.1	15.0	9.9	10.4	74.7	18.1	11.5	13.0	75.1	16.9	10.8	11.9
8:00:00	77.1	15.1	10.0	10.6	74.1	18.3	11.6	13.2	74.1	17.6	11.1	12.4
8:15:00	76.9	15.3	10.0	10.6	73.7	18.5	11.6	13.2	73.2	18.1	11.3	12.8
8:30:00	76.7	15.5	10.1	10.8	73.3	19.0	11.9	13.6	71.6	19.0	11.7	13.4
8:45:00	76.7	15.8	10.3	11.1	72.5	19.2	12.0	13.7	69.8	20.0	12.1	14.0
9:00:00	76.1	16.0	10.3	11.2	71.6	19.7	12.2	14.0	68.0	20.8	12.3	14.4
9:15:00	76.0	16.2	10.5	11.4	70.6	19.9	12.1	14.0	66.5	21.0	12.2	14.3
9:30:00	75.5	16.4	10.5	11.5	69.9	20.2	12.2	14.2	65.6	21.1	12.1	14.2
9:45:00	75.3	16.7	10.7	11.7	69.0	20.3	12.2	14.1	64.4	21.6	12.2	14.5
10:00:00	74.6	17.0	10.8	11.9	68.6	20.6	12.3	14.4	62.9	22.5	12.6	15.1
10:15:00	74.0	17.4	11.0	12.2	67.8	21.0	12.4	14.6	61.2	23.2	12.7	15.4
10:30:00	73.0	17.5	10.9	12.1	66.7	21.3	12.4	14.6	59.5	23.7	12.7	15.6
10:45:00	72.5	17.9	11.1	12.4	65.9	21.8	12.6	15.0	58.1	24.2	12.8	15.8
11:00:00	71.8	18.2	11.2	12.6	64.7	21.9	12.5	14.8	56.7	24.7	12.9	16.1
11:15:00	70.9	18.4	11.2	12.6	64.0	22.3	12.6	15.1	55.6	24.8	12.6	15.9
11:30:00	70.0	18.7	11.2	12.7	63.1	22.7	12.8	15.3	54.8	25.2	12.7	16.1
11:45:00	69.3	18.9	11.2	12.8	62.1	23.1	12.8	15.5	53.7	25.4	12.6	16.1
12:00:00	68.2	19.2	11.2	12.8	60.9	23.3	12.8	15.5	52.6	25.7	12.6	16.2
12:15:00	67.4	19.4	11.3	12.9	59.9	23.6	12.7	15.6	51.4	25.9	12.5	16.2
12:30:00	66.7	19.8	11.4	13.1	59.2	24.1	13.0	15.9	50.3	26.4	12.6	16.5
12:45:00	65.6	20.2	11.4	13.3	58.2	24.5	13.0	16.1	49.2	27.1	12.8	17.0
13:00:00	64.7	20.3	11.4	13.2	57.1	24.8	13.0	16.2	48.0	27.2	12.5	16.8
13:15:00	63.9	20.4	11.3	13.2	55.9	24.9	12.8	16.1	47.0	27.3	12.3	16.7
13:30:00	63.1	20.4	11.2	13.0	55.4	25.2	12.9	16.3	46.6	27.3	12.2	16.6
13:45:00	62.8	20.7	11.3	13.2	55.0	25.4	12.9	16.4	46.2	27.4	12.2	16.7
14:00:00	62.1	20.8	11.2	13.2	54.0	25.3	12.7	16.1	45.8	27.5	12.1	16.7
14:15:00	61.7	21.0	11.3	13.3	53.6	25.5	12.7	16.2	45.3	27.7	12.1	16.8
14:30:00	61.3	21.1	11.3	13.3	53.5	25.6	12.8	16.3	45.0	27.7	12.0	16.7
14:45:00	60.6	21.1	11.2	13.3	53.0	25.7	12.7	16.3	44.4	27.8	12.0	16.7
15:00:00	59.9	21.2	11.1	13.2	52.9	25.5	12.5	16.1	44.4	27.5	11.8	16.4
15:15:00	59.8	21.3	11.1	13.3	52.8	25.6	12.5	16.1	44.3	27.5	11.7	16.4
15:30:00	59.5	21.4	11.1	13.2	52.5	25.5	12.5	16.0	44.3	27.3	11.6	16.2
15:45:00	59.3	21.2	11.0	13.1	52.3	25.3	12.3	15.8	44.5	26.8	11.3	15.7
16:00:00	59.3	21.2	11.0	13.0	52.2	25.2	12.2	15.6	45.2	26.5	11.3	15.5
16:15:00	59.8	21.0	11.0	13.0	52.3	24.8	11.9	15.3	46.1	26.1	11.3	15.3
16:30:00	59.9	20.9	10.9	12.8	52.8	24.6	11.9	15.1	47.1	25.5	11.1	14.9
16:45:00	60.1	20.7	10.8	12.7	53.9	24.5	12.1	15.3	47.8	25.1	11.1	14.7
17:00:00	61.0	20.5	10.8	12.7	54.5	24.3	12.1	15.2	49.2	24.6	11.1	14.4
17:15:00	61.4	20.4	10.9	12.7	55.2	24.1	12.1	15.2	50.3	24.1	11.0	14.2
17:30:00	61.6	20.2	10.8	12.5	55.5	23.8	12.0	14.9	51.4	23.5	10.9	13.8
17:45:00	61.8	20.0	10.7	12.3	56.2	23.8	12.1	15.0	52.7	22.8	10.7	13.3
18:00:00	62.2	19.8	10.6	12.3	57.1	23.8	12.3	15.2	53.8	22.3	10.6	13.0
18:15:00	62.9	19.6	10.6	12.2	57.7	23.3	12.0	14.8	55.1	21.8	10.5	12.8
18:30:00	63.3	19.4	10.5	12.0	58.5	23.3	12.3	15.0	56.4	21.4	10.5	12.6
18:45:00	63.8	19.2	10.5	11.9	58.9	23.1	12.2	14.9	57.5	21.0	10.6	12.5
19:00:00	64.3	19.0	10.5	11.8	60.6	23.3	12.7	15.5	58.5	20.7	10.5	12.4
19:15:00	64.6	18.8	10.4	11.7	61.5	23.4	12.9	15.7	59.4	20.4	10.5	12.3
19:30:00	65.2	18.7	10.4	11.7	63.0	23.9	13.6	16.5	60.3	20.2	10.5	12.2
19:45:00	65.8	18.4	10.4	11.6	63.9	23.8	13.8	16.6	61.4	20.1	10.7	12.4
20:00:00	66.2	18.3	10.3	11.5	63.8	23.4	13.4	16.2	62.3	20.0	10.8	12.5
20:15:00	66.4	18.2	10.3	11.5	64.5	23.4	13.6	16.3	63.0	19.9	10.9	12.5
20:30:00	66.9	18.0	10.3	11.4	63.9	23.1	13.2	15.9	63.8	19.9	10.9	12.6
20:45:00	67.4	17.8	10.3	11.3	64.4	22.9	13.2	15.8	65.2	20.0	11.3	13.0
21:00:00	67.8	17.7	10.2	11.3	64.8	22.7	13.1	15.7	66.2	20.0	11.4	13.2
21:15:00	68.4	17.6	10.2	11.2	64.8	22.6	13.0	15.6	66.5	19.8	11.4	13.1
21:30:00	68.8	17.4	10.2	11.1	64.6	22.0	12.6	14.9	67.0	19.6	11.3	13.0
21:45:00	69.2	17.3	10.2	11.1	65.3	22.2	12.8	15.3	67.4	19.4	11.3	12.9
22:00:00	69.4	17.1	10.1	11.0	65.1	21.8	12.5	14.8	67.5	19.1	11.1	12.7
22:15:00	69.7	17.0	10.1	10.9	65.4	21.6	12.4	14.6	67.8	19.0	11.0	12.5
22:30:00	69.8	16.9	10.0	10.8	65.7	21.3	12.2	14.4	67.7	18.7	10.8	12.2
22:45:00	70.1	16.8	10.0	10.8	65.9	21.0	12.0	14.1	67.8	18.5	10.7	12.1
23:00:00	70.3	16.7	10.0	10.7	66.3	20.7	12.0	14.0	68.1	18.3	10.7	11.9
23:15:00	70.5	16.5	9.9	10.6	66.6	20.5	11.8	13.8	68.2	18.1	10.5	11.7
23:30:00	70.7	16.4	9.8	10.5	66.9	20.3	11.8	13.7	68.5	17.9	10.4	11.6
23:45:00	70.9	16.3	9.8	10.4	67.2	20.1	11.7	13.6	68.7	17.7	10.4	11.4
avge	69.6	17.4	10.3	11.4	65.0	21.3	12.1	14.3	62.6	20.7	11.1	13.2

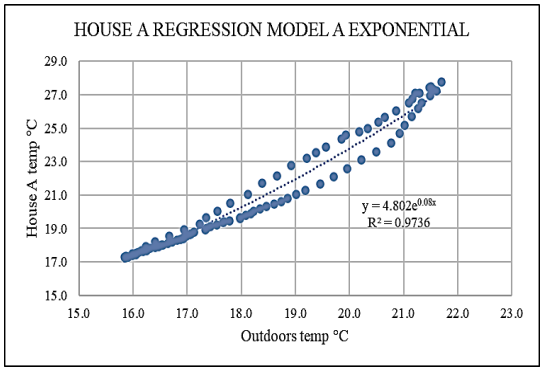
October 2019 Absolute humidity and dew point calculation spreadsheet

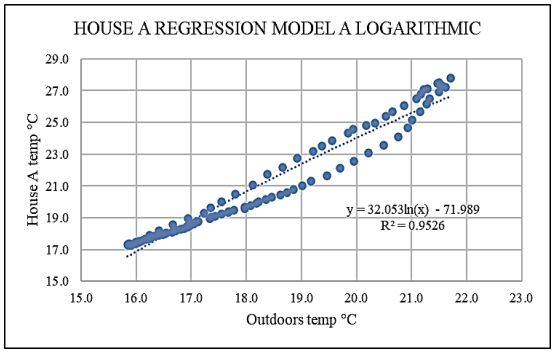
TIME	OUTDOORS RH	OUTDOORS T	OUTDOORS AH	OUTDOORS Td	HOUSE D RH	HOUSE D T	HOUSE D AH	HOUSE D Td	HOUSE E RH	HOUSE E T	HOUSE E AH	HOUSE E Td
0:00:05	85.6	16.8	12.3	14.0	81.0	20.6	14.5	16.8	73.1	21.2	13.6	15.8
0:15:05	85.8	16.8	12.3	14.0	81.3	20.4	14.4	16.7	73.2	21.1	13.5	15.7
0:30:05	86.1	16.8	12.3	14.0	81.6	20.2	14.3	16.6	73.6	21.0	13.5	15.7
0:45:05	86.4	16.6	12.2	13.9	82.0	20.2	14.3	16.6	73.8	20.9	13.4	15.6
1:00:05	86.6	16.6	12.2	13.9	82.1	20.1	14.3	16.5	74.0	20.8	13.4	15.6
1:15:05	86.9	16.5	12.2	13.9	82.3	20.0	14.2	16.5	74.2	20.7	13.3	15.5
1:30:05	87.0	16.5	12.2	13.9	82.5	19.8	14.1	16.3	74.4	20.6	13.3	15.5
1:45:05	87.2	16.4	12.2	13.8	82.7	19.7	14.0	16.2	74.5	20.5	13.2	15.4
2:00:05	87.4	16.3	12.1	13.8	82.9	19.5	13.9	16.1	74.7	20.4	13.2	15.3
2:15:05	87.4	16.3	12.1	13.8	83.0	19.4	13.9	16.0	74.8	20.3	13.2	15.3
2:30:05	87.4	16.2	12.1	13.7	83.2	19.4	13.8	16.0	75.0	20.2	13.1	15.2
2:45:05	87.4	16.2	12.1	13.7	83.4	19.3	13.8	15.9	75.1	20.2	13.1	15.2
3:00:05	87.2	16.2	12.0	13.6	83.4	19.2	13.8	15.9	75.3	20.1	13.1	15.2
3:15:05	87.2	16.2	12.0	13.6	83.6	19.2	13.7	15.9	75.4	20.0	13.0	15.1
3:30:05	87.5	16.1	12.0	13.6	83.7	19.1	13.7	15.8	75.5	19.9	13.0	15.0
3:45:05	87.7	16.2	12.1	13.7	83.9	19.1	13.7	15.8	75.6	19.9	13.0	15.0
4:00:05	87.7	16.1	12.0	13.6	83.9	19.0	13.7	15.8	75.7	19.8	12.9	15.0
4:15:05	87.8	16.0	12.0	13.6	84.0	19.0	13.7	15.8	75.8	19.8	12.9	14.9
4:30:05	87.9	16.0	12.0	13.6	84.0	18.9	13.6	15.7	76.0	19.7	12.9	14.9
4:45:05	88.0	16.0	12.0	13.6	84.1	18.9	13.6	15.8	76.5	19.8	13.0	15.1
5:00:05	88.0	16.0	12.0	13.6	84.1	18.9	13.6	15.7	76.6	19.8	13.1	15.2
5:15:05	88.1	15.9	12.0	13.6	84.2	19.0	13.7	15.8	78.6	20.9	14.3	16.6
5:30:05	88.1	15.9	11.9	13.5	84.3	19.1	13.8	16.0	81.1	22.5	16.2	18.7
5:45:05	88.2	15.9	11.9	13.5	84.1	18.9	13.6	15.7	79.7	22.6	16.0	18.6
6:00:05	88.2	15.8	11.8	13.4	84.2	18.7	13.5	15.6	79.1	22.8	16.1	18.6
6:15:05	88.4	15.7	11.8	13.4	84.4	18.9	13.7	15.8	79.5	23.1	16.5	19.0
6:30:05	88.5	15.7	11.8	13.4	84.2	18.9	13.6	15.7	81.2	23.5	17.1	19.7
6:45:05	88.6	15.7	11.9	13.4	84.2	18.9	13.7	15.8	80.8	23.4	17.0	19.6
7:00:05	89.0	15.7	11.9	13.5	84.0	18.8	13.5	15.6	78.9	22.5	15.8	18.3
7:15:05	89.3	15.7	12.0	13.6	84.2	18.8	13.6	15.6	78.6	22.3	15.5	18.0
7:30:05	89.4	15.8	12.1	13.7	84.2	19.0	13.7	15.9	78.5	22.2	15.5	18.0
7:45:05	89.4	16.0	12.2	13.9	84.1	19.1	13.8	16.0	78.1	22.1	15.3	17.8
8:00:05	89.2	16.1	12.2	13.9	83.9	19.2	13.9	16.0	77.5	21.9	15.0	17.4
8:15:05	88.9	16.3	12.3	14.0	83.7	19.2	13.8	15.9	77.3	21.5	14.6	17.0
8:30:05	88.3	16.6	12.5	14.2	83.4	19.6	14.1	16.3	77.3	21.4	14.5	16.9
8:45:05	87.5	16.9	12.6	14.4	83.1	20.0	14.3	16.6	77.3	21.5	14.5	16.9
9:00:05	86.7	17.2	12.7	14.6	82.4	20.3	14.5	16.8	76.6	21.5	14.4	16.8
9:15:05	85.2	17.5	12.7	14.5	81.9	20.7	14.7	17.1	76.7	21.7	14.6	17.0
9:30:05	84.3	17.7	12.7	14.6	81.5	20.9	14.9	17.2	76.1	22.0	14.7	17.2
9:45:05	83.3	17.9	12.7	14.6	81.1	21.3	15.1	17.6	75.7	22.3	14.9	17.4
10:00:05	82.4	18.2	12.8	14.7	80.5	21.3	15.0	17.4	75.5	22.4	15.0	17.5
10:15:05	81.2	18.5	12.9	14.8	80.2	21.3	14.9	17.3	74.6	22.5	14.9	17.4
10:30:05	80.2	18.8	12.9	14.9	80.1	21.5	15.1	17.5	74.3	22.9	15.2	17.8
10:45:05	79.3	19.1	13.0	14.9	79.8	21.6	15.1	17.5	73.2	23.1	15.1	17.7
11:00:05	78.0	19.2	12.9	14.8	79.8	21.7	15.2	17.6	72.8	23.4	15.3	17.9
11:15:05	77.2	19.5	12.9	14.9	79.8	21.6	15.1	17.6	72.0	23.6	15.3	18.0
11:30:05	76.4	19.6	12.9	14.9	79.5	21.7	15.2	17.6	71.5	23.9	15.5	18.2
11:45:05	75.8	19.9	13.0	15.0	79.5	22.2	15.6	18.1	70.9	24.3	15.7	18.5
12:00:05	75.3	20.1	13.1	15.2	78.7	22.0	15.3	17.7	70.7	24.8	16.1	18.9
12:15:05	74.4	20.1	13.0	15.0	78.5	21.9	15.2	17.6	70.0	25.2	16.3	19.2
12:30:05	73.7	20.3	12.9	15.0	78.4	22.0	15.2	17.6	70.3	25.6	16.8	19.7
12:45:05	72.8	20.6	13.0	15.1	78.5	22.1	15.3	17.7	69.3	26.2	17.0	20.0
13:00:05	72.5	20.6	13.0	15.1	78.3	22.2	15.4	17.8	68.8	26.5	17.2	20.2
13:15:05	71.9	20.7	12.9	15.0	78.3	22.4	15.6	18.1	68.5	26.7	17.3	20.4
13:30:05	71.1	20.7	12.8	15.0	78.2	22.6	15.7	18.3	67.2	26.7	17.0	20.1
13:45:05	70.6	20.9	12.9	15.1	78.1	22.8	15.9	18.5	67.1	27.2	17.5	20.6
14:00:05	69.6	21.1	12.8	15.0	77.7	23.0	15.9	18.5	63.8	26.5	15.9	19.2
14:15:05	69.0	21.2	12.8	15.0	77.1	22.9	15.8	18.4	63.4	26.4	15.8	19.1
14:30:05	69.1	21.1	12.7	14.9	76.6	22.9	15.7	18.2	62.6	26.6	15.7	19.1
14:45:05	68.4	21.3	12.7	15.0	76.5	22.9	15.7	18.2	62.5	26.6	15.8	19.1
15:00:05	67.4	21.4	12.7	14.9	76.5	23.0	15.8	18.3	62.2	26.7	15.7	19.1
15:15:05	66.5	21.6	12.6	14.9	76.2	23.1	15.8	18.4	62.1	26.7	15.8	19.2
15:30:05	65.9	21.6	12.5	14.8	75.9	23.0	15.6	18.2	62.0	26.8	15.7	19.2
15:45:05	65.8	21.7	12.5	14.8	75.5	23.0	15.5	18.1	61.5	26.6	15.5	18.9
16:00:05	66.0	21.3	12.3	14.5	75.1	23.0	15.4	18.0	61.5	26.9	15.7	19.2
16:15:05	65.9	21.3	12.3	14.5	74.9	23.1	15.5	18.1	60.6	26.5	15.2	18.7
16:30:05	66.0	21.2	12.3	14.4	74.6	23.0	15.4	18.0	60.2	26.3	14.9	18.3
16:45:05	66.8	21.0	12.3	14.4	74.4	22.8	15.1	17.7	60.2	26.0	14.6	18.0
17:00:05	67.2	20.8	12.2	14.3	74.1	22.7	15.0	17.5	60.7	25.9	14.7	18.0
17:15:05	68.2	20.6	12.2	14.2	73.9	22.5	14.8	17.3	61.0	25.6	14.5	17.8
17:30:05	69.6	20.3	12.2	14.2	73.8	22.3	14.5	17.0	61.4	25.1	14.3	17.4
17:45:05	70.6	20.0	12.2	14.1	74.0	22.0	14.3	16.8	61.6	24.7	13.9	17.0
18:00:05	71.7	19.7	12.2	14.0	74.3	21.8	14.3	16.7	61.8	24.2	13.6	16.6
18:15:05	73.1	19.4	12.2	14.0	74.6	21.7	14.3	16.7	62.8	24.1	13.7	16.6
18:30:05	74.2	19.1	12.2	13.9	74.9	21.6	14.2	16.6	65.0	24.4	14.4	17.4
18:45:05	75.2	18.9	12.1	13.9	75.4	21.4	14.2	16.5	67.8	25.1	15.7	18.7
19:00:05	76.2	18.6	12.1	13.8	75.6	21.3	14.1	16.5	70.6	26.0	17.2	20.1
19:15:05	77.0	18.5	12.2	13.9	76.1	21.5	14.4	16.7	72.8	27.0	18.7	21.6
19:30:05	77.9	18.3	12.1	13.8	76.5	21.5	14.4	16.8	73.6	27.6	19.6	22.4
19:45:05	78.6	18.1	12.2	13.8	76.7	21.3	14.2	16.6	74.6	27.6	19.8	22.5
20:00:05	79.2	18.0	12.2	13.8	77.2	21.1	14.2	16.6	73.0	26.8	18.5	21.3
20:15:05	79.8	17.9	12.2	13.9	77.6	21.4	14.6	16.9	71.1	25.6	17.0	19.9
20:30:05	80.3	17.8	12.2	13.8	78.3	21.9	15.1	17.5	70.1	24.8	16.0	18.8
20:45:05	80.9	17.6	12.2	13.8	78.4	22.2	15.4	17.8	70.2	24.4	15.6	18.4
21:00:05	81.5	17.5	12.2	13.9	78.5	22.4	15.6	18.1	70.2	23.9	15.2	18.0
21:15:05	82.0	17.5	12.2	13.9	78.7	22.7	15.9	18.4	70.4	23.8	15.1	17.8
21:30:05	82.6	17.4	12.2	13.9	79.3	22.8	16.1	18.7	70.4	23.5	14.9	17.6
21:45:05	83.2	17.3	12.2	13.9	79.4	22.8	16.1	18.7	70.7	23.3	14.8	17.4
22:00:05	83.6	17.2	12.3	13.9	79.4	22.8	16.2	18.7	71.0	23.1	14.6	17.3
22:15:05	84.0	17.2	12.3	14.0	79.7	22.7	16.1	18.6	71.1	22.8	14.5	17.1
22:30:05	84.3	17.1	12.3	14.0	79.6	22.1	15.5	18.0	71.5	22.6	14.4	16.9
22:45:05	84.5	17.1	12.3	14.0	79.9	21.6	15.1	17.5	71.8	22.4	14.2	16.7
23:00:05	85.0	17.0	12.3	14.0	80.2	21.2	14.9	17.3	72.0	22.1	14.0	16.5
23:15:05	85.2	16.9	12.3	14.0	80.7	21.2	15.0	17.4	72.5	21.8	13.9	16.3
23:30:05	85.7	16.9	12.3	14.0	81.2	21.0	14.9	17.2	72.8	21.6	13.8	16.1
23:45:05	86.0	16.8	12.3	14.0	81.3	20.8	14.7	17.1	73.2	21.4	13.7	16.0
avge	80.5	18.1	12.3	14.2	80.0	21.0	14.7	17.0	71.6	23.4	15.0	17.7

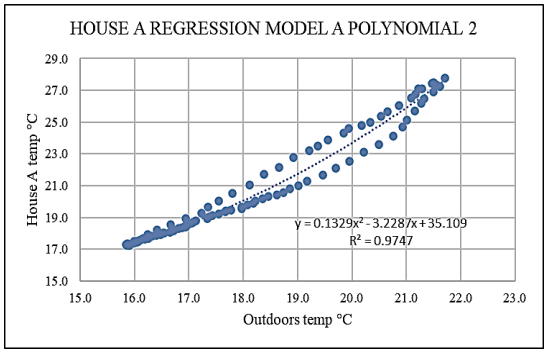
Appendix IV: Regression Prediction Models

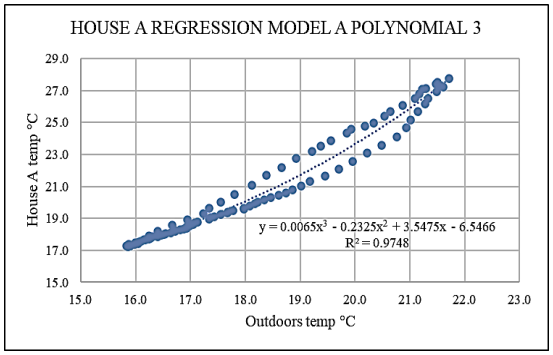
Model As regression derivation

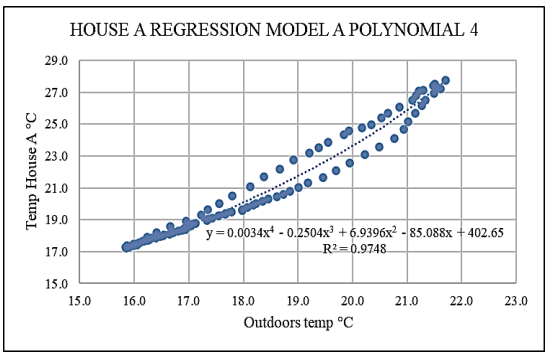


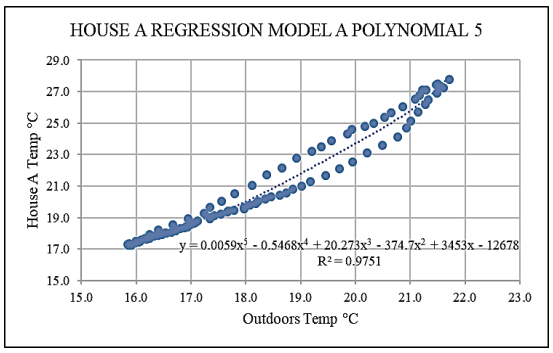


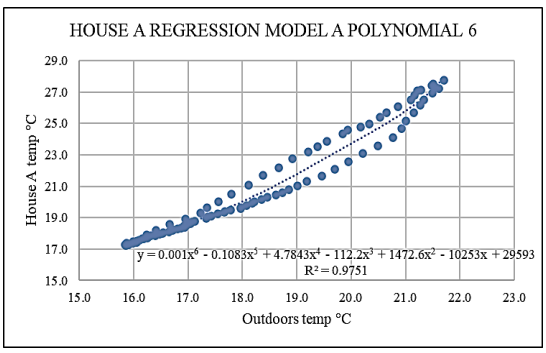


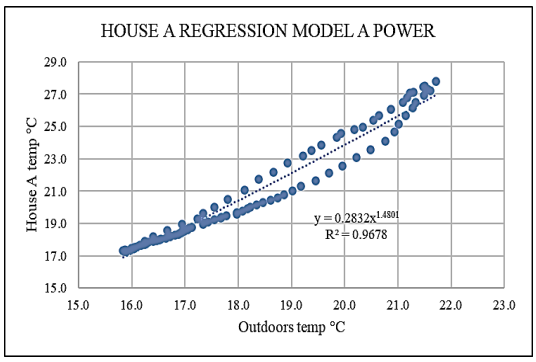




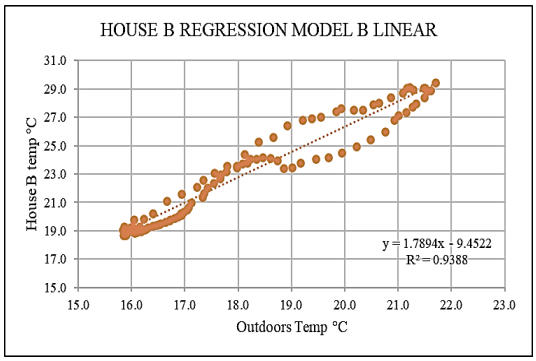


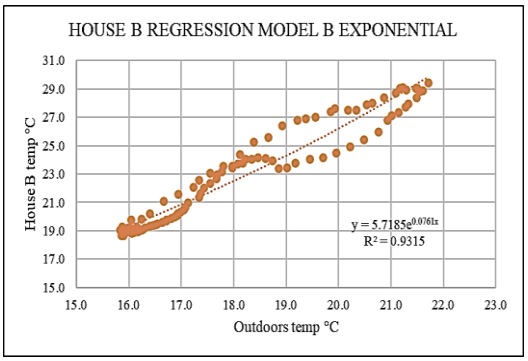


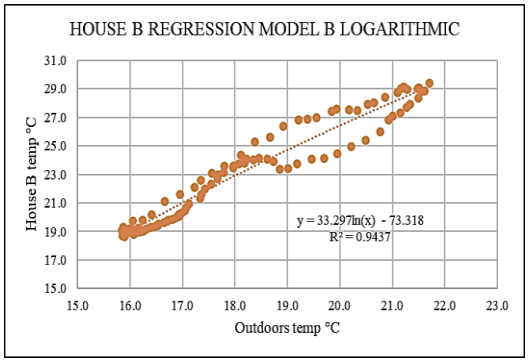


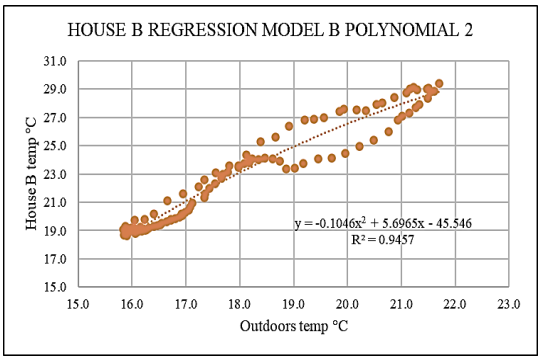


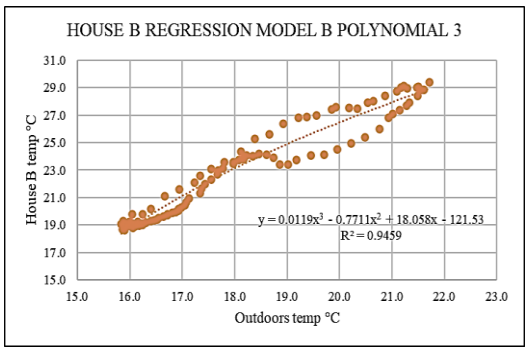
Model Bs regression derivation

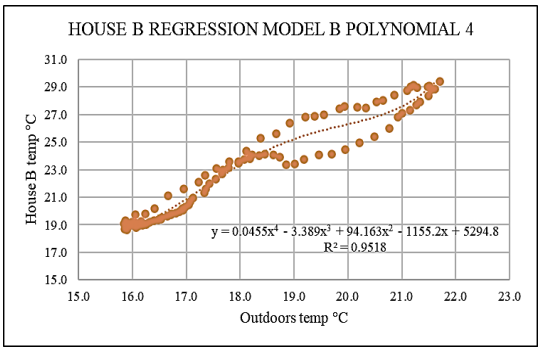


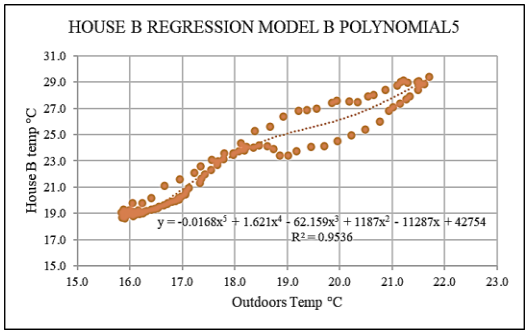


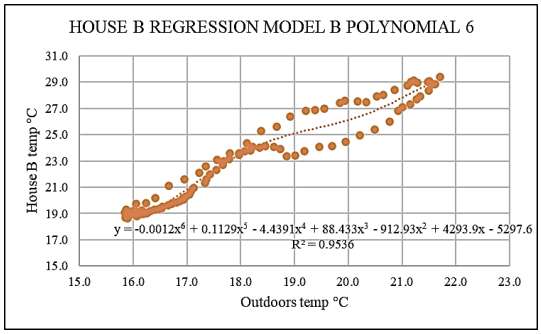


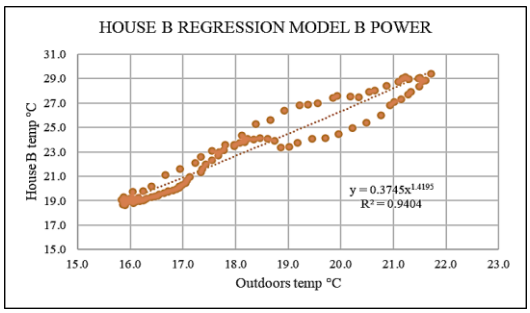







HOUSE B REGRESSION MODEL B POLYNOMIAL5
House B temp °C
Outdoors Temp °C
y = -0.0168x5 + 1.621x4 - 62.159x3 + 1187x2 - 11287x + 42754
R² = 0.9536


HOUSE B REGRESSION MODEL B POLYNOMIAL 6
House B temp °C
Outdoors temp °C
y = -0.0012x6 + 0.1129x5 - 4.4391x4 + 88.433x3 - 912.93x2 + 4293.9x - 5297.6
R² = 0.9536

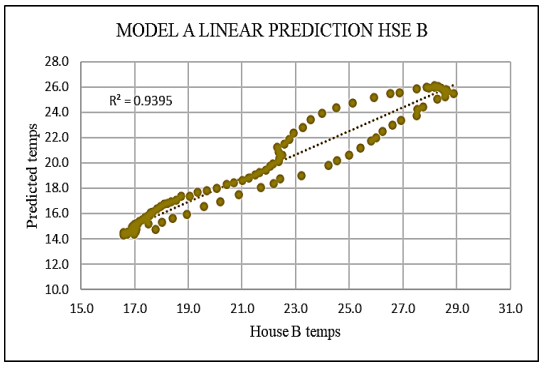

HOUSE B REGRESSION MODEL B POWER
House B temp °C
Outdoors temp °C
y = 0.3745x1.4195
R² = 0.9404

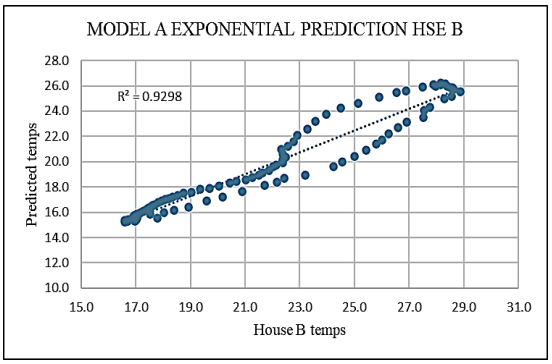
Appendix V: Regression models validation

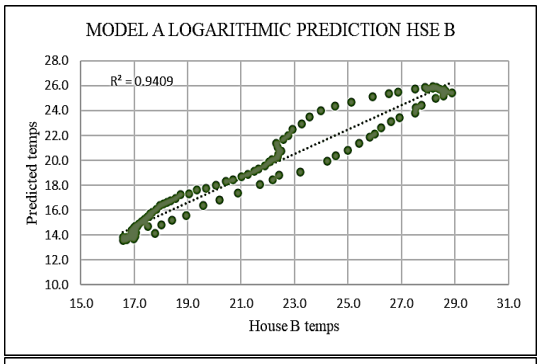
Model As validation calculation spreadsheet

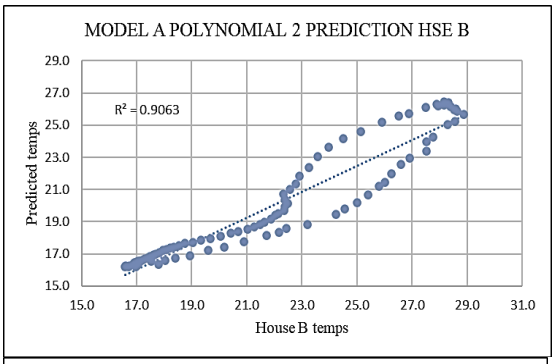
TIME	OUTDOORS	HOUSE C	HOUSE B	MOD A LINEAR	MOD A EXP	MOD A LOG	MOD A POLY2	MOD A POLY3	MOD A POLY4	MOD A POLY5	MOD A POLY6	MOD A POWER
0:00:00	16.2	20.0	18.7	17.3	17.5	17.2	17.7	17.5	15.0	37.8	-300.7	17.4
0:15:00	16.0	19.8	18.5	17.1	17.3	16.9	17.5	17.4	15.0	36.7	-283.8	17.2
0:30:00	15.9	19.7	18.4	16.9	17.2	16.8	17.4	17.2	14.9	36.1	-273.3	17.0
0:45:00	15.9	19.5	18.2	16.8	17.1	16.6	17.4	17.2	14.9	35.7	-267.8	17.0
1:00:00	15.8	19.5	18.1	16.7	17.0	16.5	17.3	17.1	14.9	35.3	-261.3	16.9
1:15:00	15.7	19.3	18.0	16.6	16.9	16.4	17.2	17.0	14.9	34.7	-252.8	16.7
1:30:00	15.6	19.3	17.8	16.4	16.7	16.1	17.1	16.9	14.8	33.9	-240.3	16.5
1:45:00	15.5	19.1	17.7	16.1	16.6	15.8	17.0	16.8	14.8	33.0	-227.8	16.3
2:00:00	15.4	19.0	17.6	16.0	16.5	15.7	16.9	16.7	14.8	32.6	-223.0	16.3
2:15:00	15.3	18.9	17.6	15.9	16.4	15.5	16.9	16.6	14.8	32.0	-215.2	16.1
2:30:00	15.3	18.8	17.5	15.8	16.3	15.4	16.8	16.6	14.8	31.7	-211.2	16.0
2:45:00	15.2	18.7	17.4	15.7	16.2	15.3	16.8	16.5	14.8	31.1	-204.8	15.9
3:00:00	15.1	18.6	17.3	15.5	16.1	15.1	16.7	16.4	14.8	30.4	-196.9	15.8
3:15:00	15.0	18.4	17.2	15.3	16.0	14.9	16.6	16.3	14.8	29.7	-189.3	15.6
3:30:00	14.9	18.3	17.1	15.2	15.9	14.7	16.5	16.2	14.8	28.9	-181.7	15.5
3:45:00	14.9	18.3	17.0	15.2	15.9	14.7	16.5	16.2	14.8	28.9	-181.7	15.5
4:00:00	14.9	18.2	17.0	15.1	15.8	14.6	16.5	16.2	14.8	28.6	-178.5	15.4
4:15:00	14.8	18.1	16.9	15.0	15.7	14.4	16.4	16.1	14.8	27.9	-172.4	15.3
4:30:00	14.8	18.0	16.9	14.9	15.6	14.3	16.4	16.1	14.8	27.4	-168.1	15.2
4:45:00	14.8	18.0	16.9	14.9	15.7	14.4	16.4	16.1	14.8	27.8	-171.0	15.3
5:00:00	14.7	17.9	17.8	14.7	15.5	14.1	16.4	16.0	14.8	26.7	-162.3	15.1
5:15:00	14.7	17.8	17.1	14.8	15.6	14.2	16.4	16.0	14.8	26.9	-164.2	15.1
5:30:00	14.6	17.7	17.0	14.7	15.5	14.1	16.3	16.0	14.8	26.4	-160.3	15.1
5:45:00	14.6	17.6	16.7	14.5	15.4	13.9	16.3	15.9	14.8	25.6	-154.0	14.9
6:00:00	14.5	17.5	16.6	14.5	15.4	13.8	16.3	15.9	14.8	25.4	-152.5	14.9
6:15:00	14.4	17.5	16.6	14.3	15.3	13.6	16.2	15.8	14.9	24.5	-146.5	14.7
6:30:00	14.5	17.6	16.7	14.4	15.3	13.7	16.2	15.8	14.9	24.7	-148.2	14.8
6:45:00	14.5	17.7	17.0	14.4	15.3	13.7	16.2	15.8	14.8	24.9	-149.5	14.8
7:00:00	14.6	17.6	17.0	14.5	15.4	13.9	16.3	15.9	14.8	25.7	-155.1	14.9
7:15:00	14.6	17.5	16.9	14.7	15.5	14.1	16.3	16.0	14.8	26.4	-160.3	15.1
7:30:00	14.8	17.7	17.0	15.0	15.7	14.4	16.4	16.1	14.8	27.9	-171.9	15.3
7:45:00	14.9	17.9	17.5	15.2	15.9	14.7	16.5	16.2	14.8	29.0	-181.9	15.5
8:00:00	15.0	18.1	18.0	15.3	16.0	14.9	16.6	16.3	14.8	29.6	-188.0	15.6
8:15:00	15.2	18.5	18.4	15.6	16.2	15.2	16.7	16.5	14.8	30.9	-201.8	15.9
8:30:00	15.4	19.1	18.9	15.9	16.4	15.6	16.9	16.7	14.8	32.2	-217.8	16.2
8:45:00	15.7	19.3	19.6	16.6	16.9	16.4	17.2	17.0	14.9	34.8	-253.4	16.7
9:00:00	16.0	19.4	20.2	16.9	17.2	16.8	17.4	17.3	14.9	36.2	-275.7	17.1
9:15:00	16.3	20.0	20.9	17.5	17.6	17.4	17.7	17.6	15.1	38.3	-309.8	17.6
9:30:00	16.6	20.4	21.7	18.1	18.1	18.1	18.1	18.0	15.2	40.7	-352.2	18.1
9:45:00	16.8	20.8	22.2	18.4	18.4	18.4	18.4	18.2	15.3	42.2	-378.0	18.4
10:00:00	17.0	20.5	22.4	18.7	18.7	18.8	18.6	18.5	15.4	43.7	-406.2	18.7
10:15:00	17.1	20.9	23.2	19.0	18.9	19.1	18.8	18.7	15.5	44.9	-429.1	19.0
10:30:00	17.6	21.3	24.2	19.8	19.6	19.9	19.4	19.3	15.8	48.9	-504.1	19.7
10:45:00	17.8	21.6	24.6	20.2	20.0	20.4	19.8	19.6	16.0	51.2	-548.1	20.1
11:00:00	18.1	22.0	25.0	20.6	20.4	20.8	20.2	20.0	16.1	53.8	-597.0	20.6
11:15:00	18.4	22.1	25.4	21.2	20.9	21.4	20.7	20.5	16.3	57.1	-662.7	21.1
11:30:00	18.7	22.8	25.8	21.7	21.4	21.9	21.2	21.0	16.6	60.6	-731.2	21.6
11:45:00	18.8	23.2	26.0	22.0	21.7	22.1	21.5	21.2	16.7	62.4	-767.1	21.9
12:00:00	19.1	23.3	26.2	22.5	22.2	22.6	22.0	21.7	16.9	66.0	-841.5	22.4
12:15:00	19.4	23.7	26.6	23.0	22.7	23.1	22.5	22.3	17.1	69.8	-921.8	22.9
12:30:00	19.6	24.1	26.9	23.3	23.1	23.4	23.0	22.7	17.2	72.7	-983.5	23.2
12:45:00	19.9	24.3	27.5	23.7	23.5	23.8	23.4	23.1	17.4	75.8	-1050.7	23.6
13:00:00	20.1	24.5	27.5	24.2	24.1	24.3	24.0	23.7	17.6	80.2	-1146.9	24.1
13:15:00	20.3	24.8	27.8	24.4	24.3	24.4	24.2	23.9	17.7	82.0	-1188.4	24.3
13:30:00	20.6	25.2	28.3	25.0	25.0	25.0	25.0	24.7	18.1	87.8	-1320.6	25.0
13:45:00	20.7	25.3	28.6	25.2	25.2	25.2	25.2	24.9	18.2	89.4	-1355.8	25.1
14:00:00	20.9	25.6	28.9	25.5	25.5	25.4	25.7	25.3	18.3	92.5	-1427.2	25.4
14:15:00	21.0	25.8	28.6	25.7	25.7	25.6	25.9	25.6	18.4	94.3	-1468.7	25.6
14:30:00	21.0	25.9	28.5	25.8	25.8	25.6	26.0	25.7	18.5	95.1	-1486.5	25.7
14:45:00	21.0	25.8	28.6	25.8	25.9	25.7	26.0	25.7	18.5	95.4	-1493.3	25.7
15:00:00	21.1	25.8	28.4	25.9	26.0	25.8	26.2	25.9	18.6	96.5	-1519.6	25.8
15:15:00	21.2	25.8	28.3	26.0	26.2	25.9	26.4	26.1	18.7	98.2	-1557.6	26.0
15:30:00	21.2	25.8	28.2	26.0	26.1	25.8	26.3	26.0	18.6	97.4	-1539.2	25.9
15:45:00	21.2	25.6	28.2	26.1	26.2	25.9	26.4	26.1	18.7	98.6	-1567.6	26.0
16:00:00	21.1	25.4	28.0	25.9	26.0	25.8	26.2	25.9	18.6	96.6	-1522.4	25.9
16:15:00	21.2	25.2	27.9	26.0	26.1	25.9	26.3	26.0	18.6	97.7	-1547.7	26.0
16:30:00	21.1	25.0	27.5	25.8	25.9	25.7	26.1	25.8	18.5	96.0	-1507.1	25.8
16:45:00	20.9	24.5	26.9	25.6	25.6	25.5	25.7	25.4	18.4	93.1	-1441.8	25.5
17:00:00	20.9	24.5	26.5	25.5	25.5	25.4	25.6	25.3	18.3	92.0	-1415.3	25.4
17:15:00	20.7	24.2	25.9	25.2	25.1	25.1	25.2	24.9	18.1	89.1	-1348.2	25.1
17:30:00	20.4	23.9	25.1	24.7	24.6	24.7	24.6	24.3	17.9	84.6	-1246.6	24.6
17:45:00	20.2	24.0	24.5	24.4	24.2	24.4	24.2	23.9	17.7	81.5	-1177.1	24.3
18:00:00	20.0	23.6	24.0	23.9	23.7	24.0	23.6	23.3	17.5	77.6	-1089.4	23.8
18:15:00	19.7	23.4	23.6	23.4	23.2	23.5	23.0	22.8	17.3	73.3	-995.3	23.3
18:30:00	19.3	23.0	23.3	22.8	22.6	23.0	22.4	22.1	17.0	68.6	-896.2	22.7
18:45:00	19.1	22.8	22.9	22.3	22.1	22.5	21.8	21.6	16.8	65.0	-820.3	22.2
19:00:00	18.8	23.2	22.8	21.8	21.6	22.0	21.3	21.1	16.6	61.5	-750.5	21.7
19:15:00	18.6	23.6	22.6	21.5	21.2	21.7	21.0	20.8	16.5	59.2	-703.3	21.4
19:30:00	18.4	23.7	22.3	21.2	21.0	21.4	20.7	20.5	16.4	57.4	-668.4	21.1
19:45:00	18.2	23.6	22.4	20.9	20.6	21.0	20.4	20.2	16.2	55.1	-623.4	20.8
20:00:00	18.1	23.6	22.5	20.6	20.4	20.8	20.2	20.0	16.1	53.6	-593.8	20.5
20:15:00	17.9	23.1	22.4	20.4	20.1	20.5	19.9	19.8	16.0	52.1	-565.2	20.3
20:30:00	17.8	23.3	22.4	20.1	19.9	20.2	19.7	19.5	15.9	50.6	-536.0	20.0
20:45:00	17.7	22.9	22.1	19.9	19.7	20.0	19.5	19.4	15.9	49.5	-515.5	19.8
21:00:00	17.6	22.5	22.0	19.7	19.6	19.9	19.4	19.3	15.8	48.7	-500.7	19.7
21:15:00	17.4	22.0	21.9	19.4	19.3	19.6	19.2	19.0	15.7	47.1	-469.9	19.4
21:30:00	17.3	21.9	21.6	19.2	19.1	19.3	19.0	18.8	15.6	46.0	-448.9	19.2
21:45:00	17.2	21.8	21.5	19.0	18.9	19.1	18.8	18.7	15.5	45.1	-431.6	19.0
22:00:00	17.0	21.7	21.3	18.8	18.8	18.9	18.7	18.6	15.5	44.2	-414.9	18.8
22:15:00	16.9	21.3	21.0	18.6	18.6	18.7	18.5	18.4	15.4	43.2	-396.8	18.6
22:30:00	16.8	21.0	20.7	18.4	18.4	18.5	18.4	18.3	15.3	42.3	-381.6	18.5
22:45:00	16.7	20.8	20.4	18.3	18.3	18.3	18.3	18.2	15.3	41.7	-369.1	18.3
23:00:00	16.6	20.7	20.1	18.0	18.1	18.0	18.1	18.0	15.2	40.6	-349.2	18.1
23:15:00	16.5	20.5	19.7	17.8	17.9	17.8	18.0	17.8	15.2	39.7	-333.9	17.9
23:30:00	16.4	20.3	19.3	17.7	17.8	17.6	17.9	17.7	15.1	39.1	-324.2	17.8
23:45:00	16.2	20.2	19.0	17.4	17.6	17.3	17.7	17.6	15.1	38.0	-304.8	17.5
F-Test Value				1.640380E-07	4.578124E-06	1.643217E-08	5.170290E-05	5.814426E-05	1.371785E-06	4.613374E-71	1.38476E-193	1.063480E-06
(B) T-Test Value				0.0001168658	0.0002442633	0.0000629494	0.0006425999	0.0001249221	0.0000000000	0.0000000000	0.0000000000	0.0001501688
(C) T-Test Value				0.0001678208	0.0003577919	0.0000883120	0.0009928629	0.0001667276	0.0000000000	0.0000000000	0.0000000000	0.0002149062

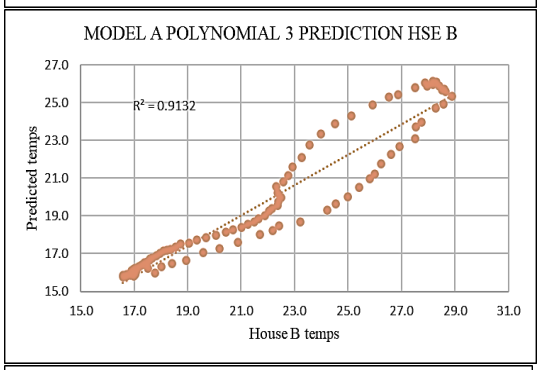
Model As correlation check for House B & C

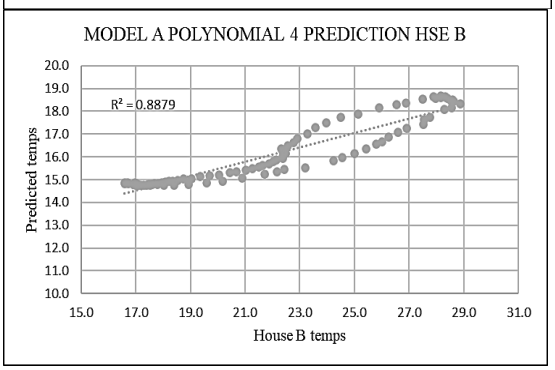












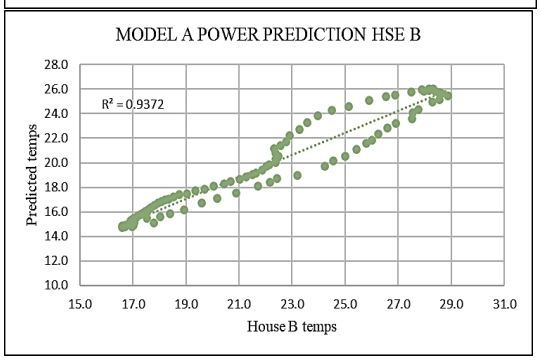
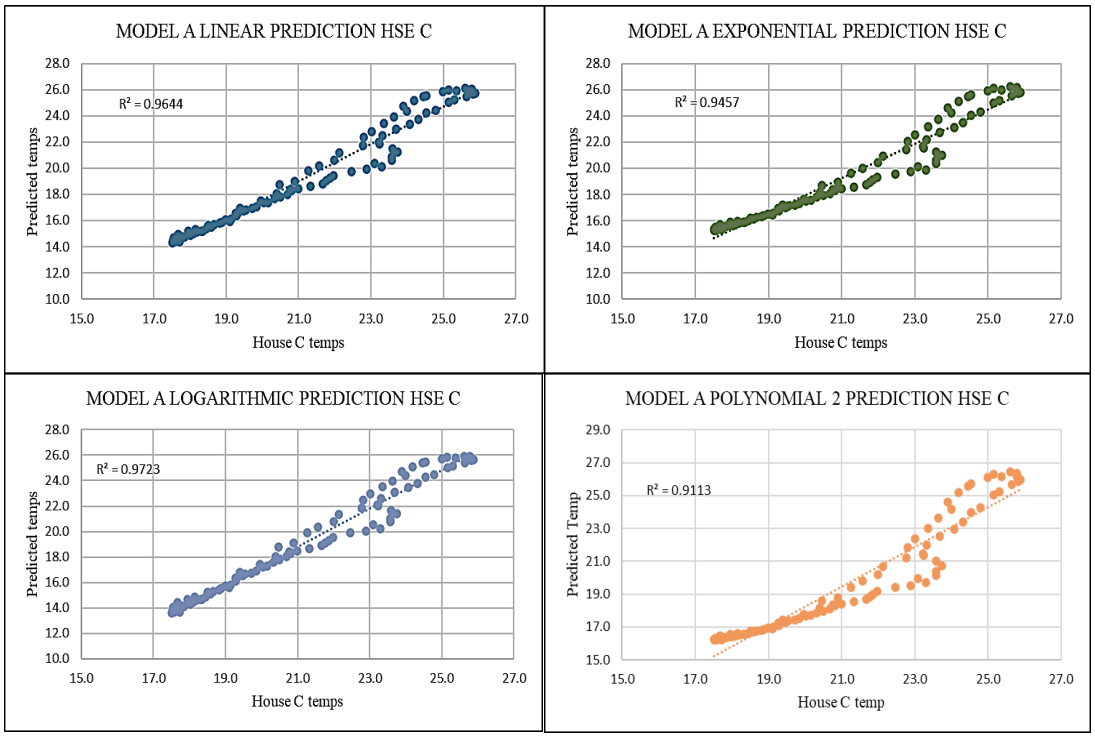
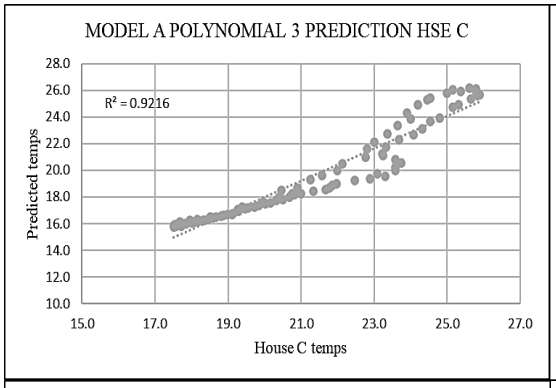
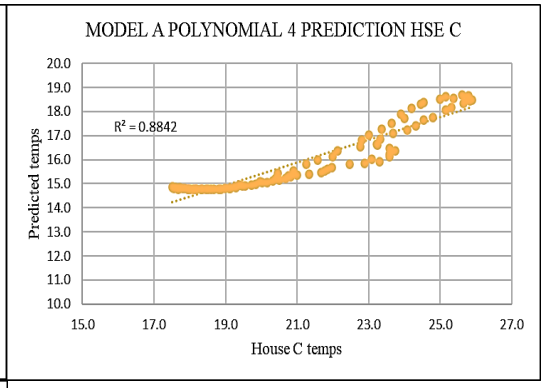


Table 1: Models A, House B

Model Type	R^2	Prediction Accuracy	F-Test Values	T-Test Values
Linear	0.9395	93.95%	1.640380E-07	0.0001168658
Exponential	0.9298	92.98%	4.578124E-06	0.0002442633
Logarithmic	0.9409	94.09%	1.643217E-08	0.0000629494
Polynomial 2	0.9063	90.63%	5.170290E-05	0.0006425999
Polynomial 3	0.9132	91.32%	5.814426E-05	0.0001249221
Polynomial 4	0.8879	88.79%	1.371785E-06	0.0000000000
Power	0.9372	93.72%	1.063480E-06	0.0001501688







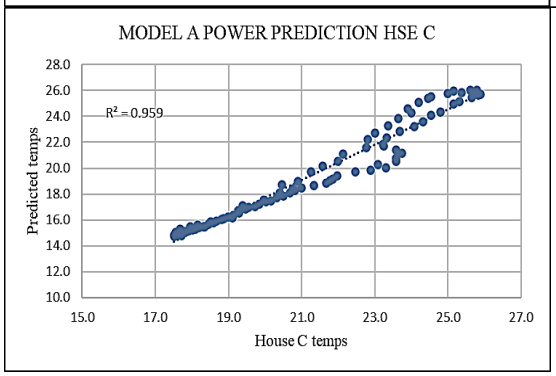
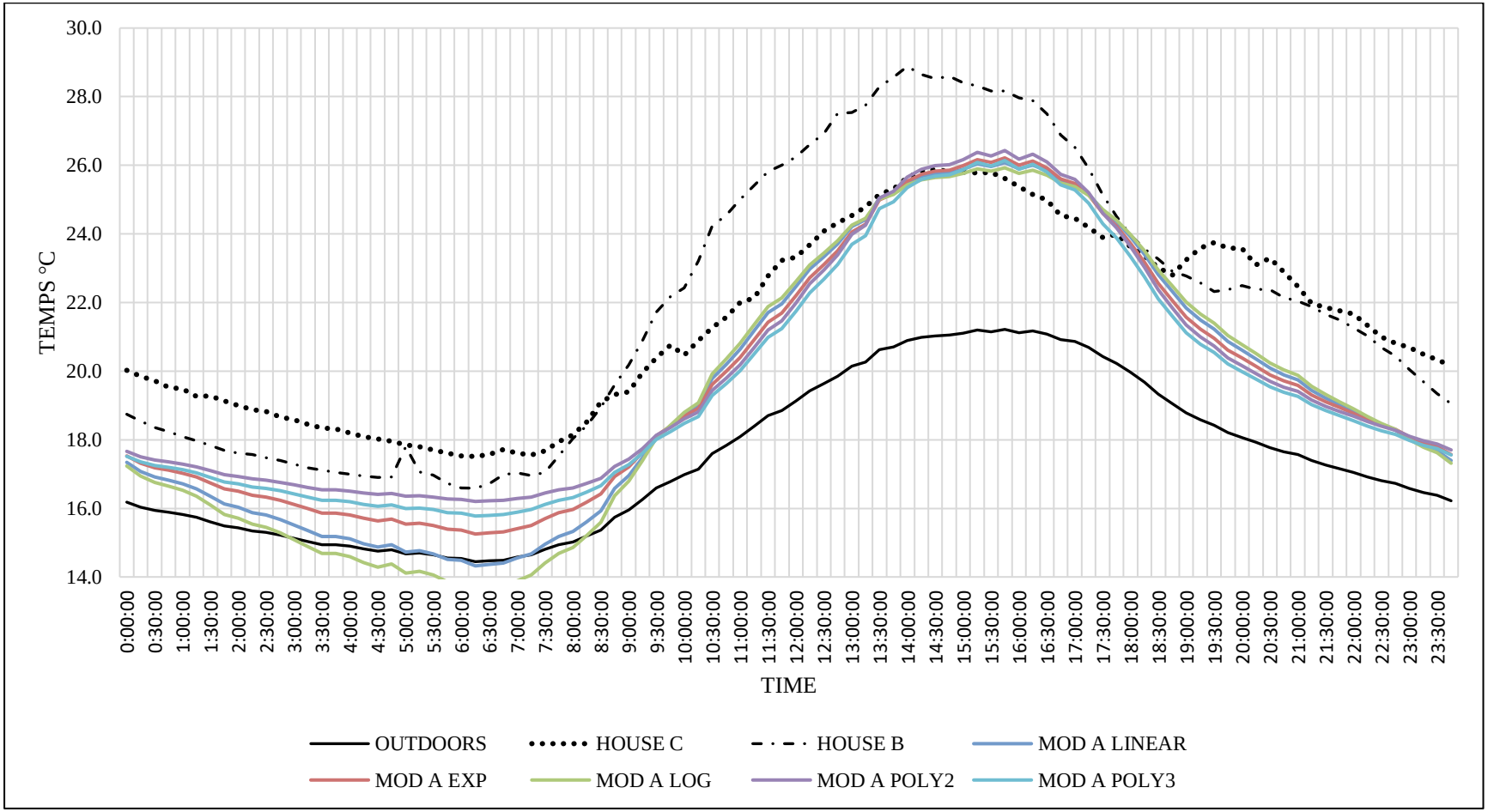


Table 2: Models A, House C

Model Type	R^2	Prediction Accuracy	F-Test Values	T-Test Values
Linear	0.9644	96.44%	1.640380E-07	0.0001678208
Exponential	0.9457	94.57%	4.578124E-06	0.0003577919
Logarithmic	0.9723	97.23%	1.643217E-08	0.0000883120
Polynomial 2	0.9113	91.13%	5.170290E-05	0.0009928629
Polynomial 3	0.9216	92.16%	5.814426E-05	0.0001667276
Polynomial 4	0.8842	88.42%	1.371785E-06	0.0000000000
Power	0.9590	95.90%	1.063480E-06	0.0002149062

Model As July 2019 predictions graphical plot



Model Bs validation calculation spreadsheet

TIME	OUTDOORS	HOUSE C	HOUSE B	MOD B LINEAR	MOD B EXPON	MOD B LOG	MOD B POLY2	MOD B POLY3	MOD B POLY4	MOD B POLY5	MOD B POLY6	MOD B POWER
0:00:00	16.2	20.0	18.7	19.5	19.6	19.4	19.2	19.2	18.0	50.9	-806.5	19.5
0:15:00	16.0	19.8	18.5	19.2	19.4	19.1	18.9	18.8	17.9	48.9	-762.3	19.2
0:30:00	15.9	19.7	18.4	19.1	19.2	18.9	18.7	18.6	17.8	47.7	-734.6	19.1
0:45:00	15.9	19.5	18.2	19.0	19.2	18.8	18.5	18.4	17.8	47.2	-720.1	19.0
1:00:00	15.8	19.5	18.1	18.9	19.1	18.6	18.4	18.3	17.8	46.5	-703.2	18.9
1:15:00	15.7	19.3	18.0	18.7	18.9	18.5	18.2	18.1	17.8	45.7	-680.5	18.7
1:30:00	15.6	19.3	17.8	18.5	18.8	18.2	17.9	17.7	17.8	44.6	-647.4	18.5
1:45:00	15.5	19.1	17.7	18.2	18.6	17.9	17.6	17.4	17.9	43.7	-613.9	18.3
2:00:00	15.4	19.0	17.6	18.2	18.5	17.8	17.4	17.2	18.0	43.4	-601.2	18.2
2:15:00	15.3	18.9	17.6	18.0	18.4	17.6	17.2	17.0	18.1	43.1	-580.1	18.1
2:30:00	15.3	18.8	17.5	17.9	18.3	17.5	17.1	16.9	18.2	42.9	-569.3	18.0
2:45:00	15.2	18.7	17.4	17.8	18.2	17.3	16.9	16.7	18.4	42.8	-551.9	17.9
3:00:00	15.1	18.6	17.3	17.6	18.1	17.1	16.7	16.4	18.6	42.8	-530.5	17.7
3:15:00	15.0	18.4	17.2	17.5	18.0	16.9	16.5	16.1	18.9	42.9	-509.5	17.6
3:30:00	14.9	18.3	17.1	17.3	17.8	16.7	16.2	15.8	19.3	43.2	-488.4	17.4
3:45:00	14.9	18.3	17.0	17.3	17.8	16.7	16.2	15.8	19.3	43.2	-488.4	17.4
4:00:00	14.9	18.2	17.0	17.2	17.8	16.6	16.1	15.7	19.4	43.5	-479.4	17.3
4:15:00	14.8	18.1	16.9	17.1	17.7	16.4	15.9	15.5	19.8	44.0	-462.3	17.2
4:30:00	14.8	18.0	16.9	17.0	17.6	16.3	15.7	15.3	20.1	44.5	-450.2	17.1
4:45:00	14.8	18.0	16.9	17.0	17.6	16.4	15.8	15.4	19.9	44.2	-458.2	17.2
5:00:00	14.7	17.9	17.8	16.8	17.5	16.1	15.5	15.0	20.6	45.3	-433.7	17.0
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5:30:00	14.6	17.7	17.0	16.8	17.4	16.1	15.5	14.9	20.7	45.7	-427.8	16.9
5:45:00	14.6	17.6	16.7	16.6	17.3	15.9	15.2	14.7	21.3	46.9	-409.7	16.8
6:00:00	14.5	17.5	16.6	16.6	17.3	15.8	15.2	14.6	21.5	47.2	-405.2	16.7
6:15:00	14.4	17.5	16.6	16.4	17.2	15.6	14.9	14.3	22.1	48.8	-387.6	16.6
6:30:00	14.5	17.6	16.7	16.4	17.2	15.7	15.0	14.4	21.9	48.3	-392.6	16.6
6:45:00	14.5	17.7	17.0	16.5	17.2	15.7	15.0	14.4	21.8	48.0	-396.4	16.7
7:00:00	14.6	17.6	17.0	16.6	17.3	15.9	15.3	14.7	21.2	46.7	-412.9	16.8
7:15:00	14.6	17.5	16.9	16.8	17.4	16.1	15.5	14.9	20.7	45.7	-427.8	16.9
7:30:00	14.8	17.7	17.0	17.0	17.6	16.4	15.9	15.4	19.8	44.1	-460.9	17.2
7:45:00	14.9	17.9	17.5	17.3	17.8	16.7	16.2	15.8	19.3	43.2	-489.1	17.4
8:00:00	15.0	18.1	18.0	17.4	17.9	16.9	16.4	16.1	19.0	42.9	-506.0	17.5
8:15:00	15.2	18.5	18.4	17.7	18.2	17.3	16.8	16.6	18.5	42.8	-543.7	17.8
8:30:00	15.4	19.1	18.9	18.1	18.4	17.7	17.3	17.1	18.1	43.2	-587.0	18.1
8:45:00	15.7	19.3	19.6	18.7	19.0	18.5	18.2	18.1	17.8	45.7	-682.2	18.7
9:00:00	16.0	19.4	20.2	19.1	19.3	18.9	18.7	18.6	17.8	48.0	-741.0	19.1
9:15:00	16.3	20.0	20.9	19.6	19.7	19.5	19.4	19.4	18.1	52.0	-830.2	19.6
9:30:00	16.6	20.4	21.7	20.2	20.2	20.2	20.2	20.2	18.7	57.4	-941.0	20.2
9:45:00	16.8	20.8	22.2	20.6	20.5	20.6	20.6	20.6	19.1	60.8	-1008.2	20.5
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10:15:00	17.1	20.9	23.2	21.2	21.1	21.3	21.4	21.4	19.9	67.4	-1141.5	21.1
10:30:00	17.6	21.3	24.2	22.0	21.8	22.2	22.3	22.3	20.9	76.9	-1337.3	21.9
10:45:00	17.8	21.6	24.6	22.5	22.2	22.6	22.8	22.8	21.4	82.2	-1452.3	22.4
11:00:00	18.1	22.0	25.0	22.9	22.6	23.1	23.3	23.2	21.9	88.0	-1580.7	22.8
11:15:00	18.4	22.1	25.4	23.5	23.2	23.6	23.9	23.8	22.5	95.6	-1753.3	23.4
11:30:00	18.7	22.8	25.8	24.0	23.7	24.2	24.4	24.3	22.9	103.2	-1933.4	23.9
11:45:00	18.8	23.2	26.0	24.3	24.0	24.5	24.7	24.6	23.1	107.1	-2028.0	24.2
12:00:00	19.1	23.3	26.2	24.8	24.5	25.0	25.2	25.0	23.4	115.1	-2224.1	24.7
12:15:00	19.4	23.7	26.6	25.3	25.1	25.5	25.6	25.5	23.7	123.6	-2435.8	25.3
12:30:00	19.6	24.1	26.9	25.7	25.5	25.8	26.0	25.8	23.8	130.0	-2598.8	25.6
12:45:00	19.9	24.3	27.5	26.1	25.9	26.2	26.3	26.2	23.9	137.0	-2776.1	26.0
13:00:00	20.1	24.5	27.5	26.6	26.5	26.7	26.8	26.6	24.1	146.9	-3030.0	26.6
13:15:00	20.3	24.8	27.8	26.8	26.7	26.9	26.9	26.8	24.1	151.2	-3139.8	26.8
13:30:00	20.6	25.2	28.3	27.4	27.5	27.4	27.4	27.3	24.4	164.7	-3488.9	27.5
13:45:00	20.7	25.3	28.6	27.6	27.7	27.6	27.6	27.4	24.5	168.3	-3581.9	27.7
14:00:00	20.9	25.6	28.9	27.9	28.0	27.9	27.8	27.7	24.7	175.6	-3770.5	28.0
14:15:00	21.0	25.8	28.6	28.1	28.2	28.0	27.9	27.8	24.8	179.8	-3880.4	28.2
14:30:00	21.0	25.9	28.5	28.2	28.3	28.1	28.0	27.9	24.9	181.5	-3927.3	28.3
14:45:00	21.0	25.8	28.6	28.2	28.4	28.1	28.0	27.9	24.9	182.2	-3945.4	28.3
15:00:00	21.1	25.8	28.4	28.3	28.5	28.2	28.1	28.0	25.0	184.9	-4015.0	28.4
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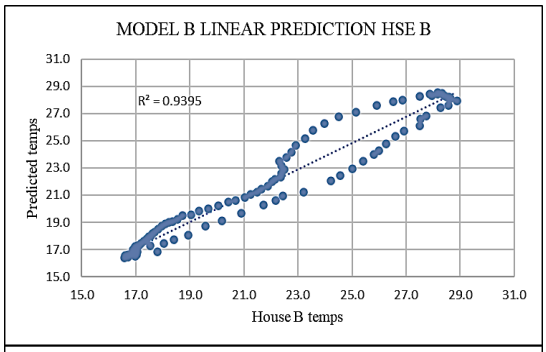
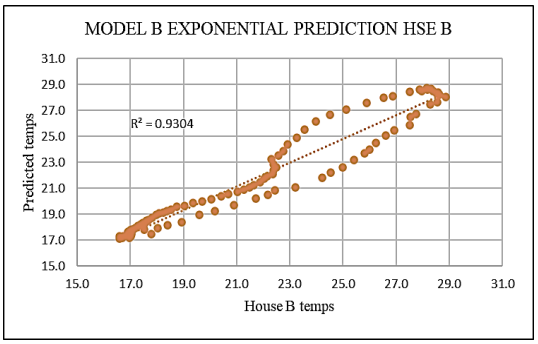
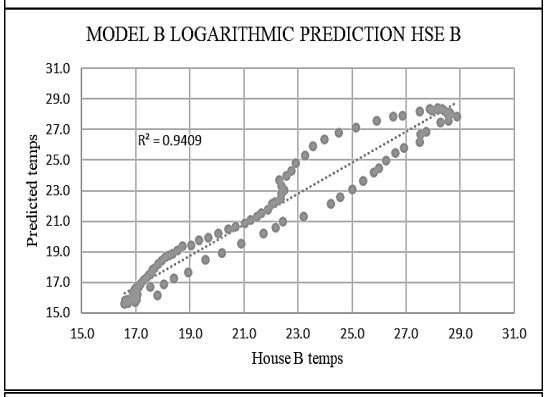
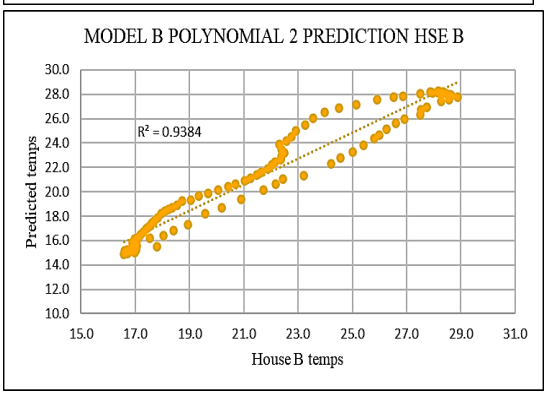
16:00:00	21.1	25.4	28.0	28.3	28.5	28.2	28.1	28.0	25.0	185.2	-4022.4	28.4
16:15:00	21.2	25.2	27.9	28.4	28.6	28.3	28.2	28.1	25.1	187.7	-4089.4	28.5
16:30:00	21.1	25.0	27.5	28.3	28.4	28.2	28.1	27.9	25.0	183.6	-3981.9	28.4
16:45:00	20.9	24.5	26.9	28.0	28.1	27.9	27.9	27.7	24.7	177.0	-3809.2	28.1
17:00:00	20.9	24.5	26.5	27.9	28.0	27.8	27.8	27.6	24.6	174.4	-3739.1	27.9
17:15:00	20.7	24.2	25.9	27.6	27.6	27.6	27.5	27.4	24.5	167.5	-3561.8	27.6
17:30:00	20.4	23.9	25.1	27.1	27.1	27.1	27.2	27.0	24.2	157.2	-3293.3	27.1
17:45:00	20.2	24.0	24.5	26.7	26.7	26.8	26.9	26.7	24.1	150.0	-3109.8	26.7
18:00:00	20.0	23.6	24.0	26.3	26.1	26.4	26.5	26.3	24.0	141.0	-2878.3	26.3
18:15:00	19.7	23.4	23.6	25.8	25.6	25.9	26.0	25.9	23.8	131.3	-2629.9	25.7
18:30:00	19.3	23.0	23.3	25.1	24.9	25.3	25.5	25.4	23.6	120.9	-2368.2	25.1
18:45:00	19.1	22.8	22.9	24.6	24.4	24.8	25.0	24.9	23.4	112.8	-2168.1	24.6
19:00:00	18.8	23.2	22.8	24.1	23.9	24.3	24.5	24.5	23.0	105.3	-1984.3	24.1
19:15:00	18.6	23.6	22.6	23.8	23.5	24.0	24.2	24.1	22.8	100.1	-1860.0	23.7
19:30:00	18.4	23.7	22.3	23.5	23.2	23.7	23.9	23.8	22.5	96.2	-1768.2	23.4
19:45:00	18.2	23.6	22.4	23.1	22.9	23.3	23.5	23.5	22.2	91.1	-1650.1	23.0
20:00:00	18.1	23.6	22.5	22.9	22.6	23.0	23.2	23.2	21.9	87.6	-1572.2	22.8
20:15:00	17.9	23.1	22.4	22.6	22.4	22.8	23.0	22.9	21.6	84.3	-1497.4	22.5
20:30:00	17.8	23.3	22.4	22.3	22.1	22.5	22.6	22.6	21.3	80.8	-1420.9	22.2
20:45:00	17.7	22.9	22.1	22.1	21.9	22.3	22.4	22.4	21.0	78.3	-1367.2	22.0
21:00:00	17.6	22.5	22.0	22.0	21.8	22.1	22.3	22.3	20.9	76.5	-1328.4	21.9
21:15:00	17.4	22.0	21.9	21.7	21.5	21.8	21.9	21.9	20.4	72.6	-1248.0	21.6
21:30:00	17.3	21.9	21.6	21.4	21.3	21.5	21.6	21.6	20.2	70.0	-1193.1	21.4
21:45:00	17.2	21.8	21.5	21.2	21.1	21.3	21.4	21.4	19.9	67.8	-1148.0	21.2
22:00:00	17.0	21.7	21.3	21.0	20.9	21.1	21.2	21.2	19.7	65.6	-1104.4	21.0
22:15:00	16.9	21.3	21.0	20.8	20.7	20.9	20.9	20.9	19.4	63.2	-1057.2	20.8
22:30:00	16.8	21.0	20.7	20.6	20.6	20.7	20.7	20.7	19.1	61.3	-1017.6	20.6
22:45:00	16.7	20.8	20.4	20.5	20.4	20.5	20.5	20.5	19.0	59.6	-985.0	20.4
23:00:00	16.6	20.7	20.1	20.2	20.2	20.2	20.1	20.1	18.7	57.0	-933.2	20.2
23:15:00	16.5	20.5	19.7	20.0	20.0	19.9	19.9	19.8	18.4	55.1	-893.2	20.0
23:30:00	16.4	20.3	19.3	19.9	19.9	19.8	19.7	19.7	18.3	53.8	-868.0	19.8
23:45:00	16.2	20.2	19.0	19.6	19.6	19.4	19.3	19.3	18.1	51.4	-817.3	19.5
F-Test Value				0.0000000362	0.0000003803	2.15931E-09	1.61104E-10	3.84434E-11	0.3438537305	1.893E-101	1.4893E-233	4.99021E-08
(B) T-Test Value				0.9246748201	0.8911878601	0.7200080911	0.5606945563	0.3956568548	0.2057257830	0.0000000000	0.0000000000	0.9539689281
(C) T-Test Value				0.7691901290	0.5826215153	0.9976769199	0.8088799949	0.5957171842	0.3781049673	0.0000000000	0.0000000000	0.7379823477

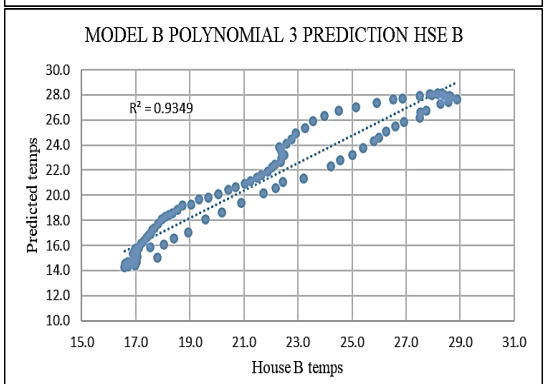
Model Bs correlation check for House B & C

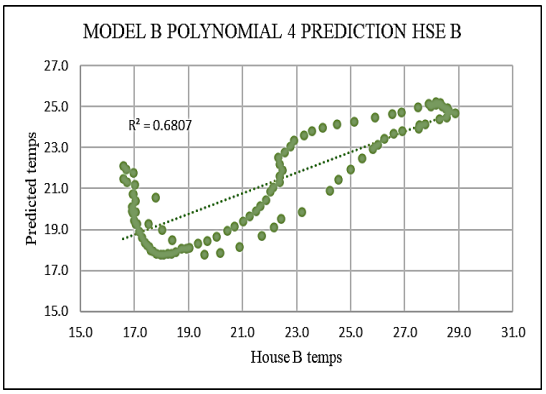












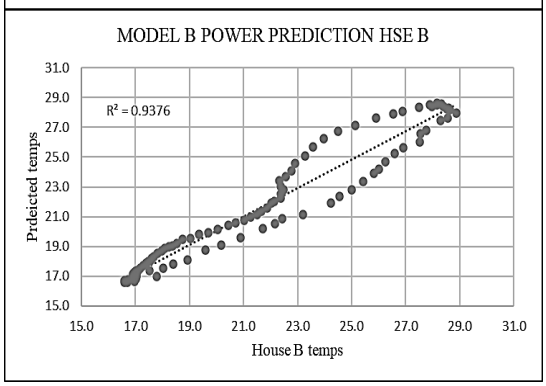
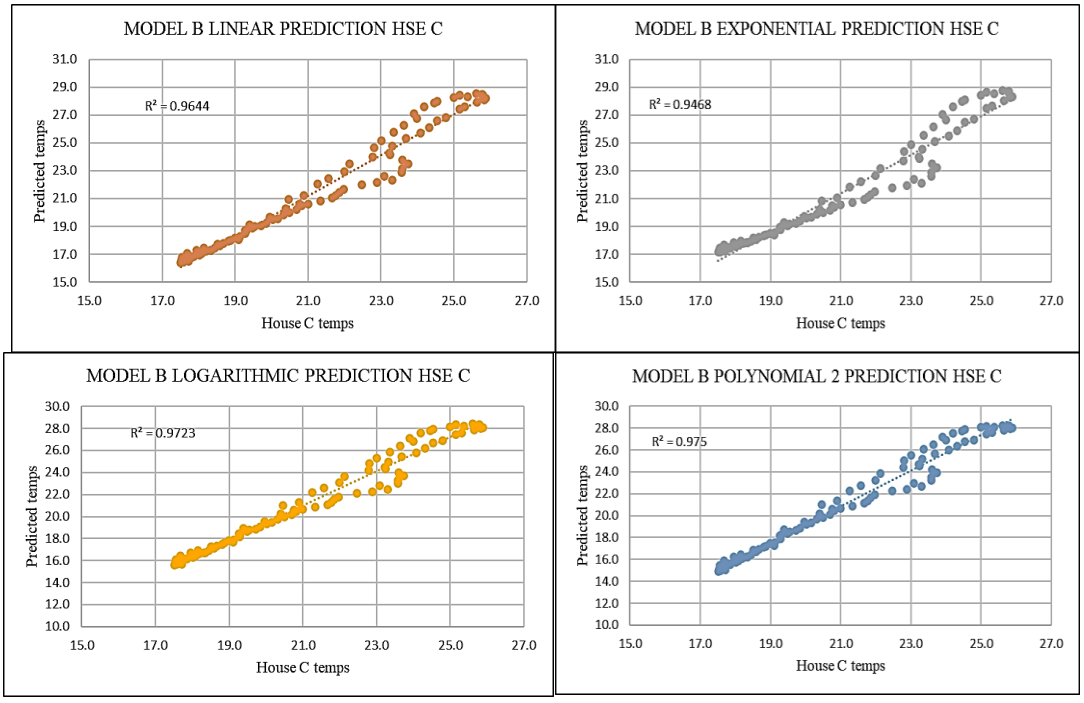
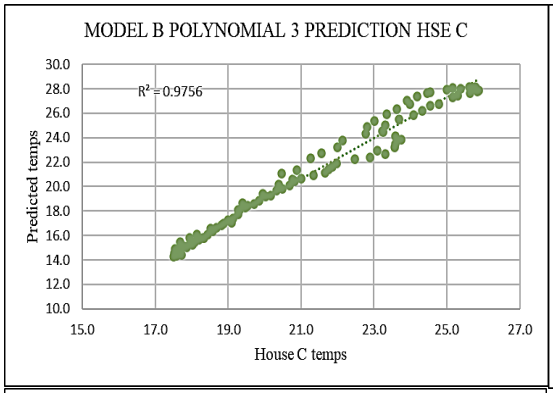
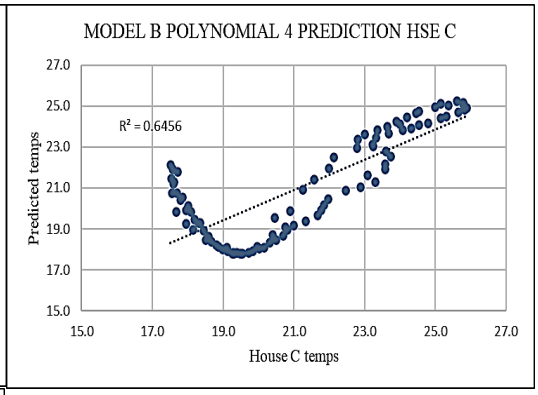


Table 3: Models B, House B

Model Type	R^2	Prediction Accuracy	F-Test Values	T-Test Values
Linear	0.9395	93.95%	0.0000000362	0.9246748201
Exponential	0.9304	93.04%	0.0000003803	0.8911878601
Logarithmic	0.9409	94.09%	2.159307E-09	0.7200080911
Polynomial 2	0.9384	93.84%	1.611036E-10	0.5606945563
Polynomial 3	0.9349	93.49%	3.844344E-11	0.3956568548
Polynomial 4	0.6807	68.07%	0.3438537305	0.2057257830
Power	0.9376	93.76%	4.990209E-08	0.9539689281







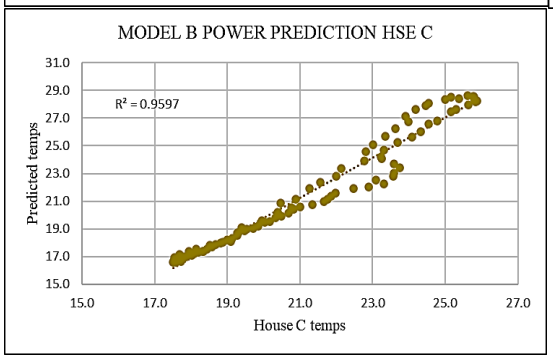
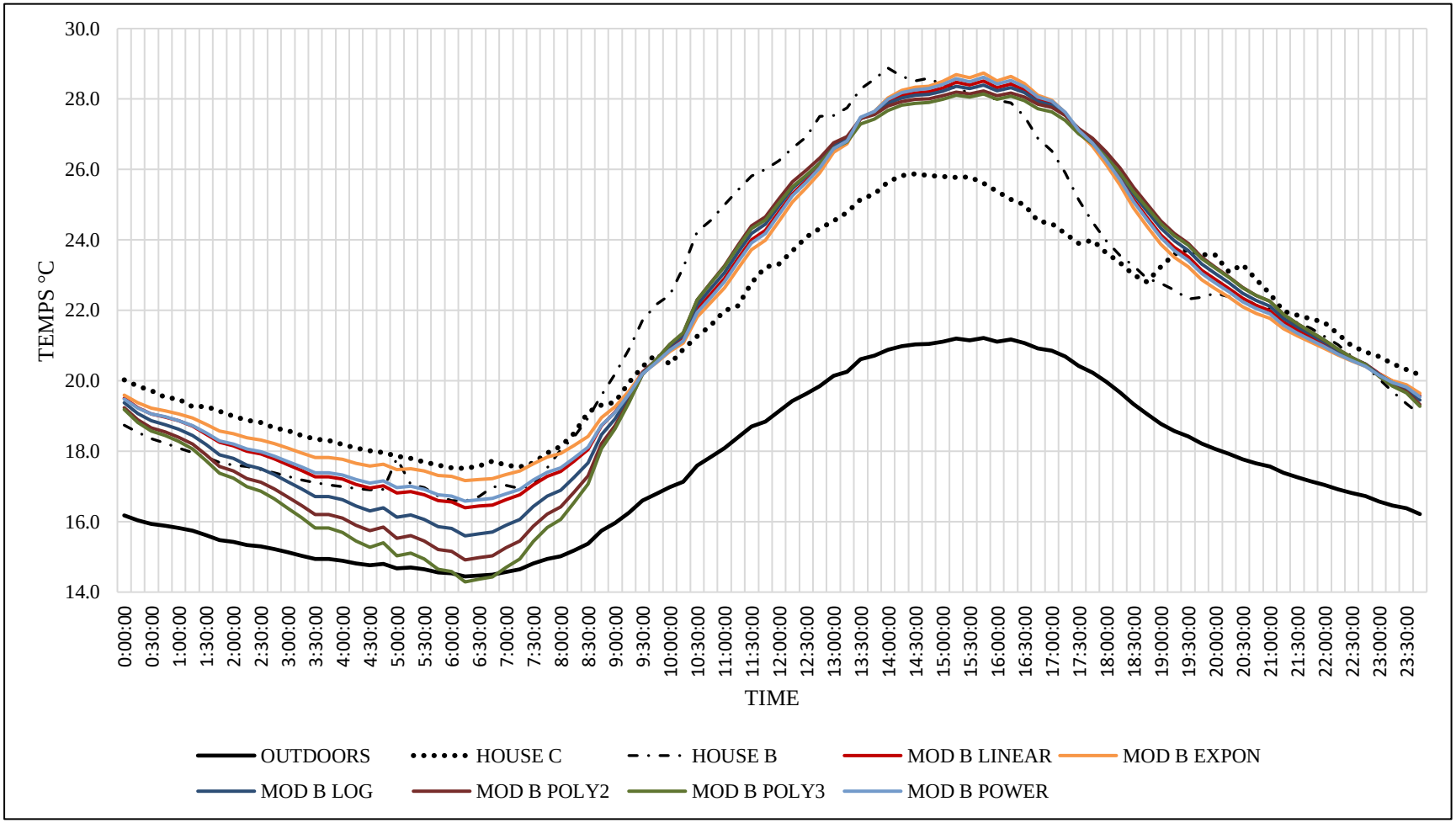


Table 4: Models B, House C

Model Type	R^2	Prediction Accuracy	F-Test Value	T-Test Value
Linear	0.9644	96.44%	0.0000000362	0.7691901290
Exponential	0.9468	94.68%	0.0000003803	0.5826215153
Logarithmic	0.9723	97.23%	2.159307E-09	0.9976769199
Polynomial 2	0.9750	97.50%	1.611036E-10	0.8088799949
Polynomial 3	0.9756	97.56%	3.844344E-11	0.5957171842
Polynomial 4	0.6456	64.56%	0.3438537305	0.3781049673
Power	0.9597	95.97%	4.990209E-08	0.7379823477

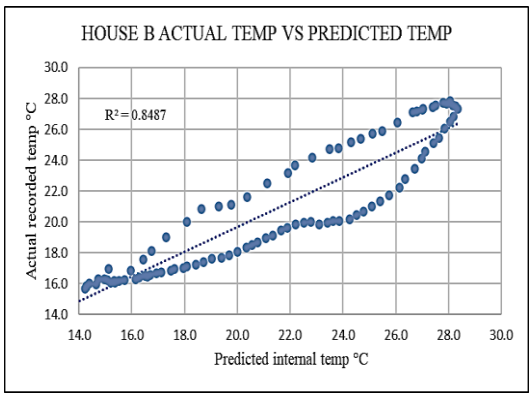
Model Bs July 2019 predictions graphical plot



Appendix VI: Validation of the prediction model

August 2019 House B prediction spreadsheet and regression analysis

	HOUSE B PREDICTIONS -		
TIME	OUTDOOR TEMP	PREDICTED INTERNAL TEMP	ACTUAL TEMP
0:00:00	16.1	19.0	17.6
0:15:00	16.0	18.7	17.4
0:30:00	15.9	18.4	17.3
0:45:00	15.8	18.1	17.1
1:00:00	15.7	17.9	17.0
1:15:00	15.6	17.6	16.9
1:30:00	15.5	17.5	16.9
1:45:00	15.4	17.1	16.8
2:00:00	15.3	16.9	16.7
2:15:00	15.2	16.7	16.6
2:30:00	15.2	16.5	16.5
2:45:00	15.2	16.5	16.5
3:00:00	15.2	16.6	16.5
3:15:00	15.1	16.3	16.4
3:30:00	15.0	16.1	16.3
3:45:00	14.9	15.7	16.2
4:00:00	14.8	15.5	16.2
4:15:00	14.8	15.4	16.1
4:30:00	14.7	15.2	16.1
4:45:00	14.7	15.1	16.2
5:00:00	14.7	15.1	17.0
5:15:00	14.7	15.0	16.3
5:30:00	14.6	14.7	16.3
5:45:00	14.5	14.4	16.0
6:00:00	14.4	14.3	15.9
6:15:00	14.4	14.3	15.8
6:30:00	14.3	13.9	15.7
6:45:00	14.4	14.0	15.6
7:00:00	14.4	14.2	15.7
7:15:00	14.6	14.6	15.9
7:30:00	14.8	15.3	16.2
7:45:00	15.0	16.0	16.9
8:00:00	15.1	16.4	17.6
8:15:00	15.3	16.8	18.1
8:30:00	15.5	17.3	19.0
8:45:00	15.8	18.1	20.0
9:00:00	16.0	18.6	20.8
9:15:00	16.2	19.3	21.0
9:30:00	16.4	19.8	21.1
9:45:00	16.7	20.4	21.6
10:00:00	17.0	21.1	22.5
10:15:00	17.4	21.9	23.2
10:30:00	17.5	22.2	23.7
10:45:00	17.9	22.8	24.2
11:00:00	18.2	23.5	24.7
11:15:00	18.4	23.8	24.8
11:30:00	18.7	24.3	25.2
11:45:00	18.9	24.7	25.4
12:00:00	19.2	25.1	25.7
12:15:00	19.4	25.5	25.9
12:30:00	19.8	26.1	26.4
12:45:00	20.2	26.6	27.1
13:00:00	20.3	26.8	27.2
13:15:00	20.4	27.0	27.3
13:30:00	20.4	27.0	27.3
13:45:00	20.7	27.4	27.4
14:00:00	20.8	27.5	27.5
14:15:00	21.0	27.8	27.7
14:30:00	21.1	27.9	27.7
14:45:00	21.1	28.0	27.8
15:00:00	21.2	28.2	27.5
15:15:00	21.3	28.3	27.5
15:30:00	21.4	28.3	27.3
15:45:00	21.2	28.2	26.8
16:00:00	21.2	28.1	26.5
16:15:00	21.0	27.8	26.1
16:30:00	20.9	27.6	25.5
16:45:00	20.7	27.4	25.1
17:00:00	20.5	27.1	24.6
17:15:00	20.4	27.0	24.1
17:30:00	20.2	26.7	23.5
17:45:00	20.0	26.4	22.8
18:00:00	19.8	26.1	22.3
18:15:00	19.6	25.7	21.8
18:30:00	19.4	25.4	21.4
18:45:00	19.2	25.1	21.0
19:00:00	19.0	24.8	20.7
19:15:00	18.8	24.5	20.4
19:30:00	18.7	24.3	20.2
19:45:00	18.4	23.9	20.1
20:00:00	18.3	23.6	20.0
20:15:00	18.2	23.4	19.9
20:30:00	18.0	23.1	19.9
20:45:00	17.8	22.8	20.0
21:00:00	17.7	22.5	20.0
21:15:00	17.6	22.2	19.8
21:30:00	17.4	21.9	19.6
21:45:00	17.3	21.7	19.4
22:00:00	17.1	21.3	19.1
22:15:00	17.0	21.1	19.0
22:30:00	16.9	20.8	18.7
22:45:00	16.8	20.6	18.5
23:00:00	16.7	20.3	18.3
23:15:00	16.5	20.0	18.1
23:30:00	16.4	19.7	17.9
23:45:00	16.3	19.4	17.7
AVGE	17.4	22.0	20.7



August 2019 House C prediction spreadsheet and regression analysis

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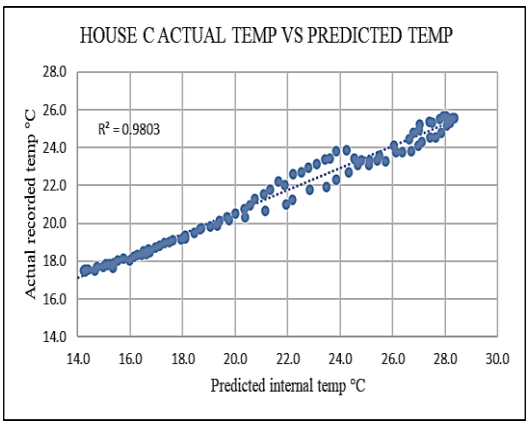
0:30:00	15.9	18.4	19.5
0:45:00	15.8	18.1	19.3
1:00:00	15.7	17.9	19.2
1:15:00	15.6	17.6	19.1
1:30:00	15.5	17.5	19.0
1:45:00	15.4	17.1	18.8
2:00:00	15.3	16.9	18.7
2:15:00	15.2	16.7	18.6
2:30:00	15.2	16.5	18.5
2:45:00	15.2	16.5	18.5
3:00:00	15.2	16.6	18.4
3:15:00	15.1	16.3	18.3
3:30:00	15.0	16.1	18.2
3:45:00	14.9	15.7	18.1
4:00:00	14.8	15.5	18.0
4:15:00	14.8	15.4	17.9
4:30:00	14.7	15.2	17.9
4:45:00	14.7	15.1	17.9
5:00:00	14.7	15.1	17.8
5:15:00	14.7	15.0	17.7
5:30:00	14.6	14.7	17.7
5:45:00	14.5	14.4	17.5
6:00:00	14.4	14.3	17.5
6:15:00	14.4	14.3	17.6
6:30:00	14.3	13.9	17.5
6:45:00	14.4	14.0	17.6
7:00:00	14.4	14.2	17.5
7:15:00	14.6	14.6	17.5
7:30:00	14.8	15.3	17.7
7:45:00	15.0	16.0	18.1
8:00:00	15.1	16.4	18.3
8:15:00	15.3	16.8	18.5
8:30:00	15.5	17.3	19.0
8:45:00	15.8	18.1	19.2
9:00:00	16.0	18.6	19.7
9:15:00	16.2	19.3	19.9
9:30:00	16.4	19.8	20.2
9:45:00	16.7	20.4	20.3
10:00:00	17.0	21.1	20.6
10:15:00	17.4	21.9	21.0
10:30:00	17.5	22.2	21.3
10:45:00	17.9	22.8	21.8
11:00:00	18.2	23.5	21.9
11:15:00	18.4	23.8	22.3
11:30:00	18.7	24.3	22.7
11:45:00	18.9	24.7	23.1
12:00:00	19.2	25.1	23.3
12:15:00	19.4	25.5	23.6
12:30:00	19.8	26.1	24.1
12:45:00	20.2	26.6	24.5
13:00:00	20.3	26.8	24.8
13:15:00	20.4	27.0	24.9
13:30:00	20.4	27.0	25.2
13:45:00	20.7	27.4	25.4
14:00:00	20.8	27.5	25.3
14:15:00	21.0	27.8	25.5
14:30:00	21.1	27.9	25.6
14:45:00	21.1	28.0	25.7
15:00:00	21.2	28.2	25.5
15:15:00	21.3	28.3	25.6
15:30:00	21.4	28.3	25.5
15:45:00	21.2	28.2	25.3
16:00:00	21.2	28.1	25.2
16:15:00	21.0	27.8	24.8
16:30:00	20.9	27.6	24.6
16:45:00	20.7	27.4	24.5
17:00:00	20.5	27.1	24.3
17:15:00	20.4	27.0	24.1
17:30:00	20.2	26.7	23.8
17:45:00	20.0	26.4	23.8
18:00:00	19.8	26.1	23.8
18:15:00	19.6	25.7	23.3
18:30:00	19.4	25.4	23.3
18:45:00	19.2	25.1	23.1
19:00:00	19.0	24.8	23.3
19:15:00	18.8	24.5	23.4
19:30:00	18.7	24.3	23.9
19:45:00	18.4	23.9	23.8
20:00:00	18.3	23.6	23.4
20:15:00	18.2	23.4	23.4
20:30:00	18.0	23.1	23.1
20:45:00	17.8	22.8	22.9
21:00:00	17.7	22.5	22.7
21:15:00	17.6	22.2	22.6
21:30:00	17.4	21.9	22.0
21:45:00	17.3	21.7	22.2
22:00:00	17.1	21.3	21.8
22:15:00	17.0	21.1	21.6
22:30:00	16.9	20.8	21.3
22:45:00	16.8	20.6	21.0
23:00:00	16.7	20.3	20.7
23:15:00	16.5	20.0	20.5
23:30:00	16.4	19.7	20.3
23:45:00	16.3	19.4	20.1
AVGE	17.4	22.0	21.3



October 2019 House D prediction spreadsheet and regression analysis

	HOUSE D PREDICTIONS -		
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0:00:00	16.8	20.7	20.6
0:15:00	16.8	20.6	20.4
0:30:00	16.8	20.5	20.2
0:45:00	16.6	20.3	20.2
1:00:00	16.6	20.2	20.1
1:15:00	16.5	20.0	20.0
1:30:00	16.5	19.9	19.8
1:45:00	16.4	19.7	19.7
2:00:00	16.3	19.5	19.5
2:15:00	16.3	19.5	19.4
2:30:00	16.2	19.3	19.4
2:45:00	16.2	19.3	19.3
3:00:00	16.2	19.2	19.2
3:15:00	16.2	19.1	19.2
3:30:00	16.1	19.0	19.1
3:45:00	16.2	19.1	19.1
4:00:00	16.1	18.9	19.0
4:15:00	16.0	18.8	19.0
4:30:00	16.0	18.8	18.9
4:45:00	16.0	18.7	18.9
5:00:00	16.0	18.7	18.9
5:15:00	15.9	18.6	19.0
5:30:00	15.9	18.4	19.1
5:45:00	15.9	18.4	18.9
6:00:00	15.8	18.1	18.7
6:15:00	15.7	18.0	18.9
6:30:00	15.7	17.9	18.9
6:45:00	15.7	18.0	18.9
7:00:00	15.7	18.0	18.8
7:15:00	15.7	18.0	18.8
7:30:00	15.8	18.3	19.0
7:45:00	16.0	18.8	19.1
8:00:00	16.1	19.0	19.2
8:15:00	16.3	19.4	19.2
8:30:00	16.6	20.1	19.6
8:45:00	16.9	20.8	20.0
9:00:00	17.2	21.5	20.3
9:15:00	17.5	22.1	20.7
9:30:00	17.7	22.5	20.9
9:45:00	17.9	23.0	21.3
10:00:00	18.2	23.4	21.3
10:15:00	18.5	24.0	21.3
10:30:00	18.8	24.5	21.5
10:45:00	19.1	25.0	21.6
11:00:00	19.2	25.2	21.7
11:15:00	19.5	25.6	21.6
11:30:00	19.6	25.7	21.7
11:45:00	19.9	26.2	22.2
12:00:00	20.1	26.5	22.0
12:15:00	20.1	26.6	21.9
12:30:00	20.3	26.8	22.0
12:45:00	20.6	27.2	22.1
13:00:00	20.6	27.3	22.2
13:15:00	20.7	27.4	22.4
13:30:00	20.7	27.5	22.6
13:45:00	20.9	27.8	22.8
14:00:00	21.1	28.0	23.0
14:15:00	21.2	28.1	22.9
14:30:00	21.1	28.0	22.9
14:45:00	21.3	28.3	22.9
15:00:00	21.4	28.5	23.0
15:15:00	21.6	28.6	23.1
15:30:00	21.6	28.6	23.0
15:45:00	21.7	28.8	23.0
16:00:00	21.3	28.3	23.0
16:15:00	21.3	28.3	23.1
16:30:00	21.2	28.2	23.0
16:45:00	21.0	27.9	22.8
17:00:00	20.8	27.6	22.7
17:15:00	20.6	27.3	22.5
17:30:00	20.3	26.8	22.3
17:45:00	20.0	26.4	22.0
18:00:00	19.7	25.9	21.8
18:15:00	19.4	25.4	21.7
18:30:00	19.1	25.0	21.6
18:45:00	18.9	24.6	21.4
19:00:00	18.6	24.2	21.3
19:15:00	18.5	24.0	21.5
19:30:00	18.3	23.6	21.5
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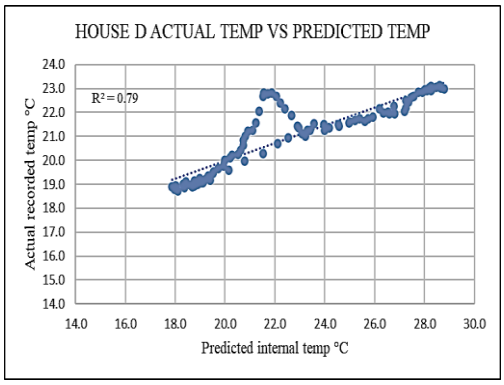
20:00:00	18.0	23.1	21.1
20:15:00	17.9	22.9	21.4
20:30:00	17.8	22.7	21.9
20:45:00	17.6	22.4	22.2
21:00:00	17.5	22.2	22.4
21:15:00	17.5	22.0	22.7
21:30:00	17.4	21.9	22.8
21:45:00	17.3	21.7	22.8
22:00:00	17.2	21.6	22.8
22:15:00	17.2	21.5	22.7
22:30:00	17.1	21.4	22.1
22:45:00	17.1	21.2	21.6
23:00:00	17.0	21.1	21.2
23:15:00	16.9	20.9	21.2
23:30:00	16.9	20.8	21.0
23:45:00	16.8	20.7	20.8
AVGE	18.1	23.2	21.0



October 2019 House E prediction spreadsheet and regression analysis

	HOUSE E PREDICTIONS -		
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0:00:00	16.8	20.7	21.2
0:15:00	16.8	20.6	21.1
0:30:00	16.8	20.5	21.0
0:45:00	16.6	20.3	20.9
1:00:00	16.6	20.2	20.8
1:15:00	16.5	20.0	20.7
1:30:00	16.5	19.9	20.6
1:45:00	16.4	19.7	20.5
2:00:00	16.3	19.5	20.4
2:15:00	16.3	19.5	20.3
2:30:00	16.2	19.3	20.2
2:45:00	16.2	19.3	20.2
3:00:00	16.2	19.2	20.1
3:15:00	16.2	19.1	20.0
3:30:00	16.1	19.0	19.9
3:45:00	16.2	19.1	19.9
4:00:00	16.1	18.9	19.8
4:15:00	16.0	18.8	19.8
4:30:00	16.0	18.8	19.7
4:45:00	16.0	18.7	19.8
5:00:00	16.0	18.7	19.8
5:15:00	15.9	18.6	20.9
5:30:00	15.9	18.4	22.5
5:45:00	15.9	18.4	22.6
6:00:00	15.8	18.1	22.8
6:15:00	15.7	18.0	23.1
6:30:00	15.7	17.9	23.5
6:45:00	15.7	18.0	23.4
7:00:00	15.7	18.0	22.5
7:15:00	15.7	18.0	22.3
7:30:00	15.8	18.3	22.2
7:45:00	16.0	18.8	22.1
8:00:00	16.1	19.0	21.9
8:15:00	16.3	19.4	21.5
8:30:00	16.6	20.1	21.4
8:45:00	16.9	20.8	21.5
9:00:00	17.2	21.5	21.5
9:15:00	17.5	22.1	21.7
9:30:00	17.7	22.5	22.0
9:45:00	17.9	23.0	22.3
10:00:00	18.2	23.4	22.4
10:15:00	18.5	24.0	22.5
10:30:00	18.8	24.5	22.9
10:45:00	19.1	25.0	23.1
11:00:00	19.2	25.2	23.4
11:15:00	19.5	25.6	23.6
11:30:00	19.6	25.7	23.9
11:45:00	19.9	26.2	24.3
12:00:00	20.1	26.5	24.8
12:15:00	20.1	26.6	25.2
12:30:00	20.3	26.8	25.6
12:45:00	20.6	27.2	26.2
13:00:00	20.6	27.3	26.5
13:15:00	20.7	27.4	26.7
13:30:00	20.7	27.5	26.7
13:45:00	20.9	27.8	27.2
14:00:00	21.1	28.0	26.5
14:15:00	21.2	28.1	26.4
14:30:00	21.1	28.0	26.6
14:45:00	21.3	28.3	26.6
15:00:00	21.4	28.5	26.7
15:15:00	21.6	28.6	26.7
15:30:00	21.6	28.6	26.8
15:45:00	21.7	28.8	26.6
16:00:00	21.3	28.3	26.9
16:15:00	21.3	28.3	26.5
16:30:00	21.2	28.2	26.3
16:45:00	21.0	27.9	26.0
17:00:00	20.8	27.6	25.9
17:15:00	20.6	27.3	25.6
17:30:00	20.3	26.8	25.1
17:45:00	20.0	26.4	24.7
18:00:00	19.7	25.9	24.2
18:15:00	19.4	25.4	24.1
18:30:00	19.1	25.0	24.4
18:45:00	18.9	24.6	25.1
19:00:00	18.6	24.2	26.0
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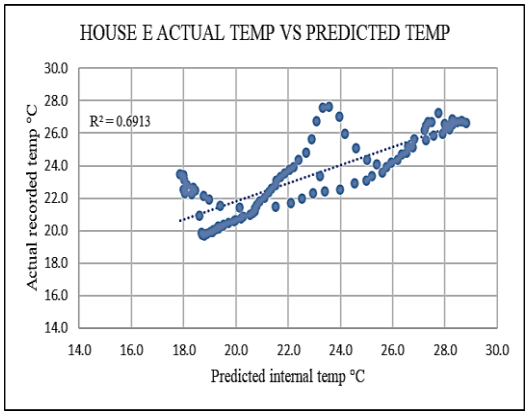
19:30:00	18.3	23.6	27.6
19:45:00	18.1	23.3	27.6
20:00:00	18.0	23.1	26.8
20:15:00	17.9	22.9	25.6
20:30:00	17.8	22.7	24.8
20:45:00	17.6	22.4	24.4
21:00:00	17.5	22.2	23.9
21:15:00	17.5	22.0	23.8
21:30:00	17.4	21.9	23.5
21:45:00	17.3	21.7	23.3
22:00:00	17.2	21.6	23.1
22:15:00	17.2	21.5	22.8
22:30:00	17.1	21.4	22.6
22:45:00	17.1	21.2	22.4
23:00:00	17.0	21.1	22.1
23:15:00	16.9	20.9	21.8
23:30:00	16.9	20.8	21.6
23:45:00	16.8	20.7	21.4
AVGE	18.1	23.2	23.4



Appendix VII: Research Set-up and Research Buildings

(a) Outdoors air temperature and relative humidity data collection

Data logger 1 located under canopy of stone and concrete building

Stone and concrete building canopy was sheltered from direct sunlight

(b) May 2019 data collection House A and House B

Vacant House A on the right side and occupied House B on the left (with curtain)

House A and B are made of unlined sheet metal on timber framing

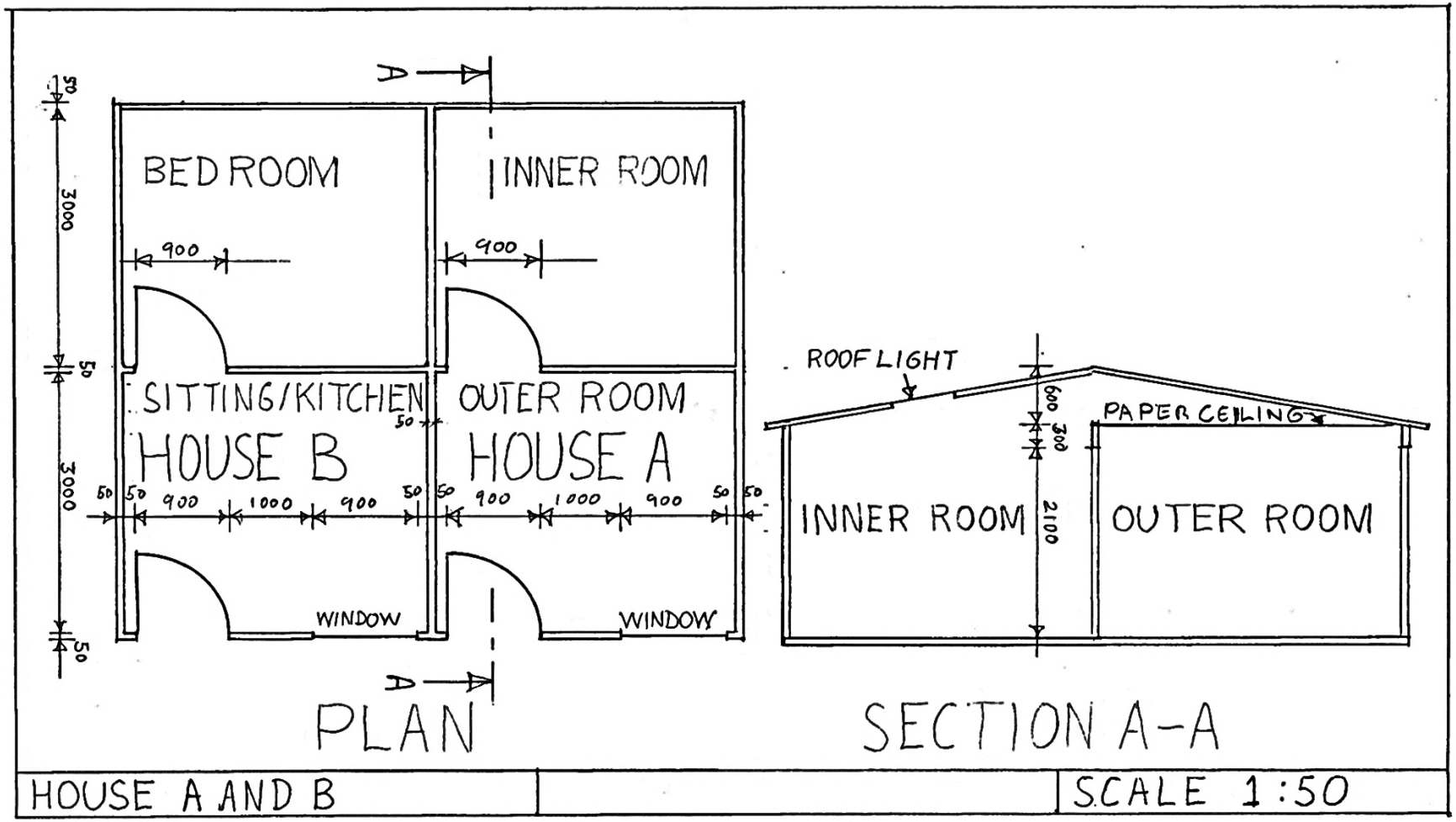
Data logger 2 was set on central partition wall of outer room, House A

Data logger 3 was set on central partition wall in the sitting room area, House B

The gable roof structure as for House A and B as seen from inside house A inner room

The front door and only window of House A as seen from inside

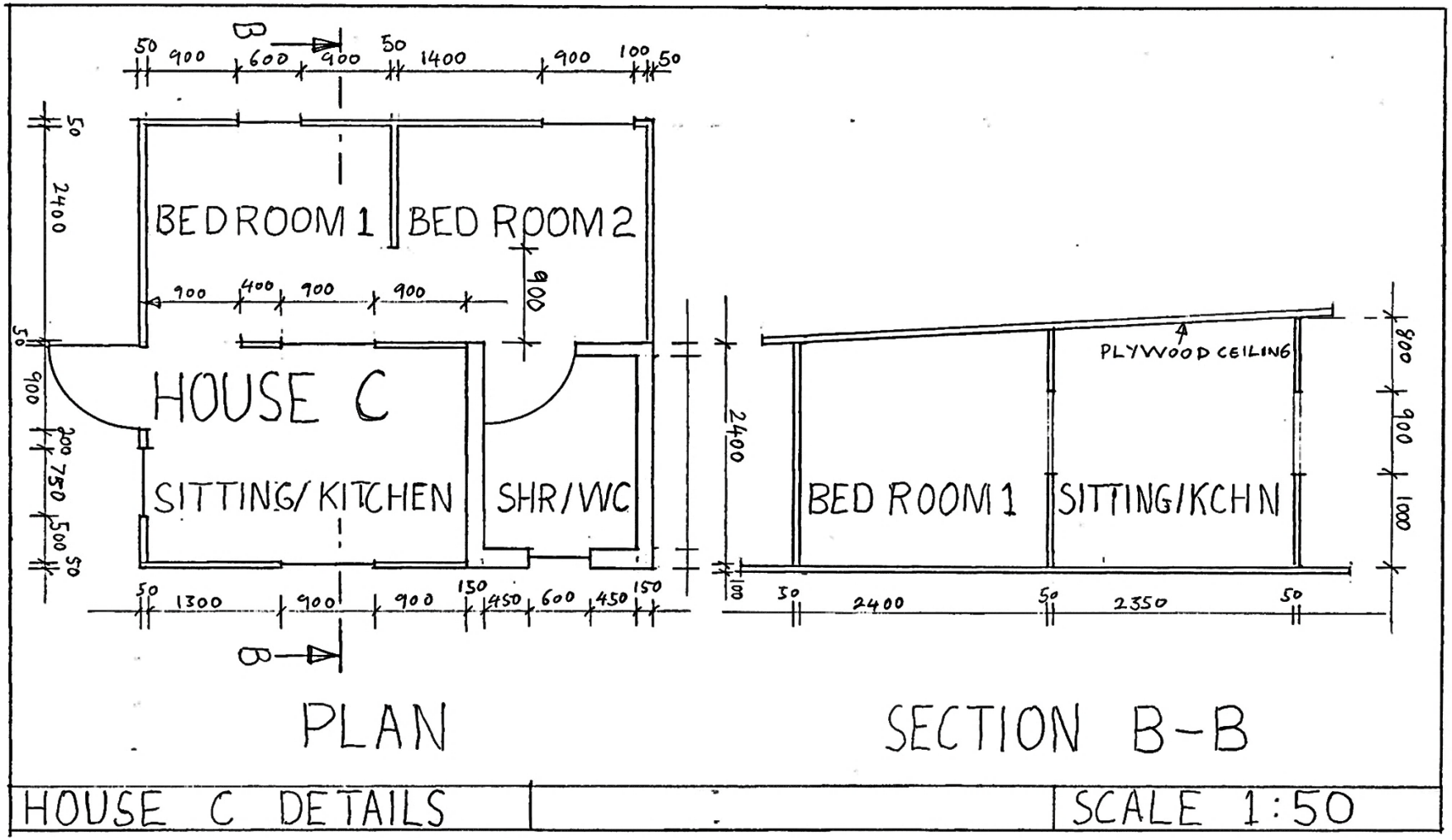
Houses A and B layout plans and section



(c) July and August 2019 data collection House C

House C as seen from its front end.

House C layout plan and section

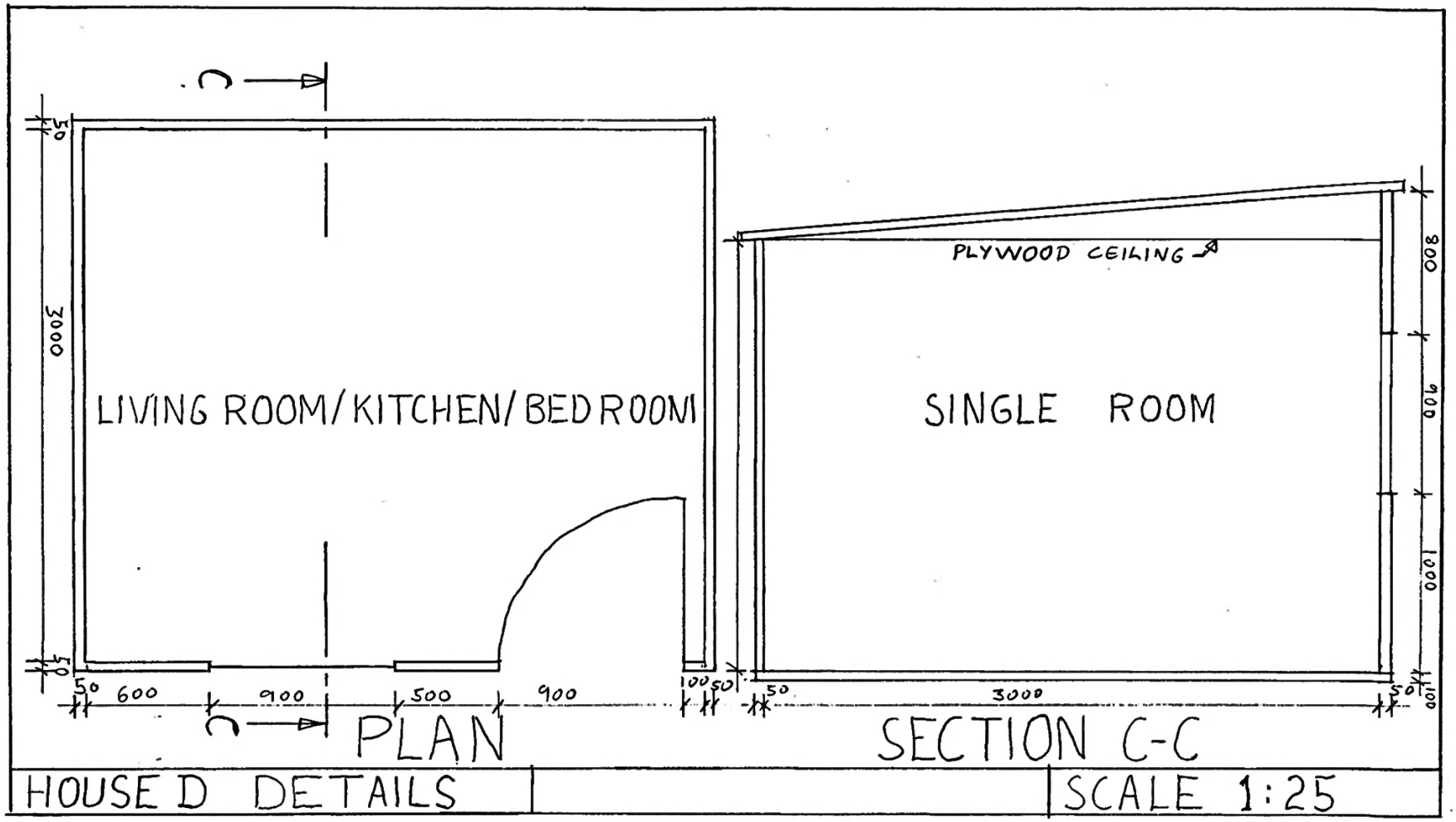


(d) October 2019 data collection House D and House E

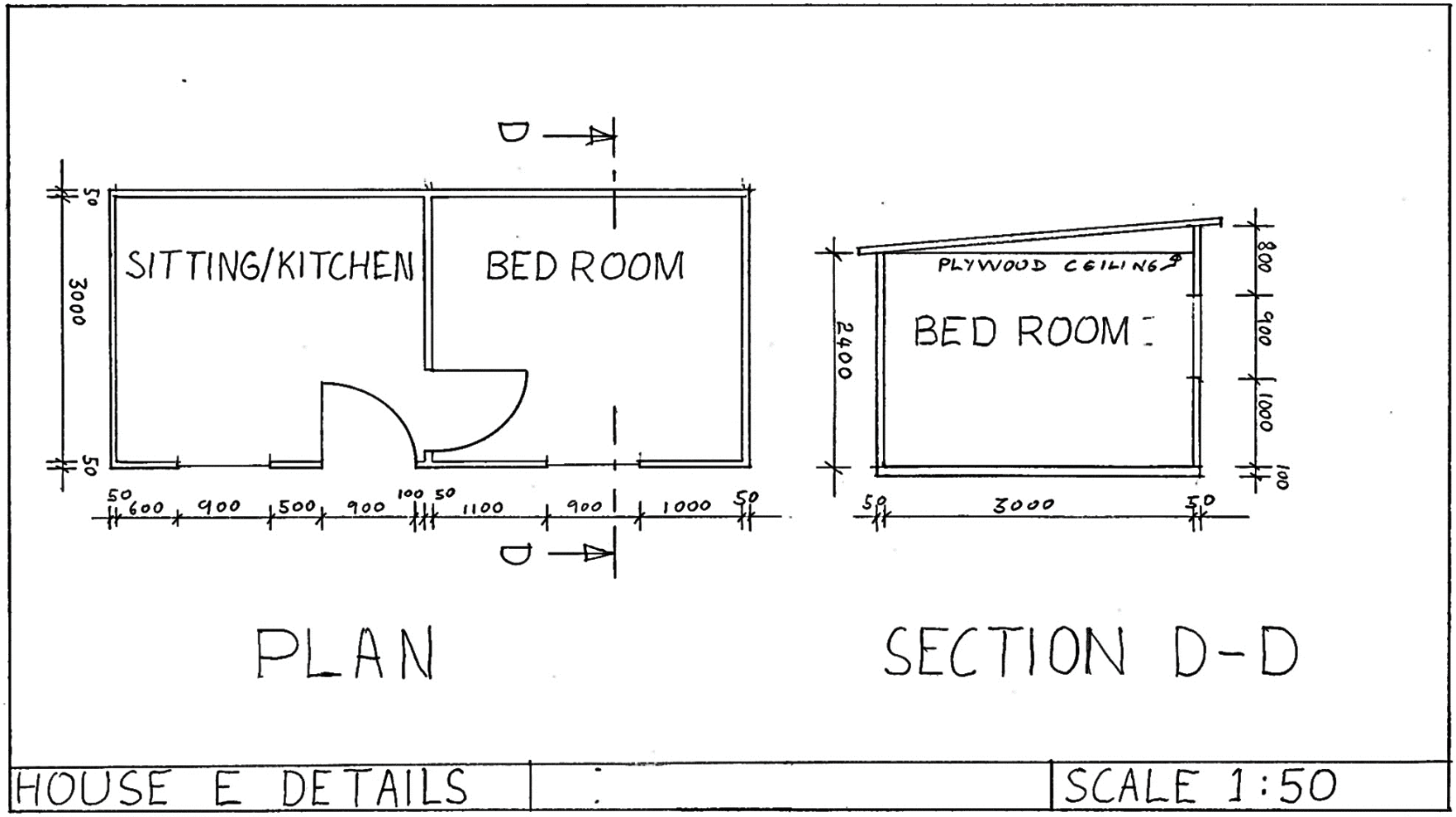
Front of House D

Front of House E (left) and corridor between House D and House E (right)

House D layout plan and section



House E layout plans



Appendix VIII: Research Houses Thermal Transmittance (U) Value Calculations

Thermal resistance R (m^2K/W)

R_{si} Internal surface layer of air = 0.123

R_{so} External surface layer of air = 0.053

R_a Air space in lined walls = 0.180

Thermal conductivities k (W/mK)

32 gauge (0.202 mm) galvanized iron sheet = 71.80

3 mm plywood = 0.130

Thermal resistance (R = L/k) for galvanized iron sheet and plywood.

R_{steel} = 0.000202/ 71.8 = 2.81×10^{-6} m^2K/W

$R_{plywood}$ = 0.003/ 0.13 = 23.08×10^{-3} m^2K/W

$$U = \frac{1}{R_{si} + R_{so} + \frac{L_1}{k_1} + \frac{L_2}{k_2} + R_a} \text{ (W/m}^2\text{K)}$$

Table of calculated U values of the case study houses.

	R_{si} (m^2K/W)	R_{so} (m^2K/W)	R_{steel} (m^2K/W)	$R_{plywood}$ (m^2K/W)	R_a (m^2K/W)	U (W/m^2K)
Unlined wall	0.123	0.053	2.81×10^{-6}	0	0	**5.68**
Lined wall	0.123	0.053	2.81×10^{-6}	23.08×10^{-3}	0.180	**2.64**

(a) R value of thermal insulation for unlined buildings required to achieve the recommended U value (0.700 W/m^2K) for buildings in Nairobi is = 1.253 W/m^2K ∴ U = 0.80 W/m^2K

(b) R value of thermal insulation for lined buildings required to achieve the recommended U value (0.700 W/m^2K) for buildings in Nairobi is = 1.229 W/m^2K ∴ U = 0.81 W/m^2K.

Appendix IX: Mechanistic Model Prediction Calculations

STEP 1:

$$Q'_s = SI'A_g$$

Where: Q'_s = mean solar gain (W)

I' = mean solar intensity (W/m^2)

S = solar gain factor

A_g = sunlit area of glazing

I = 123.61 W/m^2

S = 0.46

A_g = $1m^2$

For houses B, C, D & E; Q'_s= 56.86 W

Mean casual heat gains;

$$Q'_c = \frac{(q_{c1} \times t_{1)} + (q_{c2} \times t_2)}{24}$$

Where: Q'_c = mean casual gain (W)

q_{c1} & q_{c2} = instantaneous casual gains

t1 & t2 = duration of individual casual gains in hours

Table of q value calculations.

	House B & C	**House D**	**House E**
q_{c1} (people)	115 × 4= 460 W	115 × 2 = 230 W	115 × 3 = 345 W
q_{c2} (bulb)	11 W	11 W	11 W
q_{c3} (gas stove)	12000BTUs ×0.293 = 3516 W	3516 W	3516 W

t_1 = 5 hrs., t_2 = 5 hrs. and t_3 = 2 hrs.

House B & C, Q'_c = 391.13 W

House D, Q'_c = 343.21 W

House E, Q'_c = 367.17 W

House B & C, Q_t = 56.86 + 391.13 = 448.00 W

House D, Q_t = 56.86 + 343.21 = 400.07 W

House E, Q_t = 56.86 + 367.17 = 424.03 W

STEP 2:

Mean internal environmental temperature whereby the window is open during the day and closed at night (N = 3); window closed all day N= 0.5.

Ventilation loss C_v = 0.33 Nv

Where: N = rate of air change per hour

v = volume of room (m^3)

House B, C & E, C_v = 22.28 W

House D, C_v = 3.71 W

Fabric Loss: U value window = 5.60 W/m^2°C

U value walls House. B = 5.68 W/m^2°C

U value walls House C, D & E = 2.64 W/m^2°C

House B, ΣAU = 5.7 (1×1) + 5.68 ((6×2.5) - 1) = 85.22 W

House C, D & E ΣAU = 5.7 (1×1) + 2.64 ((6×2.5) - 1) = 93.96 W

Mean indoor environmental temperature is given as below:

Q'_t = (ΣAU + Cv) ($t'_{ei} - t'_{ao}$)

Where: ΣAU = sum of products of areas of exposed surfaces and their U values (W/°C)

C_v = ventilation loss

t'_{ei} = mean internal environmental temperature °C

t'_{ao} = mean outdoor temperature

The daily mean temperature for August 2019 and October 2019 was 17.4 °C and 18.1 °C respectively.

House B, 448.00 = (85.22 + 22.28) (t'_{ei} – 17.4)

∴ t'_{ei} = **21.6 °C**

House C, 448.00 = (93.96 + 22.28) (t'_{ei} – 17.4)

$\therefore$ t'_{ei} = **21.3 °C**

House D, 400.07 = (93.96 + 3.71) (t'_{ei} – 18.1)

$\therefore$ t'_{ei} = **22.2 °C**

House E, 424.03 = (93.96 + 22.28) (t'_{ei} – 18.1)

$\therefore$ t'_{ei} = **21.8 °C**

STEP 3:

Swing (mean to peak) in heat gain. Solar heat was found from the following equation:

$$\widetilde{Q_s} = S_a A_g (I_p - I')$$

Where: $\widetilde{Q_s}$ = swing in effective heat gain due to solar radiation (W)

S_a = alternative solar gain factor

I_p = peak intensity of solar radiation

Peak hour is 15.00 allowing for a ½ hour time lag, so peak intensity is at 14.30.

House B, C, D & E glass $\widetilde{Q_s}$ = 0.42 ×1 × 1 (578 - 123.61) = 190.84 W

Structural gain: $\widetilde{Q_f} = fAU(t_{eo} - t_{eo}')$

Where: $\widetilde{Q_f}$ = swing in effective heat input due to structural gain (w)

ϕ = time lag in hours

f = decrement factor

t_{eo} = sol-air temperature at time of peak hours less time lag (°C)

t_{eo}' = mean sol-air temperature (°C)

Taking time lag of ½ hour and decrement factor of 1.0 (see table 2.3)

House B $\widetilde{Q_f}$ =1.0 × 5.68 × 23 (28.1 – 23.7) = 570.77 W

House C, D & E $\widetilde{Q_f}$ =1.0 × 2.64 × 23 (28.1 – 23.7) = 267.17 W

Casual gain:

House B, Q_c = (4 × 115) – (448 + 570.77) = - 558.77 W

House C, Q_c = (4 × 115) – (448 + 267.17) = - 255.17 W

House D, Q_c = (2 × 115) – (400 + 267.17) = - 437.17 W

House E, Q_c = (3 × 115) – (424 + 267.17) = - 346.17 W

Gain air to air: $\widetilde{Q_a} = (\Sigma A_g U_g + C_v) t_{ao}$

Where: $\widetilde{Q_a}$ = swing in effective heat input due to swing in outside temperature in (W)

$\Sigma A_g U_g$ = sum of products of areas of exposed glazing and their U values (W/°C)

t_{ao} = swing in outside air temperature (°C)

House B, C & E, $\widetilde{Q_a}$ = ((1 × 1 × 5.7) + 22.28) 6.5 = 181.87 W

House D $\widetilde{Q_a}$ = ((1 × 1 × 5.7) + 3.71) 6.5 = 61.17 W

House B, $\widetilde{Q_t}$ = 190.84 + 570.77 - 558.00 + 181.87 = 385.48 W

House C, $\widetilde{Q_t}$ = 190.84 + 267.17 - 255.17 + 181.87 = 384.71 W

House D, $\widetilde{Q_t}$ = 190.84 + 267.17 - 437.17 + 61.17 = 82.01 W

House E, $\widetilde{Q_t}$ = 190.84 + 267.17 - 346.17 + 181.87 = 293.71 W

STEP 4:

Swing (mean-to-peak) in indoor environmental temperature.

	House B	**House C**	**House D**	**House E**
Floor	AY = 9×5.60 = 50.40	50.40	50.40	50.40
Ceiling	AY = 9×2.64 = 23.76	23.76	23.76	23.76
Window	AY = 1×5.70 = 5.70	5.70	5.70	5.70
Outside wall	AY = 14×5.68=79.52	36.96	36.96	36.96
Partitions	AY = 15×5.68=85.20	19.80	39.60	39.60
		32.25		
ΣAY	244.58	168.87	156.42	156.42

$\widetilde{Q_t}$ = $(\Sigma AY + Cv)\ t_{ei}$

House B, 385.48 = (244.58 + 22.28) t_{ei} ∴ t_{ei} = 1.44 °C

House C, 384.71 = (168.87 + 22.28) t_{ei} ∴ t_{ei} = 2.01 °C

House D, 82.01 = (156.42 + 22.28) t_{ei} ∴ t_{ei} = 0.46 °C

House E, 293.71 = (156.42 + 22.28) t_{ei} ∴ t_{ei} = 1.64 °C

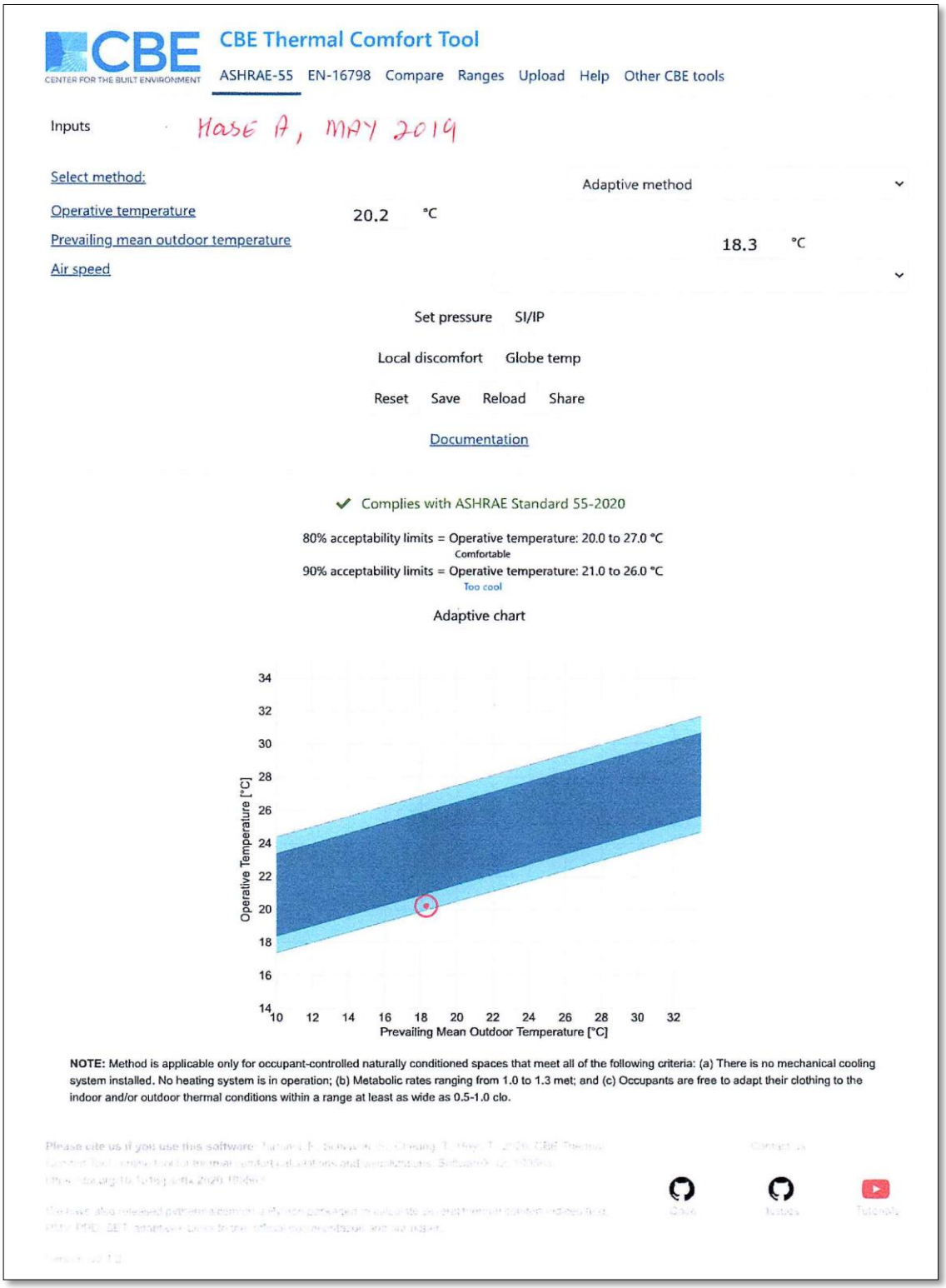
STEP 5:

Peak internal environmental temperature:

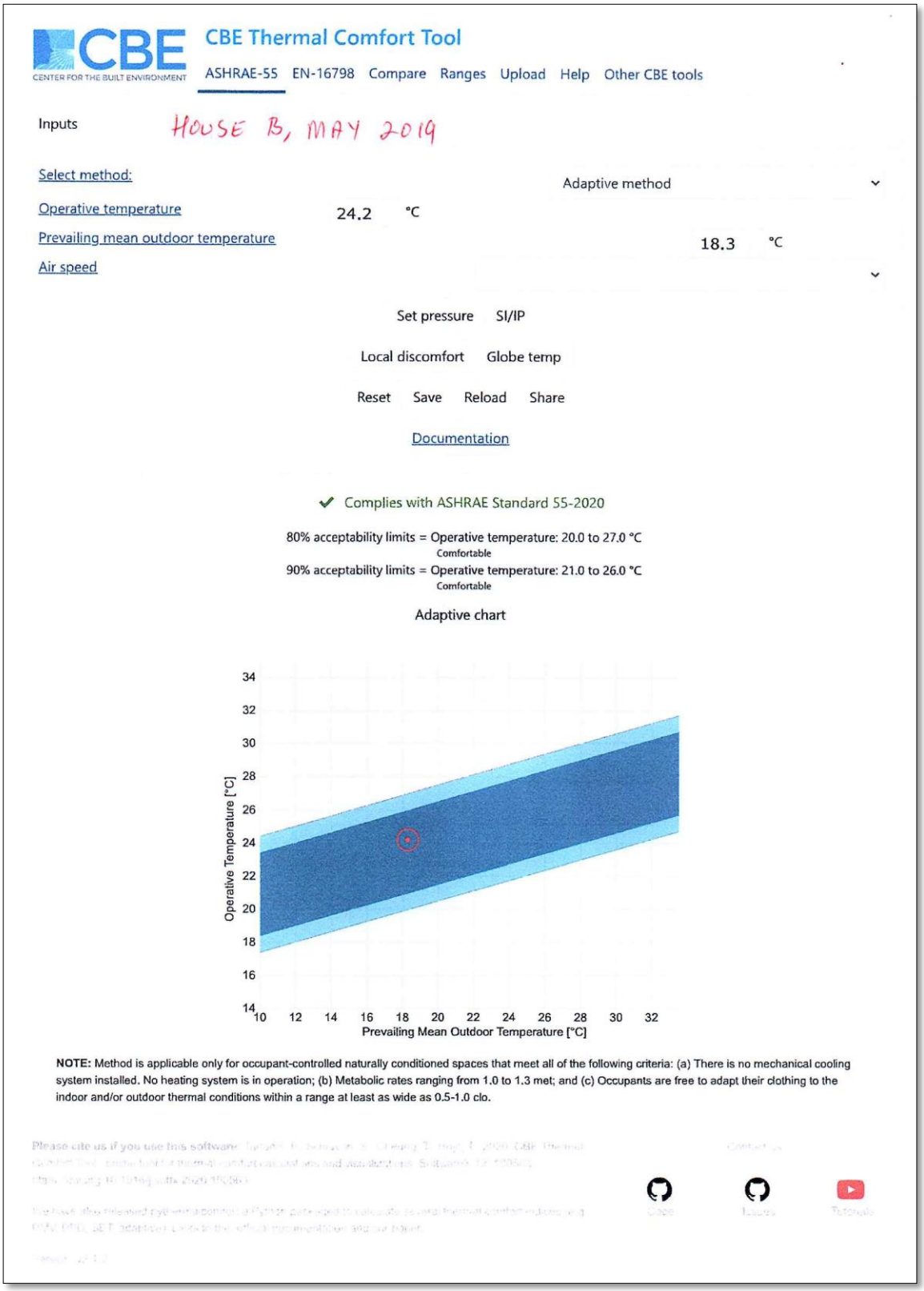
	t_{ei}''	=	$t_{ei}' + t_{ei}$		
House B,	t_{ei}''	=	21.6 + 1.4	=	**23.0 °C**
House C,	t_{ei}''	=	21.3 + 2.0	=	**23.3 °C**
House D,	t_{ei}''	=	22.2 + 0.5	=	**22.7 °C**
House E,	t_{ei}''	=	21.8 + 1.6	=	**23.4 °C**

Appendix X: CBE Thermal Comfort Tool Online Results

House A, May 2019



House B, May 2019



House B, July 2019

CBE Thermal Comfort Tool

CENTER FOR THE BUILT ENVIRONMENT

ASHRAE-55 EN-16798 Compare Ranges Upload Help Other CBE tools

Inputs HOUSE B, JULY 2019

Select method: Adaptive method

Operative temperature 22.5 °C

Prevailing mean outdoor temperature 18.1 °C

Air speed

Set pressure SI/IP

Local discomfort Globe temp

Reset Save Reload Share

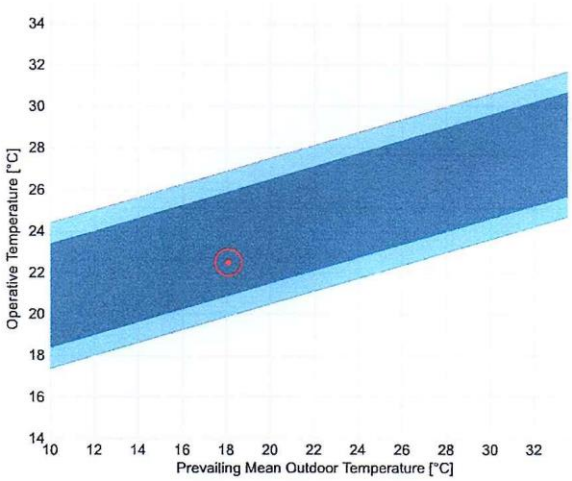
Documentation

✔ Complies with ASHRAE Standard 55-2020

80% acceptability limits = Operative temperature: 19.9 to 26.9 °C
Comfortable

90% acceptability limits = Operative temperature: 20.9 to 25.9 °C
Comfortable

Adaptive chart



NOTE: Method is applicable only for occupant-controlled naturally conditioned spaces that meet all of the following criteria: (a) There is no mechanical cooling system installed. No heating system is in operation; (b) Metabolic rates ranging from 1.0 to 1.3 met; and (c) Occupants are free to adapt their clothing to the indoor and/or outdoor thermal conditions within a range at least as wide as 0.5-1.0 clo.

House C, July 2019

CBE Thermal Comfort Tool

CENTER FOR THE BUILT ENVIRONMENT

ASHRAE-55 EN-16798 Compare Ranges Upload Help Other CBE tools

Inputs HOUSE C, JULY 2019

Select method: Adaptive method

Operative temperature 23.6 °C

Prevailing mean outdoor temperature 18.1 °C

Air speed

Set pressure SI/IP

Local discomfort Globe temp

Reset Save Reload Share

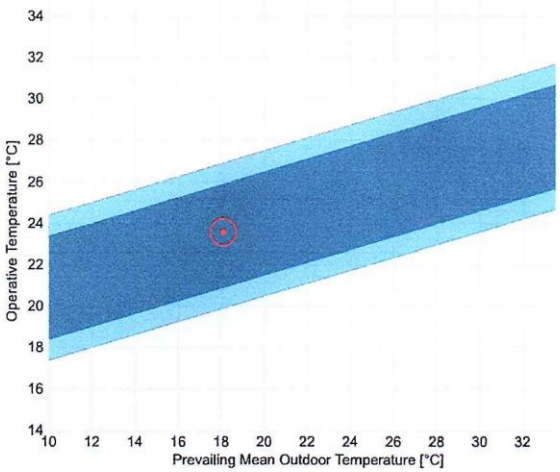
Documentation

✔ Complies with ASHRAE Standard 55-2020

80% acceptability limits = Operative temperature: 19.9 to 26.9 °C
Comfortable

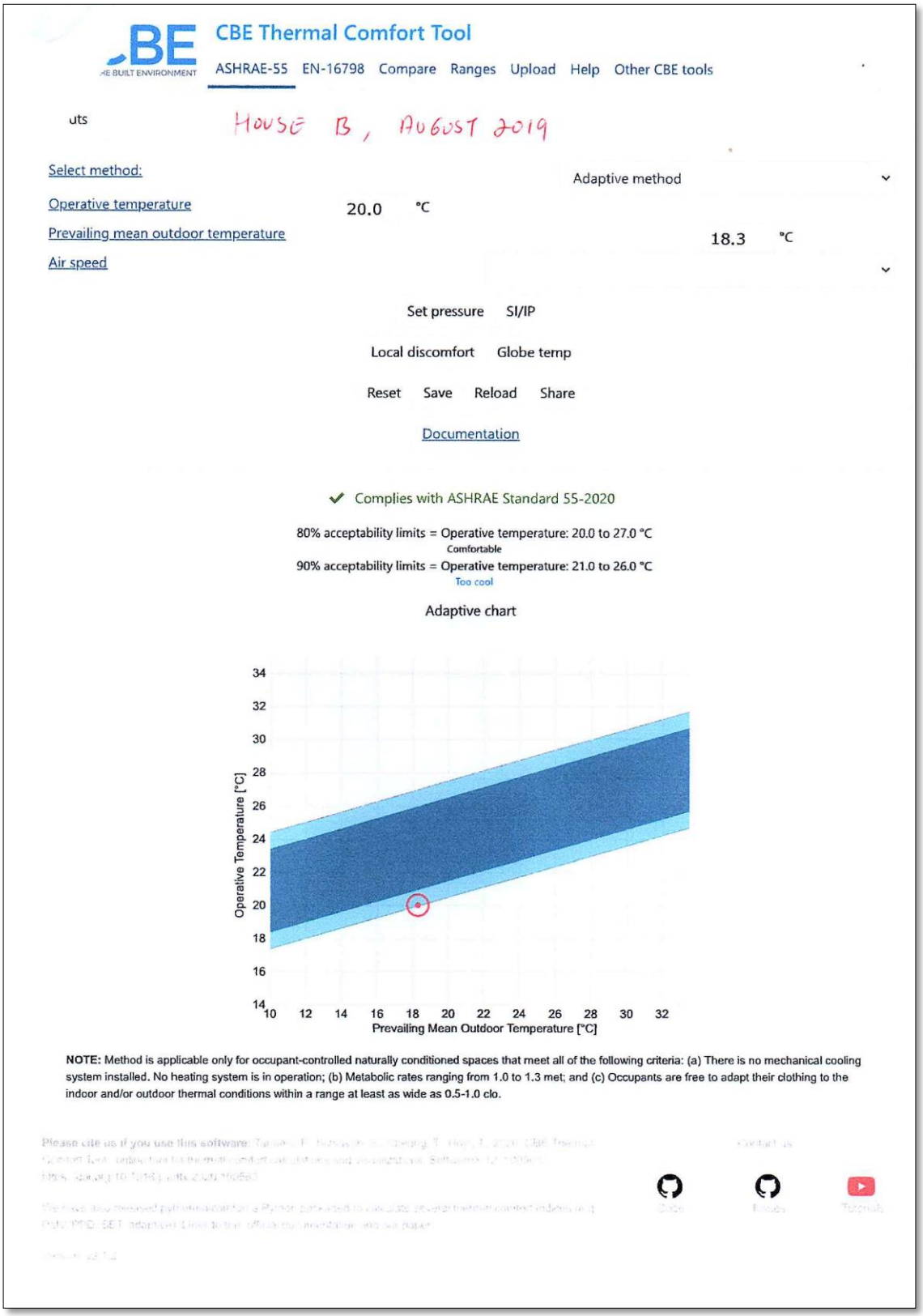
90% acceptability limits = Operative temperature: 20.9 to 25.9 °C
Comfortable

Adaptive chart



NOTE: Method is applicable only for occupant-controlled naturally conditioned spaces that meet all of the following criteria: (a) There is no mechanical cooling system installed. No heating system is in operation; (b) Metabolic rates ranging from 1.0 to 1.3 met; and (c) Occupants are free to adapt their clothing to the indoor and/or outdoor thermal conditions within a range at least as wide as 0.5-1.0 clo.

House B, August 2019



House C, August 2019

CBE Thermal Comfort Tool

CENTER FOR THE BUILT ENVIRONMENT

ASHRAE-55 EN-16798 Compare Ranges Upload Help Other CBE tools

Inputs HOUSE C, AUGUST 2019

Select method: Adaptive method

Operative temperature 23.4 °C

Prevailing mean outdoor temperature 18.3 °C

Air speed

Set pressure SI/IP

Local discomfort Globe temp

Reset Save Reload Share

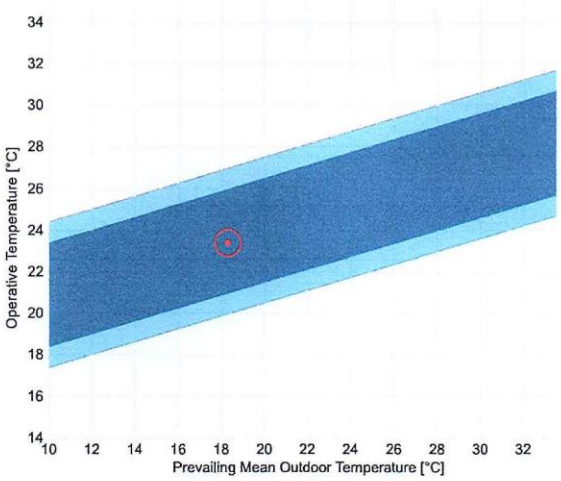
Documentation

✔ Complies with ASHRAE Standard 55-2020

80% acceptability limits = Operative temperature: 20.0 to 27.0 °C
Comfortable

90% acceptability limits = Operative temperature: 21.0 to 26.0 °C
Comfortable

Adaptive chart



NOTE: Method is applicable only for occupant-controlled naturally conditioned spaces that meet all of the following criteria: (a) There is no mechanical cooling system installed. No heating system is in operation; (b) Metabolic rates ranging from 1.0 to 1.3 met; and (c) Occupants are free to adapt their clothing to the indoor and/or outdoor thermal conditions within a range at least as wide as 0.5-1.0 clo.

House D, October 2019

CBE Thermal Comfort Tool

CENTER FOR THE BUILT ENVIRONMENT

ASHRAE-55 EN-16798 Compare Ranges Upload Help Other CBE tools

Inputs HOUSE D , OCTOBER 2019

Select method: Adaptive method

Operative temperature 21.1 °C

Prevailing mean outdoor temperature 18.0 °C

Air speed

Set pressure SI/IP

Local discomfort Globe temp

Reset Save Reload Share

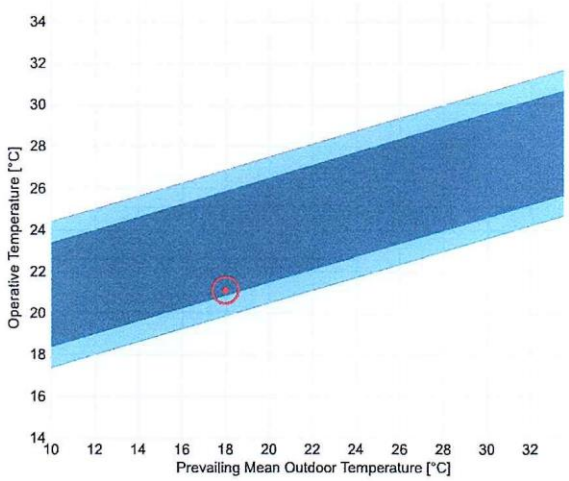
Documentation

✔ Complies with ASHRAE Standard 55-2020

80% acceptability limits = Operative temperature: 19.9 to 26.9 °C
Comfortable

90% acceptability limits = Operative temperature: 20.9 to 25.9 °C
Comfortable

Adaptive chart



NOTE: Method is applicable only for occupant-controlled naturally conditioned spaces that meet all of the following criteria: (a) There is no mechanical cooling system installed. No heating system is in operation; (b) Metabolic rates ranging from 1.0 to 1.3 met; and (c) Occupants are free to adapt their clothing to the indoor and/or outdoor thermal conditions within a range at least as wide as 0.5-1.0 clo.

House E, October 2019

CBE Thermal Comfort Tool

CENTER FOR THE BUILT ENVIRONMENT

ASHRAE-55 EN-16798 Compare Ranges Upload Help Other CBE tools

Inputs HOUSE E, OCTOBER 2019

Select method: Adaptive method

Operative temperature 26.8 °C

Prevailing mean outdoor temperature 18.0 °C

Air speed

Set pressure SI/IP

Local discomfort Globe temp

Reset Save Reload Share

Documentation

✔ Complies with ASHRAE Standard 55-2020

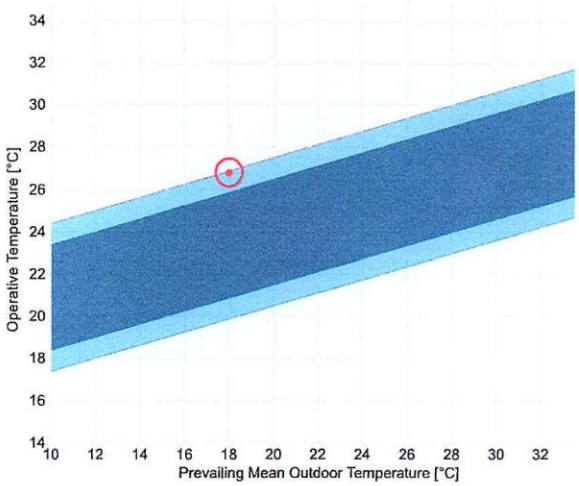
80% acceptability limits = Operative temperature: 19.9 to 26.9 °C

Comfortable

90% acceptability limits = Operative temperature: 20.9 to 25.9 °C

Too warm

Adaptive chart



NOTE: Method is applicable only for occupant-controlled naturally conditioned spaces that meet all of the following criteria: (a) There is no mechanical cooling system installed. No heating system is in operation; (b) Metabolic rates ranging from 1.0 to 1.3 met; and (c) Occupants are free to adapt their clothing to the indoor and/or outdoor thermal conditions within a range at least as wide as 0.5-1.0 clo.