EiABC

Ethiopian Institute of Architecture,
Building Construction and City Development
Addis Ababa University

Potential of Cemetery for Microclimate Regulation;

The case of Kechene Medhanealem Cemetery

A Thesis Submitted to The School of Graduate Studies of Addis Ababa University in Partial Fulfilment for the Master of Science in Landscape Architecture

By

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DECLARATION I

I, undersigned, declare that this thesis is my own and original work and has not been presented for a degree in any other university, and that all sources of material used for the thesis have been appropriately recognized, following the scientific guidelines of the institute.

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CONFIRMATION

This thesis was submitted for examination with my approval as an advisor.

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Signature _____

DECLARATION II

This thesis is submitted to the Ethiopian institute of Architecture, Building Construction and City Development (EiABC) and to the School of Graduate Studies of Addis Ababa University in the Partial fulfillment of the requirements for the degree of Masters of Science in Landscape Architecture.

Title of the Thesis:

Potential of Cemetery for Microclimate Regulation;

The case of Kechene Medhanealem Cemetery

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ABSTRACT

Cities in developing countries like Ethiopia are prone to impacts of urban heat island effect. It is well established that increasing the amount of urban green space help to cool down local climates on a different scale. Like other tree dominated habitats, existing cemeteries may provide various social and environmental services. This study aims to assess the prospect of integrating a green cemetery design approach into Kechene Medhanealem cemetery to accommodate microclimate regulation service, simultaneously add value to the benefits usually expected from parks and urban green spaces. The study follows four methodological steps; microclimate regulation capacity assessment using temperature and humidity record, and user perception analysis on thermal comfort; secondly, the existing situation is analyzed then, third case study analysis; and finally, evaluate future usability of the site as urban green space. The results showed maximizing canopy cover, ensuring permeable surface covers and modifying the spatial experience of Kechene Medhanealem cemetery, may help for the provision of microclimate regulation and recreational services for the society. Research findings can be used to other municipal cemeteries in the city then, the cumulative effect of forming green cemeteries in Addis Ababa can significantly help the efforts made to regulate urban heat island effect and serve as a replacement for lost green spaces in the city.

Keywords: *Microclimate, cemetery, urban Green Space, urban heat island, green cemetery, thermal comfort, Addis Ababa*

LIST OF ACRONYMS

NASA	National Aeronautics and Space Administration
UHI	Urban Heat Island
UNECE	United Nations Economic Commission for Europe
CED	Cooling Effect Distance
CEI	Cooling Effect Intensity
LST	Land Surface Temperature
UGS	Urban Green Space
NGO	Non-Governmental Organization
ASHIRE	American Society of Heating, Refrigerating, and Air-Conditioning Engineers
LCLU	Land Cover and Land Use
LDP	Land Development Plan
AACBPCDAA	Addis Ababa City Beautification, Parks, Cemetery Development and Administration Agency
NMA	National Metrological Agency

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CHAPTER 1 INTRODUCTION

1-1 BACKGROUND

In most urban areas the temperature at the city center is noted to be higher than its surrounding area. In ecology, this phenomenon is called Urban Heat Island (UHI) effect (Nuruzzaman, 2015). As a result of the microclimate created by an increase in temperature and humidity in cities, people living in urban areas feel uncomfortable with the surrounding thermal environment (Nuruzzaman, 2015). According (Feyisa et al., 2014) the increase in temperature on urban areas causes more illness as well as death caused by heat stress, and more energy required to cool the buildings to provide comfort for the people which end up affecting the economy. To cope with this inevitable environmental situation, cities need to develop adaptation mechanisms (Cortekar et al., 2016).

Studies suggest, increasing the amount of vegetation as one of the most effective strategies to mitigate the effect of urban microclimate (Nuruzzaman, 2015). Besides, urban vegetation, parks and trees are very well known for their contribution to improving thermal comfort (Escobedo et al.,2010), reduce air pollution (Tallis et al., 2011), improve quality of life and enhance human well-being (Dallimer et al., 2012). Urban vegetation can also have an important role to cool the local environment (Feyisa et al., 2014). Furthermore, other studies state that an urban green space would be 1^0C cooler than a non-green area (Bowler et al., 2010).

According to Clayden et al., 2017 introducing a natural burial practice, which promotes for reduced mowing and increased woodland cover allows cemeteries make a more substantive contribution to delivering a range of regulatory ecosystem service that help to mitigate the effects of urban heat islands, flooding, poor air quality and loss of biodiversity. Moreover, like other tree dominated habitats cemeteries may provide significant ecosystem services, including regulating service like climate and stormwater regulation as well as cultural ecosystem services related to recreation, wellbeing and health (Haase et al., 2014; Shanahan et al., 2015)

Despite the high level of vegetation cover and often being some of the best-preserved green space in modern cities, urban cemeteries are often omitted from the green space narration (Quinton & Duinker, 2018). “Given the relatively small areas of green space in many cities, it is important to appropriately manage these landscapes to ensure that residents can access green spaces and enjoy the many benefits they offer” (Quinton & Duinker, 2018). The study and management of cemeteries as urban green space may enhance the ability of cemeteries to

provide valuable ecosystem services and promote public access to cemeteries as other urban green spaces (Quinton & Duinker, 2018).

1-2 PROBLEM STATEMENT

The use of urban vegetation for microclimate regulation has been broadly studied and put into work in various part of the world (Lin & Lin, 2010; Oliveira et al., 2011; Aram et al., 2019), the application of this practice in some developing countries is poor. The need to cope with rapid urbanization in developing countries compelled the system to prioritize economic growth. And ended up creating more built infrastructures at the cost of green spaces. However, in cities, there are open spaces which are not parks but are not built either such as cemeteries, streetscape and river banks which may add value to the benefits that are usually expected from parks and urban green areas.

According to Gebremeskel, 2014, over the period of 28 years (from 1986 to 2014 G.C) the green space coverage of Addis Ababa had shrunk by 1621.69 ha and as a result, the city is suffering from microclimate imbalance. Within the context of a shortage of land and over sprout of settlements in Addis Ababa, cemeteries occupy a large plot of land mostly providing burial service for the society. If managed properly these cemeteries may provide multiple social and environmental benefits. But according to Alemayehu, 2014 most cemeteries in Addis Ababa are neglected and sacred places of the city. Therefore, this research aims to study the use of Kechene Medhanealem cemetery for microclimate regulation as a replacement for lost green spaces in cities.

1-3 OBJECTIVE

1-3-1 General Objective

The main objective of this study is to assess whether Kechene Medhanealem cemetery can regulate local microclimate and add value to the provision of recreational service for the community.

1-3-2 Specific Objective

- Evaluate users thermal comfort level inside the study site.
- Compare the local microclimate inside the study site with the immediate surrounding area.
- Evaluate future usability of the study site.

- Analyze physical environment of the study site and evaluate if it encompasses physical characters that enable the site to deliver microclimate regulation service.
- Develop a design test showing possible landscape design solutions that can enable cemeteries to provide microclimate regulation and recreational service.

1-4 RESEARCH QUESTIONS

- Do people feel cooler within the study site, than the immediate surrounding area?
- Is the temperature and humidity inside the study site lower than the immediate surrounding area?
- Will people living around the study site be willing to use cemeteries as green spaces?
- Does the study site encompass characters that can enable the site to deliver microclimate regulation service?
- How can landscape design solution enable cemeteries to provide microclimate regulation and recreational service for the community?

1-5 SCOPE AND LIMITATION OF THE STUDY

This thesis focuses on the study of microclimate regulation and recreational service provision by urban cemeteries. Focus area of the study is Kechene Medhanealem cemetery in Addis Ababa. Due to time and money constraints, the study area is limited to Kechene Medhanealem cemetery but the recommendation and design ideas can be applied to other similar cemeteries in the city. The main limitation to undertake this study was to find well documented secondary data regarding climate records in Addis Ababa.

1-6 SIGNIFICANCE OF THE STUDY

The drop in the number of green spaces is creating environmental degradation and microclimate imbalance which will, in turn, lessen the quality of life in urban areas. As part of cities green spaces, cemeteries occupy a substantial amount of land in Addis Ababa which end up being neglected and abounded part of the city. Therefore, exploring alternative cemetery landscape planning and design solution which promote the provision of environmentally friendly places will seamlessly integrate social and ecological need of the community.

So, this study will evoke governmental and individual body interest to reevaluate the use of existing green spaces of the city for climate regulation. Besides, this study will enable urban

planners and urban ecologists to take action in promoting multifunctional land uses that can contribute to creating a climate-resilient city.

CHAPTER 2 LITERATURE REVIEW

2-1 URBAN MICROCLIMATE

The term microclimate is defined as a phenomenon where certain areas has a different atmosphere from their surroundings. This metamorphosis in atmospheric character can be a slight variation but sometimes it can be a significant atmospheric difference which influence people experience in a certain place. For instance, a city creates its own climatic pattern different from the surrounding rural area which is called urban microclimate. The larger the urban area, the more significant the effect will be.

> *"Perhaps the most well-known example is the urban heat island effect, in which cities are typically several degrees warmer than their surroundings due to large expanses of absorptive, massive materials which trap and reradiate solar radiation. Though the urban heat island is typically inadvertent and detrimental, microclimates can also be created intentionally to make the climate of an area more comfortable for humans"*
> (Spirn, 2013).

Based on the above theoretical framework urban microclimate in this research concentrates on the increases in urban temperature as well as its consequence on city dwellers, which is indicated as urban heat island effect that could cause inevitable heat stress and related health problems. Formation of Urban Microclimate

Urban areas mostly tend to have distinct set of climatic characteristics that is different from the surrounding rural area. The urban area modifies the climate in several ways; the largest the area the greater the modification will be. Though there are various reasons for the formation of urban microclimate, urbanization process, which alters land use/land cover character of the built environment and climatic factors such as change in temperature, rainfall and wind speed are a significant contributor for the formation of urban microclimate (Shahmohamadi & Abdullah, 2005). Changes of land cover will relatively change surface properties, like heat capacity, heat conductivity, albedo, roughness length and so on which will directly affect thermal character of the area. Adding to the change in climate, the change in land cover due to urbanization creates heat stress in cities creating UHI effect, which is the most obvious climatic manifestation of urbanization (Shahmohamadi & Abdullah, 2005).

As it is illustrated on Figure 2-1 there are various physical and environmental factors contributing to the process of urban microclimate formation which mostly ended up creating UHI effect. According to Nuruzzaman, 2015, when a significant amount of park land or green space are replaced by built structures (impervious surfaces) which absorbs the incoming solar radiation (heat) and re-radiate it at night, then UHI effect is created, which may cause thermal discomfort on city dwellers.

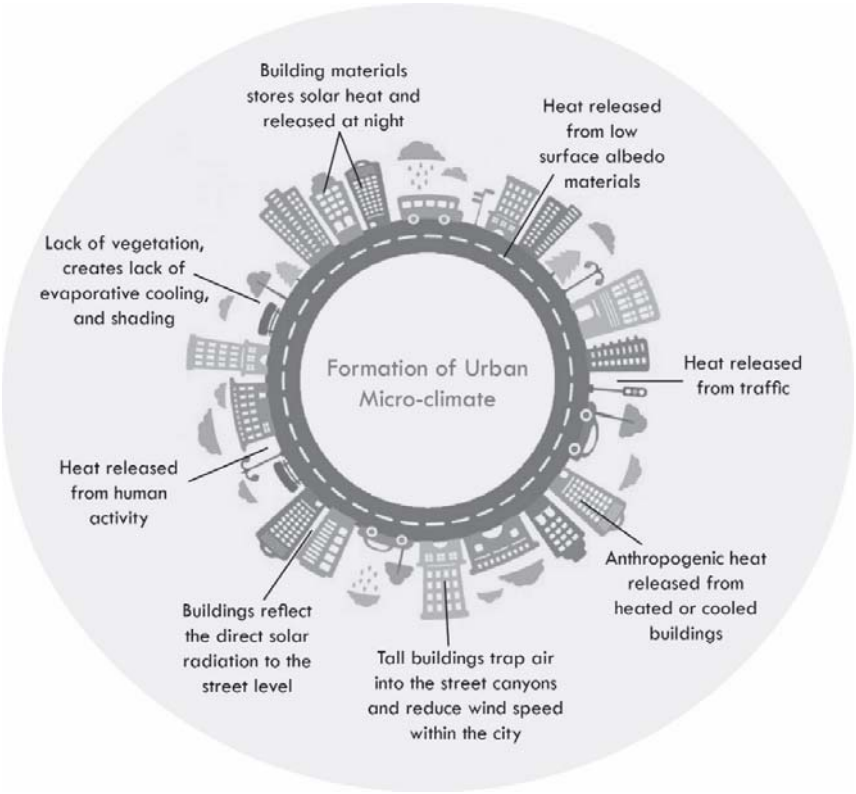


Figure 2-1 Formation of Urban Microclimate-Urban heat island effect

(Adopted from http://www.geocoops.com/urban-microclimates.html; accessed March 29, 2019)

2-1-1 Urban Heat Island Effect

The UHI effect is a phenomenon that is characterized by the higher temperature experienced in urban areas compared to the surrounding countryside, which has an enormous consequence for the health and wellbeing of people living in cities (Mohajerani, Bakaric, & Jeffrey-bailey, 2019a). It also leads to increased use of energy to cool down buildings, which further contribute to the heating of our urban landscape and add to the accumulation of environmental pollutants. “Initial studies conducted by the World Meteorological Organization (1984) and (Oke, 1987), revealed that the UHI effect can increase air temperature in an urban city by between 2 and

8°C" (Mohajerani et al., 2019a). Recent studies shows a more accurate range, which is between 5 and 15°C (Mohajerani et al., 2019a). The heat island effect arises due to the changing nature of our cities, and is the result of a reduction in vegetation and evapotranspiration, a higher prevalence of dark surfaces with low albedo, and increased anthropogenic heat production (Mohajerani et al., 2019a).

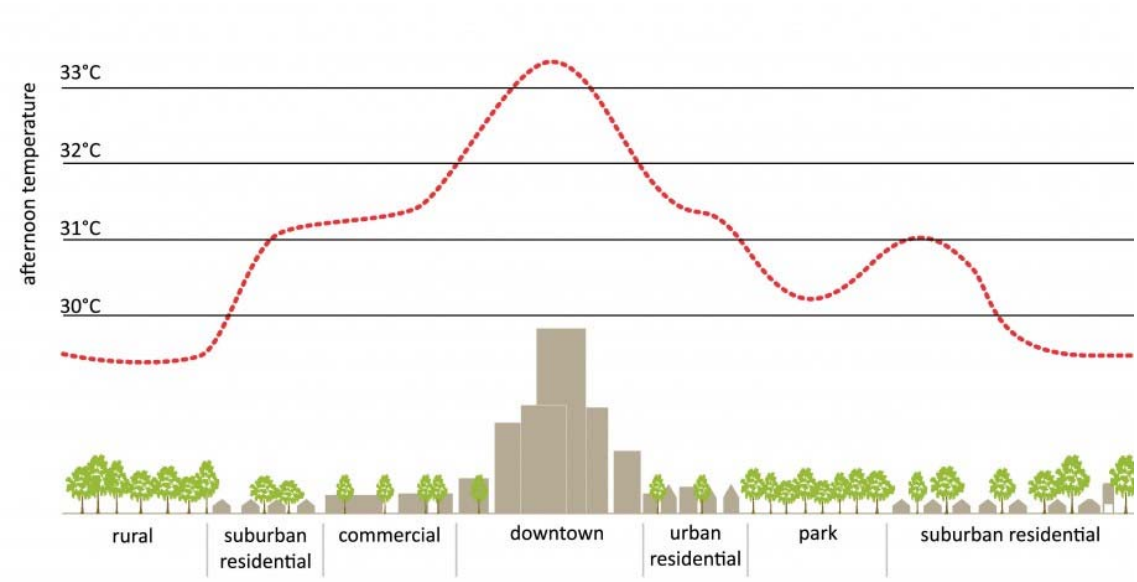


Figure 2-2 Urban Heat Island profile and its relationship with land use, land cover character; Source- https://www.urbangreenbluegrids.com/heat/ ; March 29, 2019

The above figure illustrates how various land uses have different impact on daily temperature and how urban heat island effect gets intensified as we move inward to the center of the city which is covered with more of built structures and less with vegetation (Figure 2-2).

A *Cause of Urban Heat Island Effect*

With the context of urbanization and rising global temperature, urban areas in general are noted to be hotter that the surrounding area. The hot urban microclimate resulted from heat release from the physical environment and the rise of temperature is called urban heat island effect, different literatures explained several reasons about causes of UHI effect in cities. According to Nuruzzaman, 2015 there are about 7 main factors which plays a significant role in the creation of UHI effect, out of these the most important factors that are significant for this research are:

Destruction of trees

In different part of the world forests are being wiped out in a massive scale in order to meet the demand of various urban facilities. Since trees are known for capturing direct solar heat and also absorb co2 for photosynthesis, lesser trees in the urban environment means less cooling efficiency which then aggravates the UHI effect. In addition, when a huge amount of natural land is replaced by artificial built structure (surfaces) that absorbs incoming solar radiation or heat and re radiate it at night then UHI effect is created.

Wind blocking

"Due to the presence of densely situated buildings in urban areas wind velocity is reduced"(Nuruzzaman, 2015). As a result, wind cannot freely flow through the built environment so, the heat trapped inside the densely populated buildings cannot be blown out which then lessens the cooling effect by convection. This hindrance to the flow of air because of tall buildings reduces wind speed and intensifies the UHI effect.

Low Albedo Materials

Surface albedo is a measure of how much light that hits a surface have been reflected back and how much is absorbed (North Carolina Climate Office, n.d.). The amount of energy reflected by the surface is determined by the reflectance character of the surface which is called albedo, high albedo materials means most of the light that hit the surface is reflected and a small amount is absorbed by the surface. A low albedo material means a small amount of solar radiation that hits the surface is reflected and the rest is absorbed by the material, which will be stored inside the surface and released at night. Because of the increase in the amount of low albedo materials in cities, on can experience higher average temperature in urban areas than surrounding suburban or rural areas, then UHI effect is created.

Urban Canopy

As illustrated in Figure 2-3, in urban areas there are multilayer buildings and when solar energy heats one building surface it will be reflected, the reflected energy will be trapped by the nearby taller building which creates an urban canopy layer (Nuruzzaman, 2015). Its climate character is determined by micro scale factors such as building orientation, surface albedo, emissivity, thermal properties, wetness, etc. (American Metrological Society (AMS), n.d.)Urban canopy is a zone of multiple reflection and emission, which intensifies the urban heat island effect in cities.

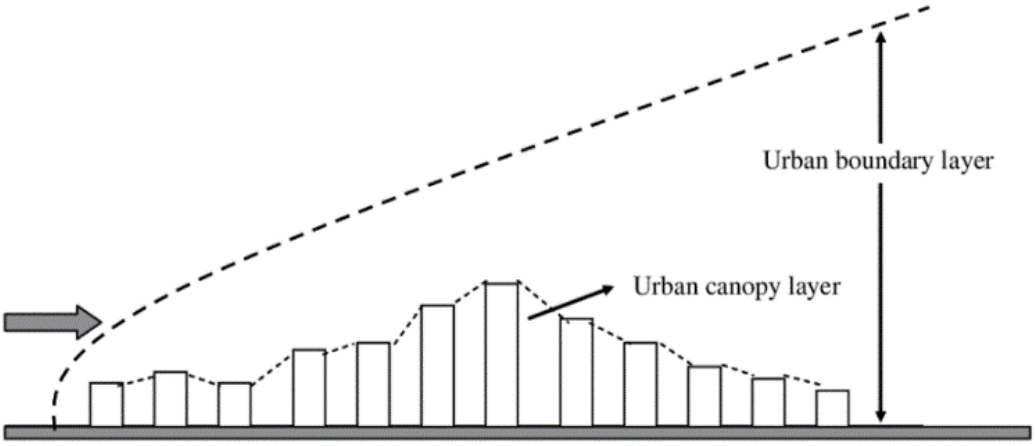


Figure 2-3 A diagram explain character of urban canopy layer in a built environment, Source- (Nuruzzaman, 2015)

B *Impacts of UHI Effect*

Due to UHI effect a city center can be over 10 degrees Celsius warmer than the surrounding countryside, according to Oke, T.R 1982 under proper condition UHI may be up to 10-15 degree Celsius (Nuruzzaman, 2015). Due to this phenomenon, many urban and suburban areas experience a higher temperature than the surrounding rural areas. For example, in New Delhi the summer time temperature was recorded to be 7-10 ^{o}C higher than the temperature of surrounding rural areas (T E R I., 2017). The increase in thermal discomfort due to UHI has led to increase the use of air conditioning appliances, resulting in increased emission of harmful greenhouse gasses to the atmosphere which has led to global climate change. “In areas with tropical climate, increased atmospheric heat can lead to several health hazards such as heat strokes, exhaustion and respiratory problem among the population” (T E R I., 2017). According to TERI. 2017, the negative impacts of urban heat islands are summarized as:

- Increased indoor heat transfer leading to increased electricity consumption for cooling in tropical countries.
- Thermal discomfort (both indoor and outdoor) leading to health hazards.
- Increased rainfall intensities over urban areas.
- Increased emission of greenhouse gasses leading to global climate change.
- Risk of fire breakouts.

2-1-2 Thermal Discomfort

"*According to ISO standard ISO 7730, acceptable thermal comfort is defined as that condition of mind which expresses satisfaction with the thermal environment and dissatisfaction (thermal discomfort) may be caused by warm or cool discomfort of the body"*. Therefore, with the context of increasing world temperature thermal discomfort in cities is becoming most observed impact of urban heat island effect. This gets intensified in the summer time, especially in the tropical and arid regions, which can also influence people's day to day activity and productivity pattern. In addition, the increased temperature will cause more energy required to cool the buildings and provide comfort to the people.

In thermal studies recommended temperatures are usually stated in ranges for the summer and winter seasons, and the most common gauge of comfort is the ambient temperature. According to a research on managing indoor air quality, considering variations in humidity level and clothing the recommended temperature for summer rages from 23 to 25.5 °C (73 to 78 °F), for the winter it ranges from 20 to 23.5 °C (68 to 74 °F) (Burroughs & Hansen, 2011). *In addition, WHO stated the comfortable warmth level in relation to a person's age and health level as:*

"The World Health Organization's standard for comfortable warmth is 18 °C (64 °F) for normal, healthy adults who are appropriately dressed. For those with respiratory problems or allergies, they recommend no less than 16 °C (61 °F), and for the sick, disabled, very old or very young, a minimum of 20 °C (68 °F)" ("Room Temprature-Wikipedia," n.d.)

According to a research about the impact of increased temperature on human comfort, there are different ways of assessing thermal comfort in a certain place, which depends on a range of characteristics of the physical environment and the person experiencing comfort or discomfort. But there are four important parameters needed to be considered when dealing with thermal comfort/discomfort.

A *Air temperature*

Air temperature is a key determinant factor in thermal comfort. It is also the most commonly used parameter in analyzing thermal comfort, that can be easily measured using on site air temperature measuring devices and most of the other parameters are also dependent on-air temperature. An increase in air temperature may intensify the UHI effect in cities, which then influences people's thermal comfort.

B *Direct solar radiation*

According to a paper done by Goulding J.R. "a direct solar penetration on a person can increase the temperature felt by as much as 25 degrees Celsius above the air temperature" (Watkins et al., 2007). Which has a significant impact on thermal comfort of a certain space therefore, reducing direct solar penetration can improve thermal comfort.

C *Air speed (Wind)*

Air movement removes heat from people's body which then creates a cooling effect in the physical environment. In addition, the degree of impact air movement has on creating cooling effect depends on the speed at which air moves in a certain physical environment, the bigger the speed the better the effect can be during summer (Watkins et al., 2007). Air speed (wind) can remove heat from the urban environment and can improve thermal comfort.

D *Humidity*

The impact of humidity on determining thermal comfort is minimal on a normal thermal situation but when a high humidity level is experienced with high air temperature in a physical environment, it can create thermal discomfort on people. In addition, in a humid tropical region humidity level can greatly affect thermal comfort whereas for countries located on a tropical region the effect humidity has on determining thermal comfort is low.

Therefore, there is a need to combat the impact of the UHI especially in light of a changing climate. While building design is important, urban planning must also consider the strategic use of water features, Vegetation and green spaces within the landscape (Doick & Hutchings, 2013).

2-2 LANDSCAPE BASED URBAN MICROCLIMATE REGULATION SCHEMES

The expansion of urban areas is frequently associated with changes in the local climate and deterioration of environmental conditions: UHI and the increase in the level of air and noise pollution are some issues that larger cities need to face. In the context of global warming these problems can be intensified. Another study also states UHI as one of the most prominent climate change phenomena in urban areas, mostly resulted from land cover change; transformation of natural surfaces in to impervious surfaces (Ravanelli et al., 2018).

Although there are various ways to regulate the undesirable effect of UHI, the presence of green spaces in urban areas can contribute to minimizing these effects by creating cooling effect and providing fresh air supply (Oliveira et al., 2011). Moreover, urban green spaces like parks and trees has an important role to cool the local environment. Different studies have

shown that an urban park would be 1˚C cooler than non-green area (Bowler et al., 2010) which will in turn contribute to mitigate the effect of UHI. Another paper released by UNECE in 2010 puts urban green space as an adaptation strategy with a potential of regulating urban climate, but the effectiveness of such areas would depend on the characteristics of vegetation such as proportion of green, green volume, sealed and built-up area (Mathey et al., 2010).

2-2-1 Urban green space

The term urban green space is mostly used in different context to represent a range of green areas but a definition that is agreed up on by different ecologists, economists, social scientists and planners is: "Urban green space is a public and private open spaces in urban areas, primarily covered by vegetation which as directly (e.g. active or passive recreation) or indirectly (e.g. positive influence on the urban environment) available for users" (Haq, 2018). Urban green spaces can be defined as green areas consists of open spaces in an urban area, generally covered with natural or planted vegetation (Panduro & Veie, 2017). These green spaces can take many shapes, forms and functions; they may vary from a small neighborhood playing field to natural landscape or highly maintained outdoor environment and mostly provided with open access to the public, although they may be privately owned (Panduro & Veie, 2017).

In addition, according to Ethiopian urban green infrastructure standard released in 2015, green space is defined as a proportion of open space that is retained in a mostly undisturbed vegetative state. It can be partly or completely covered with grass, trees, shrubs, or other vegetation. Based on the above theoretical frame the term urban green space in this paper may refer to various green spaces in urban areas from a small group of trees, street greeneries, and parks to urban forests.

According to Ali, 2013, the recorded minimum temperatures in an urban environment are those generally documented in urban green spaces. In addition, this study confirms that:

"*It is obvious that the presence of green spaces in a city has an important role in cooling the temperature of the urban area. The Evapotranspiration caused by the existence of urban green space contributes in cooling of the urban area. Urban green spaces provide an opportunity to increase freshness and contribute to the reduction of UHI"*(Ali, 2013).

According to Bowler et al., 2010 green infrastructures (trees, parks, forests and green roofs) in urban areas generally are recorded to have higher thermal comfort than other urban spaces. Moreover, contemporary development planning science considers the use of urban green space

for creating urban cool islands to be a highly effective solution for dealing with thermal islands (Aram et al., 2019). To understand or quantify the cooling effect of green spaces it is important to study the cooling effect distance (CED) and cooling effect intensity (CEI) of the green space, which depends not only on its size but also its shape and diversity of vegetation (Aram et al., 2019).

For example, a study made on 435 green spaces in China (Fuzhou) showed that, CED of a space with 2.3 ha and ΔLST of 0.9 °C was 59.62m, but the CED of a green space with and area coverage of 35.78 ha and ΔLST of 4.43 °C reached as high as 279.19 m (Yu et al., 2017). A similar study investigating about the impact of the geometric shape of 21 urban green spaces in Addis Ababa on cooling effect showed that, among the 21 cases investigated during the study the one with higher cooling impact recorded to have a CEI of 6.72 °C and CED of 240m (Feyisa et al., 2014).

According to Aram et al., 2019 a summary of various studies investigating the cooling effect of particular UGS with known specifications have been made. As shown on Table 1and on (Figure 2-4), based on their size and physical features this review has characterized the investigated UGS in to three major categories then, relate the area coverage, CEI and CED of each category.

Table 1: Summary of UGS categorization (Aram et al., 2019)

Size	**General features**
Big Size Parks	Mature and tall trees with high percent of canopy cover Water body Different zones of landscapes with various vegetation types
Medium Size Parks	Different size of trees (medium and high) Various vegetation types Small water body
Small Size Parks	Low tree diversity Low vegetation diversity Has an enclosure space

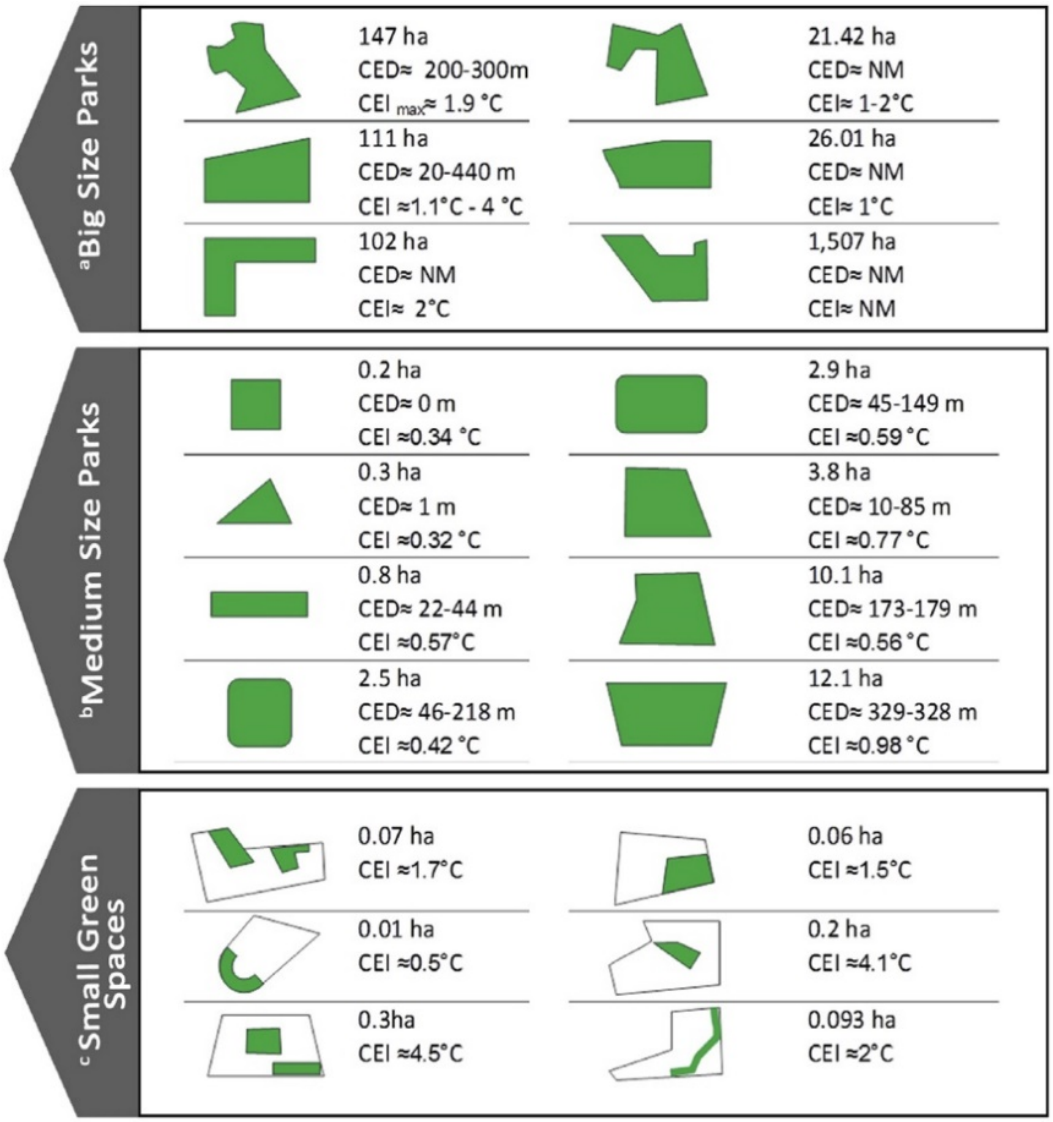


Figure 2-4 Cooling effect of different UGS with known specifications (a) 6 parks were investigated at this scale. (b) 21 parks were investigated at this scale. (C) 6 parks were investigated at this scale. (Aram et al., 2019)

A *Type of species diversity (tree, shrub, grass and ground cover) more efficient for microclimate regulation*

Although different researches have acknowledged the potential of urban vegetation for regulating urban microclimate, it is also important to explore the types of species diversity with maximum regulation capacity. According to Zafiriadi, 2006; urban trees can improve various environmental variables such as: trees regulate temperature increase and UHI by preventing solar radiation from heating the surrounding surfaces (Shading), cooling the air through evapotranspiration and reducing wind speed. Moreover, “shade under a tree can make the

apparent temperature at ground level 5-20-degree Celsius cooler. Lower plants also help reduce surface heat"(Roo, 2011).

According to Wang et al., 2015, measurement results confirmed that areas covered with trees shows lower average air temperature during summer day time than the unshaded area by approximately 1°C. The same study also experimented on daily maximum air temperature difference between shaded and unshaded area using field measurements and the results showed that the daily maximum air temperature differed by 2.5 °C (Wang et al., 2015). "These significant spatial variations were caused by the trees. Trees considerably improved the thermal comfort level through reducing the 'very hot' and 'hot' thermal conditions in the study area"(Wang et al., 2015).

"Due to their strong atmospheric coupling, foliage temperature of trees is particularly important for the local to global climate, generally small leaved trees remained cooler than large leaved trees. We concluded that urban tree temperatures are species specific and depends on the location of the tree, its leaf size, stomata conductance and other traits such as canopy architecture"(Leuzinger et al., 2009).

According to Zafiriadi, 2006; based on measurements taken in areas were mature trees are found, the air temperature under the tree foliage was 1.7-3.3 °C lower than the areas where there are no trees.

"Based on an experiment done on a courtyard with different shading options and plant organizations, the combination of shade trees over grass was predictably found to be the most effective landscape strategy in terms of the cooling provided, with the maximum air temperature reduced by up to 2K. Trees provide by far the most efficient means of reducing outdoor air temperature as measured by water consumption"(Shashua-bar etal., 2009)

Plant more trees to increase the overall canopy cover in urban areas. Studies in Chicago shows that increasing tree cover in the city by 10% may reduce the total energy used for heating and cooling by 5-10% (Roo, 2011).

B *Cooling mechanisms*

The negative impact of UHI effect can be modified by adopting various cooling strategies, and vegetation can be a very effective solution since it provides several mechanisms of cooling (Doick & Hutchings, 2013). According to Doick & Hutchings, 2013; three major cooling mechanisms have been discussed. The first one is **evaporative cooling and**

evapotranspiration; through evaporation the incoming energy is used to convert water into water vapor and this process is termed as evapotranspiration (Doick & Hutchings, 2013).

The second mechanism is **reflectance;** it refers to the extent to which direct solar radiation heats the urban environment which is liked with the surface albedo. Less reflectance means that more energy is absorbed and stored, to warm the local environment (Doick & Hutchings, 2013). But by using vegetation or high albedo surface materials it is possible to minimize energy absorption and lower the local temperature. **Shading** is the last cooling mechanism discussed. Shading from vegetation limits direct solar radiation from heating the urban surface, also shelters people from direct exposure to the sun (Doick & Hutchings, 2013). "Which is important as thermal discomfort has been suggested to relate more to higher radiation exposure than higher air temperatures" (Doick & Hutchings, 2013). The magnitude of cooling from a shade tree depends on crown shape and density.

C *The spatial scale of cooling by vegetation*

Although the cooling effect of green spaces in an urban environment have been proven by various researches but the special scale of cooling may be influenced by on different factors. According to Doick, the spatial scale of cooling by vegetation depends on;

Size of green space, for example, "the cooling impact of the large Chapultepec Park (500 ha) in Mexico City reached a distance of about 2 km, approximately equivalent to the width of the park" (Doick & Hutchings, 2013)."With a size of 60 ha, a park can reduce noon-time air temperature by up to 1.5 °C for up to 1 km distance, in a leeward breeze" (Doick & Hutchings, 2013)which shows the size of green space is directly related to spatial scale of cooling.

Proximity of green spaces is another factor that determines spatial scale of cooling, "based up on a mathematical model Honjo and Takakura, a 100m wide green space cools to a distance of 300m"(Doick & Hutchings, 2013). They recommended that green spaces should be no more than 300m apart for optimum cooling within a neighborhood (Doick & Hutchings, 2013).

Proportion of hard and soft surfaces, the relative mix of hard and soft surface in a green space is an important factor that can affect the scale of cooling by vegetation (Doick & Hutchings, 2013). For instance, while daytime hourly mean air temperature at 1.2m height over a grass have been reported to be 2 °C lower than an air temperature over a hard surface(Doick & Hutchings, 2013). Another paper by Chang, Li and Chang showed that if paved surfaces in a green space are equal or more than 50% of the land cover, then it is on average warmer than the surrounding area (Chang, Li and Chang, 2007).

Types of tree (canopies and density); within the concept of cooling by vegetation the role of trees is particularly important. The magnitude of cooling from a shade tree depends on crown shape, canopy size and density for example, mature canopies in California indicated daytime air temperature 1.7 – 3.3 °C lower than in areas with no trees(Doick & Hutchings, 2013). "Trees responded differently to extremes in temperature but generally, small leafed species (*robinia pseudoacacia* and *pinus sylvestris*) tended to be more effective at cooling by maintaining lower crown temperature than larger leafed species" (Doick & Hutchings, 2013). In general species selection for cooling service in an urban environment should consider; heat tolerance, drought tolerance, pest, disease and pollution tolerance capacity and rooting zone availability (Doick & Hutchings, 2013). Furthermore, species selection should also consider the projected future climate as well as current climatic conditions.

2-3 CEMETERIES AS URBAN GREEN SPACE FOR MICROCLIMATE REGULATION

2-3-1 Green Cemetery

Oxford English Dictionary has defined the term cemetery as: "A large burial ground, especially one not in a churchyard" (Oxford Dictionary, n.d.). Julie Rugg in his journal 'Defining the place of burial' discussed a definition by J.S. Curl, who defines cemetery as "burial ground, especially a large landscaped park or ground laid out expressly for the deposition or interment of the dead, not being a churchyard attached to a place of worship" (Rugg, 2000). Then he narrates his definition of cemetery as:

"Specifically, demarcated sites of burial, with internal layout that is sufficiently well ordered to allow families to claim and exercise control over their particular grave space, and which facilitate the conducting of appropriate funerary ritual. Although cemetery space can be regarded to some degree as sacred, cemeteries are principally secular institutions that aim to serve the whole community" (Rugg, 2000).

On the other hand, the term green cemetery is a new concept/movement which promotes burial systems with minimum environmental impact; it suggests a shift "from foreswearing embalming chemicals, concrete vaults, large monuments, and pesticides to using only naturalistic design and native species, to providing special garden areas for scattering ashes". Which will lead to a park like natural environment (Harnik, 2010).

Although the term green cemetery appeared as a new term, "the concept of designing cemeteries as green areas, and parks dates back to very old times" (Uslu, 2010). For example,

Spring Grove Cemetery designed by Adolf Strauch as a park with natural effects was chosen as the best American landscape design in 1900 at the Paris International Exposition (Uslu, 2010). Some literatures describe this concept as ‘natural burial’ and the most important part of the concept is; to embrace the cycle of nature by allowing change to occur over time. Meadows grow, forests take their place, soil is built as plant and human materials decompose (Spade, 2014). Therefore, based on the above theoretical ground the term green cemetery in this paper is used to refer to cemetery landscapes which are designed as green space with a park like natural environment.

In analyzing the role of cemeteries as a green space, the type of burial system can greatly affect the ecological behavior of the site for instance, natural burials provide more environmental benefits than the conventional system (Spade, 2014).In the current burial business there is a movement called ‘natural burial’ some literature describes it as ‘green cemetery’ which promotes burial systems with minimum environmental impact ‘from foreswearing embalming chemicals, concrete vaults, large monuments, and pesticides to using only naturalistic design and native species, to providing special garden areas for scattering ashes’. Which will lead to a park like natural environment(Harnik, 2010). The most important part of the concept is; natural burial system embraces the cycle of nature by allowing change to occur over time. Meadows grow, forests take their place, soil is built as plant and human materials decompose(Spade, 2014).

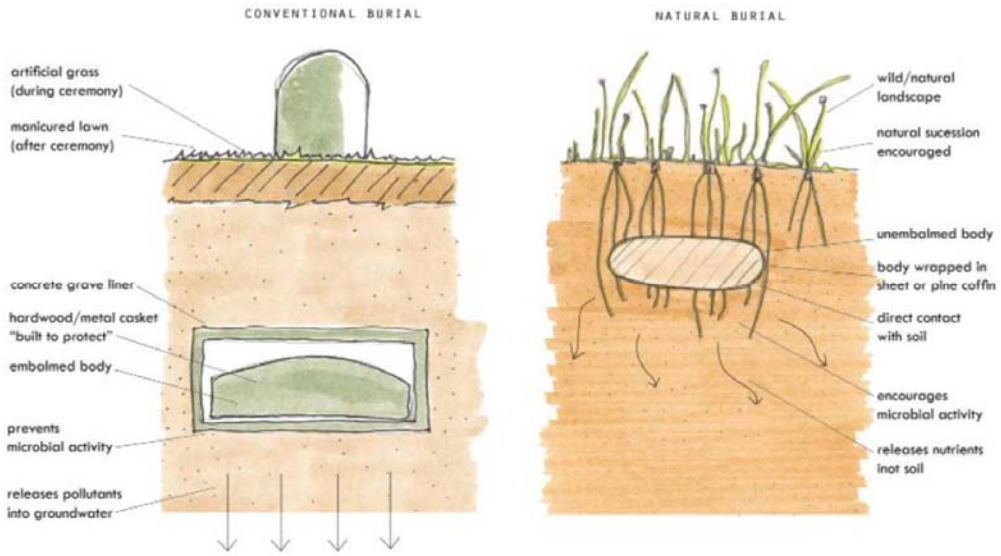


Figure 2-5 Conventional Vs. Natural Burial (K. Spade, 2014)

The British and Scandinavian cemetery design during the 19th century reflects the idea of cemetery as recreational space, in addition to bury the dead their urban cemeteries were designed to improve urban life quality by contributing to beauty and wildlife. Within this context there are some difficulties to identify suitable activities a cemetery can invite to, that can maintain its role as a place of burial and mourning, also as public recreational space(Nordh, Evensen, & Skår, 2017). 'But today some cities have hundreds or thousands of acres of public cemetery lands, both with and without gravestones, which could theoretically help with the parkland shortage'(Harnik, 2010).

Studies also suggested that cemeteries can correspondingly be designed for their ecological benefit, due to their size, habitat heterogeneity and habitat continuity in addition to being a place of burial they can serve as a natural area /habitat with the potential to improve biodiversity and provide sanctuary to wildlife including endangered species(Herron, 2012). Another paper done on Biodiversity functions of urban cemeteries states that, like other tree dominated habitats cemeteries may provide important ecosystem services such as regulating services (e.g. Climate and storm water regulation) and cultural ecosystem services related to recreation, wellbeing and health (Kowarik, Buchholz, von der Lippe, & Seitz, 2016).

CHAPTER 3 RESEARCH METHODOLOGY

3-1 RESEARCH FRAMEWORK

In order to dig deep in to the research, issue a case site was selected based on different criterion that were relevant to the study. Basing the study on the selected case site, this research followed four methodological approaches as it shown in Figure 3-1. First the research started off by assessing the existing micro climate regulation capacity of the case site using two data sources. One, on site air temperature and humidity measurement. Two, a survey of user's satisfaction with regard to thermal comfort was collected. To determine microclimate regulation capacity of the selected site this study combines two data types, one is undertaking ground based climatic measurements and the second one is a survey on user's satisfaction regarding thermal comfort.

The second section covers a study of the existing physical character of the case site specifying the study in to land use/ land cover survey, with this analysis the current physical structural pattern was explored. The Third part is a case study analysis on similar schemes, in which suitable design and planning patterns for appropriating green spaces and cemeteries for micro climate regulation service was explored and categorized. Finally, the last part deals about the future usability assessment for the selected site, weather the lessons learned from similar cases could be contextualized.

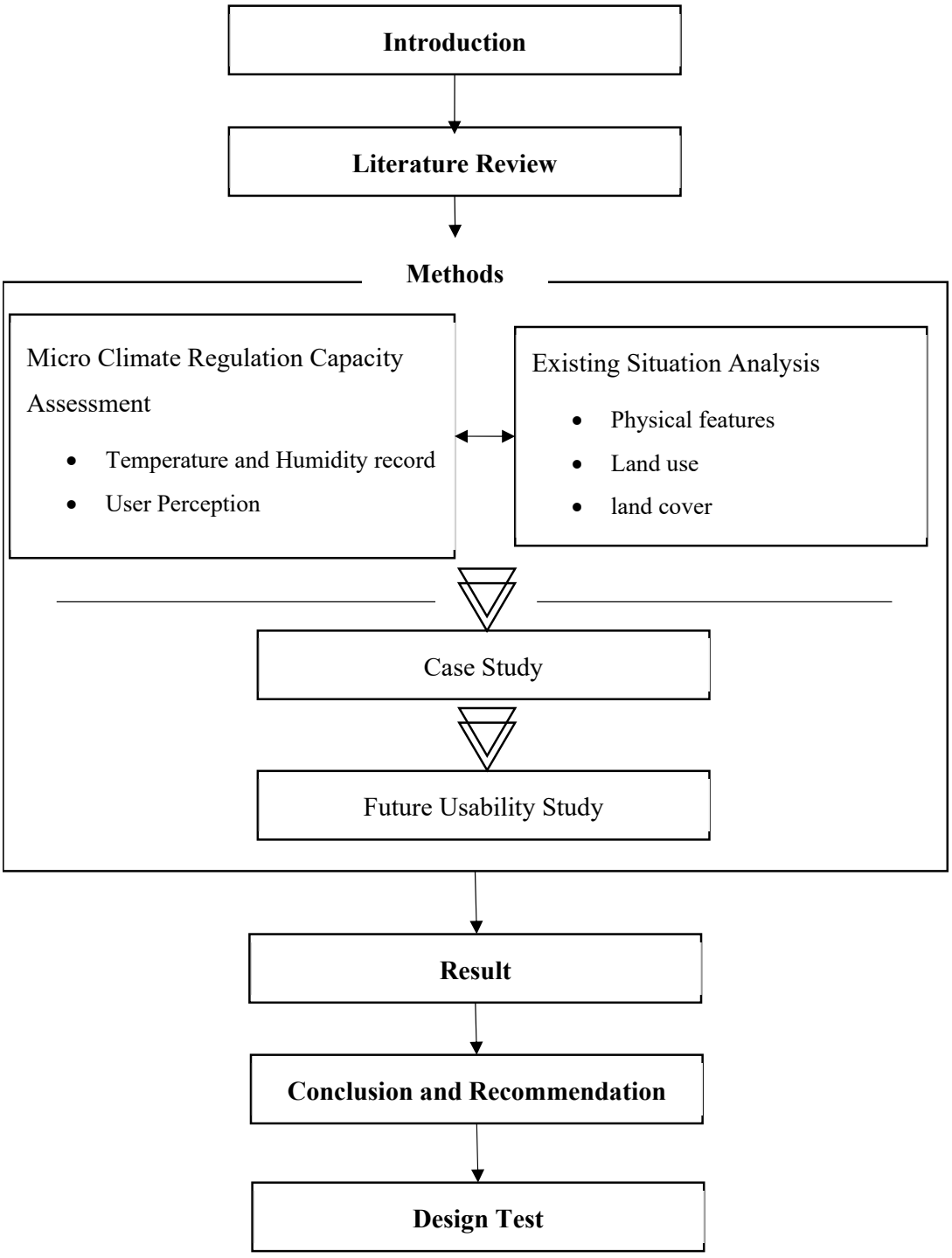


Figure 3-1 Methodological Research Framework

At the end findings will be synthesized in order to asses possible landscape design solution for the integration of microclimate regulation service in to cemetery landscapes using a show case design scheme on the selected case site.

3-1-1 Case Site Selection

In order to increase the impact and applicability of the research result additional four important criterions were used apart from the points mentioned in, scope and limitation of the study, section 1-5.

- Status: cemetery that is in line with the directive of cemetery management which limits the use of tombstones only and reduction of impervious surfaces.
- Location: case site should be located within settlements, to increase the significance of the solution
- Ownership (Governmental cemetery): in order to implement the proposed strategies a well-organized system is useful also it is beneficial to devise maintenance strategies.

Considering those criterions above Kechene Medhanealem cemetery is selected as a showcase site for this specific study.

3-1-1 Case Site Description

According to the interview with the manager of the cemetery, Kechene Medhanealem cemetery was first inaugurated during the time of Emperor Haileselase. In 2001 agency named Addis Ababa city beautification, parks and cemetery development was established. Since then, Kechene Medhanealem cemetery was administered under this agency. The cemetery provides three main services; **provide burial grounds**, **preparation of death certificate** and **burial ground rehabilitation** every seven years. There are registered organizations who are responsible for preparing the ground and delivering burial services for users.

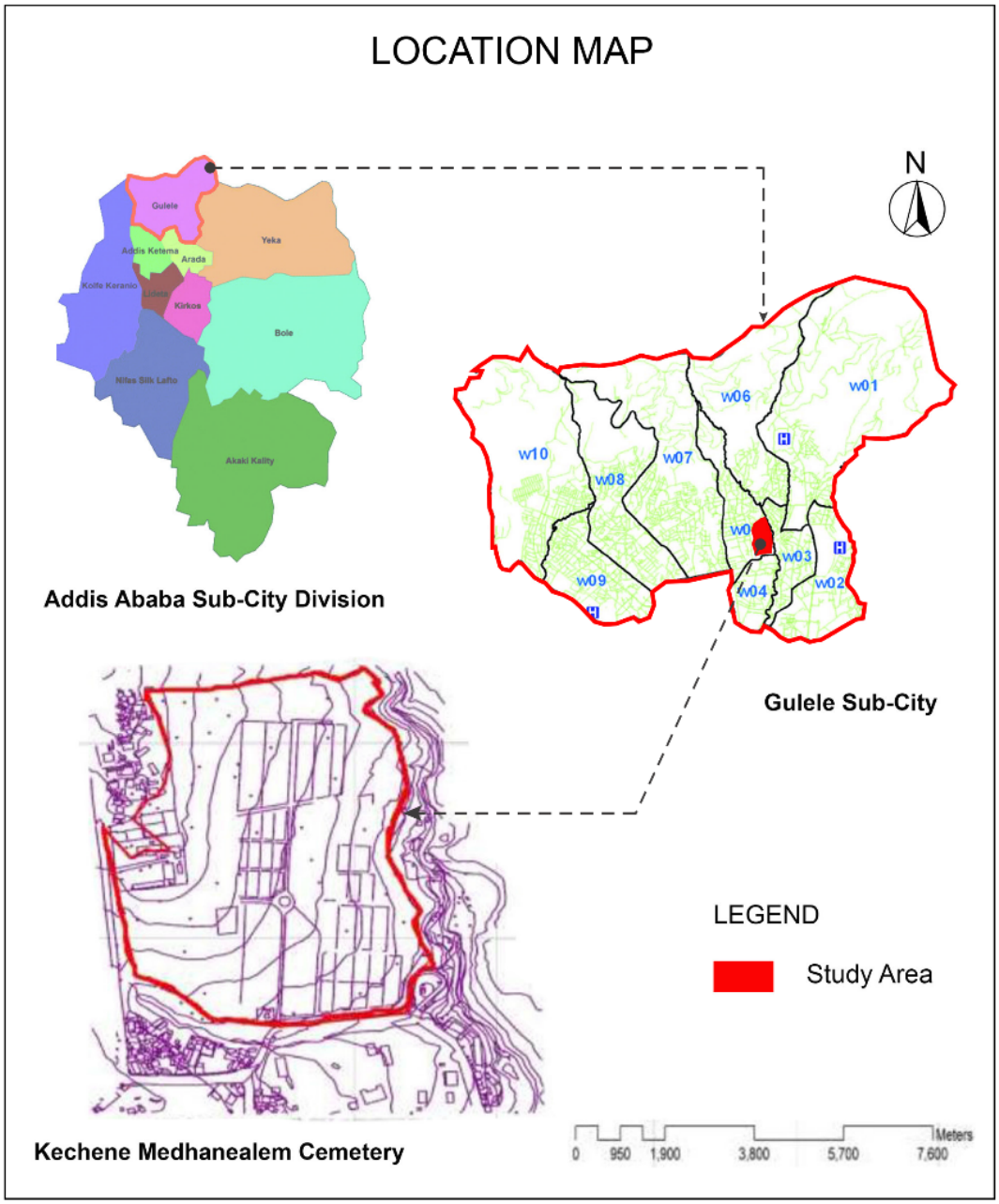


Figure 3-2 Kechene Medhanealem Cemetery: Location Map (Z. Alemayehu,2014)

Kechene Medhanealem cemetery is one of the largest governmental cemeteries located in Gulele Sub-city, Addis Ababa covering a total area of 13ha. Which can accommodate up to 20,000 dead bodies at once. The cemetery gives service for community members from all the 10 sub-cities in Addis Ababa. In average the cemetery accommodates up to 6 burial services per day but sometimes this number could reach up to 10-12 burial services per day.

Figure 3-3 Location map of Kechene Medhanealem Cemetery with major land uses, Source Google Map accessed August 2019

The total amount of visitors per day at Kechene Medhanealem cemetery is about 2100 people, who came to the site for burial service and an average of 40-50 visitors per day came to the site to visit burial places. Though the amount is very minimum there are also peoples who come to the site for refreshment.

3-1-2 Survey Area Description

To undertake further site-based analyses and survey about the research issue, it was important to determine the expected service radius. According to Addis Ababa Master plan standards green spaces/parks are classified in to different categories. Green spaces/parks with area of <0.3 ha is classified as Neighborhood Park anticipated to provide service for peoples living within 300 m radius from the park; green spaces with 0.3 – 1 ha area as Woreda Park with a service radius of 1500m. Green spaces with an area of 1- 10 ha is classified as a Sub City Park with a service radius of 5000m and a green space with area of >10 ha categorized as City Park expected to provide service to peoples living within 10000m radius from the site.

Considering only the area coverage Ketchene medhanealem cemetery may fall in to City park catagorization. However, since the function of the site is different of that specified standard it is not appropriate to directly apply this. Therefore, for the purpose of demarcating study survay area Kechene Medhanealem cemetery was considered as a Woreda park, which can give service to societies residing within 1000-1500m radius of the site boundary. As illustrated on (Figure 3-4) the envisioned service users are categorized in to two, residents living within 1000m radius from site boundary are expected to be immediate users and residents located within 1500m radius from the boundary will be secondary users. Based on this assumption,

primary data was collected from immediate users which is the site located within 1000m radius from the cemetery compound.

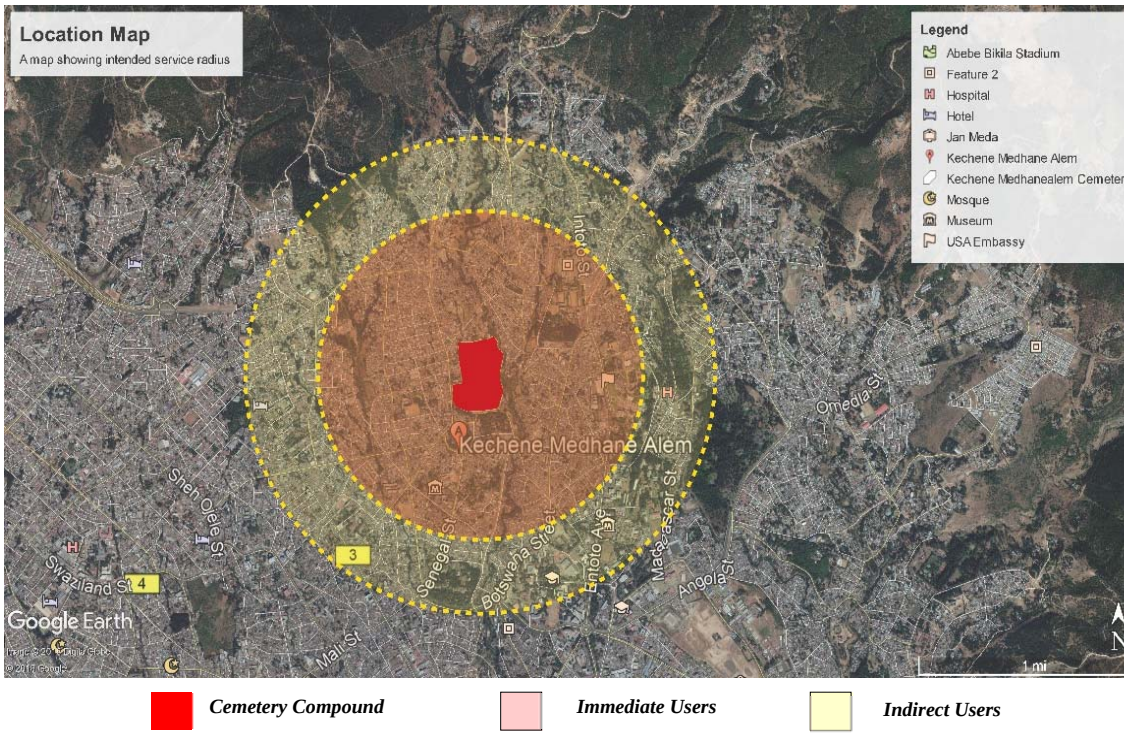


Figure 3-4 Service radius of Kechene Medhanealem Cemetery

3-2 DATA COLLECTION

3-2-1 On Site Air Temperature and Humidity Survey

In order to assess microclimate of outdoor space there are different parameters that needed to be studied. A research paper done about the impact of increased temperature on human comfort listed air temperature, direct solar radiation, air speed (wind), and humidity as a key parameter to determine the climatic character of the built environment (Shahidan & Salleh, 2007). Since the study site is located on a sub-tropical climatic zone, the impact of air speed (wind) on thermal comfort is thought to be minor. Besides due to interference of vegetation with air flow at the low height above ground, it was considered too difficult to measure realistic wind speeds therefore, for this specific study air speed (wind) is considered as constant. But air temperature and humidity are a key determinant factor in assessing microclimatic conditions of an outdoor space therefore, ground based air temperature and humidity measurements were collected from the selected site.

A *Data Collection Material and Procedure*

To undertake the ground-based air temperature and humidity survey, TemLog 20H temperature and humidity data logger were used (Annex 9-4). The device accuracy for temperature recording is ±0.5 ◦C for temperature values between -20°C and 40°C. Whereas accuracy of ± 1°C for other temperature values. Accuracy level for relative humidity recording is ± 3% for relative humidity condition ranging from 20% to 90%. Whereas ± 5% for other relative humidity condition (Table 2). Data logging devices were set to record temperature and humidity every 20 second.

Table 2 Device specification – TemLog 20H temperature and humidity data logger

Measured Values	**Recording Range**	**Accuracy**
Temperature	-20°C _ 40°C	± 0.5°C
	Other	± 1°C
Humidity	25°C, 20% _ 90%	± 3% RH
	Other	± 5% RH

As described on 3-1-2 Survey Area Description, area for the ground-based measurement was Kechene Medhanealem cemetery compound and the site located within 1000m radius from the study site. Initially 20 measurement spots were randomly selected; 10 spots inside the study site, and 10 spots outside the case site within the survey area radius, as shown in Figure 3-5. Coordinates of the sample spots were predetermined using geo referenced Google image distributed in a pattern which will help to determine an average result. Two devices inside and two for the outside were dedicated. However, during field work some locations were inaccessible, hard to manage, and speed of data recorders inside and outside was not in sync.

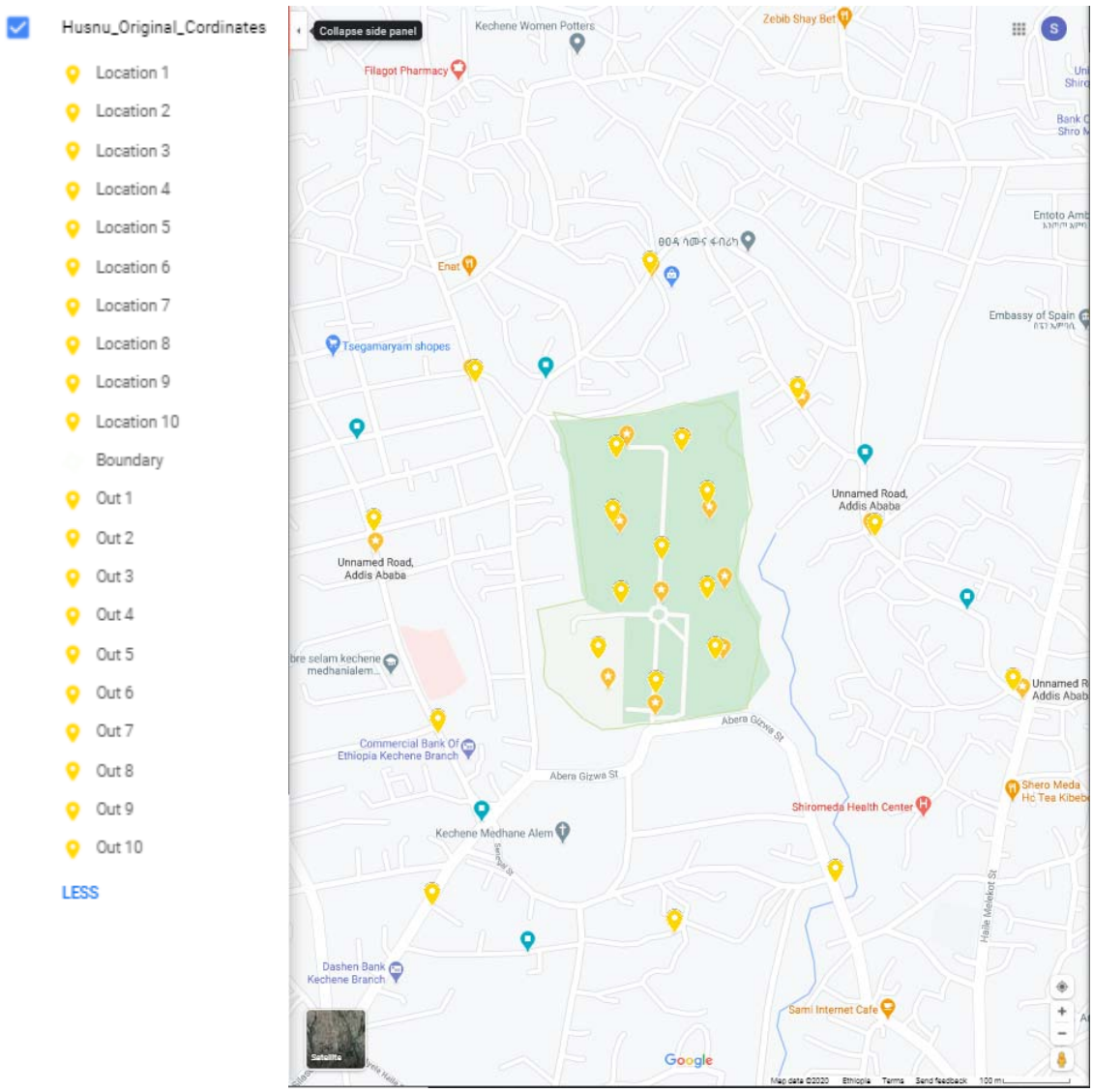


Figure 3-5 Pilot Study Temprature and Humidity Recording spots Manipulated in Google Maps

Therefore, spots have been rearranged and added on the site, as shown in Figure 3-6. Devices were used in 1 to 3 ratios, inside and outside respectively, since the measurement spots located outside the study site are larger in number and cover a larger area than the spots inside the study site. To cover all sample measuring spots on the survey site the data logging device were moved from one location to the next.

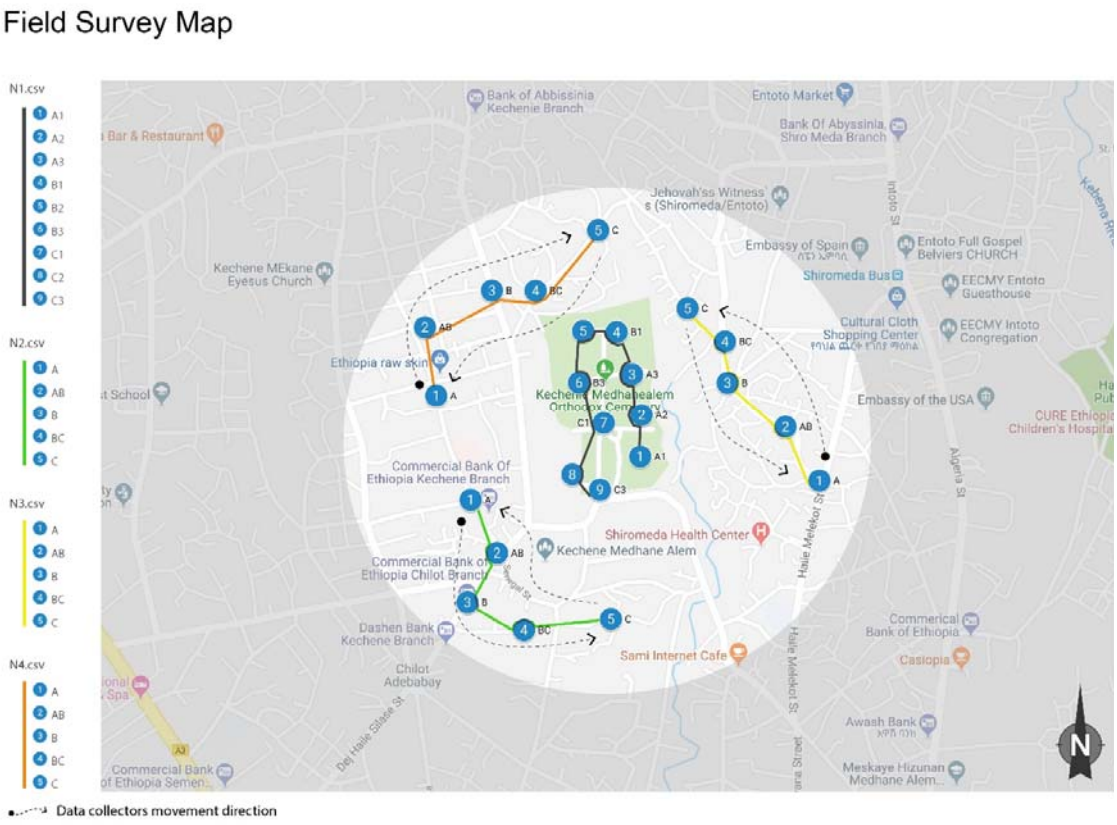


Figure 3-6 Field survey map for ground-based temperature and RH record, showing the survey area with a total of 24 recording spots.

Table 3: Ground based temperature and RH survey procedure

Device No.	Working location	No. of data collectors	No. of spots	Data collection note
N1	Kechene Medhanealem cemetery compound	1	9	Two spots were changed in second day of recording to have more representative spots
N2	In front of Church	1	3 then, 5	No. of spots increased on the second day of recording
N3	Spain embassy side	1	3 then, 5	No. of spots increased on the second day of recording
N4	Around pottery area	1	3 then, 5	No. of spots increased on the second day of recording

As shown on the Table 3, device N1 is allocated to collect data from Kechene Medhanealem cemetery compound with 9 spots distributed throughout the compound. Device N1 recorded for 3 minutes in one spot and moves to another spot within 2 minutes. If the path took more than the specified time recording time was reduced from the next spot, and added if the reverse happened. The other three devices represented on the survey map Figure 3-6 as N2 (green line),

N3 (yellow line), & N4 (orange line) are distributed around the cemetery compound with 5 recording spots per device. Each device recorded for 5 minutes and moved within 5 minutes to the next spot. As illustrated in Figure 3-6, all devices moved from the lowest spot number to the higher and back to the lower, which took 2 hours to complete one round. Each day measurements were undertaken from 12:30 to 17:30 East African Time (EAT) 4 hours, a total of two rounds per day. This continued for seven consecutive days from December 10, 2018 to December 16, 2018. Though hot seasons in Addis Ababa is around November – October and March-May, and the first-round temperature data was collected in April 2018 but because of data collection procedure error a second-round temperature data was collected. Unfortunately, the time between November – October 2018 was rainy so, we needed to wait for clear sky with no clouds. Therefore, the final temperature record was done from December 10, 2018 to December 16, 2018.

Four data collectors were chosen to move the device from one spot to another, shading themselves and the device from direct solar radiation with umbrellas. Every day at 12:00 EAT devices were turned on and attached in the umbrella by the coordinator. Then data collector's move on to their spot number one. After the data collectors were set in their first position, time counting starts at the same time through phone communication. Similarly, synchronization was checked by coordinator every 1 hour or half round. After conducting two rounds of data collection, all devices were collected by the coordinator. Every day daily data was copied into a computer in pdf, ttp, and xls formats, and devices were reseated to clear up space.

3-2-2 Users Satisfaction Survey on Thermal Comfort

A *Data Collection Material and Procedure*

In addition to the ground based micro climatic data measurement, a social data regarding thermal comfort also was collected from study site. The survey was based on an assessment done regarding user's satisfaction level on thermal comfort collected using prepared questionnaires. Questionnaires were prepared using ASHIRE standard (American Socitey of Heatting, 2010) for assessing thermal environment. This survey was undertaken simultaneously while measuring the ground-based measurements.

In order to determine population sample size to distribute questionnaires, survey monkey sample size calculator is used ("Sample Size Calculator: Understanding Sample Sizes | SurveyMonkey," n.d.). Since the questionnaires were collected for three consecutive days the total population expected to visit the site during survey time was 4410 users. Based on

population sample size calculation with 95% confidence level and 7% margin of error from a total population of 4410 users about 188 questionnaires were collected for three days simultaneously with the ground based climatic measurements.

Two data collectors were chosen to undertake this survey. They walked through Kechene Medhanealem cemetery compound between 12:30 to 17:30 East African Time (EAT) looking for volunteer visitors to fill out the prepared questionnaire asking for thermal satisfaction levels and related subjects.

3-2-3 Existing Situation Analysis

The research topic deals with microclimate regulation capacity of a certain space. In climate related studies, specifically studies dealing with microclimate topic of measuring air temperature and humidity related parameters, studying the existing situation of the study site is a key element in ground-based measurements. For this reason, existing situation was studied categorizing them in to three parameters. One, physical features analysis, which focused in the inner side of the compound. Two and three, were land use and land cover of the survey area as mentioned in section 3-1-2Survey Area Description were analyzed.

- *Data collection Material and procedure*

To analyze land use and land cover of the survey area, two secondary data sources were used. The first one was Land Use Development Plan (LDP) of the survey area prepared by Gulelle Sub city planning and information preparation office used to extract information mostly about the land use character of the site. And the second data source is a Google image of the area around survey site, primarily used to extract data about land cover of the study site. Missing data and information in those two sources were collected by the author through observation. During site observation the author walked around the site decoding information using techniques like mapping, photography and keeping site visit reports.

Table 4 Summary of site observation techniques: Adopted from Jan Ghel 2007

Data collection techniques	Description
Mapping	Land use – to decode information from the observation four main categories are used; settlements (residence and mixed use), green space, group of trees and institutions. And printed maps and color pencils are used for mapping. Land cover –to simplify the observation process four surface material categories are used; asphalt, coble stone, soil and vegetation. And using different color pencil these categories are mapped on the prepared printed map of the survey area.
Photography	Taking pictures of different surface covers used on the survey area.
Observation report	Registering details, unique experiences and observation process faced during site survey.

3-2-4 Case Study Analysis

Since the research issue deals with the use of cemetery landscapes for microclimate regulation in Addis Ababa, a contemporary concept that requires designing cemeteries as green spaces of the city which is lacking and is in a very infant stage in Addis Ababa context therefore, more experiences and researches from different case studies are needed to learn from. Within these variables this study tried to extract knowledge and techniques on how to design context based green cemeteries with multiple uses, by exploring international examples which successfully created green cemeteries with both environmental and social services. In addition, local cases showing started initiatives and projects towards green cemeteries in Addis Ababa are analyzed.

A *Case site selection criteria and selected cases*

International case studies

Two international cases were selected based on their environmental and social uses as a multifunctional cemetery landscape. In selecting case studies two important parameters were used:

1. **Green coverage** – Since the research issue deals with microclimatic impact of cemetery landscapes, green coverage of the site is an important factor that contributes to ecological service provision of the site.
2. **Multi-functionality** – The research aims to add ecological service to an already existing land use therefore, multi-functionality of cemeteries as a social space, green space or parks is a key knowledge that can be contextualized.

Therefore, based on the above criterions two international case studies are selected:

Case 1: The Ohlsdorf Cemetery, Hamburg Germany

Case 2: The city cemetery Stöcken, Hanover Germany

Local case study

To assess local practices regarding the use of cemeteries for environmental and social services ongoing initiatives, strategies, and small interventions in cemeteries of Addis Ababa were analyzed. Petros We Paulos cemetery was listed as a good example by AACBPCDAA in its green management and beautification works. Therefore, Petros We Paulos cemetery was chosen as a case example.

B *Data collection procedure*

To collect information about selected cases two data collection methods were used, one is collecting maps and literatures about the case site and review to extract essential information. The second was to undertake site observation to further understand and experience the case site through taking pictures and observation notes. Before starting site observation study parameters that needed special attention were listed, and they were helpful for the observer to extract critical knowledge for the research issue. These parameters were: green coverage, green maintenance system, social usability (activities), landscape design features and environmental characters.

Case 1: The Ohlsdorf Cemetery, Hamburg Germany

The case site analysis is done through on-site observation by the author for two consecutive days, since Ohlsdorf cemetery covers about 4 million m^2 area of land it is very difficult to cover all the site on foot. Therefore, in order to grasp the overall character of the case site existing public transportation that pass through the cemetery was used. By making random stops at different parts of the cemetery a detailed analysis was done by exploring each area through walking. Mapping, photography and taking observation notes. Using those techniques important design characters, green maintenance systems used, social activities happening on the site, and its overall environmental characters was studied.

Case 2: The city cemetery Stöcken, Hanover Germany

Similarly, with the first case the second case was also analyzed using on site observation. However, in this case the site was manageable to cover by foot. Therefore, the author walked through the cemetery compound for one-day plotting important characters of the case site. Mapping, photography and taking observation notes are the main techniques used to register landscape design features used, watering scheme ideas and how the design contributes to its environmental character.

3-2-5 Future Usability Survey

One of the research questions raised in this paper was to identify whether societies living around the study site be willing to use cemetery as green (social) space, if cemetery landscapes are designed to accommodate such activities. But in the social context of Ethiopia, there is already a sense of fear within the society to use cemetery as green (social) space. Therefore, in this context it was important to investigate future usability of cemeteries as green space, a questionnaire was prepared to collect data from potential users of Ketchene Medhanealem cemetery.

A *Data collection procedure*

As described on section 3-1-2 Survey Area Description, the potential users for the selected study site are people living within a 1000-1500m radius from Ketchene Medhanealem cemetery compound. Therefore, data was collected from randomly selected people living within the survey area through prepared questionnaires asking for their willingness to use Ketchene Medhanealem cemetery as green (social) space for the future. According to the Addis Ababa master plan standard, a green space with an area up to 1ha is expected to deliver service for about 40,000 people living within a 1000-1500m radius from the site. Although the study site covers about 10 ha area of land, however, because the main function of the site is burial ground, with the assumption of using only about 1ha area of land for refreshment. The above standard will be used to select potential service users, about 40,000 people living within a 1000-1500m radius from the site boundary.

Based on population sampling calculation with 95% confidence level and 7% margin of error, about 196 questionnaires were collected from the site. Although most natural science researchers use 3% margin of error, because this research question is mainly designed to support decision making at the proposal stage of the research. Population sample 7% margin of error was considered to be sufficient to analyze users' perspective ("Sample Size Calculator: Understanding Sample Sizes | SurveyMonkey," n.d.). The 196 questionnaires were collected from randomly selected volunteer society members living within a 1000-1500m radius from the study site.

In order to ensure fair distribution of representative people throughout the data collection site and ease of access for data collectors, data collection site was randomly classified into four sections. Then four data collectors walked through each section for three consecutive days between 14:00-17:00 EAT (this time was chosen to get more varied society members including

youths, since at 15:00 EAT most students were off from school). Questionnaires were collected from volunteer society members using prepared questionnaires asking if they will be willing to use cemeteries as green (social) spaces.

3-3 DATA ANALYSIS

3-3-1 On Site Temperature and Humidity Survey

Extracted data from the devices in xls format was processed in Microsoft excel. Scatter plot, three value graphs (Minimum, Average, and Maximum), and box plot was prepared for temperature and relative humidity. Taking into account the report from data collectors' and the scatter plot data was checked for errors and discrepancy from the determined method. After data was cheeked three value graph was prepared for temperature and relative humidity;

- For each device and each day as a factor of time of the day (Hourly),
- Mean comparison for inside and outside for each day as factor of time of the day (Hourly),
- Comparison of device average for each day as a factor of time of the day (Hourly)
- Weekly device average as factor of day
- Weekly device average as a factor of time of the day (Hourly)
- Weekly average comparison of inside and outside as a factor of day,
- Weekly average comparison of inside and outside as a factor of time of the day (Hourly),
- device weekly as a factor of day
- device weekly as a factor of time of the day (Hourly)

To have good understanding of the data box plot was prepared for temperature and relative humidity;

- Comparison of hourly data for each device daily
- Comparison of devices data for each day
- Comparison of hourly data for each device weekly

Result that was relevant and worthy to the study were chosen.

3-3-1 Questioners Survey Analysis

Data gathered through questioner of user satisfaction survey were encoded to Microsoft excel, arranging the questions in raw and respondent answers in column. Codes were given whole number representation to all answers according to the sequence they are prepared in the questioner, were 0 was used for non-answered questions. In the case of open-ended question and phrase answers all possible answers were listed. Similar expression was changed to one holistic expression, those expressions were given code number after sorting them in their

alphabetic order. After encoding the data, the data was copied into another excel file where it was transposed. Questions were arranged in columns and respondent answers in raw for the convenience of analyzing the data. Charts and tables were produced using the "count if" function in excel.

A *Users Satisfaction Survey on Thermal Comfort*

From the user satisfaction survey data such as; Demographic, years lived in the city, place of preference for living considering weather condition, weather perception at the questioning time, their desired weather condition in relation to the time of questioning, and counter measures for attaining thermal comfort were presented in table and graphs.

B *Future Usability Survey*

From the future usability survey data such as; Demographic, availability and type of green(social)space, social perception of the cemetery, and willingness to use the cemetery as green(social)space were presented in table and graphs.

3-3-2 Existing Situation Analysis

Existing situation analysis was done it in three categories, as described in section 3-2-3Existing Situation Analysis, based on site inventory using; maps, diagrams and narrations. Scaled Google map image, photograph data was processed with computer graphic software's, adobe software; Illustrator, and Photoshop.

For the land cover survey coverage area was calculated with Photoshop pixel count. First, converting the maps into colors in adobe illustrator with reference scale. Following that 2d images were exported to adobe Photoshop. Taking the reference scale measurement on the image, number of pixels was counted and area calculated automatically.

3-3-3 Case Study Analysis

The collected raw data (maps, pictures and descriptions) was analyzed and transformed into diagrams, maps and narrations by relating the physical character of the case site with microclimate regulation potential and their recreational use. Based on those analysis points, design principles were extracted, methods and guidelines with a potential of being contextualized and used for the development of the study site were developed.

Table 5:'Research strategy method and techniques applied' (Gebremeskel, 2014)

No.	Research questions	Research design	Data Source	Data Analysis
1	Do people feel cooler within the study site, than the immediate surrounding area?	• Data will be collected through interview, using prepared interview questions. • Since this interview is prepared to assess users' thermal comfort, data will be collected on hot seasons in Addis Ababa which is around November – October and March-May. Therefore, for this specific study data was collected from December 10- December 16, 2018 between 12:00 – 16:00 o'clock. • An average of 2100 people use the study site per one day and 70% of them which is 1470 people are expected to come between 12:00 – 16:00 o'clock. According to the climatic condition of Addis Ababa, this time of the day is considered as the hottest time during summer. Based on population calculation with 95% confidence level and 7% margin of error, from a total of 4410 users visiting the site between 12:00 to 16:00 o'clock per three days about 188 interviews will be collected. Although most scientific studies use 3% margin of error, because of the nature of the study site most people come for burial services which makes it difficult to convince users to participate in a survey during their time of loss. Therefore, for this specific study 7% margin of error is used in addition there is time and resource limitations to undertake a detailed survey. • Data collectors will walk through the site from 12:00 to 16:00 o'clock for three consecutive days, interviewing volunteer users with a prepared interview questions asking if they are feeling cooler temperature in the compound than the immediate surroundings.	150 volunteer cemetery users and 38 staff members (gardeners, guards, and burial service organizer)	• The raw data collected through an interview were reorganized and developed into a table format, using on excel then, statistical percentages was extracted. • Based on the statistical data extracted from the interview a detailed descriptive narration of the responses was developed by relating the existing physical character of the study site with the responses of users on thermal comfort.

2	Is the temperature and humidity inside the study site lower than the immediate surrounding area?	• Since this research question raised a question of temperature and humidity difference between two sites, temperature and humidity measurement inside and outside of the study site is needed. Therefore, temperature and humidity will be measured at a total of 20 selected spots, 10 inside the study area and another 10 outside the study site (within a 1000m radius from the study site). • Measurement Procedure: • Temtop 20H automatic temperature and humidity data logger will be used. • Data logger cage: 15*15*20cm wooden shelter will be used to protect data loggers from direct sunlight, meanwhile allowing enough air movement inside the cage. • Data loggers will be mounted 1.5-2m above ground level then, temperature and humidity will be measured on mid-October, 2018 from 11:00 to 16:00 o'clock for seven consecutive days at 20 selected measurement spots. • Because only 4 recording devices are used for this specific study, in order to cover all measurement spots the data logger will be moved from one place to the other every 10 minutes.	On-site temperature and humidity measurement.	• Automatically generated temperature and humidity report will be further analyzed by comparing results from inside the study site and outside the study site. • By using the average temperature and humidity records per day from 10 selected sites (inside), calculate the mean per day temperature and humidity of the compound. Using the same procedure calculate the mean temperature and humidity for outside the study site. • Calculate the mean temperature and humidity for seven days for inside and outside the study site. • Using mean temperature and humidity results per day and mean temperature and humidity results for the seven days of the two sites, undertake a comparison analysis and identify whether the temperature and humidity inside the study site are lower than the outside temperature and humidity records or not. • Average temperature and humidity records from 20 selected spots will be feed into GIS software to develop graphical representations of the existing temperature gradient of the study site and its surrounding.

3	Will people living around the study site be willing to use cemeteries as green spaces?	• Data will be collected from potential users (people living within a 1000-1500m radius of the study site) through prepared questionnaires. • In order to identify potential users, the expected service radius of the study site will be identified. • According to the Addis Ababa master plan standard, a green space with an area up to 1ha is expected to deliver service for about 40,000 people living within a 1000-1500m radius from the site. • Although the study site covers about 10 ha area of land, however, because the main function of the site is burial ground, with the assumption of using only about 1ha area of land for refreshment the above standard will be used to select potential service users. Which will be about 40,000 people living within a 1000-1500m radius from the site boundary. • Based on population sampling calculation with 95% confidence level and 7% margin of error, about 196 questionnaires will be collected from the site. Although most natural science researchers use 3% margin of error, because this research question is mainly designed to support decision making at the proposal stage of the research, therefore, population sampling with 7% margin of error will sufficient to analyze users' perspective. Moreover, there is time and resource limitations to undertake a more detailed survey.	Primary data: Sample population from people living within a 1000-1500m radius from the study site. Secondary data: Literature from AACBPCDAA and Gulele sub-city office, if there has been any study done on this area.	• The collected raw data will be categorized and feed into an excel software with a table format having each question on the column, and responds on the raw section. Then, numbers starting from 0 will be used to represent each possible response. • Using Excel software, the first step will be to analyze the data and categorize responses as yes or no response. Questionnaire results will be transformed into statistical percentages to identify how much of the respondents are willing to use cemeteries as green spaces if the study site is developed to provide such a service. • Then, develop a relationship using age as an independent variable and willingness to use as a dependent variable. This will help to inform decisions when designing the study site, for example, what kind of activities should be plugged into the site. • Develop another relationship using sex as an independent variable and willingness to use as a dependent variable, which will be useful on the design stage.

		• The 196 sample questionnaires will be collected from randomly selected volunteer society members living within a 1000-1500m radius of the study site. In order to ensure fair distribution of representative people throughout the data collection site, based on ease of access and location data collection site will be randomly classified into four sections. Then four data collectors will walk through each section for three consecutive days between 14:00-17:00 o'clock (this time is chosen to get more society members, after 15:00 o'clock students will be off from school) to collect questionnaires from volunteer society members using prepared questionnaires asking if they will be willing to use cemeteries as green spaces.		• The second important aspect will be suggestions of activities to be included on the study site development process, although this is not directly related to the main objective it will be a good input to incorporate users' interest on the design process. Therefore, people who respond yes to this research question will be further categorized based on suggested activities (landscape characters). • Finally, draw results from each analysis and develop a narrative based on analyzed relationships.
4	Does the study site encompass characters that can enable the site to deliver microclimate regulation service?	• Study site analysis: through site inventory and reviewing other study made about the site. • Map the green and non-green area distribution of the study site. • Study the existing species identity composition of the study site.	Primary data: Study site inventory Secondary data: Literature and maps from AACBPCDAA and Gulele sub-city office	• Based on site inventory develop a site analysis (using maps, diagrams and narrations) and relate with the results from question No. 4. • Then, compare the current situation of the study site with the outputs from the literature through narration then, identify the gap that needs intervention.
5	How can landscape design solution enable cemeteries to provide microclimate regulation and recreational service for the community?	• Two case study were analyzed based on: • Site inventory: to explore different design techniques and considerations applied on the site. • Map the green and non-green distribution of the site. • Explore the species identity used at case sites and relate to microclimate regulation capacity. • Identify different design principles and techniques used to integrate burial function with recreational service. • Literature review: collect different maps, standards, guidelines and recorded documents from the case site management office. • Identify important methods and guidelines used, that enable the case site to deliver both burial and recreational services.	Case study site inventory and works of literature about case sites.	• The collected raw data (maps, pictures and descriptions) will be analyzed and transformed into diagrams, maps and narrations by relating the physical character of the case site with microclimate regulation potential and their recreational use. • Based on the above analysis and outputs from the fourth question, extract design principles, methods and guidelines with a potential of being contextualized and used for the development of the study site.

CHAPTER 4 RESULTS

4-1 MICROCLIMATE REGULATION CAPACITY ASSESSMENT

4-1-1 Air Temperature and Humidity

The recorded temperature result shows a gradual increase from day 1 to day 6 in all recording spots, it rises from an average min. of 22°C to an average max. of 31°C (Figure 4-1). In contrast the relative humidity declines from an average max. of 45% to an average min. of 20% from day 1 to day 6, also on the first day of recording an extreme rise of RH value up to 55% have been observed (Figure 4-1). Looking at the overall trend, an inverse relationship between temperature and relative humidity was observed, the RH value decreases as the temperature increases.

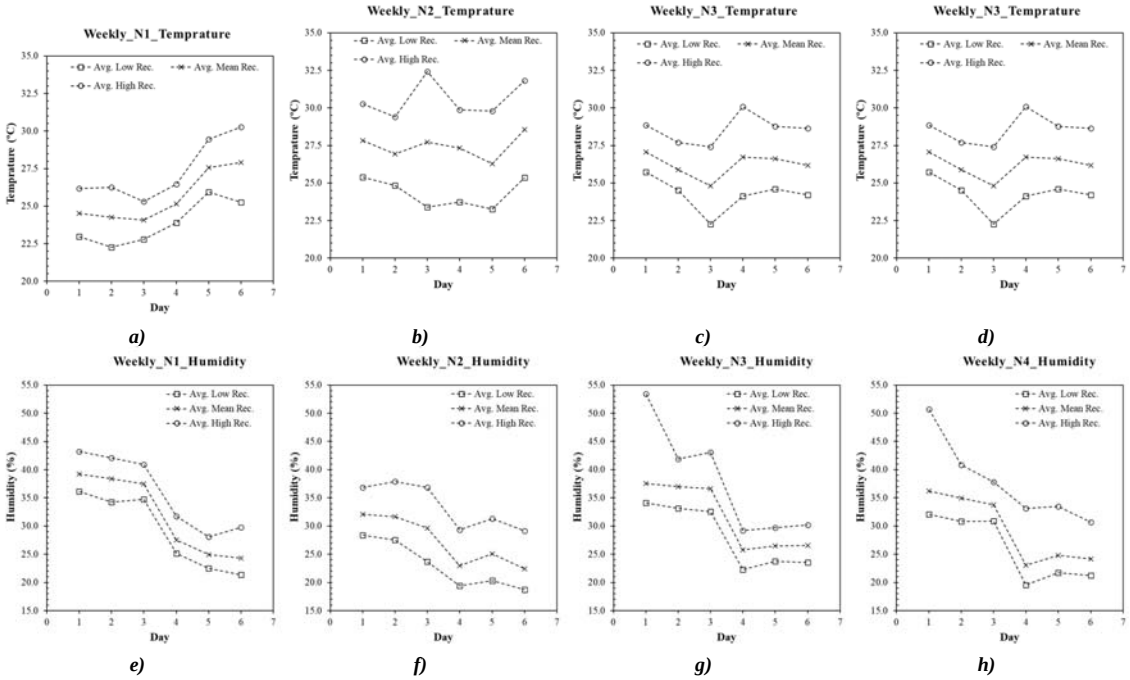


Figure 4-1 Graphs showing Weekly Temperature and Relative Humidity results of the four devices N1-N4, recorded on December 2018

According to National Metrological Agency (NMA) of Ethiopia, the actual temperature recorded on the month of December 2018 in Addis Ababa, precisely from 10^{th} – 16^{th} of December ranges from an actual high temperature of 28°C to an actual low temperature of 15°C (Figure 4-2). When comparing this with temperature results from onsite record (Figure 4-1), a variation of + 2 °C up to 3 °C was observed. However, this could be expected since the NMA result was an average for whole city.

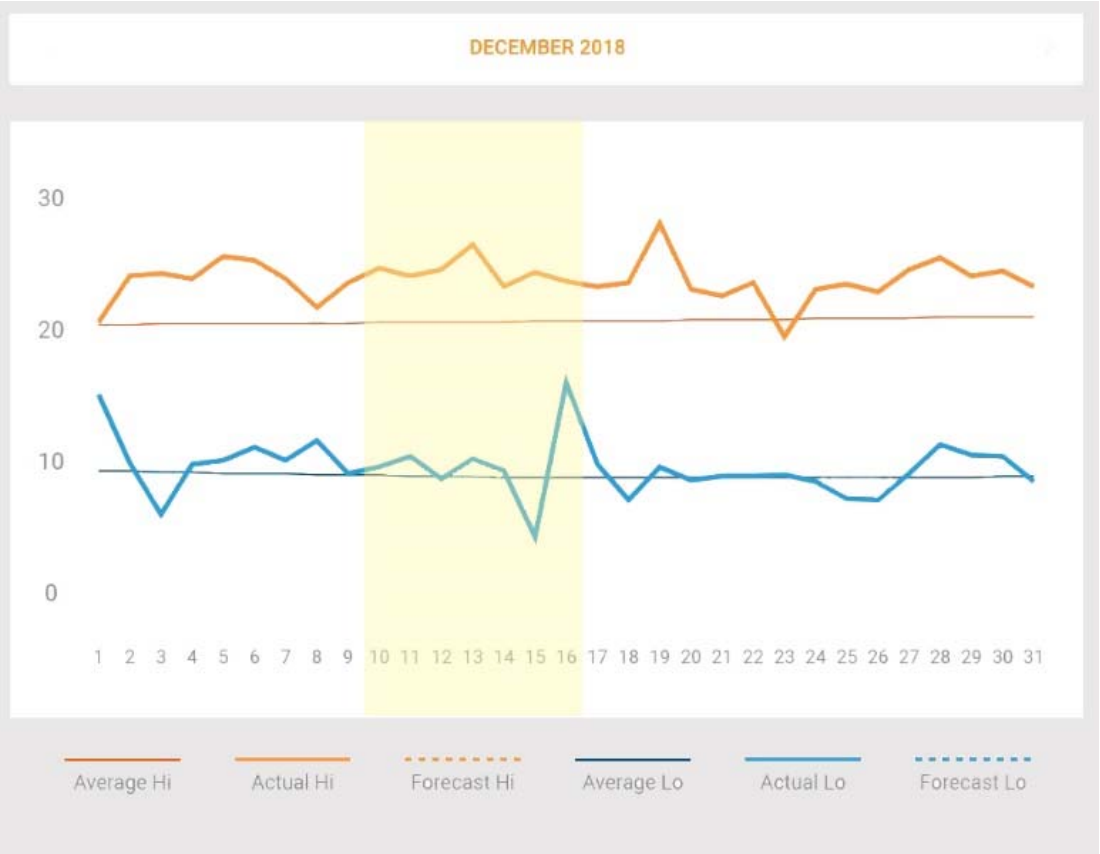
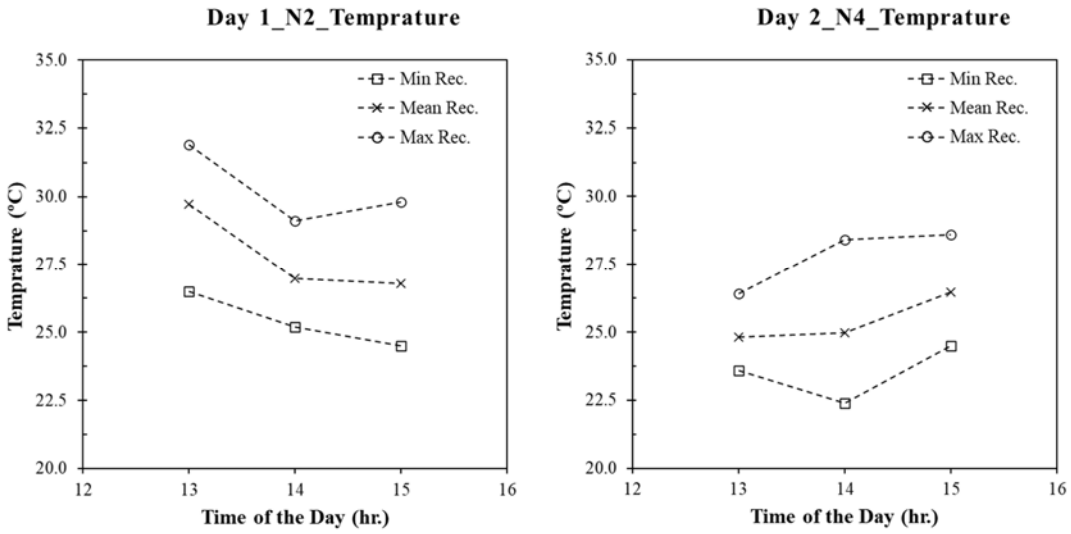


Figure 4-2 Graph showing temperature trend on the month of December 2018, Source - NMA website, Accessed August 2019

Looking at the daily average temperature trend, out of 24 daily temperature record result, 20 results shows a slight drop in average temperature from 13:00 to 16:00 EST; the remaining 4 shows slight increase. This variation in average temperature ranges from 0.5°C to 3°C, and the maximum temperature values were noted to be between 13:00 to 18:00 EST.



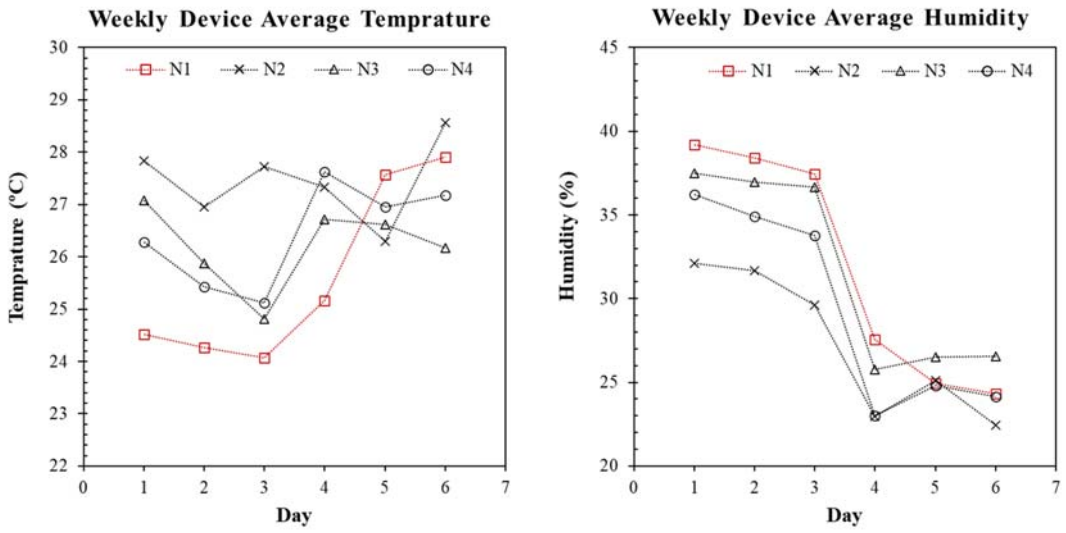
a *b*

Figure 4-3 Graphs showing daily temperature results for day 1_N2 and day 2_N4

As shown on Figure 4-3, daily average temperature trend for day 1 device 2 (N1) shows a temperature drop (30°C to 27°C) from 13:00 to 15:00 EST, in contrast the average temperature on day 2 device 4 (N4) tends to increase from 13:00 to 15:00 EST (Figure 4-3). According to the recorded RH results, the daily average RH trend varies from the one day to another it also differs from device to device. Therefore, it is hard to trace a trend on the daily average RH value as observed on the temperature outcome.

4-1-2 Comparison between In-side and Out-side Temperature and RH values

The daily average temperature in-side the cemetery (N1) was mostly noted to be lower than the outside temperature (N2, N3 & N4) but on day 5 and 6 it is observed to be higher than the outside temperature. In contrast RH value in-side the cemetery (N1) was recorded to be higher than the surrounding area (N2, N3 & N4), only on day 5 and 6 it decreased and remained constant when compared to the out-side area.



a *b*

Figure 4-4 Graphs showing weekly device average temperature and humidity results

Since devices N2, N3 and N4 were distributed within the survey area outside the cemetery compound, the change in temperature and RH when compared to N1 was different for each device. This could be because of the variation in temperature and RH resulted from land use and land cover character of each site. Therefore, it was important to compare temperature and RH results of N1 with each of the other three devices. As shown on (Figure 4-5). Although the recorded temperature at N1 remained slightly lower than the other three devices, the variation in temperature values was not the same for all the devices used out-side the study site it ranges from 0.5°C to 3°C. For example, the temperature value difference between N1 and N2 was observed to be higher than N3 and N4 which reaches up to 3°C. But N1 and N4 were observed to have a very small temperature difference which ranges from 0.5°C to 2°C (Figure 4-5). Though it is possible to comprehend there was lower temperature inside the cemetery than the surrounding area, it needs further explanation on why the change value varies from one device to another.

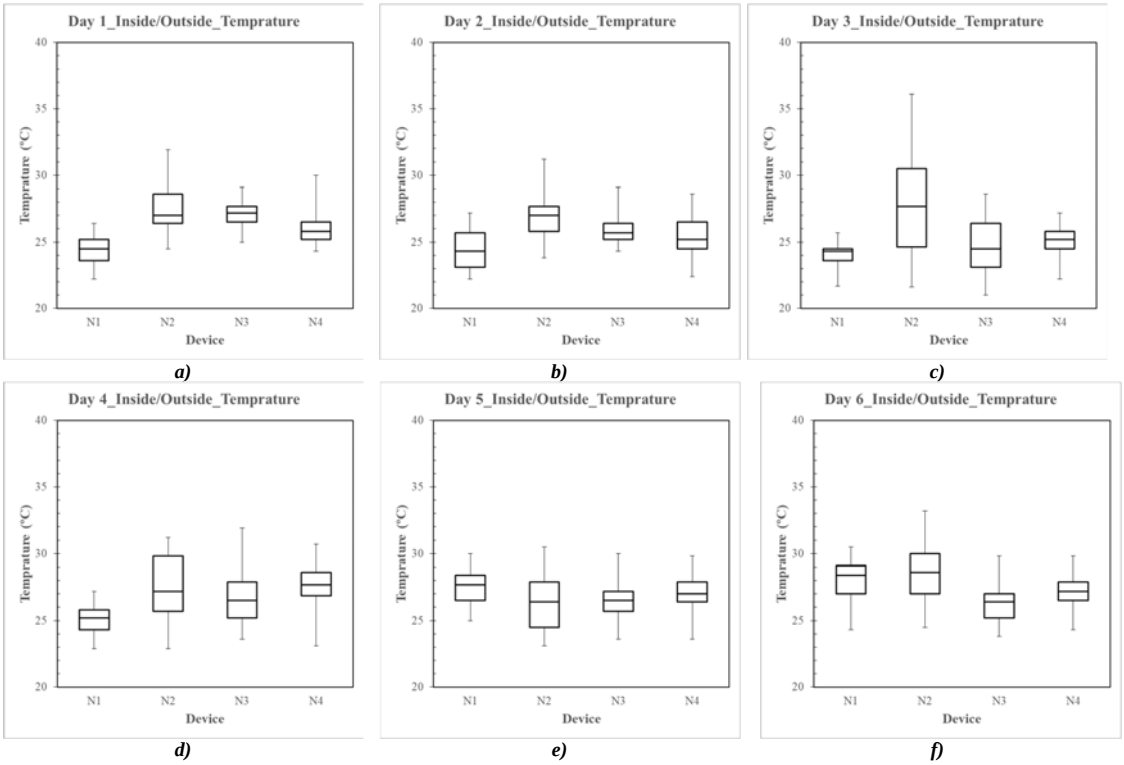


Figure 4-5 Box plot graphs showing average temperature values per device for 6 days, recorded on December 2018

In contrast, the RH value of N1 is observed to be higher than the other three devices showing RH result of N2, N3 and N4 which is recorded out-side Kechene Medhanealem cemetery. Similarly, the variance value between N1 and the other three devices differ for each device. For instance, there is 8% difference between average RH value of N1 and N2 at day 3, on the other hand only 0.5% RH value difference was observed between N1 and N3 a recorded at the same day (Figure 4-6C). This can be because of the change in land use land cover character of each site where data was collected. Therefore, it is crucial to study the existing land use land cover matrix of the study site and narrate a logical reasoning for the fluctuation of these results. But having this in mind, the RH results for the consecutive 6 days confirm that average RH value in-side Kechene Medhanealem cemetery is higher than the RH value of the surrounding area (Figure 4-6).

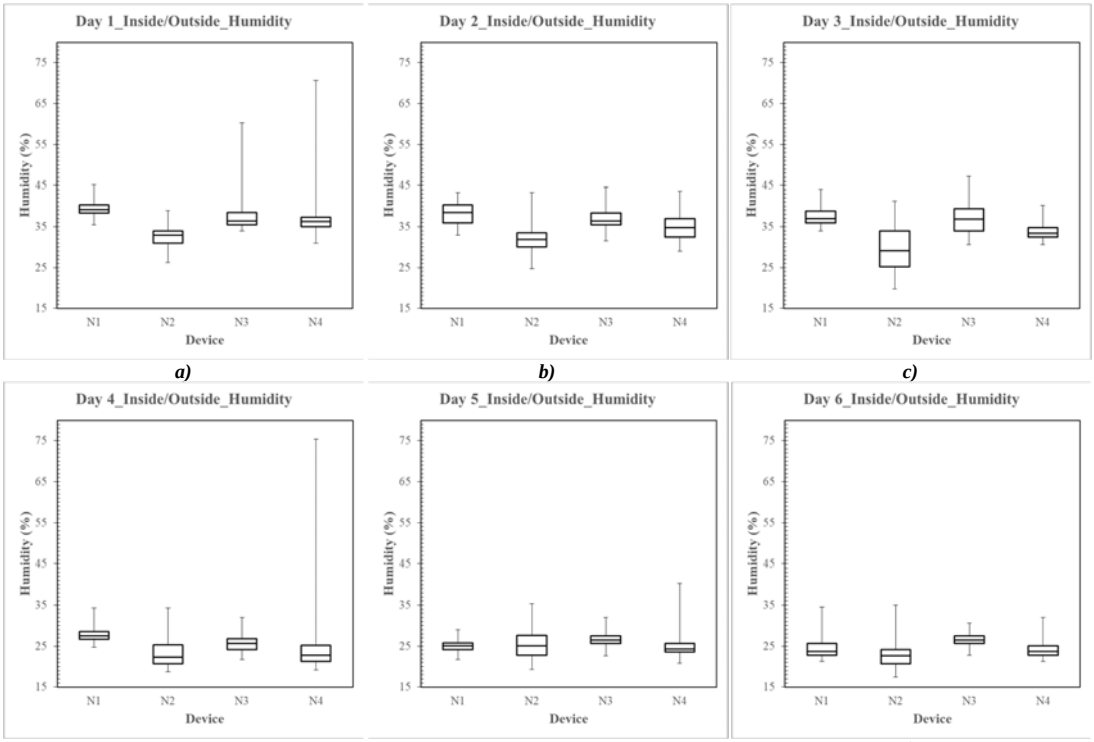
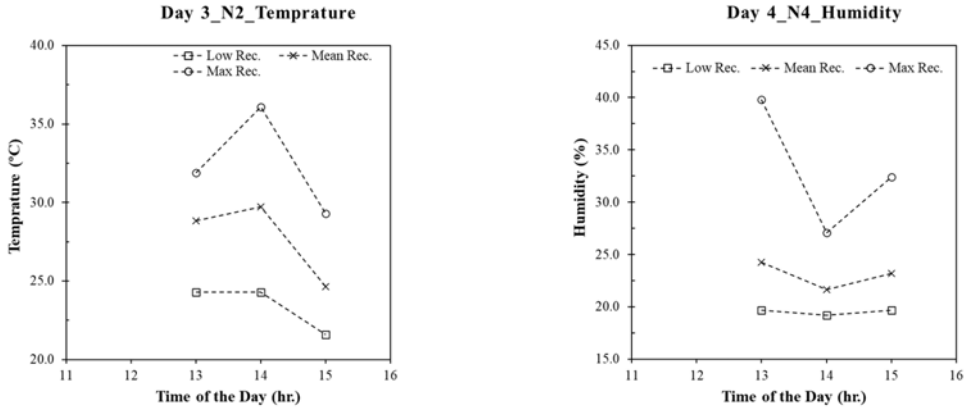


Figure 4-6 Box plot graphs showing average RH values per device for 6 days recorded on December 2018

4-1-3 Temperature and Humidity Recorded Data Validity

As shown in Figure 4-5 and Figure 4-6 the result contains some errors. Therefore, checking data validity was necessary. For temperature, Figure 4-5(c), data from day 3 device number 2. For humidity, Figure 4-6(d), data from day 4 device number 4 was selected to verify the data since those were the result with higher error margin. Looking into the data in scatter plot for recorded low, mean, and high as shown in **Figure 4-7**highlights data outliers into specific time.



a **b**

Figure 4-7 daily device scatter plot for Low, Mean, and High record a) Day 3 N2 Temprature, b) Day 4 N4 Humidity

to further understand the cause of those outlier data points boxplot was generated for each trip, which was half of round as described in method section, comparing for the 5 spots where data synchronization was possible. As shown in **Figure 4-8**, **Figure 4-9** the spots exhibited variance in temperature and humidity. This variance could be related to the spot specific physical features, wind speed in relation to specific recording time, overall weather condition, and including methodological data recording errors. To verify if the error was significant or not Two-Way ANOVA test was conducted. As shown in **Figure 4-10**, the result both for Day-3 Trip-1-Temprature and Day-4 Trip 2-Humidity suggests that the error was not significant (P value of < 0.05).

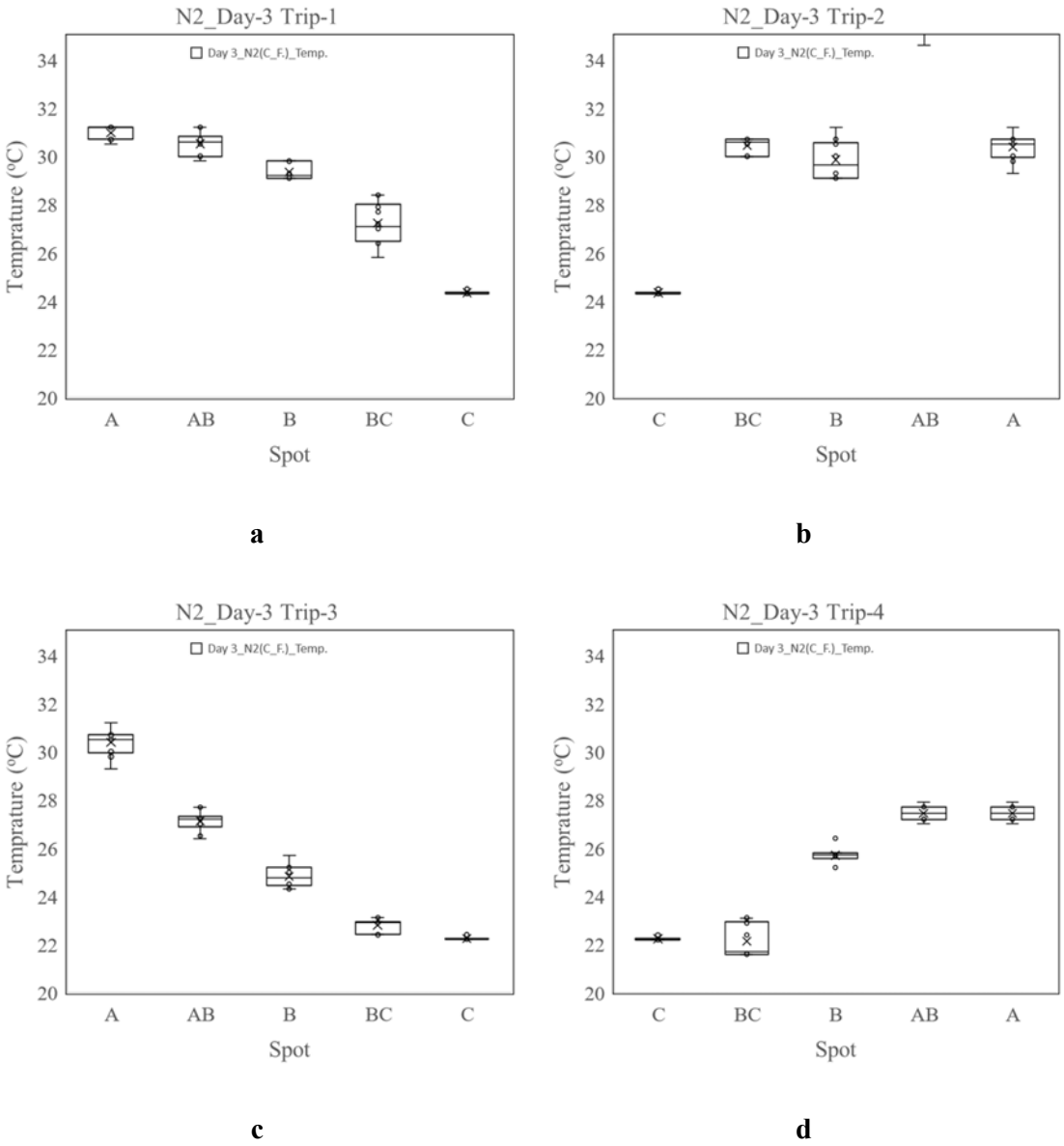


Figure 4-8 Day3N2 spot temperature result

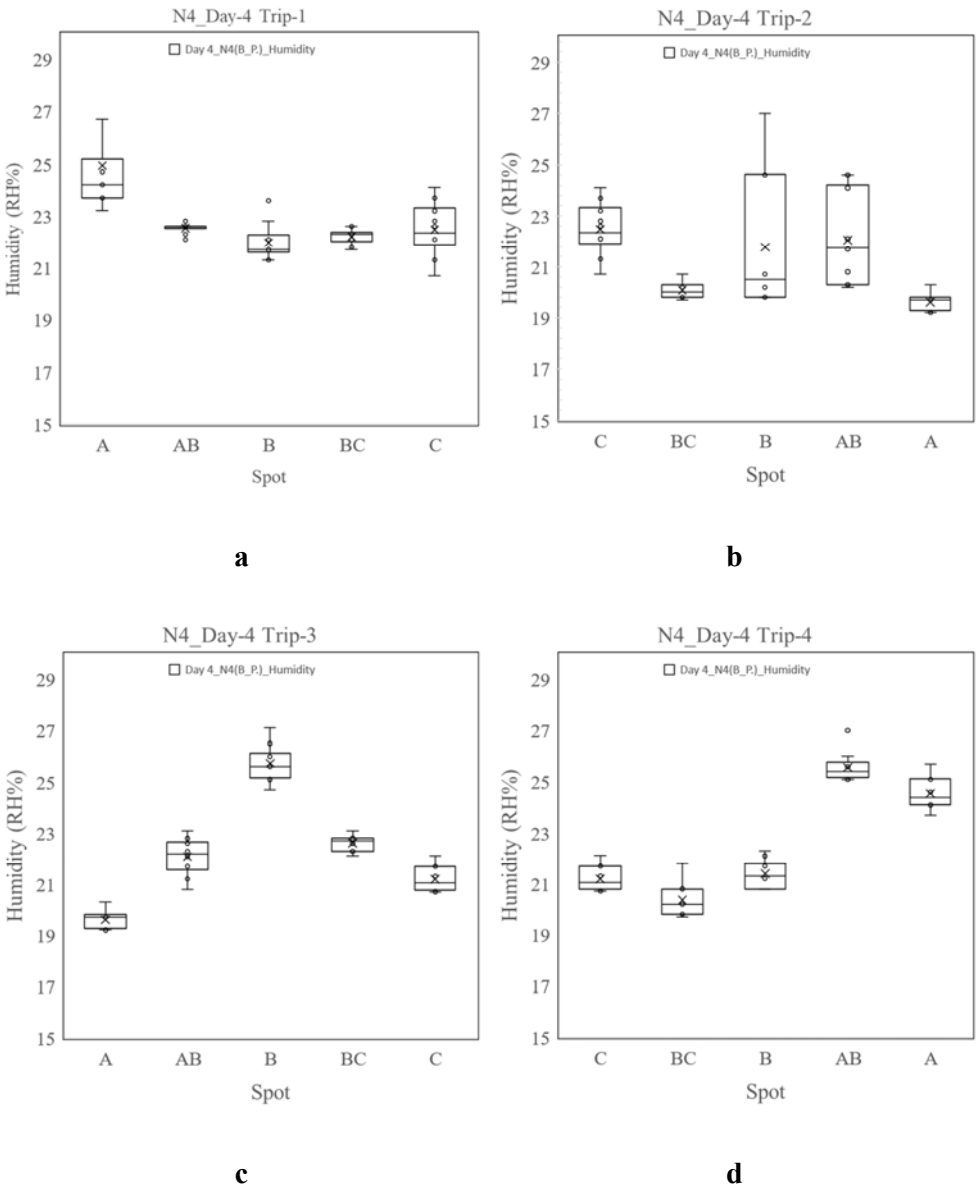


Figure 4-9 Day4N4 spot humidity result

DAY 3 Trip 1 Temprature
Anova: Two-Factor With Replication

SUMMARY	N1(Inside)	N2(C_F.)	N3(SP_E.)	N4(B_P.)	Total
A					
Count	6	6	6	6	24
Sum	150.20	187.20	164.70	152.70	654.80
Average	25.03	31.20	27.45	25.45	27.28
Variance	0.01	0.00	0.13	0.08	6.25
AB					
Count	6	6	6	6	24
Sum	150.00	181.50	160.50	154.50	646.50
Average	25.00	30.25	26.75	25.75	26.94
Variance	0.00	0.13	0.08	0.00	4.26
B					
Count	6	6	6	6	24
Sum	146.40	175.50	168.00	151.30	641.20
Average	24.40	29.25	28.00	25.22	26.72
Variance	0.01	0.08	0.36	0.07	4.20
BC					
Count	6	6	6	6	24
Sum	148.00	166.60	134.00	150.40	599.00
Average	24.67	27.77	22.33	25.07	24.96
Variance	0.07	0.35	0.01	0.15	4.01
C					
Count	6	6	6	6	24
Sum	150.10	146.00	139.60	146.20	581.90
Average	25.02	24.33	23.27	24.37	24.25
Variance	0.07	0.01	0.32	0.01	0.50
Total					
Count	30	30	30	30	
Sum	744.7	856.8	766.8	755.1	
Average	24.82	28.56	25.56	25.17	
Variance	0.09	6.05	5.66	0.27	

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Sample	172.7428333	4	43.18570833	450.1637422	5.48789E-63	2.462614926
Columns	264.523	3	88.17433333	919.1209173	1.25697E-72	2.695534255
Interaction	168.0445	12	14.00370833	145.9733322	1.10919E-57	1.850255114
Within	9.593333333	100	0.095933333			
Total	614.9036667	119				

DAY 4 Trip 2 Humidity
Anova: Two-Factor With Replication

SUMMARY	N1(Inside)	N2(C_F.)	N3(SP_E.)	N4(B_P.)	Total
C					
Count	6	6	6	6	24
Sum	169	140	144.9	138	591.9
Average	28.17	23.33	24.15	23.00	24.66
Variance	0.67	0.23	0.68	0.68	4.94
BC					
Count	6	6	6	6	24
Sum	153.5	135.9	144.2	121.1	554.7
Average	25.58	22.65	24.03	20.18	23.11
Variance	0.36	0.04	0.05	0.12	4.23
B					
Count	6	6	6	6	24
Sum	169.5	149	140.8	138.1	597.4
Average	28.25	24.83	23.47	23.02	24.89
Variance	1.06	0.04	0.04	7.77	6.33
AB					
Count	6	6	6	6	24
Sum	161.3	131.6	145.3	138.9	577.1
Average	26.88	21.93	24.22	23.15	24.05
Variance	0.38	0.21	0.24	2.03	4.10
A					
Count	6	6	6	6	24
Sum	162.7	119.2	148.3	116.4	546.6
Average	27.12	19.87	24.72	19.40	22.78
Variance	0.60	0.13	0.04	0.06	11.26
Total					
Count	30	30	30	30	
Sum	816	675.7	723.5	652.5	
Average	27.20	22.52	24.12	21.75	
Variance	1.51	2.89	0.35	4.55	

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Sample	83.32383333	4	20.83095833	27.02803668	3.28157E-15	2.462614926
Columns	523.6389167	3	174.5463056	226.4727274	1.93846E-44	2.695534255
Interaction	109.1348333	12	9.094569444	11.80014633	1.80686E-14	1.850255114
Within	77.07166667	100	0.770716667			
Total	793.16925	119				

Figure 4-10 Two-Way ANOVA result for Day3Trip1(Temprature) and Day4Trip2(Humidity)

4-1-4 Users Satisfaction Survey on Thermal Comfort

Table 6 Shows, the age and gender composition of the respondents. Out of total 147 respondents 87 of them are men, 45 Women, and 15 of them didn't indicate their gender. The age composition of the respondents shows that most of the respondents are age of 15-54 which of 25-34 was the highest followed by 15-24.

Table 6 Age and Gender composition of Respondents

Age	Men	Women	Missing Data	Total
15 -24	12	21	3	36
25-34	51	12	9	72
35-44	6	9	0	15
45-54	18	3	0	21
55-64	0	0	0	0
65-74	0	0	3	3
>75	0	0	0	0
Total	87	45	15	147

As shown in Figure 4-11 below, most of the respondents, which was 96 % stayed in Addis Ababa more than a year which was set as minimum criteria in which respondents could be familiar with the weather of Addis Ababa. It was also noted that 90% of the respondents lived in Addis Ababa more than 4 years which confirms that they were aware of the seasonal change in the city as well they have enough time to disregard their impression based on their previous place of living.

They were also asked if they lived outside of Addis Ababa to check weather their experience have an impact in their perception about thermal experience. Except the 42 respondents all have lived in other cities for at least 1year outside of Addis Ababa. 36 of those lived in two different cities other than Addis Ababa. And out of those 12 of them lived in 3 cities outside of Addis Ababa.

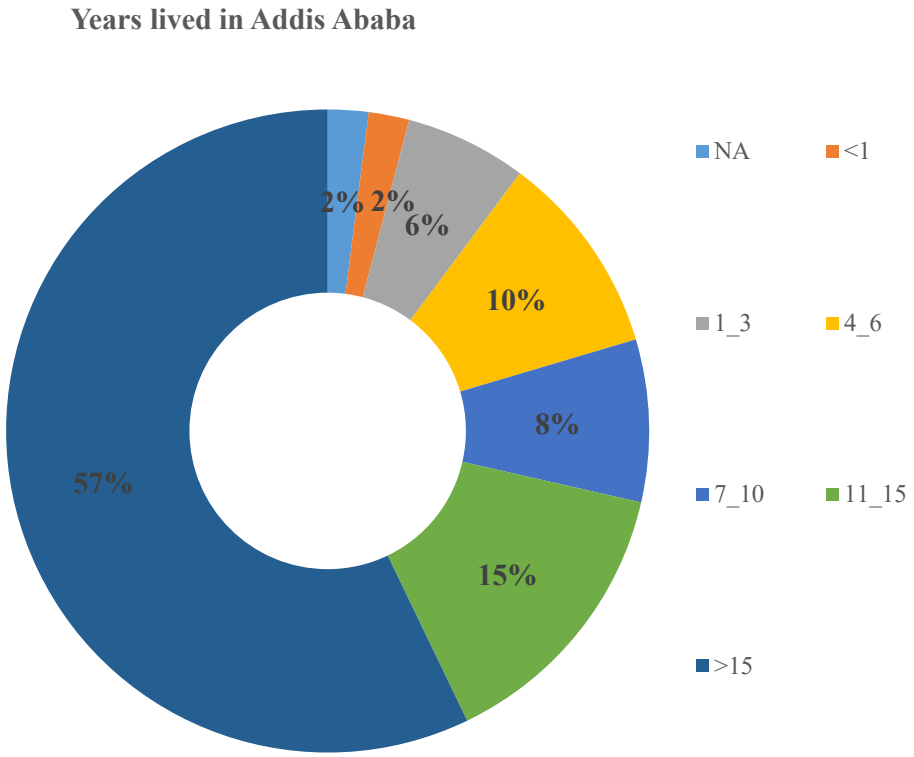


Figure 4-11 Years lived in Addis Ababa

In addition, respondents place preference based on thermal comfort was assessed to determine user's satisfaction about microclimate character of Addis Ababa, a city where the study site is located. Figure 4-12 shows response to preference of place to live in considering the weather, half of the respondents choose Addis Ababa. Hawassa was the second place preferred by number of respondents and Bahir Dar follows as third. This result shows that quite number of people are dissatisfied with the weather of Addis Ababa, this result supports the research objective of this paper.

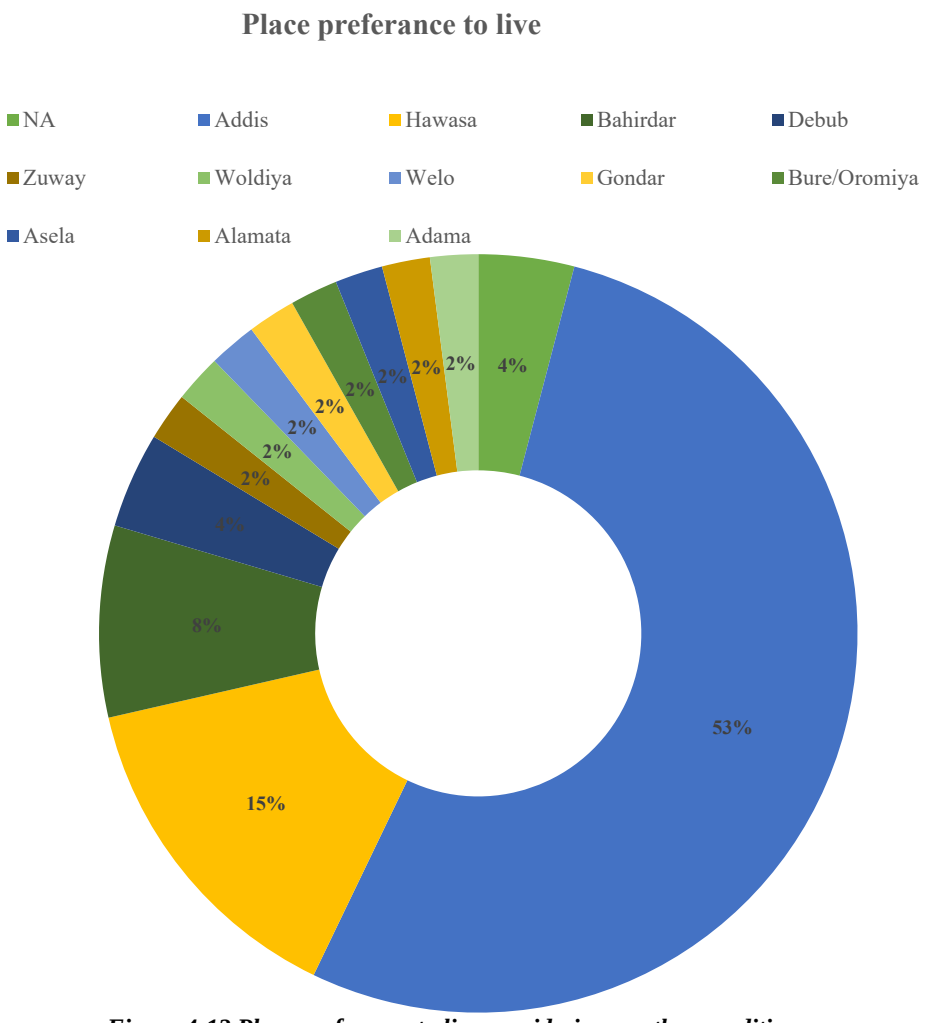


Figure 4-12 Place preference to live considering weather condition

In order to study user's satisfaction level with regard to thermal comfort respondents were asked to rate their perception of current temperature, humidity and wind during data collection. This assessment was done by means of ASHRAE Standard 55, a 7-point scale (VL-very low, SL-slightly low, L-low, M-medium, H-high, SH-slightly high, and VH-very high) is used to rate temperature, humidity and wind level (Wang, Groot, Bakker, Wörtche, & Leemans, 2017).

As shown on Figure 4-13, more than 45% of the respondents fills medium temperature level at the time of data collection, it was also noted that quite a number of people, which was 34% rate the temperature level as higher than average (SH, H and VH) (Figure 4-13). More than half of the respondents which was 60% rate the humidity level as lower than average (L, SL and VL) out of this number 40% said there is very low humidity level (Figure 4-13). It was also noted that about 30% of the total number of respondents rate the humidity level as medium. About

86% of the respondents voted to experience average to very high wind speed during data collection (Figure 4-13). In general, this result shows there was medium to very high temperature level with lower-than-average humidity and a wind speed ranging from medium to very high level, which supports the assumption of this research about the presence of thermal discomfort on the study site.

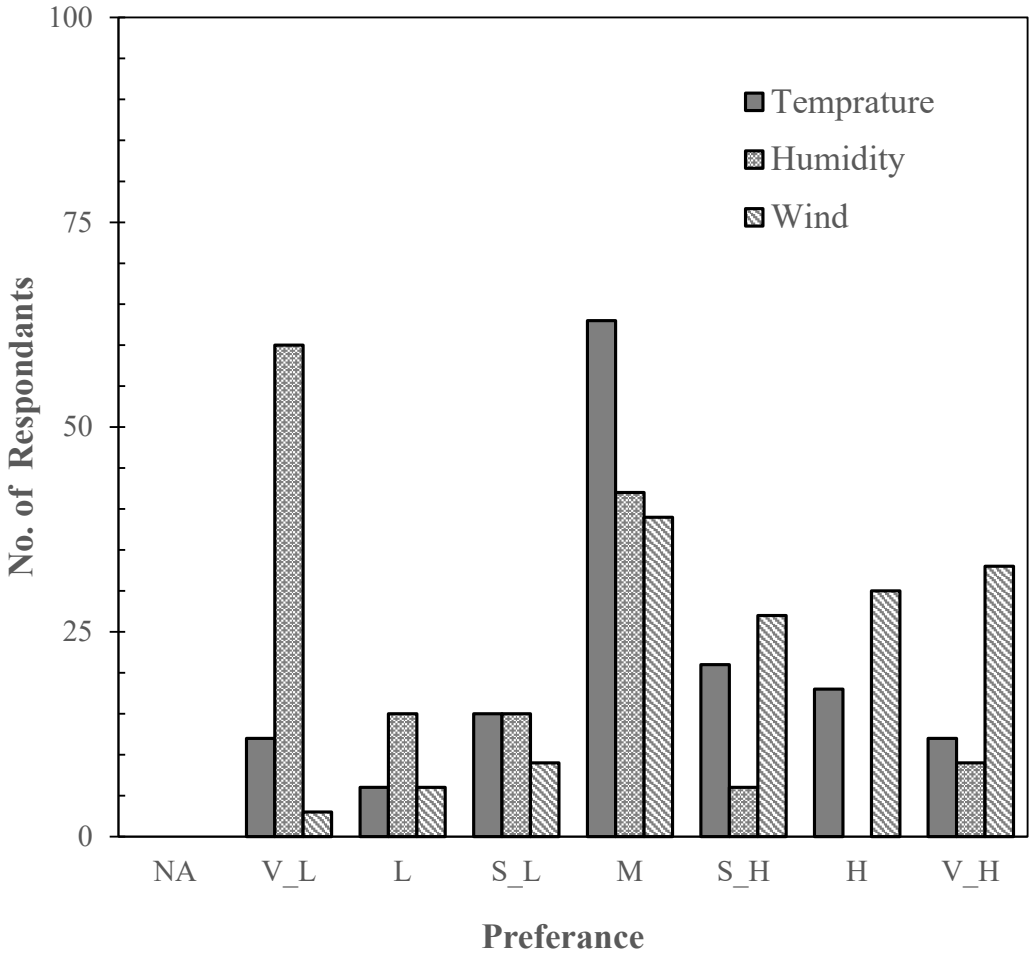


Figure 4-13 A graph showing user's weather perception during data collection with a scale ranging from very low to very high,

Based on respondents' current weather experience during data collection they were also asked to evaluate their weather condition preference by categorizing as reduced, as it is, and increased. As shown on Figure 4-14 about 51% of the respondents wished the temperature level be reduced, 40% voted for a similar temperature level as it is during the data collection and only about 9% voted for a higher temperature.

Looking at the humidity level about 58% of the respondents preferred a higher humidity when compared to the existing humidity level during data collection, 26% voted for the same humidity as it was and only 16% said they want a much lower humidity (Figure 4-14). As shown on the figure below 54% of the respondent whished for reduced wind speed, 30% voted for similar wind speed as it was and about 16% preferred a much higher wind speed.

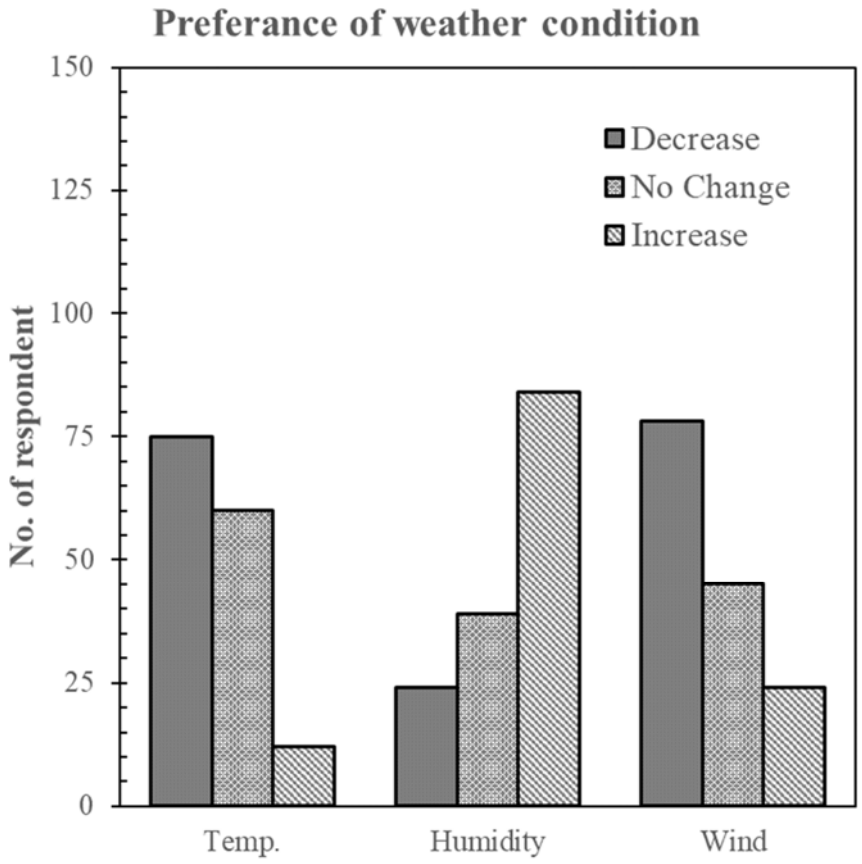


Figure 4-14 A graph showing user's weather condition preference categorized in to; Reduced, As it is, and Increased

This result shows there was more preference for a reduced temperature level, higher humidity and reduced wind speed during data collection, which proves the need for microclimate regulation in the study site. In order to explore contextualized solutions for heat prevention in the study site, users were asked to list their copping mechanism during warm weather condition. As shown on Figure 4-15 there are four major solutions practiced by respondents in time of heat.

The higher number of respondents which is 34% looks for shade, 27% reduces clothing as a solution to cope with heat, and 21% of the respondents use hat or umbrella. Also, about 9% cope up with the heat by drinking cold beverages. This result shows more than half of the

respondents use manmade or natural shading mechanism as a major solution for warmer weather conditions in the study site. In addition to this the output from this result will inform various design decisions during design phase and it will also feed different contextualized recommendations for this research.

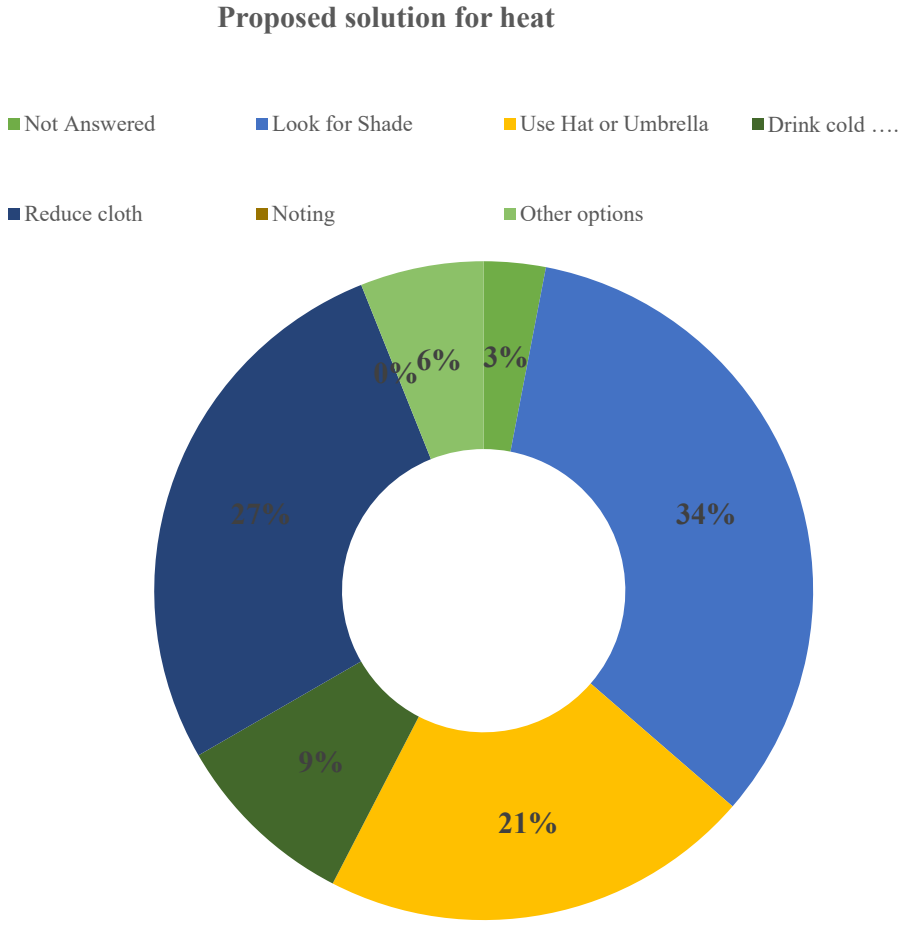


Figure 4-15 Practiced solutions for overheating in Kechene Medhanealem cemetery

4-2 EXISTING SITUATION ANALYSIS

4-2-1 Physical Features of the Case Site

As shown on the figure below landscape features and characteristics of Kechene Medhanealem cemetery has been analyzed then street furniture's like trash bin, sitting fixtures, informal sittings and signage boards were mapped on the site plan (Figure 4-16). Most designed sitting fixtures, trash bin and street signage were collected on the southern part of the site (along the entrance avenue) near the main entrance. On the other hand, informal sitting furniture made of

cut stones were observed around shaded areas of the compound, which can prove the need for more shaded sitting spaces. Although four toilet blocks were observed distributed in the compound, they are very small in size which did not consider number of users in the compound and condition of these toilets were in a poor.

Figure 4-16 Analysis Map for Kechene Medhanealem Cemetery, Source Google Map `ed August 2019

Regarding access points, there are only few pedestrian pathways which are paved with cobble stone also located on the southern part of the compound (near the main entrance). In addition, other unpaved pathways were observed that leads deep in to northern side but along the boundary line a significant area of burial space were left without any proper access options. As shown on Figure 4-16, most of the cemetery area is covered with burial space arranged in a grid system plus there is one tombstone for each remain. Having very few trees planted on the southern part of the site (near the main entrance) most of the area is exposed to direct sun light and looks like an idle space, which obstruct peoples from spending their time in the site. In addition, the fact that most of the burial space is arranged in bigger blocks with a view of a bunch of tombstones at ones create a sense of fear on visitors which also limits users to come to the site Figure 4-17.

a **b**

Figure 4-17 Kechene Medhanealem Cemetery: Burial space Visual experience; a) poorly maintained, b) well maintained

A *Vegetation Composition*

On the burial grounds, only grass was planted as ground cover then every 6 month or one year these grasses will be trimmed to create uniform pattern throughout the compound. Other plants like flowers and shrubs are planted on the side of the roads in the compound and there are very few fenced green spaces. As shown on the Figure 4-18, although the fenced green spaces were better maintained and have some sitting fixtures inside it is totally restricted for visitors to access which kind of loose the whole purpose of having maintained green space inside the cemetery compound

a **b**

Figure 4-18 Fenced green spaces

Following the greed pattern used to allocate burial spaces there are trees planted along the grid but gardeners will trim each tree when they reach about 1m or 1.5m height. And according to an interview with one of the gardeners, the trees are trimmed to allow visual access for guards to look over the compound easily. Around the main entrance of the compound there are some old and matured trees, other than that there are some indigenous trees such as *Casuarina cunninghamiana* (Shewshewe), *Juniperus procera* (Tsid) and *Olea Africana* (Woira) planted here and there with in the site. According to an interview with the site management office, Kechene Medhanealem cemetery was facing a serious water problem mainly used for watering plants on the site therefore, they could not sustain the grass and other vegetation in the compound.

All the above physical assessment analysis suggests that, although the site has a potential to be developed into a park (green space) while providing burial service but further detail research is needed. In addition, the fact that Kechene Medhanealem cemetery has been selected by Addis Ababa city beautification, parks and cemetery management agency as a sample site to improve quality of cemeteries in Addis Ababa makes this site a suitable choice to further undertake experimental researches.

4-2-2 Land Use Survey

Looking at the land use of the survey area, there are four land use categories identified during site survey; residence, mixed use, service area and cemetery. According to the result, the most dominant land use category on the survey area is residential area also, there are different

commercial activities like shops, offices, and recreational services located on sides of access roads.

Figure 4-19 Land Use Map of Survey Area – Around Kechene Medhanealem Cemetery.

In addition, there are various social service areas around the study site such as; churches (Kechene Medhanealem Church and Jehovah's Witnesses Church), health center (Shiromeda Health Center), schools and orphanage center (Kechene Orphanage Camp).

According to a paper done on impacts of land use/land cover change on climate, "Human activities have modified the environment for thousands of years and the impact of these changes have been found in local, regional, and global trends in modern atmospheric temperature records and other relevant climatic indicators" (Hubbard, Lawrence, & Mcalpine, 2010). Therefore, analyzing the land use character of a certain space is an important phase that

could affect climatic performance of an area. Since this research deals with microclimatic issues, the land use survey result will be used to build a rationale about the outcomes of ground-based temperature and humidity survey by relating to the land use character of the survey site. For this reason, the recording spots, were ground based temperature and humidity survey is measured are overlaid on the land use map and these spots are represented by numbers drawn in white and blue on Figure 4-19.

4-2-3 Land Cover Survey

According to Steven M. Crum and G. Darrel Jenerette 2018, "Land cover may influence spatial distribution of land surface temperature (LST), air temperature (Ta) and relative humidity (RH) and each of these microclimate components can have an impact on human health and energy demand" (Crum & Jenerette, 2018). Also, a change in land cover pattern can enhance or degrade the microclimatic performance of a certain space. For example, at the landscape scale when large areas of forests are cleared, the reduced transpiration results in less cloud formation, less rainfall, and increased drying.

Since the research issue focuses on microclimatic performance of a certain space, studying the land-cover pattern of the survey area is an essential phase on the research process. Although ground-based air temperature and relative humidity is measured from the survey site, but as discussed above land-cover pattern has an impact on the results of air temperature and relative humidity measurements. Therefore, the results from this analysis will be used to build a narration about microclimatic character of the survey site by relating results from the ground-based measurement with the land-cover character of the area. For this reason, the recording spots, were ground based temperature and humidity survey is measured are overlaid on the land use map and these spots are represented by numbers drawn in white and blue on Figure 4-19.

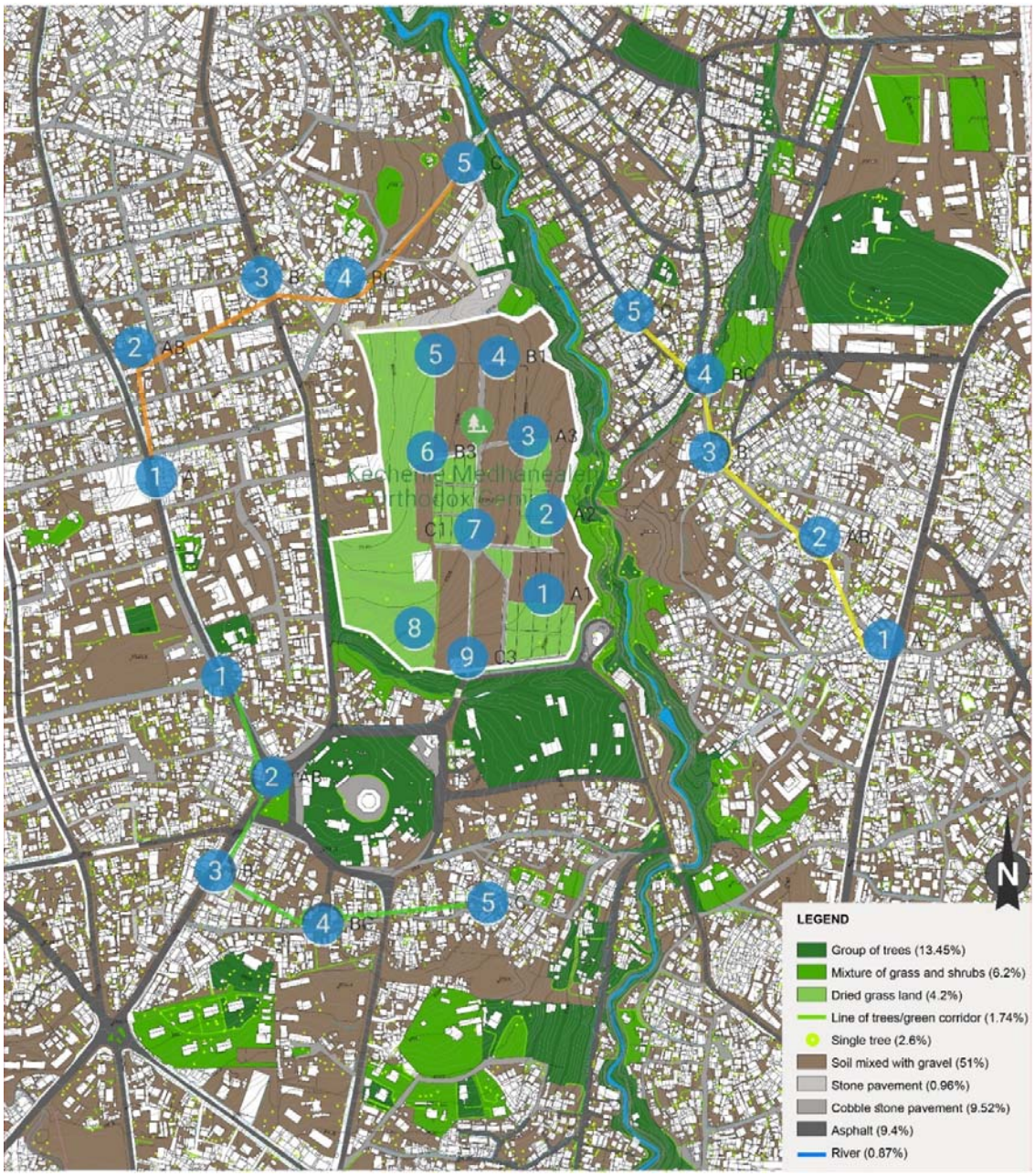


Figure 4-20 Land Cover Map of the Survey Area- Around Kechene Medhanealem Cemetery.

As shown on the above map, there about seven land-cover categories identified on the survey site; tree canopy cover, mixture of grass and shrubs, dried grass land, soil mixed with gravel, stone pavements, asphalt and river. Then, the tree canopy category was further classified in to tree sub groups so that it is easier to relate to their contribution for cooler microclimate; group of trees covers about 13.45%, green corridors (line of trees) with 1.74% coverage and singular trees covers 2.6% of the total survey area.

4-3 CASE STUDY ANALYSIS

4-3-1 International Case: The Ohlsdorf Cemetery, Hamburg

A *Introduction*

Ohlsdorf cemetery is the world largest cemetery located in Hamburg City, Germany. It was established in 1877 as a non-denominational and multi-regional burial site, today it covers 4 million sq. area of land. Although the cemetery is large in area coverage there is 17km road network which provides access to the cemetery. In addition, there are 4 entrances for vehicles and two special public bus lines for pedestrian visitors. Since its opening 1.5 million burials were carried out and now the cemetery hosts 280,000 graves. The cemetery has 230 gardeners taking care of graves and all facilities within the compound.

Figure 4-21 Location map of Hamburg and Ohlsdorf Cemetery, Source Google Map Accessed May 2019

Since the cemetery is located in the heart of the city of Hamburg it is considered as a piece of nature with in the crowd of the city. Which serves as habitat for birds, butterflies and many more insects, in addition to tourists' local peoples come here for the peace and quiet. The cemetery is partly landscaped garden and partly it is a virgin forest.

> *"There is evidence that almost 330 architects and sculptors contributed their work; hence, such expressions of the past memories often achieve a status as true pieces of art. The cemetery is therefore an open-air museum with over 800 sculptures and relief ornaments, illustrates the memorial art of the 19th and 20th centuries."* (Association of Friends of Ohlsdorf & Cemetery, n.d.)

B *Design Characteristics*

The current appearance of the landscape is derived from two landscape trends designed by two architects; the first architect was Wilhelm Cordes (1840-1917), who worked for 38 years to

create a "garden cemetery", consequently providing a well-known example for similar cemeteries throughout Germany. This section of the cemetery still maintains the interplay of architecture, sculpture and landscape with a forest like characteristics. The second one is Otto Linne (1869-1937), who was the first garden planning manager in Hamburg. His main conceptual principles were translated into strict architectural layouts and grave plots, which developed in to rows of graveyards separated by hedge lined alleys. Ohlsdorf cemetery is like a big park where nature and art go hand in hand.

a) Irregularly arranged graves with a forest like character, creating a sense of a park with few number of graves visible in one vision

b) Formal architectural layout used to organize grave plots with trimmed hedges, trees and aligned alleys separating the graveyards.

Figure 4-22 Architectural layout of graveyards used on the cemetery-a) Irregular layout of graves by Wilhem Cordes Vs. b)Formal layout of graves by Otto Linne

- **Themed Gardens**

On the design of the cemetery landscape different theme of gardens are used for different part of the site. The planting design, choice of plant species and landscape pattern is tailored to nourish the major theme of the garden for example:

- **Forest of silence:**

The landscape has a natural forest character with variety of plant identity, a combination of trees, shrubs, ground cover and flowers are used in an irregular pattern. The big tree species used create shade on the area which attracts many birds so, it fills like walking through a small jungle of forest. Moreover, the graves are also arranged in an irregular pattern following the tree plantation order.

- **Butterfly graveyard:**

On this area there are different flowering species planted on the site which acts as habitat for different butterfly and one can witness variety of butterflies playing around the site.

- **Rose garden:**

Here I have witnessed variety of rose species with a beautiful pattern, pergola structure and sculptures are also used to accentuate the site aesthetic character. The rose garden also incorporates sitting spaces for visitors.

a *b* *c*

Figure 4-23 : Collection of themed gardens in Ohlsdorf cemetery A) Forest of silence. B) Butterfly garden. C) Rose garden

- **Watering Scheme**

Since the site covers a huge area of land with dominant green coverage, on top of the 230 gardeners maintaining the green character of Ohlsdorf cemetery, the landscape design incorporates different water containers spread on the site which can provide enough water source throughout the compound. Gardeners used sprinklers to water the plants also they have a mechanism were individuals can water the plants using a small manual watering bucket.

- **Environmental Character**

In trying to understand the environmental character of Ohlsdorf cemetery, it is important to study green coverage and land cover character of the site. As shown on the location map (Figure 4-21), it is evident that larger area of the compound is covered with green like; shade trees, shrubs, climbers and different species of grasses. In addition to this, they used permeable pavement materials such as; cobble stone, concrete tiles, and grasscrete for pathways and plazas in the cemetery landscape. All these design decisions contribute in creating calmer microclimatic condition for users and enables the site to provide different ecological services.

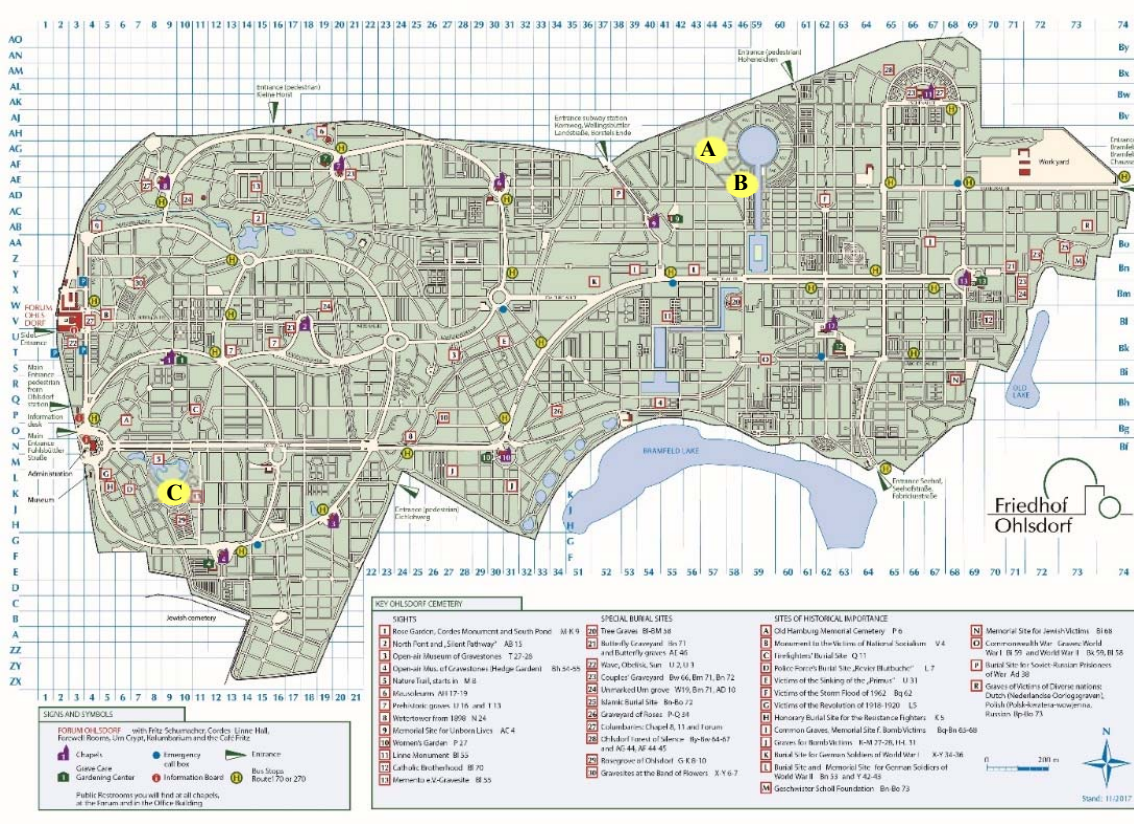


Figure 4-24 Site Plan of Ohlsdorf Cemetery, (Association of Friends of Ohlsdorf & Cemetery, n.d.)

a *b* *c*

Figure 4-25 Watering Scheme Techniques used in the cemetery, A) Concrete water container. B) Stone Water Container designed as part of retaining wall. C) Plastic Manual garden watering bucket

For instance, the shade trees guarantee shaded pathways and sitting spaces for visitors during summer, it also acts as habitat for various types of birds and insects. Furthermore, the use of permeable paving materials and green surface covers like grass aids in minimizing the surface temperature of the site, which also contributes to the microclimate character of the site. Therefore, Ohlsdorf cemetery landscape incorporates the two important parameters that confirms livable environmental character of a certain space which is; larger green coverage and

more permeable land covers, and this proves the importance given to the cemetery environmental character in the design of the cemetery landscape.

4-3-2 International Case: The City Cemetery Stöcken, Hanover

A *Introduction*

The city cemetery 'Stocken' is a municipal cemetery located in the city of Hanover, Germany. It was first inaugurated in 1891 as the second city cemetery and enlarged in the course of the next decades, the cemetery now covers 55ha area of land. Since the opening of the cemetery 170,000 people were buried in this site. The cemetery also encompasses graves of prominent people, such as the Lower Saxony President Hinrich Wilhelm Kopf and the publishing family Madsack.

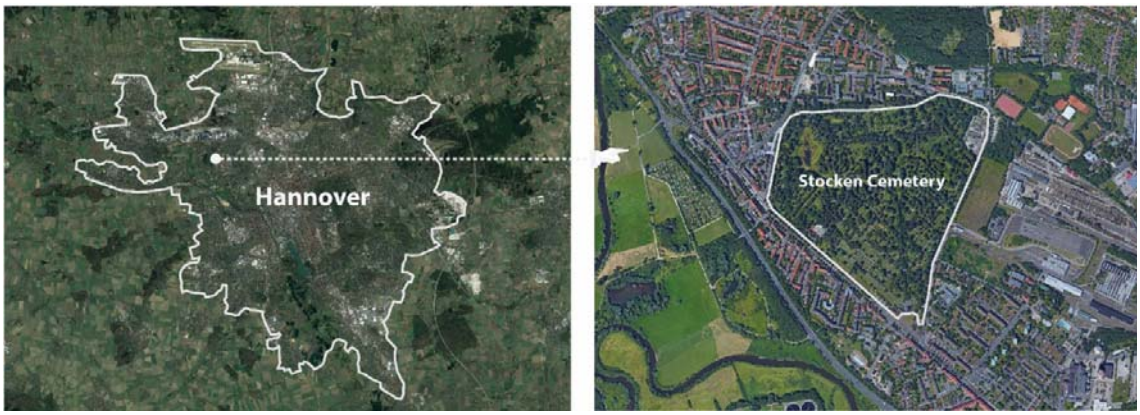


Figure 4-26 Location map of Hannover city and Stocken cemetery, Source Google Map Accessed May 2019

B *Design Characteristics*

Various design professionals have been participated on the development process of Stocken cemetery. The first construction phase with the right-angled walkway was designed by architect Paul Rowald and his colleague Adolf Narten in 1889-92. This area is cut diagonally from the main entrance on the main avenue. In 1892 the two architects also finished the neo-gothic chapel at the main entrance. The first extension was done by a Garden Director Julius Trip and it was completed in the second phase by horticultural technician Ludwig Schiebler in 1901-02. This section of the cemetery was laid out as a park like structure with rhododendron bushes and the pond were water lilies can be found until today. As it is shown on (Figure 4-27), in sections A 30 and A 17 (on the east and south bank of the pond) are some of the artistically most noteworthy grave monuments. A wooden bridge leads over a narrow part of the pond.

Figure 4-27 Pictures of selected spots and Map of Stöcken Cemetery("Stadtfriedhof Stöcken | Die Friedhöfe der Landeshauptstadt Hannover | Friedhöfe in Hannover | Gärten genießen | Naherholung | Kultur & Freizeit | Hannover.de | Home - hannover.de," n.d.) a) A30: pond View, b) A17: Temple, c) A25:Wooden bridge , d) A: Chapel , e) Site plan

The third cemetery extension took place in the year 1913-18 on the northern part of the site, this project was under city garden director Hermann Kube. The last extension and redesign took place in 1964/65 under garden director Werner Lendholt, which is on the northeast part of the site. The newest graveyard extension there since 1989 a department for deceased Muslim faith (59).

- **Landscape features used to create a sense of park**

Looking at the overall design character of the cemetery it is evident that it has a park like character with different landscape design features integrated on the cemetery design. This cemetery is designed in a way to enhance refreshment activities and invite visitors to stroll throughout the compound. For this research three important landscape design features are extracted to be elaborated in detail.

- **Attention to sceneries**

While walking through Stocken cemetery I have witnessed exclusive attention to the quality of each scenery the visitor may experience while walking through the cemetery landscape. This starts from the moment a visitor gets through the main entrance of the compound, there is a right-angled straight alley extending from the entrance and cutting through the graveyard. This alley is designed to invite visitors with trees aligned on both side of the alley giving a shade for users throughout the path. In addition, by using a mixture of tree species, some flowering plants and street chairs they have achieved a sense of getting in to a park rather than graveyard.

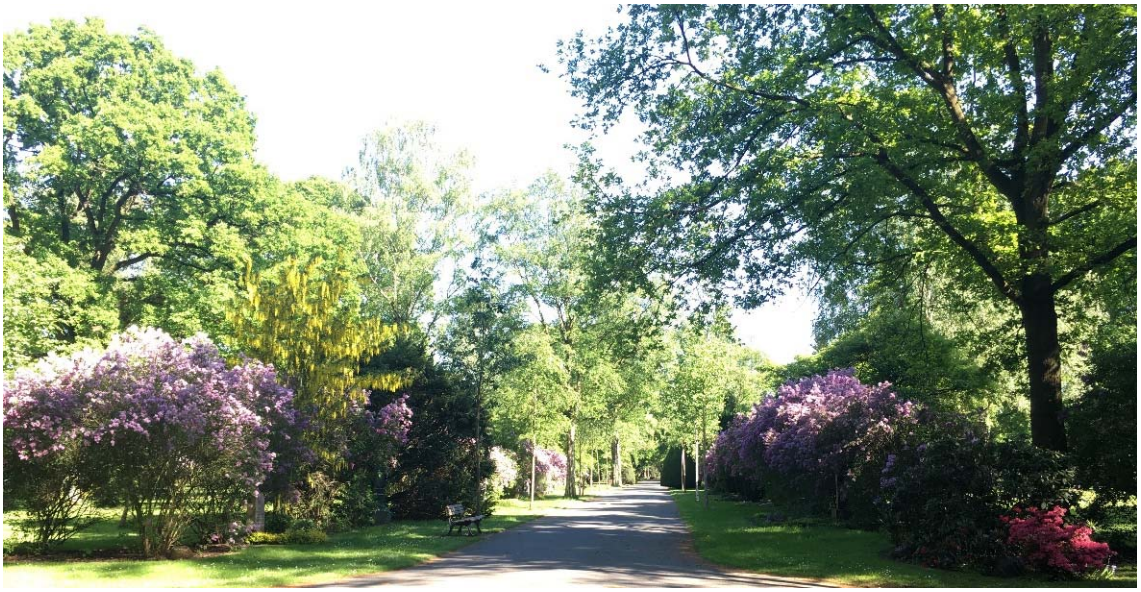


Figure 4-28 Aview from the entrance throgh the straight path to the grave yard

Furthermore, there is also a sense of surprise in the design of the landscape, for instance while walking alongside the pond there are designed sceneries one can experience at one glance. As shown on (Figure 4-29) A, the nice combination of the planting design and a white temple on the other side of the pond creates a beautiful scenery and will also trigger viewers to keep moving. The planting design used on the cemetery also contributed to create aesthetically appealing environment for visitors, I have witnessed cleaver use of creepers on the ground in combination with other flowering plants which creates a different fill compared to other ground covers.

a *b*

Figure 4-29 Use of teples and planting design to accentate senery in the cemtery landscape. A) White temple in harmoney with the planting design. B) Use of planting design to add visual aestetics to the compound.

- **Use of sculptures and temples**

In the design of the cemetery landscape there are different monumental sculptures and temples built in harmony with the planting design. These sculptures and temples act as center of vision for users it also directs visitors' vision to a certain area. It is also useful to add an artistic fill to the place. For instance, the grave area A17 is designed with an artistic pattern using half circle pattern where grave stones are also arranged along the circular landscape pattern. In addition, for the planting design they use low height plants intended to accentuate the central monumental sculpture and next to the sculpture there is a chair which overlooks to the pond (Figure 4-30).

Figure 4-30 Artistic graveyard- Urn Tomb Shore graveyard.

- **Design of sitting spaces**

Sitting spaces in the cemetery are designed in different ways, one is to give visitors a moment to sit down and have a beautiful scenery as shown on (Figure 4-31, a) A on the side of a walk way along

a *b*

Figure 4-31 Sitting space design. A) Sitting space designed for scenery. B) Siting space designed for discussion or meditation.

the pond there is a sitting space with an open view to the pond. The other type of sitting space design used is a collection of benches arranged in a circular pattern with a water fountain in the middle and surrounded by bunch of trees which can initiate social conversations or with the silence in the area it can be used to meditate and get a moment of silence (Figure 4-31, b).

- **Watering Scheme**

In order to maintain the green areas in the cemetery landscape, there are different water source delivery mechanisms. One is the use of concrete water tankers located at different spots of the

compound for water storage and using sprinklers it can be distributed to the area around. The second one is, cemetery management provides manual watering system using plastic water buckets, where families will take the responsibility to water individual plantations around the grave stone when they come to visit their loved ones.

a b

Figure 4-32 Watering scheme used in the cemetery landscape. A) Concrete water storage system. B) Plastic water bucket.

- **Environmental Character**

The two important landscape features that determine the kind of environmental character experienced on a certain space are, green coverage and land cover of the site. As shown on the location map more than 50% of the site is covered by different kinds of tree species and most of the ground other than the designed paths are shielded with grass and ground covers. In addition, most of the surface finish used for paths and access points are, materials which allow water infiltration and have high surface albedo character such as concrete tiles, coble stone, soil and grass concrete paver. All this character gives the site a calmer micro environment with a fresh breath of air for visitors furthermore, the trees, pond and even the temples acts as habitat for various birds, butterfly and insects which also add to the ecological value of the cemetery landscape.

4-3-3 Local Case: Petros We Paulos Cemetery, Addis Ababa

A *Introduction*

Petros We Paulos cemetery is a governmental cemetery located in Gulele sub-city, Addis Ababa Ethiopia. It covers about 37,284 sqm area of land providing burial service for the community, and the area includes Foreigner Catholic, Ethiopian Catholic and the Evangelical cemetery.

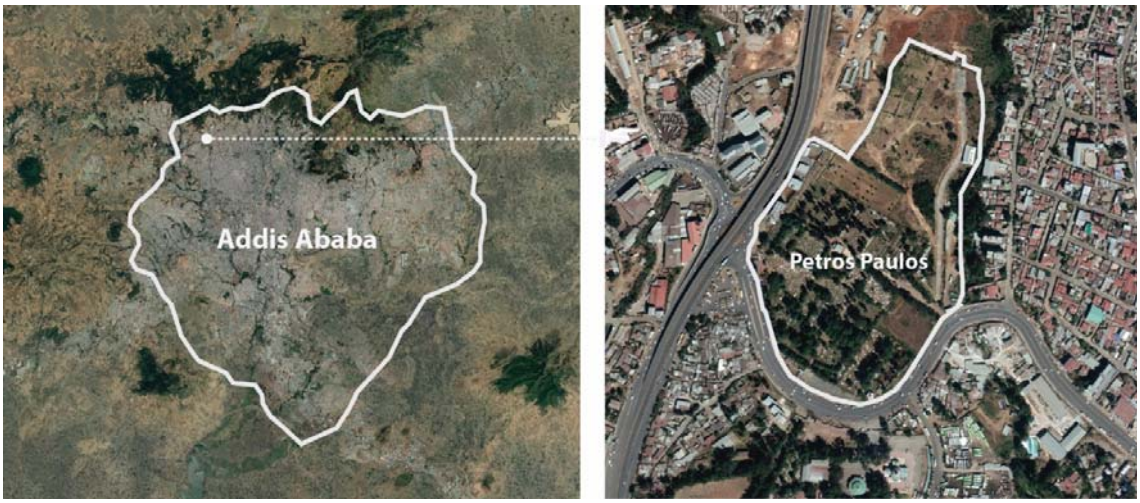


Figure 4-33 Location map of Addis Ababa and Petros Paulos Cemetery, Source Google Map Accessed on May 2019

The Italian cemetery in the compound was first established in 1941 for fallen Italian soldiers, and the Evangelical cemetery was established from 1939-1945 G.C. by Emperor Haile Selassie to serve as permanent resting place of soldiers (Alemayehu, 2014). Later in 2002 G.C. Petros We Paulos cemetery was transformed to be used as green cemetery by incorporating park services such as; sitting spaces, and green areas used for wedding and birthday pictures, to the existing burial service.

Out of the total area coverage 4,591 sqm area is designed as green space where park activities can take place. The cemetery has developed a long-time vision to create a memorial park cemetery, besides burial service it can be a place where people come to get a fresh breath of air and can be developed as green cemetery that provides both social and environmental services for the community. According to Addis Ababa city administration beautification, parks and cemetery development and administration agency, with its aim to creating a memorial park cemetery Petros We Paulos cemetery is selected as a show case for other burial sites in Addis Ababa.

B *Design Characteristics*

The overall design of the cemetery landscape follows formal grid system in arranging the graves and green spaces in the compound. As stated on the introduction it has a separate green space that can be used as refreshment area to peoples coming for burial service and on top of that these green spaces are designed to integrate a social activity for the community. There are various fenced gardens with hedges used as separation element and mostly covered with grass, as (Figure 4-34, b) shows there is an attempt to incorporate different flowering plants to give the site more warmth. And these fenced green spaces are called islands which mostly is used

to host wedding and birthday photography sessions, and as (Figure 4-34, c) shows they use different shade structures within the islands that can be useful to host different social events. In addition to all beautification works this site also have good environmental consciousness.

a *b* *c*

Figure 4-34 Design characteristics of Petros We Paulos cemetery. a) Use of hedges made of Juniperus procera for space demarcation. b) Planting design. c) Use of shade structures.

- **Environmental Character**

Based on the design transformation in 2002 G.C. the cemetery becomes more concerned about its environmental service, and as a result the site has maintained its green character for many years. Currently we can witness fully grown endemic tree species such as; Zigba (*Podocarpus falactus)*, Woira (*Olea europea*), and Wanza (*Cordia africana*) which provides shade for visitors and also acts as habitat for different birds. These design decisions to incorporate gardens and green spaces to the cemetery landscape couples with the existence of various shade trees in the compound have contributed to the calm microclimatic character of the site. But the fact they choose to separate burial space and the garden have limited the amount of green coverage in the cemetery landscape.

4-4 FUTURE USABILITY SURVEY

4-4-1 Availability and Use of Green Spaces Around Survey Area

Collected questionnaire concerning green (social) space availability on the survey area showed, more than 70% of the respondents said there is not enough green (social) space in the area. Though 26% of the respondents said there is green (social) space available near their village, they were also asked if they think the existing green space was enough for various activities in their day-to-day life, out of the 38 respondents only 20% are satisfied with the amount and quality of green (social) space. This result shows that quite a number of people living around Kechene Medhanealem cemetery are dissatisfied with the amount and quality of green (social) space around their settlement.

For the purpose of exploring existing green space functions in the survey area, respondents have been asked to point out main uses of the existing green (social) space in their area. Figure 4-35 shows, the overall output of collected responses for the above question. The main objective of this specific question was to study the type of already existing activities in the area. 63% of the respondents did not reply to the question asking for types of existing green space uses, the responses from the remaining 37% is considered sufficient. Since most of the respondents believed there was no enough green (Social) space in the first place. The respondents pointed out four main functions, which are playground, youth center, green area and reading area.

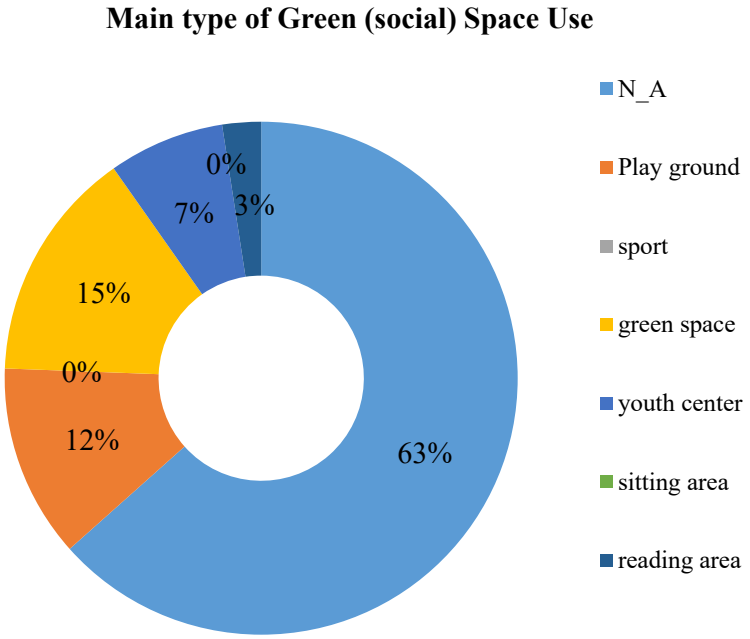


Figure 4-35 Main functions of the existing green(social) space around Kechene Medhanealem cemetery

4-4-2 Future Usability of Kechene Medhanealem Cemetery as Green (Social) Space

For the future usability survey one hundred forty-nine members of the society living around the cemetery were asked. Out of this most of the respondents are between the ages of 15-24 and 25-44. Three fourth of the respondents were male. In terms of education above half of the respondents were secondary school students.

Table 7 Respondent character of future usability questioner

Age	**No. R**	**Sex**	**No. R**	**Work**	**No. R**	**Edu. Level**	**No. R**
N_A	2	N_A	9	N_A	6	N_A	7
15 -24	59	Male	104	Student	33	None	1
25-34	54	Female	33	employed	36	primary	20
35-44	26			housewife	4	secondary	83
45-54	1			individual	62	degree	33
55-64	4			daily laborer	1	>degree	2
65-74	0			other	4		
>75	0						

In addition, respondents were asked if they have been to Kechene Medhanealem cemetery and 88% have been to the cemetery for various reasons but more than 90% of them go to the cemetery for burial services only. Furthermore, based on service and comfort level 49% of people who have visited Kechene Medhanealem cemetery considered their experience in the cemetery as good, 22% said they have a bad experience during their visit, they also mentioned various service and cleaning problems. This result shows there is a need for improvement regarding service quality in the cemetery. During preliminary assessment about the research topic, different people have raised questions about user's perception regarding scariness of cemeteries in our country. Therefore, respondents on the survey area were asked if they considered Kechene Medhanealem cemetery as scared place during their visit to the site

As shown on Figure 4-36, more than half of the respondents fill safe in the cemetery compound on the other hand 34% of the respondents perceived the site as a scary place, which shows quite a number of people who visited the site still believed there is a sense of fear related to its purpose (burial place). They were also asked if they are familiar with other countries practice to use cemeteries as green (social) space, 41% of the respondents were not familiar with this idea. However, more than half of the respondents have heard of or experienced the use of cemeteries for green (social) space. As shown on Figure 4-37, 79% of respondents support the

idea of contextualizing other countries experience of designing cemeteries to accommodate recreational and social activities, and express their willingness to use the study site in the future. On the other hand, 18% are not satisfied with this concept also they are not willing to use cemetery compound as green (social) space.

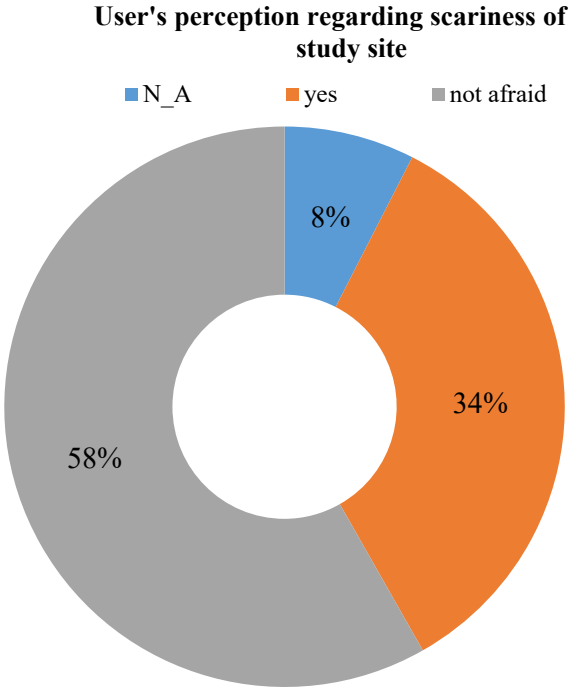


Figure 4-36: User's perception about the scariness of Kechene Medhanealem cemetery

Most of the people who disagree with the idea of transforming cemeteries to accommodate other green and social activities thought it is against the social value. However, the overall result shows quite a number of people living around Kechene Medhanealem cemetery are willing to use the cemetery as green (social) space, if it is designed to accommodate such activities in the future. As shown in Figure 4-38, they were asked what type of activities they would recommend if the cemetery was to be used as green (Social) space. 30% of the respondents didn't answer the question. However, around 45% said green and relaxation area. Services and facilities such as; toilets and café, children's playground was some of the recommendations.

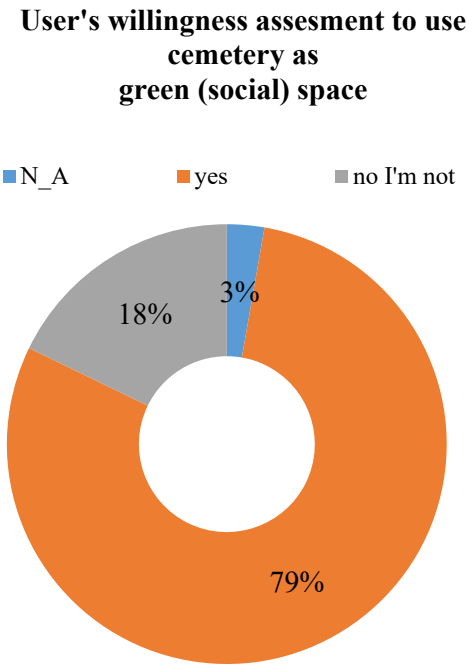


Figure 4-37 User's willingness assessment to use Kechene Medhanealem cemetery as green(social) space

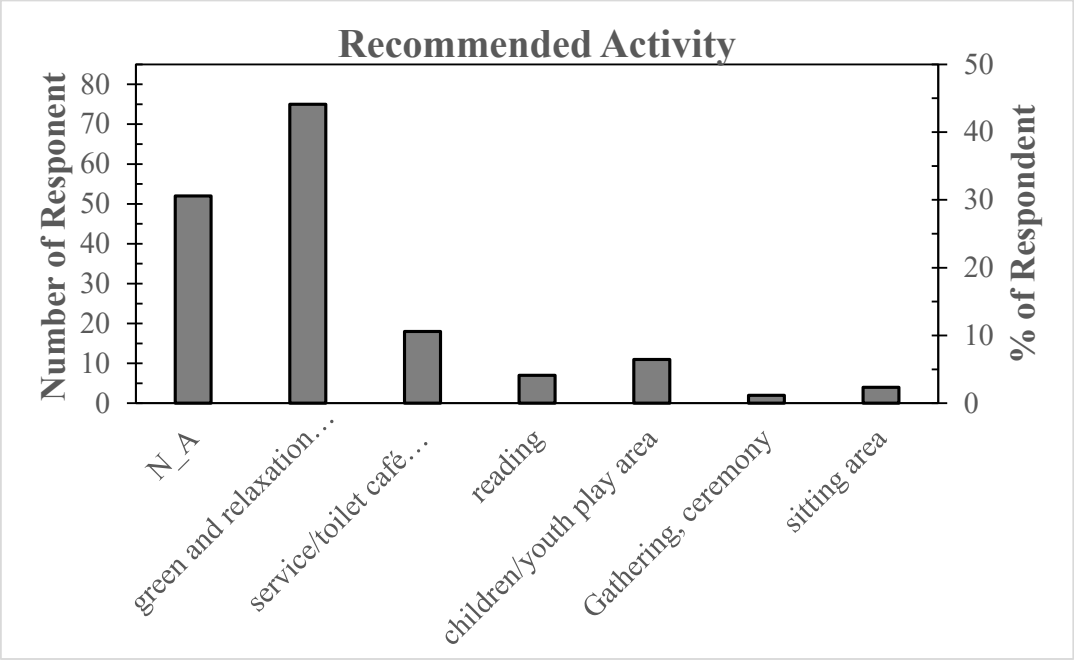


Figure 4-38 Recommended activities for cemetery social space

CHAPTER 5 DISCUSSION

The presence and impact of UHI effect in cities of the world have been researched and proven through various studies (Aekbal, Abd, Mohd, & Wan, 2013; Mohajerani et al., 2019; IPCC, 2014). On the other hand, studies also show the potential of introducing urban green spaces to improve thermal comfort, reduce air pollution, improve quality of life, and mitigate the effect of urban microclimate in various part of the world (Nuruzzaman, 2015; Feyisa et al., 2014). But in the case of cities in developing countries like Addis Ababa instead of introducing new urban green pockets existing green spaces are being replaced by built structures, this can be because of rapid urbanization and economic limitation. Therefore, this research attempts to look into the potential of already existing land uses of the city like cemeteries for temperature regulation as a replacement for lost green spaces of the city.

To measure climatic data of the study site four recording devices are used and recorded temperature and humidity data from 20 spots located within a 1000-meter radius, which commands data collectors to move from one spot to the next to cover all measuring spots within a time frame. Although the movement factor is considered as negligible for this research; it can affect the data accuracy to a certain extent. Within these limitations, results from ground-based temperature and humidity record validate the presence of slight temperature and humidity difference between the inside and outside of the study site. The results of onsite temperature records show that a 13ha cemetery compound with only about 8% canopy cover and more than 90% permeable land cover character has achieved a 0.5°C to 2.5°C reduced temperature value when compared to the surrounding survey area. According to an article about urban green space cooling effect in cities, larger parks with areas of more than 10ha with various vegetation types and water bodies have highest cooling effect intensity, that is 1°C to 2°C temperature reduction (Aram et al., 2019a). So, the results from onsite thermal recordings from the study site shown in Figure 4-4 goes with the above conclusion from a review of various studies on this topic. On the other hand, relative humidity inside the cemetery is slightly higher than the outside humidity result, which contributes to cool down the site during high heat.

Even though canopy coverage of the Kechene Medhanealem cemetery was small, the above results show the presence of a certain level of thermal regulation service provided by the Kechene Medhanealem cemetery.

In contrast, results regarding user's satisfaction survey on thermal comfort show that quite many people which is 86% of respondents voted for the presence of a temperature level raging

from average to very high with lower-than-average humidity level. Besides, more than half of the users preferred lowered temperature level and higher humidity level. The above two results confirm that most of the respondents were feeling thermal discomfort in the study site. Though there is a certain level of microclimate regulation service provided by the cemetery when compared to the surrounding survey area there was still a need for a better thermal environment in the study site.

On the flip side, the fact that there is only 8% canopy cover in the cemetery makes the site vulnerable to direct sunlight which may affect user's thermal experience. And this fact is also supported by questionnaire results about thermal comfort where more than half of the respondents voted for lowered temperature and higher RH values, which can confirm the presence of thermal discomfort in the compound.

Besides, results from the existing situation analysis show that the most dominant land cover of the survey area is bare land which covers about 51% of the total area. Although the material composition of a bare land can somehow allow a limited amount of water percolation in this case since the study area is a very crowded place the capacity of infiltration is very low which may contribute to overheating on the survey site. The percentage of asphalt land cover on the site (9.4%) plays a crucial role in the formation of the UHI effect and add to the overall thermal heating of the area. On the flip side, about 23% of the total area is covered with various types of vegetation (groups of trees, a mixture of grass and shrubs, line of trees and single trees) which significantly helps to moderate the microclimate of the area. But most of the trees are concentrated along with the river buffer, which may affect distributed cooling effect of the existing green cover.

According to the detailed analysis of Kechene Medhanealem cemetery, some access roads are paved with cobblestone, most of the area is covered with dried grassland used as a graveyard, there is also a line of matured trees created a green corridor in some part of the compound. Although all the above characters of the cemetery may help the site to have moderated microclimate with less heat reflected from the surface, the lack of shade trees exposed users to direct sunlight. Which makes the study site vulnerable to overheating during hot seasons and since quite many people use the site for various activities, this effect may cause thermal discomfort to users.

This leads to a question of how cemetery landscapes can accommodate the character of urban green spaces that can also add value to microclimate regulation in cities. Different kinds of literatures have presented the possibilities of designing cemeteries as urban green spaces where they can accommodate various ecosystem services such as regulating services (e.g. Climate and stormwater regulation) and cultural ecosystem services related to recreation, wellbeing and health (Harnik, 2010; Krüger, 2016; Nordh, Evensen, & Skår, 2017).

On the other hand, case studies presented on this paper also shows that by maximizing canopy cover, ensuring use of permeable surface materials and extending the use of different soft ground cover planting materials; they have managed to create a calmer microclimate in a cemetery compound. Besides, multiple design tools are explored through case study analysis that may enable the case sites to be a park cemetery where people chose to go to for refreshment. The attention to sceneries, expression of temples and sculptures, quality and accessibility of service areas within the cemeteries are few of the landscape design tools extracted from the case studies.

Although future usability survey result confirms that more than 70% of respondents are enthusiastic to appropriate the cemetery as green (social) space, the presence of service problems like; shortage of toilet, shaded sitting areas and absence of cafeteria or any fast-food place in Kechene Medhanealem cemetery make it difficult to directly use the site for refreshment. And this result was also confirmed by another paper done about cemeteries in Addis Ababa (Alemayehu, 2014).

In general, cemeteries are part of the urban green spaces but this perception and implementation are in a very infant stage in Ethiopia. There are initiatives like preparing manuals and standards for greening cemeteries in Addis Ababa under Addis Ababa City Beautification, Park, and Cemetery Development Agency. But unfortunately, the actual practice in designing and enabling cemeteries to be used as green spaces of the city is poor. And when we compare Kechene Medhanealem cemetery's character with the findings of case study analysis, it is clear that it needs a contextualized design solution to fully exhaust its potential as urban green space of the city.

CHAPTER 6 CONCLUSION AND RECOMMENDATION

6-1 CONCLUSION

Due to urbanization and economic limitation Addis Ababa, the capital city of Ethiopia has failed to provide a sufficient amount of urban green space that could contribute to regulate the impact of urban heat island effect. Therefore, I come up with the concept of appropriating already existing land uses of the city neither built nor parks like cemeteries into multifunctional land use, that can serve as urban green space. And turn these cemetery landscapes into green cemeteries that can add value to cool down urban microclimate and become a place where people come to for recreation.

Findings from onsite temperature and humidity records confirm the presence of cooler microclimate inside Kechene Medhanealem cemetery when compared with the surrounding survey area. On the other hand, the lack of shade trees in the study site made visitors vulnerable to direct sun radiation. Therefore, quite many visitors have experienced thermal discomfort inside the study site during hot seasons. The land cover character of the site shows the presence of permeable surface material which covers more than 90% of the study site but the fact that there is lack of natural (artificial) shading mechanism end up creating thermal discomfort on users.

Furthermore, case study analysis results have shown an opportunity to use cemeteries as urban social space where people choose to come to for recreation service. Critical landscape design tools such as; integration of sculptures and temples into the cemetery landscape, attention to sceneries, and ability to create shaded sitting spaces with intended viewpoints, are used to achieve intended social and environmental services. These design tools have enabled the case sites to be more like a memorial park than just a burial ground. And results from future usability assessment shows that more than 70% of respondents show their willingness to use the study site as urban green space of the city. This result is also an indication of societal progress in accepting the use of cemeteries as memorial parks in Addis Ababa, plus it suggests the presence of less fear to use cemeteries. Based on works of literature and case study analysis output a contextualized design solution for the cemetery landscape is proposed as part of the recommendation section.

Therefore, if Kechene Medhanealem cemetery designed to accommodate more canopy cover, better vegetation diversity and be utilized for its maximum potential to create a green cemetery. Then, with a 13ha area coverage, Kechene Medhanealem cemetery by itself can act as medium-

sized park cemetery for the society with both social and environmental benefits. Besides, by applying design recommendations of this research to other municipal cemeteries in Addis Ababa impact can be scaled up to the city level. The cumulative effect of forming green cemeteries in Addis Ababa can significantly help the efforts made to regulate urban heat island effect and serve as a replacement for lost green spaces in the city.

6-2 RECOMMENDATION

6-2-1 Planning and Management Recommendations for Microclimate Regulation Ecosystem Service Provision

- Maximize the canopy cover percentage for cooler microclimate

Tree dominated open spaces are known to have cooler microclimate therefore, increasing the canopy cover of the study site can highly contribute to the provision of microclimate regulation ecosystem service. Therefore, more shade trees needed to be planted inside the study site. As stated on the discussion there is a need for more tree planting on most of the area in the study site so, more shade trees should be planted along access footpaths, along the site boundary buffer area and more trees should be critically integrated into the burial plots.

- Maximize the use of permeable (high water infiltration capacity) pavement materials for cooler surface temperature

Pavement materials with higher water infiltration capacity such as concrete tiles, grasscrete, and gravel should be used based on functional and aesthetic desires for every access point in the study site.

- Plant species recommendation for better cooling effect

As stated on the literature review section, plant diversity which have better cooling capacity through shading and evapotranspiration are:

- ✓ Dense evergreen trees
- ✓ Deciduous trees and bushes
- ✓ Small leaved trees
- ✓ Perennial ground covers
- ✓ Tree species with rough, dense foliage and light-colored leaves

- Avoid use of concrete burial vault, instead introduce use of flat stones for setting stable ground to rest burial casket. Which can maximize water infiltration, enhance soil fertility and allow growth of diverse vegetation types like perennial herbs, small shrubs and ground covers on the burial ground.
- Introduce landscape-based surface and rain water collecting mechanisms

By using existing elevation difference on the study site, a sustainable storm water management system like vegetated swells, perforated ditches, and infiltration trench should be introduced for the purpose of collecting, cleaning, storing, and recycling both surface runoff and rain water throughout the site.

- Introducing vertical plant nursery to be used for the compound landscape

As stated on the result section the cemetery management at Kechene Medhanealem cemetery is facing space problem to create adequate plant nursery for the compound. Therefore, a vertical plant nursery should be integrated and this can be done by incorporating this practice in to the design of compound fence which can provide a wider multifunctional vertical space to create adequate plant nursery within the cemetery compound.

6-2-2 Planning and Management Recommendation for Recreational Ecosystem Service Provision

- Improve accessibility by integrating defined footpaths and stepping stones in every functional space.

Integrating reduced stepping stone access options on the burial blocks can insure lesser human intervention and helps to create a more private meditational space for visitors.

- Integrating shaded sitting spaces to enhance social interaction

Most of the shaded spaces should be constructed out of light weight natural materials like wood and tree brunches integrated with climbing plants, but in some parts of the site shading structures that can protect visitors both from sunlight and rain should be integrated. This way visitors can have a space both for sitting and chattering during all seasons.

- Improve and add basic service areas such as toilet, small café, and ceremonial spaces

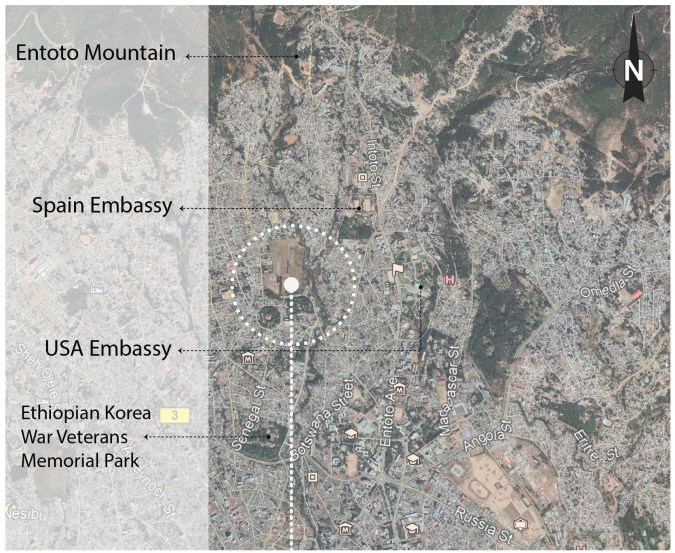
The toilet areas should be redesigned based on functional organization of the site; it must be located on areas where people sit or spend some time at. And the addition of café area

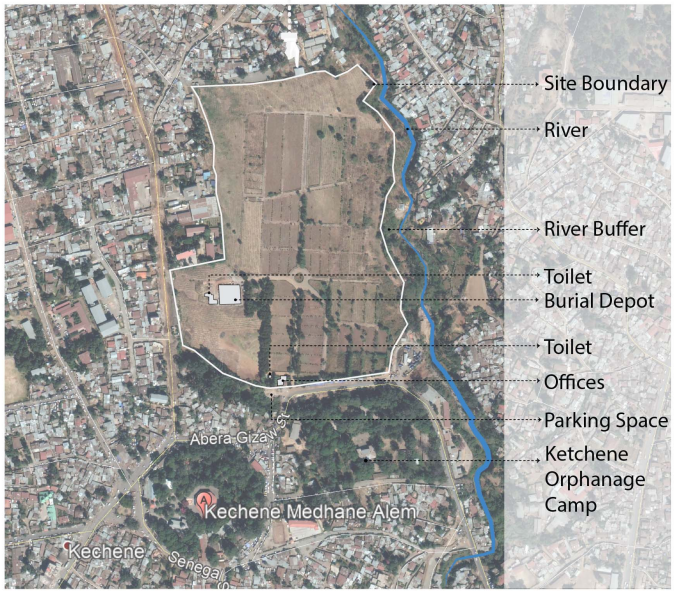
is meant to be a space for people to get simple drinks, fast food and some traditional coffee spot.

- Themed gardens or burial zones like open meadow cemetery area, woodland cemetery area, meditation area or flower garden cemetery area should be integrated to enhance aesthetic value of the site.
- Recreational spaces like walking or running trails, reading areas, outdoor board game area and birdwatching area should be introduced.
- Create a sense of security by allowing visual continuity and enhancing sense of enclosure throughout the site. Moreover, the proper signage and lighting fixtures should be introduced for better sense of direction and ease of access
- Sustainable waste disposal system should be introduced and trash bins should be properly located throughout the site.

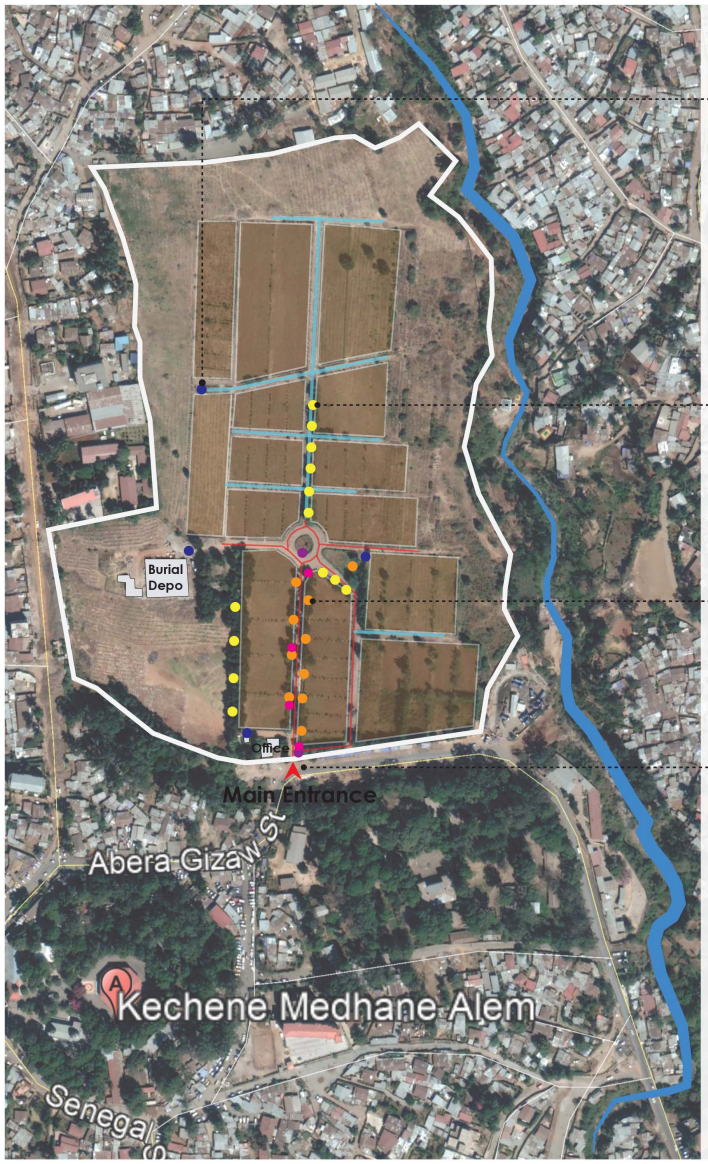
CHAPTER 7 DESIGN TEST

KECHENE MEDHANEALEM CEMETERY: SITE ANALYSIS



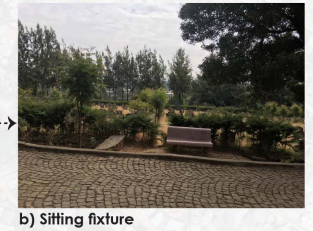


LOCATION MAP



a) Existing toilet

c) Informal sitting



b) Sitting fixture

d) Entrance area

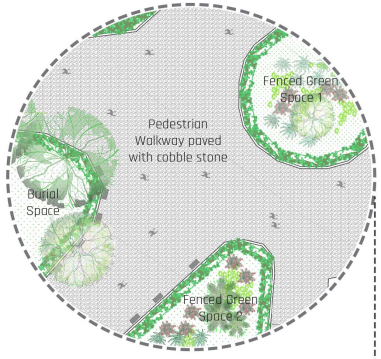
LEGEND

- Sitting fixture
- Informal Sitting
- Burial block
- Cobble stone pathway
- Unpaved pathway
- Trash cane
- Signage
- Toilet

SITE ANALYSIS MAP

KECHENE MEDHANEALEM CEMETERY: SITE ANALYSIS

EXISTING GREEN SPACE

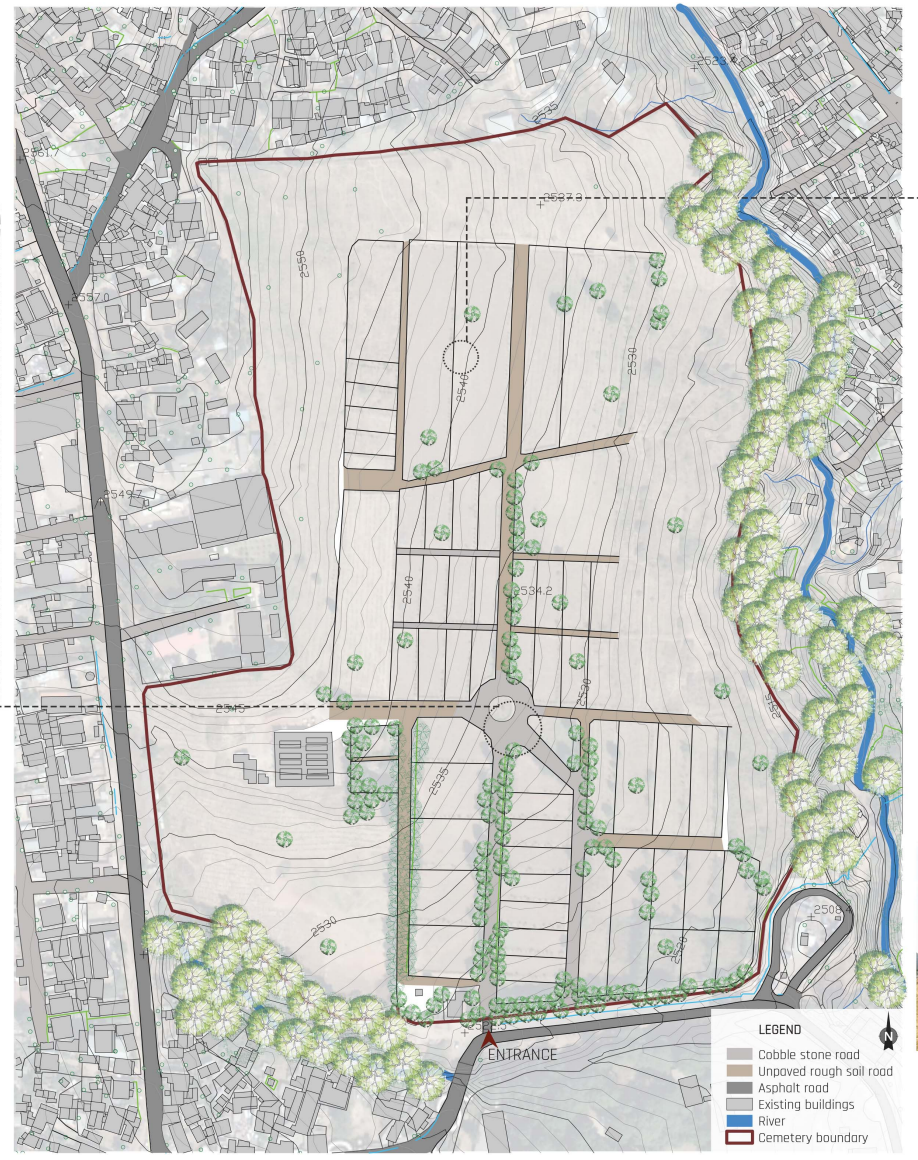


DETAIL PLAN SCALE 1:400

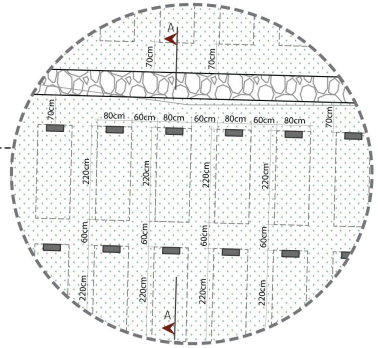
The green space allocated for mourners is fenced by using trimmed Juniperus procera. The gate is also closed by dried plants therefore; mourners cannot enter in to the allocated green space it can only be used for visual refreshment.

This green space is also fenced with hedges trimmed out of Juniperus procera, it has various types of flowering plants, grass and newly planted small trees. Since the green space is fenced on all sides it is not accessible for users, which diminutions the value of the space.

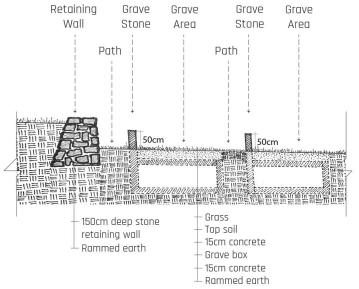
As shown on picture 1 below, there are randomly putted stone following the fenced green space which is used as a sitting space for visitors. The second picture also shows, following the trees planted on the side of the path there are randomly arranged stone sitting fixtures which demonstrates the need for properly designed shaded sitting spaces.



EXISTING GRAVE PATTERN



DETAIL PLAN SCALE 1:100



DETAIL SECTION A-A SCALE 1:100

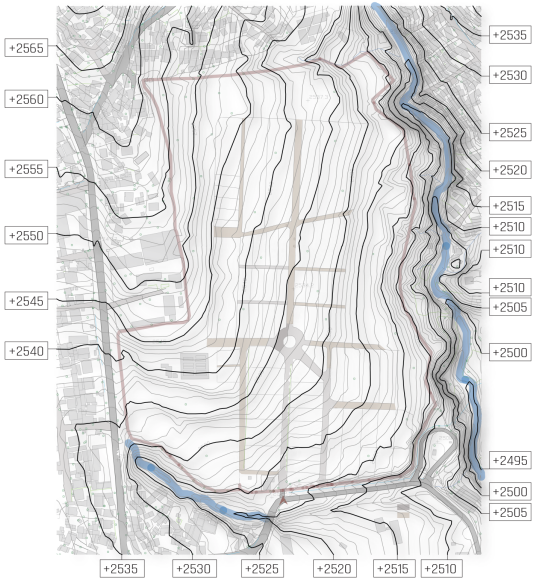
Pictures showing current grave pattern at Kechene Medhnealem cemetery. To manage the existing slope and create leveled burial platforms a serious of stone retaining walls are used.

KECHENE MEDHANEALEM CEMETERY: SITE ANALYSIS

Canopy Cover Analysis Map

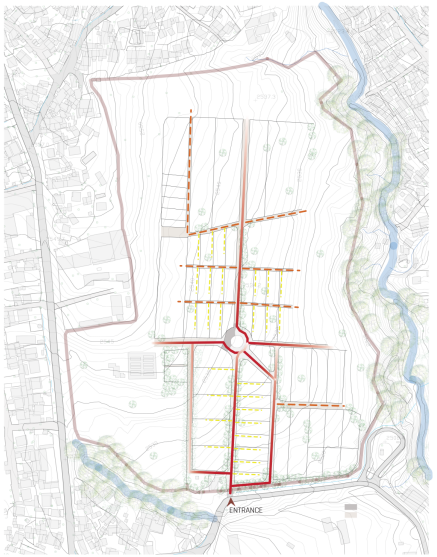
As shown on the above map the canopy cover is only about 10% of the overall site in addition, the canopy is concentrated only on the southern part of the site.

Topographic Map



The site is a sloppy site with about 15 meter level difference throughout the site, which makes it difficult to create levelled burial areas but also has a potential to create jogging paths for sport activity.

Movement Pattern Map



The movement pattern ranges from major access roads which are paved pathways to secondary access ways which are not paved. But as shown on the map there are areas which are not accessible.

SUMMARY (SWOT ANALYSIS)

STRENGTH

- Presence of cooler micro-climate
- Cleanness of the compound
- The presence of gardeners who can maintain the green areas in the compound
- Use of permeable surface materials (not using concrete sealing for burials)
- Use of permeable paving within the site
- The presence of fully matured shade trees, although it is only located on some part of the site.

WEAKNESS

- Very low visual quality around the entrance
- Poor visual experience through the paths which creates boring experience/also affects visitors sense of security
- Poor aesthetic experience (lack of colour and attention to scenery)
- Lack of basic services like toilet, cafe, and water source for watering plants
- Direct sun radiation because of lack of shade trees distributed in the site
- Lack of sitting space and social space

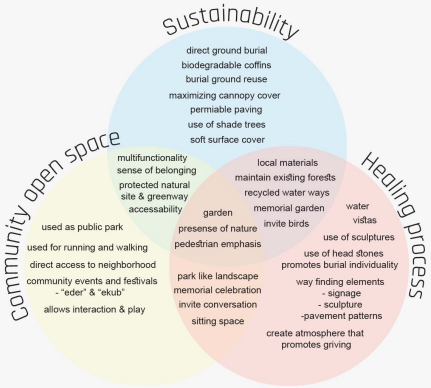
OPPORTUNITY

- The presence of the river on the eastern side of the compound
- The topographic character/having the level difference may be used for sport activities
- The presence of plant nursery

TREAT

- Lack of water resource from the municipality
- Topographic character (for burial space)

DESIGN PRINCIPLE



Design principles that shape the overall proposal for Kechene Medhanealem Cemetery

(Adopted from a paper about Deathscape, J.Higgins 2010)

Proposal Sketch

Social Spaces

Interaction

Ceremonial Healing Playing

Service Area

Interaction

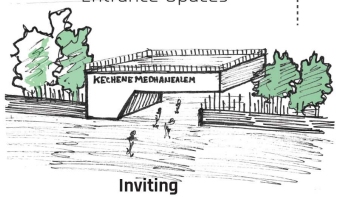
Toilet Conversation Playing

Pokect Gradens

Interaction

Ceremonial Healing Conversation

Entrance Spaces



Inviting

Parking Aesthetic Informative

Stepping Stones

Assesability

Slope management Healing

Green Corridors

Pedestrian Mobility

Reading Refreshment Healing

Water Reservior

Retention pond

Vegetated Swel

Resource management

Watering scheme

Multifunctionality Aesthetics

Vertical plant nersery

PROPOSAL SKETCH PLAN

KECHENE MEDHANEALEM CEMETERY: DESIGN TEST

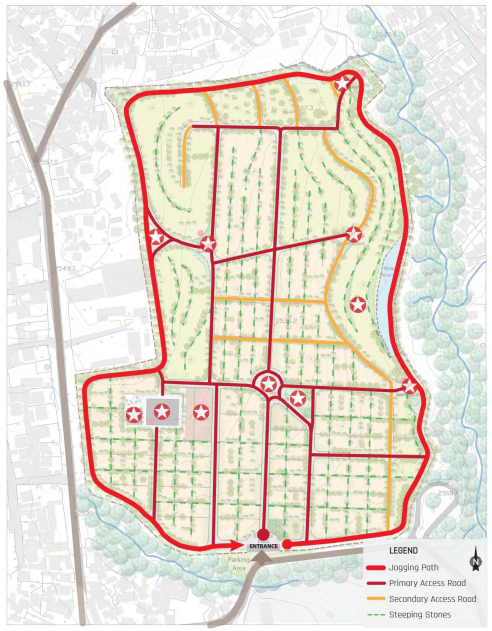
SITE PLAN SCALE 1:2000

Canopy Cover Map

Proposed Plants

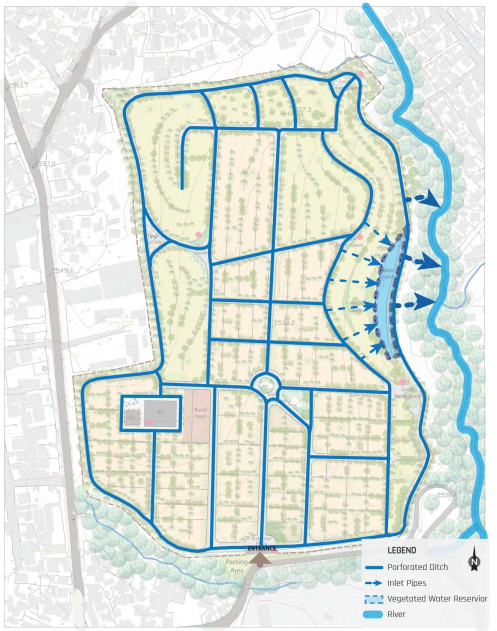
As shown on the above map most of the areas where people sit, walk, involve in burial services are shaded areas which creates calmer environment throughout the site. The green rievr buffer also contributes to the presense of calmer micro climate in the compound.

Movement Pattern Map

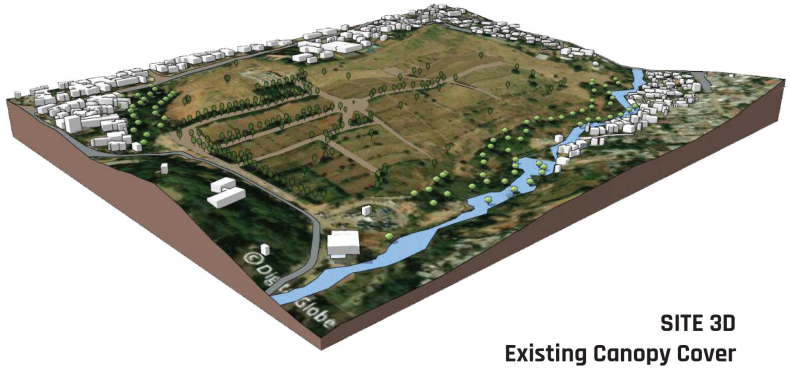


The movement pattern is designed to fit users experiance throghout the compound. There is a parking space around the entrance. Therefore, no car access is allowed in the compound. The pedestrian paths are also catagorized in four major types based on type and intensity of activies intended to facilitate.

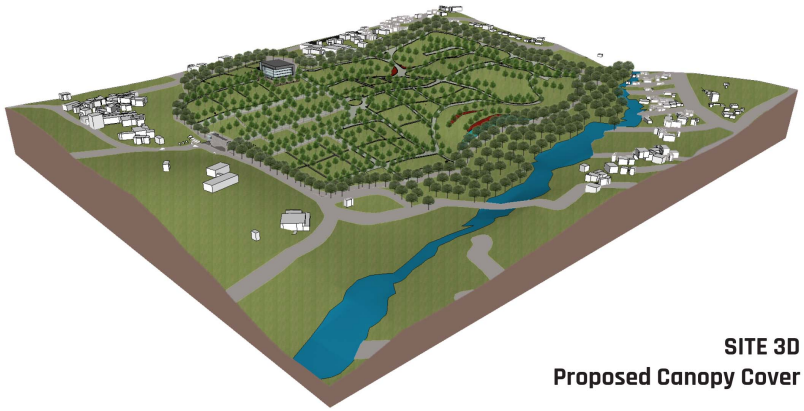
Drainage Map



As shown on the above map all major paths have incorporated perforated ditch system to collect surface water runoff in the compound. Then through the inlet pipes surface water will collected on vegetated water reservior. The overflow is directed to the river though outlet pipes from the reservior.

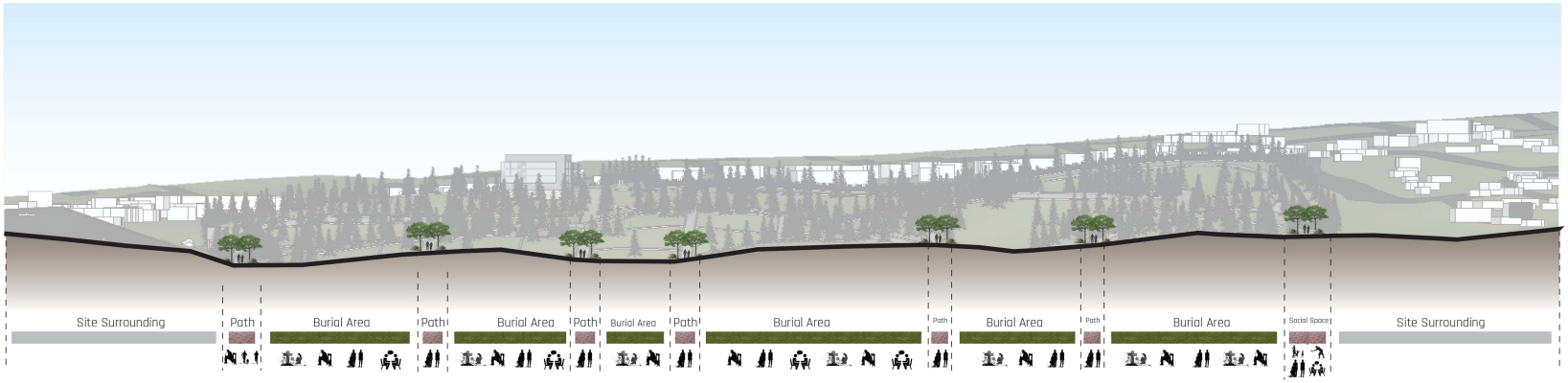


SITE 3D
Existing Canopy Cover

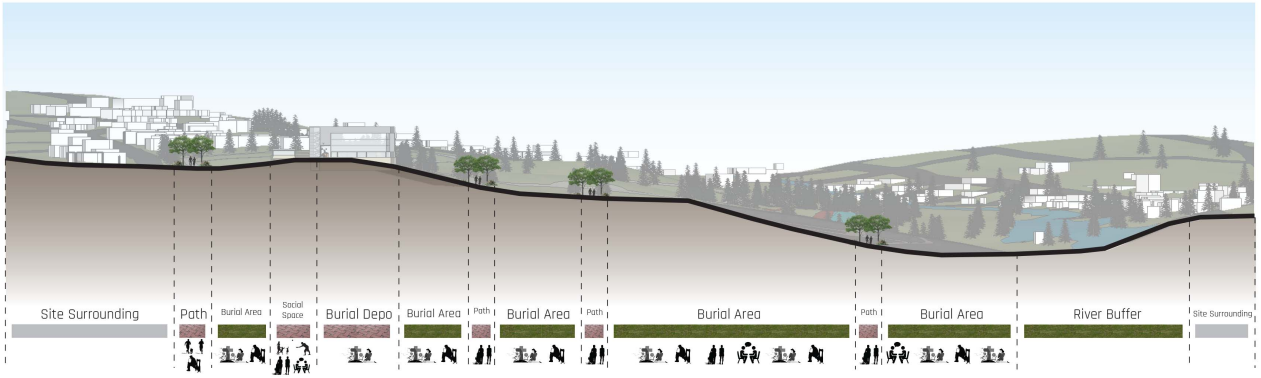


SITE 3D
Proposed Canopy Cover

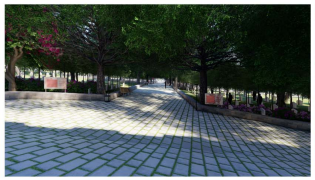
KECHENE MEDHANEALEM CEMETERY; DESIGN TEST



SECTION A-A SCALE 1:2000



SECTION B-B SCALE 1:2000





Pathways | Social Spaces | Burial Spaces

KECHENE MEDHANEALEM CEMETERY: DESIGN TEST

PEDESTRIAN EXPERIENCE

SOCIAL GREEN SPACES

Comfort

Use natural elements for healing

Shaded sitting spaces

Ease of access

Use of street signage

Properly paved walkway

Sense of security

Use landscape elements to create enclosure

Visual continuity

Sustainability

Maximize canopy cover

Water recycling system

Vertical Plant nursery

BURIAL SPACES

KECHENE MEDHANEALEM CEMETERY: DESIGN TEST

Overall 3D View

COMPOUND WALKWAYS

Attention to sceneries

Trash cane

Signage board

Pedestrian light

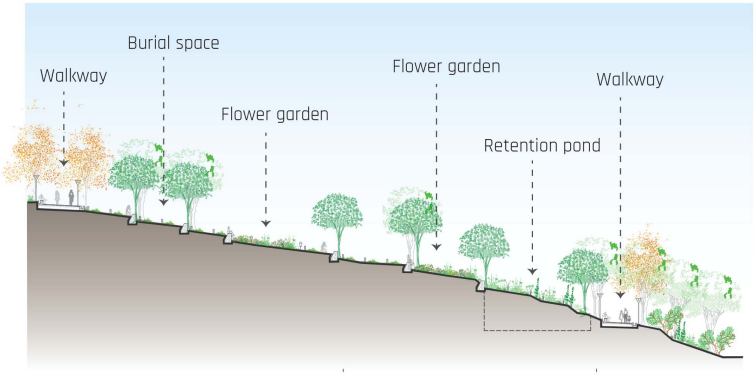
Street bench

Grass crete pavers

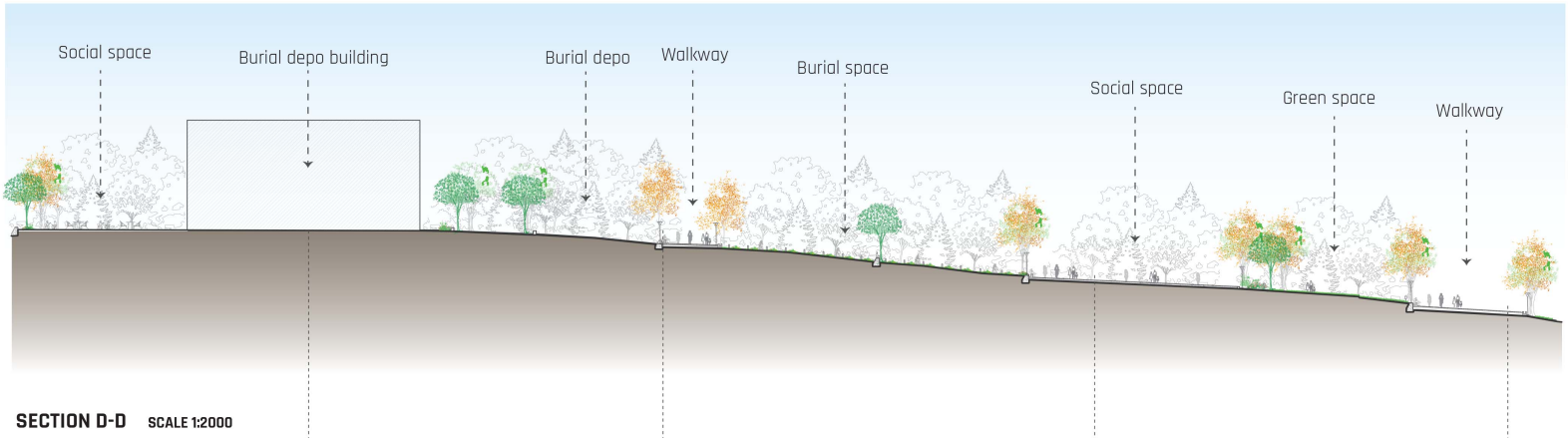
Shaded pathways

ENTRANCE AVENUE

KECHENE MEDHANEALEM CEMETERY: DESIGN TEST



SECTION C-C SCALE 1:2000



SECTION D-D SCALE 1:2000

3D Views

CHAPTER 8 REFERENCE

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CHAPTER 9 ANNEX

9-1 QUESTIONER

በቀጨኔ መድኀኒዐለም ሙታን ማረፊያ ጐብኚዎች የተዘጋጀ መጠይቅ ፣ (አየር ሁኔታ)

መግቢያ

በቅድሚያ ለትብብራችሁ ከልብ የመነጨ ምስጋናዬን አቀርባለሁ፡፡

ይህ መጠይቅ በአዲስ አበባ ዩኒቨርሲቲ ሁለተኛ ዲግሪ ለመመረቅያ ጽሁፍ ጥናት ማሟያ፤ የአየር ሁኔታ እና የተጠቃሚዎች አይታ መረጃ ለማሰባሰብ የተ*ጋጀ ነው፡፡

ክፍል ፩

ቀን: Click here to enter a date.ሰዓት : Click here to enter a date. ቦታ : Click here to enter text.

1. እድሜ:

☐15-24 ☐25-34 ☐35-44 ☐45-54 ☐55-64 ☐65-74 ☐75+

2. ጾታ: ☐ወንድ ☐ሴት
3. ክብደትClick
4. ቁመትClick
2. አዲስ አበባ መኖር ከጀመርክ ስንትኒ ሆነህ ? Click here to enter text.
3. ከአዲስ አበባ ውጪ ከ፣ ዓመት በላይ የት ኖረሃል? ለ ስንት ዓመት
    1. ከተማ Click here to enter text. ለ Click here to enter text. ዓመት
    2. ከተማ Click here to enter text. ለ Click here to enter text. ዓመት
    3. ከተማ Click here to enter text. ለ Click here to enter text. ዓመት
4. ከአየር ሁኔታ አንጻር የት ከተማ መኖር ትፈልጋለህ?

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ክፍል ፪

5. አሁን ምን አየሰራህ/ሽ ነው

☐ጋደም ብዬ ☐በ*ምታ ተቀምጬ ☐ቆሜ አየተመለከትኩ

☐*ር *ር እያልኩ ☐ቀለል ያለ አንቅስቃሴ ☐ከባድ አንቅስቃሴ

6. አሁን ያለው የአየር ሁኔታ እንዴት ነው?

የአየር ሁኔታ	1	2	3	4	5	6	7
ሙቀት	☐	☐	☐	☐	☐	☐	☐
የአየር እርጥበት	☐	☐	☐	☐	☐	☐	☐
የአየር እንቅስቃሴ	☐	☐	☐	☐	☐	☐	☐
ንፋስ	☐	☐	☐	☐	☐	☐	☐
አጠቃላይ	☐	☐	☐	☐	☐	☐	☐

1. በጣም *ቅተኛ 4. መካከለኛ 7. በጣም ከፍተኛ

7. አሁን ያለው የአየር ሁኔታው እንዴት ቢሆን ደስ ይልሃል/ሻል የአየር እርጥበት አጠቃላይ?

የአየር ሁኔታ	1	2	3	4	5	6	7
ሙቀት	☐	☐	☐	☐	☐	☐	☐
የአየር እርጥበት	☐	☐	☐	☐	☐	☐	☐
የአየር እንቅስቃሴ	☐	☐	☐	☐	☐	☐	☐
ንፋስ	☐	☐	☐	☐	☐	☐	☐
አጠቃላይ	☐	☐	☐	☐	☐	☐	☐

1. በጣም እንዲቀንስ 4. ባለበት እንዲሆን 7. በጣም እንዲጨምር

8. አሁን ምን ዓይነት ልብስ ነው የለበስከው/ሽው? ከአንድ በላይ መምረጥ ያቻላል

☐ቁምጣ ☐ጨርቅ ሱሪ ☐ጅንስ ሱሪ ☐ሙሉ ቀሚስ ☐ቀሚስ ☐ሙሉ ልብስ

☐ጃኬት/ሹራብ ☐ጨርቅ ሱሪ ☐ከናቴራ ☐ሸሚ* ☐የደንብ ልብስ /የሥራ ልብስ

☐የክት ልብስ ☐ነጠላ/ሂጃብ ☐ሌሎች

9. በጣም ሲሞቅህ/ሽ ምን ታደርጋለህ/ሽ?

☐ወደ ጥላ ቦታ መሄድ ☐ *ንጥላ/ኮፍያ እጠቀማለሁ ☐ ቀ*ቃ* ነገር መጠጣት

☐ልብስ መቀነስ ☐ምንም ☐ልላ ኣማራጭ

ክፍል ፫

10. አ*ህ ቦታ ለምን መጣህ/ሽ

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11. አሁን ያለህበት/ያለሽበት ቦታ ከመጣህ/ሽ ስንት ሰዓት ሆነሽ

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12. እ*ህ ቦታ በየስንት ጊ* ትመጣለህ/ሽ

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13. አሁን ያለህበት/ያለሽበት ቦታ ከመምጣትህ/ሽ በፊት የት ነበርክ/ሽ(እ*ህ ግቢ ውስጥ

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14. ምን ስታረግ/ጊ ነበር

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በቀጨኔ መድኀኒዐለም ሙታን ማረፊያ *ርያ ኗራዎች የተዘጋጀ መጠይቅ 2 (አጠቃቀም)

መግቢያ

በቅድሚያ ለትብብራችሁ ከልብ የመነጨ ምስጋናዬን አቀርባለሁ፡፡

ይህ መጠይቅ በአዲስ አበባ ዩኒቨርሲቲ ሁለተኛ ዲግሪ ለመመረቅያ ጽሁፍ ጥናት ማሚያ፤ የአየር ሁኔታ እና የተጠቃሚዎች አይታ መረጃ ለማሰባሰብ የተ*ጋጀ ነው፡፡

ክፍል ፩

ቀን: Click here to enter a date.ሰዓት : Click here to enter a date. ቦታ : Click here to enter text.

1. እድሜ:

☐15-24 ☐25-34 ☐35-44 ☐45-54 ☐55-64 ☐65-74 ☐75+

2. ጾታ: ☐ወንድ ☐ሴት
3. ሃይማኖት:

☐ኦርቶዶክስ ☐ፕሮቴስታንት ☐ካቶሊክ ☐እስልምና ☐ሌሎች

4. ሥራ:

☐ተማሪ ☐ተቀጣሪ ☐የቤት ሥራ/ የቤት እመቤት ☐ነጋዴ ☐የቀን ሥራ ☐ሌሎች

ክፍል ፪

1. በምትኖርበት/ በምትኖሪበት አከባቢ ለተለያዩ ማህበራዊ አገልግሎት እሚውል ፡ ለምሳሌ መ*ናኛ፣ መናፈሻ፣ መጫወቻ፣ መሰብሰቢያ ቦታ አለ፡፡

☐አዎ ☐የለም

2. ለጥያቄ ቁጥረ ፣ መልሱ አዎ ከሆነ፡ ዋና ዋና አገልግሎቶቹን ጥቀስ/ሺ

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3. ለጥያቄ ቁጥረ ፣ መልሱ አዎ ከሆነ፡ በቂ ነው?

☐አዎ ☐አይደለም

4. ለጥያቄ ቁጥረ 3 መልሱ አይደለም ከሆነ፡ምን ይጨመር?

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5. ወደ ቀጨኔ መድኀኒዐለም ሙታን ማረፊያ ሄደህ/ሽ ታውቃለህ/ሽ

☐አዎ ☐አላውቅም

6. ለጥያቄ ቁጥረ 5 መልሱ አዎ ከሆነ፡ ለምን ጉዳይ?

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7. ለጥያቄ ቁጥረ 5 መልሱ አዎ ከሆነ፡ ቆይታህ/ሽ ምን ይመስል ነበር?

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8. ለጥያቄ ቁጥረ 5 መልሱ አዎ ከሆነ፡ ቦታው ምቹ ነው?

☐አዎ፡ እንዴት? Click here to enter text. Click here to enter text Click here to enter text

☐አይደለም፡ለምን? Click here to enter text. Click here to enter text Click here to enter text Click here to enter text Click here to enter text Click here to enter text Click here

9. ለጥያቄ ቁጥረ 5 መልሱ አዎ ከሆነ፡ በየስንት ጊ* ትሄዳለህ/ሽ?

☐በሳምንት ሁለቴ/ ከ* በላይ ☐በየሳምንቱ ☐በየወሩ ☐በየዓመቱ ☐ጉዳይ ሲኖረኝ

10. ለጥያቄ ቁጥረ 5 መልሱ አዎ ከሆነ፡ በምትሄድበት/በምትሄጂበት ጊ* ስንት ሰዓተ ትቆያለህ?

☐ ነ ሰዓት በታች ☐1-3 ሰዓት ☐ ግማሽ ቀን ☐ቀኑን ሙሉ ☐ ቀንና ለሊት

11. ለጥያቄ ቁጥረ 5 መልሱ አዎ ከሆነ፡ መቼ መሄድ ትመርጣለህ/ሽ?

☐ ከሰኞ አስከ ዓርብ ☐ ቅዳሜና እሁድ ☐በማንኛውም ቀን

12. ለጥያቄ ቁጥረ 5 መልሱ አዎ ከሆነ፡ በየትኛው ግ* መሄድ ትመርጣለህ/ሽ?

☐ ጠዋት/ 12:00 – 3:00 ☐ አረፋፍጂ በጠዋት/ 3:00 – 6:00

☐ቀትር /6:00-9:00 ☐አመሻሽ ላይ /9-12 ☐ለሊት

13. ለጥያቄ ቁጥረ 5 መልሱ አዎ ከሆነ፡ ከማን ጋር መሄድ ትመርጣለህ/ሽ?

☐ ብቻየን ☐ከቤተሰብ ጋር ☐ ከጓደኞቼ ጋር ፤ ለምንClick here to enter text.

14. ግቢው ውስጥ የታ*ከከው/የታ*ሸው ወይም የሰማህው/የሰማሺው ችግር አለ?

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15. Click here to enter text. Click here to enter text. Click here to enter text. Click here to enter text.

16. ይህ ቦታ ያስፈራሃል?

☐አዎ ☐አይደለም

17. ሌሎች ሀገሮች ላይ መቃብሮች እንደ መ*ናኛ እንደሚያገለግል ታውቃለህ?

☐አዎ ☐አላውቅም

18. ተመሳሳይ አገልግሎት እ*ህ ቢጀመር ትስማማለህ/ሽ?

☐አዎ ☐አልስማማም፤ ለምንClick here to enter text.

19. ለጥያቄ ቁጥረ 10 መልሱ አዎ ከሆነ፡ ምን ማካተት አለበት?

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በቀጨኔ መድኀኒዐለም ሙታን ማረፊያ ጐብኚዎች የተዘጋጀ መጠይቅ 3 (አጠቃቀም)

መግቢያ

በቅድሚያ ለትብብራችሁ ከልብ የመነጨ ምስጋናዬን አቀርባለሁ፡፡

ይህ መጠይቅ በአዲስ አበባ ዩኒቨርሲቲ ሁለተኛ ዲግሪ ለመመረቅያ ጽሁፍ ጥናት ማሟያ፤ የአየር ሁኔታ እና የተጠቃሚዎች አይታ መረጃ ለማሰባሰብ የተ*ጋጀ ነው፡፡

ክፍል ፩

ቀን: Click here to enter a date.ሰዓት : Click here to enter a date. ቦታ : Click here to enter text.

1. እድሜ:

☐15-24 ☐25-34 ☐35-44 ☐45-54 ☐55-64 ☐65-74 ☐75+

2. ጾታ: ☐ወንድ ☐ሴት

ክፍል ፪

3. አሁን ምን አየሰራህ/ሽ ነው

☐ጉብኝት ☐በ*ምታ ተቀምጬ ☐ቆሜ አየተመለከትኩ ☐*ር *ር እያልኩ

☐እያነበብኩ ☐ከቤተሰብ/ጓደኞች ጋር እየተወያየሁ ☐ሌሎች

4. ይህ ቦታ ምቹ ነው?

☐አዎ፡ እንዴት? Click here to enter text. Click here to enter text Click here to enter text

☐አይደለም፡ለምን? Click here to enter text. Click here to enter text Click here to enter text Click here to enter text Click here to enter text Click here to enter text Click here

5. በየስንት ጊ* ትመጣለህ/ሽ?

☐በሳምንት ሁለቴ/ ከ* በላይ ☐በየሳምንቱ ☐በየወሩ ☐በየዓመቱ ☐ጉዳይ ሲኖረኝ

6. በምትመጣበት/በምትመጪበት ጊ* ስንት ሰዓተ ትቆያለህ?

☐ ነ ሰዓት በታች ☐1-3 ሰዓት ☐ ግማሽ ቀን ☐ቀኑን ሙሉ ☐ ቀንና ለሊት

7. መቼ መምጣት ትመርጣለህ/ሽ?

☐ ከሰኞ አስከ ዓርብ ☐ ቅዳሜና እሁድ ☐በማንኛውም ቀን

8. በየትኛው ግ* መምጣት ትመርጣለህ/ሽ?

☐ ጠዋት/ 12:00 – 3:00 ☐ አረፋፍጄ በጠዋት/ 3:00 – 6:00

☐ቀትር /6:00-9:00 ☐አመሻሽ ላይ /9-12 ☐ለሊት

9. ከማን ጋር መምጣት ትመርጣለህ/ሽ?

☐ ብቻየን ☐ከቤተሰብ ጋር ☐ ከጓደኞቼ ጋር ፤ ለምንClick here to enter text.

10. እ*ህ ግቢ የታ*ብከው/የታ*ብሺው ወይም የሰማህው/የሰማሺው ችግር አለ?

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11. ሌሎች ሀገሮች ላይ መቃብሮች እንደ መ*ናኛ እንደሚያገለግል ታውቃለህ?

☐አዎ ☐አላውቅም

12. ተመሳሳይ አገልግሎት እ*ህ ቢጀመር ትስማማለህ/ሽ?

☐አዎ ☐አልስማማም፤ ለምንClick here to enter text.

13. ለጥያቄ ቁጥረ 10 መልሱ አዎ ከሆነ፡ ምን ማካተት አለበት?

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9-2 TEMPERATURE AND HUMIDITY DATA

9-2-1 Recorded Data

Time	Day 1_N1(Inside)_Temp.	Day 1_N1(Inside)_Humidity	Day 1_N2(C_F.)_Temp.	Day 1_N2(C_F.)_Humidity	Day 1_N3(SP_E.)_Temp.	Day 1_N3(SP_E.)_Humidity	Day 1_N4(B_P.)_Temp.	Day 1_N4(B_P.)_Humidity
13:15:30	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
13:16:00	24.5	39.8	30.7	27.6	28.4	39.2	29.3	30.9
13:16:30	24.3	39.7	30.7	28	27.9	38.3	29.1	30.9
13:17:00	24.5	39.8	30.5	28	27.9	40.2	29.1	30.9
13:17:30	25	42.2	30.7	28.1	28.4	40.7	29.1	31.4
13:18:00	25	41.8	30.7	28.1	28.6	41.2	28.6	31.5
13:18:30	25.2	40.7	30.7	28.1	28.6	39.7	28.6	31.5
13:19:00	25.2	39.8	30.7	28.1	29.1	40.3	28.6	31.5
13:19:30	25.7	41.7	30.5	28	29.1	41.2	28.4	31.9
13:20:00	25.8	40.3	30	28.1	29.1	39.2	28.4	31.9
13:20:30	25.8	39.8	29.8	28.5	28.6	41.2	28.4	33.5
13:21:00	25.8	38.7	29.8	28.6	28.6	36.4	27.9	35.8
13:21:30	25.8	38.7	30	29.1	27.9	34	27.7	34.3
13:22:00	25.8	37.4	30	29.6	27.7	34.3	27.2	33.5
13:22:30	25.8	37.4	30.5	29.5	27.2	34.3	27	33.5
13:23:00	25.7	37.3	30.5	29	27.2	34.5	27	34.3
13:23:30	25.2	37.4	30.5	28.6	27	35.8	27	34.5
13:24:00	25	37.8	30.5	29	27	37.3	27	34.5
13:24:30	25	38.7	30.7	28.6	27.2	35.4	27	37.3
13:25:00	25	39.4	30.7	28.5	27.2	35.3	27	37.8
13:25:30	25.2	39.4	30.7	28	27	35	27	35.3
13:26:00	25.2	38.7	31.2	28.1	27	35.3	27	35.4
13:26:30	25.7	39.8	31.2	28.5	27.2	35.9	27.2	35.8
13:27:00	25.7	39.4	31.3	28	27.2	35.4	27.2	37.3
13:27:30	25.7	38.7	31.9	28	27.2	35.4	27.7	40.8
13:28:00	25.8	39.2	31.9	27.6	27.7	35.9	27.7	39.2
13:28:30	25.8	37.9	31.9	26.7	27.7	35.3	27.9	36.9
13:29:00	25.7	37.4	31.9	26.5	27.7	35.3	27.9	35.9
13:29:30	25.7	37.4	31.2	26.2	27.7	34.8	27.9	34
13:30:00	25.2	36.9	30.7	26.7	27.7	34.3	27.9	32.9
13:30:30	25	36.9	30.7	27.1	27.7	34.8	27.7	33.5
13:31:00	24.5	37.9	30.7	27.5	27.2	36.3	27.7	35.4
13:31:30	24.5	39.2	30.5	27.5	27.2	41.7	27.7	35
13:32:00	25	37.4	30.5	27.6	27.2	40.7	27.7	34.5
13:32:30	25	36.9	30.5	28.1	27.7	44.2	27.7	35
13:33:00	25	36.9	30	27.6	27.7	38.3	27.2	33.4
13:33:30	25.2	37.9	30	28.1	27.7	35.8	27.2	33
13:34:00	25	37.4	30	28.6	27.2	35.3	27.2	32.5
13:34:30	25	38.3	29.3	28.5	27.2	35.3	27	32.5
13:35:00	25.2	38.3	29.1	29.5	27.2	37.8	26.5	33.4
13:35:30	25.2	38.9	29.3	29.1	27.7	37.4	26.4	33.4
13:36:00	25.2	39.2	29.3	29.1	27.7	36.9	25.8	34
13:36:30	25.2	38.9	29.3	29.5	27.7	36.9	25.8	35.8
13:37:00	25	38.7	29.8	29.6	27.2	35.8	26.4	36.3
13:37:30	25.2	37.9	29.3	29	27	35.3	26.4	35.9
13:38:00	25.2	37.8	29.3	29.5	27	35.3	25.8	34.5
13:38:30	25.2	38.3	29.3	30.9	26.5	35.3	25.7	34.3
13:39:00	25.2	38.3	29.3	30.6	26.4	35.8	25.7	35.4
13:39:30	25.7	38.3	29.3	30.4	25.8	36.3	25.7	37.3
13:40:00	25.2	37.3	29.3	30.4	26.4	36.9	25.7	36.9
13:40:30	25.7	36.9	29.3	30.4	26.4	36.8	25.2	36.9
13:41:00	25.8	36.4	29.3	30.1	26.5	53.9	25.2	36.4
13:41:30	25.8	36.8	29.3	29.6	27	43.1	25.2	36.8
13:42:00	26.4	36.3	29.1	29.6	27.2	37.4	25.2	36.8
13:42:30	26.4	35.9	28.6	29.6	27.2	35.8	25.2	35.9
13:43:00	25.8	35.4	28.4	30	27.2	35.3	25	36.3
13:43:30	25.8	35.8	27.9	30.4	27.2	35	25	37.8
13:44:00	25.7	35.8	27.7	30.9	27.2	34.8	25	36.9
13:44:30	25.2	35.9	27.7	30.9	27	35.4	25	36.4
13:45:00	25.2	36.4	27.2	31.5	27	35.4	25	36.3
13:45:30	25.2	36.9	27.2	31.5	27	36.3	25	36.4
13:46:00	25	37.4	27.2	31.5	27.2	41.3	25	36.4
13:46:30	25	38.3	27	32.4	27.2	40.7	25	36.9
13:47:00	24.5	38.4	27	32.4	27.7	38.4	25	36.8
13:47:30	24.3	38.3	26.5	32.4	27.7	37.3	24.5	36.8
13:48:00	24.3	38.7	26.5	33	27.7	35.8	25	36.4
13:48:30	23.8	38.9	26.5	33.4	27.7	35.4	25	36.4
13:49:00	23.8	39.7	27	33.4	27.2	35	25	36.4
13:49:30	23.6	40.3	27.7	33	27	36.3	25	36.8
13:50:00	23.6	39.8	27.7	31.9	27	35.8	25	37.3
13:50:30	23.6	41.3	27.9	31.5	27.2	35.4	25	37.4
13:51:00	23.8	41.3	28.4	31.5	27.2	35.3	25	36.9
13:51:30	24.3	41.8	28.6	31.1	27.7	34.8	25	37.3
13:52:00	24.5	41.8	28.4	30.6	27.7	34.5	24.5	36.8
13:52:30	25	40.8	28.4	30.6	27.7	34	25	37.3
13:53:00	25.2	38.4	28.4	31.4	27.7	34.3	25	37.4
13:53:30	25.2	38.9	27.9	32	27.7	34.3	25.2	36.9
13:54:00	25.2	37.9	27.2	31.9	27.7	34	25.2	36.3
13:54:30	24.5	37.8	27	33	27.7	34	25.2	36.8
13:55:00	24.3	37.9	26.5	34.8	27.7	33.9	25.2	36.3
13:55:30	24.3	38.7	26.4	35.3	27.7	33.9	25	35.9

Time	Day 1_N1(Inside)_Temp.	Day 1_N1(Inside)_Humidity	Day 1_N2(C_F.)_Temp.	Day 1_N2(C_F.)_Humidity	Day 1_N3(SP_E.)_Temp.	Day 1_N3(SP_E.)_Humidity	Day 1_N4(B_P.)_Temp.	Day 1_N4(B_P.)_Humidity
13:56:00	23.8	39.8	26.4	34.3	27.7	33.9	25.2	36.3
13:56:30	23.6	39.8	25.8	35	27.7	34	25.2	36.4
13:57:00	23.1	40.3	25.8	36.4	27.7	34	25.2	35.9
13:57:30	23.1	40.8	25.7	36.3	27.2	34	25.7	35.9
13:58:00	22.9	41.3	25.7	35.8	27.2	34.3	25.7	36.9
13:58:30	22.9	41.7	25.7	36.4	27.2	34.3	25.8	37.3
13:59:00	22.9	42.3	25.2	36.9	27	34.5	25.8	37.3
13:59:30	23.1	41.7	25.2	38.3	27.2	35.3	26.4	38.7
14:00:00	23.6	41.3	25.7	36.9	27.2	35.9	26.4	40.7
14:00:30	23.8	41.2	25.8	36.9	27.2	35.4	26.4	38.3
14:01:00	24.3	41.2	26.4	35.9	27.2	35	26.4	36.9
14:01:30	24.3	40.7	26.5	34.8	27.7	35.4	26.4	38.4
14:02:00	24.3	39.8	26.5	34	27.7	35	25.8	36.3
14:02:30	24.3	39.7	26.5	33.9	27.7	35.9	25.8	35.8
14:03:00	24.3	39.4	26.5	33.9	27.7	36.3	25.8	35.8
14:03:30	24.3	39.4	26.4	34	27.2	35.4	25.7	35.8
14:04:00	24.3	39.2	26.4	34.3	27.2	35.8	25.7	35.8
14:04:30	24.3	40.2	26.4	34.5	27.2	37.4	25.7	35.3
14:05:00	24.5	40.3	26.4	34.5	27.2	37.3	25.7	35.3
14:05:30	24.5	39.7	26.4	34.3	27.2	36.9	25.2	35.3
14:06:00	24.5	39.2	26.4	34	27.2	35.8	25.2	35.8
14:06:30	24.5	39.2	26.4	33.9	27	35.8	25.7	35.9
14:07:00	24.5	39.4	26.5	33.9	26.5	35.9	25.2	35.3
14:07:30	24.5	38.9	26.4	33.5	26.4	36.3	25.2	35.4
14:08:00	24.5	38.9	26.4	33.9	26.5	37.8	25.2	35.4
14:08:30	25	38.7	26.4	33.4	26.4	37.3	25.2	35.4
14:09:00	25	38.9	26.4	33.4	26.4	36.9	25.2	35.8
14:09:30	25	38.9	26.5	33.4	26.4	36.3	25.2	35.4
14:10:00	24.5	38.4	26.4	32.9	26.4	39.4	25.2	35.8
14:10:30	24.3	38.7	26.4	33.4	26.5	39.4	25	35.9
14:11:00	24.3	39.2	25.8	33.5	26.4	37.4	25	35.8
14:11:30	23.8	40.2	25.8	33.9	26.5	37.3	25	36.8
14:12:00	23.8	40.7	26.4	34.5	26.5	38.4	25.2	37.4
14:12:30	23.8	40.2	25.8	34.3	26.4	36.9	25.7	37.3
14:13:00	23.8	40.2	25.8	34.3	26.4	36.3	25.7	37.3
14:13:30	24.3	39.4	25.8	34	26.4	36.3	25.7	36.3
14:14:00	24.3	38.9	26.4	34.5	26.5	36.3	25.7	35
14:14:30	24.3	38.4	26.4	34	26.5	35.8	25.7	34.5
14:15:00	24.3	38.9	26.4	34.8	26.5	35.4	25.2	34.8
14:15:30	24.5	38.4	26.4	34.8	26.5	35.4	25.7	35.9
14:16:00	24.5	38.4	26.4	34	26.4	35.4	25.7	35.3
14:16:30	25	39.2	26.4	33.5	26.4	35.4	25.8	35.4
14:17:00	25.2	39.4	26.4	33.5	26.4	35.4	25.8	36.3
14:17:30	25.2	38.4	26.5	33.5	26.4	35.4	26.4	37.4
14:18:00	25.2	37.9	26.5	33.4	26.5	35.4	26.5	37.8
14:18:30	25.2	38.4	27	33	26.5	35.4	26.5	36.4
14:19:00	25.2	38.7	27	32.5	26.5	35.3	26.5	35.4
14:19:30	25	38.3	27	32.4	26.5	35.4	26.5	36.3
14:20:00	25	38.3	27	32.5	26.5	36.4	26.5	35.4
14:20:30	25	38.3	27	32.5	26.5	35.9	27	35
14:21:00	24.5	38.3	27	32.4	27	35.8	27	35
14:21:30	24.5	38.3	27.2	32.4	27	35.9	26.5	33.5
14:22:00	24.5	38.3	27.2	32	27	35.3	26.5	34
14:22:30	24.5	38.7	27.2	32	27.2	35.4	26.5	35.4
14:23:00	24.5	38.4	27.2	31.9	27.7	35.4	26.5	35
14:23:30	24.3	38.4	27.2	31.9	27.2	34.3	26.5	34.5
14:24:00	24.3	38.9	27.2	32.4	27.2	33.9	26.5	33.9
14:24:30	24.3	39.4	27.2	32.5	27.2	34.5	26.5	34
14:25:00	24.3	39.7	27.7	31.9	27.2	34.8	26.5	34
14:25:30	24.3	39.7	27.7	31.9	27.7	34.5	26.5	34
14:26:00	24.3	39.7	27.7	31.9	27.7	34.5	26.4	34.8
14:26:30	24.3	39.7	27.9	32	27.7	34.3	26.4	35
14:27:00	24.3	39.7	28.4	31.4	27.7	34	25.8	35.4
14:27:30	24.5	40.2	28.4	31.1	27.7	34	25.8	35.9
14:28:00	25	39.8	28.6	31.1	27.7	34	25.8	36.4
14:28:30	25	39.4	28.6	31.5	27.2	34.3	25.8	36.9
14:29:00	25	38.7	29.1	30.6	27.2	34.8	25.8	37.3
14:29:30	25	39.4	28.6	30	27.7	35.4	25.8	37.3
14:30:00	25	37.9	28.6	30.1	27.7	35.8	25.8	36.4
14:30:30	25	37.4	28.6	30.6	27.7	35	25.8	38.3
14:31:00	25	37.9	28.6	30.6	27.7	35.9	26.4	37.9
14:31:30	25	38.4	28.4	30.9	27.7	35.9	26.4	37.3
14:32:00	25	38.7	28.4	31.4	27.7	35.9	26.4	38.4
14:32:30	25.2	38.9	28.4	31.4	27.7	35.4	26.4	37.3
14:33:00	25.2	38.3	28.6	31.4	27.7	35	26.4	37.4
14:33:30	25.2	37.8	28.6	30.9	27.7	34.8	25.8	36.9
14:34:00	25	37.4	28.6	31.5	27.7	38.7	25.8	35.4
14:34:30	25	38.4	28.6	31.1	27.7	41.3	25.7	36.9
14:35:00	25	38.7	28.4	31.4	27.9	46.2	25.7	36.3
14:35:30	25	39.8	27.9	31.5	28.4	45.6	25.7	35.8
14:36:00	25	39.2	27.9	31.9	28.4	40.8	25.2	35.8
14:36:30	25	38.9	27.7	32	27.9	38.9	25.2	35.8
14:37:00	25	39.2	27.2	32	27.9	37.4	25	35.9
14:37:30	25.2	38.7	27	32.5	27.9	36.8	25	36.9
14:38:00	25.2	38.4	27	32.4	27.7	37.3	25	36.4
14:38:30	25.2	38.7	27	32.5	27.7	37.4	25	36.4

Time	Day 1_N1(Inside)_Temp. Day 1_N1(Inside)_Temp.	Day 1_N1(Inside)_Humidity Day 1_N1(Inside)_Humidity	Day 1_N2(C_F.)_Temp. Day 1_N2(C_F.)_Temp.	Day 1_N2(C_F.)_Humidity Day 1_N2(C_F.)_Humidity	Day 1_N3(SP_E.)_Temp. Day 1_N3(SP_E.)_Temp.	Day 1_N3(SP_E.)_Humidity Day 1_N3(SP_E.)_Humidity	Day 1_N4(B_P.)_Temp. Day 1_N4(B_P.)_Temp.	Day 1_N4(B_P.)_Humidity Day 1_N4(B_P.)_Humidity
14:39:00	25.7	38.9	26.5	33	27.7	36.9	25	36.3
14:39:30	25.8	38.9	26.5	34	27.2	36.9	24.5	36.4
14:40:00	25.8	37.8	26.5	33.9	27.2	36.9	24.5	36.3
14:40:30	26.4	38.4	26.5	34.3	27	37.4	24.5	35.9
14:41:00	25.8	37.3	26.4	34.8	27	36.8	24.5	35.9
14:41:30	25.8	36.4	26.4	35	27	37.4	24.5	36.8
14:42:00	25.7	35.9	26.4	34.8	27	37.3	24.5	37.3
14:42:30	25.2	35.8	26.4	34.5	26.5	37.3	25	37.9
14:43:00	25.2	36.8	26.4	34.5	26.5	36.9	25	37.8
14:43:30	24.5	36.8	26.5	33.5	26.5	37.9	25.2	37.9
14:44:00	24.5	37.8	26.5	33.9	26.5	36.4	25.2	38.4
14:44:30	24.5	38.7	27	33.4	27	36.3	25.2	39.2
14:45:00	25	39.4	27	33.4	26.5	35.9	25.7	40.8
14:45:30	25	38.7	27.2	32.5	26.5	35.9	25.8	38.4
14:46:00	25	39.4	27	32.5	26.5	36.3	25.8	36.8
14:46:30	25.2	39.4	27	32.5	27	35.8	25.8	36.3
14:47:00	25.2	38.4	26.5	32.5	27	35.9	25.8	36.8
14:47:30	25.2	38.4	26.5	32.5	27.2	35.9	25.8	36.4
14:48:00	25.2	39.7	26.5	32.5	27.2	35.4	25.8	35.8
14:48:30	25.2	40.3	26.4	32.9	27	35	25.8	34.8
14:49:00	25.7	38.9	26.4	33.4	27	35	25.8	36.8
14:49:30	25.7	37.9	26.4	33.5	27	35.3	26.4	38.3
14:50:00	25.2	37.8	26.4	33.9	26.5	35.8	26.4	38.4
14:50:30	25.2	37.8	26.5	34	26.5	35.8	26.4	35.9
14:51:00	25.2	37.8	26.5	33.5	26.4	35.8	26.4	34.5
14:51:30	25.2	37.8	26.4	33.4	25.8	35.9	26.4	34
14:52:00	25.2	37.9	26.4	33.4	25.7	36.3	25.8	34.5
14:52:30	25.2	37.4	26.4	33.9	25.7	36.9	25.8	34.8
14:53:00	25.2	37.4	26.5	33.5	25.2	37.3	25.8	34.5
14:53:30	25	37.3	26.5	33	25.2	37.3	25.8	34.3
14:54:00	25	38.4	26.5	33	25.2	37.3	25.7	34
14:54:30	25	38.3	26.5	33	25.2	37.3	25.7	34.8
14:55:00	24.5	38.4	26.5	33	25.7	37.8	25.2	35
14:55:30	24.5	37.9	26.5	33	25.7	38.3	25.2	35.3
14:56:00	24.3	38.3	26.5	37.8	25.7	40.8	25.2	35.3
14:56:30	24.3	38.9	26.4	38.3	25.7	40.8	25.7	35.4
14:57:00	24.3	39.2	26.4	36.9	25.7	39.8	25.7	35.4
14:57:30	24.3	38.9	25.8	35.9	25.7	39.2	25.7	35.4
14:58:00	24.3	39.4	25.8	35.3	25.2	38.7	25.8	36.3
14:58:30	24.5	39.8	25.7	34.8	25.2	37.9	25.8	37.4
14:59:00	24.5	39.8	25.8	35.4	25.2	37.8	26.4	37.9
14:59:30	25	39.4	25.8	34.8	25	37.9	26.4	39.2
15:00:00	25	38.9	26.4	34.8	25	38.7	26.5	38.4
15:00:30	25	38.7	26.5	35.8	25	38.7	26.5	36.9
15:01:00	25	38.4	26.5	34.5	25.2	38.7	26.4	35.4
15:01:30	24.5	38.3	27	33.9	25.2	38.4	26.4	36.8
15:02:00	24.5	37.9	27	33	25.2	38.3	26.4	37.9
15:02:30	24.3	38.3	27	33.4	25.7	37.8	26.4	36.8
15:03:00	24.3	38.4	27	34	25.7	37.8	25.8	35.9
15:03:30	24.3	38.9	27	37.3	25.8	44.1	25.8	38.7
15:04:00	24.3	38.4	27.2	37.3	25.8	39.4	25.8	40.8
15:04:30	23.8	38.4	27.2	36.3	26.4	39.8	25.8	37.9
15:05:00	23.8	38.7	27.2	34.5	26.5	44.2	25.7	36.9
15:05:30	23.8	39.2	27.2	33.4	27	39.4	25.7	38.4
15:06:00	23.6	39.2	27.2	33	27	41.3	25.7	37.8
15:06:30	23.6	39.4	27.2	32.4	27.2	44.6	25.7	37.3
15:07:00	23.6	39.4	27.2	32	27.2	47.5	25.2	36.8
15:07:30	23.6	39.4	27	32.5	27.7	39.8	25.2	36.8
15:08:00	23.6	40.2	27.2	33	27.7	36.3	25.2	37.9
15:08:30	23.1	40.7	27.2	32.9	27.2	35.8	25.2	37.4
15:09:00	23.1	40.3	26.5	32.5	27.2	35.8	25.2	39.2
15:09:30	22.9	41.2	26.4	32.9	27.2	35.4	25.2	39.4
15:10:00	22.9	41.2	26.4	33.9	27	37.3	25.2	36.8
15:10:30	22.4	41.7	26.5	34	27	40.7	25.2	36.3
15:11:00	22.4	41.7	26.5	33.5	26.5	38.4	25.2	36.3
15:11:30	22.2	41.7	26.5	33.4	26.5	38.9	25.2	35.9
15:12:00	22.2	41.8	26.5	33.5	26.5	39.4	25.2	36.4
15:12:30	22.4	43.6	26.5	34.3	26.5	38.7	25.2	35.9
15:13:00	22.4	45.2	26.4	34.8	26.5	38.7	25.2	37.4
15:13:30	22.9	43.3	25.8	34.5	26.5	37.3	25.7	36.9
15:14:00	22.9	43.1	25.8	34.8	26.4	36.8	25.8	38.3
15:14:30	22.9	42.6	25.7	35.3	26.4	36.3	25.8	37.3
15:15:00	22.9	42.8	25.7	35.4	25.8	36.4	26.4	36.8
15:15:30	22.9	41.7	25.7	35.9	25.8	36.3	26.4	36.3
15:16:00	22.4	41.3	25.2	36.3	25.7	36.3	26.4	35.3
15:16:30	22.4	41.7	25.2	36.3	25.7	36.9	26.4	35.3
15:17:00	22.4	42.6	25.2	35.4	25.7	37.4	26.4	36.8
15:17:30	22.9	41.8	25	35.4	25.7	37.8	26.5	36.3
15:18:00	22.4	41.7	25	35.8	25.7	37.9	26.5	36.8
15:18:30	22.4	41.7	25	35.9	25.7	38.4	26.5	37.9
15:19:00	22.2	41.7	25	35.8	25.7	38.7	26.5	36.9
15:19:30	22.2	42.2	24.5	35.4	25.8	39.2	27	38.4
15:20:00	22.2	42.3	25	35.9	25.8	39.2	27	35.8
15:20:30	22.2	42.6	24.5	35.9	25.7	38.4	27	34.8
15:21:00	22.2	42.6	24.5	36.3	25.7	39.4	27.2	36.8
15:21:30	22.2	42.3	24.5	36.8	25.8	39.2	27.2	38.4
15:22:00	22.4	42.6	24.5	36.8	25.8	38.3	27.7	36.4
15:22:30	22.4	42.3	25	37.3	25.8	37.9	27.7	36.4
15:23:00	22.9	41.8	25.2	36.4	25.8	39.2	27.7	35.8
15:23:30	23.1	41.7	25.7	35.3	26.4	36.9	27.9	35.9
15:24:00	23.1	41.3	25.8	35	26.5	35.8	27.9	37.8
15:24:30	23.1	40.7	26.4	34.8	26.5	35.4	27.9	37.9
15:25:00	23.1	40.7	26.4	34	26.5	35.4	27.9	34.8
15:25:30	22.9	40.3	26.5	33.9	26.5	35.3	27.7	33.4
15:26:00	22.9	40.3	26.5	33.5	26.5	35	27.7	33.4
15:26:30	22.9	40.3	26.5	33.4	26.5	35.9	27.7	33
15:27:00	22.9	40.7	26.5	33.4	27	35.8	27.7	32
15:27:30	22.9	40.8	26.5	33	27	35.3	27	31.9
15:28:00	23.1	41.2	26.5	33.4	26.5	36.3	27	32
15:28:30	23.6	41.7	26.5	33.5	26.4	36.3	26.5	32.9
15:29:00	23.6	40.8	26.5	33	25.8	35.9	26.5	33.4
15:29:30	23.6	41.2	27	32.5	25.8	37.4	26.4	33.4
15:30:00	23.6	40.3	27	32.4	26.4	41.8	26.4	33.4
15:30:30	23.6	40.2	27	32	27	42.2	25.8	33.9
15:31:00	23.6	40.2	27	32	27.7	38.3	25.7	34.3
15:31:30	23.6	40.8	26.5	32	27.7	35.3	25.7	34.3
15:32:00	23.6	40.3	27	32.4	27.7	34.5	25.7	34.3
15:32:30	23.6	39.7	27	32.5	27.7	34.8	25.2	34.3
15:33:00	23.6	39.7	26.5	32.9	27.7	40.8	25.2	34.8
15:33:30	23.6	40.7	26.5	33	27.9	54.5	25	35.8
15:34:00	23.6	41.8	27	33	28.4	60.3	25	36.3
15:34:30	23.6	41.3	27	32.9	28.6	48.6	25	36.3
15:35:00	23.6	40.2	27.7	33.4	28.6	41.8	24.5	36.4
15:35:30	23.6	40.7	27.9	32.4	29.1	38.4	24.5	37.8
15:36:00	23.1	40.3	28.6	32	28.6	35.4	24.3	37.3
15:36:30	23.1	40.7	29.3	31.9	28.4	35.3	24.3	37.9
15:37:00	23.1	41.3	29.8	31.4	27.9	37.3	24.3	38.4
15:37:30	23.1	41.3	29.8	29.5	27.9	40.7	24.5	38.9
15:38:00	23.6	41.7	29.8	29	27.9	42.3	24.5	38.9
15:38:30	23.6	41.3	29.8	29.1	27.9	43.6	24.5	37.9
15:39:00	23.8	41.2	29.8	29	27.9	43.6	25	40.8
15:39:30	23.8	40.8	29.8	31.1	27.9	44.2	25	41.7
15:40:00	23.8	40.3	29.8	31.4	27.9	44.7	25	39.8
15:40:30	23.8	40.3	29.3	31.4	27.9	41.8	25	38.9
15:41:00	23.8	40.3	29.1	31.5	27.9	44.1	25	39.4
15:41:30	23.8	40.7	29.1	32.4	27.9	47.2	25.2	53.4
15:42:00	23.8	40.3	28.6	32.5	27.9	41.8	25.7	53.9
15:42:30	23.6	39.8	28.4	32.9	27.9	40.3	25.8	53.5
15:43:00	23.6	39.7	28.4	33	27.9	39.2	26.4	70.6
15:43:30	23.6	40.7	27.9	33	27.9	39.8	26.5	52
15:44:00	23.8	40.3	27.9	34	27.7	38.9	26.5	43.3
15:44:30	23.8	40.2	27.9	36.8	27.7	38.7	26.5	40.3
15:45:00	23.8	40.7	27.9	35.3	27.7	37.9	26.5	38.9
15:45:30	23.8	40.3	27.9	38.9	27.7	41.2	26.5	40.2
15:46:00	23.8	40.8	27.7	35	27.7	38.3	26.4	37.3
15:46:30	23.8	40.3	27.7	34	27.2	37.3	26.4	36.4
15:47:00	23.8	40.3	27.2	34	27.2	37.3	26.4	36.8
15:47:30	23.6	40.3	27.2	34.8	27.2	37.8	25.8	37.4
15:48:00	23.6	40.7	27	34.5	27	37.3	25.8	36.8
15:48:30	23.6	40.8	27	35.3	27	37.8	25.8	37.3
15:49:00	22.2	41.7	25	35.8	25.7	38.7	26.5	36.9
15:49:30	22.2	42.2	24.5	35.4	25.8	39.2	27	38.4
15:50:00	22.2	42.3	25	35.9	25.8	39.2	27	35.8
15:50:30	22.2	42.6	24.5	35.9	25.7	38.4	27	34.8
15:51:00	23.8	40.3	29.1	31.5	27.9	44.1	25	39.4
15:51:30	23.8	40.7	29.1	32.4	27.9	47.2	25.2	53.4
15:52:00	23.8	40.3	28.6	32.5	27.9	41.8	25.7	53.9
15:52:30	23.6	39.8	28.4	32.9	27.9	40.3	25.8	53.5
15:53:00	23.6	39.7	28.4	33	27.9	39.2	26.4	70.6
15:53:30	23.6	40.7	27.9	33	27.9	39.8	26.5	52
15:54:00	23.8	40.3	27.9	34	27.7	38.9	26.5	43.3
15:54:30	23.8	40.2	27.9	36.8	27.7	38.7	26.5	40.3
15:55:00	23.8	40.7	27.9	35.3	27.7	37.9	26.5	38.9
15:55:30	23.8	40.3	27.9	38.9	27.7	41.2	26.5	40.2
15:56:00	23.8	40.8	27.7	35	27.7	38.3	26.4	37.3
15:56:30	23.8	40.3	27.7	34	27.2	37.3	26.4	36.4
15:57:00	23.8	40.3	27.2	34	27.2	37.3	26.4	36.8
15:57:30	23.6	40.3	27.2	34.8	27.2	37.8	25.8	37.4
15:58:00	23.6	40.7	27	34.5	27	37.3	25.8	36.8
15:58:30	23.6	40.8	27	35.3	27	37.8	25.8	37.3
15:59:00	22.2	41.7	25	35.8	25.7	38.7	26.5	36.9
15:59:30	22.2	42.2	24.5	35.4	25.8	39.2	27	38.4
16:00:00	22.2	42.3	25	35.9	25.8	39.2	27	35.8
16:00:30	22.2	42.6	24.5	35.9	25.7	38.4	27	34.8
16:01:00	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A

Time	Day_2N1(Inside)_Temp.	Day_2N1(Inside)_Humidity	Day_2N2(C_F.)_Temp.	Day_2N2(C_F.)_Humidity	Day_2N3(SP_E.)_Temp.	Day_2N3(SP_E.)_Humidity	Day_2N4(B_P.)_Temp.	Day_2N4(B_P.)_Humidity
13:15:30	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
13:16:00	25	35.8	27.7	29.5	25.7	40.7	26.4	40.3
13:16:30	25	36.3	27.7	29.6	25.2	42.3	26.4	38.3
13:17:00	24.5	35.9	27.7	30	25.7	44.1	26.4	36.9
13:17:30	24.5	36.3	27.7	29.5	25.2	40.8	26.4	38.4
13:18:00	24.5	36.8	27.9	29.5	25.7	41.7	26.4	39.7
13:18:30	24.3	36.9	27.7	29.6	25.2	42.6	26.4	38.4
13:19:00	24.3	37.3	27.2	29.6	25.7	44.6	26.4	36.4
13:19:30	23.8	37.3	27	30.6	25.7	42.3	26.4	35.8
13:20:00	23.8	37.4	27	31.1	25.7	38.3	26.4	35.4
13:20:30	23.8	38.4	27.2	31.4	25.7	37.3	25.8	36.9
13:21:00	23.8	39.4	27.2	31.1	25.7	37.3	25.7	37.8
13:21:30	23.6	39.2	27.2	30.9	25.7	37.8	25.7	37.8
13:22:00	23.6	39.7	27	31.4	25.2	38.3	25.2	36.8
13:22:30	23.6	40.3	27	31.5	25.7	38.9	25	36.4
13:23:00	23.6	40.8	26.5	31.5	25.7	38.7	25	36.9
13:23:30	23.6	40.3	26.5	31.9	25.7	38.4	25	36.3
13:24:00	23.6	39.8	26.5	31.9	25.7	38.9	24.5	36.8
13:24:30	23.1	39.4	26.4	31.5	25.7	39.7	24.5	36.4
13:25:00	23.1	40.3	26.4	31.4	25.8	38.7	24.5	35.9
13:25:30	23.1	40.2	26.5	31.5	25.8	37.4	24.3	36.3
13:26:00	22.9	39.8	26.5	31.9	26.4	36.3	24.3	36.4
13:26:30	23.1	40.7	26.5	32.9	26.4	35.8	24.3	36.8
13:27:00	23.1	40.2	26.5	33	26.4	35.4	24.3	36.4
13:27:30	23.1	40.3	26.5	32	26.5	35.9	24.3	36.8
13:28:00	23.6	40.8	26.5	32.9	26.5	35.9	24.3	37.3
13:28:30	23.6	40.7	27	32.5	27	35.4	24.5	36.9
13:29:00	23.6	40.2	27	32.9	27	34.8	24.5	36.4
13:29:30	23.6	40.7	27.2	32.5	27	34.3	24.5	37.3
13:30:00	23.6	40.7	27.2	32.4	27	34	25	36.9
13:30:30	23.1	40.7	27.2	32.5	26.5	34.3	25	36.9
13:31:00	23.1	41.2	27.2	32.4	26.5	34.5	25	37.4
13:31:30	23.1	41.2	27.7	31.9	26.5	35	25.2	37.3
13:32:00	22.9	40.8	27.2	31.1	26.4	35	25.2	36.9
13:32:30	22.9	40.7	27	31.4	26.4	34.8	25.7	35.8
13:33:00	22.9	40.7	26.5	31.5	25.8	35	25.2	34.5
13:33:30	22.9	41.8	26.4	31.9	25.7	35.4	25	34.3
13:34:00	22.9	41.7	26.4	31.9	25.7	36.4	24.5	34.8
13:34:30	22.9	41.8	25.8	32.4	25.2	36.8	24.3	35.3
13:35:00	23.1	41.7	25.8	32.5	25.2	37.9	24.5	35.9
13:35:30	23.1	41.2	25.8	32.9	25.2	37.9	24.5	36.3
13:36:00	23.6	40.7	26.4	33	25.2	37.8	25	36.9
13:36:30	23.8	40.3	26.4	32.9	25.2	37.9	25.2	38.3
13:37:00	24.3	40.8	26.4	32.5	25.2	37.4	25.2	37.8
13:37:30	23.8	40.7	26.5	32.5	25.2	37.9	25	35.8
13:38:00	23.8	40.7	26.5	32.5	25.2	37.9	25	35.8
13:38:30	23.8	40.2	27	32.4	25.2	37.9	25	37.3
13:39:00	23.8	39.8	27.2	32	25.2	37.9	25.2	36.9
13:39:30	23.6	39.8	27.2	31.4	25.2	37.4	25.2	35.9
13:40:00	23.8	39.7	27.2	31.1	25	37.4	25.2	34.5
13:40:30	23.8	39.8	27.2	31.4	25	37.4	25.2	34.3
13:41:00	23.8	40.2	27.7	31.1	24.5	37.8	25.2	34.3
13:41:30	23.8	40.8	28.4	30.9	24.5	38.3	25.2	34.5
13:42:00	23.8	41.2	29.1	30	24.3	38.3	25.2	34.3
13:42:30	23.6	40.3	29.8	28.5	24.3	38.4	25	33.9
13:43:00	23.6	40.2	29.3	28	24.3	39.7	25	34.3
13:43:30	23.1	39.8	29.8	28	24.3	39.8	25	35.3
13:44:00	23.1	39.8	29.3	28.1	24.5	39.8	25	35.3
13:44:30	22.9	40.2	29.1	29.1	24.5	39.4	24.5	35.4
13:45:00	22.9	40.7	28.6	30	24.5	39.2	24.5	36.4
13:45:30	22.9	40.8	28.4	30.4	24.5	39.7	24.5	36.8
13:46:00	22.9	40.8	27.9	30.4	24.5	39.8	24.5	36.4
13:46:30	22.9	40.8	27.7	30.9	24.5	39.4	24.3	36.3
13:47:00	22.4	40.8	27.7	31.1	24.5	39.2	24.3	36.4
13:47:30	22.4	40.3	27.2	31.5	24.3	39.4	24.3	36.4
13:48:00	22.4	41.3	27.2	31.9	24.3	38.9	24.3	36.3
13:48:30	22.4	41.7	27	31.5	24.3	42.6	24.3	36.4
13:49:00	22.2	42.3	26.5	32	24.5	41.2	23.8	36.8
13:49:30	22.2	42.2	26.4	32.4	24.5	40.2	23.8	37.3
13:50:00	22.2	42.3	26.4	32.4	25	40.3	23.8	37.4
13:50:30	22.4	42.2	25.8	32.9	25	39.4	23.6	36.9
13:51:00	22.4	42.2	25.8	33	25.2	39.7	23.6	37.3
13:51:30	22.4	42.2	25.7	35.3	25.2	39.2	23.6	37.4
13:52:00	22.4	41.8	25.7	35.3	25.2	38.4	23.6	37.4
13:52:30	22.4	41.2	25.7	34.8	25.2	38.7	23.6	37.4
13:53:00	22.9	40.8	25.7	34.8	25.2	39.8	23.6	37.4
13:53:30	22.9	40.7	25.7	35	25.7	39.4	23.6	38.9
13:54:00	23.1	40.7	25.7	35.4	25.7	38.7	23.6	38.9
13:54:30	23.1	40.7	25.8	35.9	25.7	38.9	23.6	37.9
13:55:00	22.9	39.7	26.4	35.4	25.2	37.4	23.6	37.9
13:55:30	22.9	40.2	27.2	34.8	25.2	40.7	23.6	38.4
13:56:00	22.9	40.2	27.7	33	25.2	38.4	23.6	38.7
13:56:30	22.9	40.7	27.7	32	25.2	37.9	23.6	37.8
13:57:00	22.9	41.2	27.7	32.4	25.7	37.8	23.6	37.3
13:57:30	22.4	41.2	27.2	31.9	25.8	37.3	23.6	36.9
13:58:00	22.4	41.8	27.2	31.5	25.8	36.3	23.6	36.8
13:58:30	22.4	42.2	27.2	31.5	25.8	35.9	23.6	36.8
13:59:00	22.4	42.3	27	31.9	26.4	36.3	23.6	36.8
13:59:30	22.9	41.8	27	31.9	26.4	36.4	23.6	36.8
14:00:00	22.9	42.3	27.2	32	25.8	35.8	23.6	36.8
14:00:30	22.9	41.3	27.7	31.5	25.8	35.8	23.1	36.8
14:01:00	22.9	40.3	27.7	31.5	25.8	35.9	23.1	36.8
14:01:30	22.9	40.3	27.7	30.9	25.8	35.9	23.1	36.9
14:02:00	22.9	41.2	27.7	30.6	25.7	35.8	23.1	36.9
14:02:30	22.9	40.8	27.2	30.9	25.7	36.3	23.1	36.9
14:03:00	22.9	41.2	27.2	31.1	25.7	36.3	23.1	38.3
14:03:30	23.1	42.8	27	31.4	25.2	35.9	23.6	40.2
14:04:00	23.6	42.6	27	31.9	25.2	36.3	23.6	40.2
14:04:30	23.8	41.2	27	31.9	25.2	36.4	23.8	38.9
14:05:00	24.3	40.3	27.2	31.9	25.2	36.8	23.8	38.3
14:05:30	24.3	40.2	27.7	31.5	25.7	36.8	24.3	37.9
14:06:00	24.3	40.2	27.7	30.9	25.7	36.3	24.3	36.9
14:06:30	24.3	39.4	27.7	30.9	25.8	36.4	24.3	37.3
14:07:00	24.3	39.4	27.2	30.9	25.8	36.9	24.5	37.4
14:07:30	23.8	39.7	27	31.9	25.8	36.8	24.5	37.4
14:08:00	23.8	39.2	26.5	31.9	25.8	36.4	24.5	37.4
14:08:30	23.8	39.7	26.4	32.4	25.7	35.9	24.5	36.8
14:09:00	23.8	39.8	25.8	32.9	25.2	36.3	24.5	36.3
14:09:30	23.8	39.2	25.7	33	25.2	36.4	24.3	35.8
14:10:00	23.6	39.4	25.7	33	25.2	36.9	23.8	35.9
14:10:30	23.6	40.8	25.7	33.4	25.2	37.3	23.8	35.9
14:11:00	23.6	39.7	25.2	33.9	25.2	37.3	23.6	35.9
14:11:30	23.1	38.9	25.2	34	25.2	37.3	23.1	36.3
14:12:00	23.1	38.9	25	34.5	25	36.9	23.1	36.8
14:12:30	22.9	39.2	25	34.5	25	37.4	23.1	36.9
14:13:00	22.9	39.2	25	34.3	25	38.3	22.9	37.4
14:13:30	22.9	39.8	25	34	25	39.8	22.9	37.8
14:14:00	22.4	39.8	25	34.3	25	40.3	22.9	37.9
14:14:30	22.4	39.8	25	34.3	25	39.8	22.4	38.4
14:15:00	22.4	40.2	25	33.9	25	40.3	22.9	38.9
14:15:30	22.4	40.3	25	34	25	40.3	22.9	39.4
14:16:00	22.4	40.3	25.2	34.3	25	40.3	22.9	38.9
14:16:30	22.4	40.3	25.2	34.3	25	41.2	22.9	38.3
14:17:00	22.2	40.8	25.7	34	25	40.7	22.9	38.3
14:17:30	22.2	41.8	25.8	33.5	24.5	40.7	22.9	37.9
14:18:00	22.4	42.2	26.4	33	25	39.4	22.9	37.8
14:18:30	22.9	42.8	26.4	32.9	25	39.7	22.9	38.4
14:19:00	23.6	43.3	25.8	32.9	25	38.7	23.1	37.9
14:19:30	24.3	42.3	25.8	32.9	25	37.4	23.1	37.9
14:20:00	24.5	42.6	26.4	32.5	25	37.3	23.6	37.9
14:20:30	24.5	40.3	26.4	32.4	24.5	37.9	23.6	37.4
14:21:00	25	39.2	27	31.9	24.5	38.4	23.8	37.4
14:21:30	25	36.9	27.2	31.4	24.5	38.9	24.5	37.3
14:22:00	25.2	36.4	27.7	30.4	24.5	38.9	24.5	36.3
14:22:30	25.2	35.8	27.9	30	24.5	38.7	24.5	35.3
14:23:00	25.2	35.3	28.4	30	24.5	38.9	24.5	34.8
14:23:30	25.2	35.8	28.6	29.5	24.5	38.9	24.5	34.8
14:24:00	25.2	35.4	28.6	29.1	24.5	38.9	24.5	35
14:24:30	25.7	35.4	28.6	28.6	24.5	38.9	25	34.3
14:25:00	25.7	34.8	28.6	28.1	24.5	39.2	25.2	36.8
14:25:30	25.7	35.4	28.4	28.1	24.3	38.7	25.7	36.9
14:26:00	25.7	36.8	28.4	28.1	24.3	38.7	25.8	37.3
14:26:30	25.8	36.3	28.4	28.1	24.5	38.9	25.8	34.5
14:27:00	25.8	35.3	28.4	28.1	24.3	39.2	26.4	33.4
14:27:30	26.4	35.9	28.4	28.5	24.5	38.9	26.4	32.9
14:28:00	26.4	35.8	28.6	28.1	24.5	39.2	26.4	32.4
14:28:30	26.4	35.8	28.6	28	24.5	38.9	26.5	32.5
14:29:00	26.5	34.8	29.3	27.6	24.5	38.7	26.5	31.9
14:29:30	26.5	34	29.8	27.5	24.5	38.3	27	31.9
14:30:00	26.5	35	30	27.1	24.5	38.4	27	31.9
14:30:30	27	35.9	30	27	24.5	38.3	27.2	31.5
14:31:00	27.2	34.8	30	26.5	25	37.4	27	30.6
14:31:30	27	35	30.5	26	25.2	36.4	27	30.9
14:32:00	27	35	30.5	26.2	25.2	36.4	27	31.1
14:32:30	27	33.9	30.5	26	25.2	36.8	27.2	31.4
14:33:00	26.5	32.9	30	27	25.7	38.3	27	31.4
14:33:30	26.5	33.4	29.8	27.5	25.8	37.3	27	31.1
14:34:00	26.5	33.4	29.3	27	26.4	35.8	26.5	31.4
14:34:30	26.4	34	29.1	27.5	26.4	34.8	26.4	31.9
14:35:00	26.5	33.5	28.6	28.1	25.8	34.8	26.4	31.5
14:35:30	26.4	34	28.4	29	25.8	35.3	26.4	32.5
14:36:00	26.4	34	28.4	28.5	25.8	35.8	26.4	33
14:36:30	26.4	34	27.9	28.5	25.7	35.4	26.4	34.3
14:37:00	25.8	35.3	27.7	29	25.7	35	26.4	33.9
14:37:30	25.8	35.4	27.2	29.5	25.7	35	26.5	33
14:38:00	25.8	35.3	27.2	30	25.7	34.5	26.5	33
14:38:30	25.7	35.8	27	30.6	25.7	35.8	27	32.9

Time	Day_2N1(Inside)_Temp.	Day_2N1(Inside)_Humidity	Day_2N2(C_F.)_Temp.	Day_2N2(C_F.)_Humidity	Day_2N3(SP_E.)_Temp.	Day_2N3(SP_E.)_Humidity	Day_2N4(B_P.)_Temp.	Day_2N4(B_P.)_Humidity
14:39:00	25.7	34.8	27	31.1	25.7	36.4	27.7	32.4
14:39:30	25.7	35.3	27	30.6	25.8	35.8	27.9	31.4
14:40:00	25.7	35.3	27.2	30.6	25.8	35.8	28.4	30.4
14:40:30	25.8	35	27.9	30.4	25.8	35.4	28.4	30
14:41:00	25.8	35.3	28.4	30	26.4	35.3	27.9	29.6
14:41:30	25.7	35	28.6	30	26.4	35.8	27.7	30.4
14:42:00	25.8	34	29.1	29	26.5	34.5	27.2	30.1
14:42:30	25.8	34	29.8	29.5	26.5	34.3	27	30.1
14:43:00	25.7	35.4	30.5	28	26.5	34.3	27	30.9
14:43:30	25.7	35.8	30.7	28	26.5	34.3	26.5	31.9
14:44:00	25.2	35.3	30.7	26.5	26.5	36.3	26.4	32
14:44:30	25.2	35.4	30.7	26.2	26.5	37.8	26.4	32.4
14:45:00	25	35.8	30.7	25.7	26.5	39.7	26.4	32
14:45:30	24.5	35.4	31.2	25.2	26.5	41.3	26.4	31.5
14:46:00	24.5	35.4	31.2	25.2	26.5	41.2	26.4	31.5
14:46:30	24.3	36.3	30.7	24.7	26.5	38.7	25.8	32
14:47:00	24.3	36.3	30.5	25.2	26.5	36.3	25.8	32.4
14:47:30	24.3	36.4	30	25.7	26.4	35.4	25.7	32.5
14:48:00	23.8	37.4	29.8	25.6	26.4	36.8	25.7	32.9
14:48:30	23.8	37.9	29.3	26	26.4	36.9	25.2	33
14:49:00	23.8	37.8	29.1	27	26.4	36.3	25.2	33.5
14:49:30	23.6	37.3	29.1	27.5	26.5	37.3	25.2	33.9
14:50:00	23.6	37.8	29.1	27.1	26.5	36.8	25	33.5
14:50:30	23.6	38.4	29.1	27.6	26.5	36.3	25	33.4
14:51:00	23.6	38.7	29.3	27.6	27	34.5	24.5	33.9
14:51:30	23.6	38.7	29.8	27.5	27	34	24.5	33.9
14:52:00	23.1	39.2	30	26.7	27	33.9	24.3	34.3
14:52:30	23.1	38.7	30	26.5	27	34.3	24.3	34.3
14:53:00	23.1	39.7	30	26.2	26.5	34.3	23.8	34.5
14:53:30	22.9	39.4	29.8	26.7	26.5	34.5	23.8	35.3
14:54:00	22.9	40.2	29.8	27	26.4	34.5	24.3	35.4
14:54:30	22.9	40.2	29.3	27.1	26.4	35	24.3	35
14:55:00	22.9	40.7	29.1	27.1	26.4	35	24.5	34.5
14:55:30	23.1	41.3	28.4	27.5	25.8	35.3	24.5	34.5
14:56:00	23.6	40.8	27.9	28	25.8	35.4	25	34.3
14:56:30	23.6	39.8	27.7	28.6	25.8	35.8	25.2	34.3
14:57:00	23.8	39.2	27.2	29.1	25.8	35.9	25.2	33.9
14:57:30	24.3	39.7	27	29.6	25.8	36.3	25.2	33.5
14:58:00	24.5	38.3	26.5	30	25.7	35.9	25.2	33.4
14:58:30	25	39.2	26.5	30.4	25.7	35.9	25.2	33.4
14:59:00	25	39.4	26.5	30.9	25.7	36.4	25.2	33
14:59:30	25.2	38.9	27	31.1	25.7	36.9	25.2	33.4
15:00:00	25.7	39.4	27	31.1	25.7	36.9	25.2	33.4
15:00:30	25.8	39.8	27.2	30.4	25.7	36.9	25.7	33.4
15:01:00	26.4	37.4	27.2	30	25.7	36.8	25.7	33.5
15:01:30	26.4	35.9	27.2	30	25.7	36.8	25.8	33
15:02:00	26.4	35.8	27.2	30	25.7	36.9	25.8	32.5
15:02:30	26.4	35.9	27.2	30.1	25.7	36.4	26.4	32.5
15:03:00	26.4	35.9	27.2	30.1	25.2	36.4	26.5	32.5
15:03:30	25.8	35	27.2	30.4	25.2	36.8	26.5	32.4
15:04:00	25.7	36.3	27	30.4	25.7	36.9	27	32
15:04:30	25.7	36.3	27	30.4	25.7	36.9	27.2	31.5
15:05:00	25.7	35.3	26.5	30.6	25.7	37.4	27.7	31.5
15:05:30	25.7	35.4	26.5	30.9	25.7	36.9	27.9	31.4
15:06:00	25.8	36.8	26.5	30.9	25.7	36.4	27.9	31.1
15:06:30	25.8	36.3	26.5	31.4	25.7	37.3	28.4	30.6
15:07:00	25.8	35.3	27	31.5	25.8	37.4	28.4	29.6
15:07:30	25.8	35.4	27	31.4	25.8	36.8	28.6	29.6
15:08:00	25.7	35.3	27	31.4	26.4	36.9	28.6	29.1
15:08:30	25.8	35.4	26.5	31.4	26.5	35.4	28.6	29.6
15:09:00	25.8	35.3	26.4	31.9	27	35.9	28.6	29
15:09:30	25.8	35.3	26.4	32.4	27.2	35	27.9	29
15:10:00	25.8	35.3	26.4	33	27.2	34.8	27.7	29.5
15:10:30	25.8	36.8	25.8	33.4	27.2	34.8	27.7	30.6
15:11:00	25.8	35.8	25.8	33.5	27.2	34.8	27.7	31.1
15:11:30	25.8	35	25.8	33.4	27.2	34.5	27.7	30.6
15:12:00	25.8	35.3	25.8	33	27.2	34.8	27.2	30.4
15:12:30	25.8	35.3	26.4	32.5	27.2	35.8	27.7	30.1
15:13:00	25.8	35	26.4	32.5	27.7	35.9	27.7	30.1
15:13:30	25.8	35	26.5	32.5	27.9	35.8	27.7	30.4
15:14:00	25.7	35.3	26.4	32.4	27.9	34.5	27.7	30.4
15:14:30	25.7	35.4	26.4	32.4	27.9	34.5	27.7	30.6
15:15:00	25.7	35.8	26.4	32.4	27.7	33.5	27.7	31.1
15:15:30	25.7	35.9	26.5	32.4	27.2	34.3	27.2	30.9
15:16:00	25.8	35.4	26.5	32.5	27.2	35.9	27.2	30.6
15:16:30	25.8	35	27	32.5	27.7	35.9	27.2	30.9
15:17:00	25.8	35	27	31.9	27.7	34	27	30.9
15:17:30	25.7	34.5	26.5	31.4	27.7	33.9	27	30.9
15:18:00	25.2	34.5	26.5	31.5		33.9	27	30.6
15:18:30	25	34.8	26.5	31.5	28.4	36.3	27	30.6
15:19:00	25	36.3	26.4	32	28.4	37.4	26.5	30.6
15:19:30	25	36.4	26.4	32.5	28.4	33.5	26.4	31.1
15:20:00	25.2	36.3	26.5	32.9	28.4	32.9	26.4	31.4
15:20:30	25.7	37.4	26.4	32.4	28.4	33.9	26.4	31.5
15:21:00	25.7	36.8	26.5	32.5	28.4	34.8	26.5	31.5
15:21:30	25.2	35.9	26.5	32.4	28.6	35.3	26.5	31.9
15:22:00	25.2	35.8	26.5	32	28.6	34.5	26.5	32.5
15:22:30	25.2	35.8	26.5	32	28.6	33	26.4	32.9
15:23:00	25	35.8	26.5	32.4	28.6	32.4	26.4	32.9
15:23:30	25	36.3	27	32.9	28.6	32.5	26.4	32.9
15:24:00	25	36.8	27	32	28.6	32	26.4	32.9
15:24:30	25	37.8	26.5	31.5	28.6	33	26.4	32.9
15:25:00	25.2	37.4	26.5	31.9	28.6	32.5	26.4	32.9
15:25:30	25.2	37.3	26.4	32	29.1	31.5	26.4	32.5
15:26:00	25.2	37.4	26.4	32	29.1	32.5	26.5	32.4
15:26:30	25	36.8	25.8	32.5	28.6	31.9	26.5	32
15:27:00	25	36.9	25.8	32.9	28.6	32.5	26.5	31.9
15:27:30	25.2	37.8	25.8	33	28.6	34.5	27	32
15:28:00	25.2	37.8	25.7	33.5	28.4	34.3	27.2	31.9
15:28:30	25.7	37.4	25.7	34.8	28.4	33.4	27.2	31.4
15:29:00	25.7	36.8	25.8	38.7	27.9	33	27.7	31.1
15:29:30	25.7	36.4	25.8	36.9	27.7	33	27.7	30.6
15:30:00	25.7	35.9	25.8	34.3	27.7	33.4	27.2	30.4
15:30:30	25.7	36.3	25.7	33.9	27.7	33.9	27	30.9
15:31:00	25.7	36.3	25.7	33.9	27.7	35.3	26.5	31.4
15:31:30	25.7	35.8	25.7	34	27.2	34.3	26.5	32.4
15:32:00	25.7	35.8	25.7	34.5	27.2	34.8	26.5	32.9
15:32:30	25.2	36.8	25.7	34	27.2	34.3	26.4	31.9
15:33:00	25	36.3	25.7	34	27.2	34.5	26.4	32
15:33:30	25	36.3	25.2	34	27	34.3	26.4	32.5
15:34:00	24.5	36.4	25.2	34.3	26.5	34	25.8	32.9
15:34:30	24.3	36.9	25.2	34.5	26.5	34.5	25.7	32.9
15:35:00	23.8	37.3	25	34.5	26.4	35	25	33.4
15:35:30	23.8	37.8	25	34.8	26.4	35.3	25	34
15:36:00	23.8	37.8	25	34.8	26.4	35.8	24.5	34.5
15:36:30	23.8	37.9	24.5	34.5	25.8	35.9	24.5	35
15:37:00	23.8	37.9	24.3	35	25.8	36.8	24.5	35
15:37:30	23.8	38.3	24.3	38.4	25.8	35.8	24.5	35.3
15:38:00	24.3	39.2	24.3	39.4	25.7	35.4	24.5	35.4
15:38:30	24.3	38.9	24.5	43.3	25.2	35.9	24.5	35.4
15:39:00	24.3	38.3	24.5	39.7	25.2	37.3	24.5	35.3
15:39:30	24.3	37.4	24.5	39.2	25.7	37.3	24.5	35.3
15:40:00	24.3	37.3	24.5	37.9	25.7	37.3	25	36.3
15:40:30	24.3	37.4	24.5	36.4	25.7	38.4	24.5	35.8
15:41:00	24.3	37.8	24.3	35.9	25.8	37.3	24.5	35.4
15:41:30	24.3	38.3	24.3	35.9	25.8	35.9	24.5	35.8
15:42:00	24.3	39.7	24.3	35.9	25.8	35.8	24.5	36.9
15:42:30	24.3	39.4	24.3	35.9	25.8	35.8	25	38.7
15:43:00	24.3	38.4	24.3	35.9	25.8	35.9	25.2	38.7
15:43:30	24.5	38.7	24.3	35.9	25.8	36.4	25.2	36.4
15:44:00	24.5	38.4	24.3	36.3	25.8	35.9	25.2	34.8
15:44:30	24.5	38.4	23.8	36.4	25.8	35.9	25.2	34.8
15:45:00	24.5	38.4	23.8	36.4	25.8	35.9	25.2	34.8
15:45:30	25	38.9	23.8	36.8	26.4	36.3	25.2	35.3
15:46:00	25	38.4	24.5	36.3	26.4	36.3	25.7	35.4
15:46:30	25	37.8	25	35.9	26.4	35.4	25.7	35
15:47:00	24.5	36.9	25	35.4	26.4	35.4	25.8	35
15:47:30	24.5	37.4	25	35.3	26.4	35.4	25.8	35.4
15:48:00	24.5	37.8	25.2	35.3	26.4	35.3	26.4	34.5
15:48:30	24.5	38.3	25.7	34.8	26.4	35.4	26.4	34.8
15:49:00	24.3	38.4	25.7	34	26.4	35.8	26.5	34
15:49:30	24.3	38.9	25.7	33.9	26.4	35.3	26.5	34
15:50:00	24.3	38.7	25.7	33.9	25.8	35.3	26.5	35.8
15:50:30	23.8	38.9	25.7	33.9	25.8	35.4	27	36.3
15:51:00	23.8	38.7	25.2	34	25.8	35.9	27	35.3
15:51:30	23.8	39.2	25.2	34.3	25.8	36.4	27.2	34.8
15:52:00	23.6	40.2	25	34.3	25.8	35.9	27.7	35.8
15:52:30	23.6	40.2	25	34.5	25.8	35.9	27.9	35.8
15:53:00	23.8	40.3	25	34.8	25.7	35.9	27.9	35.9
15:53:30	23.8	40.3	24.5	35.3	25.2	36.3	27.9	33.9
15:54:00	23.6	39.8	24.5	35.4	25.2	36.8	27.7	32.4
15:54:30	23.6	40.7	25	35.4	25.2	36.8	27.2	32.5
15:55:00	23.6	40.3	24.5	35.8	25.2	36.9	27	34
15:55:30	23.6	40.3	24.5	36.3	25.2	36.9	26.5	33.4
15:56:00	23.1	39.8	24.5	36.3	25	36.9	26.5	33.5
15:56:30	22.9	39.8	24.3	35.8	25	37.4	26.4	34.8
15:57:00	22.9	40.2	24.3	35.9	25	38.4	25.8	34.8
15:57:30	22.4	40.2	24.3	36.3	25	39.8	25.8	35
15:58:00	22.9	40.2	24.3	35.9	25	38.4	25.8	34.8
15:58:30	22.4	40.2	24.3	36.3	25	39.8	25.8	35
15:59:00	23.6	39.8	25.7	34	26.4	35.8	26.5	34
15:59:30	23.6	40.7	25.7	33.9	26.4	35.3	26.5	34
16:00:00	23.6	40.3	25.7	33.9	25.8	35.3	26.5	35.8
16:00:30	23.6	40.3	25.7	33.9	25.8	35.4	27	36.3
16:01:00	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A

Time	Day 3_N1(Inside)_Temp.	Day 3_N1(Inside)_Humidity	Day 3_N2(C_F.)_Temp.	Day 3_N2(C_F.)_Humidity	Day 3_N3(SP_E.)_Temp.	Day 3_N3(SP_E.)_Humidity	Day 3_N4(B_P.)_Temp.	Day 3_N4(B_P.)_Humidity
13:15:30	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
13:16:00	25.2	34.5	31.2	24.2	27.7	31.9	25.2	33.9
13:16:30	25	34.8	31.2	24.1	27.9	32.9	25.2	34
13:17:00	25	34.5	31.2	24.2	27.7	32.5	25.2	34
13:17:30	25	35	31.2	24.2	27.2	32.9	25.7	34.3
13:18:00	25	36.3	31.2	24.6	27.2	33.4	25.7	33
13:18:30	25	36.4	31.2	24.7	27	33.5	25.7	33.4
13:19:00	25	35.4	30.7	24.6	26.5	33.9	25.7	33.4
13:19:30	25	34.5	30.7	24.6	26.5	34.3	25.7	33
13:20:00	24.5	34.5	30.5	24.7	26.4	34.3	25.7	32.9
13:20:30	24.5	34.5	30.7	25.1	26.4	35	25.7	32.5
13:21:00	24.5	35.8	30.7	25.1	25.8	35.3	25.7	32.4
13:21:30	25	36.9	30.7	24.7	25.8	35.3	25.7	32.5
13:22:00	25	37.8	31.2	24.7	25.8	35.4	25.7	32.9
13:22:30	25	36.9	31.3	24.7	25.7	35.8	25.7	33
13:23:00	25	36.8	31.2	24.2	25.7	35.9	25.7	32.9
13:23:30	25	37.4	30.5	24.2	25.7	36.4	25.7	32.5
13:24:00	25	35.4	30	24.6	25.8	35.3	25.2	32.5
13:24:30	25	35.9	29.8	25.2	25.8	34	25.2	32.5
13:25:00	25	36.8	29.8	26.2	25.8	33.5	25.2	33
13:25:30	24.5	36.4	29.8	26.2	26.4	33.9	25.2	33.9
13:26:00	25	35.9	29.8	26.7	26.5	33.4	25.7	33.9
13:26:30	25	36.3	30	26.7	26.5	33.5	25.7	33.9
13:27:00	25	36.8	30	27.1	27	33.5	25.7	33.5
13:27:30	25	36.3	30.5	26	27	32.5	25.8	32.9
13:28:00	25	35.9	30.5	25.7	27	32.4	25.8	32.4
13:28:30	25	36.8	30.7	25.7	26.5	32.5	25.8	32.5
13:29:00	25	36.4	30.7	25.7	26.5	33.4	25.8	32.4
13:29:30	24.5	36.4	30.7	26	27	33.4	26.4	32.4
13:30:00	23.8	36.8	31.2	25.2	26.5	33.4	26.4	32
13:30:30	24.3	37.9	31.2	24.7	27	37.4	25.8	31.9
13:31:00	23.8	37.4	31.3	24.7	27.2	37.9	25.8	32
13:31:30	24.3	37.3	31.3	24.6	27.7	34.3	25.8	32
13:32:00	24.3	36.4	31.9	24.6	27.9	33	25.8	31.1
13:32:30	24.3	36.3	31.9	24.2	27.9	32.5	25.7	31.1
13:33:00	24.3	36.3	31.3	24.2	27.9	32	25.7	31.4
13:33:30	24.5	37.3	31.3	24.1	27.9	31.4	25.7	31.5
13:34:00	24.5	36.8	31.2	23.7	27.9	31.4	25.2	31.5
13:34:30	24.5	36.4	30.7	24.2	27.9	31.1	25.2	31.5
13:35:00	24.5	35.9	30.5	24.7	27.9	32	25.2	31.9
13:35:30	24.5	35.9	30	25.1	28.4	34.5	25.7	31.5
13:36:00	24.5	35.8	29.8	25.2	28.4	31.9	25.7	31.9
13:36:30	24.3	36.3	29.3	25.7	28.6	31.4	25.2	31.4
13:37:00	24.5	37.3	29.1	25.7	28.4	30.9	25.2	31.5
13:37:30	24.5	36.9	29.1	26.2	27.9	31.1	25	32
13:38:00	24.3	35.8	29.1	26.5	27.7	32	25	32.9
13:38:30	24.3	35.9	29.1	26.7	27	32.9	25.2	32.9
13:39:00	23.8	35.4	29.1	26.5	26.4	33.4	25.2	32
13:39:30	23.8	35.3	29.3	26.5	25.7	34	25	32
13:40:00	23.8	36.4	29.8	26.7	25	34.3	25	32.4
13:40:30	24.3	36.8	29.8	25.6	24.5	34.3	24.5	32.9
13:41:00	23.8	35.4	29.8	25.7	24.3	34.8	24.5	32.9
13:41:30	23.6	36.3	29.8	25.7	23.8	35.8	25	33.4
13:42:00	23.6	36.4	29.8	25.7	23.8	36.4	25	33.4
13:42:30	23.1	36.8	29.3	25.2	23.6	38.3	25.2	32.4
13:43:00	23.8	37.9	29.1	25.6	23.6	38.9	25	32
13:43:30	23.8	37.8	28.6	25.7	23.6	38.9	24.5	32
13:44:00	24.3	36.8	28.6	25.7	23.1	38.4	24.5	32.4
13:44:30	24.3	35.8	28.4	26	23.1	39.4	24.5	32.9
13:45:00	24.3	35.8	28.4	26.5	22.9	38.3	24.5	33.4
13:45:30	24.5	35.9	28.4	27	22.9	38.4	24.5	33.4
13:46:00	24.5	35.3	28.4	27.1	22.4	39.8	24.5	33.4
13:46:30	25	34.8	28.4	27.5	22.4	41.2	25	34
13:47:00	25	34.8	27.9	27.6	22.4	41.2	25	34.3
13:47:30	24.5	34.5	27.7	28.5	22.4	41.8	25	33
13:48:00	24.5	35.3	27.2	29.1	22.2	41.2	25.2	33.4
13:48:30	24.5	36.4	27	29.5	22.2	41.3	25.7	33.5
13:49:00	24.5	36.4	27	29.6	21.7	41.3	25.7	32.9
13:49:30	24.5	35.9	26.5	30.4	21.7	42.2	25.7	32.5
13:50:00	24.3	35.4	26.4	30.6	21.7	41.7	25.2	32
13:50:30	24.3	35.9	25.8	30.6	21.6	41.8	25	32.4
13:51:00	24.3	36.9	25.8	31.1	21.6	42.3	24.5	32.5
13:51:30	24.5	36.9	25.7	31.4	21.6	42.2	24.5	33
13:52:00	24.3	36.3	25.2	31.4	21	43.6	24.5	33
13:52:30	24.3	36.3	25.2	31.4	21	43.3	24.5	32.9
13:53:00	23.8	36.3	25	32	21	43.6	24.5	33.4
13:53:30	23.8	37.8	25	32.5	21	44.1	24.5	34
13:54:00	24.3	38.4	25	33	21	42.8	24.5	34.3
13:54:30	24.5	37.4	25	33.4	21	47.2	25	34.8
13:55:00	25	37.3	24.5	33.4	21.6	45.1	25	34.5
13:55:30	25	36.3	24.5	33.5	21.7	42.3	25	34
13:56:00	25.2	36.3	24.5	33	22.4	41.2	24.5	33.5
13:56:30	25.2	35.4	24.3	33	22.9	39.8	24.5	35
13:57:00	25.2	35	24.3	33.4	23.1	39.8	24.3	34.5
13:57:30	25	34.8	24.3	33.9	23.6	38.9	24.3	34.5
13:58:00	25	35	24.3	34.5	23.8	38.3	24.3	34.5
13:58:30	24.5	35.4	24.3	34.5	23.8	37.3	24.3	35.4
13:59:00	24.5	35	24.3	34.3	23.8	36.9	24.3	35.9
13:59:30	24.3	35.3	24.3	34.3	23.8	37.4	24.5	36.3
14:00:00	24.3	36.3	24.3	34.8	24.3	37.3	24.5	36.9
14:00:30	24.3	36.8	24.5	34.8	24.3	37.3	25	36.3
14:01:00	24.3	36.8	25.7	34	24.5	36.9	25	35.3
14:01:30	24.3	37.3	26.5	32.5	24.5	35.4	25	34.5
14:02:00	24.5	36.8	27.7	31.1	24.5	35.3	25.2	34.5
14:02:30	24.5	36.8	28.4	29.6	24.5	35.4	25.2	34.5
14:03:00	25	35.9	28.6	28.5	24.5	35.8	25.2	34.3
14:03:30	24.5	35.9	29.8	27.6	24.5	35.8	25.2	34.5
14:04:00	24.5	35	30.5	26.2	25	35.8	25.7	35.4
14:04:30	24.5	35.3	30.7	25.2	25.2	37.8	25.7	34.8
14:05:00	24.5	35.8	31.2	25.1	25.2	35.8	25.7	34.3
14:05:30	24.5	36.4	30.7	24.6	25.2	35	25.8	34.5
14:06:00	25	36.4	30.7	24.6	25.2	35.3	25.8	34.5
14:06:30	25	34.8	30.7	25.1	25.7	35.3	25.8	33.4
14:07:00	25	34	30.7	24.7	25.7	34.5	25.7	33.4
14:07:30	24.5	34	30.7	25.1	25.8	34	25.7	33
14:08:00	24.3	34.5	30.7	25.2	25.8	33.9	25.7	32.5
14:08:30	23.8	35	30.5	25.2	25.8	33.9	25.7	34.5
14:09:00	24.3	35.4	30.5	25.2	26.4	35	25.7	34.5
14:09:30	24.3	35.3	30	25.6	26.4	34	25.7	35.3
14:10:00	24.3	35.4	30	25.7	26.4	32.9	25.8	35.8
14:10:30	23.8	35.4	30	26	26.5	32.9	25.8	35.4
14:11:00	23.8	35.9	30.5	26	26.5	33.5	25.8	34.5
14:11:30	23.8	36.4	30.5	25.2	26.5	34	25.8	35.4
14:12:00	23.6	35.8	30	26.2	26.4	34.8	26.4	34.8
14:12:30	23.6	35.4	29.8	26.7	25.8	35	26.4	34.8
14:13:00	23.6	36.4	29.3	27	25.8	34.8	26.4	34.3
14:13:30	23.8	36.3	29.1	27.6	25.7	34.5	26.4	33
14:14:00	23.8	36.8	29.1	27.6	25.7	35	26.4	33
14:14:30	23.8	37.3	29.1	27.5	25.2	36.3	25.8	32.4
14:15:00	23.8	37.3	29.1	27.6	25.2	35.4	25.8	33
14:15:30	23.8	36.4	29.1	27.5	25	35.3	25.8	33.5
14:16:00	23.8	37.4	29.1	28.6	24.5	35.3	25.7	33.9
14:16:30	23.8	38.4	29.1	28	24.5	36.8	25.7	33
14:17:00	24.3	38.4	29.1	27.5	24.5	37.9	25.2	34.3
14:17:30	24.3	37.9	29.1	27.6	24.3	37.9	25.7	34.8
14:18:00	23.8	36.4	29.3	27.1	23.8	36.9	25.2	32.9
14:18:30	23.8	37.8	30	26.5	23.8	38.9	25.7	32.4
14:19:00	23.8	38.4	30.5	25.1	23.8	39.4	25.8	32.4
14:19:30	23.8	37.8	30.7	24.2	23.6	39.8	26.4	32.4
14:20:00	23.8	36.9	30.5	23.7	23.8	38.9	26.4	31.5
14:20:30	23.8	36.8	31.2	24.1	23.8	37.8	26.4	31.9
14:21:00	23.8	36.3	31.3	24.1	24.5	36.4	26.4	31.4
14:21:30	23.8	36.8	31.9	23.6	25	36.3	26.4	30.9
14:22:00	23.8	37.4	32	23.6	25	35.3	26.4	30.9
14:22:30	24.3	38.3	32.7	23.2	25.2	35	26.4	30.9
14:23:00	24.3	38.3	33.4	23.1	25.7	34.5	26.4	31.1
14:23:30	24.5	39.4	33.4	22.1	25.7	34.5	26.5	31.9
14:24:00	25	38.3	34.1	21.7	25.8	34.5	26.5	32.5
14:24:30	25	37.3	34.6	21.3	25.8	34.3	27	32.4
14:25:00	25	35.4	34.8	21.2	25.8	34.5	27.2	33
14:25:30	25	35	35.3	20.7	25.8	34.5	27	32
14:26:00	25	34.5	35.3	20.2	26.4	33.9	27	31.1
14:26:30	24.5	34.5	35.3	20.2	26.5	33.5	27	31.1
14:27:00	24.3	35	35.5	20.7	27	33.5	27	31.9
14:27:30	24.3	35.9	35.5	20.3	27.2	32.9	26.5	30.6
14:28:00	23.8	35.9	36	20.2	27.2	31.9	26.4	31.4
14:28:30	24.3	38.7	36.1	19.8	27.2	31.9	26.4	30.9
14:29:00	24.3	38.4	36	19.8	27	32	25.8	30.9
14:29:30	24.5	37.9	35.5	19.8	27.2	32.5	25.8	31.1
14:30:00	25	38.3	35.3	20.3	27.7	32.9	25.7	31.5
14:30:30	25	37.3	34.6	20.3	27.9	32.4	25.7	31.9
14:31:00	24.5	35.8	34.1	20.8	28.4	31.5	25.2	32.4
14:31:30	24.3	35.9	33.9	21.7	28.4	30.9	25.2	32.5
14:32:00	24.3	36.4	33.2	21.8	28.4	30.6	25	32.5
14:32:30	23.8	36.4	32.7	22.6	28.4	30.6	24.5	32.9
14:33:00	23.8	36.4	32.5	23.1	28.4	30.6	24.5	33.4
14:33:30	23.8	37.4	31.9	23.6	28.4	31.4	24.3	33.9
14:34:00	23.8	38.7	31.3	24.1	28.4	33	24.3	34.3
14:34:30	24.3	39.7	31.2	24.6	27.9	31.5	24.3	34.8
14:35:00	24.3	39.8	30.7	25.1	27.7	31.4	24.3	34.8
14:35:30	24.5	39.7	30	25.1	27.7	31.9	24.3	35
14:36:00	25	38.7	30.5	25.2	27.2	31.9	23.8	35
14:36:30	25.2	37.8	30.5	25.2	27	31.5	24.3	34.8
14:37:00	25.2	36.9	30.7	25.1	26.5	32	24.5	34.5
14:37:30	25.2	35.3	31.2	25.6	26.4	32.9	24.5	34.3
14:38:00	25.2	35.4	30.7	24.6	25.7	33	25	34.3
14:38:30	25	36.9	30.7	24.6	25.8	33.5	25.2	33.5

Time	Day 3_N1(Inside)_Temp.	Day 3_N1(Inside)_Humidity	Day 3_N2(C_F.)_Temp.	Day 3_N2(C_F.)_Humidity	Day 3_N3(SP_E.)_Temp.	Day 3_N3(SP_E.)_Humidity	Day 3_N4(B_P.)_Temp.	Day 3_N4(B_P.)_Humidity
	Day 3_N1(Inside)_Temp.	Day 3_N1(Inside)_Humidity	Day 3_N2(C_F.)_Temp.	Day 3_N2(C_F.)_Humidity	Day 3_N3(SP_E.)_Temp.	Day 3_N3(SP_E.)_Humidity	Day 3_N4(B_P.)_Temp.	Day 3_N4(B_P.)_Humidity
14:39:00	24.5	36.9	30.5	24.6	26.4	34	24.5	32.5
14:39:30	24.5	35.9	30	25.1	26.4	33.9	24.5	32.9
14:40:00	24.5	36.9	29.8	31.9	26.5	33.9	24.5	33
14:40:30	24.3	36.3	29.3	27.6	26.5	33.9	24.5	33.4
14:41:00	24.3	36.3	29.1	27	26.5	33.4	24.5	33
14:41:30	24.3	36.4	28.6	27.1	27	33.9	24.5	33
14:42:00	24.3	36.8	28.4	27.6	27	33.5	24.3	33
14:42:30	24.5	36.9	27.9	27.6	27	32.9	24.3	33.4
14:43:00	25	39.7	27.7	28	26.5	32	24.3	33.4
14:43:30	25	38.9	27.2	28.5	26.4	32.9	24.3	33.9
14:44:00	25.2	37.9	27.2	28.6	25.8	33.4	24.5	33.5
14:44:30	25.2	37.3	27	29.1	25.7	33.9	24.5	33
14:45:00	25.2	35.8	27	29.1	25.7	34.5	25	32.9
14:45:30	25.2	35.3	26.5	29.5	25.2	34.8	25	32.9
14:46:00	25.7	35.9	26.4	29.6	25.7	34.5	25.2	32.9
14:46:30	25.7	35	26.5	30	25.7	34.5	25.2	32.5
14:47:00	25.7	35.3	27	29.6	25.7	34.3	25.2	32.4
14:47:30	25.7	35.8	27.2	29	25.7	34	25.2	32
14:48:00	25.7	35.3	27.2	28.6	25.7	34	25	31.9
14:48:30	25.7	35.3	27.2	29.1	25.7	34.3	25	32.5
14:49:00	25.7	35	27.2	29	25.8	35.3	25	32.5
14:49:30	25.2	35	27.2	28.6	26.4	35.3	25	32.9
14:50:00	25	34.8	27.7	28.5	26.5	34.3	25	32.9
14:50:30	24.5	35	27.7	28.5	26.5	33.5	25	33
14:51:00	24.5	35.8	27.9	29.1	27	33	25.2	33
14:51:30	24.3	35.3	27.9	29.1	26.5	32.5	25.2	33.5
14:52:00	24.3	35.8	27.7	29.5	26.5	33	25.2	33.4
14:52:30	24.5	36.8	27.2	29.5	26.4	33.4	25.2	33
14:53:00	24.5	36.4	27	30	25.8	33.4	25	32.9
14:53:30	25	40.2	26.5	30.6	25.8	33.5	24.5	32.9
14:54:00	25	36.9	26.4	30.9	25.7	34	24.5	33
14:54:30	25	35.4	25.8	31.4	25.7	34.5	24.3	34
14:55:00	25	35.3	25.8	31.5	25.2	34.8	24.3	36.3
14:55:30	24.5	35.4	25.7	32.4	25.2	35.3	24.3	35.3
14:56:00	24.5	35.4	25.7	32.5	25	35.4	24.3	34.8
14:56:30	24.5	35.3	25.2	33	25	35.8	24.3	34.5
14:57:00	24.5	35.4	25.2	32.9	25	35.9	24.5	34.3
14:57:30	24.5	36.9	25	33.4	25	35.9	24.5	33.9
14:58:00	25	38.9	25	33.4	24.5	35.9	25	33.9
14:58:30	24.3	36.3	24.5	33.5	24.5	35.9	25.2	33.9
14:59:00	24.3	35	24.5	34.3	24.5	36.3	25.2	34.5
14:59:30	23.8	35.3	24.5	34.5	24.5	36.8	25.2	33.5
15:00:00	24.3	36.4	24.3	34.3	24.3	36.8	24.5	32.9
15:00:30	23.8	36.3	24.3	34	24.3	36.8	24.5	33.5
15:01:00	23.8	36.4	24.3	34.3	24.3	36.8	24.5	34.8
15:01:30	23.8	36.3	23.8	34.3	23.8	36.9	24.5	34
15:02:00	23.6	36.4	23.8	34.5	23.8	36.9	25	34
15:02:30	23.1	37.3	23.6	35	23.8	36.9	25	34.8
15:03:00	23.1	39.7	23.6	35.4	23.8	37.3	25.2	35
15:03:30	23.1	39.2	23.6	35.4	23.8	37.4	25.7	34.5
15:04:00	23.1	37.9	23.6	35.9	23.8	37.9	25.8	34.5
15:04:30	23.6	37.9	23.6	36.3	23.6	38.3	25.8	34
15:05:00	23.6	38.4	23.1	36.4	23.6	37.9	26.4	34
15:05:30	23.6	38.7	23.1	36.4	23.6	38.4	26.4	33.4
15:06:00	23.6	38.3	23.1	36.3	23.6	38.7	26.4	32
15:06:30	23.6	37.8	23.1	36.3	23.6	38.3	26.4	32.5
15:07:00	23.6	37.4	22.9	36.3	23.6	37.9	26.4	32
15:07:30	23.6	37.3	22.9	36.3	23.6	38.3	26.4	32
15:08:00	23.6	36.9	22.9	36.8	23.1	38.3	26.4	33
15:08:30	23.1	38.3	22.9	36.9	23.1	38.3	26.4	33.5
15:09:00	23.6	38.9	22.9	37.4	23.1	38.7	26.4	32.5
15:09:30	23.6	37.8	22.4	37.8	23.1	38.7	26.5	32.5
15:10:00	23.1	37.3	22.4	37.3	23.1	38.7	26.5	32.4
15:10:30	23.6	36.9	22.4	37.4	22.9	39.2	26.5	31.9
15:11:00	23.1	37.3	22.4	37.4	22.9	39.2	26.5	31.5
15:11:30	23.6	37.9	22.4	37.9	22.9	39.2	26.4	31.1
15:12:00	23.1	37.8	22.4	38.3	22.9	39.2	26.4	31.4
15:12:30	22.9	37.9	22.2	37.9	22.9	39.4	25.8	31.4
15:13:00	22.9	38.7	22.2	38.4	22.9	39.7	25.8	31.9
15:13:30	22.9	40.7	22.2	39.2	22.9	39.7	26.4	31.9
15:14:00	23.1	39.4	22.4	38.9	22.9	39.7	26.4	31.5
15:14:30	23.1	38.7	22.4	38.7	22.9	39.8	25.8	31.5
15:15:00	23.1	38.9	22.4	37.9	22.9	39.8	25.8	31.9
15:15:30	23.6	39.7	22.4	37.4	22.9	39.8	25.8	32.4
15:16:00	23.6	38.9	22.4	37.4	22.9	39.8	25.8	32.9
15:16:30	23.6	38.3	22.4	37.9	22.9	40.2	25.8	33.4
15:17:00	23.6	37.9	22.2	37.8	22.9	40.2	26.4	33
15:17:30	23.6	42.3	22.2	37.9	22.9	40.2	26.4	32.4
15:18:00	23.8	39.7	22.2	38.4	22.9	40.2	26.4	32
15:18:30	23.8	38.9	22.2	38.3	22.4	39.8	26.4	32.5
15:19:00	24.3	37.8	22.2	38.7	22.4	40.2	26.5	32.4
15:19:30	24.3	37.9	22.2	38.4	22.4	40.3	26.5	31.4
15:20:00	24.5	39.2	22.2	38.4	22.4	40.3	26.5	30.9
15:20:30	24.5	39.2	22.2	38.9	22.4	40.8	26.5	31.5
15:21:00	25	38.3	22.2	38.9	22.4	40.7	26.5	34.5
15:21:30	24.5	36.9	22.2	38.9	23.1	40.2	26.5	32.9
15:22:00	24.5	37.4	22.2	38.7	23.1	39.8	26.5	33
15:22:30	24.5	37.4	22.2	38.9	23.1	39.4	27	33.9
15:23:00	24.3	37.3	22.2	39.2	23.1	39.2	26.5	31.9
15:23:30	24.3	37.8	22.2	39.2	22.9	39.4	25.8	31.1
15:24:00	24.3	37.8	21.7	39.4	23.1	39.7	25.8	32
15:24:30	24.3	39.2	21.7	39.7	23.8	40.2	25.8	32
15:25:00	23.8	39.4	21.6	39.8	24.5	39.7	25.7	32.4
15:25:30	23.8	38.7	21.6	39.8	25.2	38.3	25.7	33
15:26:00	23.6	37.9	21.6	40.2	25.2	36.9	25.7	34.3
15:26:30	23.6	38.7	21.6	40.3	25.2	36.4	25.7	36.4
15:27:00	23.1	38.7	21.6	40.3	25.2	36.3	25.8	34.8
15:27:30	22.9	38.7	21.6	40.8	25.2	36.8	25.8	35.3
15:28:00	22.9	39.7	21.7	40.8	25.2	36.8	25.8	35
15:28:30	22.9	40.7	21.7	41.2	25.2	36.9	25.8	33.5
15:29:00	22.9	40.3	22.4	40.3	25	36.9	25.8	33.5
15:29:30	23.1	39.8	22.9	39.4	25	37.3	25.8	34.5
15:30:00	22.9	39.4	23.1	38.4	25	37.3	25.8	35.4
15:30:30	22.9	39.8	23.1	37.8	25.2	36.8	26.4	35.3
15:31:00	22.9	39.8	23.6	37.3	25.2	36.4	26.4	34.3
15:31:30	22.9	39.7	23.8	37.3	25.2	36.8	26.4	33.4
15:32:00	22.9	39.8	23.8	36.4	25	37.3	25.8	33
15:32:30	22.9	41.2	24.3	36.3	25	36.8	25.7	33
15:33:00	23.1	44.1	24.5	35.8	24.5	36.8	25.7	33.9
15:33:30	23.8	43.3	24.5	35.4	24.5	37.3	25.2	33.5
15:34:00	24.3	40.3	25	34.8	24.5	37.8	25	33.5
15:34:30	24.3	38.9	25	34.5	24.3	37.4	24.5	34.8
15:35:00	24.3	38.9	25.2	34.3	23.8	37.9	24.5	35
15:35:30	24.3	39.2	25.2	34	23.8	38.4	24.5	35
15:36:00	23.8	38.3	25.2	33.9	23.8	39.2	24.5	35.4
15:36:30	23.8	38.3	25.2	34	23.8	39.2	24.5	35.8
15:37:00	23.6	38.3	25.7	34.3	24.3	39.2	24.5	35.3
15:37:30	23.1	38.4	25.7	33.5	24.5	38.9	24.3	35.3
15:38:00	23.1	40.2	25.7	33.4	24.5	38.3	24.3	35.3
15:38:30	23.1	40.2	25.7	33	24.3	37.9	23.8	35.4
15:39:00	23.1	40.7	25.8	33	23.6	38.3	23.8	35.8
15:39:30	22.9	40.7	25.8	32.9	23.1	38.7	23.6	35.9
15:40:00	22.4	40.8	25.8	33	23.1	39.2	23.6	35.9
15:40:30	22.4	41.7	26.4	33.4	22.9	39.8	23.6	36.4
15:41:00	22.4	42.2	26.5	33	22.9	40.3	23.1	36.8
15:41:30	22.4	41.3	27	33.4	22.4	40.7	23.6	36.9
15:42:00	22.9	41.7	27.2	32	22.4	40.7	23.6	37.4
15:42:30	22.9	41.8	27.2	31.4	22.4	41.2	23.8	37.3
15:43:00	22.9	41.8	27.2	31.1	22.4	41.3	23.6	36.3
15:43:30	22.9	42.2	27.2	31.4	22.4	41.3	23.6	36.3
15:44:00	23.1	41.7	27.2	31.5	22.9	41.2	23.6	37.4
15:44:30	23.1	41.2	27.7	31.4	22.9	41.3	23.1	38.3
15:45:00	23.1	41.2	27.7	31.1	22.9	41.2	23.1	38.7
15:45:30	23.1	40.8	27.7	30.9	22.9	41.2	23.1	38.3
15:46:00	22.9	40.7	27.7	30.6	22.9	41.2	23.1	37.9
15:46:30	22.9	40.8	27.7	30.4	22.9	41.2	22.9	37.9
15:47:00	22.9	40.7	27.2	30.6	23.1	40.8	22.9	37.8
15:47:30	22.9	40.8	27	30.9	23.6	40.7	22.9	37.8
15:48:00	22.9	41.3	27.2	31.1	23.8	40.7	22.9	37.9
15:48:30	22.4	41.7	27.2	31.1	23.8	40.2	22.9	38.3
15:49:00	22.9	42.2	27.2	31.1	24.3	39.2	22.9	38.4
15:49:30	22.4	40.8	27.7	31.1	24.3	38.4	22.4	38.7
15:50:00	22.4	40.8	27.7	31.1	24.3	38.4	22.4	38.9
15:50:30	22.2	41.2	27.9	31.1	23.8	38.3	22.2	39.2
15:51:00	21.7	41.2	28.4	30.9	23.8	38.4	22.2	40.2
15:51:30	21.7	41.8	28.6	30.4	23.6	38.9	22.2	39.8
15:52:00	21.7	42.8	29.1	30.4	23.6	39.2	22.2	39.4
15:52:30	22.2	42.8	29.3	29.6	23.1	39.4	22.4	39.4
15:53:00	22.2	42.8	29.3	28.6	23.1	39.8	22.4	39.4
15:53:30	22.2	42.8	29.3	28	23.1	39.8	22.4	39.4
15:54:00	22.2	42.3	29.3	28.1	23.1	40.2	22.4	38.9
15:54:30	22.4	42.3	29.3	28.1	22.9	40.3	22.4	39.2
15:55:00	22.4	42.2	29.1	27.6	22.9	40.3	22.4	39.2
15:55:30	22.4	41.3	28.6	28.1	22.4	40.7	22.9	38.9
15:56:00	22.9	40.7	27.7	30.6	22.9	41.2	23.1	37.9
15:56:30	22.9	40.8	27.7	30.4	22.9	41.2	22.9	37.9
15:57:00	22.9	40.7	27.2	30.6	23.1	40.8	22.9	37.8
15:57:30	22.9	40.8	27	30.9	23.6	40.7	22.9	37.8
15:58:00	22.9	41.3	27.2	31.1	23.8	40.7	22.9	37.9
15:58:30	22.4	41.7	27.2	31.1	23.8	40.2	22.9	38.3
15:59:00	22.9	42.2	27.2	31.1	24.3	39.2	22.9	38.4
15:59:30	22.4	40.8	27.7	31.1	24.3	38.4	22.4	38.7
16:00:00	22.4	40.8	27.7	31.1	24.3	38.4	22.4	38.9
16:00:30	22.2	41.2	27.9	31.1	23.8	38.3	22.2	39.2
16:01:00	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A

Time	Day 4_ N1(Inside)_ Temp.	Day 4_ N1(Inside)_ Humidity	Day 4_ N2(C_F.)_ Temp.	Day 4_ N2(C_F.)_ Humidity	Day 4_ N3(SP_E.)_ Temp.	Day 4_ N3(SP_E.)_ Humidity	Day 4_ N4(B_P.)_ Temp.	Day 4_ N4(B_P.)_ Humidity
13:15:30	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
13:16:00	25.2	34.3	26.4	26	27.9	27.1	27	30.6
13:16:30	25.2	31.5	26.5	25.6	28.4	26.7	27	26.7
13:17:00	25.2	29.1	27	25.2	28.4	26.5	27	24.7
13:17:30	25.7	29.5	27.2	24.7	28.6	26	27.2	24.2
13:18:00	25.7	30	27.9	24.7	28.6	25.1	27.7	24.2
13:18:30	25.8	30.4	28.4	23.7	29.1	25.2	27.7	24.7
13:19:00	25.8	30.4	28.6	23.1	29.3	25.2	27.2	23.7
13:19:30	25.8	29.6	29.1	22.8	29.8	25.2	27	23.2
13:20:00	25.8	29	29.3	22.3	29.8	24.7	27.2	23.7
13:20:30	25.8	28	29.8	22.1	29.8	23.7	27.2	23.7
13:21:00	26.4	27.5	30	21.2	29.8	23.2	27	23.1
13:21:30	26.5	27.1	30	20.3	29.3	23.2	27.7	23.6
13:22:00	27	27.5	29.8	20.3	29.3	24.2	27.7	22.8
13:22:30	27.2	26	29.8	20.7	29.3	24.1	27.7	22.8
13:23:00	27.2	27.1	29.8	20.7	29.8	24.6	27.7	22.6
13:23:30	27.2	26.2	29.8	21.3	29.8	25.6	27.7	23.1
13:24:00	27	26	30	21.7	30	26.5	27.2	23.2
13:24:30	27	27.1	30	21.7	30	23.7	27.7	23.6
13:25:00	27	27.6	30.5	21.2	30	22.8	27.7	23.6
13:25:30	27	28.1	30.5	20.8	29.8	22.6	27.7	23.2
13:26:00	27	28	30.5	21.7	29.3	23.6	27.9	22.8
13:26:30	26.5	26.2	30.7	21.2	29.3	23.2	27.9	22.6
13:27:00	26.4	26.7	30.7	20.8	29.8	23.2	27.9	22.6
13:27:30	26.5	27.6	31.2	20.2	29.3	22.8	27.9	22.6
13:28:00	27	26.5	31.2	20.7	29.1	23.1	27.9	22.6
13:28:30	27	26.2	30.7	20.2	28.6	23.6	27.7	22.6
13:29:00	26.5	27	30.7	20.3	28.6	24.2	27.9	22.6
13:29:30	26.4	26.2	30.7	19.8	28.6	25.1	27.7	22.3
13:30:00	26.4	26.2	30.7	19.8	28.6	24.7	27.7	22.6
13:30:30	26.4	26.2	30.7	20.3	28.6	23.7	27.7	22.1
13:31:00	26.4	28.5	30.7	19.3	28.4	24.2	27.7	22.8
13:31:30	26.4	27.6	30.5	19.2	27.9	24.6	27.9	23.1
13:32:00	26.5	28.5	30.5	19.3	27.9	24.6	27.9	22.6
13:32:30	26.4	27	30.5	19.3	27.9	24.7	27.2	23.1
13:33:00	26.4	26.5	30	19.8	27.9	25.1	27.7	23.7
13:33:30	26.4	27	30	19.3	27.7	25.6	27.7	24.2
13:34:00	26.4	27.6	30	19.8	27.7	26.7	27.7	24.7
13:34:30	26.4	27.1	30	20.2	27.2	27.1	27.9	23.2
13:35:00	26.4	26.7	30	19.8	27	28.1	28.4	23.2
13:35:30	26.4	26.7	29.8	19.8	27	28.1	28.6	22.1
13:36:00	26.4	27.6	30	20.2	26.5	28.1	28.6	23.6
13:36:30	26.4	28.1	30	20.7	26.4	28.1	28.6	22.8
13:37:00	26.4	30.6	30.5	20.8	26.4	29	28.6	22.1
13:37:30	26.4	29.6	30	20.8	25.8	29.1	28.6	21.7
13:38:00	26.4	29.6	29.8	21.2	25.8	28.1	28.4	21.7
13:38:30	26.4	30	29.1	21.7	25.8	28	27.7	21.3
13:39:00	26.4	28.6	28.6	22.1	25.8	29	27.9	21.7
13:39:30	26.4	27.5	27.9	22.6	25.8	29.5	27.9	21.3
13:40:00	26.4	27.1	27.7	23.2	25.7	29.6	27.9	21.7
13:40:30	26.4	30	27.7	23.7	25.7	28.5	27.9	21.8
13:41:00	26.5	27.6	27.2	24.1	25.7	29	28.4	21.7
13:41:30	26.5	27.1	27.2	24.1	25.7	29.1	28.4	22.3
13:42:00	26.5	26.2	27	24.1	25.7	30.4	28.6	21.8
13:42:30	26.5	25.7	26.5	23.7	25.2	30.9	28.4	21.7
13:43:00	26.5	26.7	26.4	24.2	25.2	30.1	28.4	21.7
13:43:30	26.4	26	26.4	24.7	25.2	29.5	28.4	21.7
13:44:00	25.8	25.6	25.8	25.2	25.2	30	28.6	21.8
13:44:30	25.7	25.7	25.8	25.6	25.2	30.6	28.4	21.8
13:45:00	25.7	26.5	25.7	25.2	25.2	30.1	27.9	21.8
13:45:30	25.7	27.6	25.2	25.2	25.2	30.9	27.9	21.7
13:46:00	25.7	27.5	25.2	25.2	25	30.6	27.7	21.7
13:46:30	25.7	27.1	25	25.2	25	30.6	27.7	21.8
13:47:00	25.8	28	25	25.6	24.5	30.6	27.2	22.1
13:47:30	25.8	27.1	24.5	26.2	24.5	31.4	27.2	22.3
13:48:00	25.8	26.7	24.5	26.7	24.3	31.5	27.2	22.3
13:48:30	26.4	26.7	24.5	26.5	24.3	31.4	27.2	22.3
13:49:00	25.8	26	24.3	26.5	24.3	31.4	27.2	22.3
13:49:30	25.8	26.2	24.3	26.5	23.8	30.4	27.2	22.1
13:50:00	25.7	26	23.8	26.7	23.8	30	27.2	22.6
13:50:30	25.2	26.2	23.8	27.1	23.8	29.6	27.2	22.6
13:51:00	25.2	27.5	23.8	27.1	23.6	29.6	27	23.6
13:51:30	25.7	28	24.3	27.5	23.6	29.6	27.7	28.5
13:52:00	25.2	27.1	25	26.7	23.6	30.6	27.9	24.2
13:52:30	25.7	27.6	25	25.7	23.6	32	28.4	23.1
13:53:00	25.7	27.5	25.2	25.1	23.8	31.9	28.4	22.3
13:53:30	25.2	27.1	25.7	25.6	25	31.4	28.4	22.1
13:54:00	25.2	27	25.8	25.6	25.7	30.1	28.4	22.3
13:54:30	25.2	27	25.8	24.7	26.5	29.6	28.4	23.6
13:55:00	25	27.6	26.4	24.6	27	28	27.9	23.1
13:55:30	25	28	26.5	24.2	27.7	26.7	28.4	22.1
13:56:00	25.2	29.6	26.5	24.1	28.4	25.2	28.4	22.1
13:56:30	25.2	28.1	27	23.7	29.1	24.7	28.6	24.1
13:57:00	25.7	27.6	27.2	23.1	29.3	24.7	29.1	23.7
13:57:30	25.7	27.6	27.7	23.2	30	23.6	29.3	22.8
13:58:00	25.8	28.6	27.9	22.8	30.5	23.6	29.8	23.2
13:58:30	26.4	27.5	27.9	23.1	30.5	23.1	30	22.1
13:59:00	26.5	26.2	28.6	22.8	30.7	23.7	30	22.6
13:59:30	26.5	26.2	29.1	22.1	31.2	21.7	30	22.1
14:00:00	26.4	25.6	29.3	21.8	31.3	21.8	30.5	21.3
14:00:30	26.5	27	29.8	21.8	31.9	21.8	30.5	20.7
14:01:00	26.5	26.2	30	21.3	31.3	22.1	30.5	19.7
14:01:30	27	26.2	30.5	21.3	30.7	22.3	30.5	19.8
14:02:00	27	25.7	30.5	20.7	30.5	22.8	30.5	19.7
14:02:30	27	26	30.5	20.3	29.8	22.6	30.5	19.8
14:03:00	27	25.2	30.5	20.2	29.3	22.3	30.7	20.2
14:03:30	27	27	30.5	19.8	29.1	22.8	30.7	20.2
14:04:00	27.2	27	30	20.3	29.1	23.1	30.7	20.2
14:04:30	27	25.7	29.3	21.3	28.6	23.1	30.7	20.2
14:05:00	27	25.1	29.1	21.3	28.4	23.2	30.5	20.7
14:05:30	27	25.7	28.6	22.1	27.9	24.1	30.5	21.2
14:06:00	27	24.7	28.4	22.3	27.9	24.2	30.5	20.7
14:06:30	27	26.2	27.9	22.6	27.9	24.1	30.5	20.3
14:07:00	27	25.6	27.7	22.6	27.9	24.1	30.5	19.8
14:07:30	27	25.7	27.2	22.8	27.9	24.1	30.7	20.2
14:08:00	27	25.1	27.7	22.8	28.4	24.1	30.7	19.8
14:08:30	27	26.2	27.7	22.8	28.4	23.6	30.7	20.3
14:09:00	27	26	27.9	22.8	28.4	23.6	30.5	19.7
14:09:30	27	25.1	28.4	23.6	28.6	23.2	30	19.8
14:10:00	26.4	24.7	28.4	22.6	28.6	23.2	30	19.8
14:10:30	25.8	25.2	28.6	22.6	28.6	23.2	29.8	20.3
14:11:00	25.7	26.2	28.6	22.1	29.1	23.6	29.3	20.2
14:11:30	25.7	28	28.6	21.7	29.1	23.2	29.3	21.3
14:12:00	25.7	28	28.6	21.3	29.3	23.1	29.3	20.8
14:12:30	25.7	27.6	28.4	21.7	29.3	23.1	29.3	21.7
14:13:00	25.8	27.1	27.9	22.3	29.1	23.1	29.8	21.3
14:13:30	25.8	26.5	27.7	22.8	29.1	22.8	30	21.7
14:14:00	25.8	26.7	27.2	23.2	29.1	23.2	29.8	20.8
14:14:30	25.8	27	27	23.7	28.6	23.6	29.8	20.7
14:15:00	25.8	27.5	26.5	24.1	28.6	23.1	29.3	20.7
14:15:30	25.8	26.2	26.4	24.2	28.6	23.6	29.3	21.2
14:16:00	25.7	26.7	26.4	24.7	28.6	23.6	29.3	20.7
14:16:30	25.8	27.6	25.8	24.7	28.6	23.6	29.3	24.6
14:17:00	25.8	28.5	25.8	25.1	29.1	23.2	29.8	27
14:17:30	25.8	28.1	25.7	24.7	29.1	23.6	29.8	24.7
14:18:00	25.8	29.6	25.7	24.7	28.6	23.6	29.8	20.8
14:18:30	26.4	29	25.2	25.1	28.6	23.2	29.8	20.3
14:19:00	26.4	29.1	25.2	25.2	28.6	23.6	29.8	19.8
14:19:30	26.4	27.1	25	25.6	28.4	23.2	29.3	19.8
14:20:00	26.5	27.5	25	26	27.7	23.1	29.3	19.8
14:20:30	26.4	26.7	25	26	27.7	23.7	29.1	20.2
14:21:00	26.4	26.7	24.5	26	27.7	23.7	28.6	20.3
14:21:30	25.8	27.6	25	26.2	27.9	24.7	29.1	20.8
14:22:00	25.7	26.5	25.7	25.7	27.9	24.7	28.6	20.8
14:22:30	25.7	26	25.8	25.6	27.9	24.6	28.6	21.7
14:23:00	25.2	26.5	26.5	25.2	27.9	24.2	29.1	21.8
14:23:30	25.2	28.1	27	24.2	27.9	24.6	29.1	20.8
14:24:00	25.2	28.6	27.7	23.7	27.9	24.2	29.1	20.7
14:24:30	25	27.6	27.7	23.2	27.9	24.2	29.1	20.7
14:25:00	24.5	26.7	28.4	23.1	27.9	23.7	28.6	20.8
14:25:30	24.5	26.7	28.6	22.6	27.9	23.6	28.6	23.7
14:26:00	24.5	26.7	28.4	22.1	27.9	23.6	28.6	24.6
14:26:30	24.5	26.2	28.6	22.6	27.7	23.7	28.6	24.6
14:27:00	25	27.1	29.1	21.8	27.7	24.1	29.1	24.1
14:27:30	25	27.5	29.3	22.1	27.7	24.6	28.6	22.1
14:28:00	25.2	27.6	29.8	21.8	27.7	24.6	28.6	21.7
14:28:30	25.2	26.2	29.8	21.2	27.7	24.7	28.6	21.8
14:29:00	25.2	26.7	29.8	20.7	27.7	24.6	28.6	20.8
14:29:30	25.2	27	30	20.3	27.7	24.1	28.6	20.3
14:30:00	25.2	27	30	20.2	27.7	24.1	28.6	20.2
14:30:30	25.2	26.2	30	19.8	27.2	23.7	28.6	20.3
14:31:00	25.2	28.6	30	19.3	27	23.7	28.6	20.7
14:31:30	25.2	27.6	30	19.3	26.5	24.6	28.6	20.3
14:32:00	25.2	26.5	30	19.7	26.5	27.5	28.6	20.7
14:32:30	25.2	26.7	29.8	19.3	27	26	29.1	20.7
14:33:00	25.7	26.7	29.8	19.2	27	25.2	29.1	19.8
14:33:30	25.7	26.5	29.8	19.8	27	25.2	29.1	19.7
14:34:00	25.8	26.7	29.8	19.7	27	25.1	29.3	19.8
14:34:30	25.8	27	29.8	19.8	27	25.1	29.8	19.8
14:35:00	25.7	27.5	29.3	19.8	27	24.7	30	20.3
14:35:30	25.7	30.1	29.8	19.8	27	24.7	30.5	19.7
14:36:00	25.2	28.6	29.8	19.8	27.2	25.1	30.5	19.7
14:36:30	25.2	27	29.8	19.8	27	24.6	30.5	19.3
14:37:00	25.2	26.5	29.8	19.8	27	24.6	30.5	19.7
14:37:30	25.2	27.1	30	20.2	26.5	24.7	30.5	19.2
14:38:00	25.2	27	30	20.3	26.4	24.7	30	19.3
14:38:30	25.2	26.5	30	19.3	25.8	24.6	30	19.2

Time	Day 4_N1(Inside)_Temp. Day 4_N1(Inside)_Temp.	Day 4_N1(Inside)_Humidity Day 4_N1(Inside)_Humidity	Day 4_N2(C_F.)_Temp. Day 4_N2(C_F.)_Temp.	Day 4_N2(C_F.)_Humidity Day 4_N2(C_F.)_Humidity	Day 4_N3(SP_E.)_Temp. Day 4_N3(SP_E.)_Temp.	Day 4_N3(SP_E.)_Humidity Day 4_N3(SP_E.)_Humidity	Day 4_N4(B_P.)_Temp. Day 4_N4(B_P.)_Temp.	Day 4_N4(B_P.)_Humidity Day 4_N4(B_P.)_Humidity
14:39:00	25.2	27.1	30	19.3	25.8	25.2	30	19.7
14:39:30	25.2	27.6	29.8	19.2	25.7	25.2	30	20.3
14:40:00	25.2	28.5	29.3	18.8	25.7	26	29.8	19.8
14:40:30	25.2	30	29.3	19.2	25.7	26.5	29.3	19.8
14:41:00	25.7	28.1	29.3	19.7	25.7	27	29.3	20.2
14:41:30	25.2	27.1	29.3	20.2	25.7	26.7	29.1	20.2
14:42:00	25.2	28	29.3	19.3	25.7	26.2	29.3	21.3
14:42:30	25.2	27.1	29.8	19.3	25.2	26.2	29.1	20.7
14:43:00	25.2	27	29.8	19.7	25.2	26.5	29.1	20.7
14:43:30	25	27	30	19.8	25.2	26.7	29.1	20.7
14:44:00	25.2	27.5	30	19.8	25.2	26.7	29.3	20.7
14:44:30	25.2	28.6	30	19.3	25.2	27	29.1	20.3
14:45:00	25.2	28.1	30	19.7	25.2	27	28.6	20.3
14:45:30	25.2	28.5	30	19.3	25.2	27	27.9	20.7
14:46:00	25.7	28.1	30	19.8	25.2	26.7	27.9	20.8
14:46:30	25.7	28.1	30.5	20.3	25.2	26.7	27.2	21.2
14:47:00	25.7	27.1	30.5	19.7	25.2	27	27.2	21.7
14:47:30	25.7	27.1	30.5	19.3	25.2	26.7	27.2	21.7
14:48:00	25.7	26.7	30.5	19.2	25.2	26.7	27	22.1
14:48:30	25.7	27	30.5	18.7	25.2	27	27	22.6
14:49:00	25.7	27.5	30.5	18.8	25.2	27.1	26.5	22.8
14:49:30	25.8	28.1	30.5	19.2	25	27	27	23.1
14:50:00	25.8	28.6	30.5	18.8	25	27.1	27	22.6
14:50:30	25.8	27.6	30.5	18.8	25	27.6	27	22.3
14:51:00	25.8	27.6	30.5	19.2	25.2	27.5	27	22.8
14:51:30	25.7	26.7	30.5	18.8	25.7	27	26.5	22.8
14:52:00	25.7	26	30	18.7	25.7	26.5	26.4	23.1
14:52:30	25.2	25.7	30	18.8	25.8	26.5	25.8	23.2
14:53:00	25	25.7	30	19.2	25.8	26	25.7	23.7
14:53:30	25	26.7	30	19.8	26.4	26.2	25.2	24.1
14:54:00	25	26.2	30	19.8	26.4	26.7	25	24.6
14:54:30	25	26.2	30	19.7	26.5	26.2	25	24.7
14:55:00	25.2	27	30	19.8	27	25.6	24.5	24.7
14:55:30	25	27.1	30	19.7	27.2	25.2	24.3	24.7
14:56:00	25.2	28	29.8	19.7	27.2	25.6	24.3	24.7
14:56:30	25	30.1	29.8	19.8	27.7	25.2	23.8	25.1
14:57:00	25	29.1	29.3	20.3	27.7	24.7	23.8	25.6
14:57:30	24.5	28	29.3	20.7	27.2	24.6	23.8	26
14:58:00	24.5	28.1	29.1	21.3	27.2	24.6	24.5	26.5
14:58:30	25	28.6	28.6	21.8	27	24.1	25.2	27.1
14:59:00	25	28.6	28.4	21.8	26.5	24.6	25.2	26
14:59:30	25	28.6	27.9	22.1	26.5	25.2	25	25.2
15:00:00	24.5	27.5	27.7	22.3	26.4	25.6	25	25.6
15:00:30	24.3	27.6	27.2	22.8	25.8	25.7	25	25.6
15:01:00	23.8	28	27	23.1	25.8	26	25.7	26
15:01:30	23.8	28.1	26.5	23.2	25.7	26.7	25.8	25.1
15:02:00	23.6	28.6	26.5	23.6	25.2	26.2	25.8	24.6
15:02:30	23.6	28.6	26.4	24.1	25.2	26.5	25.8	24.6
15:03:00	23.6	28.5	25.8	24.6	25.2	27	26.4	24.7
15:03:30	23.6	28.1	25.8	25.1	25.2	26.7	26.5	25.6
15:04:00	23.6	28.6	25.7	25.7	25.2	27	27	25.7
15:04:30	23.6	29.1	25.7	25.1	25.2	26.5	27.2	24.2
15:05:00	23.1	29.5	25.2	25.1	25.2	27	27.2	23.6
15:05:30	23.1	29.6	25.2	25.6	25.2	27.6	27.2	23.2
15:06:00	23.6	29.6	25.2	25.7	25.2	27.1	27.2	23.1
15:06:30	23.6	29.1	25	25.7	25.2	27.5	27	22.8
15:07:00	23.8	28.6	25	25.7	25	27.1	27	22.8
15:07:30	23.8	28	25	26	25.2	27.6	27	22.6
15:08:00	23.8	27.6	24.5	26	25.2	28	27	22.3
15:08:30	24.3	28	24.5	25.7	25.2	27.5	27	22.6
15:09:00	24.3	28.1	24.5	26	25.7	27.5	27	22.8
15:09:30	23.8	28	24.5	26	25.7	27.5	27	22.1
15:10:00	23.8	27.5	24.3	26	25.8	26.7	27	22.3
15:10:30	23.6	27.5	24.3	26.2	26.4	26.7	27.2	22.8
15:11:00	23.8	28.6	24.3	26.5	26.4	25.7	27.2	22.8
15:11:30	23.8	28.5	24.3	26.7	26.4	25.6	27.7	22.6
15:12:00	24.3	28	23.8	27	26.5	25.7	27.9	21.8
15:12:30	24.3	27	23.8	27	26.5	25.6	27.9	21.3
15:13:00	24.3	27	23.8	27	27.2	26.5	27.7	22.1
15:13:30	24.3	27	23.8	27.5	27.2	25.1	27.7	23.2
15:14:00	24.3	26.7	23.8	27.1	27.7	24.6	27.7	23.6
15:14:30	24.3	26.5	23.8	26.5	27.7	24.6	27.9	23.1
15:15:00	23.8	27	23.6	26.2	27.7	23.7	27.9	22.8
15:15:30	23.8	27	23.6	26.2	27.7	23.2	27.9	21.7
15:16:00	23.6	28	23.6	26.7	27.9	23.2	28.4	21.7
15:16:30	23.8	28.5	23.6	27.5	27.9	23.1	28.4	22.1
15:17:00	23.8	28	23.6	27.5	27.9	23.1	28.6	21.3
15:17:30	23.8	28.5	23.6	27.1	27.7	23.2	28.6	20.8
15:18:00	24.3	28.6	23.6	27	27.2	23.1	28.6	20.7
15:18:30	24.5	28.6	23.6	27	27	22.8	28.6	21.7
15:19:00	24.5	27.1	23.1	27	27	23.1	28.6	21.3
15:19:30	24.5	26.7	23.1	27	27.2	23.7	28.6	20.8
15:20:00	24.3	26.2	23.1	26.5	27.2	24.1	28.6	20.8
15:20:30	24.3	27.1	23.1	26.5	27.2	24.1	28.4	20.7
15:21:00	24.3	27.1	22.9	26.7	27.2	23.7	28.4	20.2
15:21:30	23.8	26.2	22.9	27.1	27	23.1	28.4	20.2
15:22:00	24.3	26.7	22.9	27.5	27	23.1	28.4	20.2
15:22:30	24.3	26.5	22.9	28	26.5	23.2	27.9	19.8
15:23:00	24.3	26.7	22.9	27.5	26.5	23.2	27.7	19.8
15:23:30	24.3	27	22.9	27	26.5	23.2	27.7	20.2
15:24:00	24.5	26.5	22.9	27.1	26.5	24.2	27.7	20.8
15:24:30	24.5	26.7	22.9	27.5	27	24.1	27.7	21.2
15:25:00	24.5	28.5	22.9	27.5	27	24.1	27.9	20.8
15:25:30	24.5	27.6	22.9	27.1	27	24.1	27.9	20.2
15:26:00	24.5	26.7	22.9	27.5	27	23.6	28.4	20.3
15:26:30	24.5	26	22.9	27.5	26.5	24.2	28.4	20.8
15:27:00	25	26.5	22.9	27	26.5	24.6	28.4	19.8
15:27:30	24.5	25.6	23.1	34.3	26.4	24.6	28.4	19.7
15:28:00	24.5	25.2	23.1	30	25.8	24.2	28.4	20.2
15:28:30	24.5	25.6	23.1	28.6	25.7	24.2	28.4	20.2
15:29:00	24.5	26.2	23.1	28	25.2	24.2	27.9	19.8
15:29:30	24.5	26.7	23.1	27.5	25.2	24.7	27.2	20.2
15:30:00	24.3	26.5	23.1	27.5	25.2	25.2	27.2	20.8
15:30:30	24.3	26.5	23.6	27	25.2	25.7	27.2	21.8
15:31:00	23.8	26.5	23.8	26.2	25	25.7	27.2	22.3
15:31:30	23.8	29.5	24.3	25.2	25	25.7	27.7	22.1
15:32:00	24.3	27.6	24.5	24.7	25	26	27.7	21.8
15:32:30	23.8	26.2	25	24.6	25	27.5	27.7	22.6
15:33:00	23.8	25.6	25.2	23.7	25	27	27.9	22.3
15:33:30	23.8	26	25.7	23.6	25	26.2	27.9	21.2
15:34:00	23.8	26.2	25.8	22.8	25	26	27.7	21.3
15:34:30	23.8	26.2	25.8	22.3	25	26	27.2	21.2
15:35:00	23.8	26.5	25.8	22.1	24.5	25.2	27.2	21.8
15:35:30	23.8	27.1	25.8	22.1	24.5	25.7	27.2	21.2
15:36:00	23.8	27.6	25.8	22.1	24.5	26	27	20.8
15:36:30	23.8	30.9	26.4	22.1	24.5	25.7	26.5	20.8
15:37:00	24.3	29	26.5	21.8	24.3	25.6	26.4	20.8
15:37:30	24.3	28	26.5	21.7	24.3	25.6	26.4	21.2
15:38:00	24.3	27.6	26.5	21.3	24.3	26	26.4	21.3
15:38:30	24.3	27.1	27	21.8	23.8	26	26.4	21.7
15:39:00	24.3	26.7	27	21.3	23.8	26.2	25.8	21.3
15:39:30	24.3	26.2	27.2	21.7	23.8	26.5	25.8	21.7
15:40:00	24.3	26	27.2	21.2	23.8	27	25.7	22.1
15:40:30	24.3	27.6	27.7	20.8	24.3	27.1	25.2	22.3
15:41:00	24.3	29.5	27.7	21.3	24.3	27.1	25.2	22.8
15:41:30	23.8	28	27.7	21.2	24.5	27.1	24.5	23.1
15:42:00	23.8	27.6	27.9	20.8	24.5	27	24.5	24.1
15:42:30	23.6	27.1	27.7	20.7	25	26.5	24.3	25.6
15:43:00	23.6	27.1	27.7	20.7	25	26.5	24.3	27.5
15:43:30	23.6	28.1	27.7	22.1	25	26.7	23.8	27.6
15:44:00	23.1	28.5	27.9	21.3	25	26.7	23.6	27.5
15:44:30	23.1	29	27.9	20.8	24.5	26.7	23.1	26
15:45:00	23.1	29.1	27.9	21.2	24.5	26.7	23.1	25.7
15:45:30	23.1	29.1	27.9	20.8	24.3	27	23.1	27.5
15:46:00	23.1	29.1	27.7	20.3	24.3	26.7	23.6	27
15:46:30	23.1	28.6	27.7	20.7	24.5	27	23.8	26
15:47:00	23.1	29	27.7	21.2	25	26.7	23.8	25.2
15:47:30	23.1	28.1	27.7	21.3	25	26.2	24.3	25.6
15:48:00	23.1	28	27.7	21.3	25.2	25.7	24.5	25.2
15:48:30	23.1	28.5	27.7	21.3	25.2	25.7	24.5	25.2
15:49:00	23.1	29.5	27.7	21.3	25	25.6	24.5	25.6
15:49:30	23.1	29	27.2	21.3	25	26.2	24.5	25.1
15:50:00	23.1	29.1	27.2	22.3	25	26.5	25	25.1
15:50:30	23.1	28.6	27.2	22.1	25	26.5	25	25.7
15:51:00	23.1	30	27.2	22.3	25	26.5	25	25.2
15:51:30	23.1	29.5	27.2	22.3	25	26.5	25.2	30.9
15:52:00	23.1	29.6	27.2	21.8	25	26.5	25.2	30.6
15:52:30	23.1	29.6	27.2	22.1	25	26	25.7	27.6
15:53:00	23.1	30	27.2	22.1	25	26	25.7	26.7
15:53:30	23.1	29.6	27.2	21.7	25	26	25.7	25.7
15:54:00	23.1	28.6	27.2	21.7	25	26.2	25.7	25.6
15:54:30	23.6	28.6	27	21.7	25	25.6	25.8	25.1
15:55:00	23.1	28.1	27	21.7	25	25.6	25.7	24.1
15:55:30	23.1	28.5	26.5	21.7	25.2	25.7	25	23.7
15:56:00	23.6	29	26.5	21.8	25.2	26	24.5	23.7
15:56:30	23.6	28.1	26.5	21.8	25.2	25.7	24.5	24.1
15:57:00	23.6	28.5	26.4	22.1	25	25.6	24.3	24.1
15:57:30	23.8	28.5	26.4	22.3	25	26	24.5	24.2
15:58:00	23.8	28.6	25.8	22.6	25.2	25.7	24.5	24.6
15:58:30	23.8	28	25.8	23.1	25.7	26	24.3	24.2
15:59:00	23.6	27.1	25.8	23.2	25.7	25.7	24.3	25.1
15:59:30	23.6	27.6	25.8	23.6	25.8	25.7	24.5	25.2
16:00:00	23.1	28	25.8	23.6	25.7	25.6	24.5	24.7
16:00:30	23.1	28.6	25.7	24.2	25.7	25.6	25	25.7
16:01:00	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A

Time	Day 5_ N1(Inside)_ Temp. Day 5_N1(Inside)_Temp.	Day 5_ N1(Inside)_ Humidity Day 5_N1(Inside)_Humidity	Day 5_ N2(C_F.)_ Temp. Day 5_N2(C_F.)_Temp.	Day 5_ N2(C_F.)_ Humidity Day 5_N2(C_F.)_Humidity	Day 5_ N3(SP_E.)_ Temp. Day 5_N3(SP_E.)_Temp.	Day 5_ N3(SP_E.)_ Humidity Day 5_N3(SP_E.)_Humidity	Day 5_ N4(B_P.)_ Temp. Day 5_N4(B_P.)_Temp.	Day 5_ N4(B_P.)_ Humidity Day 5_N4(B_P.)_Humidity
13:15:30	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
13:16:00	26.5	27.5	29.8	21.2	29.3	26.2	26.4	25.6
13:16:30	27	26.5	29.3	21.2	29.3	24.7	25.8	25.6
13:17:00	27.7	26.2	28.6	21.7	29.3	24.7	25.8	25.2
13:17:30	27.7	25.1	28.4	21.8	29.3	25.7	25.7	25.2
13:18:00	27.9	25.2	27.7	22.3	29.3	25.6	25.2	25.2
13:18:30	28.4	24.7	27.2	22.6	29.3	28.1	25.2	25.7
13:19:00	28.6	24.6	27.2	23.2	29.1	26.2	25	25.7
13:19:30	28.6	24.2	27	23.7	29.1	26.2	25	26.7
13:20:00	28.6	23.6	26.5	24.2	29.3	26.5	25.2	27.1
13:20:30	29.1	23.7	26.5	24.1	29.3	27	25.2	27
13:21:00	29.1	24.6	26.4	24.7	29.8	28	25	26.2
13:21:30	29.3	25.6	25.8	25.7	29.8	28	25	26.5
13:22:00	29.8	25.7	25.8	26.2	30	25.1	25	27.6
13:22:30	30	24.1	25.8	26.2	30	24.7	25	28.1
13:23:00	29.8	22.8	25.7	27	30	24.1	25	27.6
13:23:30	29.3	22.8	25.2	27.5	30	23.7	25	27.6
13:24:00	28.6	22.6	25.2	26.7	30	25.1	25	28.1
13:24:30	28.6	23.2	25.2	26.7	29.8	24.7	25	27.5
13:25:00	28.6	25.1	25	26.5	29.8	24.6	25	27.6
13:25:30	28.6	25.1	25	27	29.8	23.2	25	27.1
13:26:00	28.6	24.2	25	27	29.8	23.2	25	27.5
13:26:30	28.6	23.6	25	27.5	29.8	25.6	25	27.5
13:27:00	28.6	23.6	25	28.1	30	26	25	27.6
13:27:30	29.1	25.2	25	29.1	30	24.1	25	28.5
13:28:00	29.1	24.6	25	29.1	29.3	22.6	25	29.6
13:28:30	29.1	24.1	25	28.6	29.1	22.8	25.2	29.5
13:29:00	29.1	23.7	25	28	29.1	23.1	25.2	28.6
13:29:30	29.1	24.2	25	28	28.6	23.1	25.2	28
13:30:00	29.1	23.7	25.2	26.7	28.4	24.1	25.2	27
13:30:30	29.3	24.1	25.2	26	28.4	24.1	25.2	27
13:31:00	29.3	24.2	25.7	26	27.9	24.7	25.7	26.7
13:31:30	29.1	23.7	25.8	25.6	27.7	25.1	25.8	26.5
13:32:00	29.1	23.6	25.8	25.2	27.7	25.2	26.4	26.2
13:32:30	28.6	24.1	26.4	24.7	27.2	25.2	26.4	26.5
13:33:00	28.6	24.1	26.5	24.6	27.2	25.7	26.5	26.5
13:33:30	28.6	25.1	27	24.1	27	26.2	26.5	25.6
13:34:00	28.6	25.1	27.2	23.6	27	26.2	27	25.7
13:34:30	28.4	24.7	27.2	23.2	27	26.7	27	25.6
13:35:00	27.9	24.2	27.7	23.2	27	26.5	27	25.2
13:35:30	27.9	24.6	27.9	23.6	27.2	25.7	27	25.1
13:36:00	27.9	24.6	27.9	23.6	27.2	25.2	27.2	25.2
13:36:30	27.9	24.7	27.9	23.1	27.2	25.1	27.2	25.6
13:37:00	27.7	24.2	27.7	23.2	27.2	26	27.2	24.6
13:37:30	27.2	24.6	27.2	23.7	27.7	25.7	27.2	24.7
13:38:00	27.2	24.7	27	24.6	27.9	25.7	27.2	25.2
13:38:30	27.2	24.6	26.5	24.7	27.9	25.7	27.7	25.2
13:39:00	27	25.1	26.4	25.6	27.9	25.1	27.7	24.1
13:39:30	27.2	25.1	25.8	26.2	27.9	24.6	27.7	23.7
13:40:00	27.2	25.2	25.8	26.5	27.7	24.6	27.7	23.6
13:40:30	27	25.7	25.8	26.5	27	24.6	27.7	23.6
13:41:00	26.5	25.7	25.7	26	26.5	25.2	27.9	23.2
13:41:30	26.5	26.5	25.7	26	26.5	26.2	27.9	23.1
13:42:00	26.5	26.5	25.2	26	26.4	26.7	27.9	23.1
13:42:30	26.5	26	25.2	26	25.8	26.5	27.9	23.1
13:43:00	26.5	26.2	25	26.5	25.7	26.7	27.9	22.8
13:43:30	27	26.2	25	27.1	25.7	27.1	28.4	23.7
13:44:00	27.2	26	25	27.1	25.7	27.5	28.6	24.2
13:44:30	27.7	25.6	24.5	27	25.7	27.1	27.9	23.1
13:45:00	27.7	25.6	24.5	27.5	25.7	27.5	27.9	22.6
13:45:30	27.9	25.2	24.5	27.1	25.2	27.1	27.7	22.6
13:46:00	27.9	24.7	24.5	27	25.2	27	27.7	23.1
13:46:30	27.9	24.1	24.3	27.1	25.2	27	27.7	23.7
13:47:00	27.7	23.7	24.3	27.6	25.2	27.5	27.7	23.2
13:47:30	27.2	23.7	24.3	28	25.2	28	27.9	23.7
13:48:00	27	23.7	24.3	28.5	25.2	27.6	27.9	24.2
13:48:30	27	24.1	23.8	28	25	27.5	28.4	24.1
13:49:00	27	24.1	23.8	28.1	25	27.5	28.6	24.2
13:49:30	27.2	24.2	23.8	28.5	25	28.1	28.6	24.7
13:50:00	27.7	24.1	23.8	28.6	25.2	29	28.6	23.7
13:50:30	27.7	24.2	23.8	29	25.8	28.6	28.4	22.8
13:51:00	27.9	25.7	23.8	28.6	26.4	27.6	28.4	22.8
13:51:30	27.7	25.6	23.8	29	26.4	26.2	27.9	22.8
13:52:00	26.5	24.2	23.8	28.1	25.8	26	27.7	23.1
13:52:30	26.4	24.7	23.8	28.1	26.4	26.5	27.2	23.6
13:53:00	26.5	25.2	23.8	28	26.5	27	27	24.1
13:53:30	26.5	25.6	23.6	27.6	26.5	26.5	27	24.2
13:54:00	27	26.5	23.6	28	26.5	26.5	26.5	24.7
13:54:30	27.2	26	23.6	28.5	27	26.2	26.5	25.2
13:55:00	27.7	25.1	23.6	29	27.2	26.7	26.5	24.7
13:55:30	27.9	24.6	23.6	29.1	27.7	27.5	26.4	24.7
13:56:00	28.4	24.7	23.6	29	27.7	26.7	26.4	24.7
13:56:30	28.4	24.2	23.6	29	27.9	27.1	26.4	25.1
13:57:00	28.4	24.6	23.6	28.6	27.9	25.7	25.8	25.6
13:57:30	28.6	24.7	23.6	29	27.9	24.7	25.8	24.6
13:58:00	29.1	24.6	23.1	28.6	27.7	24.7	25.8	24.6
13:58:30	29.1	23.7	23.1	28.5	27.2	24.7	25.8	24.7
13:59:00	29.3	23.6	23.1	29.1	27.2	25.1	25.8	25.1
13:59:30	29.8	23.1	23.1	29.6	27	25.1	25.8	25.2
14:00:00	29.8	23.1	23.1	29.1	26.5	25.1	25.8	25.7
14:00:30	30	22.6	23.1	29.1	27	25.1	25.8	25.2
14:01:00	29.8	22.6	23.1	29.1	27	25.7	25.8	24.7
14:01:30	29.8	23.1	23.1	29.1	27.2	26	25.8	25.6
14:02:00	29.8	21.8	23.1	28.6	27.2	26	25.8	26.2
14:02:30	29.8	23.2	23.1	28.6	27.2	25.6	26.4	26
14:03:00	29.8	24.7	23.1	28.5	27	25.2	26.5	26
14:03:30	29.8	24.2	23.1	28.6	27	25.1	27	25.6
14:04:00	29.3	22.8	23.1	29	27	25.6	27	25.6
14:04:30	29.3	22.8	23.1	29	27	25.6	27.2	25.6
14:05:00	29.8	23.6	23.1	29.1	27	25.2	27.2	25.1
14:05:30	29.8	23.7	23.1	29.1	27	25.6	27.7	25.6
14:06:00	29.3	23.6	23.6	29	26.5	25.1	27.7	25.1
14:06:30	29.1	22.3	23.6	28.6	26.5	25.7	27.7	24.1
14:07:00	28.4	22.6	23.6	28.6	27	25.6	27.9	24.7
14:07:30	28.4	23.1	23.6	28.6	27	25.2	27.9	25.1
14:08:00	28.6	26	23.6	28.5	27	25.2	28.4	24.6
14:08:30	28.6	26.2	23.6	28.6	27	25.1	28.4	23.2
14:09:00	29.1	24.2	23.8	28.6	27	25.2	27.9	23.2
14:09:30	29.8	23.7	23.8	28.6	27	25.2	27.9	23.1
14:10:00	30	22.6	23.8	28.6	27.2	25.2	27.9	22.1
14:10:30	30	22.3	23.8	29	27.2	25.2	27.9	22.3
14:11:00	30	22.1	23.8	28.6	27.7	25.1	27.7	22.6
14:11:30	29.8	21.7	23.8	28.5	27.2	24.7	27.7	22.3
14:12:00	29.8	22.1	23.8	28.5	27.2	25.1	27.7	22.8
14:12:30	29.3	22.6	23.8	28.5	27.2	25.2	27.2	22.8
14:13:00	29.1	22.3	24.3	29	27	25.6	27	22.6
14:13:30	29.3	25.2	24.3	29	27	25.7	27	23.2
14:14:00	29.3	24.2	24.3	28.5	27	26	27	23.2
14:14:30	29.3	23.7	24.3	28	26.5	26	26.5	23.6
14:15:00	29.1	23.1	24.5	27.6	26.4	26	26.5	24.1
14:15:30	28.6	22.8	24.5	27.1	26.4	26.5	26.5	24.6
14:16:00	28.6	22.6	24.5	28	26.4	26.2	26.4	24.6
14:16:30	29.1	22.1	25.2	27.6	26.4	25.7	26.5	25.1
14:17:00	29.1	22.3	25.7	26.5	26.4	26.2	26.5	24.7
14:17:30	28.6	23.2	25.8	25.7	26.4	26.5	26.5	24.2
14:18:00	28.4	27.5	26.5	25.2	26.4	26.5	27	24.2
14:18:30	28.4	25.1	26.5	24.2	26.4	26	27	24.1
14:19:00	28.4	24.2	26.5	24.6	26.4	26	27	24.2
14:19:30	28.4	24.2	27	24.1	26.4	26	27	24.1
14:20:00	27.9	24.2	27.2	24.1	26.4	26.7	27	24.6
14:20:30	27.9	24.6	27.2	23.2	26.5	27	27.2	25.1
14:21:00	27.9	24.7	27.2	23.1	26.4	27	27.7	24.6
14:21:30	27.9	25.2	27.2	22.8	26.4	27	27.7	24.1
14:22:00	27.9	24.6	27.7	22.8	26.4	26.2	27.7	23.7
14:22:30	28.4	24.2	27.9	22.8	25.8	26.5	27.7	24.2
14:23:00	28.4	25.2	28.4	22.6	25.8	27	27.7	23.7
14:23:30	28.6	25.2	28.4	21.7	25.8	27	27.2	23.6
14:24:00	28.6	25.1	28.4	21.3	25.8	27	27.2	24.7
14:24:30	28.6	24.1	28.4	21.8	26.4	27.1	27.2	25.6
14:25:00	28.6	23.6	27.9	21.7	26.5	27.1	27.2	26
14:25:30	28.6	24.1	27.9	22.3	26.5	26.7	27.7	26.7
14:26:00	28.6	24.2	27.9	23.1	26.5	26.5	27.9	26.7
14:26:30	28.4	24.1	27.7	22.6	26.5	26.5	28.4	25.2
14:27:00	27.9	24.1	27.9	22.3	26.5	25.7	28.4	23.6
14:27:30	27.9	27.6	28.4	22.6	26.4	25.7	28.4	23.2
14:28:00	27.9	26	28.6	22.3	26.4	25.7	28.4	23.6
14:28:30	27.9	25.6	29.3	22.1	26.4	26.2	28.6	23.6
14:29:00	27.9	24.1	29.8	21.7	26.4	26.5	28.6	23.1
14:29:30	27.9	24.1	30	21.2	26.5	26.7	27.9	22.1
14:30:00	27.9	25.1	30	20.8	26.5	27	27.9	22.1
14:30:30	27.7	24.6	30.5	21.2	27	26.5	27.7	22.3
14:31:00	27.7	25.1	30.5	20.7	27	26	27	22.3
14:31:30	27.7	25.2	30.5	20.2	27.2	25.6	26.5	22.8
14:32:00	27.7	25.7	30	19.8	27.2	25.2	26.4	23.6
14:32:30	27.7	25.2	30	19.8	27.7	25.2	25.8	24.1
14:33:00	27.7	25.1	30	19.8	27.7	24.7	25.8	24.2
14:33:30	27.7	26.5	30.5	20.3	27.7	25.1	25.8	25.2
14:34:00	27.9	25.7	30.5	19.8	27.9	24.6	25.8	26
14:34:30	28.4	25.6	30	19.3	27.9	24.2	26.4	25.6
14:35:00	28.4	25.2	29.8	19.7	27.7	24.1	26.4	24.2
14:35:30	28.4	24.6	29.8	19.8	27.9	24.6	26.5	28.5
14:36:00	28.4	24.1	29.8	19.8	27.9	24.6	26.5	30.6
14:36:30	27.9	24.1	29.3	20.3	27.9	24.6	27	26.5
14:37:00	27.9	24.2	28.6	21.8	27.9	24.1	27.2	26.7
14:37:30	27.9	26.7	28.6	22.3	27.9	24.2	27.7	26.2
14:38:00	27.7	24.7	28.4	22.6	28.4	24.7	27.9	25.6
14:38:30	27.7	23.7	28.4	22.8	28.4	25.7	27.9	24.7

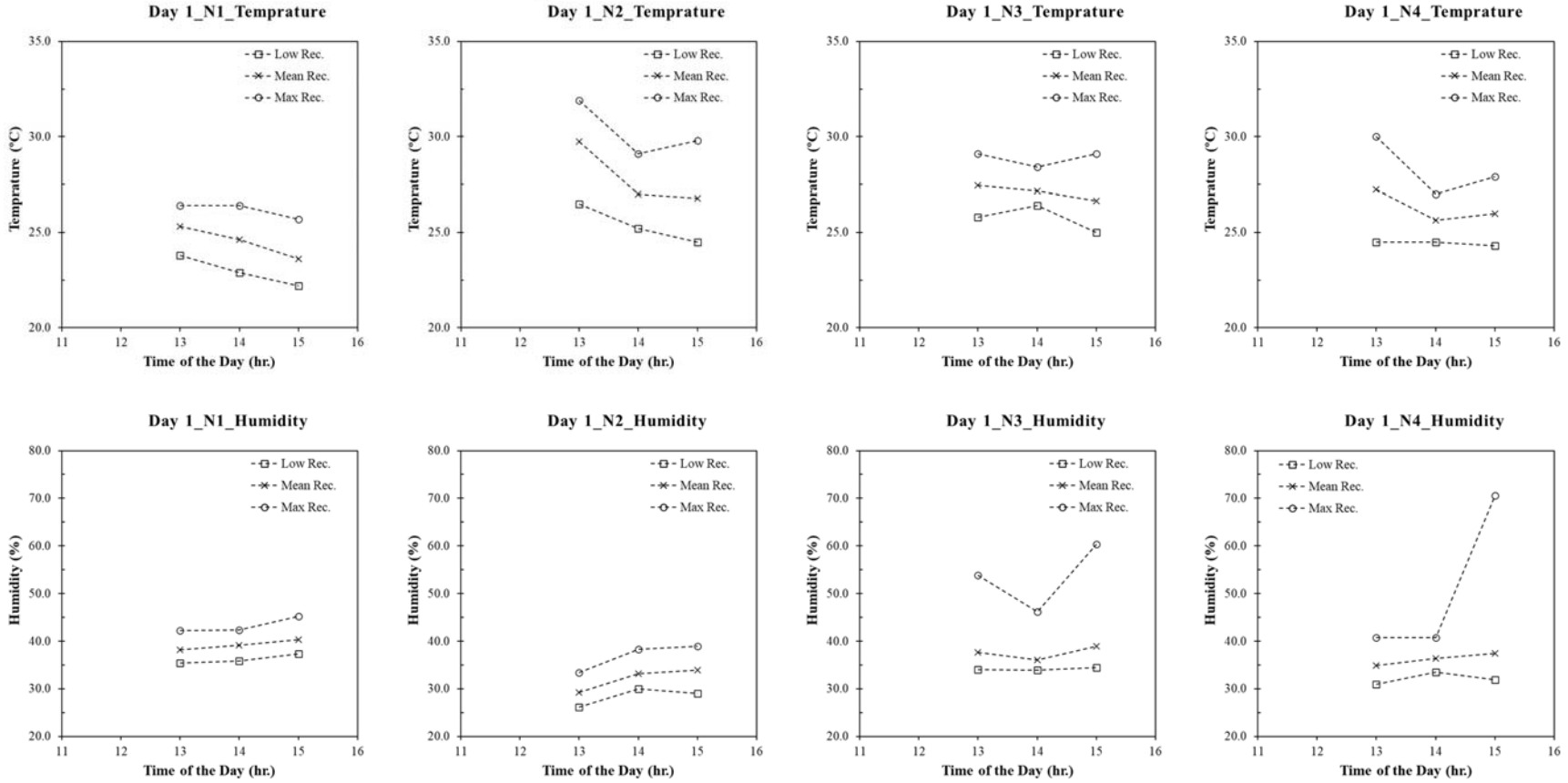
Time	Day 5_N1(Inside)_Temp. Day 5_N1(Inside)_Temp.	Day 5_N1(Inside)_Humidity Day 5_N1(Inside)_Humidity	Day 5_N2(C_F.)_Temp. Day 5_N2(C_F.)_Temp.	Day 5_N2(C_F.)_Humidity Day 5_N2(C_F.)_Humidity	Day 5_N3(SP_E.)_Temp. Day 5_N3(SP_E.)_Temp.	Day 5_N3(SP_E.)_Humidity Day 5_N3(SP_E.)_Humidity	Day 5_N4(B_P.)_Temp. Day 5_N4(B_P.)_Temp.	Day 5_N4(B_P.)_Humidity Day 5_N4(B_P.)_Humidity
14:39:00	27.2	23.6	28.4	22.8	28.6	26	28.4	24.6
14:39:30	27.2	24.1	27.9	23.1	28.6	25.7	27.9	23.7
14:40:00	27.2	23.7	27.9	23.7	28.6	25.6	27.9	23.6
14:40:30	27.2	23.7	27.9	23.2	28.6	25.1	27.9	24.1
14:41:00	27.2	24.2	27.9	23.2	28.4	24.7	27.9	24.2
14:41:30	27	25.2	27.9	23.2	27.9	24.2	27.9	24.1
14:42:00	27.2	25.2	27.9	24.1	27.7	24.6	27.9	24.2
14:42:30	27	25.2	27.7	23.6	27.2	24.7	27.7	23.7
14:43:00	27	25.2	27.7	23.6	27.2	25.1	27.2	24.2
14:43:30	27	25.2	27.9	23.6	27	25.6	27.2	24.7
14:44:00	27	25.6	27.9	24.1	27	26	27.2	26
14:44:30	26.5	25.1	27.9	24.1	26.5	26.2	27.2	26.5
14:45:00	26.4	25.1	27.9	23.7	26.5	26.2	27.2	24.6
14:45:30	26.4	26	27.9	23.6	26.5	26.5	27.2	23.7
14:46:00	26.4	26	27.9	23.1	26.5	26.5	27	24.1
14:46:30	26.5	26.5	27.9	23.1	27	26.5	27	24.2
14:47:00	26.5	27.1	27.9	22.8	27.2	26.7	27	24.7
14:47:30	27	26.7	27.9	22.8	27.2	26.5	27	24.2
14:48:00	27.2	27	27.9	22.6	27.7	26.2	27	23.7
14:48:30	27.2	25.7	27.7	22.6	27.7	25.1	26.5	23.6
14:49:00	27.7	25.6	27.9	22.6	27.2	25.1	26.4	23.6
14:49:30	27.7	25.1	28.4	22.1	27	25.2	26.4	23.7
14:50:00	27.7	24.2	28.4	21.7	27	25.6	26.4	24.1
14:50:30	27.7	25.1	28.6	21.8	26.5	25.7	26.4	24.6
14:51:00	27.9	26.2	29.1	21.7	26.5	26	26.4	24.6
14:51:30	28.4	25.2	29.3	21.3	26.4	26.5	26.4	24.7
14:52:00	28.4	24.7	29.8	20.8	26.4	26.5	26.4	24.6
14:52:30	28.4	25.1	29.8	20.7	25.8	26.7	26.5	24.2
14:53:00	28.4	25.7	29.8	20.7	25.8	27.1	27	24.2
14:53:30	28.4	26	29.8	20.7	25.7	27.6	27	23.6
14:54:00	28.4	26	29.8	20.7	25.7	27	27	23.2
14:54:30	28.4	24.7	29.8	20.7	25.7	26.7	26.5	23.2
14:55:00	28.6	23.6	29.3	20.7	25.7	26.7	26.5	23.2
14:55:30	28.6	23.7	29.1	21.2	25.7	27.6	26.5	23.6
14:56:00	28.6	23.7	29.1	21.3	25.8	27.6	26.5	23.6
14:56:30	28.6	23.2	29.1	21.3	25.8	27.6	26.5	24.1
14:57:00	28.6	23.6	28.6	21.2	25.8	28	26.5	23.6
14:57:30	28.6	23.7	28.6	21.8	25.8	28	26.4	23.6
14:58:00	28.6	23.7	28.4	21.8	25.7	27.1	26.4	24.2
14:58:30	28.4	23.6	27.9	22.1	25.7	27.6	26.4	24.2
14:59:00	28.4	23.6	27.9	22.3	25.7	28	25.8	24.6
14:59:30	28.4	24.1	27.9	22.6	25.7	28.1	25.8	24.7
15:00:00	28.4	23.6	28.4	22.3	25.7	27.5	26.4	25.1
15:00:30	27.9	23.6	28.4	22.1	25.2	27.1	26.5	25.2
15:01:00	28.4	23.6	28.4	26.2	25.2	27.1	26.5	24.2
15:01:30	27.9	23.2	28.4	24.6	25	27.6	26.5	23.7
15:02:00	27.9	23.7	28.4	23.1	25	27.6	27	23.7
15:02:30	27.9	23.7	27.9	22.6	24.5	28.1	27	23.6
15:03:00	27.9	24.2	27.9	21.8	24.5	28.6	27	23.1
15:03:30	27.9	23.7	27.9	22.1	25	28.6	27.2	22.8
15:04:00	27.9	24.2	27.7	22.6	25	28.5	27.2	23.1
15:04:30	27.7	24.2	27.2	23.2	25	28.1	27.2	22.8
15:05:00	27.7	24.1	27.2	23.7	25.2	28.5	27.2	22.8
15:05:30	27.7	24.2	27	23.7	25.7	27.6	27.2	23.1
15:06:00	27.7	24.1	26.5	23.6	25.7	27.5	27.7	23.2
15:06:30	27.7	24.1	26.5	23.7	25.8	27.1	27.7	23.7
15:07:00	27.7	24.2	26.4	23.7	25.8	26.7	27.7	23.6
15:07:30	27.7	24.1	26.4	24.1	25.7	26.2	27.7	23.7
15:08:00	27.2	23.7	26.4	24.2	25.2	26.2	27.9	23.7
15:08:30	27.2	23.6	26.4	25.7	25.2	27	27.9	23.6
15:09:00	27.2	23.6	25.8	25.6	25	27.5	27.9	23.2
15:09:30	27	24.1	25.8	25.1	25	27.5	27.7	23.6
15:10:00	27	24.2	25.8	25.1	24.5	27.6	27.7	23.2
15:10:30	27	24.6	25.8	25.2	24.5	27.6	27.7	24.2
15:11:00	27	24.7	25.7	25.6	24.5	27.6	27.7	23.7
15:11:30	27	24.6	25.7	25.6	24.5	27.6	27.7	24.6
15:12:00	27	24.6	25.2	25.6	24.3	28	27.7	24.1
15:12:30	26.5	24.2	25.2	25.7	24.3	28.5	27.9	23.7
15:13:00	25.8	24.2	25.2	25.6	24.3	29	27.9	23.7
15:13:30	25.2	24.7	25	26	24.3	29.1	28.4	23.6
15:14:00	25.2	25.6	25	26	24.3	28.6	28.6	23.7
15:14:30	25.7	26.7	25	26.2	24.3	28.6	29.1	23.6
15:15:00	25.7	26.5	25.7	25.7	24.3	28.6	29.1	23.1
15:15:30	25.8	26.2	25.8	25.2	23.8	28.5	29.1	22.1
15:16:00	26.4	27	26.4	25.1	23.8	28.5	29.1	21.8
15:16:30	26.4	27.5	26.4	24.7	23.6	28.5	29.1	21.8
15:17:00	26.4	25.7	26.5	24.7	23.6	28.5	29.1	22.3
15:17:30	26.4	25.7	26.5	24.2	23.6	28.6	29.1	22.6
15:18:00	26.5	26.5	27	23.7	23.6	29.1	29.3	22.8
15:18:30	27	26.5	27	23.7	23.6	30	29.8	23.6
15:19:00	27.2	26	26.5	24.1	23.8	30.6	29.8	23.2
15:19:30	27.7	25.6	26.4	24.6	24.3	30	29.8	21.8
15:20:00	27.7	25.1	26.4	25.1	24.5	29.5	29.3	21.2
15:20:30	27.7	24.1	25.8	25.6	24.5	29	29.1	20.8
15:21:00	27.9	24.1	25.7	25.6	25	29	28.6	21.2
15:21:30	27.7	23.7	25.7	25.7	25	28.1	28.4	21.7
15:22:00	27.2	24.1	25.2	26	25	28	28.4	21.7
15:22:30	27.2	25.1	25.2	26.2	24.5	28.5	27.9	22.1
15:23:00	27.2	25.7	25	26	24.5	29	27.9	23.6
15:23:30	27.7	25.2	25	26.2	24.5	29.5	27.9	24.2
15:24:00	27.7	24.7	24.5	26.5	24.3	29	27.9	25.2
15:24:30	27.2	24.7	24.5	26.5	24.3	30	27.9	25.7
15:25:00	27.2	24.6	24.3	27	24.3	30.4	27.9	27
15:25:30	27.2	25.1	24.3	27.1	24.3	30.6	28.4	25.7
15:26:00	27.7	26.2	24.3	27.6	24.3	30.4	28.6	24.6
15:26:30	27.2	25.6	24.3	28	24.3	30.1	28.6	23.6
15:27:00	27	24.1	23.8	27.6	24.5	29.1	28.6	23.2
15:27:30	26.5	24.1	23.8	28	24.3	29	29.1	24.6
15:28:00	25.8	24.2	23.8	28	24.3	29.5	29.1	24.7
15:28:30	25.8	25.1	23.8	28.1	24.3	29.1	28.6	25.7
15:29:00	25.8	25.2	23.8	28.1	24.3	30.1	28.6	23.7
15:29:30	25.7	25.2	23.8	28.5	24.3	30.4	28.4	22.3
15:30:00	25.7	25.6	23.8	28.5	24.3	31.9	28.4	22.1
15:30:30	25.8	25.6	23.8	28.1	24.5	32	27.9	21.8
15:31:00	25.8	26	23.6	28.1	24.5	30.1	27.7	21.8
15:31:30	26.4	25.7	23.6	28.5	25	29.1	27.7	22.1
15:32:00	26.4	25.6	23.8	28.1	25	28	27.7	23.1
15:32:30	25.8	25.2	24.3	28	25	27.6	27.7	23.1
15:33:00	26.4	26.2	24.5	27.6	25	28	27.2	22.6
15:33:30	26.5	26.5	25	27	25.2	28.1	27.2	23.2
15:34:00	26.5	26	25.2	26.5	25.2	27.6	27.2	23.6
15:34:30	26.5	25.6	25.7	26.2	25.7	27.6	27	23.6
15:35:00	26.5	25.1	25.8	25.6	25.7	26.7	26.5	23.6
15:35:30	26.4	25.1	26.4	25.1	25.7	26.7	26.5	23.6
15:36:00	26.4	25.7	26.4	24.2	25.2	26.7	26.5	24.6
15:36:30	25.8	25.7	26.5	24.2	25.7	27.1	26.5	24.7
15:37:00	25.8	25.6	27	24.2	25.7	27.1	27	25.1
15:37:30	25.8	25.6	27.2	24.2	25.7	27.5	26.4	24.1
15:38:00	25.8	25.7	27	23.7	25.8	28	26.4	24.1
15:38:30	25.7	25.6	27	23.2	25.8	28.1	26.4	24.2
15:39:00	25.7	26	27	23.2	25.8	27.5	25.8	24.2
15:39:30	25.7	26	27.2	23.7	25.8	27	26.4	24.2
15:40:00	25.7	26.5	27.2	23.2	26.4	27.5	26.4	24.1
15:40:30	25.7	26.5	27	23.1	26.4	26.7	26.5	24.1
15:41:00	25.2	26.7	27	23.2	26.5	27.5	26.5	24.1
15:41:30	25	26.5	27	23.6	27	26.7	26.5	24.1
15:42:00	25.2	27.1	27	23.7	27	26.7	26.5	24.6
15:42:30	25.2	27	27	23.6	26.5	26.2	26.5	23.7
15:43:00	25.2	26.7	27	23.6	26.4	26	26.5	26.2
15:43:30	25.7	26.7	27	23.6	25.8	26	26.5	27.6
15:44:00	25.8	27	27	23.2	25.8	26.5	26.5	26.7
15:44:30	26.4	27.5	27.2	23.6	25.8	27	27	27.6
15:45:00	26.4	26.7	27.2	23.2	25.8	26.5	27.2	28.1
15:45:30	26.5	26	27.7	23.1	25.8	26.5	27.2	28.1
15:46:00	26.5	26.2	27.9	22.8	25.8	26.7	27.7	27.6
15:46:30	26.5	26.5	27.9	22.6	25.8	26.7	27.7	26.5
15:47:00	26.4	26	27.9	22.8	25.8	26.7	27.7	24.6
15:47:30	25.8	26	27.7	22.6	25.8	26.7	27	23.7
15:48:00	25.8	25.6	27.2	22.8	25.8	27	26.5	23.2
15:48:30	25.8	25.7	27.2	25.1	25.8	27	26.5	23.1
15:49:00	25.8	26	27	26.2	25.8	26.7	26.4	23.6
15:49:30	25.8	26.7	27	25.7	25.8	26.7	25.8	24.1
15:50:00	25.8	26.7	26.5	24.7	25.8	27	25.7	24.7
15:50:30	25.8	26.7	26.4	24.7	25.8	26.2	25.2	24.7
15:51:00	25.8	26.7	25.8	25.1	25.8	26.2	25.2	24.6
15:51:30	25.8	27.1	25.2	25.2	25.8	26.5	25	25.2
15:52:00	25.8	27.5	25	26	25.8	26.7	25	26.2
15:52:30	25.7	26.5	25.2	35.3	25.8	27	25.2	26.5
15:53:00	25.7	27	25.2	30.4	26.4	27.5	25	27
15:53:30	25.8	26.7	25.2	29.5	26.5	26.7	25	29.6
15:54:00	25.8	26.7	25.2	27.1	26.5	26.2	24.5	29.5
15:54:30	26.4	27	25	26.7	27	26	24.3	27.6
15:55:00	26.4	27.5	25	26.7	27.2	25.6	23.8	27.6
15:55:30	26.5	26.7	24.3	26.7	27.2	25.1	23.6	28.6
15:56:00	26.5	26.2	24.3	26.7	27.2	25.1	23.6	28.5
15:56:30	26.5	25.6	24.3	27.5	27.2	26.2	23.6	28.6
15:57:00	26.4	25.2	24.3	26.7	27.2	26.7	23.6	28.1
15:57:30	26.4	25.6	24.3	27.1	27.2	26.5	23.8	39.4
15:58:00	25.8	25.7	24.5	30.6	27.7	25.6	24.5	40.3
15:58:30	25.7	26	24.5	30.9	27.7	24.6	25	39.7
15:59:00	25.2	26.5	24.3	30.9	27.7	24.7	25.2	37.9
15:59:30	25.2	26.7	24.5	28	27.2	25.1	25.7	36.8
16:00:00	25	27	24.5	26.5	27	25.6	25.2	29.6
16:00:30	25	27.6	24.5	26.5	26.5	26.2	25.2	26.7
16:01:00	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A

Time	Day 6_N1(Inside)_Temp. Day 6_N1(Inside)_Temp.	Day 6_N1(Inside)_Humidity Day 6_N1(Inside)_Humidity	Day 6_N2(C_F.)_Temp. Day 6_N2(C_F.)_Temp.	Day 6_N2(C_F.)_Humidity Day 6_N2(C_F.)_Humidity	Day 6_N3(SP_E.)_Temp. Day 6_N3(SP_E.)_Temp.	Day 6_N3(SP_E.)_Humidity Day 6_N3(SP_E.)_Humidity	Day 6_N4(B_P.)_Temp. Day 6_N4(B_P.)_Temp.	Day 6_N4(B_P.)_Humidity Day 6_N4(B_P.)_Humidity
11:55:00	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
11:55:30	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
11:56:00	25	27.6	28.6	22.8	27.7	26.2	26.5	23.7
11:56:30	25	27.1	28.6	22.8	27.2	25.2	26.5	24.2
11:57:00	25	27.1	28.6	23.1	27.2	25.6	26.5	24.6
11:57:30	25	27.5	28.6	23.1	27.7	26	27	24.2
11:58:00	25.2	27.6	28.6	23.1	27.9	28.1	27	24.1
11:58:30	25.7	27.1	28.6	22.8	28.4	27.6	27	24.6
11:59:00	25.8	26.2	29.1	23.2	28.4	26.5	27	25.1
11:59:30	26.4	25.7	29.3	24.1	28.4	25.6	27.2	27.5
12:00:00	26.4	25.1	29.8	22.8	28.4	24.7	27.2	26.7
12:00:30	26.4	25.1	30	21.2	28.6	25.1	27.7	25.2
12:01:00	26.4	25.7	29.8	20.8	28.6	23.7	27.7	24.2
12:01:30	26.5	25.7	29.3	20.7	28.6	24.6	27.7	23.6
12:02:00	27.2	26	29.3	21.7	28.6	24.1	27.7	23.2
12:02:30	27.2	26	29.3	22.1	29.1	24.6	27.7	23.6
12:03:00	27.7	25.1	29.3	21.2	29.3	25.7	27.7	23.1
12:03:30	27.9	26.2	29.3	20.8	29.8	26.2	27.7	22.6
12:04:00	27.9	24.6	29.8	21.7	29.8	25.6	27.7	22.3
12:04:30	27.9	25.1	29.8	23.6	29.3	24.7	27.9	23.6
12:05:00	27.9	25.2	29.8	24.1	29.1	23.2	27.9	27.6
12:05:30	28.4	25.2	29.8	24.6	28.6	22.8	27.9	25.2
12:06:00	28.6	25.7	30	24.6	27.9	23.1	28.4	25.2
12:06:30	29.1	24.7	30	23.7	27.7	23.6	28.4	24.2
12:07:00	29.1	24.1	30	22.6	27.2	24.2	28.6	23.2
12:07:30	29.1	24.2	30	24.1	27.2	24.6	28.4	21.8
12:08:00	29.1	24.1	30	23.1	27	24.7	28.4	22.1
12:08:30	28.4	23.2	30.5	22.8	27	24.7	28.4	22.6
12:09:00	27.7	23.2	30	22.6	26.5	25.1	27.9	22.8
12:09:30	27.7	23.2	30.7	22.8	26.5	25.2	28.4	23.7
12:10:00	27.7	23.6	30.7	21.8	26.4	25.6	28.4	23.1
12:10:30	27.9	24.1	30.5	21.8	26.4	25.7	28.4	22.6
12:11:00	28.4	23.7	30.5	20.7	25.8	25.7	28.4	21.3
12:11:30	28.6	23.7	30	19.8	25.8	26.5	27.9	21.7
12:12:00	28.6	23.7	30	19.8	25.8	27	27.9	21.3
12:12:30	29.1	24.2	30	21.2	25.8	26.7	27.9	21.8
12:13:00	29.3	24.2	30	21.3	25.8	26.5	28.4	22.3
12:13:30	29.8	24.2	30	21.3	26.4	26.7	28.4	22.3
12:14:00	29.8	22.8	30	21.2	26.5	26	28.4	22.1
12:14:30	29.8	23.1	30	21.8	26.5	25.6	28.4	22.6
12:15:00	29.8	23.1	30.5	22.8	26.5	25.7	28.4	22.1
12:15:30	29.3	22.3	30.5	21.8	27	25.1	27.9	21.7
12:16:00	29.3	22.1	30.5	22.3	27	25.1	27.7	22.3
12:16:30	29.3	22.8	30.5	23.7	27.2	24.6	27.7	22.6
12:17:00	29.1	22.8	30.5	25.1	27	24.7	27.7	23.1
12:17:30	29.1	22.3	30.7	25.7	26.5	26.2	27.7	23.2
12:18:00	29.1	22.1	30.7	26.5	26.5	26.2	27.7	23.1
12:18:30	28.6	23.1	31.2	26.7	26.4	26	27.7	22.8
12:19:00	28.6	23.1	31.3	25.7	26.4	26.2	27.9	24.7
12:19:30	28.4	22.1	31.9	22.3	25.8	26.7	28.4	24.7
12:20:00	28.4	22.3	31.9	19.7	25.8	27.5	28.4	23.1
12:20:30	28.4	22.8	31.9	18.7	25.7	28.6	27.9	22.1
12:21:00	28.6	22.8	31.2	18.7	25.7	29.1	27.9	22.1
12:21:30	28.6	22.6	31.2	20.2	25.7	29.6	27.9	23.1
12:22:00	29.1	23.1	31.2	23.2	25.7	29	28.4	23.7
12:22:30	29.3	22.8	31.3	23.6	26.4	27.6	28.4	24.6
12:23:00	29.1	22.6	31.3	21.3	26.5	27	28.4	23.7
12:23:30	29.1	22.1	31.9	22.1	27	26.5	28.4	23.7
12:24:00	29.1	21.7	31.3	20.2	27.2	27	27.9	22.8
12:24:30	29.1	21.8	31.3	19.8	27	26	27.7	22.8
12:25:00	29.1	22.6	31.3	21.3	26.5	25.2	27.7	23.6
12:25:30	29.1	23.6	31.9	21.7	26.4	25.2	27.7	24.2
12:26:00	29.1	23.2	31.9	20.7	25.8	26	27.7	24.2
12:26:30	29.1	22.3	31.9	19.7	25.7	26.2	27.7	23.7
12:27:00	28.6	22.1	31.9	18.8	25.2	26.5	27.7	23.2
12:27:30	27.9	22.8	31.9	19.3	25	26.7	27.7	23.2
12:28:00	27.9	22.6	31.9	18.7	25	27.1	27.7	22.3
12:28:30	27.9	23.2	31.3	19.3	24.5	27.5	27.2	22.1
12:29:00	28.4	22.8	31.9	20.2	24.5	27.1	27.2	22.8
12:29:30	28.4	22.8	32	20.8	24.3	27.5	27.7	23.7
12:30:00	28.4	22.3	32	20.3	24.3	28.1	27.7	23.1
12:30:30	28.4	22.6	32.5	20.2	23.8	28.5	27.7	23.7
12:31:00	27.9	22.1	32.5	20.2	23.8	28.5	27.2	23.6
12:31:30	27.2	23.1	32	18.7	24.3	28.6	27.2	23.7
12:32:00	27.2	23.6	31.9	17.9	24.5	28.5	27	24.1
12:32:30	27.2	24.2	31.9	18.2	25.2	28.5	26.5	25.1
12:33:00	27.7	25.7	31.2	18.8	25.8	27.6	26.5	24.6
12:33:30	28.4	27.5	31.2	18.4	26.4	27	26.5	23.7
12:34:00	28.6	27.6	30.7	18.2	26.5	26.7	27	24.1
12:34:30	29.3	25.6	30	18.7	27	27	27	23.6
12:35:00	29.3	23.2	29.8	20.3	27.2	27	27	23.2
12:35:30	29.8	22.6	29.1	25.1	27.2	26	27.2	23.7
12:36:00	29.8	22.3	28.6	23.2	27.2	25.2	27.7	25.6
12:36:30	30	22.3	28.6	21.8	27	24.7	27	23.7
12:37:00	30	22.1	29.1	21.7	26.5	24.7	26.5	23.2
12:37:30	30	22.6	29.1	20.8	26.5	25.2	26.5	24.1
12:38:00	30.5	22.1	28.6	20.7	26.5	25.2	26.5	24.1
12:38:30	30	21.3	28.6	20.7	26.4	25.2	26.4	24.1
12:39:00	29.3	21.3	28.6	21.2	26.4	25.6	26.4	24.2
12:39:30	29.8	22.8	28.6	21.2	25.8	26.2	26.4	25.6
12:40:00	29.8	23.2	28.6	21.7	25.8	26.5	26.5	26.7
12:40:30	29.8	22.3	28.4	21.8	25.8	26.2	26.5	28.1
12:41:00	29.8	22.1	27.9	22.3	25.7	26	27	28.1
12:41:30	29.3	21.7	27.9	23.2	25.7	26.2	27	26.5
12:42:00	29.1	21.3	27.7	23.6	25.2	26.2	27.2	26.2
12:42:30	29.1	21.7	27.2	23.6	25.2	26.5	27.2	26
12:43:00	29.1	21.8	27.2	23.7	25.2	27	27.2	24.7
12:43:30	28.6	21.7	27	23.6	25.2	27.1	27	24.2
12:44:00	28.6	23.6	27	23.2	25.2	27.1	27	27
12:44:30	29.1	24.2	27	24.1	25.2	27.1	27	28
12:45:00	29.1	23.2	26.5	24.1	25.2	26.7	27.2	29
12:45:30	28.4	22.3	26.5	23.7	25.2	26.7	27.7	31.4
12:46:00	27.9	23.1	26.5	23.2	25.2	27	27.9	27.6
12:46:30	27.9	23.6	26.4	23.2	25.2	27	28.4	25.2
12:47:00	27.7	22.6	26.4	23.7	25.2	27	28.6	24.1
12:47:30	27.9	22.6	26.4	24.2	25.7	26.7	28.6	24.6
12:48:00	27.9	22.3	26.4	24.6	25.7	26.7	29.1	24.7
12:48:30	27.9	22.8	26.4	24.6	25.7	27	29.3	23.7
12:49:00	27.9	23.1	25.8	24.7	25.7	27.5	29.3	23.2
12:49:30	28.4	23.7	25.8	24.7	25.7	27.1	29.8	22.3
12:50:00	28.6	23.6	25.8	25.1	25.7	26.7	29.3	21.8
12:50:30	28.6	23.1	25.8	24.7	25.7	26.7	29.1	21.2
12:51:00	29.1	23.1	25.7	24.7	25.7	26.5	29.1	21.7
12:51:30	28.6	22.6	25.7	25.1	25.7	26.7	29.1	23.6
12:52:00	28.6	23.2	25.2	25.2	25.8	27	29.1	23.2
12:52:30	29.1	24.1	25.2	25.6	26.4	26.5	29.1	22.6
12:53:00	29.3	23.6	25.7	25.7	26.5	26	29.1	23.2
12:53:30	29.8	24.1	25.8	25.7	26.5	26.2	29.3	23.7
12:54:00	29.3	22.8	26.4	25.2	26.5	26	29.3	22.3
12:54:30	29.3	22.8	27	24.2	27	26	29.1	23.6
12:55:00	29.8	23.7	27.2	23.7	27.2	27	29.1	22.3
12:55:30	29.8	23.1	27.2	23.1	27.2	26.7	28.6	21.8
12:56:00	29.3	22.3	27.7	22.6	27.2	26.7	28.4	22.3
12:56:30	29.1	22.6	27.9	22.3	27.2	26.5	28.4	22.3
12:57:00	29.1	23.1	28.4	21.8	27.2	25.7	28.4	22.3
12:57:30	29.1	23.2	28.6	21.8	27	25.2	28.4	22.3
12:58:00	29.1	22.8	29.1	21.8	27	25.2	28.4	22.6
12:58:30	29.1	22.6	29.1	21.3	27	25.2	28.4	22.3
12:59:00	29.1	22.1	28.6	21.2	27	25.2	28.4	22.1
12:59:30	29.1	22.6	28.6	21.2	27.2	25.7	28.4	22.3
13:00:00	29.1	23.6	28.6	20.8	27.2	25.7	28.4	22.1
13:00:30	29.1	23.6	28.6	21.3	27.2	25.6	27.7	21.3
13:01:00	29.1	23.1	29.1	21.2	27.2	26	27.7	21.8
13:01:30	29.1	22.6	29.1	20.7	27.2	25.7	27.2	21.7
13:02:00	28.4	23.1	29.8	21.3	27	25.1	27	21.8
13:02:30	28.6	24.1	29.8	20.7	27	24.7	26.5	22.3
13:03:00	28.6	25.6	29.8	19.8	26.5	25.1	26.4	22.8
13:03:30	28.4	25.1	29.3	19.8	26.5	25.6	26.4	23.7
13:04:00	27.7	24.1	29.8	20.2	26.5	25.7	26.4	24.6
13:04:30	27.7	23.7	29.1	19.8	27	25.7	25.8	25.7
13:05:00	27.2	24.1	29.1	20.3	27	25.7	25.8	27.1
13:05:30	27.2	24.7	29.3	20.8	27	26	25.8	26.5
13:06:00	27.7	25.2	29.3	20.7	27	25.7	25.8	26.5
13:06:30	27.7	25.1	29.8	20.3	27	25.1	25.8	27.5
13:07:00	27.7	25.2	29.3	20.2	27	25.1	25.8	27.5
13:07:30	27.2	24.7	29.1	19.8	26.5	24.7	25.8	26.7
13:08:00	27	24.7	29.1	21.7	26.4	25.1	26.4	25.7
13:08:30	27.2	25.6	29.1	21.2	26.4	25.7	26.4	26
13:09:00	27.2	26.2	29.1	20.7	26.4	26	26.5	26.5
13:09:30	27.2	25.2	29.3	20.7	25.8	26	26.5	25.1
13:10:00	27.7	25.1	29.8	20.3	25.2	26	26.5	24.1
13:10:30	27.7	26	30	20.7	25.2	26.7	26.4	24.1
13:11:00	27.9	24.7	29.8	20.3	25.2	27.1	25.8	24.1
13:11:30	27.9	24.2	29.8	20.3	25.2	27	25.7	24.1
13:12:00	28.4	24.1	29.8	19.8	25.2	26.5	25.7	24.6
13:12:30	28.4	25.6	30	20.2	25.2	27.1	25.8	24.6
13:13:00	27.9	24.2	30	19.8	25.2	27.5	26.4	24.1
13:13:30	27.9	24.7	30	19.8	25.2	28	26.4	23.6
13:14:00	27.7	25.6	30.7	19.8	25.2	28	26.5	23.1
13:14:30	27.9	24.7	31.2	19.3	25.2	28.5	26.5	23.2
13:15:00	28.4	24.2	31.9	19.7	25.2	29.5	27	23.2
13:15:30	28.6	25.1	32	19.3	25.2	28.6	27.2	22.6
13:16:00	28.4	23.7	32	18.7	25.2	28.5	27.2	22.3
13:16:30	27.9	23.1	32	18.2	25.2	28	27.2	21.8
13:17:00	27.7	23.7	32	18.4	25	27.6	27.2	22.1
13:17:30	27.7	23.7	32.5	19.3	25	27.6	27.2	22.3
13:18:00	27.9	23.6	32.7	19.8	25	28.1	27.2	22.3
13:18:30	27.9	23.6	33.2	18.2	25.2	28	27.7	22.3
13:19:00	28.4	24.1	32.7	17.4	25.7	27.5	27.2	22.6
13:19:30	28.6	23.2	32.7	17.4	25.7	27.5	27	23.1
13:20:00	28.6	23.6	32.7	17.4	25.8	26.7	27	24.1
13:20:30	29.1	23.6	32.7	17.7	26.4	26	27	24.2

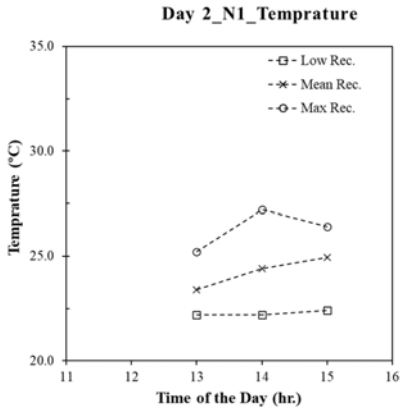
Time	Day 6_N1(Inside)_Temp.	Day 6_N1(Inside)_Humidity	Day 6_N2(C_F.)_Temp.	Day 6_N2(C_F.)_Humidity	Day 6_N3(SP_E.)_Temp.	Day 6_N3(SP_E.)_Humidity	Day 6_N4(B_P.)_Temp.	Day 6_N4(B_P.)_Humidity
13:21:00	29.3	25.2	32.5	17.7	26.5	25.6	27	25.1
13:21:30	29.8	24.7	31.3	17.7	26.4	25.2	27.2	25.2
13:22:00	29.8	23.7	30.7	18.2	26.4	26	27.2	24.2
13:22:30	29.8	22.1	30.5	18.7	26.5	28.1	27.2	26.5
13:23:00	29.8	22.1	29.8	19.3	26.5	27.1	27.2	25.1
13:23:30	29.8	23.1	29.1	20.2	26.5	25.7	27.2	23.2
13:24:00	29.8	22.1	28.6	20.7	26.5	24.7	27.2	23.6
13:24:30	29.1	21.7	28.4	21.2	26.5	24.7	27.7	24.1
13:25:00	29.1	21.7	27.9	21.2	26.5	25.6	27.7	25.2
13:25:30	29.1	22.3	27.7	21.3	26.5	25.6	27.9	23.6
13:26:00	28.6	22.3	27.2	21.8	26.5	25.6	27.7	22.6
13:26:30	28.6	22.3	27	22.3	26.5	25.7	27.7	22.3
13:27:00	29.1	23.7	26.5	22.3	26.5	25.2	27.7	22.8
13:27:30	28.4	23.2	26.4	22.6	26.5	25.2	27.7	22.8
13:28:00	28.6	22.8	26.4	23.1	26.5	25.2	27.2	23.1
13:28:30	28.6	23.6	26.5	23.2	26.5	25.6	27	23.1
13:29:00	29.1	23.2	27.2	23.1	26.5	25.2	27	23.2
13:29:30	29.1	22.8	27.7	22.1	26.4	25.7	27	24.1
13:30:00	28.6	22.6	27.9	21.7	26.5	25.7	26.5	23.1
13:30:30	29.1	23.2	28.4	21.7	26.5	25.2	27	24.2
13:31:00	28.6	23.1	28.6	21.7	26.5	25.1	27	24.1
13:31:30	28.6	24.1	29.1	21.2	27	25.6	26.5	23.7
13:32:00	28.4	23.6	29.3	21.3	27.2	25.6	26.5	23.7
13:32:30	28.4	23.1	29.8	20.8	27.2	25.1	26.5	24.1
13:33:00	28.4	24.1	30	20.3	27.7	24.7	26.5	25.2
13:33:30	28.6	24.2	30.5	20.3	27.7	24.6	26.5	26.7
13:34:00	28.6	23.6	30.5	19.3	27.2	24.6	27	24.6
13:34:30	28.6	23.6	30.5	19.2	26.5	24.2	27	23.1
13:35:00	29.1	23.7	30.7	19.3	26.4	25.1	27	22.8
13:35:30	28.6	23.2	30.7	18.8	25.8	25.6	27	23.1
13:36:00	29.1	22.3	30.5	18.7	25.8	26.2	27	24.1
13:36:30	28.6	22.1	30.5	19.2	25.7	26.5	27	23.1
13:37:00	29.1	22.6	30.7	19.3	25.7	26.7	27	23.1
13:37:30	29.1	22.8	30.7	19.2	25.7	26.7	26.5	23.6
13:38:00	29.1	22.6	30.7	18.7	25.2	26.5	26.5	23.6
13:38:30	29.1	21.8	30.7	18.8	25.2	26.7	26.5	24.2
13:39:00	29.1	21.7	31.2	19.3	25.7	27.6	26.5	24.2
13:39:30	29.1	21.8	30.7	21.2	25.8	27.6	26.5	24.1
13:40:00	29.1	22.1	30.5	20.2	26.4	27.5	26.5	25.1
13:40:30	29.1	22.8	30	19.7	26.4	28.6	27	26.5
13:41:00	29.1	22.8	29.8	19.7	26.5	29.6	27	28.5
13:41:30	28.6	22.6	29.3	19.8	26.5	30.1	27.2	28.5
13:42:00	28.6	23.1	29.1	20.7	26.5	28.6	27.7	28.6
13:42:30	28.4	22.8	29.1	21.2	26.5	28	27.9	27.5
13:43:00	28.4	22.8	28.6	21.3	26.5	30.6	27.9	25.7
13:43:30	28.4	23.6	28.6	21.3	26.5	30	27.9	24.6
13:44:00	28.6	24.1	28.4	21.8	26.5	28	27.9	25.6
13:44:30	29.1	23.7	28.4	22.1	26.5	26.7	27.7	23.6
13:45:00	29.1	24.1	28.4	22.6	26.5	26.7	27.2	22.8
13:45:30	29.3	23.1	28.4	22.6	26.5	27	27	23.1
13:46:00	29.1	22.3	28.4	22.1	26.4	28.5	27	23.6
13:46:30	28.4	22.6	28.4	22.3	26.5	29.6	27	24.2
13:47:00	27.9	22.6	28.4	21.8	26.5	28.5	27	23.7
13:47:30	27.9	23.2	28.6	22.3	26.5	27	27	23.6
13:48:00	27.7	22.8	29.1	21.8	27	26.2	26.4	23.7
13:48:30	27.2	23.2	29.3	21.3	27	25.7	25.8	25.2
13:49:00	27.2	23.2	29.8	21.7	27	25.6	25.8	26.5
13:49:30	27	23.2	29.8	21.2	27.2	25.6	25.8	24.7
13:50:00	27	23.6	29.3	20.8	27.7	25.2	25.8	24.6
13:50:30	27.2	23.7	28.6	21.2	27.9	24.6	25.8	24.7
13:51:00	27	24.1	28.4	21.8	27.9	24.1	25.8	24.6
13:51:30	26.5	24.2	28.4	22.1	27.9	23.7	26.4	24.2
13:52:00	26.4	25.1	27.9	22.3	27.7	24.1	26.5	25.2
13:52:30	26.5	25.2	27.7	22.8	27.2	24.1	27	24.7
13:53:00	27	26.5	27.2	22.3	27	24.2	27.2	23.6
13:53:30	27.2	25.7	27.2	22.6	27	25.1	27.7	24.2
13:54:00	27.7	25.1	27.2	23.1	26.5	25.6	27.7	23.7
13:54:30	27.9	24.7	27	23.1	26.5	25.2	27.7	23.7
13:55:00	28.4	25.2	27	23.6	26.4	25.7	27.9	24.6
13:55:30	28.6	25.7	27	23.6	26.4	25.7	27.9	24.1
13:56:00	28.6	23.7	27	23.7	25.8	25.7	28.4	23.1
13:56:30	28.6	23.2	27	23.6	25.8	26.2	28.4	23.2
13:57:00	28.6	24.6	26.5	23.6	25.8	26.7	28.6	22.8
13:57:30	28.6	24.2	26.5	23.6	25.8	26.5	28.6	22.3
13:58:00	28.6	24.2	26.5	23.6	25.7	26.5	28.6	23.1
13:58:30	28.6	23.7	26.5	23.6	25.7	26.5	28.6	22.6
13:59:00	28.6	23.2	26.4	23.6	25.7	27	28.6	22.1
13:59:30	29.1	23.2	26.4	24.1	25.7	27.1	28.6	21.8
14:00:00	29.1	23.1	26.4	24.6	25.7	26.7	28.4	21.7
14:00:30	29.1	23.1	26.4	25.1	25.2	26.7	28.4	25.2
14:01:00	29.3	24.7	26.5	24.6	25.2	26.7	28.4	23.2
14:01:30	29.8	24.6	27	24.1	25.2	27.5	28.6	22.3
14:02:00	30	24.6	27.2	23.6	25.7	27.1	28.6	21.8
14:02:30	30.5	24.6	27.7	23.6	25.7	27	28.6	21.7
14:03:00	30.5	23.2	27.9	23.6	25.7	26.7	28.6	21.8
14:03:30	30	21.2	28.4	23.1	25.7	26.7	29.1	22.3
14:04:00	30	21.3	28.4	22.6	25.8	26.7	29.1	22.3
14:04:30	30	22.3	28.4	22.6	25.8	26.5	29.3	21.8
14:05:00	30	21.7	27.9	22.3	25.8	26.2	29.3	21.7
14:05:30	29.8	21.8	27.7	22.3	25.8	26.7	29.3	21.7
14:06:00	29.3	21.8	27.2	22.8	25.8	27.1	29.8	21.7
14:06:30	28.6	22.3	27.2	23.2	25.7	27	29.8	24.2
14:07:00	28.4	22.6	27.2	23.6	25.7	26.7	29.8	22.8
14:07:30	27.9	23.2	27	23.7	25.2	27.1	29.8	22.6
14:08:00	27.9	23.2	27	23.7	25	27.6	29.8	23.1
14:08:30	27.9	22.8	27	24.1	25	28	29.8	21.8
14:09:00	27.9	22.8	27	24.1	25	28.1	29.3	21.2
14:09:30	27.9	22.8	27	24.2	25	28.1	29.1	21.7
14:10:00	27.9	23.1	27	23.6	24.5	28.1	29.1	22.3
14:10:30	27.7	23.2	26.5	23.2	24.5	28.5	28.6	21.8
14:11:00	27	24.1	26.5	23.2	25	28.1	28.6	21.7
14:11:30	26.5	24.2	27	23.6	25	28.1	28.6	23.6
14:12:00	26.5	24.6	27	23.2	25	28	28.6	21.8
14:12:30	26.5	26	26.5	23.1	25	27.6	28.6	21.7
14:13:00	26.5	27.1	26.5	23.1	25	28	28.6	22.8
14:13:30	27	26	26.4	23.6	24.5	28	28.4	22.6
14:14:00	27	25.7	26.4	23.7	24.5	28	27.9	21.8
14:14:30	26.5	26.2	25.8	23.7	24.5	28.1	27.7	21.8
14:15:00	26.5	25.7	25.7	24.1	24.5	28.5	27.2	21.8
14:15:30	26.4	25.6	25.7	24.1	24.3	28.6	27	22.6
14:16:00	25.8	25.6	25.2	24.2	24.3	29.5	26.5	23.1
14:16:30	25.8	27	25.2	24.6	24.3	29.1	26.5	23.7
14:17:00	25.7	26.7	25	24.7	24.3	29.1	26.5	23.7
14:17:30	25	26.7	25	25.1	24.3	29.6	26.4	24.2
14:18:00	25	27	25	25.1	24.3	29.5	26.4	24.1
14:18:30	25	27	24.5	25.6	23.8	29.1	26.4	24.2
14:19:00	24.5	27.5	24.5	25.7	23.8	29.5	25.8	24.2
14:19:30	24.5	28.1	25	25.7	23.8	29.5	25.8	24.6
14:20:00	24.5	28.1	25	25.6	23.8	29.6	25.7	24.6
14:20:30	24.3	28.1	25	25.7	23.8	29.6	25.7	24.2
14:21:00	24.3	29.6	25.2	25.6	23.8	30	25.2	24.6
14:21:30	24.3	30	25.2	25.2	23.8	30	25.2	25.1
14:22:00	24.3	29.1	25.2	25.2	23.8	30	25	25.7
14:22:30	24.5	29.5	25.2	25.2	23.8	30	25	25.1
14:23:00	24.5	28.6	25.2	25.2	23.8	29.6	24.5	25.1
14:23:30	24.5	28.1	25.2	25.2	23.8	29.5	24.5	25.2
14:24:00	24.5	28	25.7	25.2	23.8	29.5	24.5	25.7
14:24:30	24.5	28.1	25.7	25.1	24.3	30.4	25	25.6
14:25:00	24.5	29	25.7	24.7	24.3	30	25	25.6
14:25:30	25	27.6	25.7	24.7	24.3	29.6	25.2	25.1
14:26:00	25.2	27.5	25.7	24.6	24.3	29	25.2	24.6
14:26:30	25.7	27.1	25.8	24.7	24.3	28.6	25.2	25.2
14:27:00	25.7	27.1	26.4	24.6	24.3	28.6	25.2	25.2
14:27:30	25.7	26.7	26.5	24.6	24.3	28.5	25.2	24.7
14:28:00	25.7	26.5	27	24.2	24.5	28.6	25.2	25.1
14:28:30	25.2	26	27.2	23.6	24.5	29	25.2	24.7
14:29:00	25.2	26.7	27.2	23.2	24.5	29	25.7	25.2
14:29:30	25.2	26.7	27	23.6	24.5	28.5	25.7	25.1
14:30:00	25.7	27	27	24.1	24.5	28.6	25.2	25.1
14:30:30	25.8	27.6	26.5	23.7	25	28.5	25.2	25.1
14:31:00	25.8	27.5	26.5	24.2	25.2	28.5	25.2	26
14:31:30	25.8	27.5	26.4	24.7	25.7	27.6	25	26
14:32:00	26.4	28	26.4	24.7	25.8	27.1	25	26
14:32:30	26.4	28.6	26.4	26	25.8	26.7	25	26.2
14:33:00	26.5	27.5	26.4	27	25.8	26.2	25	26
14:33:30	27	27.1	26.4	27.1	25.8	25.7	25	25.7
14:34:00	27.2	27.1	26.4	27	26.4	26	25	25.6
14:34:30	27.7	26.7	26.4	27	26.4	26.2	25	25.6
14:35:00	27.7	26	26.5	27	26.4	25.7	25	25.7
14:35:30	27.2	25.1	26.5	27	26.4	25.7	25	26.5
14:36:00	27	25.1	27	26.7	25.8	25.7	25	26
14:36:30	27	26.7	27	25.2	25.8	26	25	27
14:37:00	26.5	25.2	27	25.7	26.4	26	25.2	27.5
14:37:30	26.4	25.2	27	25.2	26.5	26	25.2	28.5
14:38:00	26.4	25.2	27	25.1	27	26	25.2	26.7
14:38:30	26.4	25.2	27	25.2	27	25.6	25.2	26.7
14:39:00	26.4	26.7	27.2	24.7	27.2	24.7	25.7	29.5
14:39:30	26.4	26.7	27.2	25.2	27.2	24.7	25.7	31.1
14:40:00	26.4	27.6	27.2	26.2	27.2	24.6	25.8	32
14:40:30	26.4	27.5	27.7	26.2	27.2	24.6	26.4	31.1
14:41:00	26.5	27.1	27.7	26.2	27.7	24.7	26.4	30.6
14:41:30	26.5	27.1	27.9	26	27.9	24.6	26.5	30.9
14:42:00	27.2	28.1	27.9	26.2	27.9	24.6	26.5	29
14:42:30	27.2	26.5	27.9	27.5	28.4	24.2	27	29.1
14:43:00	27.2	25.6	27.9	26.7	27.9	24.1	27	31.1
14:43:30	27	25.1	27.9	25.2	28.4	24.2	26.5	27.1
14:44:00	26.5	25.2	27	23.6	27.9	24.2	26.4	24.7
14:44:30	26.4	26	25.8	23.6	27.9	24.7	25.7	24.6
14:45:00	25.8	26.5	25.8	24.1	28.4	25.6	25.2	25.2
14:45:30	25.7	26.5	25.8	24.2	27.9	25.1	25	25.6
14:46:00	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
14:46:30	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A

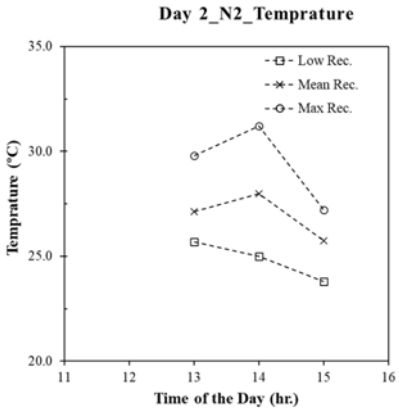
9-2-2 Daily; Low., Mean, and High Record.

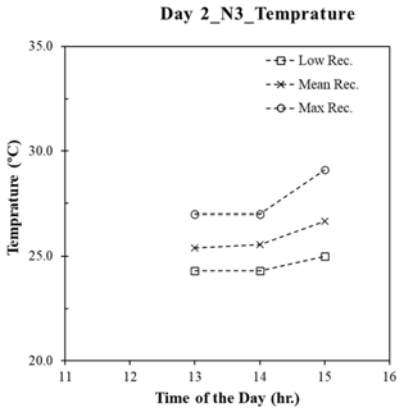
A ***Day 1 – Hourly Low, Mean, and High Record***

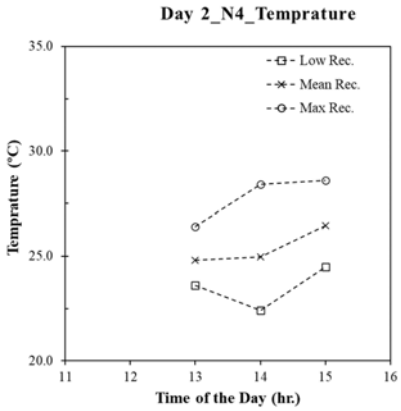


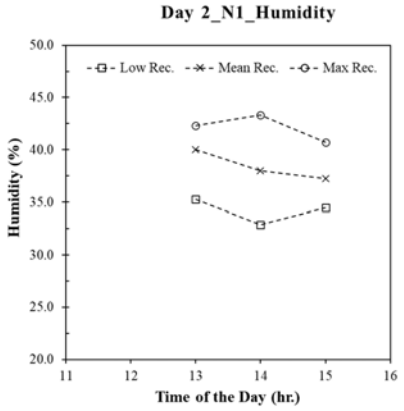
B *Day 2 – Hourly Low, Mean, and High Record*

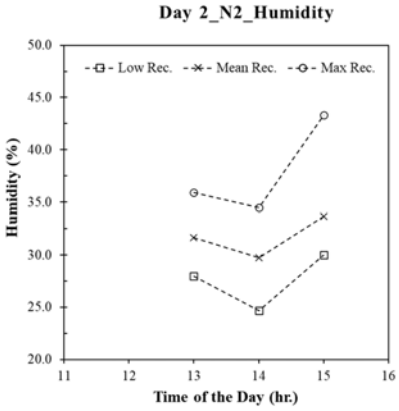


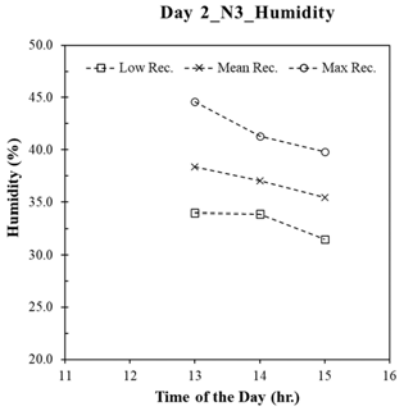


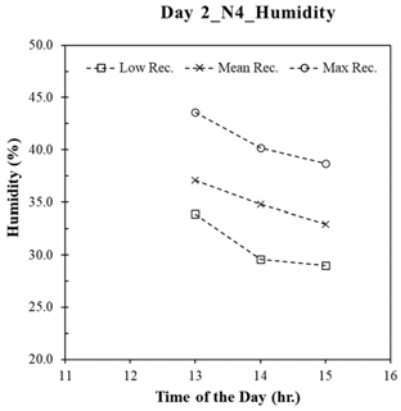




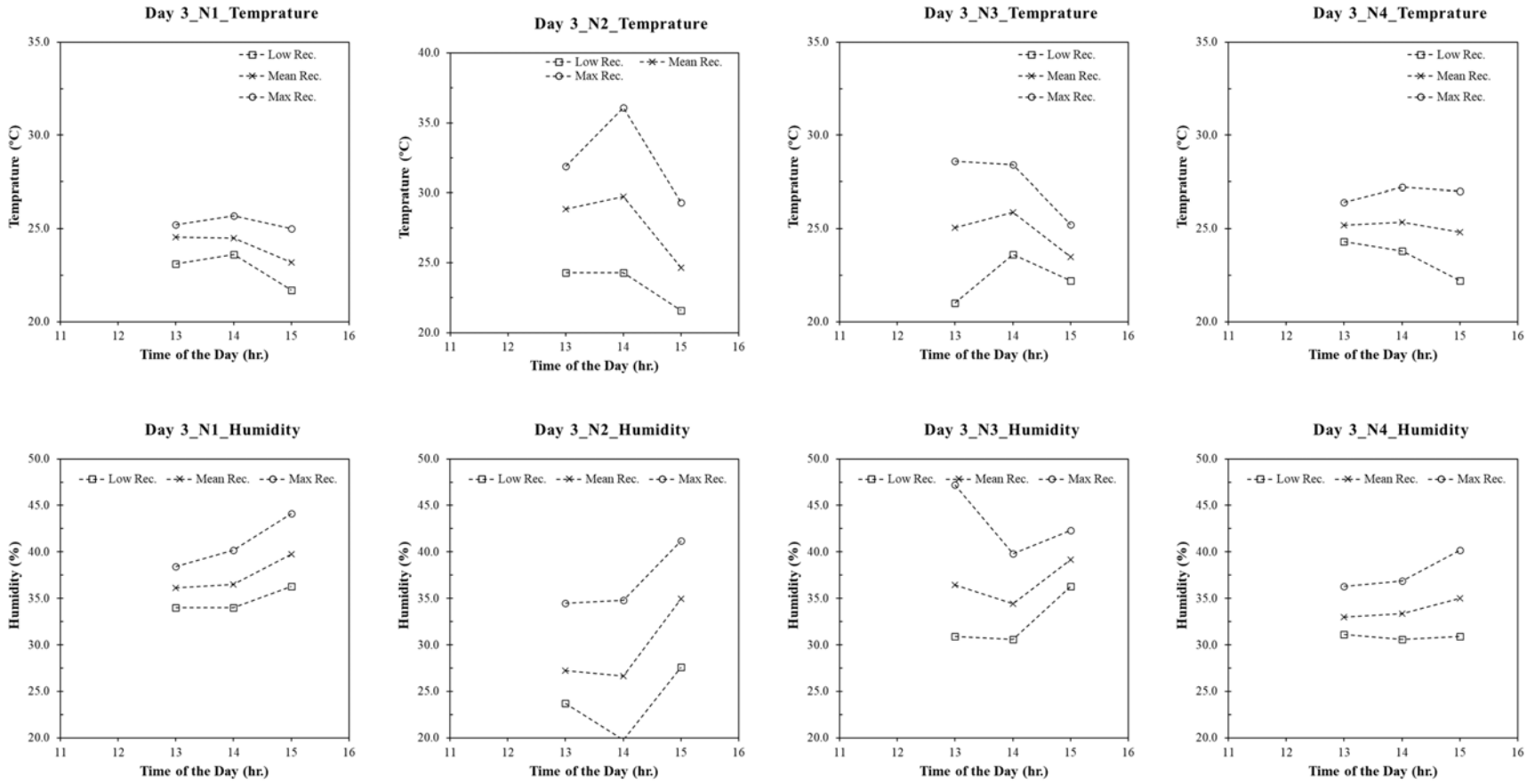




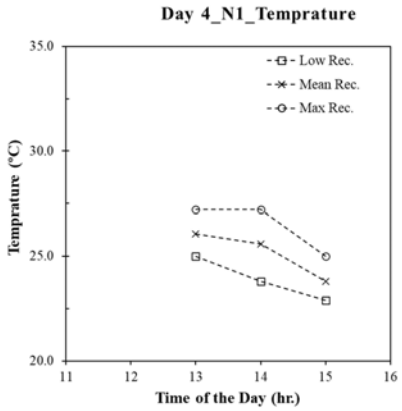


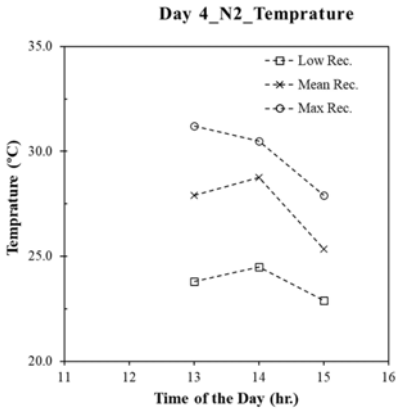


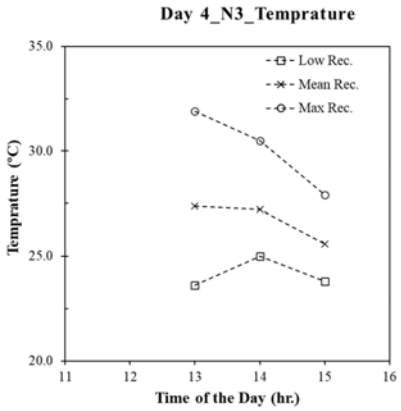
C *Day 3 – Hourly Low, Mean, and High Record*

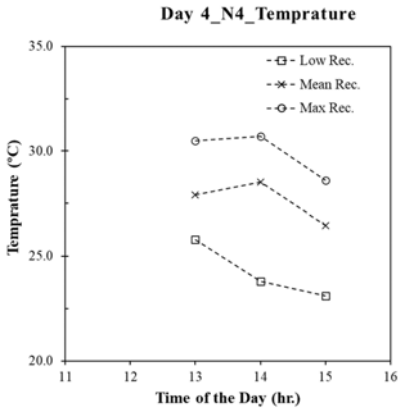


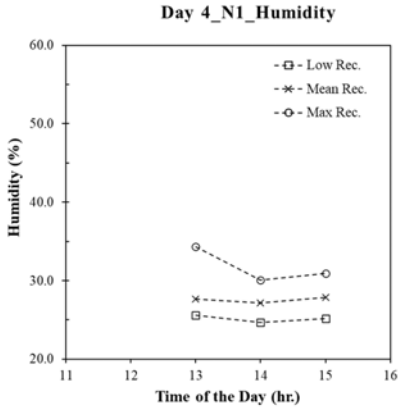
D *Day 4 – Hourly Low, Mean, and High Record*

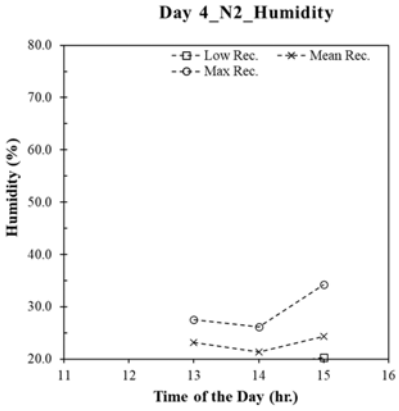


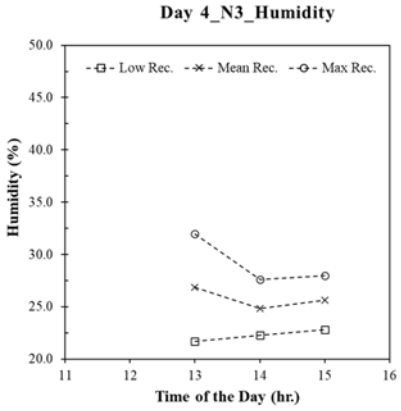


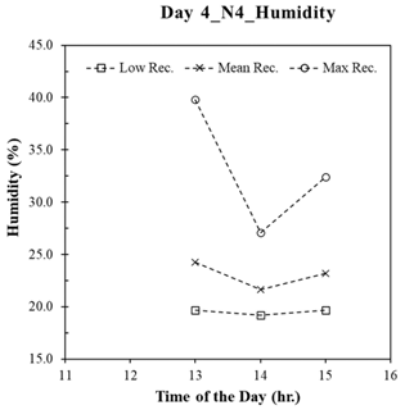




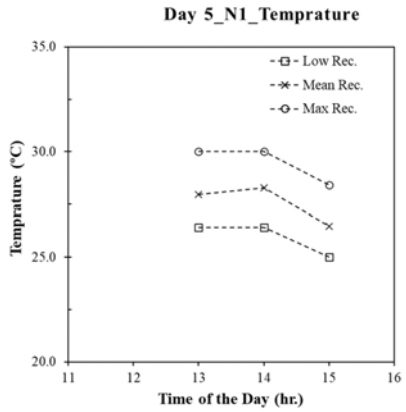


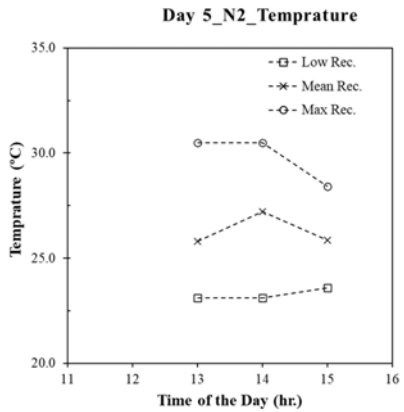


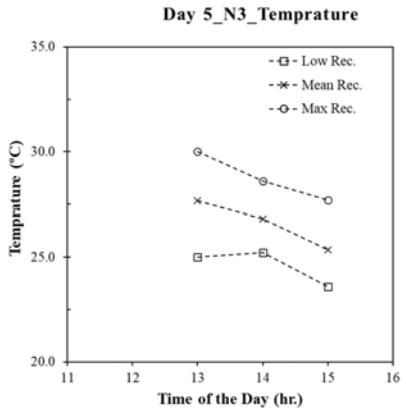


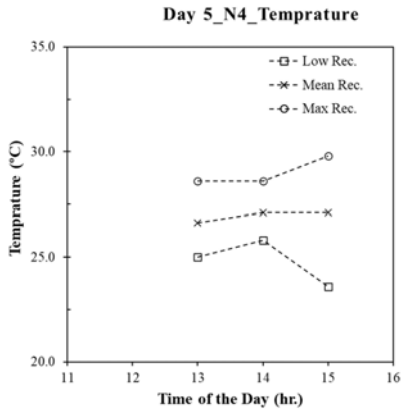


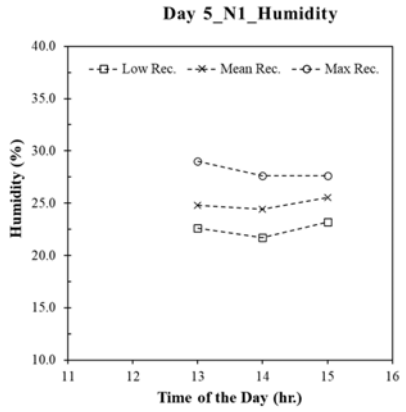
E *Day 5 – Hourly Low, Mean, and High Record*

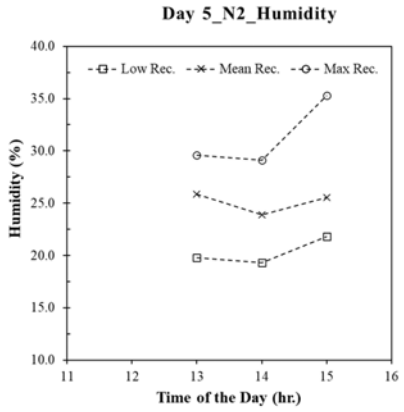


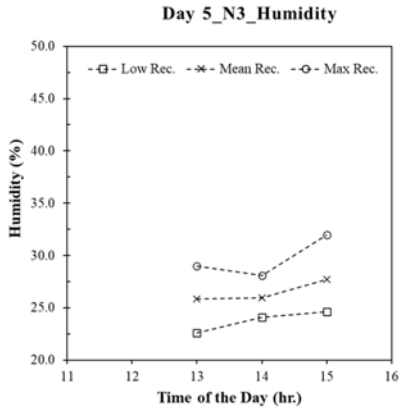


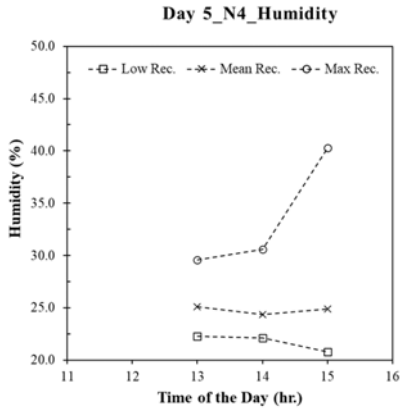




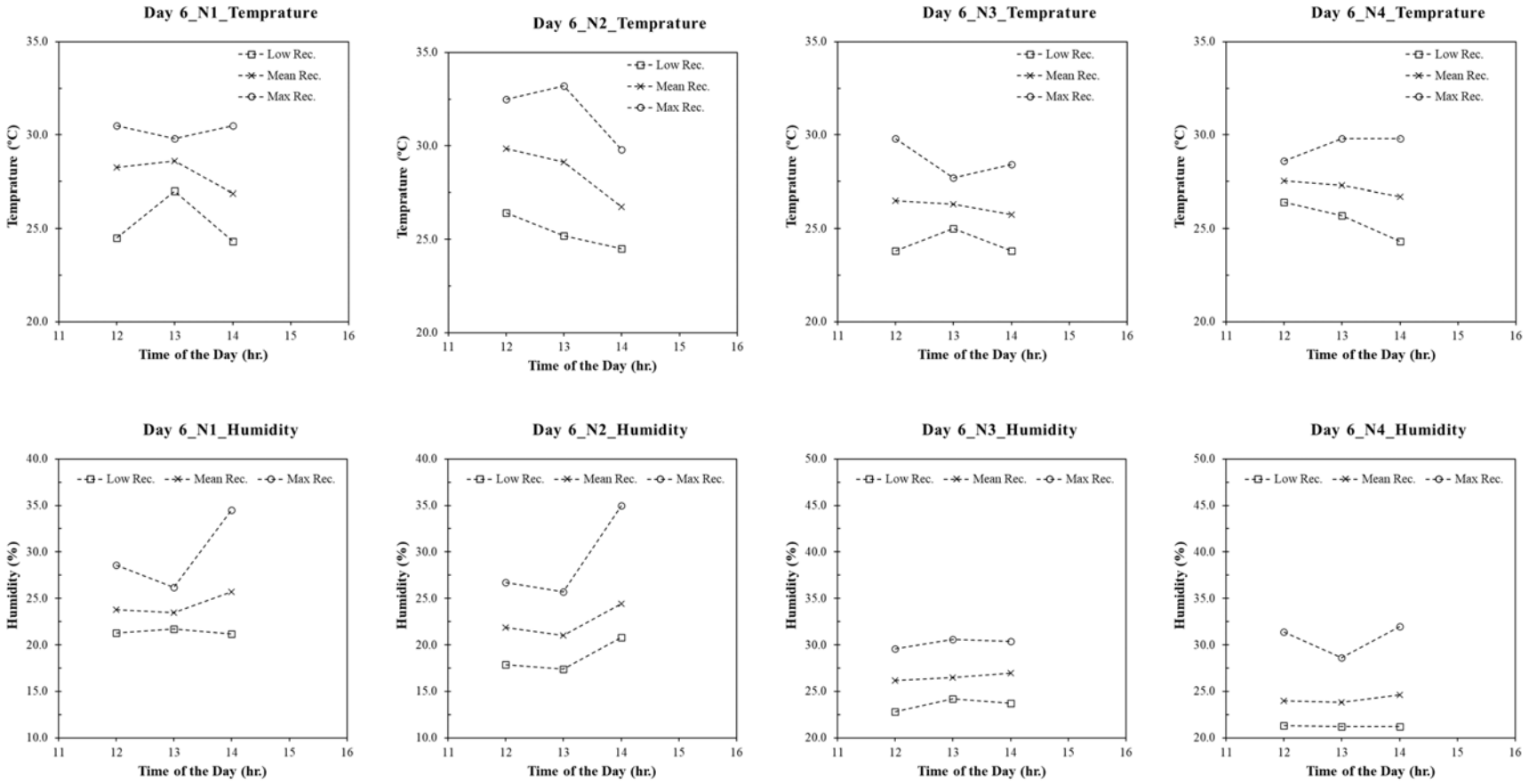




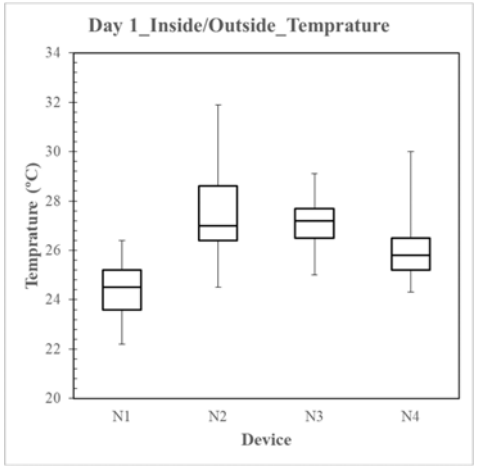


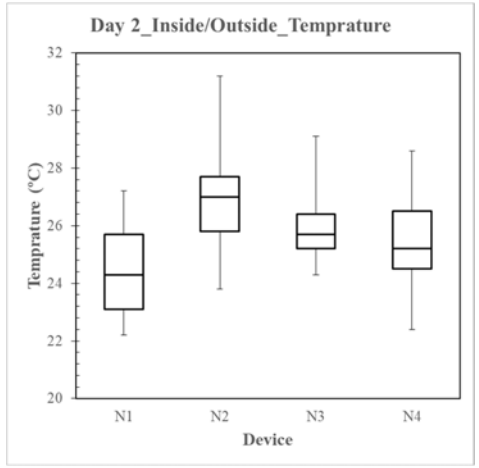


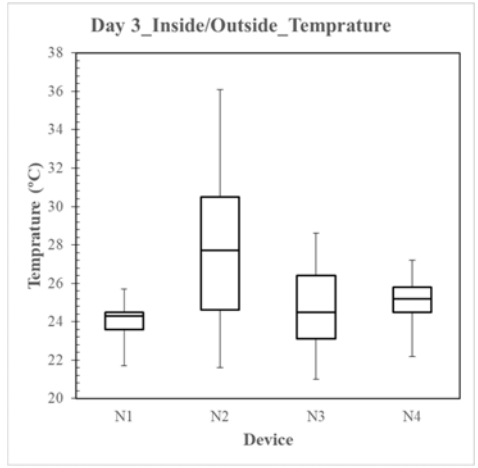
F *Day 6– Hourly Low, Mean, and High Record*

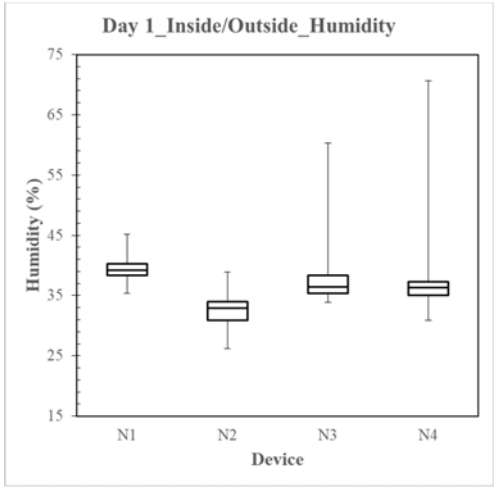


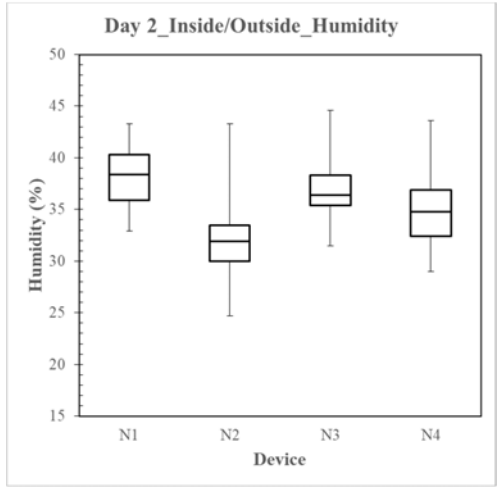
9-2-3 Daily Device comparison box plot

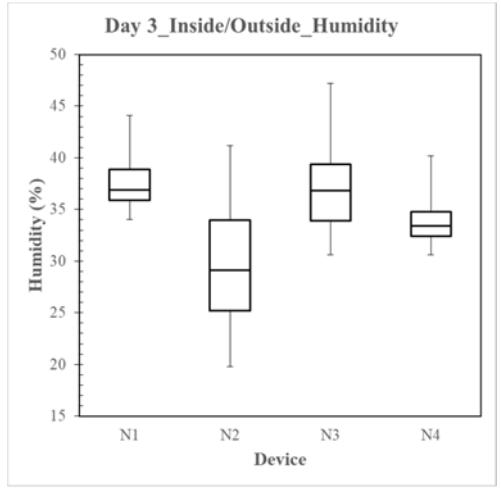


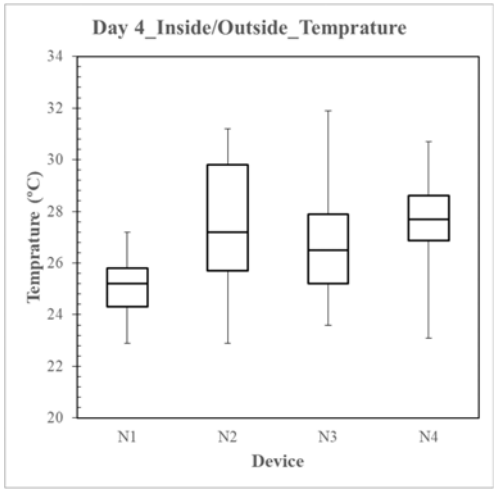


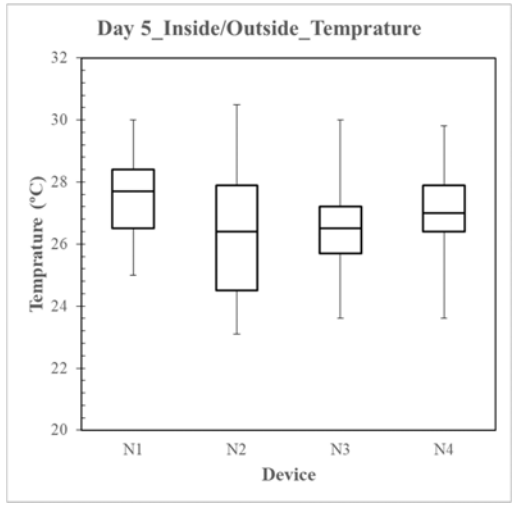


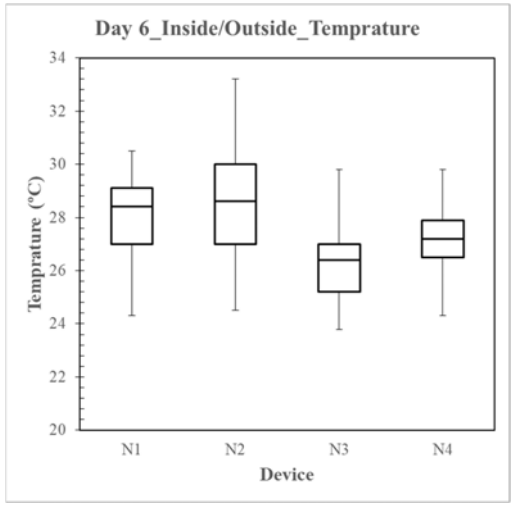


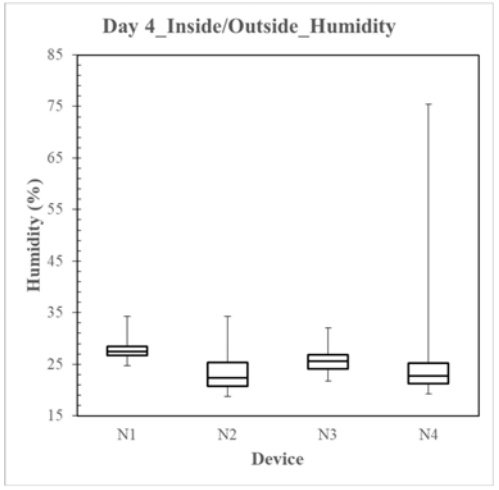


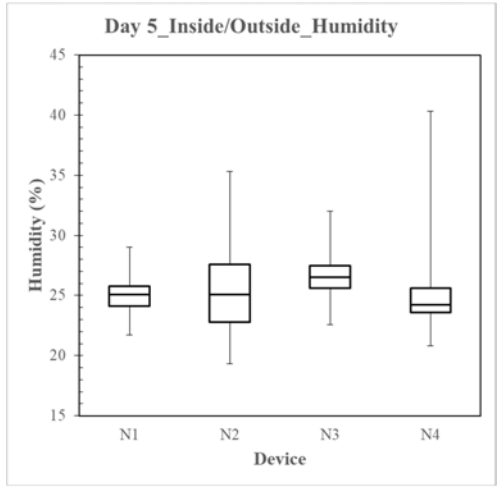


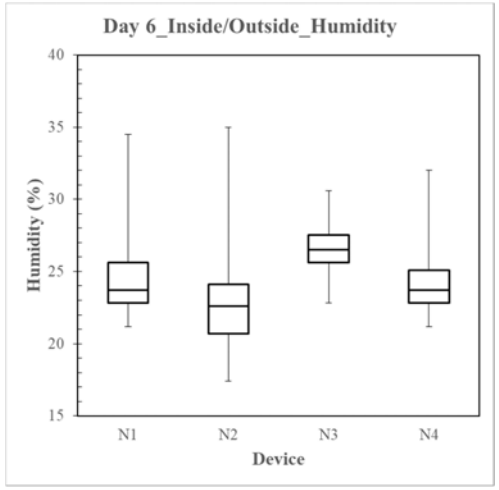

Day 4_Inside/Outside_Temprature
Temprature (°C)
34
32
30
28
26
24
22
20
N1
N2
N3
N4
Device


Day 5_Inside/Outside_Temprature
Temprature (°C)
32
30
28
26
24
22
20
N1
N2
N3
N4
Device


Day 6_Inside/Outside_Temprature
Temprature (°C)
34
32
30
28
26
24
22
20
N1
N2
N3
N4
Device

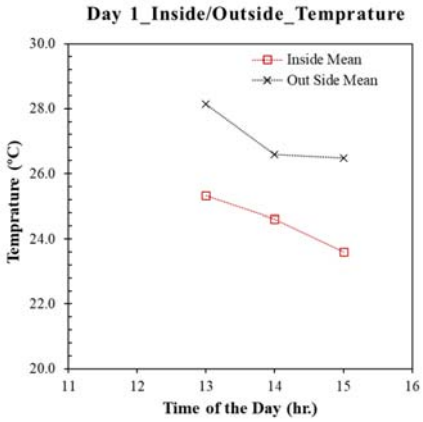

Day 4_Inside/Outside_Humidity
Humidity (%)
85
75
65
55
45
35
25
15
N1
N2
N3
N4
Device

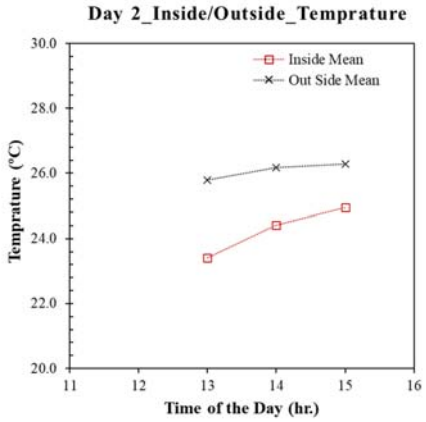

Day 5_Inside/Outside_Humidity
Humidity (%)
45
40
35
30
25
20
15
N1
N2
N3
N4
Device

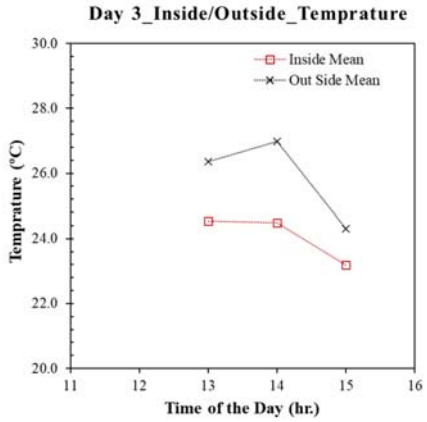

Day 6_Inside/Outside_Humidity
Humidity (%)
40
35
30
25
20
15
N1
N2
N3
N4
Device

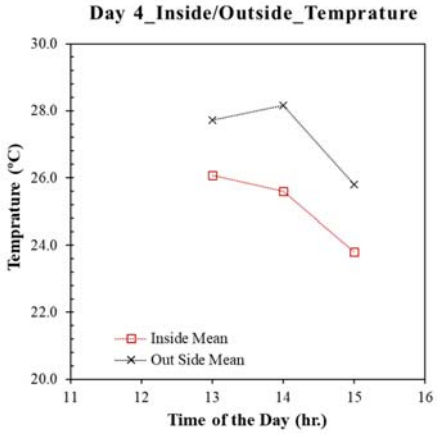
9-2-4 Daily; Inside vs Outside

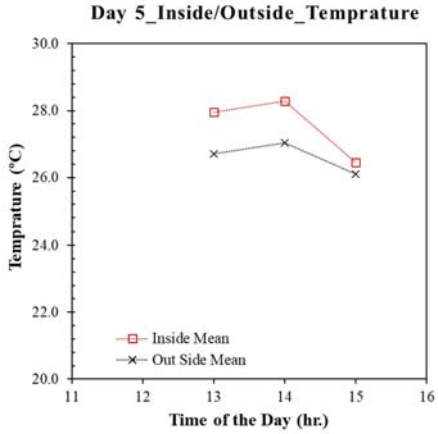
A *Temprature*

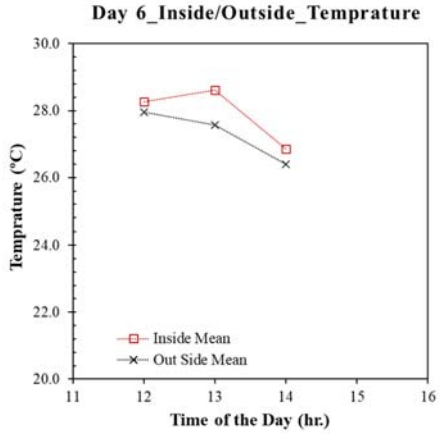




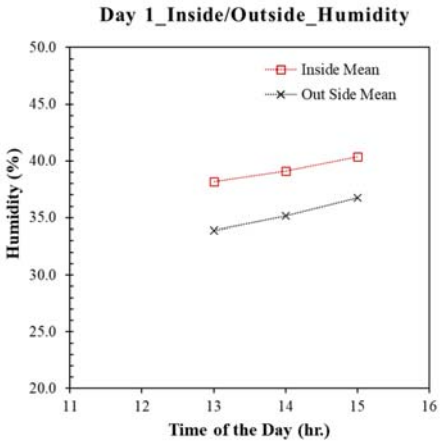


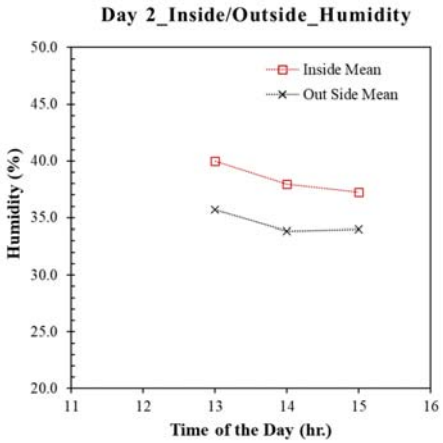


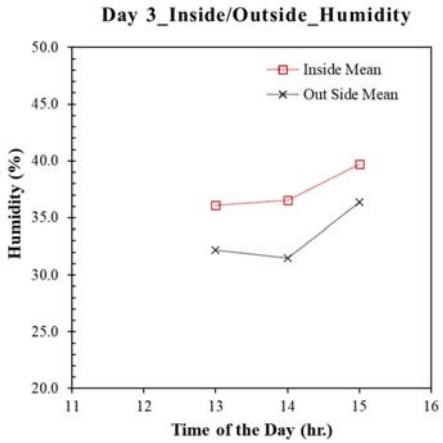


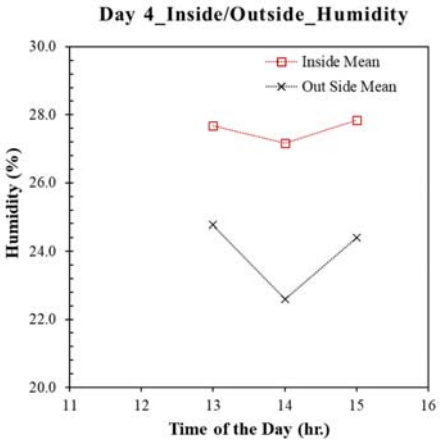


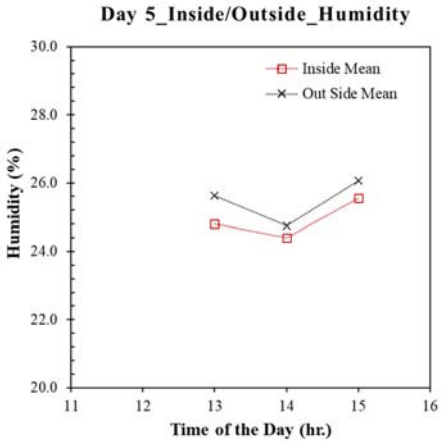
B *Humidity*

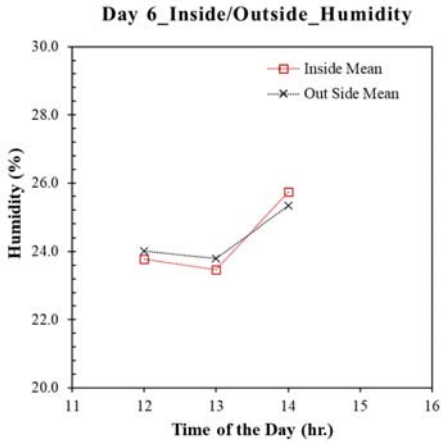

Day 1_Inside/Outside_Humidity
Inside Mean
Out Side Mean
Humidity (%)
Time of the Day (hr.)


Day 2_Inside/Outside_Humidity
Inside Mean
Out Side Mean
Humidity (%)
Time of the Day (hr.)


Day 3_Inside/Outside_Humidity
Inside Mean
Out Side Mean
Humidity (%)
Time of the Day (hr.)

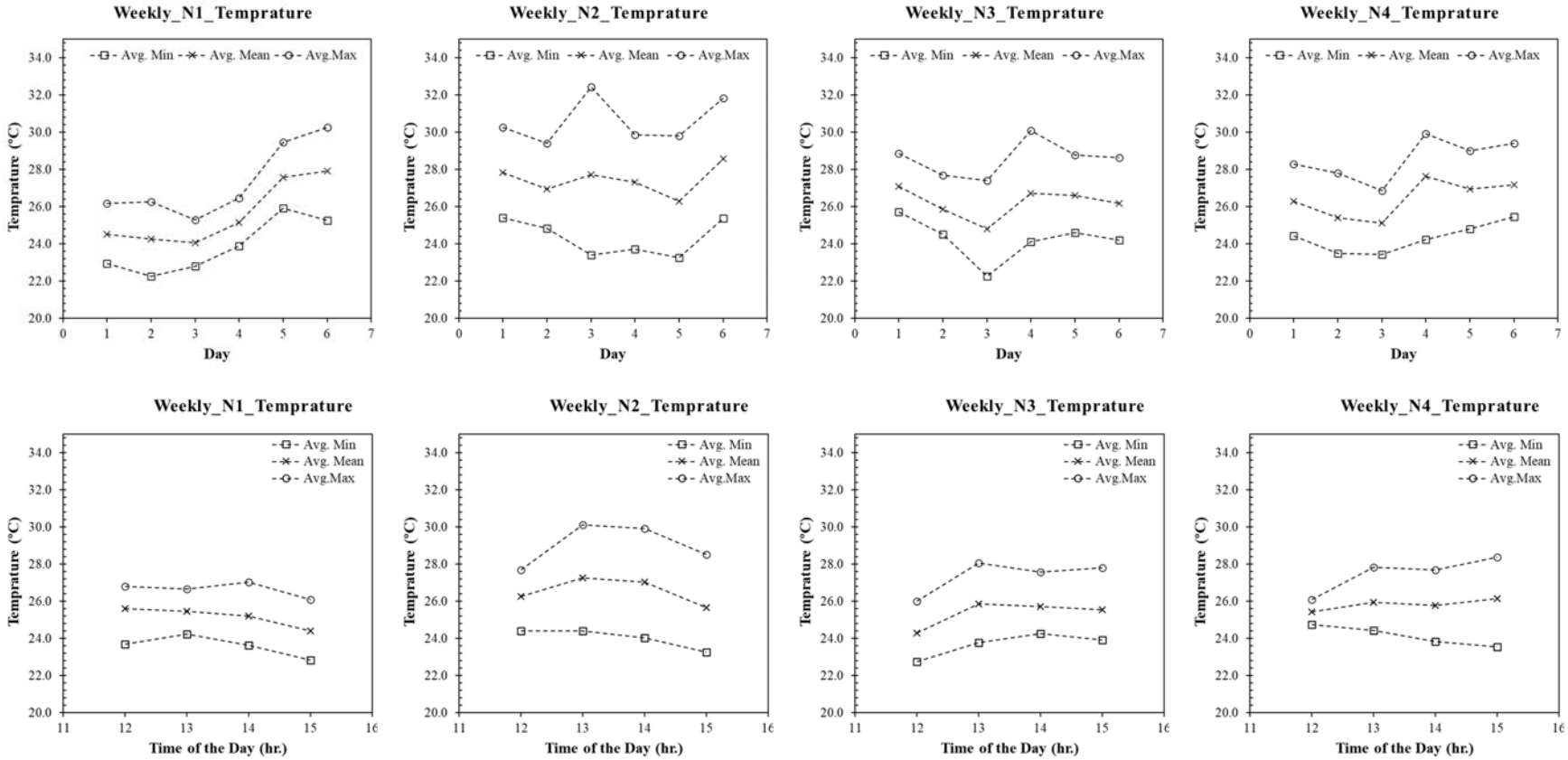

Day 4_Inside/Outside_Humidity
Inside Mean
Out Side Mean
Humidity (%)
Time of the Day (hr.)


Day 5_Inside/Outside_Humidity
Inside Mean
Out Side Mean
Humidity (%)
Time of the Day (hr.)

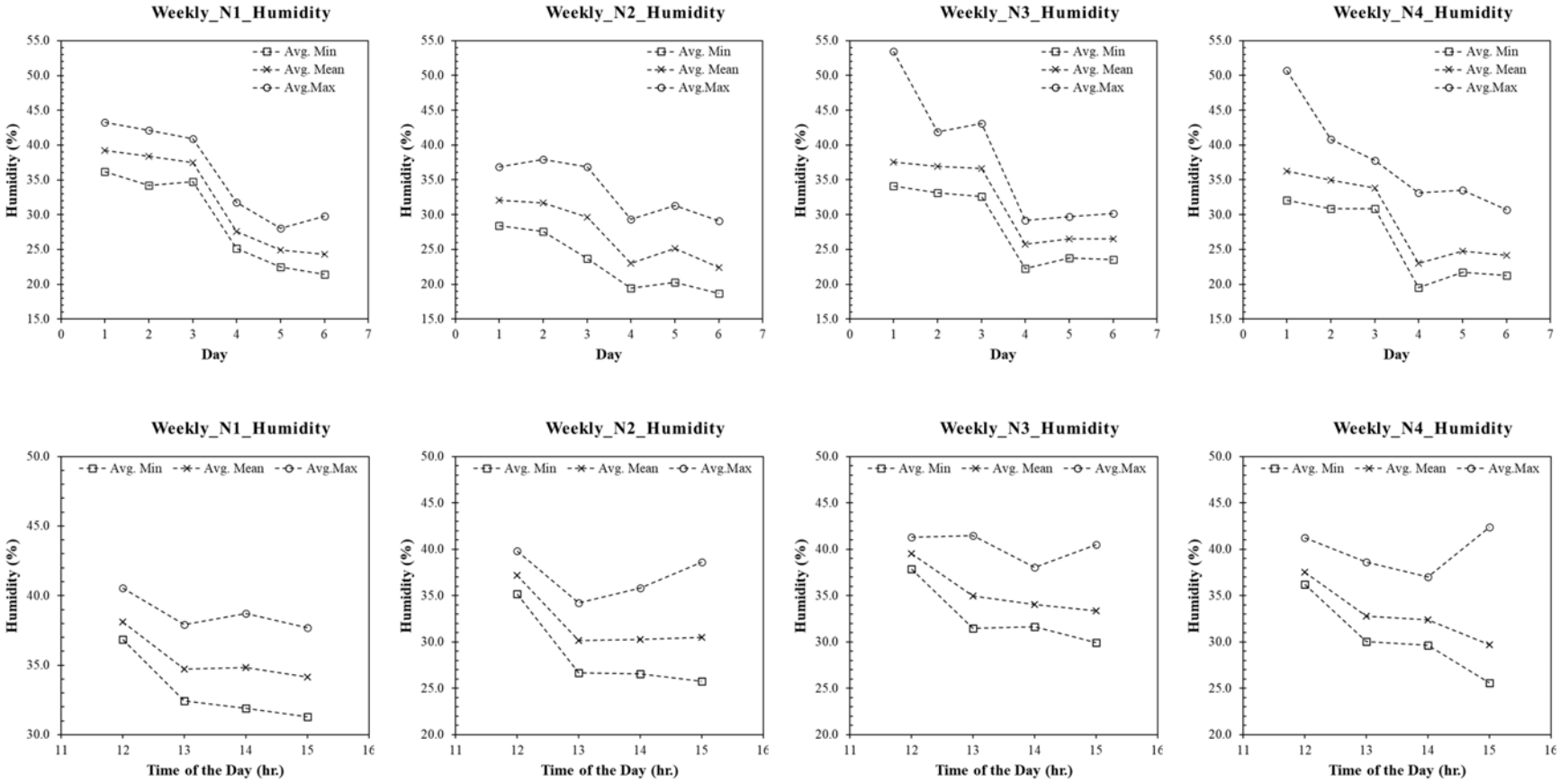

Day 6_Inside/Outside_Humidity
Inside Mean
Out Side Mean
Humidity (%)
Time of the Day (hr.)

9-2-5 Weakly device

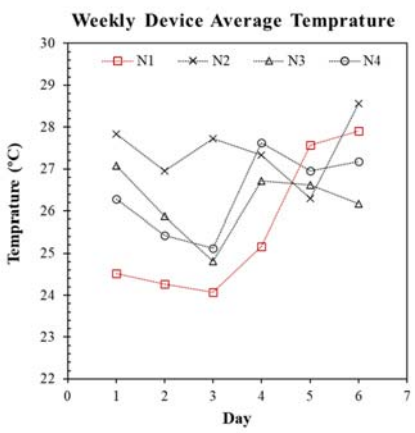
A ***Temprature***

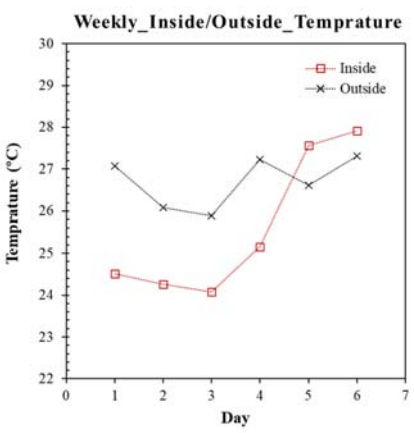


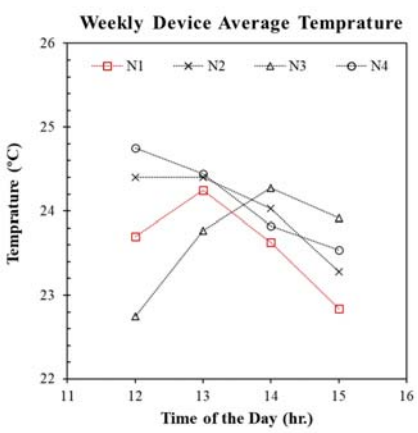
B ***Humidity***

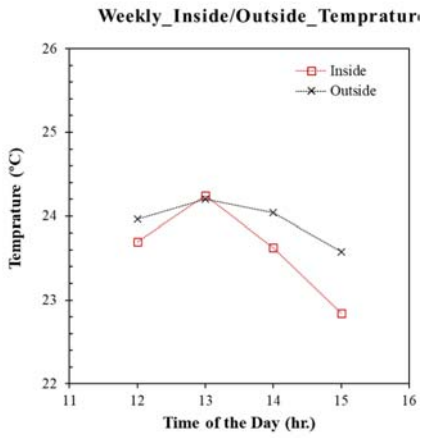

Weekly_N1_Humidity
Weekly_N2_Humidity
Weekly_N3_Humidity
Weekly_N4_Humidity
Avg. Min
Avg. Mean
Avg.Max
Humidity (%)
Day
Time of the Day (hr.)

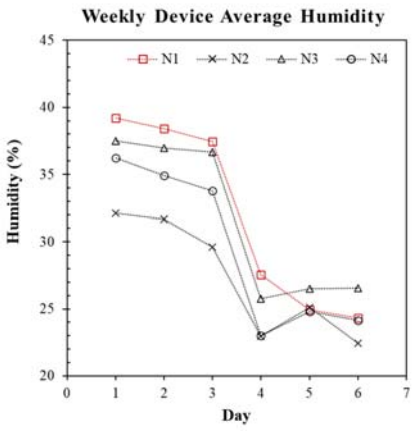
9-2-6 Weakly average comparison

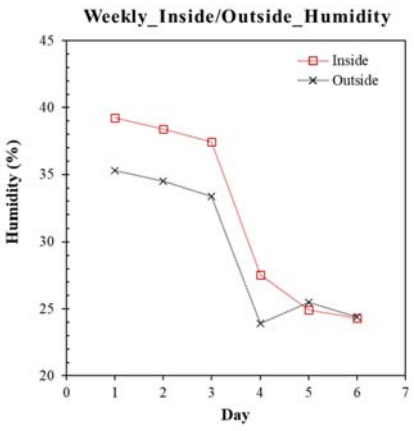


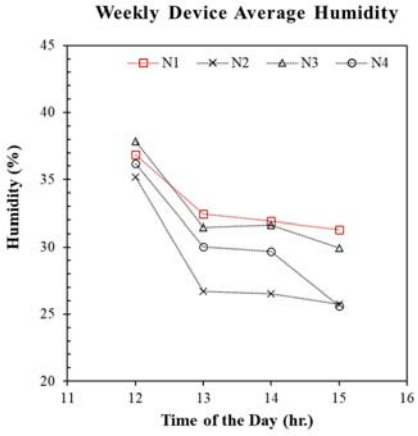


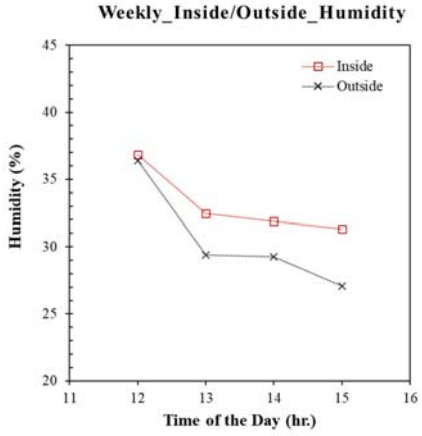












9-2-7 ANOVA Test Result for Day3 and 4

DAY 3 Trip 1 Temprature

Anova: Two-Factor With Replication

SUMMARY	Day 3_N1(Inside	Day 3_N2(C_F.)	Day 3_N3(SP_E	Day 3_N4(B_P.)	Total
A					
Count	6	6	6	6	24
Sum	150.2	187.2	164.7	152.7	654.8
Average	25.03333333	31.2	27.45	25.45	27.28333333
Variance	0.006666667	0	0.131	0.075	6.252753623
AB					
Count	6	6	6	6	24
Sum	150	181.5	160.5	154.5	646.5
Average	25	30.25	26.75	25.75	26.9375
Variance	0	0.131	0.075	0.003	4.264184783
B					
Count	6	6	6	6	24
Sum	146.4	175.5	168	151.3	641.2
Average	24.4	29.25	28	25.21666667	26.71666667
Variance	0.012	0.079	0.356	0.065666667	4.202318841
BC					
Count	6	6	6	6	24
Sum	148	166.6	134	150.4	599
Average	24.66666667	27.76666667	22.33333333	25.06666667	24.95833333
Variance	0.066666667	0.346666667	0.010666667	0.150666667	4.005144928
C					
Count	6	6	6	6	24
Sum	150.1	146	139.6	146.2	581.9
Average	25.01666667	24.33333333	23.26666667	24.36666667	24.24583333
Variance	0.073666667	0.006666667	0.318666667	0.010666667	0.499981884
Total					
Count	30	30	30	30	
Sum	744.7	856.8	766.8	755.1	
Average	24.82333333	28.56	25.56	25.17	
Variance	0.092885057	6.054896552	5.659724138	0.274586207	

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Sample	172.7428333	4	43.18570833	450.1637422	5.48789E-63	2.462614926
Columns	264.523	3	88.17433333	919.1209173	1.25697E-72	2.695534255
Interaction	168.0445	12	14.00370833	145.9733322	1.10919E-57	1.850255114
Within	9.593333333	100	0.095933333			
Total	614.9036667	119				

DAY 4 Trip 1 Temprature

Anova: Two-Factor With Replication

SUMMARY	Day 4_N1(Insid	Day 4_N2(C_F.)	Day 4_N3(SP_E	Day 4_N4(B_P.)	Total
A					
Count	6	6	6	6	24
Sum	152.8	163.4	171	163.6	650.8
Average	25.46666667	27.23333333	28.5	27.26666667	27.11666667
Variance	0.086666667	0.618666667	0.152	0.118666667	1.431014493
AB					
Count	6	6	6	6	24
Sum	160.4	185	175.4	167.2	688
Average	26.73333333	30.83333333	29.23333333	27.86666667	28.66666667
Variance	0.086666667	0.086666667	0.150666667	0.006666667	2.522318841
B					
Count	6	6	6	6	24
Sum	158.4	179.4	156.7	170.5	665
Average	26.4	29.9	26.11666667	28.41666667	27.70833333
Variance	1.51461E-29	0.208	0.121666667	0.129666667	2.591231884
BC					
Count	6	6	6	6	24
Sum	155.2	148.7	147.6	164.2	615.7
Average	25.86666667	24.78333333	24.6	27.36666667	25.65416667
Variance	0.070666667	0.101666667	0.104	0.066666667	1.339112319
C					
Count	6	6	6	6	24
Sum	154	164.2	177.8	175.2	671.2
Average	25.66666667	27.36666667	29.63333333	29.2	27.96666667
Variance	0.198666667	0.318666667	0.710666667	0.404	2.950144928
Total					
Count	30	30	30	30	
Sum	780.8	840.7	828.5	840.7	
Average	26.02666667	28.02333333	27.61666667	28.02333333	
Variance	0.305471264	4.98254023	4.105574713	0.656333333	

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Sample	123.5113333	4	30.87783333	165.0779649	3.96303E-43	2.462614926
Columns	81.24158333	3	27.08052778	144.7769462	2.9556E-36	2.695534255
Interaction	149.2313333	12	12.43594444	66.48460008	4.27572E-42	1.850255114
Within	18.705	100	0.18705			
Total	372.68925	119				

DAY 3 Trip 2 Temprature

Anova: Two-Factor With Replication

SUMMARY	Day 3_N1(Inside	Day 3_N2(C_F.)	Day 3_N3(SP_E	Day 3_N4(B_P.)	Total
C					
Count	6	6	6	6	24
Sum	150.1	146	139.6	146.2	581.9
Average	25.01666667	24.33333333	23.26666667	24.36666667	24.24583333
Variance	0.073666667	0.006666667	0.318666667	0.010666667	0.499981884
BC					
Count	6	6	6	6	24
Sum	147.6	184	154	154.4	640
Average	24.6	30.66666667	25.66666667	25.73333333	26.66666667
Variance	0.244	0.006666667	0.054666667	0.002666667	5.843188406
B					
Count	6	6	6	6	24
Sum	143.8	175.7	145.4	153.2	618.1
Average	23.96666667	29.28333333	24.23333333	25.53333333	25.75416667
Variance	0.066666667	0.129666667	0.118666667	0.066666667	4.781721014
AB					
Count	6	6	6	6	24
Sum	146.2	213.7	161.5	160.3	681.7
Average	24.36666667	35.61666667	26.91666667	26.71666667	28.40416667
Variance	0.150666667	0.121666667	0.137666667	0.097666667	19.25346014
A					
Count	6	6	6	6	24
Sum	150.8	184.3	158.6	147.3	641
Average	25.13333333	30.71666667	26.43333333	24.55	26.70833333
Variance	0.010666667	0.065666667	0.370666667	0.251	6.225144928
Total					
Count	30	30	30	30	
Sum	738.5	903.7	759.1	761.4	
Average	24.61666667	30.12333333	25.30333333	25.38	
Variance	0.282816092	13.51633333	2.097574713	0.829241379	

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Sample	221.5355	4	55.383875	480.5542299	2.48085E-64	2.462614926
Columns	578.3629167	3	192.7876389	1672.777778	2.78322E-85	2.695534255
Interaction	251.9925	12	20.999375	182.2071584	3.07496E-62	1.850255114
Within	11.525	100	0.11525			
Total	1063.415917	119				

DAY 4 Trip 2 Temprature

Anova: Two-Factor With Replication

SUMMARY	Day 4_N1(Insid	Day 4_N2(C_F.)	Day 4_N3(SP_E	Day 4_N4(B_P.)	Total
C					
Count	6	6	6	6	24
Sum	154	164.2	177.8	175.2	671.2
Average	25.66666667	27.36666667	29.63333333	29.2	27.96666667
Variance	0.198666667	0.318666667	0.710666667	0.404	2.950144928
BC					
Count	6	6	6	6	24
Sum	162	166.6	168.4	183.6	680.6
Average	27	27.76666667	28.06666667	30.6	28.35833333
Variance	0	0.150666667	0.066666667	0.012	1.95557971
B					
Count	6	6	6	6	24
Sum	155.3	154.6	172.6	177.8	660.3
Average	25.88333333	25.76666667	28.76666667	29.63333333	27.5125
Variance	0.065666667	0.146666667	0.066666667	0.066666667	3.146358696
AB					
Count	6	6	6	6	24
Sum	149.4	175	166.4	172.1	662.9
Average	24.9	29.16666667	27.73333333	28.68333333	27.62083333
Variance	0.104	0.346666667	0.006666667	0.041666667	2.960851449
A					
Count	6	6	6	6	24
Sum	151.2	179.4	159.9	182	672.5
Average	25.2	29.9	26.65	30.33333333	28.02083333
Variance	0	0.012	0.271	0.066666667	4.958242754
Total					
Count	30	30	30	30	
Sum	771.9	839.8	845.1	890.7	
Average	25.73	27.99333333	28.17	29.69	
Variance	0.603551724	2.322712644	1.229758621	0.618862069	

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Sample	10.97083333	4	2.742708333	17.95161994	3.8763E-11	2.462614926
Columns	239.83625	3	79.94541667	523.2600633	5.74211E-61	2.695534255
Interaction	112.2225	12	9.351875	61.21004691	1.57843E-40	1.850255114
Within	15.27833333	100	0.152783333			
Total	378.3079167	119				

DAY 3 Trip 3 Temprature

Anova: Two-Factor With Replication

SUMMARY	Day 3_N1(Insid	Day 3_N2(C_F.)	Day 3_N3(SP_E	Day 3_N4(B_P.)	Total
A					
Count	6	6	6	6	24
Sum	150.8	184.3	158.6	147.3	641
Average	25.13333333	30.71666667	26.43333333	24.55	26.70833333
Variance	0.010666667	0.065666667	0.370666667	0.251	6.225144928
AB					
Count	6	6	6	6	24
Sum	154.2	161.5	154.2	150.8	620.7
Average	25.7	26.91666667	25.7	25.13333333	25.8625
Variance	0	0.137666667	0	0.010666667	0.474619565
B					
Count	6	6	6	6	24
Sum	147.3	150.6	149	147.8	594.7
Average	24.55	25.1	24.83333333	24.63333333	24.77916667
Variance	0.055	0.152	0.066666667	0.142666667	0.137373188
BC					
Count	6	6	6	6	24
Sum	141.1	137.8	140.6	158.4	577.9
Average	23.51666667	22.96666667	23.43333333	26.4	24.07916667
Variance	0.041666667	0.010666667	0.066666667	1.51461E-29	1.945199275
C					
Count	6	6	6	6	24
Sum	142	133.6	136.9	157.2	569.7
Average	23.66666667	22.26666667	22.81666667	26.2	23.7375
Variance	0.010666667	0.010666667	0.041666667	0.096	2.403315217
Total					
Count	30	30	30	30	
Sum	735.4	767.8	739.3	761.5	
Average	24.51333333	25.59333333	24.64333333	25.38333333	
Variance	0.745333333	9.625471264	1.988747126	0.711091954	

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Sample	147.5366667	4	36.88416667	478.8078754	2.94893E-64	2.462614926
Columns	25.758	3	8.586	111.4582432	9.04483E-32	2.695534255
Interaction	223.8086667	12	18.65072222	242.1123612	3.7555E-68	1.850255114
Within	7.703333333	100	0.077033333			
Total	404.8066667	119				

DAY 4 Trip 3 Temprature

Anova: Two-Factor With Replication

SUMMARY	Day 4_N1(Insid	Day 4_N2(C_F.)	Day 4_N3(SP_E	Day 4_N4(B_P.)	Total
A					
Count	6	6	6	6	24
Sum	151.2	179.4	159.9	182	672.5
Average	25.2	29.9	26.65	30.33333333	28.02083333
Variance	0	0.012	0.271	0.066666667	4.958242754
AB					
Count	6	6	6	6	24
Sum	154.2	182.5	151.2	163.5	651.4
Average	25.7	30.41666667	25.2	27.25	27.14166667
Variance	0	0.041666667	0	0.111	4.359927536
B					
Count	6	6	6	6	24
Sum	149.2	175.9	164	145.4	634.5
Average	24.86666667	29.31666667	27.33333333	24.23333333	26.4375
Variance	0.086666667	0.205666667	0.086666667	0.314666667	4.43375
BC					
Count	6	6	6	6	24
Sum	142.9	149.2	151	162.2	605.3
Average	23.81666667	24.86666667	25.16666667	27.03333333	25.22083333
Variance	0.065666667	0.086666667	0.006666667	0.006666667	1.440851449
C					
Count	6	6	6	6	24
Sum	143.8	141.6	165.6	171.2	622.2
Average	23.96666667	23.6	27.6	28.53333333	25.925
Variance	0.122666667	1.51461E-29	0.16	0.010666667	4.981086957
Total					
Count	30	30	30	30	
Sum	741.3	828.6	791.7	824.3	
Average	24.71	27.62	26.39	27.47666667	
Variance	0.58437931	8.260965517	1.194034483	4.234954023	

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Sample	112.4011667	4	28.10029167	339.5805639	3.05261E-57	2.462614926
Columns	162.44425	3	54.14808333	654.3575025	1.47529E-65	2.695534255
Interaction	293.2795	12	24.43995833	295.3469285	2.52532E-72	1.850255114
Within	8.275	100	0.08275			
Total	576.3999167	119				

Annex

DAY 3 Trip 4 Temprature

Anova: Two-Factor With Replication

SUMMARY	Day 3_N1(Inside	Day 3_N2(C_F.)	Day 3_N3(SP_E	Day 3_N4(B_P.)	Total
C					
Count	6	6	6	6	24
Sum	142	133.6	136.9	157.2	569.7
Average	23.66666667	22.26666667	22.81666667	26.2	23.7375
Variance	0.010666667	0.010666667	0.041666667	0.096	2.403315217
BC					
Count	6	6	6	6	24
Sum	139	129.8	151.2	154.6	574.6
Average	23.16666667	21.63333333	25.2	25.76666667	23.94166667
Variance	0.118666667	0.002666667	0	0.002666667	2.85557971
B					
Count	6	6	6	6	24
Sum	140.5	153.2	145.2	145.9	584.8
Average	23.41666667	25.53333333	24.2	24.31666667	24.36666667
Variance	0.125666667	0.066666667	0.104	0.073666667	0.67884058
AB					
Count	6	6	6	6	24
Sum	136.9	164	140.1	137.6	578.6
Average	22.81666667	27.33333333	23.35	22.93333333	24.10833333
Variance	0.041666667	0.086666667	0.187	0.006666667	3.728623188
A					
Count	6	6	6	6	24
Sum	136.9	164	140.1	137.6	578.6
Average	22.81666667	27.33333333	23.35	22.93333333	24.10833333
Variance	0.041666667	0.086666667	0.187	0.006666667	3.728623188
Total					
Count	30	30	30	30	
Sum	695.3	744.6	713.5	732.9	
Average	23.17666667	24.82	23.78333333	24.43	
Variance	0.173574713	6.212689655	0.811781609	1.979413793	

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Sample	5.194666667	4	1.298666667	20.02570033	3.89204E-12	2.462614926
Columns	47.13291667	3	15.71097222	242.2663411	1.01805E-45	2.695534255
Interaction	254.4666667	12	21.20555556	326.9939176	1.80036E-74	1.850255114
Within	6.485	100	0.06485			
Total	313.27925	119				

DAY 4 Trip 4 Temprature

Anova: Two-Factor With Replication

SUMMARY	Day 4_N1(Insid	Day 4_N2(C_F.)	Day 4_N3(SP_E	Day 4_N4(B_P.)	Total
C					
Count	6	6	6	6	24
Sum	143.8	141.6	165.6	171.2	622.2
Average	23.96666667	23.6	27.6	28.53333333	25.925
Variance	0.122666667	1.51461E-29	0.16	0.010666667	4.981086957
BC					
Count	6	6	6	6	24
Sum	147.5	138	157.9	170.4	613.8
Average	24.58333333	23	26.31666667	28.4	25.575
Variance	0.041666667	0.012	0.237666667	1.51461E-29	4.275
B					
Count	6	6	6	6	24
Sum	144.8	158.7	145.7	159.1	608.3
Average	24.13333333	26.45	24.28333333	26.51666667	25.34583333
Variance	0.066666667	0.147	0.065666667	0.057666667	1.426938406
AB					
Count	6	6	6	6	24
Sum	138.6	166.2	149.2	144.5	598.5
Average	23.1	27.7	24.86666667	24.08333333	24.9375
Variance	1.51461E-29	0	0.142666667	0.157666667	3.128532609
A					
Count	6	6	6	6	24
Sum	142.2	157.4	151.3	146.6	597.5
Average	23.7	26.23333333	25.21666667	24.43333333	24.89583333
Variance	0.012	0.114666667	0.065666667	0.010666667	0.966503623
Total					
Count	30	30	30	30	
Sum	716.9	761.9	769.7	791.8	
Average	23.89666667	25.39666667	25.65666667	26.39333333	
Variance	0.291367816	3.375505747	1.546678161	3.723402299	

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Sample	18.1605	4	4.540125	63.72105263	1.15564E-26	2.462614926
Columns	98.88425	3	32.96141667	462.6163743	1.82991E-58	2.695534255
Interaction	233.8861667	12	19.49051389	273.5510721	1.03501E-70	1.850255114
Within	7.125	100	0.07125			
Total	358.0559167	119				

DAY 3 Trip 1 Humidity

Anova: Two-Factor With Replication

SUMMARY	Day 3_N1(Insid	Day 3_N2(C_F.)	Day 3_N3(SP_E	Day 3_N4(B_P.)	Total
A					
Count	6	6	6	6	24
Sum	211.5	146	197.1	202.6	757.2
Average	35.25	24.33333333	32.85	33.76666667	31.55
Variance	0.763	0.062666667	0.351	0.226666667	19.18521739
AB					
Count	6	6	6	6	24
Sum	218	157.9	197.8	199.1	772.8
Average	36.33333333	26.31666667	32.96666667	33.18333333	32.2
Variance	0.162666667	0.353666667	0.302666667	0.457666667	14.16956522
B					
Count	6	6	6	6	24
Sum	218	156	190.2	192.6	756.8
Average	36.33333333	26	31.7	32.1	31.53333333
Variance	0.402666667	0.32	0.532	0.436	14.45623188
BC					
Count	6	6	6	6	24
Sum	211.1	169.3	246.5	201.6	828.5
Average	35.18333333	28.21666667	41.08333333	33.6	34.52083333
Variance	0.453666667	0.929666667	0.449666667	0.22	22.38432971
C					
Count	6	6	6	6	24
Sum	211.9	202.3	235.3	207.4	856.9
Average	35.31666667	33.71666667	39.21666667	34.56666667	35.70416667
Variance	0.289666667	0.477666667	1.845666667	0.406666667	5.282155797
Total					
Count	30	30	30	30	
Sum	1070.5	831.5	1066.9	1003.3	
Average	35.68333333	27.71666667	35.56333333	33.44333333	
Variance	0.650402299	11.25316092	15.67205747	0.976333333	

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Sample	347.2171667	4	86.80429167	183.8424815	3.62587E-45	2.462614926
Columns	1255.193	3	418.3976667	886.122838	7.32323E-72	2.695534255
Interaction	433.5728333	12	36.13106944	76.52185551	8.48454E-45	1.850255114
Within	47.21666667	100	0.472166667			
Total	2083.199667	119				

DAY 4 Trip 1 Humidity

Anova: Two-Factor With Replication

SUMMARY	Day 4_N1(Insid	Day 4_N2(C_F.)	Day 4_N3(SP_E	Day 4_N4(B_P.)	Total
A					
Count	6	6	6	6	24
Sum	184.8	149.9	156.6	155.1	646.4
Average	30.8	24.98333333	26.1	25.85	26.93333333
Variance	3.624	0.653666667	0.668	6.275	7.81884058
AB					
Count	6	6	6	6	24
Sum	161.2	124.8	139.5	135.8	561.3
Average	26.86666667	20.8	23.25	22.63333333	23.3875
Variance	0.574666667	0.34	0.095	0.006666667	5.278532609
B					
Count	6	6	6	6	24
Sum	175.5	125.4	170.4	133.2	604.5
Average	29.25	20.9	28.4	22.2	25.1875
Variance	1.335	0.256	0.256	0.728	14.6811413
BC					
Count	6	6	6	6	24
Sum	163.1	155.4	186.1	132.5	637.1
Average	27.18333333	25.9	31.01666667	22.08333333	26.54583333
Variance	0.249666667	0.432	0.209666667	0.073666667	10.83389493
C					
Count	6	6	6	6	24
Sum	169	140	144.9	138	591.9
Average	28.16666667	23.33333333	24.15	23	24.6625
Variance	0.666666667	0.226666667	0.683	0.68	4.944184783
Total					
Count	30	30	30	30	
Sum	853.6	695.5	797.5	694.6	
Average	28.45333333	23.18333333	26.58333333	23.15333333	
Variance	3.254298851	4.784885057	8.651091954	3.328781609	

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Sample	198.893	4	49.72325	55.14593346	1.78637E-24	2.462614926
Columns	620.142	3	206.714	229.257671	1.13831E-44	2.695534255
Interaction	291.493	12	24.29108333	26.94020333	4.34466E-26	1.850255114
Within	90.16666667	100	0.901666667			
Total	1200.694667	119				

DAY 3 Trip 2 Humidity

Anova: Two-Factor With Replication

SUMMARY	Day 3_N1(Inside	Day 3_N2(C_F.)	Day 3_N3(SP_E	Day 3_N4(B_P.)	Total
C					
Count	6	6	6	6	24
Sum	211.9	202.3	235.3	207.4	856.9
Average	35.31666667	33.71666667	39.21666667	34.56666667	35.70416667
Variance	0.289666667	0.477666667	1.845666667	0.406666667	5.282155797
BC					
Count	6	6	6	6	24
Sum	208.7	149.9	206.9	201.3	766.8
Average	34.78333333	24.98333333	34.48333333	33.55	31.95
Variance	0.793666667	0.069666667	0.449666667	0.651	17.52434783
B					
Count	6	6	6	6	24
Sum	226.3	165.3	223.7	201.3	816.6
Average	37.71666667	27.55	37.28333333	33.55	34.025
Variance	0.561666667	0.523	1.537666667	0.859	18.0776087
AB					
Count	6	6	6	6	24
Sum	214.5	121.4	197.6	187	720.5
Average	35.75	20.23333333	32.93333333	31.16666667	30.02083333
Variance	2.487	0.082666667	0.742666667	0.198666667	36.87128623
A					
Count	6	6	6	6	24
Sum	221	150.3	194.8	206.4	772.5
Average	36.83333333	25.05	32.46666667	34.4	32.1875
Variance	1.766666667	0.151	0.602666667	0.272	20.82461957
Total					
Count	30	30	30	30	
Sum	1082.4	789.2	1058.3	1003.4	
Average	36.08	26.30666667	35.27666667	33.44666667	
Variance	2.179586207	20.22547126	7.837712644	1.939126437	

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Sample	450.0888333	4	112.5222083	152.3830832	1.24274E-41	2.462614926
Columns	1784.15425	3	594.7180833	805.3963435	7.23407E-70	2.695534255
Interaction	409.3445	12	34.11204167	46.19619682	2.50245E-35	1.850255114
Within	73.84166667	100	0.738416667			
Total	2717.42925	119				

DAY 4 Trip 2 Humidity

Anova: Two-Factor With Replication

SUMMARY	Day 4_N1(Insid	Day 4_N2(C_F.)	Day 4_N3(SP_E	Day 4_N4(B_P.)	Total
C					
Count	6	6	6	6	24
Sum	169	140	144.9	138	591.9
Average	28.16666667	23.33333333	24.15	23	24.6625
Variance	0.666666667	0.226666667	0.683	0.68	4.944184783
BC					
Count	6	6	6	6	24
Sum	153.5	135.9	144.2	121.1	554.7
Average	25.58333333	22.65	24.03333333	20.18333333	23.1125
Variance	0.357666667	0.039	0.046666667	0.117666667	4.229836957
B					
Count	6	6	6	6	24
Sum	169.5	149	140.8	138.1	597.4
Average	28.25	24.83333333	23.46666667	23.01666667	24.89166667
Variance	1.059	0.042666667	0.042666667	7.773666667	6.328623188
AB					
Count	6	6	6	6	24
Sum	161.3	131.6	145.3	138.9	577.1
Average	26.88333333	21.93333333	24.21666667	23.15	24.04583333
Variance	0.381666667	0.214666667	0.237666667	2.027	4.103460145
A					
Count	6	6	6	6	24
Sum	162.7	119.2	148.3	116.4	546.6
Average	27.11666667	19.86666667	24.71666667	19.4	22.775
Variance	0.597666667	0.126666667	0.037666667	0.056	11.25673913
Total					
Count	30	30	30	30	
Sum	816	675.7	723.5	652.5	
Average	27.2	22.52333333	24.11666667	21.75	
Variance	1.512413793	2.887367816	0.346264368	4.548103448	

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Sample	83.32383333	4	20.83095833	27.02803668	3.28157E-15	2.462614926
Columns	523.6389167	3	174.5463056	226.4727274	1.93846E-44	2.695534255
Interaction	109.1348333	12	9.094569444	11.80014633	1.80686E-14	1.850255114
Within	77.07166667	100	0.770716667			
Total	793.16925	119				

DAY 3 Trip 3 Humidity

Anova: Two-Factor With Replication

SUMMARY	Day 3_N1(Inside	Day 3_N2(C_F.)	Day 3_N3(SP_E	Day 3_N4(B_P.)	Total
A					
Count	6	6	6	6	24
Sum	221	150.3	194.8	206.4	772.5
Average	36.83333333	25.05	32.46666667	34.4	32.1875
Variance	1.766666667	0.151	0.602666667	0.272	20.82461957
AB					
Count	6	6	6	6	24
Sum	212.6	175.9	205.6	194.2	788.3
Average	35.43333333	29.31666667	34.26666667	32.36666667	32.84583333
Variance	0.118666667	0.257666667	0.050666667	0.134666667	5.70432971
B					
Count	6	6	6	6	24
Sum	218.2	198.7	214.8	205.3	837
Average	36.36666667	33.11666667	35.8	34.21666667	34.875
Variance	1.942666667	0.149666667	0.04	0.145666667	2.218478261
BC					
Count	6	6	6	6	24
Sum	226	218.9	229.8	195	869.7
Average	37.66666667	36.48333333	38.3	32.5	36.2375
Variance	0.322666667	0.081666667	0.064	0.4	5.491141304
C					
Count	6	6	6	6	24
Sum	236	227.7	240.4	196.2	900.3
Average	39.33333333	37.95	40.06666667	32.7	37.5125
Variance	2.486666667	0.131	0.042666667	0.248	9.290706522
Total					
Count	30	30	30	30	
Sum	1113.8	971.5	1085.4	997.1	
Average	37.12666667	32.38333333	36.18	33.23666667	
Variance	2.942712644	23.20557471	7.83337931	1.014126437	

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Sample	481.2063333	4	120.3015833	255.7250407	1.41526E-51	2.462614926
Columns	467.5016667	3	155.8338889	331.2560523	8.68E-52	2.695534255
Interaction	486.6283333	12	40.55236111	86.20214223	4.03985E-47	1.850255114
Within	47.04333333	100	0.470433333			
Total	1482.379667	119				

DAY 4 Trip 3 Humidity

Anova: Two-Factor With Replication

SUMMARY	Day 4_N1(Insid	Day 4_N2(C_F.)	Day 4_N3(SP_E	Day 4_N4(B_P.)	Total
A					
Count	6	6	6	6	24
Sum	162.7	119.2	148.3	116.4	546.6
Average	27.11666667	19.86666667	24.71666667	19.4	22.775
Variance	0.597666667	0.126666667	0.037666667	0.056	11.25673913
AB					
Count	6	6	6	6	24
Sum	164.1	117	160.8	130.1	572
Average	27.35	19.5	26.8	21.68333333	23.83333333
Variance	0.359	0.308	0.024	0.405666667	11.86492754
B					
Count	6	6	6	6	24
Sum	171.9	123.6	148.8	155	599.3
Average	28.65	20.6	24.8	25.83333333	24.97083333
Variance	0.691	0.696	0.276	0.790666667	9.249981884
BC					
Count	6	6	6	6	24
Sum	170.9	154.8	164.8	136.2	626.7
Average	28.48333333	25.8	27.46666667	22.7	26.1125
Variance	0.577666667	0.024	0.114666667	0.072	5.179402174
C					
Count	6	6	6	6	24
Sum	170.2	162.8	138.5	128.3	599.8
Average	28.36666667	27.13333333	23.08333333	21.38333333	24.99166667
Variance	0.082666667	0.098666667	0.021666667	0.305666667	8.625144928
Total					
Count	30	30	30	30	
Sum	839.8	677.4	761.2	666	
Average	27.99333333	22.58	25.37333333	22.2	
Variance	0.810298851	10.94786207	2.651678161	4.879310345	

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Sample	155.4461667	4	38.86154167	137.1906625	1.07678E-39	2.462614926
Columns	658.1133333	3	219.3711111	774.4332	4.74081E-69	2.695534255
Interaction	375.6125	12	31.30104167	110.5002648	4.79444E-52	1.850255114
Within	28.32666667	100	0.283266667			
Total	1217.498667	119				

Annex

DAY 3 Trip 4 Humidity

Anova: Two-Factor With Replication

SUMMARY	Day 3_N1(Inside	Day 3_N2(C_F.)	Day 3_N3(SP_E	Day 3_N4(B_P.)	Total
C					
Count	6	6	6	6	24
Sum	236	227.7	240.4	196.2	900.3
Average	39.33333333	37.95	40.06666667	32.7	37.5125
Variance	2.486666667	0.131	0.042666667	0.248	9.290706522
BC					
Count	6	6	6	6	24
Sum	234.4	243.6	220.1	209.3	907.4
Average	39.06666667	40.6	36.68333333	34.88333333	37.80833333
Variance	0.966666667	0.156	0.069666667	0.949666667	5.47384058
B					
Count	6	6	6	6	24
Sum	233.7	202.1	232.7	212.5	881
Average	38.95	33.68333333	38.78333333	35.41666667	36.70833333
Variance	0.939	0.221666667	0.309666667	0.037666667	5.584275362
AB					
Count	6	6	6	6	24
Sum	246	184.7	244.8	227.6	903.1
Average	41	30.78333333	40.8	37.93333333	37.62916667
Variance	0.168	0.085666667	0.14	0.034666667	17.92998188
A					
Count	6	6	6	6	24
Sum	246	184.7	244.8	227.6	903.1
Average	41	30.78333333	40.8	37.93333333	37.62916667
Variance	0.168	0.085666667	0.14	0.034666667	17.92998188
Total					
Count	30	30	30	30	
Sum	1196.1	1042.8	1182.8	1073.2	
Average	39.87	34.76	39.42666667	35.77333333	
Variance	1.711827586	16.06248276	2.62891954	4.299954023	

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Sample	17.91116667	4	4.477791667	12.0776579	4.77645E-08	2.462614926
Columns	594.3209167	3	198.1069722	534.3411253	2.14422E-61	2.695534255
Interaction	661.4061667	12	55.11718056	148.6640069	4.69576E-58	1.850255114
Within	37.075	100	0.37075			
Total	1310.71325	119				

DAY 4 Trip 4 Humidity

Anova: Two-Factor With Replication

SUMMARY	Day 4_N1(Inside	Day 4_N2(C_F.)	Day 4_N3(SP_E	Day 4_N4(B_P.)	Total
C					
Count	6	6	6	6	24
Sum	170.2	162.8	138.5	128.3	599.8
Average	28.36666667	27.13333333	23.08333333	21.38333333	24.99166667
Variance	0.082666667	0.098666667	0.021666667	0.305666667	8.625144928
BC					
Count	6	6	6	6	24
Sum	155.6	174.9	145.4	121	596.9
Average	25.93333333	29.15	24.23333333	20.16666667	24.87083333
Variance	0.334666667	7.523	0.134666667	0.154666667	12.72128623
B					
Count	6	6	6	6	24
Sum	170.2	130.8	154.9	126.6	582.5
Average	28.36666667	21.8	25.81666667	21.1	24.27083333
Variance	1.946666667	0.088	0.041666667	0.136	9.696068841
AB					
Count	6	6	6	6	24
Sum	171.3	126.1	158	154.2	609.6
Average	28.55	21.01666667	26.33333333	25.7	25.4
Variance	0.203	0.177666667	0.306666667	0.508	8.111304348
A					
Count	6	6	6	6	24
Sum	170.7	133.7	155	144.9	604.3
Average	28.45	22.28333333	25.83333333	24.15	25.17916667
Variance	0.131	0.253666667	0.034666667	0.083	5.475634058
Total					
Count	30	30	30	30	
Sum	838	728.3	751.8	675	
Average	27.93333333	24.27666667	25.06	22.5	
Variance	1.504367816	12.29564368	1.620413793	4.676551724	

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Sample	17.37616667	4	4.344041667	6.914144362	5.90084E-05	2.462614926
Columns	461.0409167	3	153.6803056	244.6035051	6.67797E-46	2.695534255
Interaction	502.6078333	12	41.88398611	66.66416868	3.79832E-42	1.850255114
Within	62.82833333	100	0.628283333			
Total	1043.85325	119				

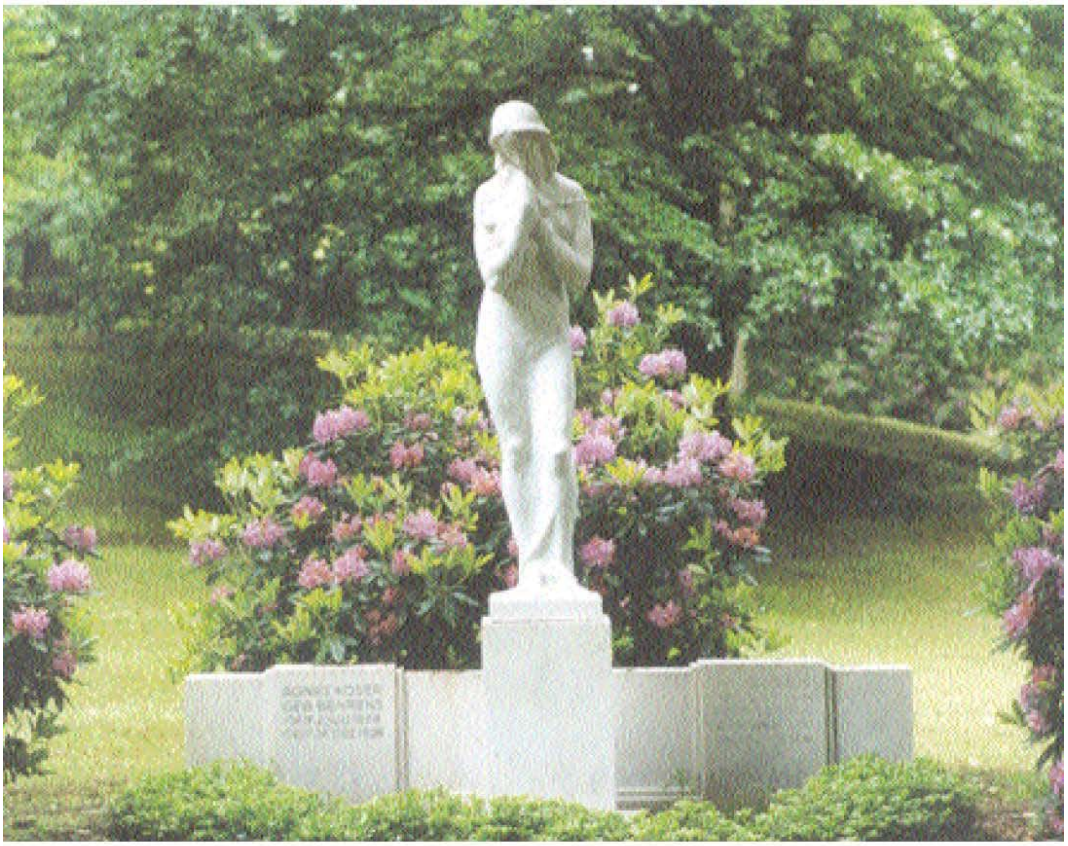
9-3 OHLSDORF CEMETERY GUIDE

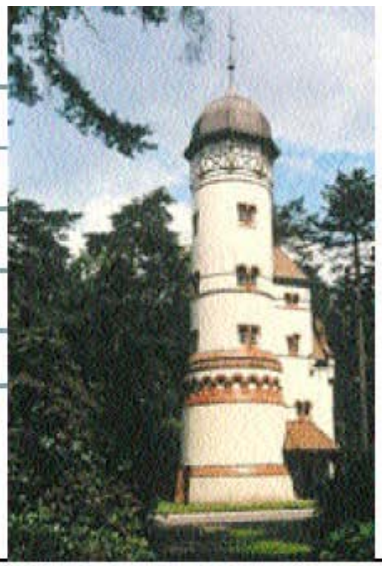
HAMBURG: THE OHLSDORF CEMETERY

An invitation to extensive

walks in the gardens

GERMANY





HAMBURG: THE OHLSDORF CEMETERY

An invitation to extensive walks in the gardens

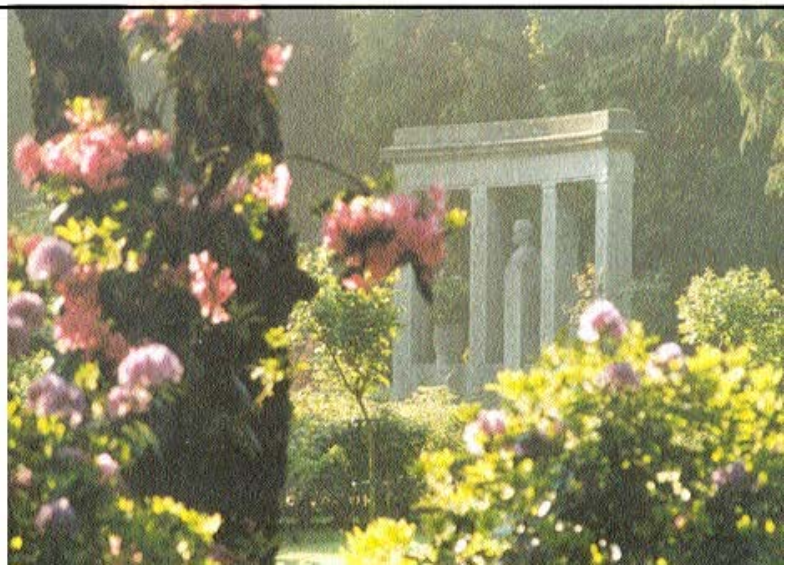
Previous page:
In 1927 the Hamburg-born sculptor Richard Kuöhl produced this work taking inspiration from Classical models. He was buried at Ohlsdorf in 1966, in the tomb he himself had realized

Over 200 angels embellish the park. The idea surfaced in 1877, and it meant to provide an image of Heaven, as the bourgeoisie of the time figured it.

The plan for a central municipal cemetery, which was to replace small century-old churchyards, was developed in the mid-19th century. It took into account the foreseeable increase in population and the demand for individual graves, as well as grave numbering and burial records.
The Ohlsdorf Cemetery was established in 1877 as a non-denominational and multi-regional burial site, and at that time it was quite far from town. Today its 4 million sqm are completely surrounded by built-up areas. A 17 km road network provides access to the cemetery; there are 4 entrances for vehicles and two special bus lines.
Since its opening, nearly 1.5 million burials were carried out and the cemetery now hosts 280,000 graves. About 40% of all burials in Hamburg take place here; in 2002 there were 1600

Over 200 angels embellish the park. The idea surfaced in 1877, and it meant to provide an image of Heaven, as the bourgeoisie of the time figured it.

The 1926 bust of Wilhelm Cordes, first director of Ohlsdorf cemetery, his life-long concern, is in the Rosengarten (Rose Garden).

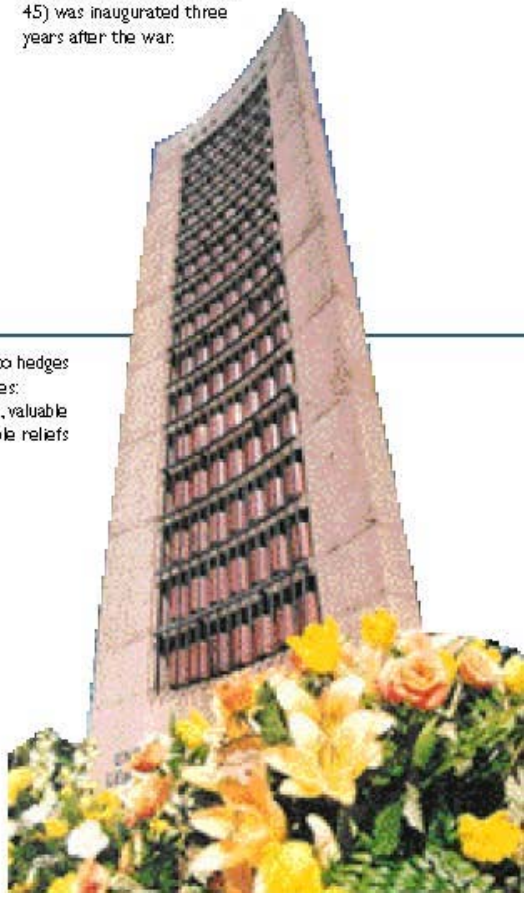


The water tower (1898) is indeed a technical structure, but, thanks to its ornamental architecture, it fits quite well into the landscape. Today it hosts a small exhibition on the famous theatre woman director, Gerda Gmelin, set up by the Garten der Frauen (Women's Garden) Association

A large area had been planned for the imposing administration building , that was built 35 years later, in 1911

interments and 4300 urn burials; 230 gardeners take care of graves and all facilities.
Two different landscaping trends contributed to the current aspect of the cemetery. The first architect was Wilhelm Cordes (1840-1917), of national and international renown, who worked 38 years to create a "garden cemetery", thus providing a well-known example for similar cemeteries throughout Germany. This early section still maintains its graceful interplay between architecture, sculpture and landscape. Large burial plots are skilfully surrounded by thick groves while a variety of trees, often forest-like, and rhododendrons characterise the oldest part of the cemetery.
The cemetery was expanded after World War I, on the basis of a project by Otto Linne (1869-1937), the first garden planning manager in

105 urns contain ash and soil from as many Nazi concentration camps.,This Denkmal der Opfer des Nationalsozialismus 1933-45 (Monument to the Victims of National-Socialism, 1933-45) was inaugurated three years after the war.

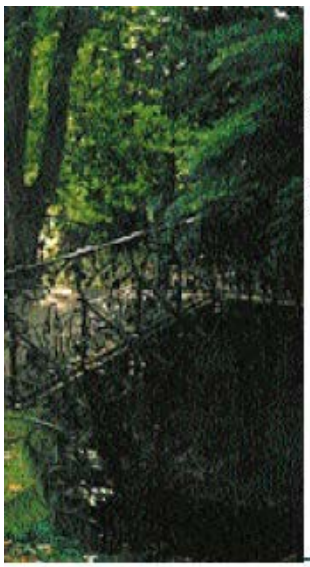


Several niches cut into hedges conceal real treasures: artworks, craftworks, valuable sculptures and marble reliefs

The bridge to the Rosengarten (Rose Garden) was donated by the blacksmiths association. It spans an area of natural marshes, the starting point for an educational environmental path through the cemetery

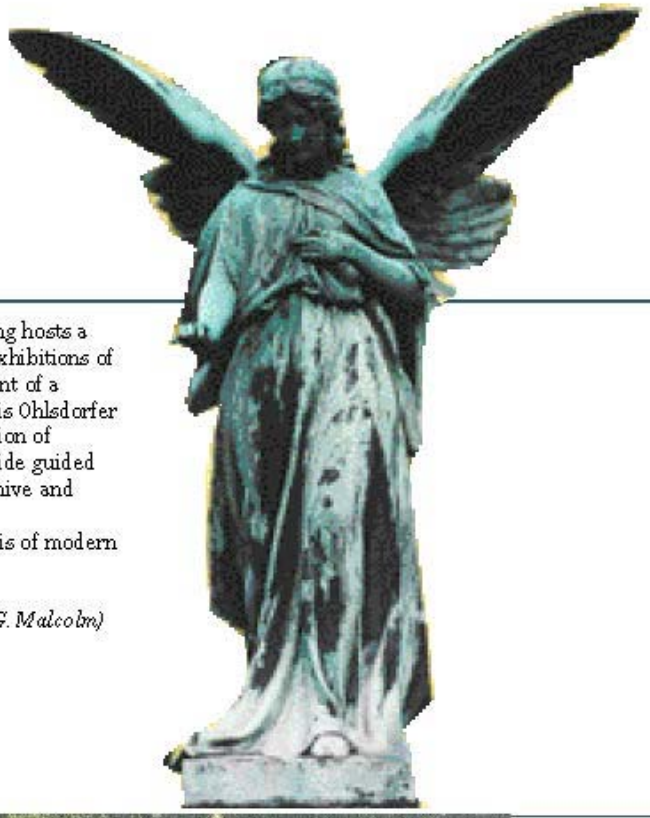
The Margarethenbrunnen (Margarethe Fountain) was realized by Eugen Christ, a blacksmith/artist, on the occasion of the 1953 garden exhibition. He named it after his wife, who had sold her jewels to pay for the materials her husband needed for his piece of art

Hamburg. His plans were thoroughly consistent with the movement for Cemetery Reform and with the new landscaping art of that period. His main conceptual principles translate into strict architectural layouts and grave plots considered as basic units which develop into rows and then into graveyards proper, separated by hedge-lined alleys.
Both sections of the cemetery are suggestive of extensive walks with different features and seasonal charms, especially so in the *Althamburgische Gedächtnisfriedhof* (old Hamburg Memorial Cemetery), the *Rosengarten* (Rose Garden) and, more recently, the *Garten der Frauen* (Women's Garden). In addition, there are several memorial sites for war casualties and the victims of tyranny and oppression as well as the graves of famous public figures. All throughout the year countless visitors tread these areas, especially in late May/early June, when rhododendrons are in full bloom.
Ohlsdorf Cemetery as a whole, thanks to its remarkable inventory of funerary monuments, is a true work of art, where contemporary stonemasonry is documented in various ways. There is evidence that almost 330 architects and sculptors contributed their work; hence, such expressions of past memories often achieve a status as true pieces of art. The cemetery is therefore an open-air museum of a special kind: this unique sculpture park in the cemetery, with over 800 sculptures and relief ornaments, illustrates the memorial art of the 19th and 20th centuries. About 6,000 funerary monuments were deemed worthy of restoration within the framework of a specific research project.



All angels in this cemetery stand on high socles. The reason is that "Visitors, bent by their own mourning, are asked to lift up their heads" – hence, the clear message by the silent angel is "Look upwards!"

This huge statue of Christ (1904-5) is in the Altham-burgische Gedächtnis-friedhof (Old Hamburg Memorial Cemetery), a sort of introduction to the cemetery, where senators, jurists, patrons of the arts, scientists, bishops, priests and artists have their final resting place, after being moved here from various town graveyards in disuse



Since 1996, a small historical building hosts a funerary museum, with temporary exhibitions of sepulchral art, under the management of a voluntary association, the Förderkreis Ohlsdorfer Friedhof e.V. (Society for the Promotion of Ohlsdorf Cemetery), which also provide guided tours and lectures. The society's archive and library are also open to the public.
The cemetery is operated on the basis of modern management models.

(Helmut Schoenfeld, translation by G. Malcolm)

Since over a decade the museum, managed by the Förderkreis Ohlsdorfer Friedhof e.V., provides information on any funerary and cemeterial issue. The main topics of the permanent exhibition are cremation, the history of the cemetery and of the famous figures buried at Ohlsdorf, i.e. Hans Albers, Heinz Erhard, Gustaf Gründgens and Wolfgang Borchert.

OHLSDORF CEMETERY

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Fax 0049 (0) 40 59388-888
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Association of Friends of Ohlsdorf Cemetery, Hamburg

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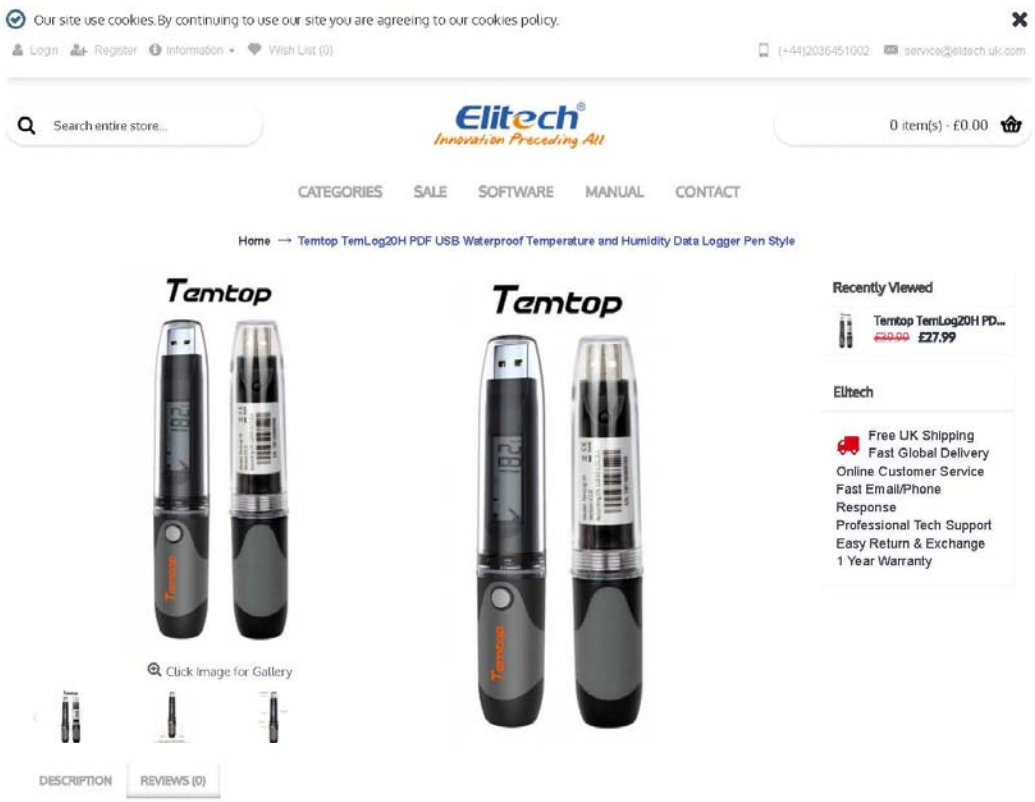
Fuhlsbüttler Straße 756
D-22337 Hamburg
Phone: 0049 (0) 40 50053387
www.fof-ohlsdorf.de

9-4 TEMLOG20H



***** Get extra 10% off for this product with coupon code EXTRA10**

Product Description:

TemLog20H is a temperature and humidity data logger. It is very easy to use, and can generate PDF report automatically without any software. USB design and water-proof.

TemLog20H temperature and humidity data logger is mainly used in the fields of medicine, food, science, flowers, breeding industry, ice chest, container, shady cabinet, medical cabinet, refrigerator, laboratory and greenhouse, etc.

TemLog20H is designed with USB model, which you can plug and play in easily. It can generate the data report automatically, without installing data management software. The data can still be read even if the battery runs out.

Technical Parameters:

Power supply: ER14250(Typically one year. It can be replaced by 3.6V lithium battery);
Temperature measuring range: -30°C~70°C/22°F~158°F
Humidity measuring range: 10%~95%RH
Resolution: 0.1°C; 0.1%RH
Temperature accuracy: ±0.5°C/0.9°F(-20°C~40°C), ±1°C/1.8°F(others);
Humidity accuracy: ±3%RH (25°C, 20%~90%RH), ±5%RH(others)
Sensor: built-in Temperature and Humidity Sensor;
Record capacity: 32000 points (Max), support data cycle and cover;
Log Interval: 10 seconds to 12 hours continuously set
Display type: multifunction LCD, status indicator
Operation mode: multifunction keyboard
Alarm type: Single/Cumulative;
Communication type: USB 2.0;

Operating system: WIN XP/VISTA/7/8/MAC(It does not support upper computer operation but only AI report view in MAC system);

Water-proof level: IP65.

Features:

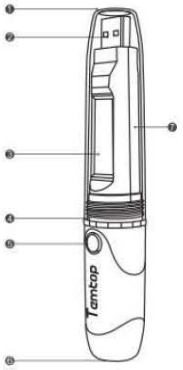
1. Generate PDF report automatically.
2. Multiple alarm indication.
3. High waterproof protection grade, wide range of applications.
4. High accuracy sensor with long-term stability property.
5. USB port, plug and play easily.
6. 32000 recording point. After run out, it can be restored by software setting.
7. 2 years' battery life.

Package:

1 Temlog 20H

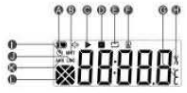
1 Instruction

Structure Description



1 Transparent cap	5 Button
2 USB port	6 Sensor
3 LCD screen	7 Product label
4 Seal ring	

LCD screen



A Battery indicator	H Humidity unit or Progress percentage
B Mean kinetic temperature	
C Start recording indicator	I Timing indicator
D Stop recording indicator	J Average value indicator
E Cyclic recording indicator	K Number of records
F Computer connection indicator	L Combined indicator
G Temperature unit(°C/°F)	

For more details, please refer to the menu and status indicator

Product label

a Model	d Barcode
b Firmware version	e Serial number
c Certification information	