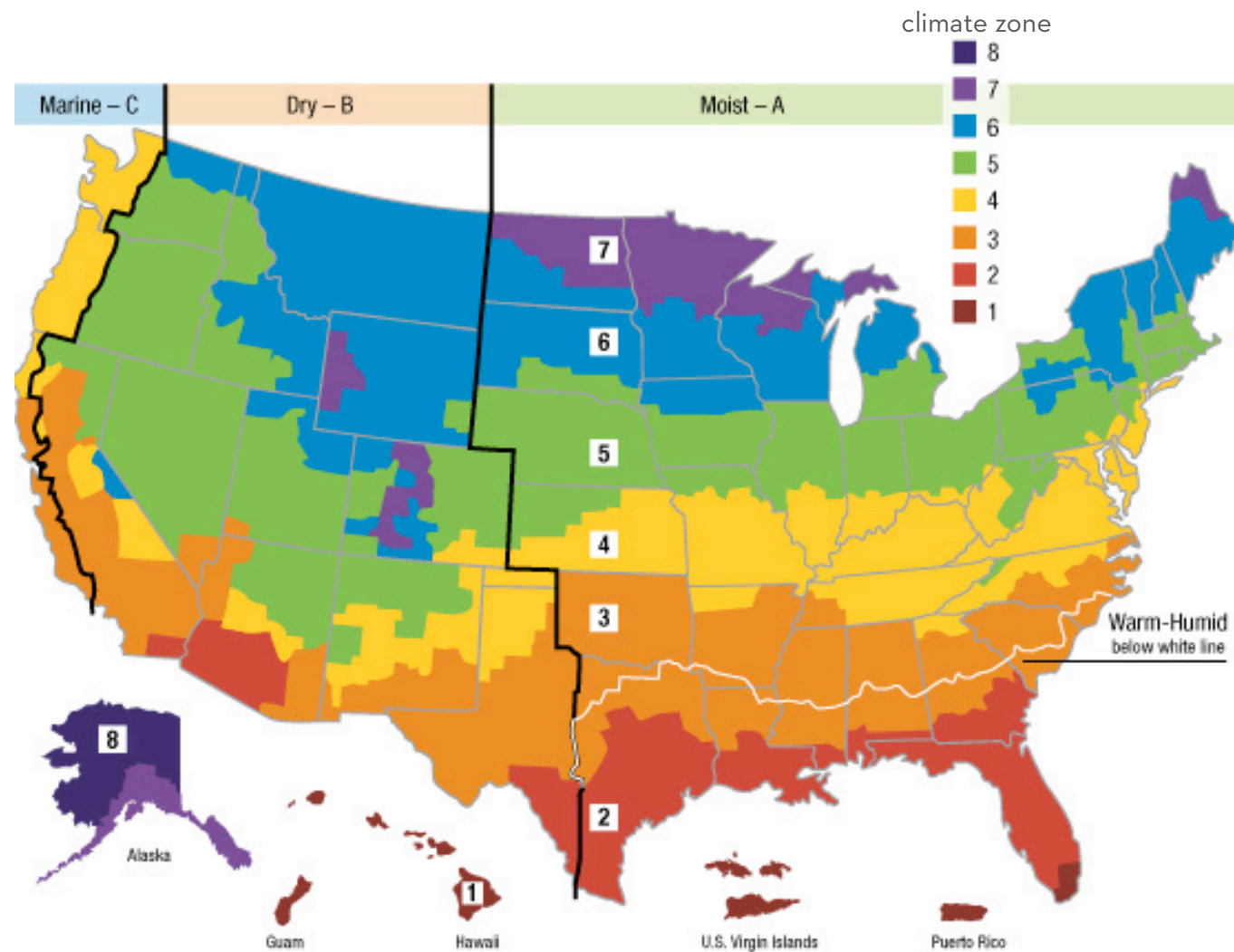


LOCATION

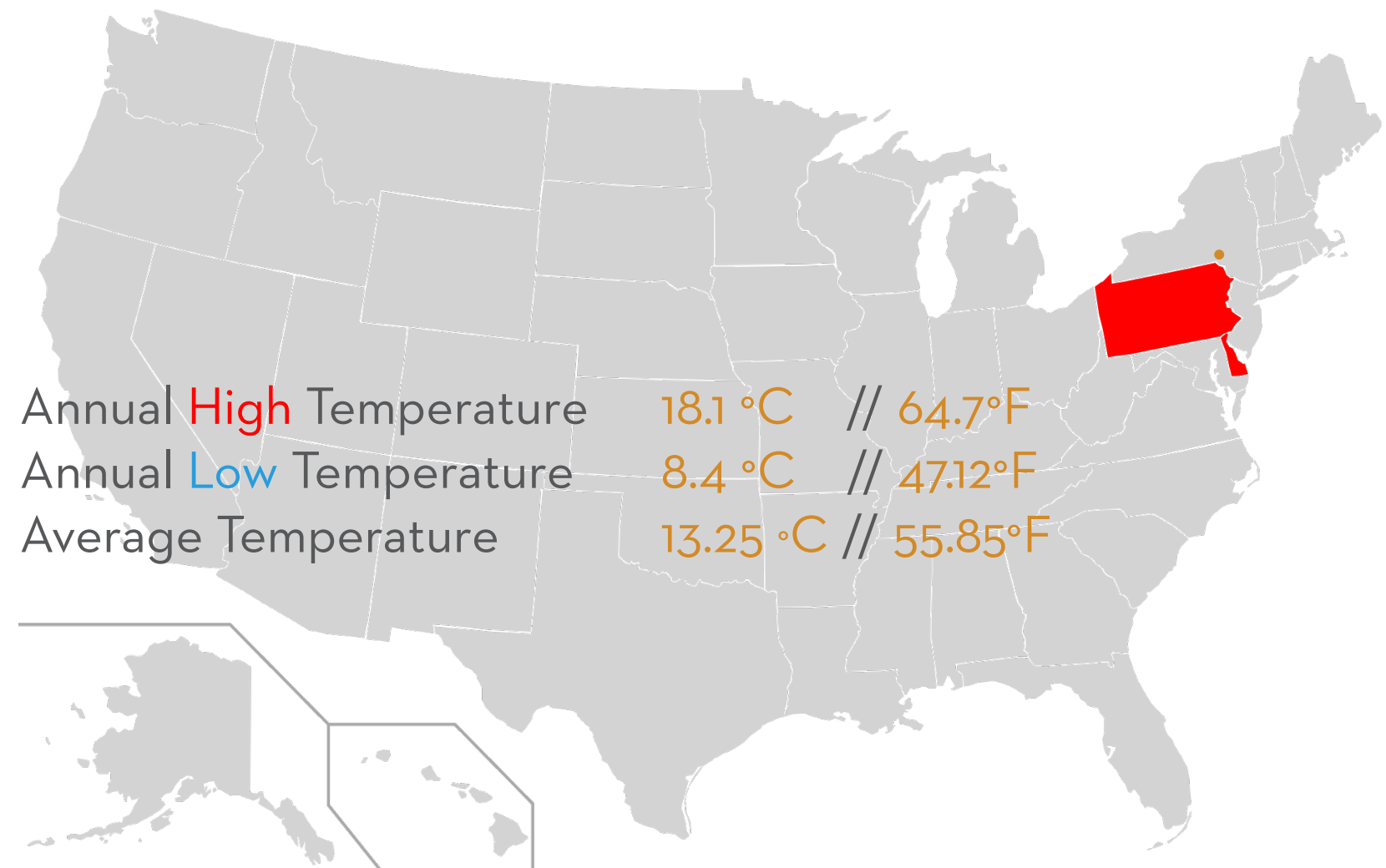
PHILADELPHIA // PA
CLIMATE ANALYSIS

U.S Climate Zone Map



Because the United States has such differing climates from coast to coast, understanding climate classification, temperature, and relative humidity are vital throughout the design process.

LOCATION Philadelphia, PA
CLIMATE ZONE 4A
CHARACTERISTIC Mixed-Humid




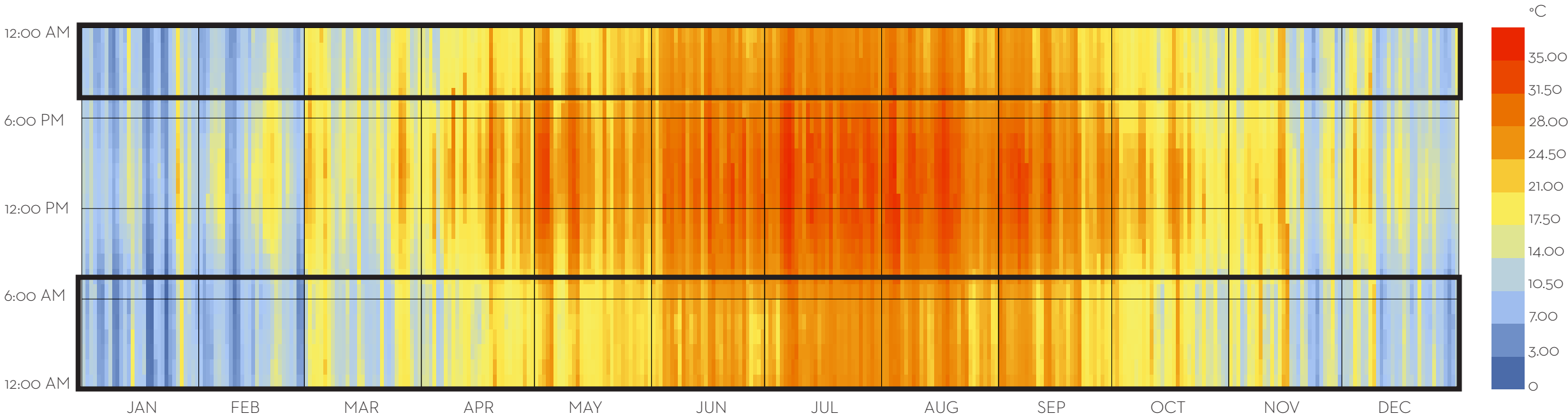
The climate in Pennsylvania varies quite a bit across the state. In Philadelphia, the climate zone is 4A, which is defined as mixed-humid. The annual temperature averages 55.85 °F, with its high being 64.7°F and low at 47°F. It is considered mixed-humid because of its average annual precipitation at 41.45 inches.

TEMPERATURE

PHILADELPHIA // PA
CLIMATE ANALYSIS

According to the TMY3 data, the temperature in Philadelphia is mostly high in the months of **June** through **September** in between the times of **9am-5pm**.

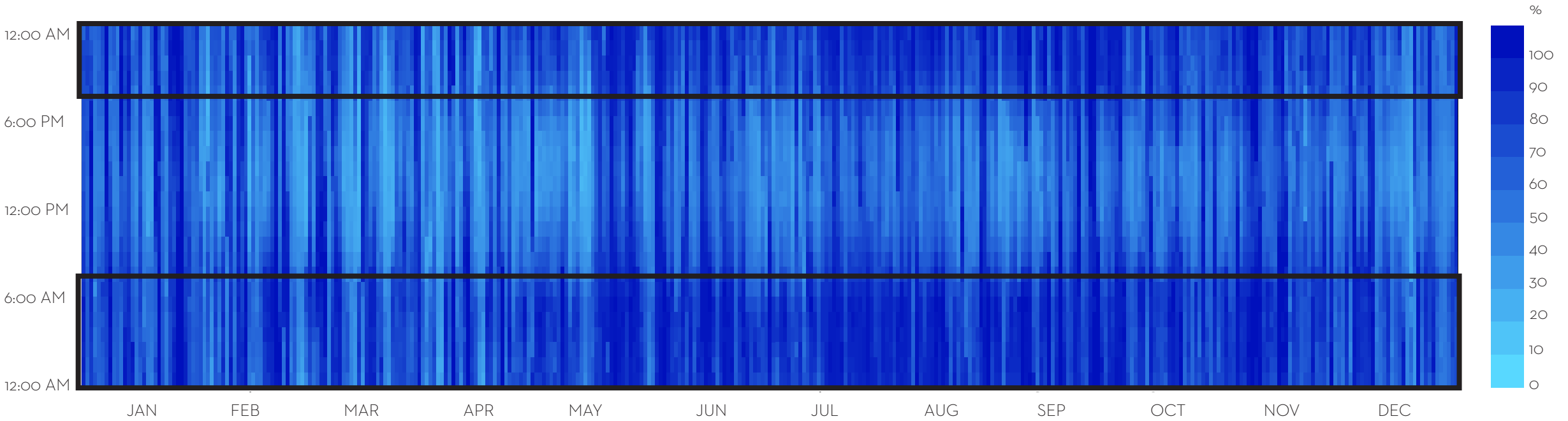
 occupied hours
7pm-8am



DRY BULB TEMPERATURE °C

Because this **building type is residential**, and is not occupied to the typical times of 9am-5pm as a commercial building, it is important to note the occupied hours.

In this case, the space is **mainly occupied from 7pm-8am**. In turn, outside temperature (24 °C) is not as high as during the day (35 °C). However, relative humidity high all year round, but specifically higher in the evening than during the day at 80% or more, which increases the occupant of feeling temperature and can lead to discomfort.



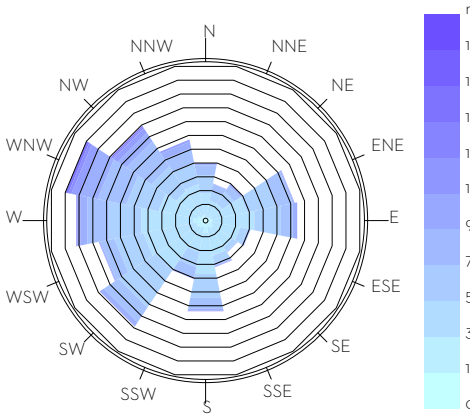
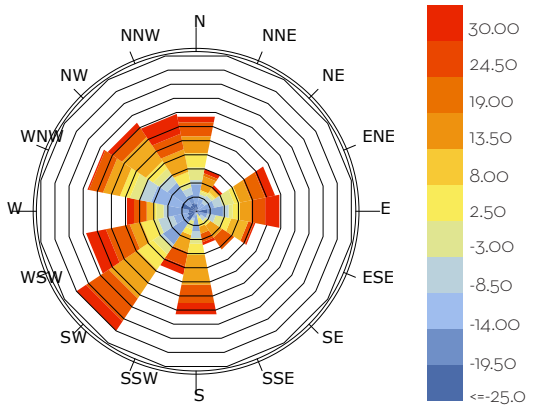
RELATIVE HUMIDITY%

WIND ROSE
SUN PATH
SKY COVER
PHILADELPHIA // PA
CLIMATE ANALYSIS

IDEAL LEVEL OF COMFORT:

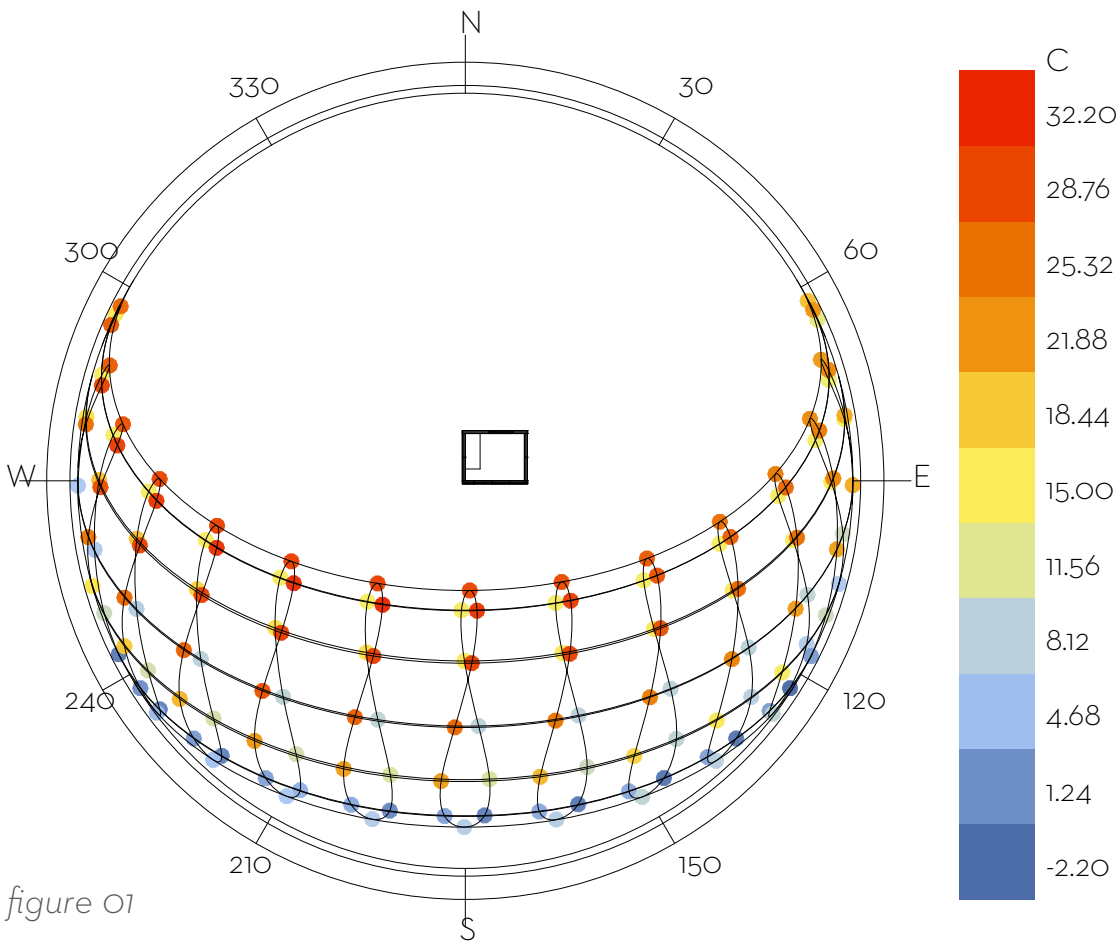
Sky Cover
< 50% (6 out of 10)

The wind in Philadelphia is mostly westerly wind. Throughout the year, there is constant strong and warm winds from the West, which reinforces its mixed-humid climate.

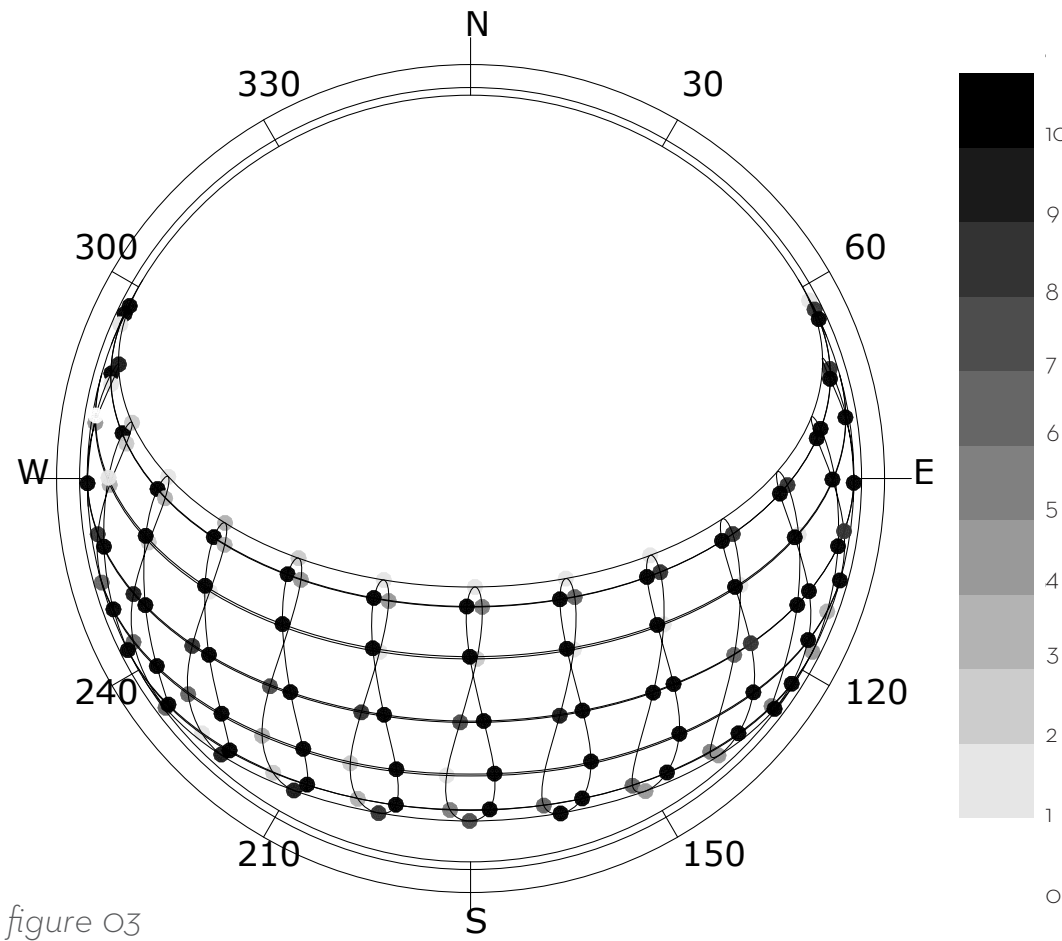


Wind Speed (m/s)
Calm for 2.81% of time = 246 hours

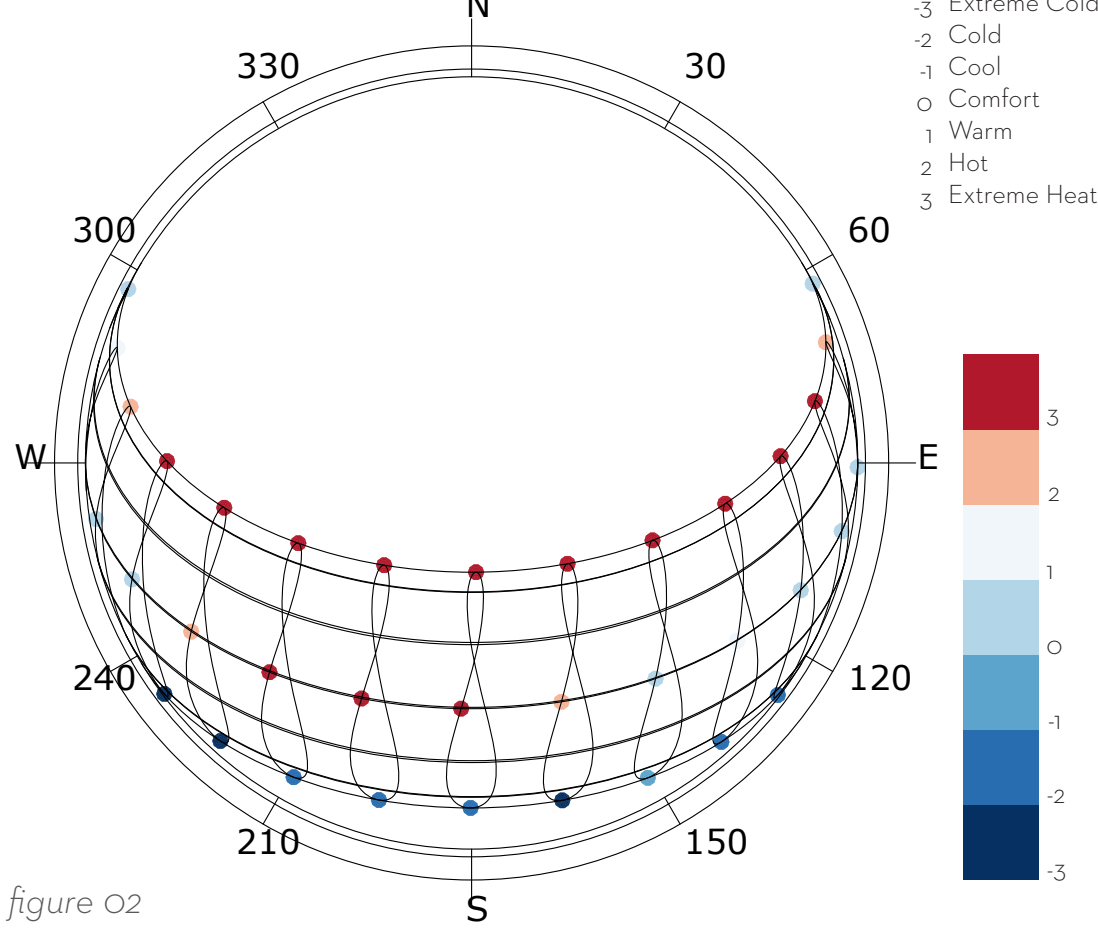
DRY BULB TEMPERATURE



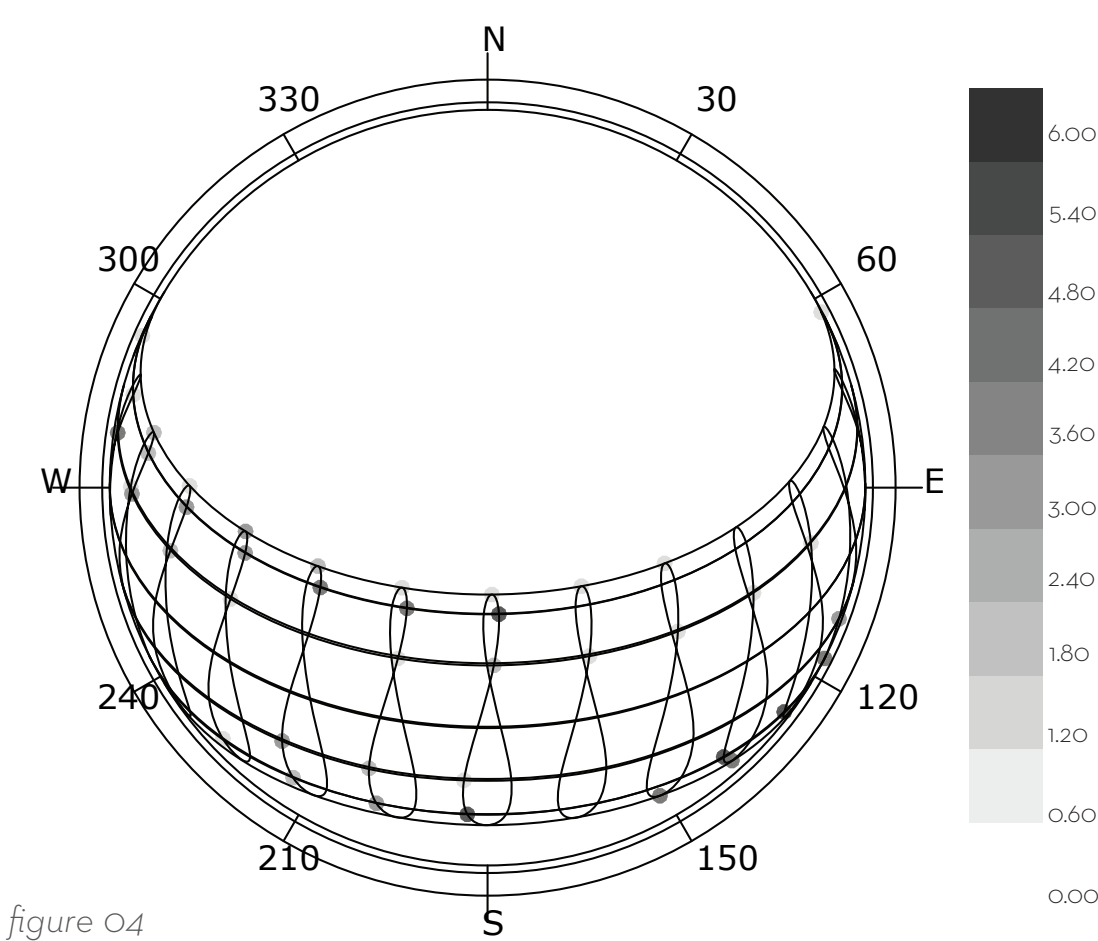
SKY COVER



OUTDOOR COMFORT



SKY COVER (LESS THAN 50% COVERED)

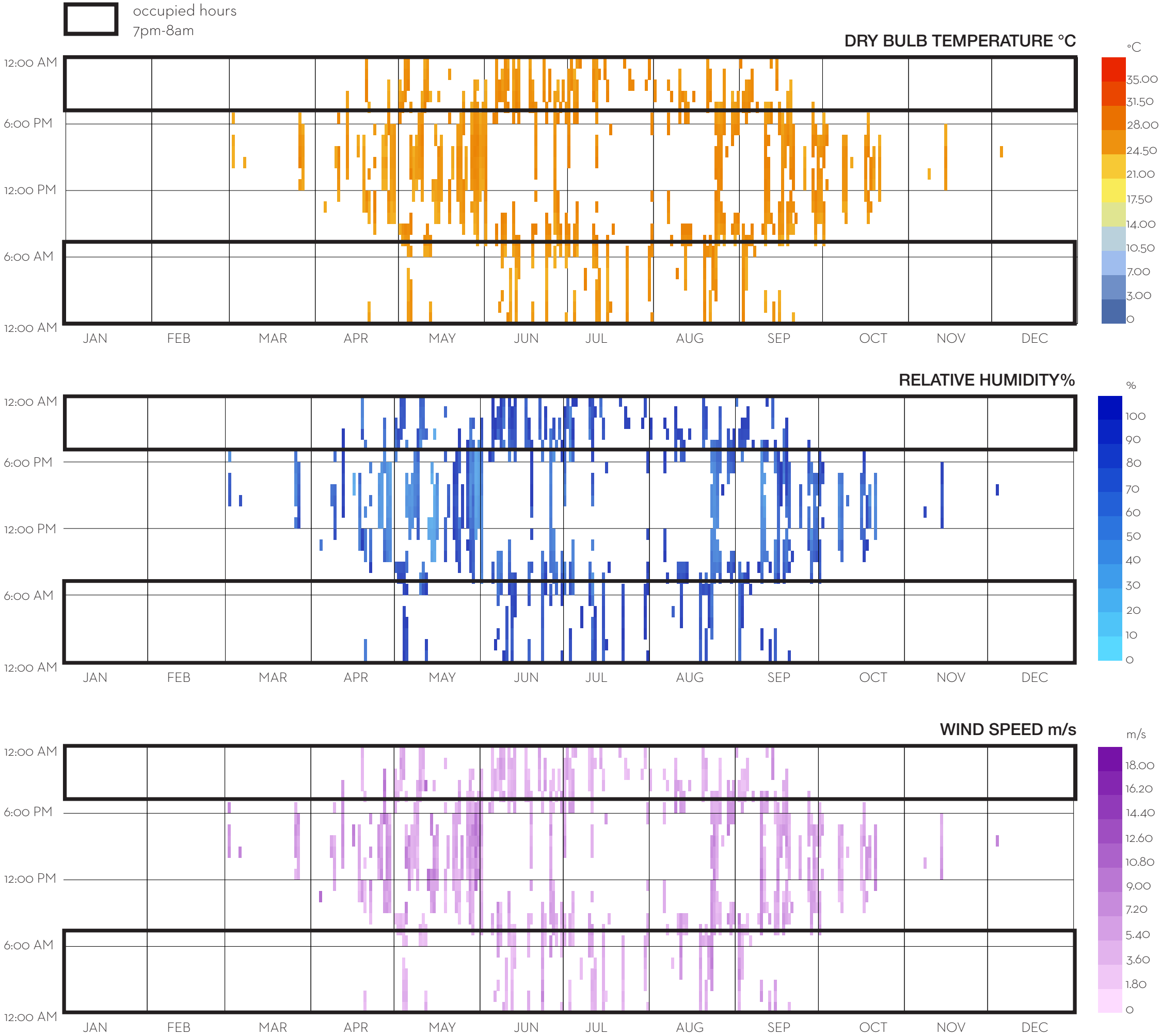


IDEAL LEVELS
OF COMFORT
PHILADELPHIA // PA
CLIMATE ANALYSIS

Temp
Less than 24C,
Above 18C

Humidity
Less than 80C,
Above 2C

Wind Speed
Less than 10m/s,
Above 2m/s



Percent of Time Comfortable:

45.10%

Heat Stress

3.43 %

Cold Stress

28.79%

The Universal Thermal Climate Index takes into consideration of the microclimatic effects in an environment such as **radiant temperature, relative humidity, wind speed, etc**, and indicates a thermal value felt by occupants.

As shown in the diagrams, the most intense **heat stress** happens during the day from **10am-6pm**.

A main concern would be in the evening when the occupant would be present, in which the cold stress occurs in the months of **Nov-Mar** throughout the day and into the night.

