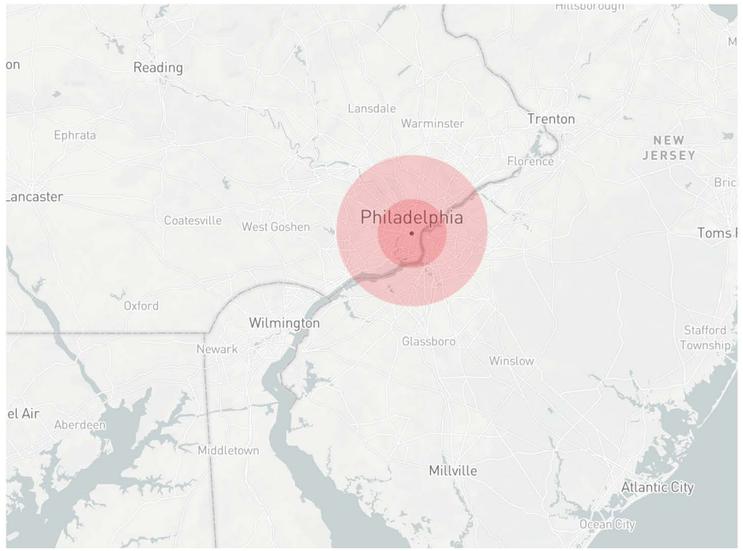
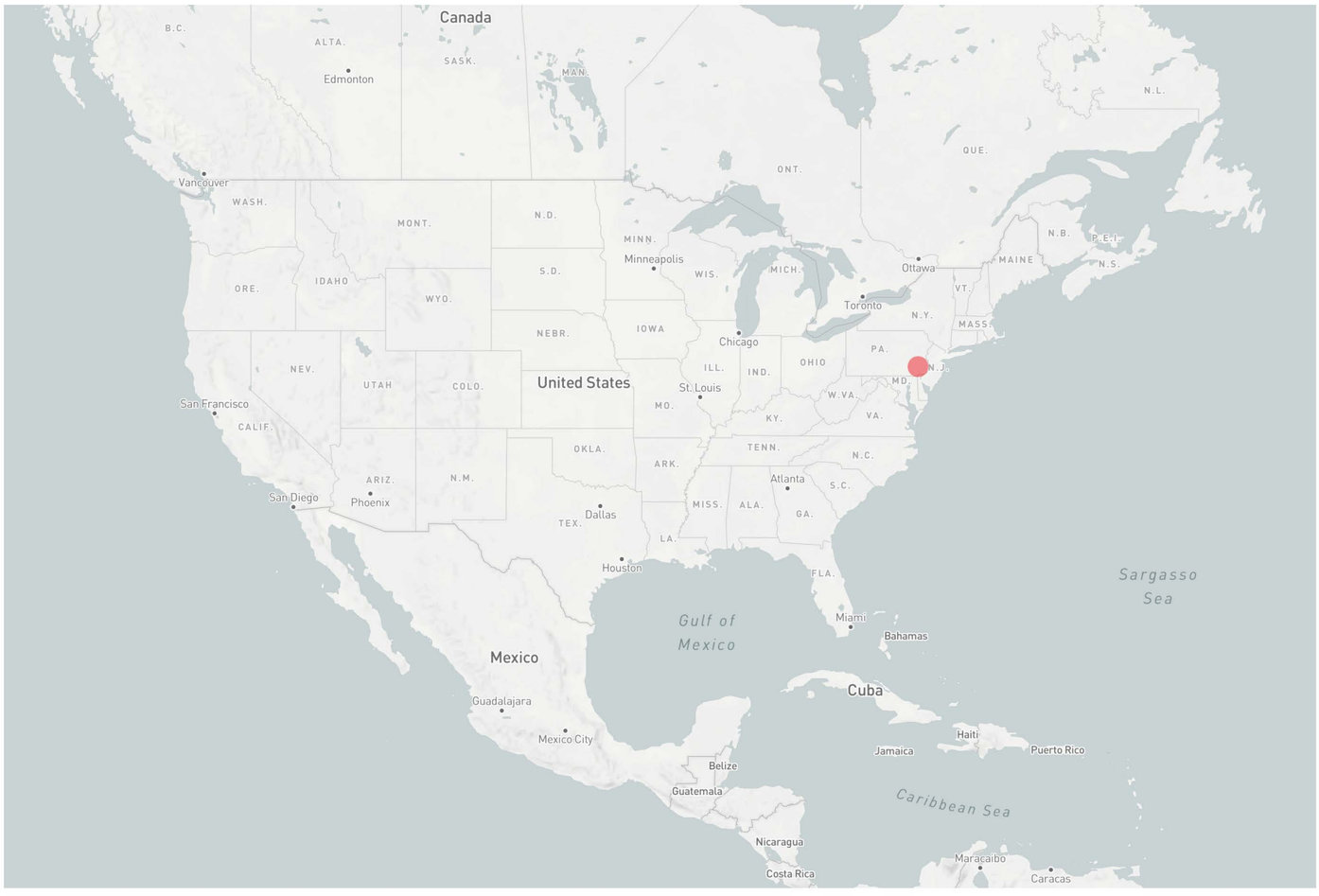
Assignment 1　Climate Analysis Report of Philadelphia

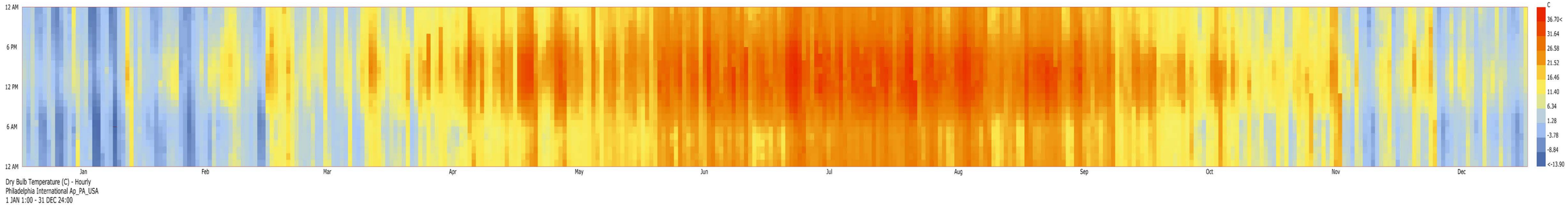
Location: Philadelphia, Pennsylvania, USA
Latitude: 39.87
Longtitude: -75.23
Time Zone: -5



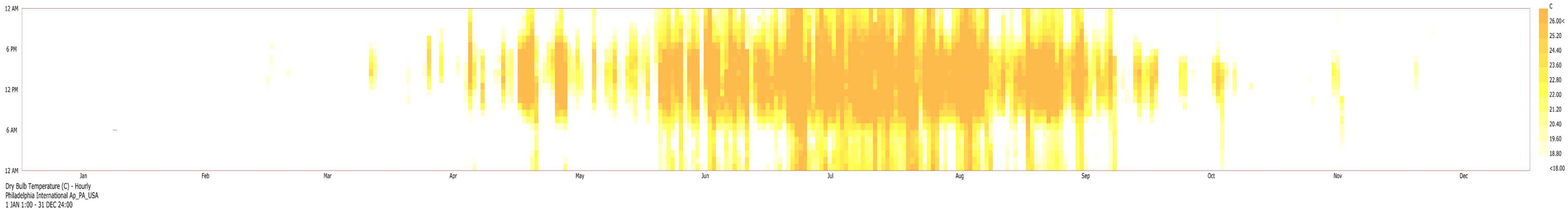


Drybulb Temperature

Ideal Temperature for Human Comfort is about from 18C to 26C.
Comfortable Hours: 2157 / 8760 hours, 25% (mainly from April to October)



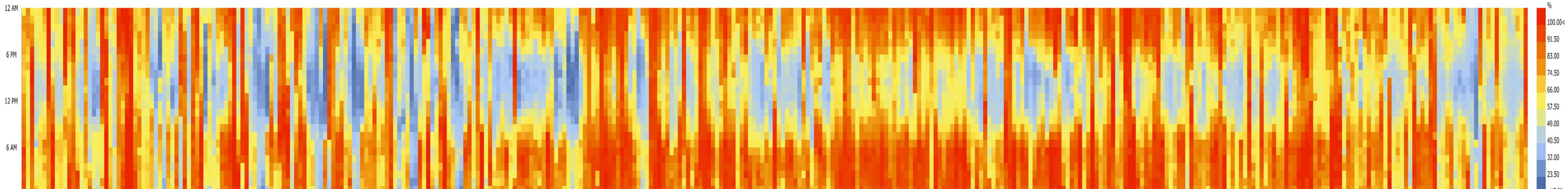
Whole Year Temperature



Temperature Between 18C to 26C

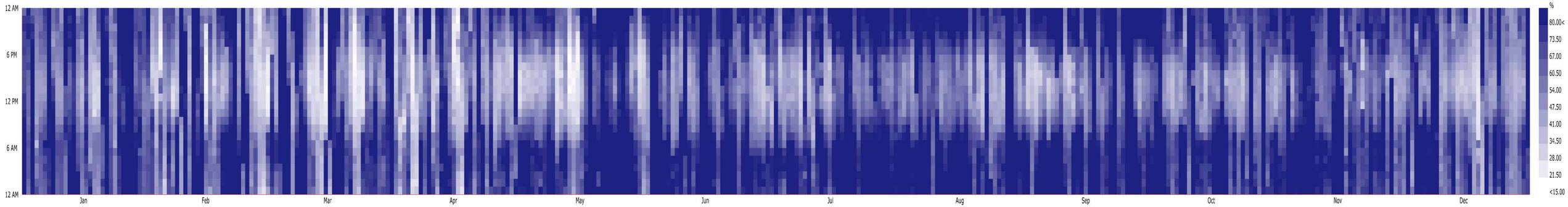
Relative Humidity

Ideal Relative Humidity for Human Comfort is smaller than 80%.
Comfortable Hours: 6078 / 8760 hours, 69%



Relative Humidity (%) - Hourly
Philadelphia International Ap_PA_USA
1 JAN 1:00 - 31 DEC 24:00

Whole Year Relative Humidity

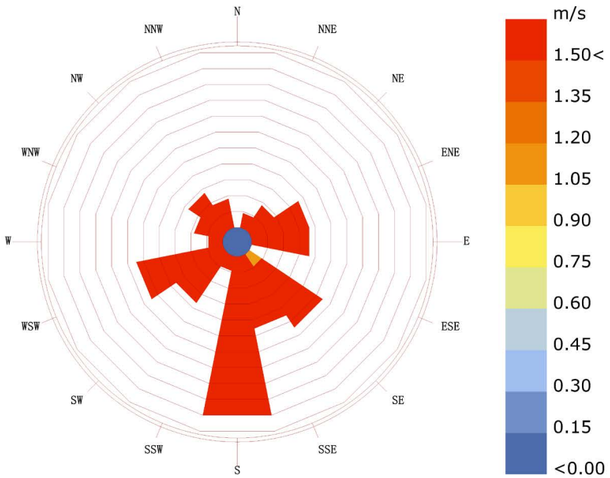


Relative Humidity (%) - Hourly
Philadelphia International Ap_PA_USA
1 JAN 1:00 - 31 DEC 24:00

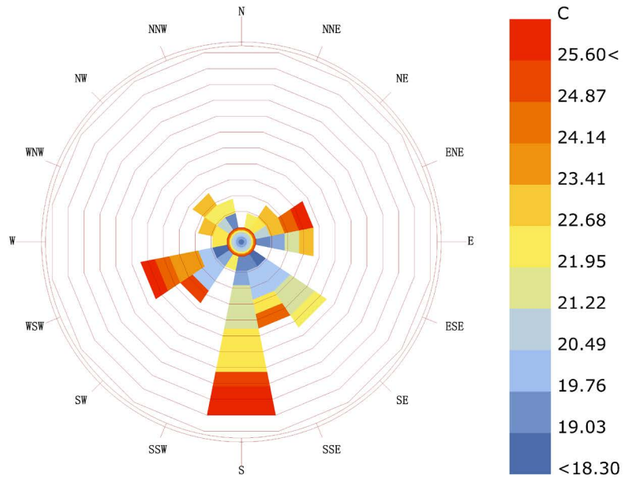
Relative Humidity < 80%

Wind

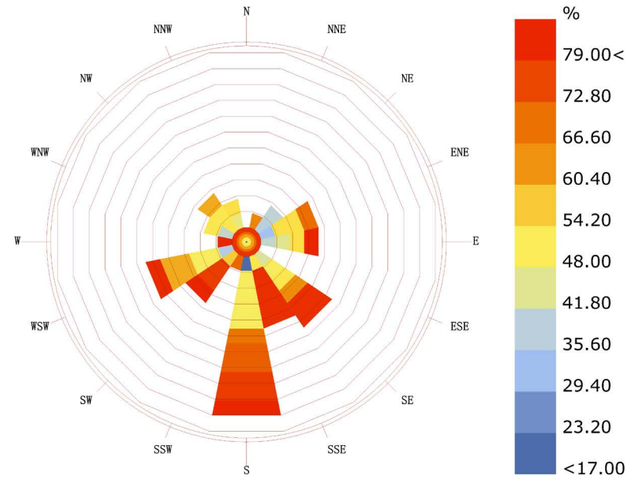
When the drybulb temperature is between 18C to 26C, wind speed < 2m/s and relative humidity < 80%, the wind direction is mainly from the south.



Wind-Rose
Philadelphia International Ap_PA_USA
1 JAN 1:00 - 31 DEC 24:00
Hourly Data: Wind Speed (m/s)
Calm for 0.18% of the time = 16 hours.
Each closed polyline shows frequency of 0.0%. = 1 hours.
... ...
Conditional Selection Applied:
Wind Speed<2
and 18<Dry Bulb Temperature<26
and Relative Humidity<80
68.0 hours of total 8760.0 hours (0.78%).



Wind-Rose
Philadelphia International Ap_PA_USA
1 JAN 1:00 - 31 DEC 24:00
Hourly Data: Dry Bulb Temperature (C)
Calm for 0.18% of the time = 16 hours.
Each closed polyline shows frequency of 0.0%. = 1 hours.
... ...
Conditional Selection Applied:
Wind Speed<2
and 18<Dry Bulb Temperature<26
and Relative Humidity<80
68.0 hours of total 8760.0 hours (0.78%).



Wind-Rose
Philadelphia International Ap_PA_USA
1 JAN 1:00 - 31 DEC 24:00
Hourly Data: Relative Humidity (%)
Calm for 0.18% of the time = 16 hours.
Each closed polyline shows frequency of 0.0%. = 1 hours.
... ...
Conditional Selection Applied:
Wind Speed<2
and 18<Dry Bulb Temperature<26
and Relative Humidity<80
68.0 hours of total 8760.0 hours (0.78%).

Strategy

1. The temperature in Philadelphia is somehow extreme and comfortable hours only take up 25% in one year. So, during the winter, the room should get more sunshine but in summer, there should be useful shading device.

2. Because of the temperature difference, the wall should be have better insulation to save the energy for heating and airconditioning. Also, I have the requirement of a large window, so the choice of the glass also should be considered.

3.The orientation of the room should facing south, shoutheast or southwest, which could make use of natural ventilation when the temperature and relative humidity is comfortable.

Plan of Dream Room