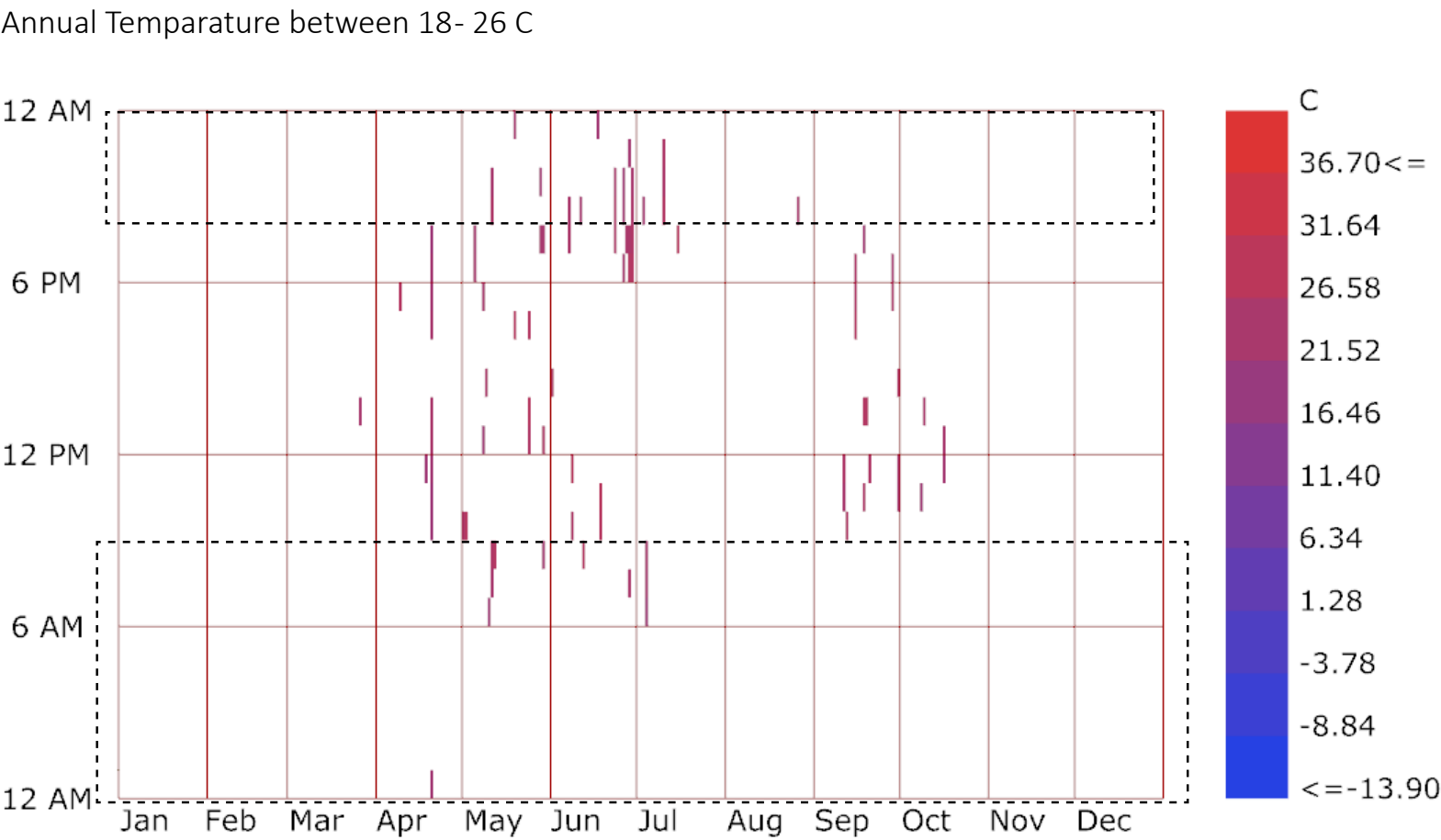
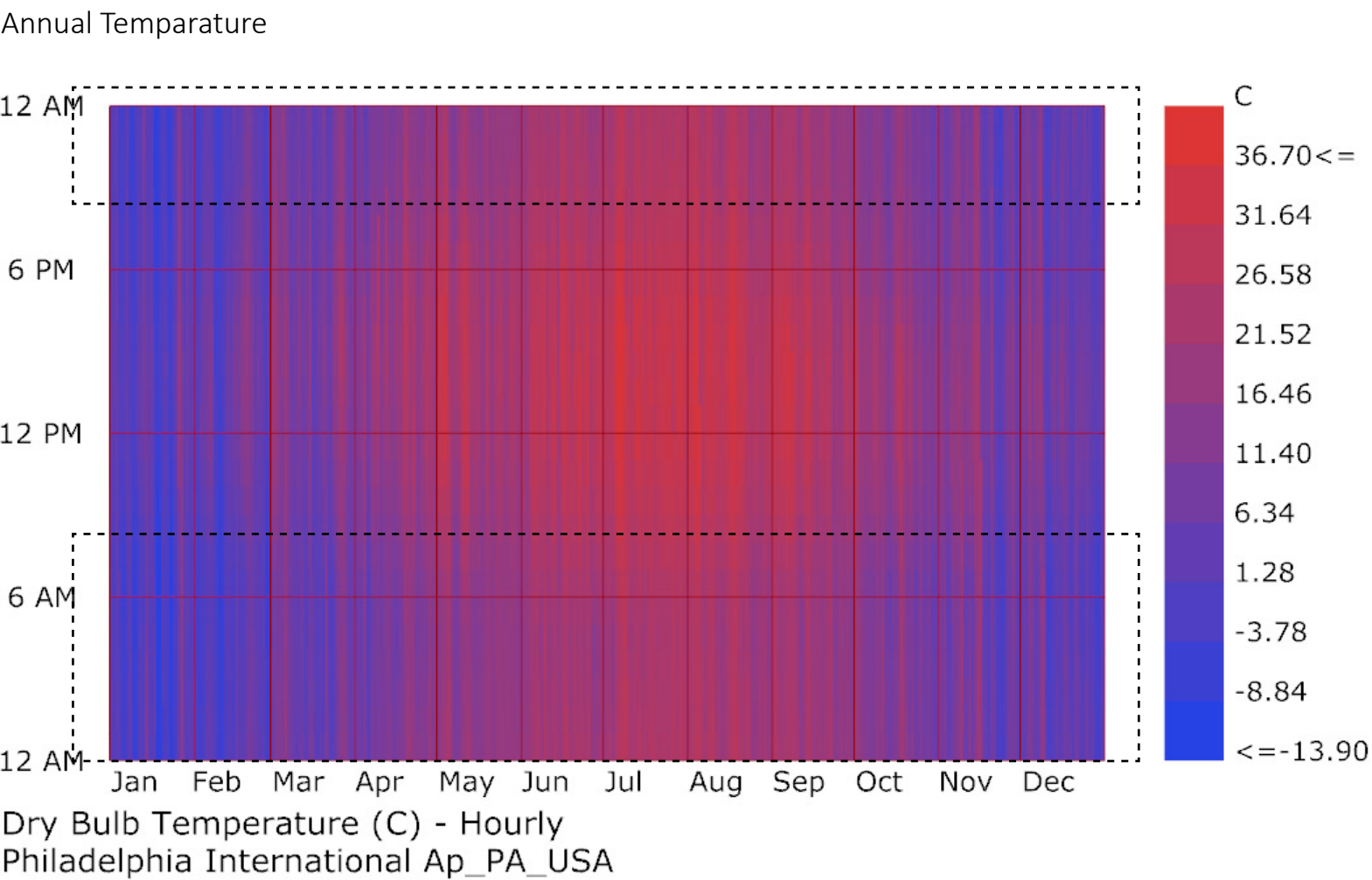


1. Annual Temperature Analysis

- 1. As a bedroom, the occupied time is usually on the morning and during the night, which is from 8pm- 9am. From the chart, we find the temperature in Philadelphia varies from -13.9 to 36.7.
- 2. During the occupied time, in winter the temperature is usually below 1 C, In summer it is between24-35 C. So in summer the bedroom needs to be cooled down and in winter, we need to keep it warm.

3.For me the most comfortable temperature is from 18- 26, from the chart we can find in spring the temperature is good, but for winter and summer it is not that temparate.

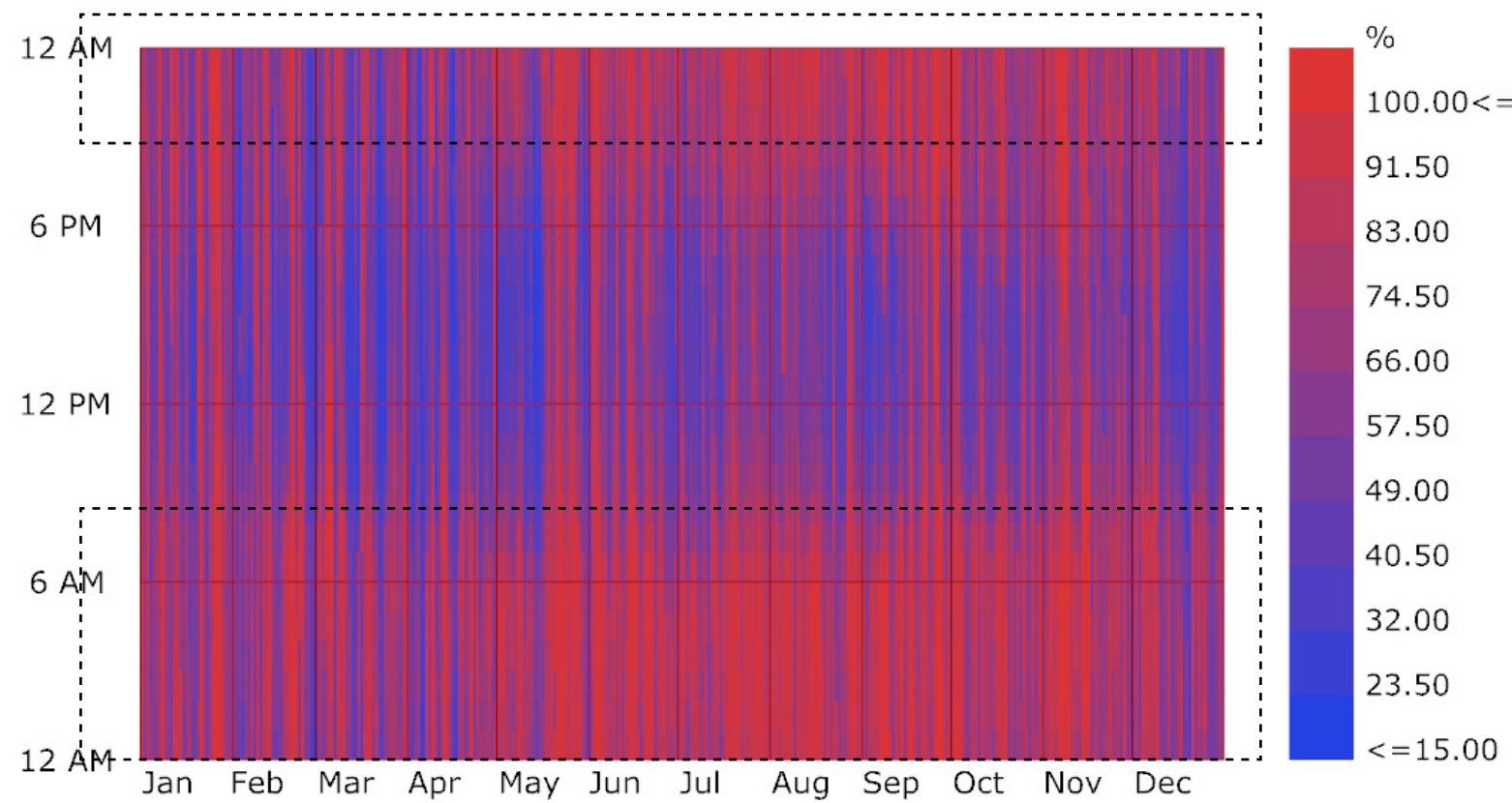
Strategy 1:
To cool down the indoor temperature in summer, we can adjust the orientation and the position of door to get better ventilation.
In winter, because the wind is mainly coming from west, we can keep the door closed to prevent the heat loss and the wall on the westside could be thicker.



2. Relative Humidity Analysis

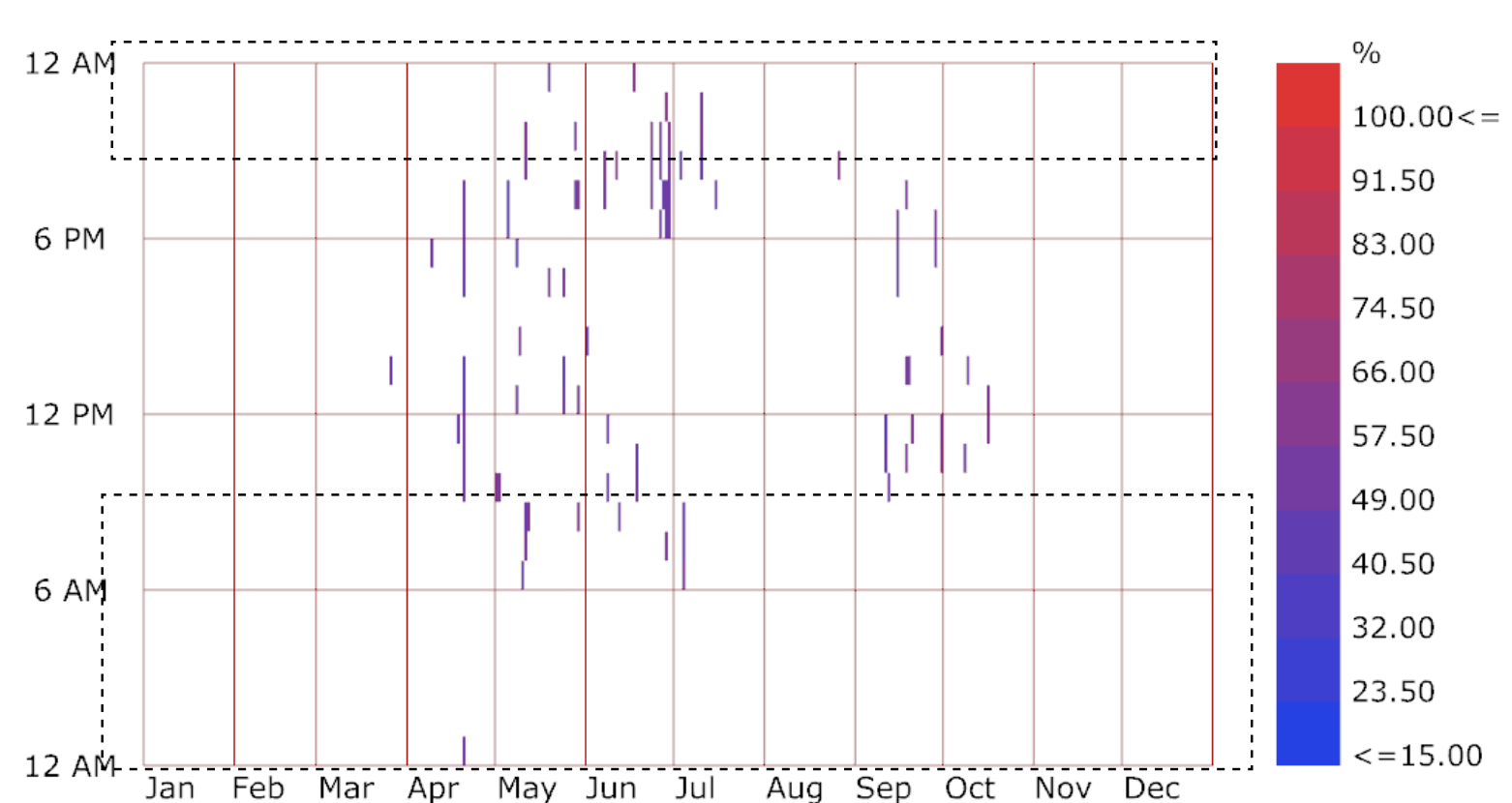
4. During the occuied time, the humidity is usually more than 70%, which makes the temparature higher, especially in summer.

Annual Relative Humidity



5. The usual comfort humidity for human indoor is 40%- 60%,from the chart we can find the humidity is good in spring, but for winter and summer it is not that temparate, so we need some improvement.

Annual Relative Humidity between 40%- 60%

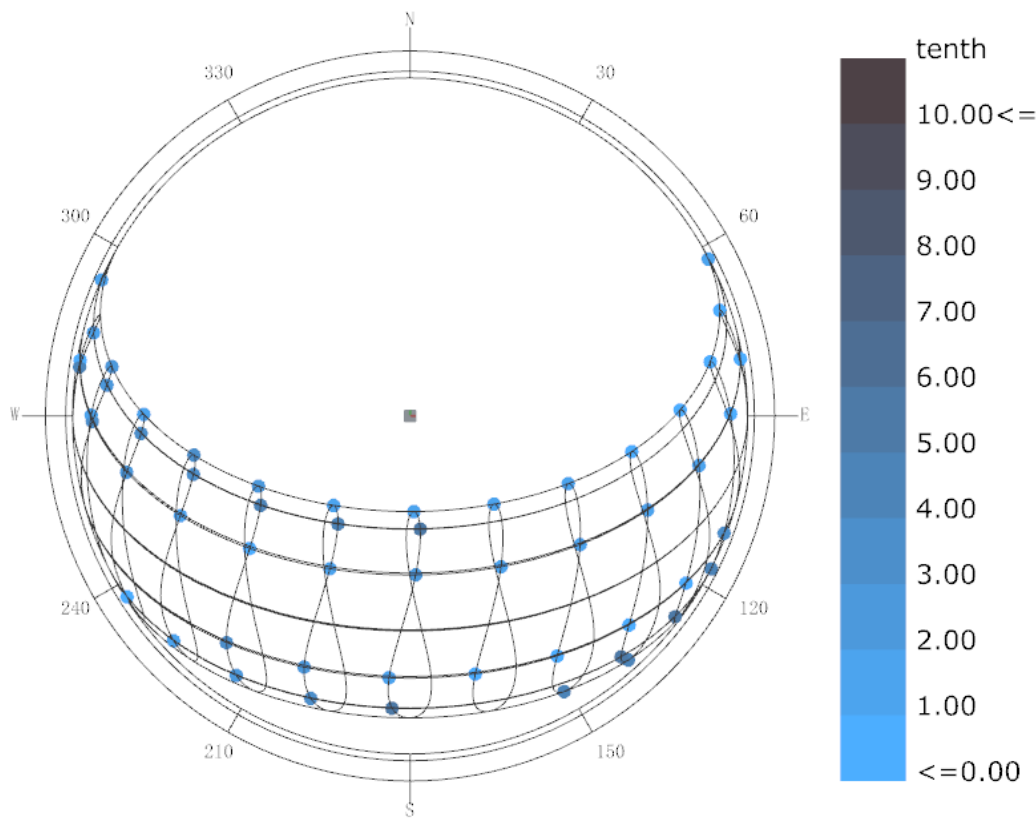


Strategy 2:
In summer, to make the interior humidity during the night lower, we could either close the door and window during the night and morning or get a dehumidifier.
In winter, to make the interior humidity during the night higher, we could get a humidifier or close the window and door, which keep the bedroom warm.

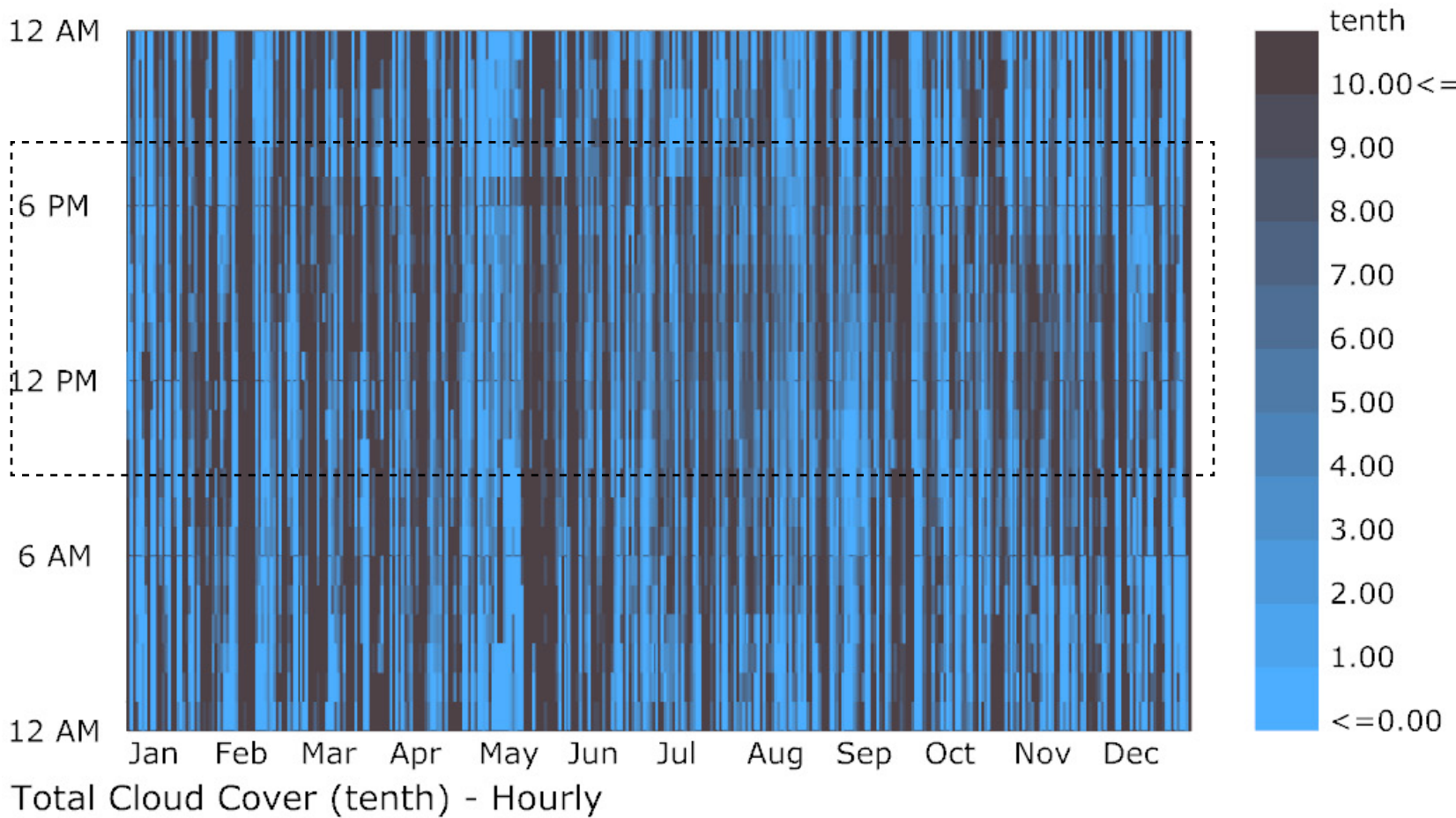
3. Annual Sky Cover Analysis

6. During the occuied time, from these two charts, the annual sky cover is not changing very much, the fall season and winter season has more chance to be covered. This indicates the orientation of bedroom should be properly set to get more sunlight in winter.

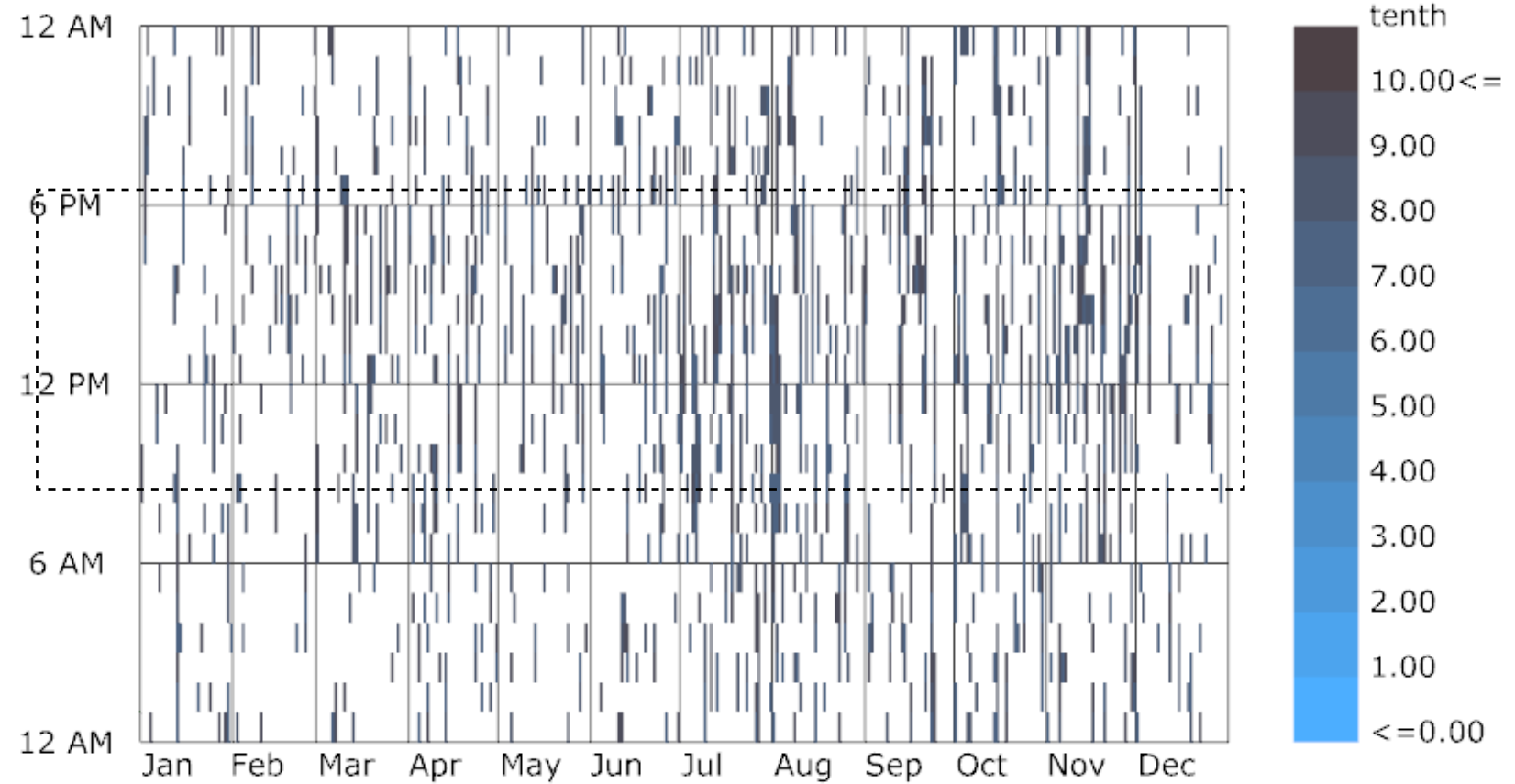
Annual Sky Cover Under 6



Annual Sky Cover

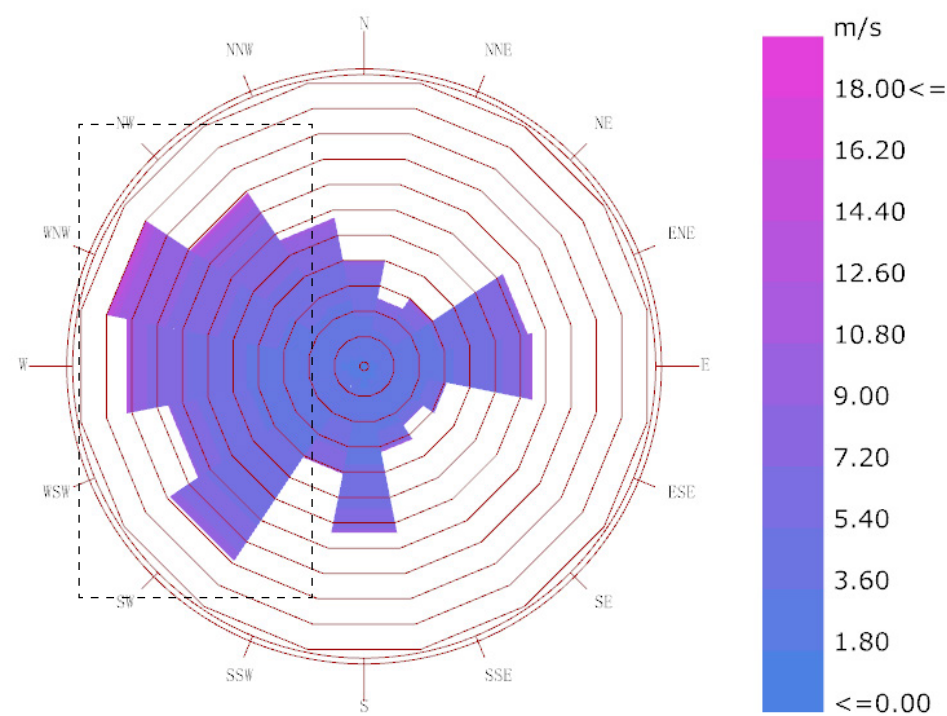


Annual Sky Cover Between 6 and 10



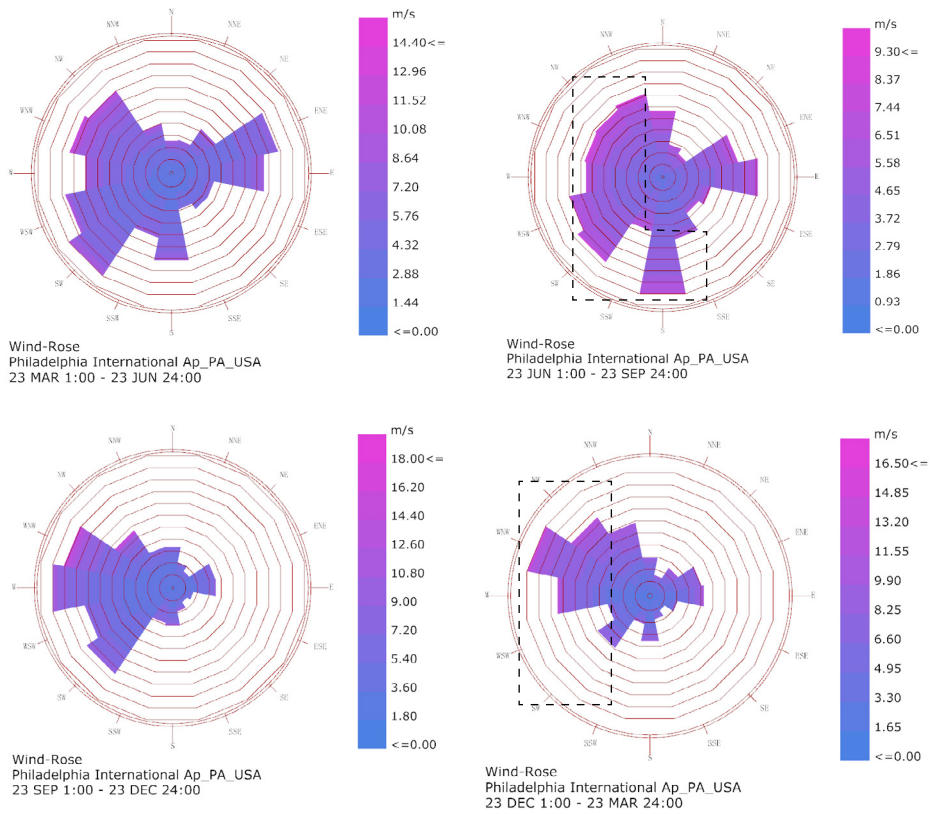
4. Wind Speed and Direction

Annual Wind Speed and Direction

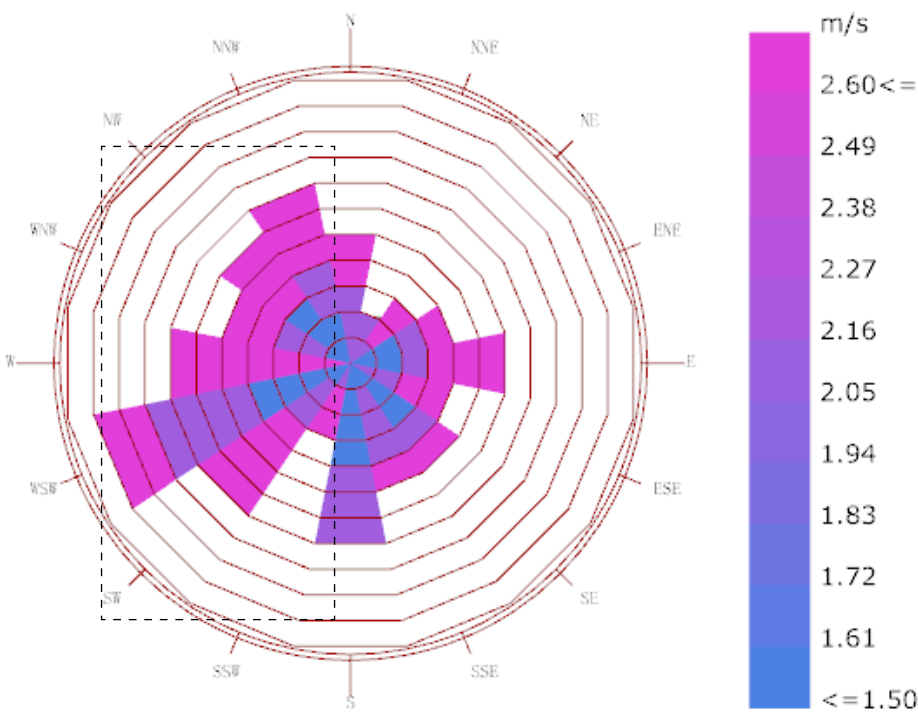


The wind is mainly coming from west and mostly the speed is between 0- 7 m/s.

Each Season's Wind Speed and Direction



Wind Speed between 1- 3 m/s



Wind-Rose
Philadelphia International Ap_PA_USA
1 JAN 1:00 - 31 DEC 24:00
Hourly Data: Wind Speed (m/s)

The comfort wind is between 1- 3m/s, which is also mainly coming from west and southwest.

Strategy 3:
To cool down the indoor temperature in summer, we can adjust the orientation and the position of door to get better ventilation. Also we can keep the door westside open during the summer time.
In winter, the wind is mainly coming from northwest, we could grow evergreen trees near the north-westside of the exterior wall to lower the wind speed which can keep the wall from losing more heat.