Germany, Berlin
Climate analysis for “dream room”

- Assignment01
-09/24/2017
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This is the location of the site of my studio, it is located in Temporhof, Berlin, Germany. And it is in the city center, surrounded by residential areas, green space, and some public activities space.

Dry Bulb Temperature (C) - Hourly
Berlin Municipal_NH_USA
1 JAN 1:00 - 31 DEC 24:00

Wind-Rose
Berlin Municipal_NH_USA
1 JAN 1:00 - 31 DEC 24:00
Hourly Data: Dry Bulb Temperature (C)
Calm for 42.77% of the time = 3747 hours.
Each closed polyline shows frequency of 0.9%. = 83 hours.

Dry Bulb Temperature (C) - Hourly
Berlin Municipal_NH_USA
21 MAR 1:00 - 21 JUN 24:00

Dry Bulb Temperature (C) - Hourly
Berlin Municipal_NH_USA
21 JUN 1:00 - 22 SEP 24:00

Dry Bulb Temperature (C) - Hourly
Berlin Municipal_NH_USA
22 SEP 1:00 - 21 DEC 24:00

Dry Bulb Temperature (C) - Hourly
Berlin Municipal_NH_USA
21 DEC 1:00 - 21 MAR 24:00

From these images , the most warm month of Berlin is in July and August, the average temperature is 18.6˚C. The most cold month of Berlin is in January, with an average temperature of -0.9 ˚C.

From May, Berlin began to warm up, and the temperature began to fall in September. The annual average temperature of 9.4 ℃.

Wind Speed (m/s) - Hourly
Berlin Municipal_NH_USA
1 JAN 1:00 - 31 DEC 24:00

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Wind Speed (m/s) - Hourly
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21 JUN 1:00 - 22 SEP 24:00

Wind Speed (m/s) - Hourly
Berlin Municipal_NH_USA
22 SEP 1:00 - 21 DEC 24:00

Wind Speed (m/s) - Hourly
Berlin Municipal_NH_USA
21 DEC 1:00 - 21 MAR 24:00

The wind speed in the region is appropriate, the northwest wind may have an impact on people's living
And the average wind speed in spring is 2.6m/s, in summer is 1.6m/s , in autumn is 1.9m/s, in winter is 1.8m/s .
The wind speed is not bad in Berlin. We should only think about wind speed in spring.

Relative Humidity (%) - Hourly
Berlin Municipal_NH_USA
1 JAN 1:00 - 31 DEC 24:00

Wind-Rose
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Relative Humidity (%) - Hourly
Berlin Municipal_NH_USA
21 MAR 1:00 - 21 JUN 24:00

Relative Humidity (%) - Hourly
Berlin Municipal_NH_USA
21 JUN 1:00 - 22 SEP 24:00

Relative Humidity (%) - Hourly
Berlin Municipal_NH_USA
22 SEP 1:00 - 21 DEC 24:00

Relative Humidity (%) - Hourly
Berlin Municipal_NH_USA
21 DEC 1:00 - 21 MAR 24:00

Winter in Berlin is cold, and the annual rainfall is 580 mm, the rainfall is more uniform in a year, but slightly more summer rain. Winter have more snow, snowfall about the total annual precipitation of 1/4 to 1/5. The average annual snow cover is 50 days.
Because of this, the huimidity of Berlin is high, and the data not change too much in a year.
The residencial in Berlin must think about how to reduce the huimidity.

Wind-Rose
Berlin Municipal_NH_USA
1 JAN 1:00 - 31 DEC 24:00
Hourly Data: Wind Speed (m/s)
Calm for 0.16% of the time = 14 hours.
Each closed polyline shows frequency of 0.0%. = 2 hours.
... ...
Conditional Selection Applied:
18<Relative Humidity<28
and Dry Bulb Temperature<80
and Dry Bulb Temperature>2
158.0 hours of total 8760.0 hours (1.80%).

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Wind Speed (m/s) - Hourly
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If we control all the conditions in a comfortable range.
For example: temperature is during 18℃ -28℃, humidity is less than 80%, wind speed less than 2 m/s.
We can see that there are less conditions meet the criteria.
So if we design the residential in Berlin, We need to think about how to protect temperature, reduce humidity and limit the wind speed .

1. Because the annual temperature is low, so the building should be good insulation, the main function area should open the window be based on the direction of the sunlight , as far as possible to reduce the energy consumption of the building itself. And building should have the heating system.

2. Because the wind speed is not bad, so we do not need to consider about the wind speed too much.

3. Because the annual humidity of Berlin is large, it should be considered to reduce the humidity, such as strengthening the natural ventilation, or to enhance the permeability of the envelope, or increase the function of mechanical dehumidification.