

LOCATION: in front of Van Pelt Library - (map with location a1, a2, a3, a4,a5, a6)

TIME: 20170916 - 10:00, 13:00, 16:00

location points			a1	a2	a3	a4	a5	a6
20170909 10:00								
	airport	weather data	measurement	measurement	measurement	measurement	measurement	measurement
temperature(°C)	26	21.1	24.9	35.6	28.8	40.1	26.8	31.5
humidity(%)	69	61	49.6	47.3	48.7	49.0	46.8	47
wind speed (mph)	E 2.2 mph	9	0.6	1.1	0.1	1.2	9.8	0.8
comfort condition	UTCI= 28 °C		comfort	hot	hot	hot	comfort	hot
Strong radiation								
20170909 13:00								
	airport	weather data	measurement	measurement	measurement	measurement	measurement	measurement
temperature(°C)	29	22.2	32.8	41	32.7	34.5	30	35.3
humidity(%)	52	57	52.4	53.8	53.7	53	52.1	53.1
wind speed (mph)	E 2.2 mph	10	0.3	0.3	0.5	0.1	0.8	0.3
comfort condition	UTCI= 31 °C		comfort	comfort	comfort	comfort	comfort	comfort
cloudy								
20170909 16:00								
	airport	weather data	measurement	measurement	measurement	measurement	measurement	measurement
temperature(°C)	29	20.6	29.3	41	30.6	31.2	29.4	31.6
humidity(%)	49	63	55.6	53.8	50.9	47.2	47.5	51.1
wind speed (mph)	E 5 mph	10	2	0.3	1.5	0.4	1.5	0.2
comfort condition	UTCI= 31 °C		comfort	Comfort	hot	comfort	comfort	comfort

- **BEHAVIOR**



**10 am**

In the location around the bench, the sun radiation is strong and people don't select to sit in the sun because of the comfort condition

In the location in the sun shade it is comfortable to sit down and stay because it is very comfortable with mild wind and nice temperature

In the location of the sculpture the sun radiation is relatively strong, but the design influence the behavior much more than comfort condition in this case

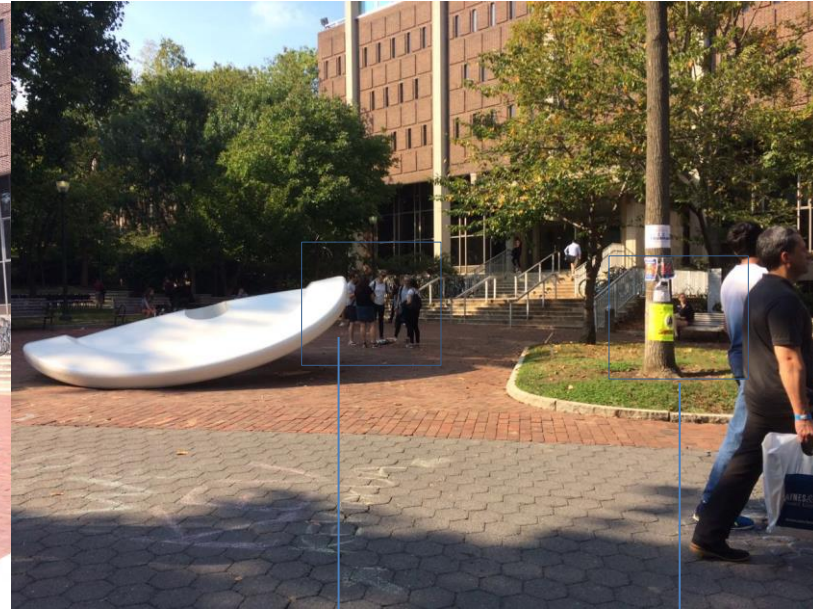
In this case, the girl selected to sit on the ground because of the sun shade and comfortable condition. In this case, comfort condition influence behavior much more than design



1pm

At 13:00, in the location around the bench, the sun radiation is less than that at 10:00, because the shading is covering the location. So the student selected to sit here

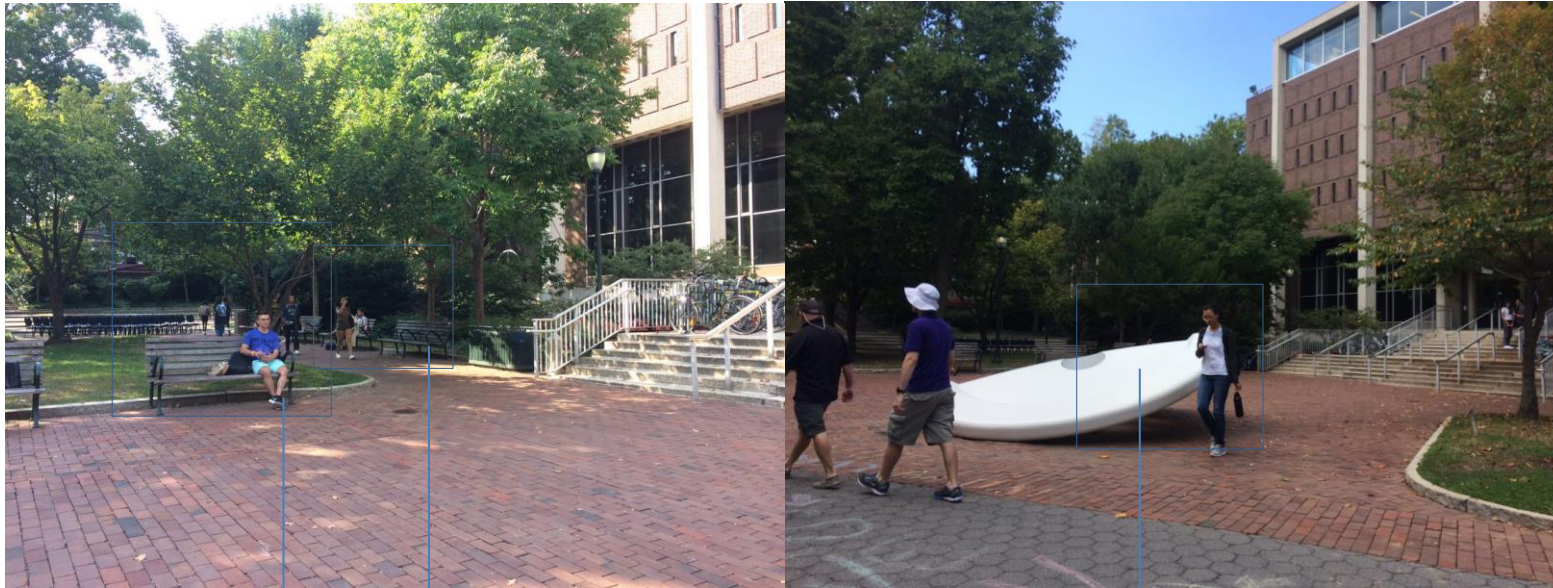
The location under the sun shade is very comfortable similar to the condition at 10:0-



Compared with the case at 10:00, there is nobody around the sculpture which is baked with the sun radiation. However, in the sunshade, people are standing to chat because the influence of the sun radiation

Compared with the case at 10:00, there is nobody sitting on the ground because the condition becomes more comfortable at the bench. So people selected to sit at the bench instead.





4pm

At 16:00, in the location around the bench, the sun radiation is less than that at 10:00 and 13:00, because the shading is covering the location. So the student selected to sit here

The location under the sun shade is very comfortable similar to the condition 10:00 and 13:00

Compared with the case at 10:00, there is nobody staying around the sculpture and only walking through. As the location is under the sun shade, the Comfort condition is very good.

- **PROPOSAL**

Generally the comfort condition is pretty good in front of Van Pelt Library on Sep. 16<sup>th</sup> at 13:00 and 16:00. Only at 10:00, it is a little bit hot because of the strong sun radiation without the sun shade. As it is not very realistic to create the sun shade near the bench, we propose to plant some trees in the hot zone, which in our observation, the location a2, a3, a4.

Strategies:

1. Propose to create the proper shading system for the hot areas
2. Propose to plant trees

- **DIFFERENCE BETWEEN DATA**

temperature(°C)	10:00	13:00	16:00
airport	26	29	29
weather data	21.1	22.2	20.6
measurement	24.9	32.8	29.3

humidity(%)	10:00	13:00	16:00
airport	69	52	49
weather data	61	57	63
measurement	49.6	52.4	55.6

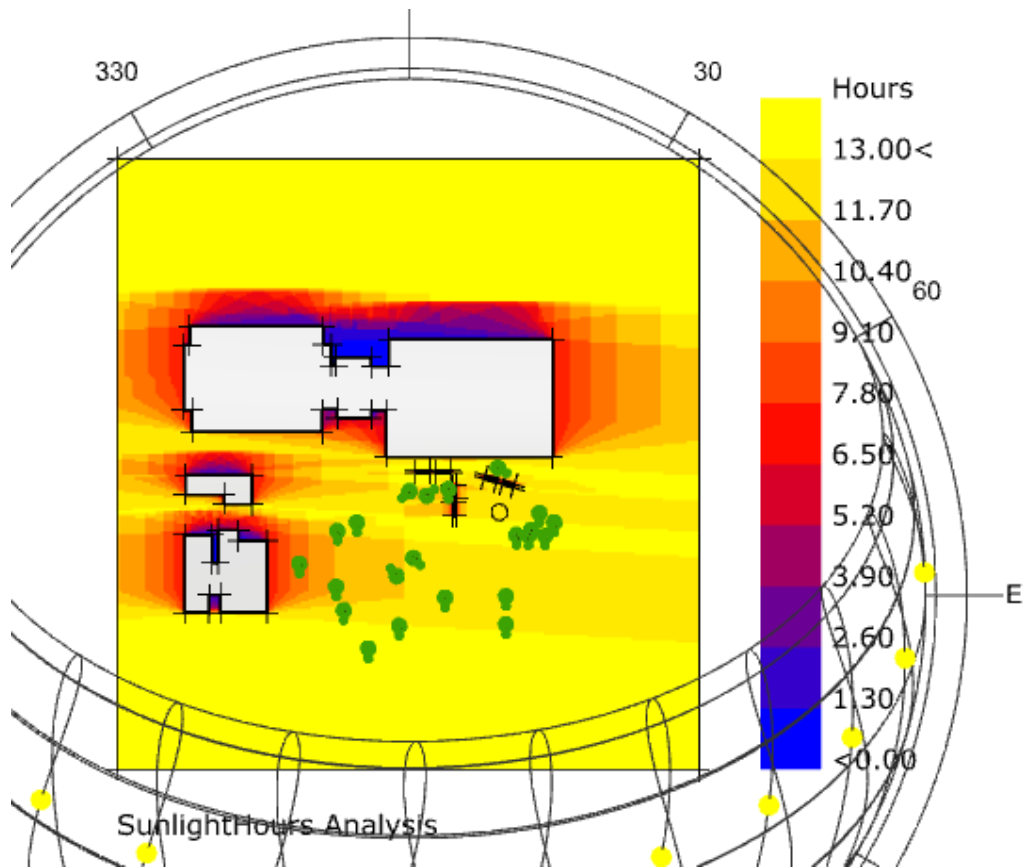
wind speed(mph)	10:00	13:00	16:00
airport	2.2	2.2	5
weather data	9	10	10
measurement	0.6	0.3	2

From the comparison of the data between local weather data, weather file and the station weather data, we found that **for the temperature**, the local weather data are always the lowest, around 5 - 9 °C lower than the other two data. And as for the weather file and the station weather data, they are almost the same and the differences are less than 3.5 °C.

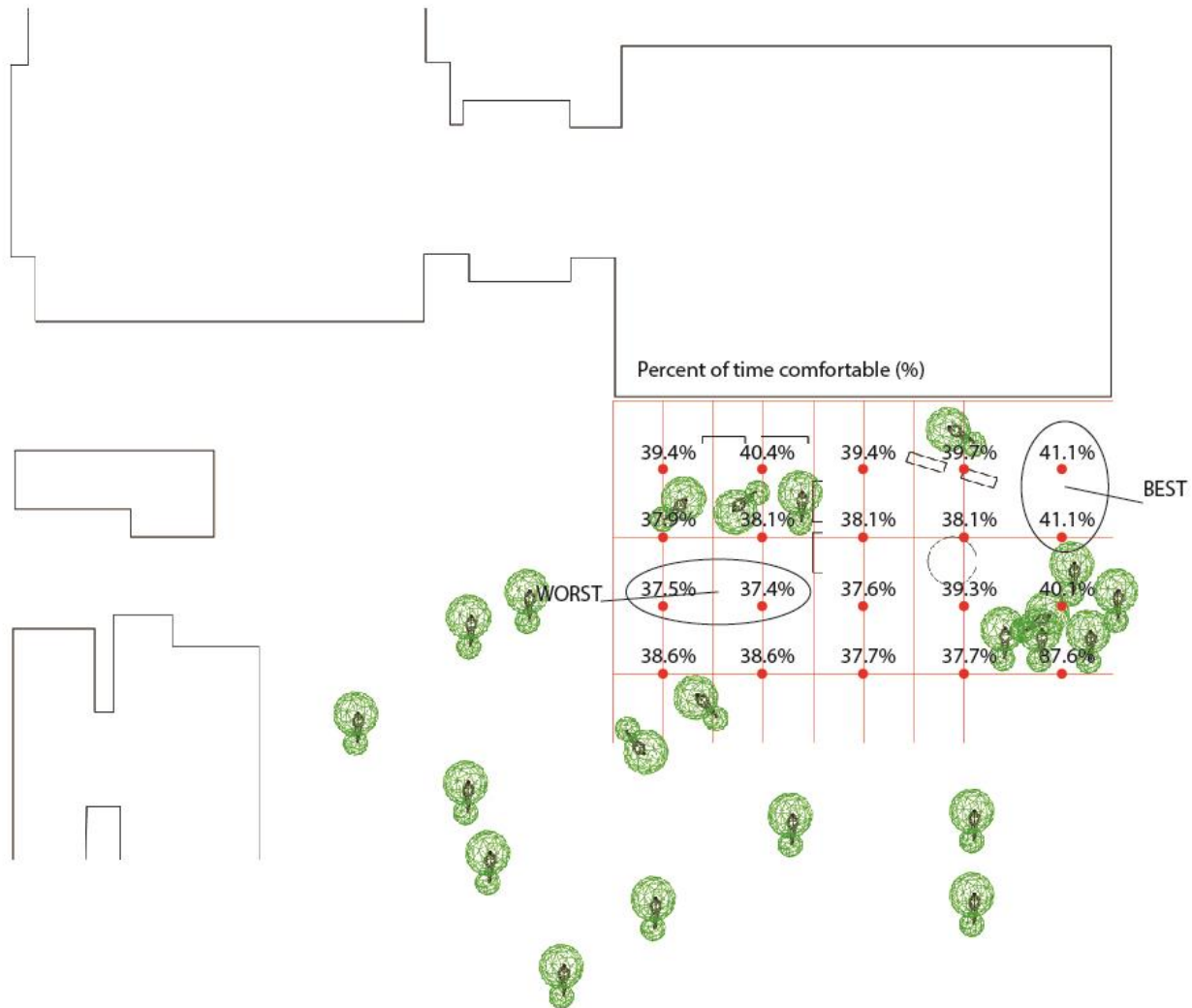
**For the humidity**, we found that at 10:00, station data is highest, and at 13:00 or 16:00, the weather file data are highest. The measurement data is always the lowest.

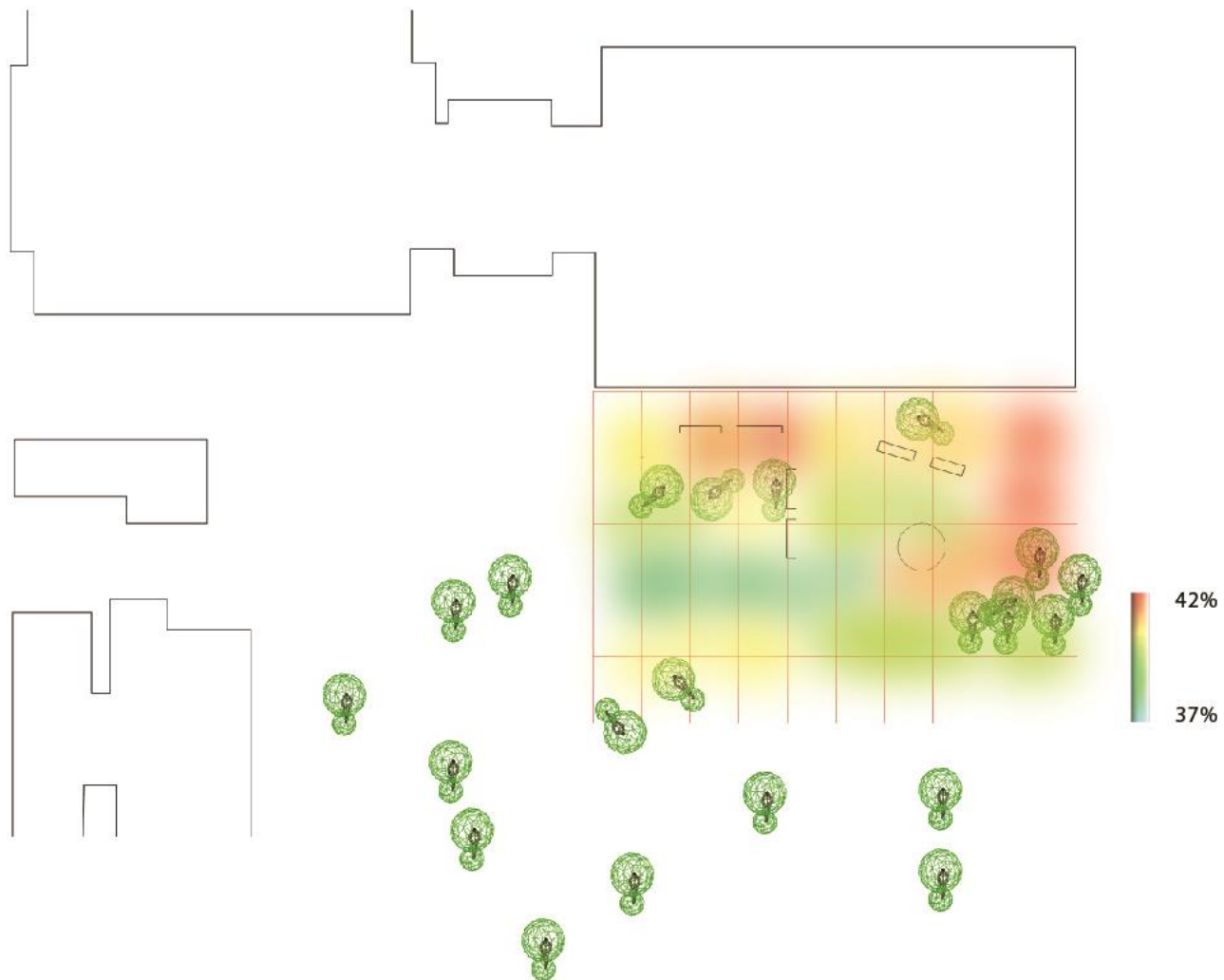
**For the wind speed**, we found that the weather file data is much higher than the data from measurement. And the station weather data is more in between the two extreme and closer to the measurement.

- **Sunlight Hours Analysis**



- The Annual outdoor comfort

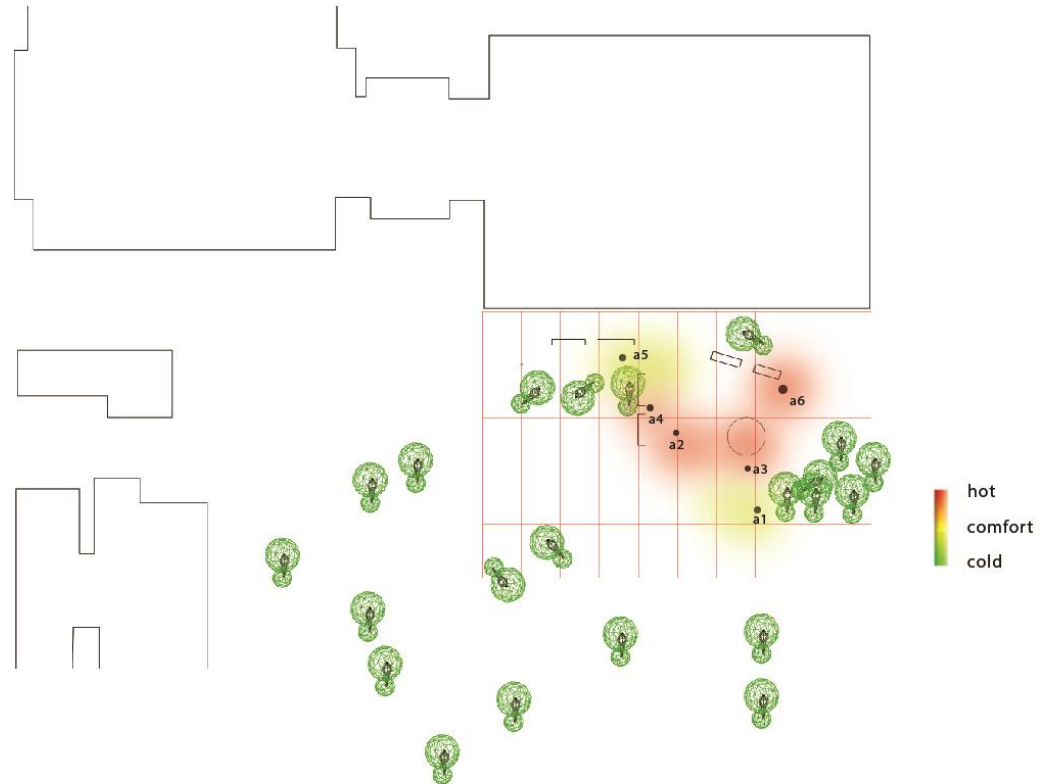




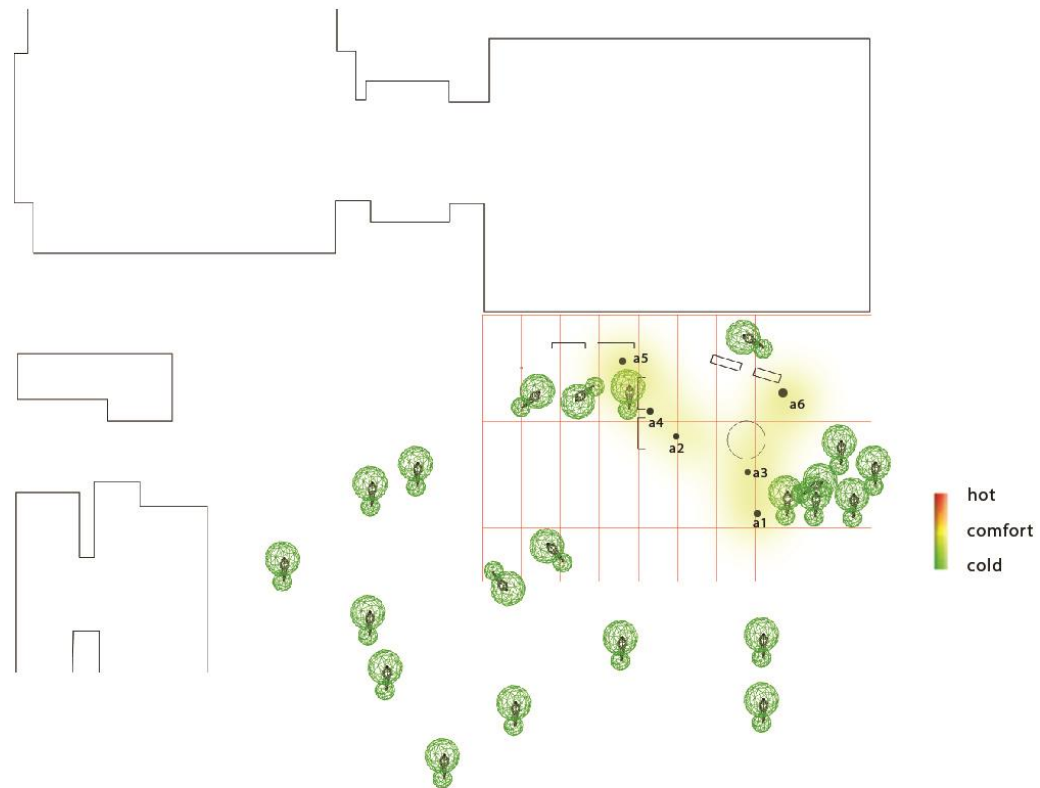


- **Comfort map sketch (based on measured data)**

10:00



13:00



16:00

