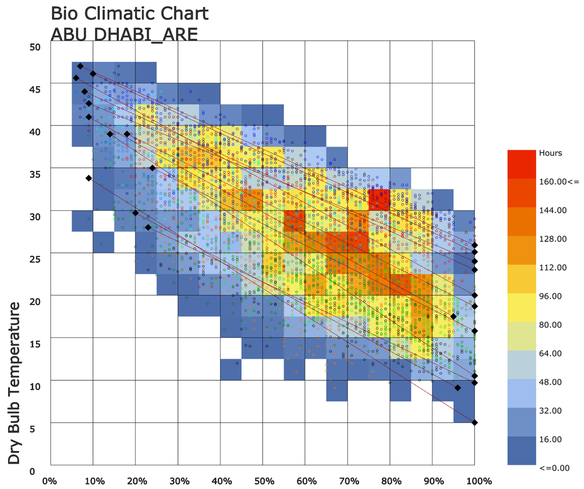
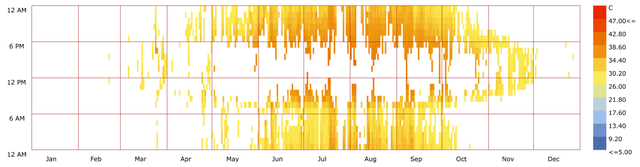
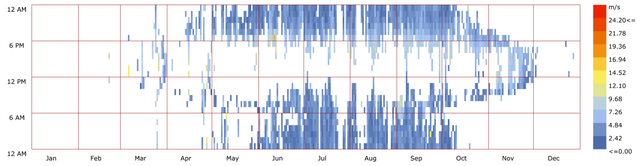
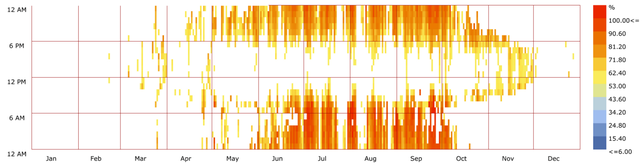




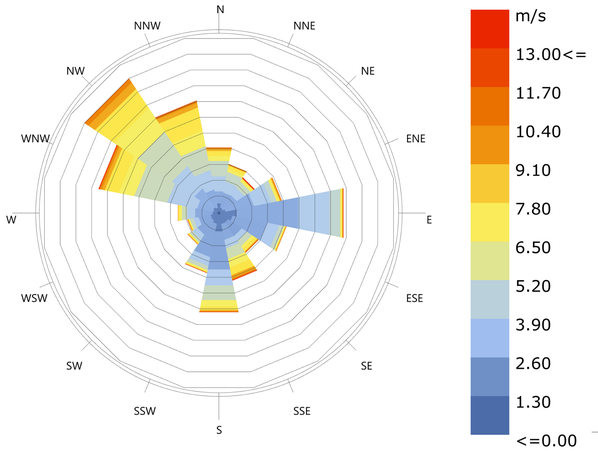
Dry Bulb Temperature (C) - Hourly
ABU DHABI_ARE
1 JAN 1:00 - 31 DEC 24:00



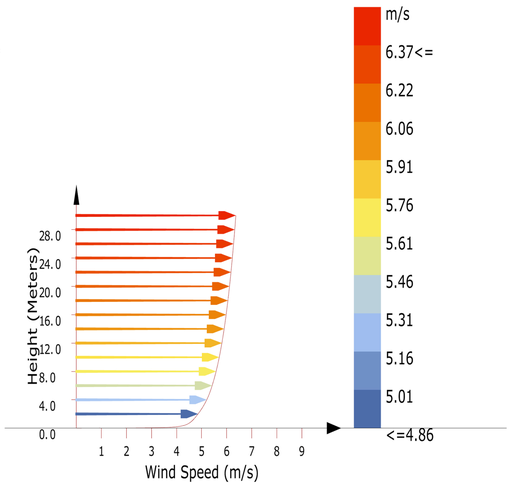
Wind Speed (m/s) - Hourly
ABU DHABI_ARE
1 JAN 1:00 - 31 DEC 24:00



Relative Humidity (%) - Hourly
ABU DHABI_ARE
1 JAN 1:00 - 31 DEC 24:00



Wind-Rose
ABU DHABI_ARE
1 JAN 1:00 - 31 DEC 24:00
Hourly Data: Wind Speed (m/s)
Calm for 1.60% of the time = 140 hours.
Each closed polyline shows frequency of 1.3%. = 110 hours.



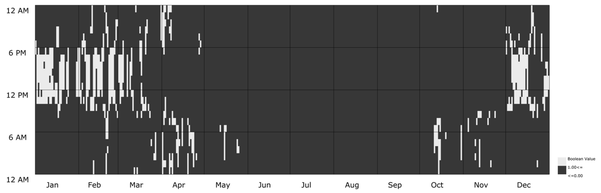
Wind Profile - Prevailing Wind Average Velocity
ABU DHABI_ARE - Water Terrain
1 JAN 1:00 - 31 DEC 24:00

Humidity Ratio

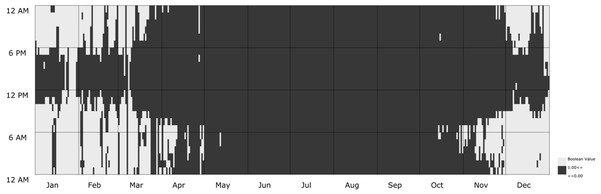
- Comfort
- Passive Solar Heating
- Evaporative Cooling
- Thermal Mass + Night Vent
- Natural Ventilation

No Comfort / Comfort

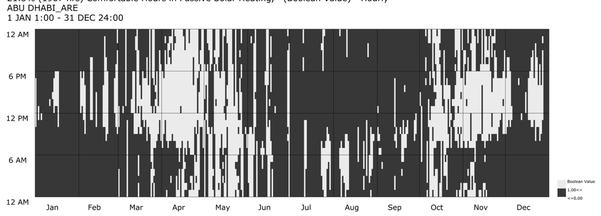
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec



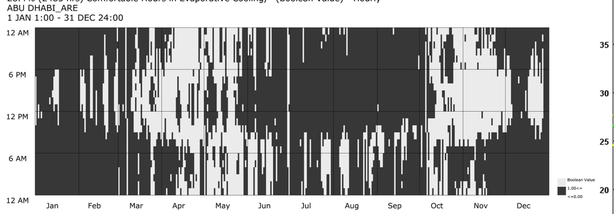
7.5% (658 hrs) Comfortable Hours in Comfort, (Boolean Value) - Hourly
ABU DHABI_ARE
1 JAN 1:00 - 31 DEC 24:00



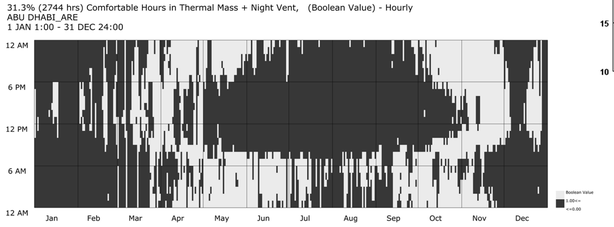
21.8% (1907 hrs) Comfortable Hours in Passive Solar Heating, (Boolean Value) - Hourly
ABU DHABI_ARE
1 JAN 1:00 - 31 DEC 24:00



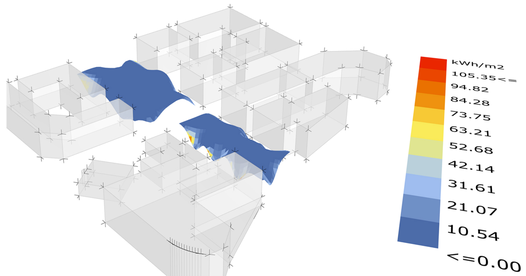
28.4% (2485 hrs) Comfortable Hours in Evaporative Cooling, (Boolean Value) - Hourly
ABU DHABI_ARE
1 JAN 1:00 - 31 DEC 24:00



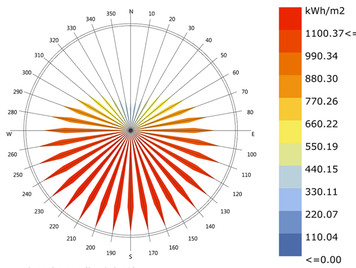
31.3% (2744 hrs) Comfortable Hours in Thermal Mass + Night Vent, (Boolean Value) - Hourly
ABU DHABI_ARE
1 JAN 1:00 - 31 DEC 24:00



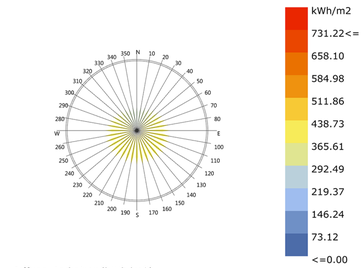
34.2% (2997 hrs) Comfortable Hours in Natural Ventilation, (Boolean Value) - Hourly
ABU DHABI_ARE
1 JAN 1:00 - 31 DEC 24:00



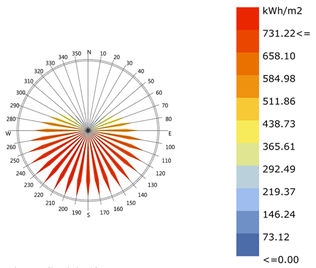
Radiation Analysis



Total Radiation(kWh/m2)
ABU_DHABI_ARE
1 JAN 1:00 - 31 DEC 24:00



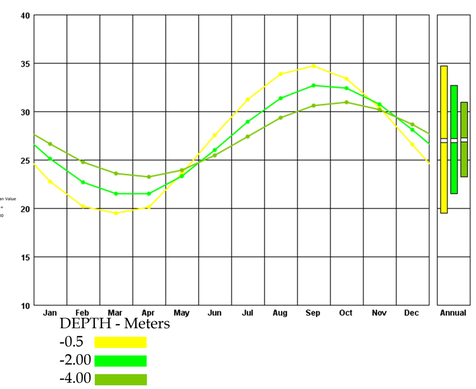
Diffuse Radiation(kWh/m2)
ABU_DHABI_ARE
1 JAN 1:00 - 31 DEC 24:00



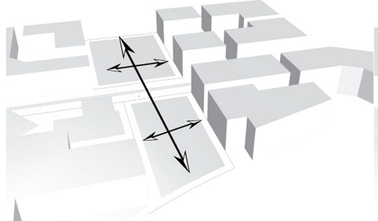
Direct Radiation(kWh/m2)
ABU_DHABI_ARE
1 JAN 1:00 - 31 DEC 24:00

Ground Temperature

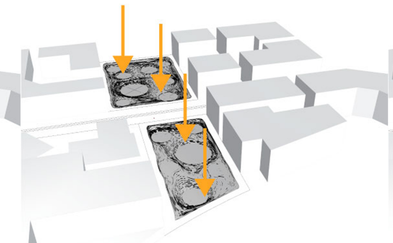
Monthly Average



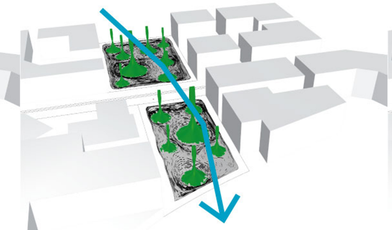
The Design Process



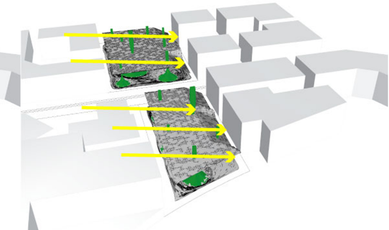
Orientation of the site in the direction of northwest to south east



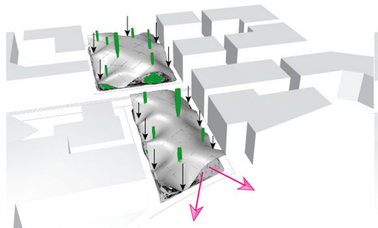
Placing building below ground level due to lower thermal fluctuations in the depths of the soil and creating spaces for increasing social interactions



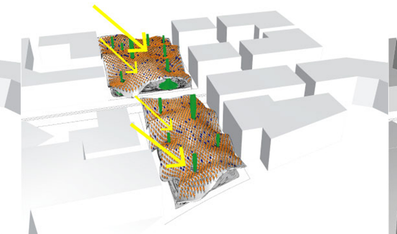
Use of the wind in the area by putting windbreakers in the building



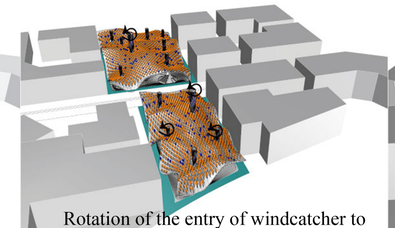
Determine the height of the ceiling with a Solar envelope and specify a meters to 15 maximum height of avoid creating shadows on adjacent buildings



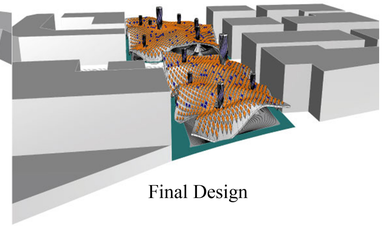
Shaping the building shell and pointing out the supporting points based on the optimal site's visibility directions



Incorporating intelligent and rotatable Solar panels on the roof tile to maximize solar energy consumption



Rotation of the entry of windcatcher to the wind direction of the area for better use of wind blowing and moving the wind inside the winding and cooling the building air with evaporative cooling



Final Design