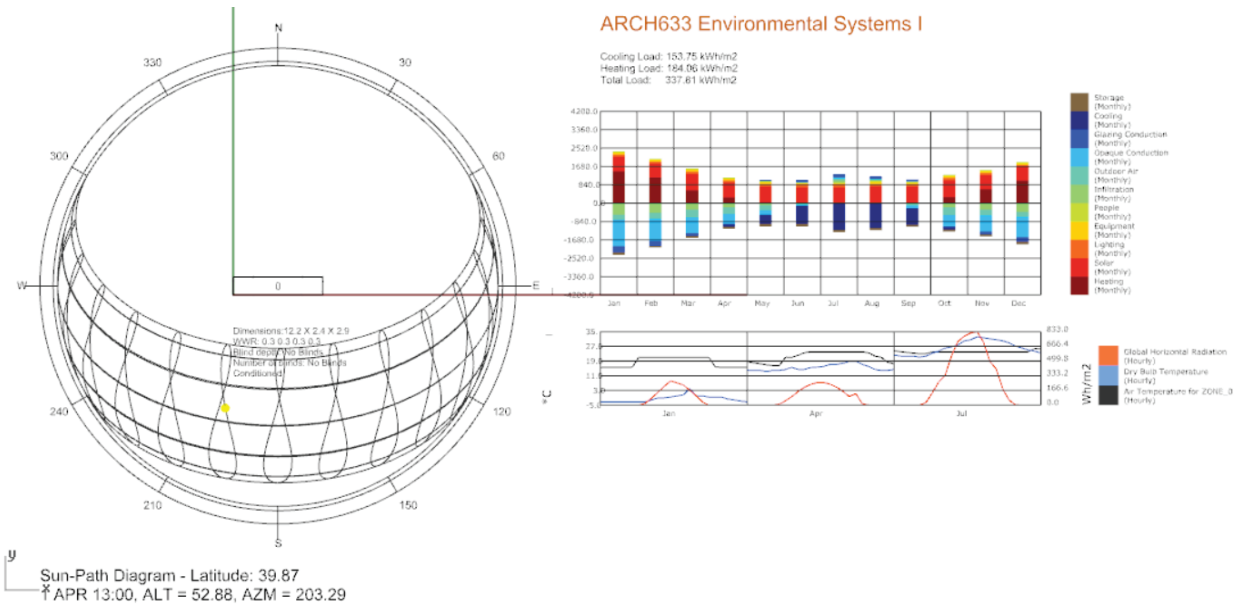
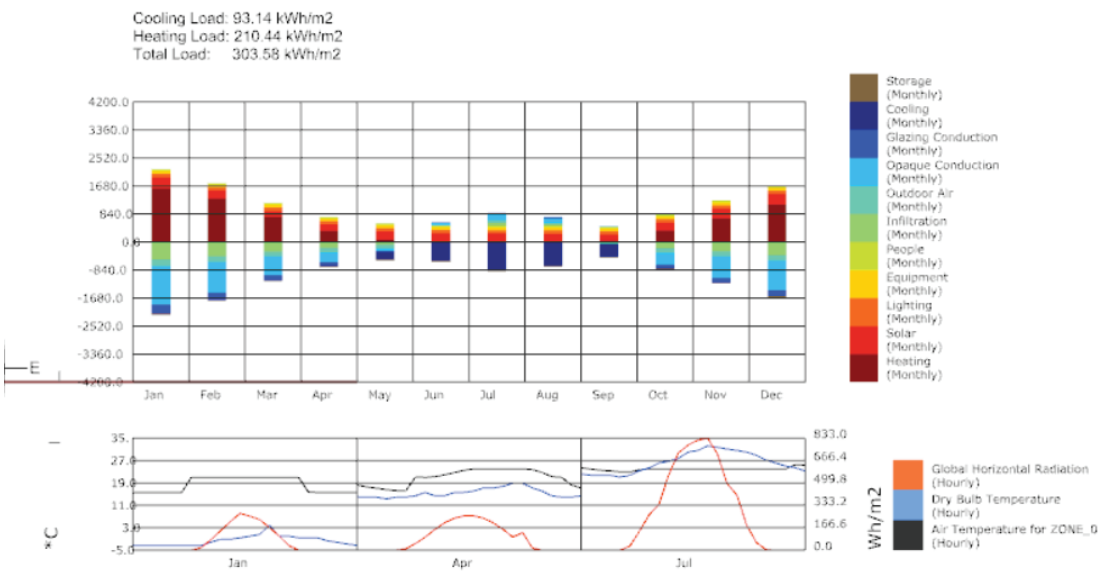
Nicole Bronola

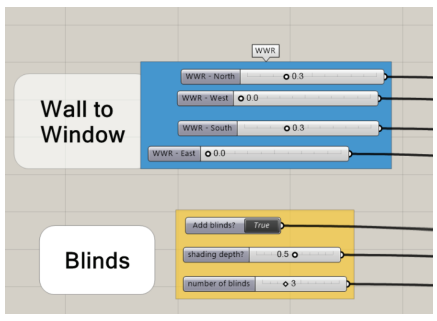


Cooling Load: 153.75 kWh/m2
Heating Load: 184.06 kWh/m2
Total Load: 337.81 kWh/m2

Original Total Load = 337.61 kWh/m2

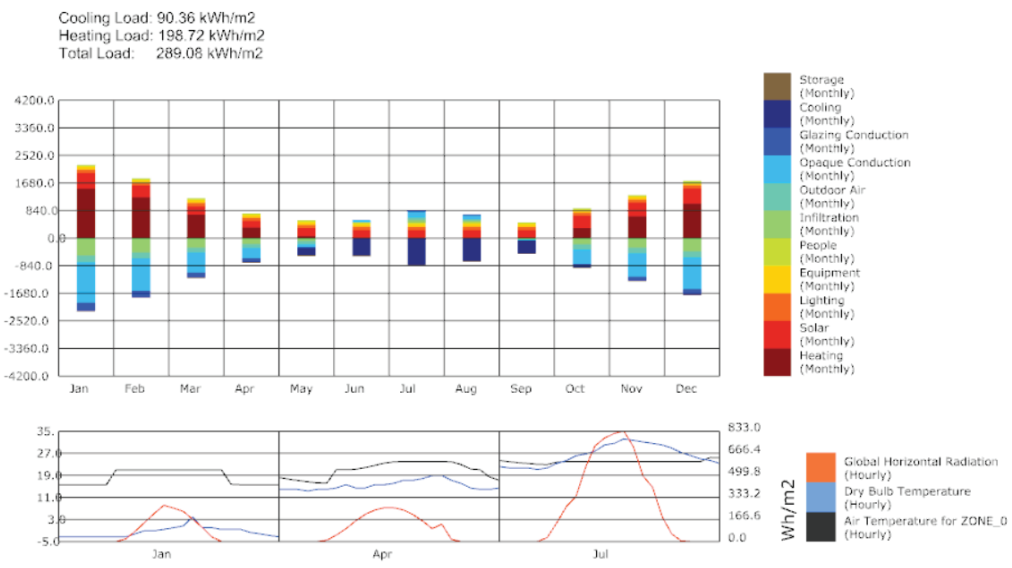
The original total load read 337.61 kWh/m2. The charts indicated that most load exertion was due to heating and opaque conduction. To change the variables and increase temperature during the winter, and to reduce solar exposure during the summer adjustments in window size and position had to be made.

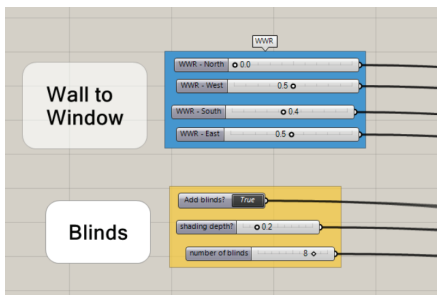


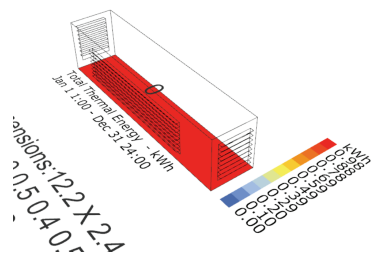


Modification Set 1 = TOTAL LOAD 303.58 kWh/m2

First To increase heat due to solar radiation, the southern and northern windows were created at 0.3. This will increase the surface area heated by radiation during the winter. Moderate amount of blinds were also added to regulate solar radiation during the summer. Because of the window removal cooling load went down; however the heating load increased.

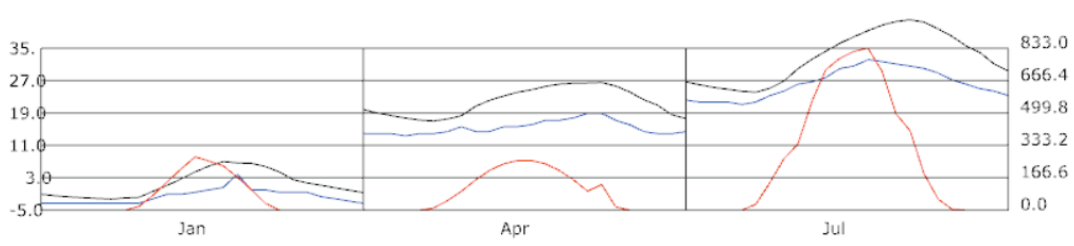






Modification Set 2 = TOTAL LOAD 289.08 kWh/m2

Now to maintain the cooling load but reduce the hearting load the northern window was taken out, and the east and west windows were introduced at .05. Blinds were also added at a higher number but lower density. The addition of the thermal mass did not make any difference. The addition of the eastern and western facing windows allowed for more solar radiation and reduced the heating load. However this lightly increased the cooling due to glazing.



TEMPERATURE RANGE

After applying the changes and removing the systems the temperature variation showed extreme differences between the summer and winter. The winter reached -1 Celsius while the summer moved above 35 Celsius.