DAYLIGHTING ANALYSIS

Building Performance &
Simulation
Fall 2016

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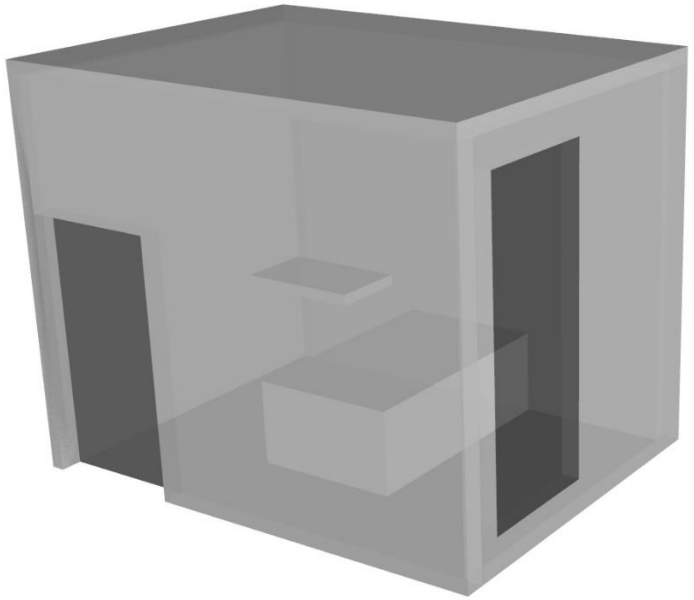
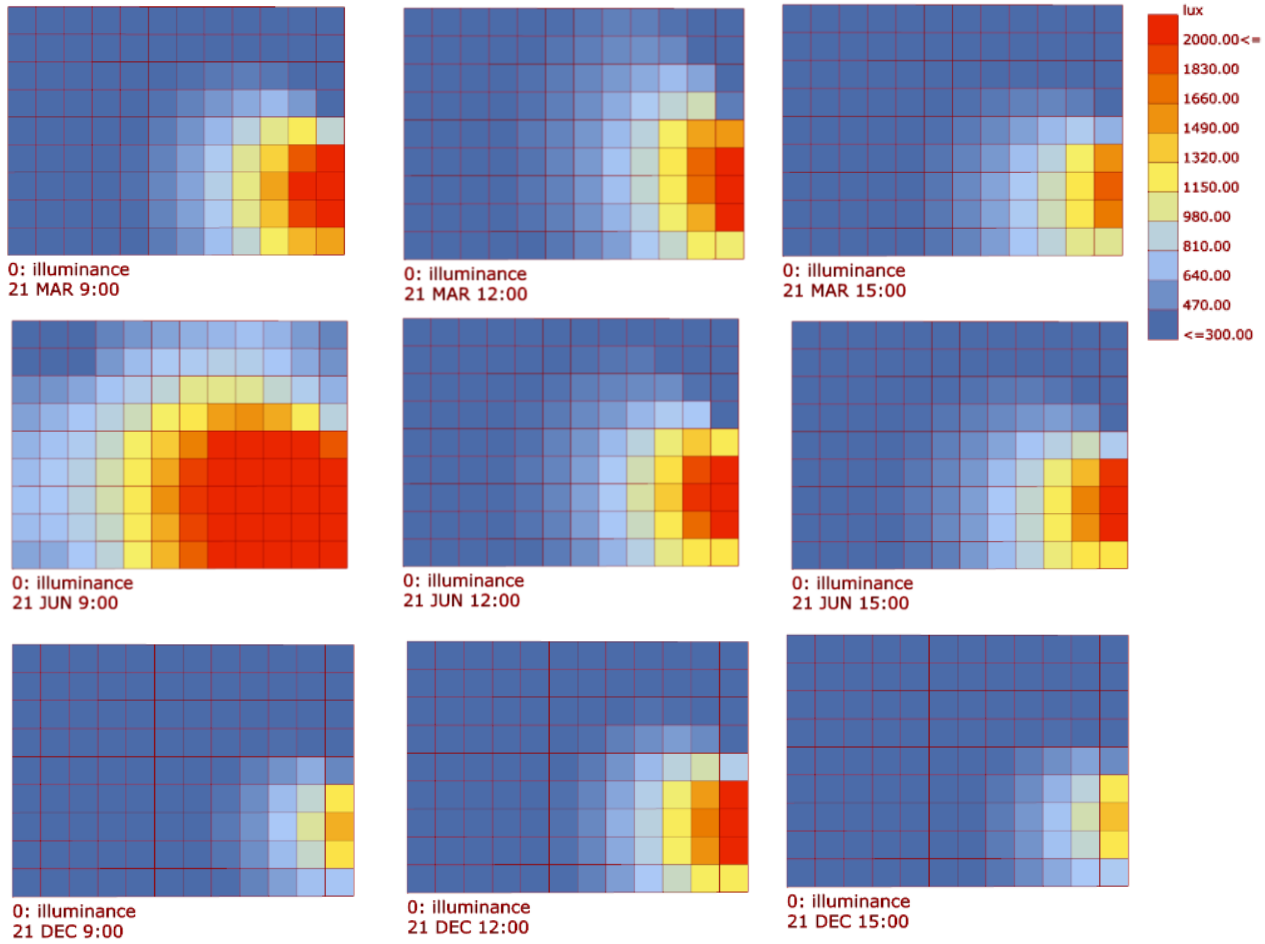
Base Case



Findings:

- Room with a single East facing window.
- What is seen here, as can be noted in the results below, the study desk does not receive enough daylighting.
- Excess glare seen in June.
- Only 1 external surface where the size of the openings can be worked upon.

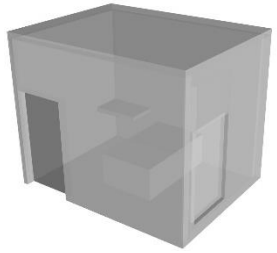


Conclusion:

Potential Problem:

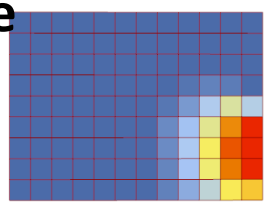
1. Not enough Daylight throughout the year, so this can be worked upon.
2. Worst glare situations need to be worked upon.

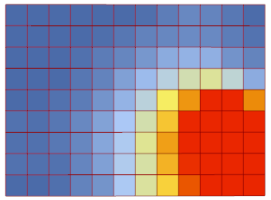
Window size Iterations

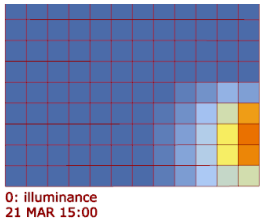


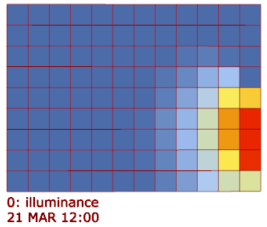
Option 1

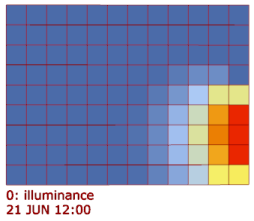
- Reducing the size of the window, reduces the glare but not significantly.
- Most part of the room still requires adequate daylight.

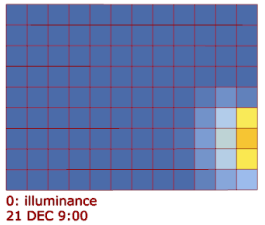


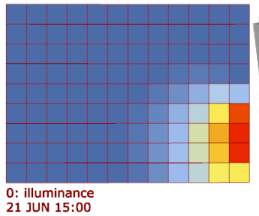


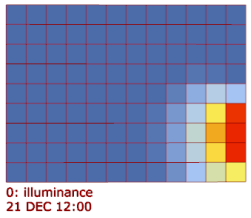


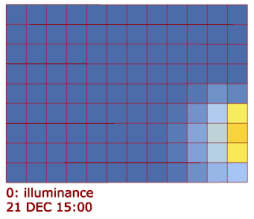


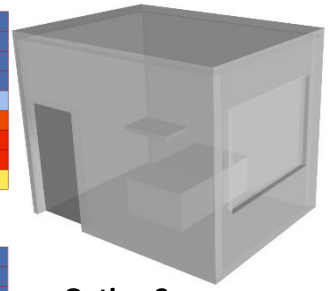






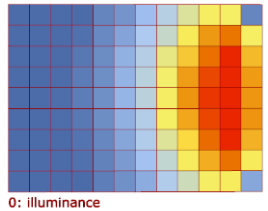


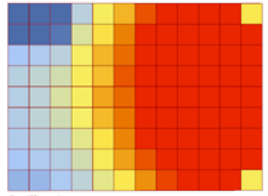


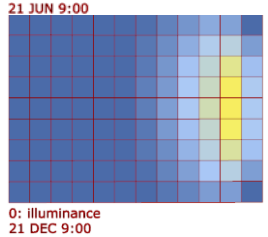


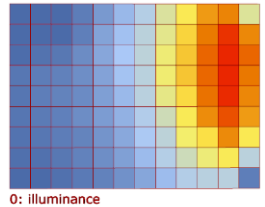
Option 2

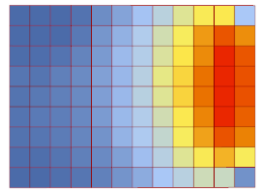
- Increasing the size of the window, helps in improving the daylight results in the mid room section.
- Daylight can be made better and glare needs to be managed.

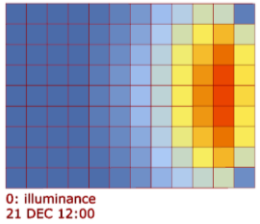


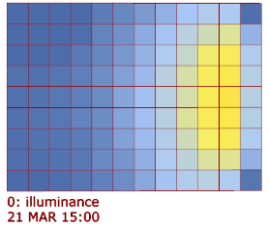


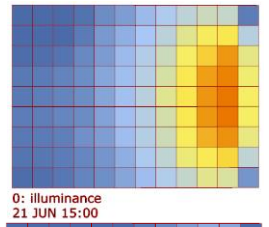


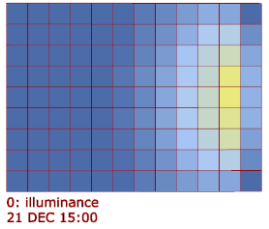


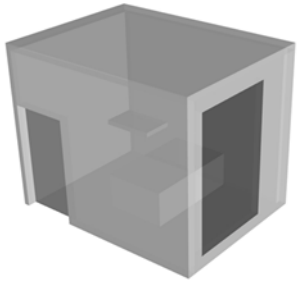






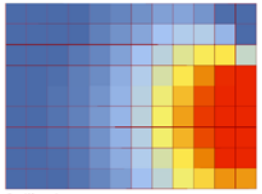


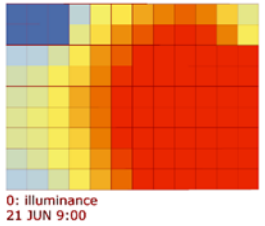


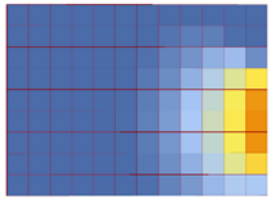


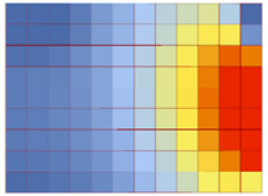
Option 3

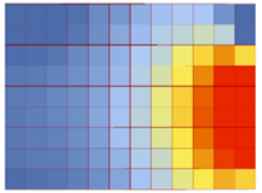
- The daylight reading is significantly better but can be made even better.

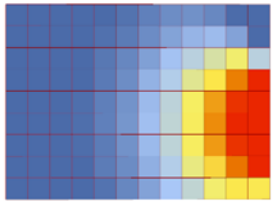


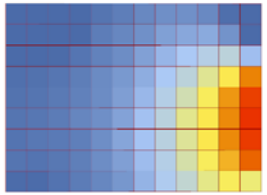


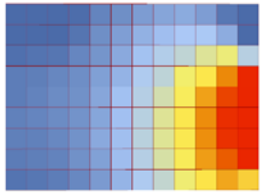


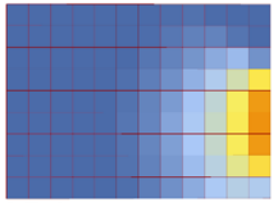


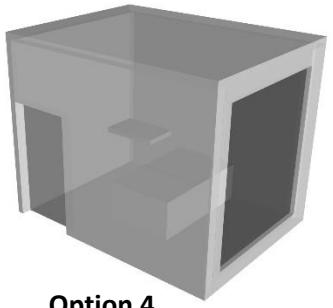






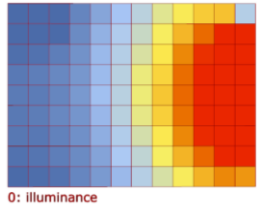


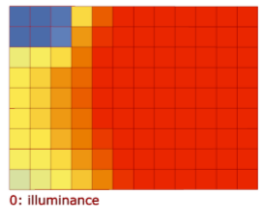


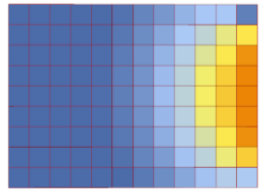


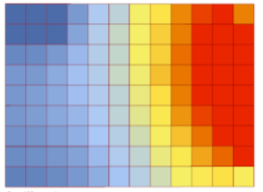
Option 4

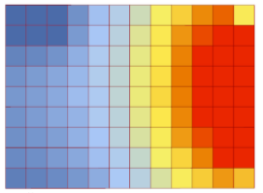
- Daylight readings better in this option, thus can be taken forward.
- High glare as a result of bigger area of window, solutions to be worked to reduce this discomfort.

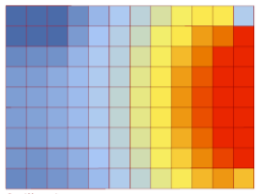


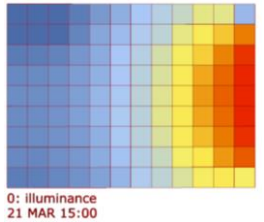


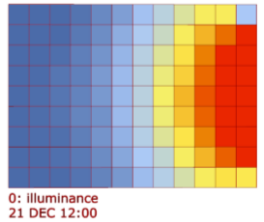


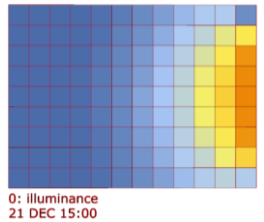




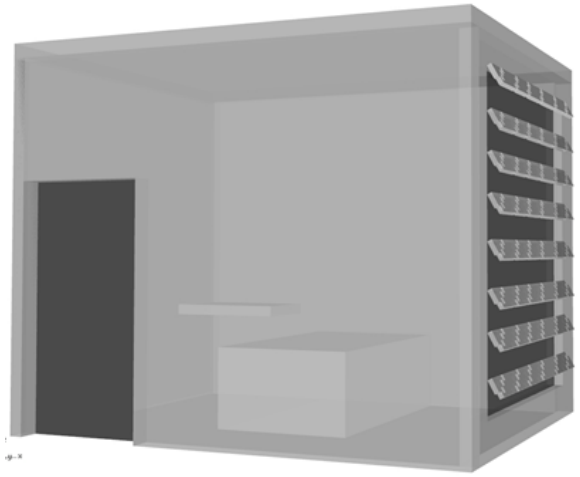








Window shading Iterations



Shading Option 1:

- As seen in the results, compared to the base results, the daylight readings improved till the middle part of the room.
- As this is the only external wall and the size of the window is the largest (amongst the iterations), it is suggested to move the study desk.
- As for the high glare seen in the reading specifically for 21 June 9 a.m., internal blinds can be installed to manage the same.