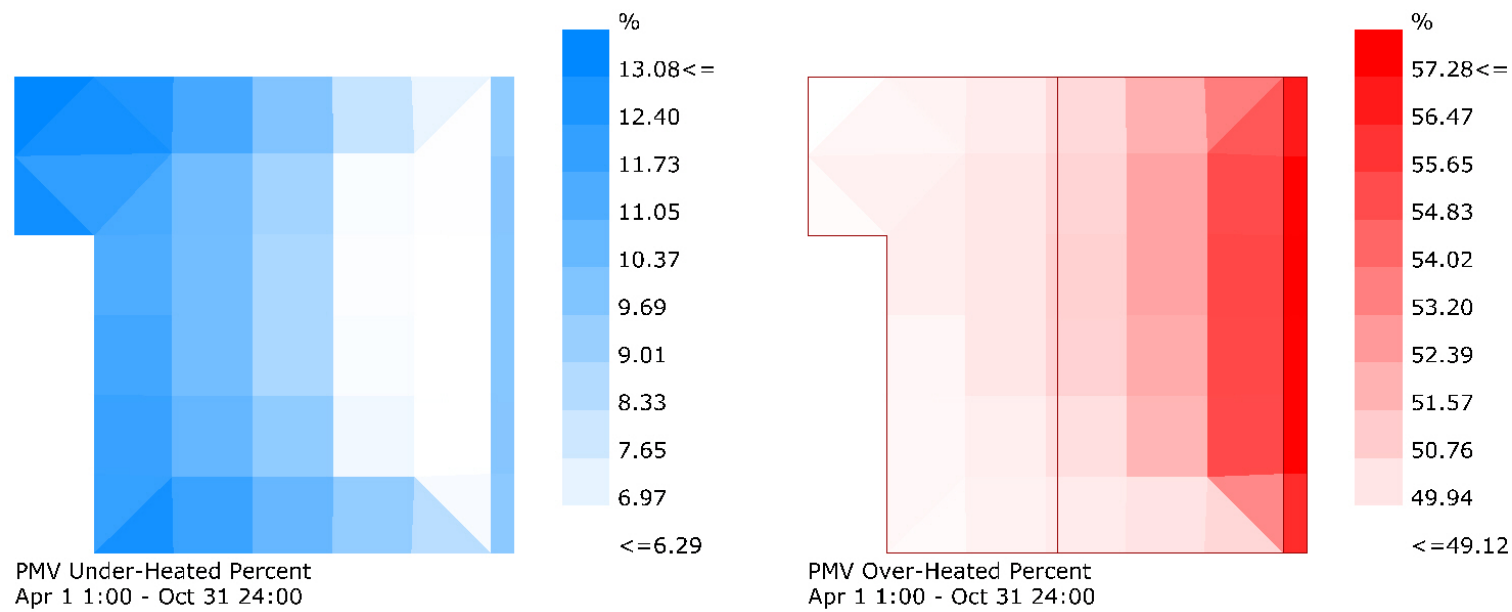
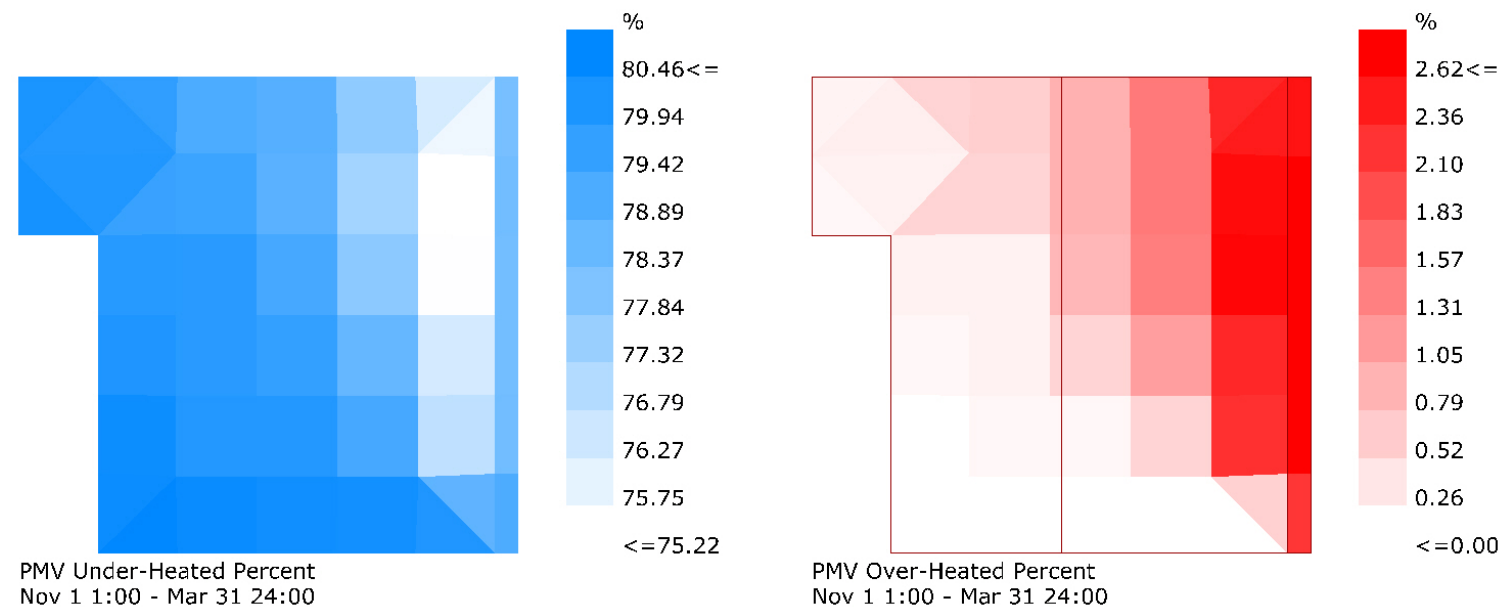


Comfort Autonomy Simulation (no shade)

Non-winter season



Winter season



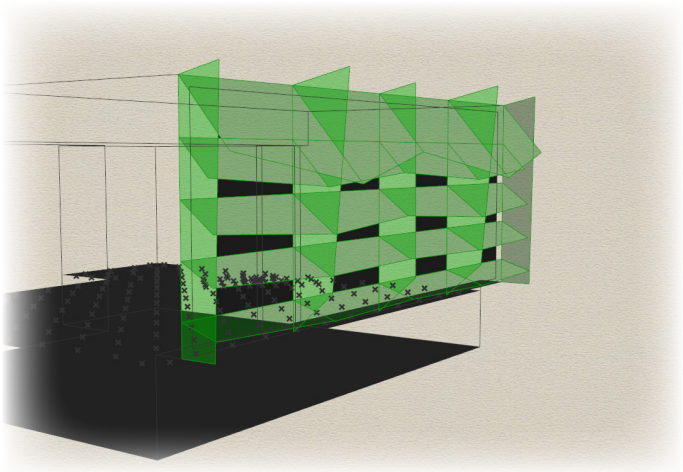
Comfort Autonomy Simulation was performed without shading devices to see the initial comfort problems. During non-winter season, this space needs more cooling loads and need more heating load in winter season.

Natural Ventilation Comfort Simulation (no shade)

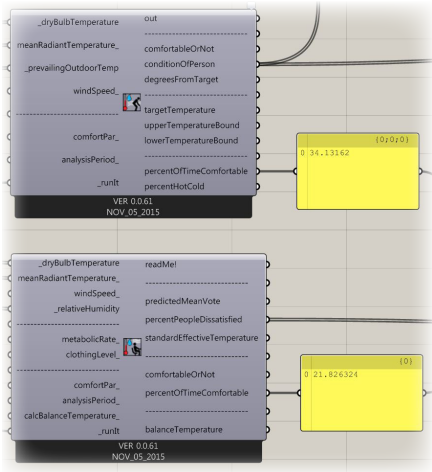
Non-winter season



The comfort without shade shows almost 0% in the beginning.



Based on the autonomy simulation, extreme shade device would be a best strategy during non-winter season.

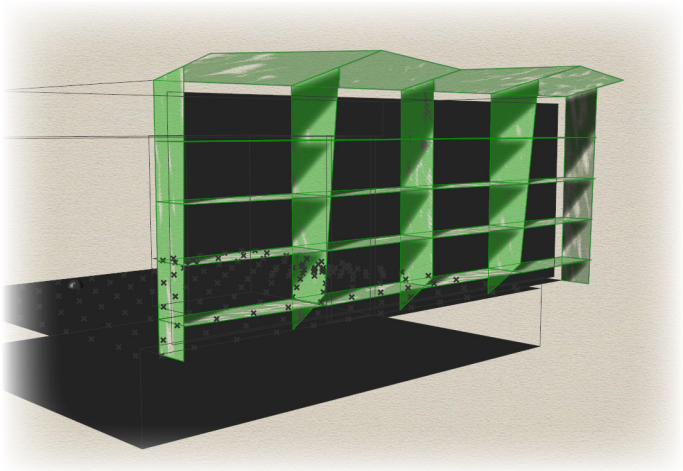


From the adaptive comfort calculator, 34.13 % was came out.

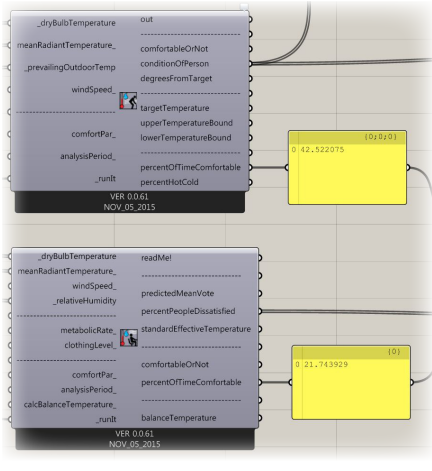
Winter season



The comfort without shade shows better result compared with non-winter season.
These results prove the result from the comfort autonomy simulation.



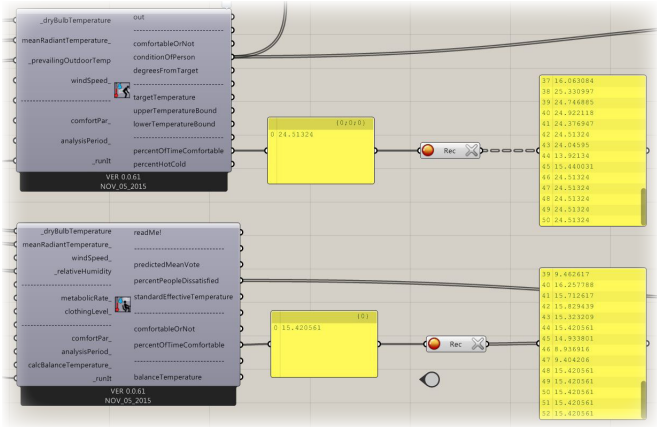
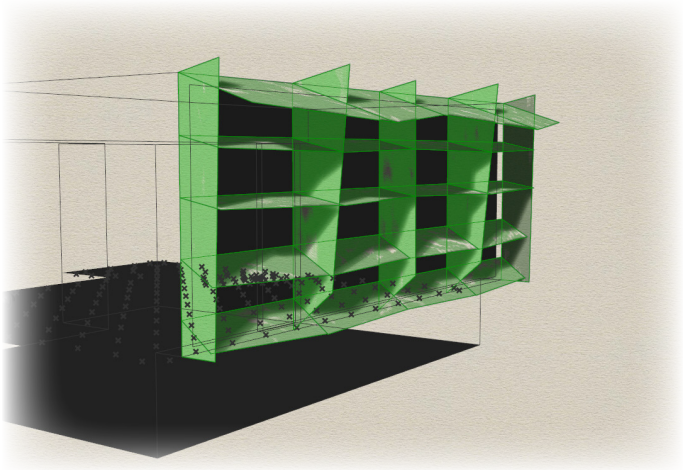
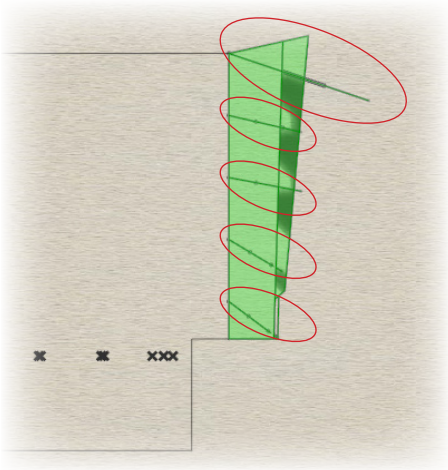
Based on the autonomy simulation, extreme shade device would be a best strategy during non-winter season.



From the adaptive comfort calculator, 42.52 % was came out.

Advanced Strategy

Non-winter season / Decreaseing openings

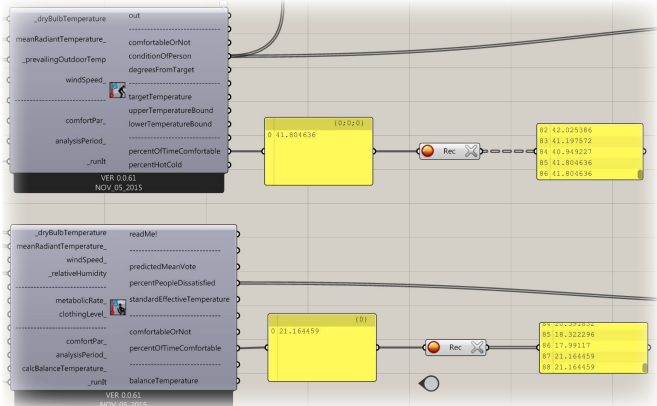
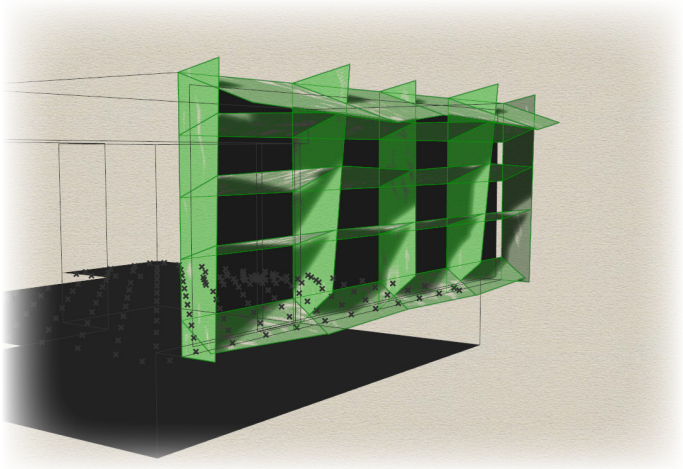
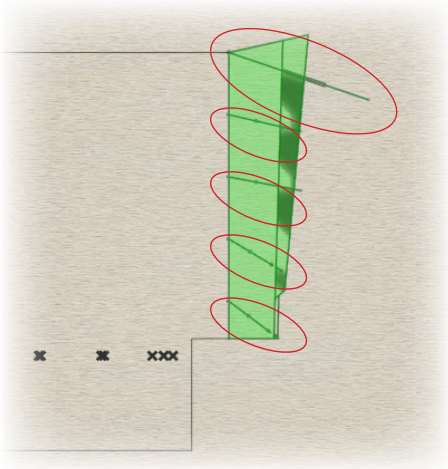


Advanced strategy was expected by adjusting each level of shade angle and reflection rate with 5 degrees and chaging reflection rate of shade.

Best design by adjusting shade.

Throughout all variation, initial shade(page 2) seems to be best model for this system.

Winter season/ Incrasing openings



For winter season, increasing openings was concluded from previous research.

Based on the autonomy simulation, extreme shade device would be a best strategy during non-winter season.

From the adaptive comfort calculator, 41.80 % was came out. This one also represent that initial model was for best comfort(42.52%).