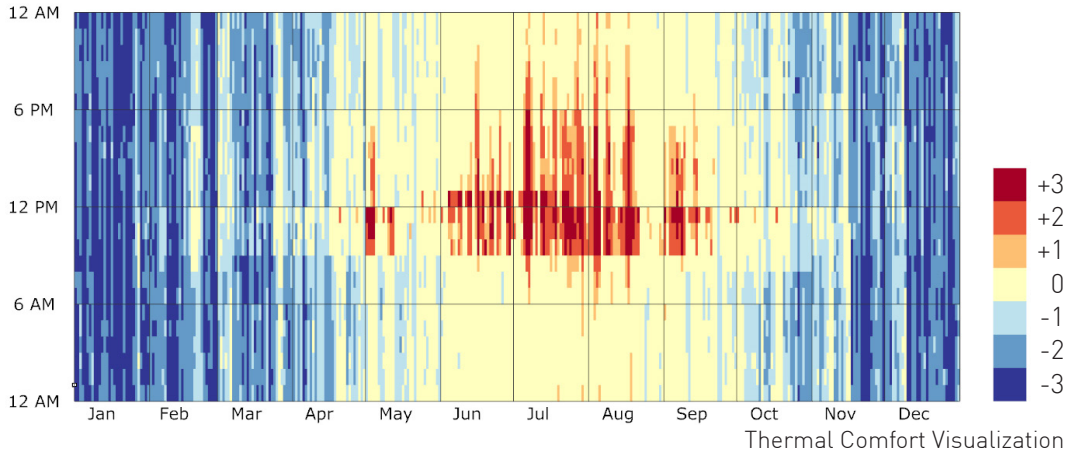
ASSIGNMENT 3: Outdoor Comfort Study

Simulation 01: Existing Conditions

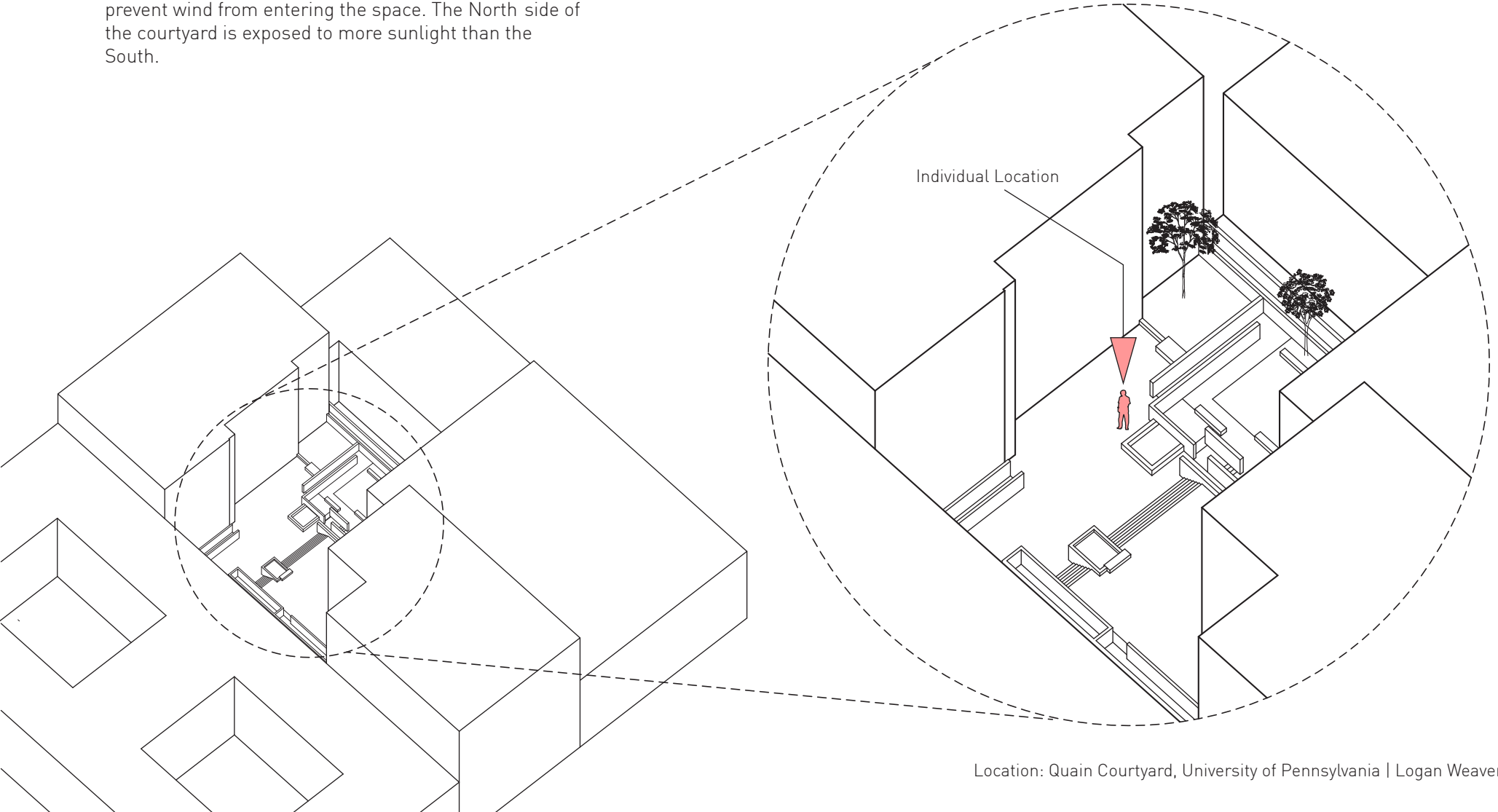
Comfortable Time:	39%
Comfortable (Short) Time:	20%
Heat Stress Time:	8%
Cold Stress Time:	34%

Comments

The area is flanked on all sides by buildings of 4+ stories, which provide some shading and largely prevent wind from entering the space. The North side of the courtyard is exposed to more sunlight than the South.



Thermal Comfort Visualization



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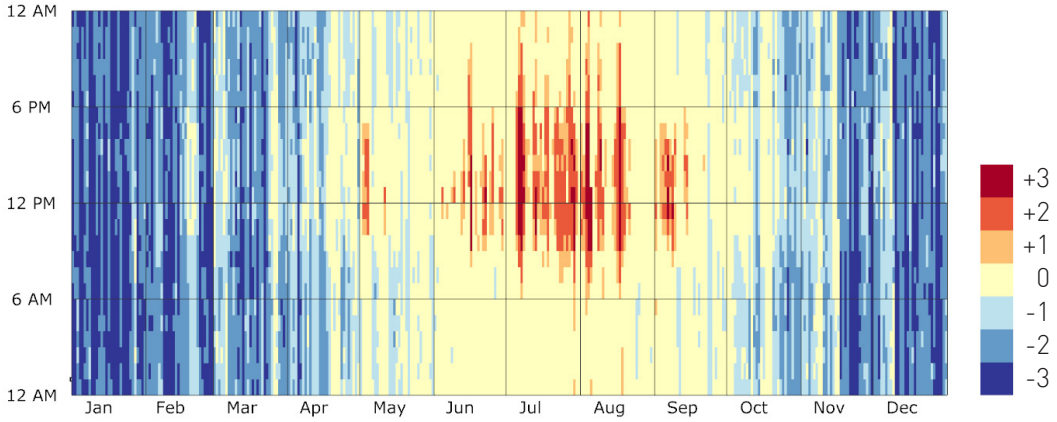
Simulation 02: Additional Shading

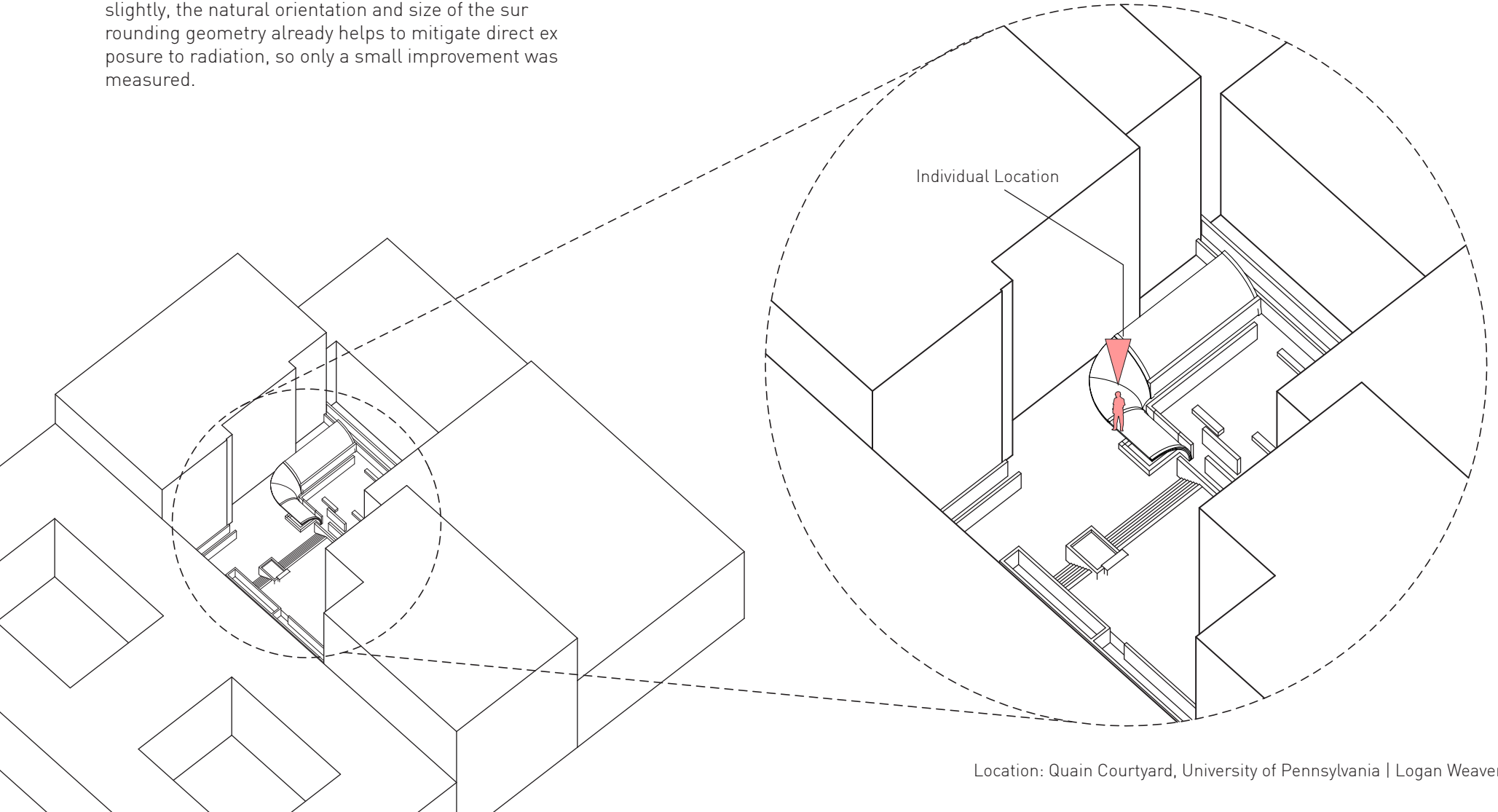
Comfortable Time:	41%
Comfortable (Short) Time:	20%
Heat Stress Time:	5%
Cold Stress Time:	34%

Comments

Providing additional shading did very little to increase overall thermal comfort. While it improved heat stress slightly, the natural orientation and size of the sur rounding geometry already helps to mitigate direct ex posure to radiation, so only a small improvement was measured.



Thermal Comfort Visualization



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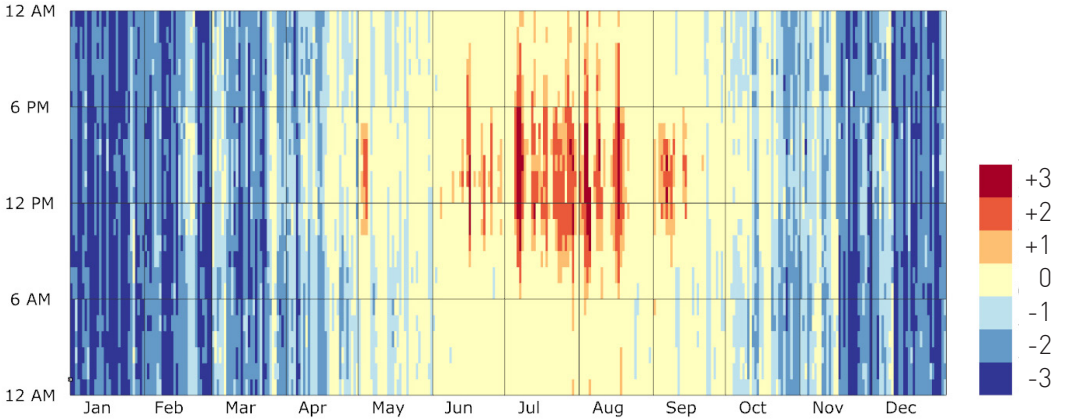
Simulation 02: Selected Shading, Allows in Low Light

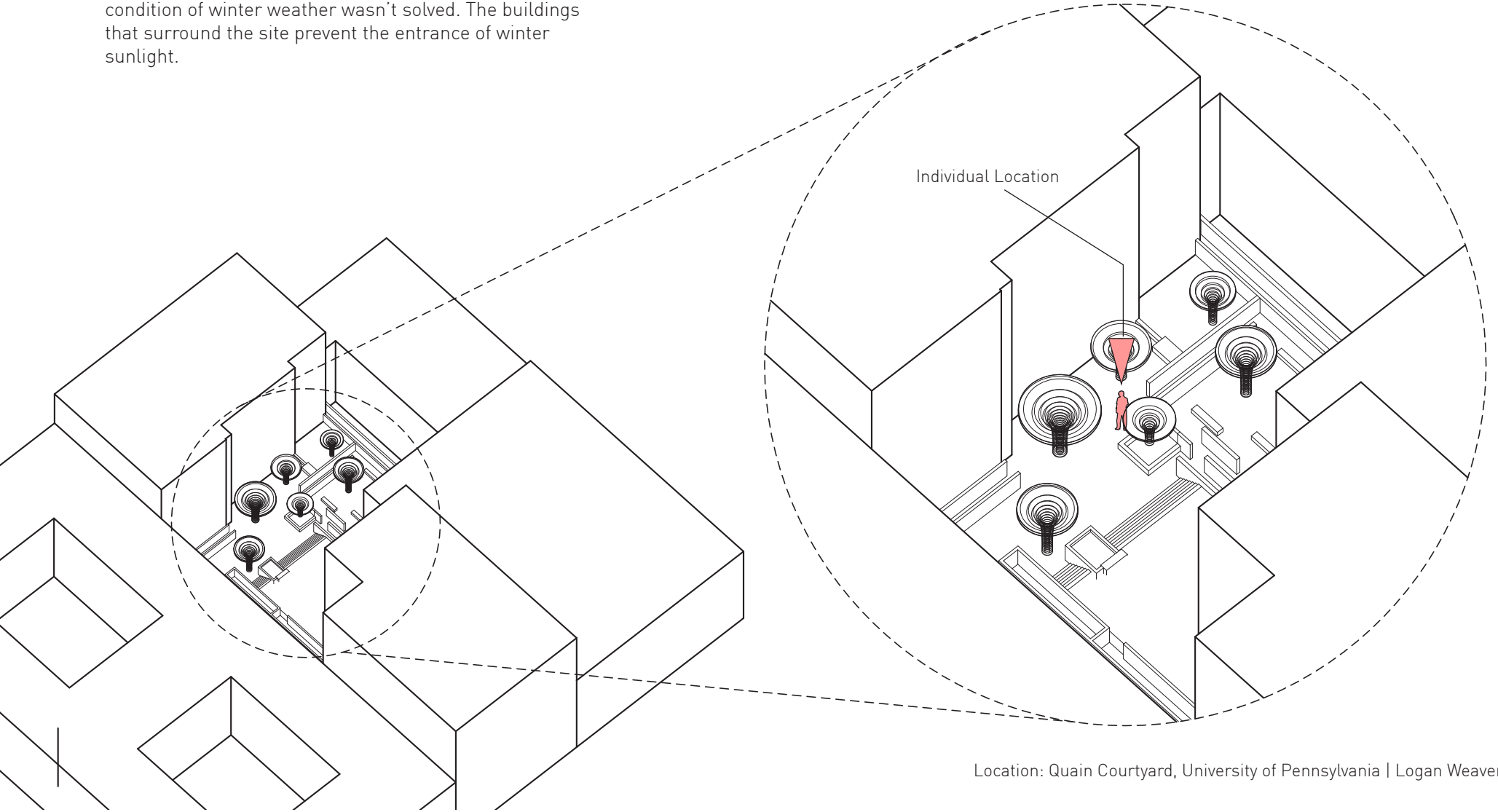
Comfortable Time:	41%
Comfortable (Short) Time:	19%
Heat Stress Time:	6%
Cold Stress Time:	34%

Comments

Again, not very helpful. Certain areas were made slightly more comofortable in heat, but overall, the thermal condition of winter weather wasn't solved. The buildings that surround the site prevent the entrance of winter sunlight.



Thermal Comfort Visualization



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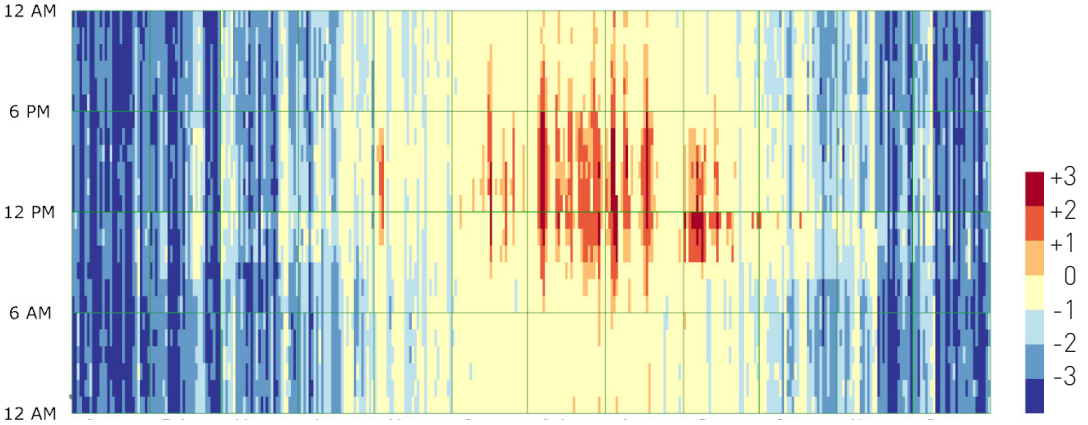
Simulation 03: Raised Walkway + Lowering Nearby Building

Comfortable Time:	42%
Comfortable (Short) Time:	22%
Heat Stress Time:	3%
Cold Stress Time:	33%

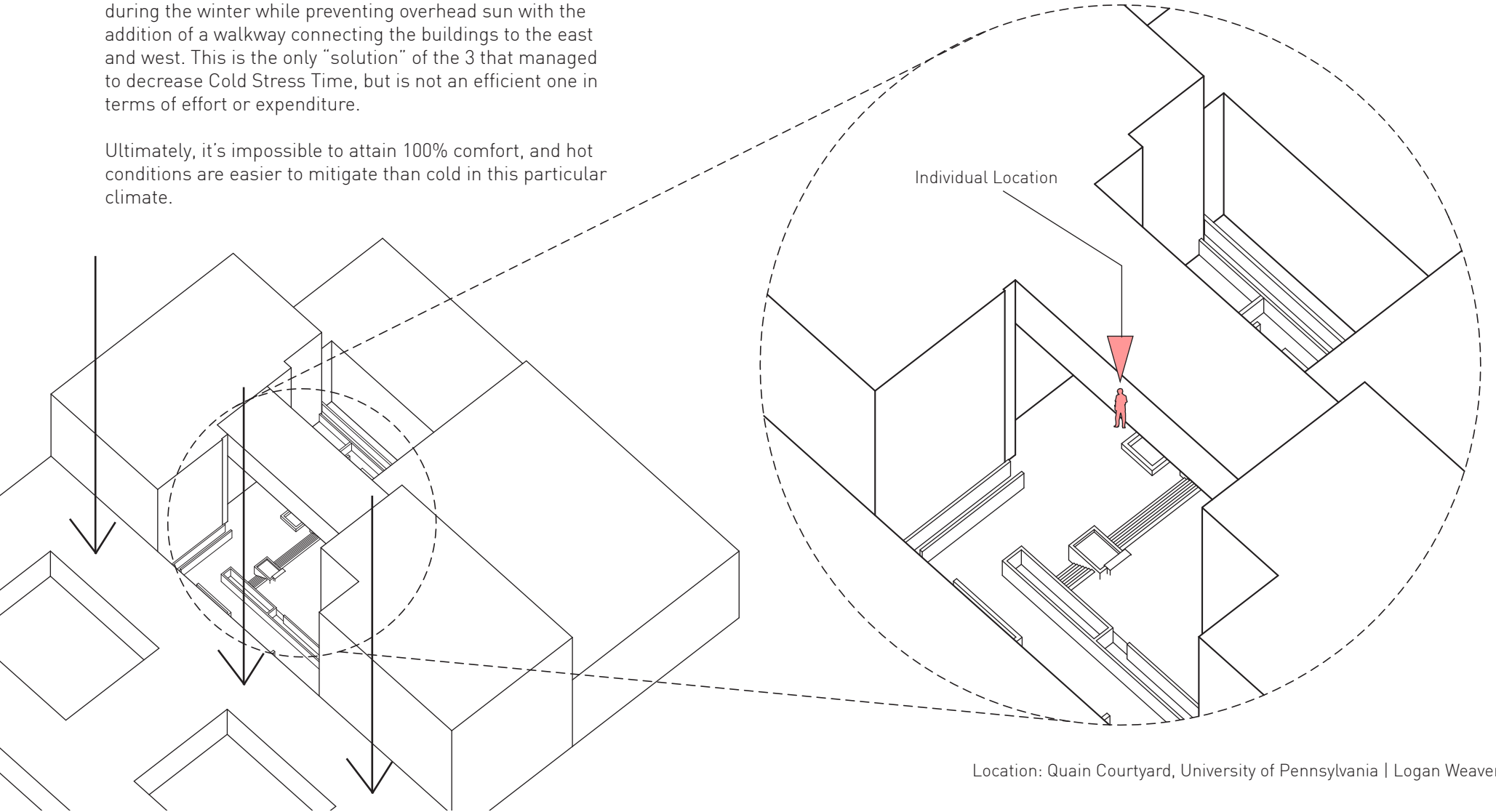
Comments

This is a more bold and slightly absurd solution that lowers the building to the south to allow more sun into the space during the winter while preventing overhead sun with the addition of a walkway connecting the buildings to the east and west. This is the only "solution" of the 3 that managed to decrease Cold Stress Time, but is not an efficient one in terms of effort or expenditure.

Ultimately, it's impossible to attain 100% comfort, and hot conditions are easier to mitigate than cold in this particular climate.



Thermal Comfort Visualization



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