



Warm And Moist Breeze

DREAM ROOM in Philadelphia

City: Philadelphia, PA

Latitude: 39.8683

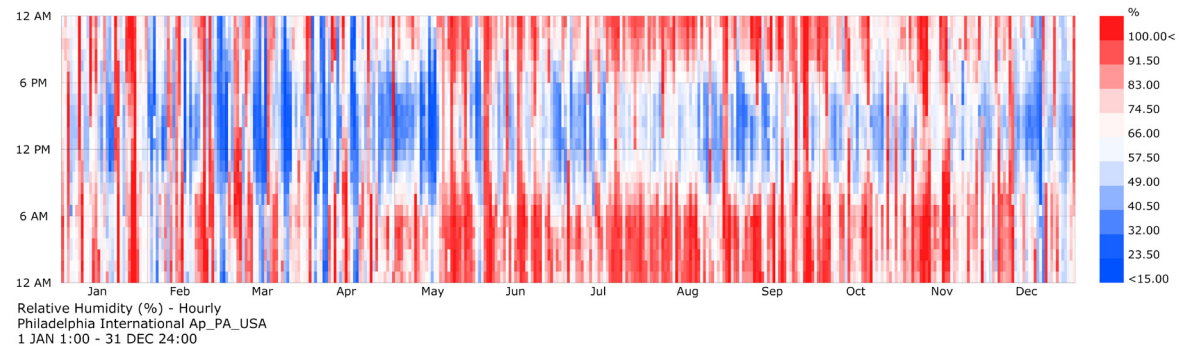
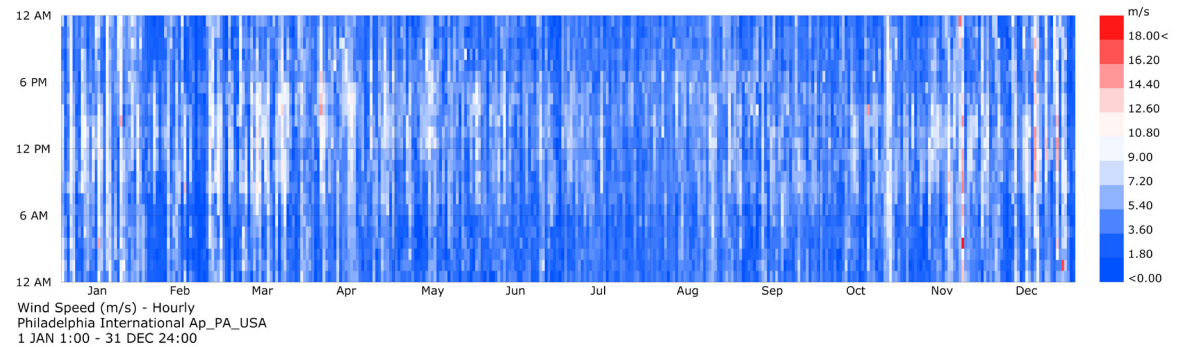
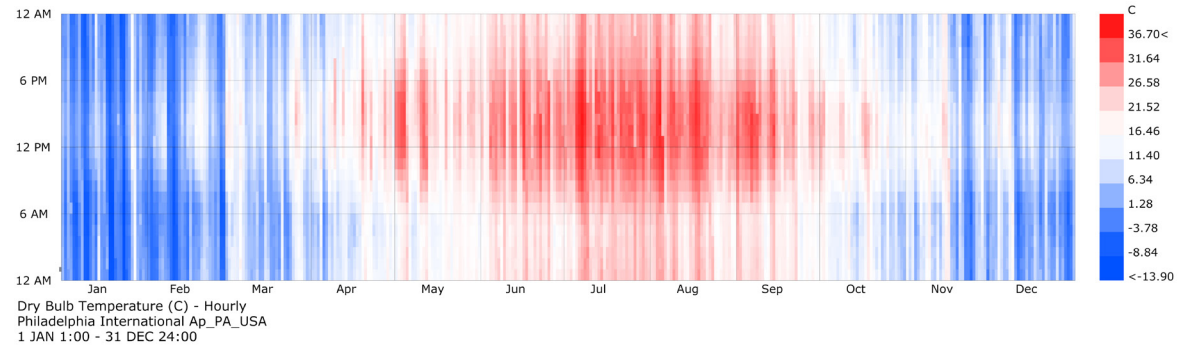
Longitude: -75.2311

Climate:

According to the Köppen climate classification, Philadelphia falls under the northern periphery of the humid subtropical climate zone (Köppen Cfa),[71] whereas according to the Trewartha climate classification, the city has a temperate maritime climate (Do).[72] Summers are typically hot and muggy, fall and spring are generally mild, and winter is cold. (Wikipedia)

Wind:

Generally, not too extreme, however, sometimes in winter, it's quite strong.



My DREAM ROOM Condition

Temperature: 10 ~ 28 C

Comparing to common people, I prefer low temperatures to high ones. Thus, the minimum point of my temperature preference is 10 C.

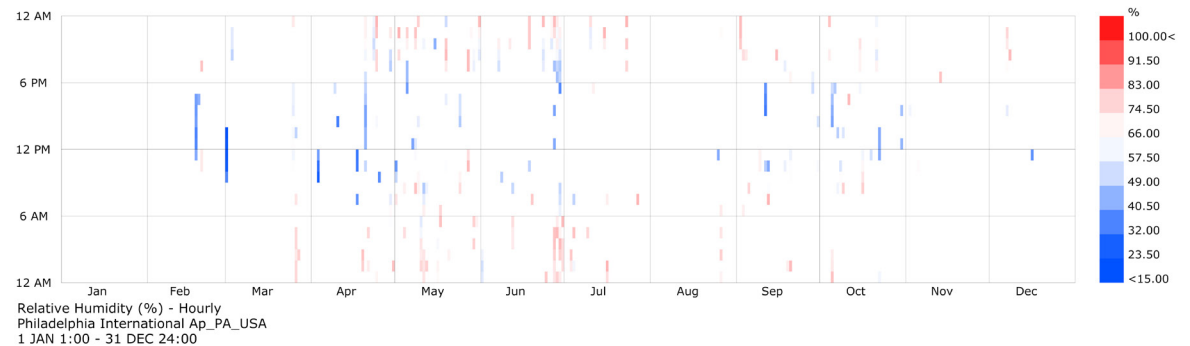
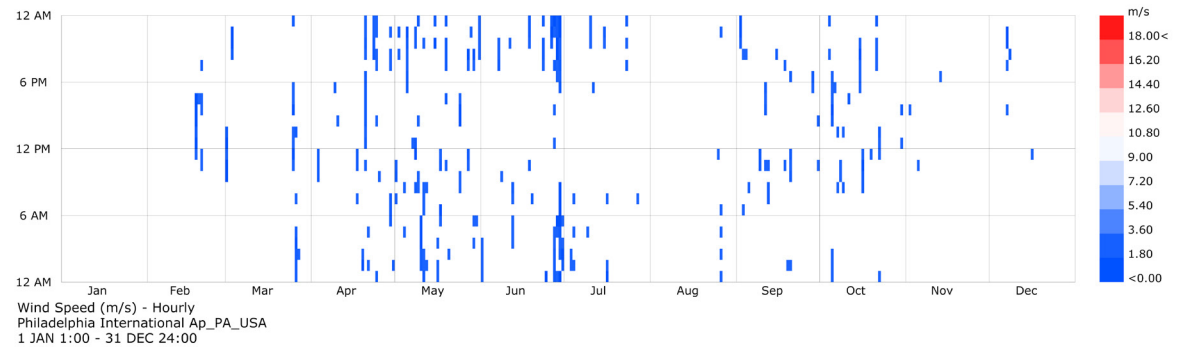
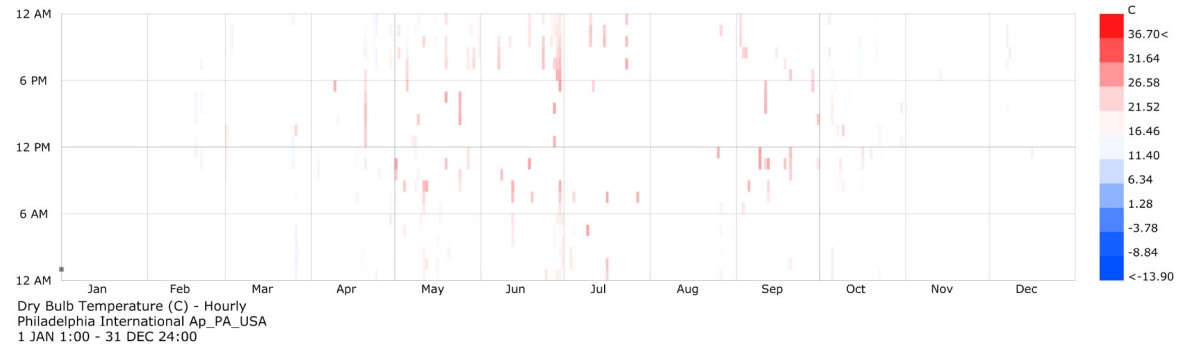
Wind Speed: ~2.5 m/s

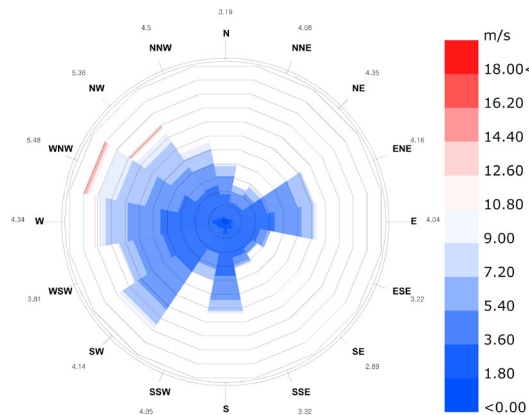
My hometown is maritime city, and I enjoy wind pretty much, so I can stand higher wind speed indoors.

Relative Humidity: ~80%

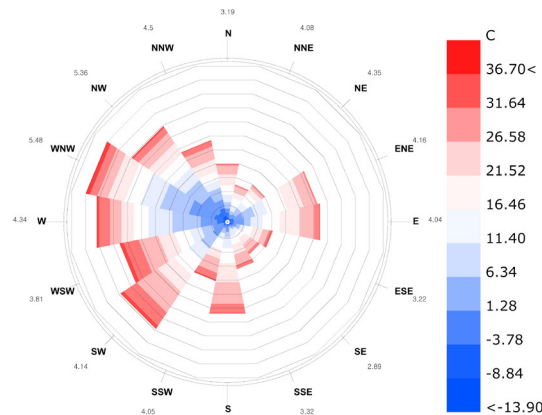
I like moist wind, yet hate mold on the wall. It is important to maintain humidity not too high.

At now, for summer and winter, some design strategies are necessary. Also, generally, day-time is less comfortable then nighttime.

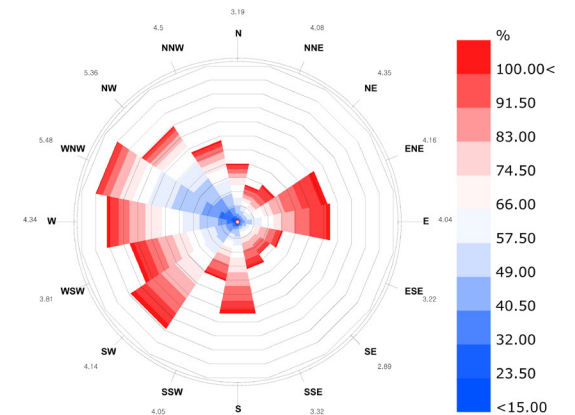




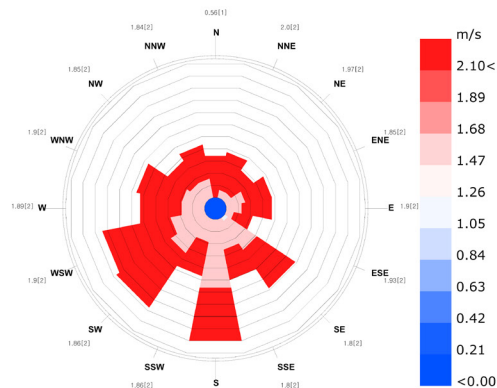
Wind-Rose
Philadelphia International Ap_PA_USA
1 JAN 1:00 - 31 DEC 24:00
Hourly Data: Wind Speed (m/s)
Calm for 2.81% of the time = 246 hours.



Wind-Rose
Philadelphia International Ap_PA_USA
1 JAN 1:00 - 31 DEC 24:00
Hourly Data: Dry Bulb Temperature (C)
Calm for 2.81% of the time = 246 hours.



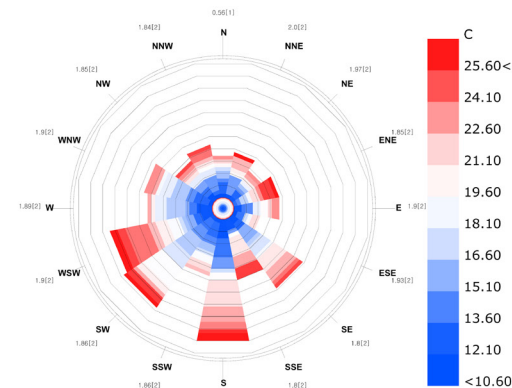
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Philadelphia International Ap_PA_USA
1 JAN 1:00 - 31 DEC 24:00
Hourly Data: Relative Humidity (%)
Calm for 2.81% of the time = 246 hours.



Wind-Rose
Philadelphia International Ap_PA_USA
1 JAN 1:00 - 31 DEC 24:00
Hourly Data: Wind Speed (m/s)
Calm for 0.53% of the time = 46 hours.
Each closed polyline shows frequency of 0.0%. = 3 hours.

Conditional Selection Applied:
Wind Speed<2.5
and 10<Dry Bulb Temperature<26
and Relative Humidity<80
310.0 hours of total 8760.0 hours (3.54%).

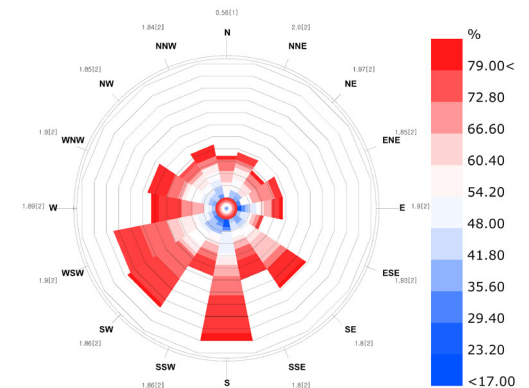
[1] : At this wind speed, smoke drift indicates wind direction.
However, Leaves and wind vanes are still stationary.
[2] : At this wind speed, wind is felt on exposed skin.
Leaves rustle and wind vanes begin to move.



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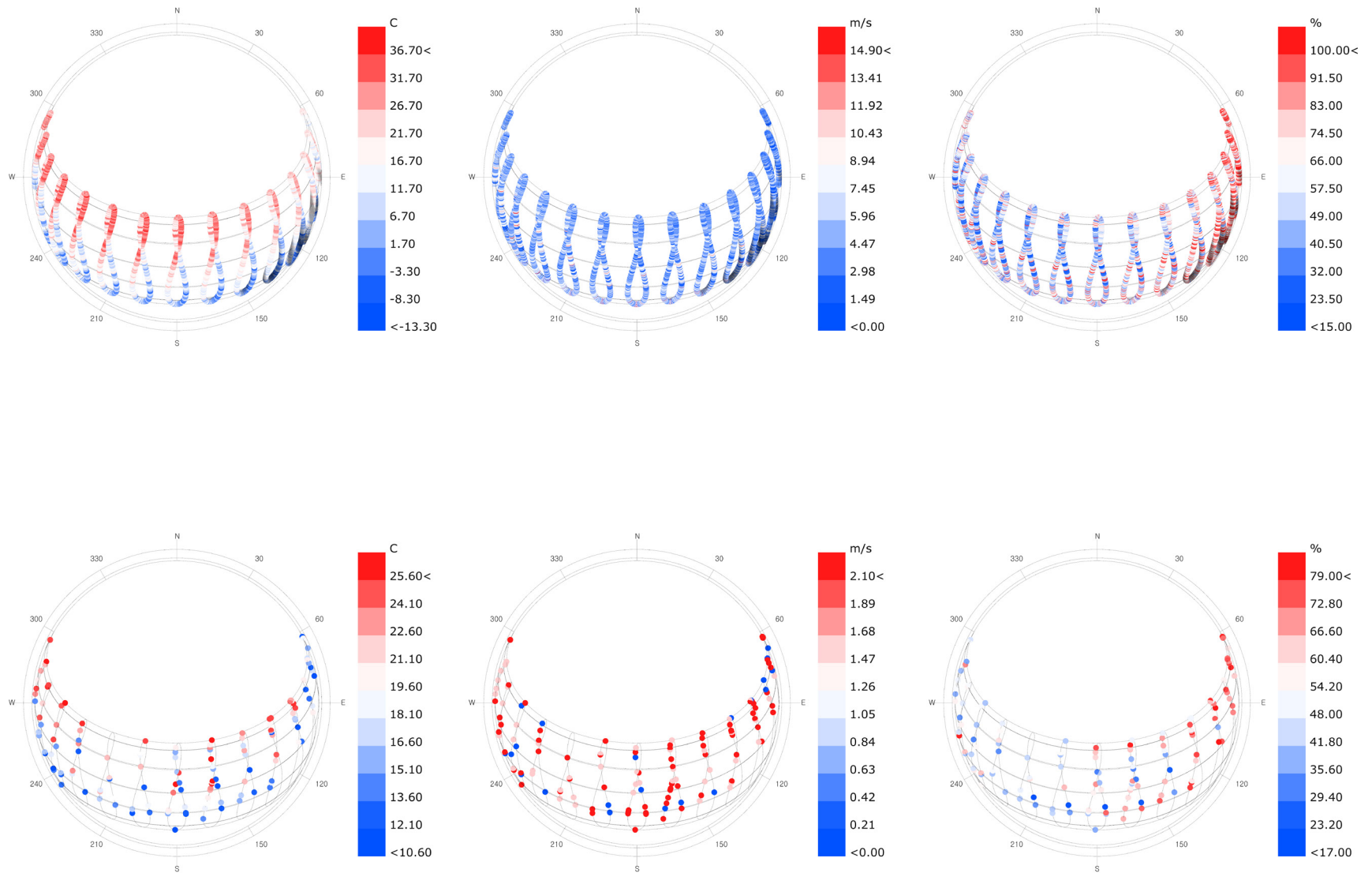


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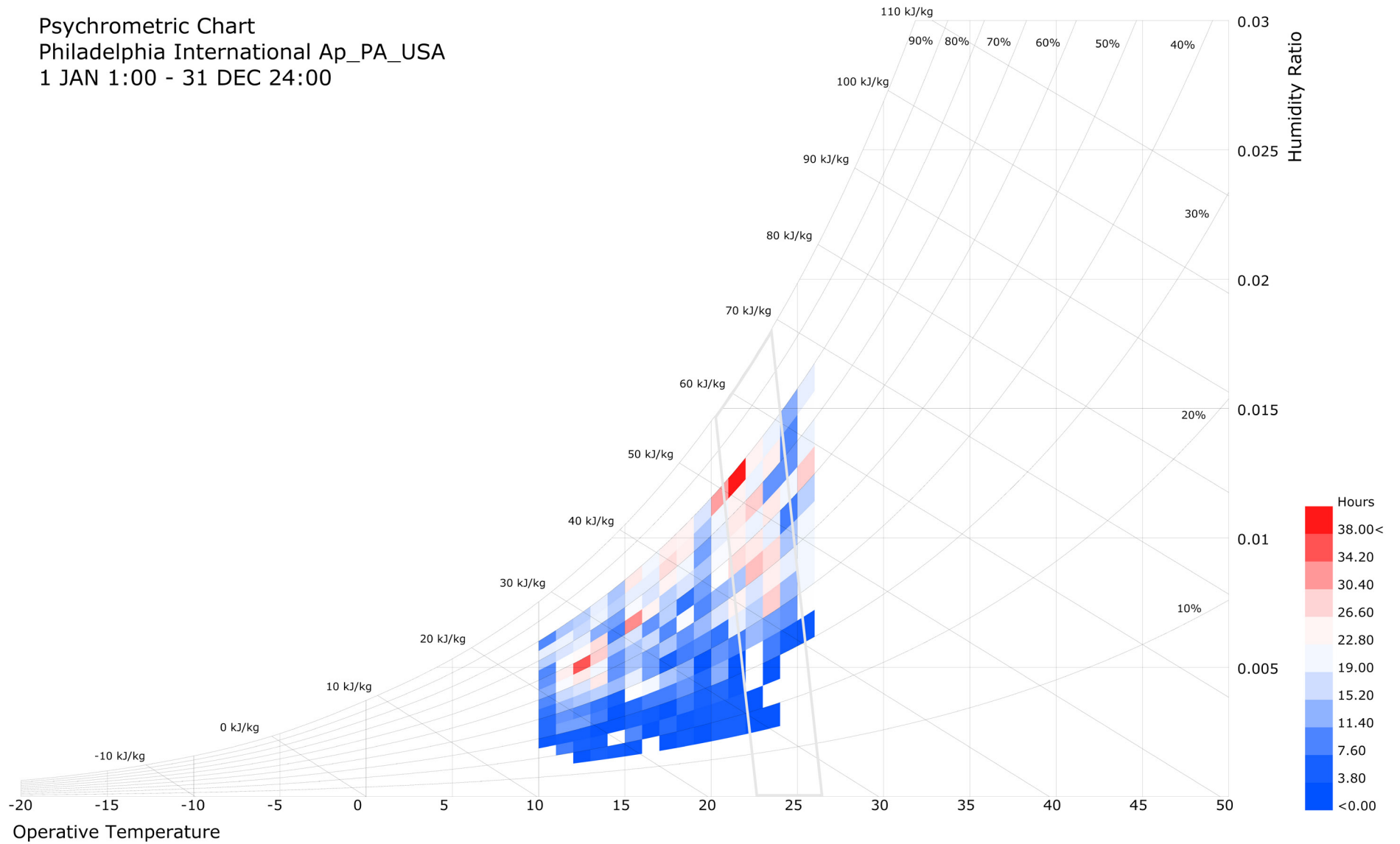
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Comparing to the wind all year around, what I want comes from south rather than west. Yet, specifically, still southwestern wind is also abundant.



Basically, morning is more humid than other times, but sometimes, wind is little. I want to exploit the wind as much as possible.

Psychrometric Chart
Philadelphia International Ap_PA_USA
1 JAN 1:00 - 31 DEC 24:00



Total comfort percentage is just 25.36% now.

My DREAM ROOM Condition

Window:

Long window occupying whole width, and located at slightly higher than center.

Room Proportion:

Living space is almost square, and overall proportion is almost 2:3. Bathroom is far from the window.

Passive Strategy. 1:

To bring wind to the bathroom, make a wind passway in front of the window. However, it should be carefully considered not to make the general wind speed too high.

Passive Strategie. 2:

My room is facing east. In order to bring more natural light, indirect lighting by reflection of sunlight could be an option.

Passive Stragege. 3:

Not to decrease the room temperature too much, insulation method could be considered for the facade wall.

