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IMC 306
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Cold Days, Warm Nights

As a senior at Northwestern University, Chicago winters are no joke. I'll never forget my first Northwestern polar vortex when my weather app said that the Evanston temperature was colder than the temperature in Antarctica. And yes, I said "my first," since polar vortexes have become a familiar occurrence in my college life. However, I have come up with my own familiar occurrence that I've noticed on late walks home from extracurriculars or social events: it feels warmer walking outside late at night than it does during the day.

Critics might rebut this statement by arguing that the numerical temperature decreases at night, but I want to stress that I am not referring to the numerical thermometer-based temperature, but rather how one's body feels outside at night. I agree that the numerical temperature decreases at night, but this decrease actually contributes to our perception of feeling warmer. The body perceives a combination of dry bulb temperature, which is what your thermometer says, and relative humidity, which is how much water vapor is in the air. Thus, if the dry bulb temperature gets colder at night, the only factor that could make our bodies feel warmer outside at night would be the relative humidity. In fact, relative humidity goes up at nighttime as the air temperature approaches the dew point, the temperature the air needs to be cooled to in order to attain a relative humidity of 100%. So as the temperature cools at night, it approaches the dew point, which then increase the relative humidity and affects our body's perception of the temperature.

For instance, this first image displays a forty-eight-hour forecast from Wednesday, March 3, 2021 to Friday, March 5, 2021. As you can see, there is a larger gap between the

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temperature and the dew point during the day and a smaller gap between these two categories at night. The second image maps the humidity in correlation with time on Wednesday, March 3. As it gets later, the humidity clearly increases, which corresponds to the pattern revealed by the first image.

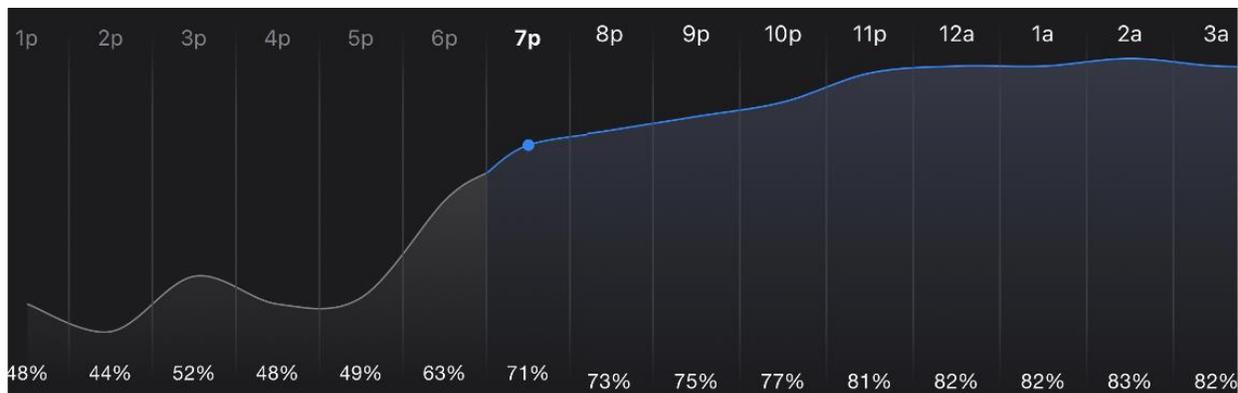
Image 1

Forecast for the next 48 hours

	Wednesday		Thursday				Friday
	Afternoon	Evening	Night	Morning	Afternoon	Evening	Night
Forecast							
Temperature	47 °F	37 °F	34 °F	35 °F	36 °F	33 °F	31 °F
	Sunny.	Clear.	Scattered clouds.	More clouds than sun.	Mostly sunny.	Clear.	Clear.
Feels Like	42 °F	30 °F	26 °F	27 °F	27 °F	22 °F	21 °F
Wind Speed	11 mph	10 mph	10 mph	12 mph	15 mph	16 mph	12 mph
Wind Direction	NNW ↘	N ↓	NE ↙	NNE ↘	NNE ↘	NNE ↘	NE ↙
Humidity	59%	74%	76%	70%	61%	68%	74% ^{Wind}
Dew Point	33 °F	30 °F	27 °F	26 °F	24 °F	23 °F	23 °F
Visibility	8 mi	9 mi	7 mi				
Probability of Precipitation	1%	4%	4%	5%	4%	2%	5%

* Updated Wednesday, March 3, 2021 12:18:16 pm Evanston time - Weather by CustomWeather, © 2021

Image 2



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Therefore, although it seems backwards, the warmth that I feel when walking back to my apartment during the midnight hours actually has a scientific explanation that coincides with, rather than contradicts, the fact that the numerical temperature gets colder at night. So, the next time you are looking to take a walk in the windy city, do it late at night!