Unit_6_Python_APIs
Melissa Morgan
Observable Trends

WeatherPy

What's the weather like as we approach the equator?

To answer this question, we created a Python script o visualize the weather of 500+ cities across the world of varying distance from the equator. A Jupyter Notebook, the Python library, and the OpenWeatherMap API were utilized to create a representative model of weather across world cities.

The objective: Build a series of scatter plots to showcase the following relationships: Temperature (F) vs. Latitude Humidity (%) vs. Latitude Cloudiness (%) vs. Latitude Wind Speed (mph) vs. Latitude.

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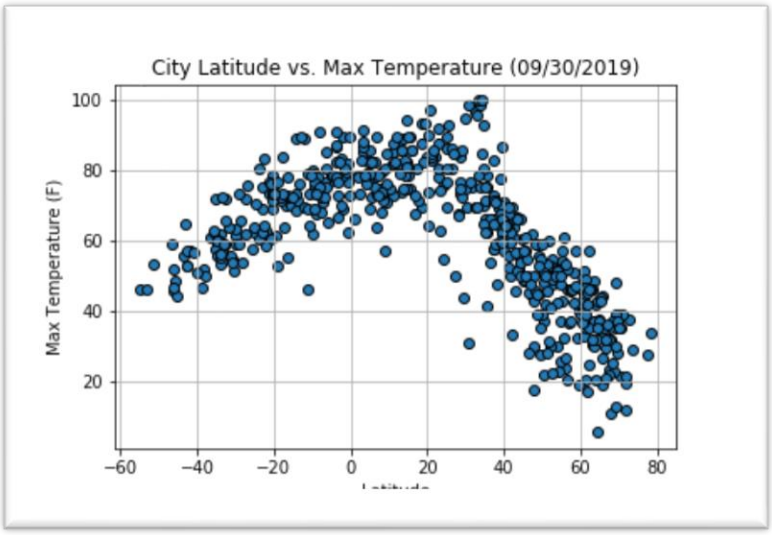
Temperature

There is a relatively strong correlation between latitude and temperature. The lower latitudes have higher temperatures and the higher latitudes have lower temperatures.

The first scatterplot executed displays the relationship between a city's latitude and its maximum temperature for the given date. The results indicate that latitude and the plotted temperature are inversely related. Which providing strong support that there is a relatively strong that there is a legitimate correlation between latitude and temperature. The lower latitudes have higher temperatures and the higher latitudes have lower temperatures.



Note: Temperature becomes significantly warmer as the city's location approaches the equator. However, city temperatures peak at +20-40 N latitude, rather than directly at the equator. This is likely contributed to the data representing only a single day of the year. Data for an entire year would probably result in a more accurate / statistically significant scatter plot.

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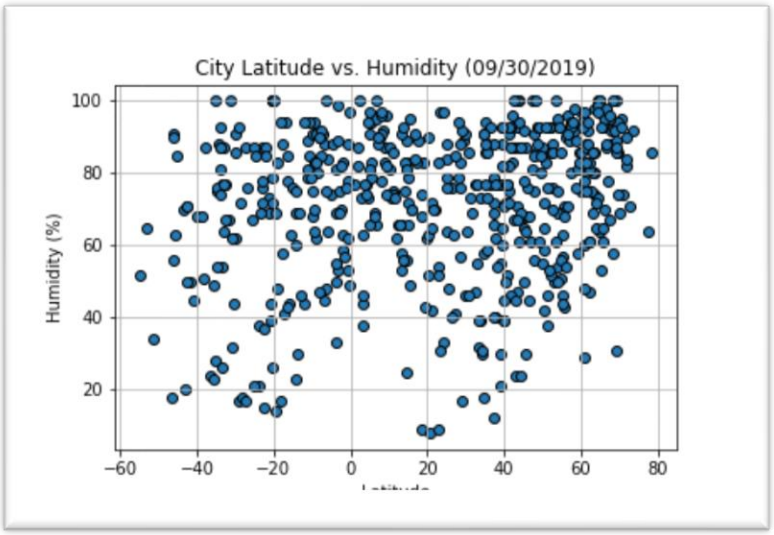
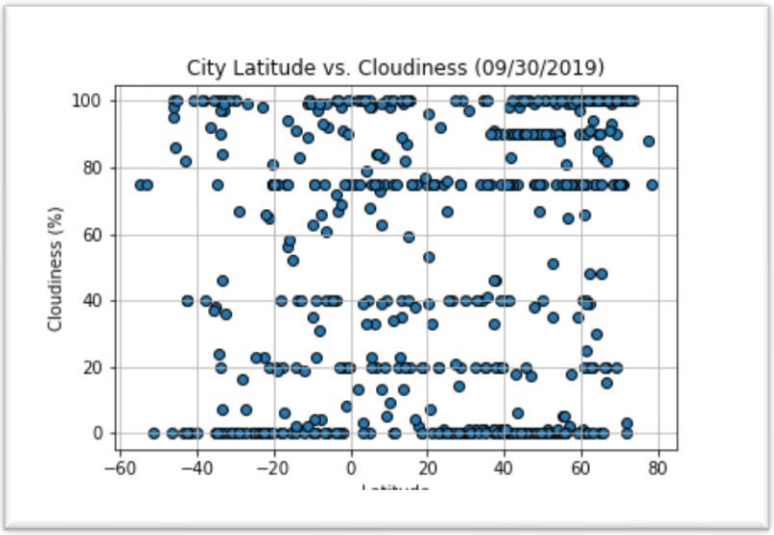
Humidity and Cloudiness

Based on our scatter plot, the correlation between humidity is weak. However, there is a slightly larger cluster of northern hemisphere cities with high humidity (above 60%).



There is almost no correlation between cloudiness and latitude.



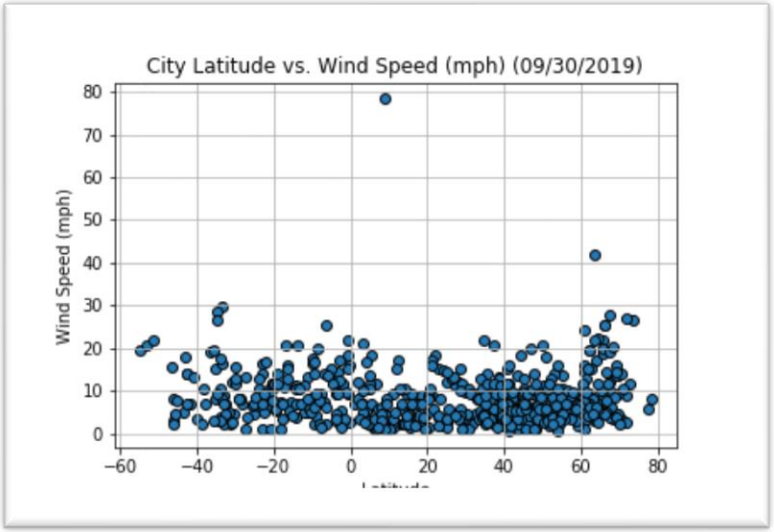
According to both the City Latitude vs. Humidity and the City Latitude vs. Cloudiness scatter plot, there is no significant correlation.

Wind Speed

There is clearly an extreme outlier in the data comparing latitude to wind speed.

The outlier is the city of Lebu, Ethiopia. For our randomly selected sample set, Lebu was the only city selected from the country of Ethiopia. There is no other comparable city in the sample dataset to determine if this extreme wind speed is indeed accurate and perhaps common in that country.

This outlier significantly skews the data so the scale is distorted to the point that it is very difficult to analyze and draw a conclusion regarding any relationship or correlation between latitude and wind speed.



If additional analysis is performed on this dataset, outliers need to be addressed.

Summary

As expected, temperature appears to have a clear correlation with latitude. On the other hand, in this study, the visualizations for humidity, cloudiness, and wind speed, did not result in any discernable relationship with latitude.