Data Analyst Udacity Nanodegree
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Exploring Weather Trends

Global avg temperatures vs Zapopan avg temperatures

Outline the process

This is a brief of what I did to accomplish this project.

1. Data was extracted from provided Database using the following queries

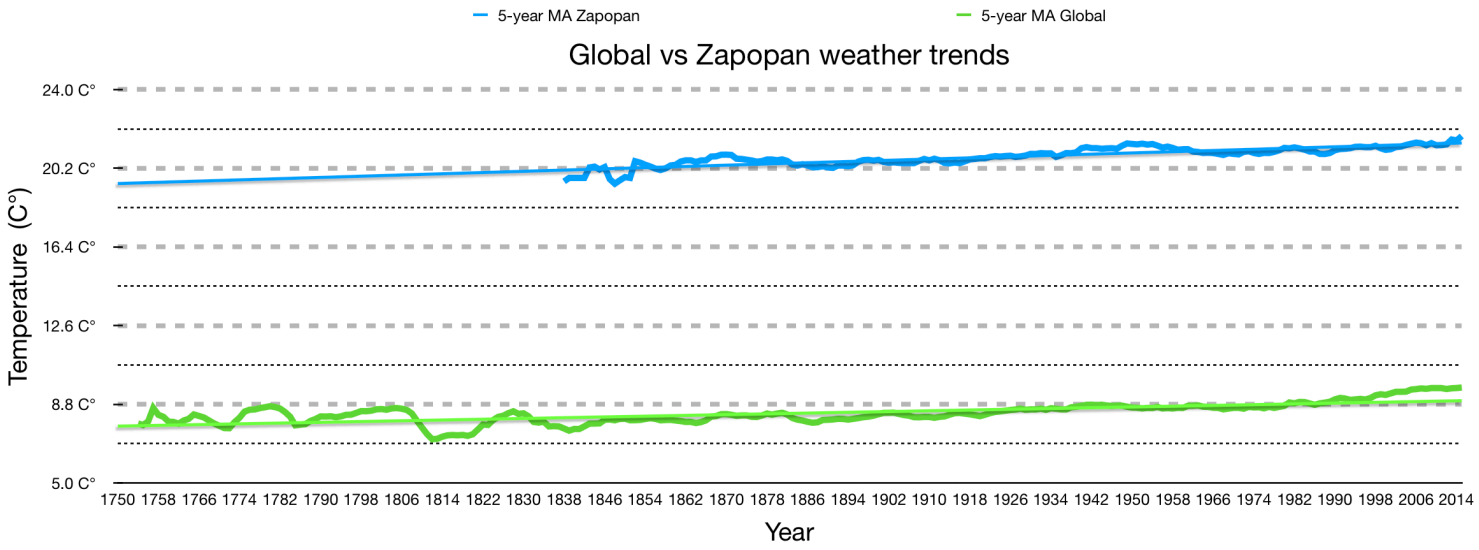
   SELECT year, avg_temp FROM city_data WHERE city = 'Zapopan'

   *SELECT * FROM global_data*

   I also explored other cities to see how different temperatures they have each other. For this exploration I needed to query first city_list table

2. With cvs files in place, then I imported them to Mac Numbers software, applying a merge of Global and Zapopan tables. With resulting table I added 2 extra columns to calculate their Moving Average. I considered 5 years a good number for this process as I think is granular enough to see tendencies.
3. Finally I selected year column as X axis and 5-year Moving Averages from both Global and Zapopan temperatures as source columns of series. The rest was just aesthetic work over the visualization.

Line Chart



Outline the process

The first difference we see between Global and Zapopan data is that Global has around 90 more entries. This means we can not rely start comparing until 1838. Also, there are some missing entries for Zapopan few years after first temp was ever registered. Even though that missing information, we can still see how Zapopan is definitely hotter respect Global average temperature.

One important thing to notice is how volatile temperatures are in Global in the period of 1750 - 1830 with alternate values that goes from min 7.11C° until 8.70 C°. It would be interesting to deeper investigate if those changes are due to a natural phenomena or some kind of measurement error; specially in period 1806 -1823 where temp went down constantly ruching the minimum 5 year Moving Average of 7.11C° in 1812.

Both lines tend to increment over years. We can see an aggressive change specially in last years. Starting in 1990, there is a 5-year MA temperature without precedence: Global temperature reaches over 9 C° and since then, Temperature has never been under 9. Something similar happens with Zapopan, from 1990 onwards, it keeps a sustained 21.0 C° and above temp.

Something even more alarming, if we observe last entries for both Global and Zapopan temps, we'll notice that in 2015, they reach their maximum 5-year MA ever with 9.61C° and 21.75 C° respectively.

I decided to add linear regression to the chart in order to see tendency.

Final Observations

In this final chart, I want to show off how real is global warming effect by choosing cities with different historical weather. One cold, second mild and last hot. All of them show a clear tendency of increasing temperature.