Project: Exploring Weather Trends

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Steps Taken:

- **What tools did you use for each step? (Python, SQL, Excel, etc)**

I used the SQL provided to extract data using the following codes:

Extract data from the closest big city to where I live:

> *select * from city_data where city = 'Campinas'*

Extract data for the world:

> *select * from global_data*

Then I used Google sheets to calculate the moving averages and plot the line chart. Examples:

- **How did you calculate the moving average?**
  I decided to go with a 5 years moving average from this exercise. I used 5 years because it is a good time to aggregate weather since the data provided is already aggregated in year level.

- **What were your key considerations when deciding how to visualize the trends?**
  I wanted to be able to see how Campinas compare to global trends. I've already known Campinas would be hotter than the global average, but never I have never seen it in a 5 year moving average. In order to make it more comparable I decided to fix the range of years from both datasets the same. So the first year is 1836 and the last one is 2013. Campinas showed missing data for some years, to fix it I used the average from all years in the dataset to replace the missing data.

Results:

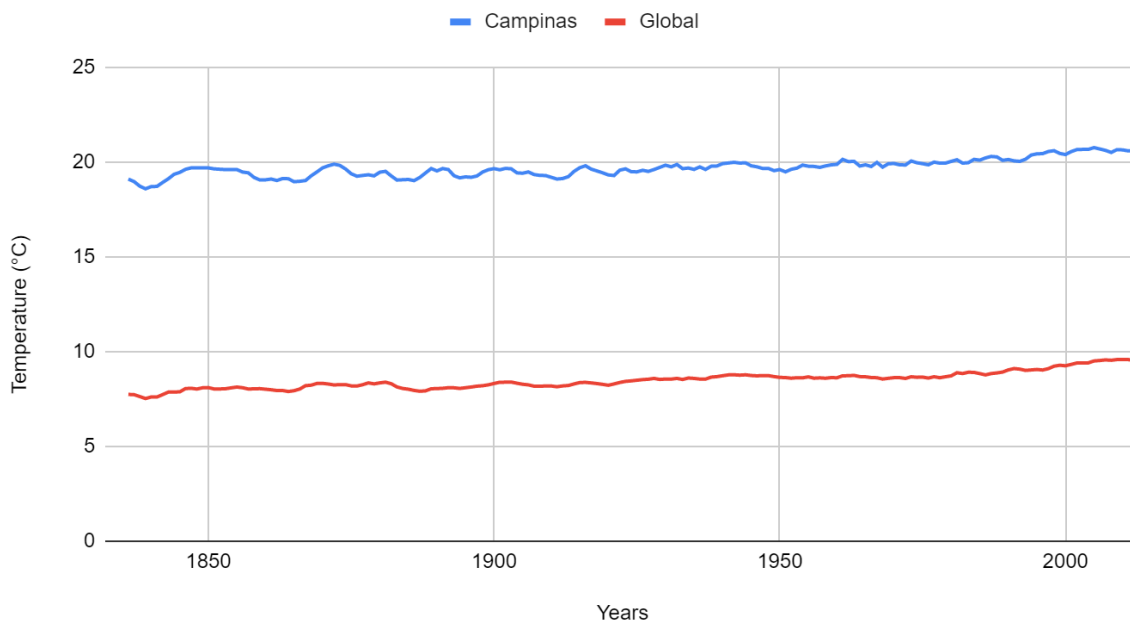## 5Years Moving Average - Campinas X Global

Chart 1 - Campinas 5 years moving average x Global 5 years moving average

- **Observations**
  - Campinas is hotter than the Global average by at least 10 degrees. It can be explained because Campinas is in Brazil. A southern hemisphere country near the equator line. Temperatures here are often hotter than most countries.
  - Campinas average temperature has been rising since the first observation, starting from 19 degrees in 1836 to 20.5 in 2013 (7.89% difference). Similar variation can be seen in Global averages, starting from 7.7 degrees to 9.57 (23.64% difference) degrees in the same period. This rising can be explained by the Global Warming that earth has been suffering all those years;
  - Campinas 5 years moving average is more variable than Global's it is shown by the more common rise and drop in the line through the years. It indicates that the temperature in Campinas is more volatile than the Global average, with higher temperatures amplitudes than the global average;
  - It is impossible to estimate Campinas temperature considering the Global average. Since the trends are totally apart from each other, Global's average is not a good variable to predict Campinas temperature.