Udacity Project 1 : Global Temperature

SQL used to generate dataset

select a.year as ano, a.avg_temp as media_mundial, b.avg_temp as media_campinas from global_data a right join city_data b on a.year = b.year where b.city = 'Campinas'

I removed the most values nullables in the table city_data when i used join to concatenate the tables.

The closest big city to where i live is Campinas.

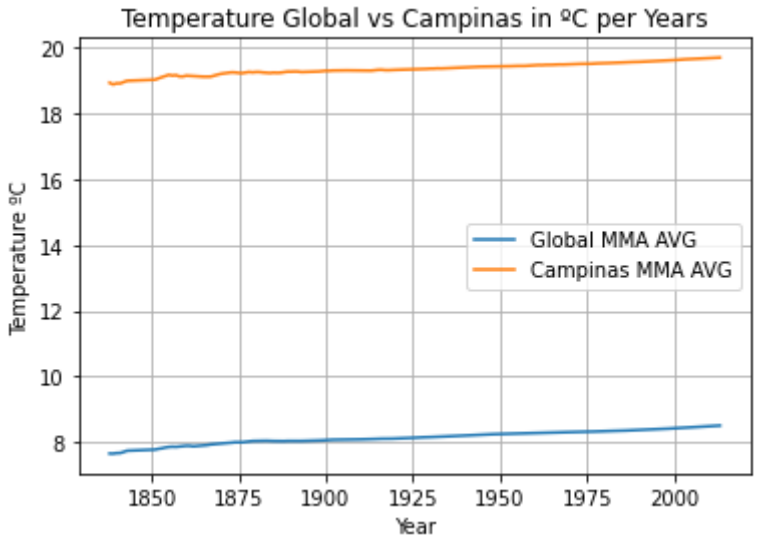
```
import pandas as pd
import matplotlib.pyplot as plt
city = pd.read_csv('consulta_pronta.csv', sep=',')
city = city.dropna()
city_calc = city.copy()
city['MMA_7_global'] = city.media_mundial.expanding(min_periods=7).mean()
city['MMA_7_campinas'] = city.media_campinas.expanding(min_periods=7).mean()
city_calc['percent'] = ((city_calc.media_campinas - city_calc.media_mundial)
/city_calc.media_mundial)
city_calc['MMA_7'] = city_calc.percent.expanding(min_periods=7).mean()
city_calc.head()
```

	ano	media_mundial	media_campinas	percent	MMA_7
0	1832	7.45	18.94	1.542282	NaN
1	1833	8.01	19.93	1.488140	NaN
2	1834	8.15	19.21	1.357055	NaN
3	1835	7.39	18.62	1.519621	NaN
4	1836	7.70	18.84	1.446753	NaN

```
plt.plot(city['ano'], city['MMA_7_global'], label = 'Global MMA AVG')
plt.plot(city['ano'], city['MMA_7_campinas'], label = 'Campinas MMA AVG')
plt.xlabel("Year")
plt.ylabel("Temperature ºC")
plt.legend()
plt.title('Temperature Global vs Campinas in ºC per Years')
```

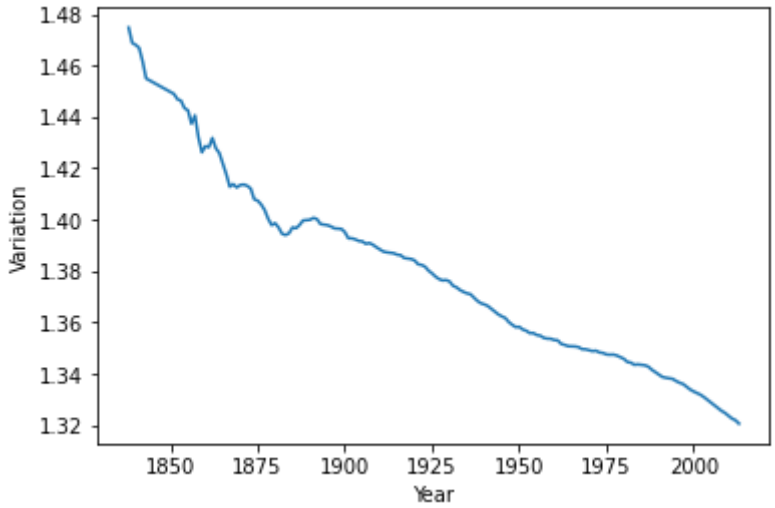
```
plt.grid()
plt.plot()
```

```
[]
```




```
plt.plot(city_calc['ano'], city_calc['MMA_7'])
plt.xlabel("Year")
plt.ylabel("Variation")
```

```
Text(0, 0.5, 'Variation')
```



Conclusion.

1. As we can see, temperatures are increasing both locally and globally.
2. The temperature has been increasing upwards since the beginning of the measurements.

3. There is a very large temperature difference in relation to the world average, the average temperature in the city of Campinas.
4. The variation between temperatures is decreasing as shown in the second graph, that is, the world average temperature is increasing faster than the temperature in the city of Campinas.

References:

https://www.geeksforgeeks.org/plot-multiple-lines-in-matplotlib/

https://matplotlib.org/2.0.2/users/pyplot_tutorial.html