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Udacity Data Analyst Nanodegree
Project 1 – Submission 2
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Explore Weather Trends

Overview:

In this project, I have analyzed local temperature data in San Francisco, USA and the global temperature data and observed any similarities and differences. I was provided with a database through Udacity portal from where I extracted, manipulated, and visualized the data.

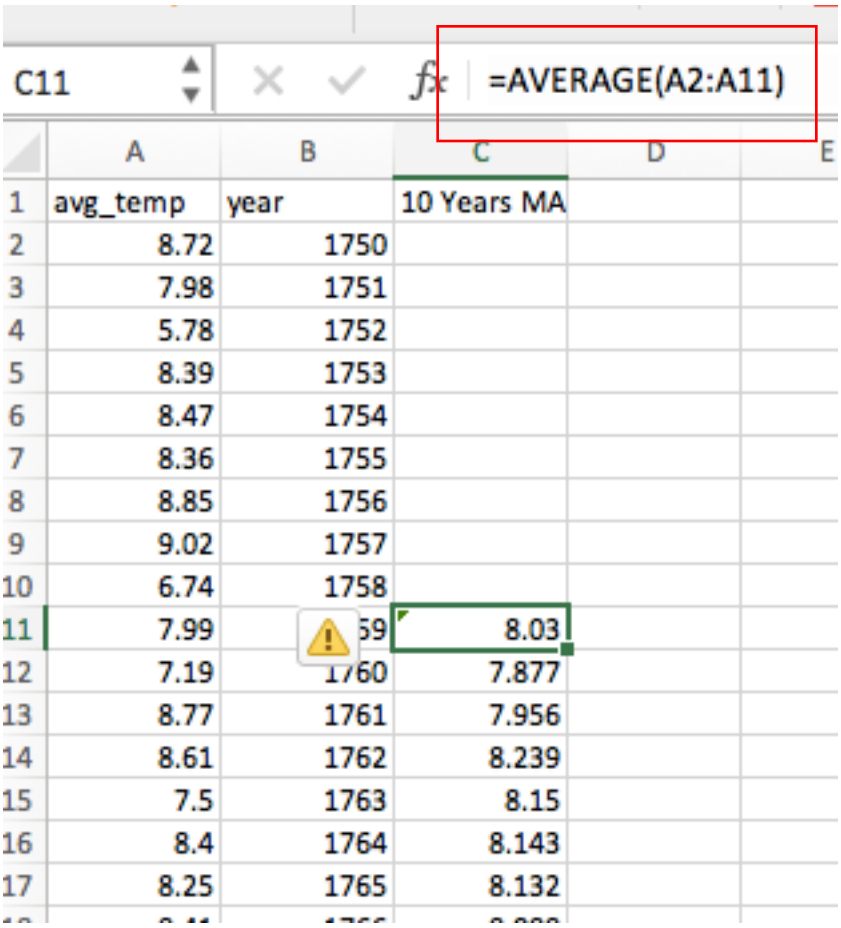
Part 1 – Accessing Data With SQL

Extract San Francisco temperature data with SQL
```
select avg_temp, year from city_data where city = 'San Francisco' order by year
```

Extract Global temperature data with SQL
```
select avg_temp, year from global_data order by year
```

Part 2 – Moving Averages with Excel

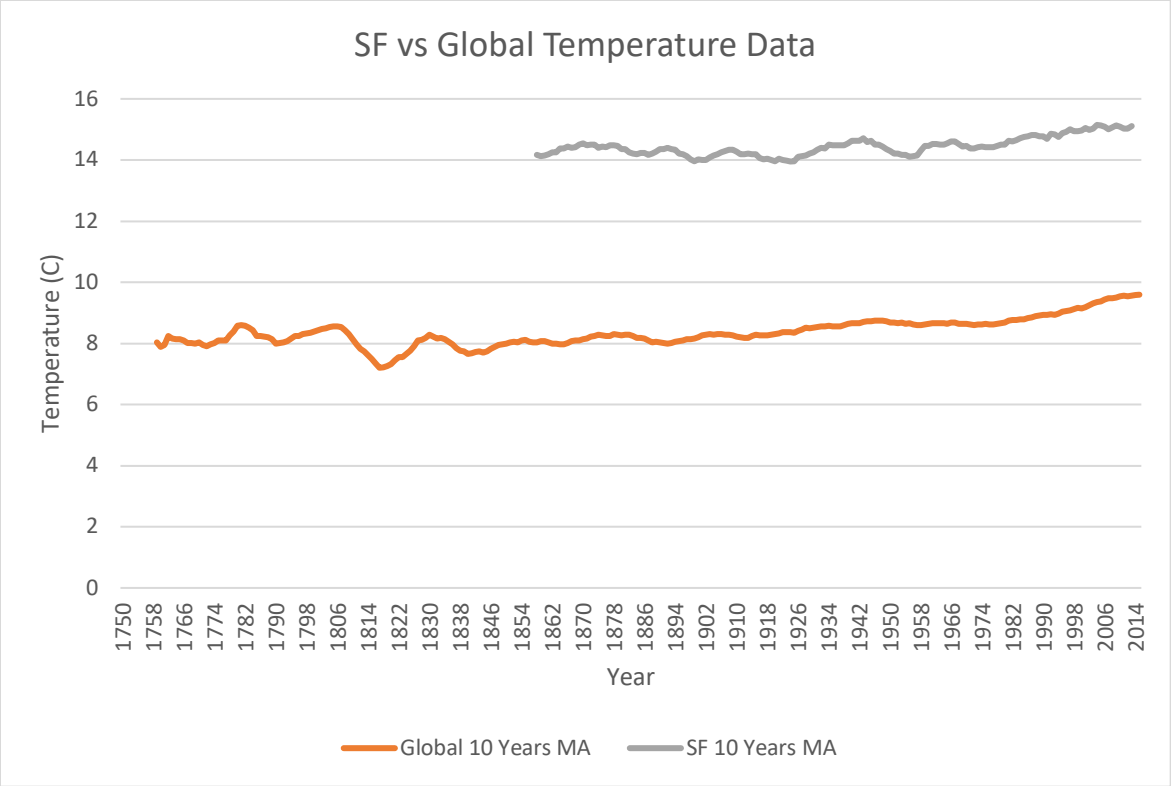
I calculated the 10 Years moving averages from both San Francisco and Global temperature data extracted in Part 1. I chose to do 10 Years because the duration is not too long so still can observe the trend and smooth out the fluctuation.



	A	B	C	D	E
1	avg_temp	year	10 Years MA		
2	8.72	1750			
3	7.98	1751			
4	5.78	1752			
5	8.39	1753			
6	8.47	1754			
7	8.36	1755			
8	8.85	1756			
9	9.02	1757			
10	6.74	1758			
11	7.99	59	8.03		
12	7.19	1760	7.877		
13	8.77	1761	7.956		
14	8.61	1762	8.239		
15	7.5	1763	8.15		
16	8.4	1764	8.143		
17	8.25	1765	8.132		

I calculated the first moving average by using the built-in Average formula in Excel on the first 10 years' average temperature and then dragged the formula down until the last data.

Part 3 – Line Charts with Excel



Part 4 – Observations

1. The city (San Francisco)'s temperature data ranges from 13-15C, where the global temperature data ranges from 7-9C, which means that San Francisco has temperature greater than the global average.
2. San Francisco's data is much more fluctuating than the global data.
3. The global temperature has been on the rise since 1820, possibly due to global warming and industrialization.
4. Based on the 2 line charts, it can be concluded that the temperatures, both in city-level and global-level are rising constantly.