

Exploring Weather Trends

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Tools used: SQL for Data extraction, Microsoft Excel for calculating the moving average and chart plotting.

1. Extract the Data:

- Nearest City:

```
1 select * from city_list where country='Bahrain'
```

- Output:

Output 1 results

city	country
Manama	Bahrain

- Extract city level data:

```
1 select * from city_data where city='Manama' order by  
year
```

- Extract global data:

```
1 select * from global_data order by year
```

2. Calculate the Moving Average:

I used the Moving Average function in the Data Analysis tool in Excel to calculate the 10-years moving average.

- Manama City Moving Average:

year	city	country	avg_temp	10-years MA
1843	Manama	Bahrain	25.26	
1844	Manama	Bahrain	25.71	
1845	Manama	Bahrain	21.18	
1846	Manama	Bahrain		
1847	Manama	Bahrain		
1848	Manama	Bahrain	25.12	
1849	Manama	Bahrain	25.37	
1850	Manama	Bahrain	24.95	
1851	Manama	Bahrain	25.62	
1852	Manama	Bahrain	25.44	24.83125
1853	Manama	Bahrain	25.47	24.8575
1854	Manama	Bahrain	25.26	24.80125
1855	Manama	Bahrain	25.5	25.34125
1856	Manama	Bahrain	25.15	25.32
1857	Manama	Bahrain	24.84	25.272
1858	Manama	Bahrain	25.57	25.317
1859	Manama	Bahrain	25.58	25.336
1860	Manama	Bahrain	25.5	25.393
1861	Manama	Bahrain	24.75	25.306

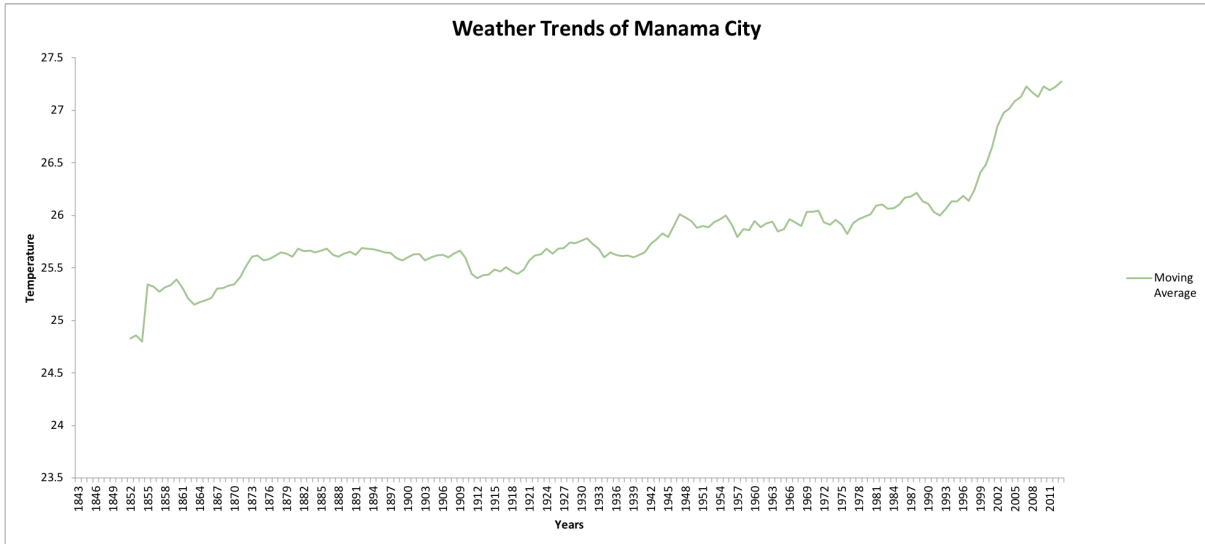
- Global Moving Average:

year	avg_temp	10-year MA
1750	8.72	
1751	7.98	
1752	5.78	
1753	8.39	
1754	8.47	
1755	8.36	
1756	8.85	
1757	9.02	
1758	6.74	
1759	7.99	8.03
1760	7.19	7.877
1761	8.77	7.956
1762	8.61	8.239
1763	7.5	8.15
1764	8.4	8.143
1765	8.25	8.132
1766	8.41	8.088
1767	8.22	8.008
1768	6.78	8.012

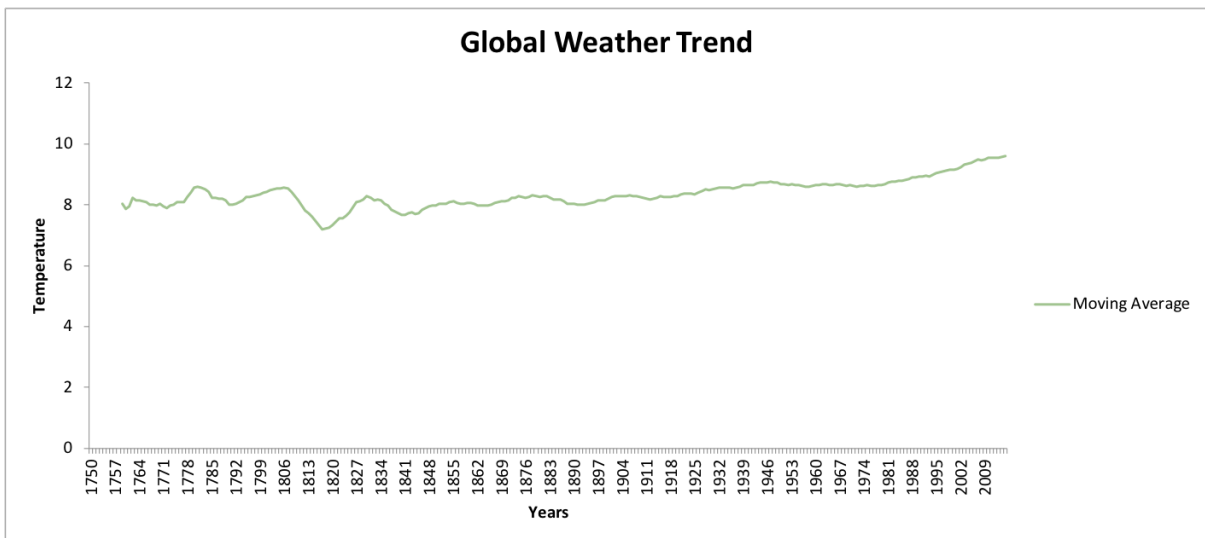
3. Data Visualization:

Below are the charts displaying the moving average of the globe and Manama City.

- Manama City's weather trends:



- Global weather trends:



4. Data Interpretation:

- Manama's weather trend:
 - There had been a spike in Manama's temperature from 1997 to 2008.
 - Manama's highest moving average was 27.276 in the year 2013.
 - While its lowest moving average was 24.801 in the year 1854.
 - By observing the charts, it can be concluded that Manama's temperature has been increasing over the years.

- Global weather trend:
 - 1817 had the lowest moving average with a 7.203 average.
 - 2015 had the highest moving average with a 9.594 average.
 - By observing the charts, it can be concluded that the global temperature has been increasing over the years, meaning the world has gotten hotter.
 - Comparatively, Manama's average temperature is higher than the global average temperature.