

# Exploring Weather Trends - Project Instructions

## Summary

In this project, you will analyze local and global temperature data and compare the temperature trends where you live to overall global temperature trends.

## SQL Data Extraction

### Global

Input

HISTORY ▾

MENU ▾

SCHEMA

city\_data ▾

city\_list ▾

global\_data ▲

year

avg\_temp

1 SELECT \*

2 FROM global\_data

3 WHERE year BETWEEN 1990 AND 2013

4

Success!

EVALUATE

Output 24 results

Download CSV

### Seoul City

Input

HISTORY ▾

MENU ▾

SCHEMA

city\_data ▾

city\_list ▾

global\_data ▾

1 SELECT city,year, avg\_temp

2 FROM city\_data

3 WHERE year BETWEEN 1990 AND 2013

4 And city = 'Seoul'

Success!

EVALUATE

## Exploring Weather Trends - Project Instructions

### Summary

Analyze local and global temperature data and compare the temperature trends where you live to overall global temperature trends.

### Prep Data

```
In [1]: # Import Libraries
import pandas as pd
import seaborn as sns
```

```
In [2]: # Import Data
seoul_temp = pd.read_csv('seoul_data.csv')
```

```
In [3]: global_temp = pd.read_csv('global.csv')
```

```
In [4]: # Check data count
seoul_temp.count()
```

```
Out[4]: avg_temp    175
        city        175
        country    175
        year        175
        dtype: int64
```

```
In [5]: #Check data count
global_temp.count()
```

```
Out[5]: year        266
        avg_temp    266
        dtype: int64
```

### Inspect Data

Make observations about the similarities and differences between the world averages and your city's averages, as well as overall trends.

```
In [40]: seoul_temp.avg_temp.describe()
```

```
Out[40]: count    175.000000
         mean      10.684800
         std       0.680143
         min       9.200000
         25%      10.250000
         50%      10.560000
         75%      11.155000
         max      12.660000
         Name: avg_temp, dtype: float64
```

```
In [41]: global_temp.avg_temp.describe()
```

```
Out[41]: count    266.000000
         mean      8.369474
         std       0.584747
         min       5.780000
         25%      8.082500
         50%      8.375000
         75%      8.707500
         max      9.830000
         Name: avg_temp, dtype: float64
```

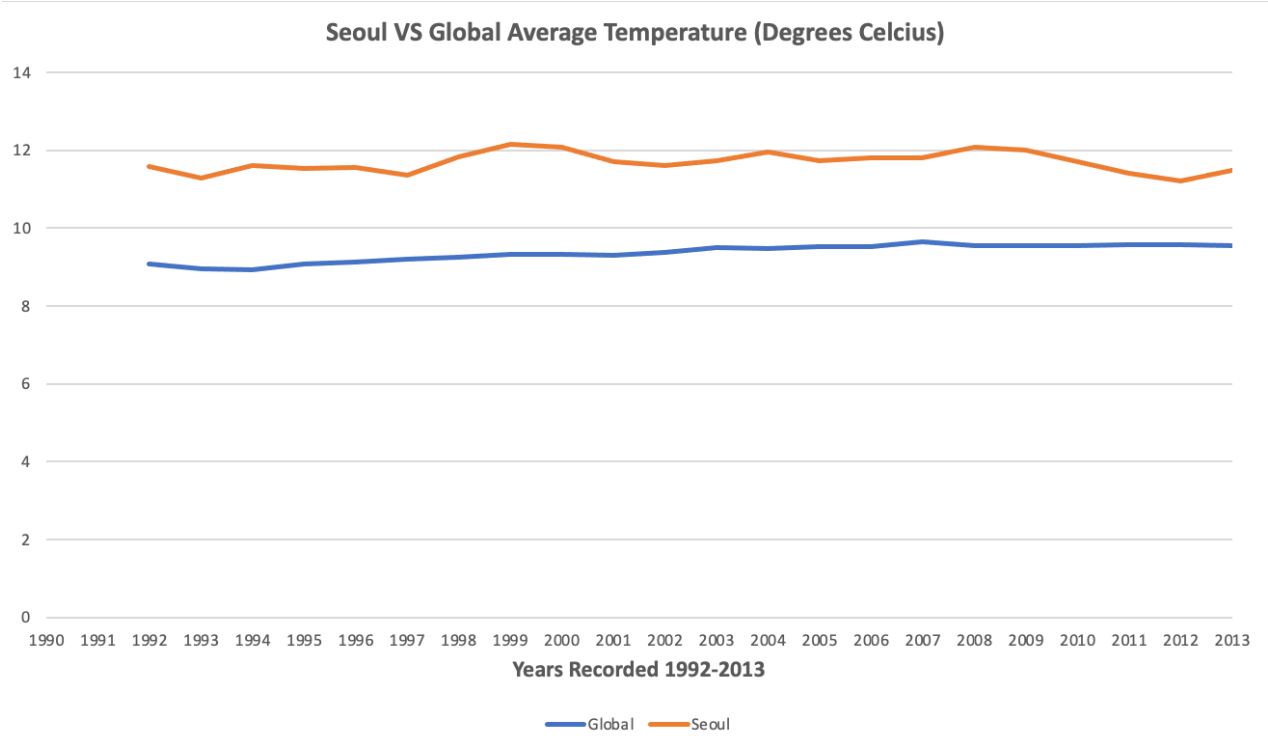
```
In [24]: #Explore global_temp
global_temp.plot.line(x = 'year', y = 'avg_temp', title = 'Average Temperature Globally', xlabel = 'Recording period')
```

Calculate Moving Averages:

	year	avg_temp	Moving Average	
Global	1990	9.23	#N/A	
Global	1991	9.18	#N/A	
Global	1992	8.84	9.08	
Global	1993	8.87	8.96	
Global	1994	9.04	8.92	
Global	1995	9.35	9.09	
Global	1996	9.04	9.14	
Global	1997	9.2	9.2	
Global	1998	9.52	9.25	
Global	1999	9.29	9.34	
Global	2000	9.2	9.34	
Global	2001	9.41	9.3	
Global	2002	9.57	9.39	
Global	2003	9.53	9.5	
Global	2004	9.32	9.47	
Global	2005	9.7	9.52	
Global	2006	9.53	9.52	
Global	2007	9.73	9.65	
Global	2008	9.43	9.56	
Global	2009	9.51	9.56	
Global	2010	9.7	9.55	
Global	2011	9.52	9.58	
Global	2012	9.51	9.58	
Global	2013	9.61	9.55	

city	year	avg_temp	Moving Average	
Seoul	1990	11.86	#N/A	
Seoul	1991	11.39	#N/A	
Seoul	1992	11.48	11.58	
Seoul	1993	11.02	11.3	
Seoul	1994	12.32	11.61	
Seoul	1995	11.27	11.54	
Seoul	1996	11.13	11.57	
Seoul	1997	11.7	11.37	
Seoul	1998	12.66	11.83	
Seoul	1999	12.13	12.16	
Seoul	2000	11.42	12.07	
Seoul	2001	11.6	11.72	
Seoul	2002	11.8	11.61	
Seoul	2003	11.8	11.73	
Seoul	2004	12.25	11.95	
Seoul	2005	11.16	11.74	
Seoul	2006	12.01	11.81	
Seoul	2007	12.25	11.81	
Seoul	2008	11.96	12.07	
Seoul	2009	11.84	12.02	
Seoul	2010	11.3	11.7	
Seoul	2011	11.12	11.42	
Seoul	2012	11.23	11.22	
Seoul	2013	12.12	11.49	

Visualize data:



**Data Observation - Use the data to identify trends between the two different sets of data.**

**Q1: Is your city hotter or cooler on average compared to the global average? Has the difference been consistent over time?**

- The data shows, that Seoul's temperature has been hotter than the global average from 1992-2013. The trend line of Seoul's temperature fluctuates more compared to the global temperature trend line. But both have an upward trend line.

**Q2: How do the changes in your city's temperatures over time compare to the changes in the global average?"**

- The global trend line has a steadier uptrend from 9.5 to 10.0 degrees Celsius range. While Seoul's fluctuated between 10.6 - 12.2 degrees Celsius.

**Q3: When are there spikes in temperature? Do they occur for both data sets?**

- Seoul: 1999, 2004, and 2008/2009
- Global: 2003 and 2008

Yes, 2008 shows a spike in temperature for both data sets.

**Q4: What are some factors that could influence highs and lows in temperature?**

- Some factors such as geolocation of the country, urbanization, increase in pollution, and weather. For Seoul, in the last 100 years there has been a massive increase in population, pollution and urbanization. Seoul is also a country with 4 seasons which could also influence the fluctuation of average temperatures.