

## Project: Explore Weather Trends

### Retrieving the Data

Entered two queries in SQL to obtain data of Adelaide and Global average temperatures. Global average temperature data was only to retrieve temperatures from 1841. This was done to compare both datasets across the same period. Data in both queries were exported to csv files and opened with Google Sheets. Data sets were compiled into one spreadsheet.

```
SELECT *  
  
FROM city_data  
  
WHERE city = 'Adelaide';
```

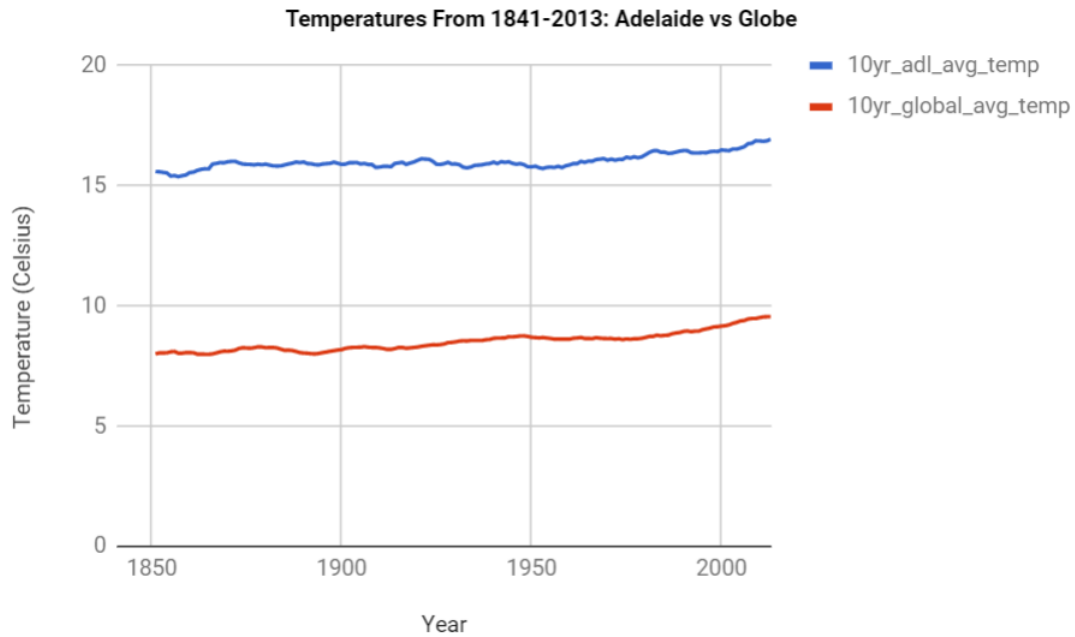
```
SELECT *  
  
FROM global_data  
  
WHERE year > 1840;
```

### Calculating the Moving Average

As the temperatures for both data sets were expressed as yearly average temperatures it was appropriate to calculate a 10-year moving average to smooth out the trend lines, making any trends more observable in any line chart created. The "AVERAGE()" formula was used to average the first 10 yearly average temperatures to create the 10-year moving average, the formula was applied to the rest of the period.

### Creating the Line Chart

The line chart was created by selecting 10 year moving averages for both the Global temperatures and Adelaide temperatures, along with the year data, then the "insert chart tab" was selected. A chart title, axis label and legend were used to help properly explain relationships between the two temperatures. A line chart was used to track changes in temperature over short and long periods of time. Further it was appropriate as we were comparing changes over the same period for more than one group.



## Observations

Looking at the 10-year moving average line chart, it appears the Adelaide average temperature has been warmer than global average temperature during the entire period from 1840 to 2013. Further there appears to be a general upward trend in temperature for both the Adelaide and the globe over the entire period. However, since the 1950's this upward trend has become more noticeable, when compared to the relatively stable trend lines from 1840 to 1950. This suggests temperatures in Adelaide and the globe have been increasing at a greater rate than they have in the past.

A correlation coefficient was calculated for both the Adelaide and global yearly average temperatures using the "CORREL(Y, X)" function in Google Sheets. The temperature was set as the dependent variable and the year was set as the independent variable. The correlation coefficient helps determine the degree to which two variables' movement are associated. The correlation coefficient for the Adelaide temperature and global temperatures was 0.56 and 0.86 respectively. This suggests that there is a stronger positive correlation between year and global average temperature than there is between year and Adelaide average temperature.