

# Udacity DAND: Project 1 – Explore Weather Trends

## Project Outline:

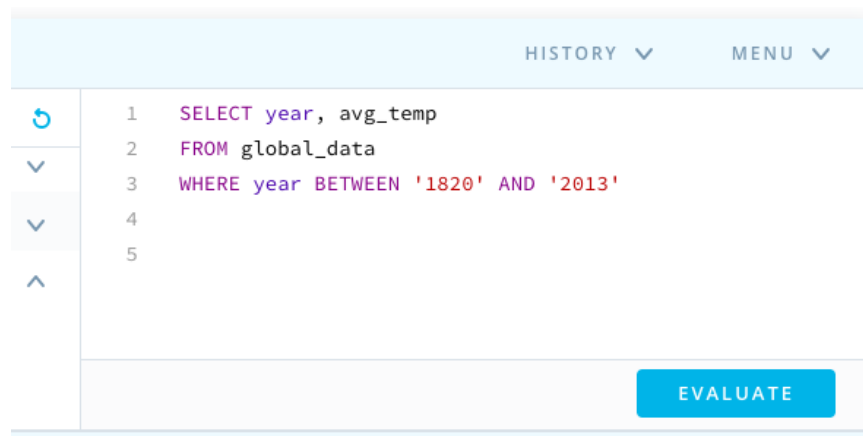
1. I used SQL to query the database on the Udacity website. My SQL code is as follows:



The screenshot shows the Udacity DAND SQL editor interface. At the top, there are tabs for 'HISTORY' and 'MENU'. Below the tabs is a text area containing the following SQL query:

```
1 SELECT *
2 FROM city_data
3 WHERE (city LIKE 'H%') AND (country LIKE 'U%')
```

At the bottom right of the text area is a blue button labeled 'EVALUATE'.



The screenshot shows the Udacity DAND SQL editor interface. At the top, there are tabs for 'HISTORY' and 'MENU'. Below the tabs is a text area containing the following SQL query:

```
1 SELECT year, avg_temp
2 FROM global_data
3 WHERE year BETWEEN '1820' AND '2013'
```

At the bottom right of the text area is a blue button labeled 'EVALUATE'.

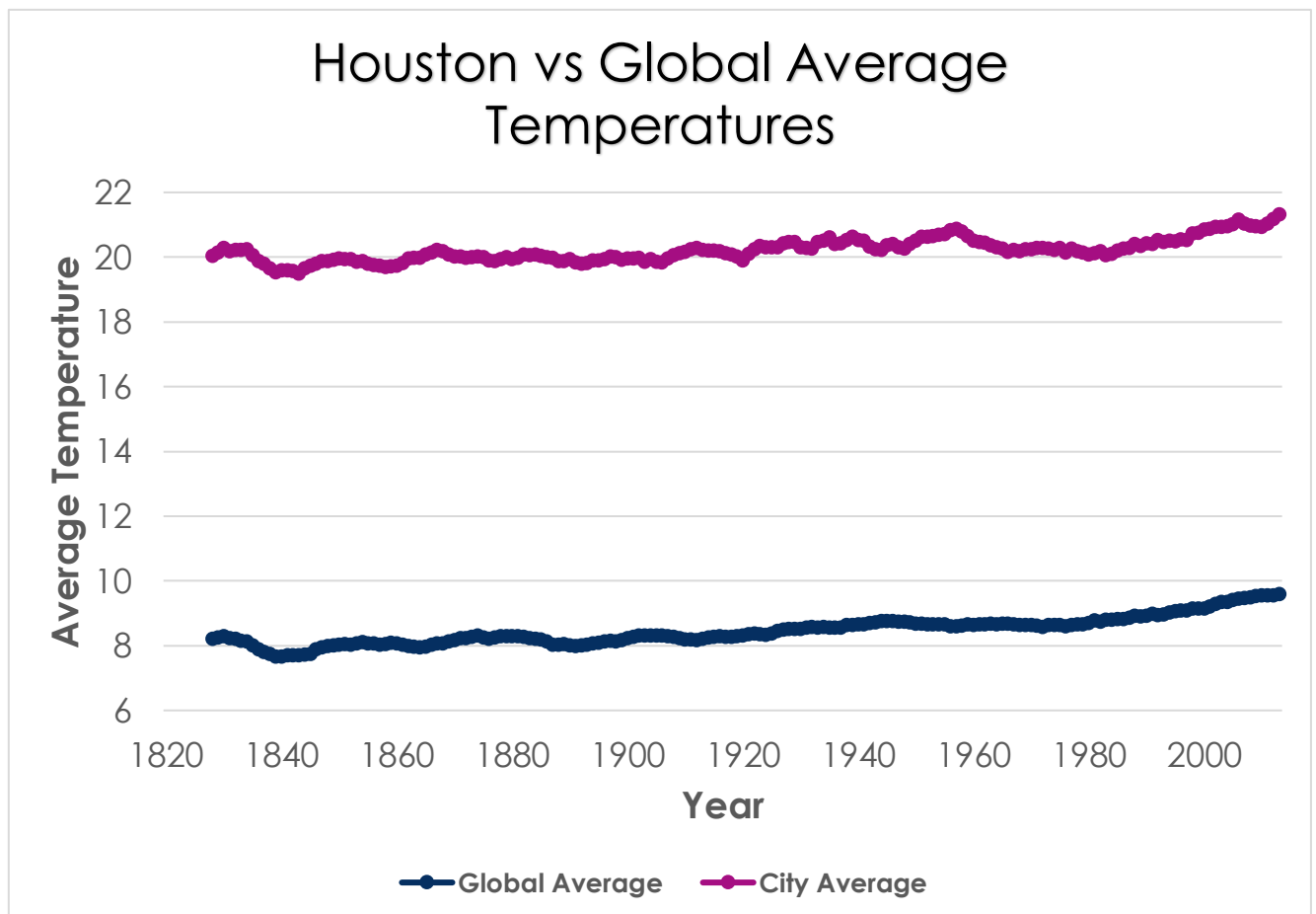
Note: I included “WHERE year BETWEEN ‘1820’ AND ‘2013’ for the global year because the city year only included between 1820-2013 for the city of Houston avg\_temp

2. I exported both database queries as a .csv file into Microsoft excel
3. A *moving averages* function was applied to both avg\_temp for global and the city of Houston. I used averages every 10 years. The formula =average (X:X) was used and the selection was every 10 data points. I then dragged the right corner of the first *moving average* to the last data point in the column.
4. The new column heading name for the *moving averages* are global\_avg and city\_avg
5. I copy and pasted the global\_avg column into the same workbook for city\_avg

6. I highlighted global\_avg and city\_avg columns and created a line graph with markers
7. I tweaked the graph so that it looks presentable and readable. Key changes to the graph includes

- Deleting the horizontal axis
- Adding vertical axis label – Average Temperature
- Changing max and min values of the vertical axis (average temperature) from 6.0 to 22.0
- Adding a title – Houston vs Global Average Temperatures
- Changing the legend from bottom to the right side of the graph
- Increasing font size and type to 14 and bold for axis titles and legend

The goal of these changes is to blow up the line graph so that each data point can be seen and to be able to view a discernable trend line. Font size of titles/labels were increased for better visualization.



Observations:

- The city of Houston is hotter than the global average. This trend is consistent over time as it stays well above the global average for the next two centuries.
- The change in Houston's temperature over time is a direct relationship with the global average temperature change over time. Both increase over time but the global average temperature increase is a slightly higher increase than Houston's average temperature change.
- The overall trend is that average temperatures are increasing with increasing time. The world is getting hotter. This trend has been consistent over the last few hundred years.
- Houston's average temperatures have been fluctuating more than the global average temperature. This can be seen with Houston's line as more jagged than the global's linear, smooth line. This could be due global warming where temperatures get hotter but certain years can be subject to short-term fluctuations (see reference below).

[https://en.wikipedia.org/wiki/Global\\_warming#Regional\\_trends\\_and\\_short-term\\_fluctuations](https://en.wikipedia.org/wiki/Global_warming#Regional_trends_and_short-term_fluctuations)