Project 1: Global Weather Trends

Kaitlyn Klucznik

Extracting Data from a data base and calculating moving average:

1) I first looked at the data available to me in each schema. I then created a query to determine if my city was available.

```
SELECT *
FROM city_list
WHERE city = 'Atlanta' AND country = 'United States';
```

2) After determining the city nearest me exists, I wrote the following query to do two things:
   a. Pull the year, city average temp, and global average temp into a single view.
   b. Created a window function to calculate the moving averages.
      i. I decided I was interested to see what the data looked like from a century average, a half century average, and a decade average.
   c. The resulting query is as follows:

```
SELECT cd.year
        ,cd.avg_temp AS city_avg_temp
        ,gd.avg_temp AS global_avg_temp
        ,AVG(cd.avg_temp) OVER(ORDER BY cd.year ROWS BETWEEN 9
            PRECEDING AND CURRENT ROW) as city_decade_avg
        ,AVG(gd.avg_temp) OVER(ORDER BY cd.year ROWS BETWEEN 9
            PRECEDING AND CURRENT ROW) as global_decade_avg
            ,AVG(cd.avg_temp) OVER(ORDER BY cd.year ROWS BETWEEN 49
            PRECEDING AND CURRENT ROW) as city_hcent_av
        ,AVG(gd.avg_temp) OVER(ORDER BY cd.year ROWS BETWEEN 49
            PRECEDING AND CURRENT ROW) as global_hcent_avg
        ,AVG(cd.avg_temp) OVER(ORDER BY cd.year ROWS BETWEEN 99
            PRECEDING AND CURRENT ROW) as city_cent_avg
        ,AVG(gd.avg_temp) OVER(ORDER BY cd.year ROWS BETWEEN 99
            PRECEDING AND CURRENT ROW) as global_cent_avg
FROM city_data cd
JOIN global_data gd
ON cd.year = gd.year
WHERE cd.city = 'Atlanta';
```

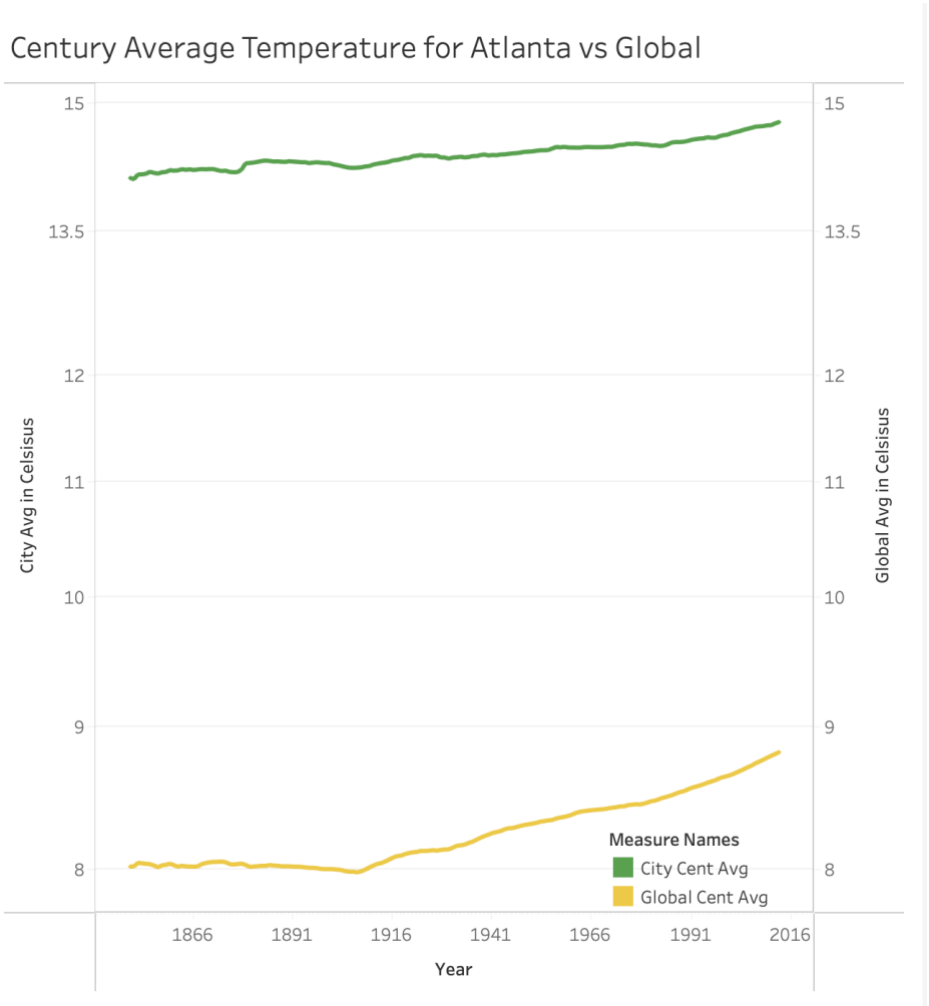
   d. Below is a sample screen shot of the table generated as a result of the query.

	A	B	C	D	E	F	G	H	I	J
1	year	city_avg_temp	global_avg_temp	city_decade_avg	global_decade_avg	city_hcent_avg	global_hcent_avg	city_cent_avg	global_cent_avg	
114	1862	14.61	7.56	14.347	7.984	14.3466	7.8942	14.20727273	8.0251	
115	1863	13.93	8.11	14.283	7.991	14.3468	7.9016	14.22181818	8.0312	
116	1864	13.73	7.98	14.137	7.968	14.3476	7.9094	14.21484848	8.027	
117	1865	14.61	8.18	14.14	7.975	14.3734	7.9282	14.22010101	8.0263	
118	1866	14.13	8.29	14.218	8.004	14.3982	7.9552	14.21272727	8.0251	
119	1867	14.31	8.44	14.314	8.072	14.425	7.9844	14.21868687	8.0273	
120	1868	13.68	8.25	14.238	8.087	14.4266	7.9928	14.22292929	8.042	
121	1869	13.92	8.43	14.199	8.105	14.432	8.014	14.22060606	8.0494	
122	1870	14.28	8.2	14.162	8.129	14.4438	8.0256	14.22343434	8.0545	
123	1871	14.88	8.12	14.208	8.156	14.471	8.0262	14.22333333	8.0572	
124	1872	13.36	8.19	14.083	8.219	14.4458	8.0262	14.21030303	8.0572	
125	1873	13.83	8.35	14.073	8.243	14.4434	8.0388	14.20070707	8.0585	
126	1874	14.83	8.43	14.183	8.288	14.4482	8.0364	14.20515152	8.0551	
127	1875	13.75	7.86	14.097	8.256	14.4222	8.0258	14.18989899	8.0419	
128	1876	13.82	8.08	14.066	8.235	14.4044	8.0202	14.18686869	8.0397	
129	1877	14.13	8.54	14.048	8.245	14.3828	8.0148	14.18848485	8.0425	
130	1878	14.66	8.83	14.146	8.303	14.3504	8.028	14.21787879	8.0454	
131	1879	14.71	8.17	14.225	8.277	14.3556	8.0326	14.28979798	8.0373	
132	1880	14.75	8.12	14.272	8.269	14.3326	8.0246	14.2944	8.0242	
133	1881	15.05	8.27	14.289	8.284	14.3568	8.0372	14.2995	8.0259	
134	1882	14.87	8.13	14.44	8.278	14.3598	8.0508	14.3075	8.0282	
135	1883	14.85	7.98	14.542	8.241	14.3608	8.0502	14.3178	8.0312	
136	1884	14.32	7.77	14.491	8.175	14.3392	8.0426	14.3231	8.0303	
137	1885	13.14	7.92	14.43	8.181	14.3152	8.0532	14.3187	8.0359	
138	1886	13.45	7.95	14.393	8.168	14.3088	8.0582	14.3119	8.0328	
139	1887	14.29	7.91	14.409	8.105	14.3038	8.0688	14.3132	8.0316	
140	1888	14.29	8.09	14.372	8.031	14.3088	8.0804	14.3096	8.028	
141	1889	14.2	8.32	14.321	8.046	14.3004	8.0942	14.3076	8.0279	
142	1890	15.07	7.97	14.353	8.031	14.3054	8.0976	14.3153	8.0278	
143	1891	14.05	8.02	14.253	8.006	14.2978	8.1042	14.3107	8.0257	
144	1892	13.71	8.07	14.137	8	14.277	8.1052	14.3077	8.0255	
145	1893	14.14	8.06	14.066	8.008	14.285	8.103	14.3036	8.0238	
146	1894	14.58	8.16	14.092	8.047	14.2828	8.1132	14.3028	8.0201	

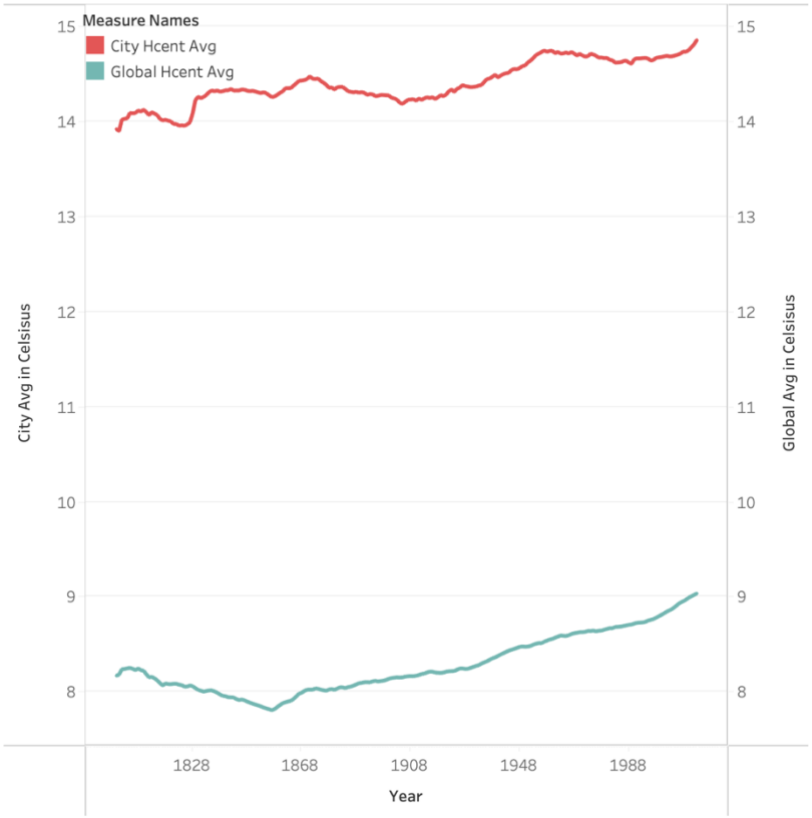
Global Weather v 2 +

Ready

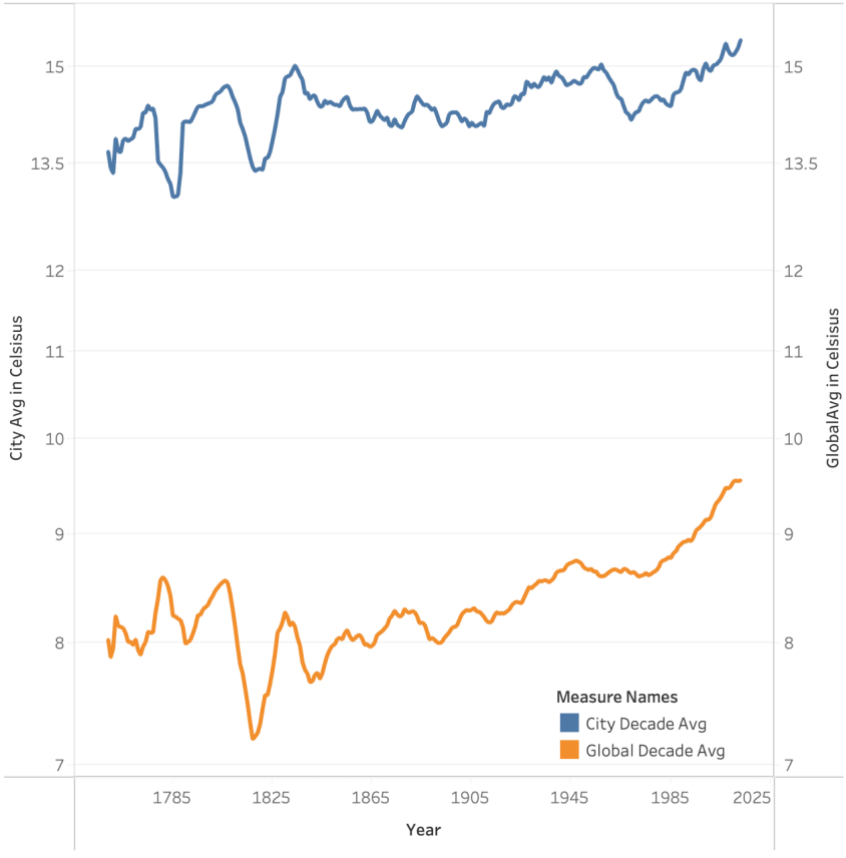
Charts and Observations



Half Century Average Temperature of Atlanta vs. Global



Decade Temp Average of Atlanta vs. Global



1) Century: Looking at the century chart it, one can surmise that the temperature has stayed relatively consistent with Atlanta averaging a higher temperature than the global average (which one can assume is due to the land locked nature of Atlanta) until 1916 when global temperature seems to be growing at an accelerated rate compared to Atlanta.
2) Half Century: Drilling into the half century data we can see that Atlanta again remains consistently higher, though temperature spiked exponentially around the mid 19th century for the city. Conversely the global average seems to reach an all time low around then (close to 1867.)
3) Decade: Drilling into the decade data one can observe that the temperature both globably and for Atlanta were far more volatile prior to the mid 19th century than the century chart would lead one to believe.
4) Decade: Atlanta experienced two dramatic drops in the average temperature between 1785 and 1825 while globally there is only one extreme dip in temperature around 1825.
5) Decade: Temperature for Atlanta stays relatively consistent through the decades, gradually cooling from 1825 until about the 1865 when it spikes and then plateaus until about the 1930s when a gradual increase in temperature takes over until about 1985 when we a dramatic cooling before the temperature increases more exponetially. Globally however we see that overall temperature increases more dramatically on a continual basis from the mid 19th century onward.