

Climate Change is NOT fake news

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Project goal

Some say climate change is the biggest threat of our age while others say it's a myth based on dodgy science. Here we try to analyze how the world temperatures are shifting over the years on a day to day basis.

DataSet

Our dataset includes the following separate files-

Global Land and Ocean-and-Land Temperatures (GlobalTemperatures.csv):

- Date: starts in 1750 for average land temperature and 1850 for max and min land temperatures and global ocean and land temperatures
- LandAverageTemperature: global average land temperature in celsius
- LandAverageTemperatureUncertainty: the 95% confidence interval around the average
- LandMaxTemperature: global average maximum land temperature in celsius
- LandMaxTemperatureUncertainty: the 95% confidence interval around the maximum land temperature
- LandMinTemperature: global average minimum land temperature in celsius
- LandMinTemperatureUncertainty: the 95% confidence interval around the minimum land temperature
- LandAndOceanAverageTemperature: global average land and ocean temperature in celsius
- LandAndOceanAverageTemperatureUncertainty: the 95% confidence interval around the global average land and ocean temperature

Other files include:

- Global Average Land Temperature by Country (GlobalLandTemperaturesByCountry.csv)
 - date
 - AverageTemperature
 - AverageTemperatureUncertainty
 - Country

- Global Average Land Temperature by State (GlobalLandTemperaturesByState.csv)
 - date
 - AverageTemperature
 - AverageTemperatureUncertainty
 - State
 - Country
- Global Land Temperatures By Major City (GlobalLandTemperaturesByMajorCity.csv)
 - date
 - AverageTemperature
 - AverageTemperatureUncertainty
 - City
 - Country
 - Latitude
 - Longitude
- Global Land Temperatures By City (GlobalLandTemperaturesByCity.csv)
 - date
 - AverageTemperature
 - AverageTemperatureUncertainty
 - City
 - Country
 - Latitude
 - Longitude

Analytical Questions and Proxy Tasks

Make a list of questions you want to answer in your project and corresponding proxy tasks (referring to the attributes described in the previous section).

1. Which countries record the largest temperature change and susceptibility to rise in temperature?
 - Proxy task: Temperature change: increase/decrease in temperature and Susceptibility: Compare the Average temperature of all countries to the average temperature of a particular country
2. How the temperature change over seasons from 1750 to 2015 in the US?
 - Proxy task: Determine the seasonality from the months and compare the trend over the years
3. Which states in the US record the highest temperature differences?

- Proxy task: Find the difference between the max and min temperature value for every state
4. Is the gap between two extreme events shrinking, meaning that extremes are becoming more extreme faster than before?
 - Proxy task: Is the difference between the max and min temperature increasing or decreasing
 5. How is the temperature uncertainty varying from 1750 for major cities in US?
 - Proxy task: Does the temperature uncertainty reduce over time

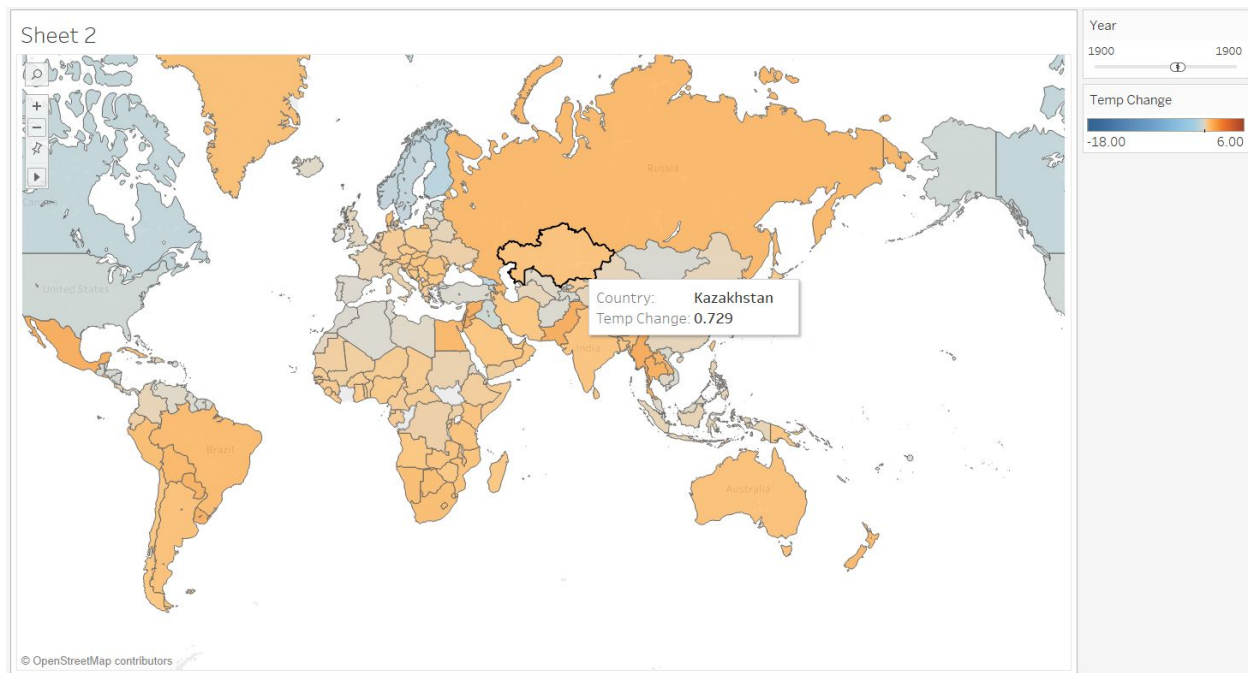
Story Design

Data Analysis

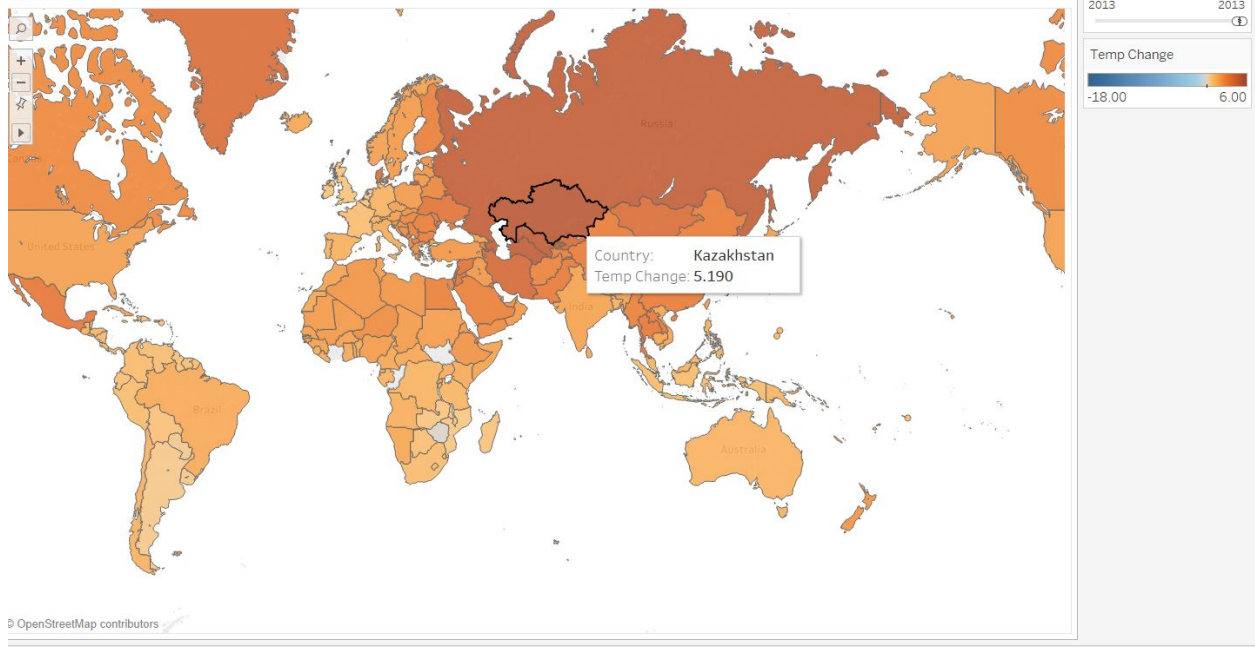
Which countries record the largest temperature change and susceptibility to rise in temperature?

Consider the country Kazakhstan here:

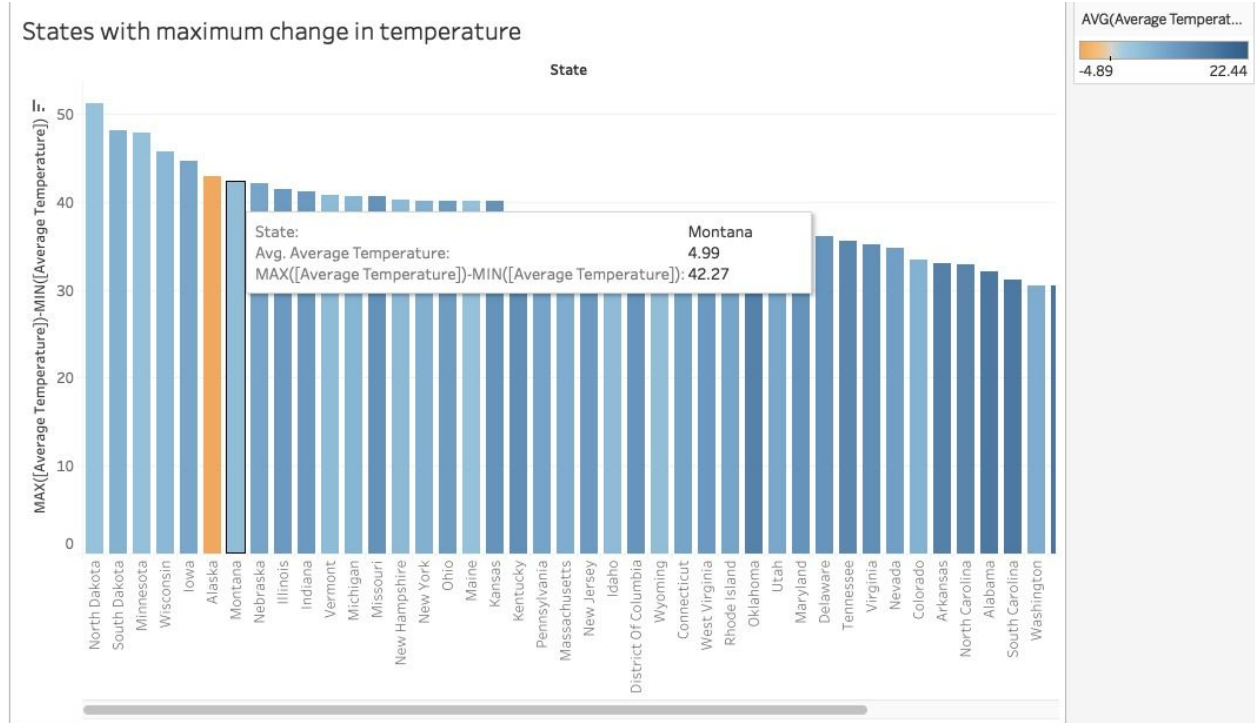
The base temperature for Kazakhstan is considered as 3.75°C (average) from the year 1812. In comparison to this, the temperature change in the year 1900 was only 0.73°C. However, the difference rose to 5.2°C in 2013, which means the average temperature in 2013 was 8.95°C.



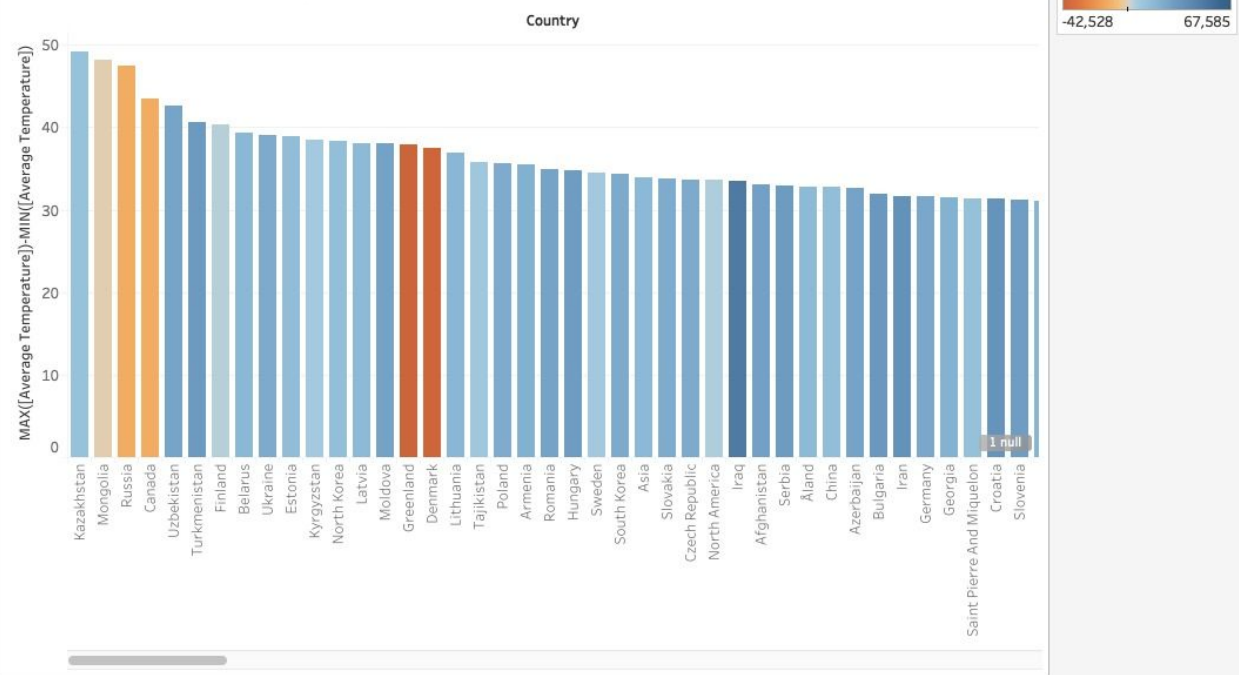
Sheet 2



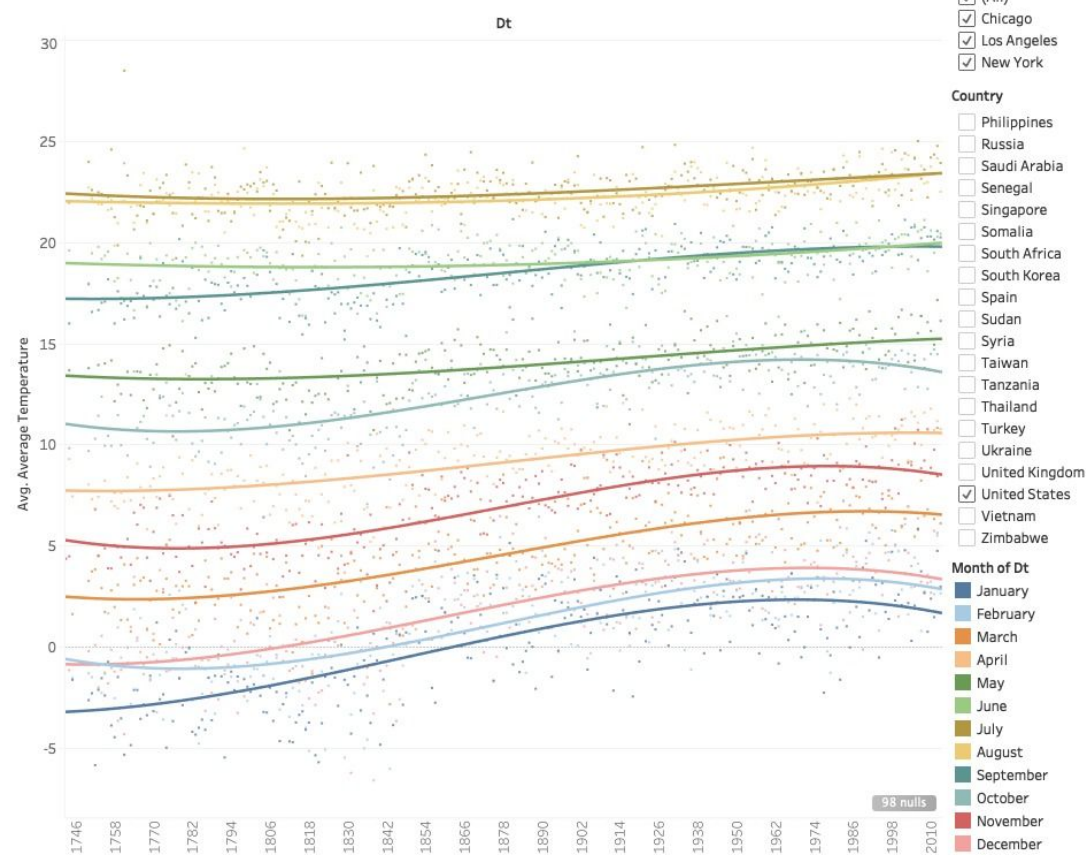
Is the gap between two extreme events shrinking, meaning that extremes are becoming more extreme faster than before?



Countries recording the major changes in Temperature

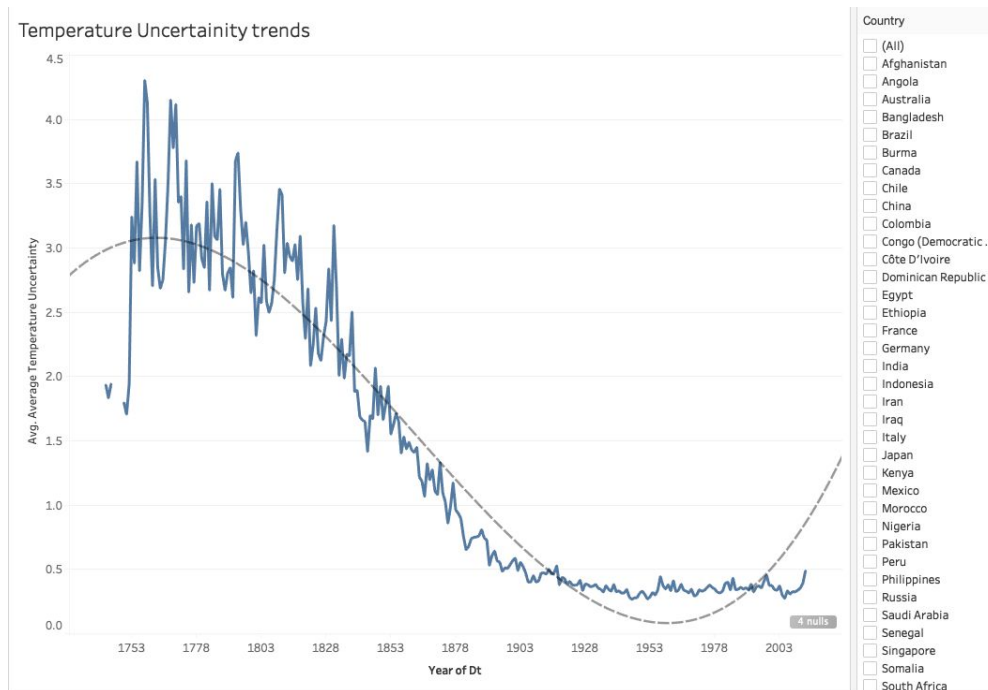


Average Temperature by Month



How is the temperature uncertainty varying from 1750 for major cities in US?

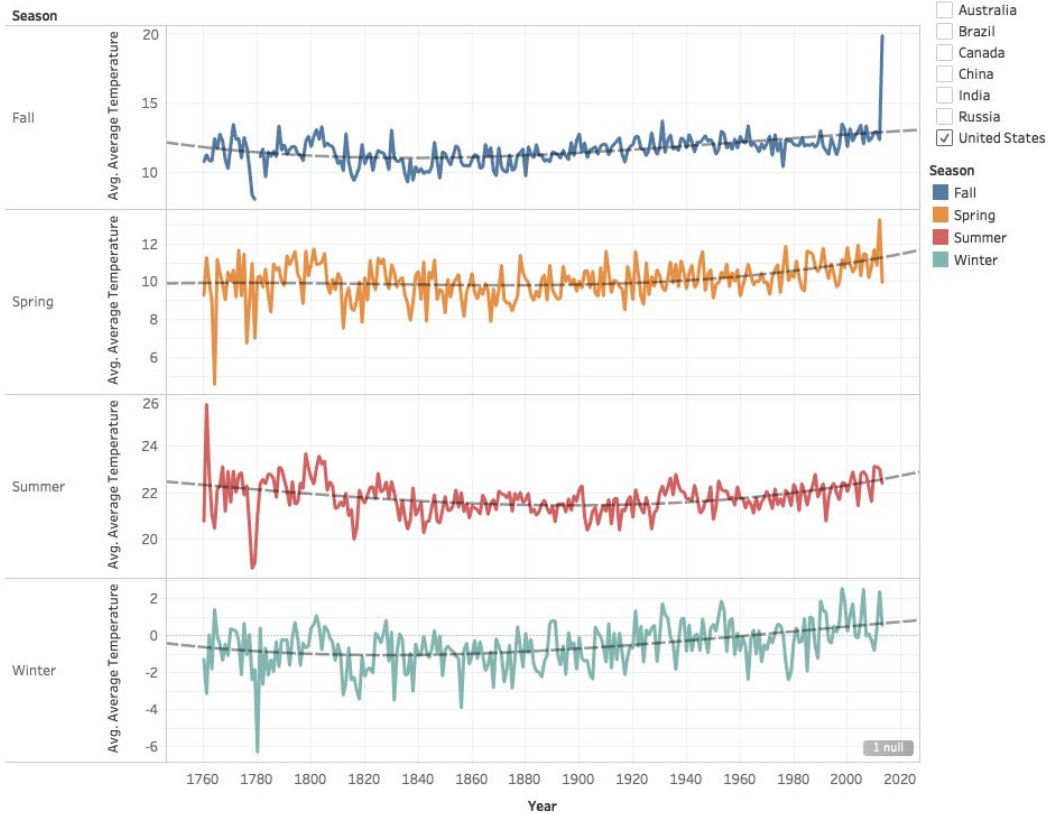
With time, the measure in the uncertainty of temperature is decreasing for more developed countries the uncertainty measure is close to zero but for less developed countries



How the temperature change over seasons from 1750 to 2015 in the US?

For US , the trend line shows the temperature increases over time from 1750 to 2015 for all the seasons. There are slight variations but the the overall trend is upwards.

Seasonality trends in the North Hemisphere

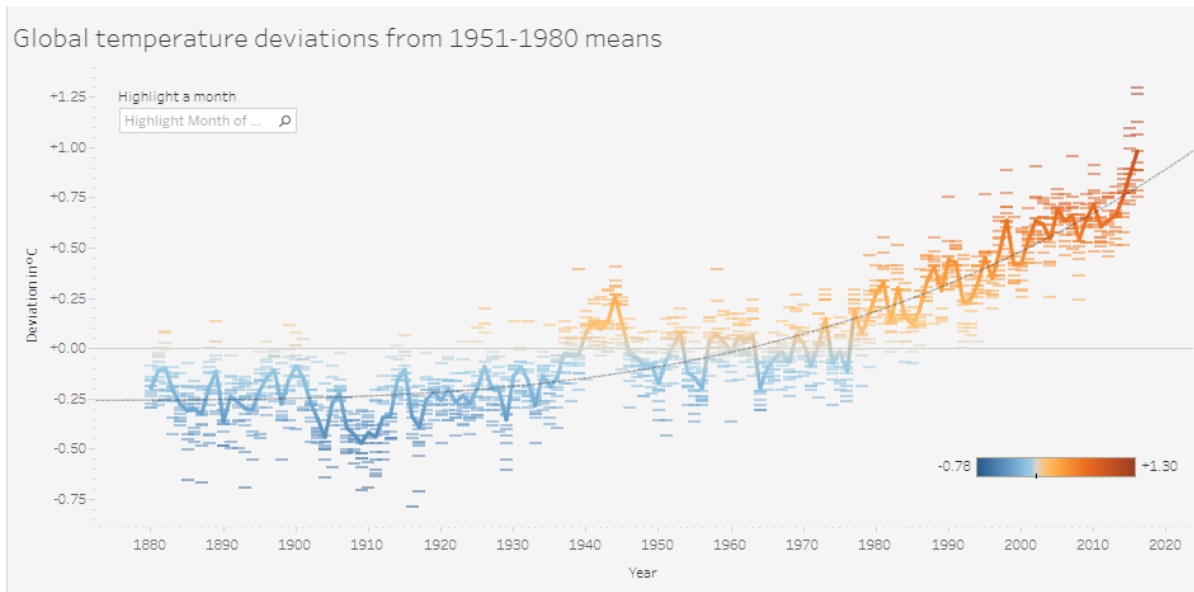


Storyboard

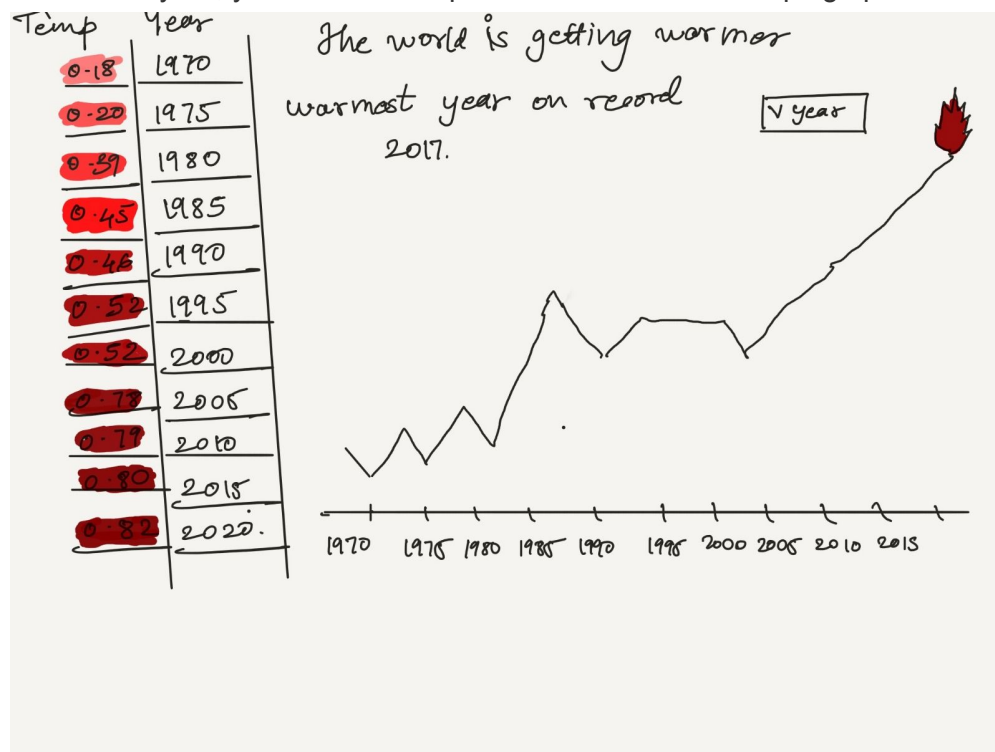
Climate Change is NOT fake news!

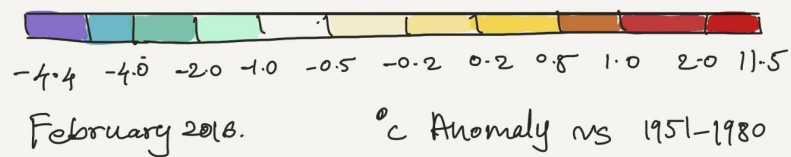
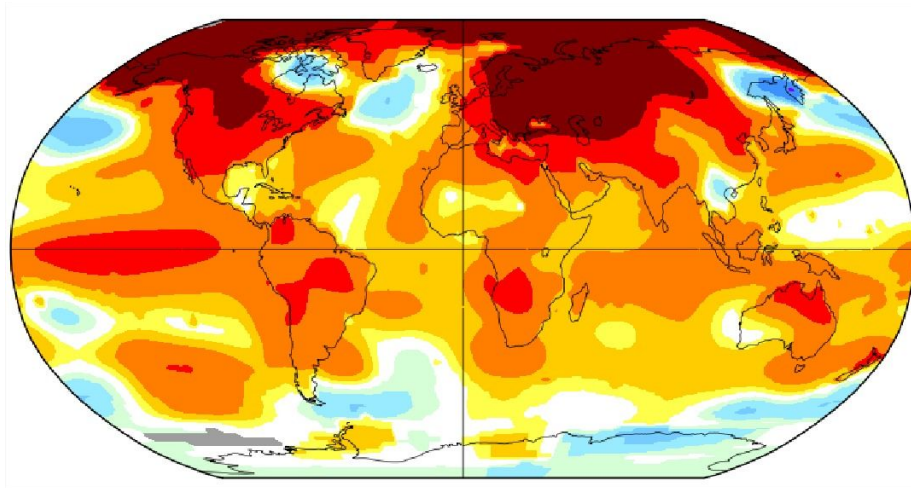
In recent years, global warming has been the subject of a great deal of political controversy. As scientific knowledge has grown, this debate is moving away from whether humans are causing warming and toward questions of how best to respond.

Signs that the Earth is warming are recorded all over the globe. The easiest way to see increasing temperatures is through the thermometer records kept over the past century and a half. Around the world, the Earth's average temperature has risen more than 1 degree Fahrenheit (0.8 degrees Celsius) over the last century, and about twice that in parts of the Arctic.



This doesn't mean that temperatures haven't fluctuated among regions of the globe or between seasons and times of day. But if you average out the temperature all over the world over the course of a year, you see that temperatures have been creeping upward.





Implementation

- Github Link: <https://github.com/NYU-VIS-FALL2018/storytelling-group-8>
- Demo Link: <https://nyu-vis-fall2018.github.io/storytelling-group-8/>