Project overview
This project aims to visualize the relationship between cities in the dataset in terms of temperature and precipitation. The project is inspired by the dust and magnetic type data visualization and aims to use a similar approach to visualize the relationship mentioned previously.

User tasks
- As a Seattle native who's moving out due to high housing prices, I want to find which city is the most similar to Seattle in terms of weather so I could still enjoy similar weather to my childhood with cheaper house prices.
- As an international student about to attend UW next year, I want to see the change in temperature and precipitation of Seattle as a city so I can prepare clothes for the upcoming freshman year.
- As a weather data archivist, I want to compare record maximum temperature and precipitation between different cities starting from 2014-7-1 to 2015-6-30 so I can give a comparative analysis report on that year's weather condition.
- As a weather researcher, I want to find out which city has the highest actual precipitation and highest actual mean temperature throughout the year so that I can put it into a larger analytic project.
- As a Weather hobbyist, I want to identify the cities in the interquartile range in terms of temperature and precipitation throughout the summer of 2014 so I can report which cities have less drastic weather condition changes.
- As a weather hobbyist, I want to identify the cities outside of interquartile range in terms of record temperature and precipitation so I can look more into the abnormal weather events.

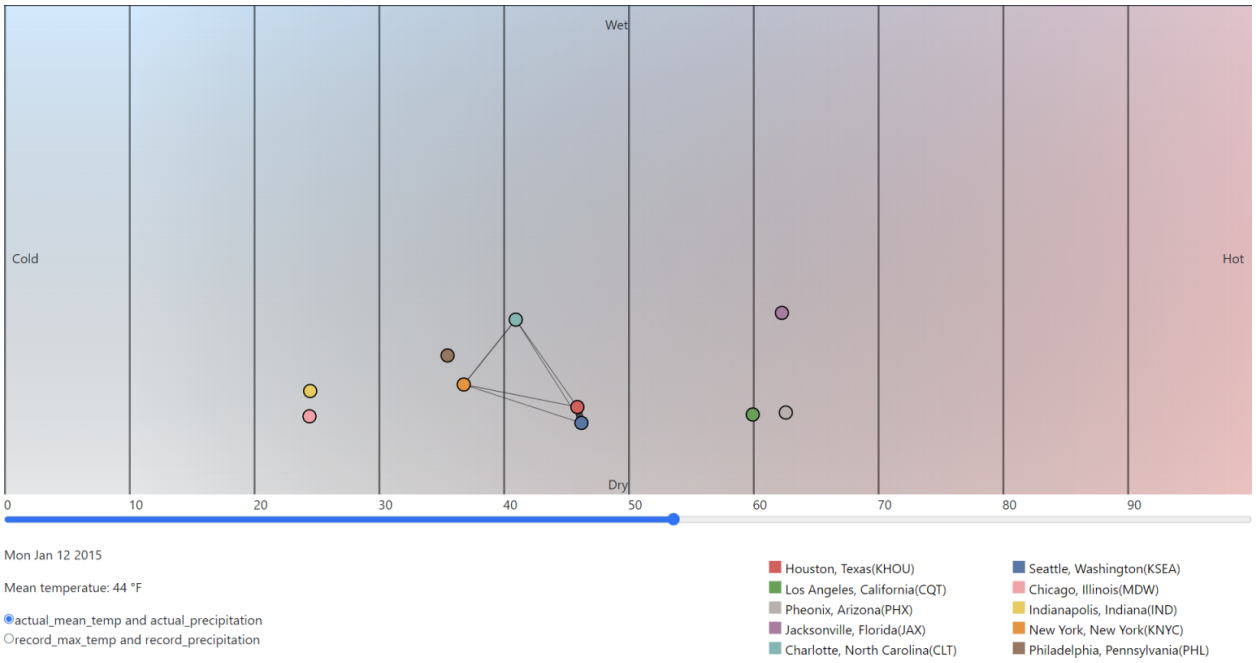
Design overview
Since this visualization wants to showcase the relationship between each city in terms of temperature and precipitation, I used dots as the main encoding for this visualization. Each dot represents a different city in the dataset. Also, in order to make each dot/city distinct in the viewers' eyes, I have also given each dot a different color. There is no meaning behind the dot colors besides separating them from each other.

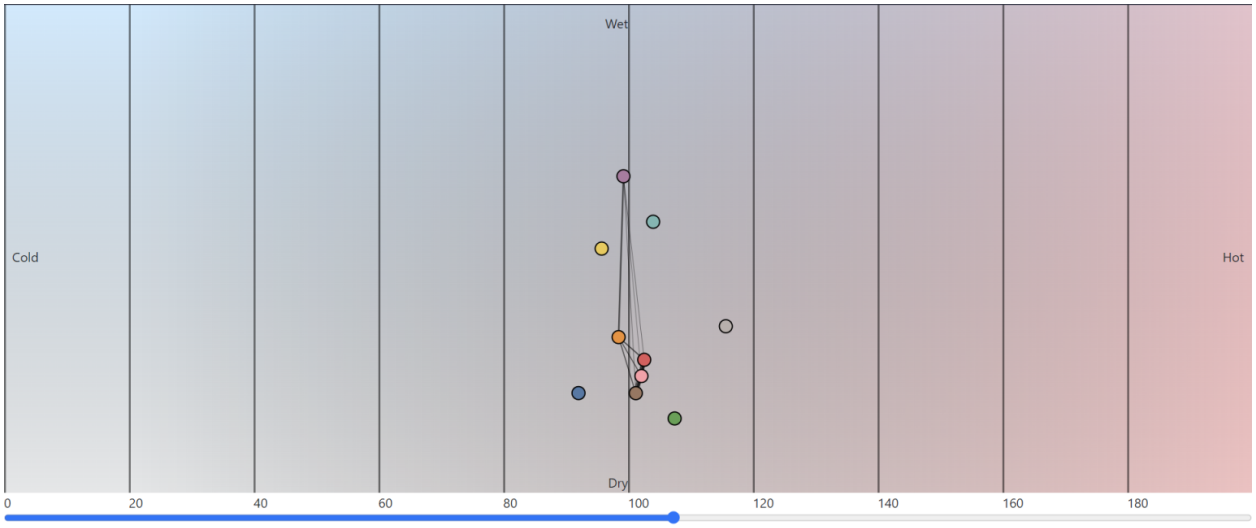
Because this visualization is inspired by the dust and magnetic type data visualization, the temperature of a city at a certain time period is encoded as the location along the width of the screen, while the precipitation of the city at a certain time period is encoded as the location of the dots along the height of the graph. In order to make the location of the dots understood, I also added a gradient background,where coldness and wetness are painted with a colder blue color while hotness and dryness are painted with a warmer red color, so based on the color, the user will have a better idea of what they are looking at.

Cities that have data points within the 25 to 75 percentile in that particular data(by date) are also linked together in terms of their temperature and precipitation. The thicker/darker the line is between the cities, the more similar they are.

This visualization is also designed to be interactive. This is because I believe that interactive visualization will make the process of viewing the data more engaging. I believe that interactiveness is a way of attracting the viewer to see the visualization, and it provides more engagement and helps the viewer to better understand the data. There are three ways of interacting with this visualization. The first and the main mode of interaction is to use the large slider located about a third of the way up from the bottom of the screen. Using this slider, the user can select the data by the date and allow a new set of data to be rendered. The second way of interaction is by selecting one of the options on the bottom left screen. The user can either select to see the data based on the actual mean temperature and actual precipitation, or they can see the data based on the record max temperature and the record precipitation. Finally, the third way of interacting with the visualization is to hover the mouse on to each dot rendered on the screen. Upon hovering, the user should be able to see detailed information about the particular city.

Screen shot



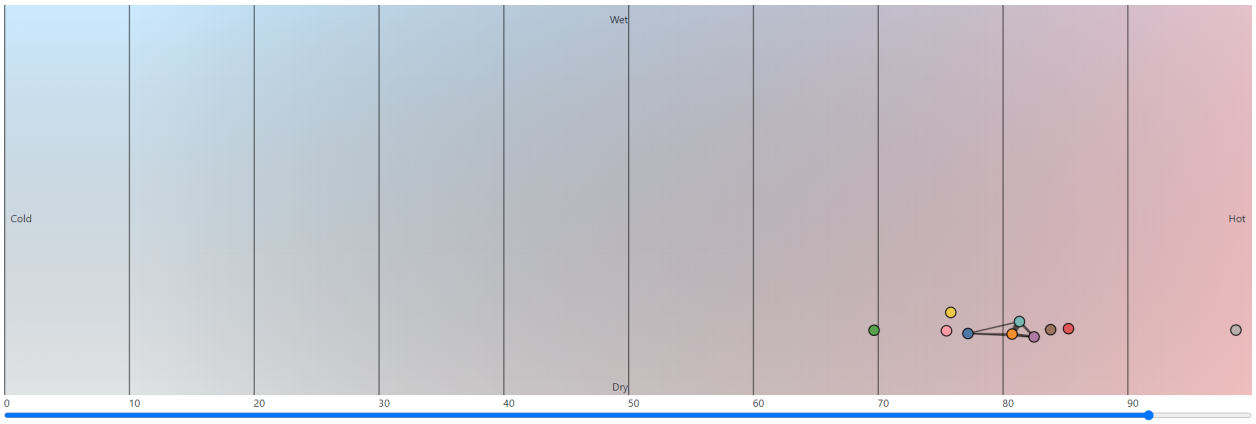


Mon Jan 12 2015

Mean temperatue: 102.4 °F

actual_mean_temp and actual_precipitation
record_max_temp and record_precipitation

Houston, Texas(KHOU)
Los Angeles, California(CQT)
Pheonix, Arizona(PHX)
Jacksonville, Florida(JAX)
Charlotte, North Carolina(CLT)
Seattle, Washington(KSEA)
Chicago, Illinois(MDW)
Indianapolis, Indiana(IND)
New York, New York(KNYC)
Philadelphia, Pennsylvania(PHL)



Mon Jun 01 2015

Mean temperatue: 80.8 °F

actual_mean_temp and actual_precipitation
record_max_temp and record_precipitation

Houston, Texas(KHOU)
Los Angeles, California(CQT)
Pheonix, Arizona(PHX)
Jacksonville, Florida(JAX)
Charlotte, North Carolina(CLT)
Seattle, Washington(KSEA)
Chicago, Illinois(MDW)
Indianapolis, Indiana(IND)
New York, New York(KNYC)
Philadelphia, Pennsylvania(PHL)