Week 11: Maps & Interactivity

Fall 2017

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Broadcasting

go.ischool.illinois.edu/meet2

Warm-Up Activity

1. What is the visualization trying to show?
2. What are its methods?
3. What are the strengths / weaknesses?
4. (Bonus) How was the data collected?

Warm-Up Activity

https://bookworm.htrc.illinois.edu/develop/

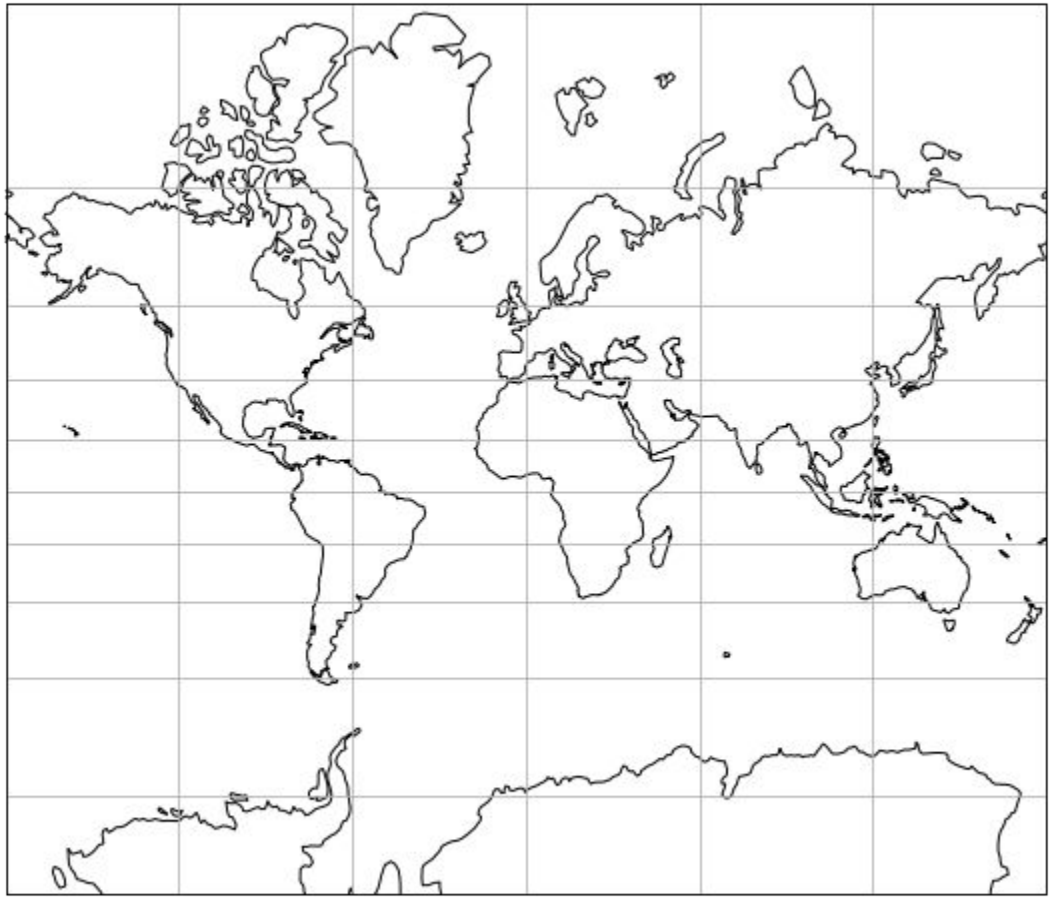
Geospatial data in brief

- Projections
- Coordinate systems
- Plotting with cartopy

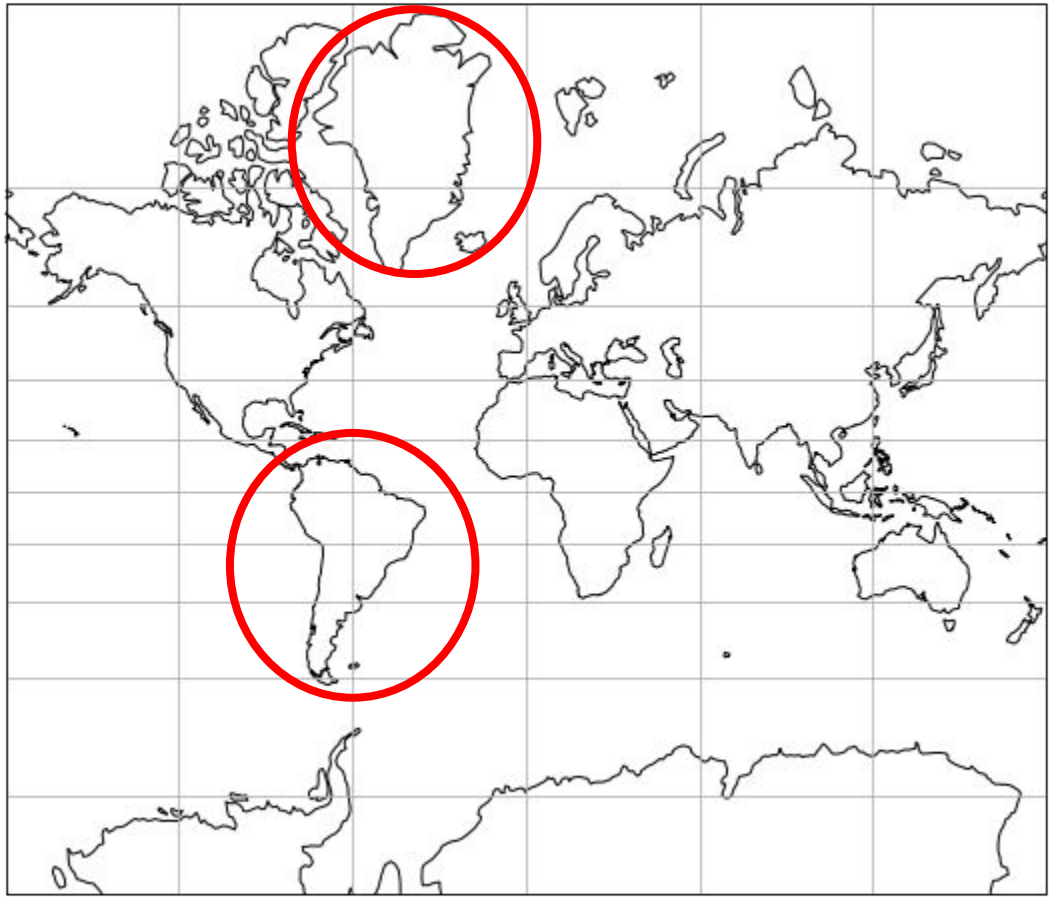
Projections

- Conformal
- Equal area
- Compromise
- Equidistant
- Gnomonic

Conformal: Mercator

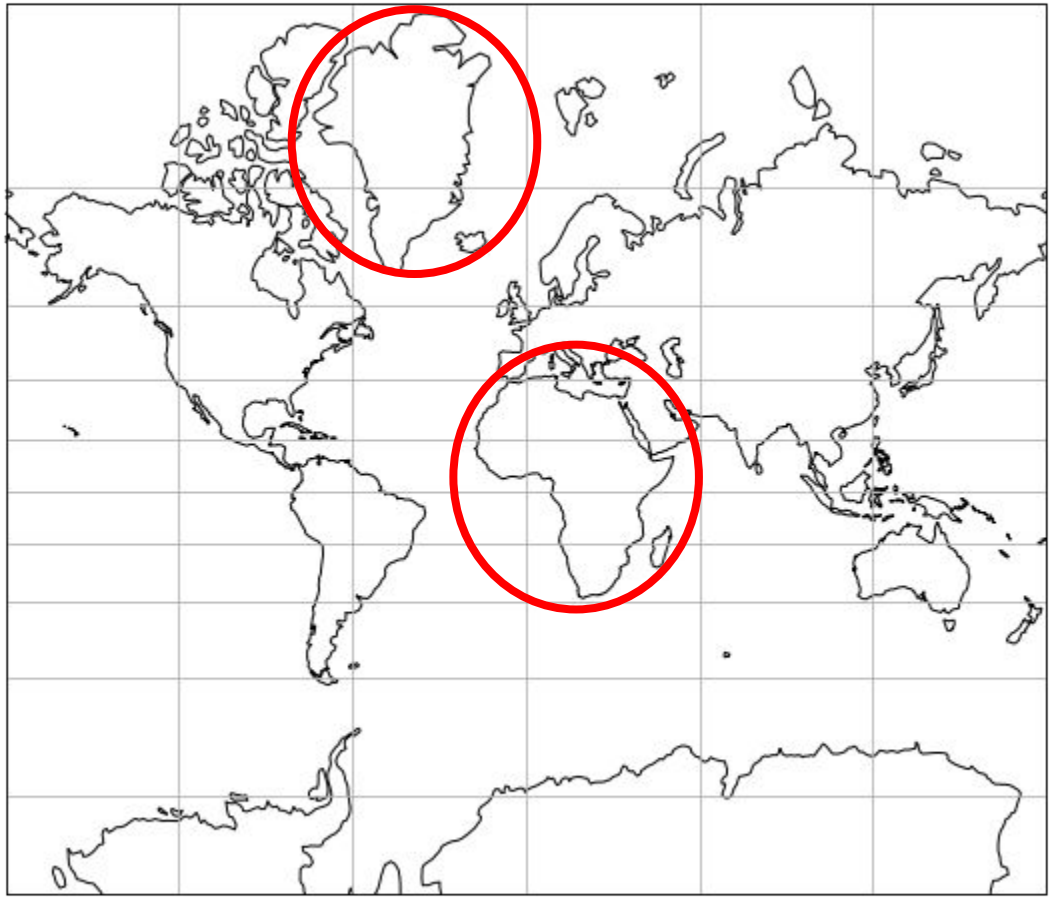


Conformal: Mercator



Distortion gets worse closer to the poles

Conformal: Mercator

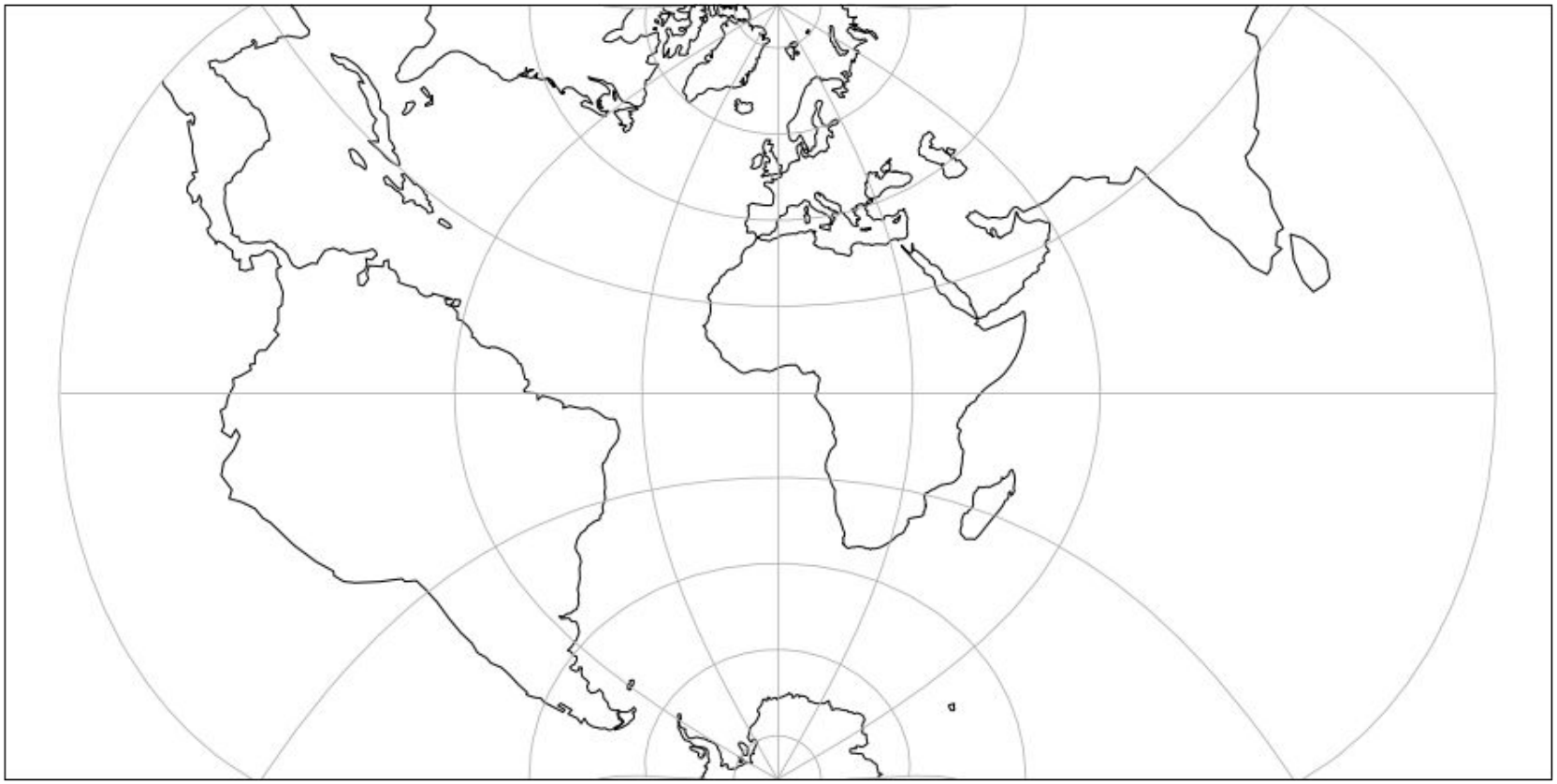


Distortion gets worse closer to the poles

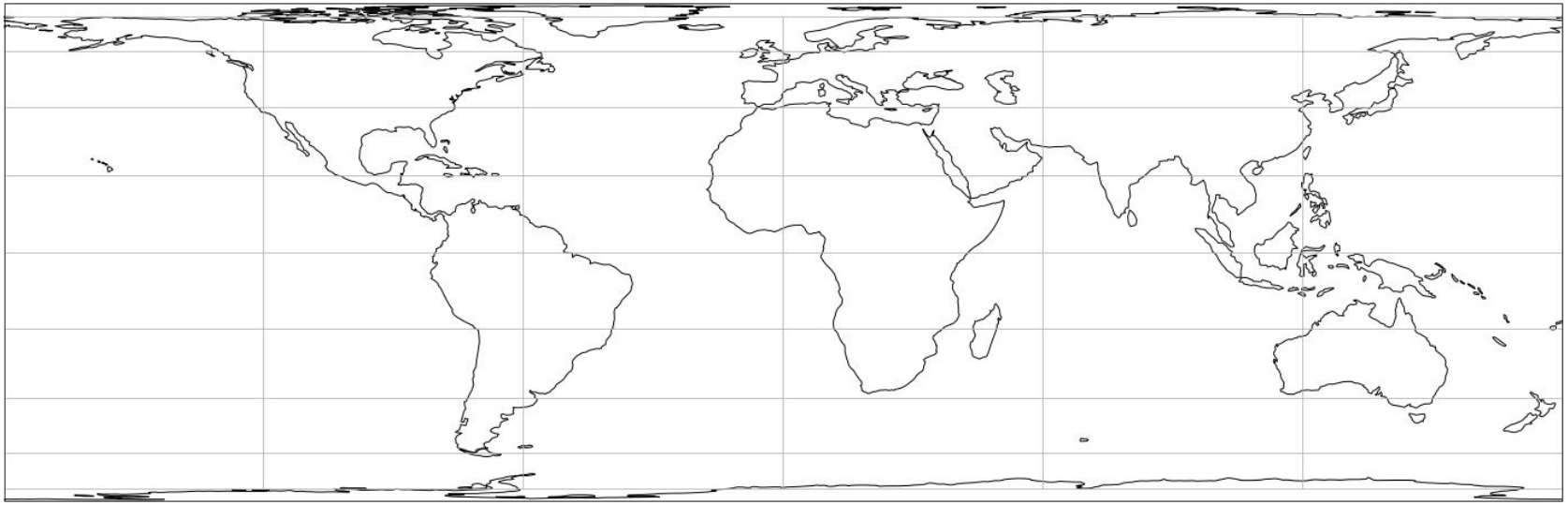
Conformal: Mercator

Infinite at the poles

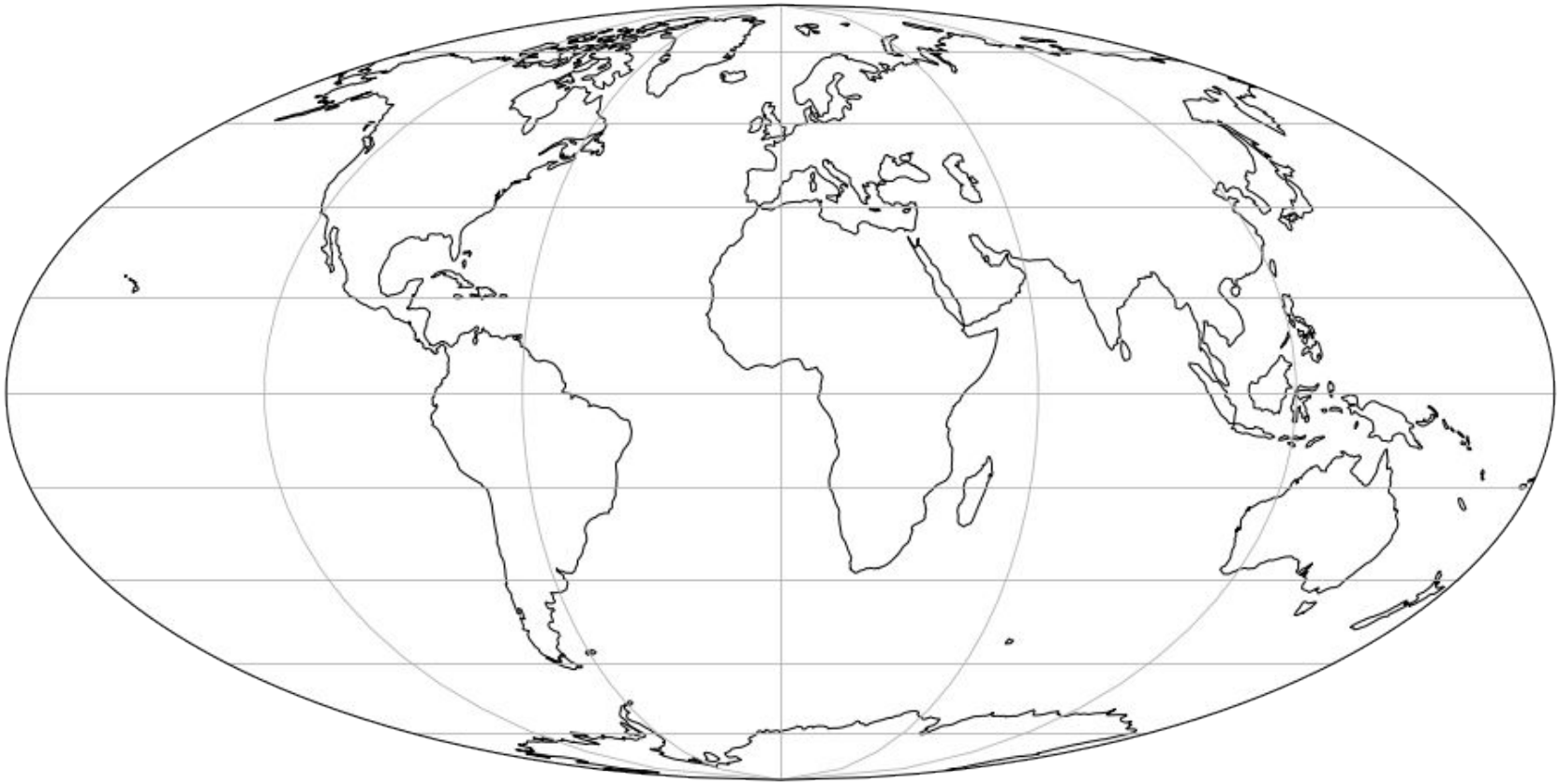
Conformal: Transverse Mercator



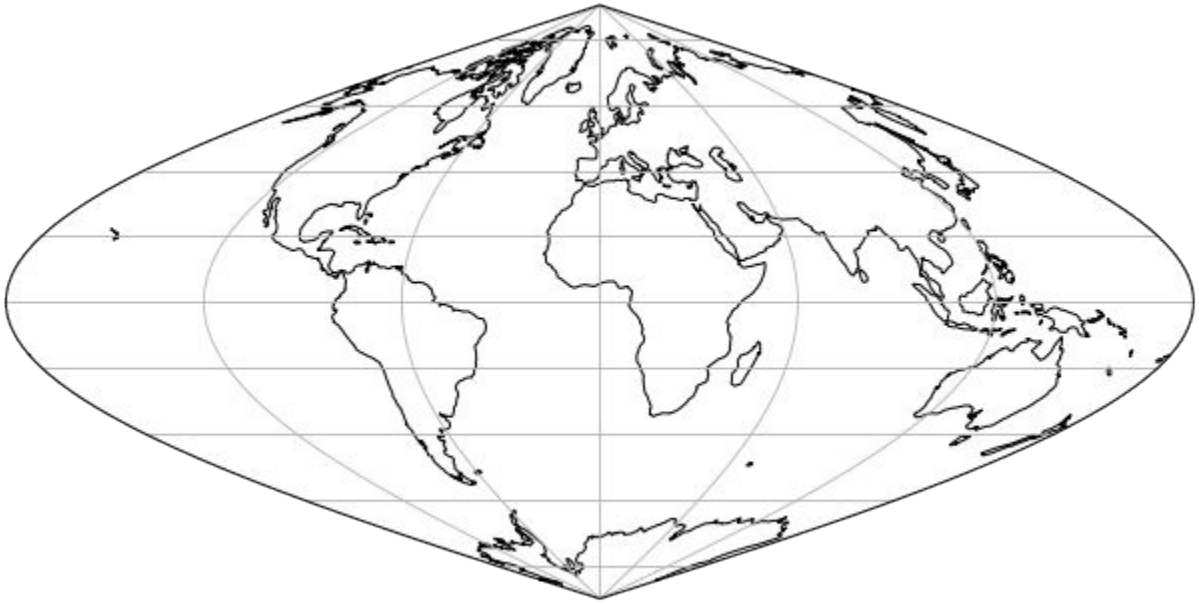
Equal Area: Lambert Cylindrical



Equal Area: Mollweide

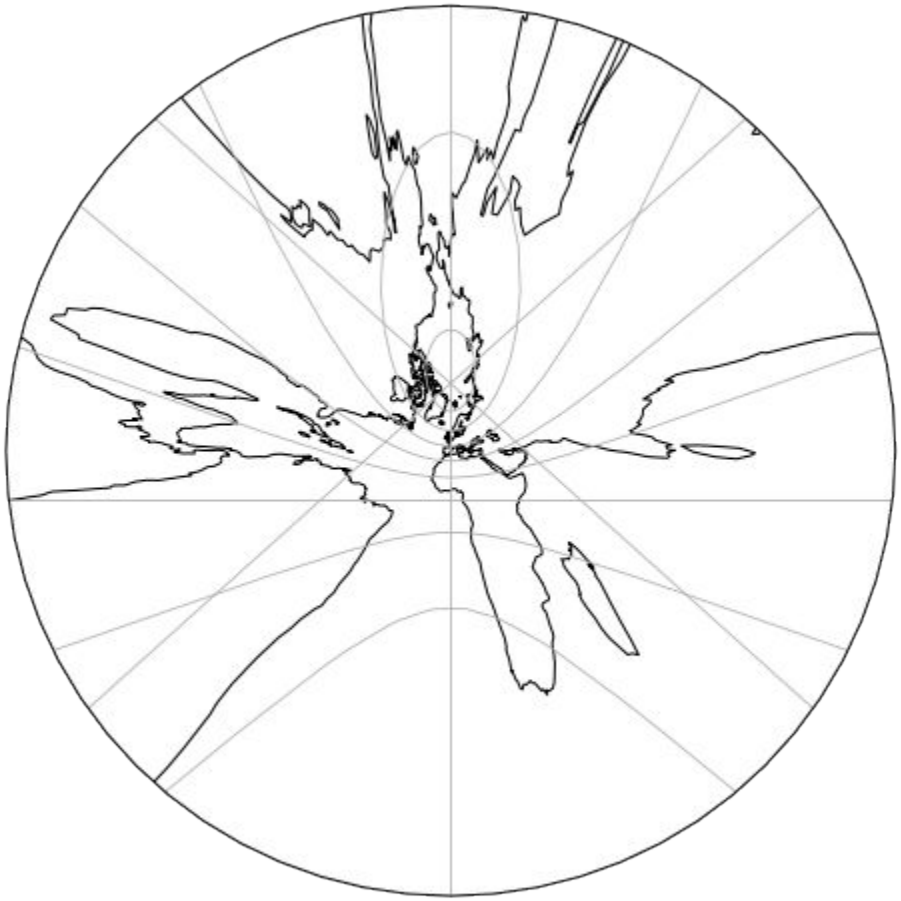


Equidistant: Sinusoidal

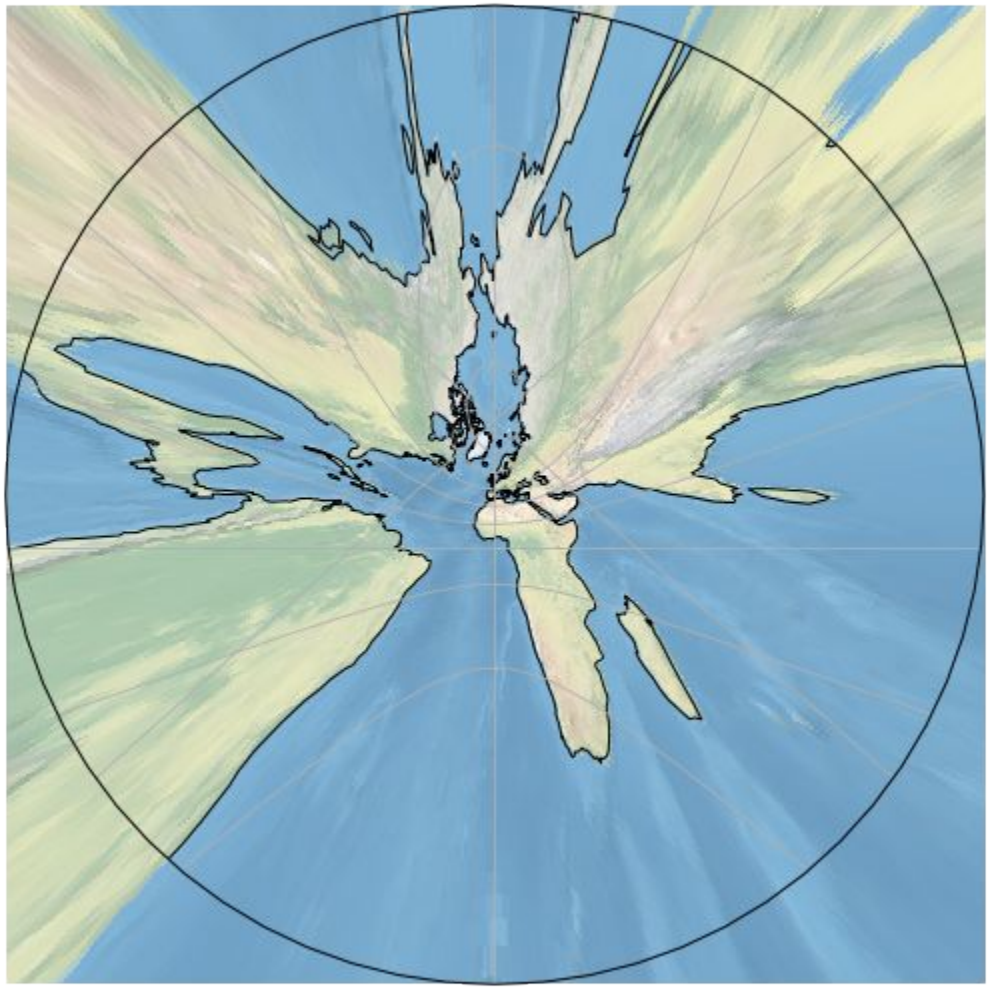


(Also equal-area)

Gnomonic



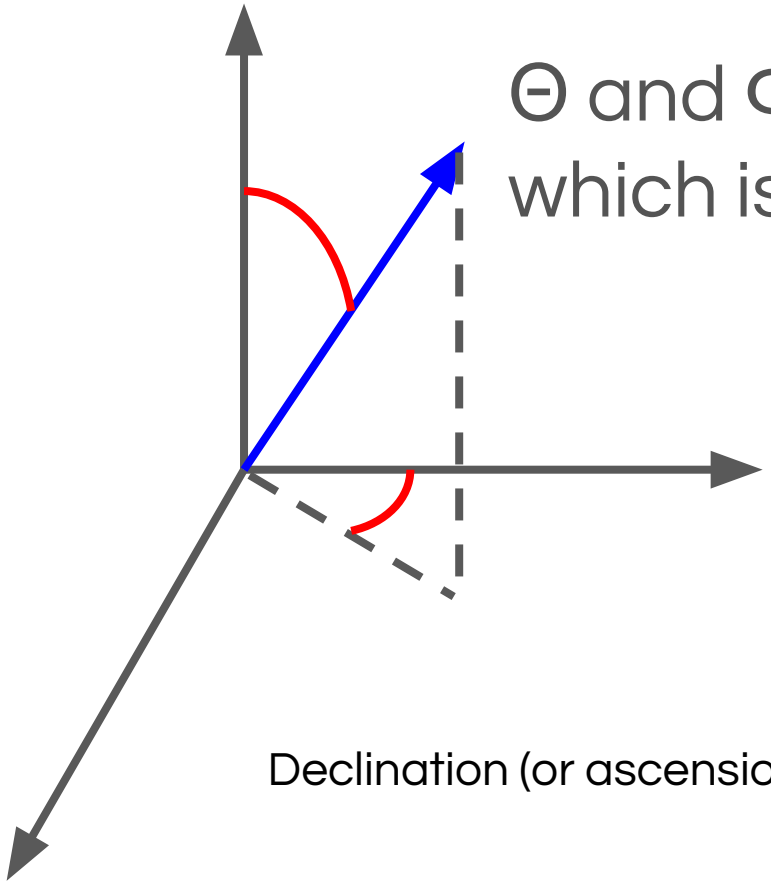
Gnomonic



Coordinate Systems

- Spherical coordinates
- Latitude / longitude
- Degrees / minutes / seconds

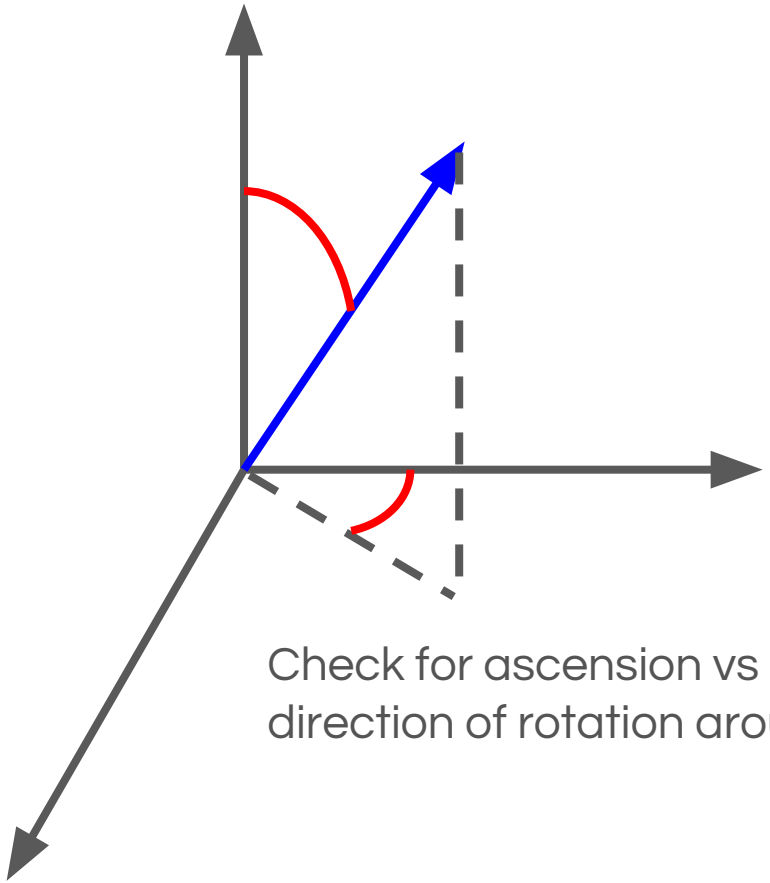
Coordinate Systems: Spherical



Θ and Φ, but which is which is prone to error!

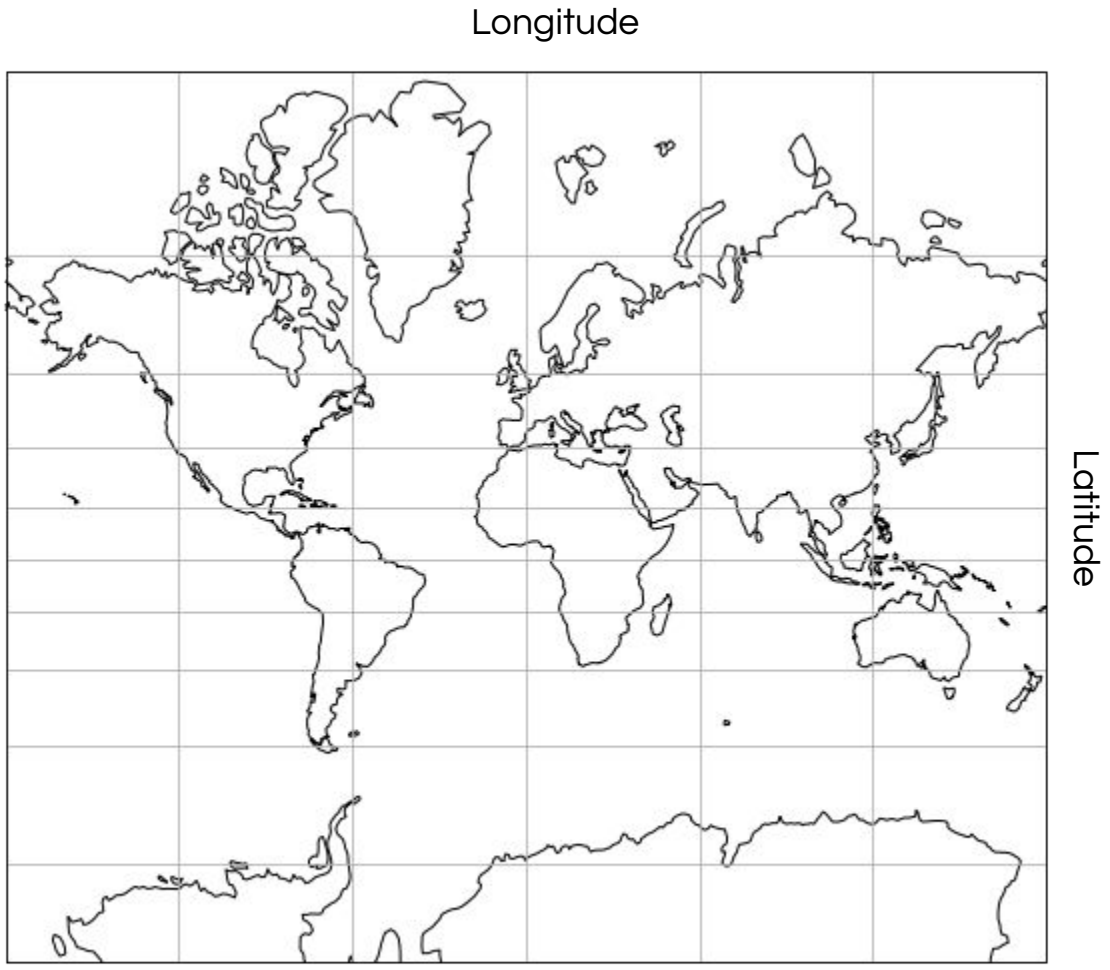
Declination (or ascension) and azimuthal

Coordinate Systems: Spherical



Check for ascension vs declination and direction of rotation around azimuth.

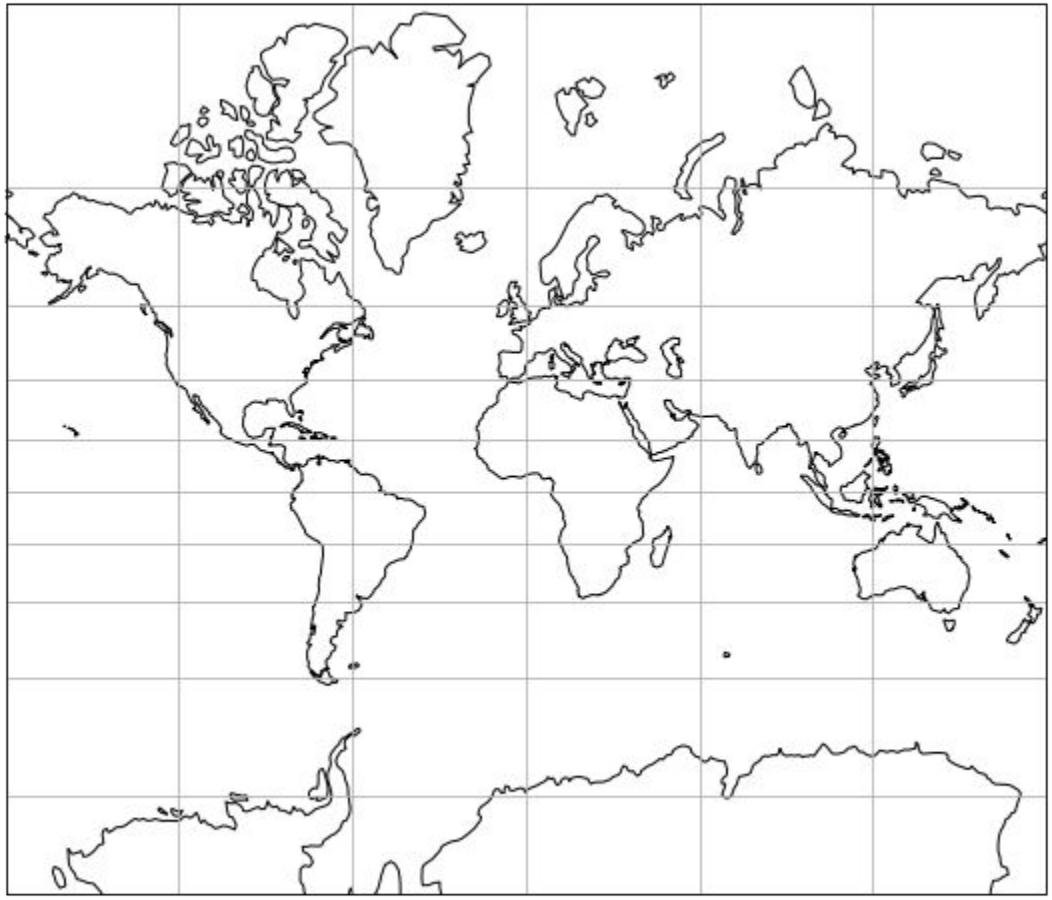
Coordinate Systems: Latitude and Longitude



Things to watch for:

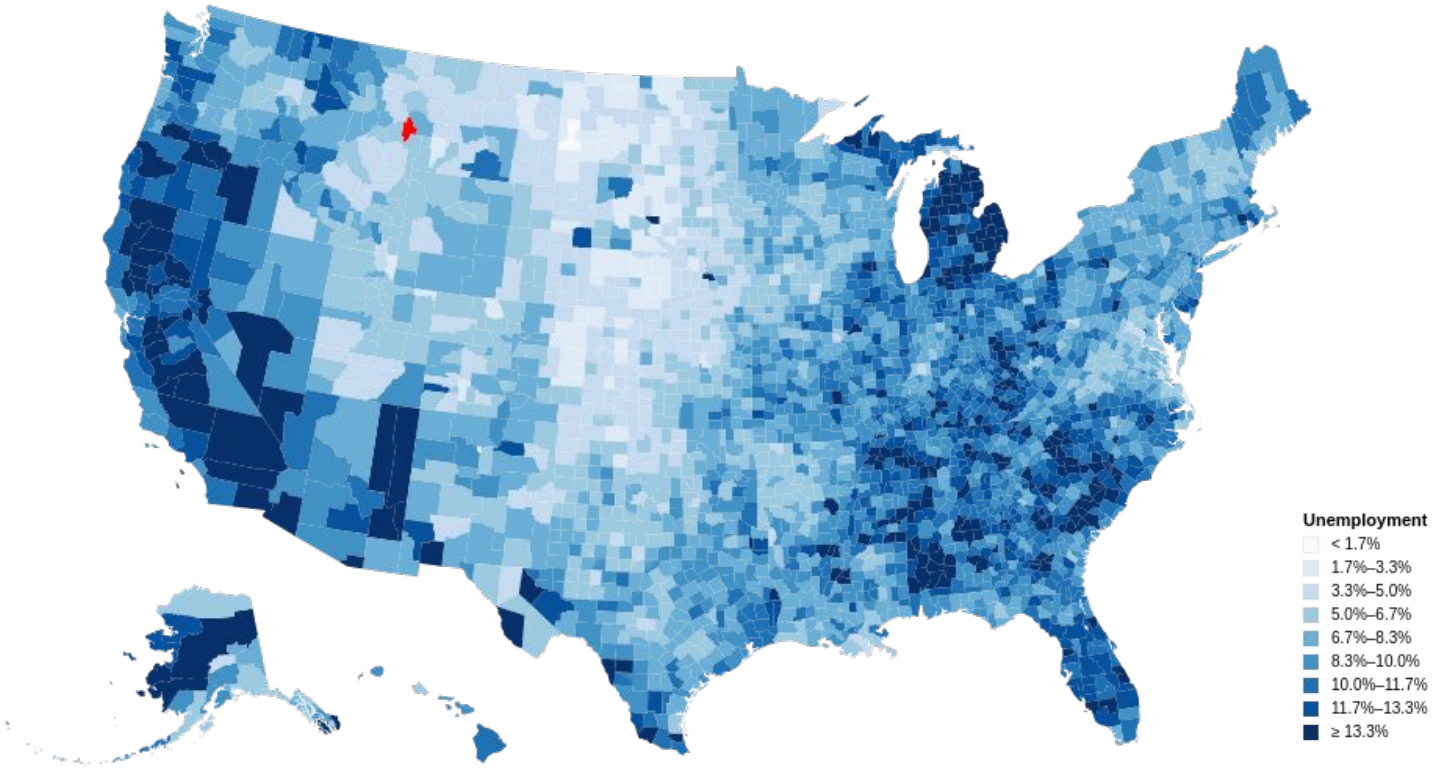
- Zero point
- Range
- N/S, E/W

Coordinate Systems: Degrees, minutes, seconds



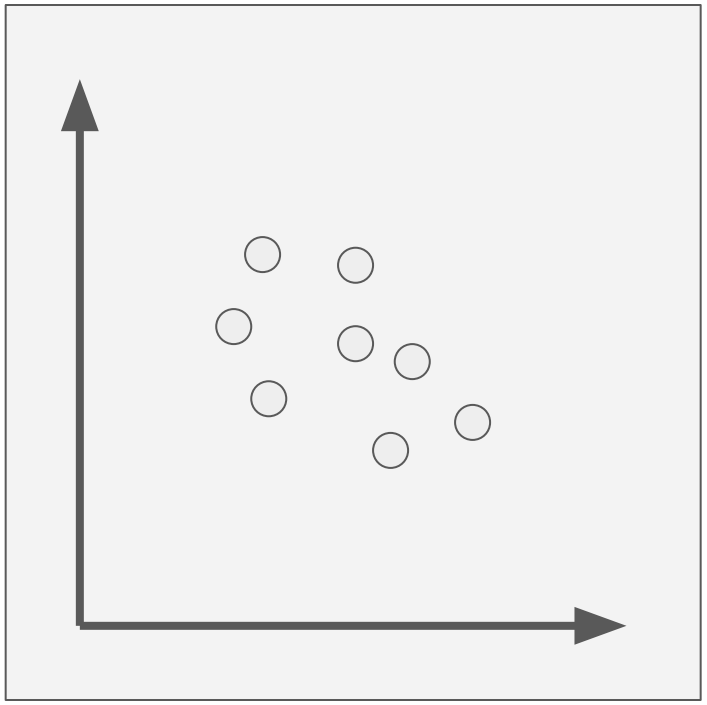
- 24 hours in a day
- 60 minutes in an hour
- 60 seconds in a minute

Viz with Maps: Chloropleth

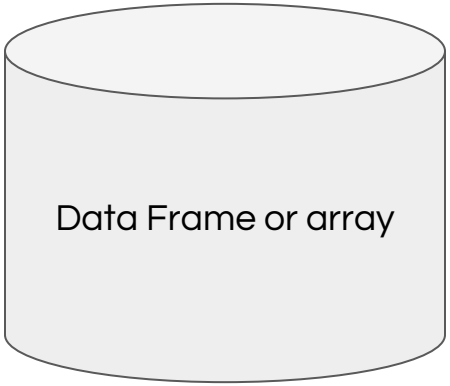


https://vega.github.io/vega/examples/county-unemployment/

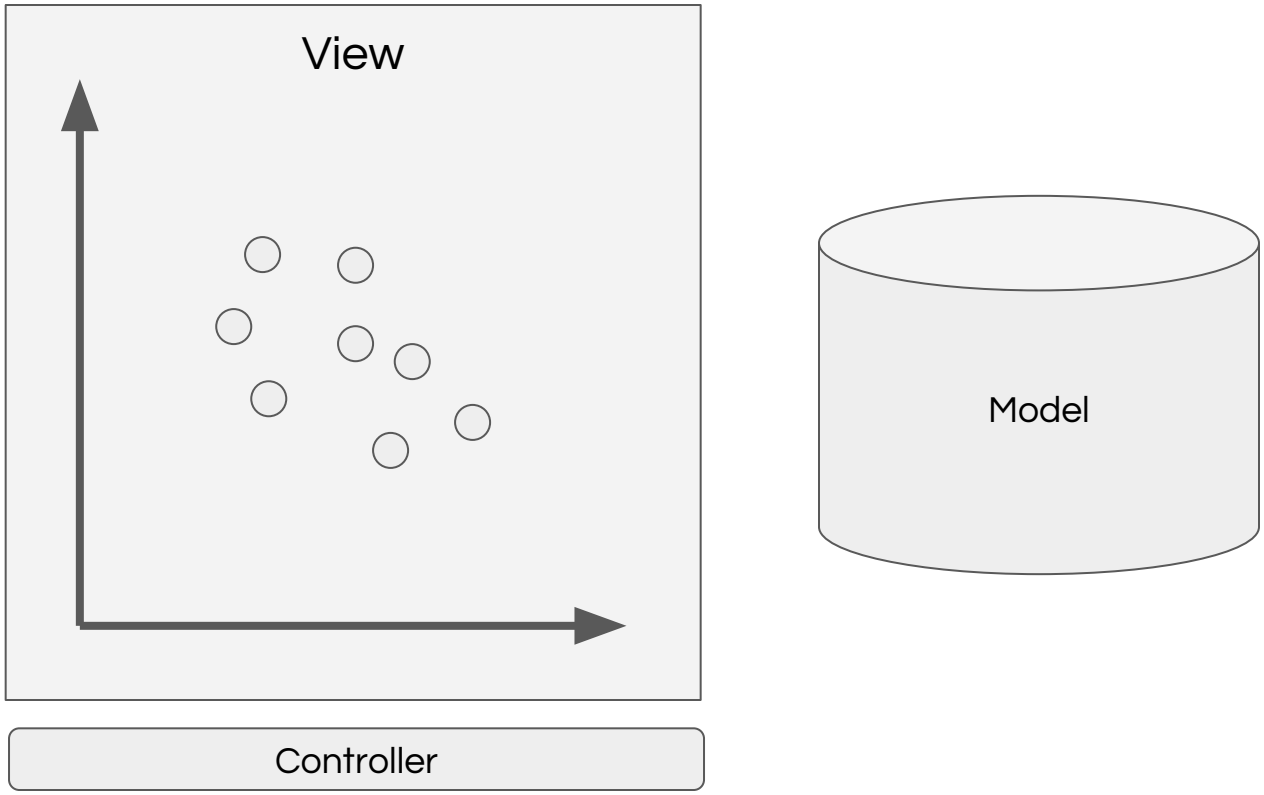
Interactivity and the Model-View-Controller



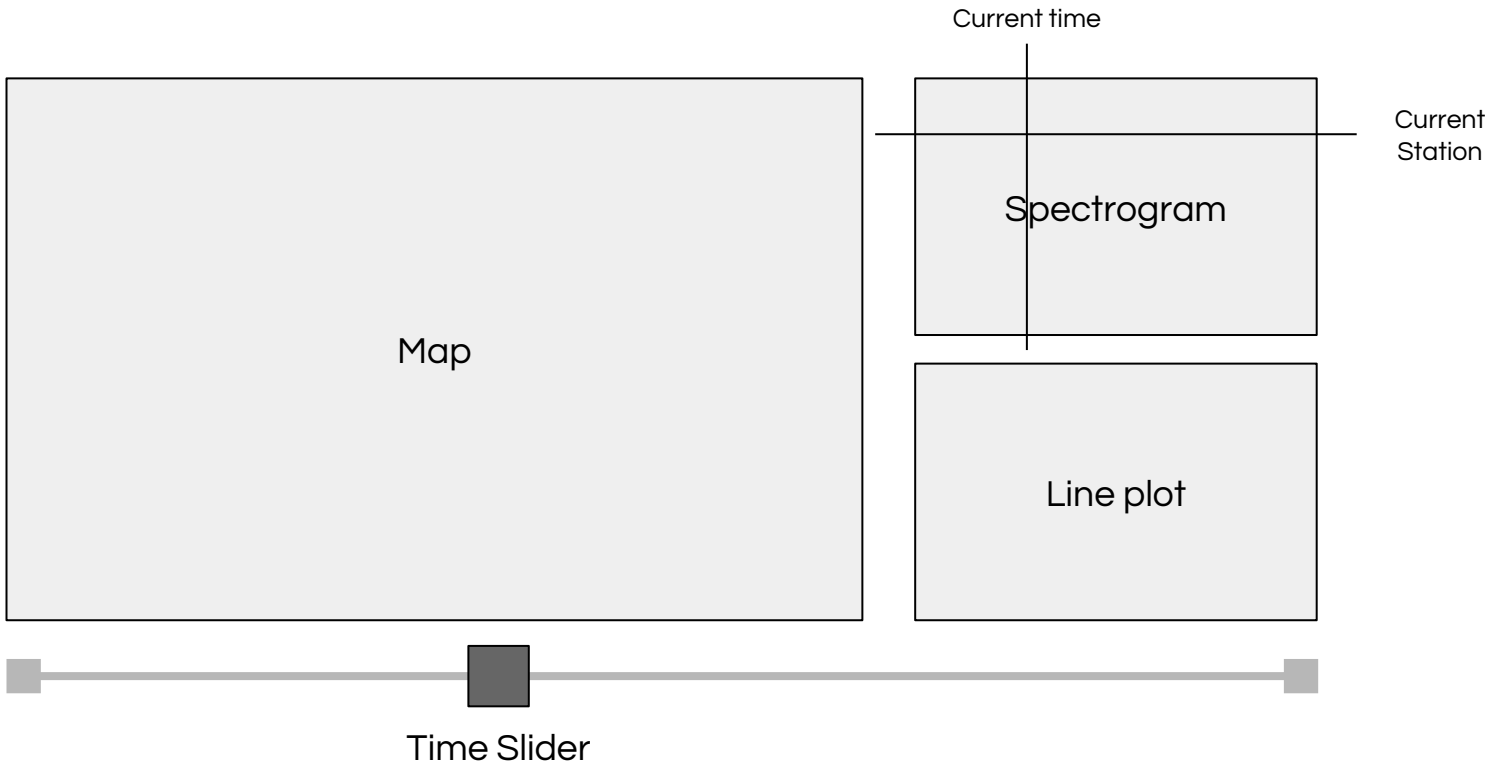
Selection



Interactivity and the Model-View-Controller



Project Part 1: Interactive Viz



Project Part 2: Movie

- Use mediaspace.illinois.edu to demonstrate visualization
- Time-varying (i.e., movie)
- Augment with other information you find on your own

In-Class Project

- Heat map of UFOs
  - Start with by-state aggregations
  - Use cartopy to get state locations
- Add a widget to change which field gets viewed
  - Number of sightings
  - Total time of sightings

Today

- Intro to bqplot
- bqplot.readthedocs.org