

MAPS!

# Facts about Maps

- ALL are *distorted!*
- They are transferred using *projection*
- They are two dimensional
- **Cartography** = the science of map making

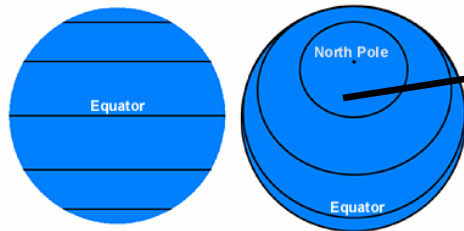
# Categories of Maps

- Reference: Boundaries, roads, mountains... etc.
- Thematic: features or patterns
- Flow-line maps – good for determining movement or migration patterns

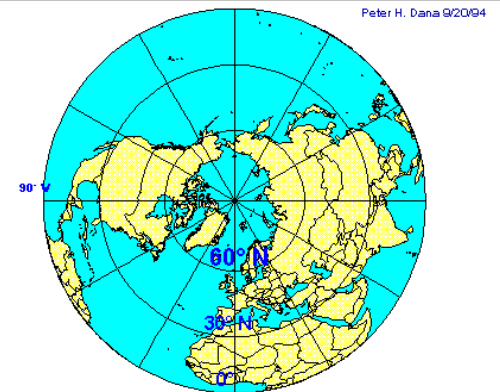
# Basic Map Projections

- 4 basic types of map projections:

- Cylindrical

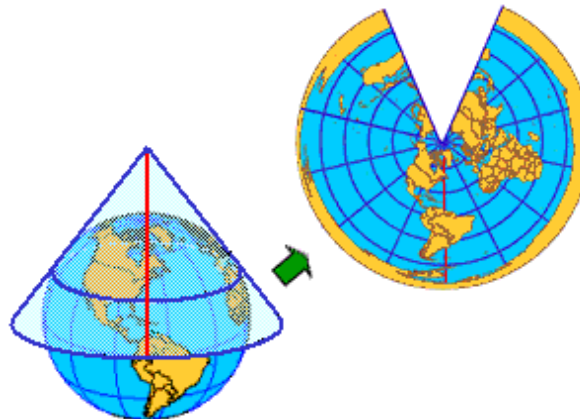


- Azimuthal (also called planar)

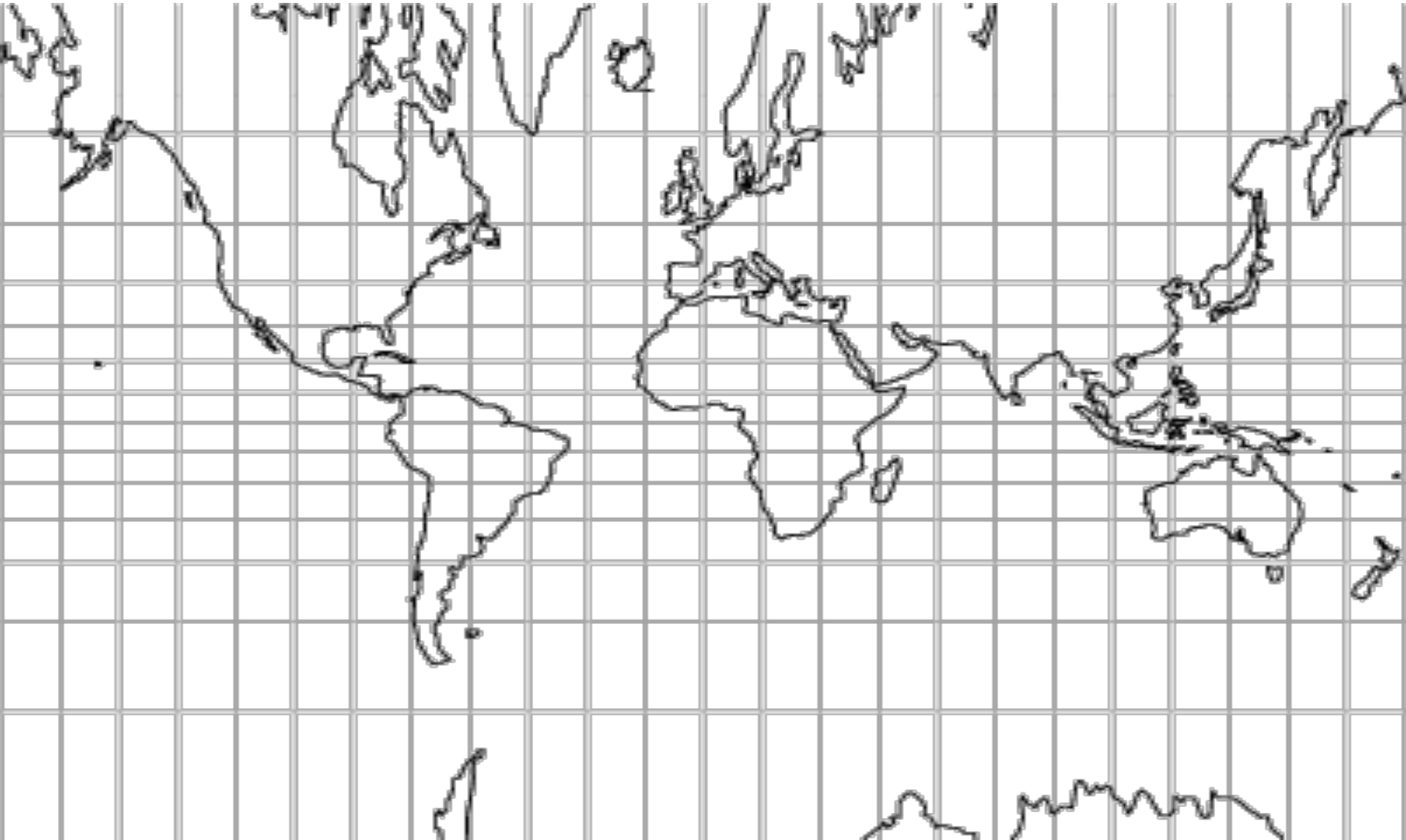


Lambert Azimuthal Equal Area

- Conic

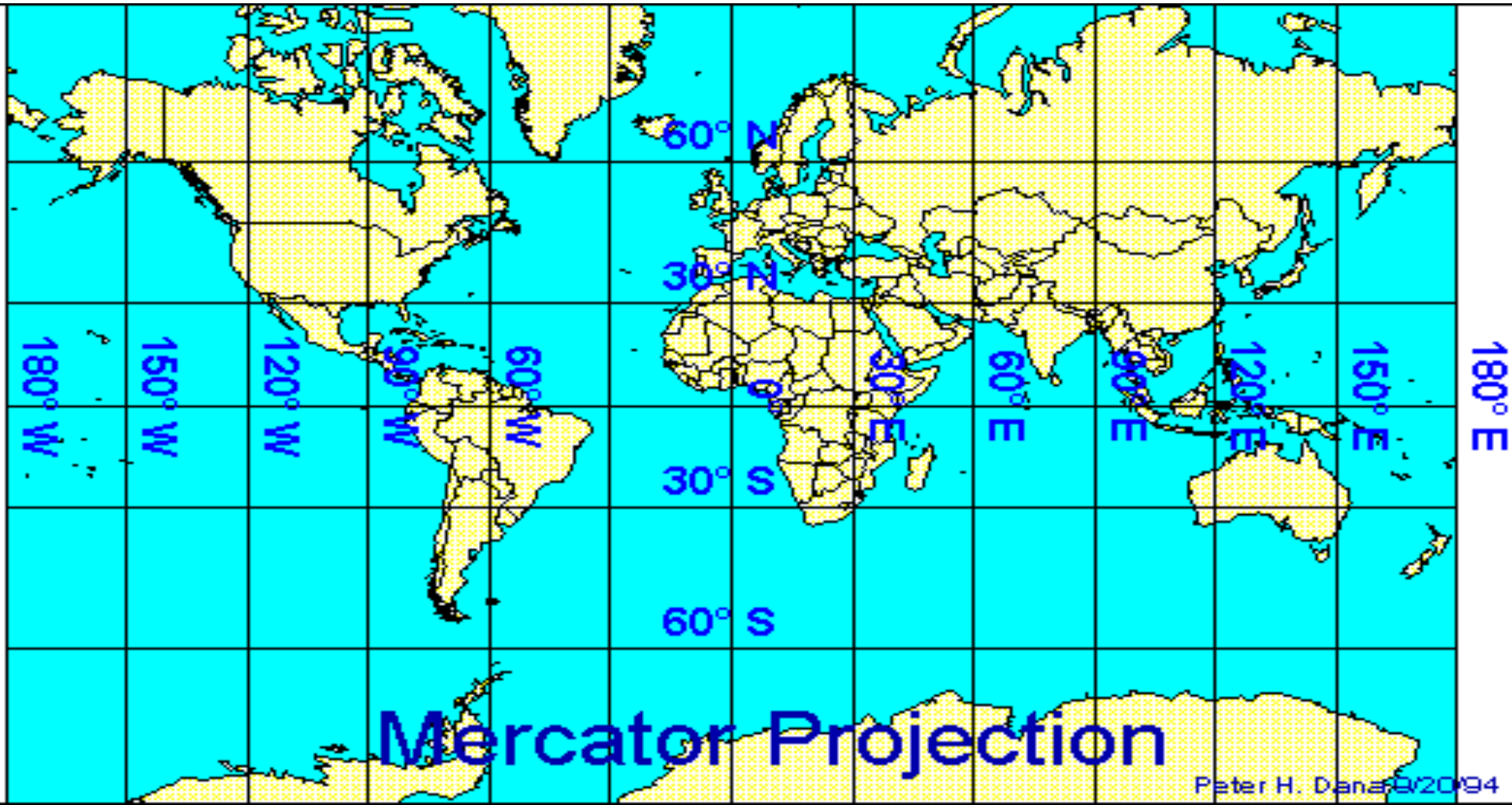


# Cylindrical Projection: DISTORTION!



# Mercator Projection

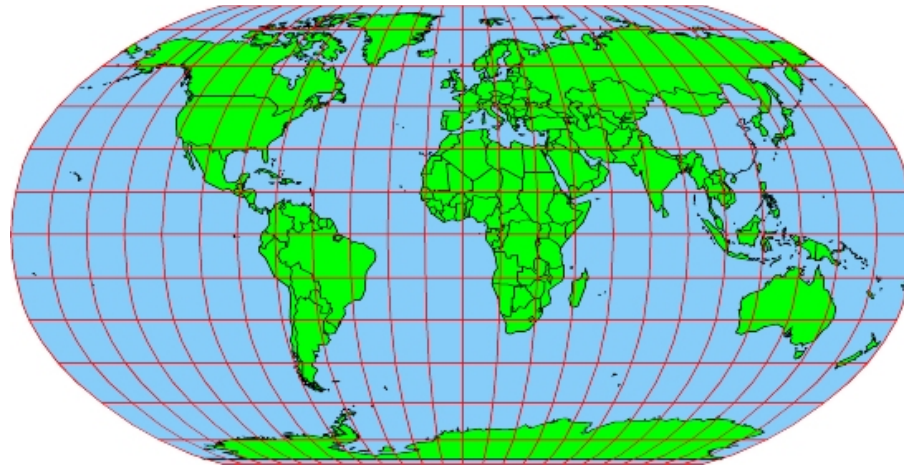
- Mercator Projection Map = Distortion as you get farther away from the equator!



# Why use Mercator?

- Serves its purpose to allow plotting of straight lines (think sea navigators)
  - Only needed straight line for directions
- Many wall maps are still using this projection
- **DOES NOT SHOW CURVE OF THE EARTH!**
  - Spatial Distortion

# Robinson Projection



- Provides better balance of size and shape at higher latitudes
- (does not maintain accurate area, shape, distance, or direction...but minimizes errors)



# Planar Projection

- Useful for less distortion at the POLES!

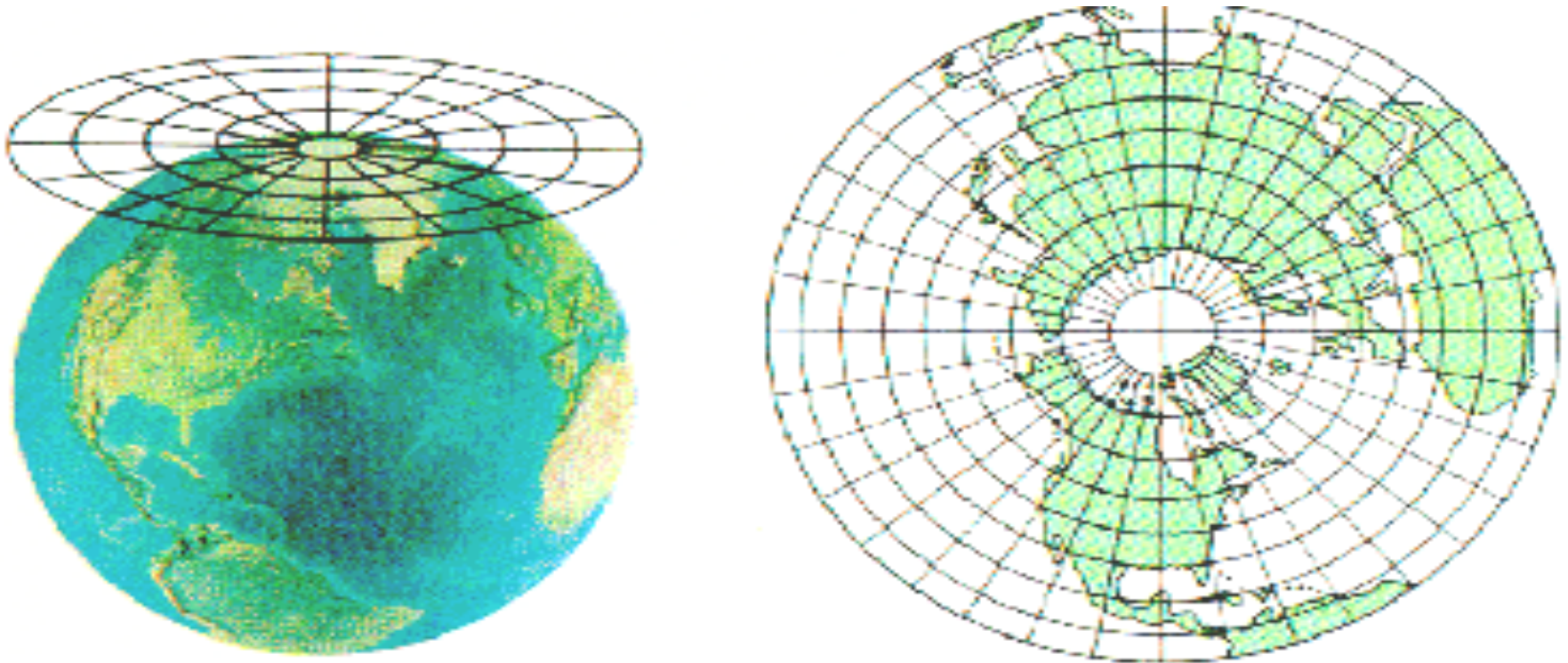
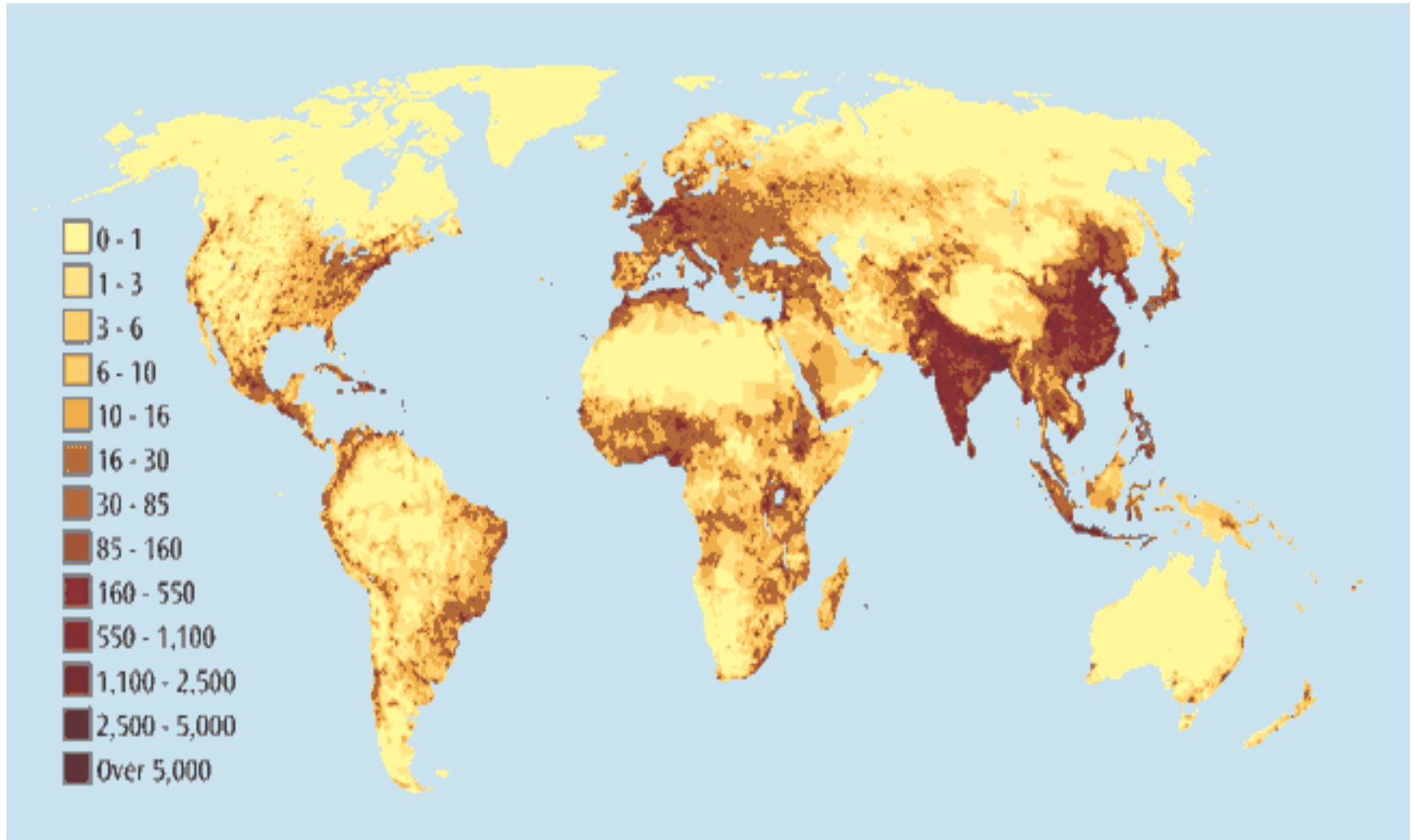


Figure 6. Lambert Equal-Area Projection (right), which assumes the projection of the globe onto a plane surface.

# Other maps to know...

- Dot maps
  - One dot = a particular phenomenon
- Thematic maps
  - Reflects a theme about a geographic area
- Choropleth maps
  - Areas are shaded or patterned in proportion to data shown
- Cartograms
  - Size of place/land changes to fit theme
- Isoline
  - Uses lines of equal value

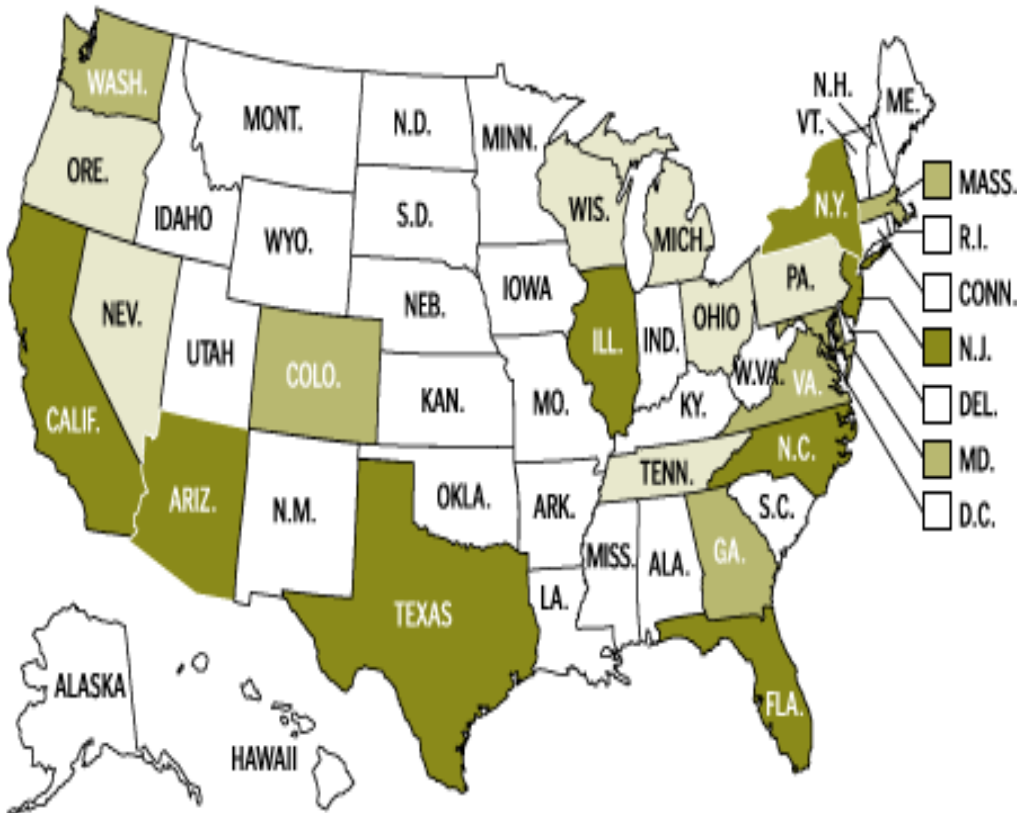
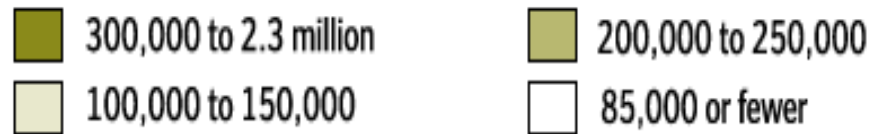
# Dot Map



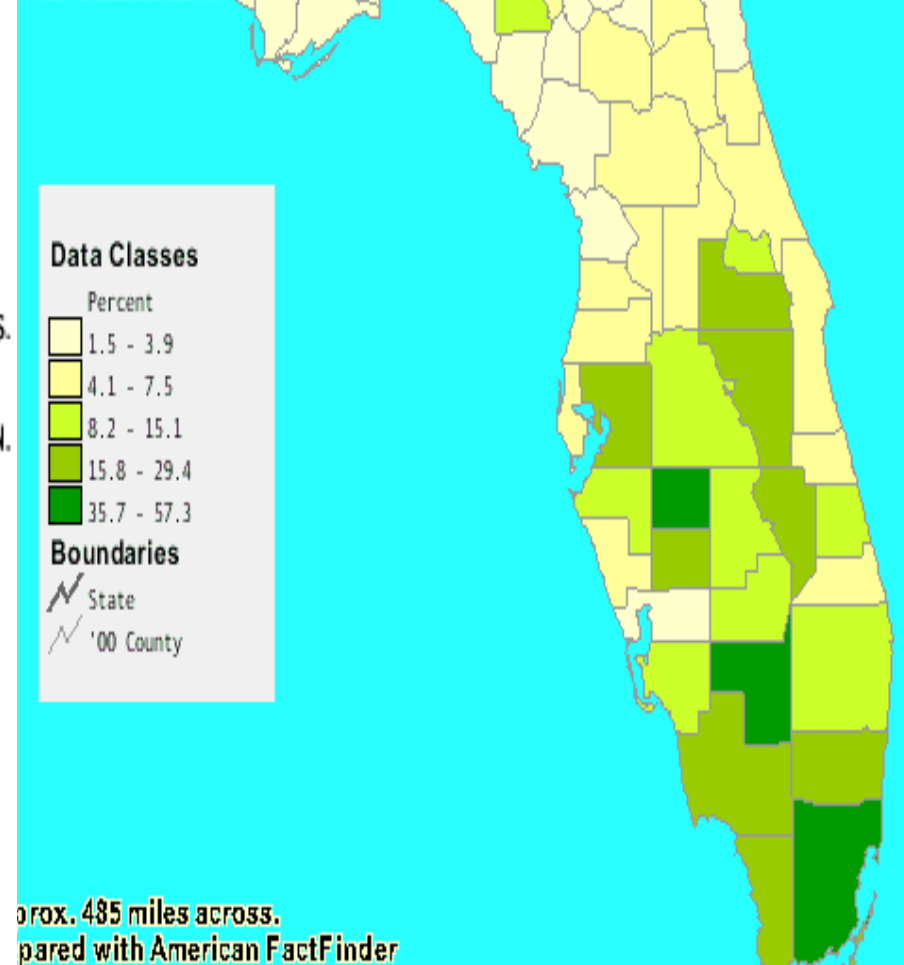
# Choropleth maps!

## Usually 4-5 categories

Estimated number of illegal immigrants in each state

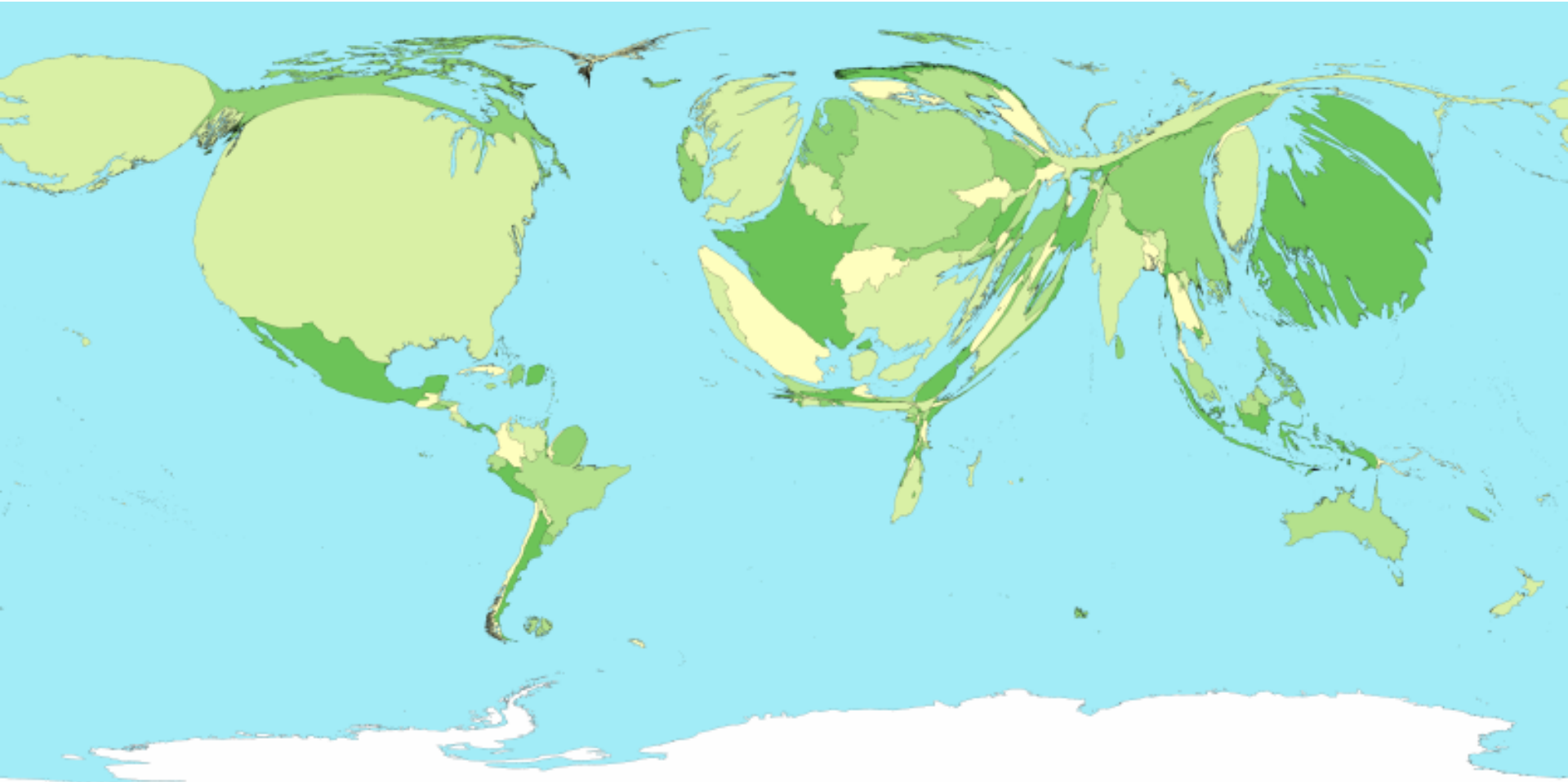


Percent of Persons Who Are Hispanic or Latino (of any race), Florida by County  
 Source: Census 2000

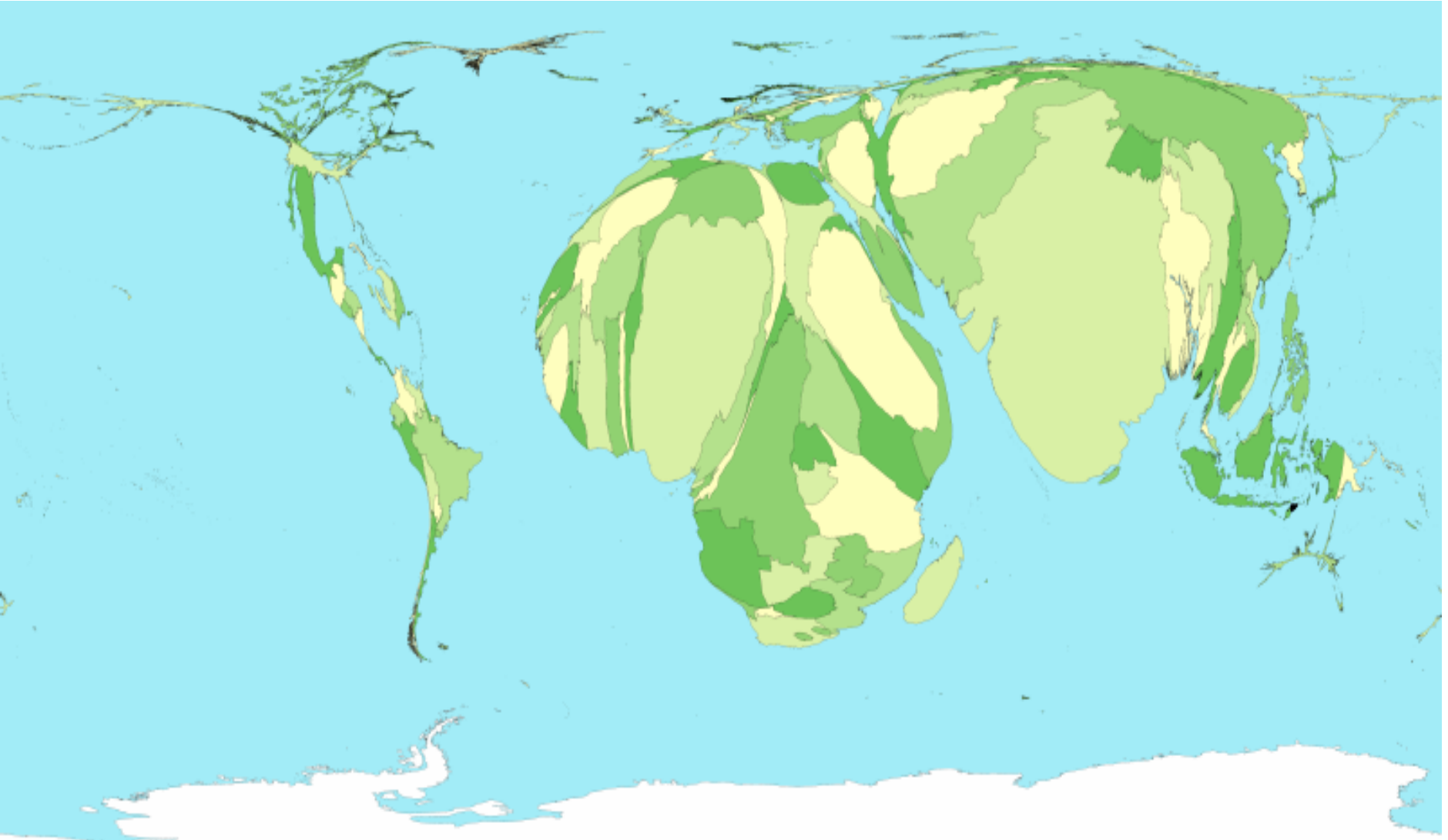


**cartograms** – chart and assign data by size.  
Examples: populations, mortality rates, GDP

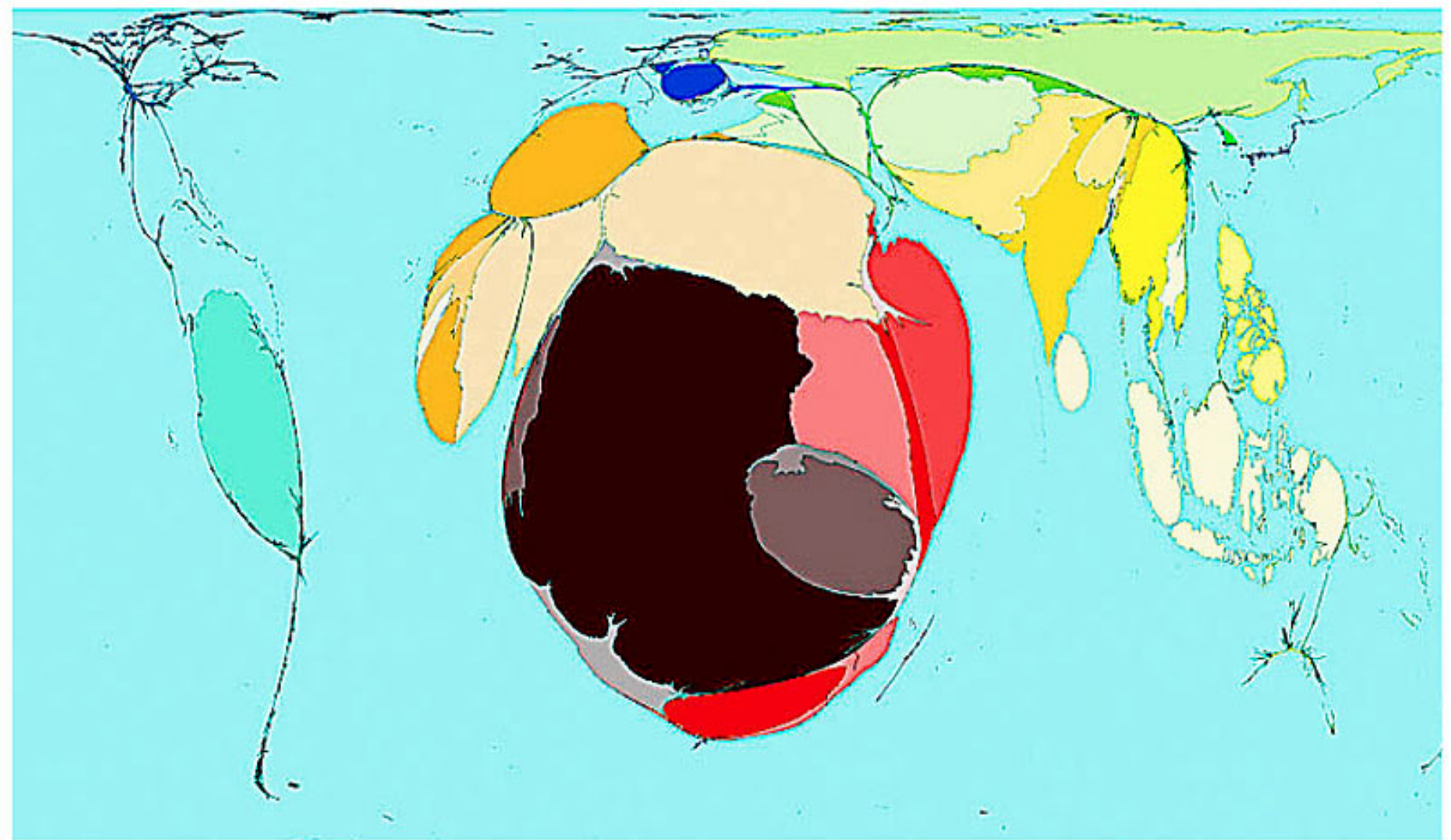
GDP



# Child Mortality Rates

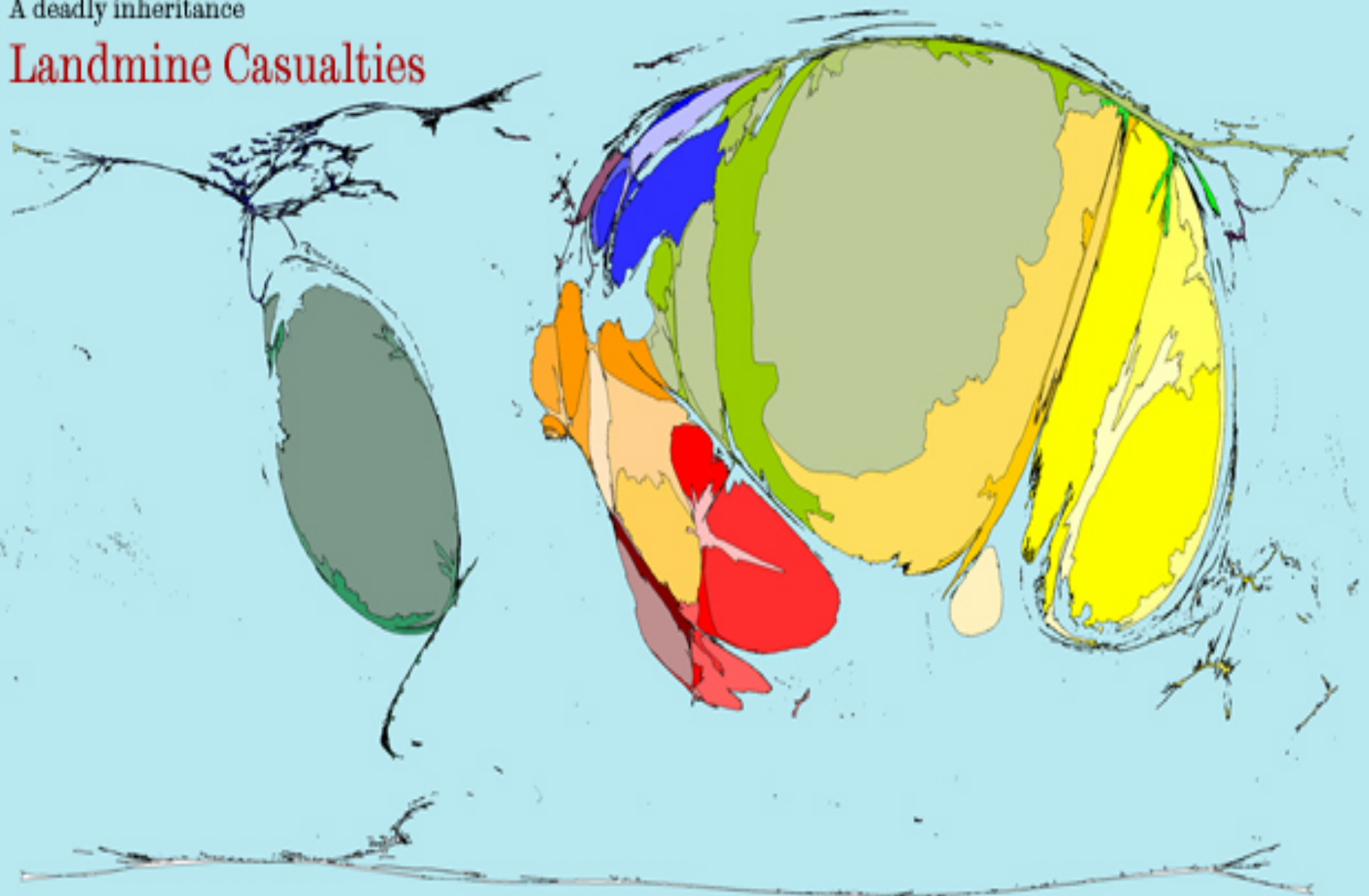


# Wars and Death Rates



A deadly inheritance

## Landmine Casualties



Map showing the countries of the world resized according to  
Mine, Explosive Remnants of War (ERW) and Cluster Submunition Casualties in 2010

Data Source: ICBL-CMC 2011

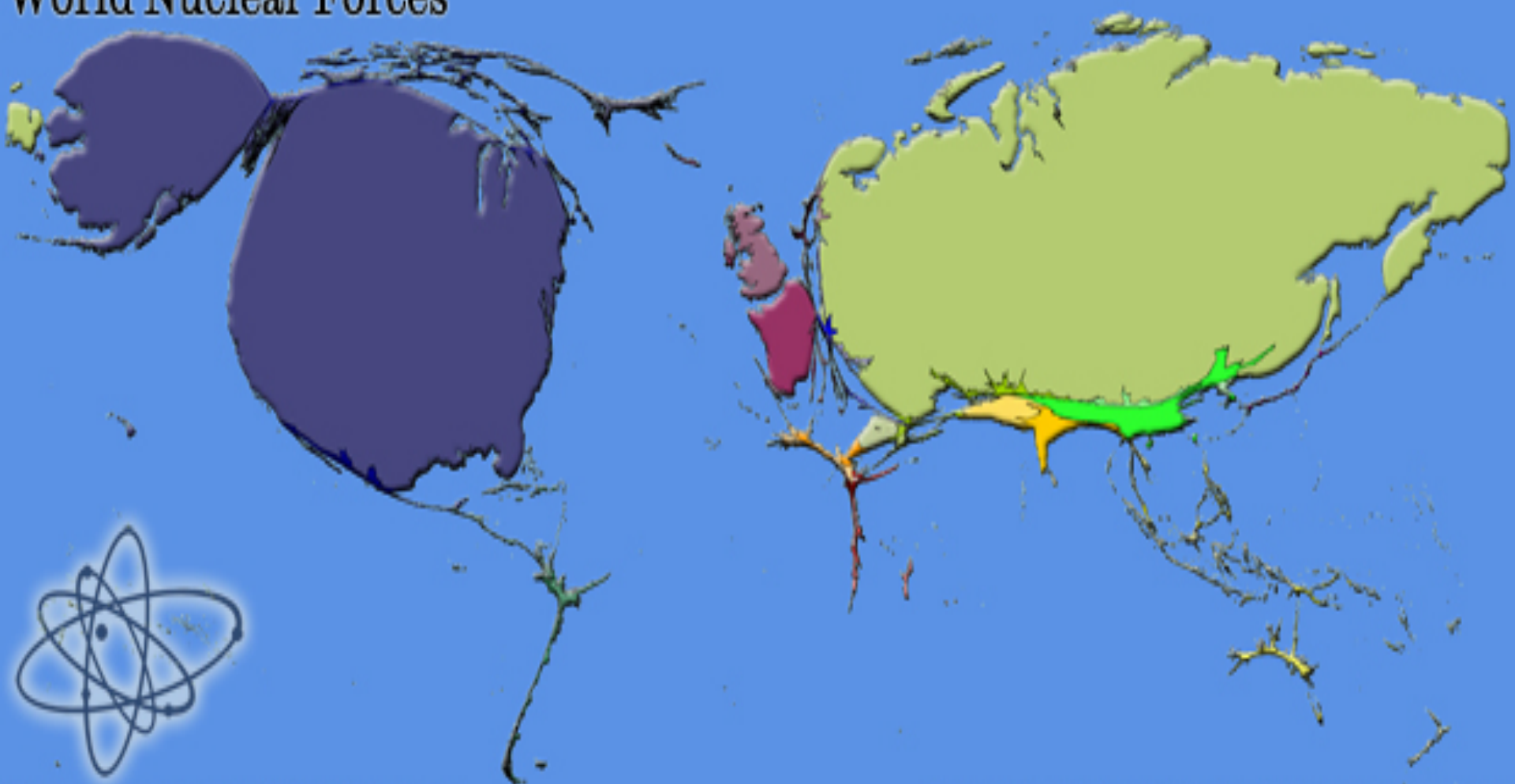
Map created by Benjamin D. Hennig

University of Sheffield

[www.viewsoftheworld.net](http://www.viewsoftheworld.net)



# World Nuclear Forces



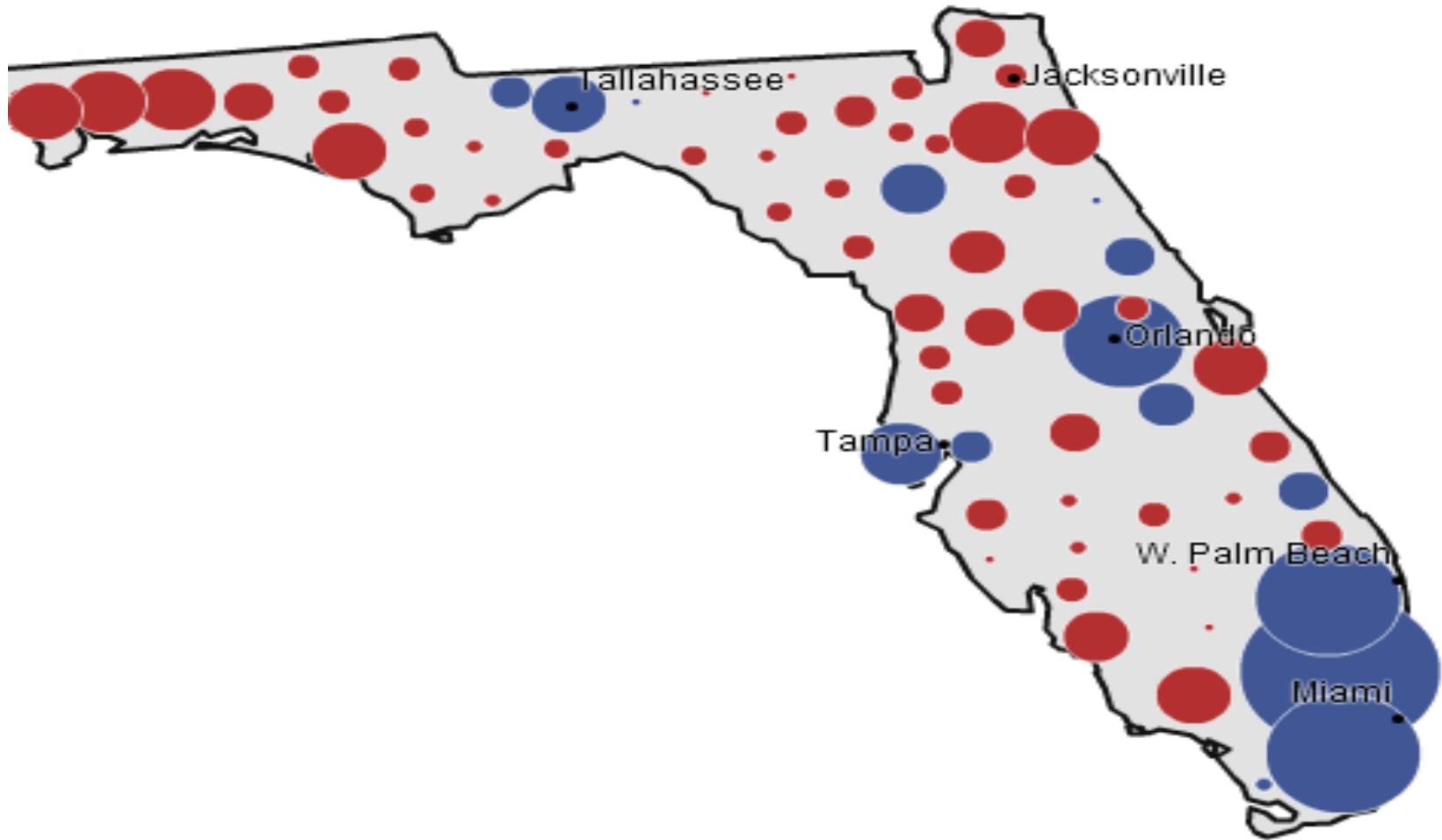
Data Source: Federation of American Scientists 2011

Map resized according to the estimated number of nuclear weapons in possession by a country

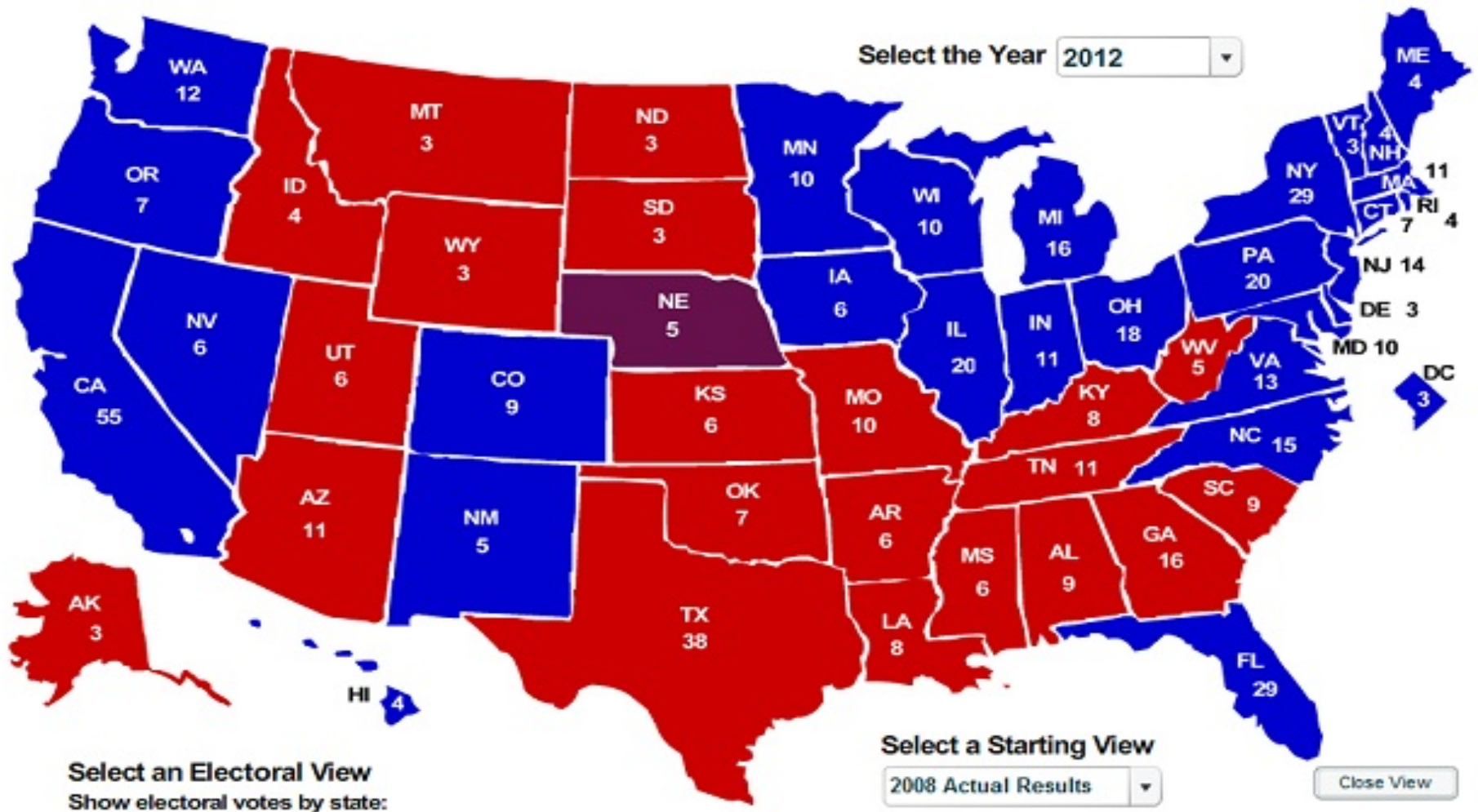
Map created by Benjamin D. Hennig, University of Sheffield

[www.viewsoftheworld.net](http://www.viewsoftheworld.net)

# Proportional Symbol Map

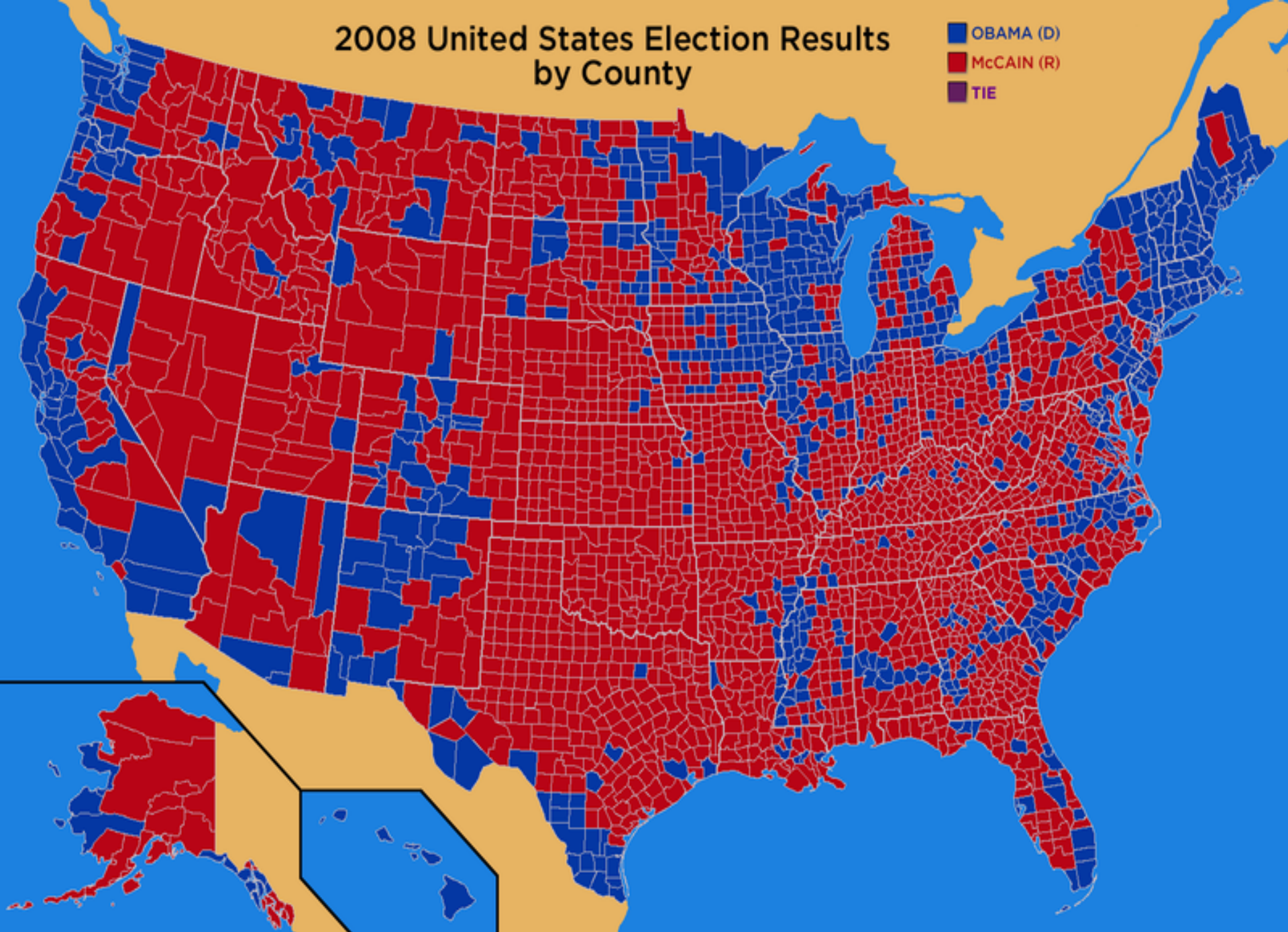


# Electoral College Map



# 2008 United States Election Results by County

- OBAMA (D)
- McCAIN (R)
- TIE



# Map Basics

- Scale- the relationship between the length of an object on a map to its length on the landscape
- Small Scale shows a large area – 1:250,000 (World Map)
- Large Scale shows a small area in detail – 1:1000 (City Map)

**Small Scale**

**Large Scale**



World Map    Continent    Country    Region    State    City    Neighborhood

# Large or Small Scale?



# Large or Small Scale?



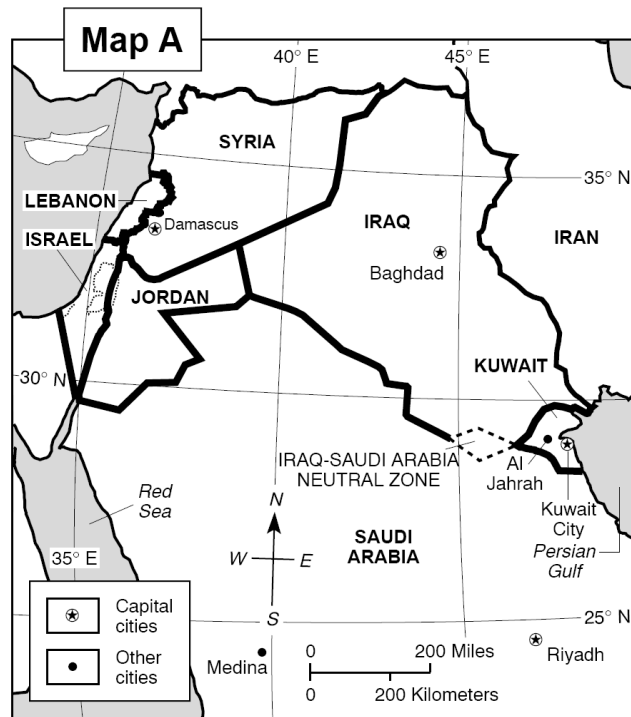


# Large-scale

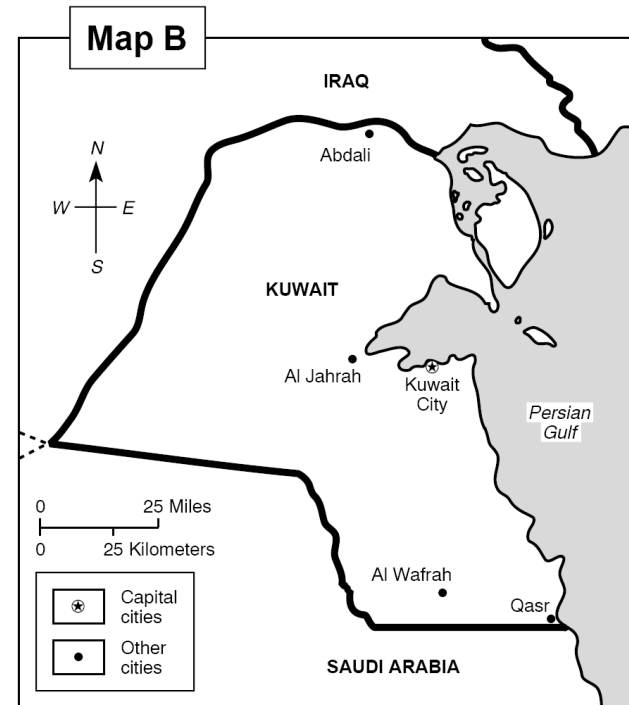


# Comparing maps of different scale

## Large vs. Small Scale Maps



Small-Scale Map

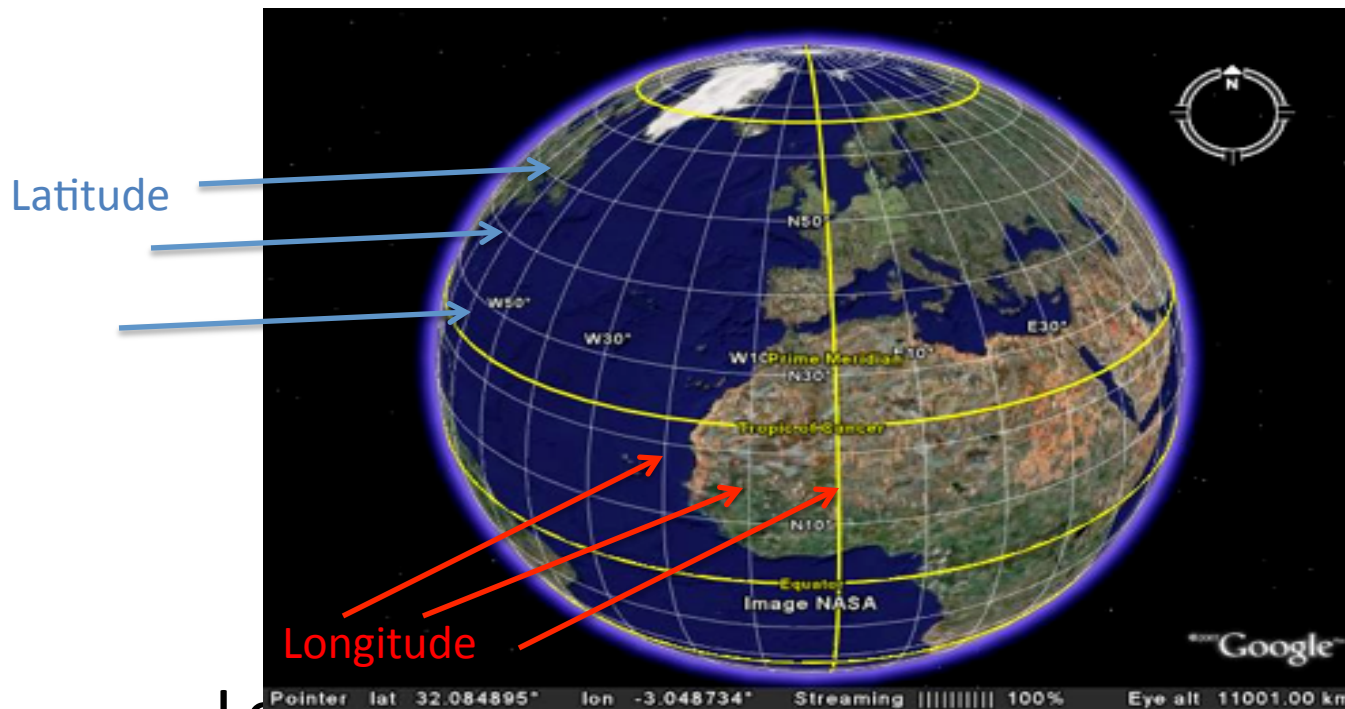


Large-Scale Map



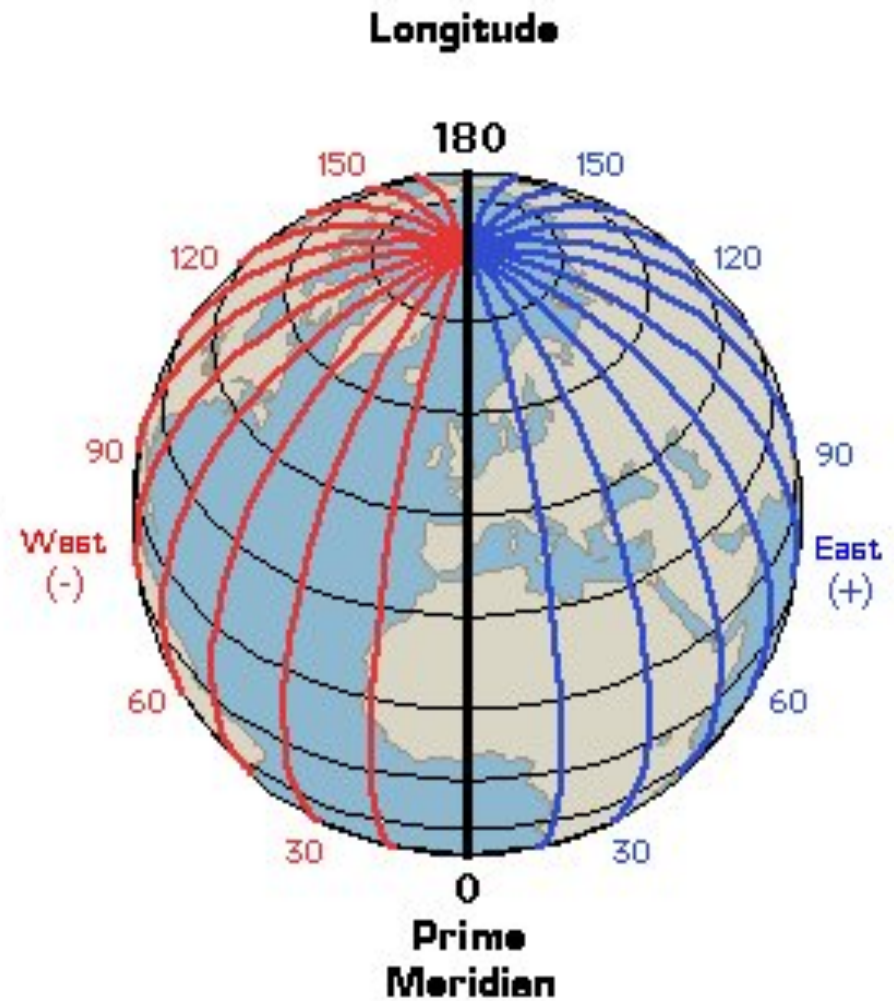
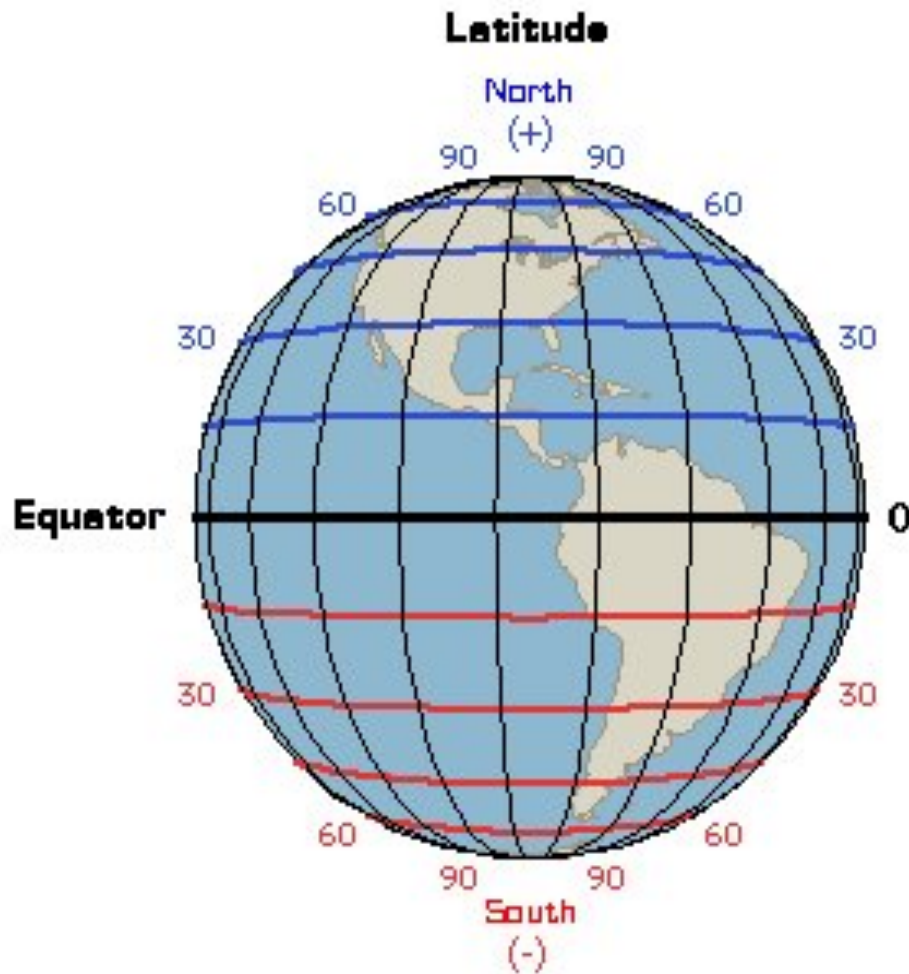
# Latitude and Longitude

- Latitude – Lines that run East and West, but measure North to South
  - (around the globe like a ladder)



- Longitude: Lines that run North and South, but measure East and West (LONG)

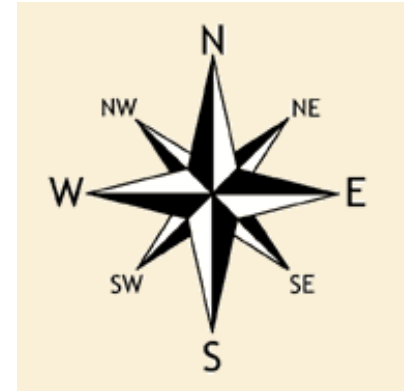
# Equator and Prime Meridian



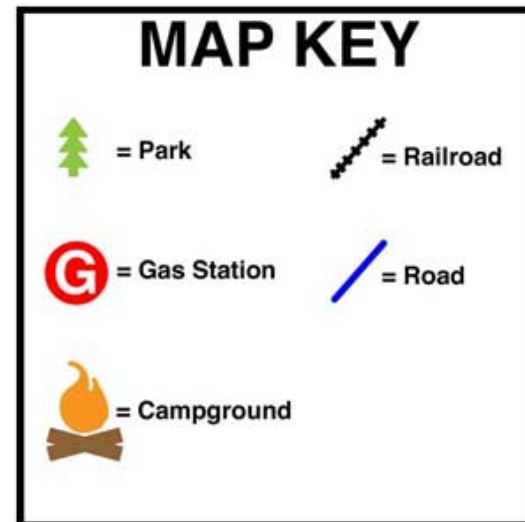
# Other Important Aspects of Maps

- Cardinal Directions – North, South, East, West

- Compass Rose – Shows directions on a map



- Key/legend – Explains the use of symbols on a map



# A Little More Stuff

- Remote Sensing- Acquisition of data about the earth's surface using satellites and other long range methods
- Global Information System (GIS)-Computer system that stores, organizes, and displays geographic data
- Global Positioning System (GPS)- Using a series of satellites to determine location on the earths surface

# Mental Maps

- An individual's internal, geographic understanding of a place.
- Formed when people perceive information about their surroundings and then process that information into a mental image that reflects both the physical environment and that individual's social, cultural, and psychological framework.
- May include hazards – items/places a person avoids during their daily routine.

# Location/Distance

Geographers use these to establish location and distance:

- Coordinate system
- Absolute location
- Longitude and latitude
- Meridians – Prime Meridian
- International Date Line
- Parallels
- Site
- Situation – Relative location
- Absolute distance
- Relative distance
- Connectivity
- Time-Space Convergence