



BLUE MARBLE
GEOGRAPHICS

MIND THE GAP BETWEEN WORLD AND MAP

Everyday Geodetics

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What is Geodesy?

- The Science of measuring the Size and Shape of the Earth
- Determination of exact positions
- How both of those change over time

Is Geodesy an “Everyday” thing?

YES.

What is Geodesy?

Geodesy is the difference
between a *picture* and a *map*.

Geodetics & GIS

Without geodesy:

- Our data has no link to our maps
- Our maps have no link to the real world
- Our analysis has no link to reality

Coordinate Reference

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PROJCS["NAD_1983_UTM_Zone_19N",GEOGCS["GCS_North_American_1983",DATUM["D_North_American_1983",SPHEROID["GRS_1980",6378137.0,298.257222101]],PRIMEM["Greenwich",0.0],UNIT["Degree",0.0174532925199433]],PROJECTION["Transverse_Mercator"],PARAMETER["False_Easting",500000.0],PARAMETER["False_Northing",0.0],PARAMETER["Central_Meridian",-69.0],PARAMETER["Scale_Factor",0.9996],PARAMETER["Latitude_Of_Origin",0.0],UNIT["Meter",1.0]]
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```

Coordinate Transformations

In most places on the planet, there are
over 20 usable geodetic datums

Transformation



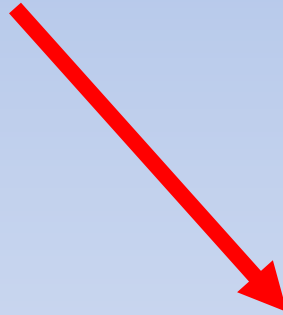
Conversion

Transformations



Projections

Round Earth

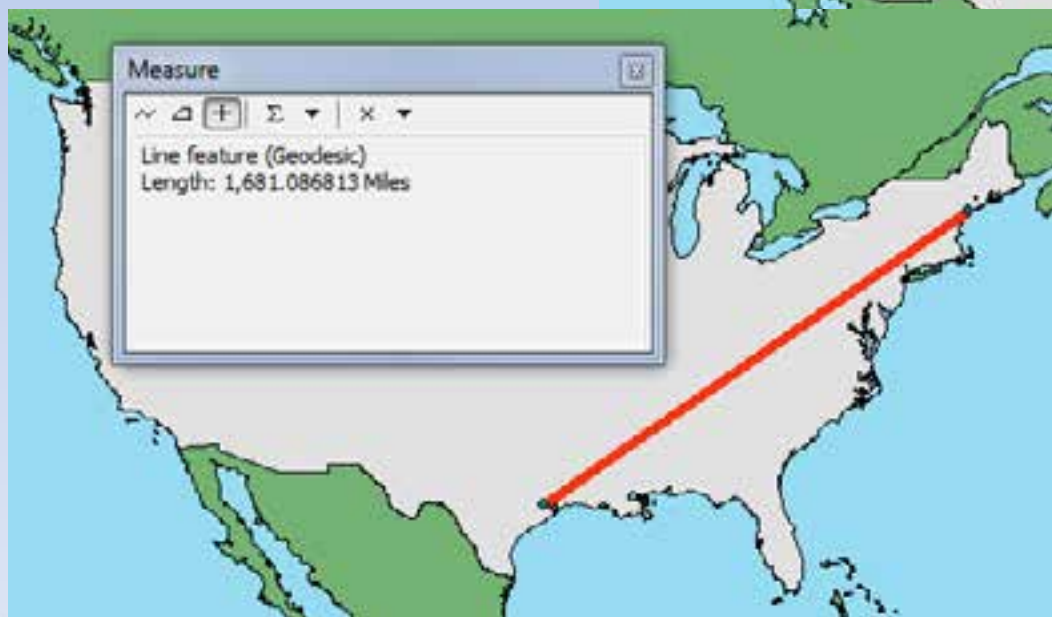
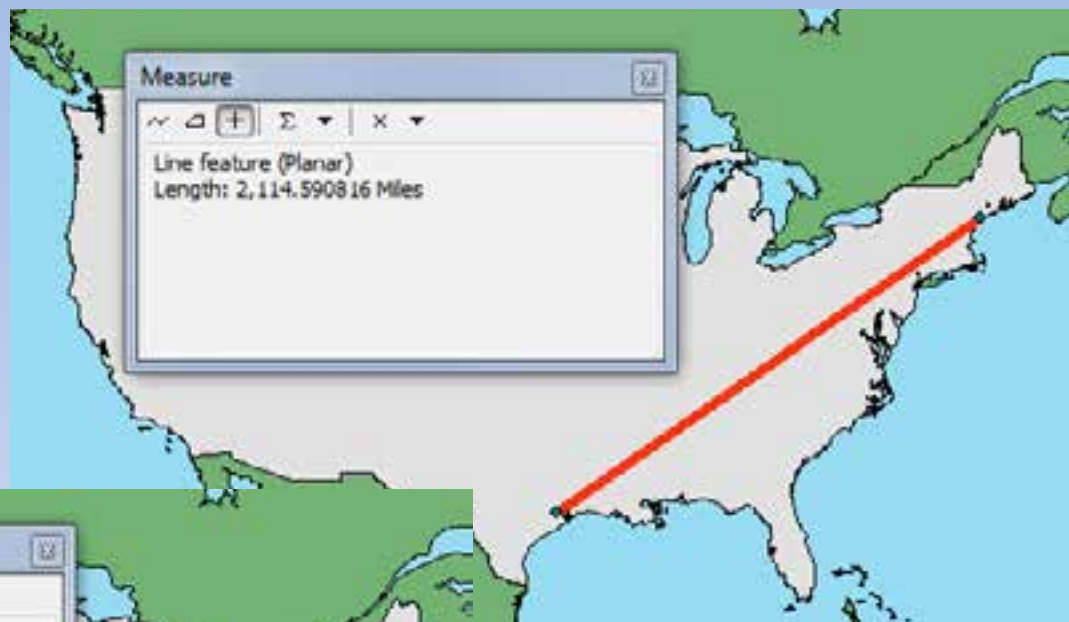


Flat Paper

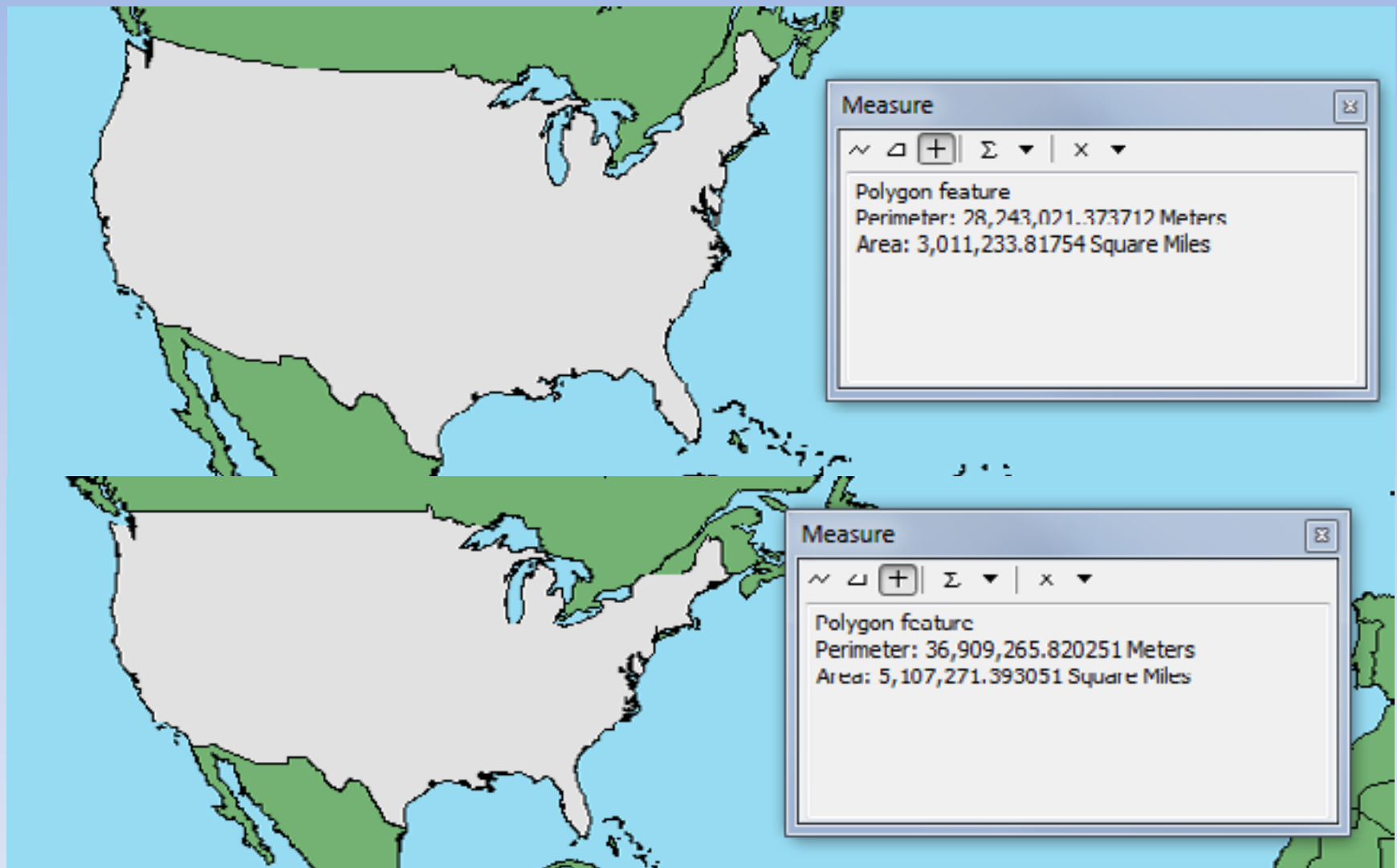
Projections- Distance

Web Mercator

- Planar (Grid)
- Geodesic



Projections- Area



Projections- Angles

The red lines originate from the same location and have the same angular relationships



Projections- Direction

Where is the North Pole on each of these?



So?

If our maps are telling stories, the geodetics
are Chapter 1



Resources

- OGP's EPSG Dataset and Guidance Notes
 - www.epsg-registry.org
- APSG – Association of Petroleum Surveying and Geomatics
 - www.apsg.info
- PUG Tech - Survey & Geodetics
- Vendor documentation



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Thanks!
Questions?

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