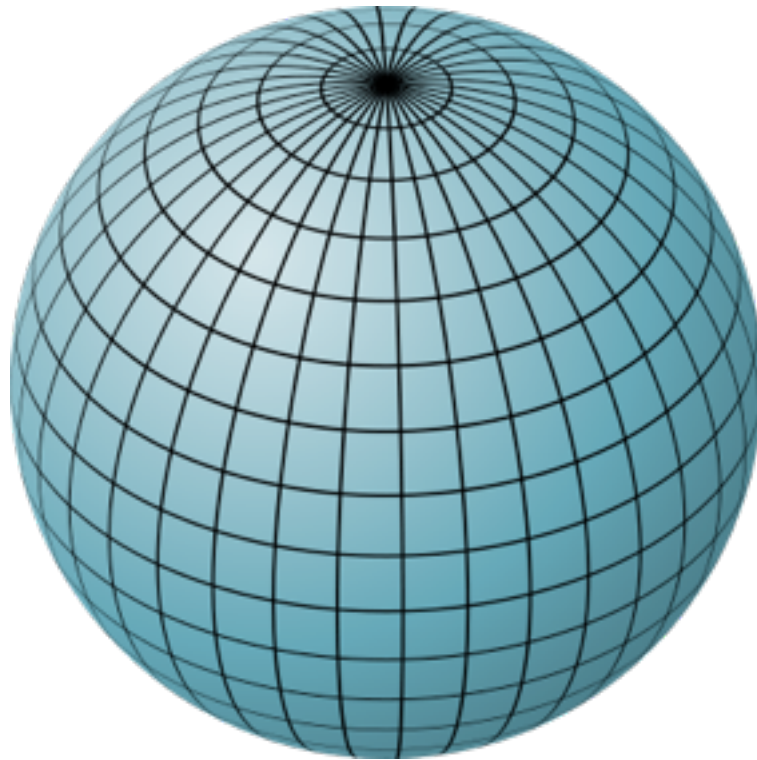# D3.geo

GIS (Geographic Information System)

Is a system that let us to handle geographical data.

Spherical coordinates measured from the earth's center in decimal degree called **longitude** and **latitude**.

Longitude:

Vertical lines called Meridians
Usually represent the 'x' position
The prime Meridian measure 0° and passes throught Greenwich, England.
The range of possible values is from -180° to 180°

Latitude:

Horizontal lines called Parallels
Usually represent the 'y' position
The midway Parallel between poles is the Equator which measure 0°
The range of possible values is from -90° (the South Pole) to 90° (the North Pole)

Latitude   Longitude

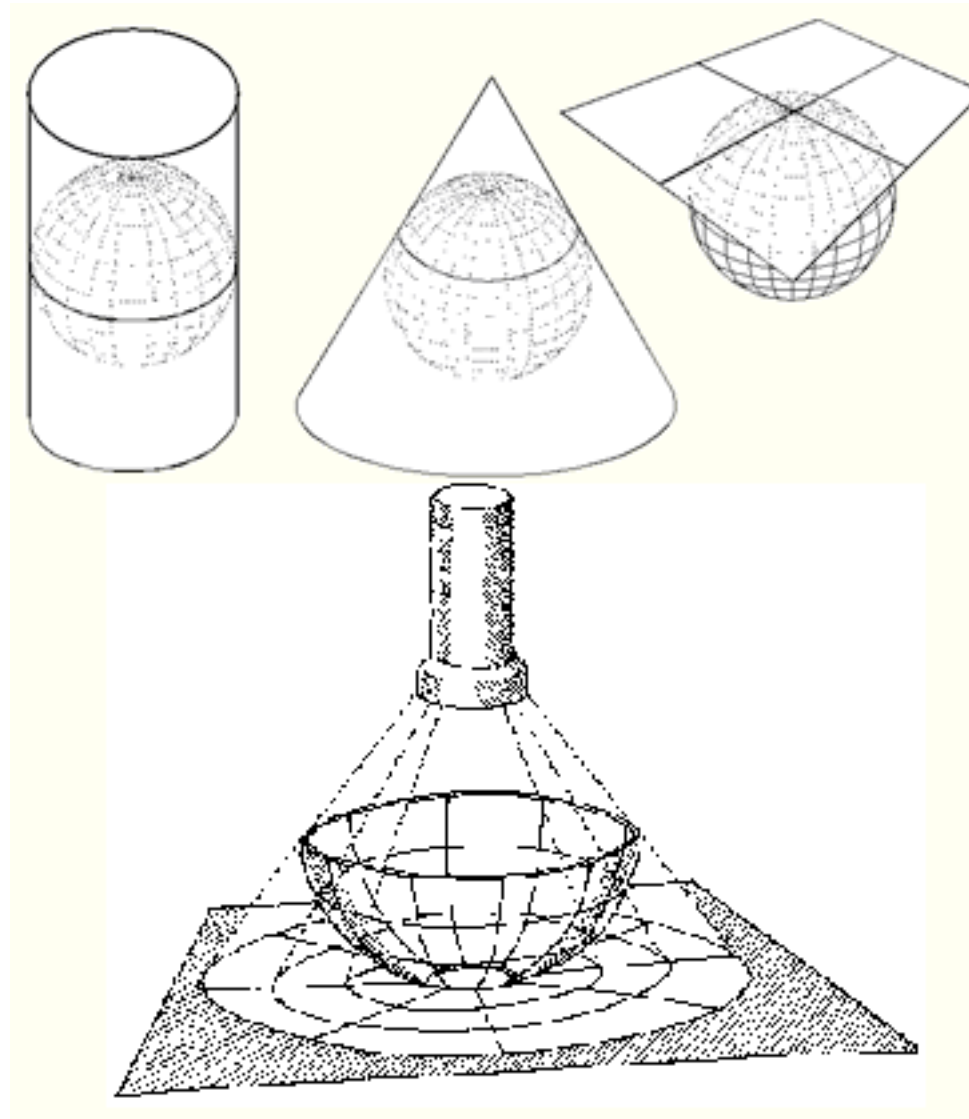41.9000° N, 12.5000° E

Rome, Coordinates

Projection

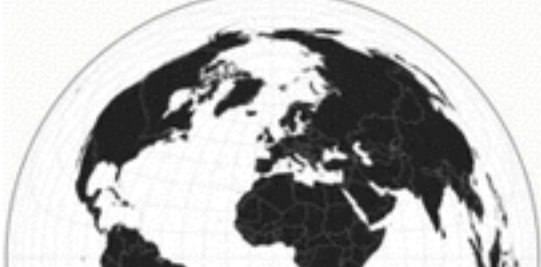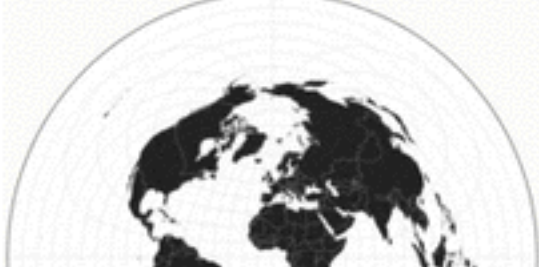Represent Geographic coordinates onto a two-dimensional Cartesian plane
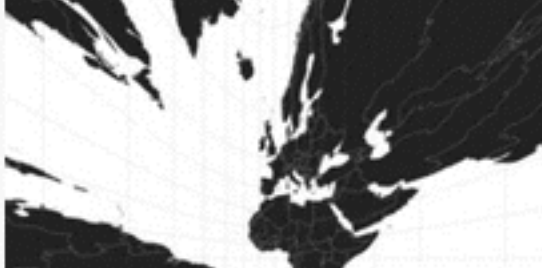
A projection of spherical coordinates on a plane produce always distortions.
Different projection strategies produce different distortions.
Each projection has pros and cons

Projections in D3.js

https://github.com/mbostock/d3/wiki/Geo-Projections

Map Formats

GeoJSON:

Is an open format for encoding a variety of geographic data structures, based on JSON notation.
It is widely supported and it is the format D3.js understands.

TopoJSON:

Is an extension to GeoJSON that encodes topology.
It represents geometries using shared segments called arcs.
It eliminates redundancy thus it is much more compact but it is difficult to read.

ShapeFile:

Is a digital vector storage format for storing geometric location and associated attribute information.
It is very popular and widely used.

Convert shapefiles

GeoJSON countries repository (low res):

https://github.com/johan/world.geo.json/tree/master/countries

Online Shapefile to geoJSON converter:

http://converter.mygeodata.eu/vector

Shapefile to geoJSON converter framework:

http://www.kyngchaos.com/software/frameworks

QuantumGIS: Shapefile editor and converter:

http://www.qgis.org/

Free shapefiles

http://www.naturalearthdata.com

Online Shapefile simplifier:

http://mapshaper.com