

HTML2PostGIS

Drawing maps

JS APIs

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① Earth measurements

Shape

Height

Coordinate systems and projections

② JS Map APIs

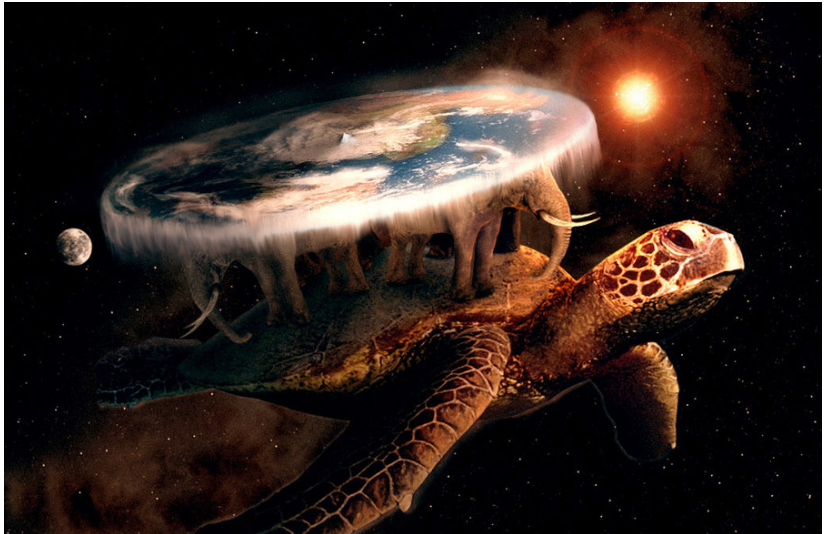
Comparison

GoogleMaps

OpenLayers

Leaflet's story

If only the world was flat...



A little bit of history I

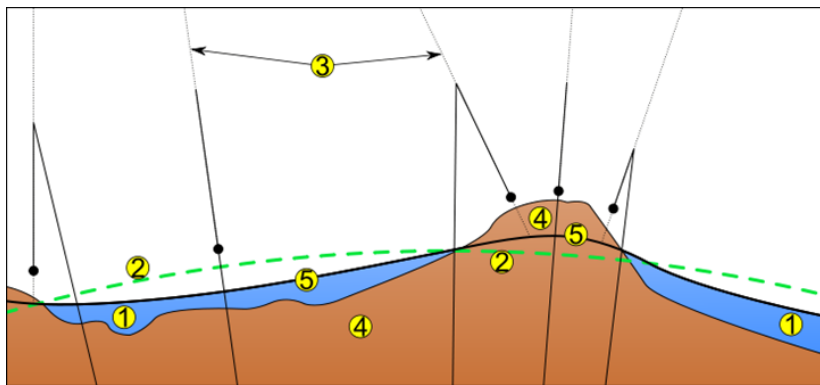
- VI w. p.n.e. - Pythagoras hypothesized about spherical Earth shape
- III w. p.n.e. - Eratosthenes - computed Earth's circumference
- XVII w. n.e. - Newton - spheroid (ellipsoid of revolution)
- ...and what is the true shape?

Earth shape I

Geoid

It is a theoretical shape that the ocean surface would take under the influence of the gravity and rotation of Earth alone, if other influences such as winds and tides were absent. This surface is extended through the continents (such as with very narrow hypothetical canals). All points on a geoid surface have the same effective potential (the sum of gravitational potential energy and centrifugal potential energy).

Earth shape II



1. Ocean
2. Reference ellipsoid
3. Local plumb line
4. Continent
5. Geoid



What is sea level?

<https://www.youtube.com/watch?v=q65O3qA0-n4>

Kronsztad86 I

Kronsztad86 Ordnance Datum

- Id: PL-KRON86
- Year: 1986
- Average Baltic Sea Level
- Valid till 31.12.2019

Amsterdam I

Amsterdam Ordnance Datum

- Id: PL-EVRF2007
- Year: 2008
- Average North Sea level

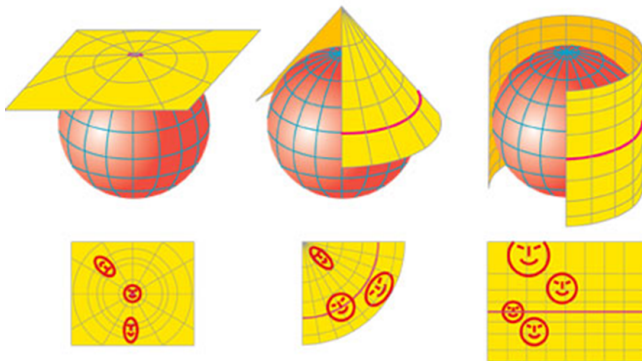
Projections



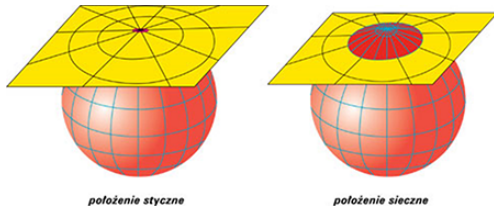
What's that? You think I don't like the Peters map because I'm uncomfortable with having my cultural assumptions challenged? Are you sure you're not ... ::puts on sunglasses:: ... projecting?

<http://xkcd.com/977/>

How to wrap it?



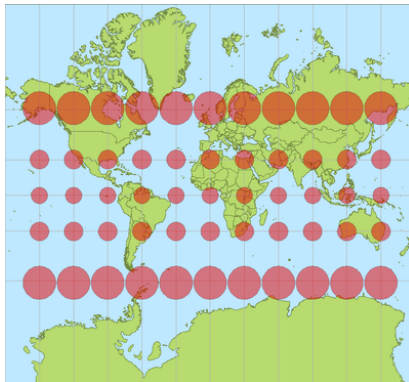
How to cut it?



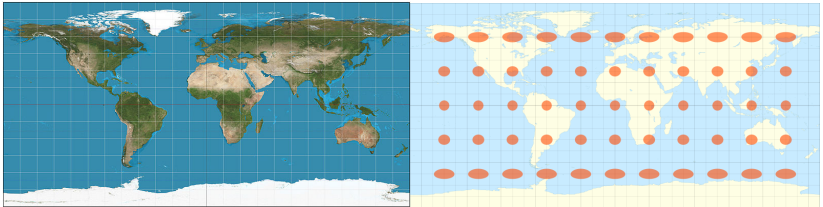
How to map it?

ZE WZGLĘDU NA GEOMETRIĘ RZUTU		ZE WZGLĘDU NA POŁOŻENIE ŚRODKA RZUTU		
		centralne	stereo-graficzne	ortograficzne
ZE WZGLĘDU NA RODZAJ POWIERZCHNI RZUTU	plaskoczynowe (azymutalne)			
	walcowe			
	stożkowe			

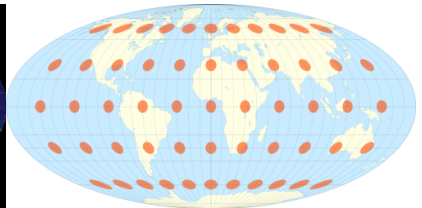
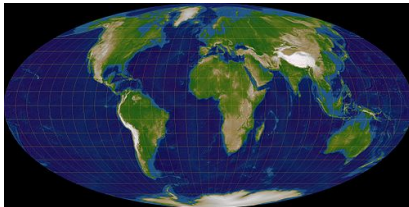
Mercator



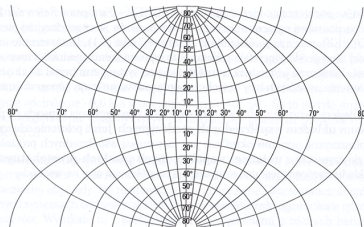
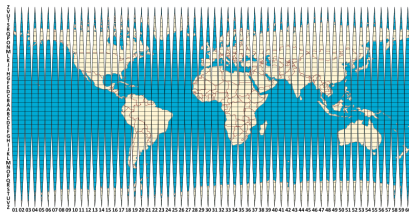
Equirectangular projection



Mollweide



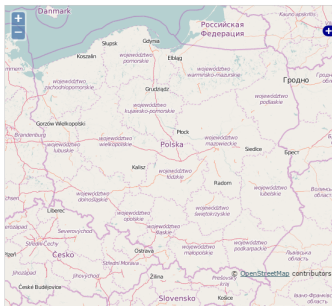
Gauss-Krüger



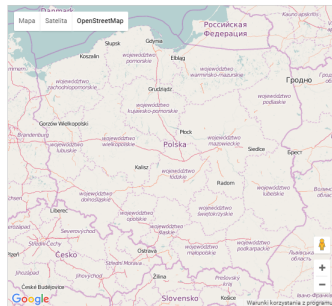
Ryc. 7.3. Siatka kartograficzna w odwzorowaniu Gaussa-Krügera

JavaScript GIS API

Basic OpenLayers example



Basic GoogleMaps example



JavaScript GIS API

My view of GoogleMaps vs OpenLayers:

	GMaps API	OL API
Local library	No	Yes
Simple map	Very simple	Simple
Standard interface	Ready-to-use	CSS
Official examples	Many	Many
Examples quality	High	Mediocre
Documentation quality	High	Mediocre
Dane GoogleMaps	Ready-to-use	Unavailable
Dane OSN	Yes	Ready-to-use
Different projections	Yes	Yes
WMS	Yes	Ready-to-use
WMTS	Yes	Ready-to-use
WFS	Unavailable	Ready-to-use
KML	Ready-to-use	Ready-to-use
StreetView	Ready-to-use	Unavailable
GeoRSS, Panoramio itp.	Support varies	Support varies
Summary	Simple, visually attractive applications	Complex, professional systems

GoogleMaps API I

Documentation

A natural data source for GoogleMaps API are data and services, which may be found at <http://maps.google.com/>

Selected examples:

- Simple map
- Adding/removing markers
- Additional data
- Reprojections
- WMS
- KML
- GeoRSS
- Heatmap
- StreetView

OpenLayers API I

Documentation

OpenLayers is not strictly connected with any spatial data source, but typically its base layer is based on the OpenStreetMap data.

Examples:

- Simple map
- Marker
- WMS
- WFS
- KML
- Vector layer
- Custom projection with proj4js
- Various projections

OpenLayers API II

- Heatmap
- Layer control

GIS is **hard**

hard it's hard to use it's hard to
understand it's hard to learn and it's



Basic example