



Module #8b: Map Projections

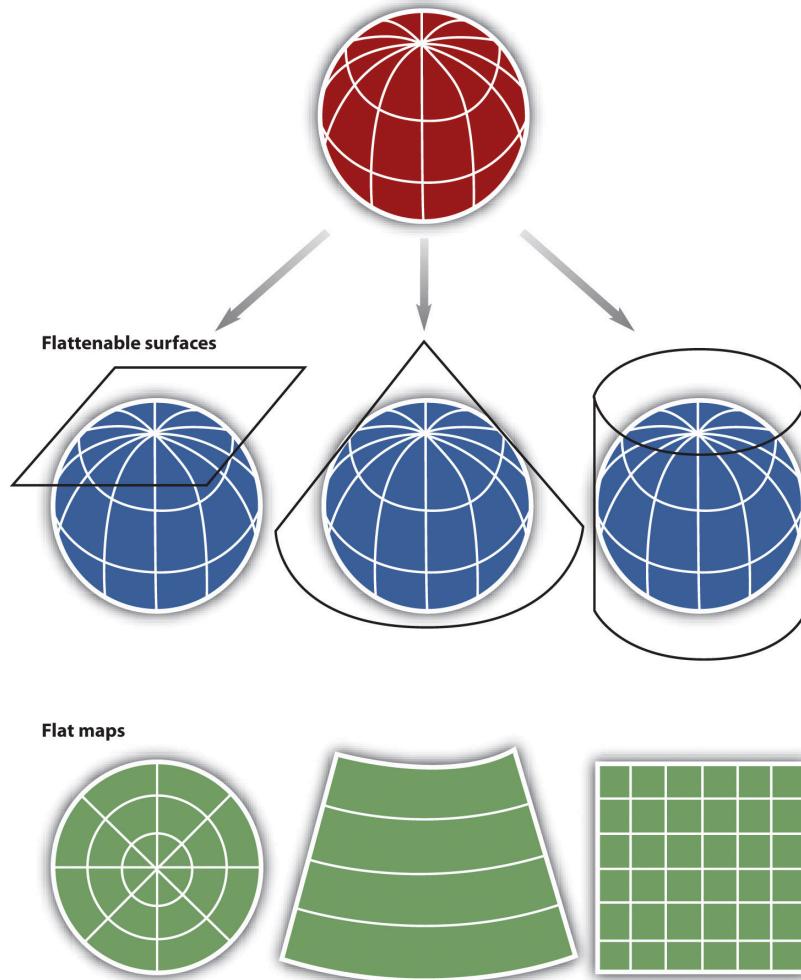


Types of Projections

1. **Equal-area (or equivalent) projections:** maps that maintain area but distort other properties.
2. **Conformal (or orthomorphic) projections:** maps that maintain shape but distort other properties (it is impossible to have a projection that is both conformal and equal area).
3. **Azimuthal projections:** maps that maintain direction but distort other properties.
4. **Equidistant projections:** maps that maintain distance but distort other properties.



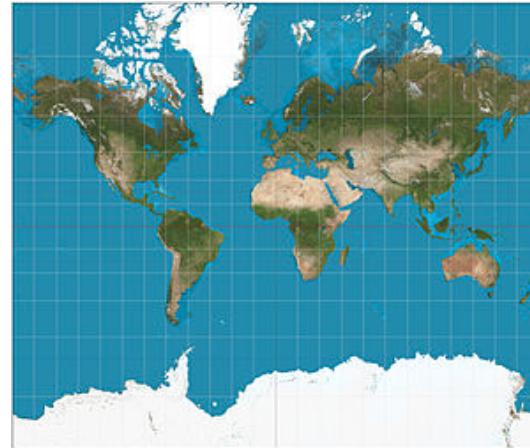
Views of projected surfaces



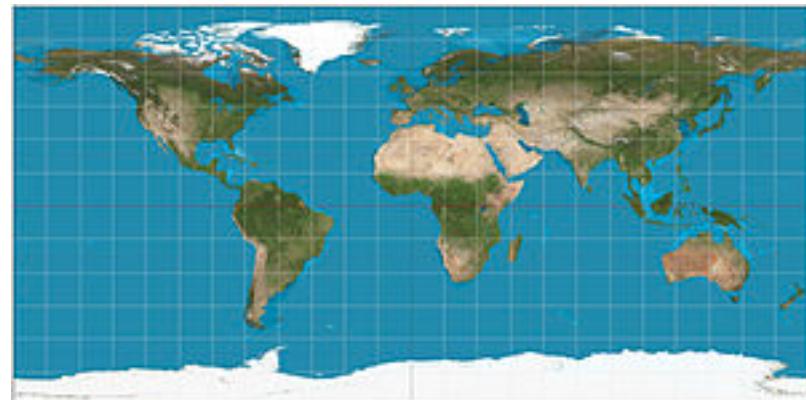


Projections

1. Mercator
2. Transverse Mercator
3. Robinson
4. Lambert Azimuthal Equal Area
5. Miller Cylindrical
6. Sinusoidal Equal Area
7. Orthographic
8. Stereographic
9. Gnomonic
10. Albers Equal Area Conic



Mercator



Equirectangular



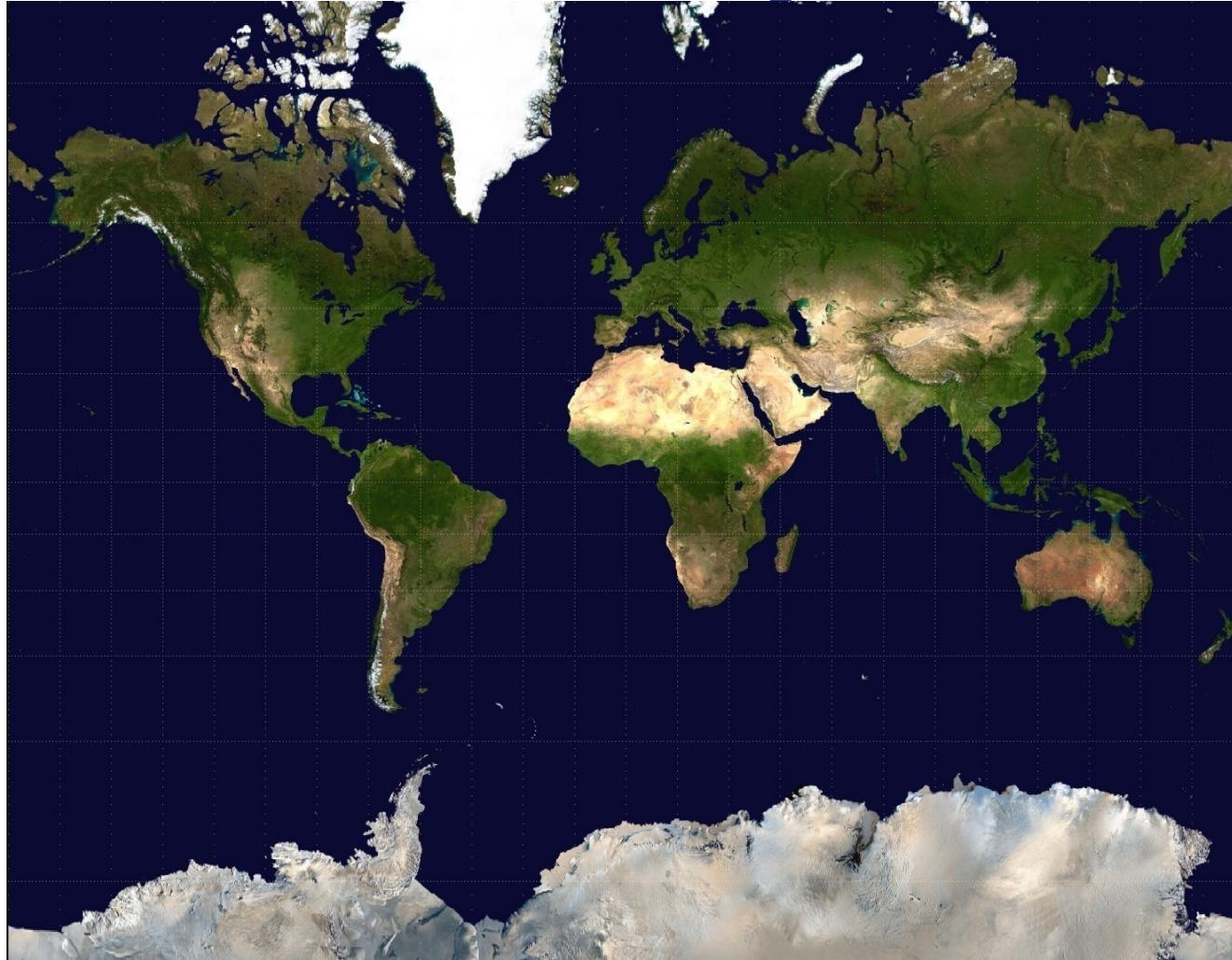
Mercator Projection

- Cylindrical map projection
- Used since 1569
- Useful for navigation because it maintains accurate direction
- Famous for their distortion in area that makes land at the poles appear oversized

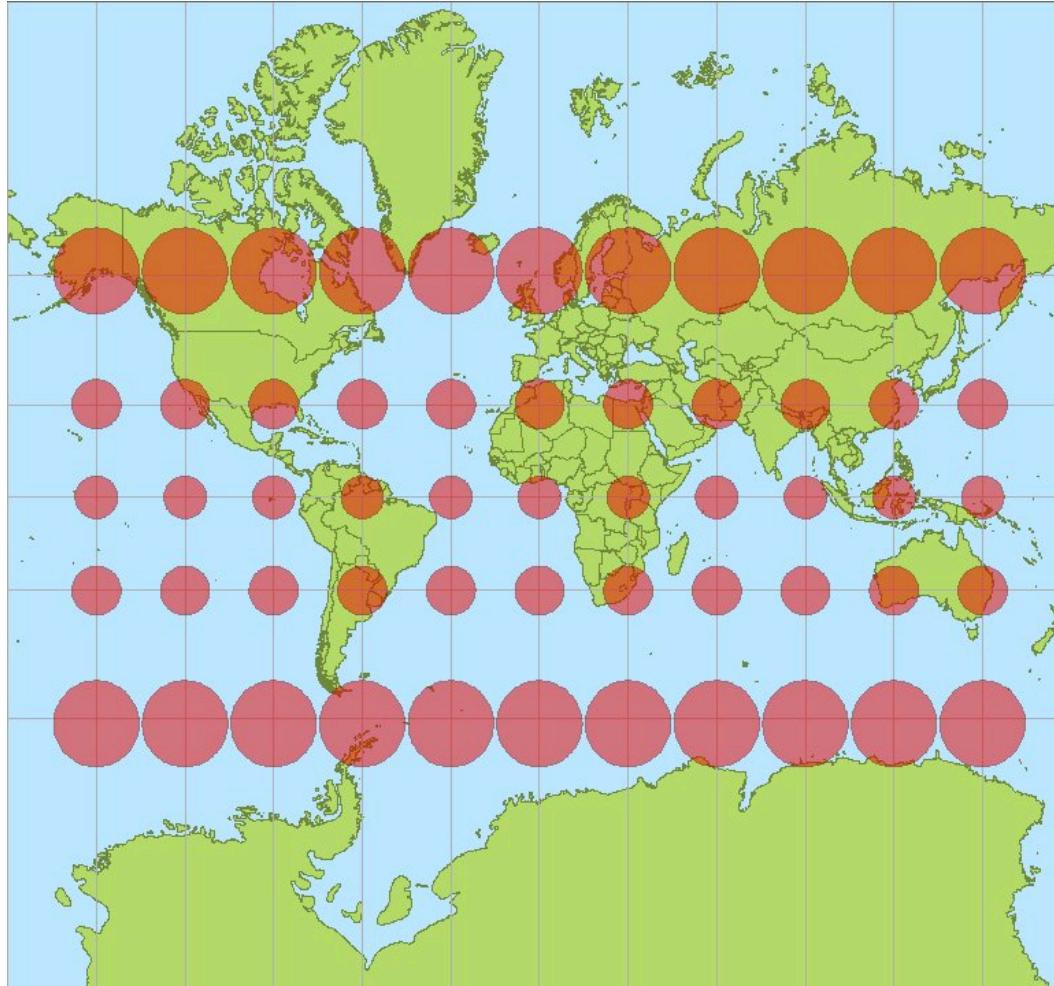




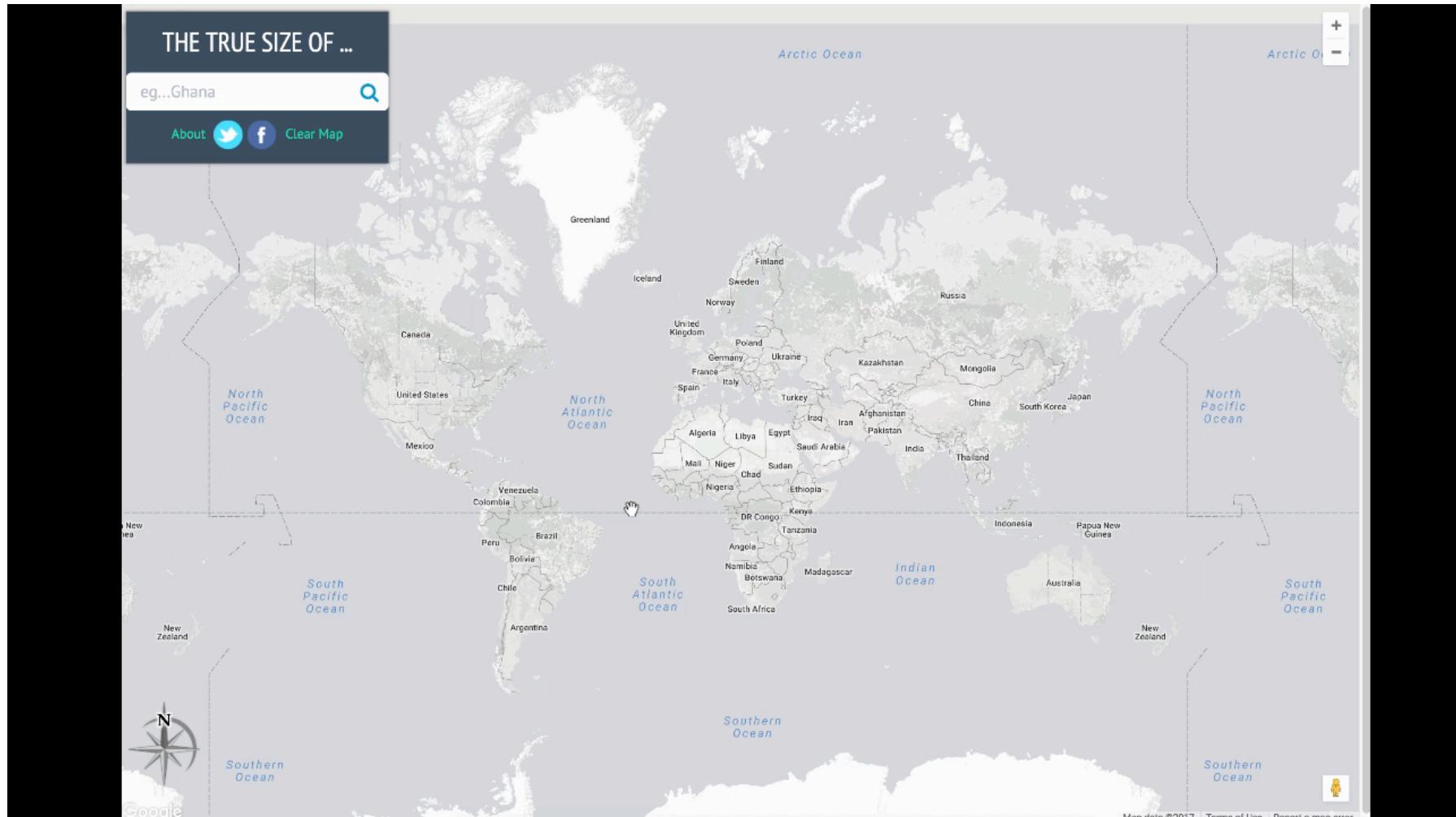
Mercator Projection



Mercator Projection



The True Size





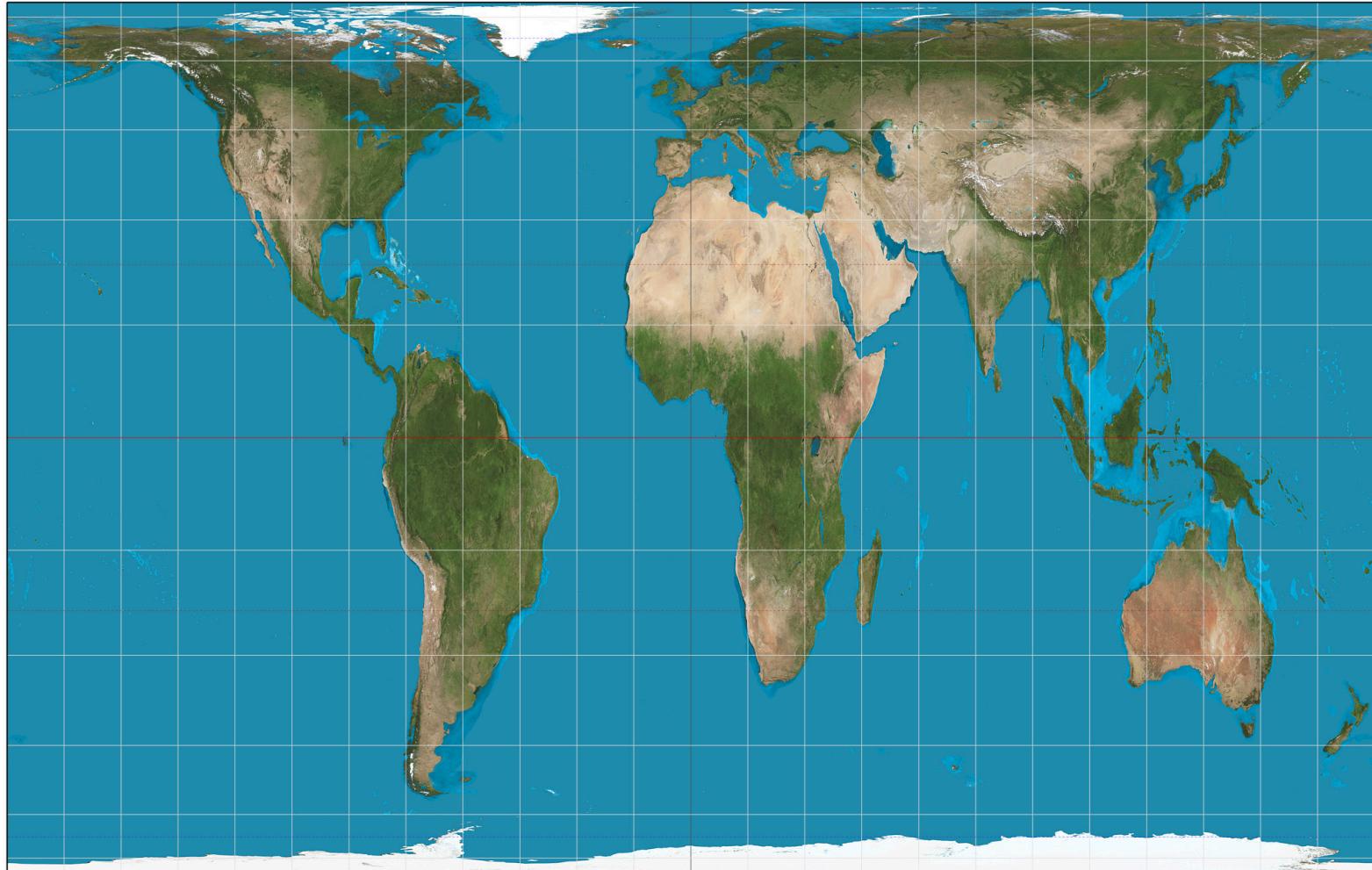
Gall-Peters Projection

- Cylindrical map projection
- Attempts to retain all the accurate sizes of all the world's landmasses
- Sometimes used as a political statement



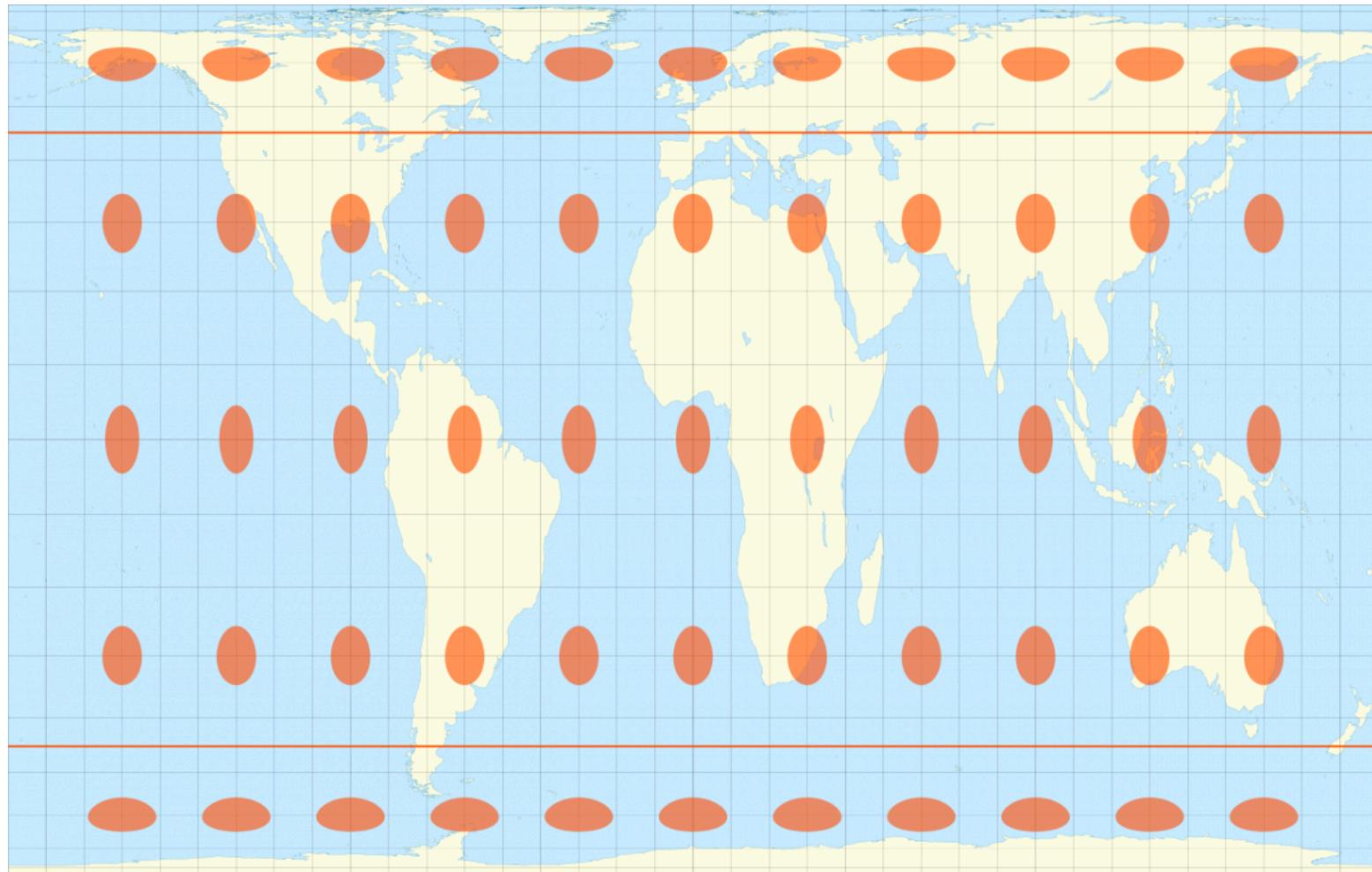


Gall-Peters Projection





Gall-Peters Projection



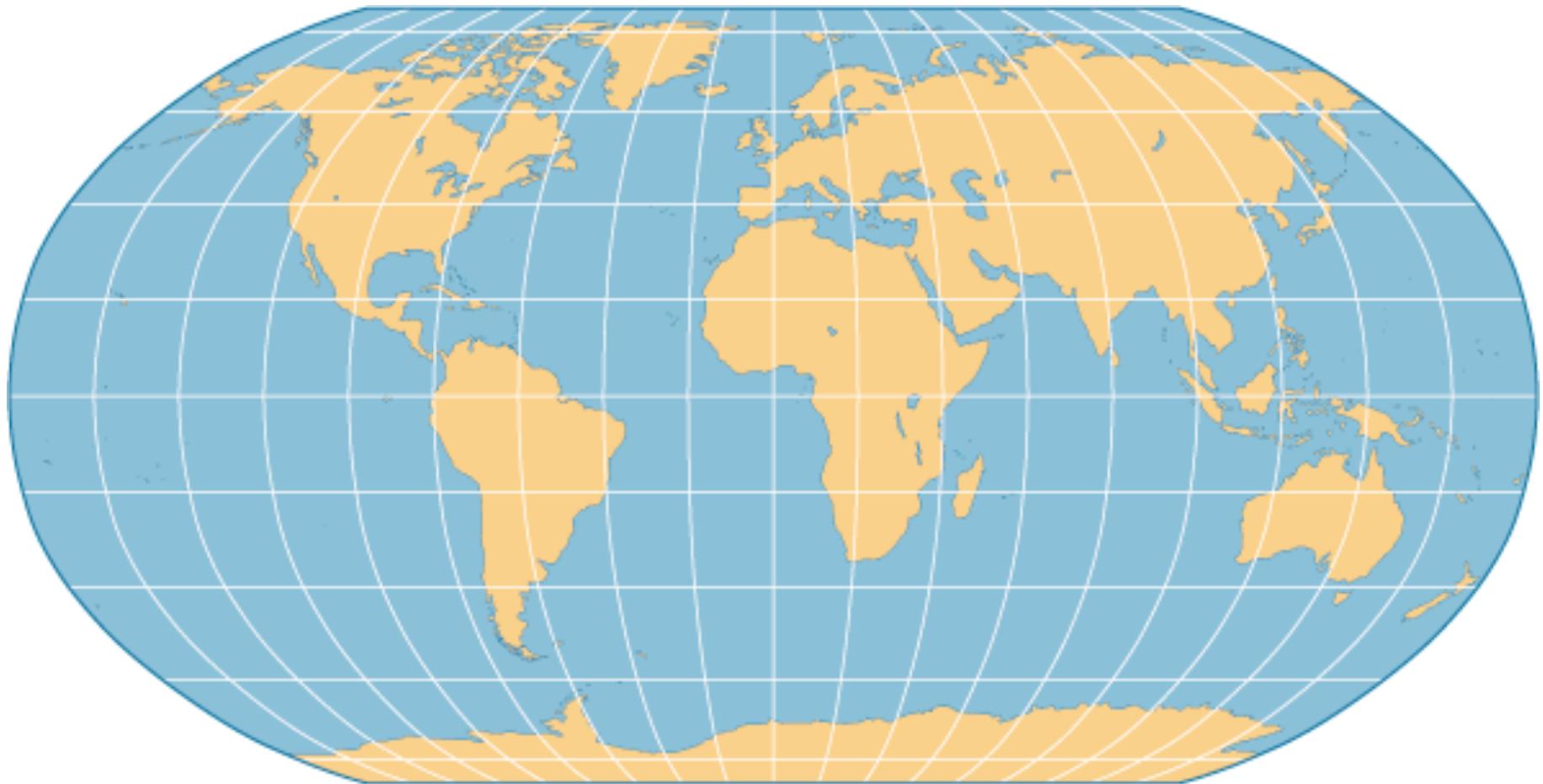


Robinson Projection

- Attempts to balance several possible projection errors.
- Pseudocylindrical type.
- Does not maintain completely accurate area, shape, distance, or direction, but it minimizes errors in each.
- Used by National Geographic

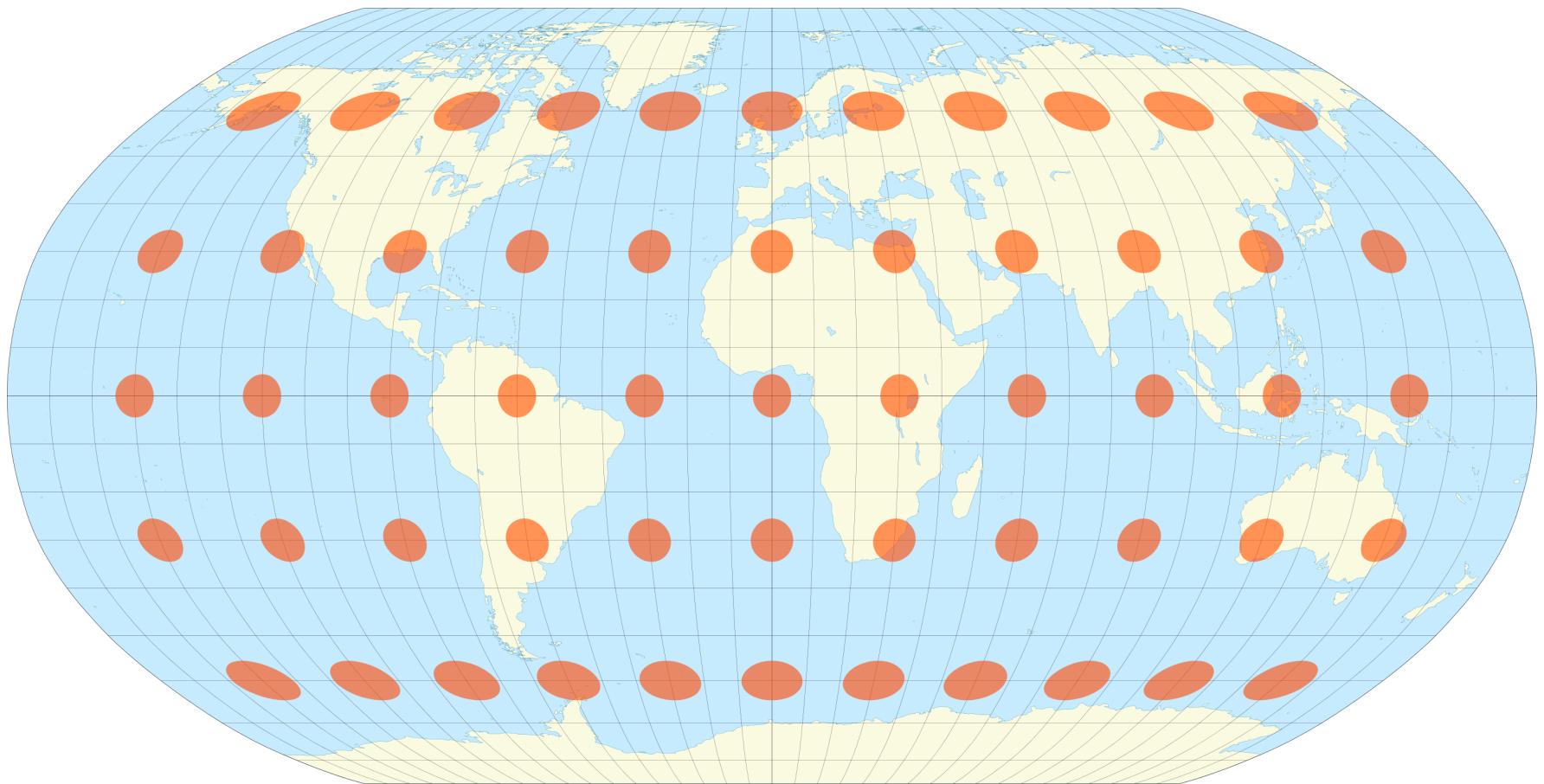


Robinson Projection





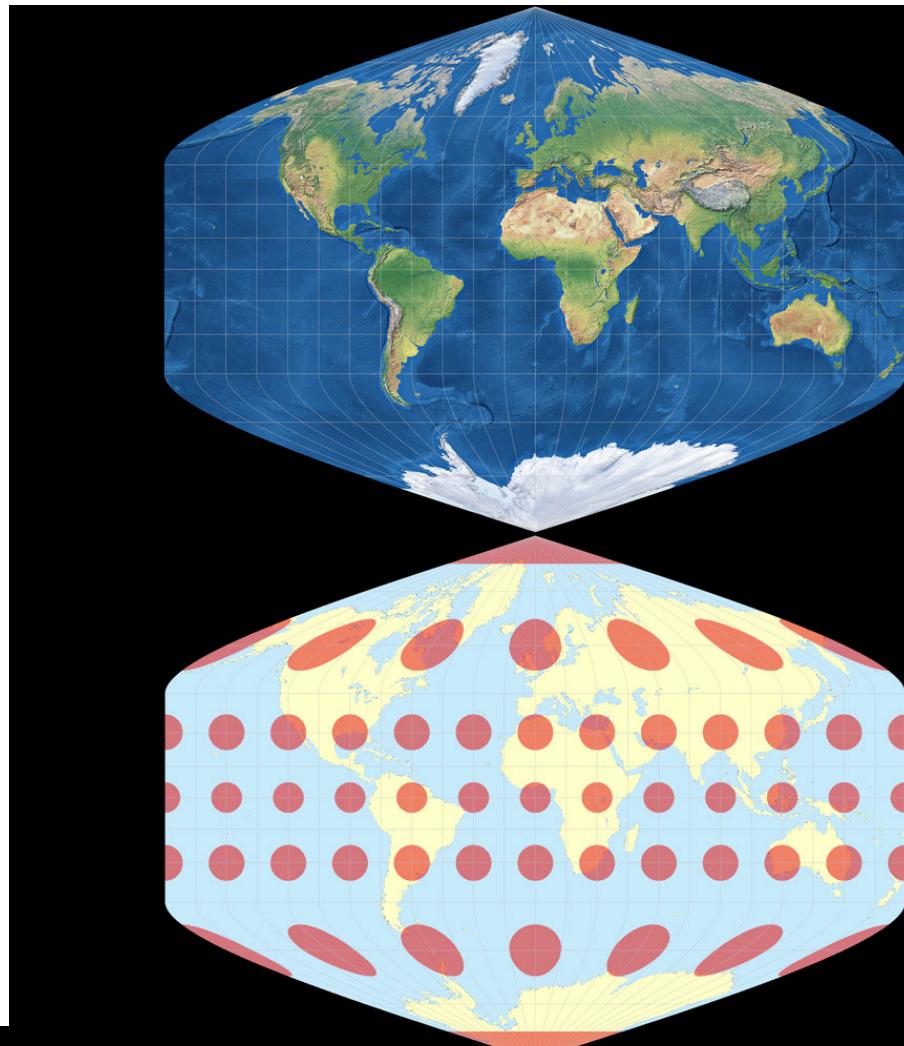
Robinson Projection





Bakers Projection

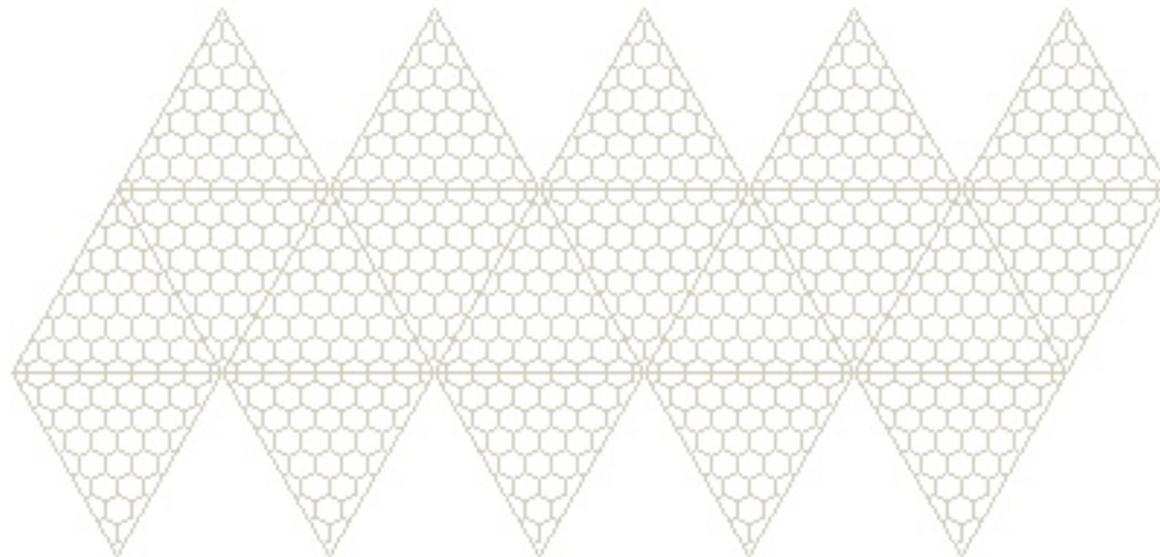
- Attempts to balance several possible projection errors.
- Pseudocylindrical type.
- Does not maintain completely accurate area, shape, distance, or direction, but it minimizes errors in each across the center.
- Large distortion towards the poles.





Fuller Projection

- Maintains the accurate size and shape of landmasses
- Completely rearranges direction such that the four cardinal directions (north, south, east, and west) no longer have any meaning.





Fuller Projection





A photograph showing a person from the side, wearing a grey VR headset. They are looking at a large, curved screen displaying a Mercator projection map of the world. The map shows continents in green and blue, with yellow and orange areas indicating landmasses. The word "Vox" is overlaid in a large, white, serif font with a yellow outline.

Vox

<http://www.vox.com/world/2016/12/2/13817712/map-projection-mercator-globe>



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