Map Projections

AZIMUTHAL PROJECTIONS

Azimuthal projections are projections that are radially symmetric in all directions from the center point of the map, which can be thought of as being the tangent point on a globe from which projection takes place.

CYLINDRICAL PROJECTIONS

In the normal case, a cylindrical projection is easy to recognize. The Equator, and all other parallels, and all meridians, are straight lines. This is a result of the fact that a cylindrical projection is based on a cylindrical surface in a symmetrical relationship with the globe.

CONIC PROJECTIONS

Since coordinate transformations are usually difficult to carry out (although for some azimuthal projections, there are handy methods of construction available) when projections are used only in their conventional aspect, the azimuthal projections serve for areas around the poles, the cylindrical projections serve for areas near the Equator. Thus, the conic projections serve for everywhere in between.

PSEUDOCYLINDRICAL OR PSEUDOCONIC PROJECTIONS (OR LOXIMUTHAL)

Cylindrical projections have parallels and meridians that are straight lines in the conventional case. A pseudocylindrical projection is still partly based on the idea of wrapping the map around the sphere, because the parallels are straight lines, but it doesn't follow that principle strictly. Most are equal-area projections, but not always.

The Eckert IV Projection is also a pseudocylindrical or Pseudoconic projection. The stretching of the continents at the equator is more noticeable than the Mollweide projection.
Map projections are attempts to portray the surface of the earth or a portion of the earth on a flat surface. Some distortions of conformality, distance, direction, scale, and area always result from this process. Some projections minimize distortions in some of these properties at the expense of maximizing errors in others. Some projection are attempts to only moderately distort all of these properties.

**Conformality**

When the scale of a map at any point on the map is the same in any direction, the projection is conformal. Meridians (lines of longitude) and parallels (lines of latitude) intersect at right angles. Shape is preserved locally on conformal maps.

**Distance**

A map is equidistant when it portrays distances from the center of the projection to any other place on the map.

**Direction**

A map preserves direction when azimuths (angles from a point on a line to another point) are portrayed correctly in all directions.

**Scale**

Scale is the relationship between a distance portrayed on a map and the same distance on the Earth.

**Area**

When a map portrays areas over the entire map so that all mapped areas have the same proportional relationship to the areas on the Earth that they represent, the map is an equal-area map.

Different map projections result in different spatial relationships between regions.