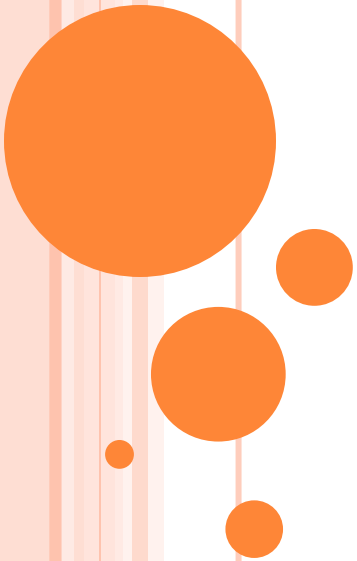
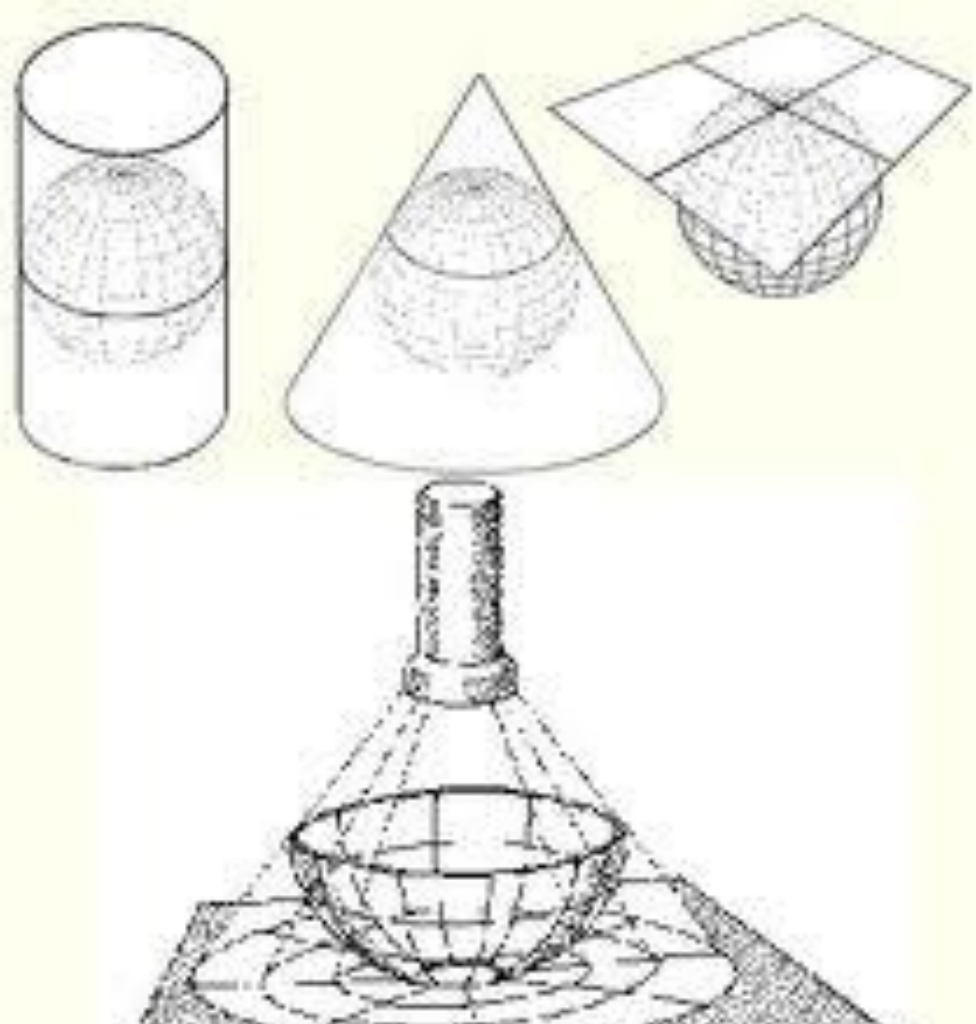


Lecture 5

FT. Okyere

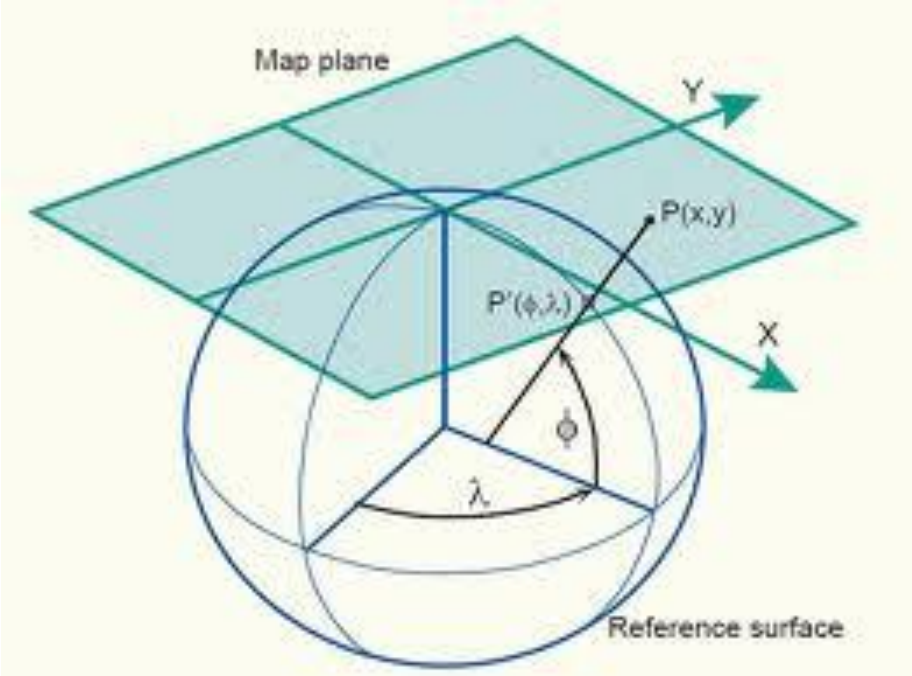
Cartography- Map Projections

- **The purpose of Map Projections**



Map Projections

- The need for maps (representation of the earth's surface on a flat sheet) calls for the need to **transform the earth's curved surface onto a plane**



Map Projections

- The science of map projection is concerned with
- the possibilities which exist for a transformation,
- the laws by which it is governed and
- with the distortions of the earth's picture caused by that particular transformation.

Map Projections

- Influencing the choice of a suitable projection
- It is a fundamental principle of distortion theory that ->
- the particular scales and therefore exaggeration of area and angular deformation increase from the origin of the projection towards the edges.
- E.g if you need a conformal map;
- choose one with the least angular distortion inherent in all equivalent projections
- the concept of minimum-error representation.

Map Projections

- The three variables- location, size and shape- usually determine the choice of the origin, aspect and class of a suitable projection.
- For maps to represent entire continents or oceans larger deformations must be tolerated
- Choice of Origin, Aspect and Class of a Projection
- The traditional approach to the choice of class is described in most literature as:
- If the country to be mapped lies in the Tropics, a cylindrical projection should be used.
- If the country to be mapped lies in the temperate latitudes, a conical projection should be used.
- If the map is required to show one of the polar regions, and Azimuthal projection should be used

Map Projections

- Tissots Law of Distortion
- Linear distortion- change in the length of a line
- Angular distortion- change in the angle
- Area distortion- change in the area

- Tissots Law demonstrates
  - At every point there are two orthogonal principal directions which are perpendicular on the circle and on globe
  - Infinitely small circle rep. by a inf. Small circle on map called TI.
  - The axis of the ellipse of distortion- maximum and minimum particular scales.

Map Projections- project notes

Map Projections