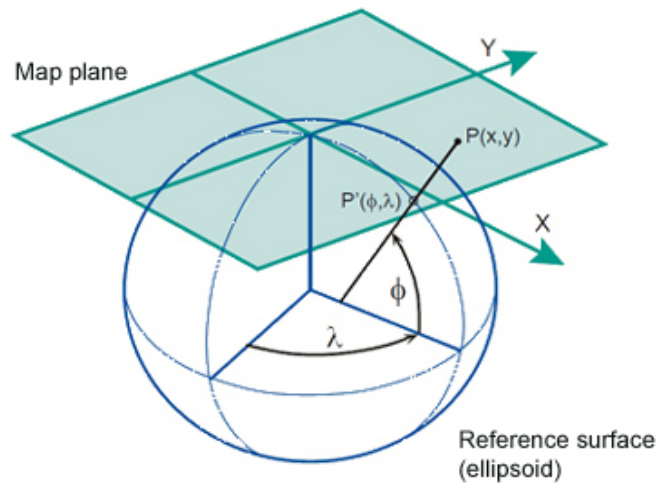


2. PROJECTION SYSTEMS

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This chapter on projections systems is an extract from the website on "[Geometric Aspects of mapping](#)", ITC).

As mentioned, geographical (ϕ, λ) or rectangular coordinates (x, y) can be used to locate geographic features. Each feature with geographical coordinates on the reference surface of the Earth may be transformed to rectangular coordinates (x,y) representing positions on the map plane (see figure below).



Source: [Geometric aspects of mapping](#), ITC

In other words, each feature may be transferred from the curved surface of the earth, approximated by a reference surface, to the flat plane of the map by means of a ***map projection***

A map projection therefore, is a mathematically described technique of how to represent the Earth's curved surface on a flat map. To represent parts of the surface of the Earth on a flat paper map or on a computer screen, the curved horizontal reference surface must be mapped onto the 2D mapping plane. The reference surface for large-scale mapping is usually an oblate ellipsoid, and for small-scale mapping, a sphere.

Four aspects to take into consideration when choosing an appropriate map projection:

- A) Classification of map projections
- B) Scale distortions
- C) Choosing a map projection
- D) Commonly used map projections

Each of the above aspects are explained in the following pages.

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