Geographical Information System (GIS)

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Abstract

In the context of technological world, Geographical Information Technology is the beautiful application of Information Technology which manages the information about places by mapping and analyzing the earth's feature. It is all about understanding and utilizing the earth by linking databases and maps. Whether it is Agriculture, Natural Resource Management, Planning and Economic Development, Education, etc, GIS is used everywhere. It is a powerful tool which deals with the spatial environment which helps in the planning processes. GIS helps in solving problems and improve the processes.
 This paper aims at presenting the core concepts behind the key terms for the complex spatial environment concepts. Adoption of GIS allows organizations or communities to better record-keeping of information, increase efficiency, geographically managing the data, saving cost and time and ultimately making the right decision/decision making. It has the capabilities of analyzing a large amount of data. It is an effective way of data handling in a short time period. When we talk about Geographical Information, it refers to a location on the earth's surface. It is all about exploring both geographical and thematic components of data in a holistic way.

Keywords: GIS, Projection, Latitude, Longitude, Vector data, Raster data.

1. Introduction

In the context of technological world, Geographical Information Technology is the beautiful application of Information Technology which manages the information about places by mapping and analyzing the earth's feature. It is all about understanding and

utilizing the earth by linking databases and maps. Whether it is Agriculture, Natural Resource Management, Planning and Economic Development, Education, etc, GIS is used everywhere. It is a powerful tool which deals with the spatial environment which helps in the planning processes. GIS helps in solving problems and improve the processes. GIS applications are tools that allow users to create interactive queries, analyze spatial information by editing data in maps, and present the results of the operations.

Before understanding the core concept of GIS, we have to understand the concept of latitude and longitude.

1.1 Latitude

It is the imaginary lines from East to West direction on the Earth measured in degrees both ways that is 0 -90 degree North and 0-90 degree South from the equatorial plane. Each lines are parallel to each other and is clearly a circle around the Globe. Parallels aree not of equal length.

1.2 Logitude

It s the imaginary North to South lines on the Earth measured in degrees from selected meridian that is 0-180 degree East or 0-180 degree West from th meridian of greenwich. Each meridian is semi-circle running North-South from one pole to another.
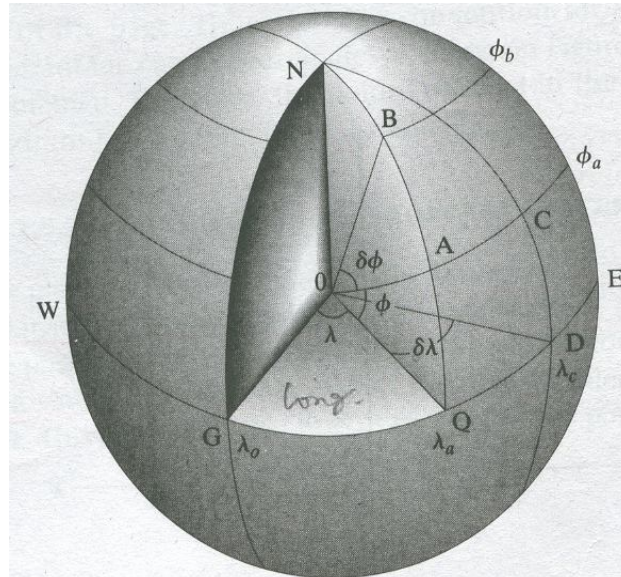
Fig.1: Measuring Latitude and Longitude.

Where, QOA is the Latitude and GOQ is the Longitude.

So, basically Latitude and Longitude deals with the imaginary lines, real values and real use.

2. Map Projection

The analysis of data takes place with the help of map which is of course two-dimensional in nature which transfers Earth surface feature to Map features, Geographical coordinates system to x, y coordinates system and Spherical surface to plane surface.
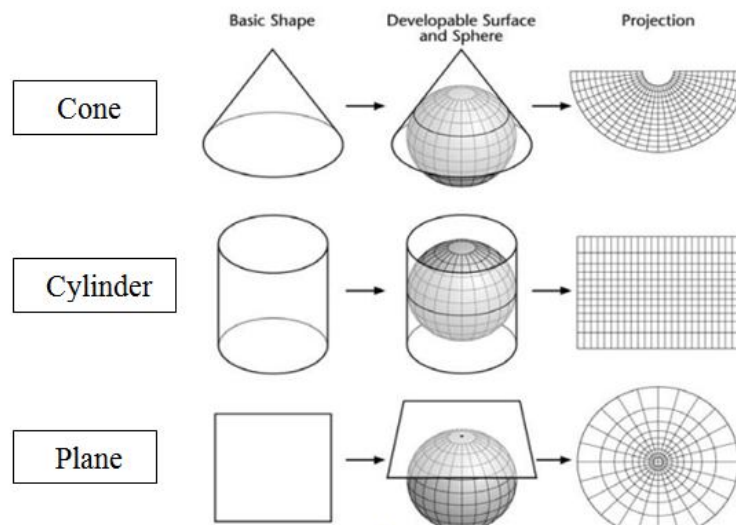
2.1 Projection Types

Fig. 2: Showing Projection types.

3. GIS Data Components

3.1 Attribute Components

- Deals with 'what' a feature is...like text, images, sound, statistics etc.

3.2 Spatial Components

- Deals with 'where' the feature is
- It is coordinate based
- Data Models- Vector data and Raster data
- Vector Data- fixed location, discrete features:
  - Points
  - Lines
  - Polygons
- Raster Data- Continuous in nature

4. Vector vs Raster Graphics

5. Conclusion

I examine that adoption of GIS allows organizations or communities to better record-keeping of information, increase efficiency, geographically managing the data, saving cost and time and ultimately making the right decision/decision making. It has the capabilities of analyzing a large amount of data. It allows a wide variety of forms of visualisation. On the other hand it has some limitations too like data are expensive. Shows spatial relationships but does not provide absolute solutions, etc. But overall it explores both geographical and thematic components of data in a holistic way.

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