LECTURE – 05

GEOREFERENCING AND DIGITIZATION

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Content

- Georeferencing

- Georeferencing in QGIS

- Digitization

- Digitization in QGIS

Georeferencing

■ **What is Georeferencing?**

- Aligning geographic data to a known coordinate system so it can be viewed, queried, and analyzed with other geographic data.

- It is the process of taking a raster image or vector coverage, assigning it a coordinate system and coordinates.

- To **georeference** means to associate something with locations in physical space.

- The term is commonly used in the GIS field to describe the process of associating a physical map or raster image of a map with spatial locations.

- Georeferencing may be applied to any kind of object or structure that can be related to a geographical location, such as points of interests, roads, places, bridges, or buildings.

Georeferencing

- **What is Georeferencing?**

  - Geographic locations are most commonly represented using a coordinate reference system, which in turn can be related to a geodetic reference system such as WGS-84.

  - Examples include establishing the correct position of an aerial photograph within a map.

  - **Input:** Imagery, Image control points, Matching geospatial control points (GCP)

  - **Output:** Image with data attached showing how it fits onto the globe

Georeferencing in QGIS

■ **Workflow:**

- ■ Install **Georeferencer GDAL** plugin (if not installed)
  - ■ **Plugins** > **Georeferencer**
- ■ **Raster** > **Georeferencer** > **Georeferencer**
- ■ **Open Raster**
- ■ Define **GCP** (GCP are taken for known positions on raster data. They can be conveniently taken either using GPS handset or Google Earth)
- ■ After you have add all GCP data, click on **Start Georeferencing** icon.
- ■ Specify **Linear** as method of georeferencing
- ■ Specify **WGS-84** in **CRS**.
- ■ Save output raster file

Digitization

■ **What is Digitization?**

- Digitizing in GIS is the process of converting geographic data either from a hardcopy or a scanned image into vector data by tracing the features.

- During the digitizing process, features from the traced map or image are captured as coordinates in either point, line, or polygon format.

Digitization in QGIS

- **Workflow:**

  - Add raster data layer

  - This data layers should be geographically referenced.

  - Create appropriate shape files (point, line and polygon) over the raster overlay.

References

- Hill, Linda L. (2006). Georeferencing. The MIT Press. ISBN 978-0262083546.

- ESRI Community

- QGIS User Manual