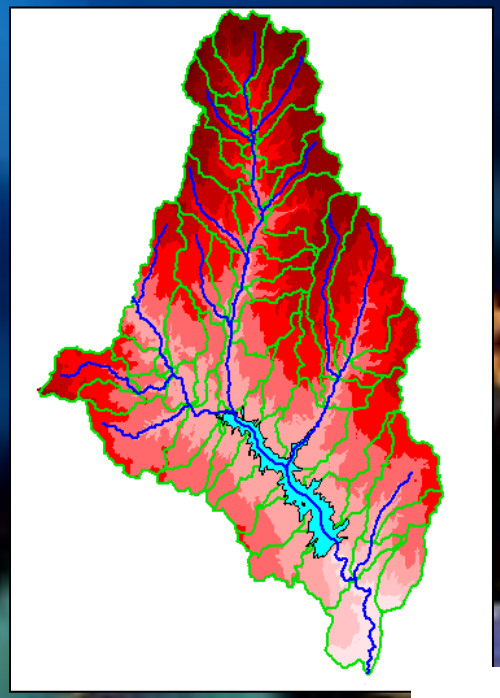
Course Title: Advances in Remote Sensing and GIS

Course Code: ENV-652

Topic: **Major Data Sources of GIS**



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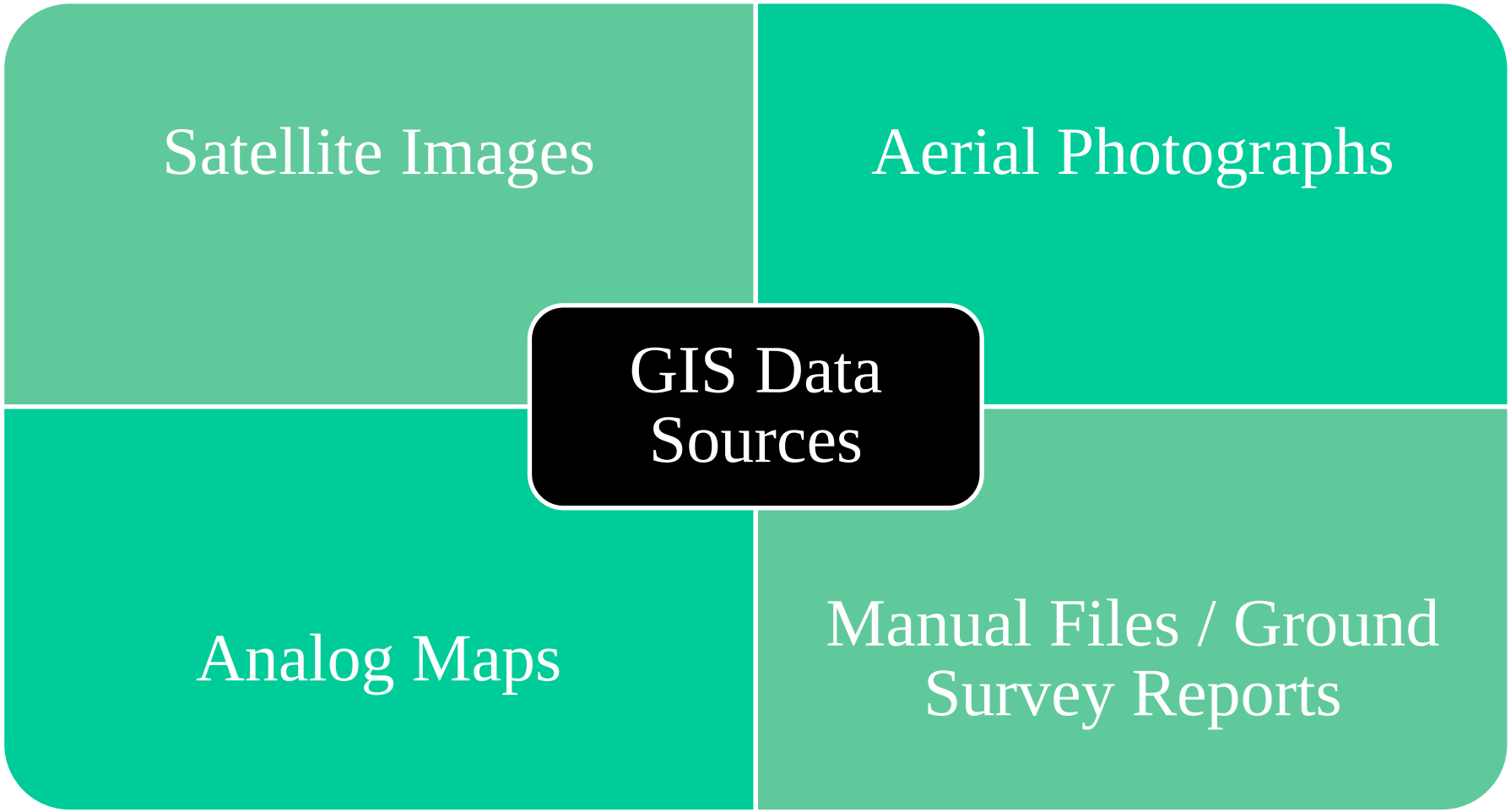
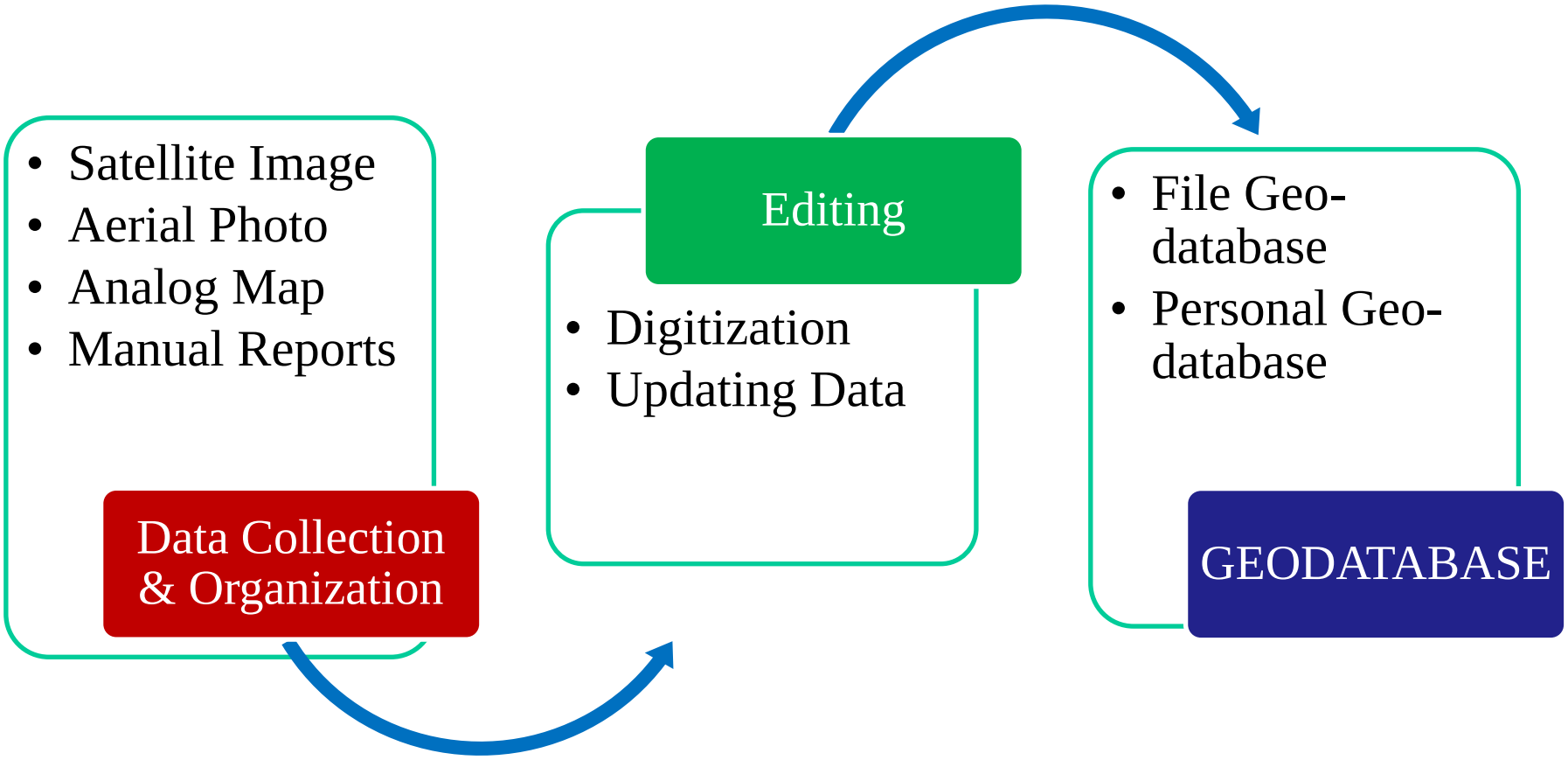
1. Major Data Sources of GIS

- **Primary Data Sources** (first-hand collection)
  - Digitizing
  - Scanning
  - Other point measurements data (in text files)
  - Census data
  - GPS data collections
  - Aerial photographs
  - Satellite Imagery
- **Secondary Data Sources** (from others)
  - Published or released data

Data Sources In GIS



Data Sources In GIS



Analog Map

- Any direct viewable map on which graphic symbols, and features (Contours, Drains, Spot Heights) are digitized manually through digitizer / Scanner.

Drawbacks of Analog Map

- Lack of Availability
- Outdated
- Inconsistency in map production.
- Time
- Inaccuracy

Analog Map

Aerial Photographs

- The process of taking photography from an aircraft using specialized photographic equipment/sensor.
- Most important, widely available, and commonly utilized kinds of remotely sensed images.
- They are used for all manner of land use , land cover , drainage network , urbanization , cartography, and surveys in the public and private sectors.
- Aerial Photos can be Vertical / Oblique
- Scale factor increases if the height of the aircraft increases.

Aerial Photographs

- Aerial Photographs are usually taken at scale between 1:25000-1:50000
- Most air photo missions are flown using black and white film, however color film are sometimes used for special projects.

$$\frac{\text{PHOTO DISTANCE}}{\text{GROUND DISTANCE}} = \frac{4\text{ cm}}{1\text{ km}} = \frac{4\text{ cm}}{100\,000\text{ cm}} = \frac{1}{25\,000}$$

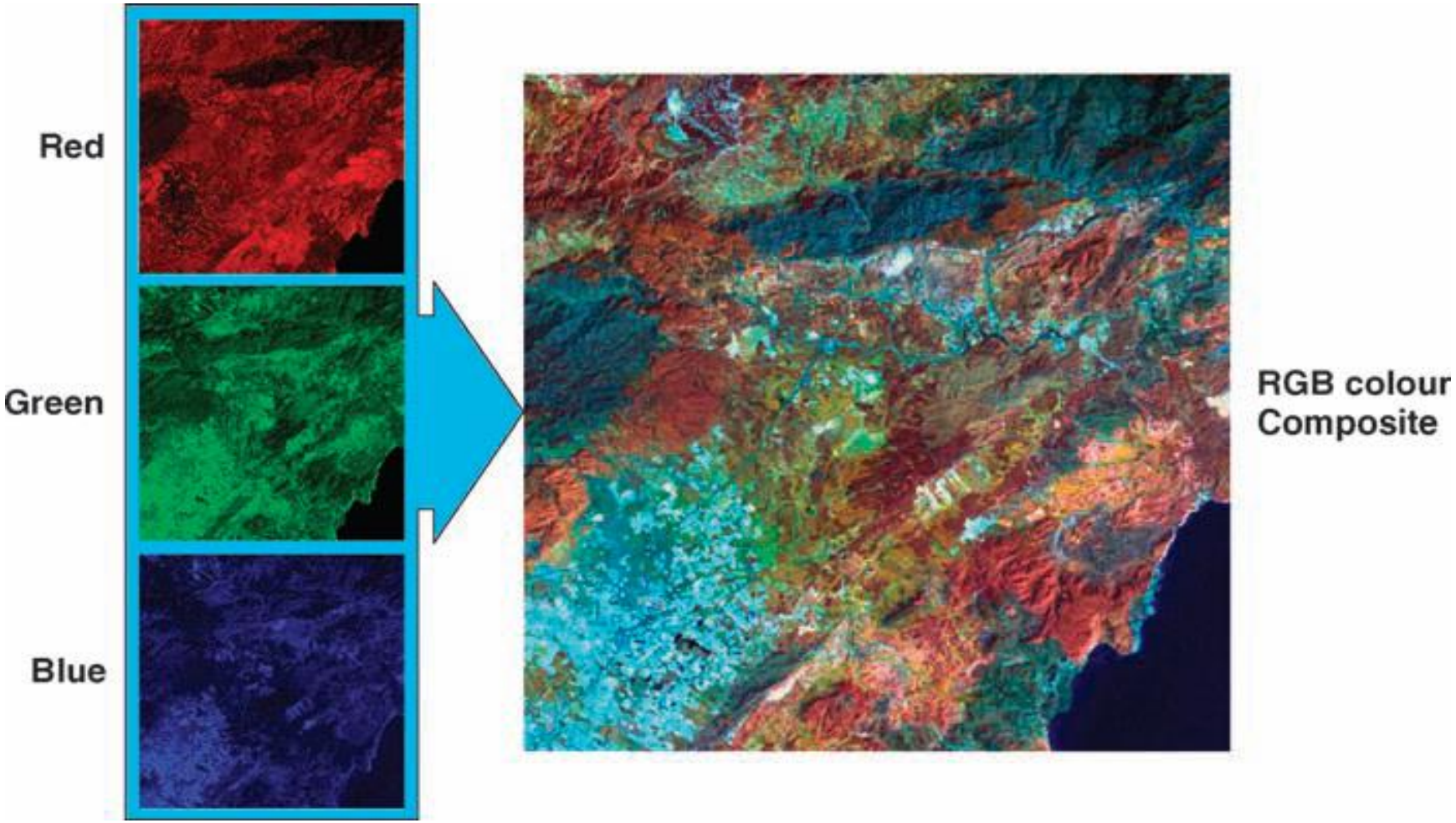
SCALE: 1/25 000

Aerial Photograph of Badshahi Mosque

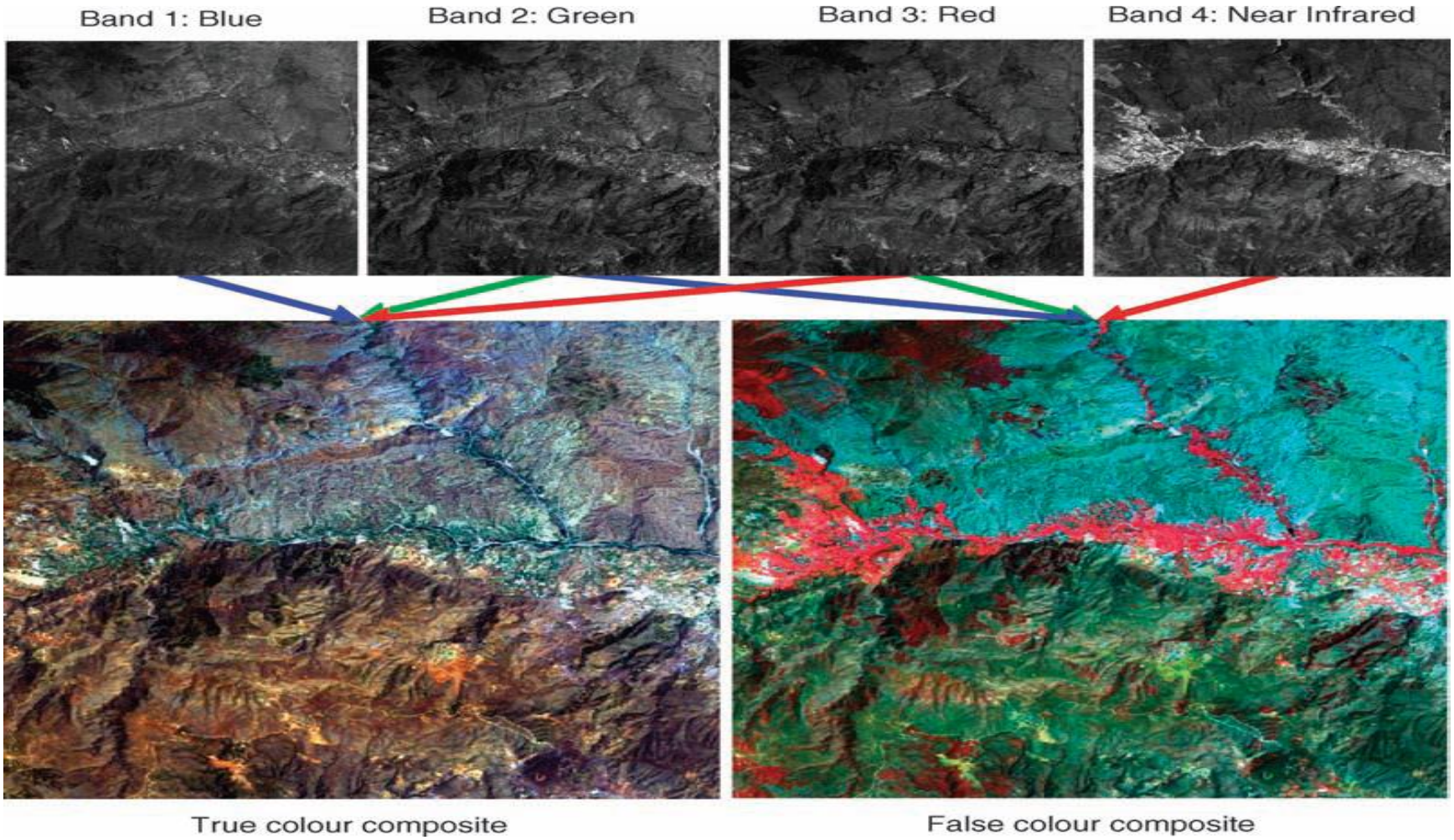
Satellite Imagery

- A picture of the earth taken from an earth-orbital satellite. **Satellite image**s are produced through sending electric signals to earth receiving stations.
- Signals are processed by computers to produce an image which may be in both analog and digital format.
- Satellite image can be True color / False color composite

True Color



Comparison of True Color and False Color Image



Remote Sensing