

Geotechnology

There are several kinds of geotechnologies that have become a very familiar part of modern life. Remote sensing, geographic information systems and the global positioning system are three examples of geotechnologies that we experience on a regular basis. These tools can also help us study geography.

Geotechnology: the use of advanced technology in the study of geography and in everyday use.

1. Remote Sensing

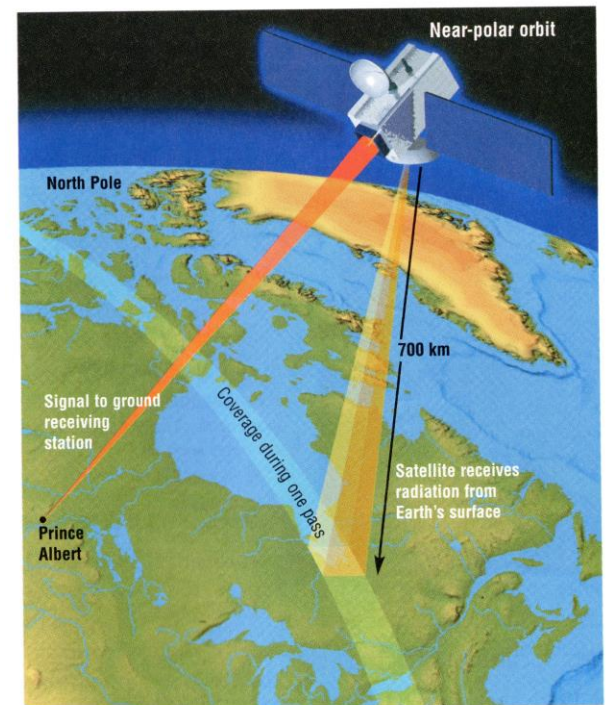
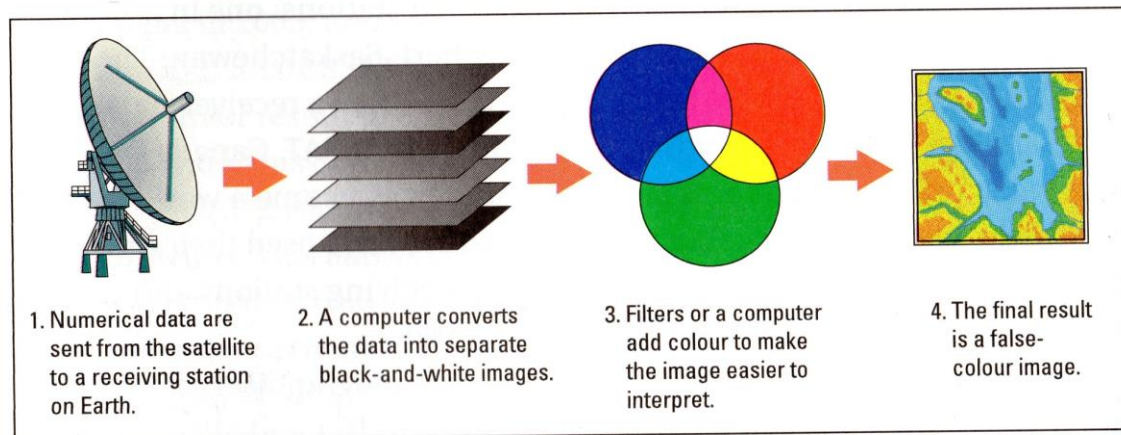
- Remote sensing means to see something from a considerable distance away, usually from a satellite
- Satellite images help geographers learn about an area without having to actually visit it
- Satellites continually take photos of the earth, so the information is always changing

EX: RADARSAT and RADARSAT-2

- RADARSAT-2, developed in Canada, is a satellite that orbits the earth 14 times a day at an altitude of about 800km
- This allows complete coverage of Canada every 3 days

Uses of RADARSAT-2

- Agriculture – identifying crops, estimating acreage
- Marine Surveillance – detecting illegal fishing vessels
- Sea Ice – assess melting rate, detecting icebergs
- Disaster Management – predicting floods, determine damage



2. GIS – Geographic Information Systems

- **GIS:** A mapping technology creates 'dynamic maps' by creating 'layers' of specific geographic information
- Allows you to analyze the relationship between different pieces of geographic information
- EX: Google Earth

Uses of GIS

- Getting 911 emergency services to your home quickly as possible
- Deciding if there is enough children in an area to justify building a new school

3. Global Positioning System

-GPS can help us find the exact latitude and longitude position of any place on earth

How it Works

- There are 3 parts to making GPS work:
 1. Satellites: There are between 24 and 32 satellites orbiting the earth
 2. Control Stations: There are 11 control stations in various places around the world
 3. GPS Receiver: Any GPS receiver, like the one in a car
- A GPS receiver's job is to locate any 3 of the satellites orbiting the earth and send information to the satellite
- The satellites use **trilateration** to determine where the GPS unit is – trilateration is the intersection of 3 satellites

- The GPS receiver tells the satellite the direction and how fast it is moving
- The satellite then determines the GPS receiver's latitude and longitude coordinates and then tell the receiver
- When the satellites and the receiver work together, it can determine your speed, distance to your destination, arrival time, etc.

Uses GPS

- Here are some examples of the multiple ways GPS is used in our everyday life:
- **Transportation** – help drivers with directions to a specific location (this really helps taxi drivers)
- **Agriculture** – tractors, steered by a GPS receiver rather than a person, can plough a field perfectly
- **Recreation** – GPS technology is used on golf courses (to indicate the distance to the hole)

Diagram of Trilateration

Another valuable use of geotechnology is the creation of digital maps. Digital maps allow us to update, change and manipulate information on a map to emphasize specific points.

Digital Mapping: the location of geographic data (lines, points, areas, elevation and numerical data such a census information is digitized, and used to create maps.

Isodemographic Map

- A map where the relative area of a region is not proportional to its landmass but to its population.

