Week1

Summary

- Remote sensing is defined as acquiring information from a distance. Remote sensing can collect data without physical contact with objects by sensors.
- Passive or active sensors. Active sensors have an energy source and will actively emit electromagnetic energy and then receive
- Electromagnetic energy

  1. Wavelength: long wavelength = low frequency = low energy
  2. Electromagnetic spectrum: total range of wavelengths of EM radiant
  3. Energy interaction: reflected, absorbed by the surface, transmitted through the surface, scattered by particles in the atmosphere.
  4. Blue light shorter wavelength and more easily scatters(450nm-blue(shortest visible light) 550nm-green 700nm-red(longest)).
  5. The spectral reflectance characteristics of surface materials are different. That is why sensors can identify materials. In the visible spectrum, chlorophyll in plant leaves strongly absorbs light in the blue and red regions, but reflects green light. This is why healthy vegetation appears green to our eyes.
  6. The sun is the primary source of EM energy

- Four resolutions

  1. Spatial resolution the size of the raster grid per pixel
  2. Spectral resolution the number of bands sensor records data
  3. Radiometric resolution identify differences in light or reflectance, in practice this is the range of possible values.
  4. Temporal resolution the time it revisits

Application

Sentinel-2

1. Spatial resolution of 10 m, 20 m and 60 m
2. Revisiting every 10 days
3. Multi-spectral data with 13 bands in the visible, near-infrared, and short-wave infrared part of the spectrum

- Application

1. Watching coastal waters.
2. Monitoring inland water bodies

Landset