Week 1

Summary of general overview of remote sensing

In the first week, a general overview of remote sensing. I will use an image from Kerry et al., 2022 to summarize.

A diagram of a remote controlled sensor

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(Kerry et al., 2022)

In remote sensing data is gathered through passive (e.g., satellite imagery) and active (e.g., LiDAR, RADAR) methods. It can be integrated with GIS to analyse landscapes, land cover, demographics and others. Active sensors compute elevation using laser pulses, while passive sensors capture reflected sunlight, they all are electromagnetic waves. Combining these techniques and noting the interaction in the earth’s atmosphere, enables precise environmental monitoring, resource management, and biodiversity conservation at multiple spatial scales.

I want to dive into the satellites. These were the two main satellites discussed in the lecture. The Landsat which has 9 types however one did make it to orbit (landsat-6) (“Landsat Science,” n.d.). and sentinel satellite which has 6 types (“Discover our satellites | Copernicus,” n.d.). I will focus on the Landsat satellite.

The Landsat satellite series is the longest series of satellites in orbit. The first lunch (Landsat 1) was on 23 July, 1972 (“Landsat 1 | Landsat Science,” 2021). This was in the interest of studying and observing the earth’s landmasses with a Return Beam Vidicon and Multispectral Scanner sensor (“Landsat 1 | Landsat Science,” 2021).

These satellites have span for operation after which they’re terminated. The figure below shows the history of the Landsat satellite (“USGS.gov | Science for a changing world,” n.d.).

A timeline of a company

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From the picture, the current Landsat 8 and Landsat 9 are orbiting. These two satellites are quite identical. They both have a similar sensors, same number of multispectral bands, identical bandpasses and the same spatial resolution (Xu et al., 2024). This might be a be a satellite was launched to keep an active Landsat satellite in orbit.