

# Supplementary Materials

## Decoding Earth: Signals from Geostationary Orbit

This document provides supporting images, diagrams, and links to accompany the *Decoding Earth: Signals from Geostationary Orbit* lab manual. It is intended to be used in a digital format and not printed.

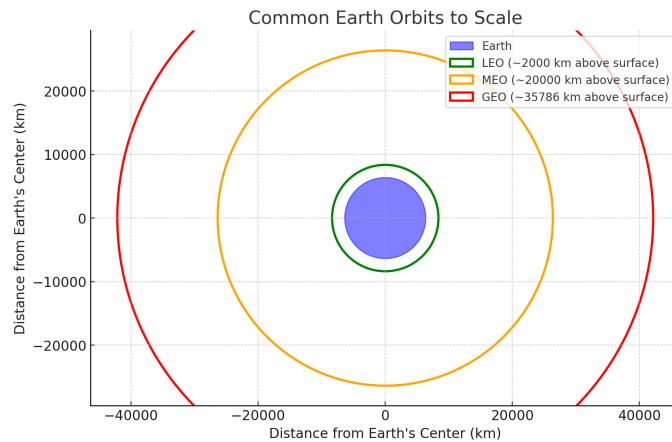


Figure 1: Diagram of Low Earth Orbit (LEO), Medium Earth Orbit (MEO), and Geostationary Earth Orbit (GEO), showing orbital distances to scale, measured from Earth's center.

### Section 3

Install SDR Drivers. Scroll down until you see "SDR# (SDRSharp) Set Up Guide" and start at step 4:  
<https://www.rtl-sdr.com/rtl-sdr-quick-start-guide/>

Download SatDump: <https://www.satdump.org/download/>

**Section 6.2** - Global Biosphere Visualization: <https://svs.gsfc.nasa.gov/5474/>

**Section 6.2** - GOES Image Viewer: [https://www.star.nesdis.noaa.gov/goes/fulldisk\\_band.php?sat=G19&band=GEOCOLOR&length=180&dim=1](https://www.star.nesdis.noaa.gov/goes/fulldisk_band.php?sat=G19&band=GEOCOLOR&length=180&dim=1)

**Section 6.3** - Earth Observatory Agricultural Patterns: <https://earthobservatory.nasa.gov/images/6605/agricultural-patterns>

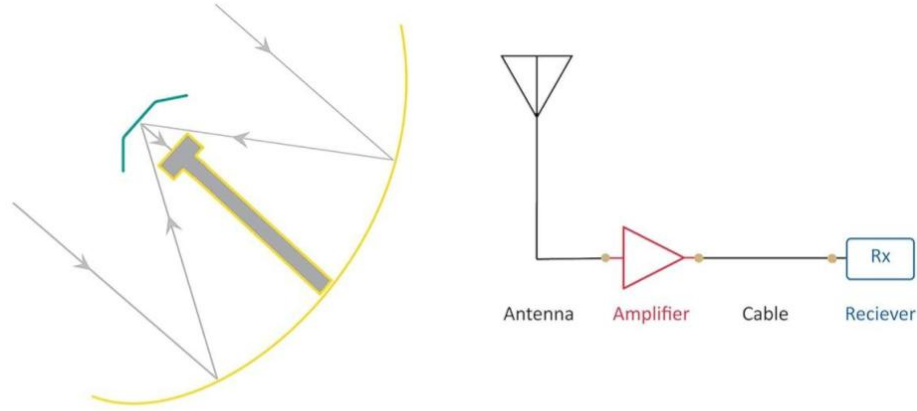


Figure 2: Signal path of the radio dish system. **Left:** Incoming radio waves are reflected by the parabolic dish and focused onto the feed, where they are converted into an electrical signal. **Right:** The signal chain begins at the antenna (feed), passes through a low-noise amplifier (LNA) to boost the weak signals, travels along a coaxial cable, and is finally processed by the receiver (Rx).

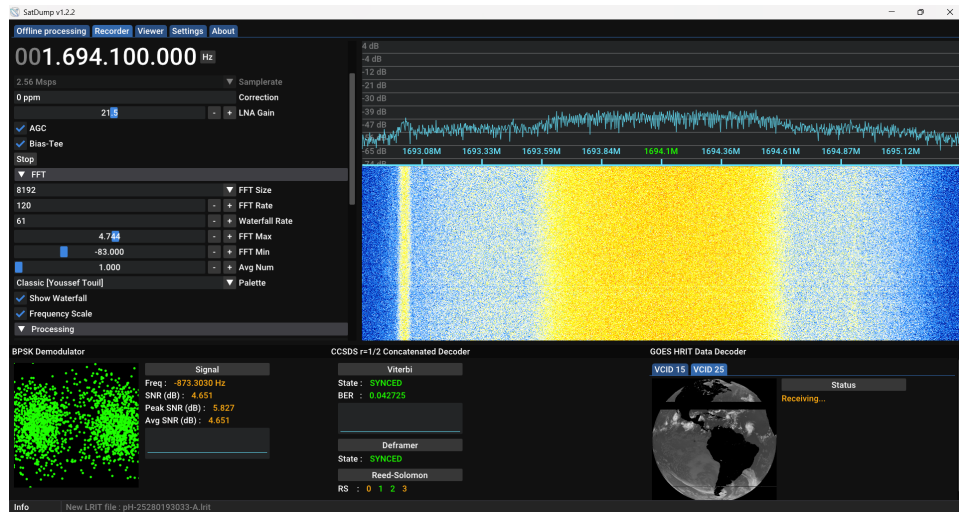


Figure 3: Spectrum (top) and waterfall plot (bottom) of the GOES HRIT (High Rate Information Transmission) signal being received in SatDump.

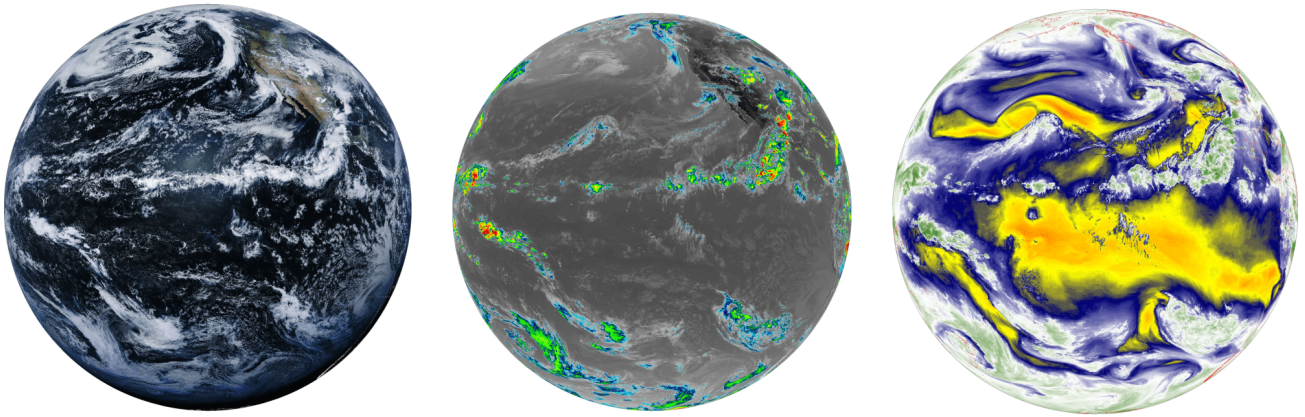


Figure 4: Example GOES-18 full disk imagery displayed in three different spectral bands. From left to right: False Color (highlighting natural looking cloud and surface features), Clean Longwave Infrared (emphasizing cloud-top temperatures and storm structure), and Mid-level Tropospheric Water Vapor (showing moisture content and atmospheric circulation patterns).