

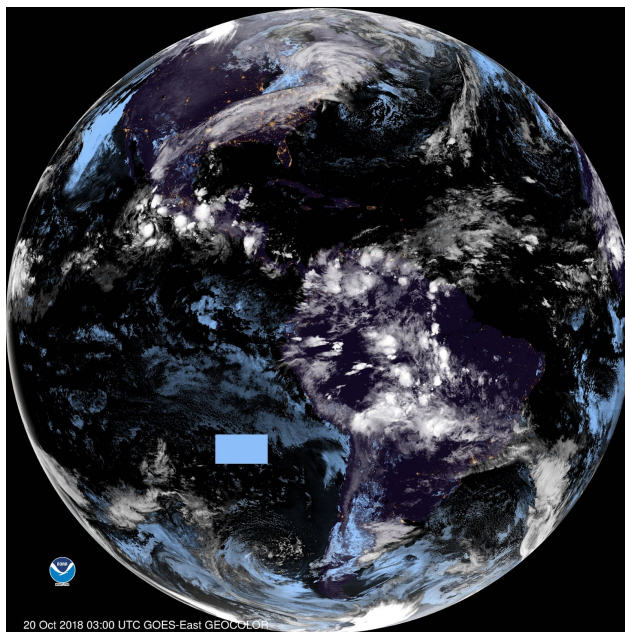
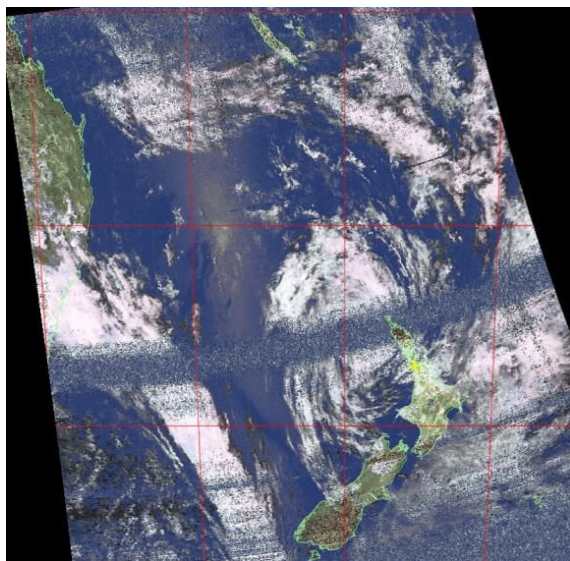
Digi-GOES

This project seeks to implement an FPGA-based display of live images of demodulation, decoding, and displaying of weather satellite transmissions of Earth images. There are two main satellite candidates: polar-orbiting NOAA satellites, and geostationary GOES satellites.

The NOAA satellites provide a more limited view of Earth, but an easy to receive and decode setup. The GOES satellite is harder to receive, and transmits a lot more data.

The main challenge to the project is the size of the data. A single GOES satellite reception file (pre-recorded) is around 10GB, and the final image would be 10,000x10,000px (300MB in 24-bit RGB). Possible options to get the data onto the FPGA include the UART bus, Ethernet, or SD cards. Some of these options (notably Ethernet) could be use for some two-way communication with a PC who could manage the large files, while the FPGA does fast processing.

This project is extensible from decoding a pre-recorded NOAA transmission, and can be expanded to include GOES transmissions, decoding live passes, or active CPU/FPGA collaboration.



NOAA polar satellite view of New Zealand, GOES-EAST view of the Americas