

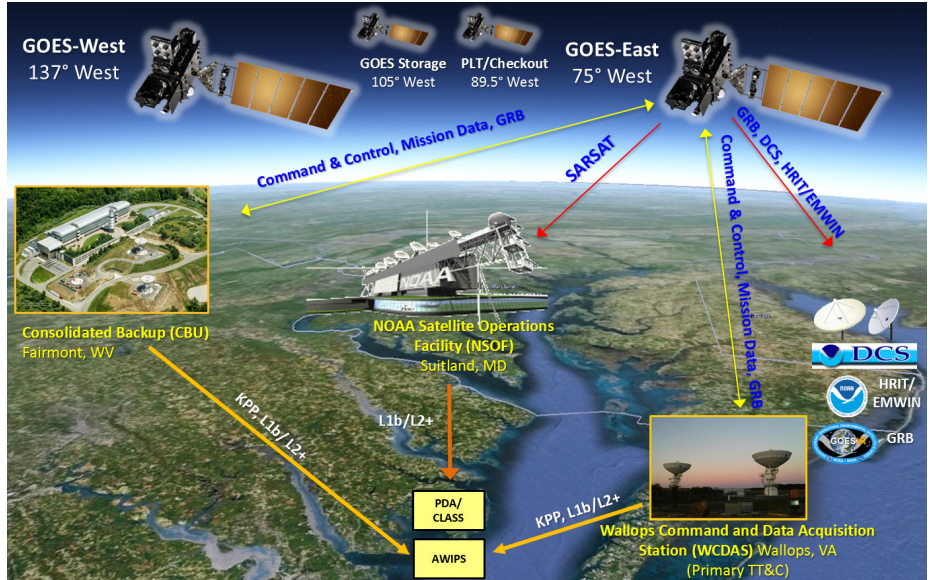


# GOES-R Series Ground System

Ground support is critical to the GOES-R mission. NOAA developed a state-of-the-art ground system that receives data from GOES-R Series spacecraft and generates real-time data products. This is accomplished via a core set of functional elements, which include space/ground communications, raw data processing, monitoring satellite health and safety, and commanding the spacecraft and instruments, as well as a new antenna system and a product access component.



NOAA Satellite Operations Facility



GOES-R ground system architecture

## FACILITIES AND ANTENNAS

The GOES-R core ground system consists of two primary locations that receive data from GOES-R Series satellites: NOAA Satellite Operations Facility (NSOF) in Suitland, Maryland, and Wallops Command and Data Acquisition Station (WCDAS) in Wallops, Virginia. A third operations facility in Fairmont, West Virginia, serves as the Consolidated Backup (CBU).

NSOF houses the majority of GOES-R Series mission operations and science data production.

WCDAS is the primary site for space-to-ground communications and command uplink. Some data is processed at WCDAS to produce GOES Rebroadcast (GRB) data for satellite uplink. WCDAS also provides uplink to the satellites to support certain communications relay services in addition to the primary GOES mission data.

The CBU serves to support contingency operations and perform all of the critical functions of NSOF and WCDAS if needed as a backup.

NOAA upgraded four 9.1 meter antennas at NSOF for compatibility with the GOES-R satellites and constructed three new 16.4 meter antennas at WCDAS and three new 16.4 meter antennas at CBU. The new and upgraded antennas maintain compatibility with the previous generation of GOES satellites, some of which remain on orbit as backup for NOAA's operational constellation. The antennas will operate continuously for the life of the GOES-R Series.



W-1 antenna at WCDAS





Consolidated Backup



Wallops Command and Data Acquisition Station

## DATA ACCESS

Users are able to access GOES-R data in a number of ways, depending on user type and data latency needs. Product distribution services include:

**AWIPS:** The **Advanced Weather Interactive Processing System** is a computer system that integrates meteorological and hydrological data, enabling meteorologists to prepare forecasts and issue warnings. The National Weather Service is the primary operational user of GOES-R Series data and receives key data directly from the GOES-R Series AWIPS interface.

**PDA:** Real-time data is available to authorized users via the **Product Distribution and Access** system, which receives and stores real-time environmental satellite data and products.

**GRB: GOES Rebroadcast** enables users with their own receivers to receive full resolution, calibrated, near real-time direct broadcast data products.

**CLASS: The Comprehensive Large Array-data Stewardship System** is a web-based data archive and distribution system for NOAA's environmental data to scientists, researchers, and academics to review archived products (older than seven days).

## DATA PRODUCTS

The ground system receives raw data from GOES-R Series spacecraft and generates Level 1b and Level 2+ products. Level 1b data from each instrument and Level 2+ data from the Geostationary Lightning Mapper (GLM) are distributed to direct readout users by means of spacecraft relay via GRB. Level 1b products and Level 2+ products are provided to the PDA system, including the data archive centers via CLASS.

Data levels	
<b>Level 0:</b>	Unprocessed instrument data at full resolution
<b>Level 1b:</b>	Level 0 data with radiometric and geometric correction applied to produce parameters in physical units
<b>Level 2+:</b>	Derived environmental variables with spatial and temporal resolution comparable to Level 1 data

### Learn more

- [Ground System Overview](#)
- [User Systems Overview](#)