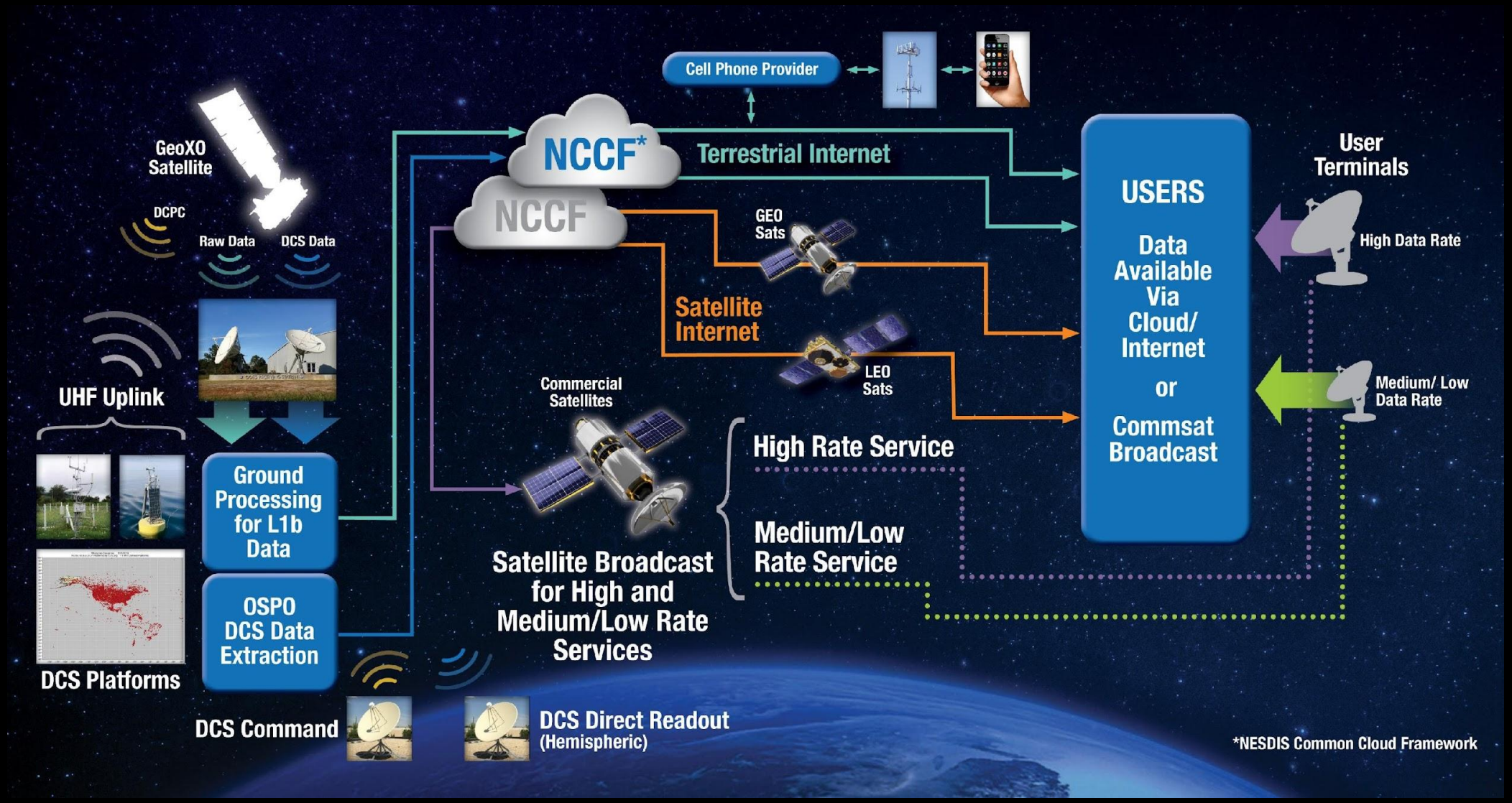
User Facing Communications for GeoXO

May 20, 2025

NOAA
National Environmental Satellite, Data, and Information Service

Accessing Data from GeoXO



Access Over the Air: User Facing Communications

GOES-R Service	GeoXO Service	User Facing Changes, Upgrades or Modifications
DCS Platform Signal Rx (DCPR)	DCS Platform Signal Rx (DCPR)	None. DCPR services will continue on the same frequencies as GOES-R.
DCS Rebroadcast (DRGS)	DCS Rebroadcast (DRGS)	Users antennas or filters may require minor modification for shifted DCS DRGS frequencies which provide bandwidth margin from proposed L-band spectrum sharing. GOES-R L-Band Frequencies: 1679.9 (U.S. Domestic) 1680.2 (International) GeoXO L-Band Frequencies: 1691.9 (U.S. Domestic) 1692.2 (International
DCS 2-way commanding (DCPC)	DCS 2-way commanding (DCPC)	None. DCPR services will continue on the same frequencies as GOES-R. DCPC receivers in development are compatible with GOES-R and GeoXO.
EMWIN/HRIT Broadcast	Medium/Low Rate Service	Users will need to replace existing L-Band receivers and antenna with new systems compatible with selected commercial frequencies. Costs for receive hardware to be borne by users. Service will continue to be free of charge. Receive systems are expected to be equivalent if not lower in cost than existing systems. Service footprint may be limited due to availability of commercial beams, but intent is to service as many existing users as possible.
GOES-R Rebroadcast (GRB)	High Rate Service	

GOES-R to GeoXO: User Equipment Updates

GOES-R Access

(with current system examples)

HRIT/EMWIN

"Professional" (Left) & Low Cost (Right) HRIT/EMWIN Antennas

GRB

Typical GRB Receiving Antennas

GeoXO Access

(with examples from equivalent services)

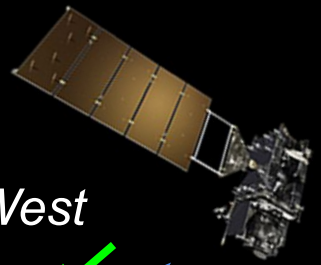
C-Band (GNC-A Service)

1.25m Ku (Eumetcast Service)

1.8m Ku (Eumetcast Service)

Eumetcast Terrestrial

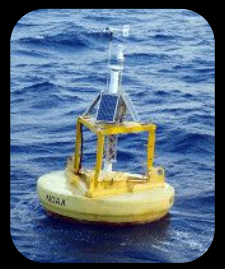
Data Collection System



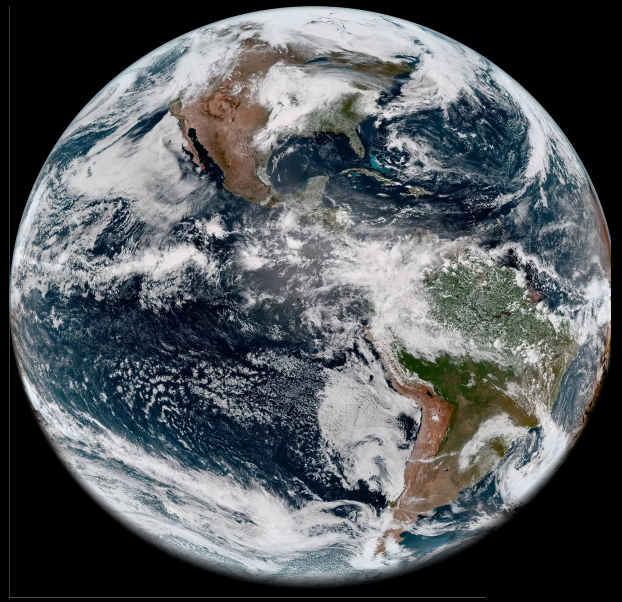
GEO-West

Command
(DCPC)

Data
(DCPR)

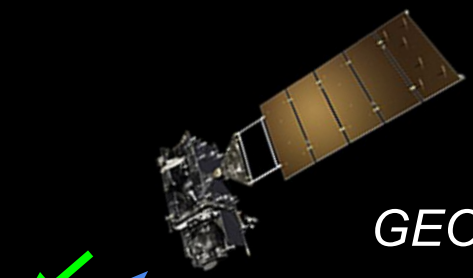


Data Collection Platform
DCPR (401.7-402.1 MHz)
DCPC (468.8 MHz)



Hemispheric Real-Time Coverage (> 5 deg El)
Free to Use Data Relay
32,000+ Active Platforms
Weather Stations, Flood Gauges, Fire Monitoring, Tide Levels, Tsunami Monitoring, Wildlife Monitoring, Buoys (In Dev.), Geomagnetic Sensors, Custom Sensors

New Environmental Use Cases Welcome!
nicolaie.todirita@noaa.gov



GEO-East

Data
(DCPR)

Command
(DCPC)

User Direct Ground
Downlink: L-Band

NOAA Ground
Uplink: S-Band
Downlink: L-Band

User Facing Comms - Summary

- NOAA will continue to provide User Facing Communications “Over the Air” using Commercial Broadcast Services
  - These services will be free to use - with low cost user provided receivers
    - Due to changes in band, users will need to update hardware for GeoXO (NET 2032)
    - NOAA is evaluating ways to reduce h/w cost for continued use of GOES-R broadcasts
  - GeoXO High Rate: GXI (Imager) L1b & LMX (Lightning) Data
  - GeoXO Medium Rate/Low: L2+ Products, Emergency Warnings, DCS
  - Interested in user feedback on services, products, and architecture
    - Please speak up today or email geoxo.satellites@noaa.gov!
- GeoXO will host the Data Collection System (Receive & Command)
  - Provides a real-time link for in-situ environmental data with no service cost to users
  - New users & applications welcome!

Discussion on Data / Formats

- GeoXO Data Archive for life of mission will be available
- Formats applicable to mission (e.g. GIS)

"[Whatever they do, there better be imagery in front of forecasters on day one]"