

Status report on the current and future satellite systems by NOAA

Presented to CGMS-53 plenary session, agenda item 3



Our aspiration

Provide a truly integrated digital understanding of our earth environment that can evolve quickly to meet changing user expectations by leveraging our own capabilities and partnerships

NOAA's Next-Gen Earth Observation Strategy

Integrated, Adaptable, and Affordable: Orbits, Instruments, & Systems

LEO

Maintain critical global observations and critical public and private partnerships yielding high accuracy long-range forecasts.

New systems will utilize next-generation instruments launched on single payload satellites, embracing agile, “new space” commercial processes.

GEO

Continuous real-time observations supporting warnings and watches of severe weather and hour-by-hour changes.

Monitoring of oceans, atmosphere, and climate to improve productivity and health outcomes.

Space Weather

Reliably monitoring coronal mass ejections from L1, GEO, and LEO can protect the nation's valuable, vulnerable infrastructure.

New capabilities at L5 and high earth orbit can provide additional insight and improve forecasts.

Common Ground Services

Secure ingest of data in different formats from different partners requires a flexible, scalable platform.

Common Services approach integrates cloud, AI, and machine-learning capabilities to verify, calibrate, and fuse data into new and better products and services.





NOAA Satellite Missions

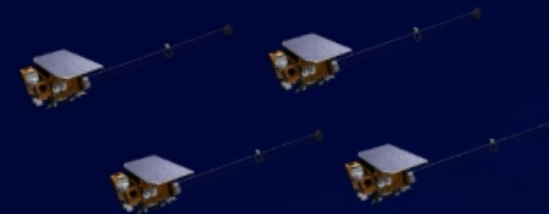
DSCOVR
Operational July 27, 2016



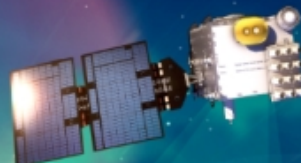
SWFO
SWFO-L1 - Launches 2025



SW NEXT

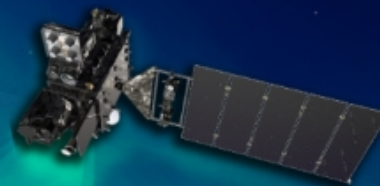


COSMIC-2
Operational Feb. 25, 2020



GOES-R SERIES

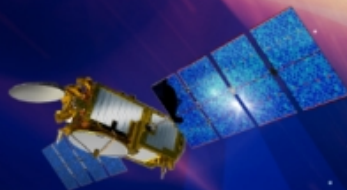
GOES-16 - Operational Dec. 18, 2017
GOES-17 - Operational Feb. 12, 2019
GOES-18 - Operational Jan. 4, 2023
GOES-19 - Operational April 7, 2025



GeoXO



JASON-3
Operational July 1, 2016



SENTINEL-6 Michael Freilich
Operational Nov. 22, 2021

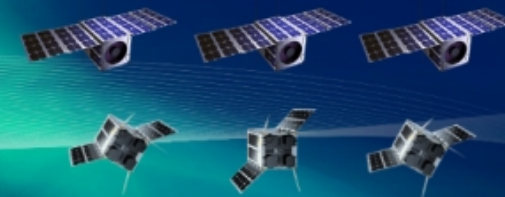


JPSS SERIES

Suomi-NPP - Operational May 1, 2014
NOAA-20 - Operational May 30, 2018
NOAA-21 - Operational Nov. 8, 2023
JPSS-3 - Launches fiscal year 2033
JPSS-4 - Launches fiscal year 2028



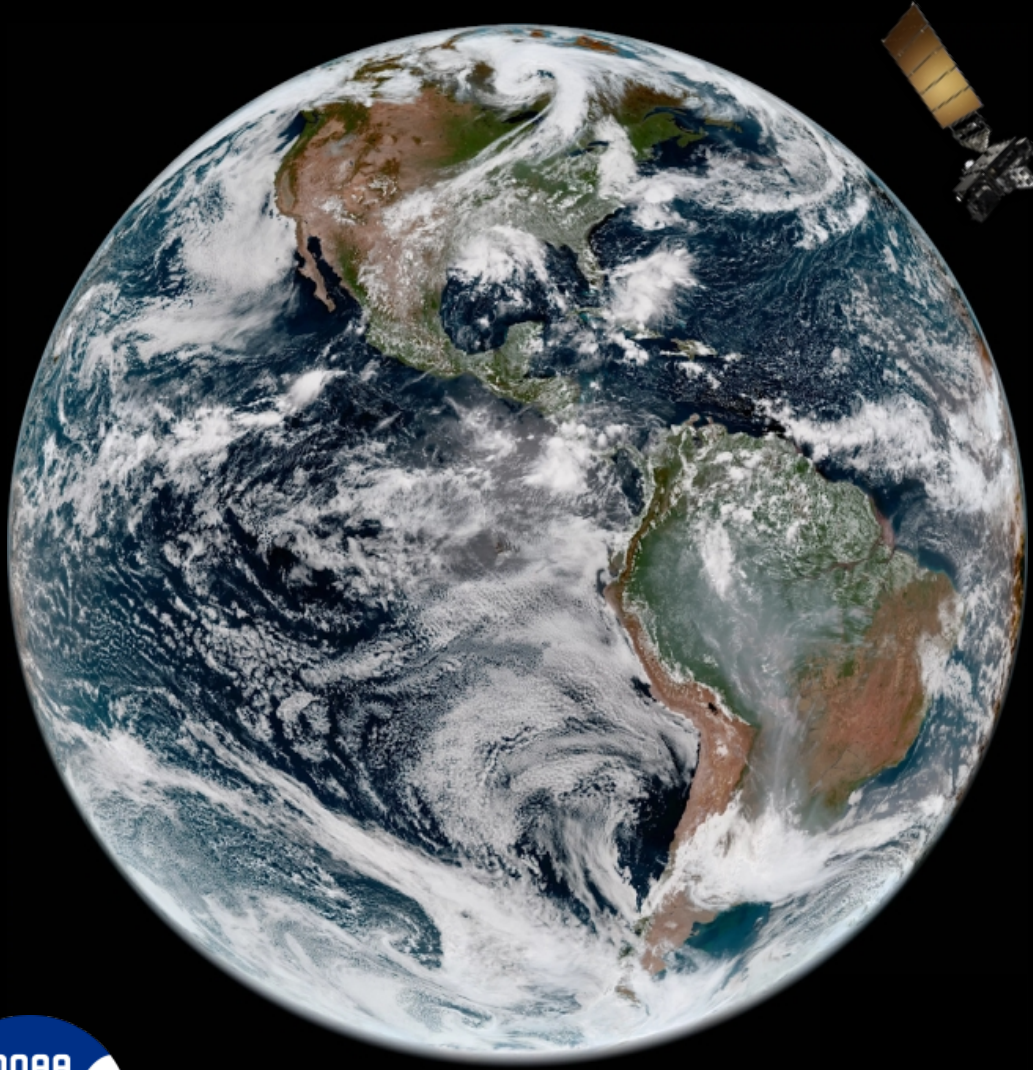
NEON



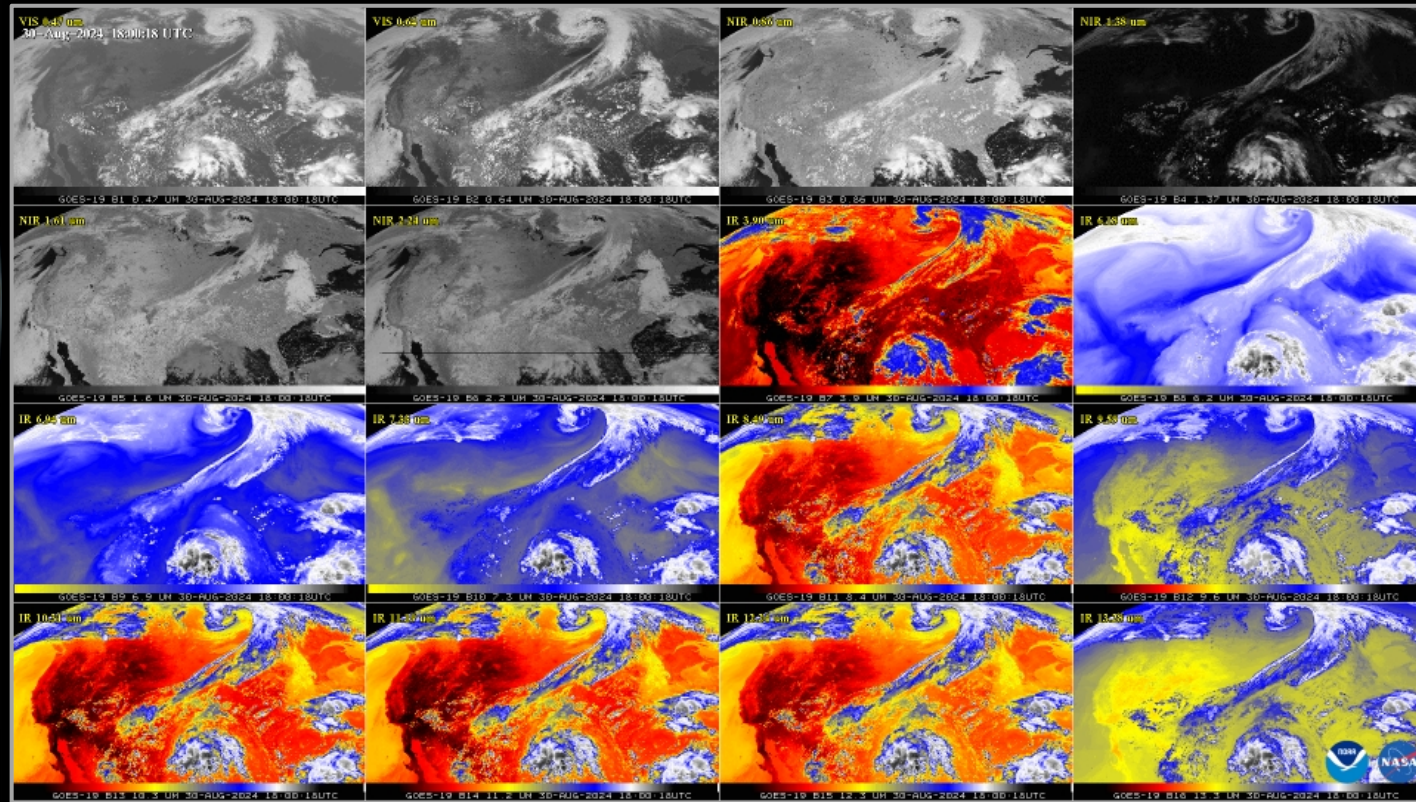
QuickSounder
Launches fiscal year 2026



First Imagery from GOES-19 - The final GOES-R Series Satellite



GOES-19 is planned to take over as NOAA's operational GOES-East satellite in April 2025



GOES-19 First Light Image
Full Disk GeoColor image from Aug. 30, 2024.

**Successful CCOR-1 on GOES-19 launch in 2024*

GeoXO Will Underpin Broad Swath of NOAA's Weather Mission

Volcanoes

GXI detects eruptions and tracks ash plumes

Wildfires

GXI detects hotspot formation and evolution and helps track smoke plumes

LMX detects continuing-current lightning strikes

Monitors pyrocumulonimbus clouds and fire-generated lightning

Aviation

GXI detects cloud and vapor patterns of turbulence and other risks

LMX detects lightning threat

GXS detects conditions where icing is likely to occur

Drought

GXS and **GXI** improve drought analysis and forecasting; benefits agricultural planning and management

Tornadoes, Thunderstorms and Floods

GXS senses pre-storm environment; predicts storms before development

GXI detects cloud patterns before and during storm formation; monitors flooding

LMX detects lightning; improves severe storm warnings

Blizzards and Lake Effect Snow

GXS improves forecasts

GXI improves storm monitoring

Nor'easters and Open Ocean Storms

GXS improves forecasts

GXI improves storm monitoring and tracking

Hurricanes

GXI and **LMX** provide minute-by-minute monitoring

GXS improves hurricane track

GeoXO
Weather
Sensors

GXI = Imager **LMX** = Lightning Mapper **GXS** = IR Sounder



LOW EARTH ORBIT OBSERVATIONS

MULTIPURPOSE IMAGERY

- Hurricane Location and Track
- Fires
- Air Quality
- Droughts and Floods
- Cloud Cover
- Land and Sea Ice
- Snow Cover
- Land-Cover Changes
- Harmful Algal Blooms
- Wind-Speed in High Latitudes
- Night Time Imagery
- Water Quality
- Fish Stock Assessments
- Oil Spills

UV MEASUREMENTS

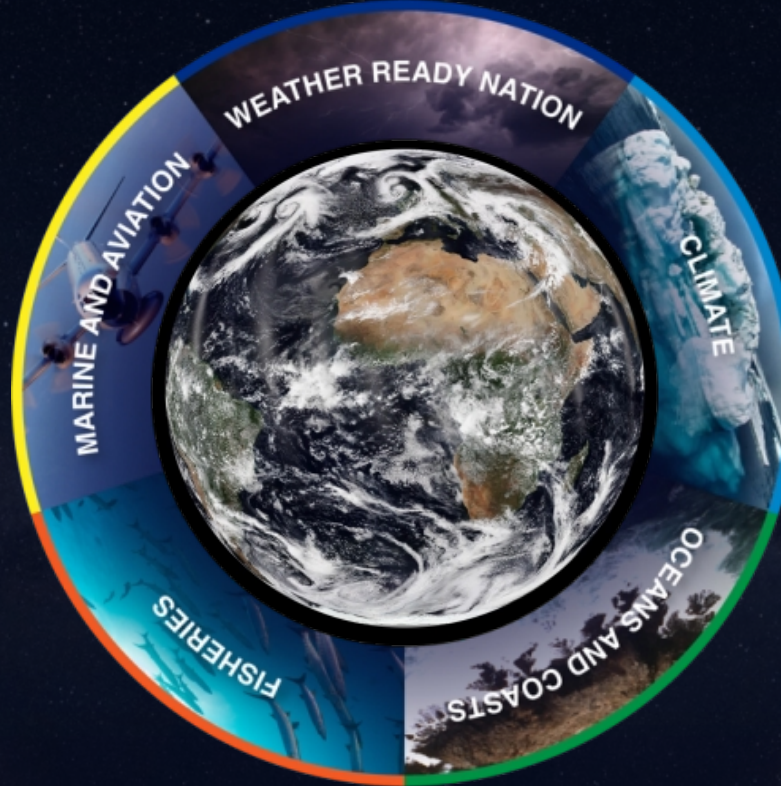
- Ozone Hole Monitoring
- Greenhouse Gasses
- Air Quality

SOUNDINGS

- Numerical Weather Prediction
- Precipitation
- Routine Weather
- Tropical Cyclone Intensity and Track Forecasts
- Aviation Weather
- Greenhouse Gasses
- Atmospheric Rivers

ALTIMETRY

- Sea Surface Height
- Marine Weather
- Coastal Flooding



JPSS provides foundational observations for weather forecasting through the 2030s

SAR

- Floods
- Oil Slicks
- Ocean Surface Winds
- Sea Ice

SCATTEROMETRY

- Ocean Surface Winds
- Marine Weather
- Tropical Cyclone Intensity

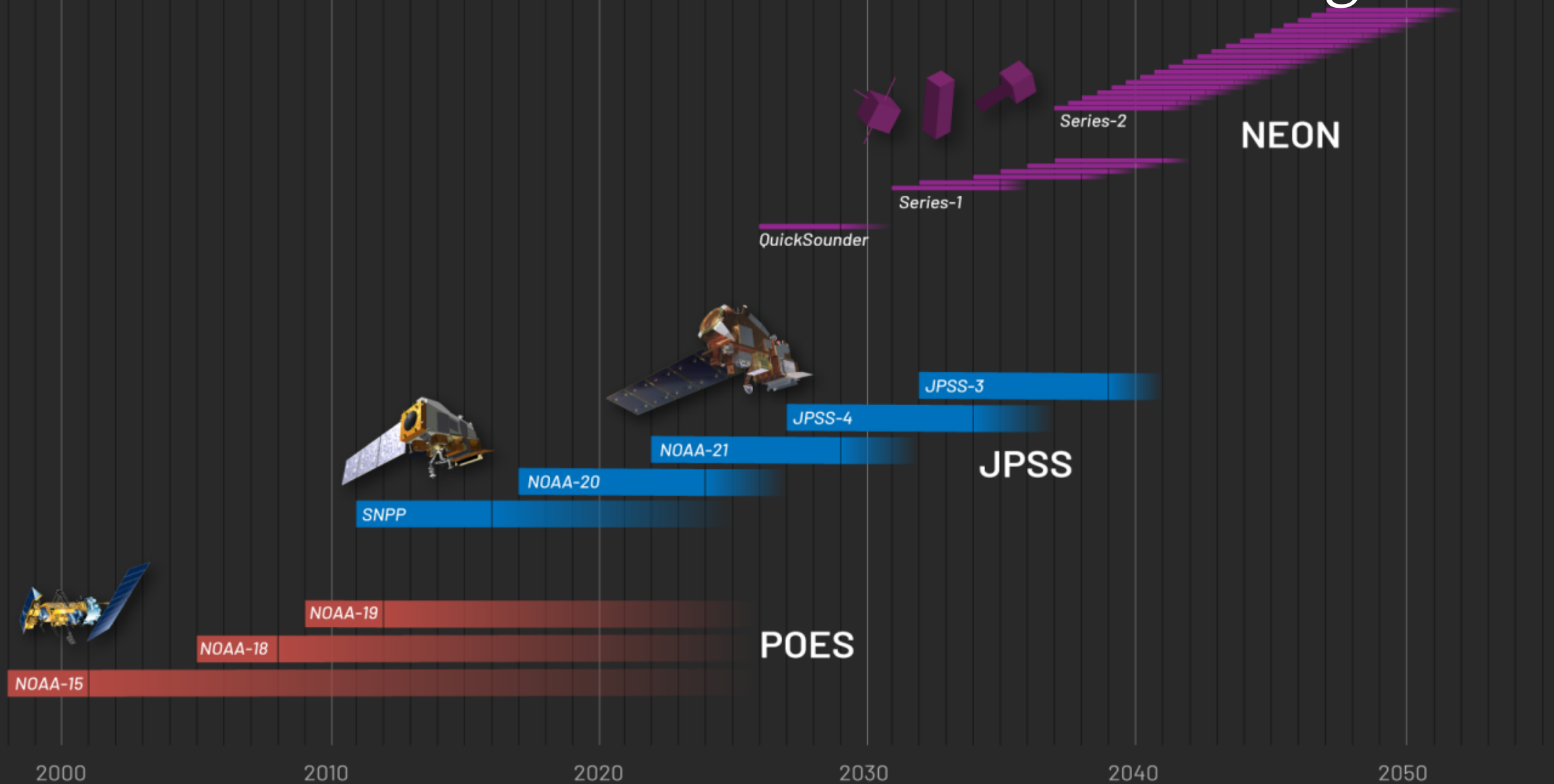
MICROWAVE IMAGERY

- Precipitation
- Land and Sea Ice
- Ocean Surface Winds
- Tropical Cyclone Location, Track and Intensity
- Marine Weather
- Soil Moisture
- Ocean Salinity

LIDAR

- Wind Speed
- Aerosols for Air Quality
- Cloud Properties for Precipitation and Climate

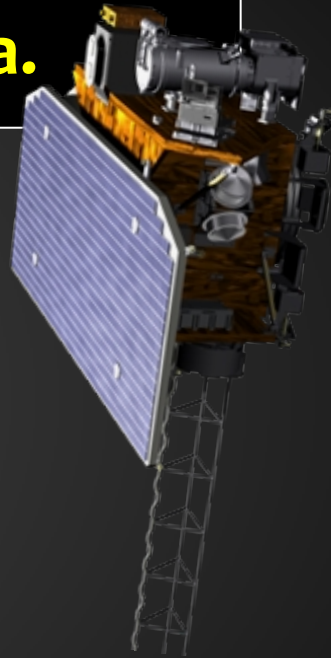
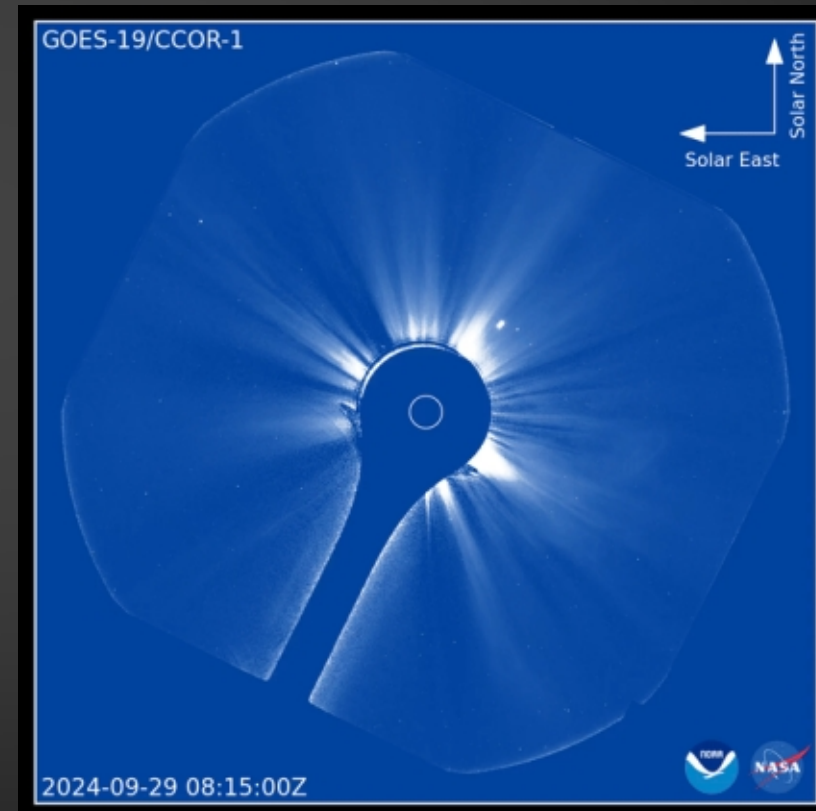
NOAA Has Three Low Earth Orbit Satellite Programs



SWO Program Overview

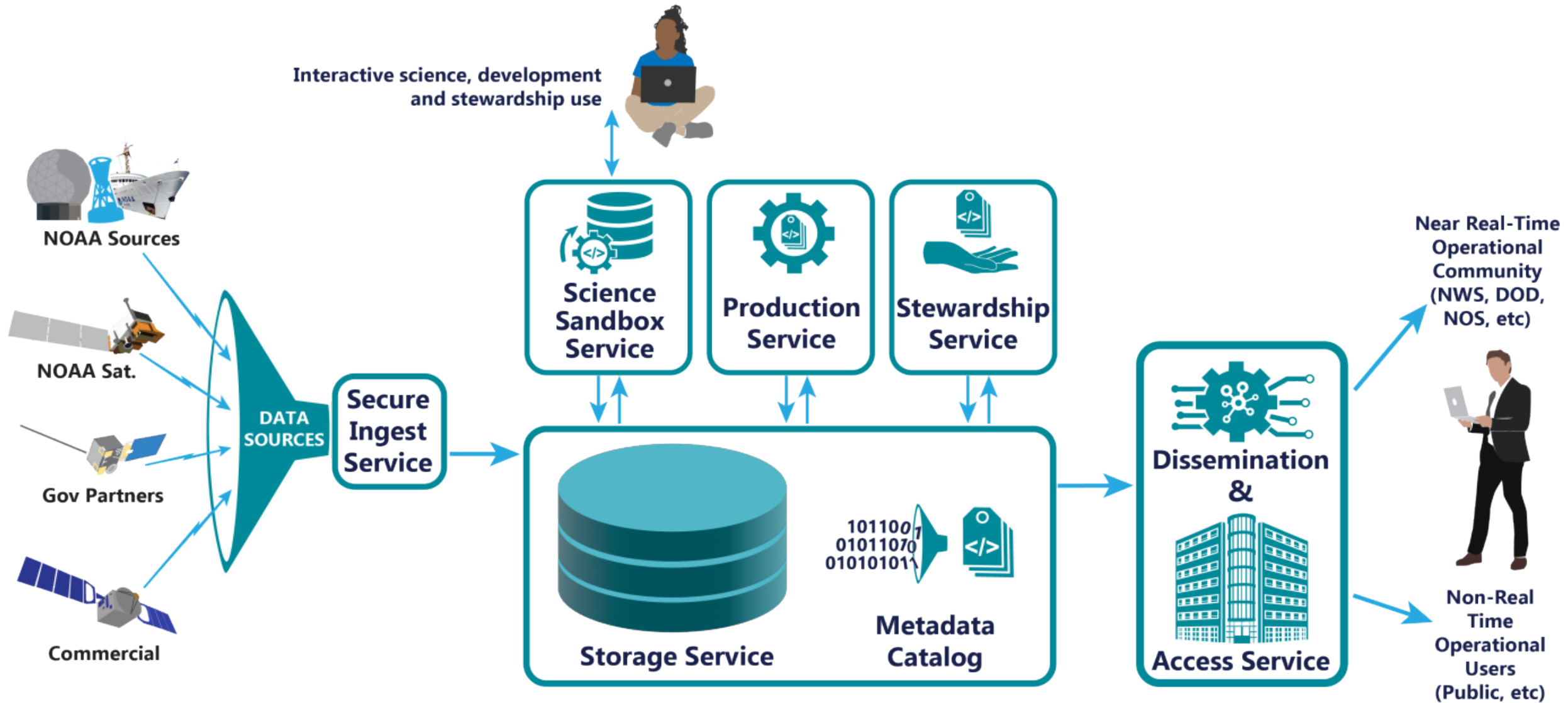
SWFO sustains NOAA's foundational set of space-based space weather observations and measurements to ensure continuity of critical data.

- Successful CCOR-1 on GOES-19 launch in **2024**
- SWFO-L1 Observatory (Bus + CCOR-2, MAG, SWiPS, STIS Instruments) launch in October **2025**
- ESA-NOAA-NASA L5 mission in formulation for launch ~**2031**
- SW Next Program with two L-1 satellites, SOL-A and SOL-B, with launches planned for **2029** and **2033**
- SW Next GEO in preformulation



SWFO-L1 Spacecraft
Image Credit: BAE Systems

NESDIS Common Cloud Framework (NCCF)



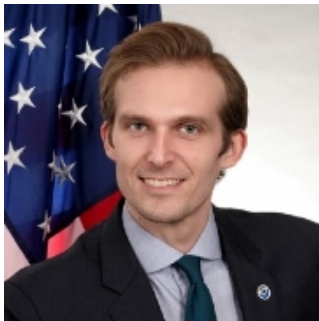
NOAA Leadership – Current and Upcoming

***Assistant Secretary of
Commerce for
Environmental Observation
and Prediction***

**ACTING:
Dr. Stephen Volz**



**NOMINATED:
Taylor Jordan**

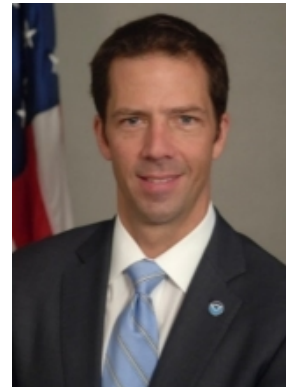


***Under Secretary of
Commerce for Oceans and
Atmosphere and NOAA
Administrator***

**PERFORMING
DUTIES OF:
Laura Grimm**



**NOMINATED:
Dr. Neil Jacobs**



***Deputy Assistant
Secretary for
International and Space
Affairs***

Juan Caro



Thank You



WWW.NESDIS.NOAA.GOV