

NASA UPDATES SINCE CGMS-53 AND REPORT ON MEDIUM TO LONG-TERM FUTURE PLANS ON EARTH OBSERVATIONS

Presented to CGMS-54 Plenary Session
Presenter: Karen St. Germain, NASA Headquarters

Report prepared based on inputs from
colleagues at NASA HQ, NASA Centers,
and broader research community

Agenda

- **Mission Highlights:**

- Recent Launches
- Missions in Work

- **Other Highlights:**

- B777: An Asset for Earth System Understanding & Satellite Cal/Val
- Satellite Data Acquisition: Commercial Sector Engagement



Recent Launches

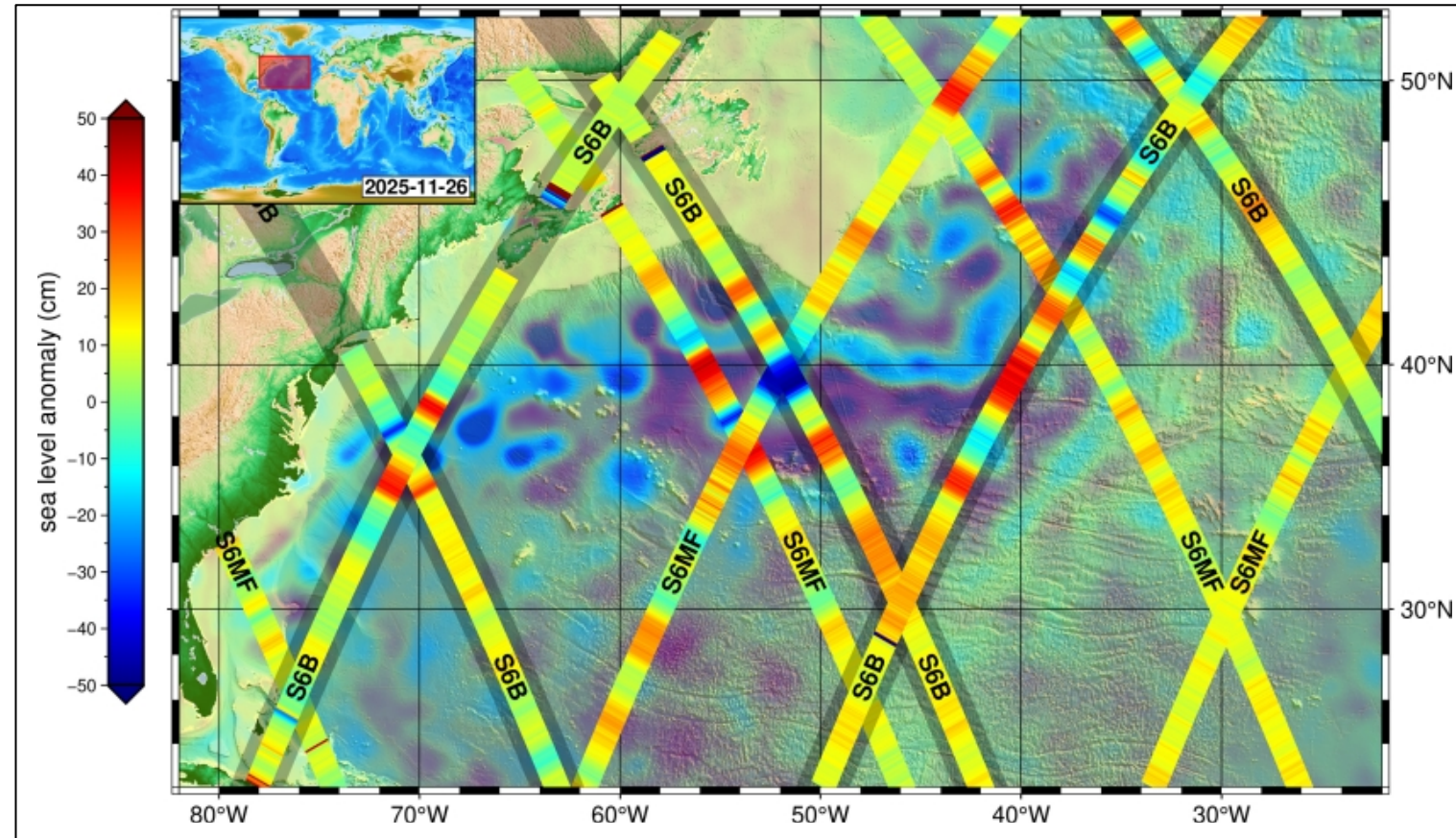
Sentinel-6B Mission Updates

Current Status:

Officially transitioned into nominal operations in April 2026, and advancing toward routine data collection.

Overview:

- Launched from Vandenberg Space Force Base on November 16, 2025, Sentinel-6B is the second satellite in a series of two (following Sentinel-6A).
- Continues nearly 40 years of ocean surface topography measurements from satellites.
- Measurements form the basis for flood predictions for coastal infrastructure, real estate, energy storage sites, & other coastal assets.
- Data also supports short-term weather forecasting and seasonal prediction, as well as operational oceanography, improving forecasts of currents and wind wave conditions that are critical for navigation, search and rescue, and debris tracking.

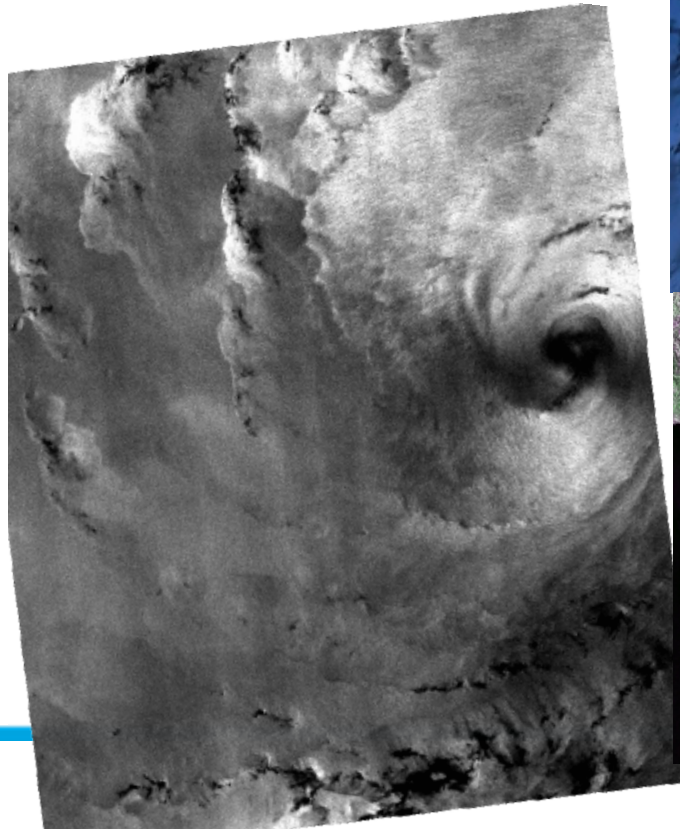


Current Status:

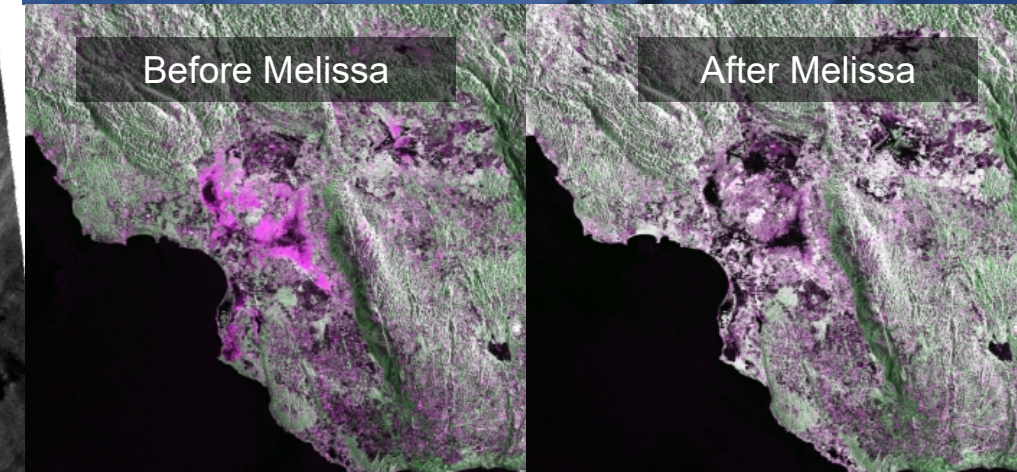
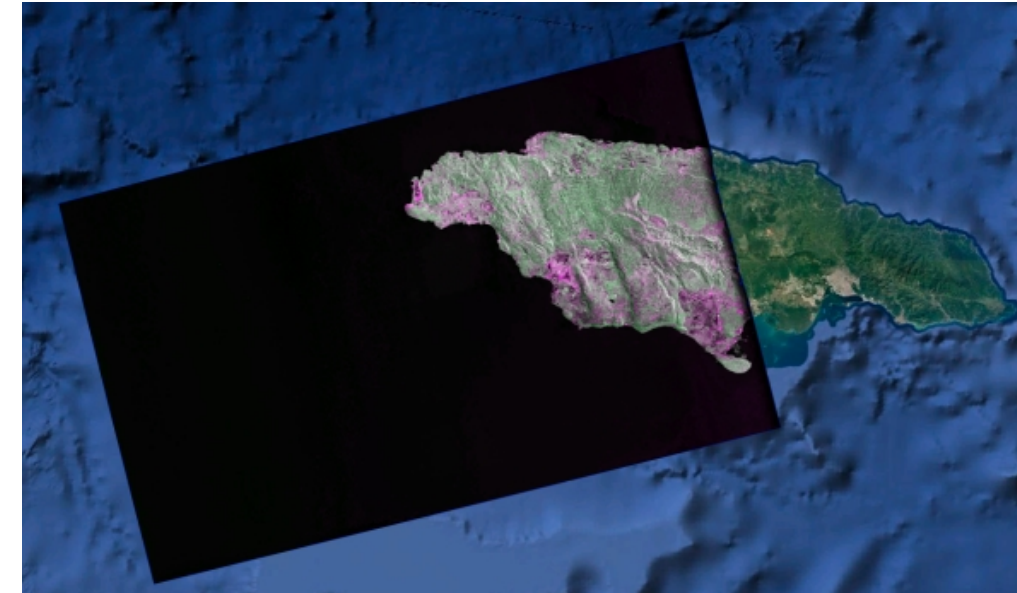
NISAR's science phase began early November 2025 after completing calibration.

Overview:

- Launched on July 30, 2025, aboard the Indian Space Research Organisation's (ISRO) GSLV-F16 rocket from the Satish Dhawan Space Centre in Sriharikota, India.
- The NASA-ISRO joint mission is equipped with an L- and S-band Synthetic Aperture Radar (SAR), observing nearly all of Earth's land and ice surfaces twice every 12 days.
- It is designed to help track disasters, monitor ecosystems and crops, study glaciers and ice sheets, and understand how Earth's surface moves and changes.



NISAR: Hurricane Melissa, Jamaica





Missions in Work

As of FY2026 Enacted Appropriations

EARTH SYSTEM OBSERVATORY

INTERCONNECTED CORE MISSIONS

SURFACE BIOLOGY AND GEOLOGY

EAGLE-VSWIR
EDGE
EAGLE-TIR

SURFACE DEFORMATION AND CHANGE

NISAR



CLOUDS, CONVECTION AND PRECIPITATION

INCUS
FCSIF
PMM
FALCON-Lidar
FALCON-Radar

AEROSOLS

FALCON-Lidar
STRIVE

MASS CHANGE

GRACE-C

*contributing, competitively-selected missions

Fleet for the Atmosphere Linking Commercial Observations with NASA

FALCON

PMM (JAXA/GSFC)

Precipitation profiles

FALCON-Lidar (GSFC/LaRC)

Atmospheric structure and composition measurements

FALCON-Radar (JPL)

Cloud profiles to improve understanding of severe weather drivers.

FALCON-Radiometry (Commercial)

RFI Released this week for contribution options

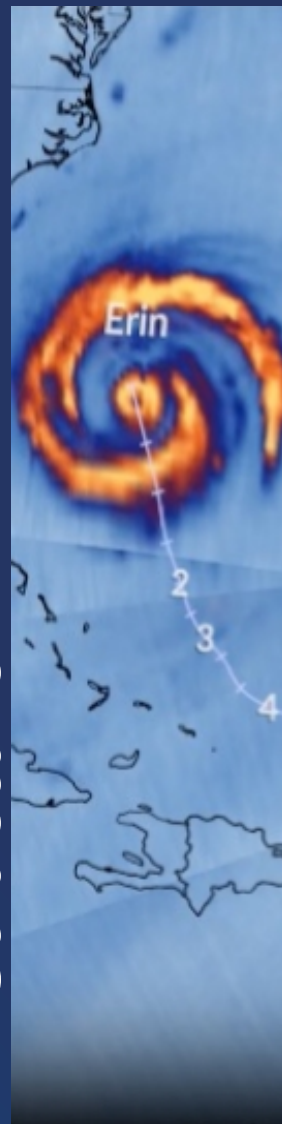
Joining the FALCON fleet

- INCUS (CSU/JPL)
- PoSIR (Vanderbilt/GSFC)
- STRIVE (UW/GSFC)

Profiles



Structure



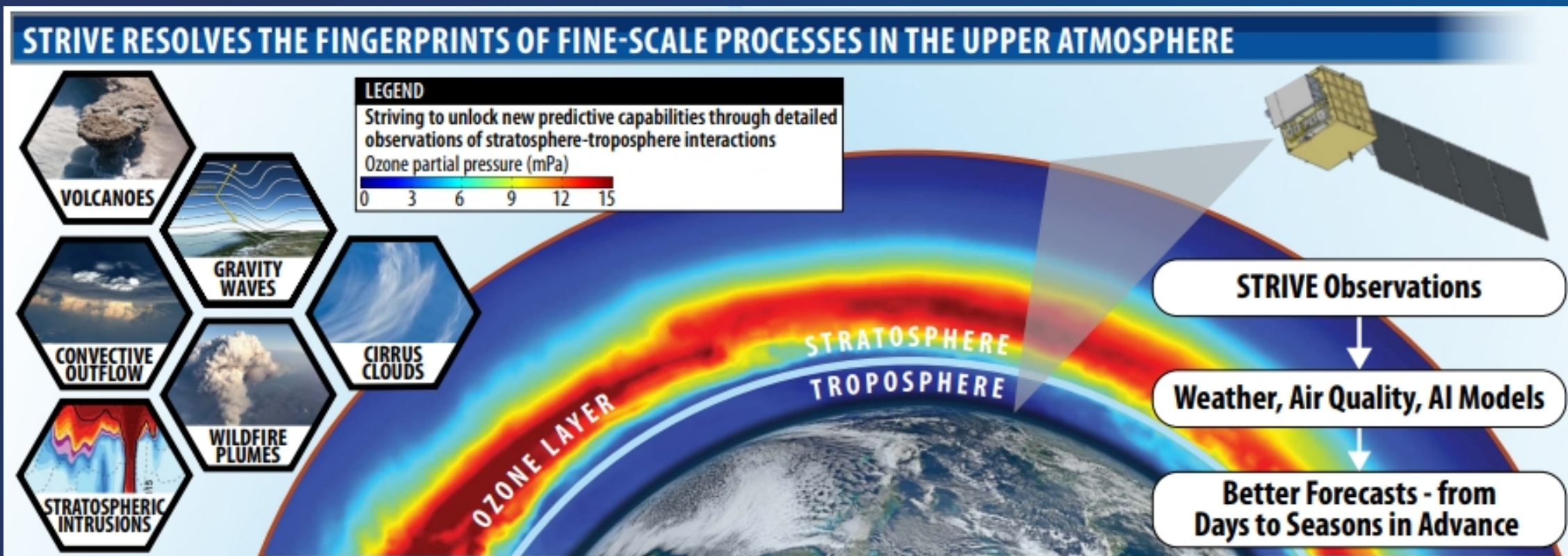
Composition





Flight Program Highlight STRIVE: Opening a New Window on Stratosphere-Troposphere Interactions

STRIVE (Stratosphere Troposphere Response using Infrared Vertically-resolved light Explorer) will deliver an unprecedented view of the atmosphere, transforming our understanding and enabling a leap in the accuracy of atmospheric predictions including weather patterns, extreme events, air quality, and the future of the ozone layer.

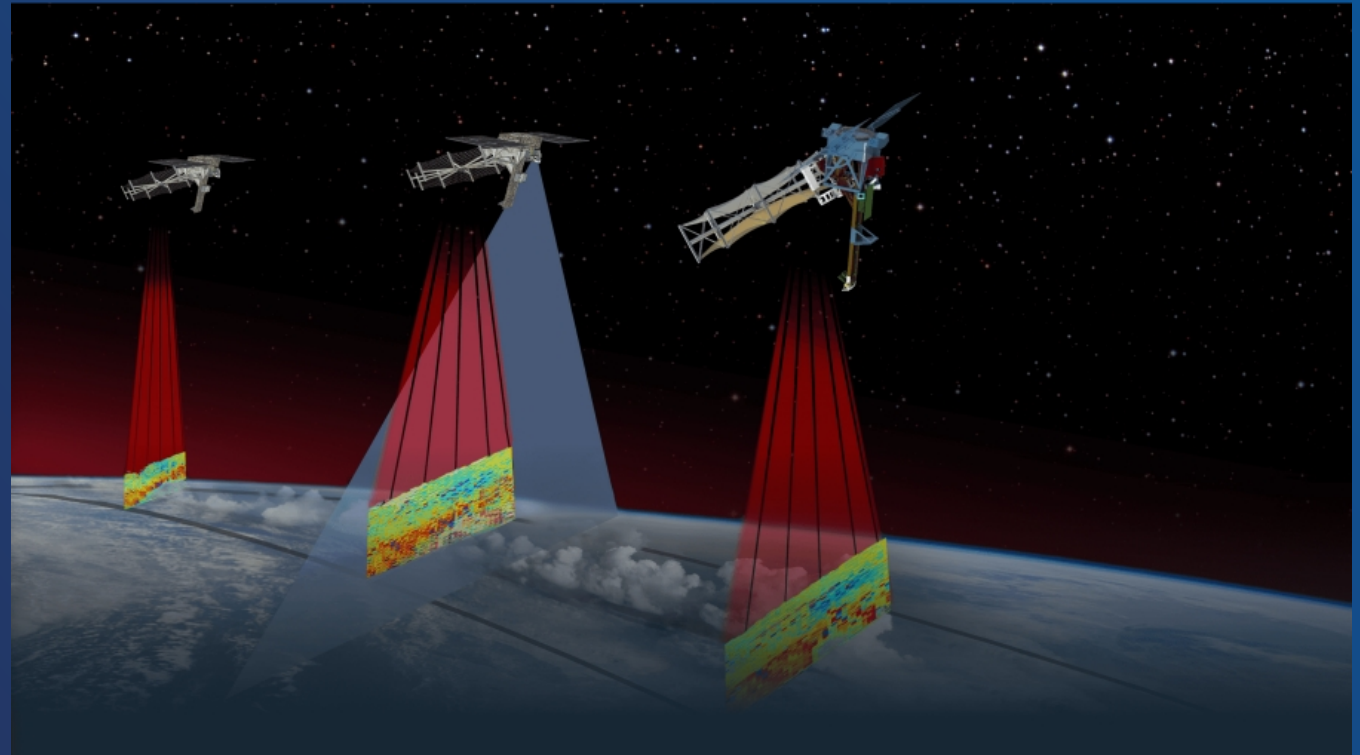




INvestigation of Convective UpdraftS INCUS

Competed Venture Class Mission
(CSU/JPL)

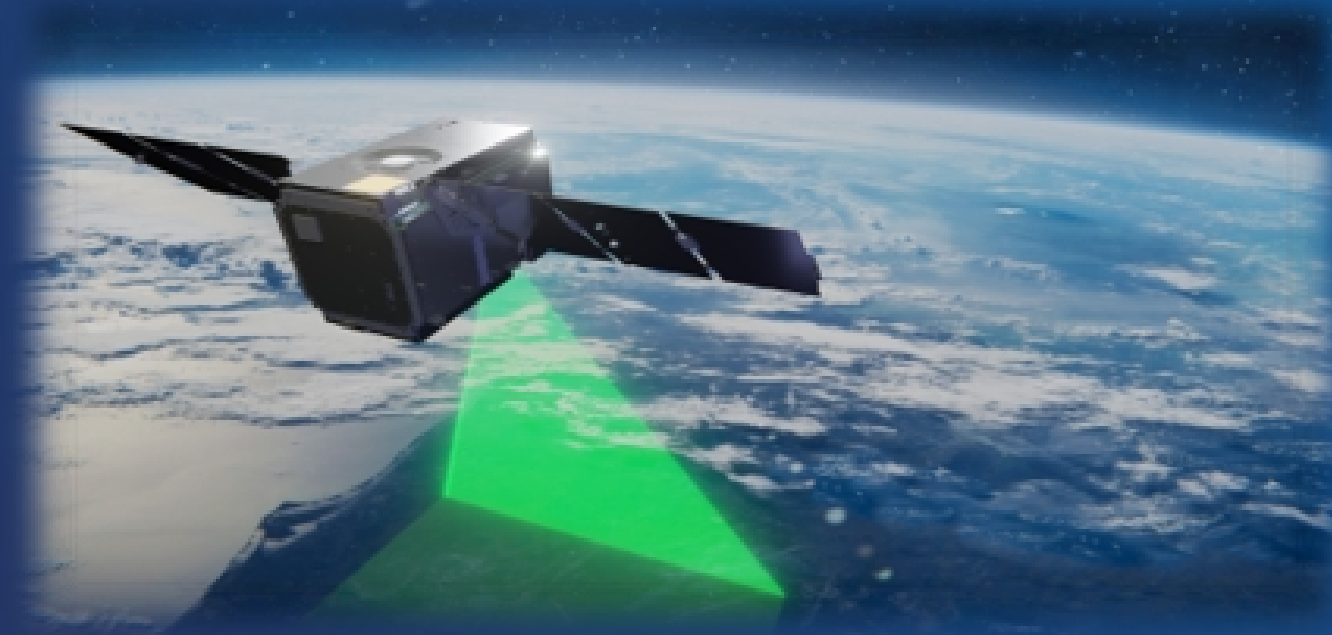
- Why convective storms, heavy precipitation and clouds occur exactly when and where they do
- First ever measurements of how much water and air is lifted (convective mass flux) into the atmosphere to understand and improve prediction of severe weather



Polarized Submillimeter Ice-cloud Radiometer PoISIR

Competed Venture Class Mission (Vanderbilt/GSFC)

- Diurnal variability of tropical and sub-tropical ice clouds to reduce a fundamental uncertainty in Earth system understanding of how and why ice clouds change throughout the day.
- Deep convection re-distributes energy around the Earth, and its evolution in a changing climate is an incredibly complicated process.
- Observations from PoISIR's two CubeSats will increase understanding of the diurnal cycle of deep convection.





Other Highlights

Boeing 777: A new Asset to Support Understanding Earth System and Satellite Cal/Val

Overview:

- The plane was been modified to include 2 large and 4 small nadir portals, and 4 enlarged window viewports.
- The aircraft returned to NASA on April 22, 2026. Scheduled maintenance and final payload outfitting and installation will occur over the next few months.
- The plane will prepare for its first mission in January 2027 – the **North American Upstream Feature-Resolving and Tropopause Uncertainty Reconnaissance Experiment (NURTURE)**.

NURTURE will be the most comprehensive and advanced airborne weather observing campaign to date, leveraging NASA innovations to observe the temperature, moisture, winds, clouds, precipitation, and composition of the atmosphere.

| Aircraft | Payload Weight (pounds) | Fuel load (percent) | Range (miles) | Endurance (hours) |
|-------------|-------------------------|---------------------|---------------|-------------------|
| B777-200 ER | 50,000 | 55 | 5,400 | 11.7 |
| | 50,000 | 100 | 9,000 | 19 |
| | 100,000 | 85 | 7,400 | 15.6 |



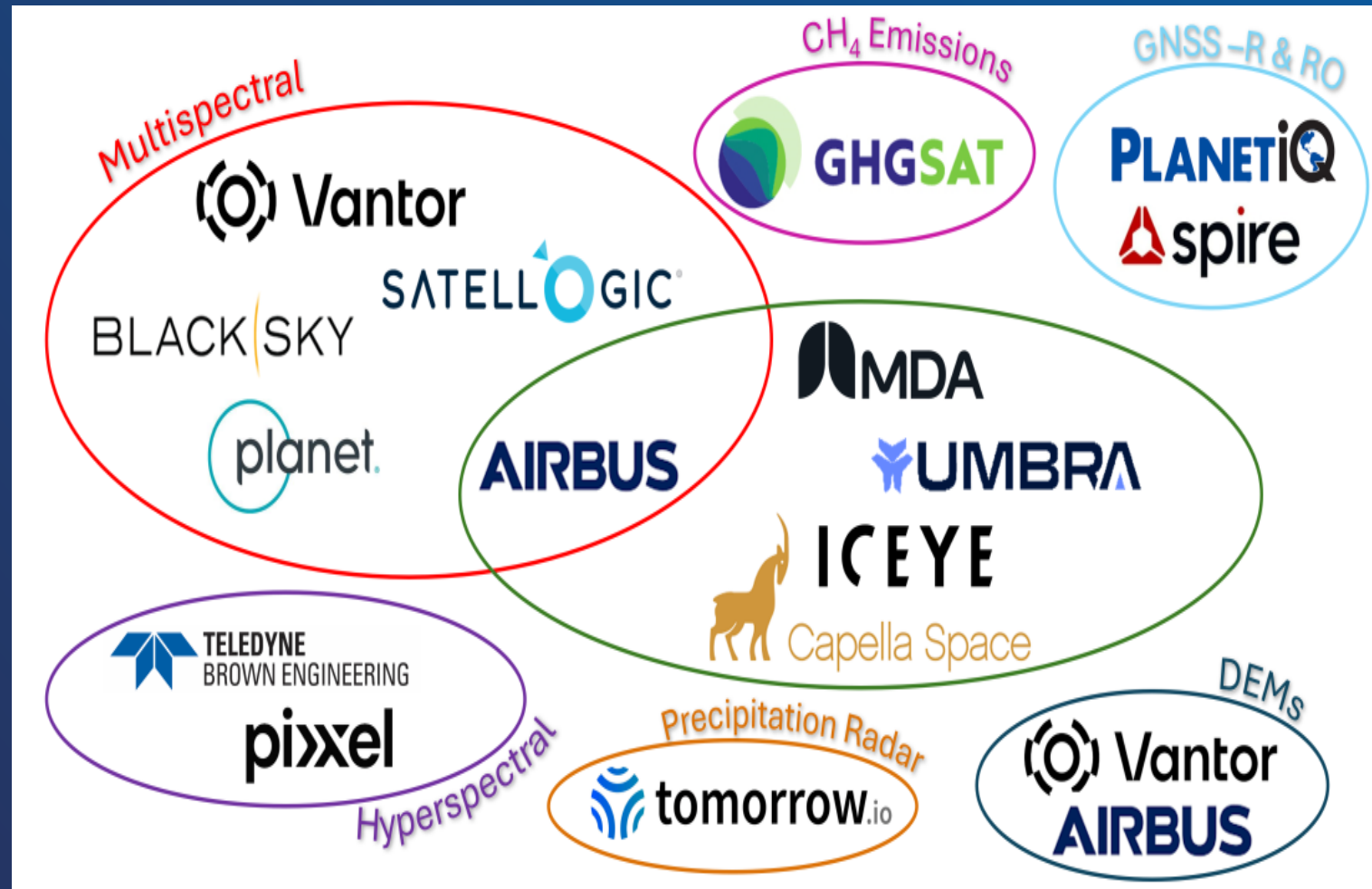
Engaging the Space Data Commercial Sector

Why Does NASA Buy Commercial Data?

NASA's missions provide the trusted, open foundation for understanding the Earth System.

Commercial satellite data extends that by adding:

- Greater resolution
- Higher-frequency revisits
- Taskable observations
- Flexible, real-time, niche data services
- Unique and innovative instruments
- Cost-effective options to meet specific user needs



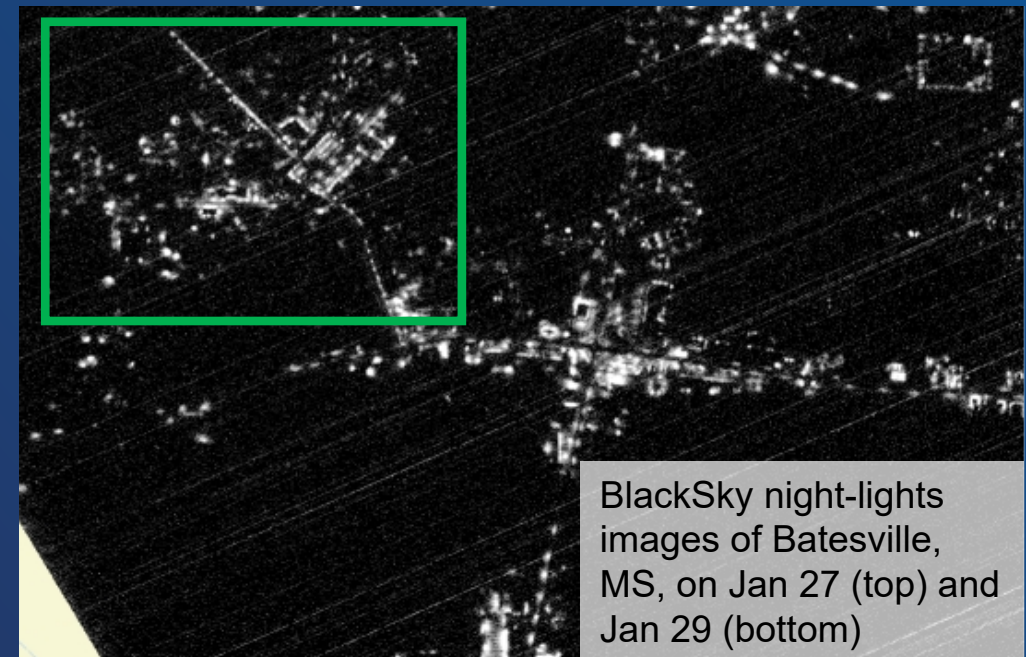
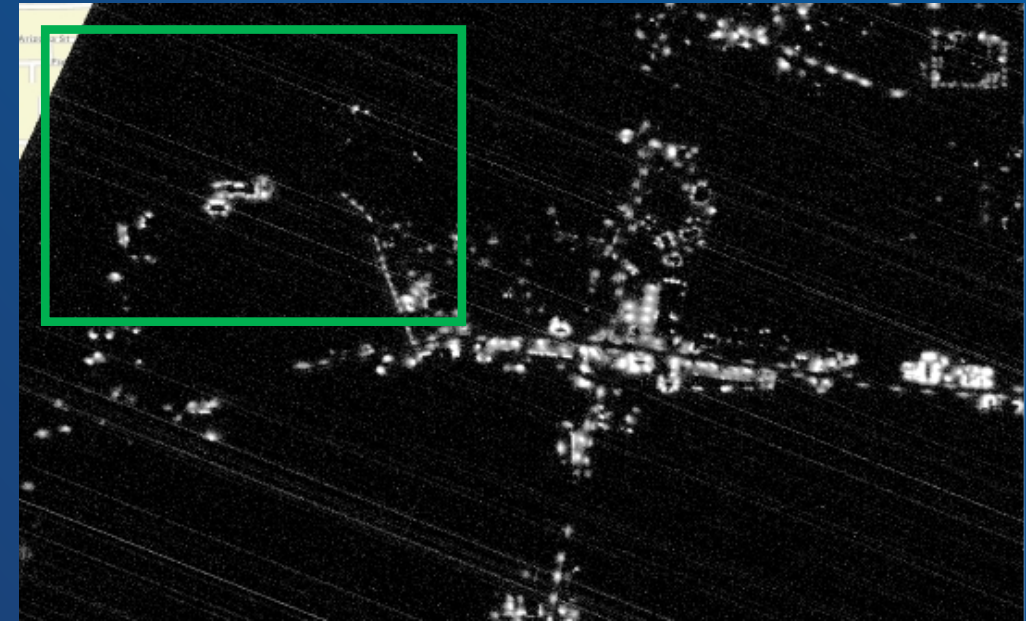
But there are many more vendors out there.

Attendees at Commercial Satellite Data Acquisition (CSDA) Program Workshop: March 3-4, 2026



During Disaster Response

Even as snow fell, NASA's Disaster Response Coordination System (DRCS) activated, supporting requests from four States, FEMA, and CMS, using CSDA data to inform critical response needs.





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