5th plenary meeting of the Subcommittee on Geodesy

NASA Update

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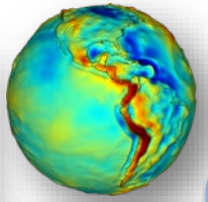
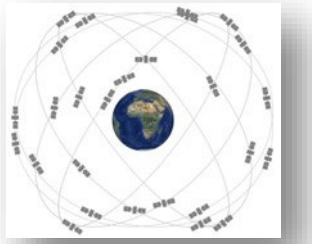
Geodesy and Society – an Economic Driver


Volcanoes


Water and Ice

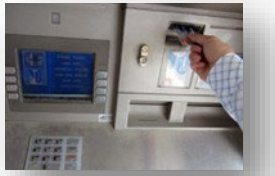

Gravity


Spacecraft Navigation


Disaster Cleanup


Earthquakes

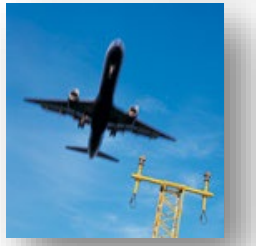
Public Safety


Financial Transactions

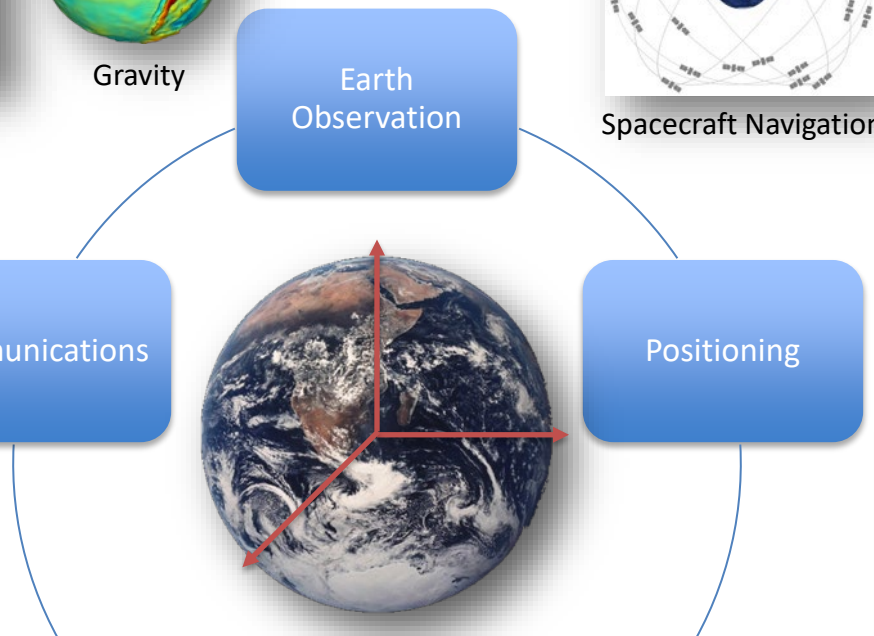

Utilities


Surveying


Precision Agriculture


Aviation

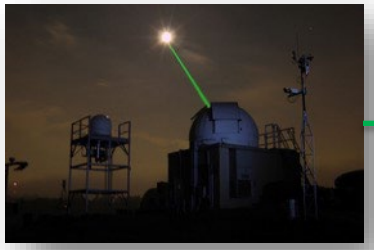

Transportation



Geodesy Support for Positioning, Navigation, and Timing

Very Long Baseline Interferometry (VLBI)

UT1-UTC, Polar Motion
Celestial Pole Offsets



Satellite Laser Ranging (SLR)

Polar Motion

Earth Orientation Combination Center

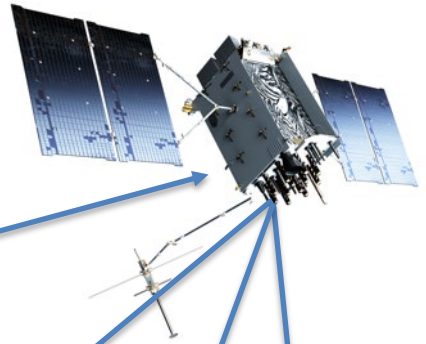
Earth Orientation Parameters

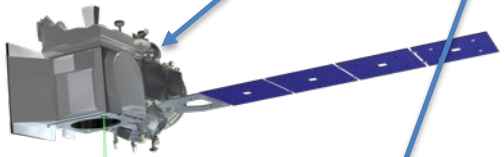
GNSS Spacecraft Operator

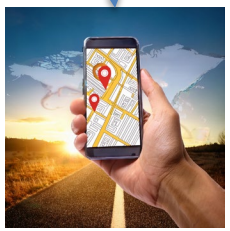
Global Navigation Satellite System (GNSS)

d/dt(UT1-UTC)
Polar Motion

Navigation Satellite (GPS, Galileo,…)

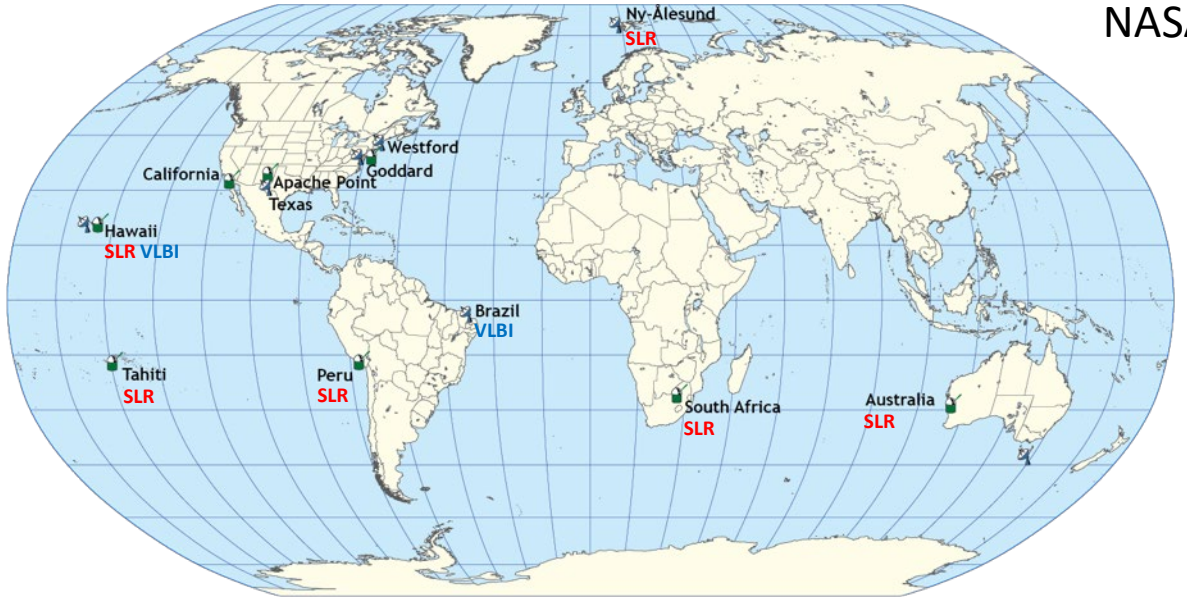




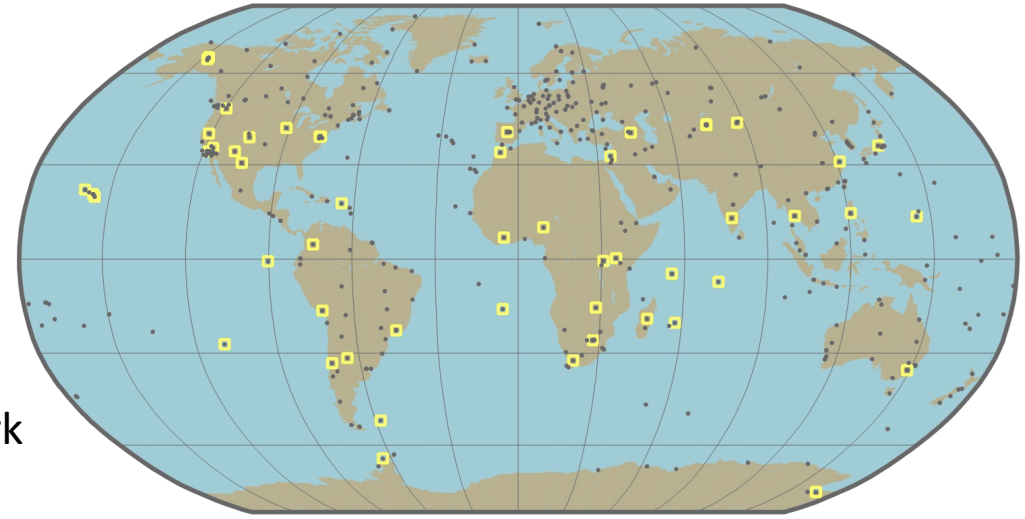


NASA Space Geodesy Program

NASA Space Geodesy Network



NASA Global GNSS Network



Sustaining the Network

Svalbard SLR Station Deployment

Completing Integration and Test of NASA's Space Geodesy Satellite Laser Ranging Ny-Ålesund system at NASA Goddard with installation and operations planned for next year.

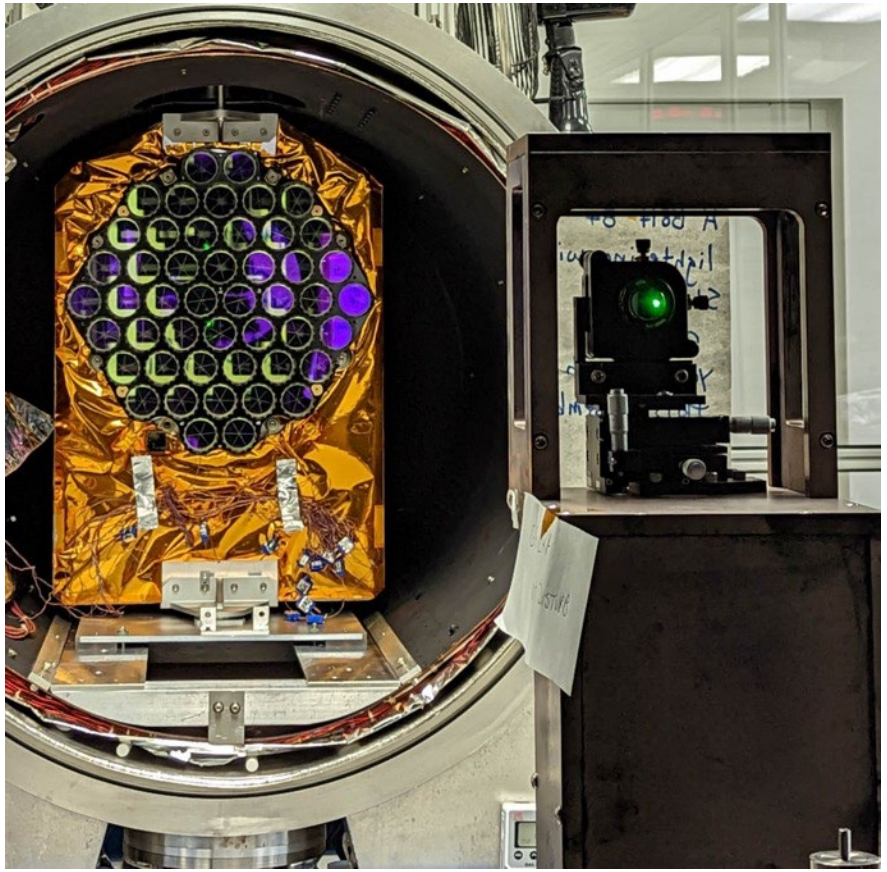
NASA VGOS Station Brazil Deployment

Build of new antenna on target to begin operations this year!

Laser Ranging to GPS Coming Soon

SLR to GPS will contribute significantly towards improving the accuracy and stability of the International and WGS84 Terrestrial Reference Frames

First two retroreflectors integrated on GPS III vehicles 9 and 10 and available for launch in 2026.

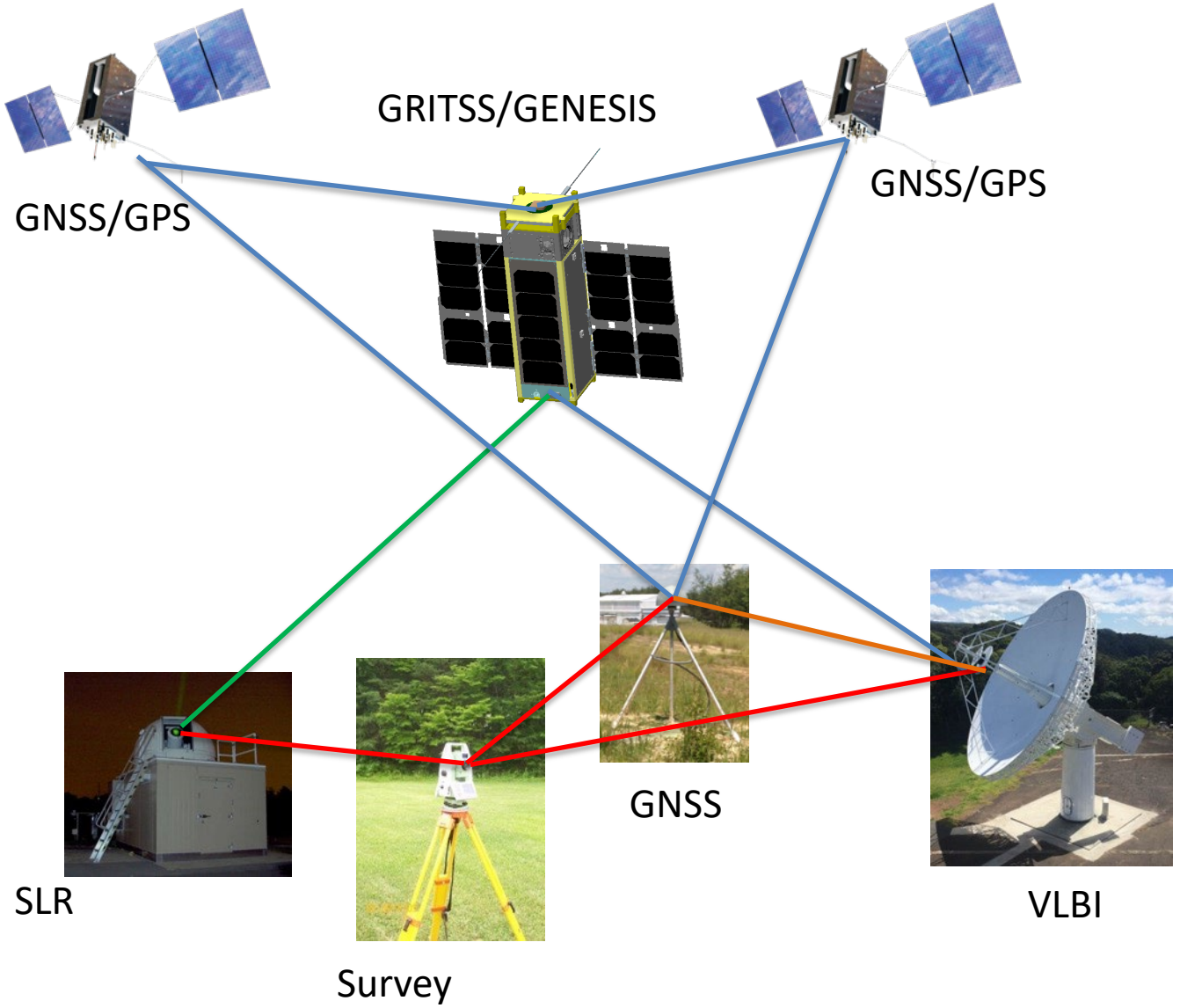


Fight unit under optical testing at GSFC

Geodetic Colocation In Space

Observations of a common space-based reference has the potential for reducing the uncertainty in the local-ties to the mm level thus improving the ITRF combination

NASA GRITSS Demonstration Mission targeting launch in February 2026



Lunar Geodesy

- Realization of the lunar reference frames (Mean Earth and Principal Axis), used for lunar cartography, geolocation, positioning, and navigation, critically rely on the lunar laser ranging (LLR) measurements.
- Next-generation lunar retroreflectors deployed to new lunar sites will further extend the science, positioning, and navigation applications.
- The CLPS and Artemis retroreflectors greatly expand the geometric coverage and build upon the long legacy of LLR.