NASA Laser Safety Review Board

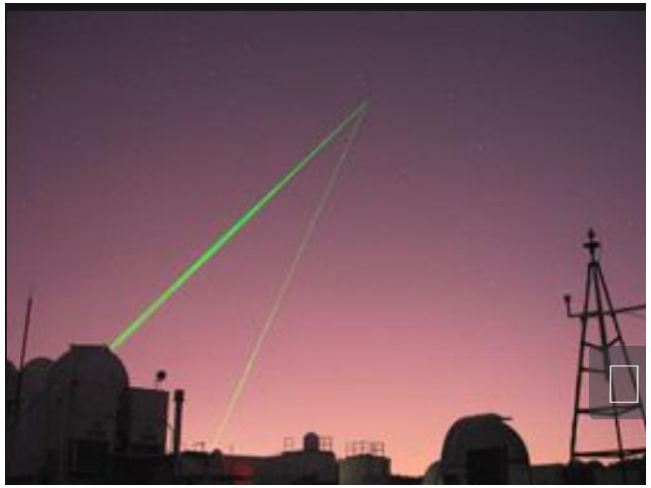
Jamie Gurney, CLSO, Health Physics Specialist, GSE, Inc.

May 19, 2026

This briefing provides an overview of the NASA Laser Safety Review Board, including its purpose, authority, membership, operational processes, and review requirements

What is the LSRB?

- NASA's Agency-level review body for outdoor laser operations (separate from each NASA Center, where each Center has their own review committee).



Credit: NASA

Purpose of the LSRB

AI-generated illustration created with Microsoft Copilot

- Protect NASA personnel, public, aircraft crew, and space-based assets
- Ensure compliance with regulations, standards, and interagency guidance
- Provide final Agency concurrence or non-concurrence for outdoor laser operations

Governing Affiliation and Support

Established by the Office of Chief Health and Medical Officer (OCHMO)

Board affiliation: Chief Health and Medical Officer Management Board (CMB) supported by Office of Safety and Mission Assurance

- Chairman – Senior Environmental Health Officer (OCHMO)
- Co-Chairman – Safety Engineer (OSMA)

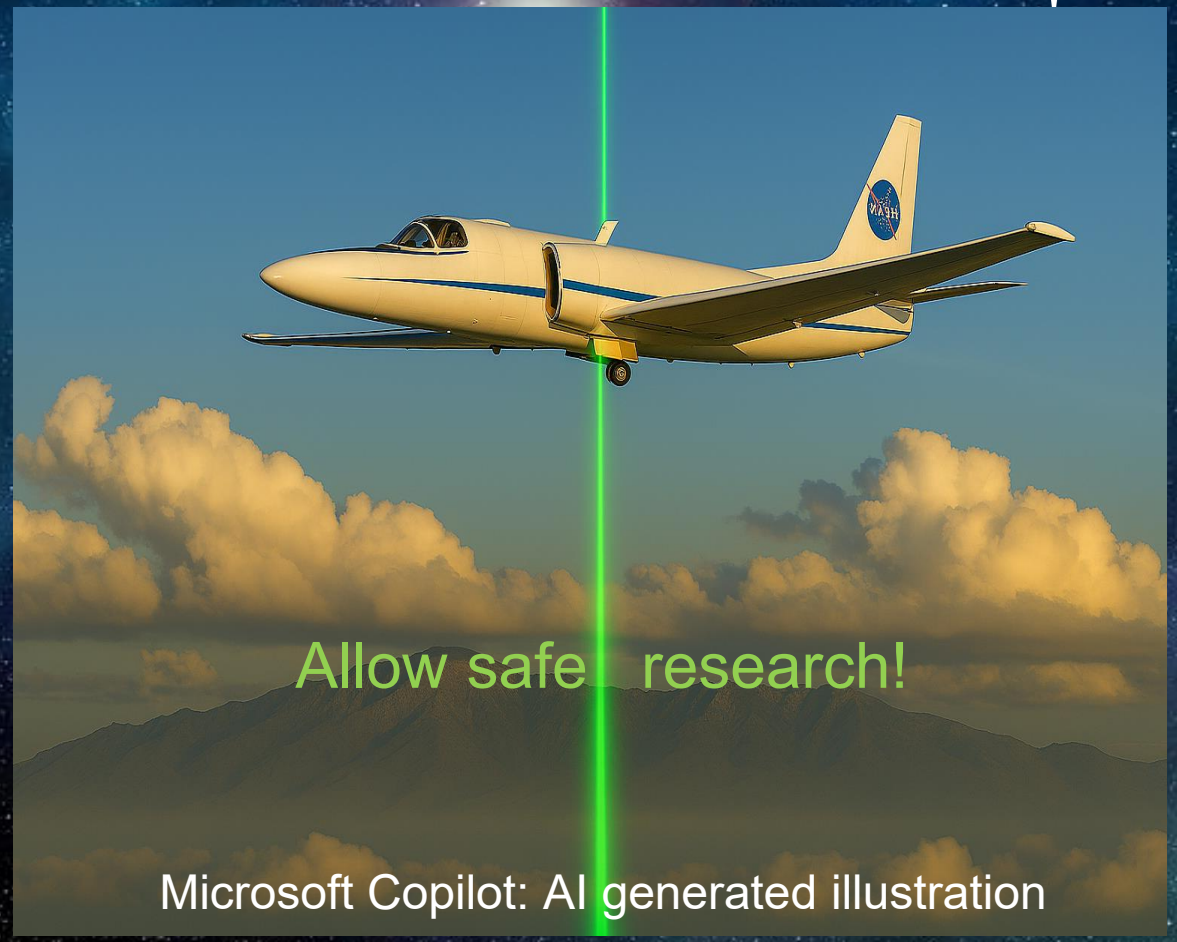
Other Agency support

- Office of Chief Engineer (OCE)
- Mission Directorates
  - Science Mission Directorate (SMD)
  - Space Technology Mission Directorate (STMD)
  - Space Operations Mission Directorate (SOMD)
- NASA Center LSO's (Kennedy Space Center, Langley Research Center, etc.)

Scope of Operations

Outdoor laser beams that intentionally propagate:

- Over the horizon (OTH) without a backstop
- Into navigable airspace
- Into space and space to space, space to ground
- In any scenario with potential negative impact to public, personnel, NASA assets, or aircrews



LSRB Meetings

- Convened as needed for mission or time critical reviews
- Quorum requires all three core members or alternatives
- Project presentations may accompany technical documentation
- Minutes documented by Secretary

Membership (Core Voting Members)

- OCHMO Representative – Chairman
- OSMA Representative- Co-Chairman
- Laser Safety Subject Matter Experts (SME) — typically a Center Laser Safety Officer

Core Functions of Members

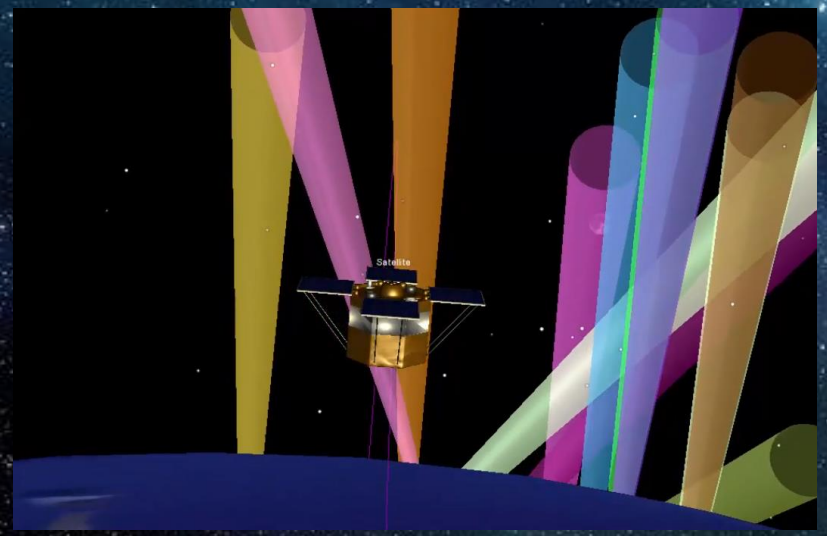
- Assess potential interference with air traffic, space assets, or public safety through **project submitted documentation**
- Review Federal Aviation Administration(FAA) Non-objections or objections and determine operational consequences
- Review Laser Clearinghouse approval and deconflictions (as applicable)
- Provide recommendations on Agency policy and standards
- Maintain LSRB bylaws and conduct confirmatory reviews
- Final review authority for NASA-sponsored outdoor laser operations

Required Project Submittals

- Project mission and description
- Center Laser Safety Plan
- FAA Form 7140-1 and FAA LoD (as applicable).
- Laser Clearinghouse authorization for DoD missions (as applicable)

Responsibilities of LSRB

- Report concerns, risks, and impacts associated with laser operations
- Concur or non-Concur with the project



When LSRB Review Is Not Required

- Projects predating NASA's Agency LSRB with valid FAA/DoD approvals
- No substantive deviations from previously concurred systems
- Effective beam termination (capture/containment)
- NOHD and visual interference distances short enough to avoid hazards
- Downward beams entirely within controlled airspace.
- Ops below FL600 that don't require FAA Form 7140-1

Concurrence Decision

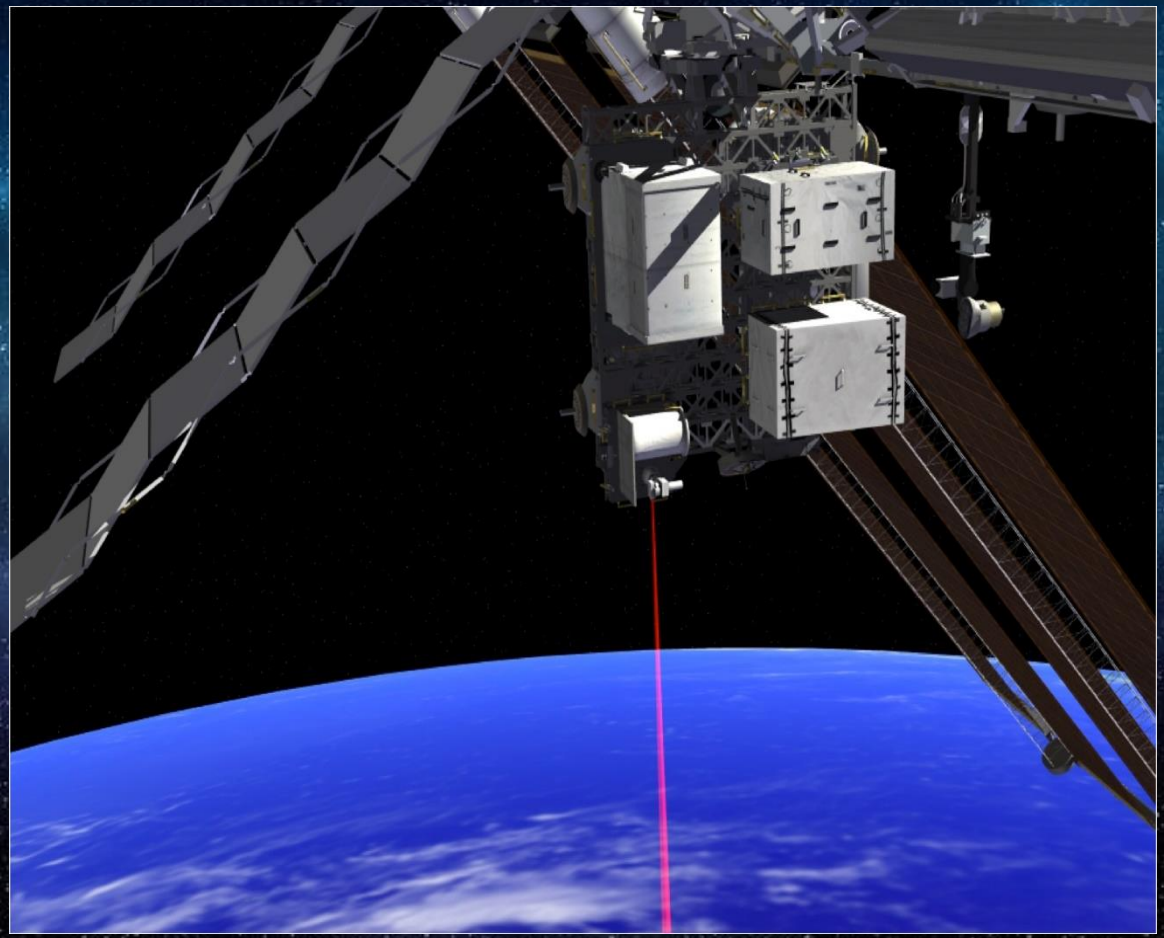
- Subject matter experts and Executive Secretary notify LSRB when the package is ready
- Majority vote of core members determines concurrence. Board makes recommendations for OCHMO and OSMA concurrence with the project
- LSRB Executive Secretary drafts Letter of Concurrence; Chair signs.
- Distribution of letter and an executive summary to Centers, Mission Directorates, and all Board participants

Non-Concurrence?

- FAA or DoD objections routed to OCHMO for LSRB evaluation
- High-risk or insufficiently mitigated proposals trigger notifications to Center leadership, OSMA, OCHMO, Office of General Counsel (OGC), and Mission Directorates

Why Another Board?

Artist rendition shows OPALS operating from International Space Station:
Full image and caption Credit: NASA

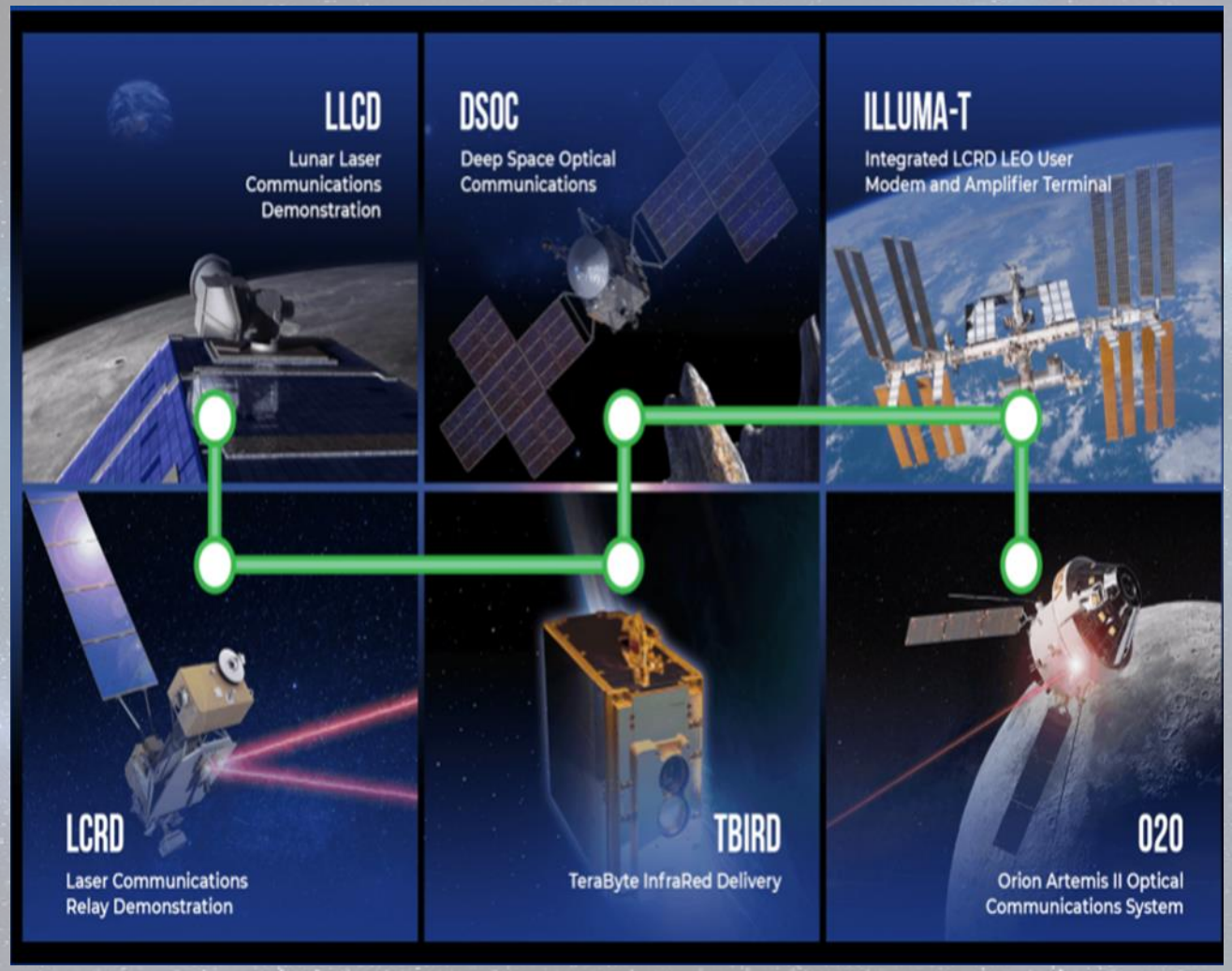


- Visibility to NASA Headquarters
- Risk Evaluation of Mission/Project at a higher level

Lunar Laser Communications Demonstration

- High bandwidth, lunar orbit to Earth optical link
- Downlink: 40-622 Mbps; Uplink: 10-20 Mbps
- Ground stations: White Sands, NM; NASA JPL's Table Mountain, CA; European Space Agency Tenerife, Spain (Canary Islands)
- Flight on LADEE spacecraft: October 2013 – April 2014

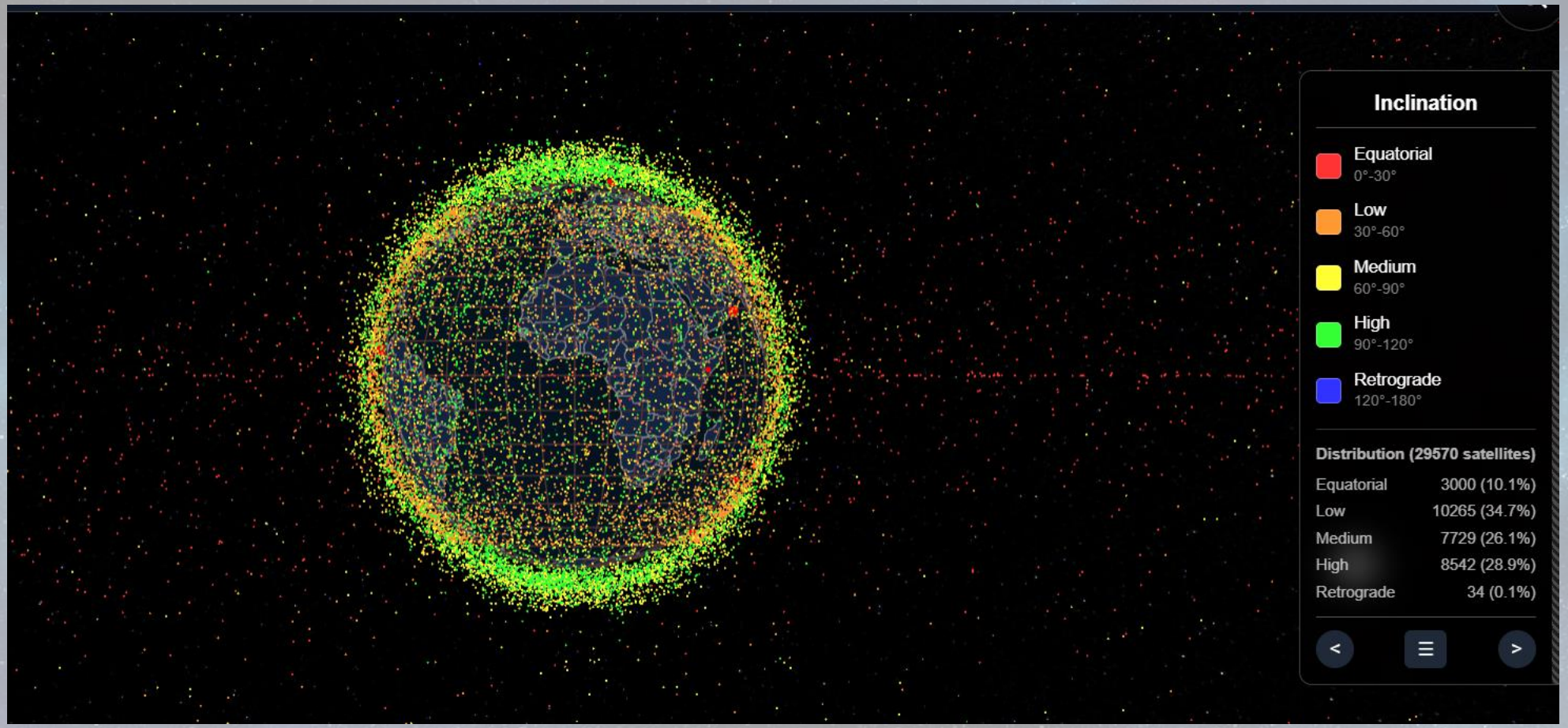
LLCD to Orion Artemis II Optical Communications System (O2O)



Laser beams shown here as visible, but most are not visible to the human eye

Credits: NASA

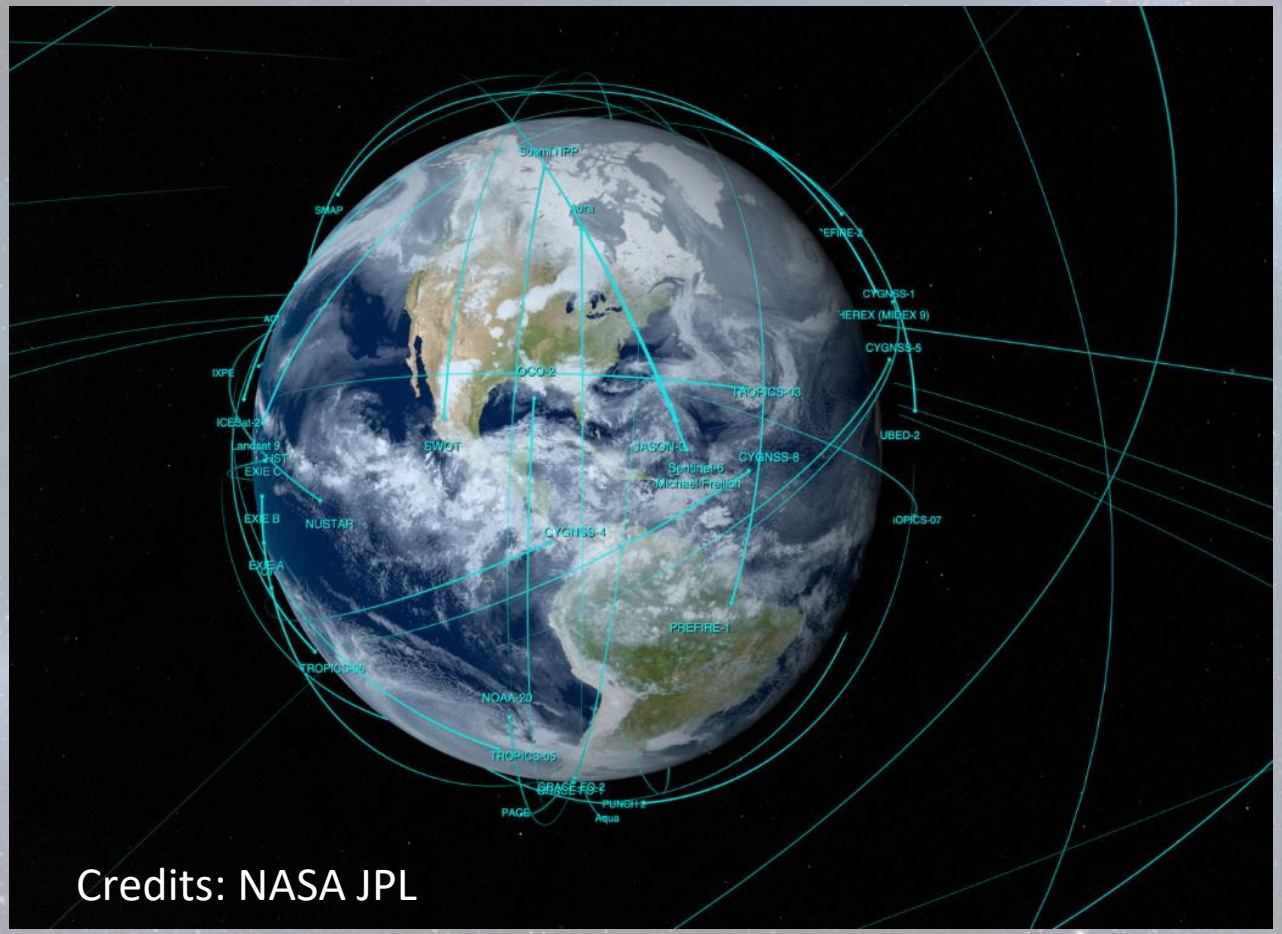
Is it crowded in Space?



Credit : Image from Satelllitemap.space

NASA’s Eyes on Space

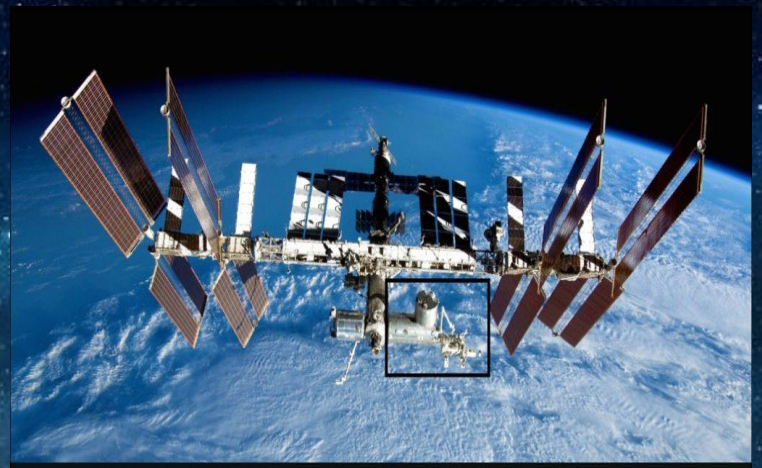
Image of NASA satellites

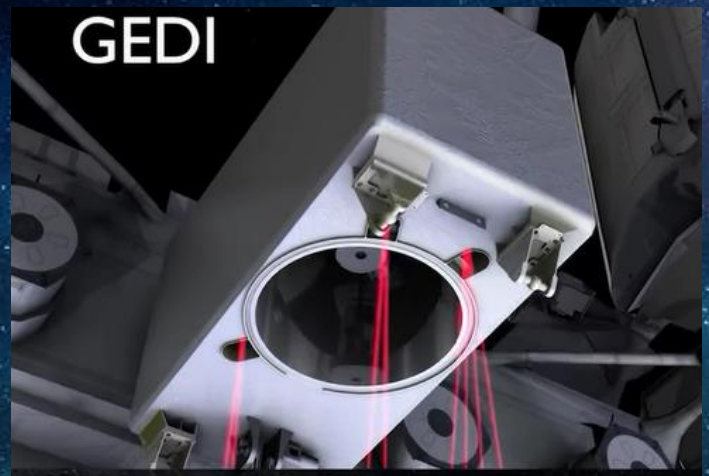


Credits: NASA JPL

NASA Jet Propulsion Laboratory. NASA Eyes on the Earth. Visualization platform. Image retrieved from NASA/JPL-Caltech.

GEDI on the ISS / ICE Sat-2 in orbit





3D lidar mapping of Earth's forests

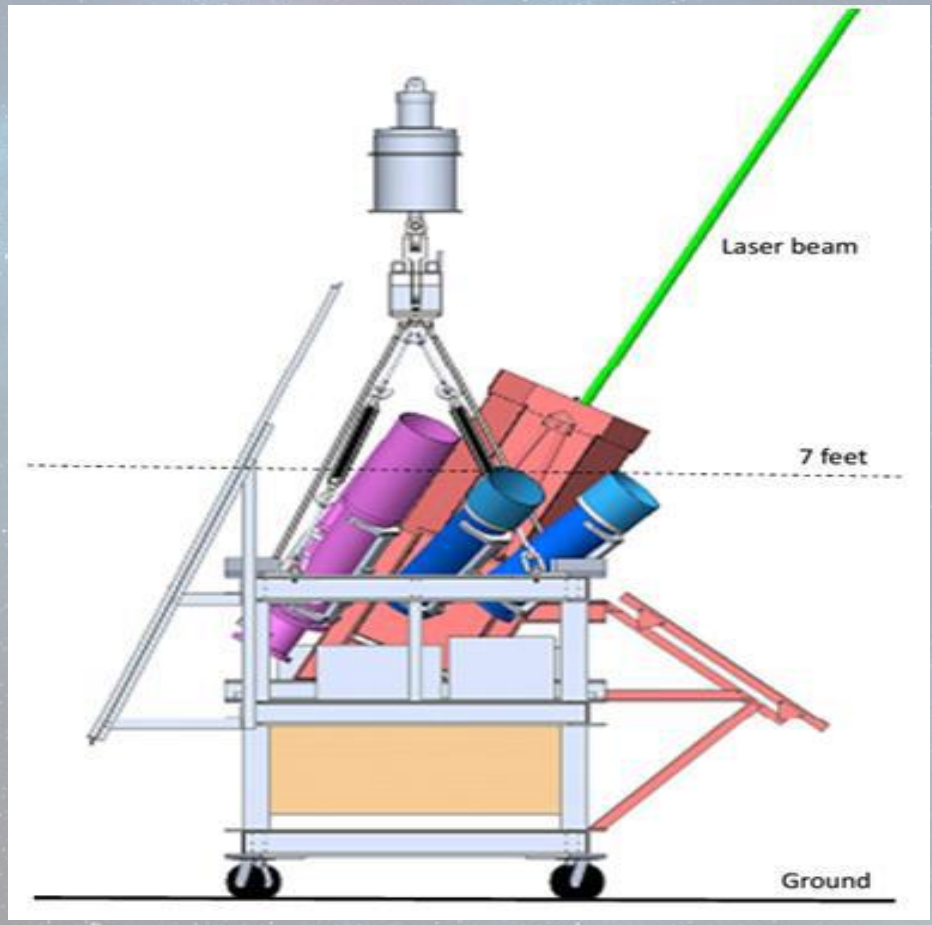
Artist rendition shows image and caption, Credit: NASA

NASA JPL's Deep Space Optical Communication

Table Mountain, CA

Credit: NASA/JPL-Caltech

Bolide



Summary

- LSRB is NASA's final safety authority for outdoor laser activities using NASA assets
- Ensures regulatory compliance, hazard mitigation, and mission safety.
- Uses structured documentation, review, and decision processes
- Supports consistent and safe laser use across all NASA Centers

However, there's nothing we can do about this hazard!

Questions?

Thank You!