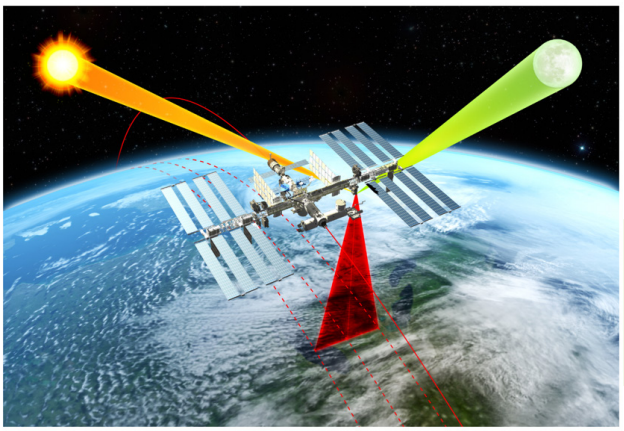
National Aeronautics and Space Administration

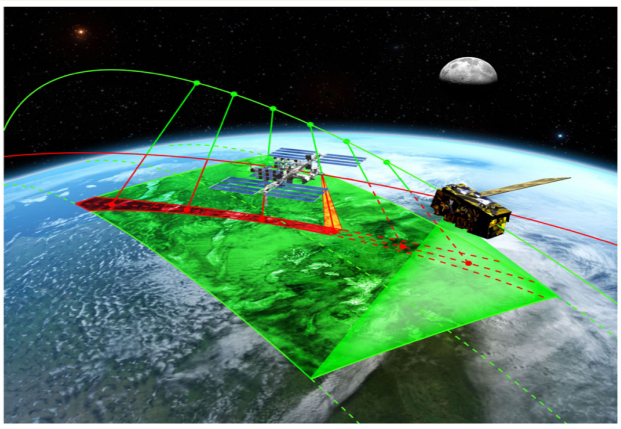
# CLARREO Pathfinder

***Advancing Science Through Unprecedented Accuracy***

CLARREO Pathfinder (CPF) will take highly accurate measurements of sunlight reflected by Earth and the Moon. These measurements, which will be anchored to international standards, will be five to ten times more accurate than those from existing sensors. CPF will have the unique ability to maintain its high accuracy throughout its lifetime. CPF will also showcase novel techniques in transferring its high accuracy to other sensors monitoring Earth. Higher accuracy means greater certainty in our measurements, which makes it possible to detect changes in Earth's system decades sooner than otherwise possible, and provides the knowledge needed to make informed decisions in response. The CLARREO Pathfinder Mission is led by NASA's Langley Research Center and the payload will be installed on the International Space Station.

## CPF is a High-Accuracy Reference for Optical Remote Sensing Satellite Measurements



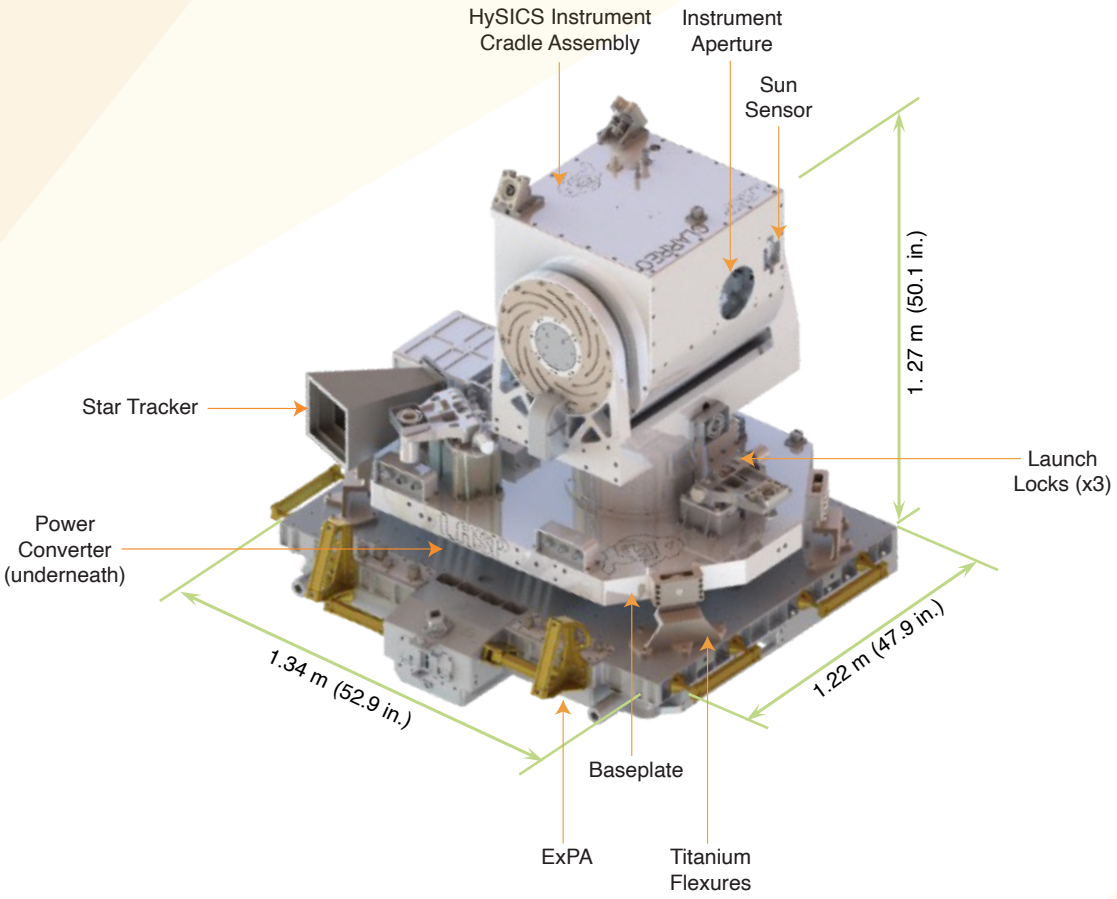


### CPF Supports Multi-Sector Applications:

- **NASA Lunar Exploration:** Provides detailed spectral data of the Moon, enabling lunar surface characterization/landing site planning and resources identification
- **Earth Science Leadership:** Enhances federal sensor accuracy for critical applications in weather forecasting, wildfire monitoring, and disaster response
- **Defense & Intelligence:** Improves calibration of existing optical sensors, leveraging NASA investment to enhance imagery quality
- **Commercial Space:** Serves as calibration standard for satellite constellations, improving Earth observation product accuracy and consistency

# CLARREO Pathfinder Reflected Solar Payload

The HySICS instrument is the imaging spectrometer that is the heart of the CPF payload. HySICS will take spectral measurements of sunlight reflected by Earth and the Moon. The payload has been developed and built by the University of Colorado at Boulder's Laboratory for Atmospheric and Space Physics (LASP) and is ready to launch. Its design builds on over 10 years of LASP-led science research and technology development.

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|---|---|
| Mass excluding ExPA | 255.6 kg |
| Mass including ExPA | 364.5 kg |
| Power (Average) | 230 W |
| Power (Peak) | 280 W |
| Communications | 1553 / Ethernet |
| Ground Swath (at nadir) | 68.5 km (linear) |
| Spatial Resolution | 0.5 km |
| Spectral Responsivity | 350-2275 nm |
| Spectral Resolution | 6 nm |
| Daily Data Volume (Avg.) | 60 Gb |

CLARREO Pathfinder will establish unprecedented boundaries in accuracy (0.3%,1-sigma) of reflected sunlight measurements of Earth.