



Why CLARREO Pathfinder?

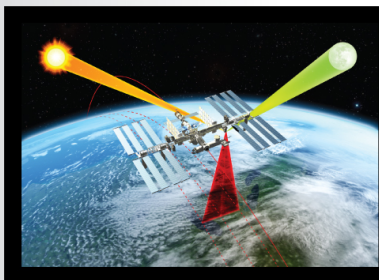
- ➔ Primary Purpose: Demonstrate technologies and techniques for more accurate measurements of Earth solar reflectance, leading to *increased certainty* in climate change predictions and benefits to numerous other Earth observations.
- ➔ Help detect climate change trends decades sooner than otherwise possible.
 - A key step toward improved sea level rise predictions.
- ➔ Inform the design of future missions and lay the foundation for continued long-term observations of Earth's climate.
- ➔ **The 2017 Earth Science Decadal Survey of the U.S. National Academy of Sciences recommended continuation of CLARREO Pathfinder (CPF).**

What is CLARREO Pathfinder?

- ➔ A reflected solar spectrometer that will take measurements from the International Space Station for a minimum of 1 year.
- ➔ Will measure Earth-reflected sunlight.

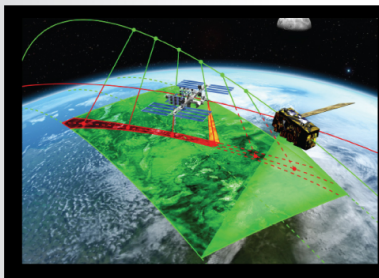
CLARREO Pathfinder Mission Objectives

1



Demonstrate ability to take highly accurate measurements of Earth with on-orbit calibration using the Sun and the Moon.

2



Demonstrate ability to transfer high accuracy to other Earth-viewing instruments that cross its path in orbit.

CLARREO-PF

Climate Absolute Radiance and Refractivity Observatory (CLARREO) Pathfinder Mission

clarreo-pathfinder.larc.nasa.gov





Why is CLARREO Pathfinder Important?

► Unprecedented Calibration Accuracy

- Achieves revolutionary accuracy of reflected sunlight measurements 5-10x better than existing sensors.

► Innovative Inter-calibration Approach

- Uniquely looks at Earth at the same location, time, and viewing angle as other Earth-viewing satellite sensors that cross its path in orbit.
 - Showcases ability to transfer its high accuracy to sensors measuring reflected sunlight.
 - Improves measurements from weather, climate, land imaging, and DoD instruments.
 - Enables more accurate data products for a variety of science applications.

► Improved Lunar Calibration Standard

- Measures sunlight reflected by the Moon
- The Moon offers unmatched stability, making it an attractive calibration reference for satellite instruments.
- CPF increases the calibration accuracy of the Moon by 10x, making it an improved reference for reflected solar spaceborne instruments.
- Anchoring the Earth-viewing instruments of yesterday, today, and tomorrow

CLARREO Pathfinder Payload

- Builds on 10+ years of U.S. technology development and science research.

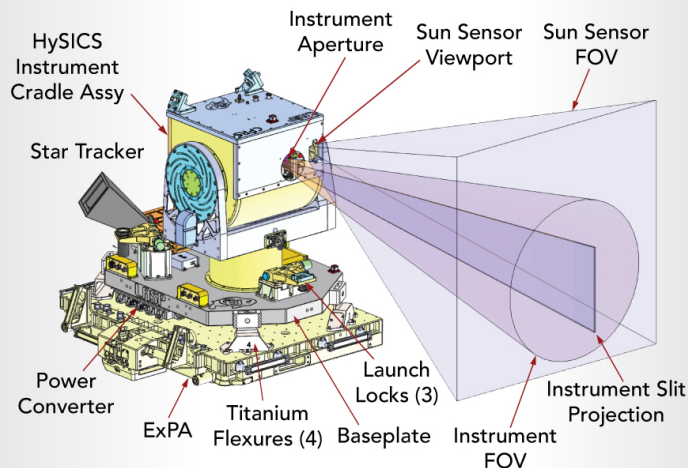


Image provided by: LASP

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