



The HySICS Instrument Incubator Project measures outgoing Earth-reflected radiation with unprecedented accuracy relative to sunlight that directly strikes the Earth.

## Frequently Asked Questions

### What is the purpose of the HySICS mission?

The data collected by HySICS during its two demonstration flights helped determine the ability to achieve the radiometric accuracy levels (better than 0.2% in the shortwave spectral region (350 - 2,300 nm) at resolutions < 8 nm) necessary for Earth climate science using the Sun as an on-orbit radiometric reference.

### What does the HySICS instrument measure?

The HySICS instrument builds on LASP's heritage of solar radiometry expertise to better quantify and understand climate change on the Earth. The instrument relies on precise radiance measurements of the Sun relative to Earth scenes. Based on accurate solar calibrations, the HySICS radiometric measurements of the Earth can thus establish a long-term data record that is roughly 10 times more accurate than current measurements.



(Courtesy LASP)

### What are the expected outcomes from HySICS?

During its second flight on August 18, 2014, HySICS acquired the most accurate space-borne radiance measurements ever made of Earth—an important milestone for future technology

## Quick Facts

**Launch dates:** September 29, 2013 and August 18, 2014

**Launch location:** Columbia Scientific Balloon Facility, Fort Sumner, NM

**Launch vehicle:** High-altitude scientific balloon

**Mission target:** Earth observing sub-orbital flight

**Primary duration:** 8.5 hours

**Project description:** The HySICS Instrument Incubator Project consists of two scientific balloon launches to demonstrate radiometric accuracy levels needed for climate science.

#### LASP will provide:

- The HySICS instrument and electronics
- The LASP Fine Sun Sensor
- HySICS principal investigator, Greg Kopp
- HySICS co-principal investigator, Peter Pilewskie

#### Other organizations involved:

- NASA's Earth Science Technology Office
- NASA's Wallops Flight Facility
- NASA's Columbia Scientific Balloon Facility (CSBF)

developments and the researchers who could someday incorporate such data into more reliable climate models. HySICS observations of the Moon will improve radiance measurements of this source commonly used for on-orbit calibrations of other instruments.

To read more about the HySICS mission, visit:

<http://lasp.colorado.edu/home/missions-projects/quick-facts-hysics>.

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