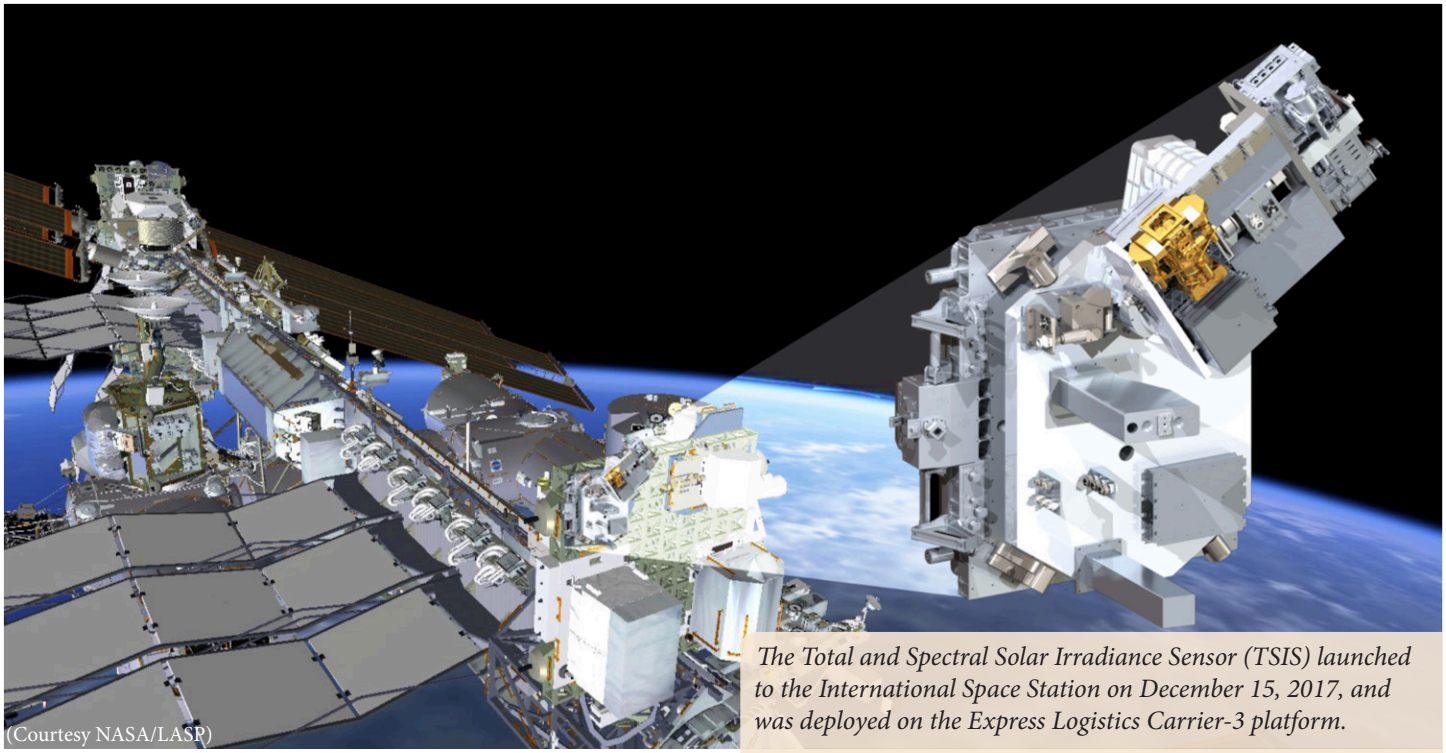
TSIS
Total and Spectral Solar Irradiance Sensor

Laboratory for Atmospheric and Space Physics
University of Colorado **Boulder**


(Courtesy NASA/LASP)

The Total and Spectral Solar Irradiance Sensor (TSIS) launched to the International Space Station on December 15, 2017, and was deployed on the Express Logistics Carrier-3 platform.

Frequently Asked Questions

What is the purpose of the TSIS mission?

The TSIS mission is acquiring measurements of total and spectral solar irradiance (TSI and SSI, respectively). TSI is required for establishing Earth's total energy input while SSI is needed to understand how the atmosphere responds to changes in the sun's output. Solar irradiance is one of the longest and most fundamental of all climate data records derived from space-based observations. Highly accurate, stable, and continuous observations of solar irradiance are critical to understanding the present climate epoch and for predicting future climate.

What do the TIM and SIM instruments measure?

The Total Irradiance Monitor (TIM) measures the TSI that is incident at the outer boundaries of the atmosphere; and the Spectral Irradiance Monitor (SIM) measures the SSI from 200 nm to 2400 nm (96 percent of the TSI). The TSIS TIM and SIM are heritage instruments to those on the SORCE satellite. Both were selected as part of the TSIS mission because of their unprecedented measurement accuracy and stability, and because both measurements are essential to constraining the energy input to the climate system and interpreting the response of climate to external forcing.

Quick Facts

Launch date: Dec. 15, 2017; Science data return in Feb. 2018
Launch location: Cape Canaveral Air Force Station
Launch vehicle: Space X Falcon 9 and Dragon capsule
Mission target: Low-Earth orbit
Primary duration: 5 years
Project description: TSIS is a dual-instrument package that makes solar irradiance measurements from the International Space Station over a nominal period of five years.
LASP provides:
- The Total Irradiance Monitor (TIM)
- The Spectral Irradiance Monitor (SIM)
- Precision solar pointing of the TIM and SIM instruments
- TSIS Principal Investigator, Peter Pilewskie
- Mission Operations for TSIS

Other organizations involved:
- NASA's Goddard Space Flight Center (GSFC)

What do we expect the results of TSIS to indicate?

TSIS has been identified as providing critical data in determining the natural forcings of the climate system and is helping to ensure the continuity of the solar irradiance Climate Data Record (CDR).

To read more about the TSIS mission, visit:
http://lasp.colorado.edu/home/missions-projects/quick-facts-tsis.

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