

## **TSIS-2: Continuing the Solar Irradiance Data Record**

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NASA Goddard Space Flight Center is developing the Total and Spectral solar Irradiance Sensor-2 (TSIS-2) as a Class-D mission for launch in 2023. It will provide continuity to the Total Solar Irradiance (TSI) data that extends back more than 40 years as well as the more recent Spectral Solar Irradiance (SSI) data. As emphasized in the 2017 NAS Decadal Survey for Earth Science and Applications from Space, accurate TSI and SSI measurements over many decades are required to understand the Earth's energy balance and detailed processes that affect the climate system. This paper describes the TSIS-2 mission concept and the challenges of carrying out Goddard's first Class-D free-flyer science mission. The two instruments on TSIS-2, the Total Irradiance Monitor (TIM) and Spectral Irradiance Monitor (SIM), will be identical to those on TSIS-1 and are being developed by the Laboratory for Atmospheric and Space Physics (LASP) at the University of Colorado. In contrast to TSIS-1, which launched in December 2017 and is currently operating on the International Space Station (ISS), TSIS-2 will be a 3-year mission on a dedicated spacecraft operating in a Sun-synchronous orbit.