

A TSIS & SORCE Status Overview

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Measurements of solar irradiance from space began four decades ago with the launch of the Nimbus 7 satellite that carried the Earth Radiation Budget (ERB) and Solar Backscatter Ultraviolet (SBUV) sensors. Remarkable progress has been made since that time in our ability to monitor ever smaller changes in the Sun's output, integrated over the entire spectrum and in individual wavelength bands, and with increased radiometric accuracy. This has improved our understanding of the Sun's influence in past and present climate, our ability to predict future climate and helped us gain insight into the mechanisms by which the Earth system responds to subtle variations in solar irradiance.

The timing our meeting represents an important juncture in the measurement record of solar irradiance. The Solar Radiation and Climate Experiment (SORCE) recently celebrated the 15-year anniversary of its launch. SORCE not only ushered in advanced capabilities for measuring total and spectral solar irradiance, accompanied by a large number of science achievements, it has persevered for 10 years beyond its scheduled mission lifetime. In so doing, SORCE has helped preserve the 40-year solar irradiance data record from space.

As SORCE winds down, the Total and Spectral Solar Irradiance Sensor-1 (TSIS-1) is just beginning its mission. TSIS-1 was launched to the International Space Station (ISS) on 15 December 2017; commissioning exercises have been underway for the past two-plus months. The SORCE-heritage Total Irradiance Monitor (TIM) and Spectral Irradiance Monitor (SIM) on TSIS-1 have both experienced first light. At this meeting, preliminary data from both sensors will be presented. We anticipate that the expected improvements in accuracy, particularly for solar spectral irradiance, will impact Sun-climate studies in the coming decade.