

Reference Solar Spectra for Earth Science Research

Tom Woods [tom.woods@lasp.colorado.edu], **Frank Eparvier**, **Jerry Harder**, **Marty Snow**, and **Gary Rottman**; *Laboratory for Atmospheric and Space Physics (LASP), University of Colorado, Boulder.*

Reference spectra of the solar irradiance are important products for studying the solar influences on Earth's climate system and the atmospheres of Earth and other planets. For example, solar reference spectra are used as input in general circulation models of Earth's coupled atmosphere-ocean system to study changes due to the 11-year solar cycle. Solar reference spectra are also useful for establishing and validating models of the solar irradiance. These models are essential for times when no solar observations are available and for reconstructing the solar irradiance prior to the space era, such as the Maunder Minimum period during the late 17th century. The solar minimum spectrum is of special interest because it establishes the baseline from which solar variability is compared, both for the 11-year solar cycle variability and for long-term (secular) trends in the solar irradiance. As part of the international Whole Heliosphere Interval (WHI) campaign in 2008, new reference spectra were established using measurements from the Solar Radiation and Climate Experiment (SORCE) and Thermosphere, Ionosphere, Mesosphere, Energetics, and Dynamics (TIMED) missions. Comparisons of these WHI reference spectra to earlier reference spectra during solar cycle 23 and more recent observations in solar cycle 24 will be presented.