

Solar Spectral Irradiance Intercomparison Workshop

September 19, 2006, 8:30 a.m. - 4:30 p.m.

Rosario Resort and Spa

Workshop Host: LASP, University of Colorado

Organizers: Jerald Harder and Martin Snow

The SORCE instrument team is convening a workshop to discuss and intercompare the past, present, and to some extent, the future instruments that have been responsible for defining the space-based spectral irradiance of the Sun. The Earth science and climate communities currently have a need for a standard top of the atmosphere reference spectra covering a very broad portion of the solar spectrum. Calibrated space-based instruments provide the most accurate measurements of that spectrum and supply the most precise determinations of spectral variability over time. The workshop will be partitioned into morning and afternoon sessions concentrating first on the ultraviolet spectrum and then on the visible and infrared portions of the spectrum.

1. The combined UARS SOLSTICE and SUSIM and SORCE SOLSTICE experiments connect over almost two solar cycles, and intercomparing these three instruments provides the best opportunity to analyze the solar minimum condition in the FUV and MUV parts of the spectrum. Is the current solar cycle minimum lower than the previous one? Understanding the instrument calibrations and long-term sensitivity degradations of these instruments, and including additional insight from the shuttle-borne SOLSPEC instrument and the TIMED SEE EGS spectrometer provides the basis for this interesting and important comparison study. A final point of discussion is whether there is a need for future satellite-borne UV spectrometers such as the ones discussed here since they are not called for in the NPOESS EDRs.
2. For the afternoon session, the discussion will center on progress towards the development of a reference spectrum in the visible and infrared. To date, the limited number of space-based instruments represents the best records of the absolute spectral irradiance measurement and the best estimates of the subtle, but important, variability in this part of the spectrum. The SOLSPEC and SORCE SIM instruments fill these roles, but the highly structured nature of the solar spectrum is not captured by either of these instruments, and for a true reference spectrum the high resolution spectra resolving the Fraunhofer structure is needed. We will focus on the comparison of these spectra, and how spectra must be analyzed to properly compare them to ensure that artifacts do not bias the interpretation of the spectra. How these space-based instruments should be used to 'calibrate' the higher resolution spectra will be considered.

The attendance and presentation length will be limited so that audience participation and discussion can occur throughout the workshop.