

GSICS Applications and the Need of a Solar Irradiance Reference Spectrum

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GSICS is an international organization designed to promote calibration best practices across satellite dataset providers. By radiometrically scaling a target sensor reflected solar band to a well-calibrated contemporary reference sensor such as MODIS and VIIRS. This in turn allows for consistent channel reflectances across a large constellation of sensors, which are necessary to provide uniform cloud, aerosol and land retrievals. Similarly, a reference solar reference spectrum is necessary to assign consistent band radiances among sensors. This can be easily accomplished if sensor agencies use the same solar spectrum. However, the MODIS and VIIRS dataset providers, have used the MCST, Modtran, and Thuillier solar spectrum for MODIS, NPP-VIIRS and NOAA-20-VIIRS, respectively. GSICS and ISCCP next generation projects, would like to promote the use of a recommended solar spectrum used by all dataset providers. Can the solar community provide the state of the art static (outside of the UV) solar spectrum based on measurements and high resolution modeled data? Can continuity be achieved between an existing and a more accurate future solar spectrum by means off a “scaling factor”?

The potential sensor band radiance differences based on several solar spectrum will be presented to illustrate the need for a recommended solar spectrum. The presentation will summarize the GSICS solar spectrum web meetings designed to achieve consensus within the solar community. An example of the NASA-Langley spectral band adjustment factor tool will be presented, to highlight how sensor band spectral differences are taken into account.