Near Infrared Ground-based Spectrum

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The near-infrared (NIR) part of the solar spectrum is of prime importance for solar physics and climatology, directly intervening in the Earth's radiation budget. Despite its major role, available solar spectral irradiance (SSI) NIR datasets, space-borne or ground-based, present discrepancies caused by instrumental or methodological reasons. We present results obtained from the PYR-ILIOS SSI NIR ground-based campaign carried out at the Mauna Loa Observatory (MLO) in Hawaii (3397 m a.s.l.) during 20 days in July 2016.

The top-of-atmosphere (TOA) NIR SSI is obtained with the Langley-plot method, derived from the Beer-Bouguer-Lambert law. The NIR SSI dataset obtained with the Langley-plot method is presented as well as a detailed error budget and atmospheric sensitivity study.

We demonstrate that the most recent results, from PYR-ILIOS and other space-borne and ground-based experiments, namely TSIS on the ISS, agree and show a NIR SSI lower than the previous reference spectrum, ATLAS3, for wavelengths above 1.6μm.