



Solar Spectral Irradiance as observed by LYRA/PROBA2 and PREMOS/PICARD

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Total and Spectral Solar Irradiance are key input parameters to atmospheric/oceanic and space weather models. Both vary on time-scales ranging from days to millennia, although a complete picture of the solar irradiance variability is still missing. The recent launch of two European missions PROBA-2 with LYRA radiometer onboard and PICARD with PREMOS package onboard provides therefore valuable information and nourishes theoretical models. Both instruments covers the solar spectrum from the EUV to near-infrared.

Here we present spectral solar irradiance data from these two recent missions. After a proper correction of the degradation and non-solar signatures, we compare these data with those from the VIRGO/SOHO and SOLSTICE+SIM/SORCE experiments. Both LYRA and PREMOS have also observed several solar eclipses, which allows us to accurately retrieve the center-to-limb variations (CLVs) of the quiet Sun's brightness at the wavelengths of the corresponding channels. CLVs play indeed an important role in modelling of the solar irradiance variability. We show that calculations with the published CODE for Solar Irradiance (COSI) yield CLVs that are in good agreement with measurements. Finally we use COSI to model the variability of the irradiance, assuming that the latter is determined by the evolution of the solar surface magnetic field as seen with SDO/HMI data. These theoretical results are compared to PREMOS and LYRA measurements.