

First Steps Towards a Homogeneous Solar Spectral Irradiance Data Set: Selection, merging and quality assessment

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The Sun varies over different timescales, from minutes to months, decades and millennia. Its variation is an important driver of terrestrial climate change and as such a significant input to climate models. While several observations exist to date over a broad frequency range, they are sparse over both frequency and time.

As part of the SOLID (First European comprehensive SOLar Irradiance Data Exploitation) project we will show first results of constructing a homogeneous solar spectral irradiance data set of the UV. By combining a large variety of solar spectral irradiance data sets, we aim to reconstruct spectral solar variability further back in time and to deliver a data set that can be used by others, e.g. climate researchers in order to account for the non-constant solar forcing. We present the data used, together with preliminary error-estimates, self-consistent quality assessments, gap-filling methods and selection criteria. We use a combination of observed solar spectral irradiance from several missions, starting with OSO III in 1967, as well as available proxy data to identify outliers and trace them back to either instrumental or physical cause.

The SOLID project is part of the seventh European framework programme. SOLID brings together representatives from all European solar space experiments and European teams specialized in irradiance modelling, reconstruction and solar image processing.