Reconstruction of solar spectral irradiance employing LYRA Data

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•**Context:** The solar energy input is the main external heating source of the Earth's atmospheric/oceanic system. Thus, variations of the solar emission produce corresponding changes of the weather and climate.

•**Aims:** We present a reconstruction of the current solar spectral irradiance based on observations of solar parameters, which can be used to constrain the evolution of global and regional circulation models.

•**Method:** We employ a backpropagation neural network to model the evolution of solar irradiance. The basic assumption of this model is that the variations of the irradiance are related to the evolution of the solar magnetic field. The input parameters and the corresponding targets are used to train a network until it can approximate the observations.

- Input Parameters:

    •Calibrated/Uncalibrated time series of the four channels observed by LYRA instrument;

    •Solar disk magnetograms and continuum Images;

    •Solar indexes (e.g. Magnesium-II Index).

- Targets:

    •SORCE/SOLSTICE and TIMED/SEE Observations;

    •Total Solar Irradiance (TIM/SORCE, VIRGO, ACRIM III).