

Modelling Solar Irradiance with SATIRE

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SATIRE (Spectral And Total Irradiance REconstructions) is a set of models aimed at reconstructions of solar irradiance driven by the evolution of the solar surface magnetic field on time scales of days to millennia. The Sun's visible surface is split into several components depending on their brightness and/or the magnetic field strength. SATIRE requires two input ingredients: (1) time-independent but wavelength- and position-dependent brightness spectra of each surface component, and (2) their surface distribution and area-coverage. The brightness spectra currently employed in all versions of SATIRE have been computed from the corresponding semi-empirical model atmospheres using ATLAS9. The area coverage and surface distribution of surface magnetic structures are derived using different available observational data (magnetograms, sunspot area and number, cosmogenic isotope data) depending on the time scale. We will discuss the main features of the resulting reconstructions, as well as their limitations.