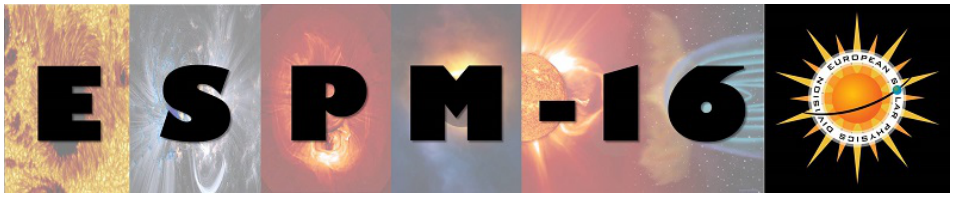

Contribution ID: **418** Type: **Poster**

Historical Total Solar Irradiance Reconstruction: a new approach

Wednesday, 8 September 2021 09:00 (13 minutes)

It is well established that the total solar irradiance (TSI) varies on timescales of minute to centuries. On timescales of minutes to hours the TSI varies due to the globally-averaged superposition of solar turbulent convection and oscillations, while on solar-cycle and solar-rotation timescales the majority of the TSI-amplitude fluctuations are the result of opposing brightenings caused by faculae/plages and shorter-duration dimmings caused by sunspots. While TSI variations from minutes to a few decades have been continuously monitored from space since the late 1970s, TSI variations over much longer periods of time can only be estimated using either historical observations of solar surface magnetic features, namely sunspots and plages, possibly supported by surface flux transport models, or from the measurements of the cosmogenic isotope (i.e., 14C and 10Be) concentrations in tree rings and ice cores.

In this work we present a new approach to reconstruct the TSI variability from the pre-industrial era to the present using component analysis of time series of historical observations of plages and sunspots, and the secular trend of the solar potential modulation.

Student poster?

Do you want to be considered for a student poster prize?

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Session Classification: Poster Session 5.1

Track Classification: Session 1 - Solar Interior, Dynamo, Large-Scale Flows and the Solar Cycle