

### **Total Solar Irradiance Reconstruction over the last 300 Years**

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The quantification of the TSI variability is important to understand whether the Sun can have a significant influence on climate change on Earth. A careful analysis of the TSI space measurements over the last 30 years indicates that within a measurement uncertainty of  $0.1 \text{ W/m}^2$  decade the long term TSI variation can be fully explained by the ‘magnetic ingredients’ of sunspots and facula associated to the 11-year solar activity cycle. Further analysis of the Ca II K index measured from Mount Willson observatory for the last 100 years and of the revised sunspot time series for the last 300 years indicates that contrary to the long-held paradigm of a ‘modern grand solar maximum’ we are currently in the minimum of a long-term modulation of the amplitude of the 11-year cycle; this amplitude modulation has a periodicity around 100 year.