

Total Solar Irradiance measurements: quantification of the solar radiative forcing of the earth's climate from 30 years of observations from space

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The Total Solar Irradiance (TSI) quantifies the amount of the energy the earth receives from the sun, normalised for the annual sun-earth distance variations. Variations of the TSI therefore correspond to a solar radiative forcing of the climate on earth. The TSI is measured from space since 1978, with a stability that gradually increased in time. We will present our current best understanding of the long term TSI variations. The current solar cycle 24 is unusually low, and it followed an unusually long minimum after solar cycle 23. It appears that the 11 year solar cycle TSI variation, with an average amplitude around 1 W/m² is itself modulated with a 100 year modulation of 1 W/m². TSI variations do not seem to explain the Little Ice Age around 1700, nor the 'break in global warming' since around 2000.