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Total Solar Irradiance measured by PREMOS/PICARD

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We report Total Solar Irradiance (TSI) measurements made by the space experiment PREMOS on the French micro satellite PICARD and compare them to other operating TSI space experiments. PREMOS/PICARD is the first SI-traceable TSI experiment in space and it confirms the value measured by TIM/SORCE that the solar constant is 1361 W/m2. We discuss the accuracy of absolute and relative measurements of TSI and conclude on the reliability of the TSI composite 1979-2012. We find that over a decade, the relative accuracy is 0.2 W/m2 and that within this uncertainty it cannot be decided whether the solar irradiance in the past solar minimum of 2008 was lower than in the minimum of 1996. Reconstructions back to 1979 have even larger uncertainties.