

TSI: The Incoming Side of the Equation

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The SORCE/TIM measures the total solar irradiance (TSI), the entire incoming radiant energy from the Sun at the top of the Earth's atmosphere, and continues a 28-year climate record of such space-based measurements involving overlapping instruments. From this TSI record, correlations between solar forcing and historical Earth climate records are made and, through meetings such as this, hopefully eventually understood.

In a simplified Earth radiation balance equation, the TIM and other TSI instruments directly measure the net incident solar radiation, by far the dominant driver of Earth climate. These measurements presently are discrepant by roughly 0.3%, indicating uncertainty in the radiation balance and/or in the instrument(s). I will discuss the TSI record's absolute accuracy and what is being done to improve future TSI instrument accuracies.