

In-flight Performance of Solar Irradiance Monitor-II on-board FY-3C and its TSI Data

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The Solar Irradiance Monitor-II (SIM-II) is a key payload on-board FengYun-3C (FY-3C) polar-orbit meteorological satellite and aim to capture variation of solar energy at the whole waveband from the top of atmosphere with Total Solar Irradiance (TSI) product. It is designed for earth radiation budget research coupled with Earth Radiation Measurement (ERM) together as an instrument group. FY-3C/SIM-II has two significant improvements by adding sun tracking system and temperature control system comparing to SIM-I. The observation is traceable to World Radiometric Reference (WRR) by field calibration experiment before launch.

SIM-II has been on-orbit operated for more than 4 years since FY-3C was successful launched on Sep. 23, 2013. An assessment on instrument in-flight performance has been done by analyzing instrument parameters, corrected factors and especially on aging monitor. An optimization of product algorithm is developed based on this work. Total solar irradiance product from FY3C/SIM-II has been evaluated by comparing with SORCE/TIM and SOHO/VIRGO. The result shows a good consistency. In future, the first early-morning orbit satellite - FY-3E will have two solar irradiance instruments for total and spectral solar energy observation in the same platform.