Contributed Talk

Splinter Activity

Measurements of Total Solar Irradiance on FengYun3 Satellites, from 2008 to 2017

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Impact of solar variability on the Earths climate change has been a controversial topic for about two centuries. The inherent solar driving mechanism cant be understood completely without accurate data sets of solar irradiance (SI). Total solar irradiance (TSI) has been measured by FengYun3 (FY-3) Satellites since FY-3A was launched in May 2008 as the first satellite of the series. The TSI instruments on FY-3A and FY-3B operated in a scanning mode and the Sun is only measured when the sunlight is in FOV of the instrument. FY-3C satellite was launched in September 2013 as the third satellite and it has carried a TSI instrument with a pointing system.

Year 2013 has witnessed several historical events in space measurements of TSI. Configuration for TSI space instruments has changed 4 times from July to December in 2013. FY-3C TSI data from Oct. 2013 to Dec. 2013 is important for composite of TSI data series, since it seems the most accurate data set without too much detector degradation. In my previous work (Hongrui Wang and etc. Initial In-flight Results: The Total Solar Irradiance Monitor on the FY-3C Satellite, an Instrument with a Pointing System. Solar Physics, 2017, 292:9), correction of detector degradation was not performed yet. The correction method of detector degradation for Level 1 product of FY-3C TSI data will be presented here.

In the coming years, several missions of SI measurements have been planned on FY-3 satellites. One TSI space mission will fly on the FY-3E satellite and Physikalisch-Meteorologisches Observatorium Davos will contribute one radiometer package for the TSI radiometer on the FY-3E satellite. Measurements of TSI on the FY-3 satellites will be presented here, including instrument overview, current progresses of data corrections and composite of multi TSI data series.