

Twenty One Years of Total Solar Irradiance from VIRGO on SoHO

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The experiment VIRGO on the ESA/NASA mission SoHO was launched on December, 5 1995 and the continuous observations of TSI started in late January 1996. Two radiometer PMO6V-A and B and DIARAD with 2 channels observe TSI. PMO6V-A provides a value every minute (in the shuttered during 23 days at the beginning every 2 minutes) and DIARAD every 3 minutes. As SoHO is at a halo orbit around L1 solar observations are never interrupted. In June 1998 SoHO was lost due to an operational mishap and no data are available until October 1998, when it was successfully rescued and observations of the Sun restarted for all but one instrument (C1 of LASCO). In late 1998 the operation of SoHO was reconfigured without needing the giros anymore and no science data could be transmitted during this period. These periods, called the summer (103 days) and winter (43 days) vacations of SoHO, are the only prolonged ones when no science data were available. They were some other shut-downs of SoHO and together with a few switch-offs of VIRGO (mostly due to latch-up) we have lost about 3.8% of the continuous hourly TSI values during the whole mission (half is due to the SoHO vacations).

The level-1 DIARAD data are evaluated at the VDC with only minor changes during the mission. Until the end of 2017 the level-1 PMO6V were evaluated with the level-1 IDL program developed in 1996 by Wolfgang Finsterle. Now a new program is used which takes the temperature dependence of the power measurements into account and treats missing temperatures during the 'keyholes' adequately. More importantly, the evaluation of the open/closed power during the cover operation is now properly treated. The absolute value of VIRGO TSI is based on the new characterization of the PMO6V (see poster) and my earlier one of DIARAD, because the VIRGO value is an average of the two radiometer. The corrections due to degradation (level-2 hourly and daily record) the latest version is still in use.