

SOHO – HERSCHEL Sounding Rocket Intercomparisons

*J.D.Moses, J.Newmark, E. Antonucci, S. Fineschi, F. Auchère (HERSCHEL)
L.D. Gardner, J. L. Kohl, L. Abbo (SOHO/UVCS)
J.D. Moses, J. Newmark (SOHO/C2-C3 & STEREO/COR1-COR2)
J.-P. Wuelser, and J. Lemen (STEREO/EUVI)
(TRACE)*

Vers.: 24-Nov-2008

Participating Instruments

HERSCHEL: SCORE/UVCI, HEIT, HeCor
SOHO: UVCS, LASCO, EIT
TRACE
STEREO: SECCHI (EUVI, COR1, COR2)

Background and Scientific Justification

The HERSCHEL sounding rocket payload consists of a suite of 3 instruments: SCORE/Ultraviolet Coronagraph Imager (UVCI), Herschel EIT (HEIT) and Helium Coronagraph (HeCor). The HERSCHEL (HELIum Resonance Scattering in the Corona and HELiosphere) Sun-Earth Sub-Orbital Program is a sounding-rocket payload designed to investigate helium coronal abundance and solar wind acceleration from a range of solar source structures by obtaining simultaneous observations of the electron, proton and helium solar coronae. HERSCHEL will provide the first measurements of the coronal helium abundance in source regions of the solar wind, thus bringing key elements to our understanding of the Sun-Earth connections. The HERSCHEL instrument package consists of

1. the HEIT for on-disk coronal observations of the chromospheric and coronal emissions at 17.3, 19.5, 28.4, and 30.4 nm
2. UVCI for off-limb coronal imaging at heliocentric heights comprised between 1.8 to 3.5 solar radii of a) K-corona polarized brightness (pB); b) H I Lyman- α , 121.6 nm, line-emission; c) He II Lyman- α , 30.4 nm, line.
3. HeCor for off-limb observations of the line He II Lyman- α , 30.4 nm at heliocentric heights comprised between 1.2 to 2.0 solar radii

The objective of this ICAL is the radiometric cross-calibration of SOHO, TRACE, STEREO instruments using HERSCHEL sounding rocket.

Further calibration checks will be applied immediately before and after launch.

This Intercal would include special observations 1 day for EIT and 2-3 days for UVCS and LASCO around the time of the HERSCHEL rocket launch from White Sands.

Overview of Observing Campaign

Scheduling

The HERSCHEL sounding rocket is currently scheduled to launch on January 23th, 2009. See the detailed instrument plans for specific timing.

Instrument participation

HERSCHEL/UVCI: this instrument measures visible-light pB, HeII 30.4 nm and HI Ly α 121.6 nm radiation of full corona.

HERSCHEL/HEIT: this instrument measures full disk 17.1, 19.5, 28.4 and 30.4 nm intensities.

HERSCHEL/HeCor: this instrument measures He II 30.4 nm coronal emission.

SOHO/UVCS: the observation of the HI Ly α with the LYA (OVI?) channel is requested for 1-2 days before and after launch. These observations provide an excellent cross-calibration using UVCI.

SOHO/LASCO: visible light and pB observations with C2 and, possibly with C3 are requested 1-2 before and after launch for the cross-calibration with the pB channel of UVCI.

SOHO/EIT: this is the main instrument for the intercalibration with HEIT instrument. High time cadence is requested for 17.1, 19.5, 28.4 and 30.4 nm observations for 1 day around the time of the launch.

TRACE: observations at passbands Fe IX 17.3, Fe XII 19.5, Fe XV 28.4 are requested. HI Ly α passband observations are also requested as input of chromospheric data in the analysis of the coronal resonance radiation detected by the UVCI instrument..

STEREO/SECCHI-COR1 and COR2: cross-calibration with UVCI.

STEREO/SECCHI-EUVI: cross-calibration with HEIT.