

Topical Discussion Meeting report

A Topical Discussion Meeting aims at active participation or interaction between the participants. The participants work and discuss on a predefined theme or problem heading towards an outcome or target. A working meeting is a 1h 15min informal afternoon meeting with NO abstract submission form and therefore NO poster contributions.

Name of the meeting: HARMONISATION OF SEP DATA CALIBRATIONS (HSDC)

Conveners: Stanislav Borisov (Center for Space Radiations, Earth and Life Institute, Université catholique de Louvain); Daniel Heynderickx (DH Consultancy BVBA); Juan V. Rodriguez (Cooperative Institute for Research in Environmental Sciences at University of Colorado at Boulder and NOAA National Centers for Environmental Information); Piers Jiggins (European Space Agency)

Data – Time – Room: 07/11/2018 – 14:00-15:15 – MTC00.15

Nr of participants: 20

Objective of the TDM

Comparisons and cross-calibration of in-situ Solar Energetic Particle (SEP) radiation data are of critical importance for improving the accuracy of specifications of the space environment, space weather predictions and the outputs of relative scientific studies. For scientists working on these topics the issues pertaining to the data processing are often not the subject of their work, but nonetheless they appreciate the usefulness of harmonised data sets with measurement artifacts removed and caveats identified.

We propose the eighth formal meeting of the Harmonisation of SEP Data Calibrations (HSDC) working group to be hosted in ESWW15. The focus of this group is on the rigorous analysis of Solar Energetic Particles (SEPs) measurements which includes protons, electrons and heavier ions. This area of research bridges the gap between instrument developers, who often possess essential information on the characteristic features of instruments, and radiation environment specialists, who understand the sensitivity of models to instrument response. The ultimate goal is the construction of SEP reference data sets with well-defined uncertainties emerged from the measurement process and the data post-processing. The reference datasets should be the result of widely accepted numerical techniques and should be ready for use by the scientific and space weather European and International communities. It should be underlined that the HSDC working group is not addressed only to the SEP community. The methods developed and the derived outputs have been proven to be vital for the radiation belt and galactic cosmic ray environment communities as well.

Attendees will be requested to briefly present (5-10 minutes) comparisons of data and their conclusions with significant time for discussions of key problem areas and possible solutions. The topics of interest will include cross-calibration techniques, data-cleaning, background subtraction and identification of caveats in particle radiation data sets. Data caveats include but are not limited to the saturation of scientific instruments and to the wide uncertainties on the response of radiation monitors that depend on spectral hardness and angular distribution.

Some discussion highlights

Rami Vainio: Create platform (on-line database) for intercalibration of the instruments.

Carlos Granja, Sylvie Benck: Extend the goals of the working group to intercalibration everywhere and for more particle species, instead of only focusing on SEPs only.

Main conclusion of the meeting

1. Extend format of the working group to focus on intercalibration of various instruments in all the types of regions in Space. Change the name in order to reflect better the new content (TBD):

Harmonisation of Space Radiation Datasets and Instrument Calibrations.

2. Evaluate what could be the way of putting all the radiation instrument data together in the same place and in coherent format for facilitating the cross-calibration. Can it be ODI interface for the existing SSA federated products? (TBC)

Annexes

Presentations by:

1. Brian Kress “Selected Results from GOES-16 Solar and Galactic Cosmic Ray Sensor (SGPS) Calibration and Anomaly Resolution Work” [KressNCEI_SGPS_Calibration_11-7-18.pdf]
2. Ingmar Sandberg “Calibration & cross-calibration of proton telescopes of Galileo satellites”
3. Juan Rodriguez “Cross-Calibration of GOES-11 and -13 Helium Channels” [RodriguezGOES11_13_xcal_Dec2006.pdf]
4. Stanislav Borisov “EPT recalibration achievements” [BorisovESWW_2018_HSDC.pdf]
5. Piers Jiggins “Space Weather Paper on SEP data and effect Correlations in September 2017” [JigginsHSDC_PJ.pdf]