GSICS Work plan

Objective:

To provide coherent and consistent exchange of the data provided by radiation monitoring assets of the GSICS members.

Requirements:

- Consistency of data level definitions.
- Cross-calibration of datasets.
- Standardisation and Specification of data, its meta data and necessary ancillary data.
- Consistent data exchange service interfaces.

Tasks:

Map data level definitions of GSICS members

The definition of data set processing levels varies from instrument to instrument. To ensure consistency for data intercomparisons, it is necessary to provide a mapping between the different levels used by the members.

Define procedure for dataset cross-calibration

A procedure for the cross-calibration of radiation instrument data is required. Existing procedures, such as the COSPAR/PRBEM procedure (https://prbem.github.io/documents/Standard_Data_Analysis.pdf) will be analysed. The unique aspects of the GSICS data sets on Geostationary orbits, i.e. a lack of conjunctions between spacecraft must be addressed in the process.

Identification of Ancillary Data

The datasets to be exchanged are generally time series data from in-situ radiation instrumentation, typically providing flux spectra for a set of energetic particles, e.g. protons and electrons. To effectively cross-calibrate the data additional ancillary information is required. This can include:

- Geographic location
- Magnetospheric location (B, L, L*, MLT, pitch angle), which introduces questions about consistency in the calculation method and geomagnetic field models.
- Instrument response functions
- Instrument calibration reports

Note: the COSPAR/PRBEM collaboration has developed a series of documents specifying the minimum level of ancillary data and meta-data required for a typical radiation belt data analysis, https://prbem.github.io/docs/.

Define Data Exchange services

To effectively share data assets between the GSICS members, a coordinated approach for dissemination is necessary. Ideally, this includes the consistent implementation of services

based upon the same interfaces to both to search and deliver data, but also provision of the ancillary data in a coherent and standardized manner.

Issues to be addressed include:

- Latency in (near) real time dataset updates
- Archival access to data
- Local mirroring of data
- Standardised provision of ancillary data
- Documentation of changes in service (data outages, scheduled maintenance, recalibration/configuration of instruments, etc.)
- Technology API (HAPI servers, CDF data file directories, etc.)