GSICS Users Workshop
FCDR Requirements

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Background

➔ CM SAF provides an SSM/I & SSMIS FCDR of Brightness Temperatures for instruments aboard F08, F10, F11, F13, F14, F15 and F16, F17, F18.

➔ Inter-calibration to a reference instrument (F11) directly and via transfer-targets

➔ FCDR data processing

  ➔ accounts for identified issues with the instruments: moonlight-intrusions, sunlight-intrusions, along-scan inhomogeneity, reflector emissivity.

➔ FCDR data files provide

  ➔ Quality control flags (for scan, channel, FOV)

  ➔ additional metadata like satellite zenith angle, solar zenith angle, surface types, …

  ➔ sensor sensitivities (e.g. NEdT),

  ➔ Inter-sensor calibration offsets as separate layer,

  ➔ Incidence angle normalization offsets (over ocean) as separate layer,

➔ FCDR data files are conforming to CF Metadata Conventions

➔ Documentation: ATBD, Product User Manual, Validation Report

➔ DOI:10.5676/EUM_SAF_CM/FCDR_MWI/V002

FCDR Design

- → FCDR of a single sensor like SSM/I F11

- → FCDR of one sensor type, like SSM/I

  - → A set of channels from identical instruments,
    but different Earth-Incidence angles due to different mounting angles and orbits

  - → Provide FCDR at fixed EIA or at measured EIA?

- → FCDR of one sensor family like SSM/I and SSMIS

  - → Similar instruments, but possible frequency shift or different bandwidths (89GHz -> 91GHz)

  - → Provide FCDR with normalized frequency ?

- → The FCDR can be defined in two ways:

  - → With a primary aim as the consistency across sensors with sensor calibration being a secondary consideration, or

  - → With a focus on accuracy on each sensor data record independently with consistency diagnosed rather than constraint.

Requirements

➔ Consistency and decadal stability (e.g. GCOS-154, 2011)

   ➔ But historical instruments might never fulfil this user requirement

➔ Full traceability to the original data records.

➔ Clear differentiation between corrections (due to instrument issues) and inter-calibration offsets to a reference target

➔ Extensive documentation

   ➔ *ATBD* and if possible a list of reference documents – its is very important to also archive the existing technical manuals

   ➔ *Product User Manual* with examples how to use the data records and how to apply the quality flags – users of satellite data are mostly not satellite experts

   ➔ *Evaluation/Validation report* to show/summarize the quality of the data record

➔ User support