



BIAS Team

Solar Orbiter / RPW

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BIAS Management

- Andris Vaivads (IRF) – Lead Co-I (overall responsibility)
- Erik Johansson (IRF) – Lead software engineer
- Yuri Khotyaintsev (IRF) – Lead archiving scientist

SUPPORT:

- Daniel Graham (IRF) – Consultant, AC calibration
 - Anders Eriksson (IRF) – Consultant, DC calibration
 - Thomas Nilsson (IRF) – SPIS simulations
 - Thomas Karlsson (KTH) – KTH coordination
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- Footnote: Lennart Åhlén (IRF) – Hardware engineer (BIAS design, testing) – Retired in ~April 2017



BIAS Calibrations Software (BICAS)

- Software version control (internal): git
- Implementation:
 - MATLAB 2016a (+ NASA CDF patch)
 - Internally uses official datasets (CDFs) plus "internal datasets", all related through a web of modular one-way dependencies. Output datasets are derived recursively, indirectly from the input datasets. Design should make the dataset processing flexible w.r.t. e.g. multiple dataset versions and changing dataset relationships.
- Intended to be extended to be used on both pipelines: ROC-SGSE (ground calibration; current design), and RODP (mission)



Current status, issues

- There is a submitted User Manual (RUM) draft, but no s/w reqs. spec. (SRS).
- ~ICD compliant (not latest ICD; if ignoring CDF contents).
- Does read, process, and produce some datasets. Supported output CDFs “decent”.
 - Handles LFR WF datasets; incomplete implementation for TDS WF.
 - Simplistic calibration: multiplication (no transfer functions, no offsets)
 - Processes dataset levels according to old scheme L2R → L2S (not L1R→L2S)
 - No sweeps and bias currents (awaiting design decisions with ROC; only RODP pipeline anyway)
- No official BIAS calibration table skeleton yet: non-trivial, ambiguous



BIAS Datasets

- **BICAS input datasets:**
 - Can read – All LFR, V01/V02
 - ROC-SGSE_L2R_RPW-LFR-SBM1-CWF
 - ROC-SGSE_L2R_RPW-LFR-SBM2-CWF
 - ROC-SGSE_L2R_RPW-LFR-SURV-CWF
 - ROC-SGSE_L2R_RPW-LFR-SURV-SWF
 - ROC-SGSE_HK_RPW-BIA
 - Can read (processing incomplete)
 - ROC-SGSE_L2R_RPW-TDS-LFM-RSWF
 - ROC-SGSE_L2R_RPW-TDS-LFM-CWF
 - Will also eventually need to read more datasets (RODP pipeline). Awaiting design decisions.
 - SOLO_L1_RPW-BIA-SWEEP (Sweeps)
 - Bias currents
- **BICAS output datasets:**
 - Can output; skeletons are well defined (V02)
 - ROC-SGSE_L2S_RPW-LFR-SBM1-CWF-E
 - ROC-SGSE_L2S_RPW-LFR-SBM2-CWF-E
 - ROC-SGSE_L2S_RPW-LFR-SURV-CWF-E
 - ROC-SGSE_L2S_RPW-LFR-SURV-SWF-E
 - Partially implemented; Skeletons are well defined
 - ROC-SGSE_L2S_RPW-TDS-LFM-RSWF-E
 - ROC-SGSE_L2S_RPW-TDS-LFM-CWF-E
 - Will also eventually need to read more datasets (RODP pipeline). Awaiting design decisions.
 - Sweeps
 - (Preliminary L3 datasets (no L4); no impl.)
 - E x B drift
 - True satellite potential
 - 3D electric field ($E \cdot B = 0$)