Objectives

Objectives

- To agree on how the L2 calibrated science data files will be generated at the ROC. More specifically concerning the waveform products.

- To agree on the corresponding responsibilities (software and data)

- To agree on the updated test and delivery schedule

- Good occasion to start discussion with the FIELDS/SPP team in terms of science data

Agenda

START TIME	DURATION	TOPIC	PRESENTER
09:30	5 min	Introduction & objectives of the meeting	X.Bonnin
09:35	30 min	Presentation of FIELDS science data products, format, levels, processing pipeline and current status	M.Pulupa
10:05	15 min	Presentation of RPW science data products, format, levels, processing pipeline, feedback from the calibration campaigns concerning the ROC-SGSE, current status and planning	X.Bonnin
10:20	10 min	THR calibration status, feedback from the calibration campaign	M.Maksimovic (TBC)
10:30	10 min	TDS calibration status, feedback from the calibration campaign	J.Soucek (TBC)
10:40	10 min	LFR calibration status, feedback from the calibration campaign	T.Chust (TBC)
10:50	10 min	Coffee break	
11:00	10 min	Bias calibration status, feedback from the calibration campaign	E.Johansson (TBC)
11:10	10 min	SCM calibration status, feedback from the calibration campaign	J.-Y.Brochot (TBC)
11:20	1h10	Discussion about the RPW science data production and validation responsibilities	All
12:30	1h30	Lunch	
14:00	1h	Continuation of the discussion about the RPW science data production and validation responsibilities.	All
15:00	15 min	Discussion concerning the impact on the calibration software and data planning (tests and delivery)	X.Bonnin, All
15:15	15 min	Conclusion	X.Bonnin
15:30		End of the meeting	

RPW science data products

X.Bonnin and the ROC Team

SOC specification: data processing levels

Level	Source	Data Type	Format and Metadata content
L0	IT	"Raw" data, unpacked and decompressed data	Data format preferable in FITS or CDF, but can be different if this is more appropriate. Metadata reflect the information that was available in the TM packets only.
L1	IT	"Engineering" data, uncalibrated	FITS or CDF, metadata follows Solar Orbiter standard for L1 (see Section 3): *Note that this level might not always apply to instruments using a complete processing and calibration pipeline onboard, like PHI.*
L2	IT	"Calibrated" data, science quality	FITS or CDF, metadata follows Solar Orbiter standard for L2 (see Section 3): full attitude information in WCS coordinate frame and time in UTC.
L3	*IT*	*Higher-level data*	*Data format as appropriate. The format of Level-3 data, calibration data and ancillary data can be chosen depending on the type of data product and the objectives. However, as much as possible standard formats should be used (MPEG, FITS, JPEG2000, CDF, PNG, ...).*
CAL	IT	Calibration data	Data format as appropriate. *Not all calibration data are necessarily open to the scientific community.*
ANC	IT/SOC	Ancillary data	Data format as appropriate. *Not all ancillary data are necessarily open to the scientific community.*
LL01	SOC	LL engineering data, output of LL pipeline	FITS or CDF, metadata follow Solar Orbiter standard, with some specifics for LL-01 data (see [LLFITSICD] and [LLCDFICD] : time in OBT, attitude in instrument detector reference frame.
LL02	SOC	Operational LL data, enhanced with S/C HK	FITS or CDF, metadata follow Solar Orbiter standard, with some specifics for LL-02 data (see [LLFITSICD] and [LLCDFICD]: time in UTC, attitude in WCS coordinate frame.
LL03	SOC	Visualisation of operational LL data, in "quicklook" format	'Quicklook' data in PNG or JPEG2000 (details TBC). This level is also used for LL data products derived from (multiple) LL02 products.

[SOL-SGS-TN-0009]

SOC specification: file naming convention

`source_level_descriptor_datetime_version_freefield.extension`

Field	Description	Mandatory / Optional
source	Identifies the data as from Solar Orbiter. Content will be 'solo' (TBD).	Mandatory
level	Processing level. Content will either be L0, L1, L2, L3, LL01, LL02, LL03, ... according to the Solar Orbiter data processing level standard in Sect. 2.1.2.	Mandatory
descriptor	The instrument, and if appropriate the sensor/detector and/or data product, each separated by a hyphen. Including the instrument is mandatory. Detector and data product information can be included (or not) as required, e.g. metis, swa-eas-pad or epd-flux are all valid descriptors. However, the descriptor must **uniquely identify the type of data in the file**, for example EUI FSI images taken in different wavelengths cannot have only eui-fsi as their descriptor. Level 3 data derived from multiple instruments will have 'multi' as the first part of descriptor. The meaning of the descriptor for ancillary (and planning) data is slightly different, i.e. <creating actor> + '-' + <product>	Mandatory
datetime	The timestamp of the data in the file, i.e. the UTC at which the observation was made by the spacecraft. Formatted according to Sect. 2.1.3.1 below. The same date and time should be reflected in the metadata (e.g. in FITS keywords DATE_BEG and, if applicable, DATE_END). L0 data are special in the sense that no OBT-to-UTC conversion has taken place yet, so their filename will contain datetime fields in OBT (see Sect. 2.1.3.1).	Mandatory
version	The version of the file, formatted as capital V + 2-character incremental number padded with 0. Again, version numbers in L0 files are more flexible.	Mandatory
free field	An optional field of which the format is free, but decimal points or underscores cannot be used.	Optional
extension	File extension: '.fits' for all FITS files, '.cdf' for all CDF, '.jp2' for JPEG2000 files (more extensions might be added later). Simple ASCII text files must also have an extension '.txt'.	Mandatory

ex. « solo_L1_RPW-TDS-SURV-RSWF_V02.cdf »

SOC specification: expected zVars

NAME	DESCRIPTION	TYPE	LEVEL	DATA TYPE	COMMENT
EPOCH	Primary time variable as defined in the section 1.1.2	M	All	CDF_TIME_TT2000	See http://spdf.gsfc.nasa.gov/istp_guide/variables.html#Epoch.
EPOCH_i	i-th time variable as defined in the section 1.1.2	M	All	CDF_TIME_TT2000	Only mandatory for multiple temporal resolutions.
SCET	Onboard S/C time	P	L1, LL	CDF_REAL8	
ACQUISTION_TIME	Time of acquisition as returned in the instrument packet data	O	L1, LL	TBD	Not necessarily the same than SCET
JULIAN_DAY	Time in julian days	O	L2, L3	CDF_REAL8	
SYNCHRO_FLAG	Flag to check instrument time synchronisation	O	L1, LL	CDF_UINT1	e.g., Check time synchronisation between the RPW DPU time and sub-systems times.
QUALITY_FLAG	Human readable high level parameter	P	All	CDF_UINT1	Can apply to one or several science parameters
QUALITY_BITMASK	Computer readable quality parameter	P	All	CDF_UINT2	Can apply to one or several science parameters
POST_GAP_FLAG	Flag that indicates data gap in the records.	O	All	CDF_UINT1	See http://spdf.gsfc.nasa.gov/istp_guide/variables.html#Post%20Gap%20Flag
INTERPOL_FLAG	Flag that indicates if the current record is real or interpolated	O	All	CDF_UINT1	
SC_HCI_POS	S/C Cartesian coordinates in the HCI system.	P	L2, L3	TBD	Only mandatory for low cadence, level 2/3.
SC_HEE_POS	S/C Cartesian coordinates in the HEE system	O	L2, L3	TBD	Only mandatory for low cadence, level 2/3.
SBM_FLAG	Flag that indicated if a SBM mode is currently on/off.	O	All	CDF_UINT1	

- M: Mandatory keywords to comply with the ISTP guidelines.
- P: Keywords we propose to be mandatory in the Solar Orbiter CDF files.
- O: Keywords in *italic* are optional and can be defined if applicable to the instrument in question.

Quality	Meaning
0	Bad data
1	Known problems, use at your own risk
2	Survey data, possibly not publication-quality
3	Good for publication, subject to PI approval
4	Excellent data which has received special treatment

QUALITY_BITMASK shall be a CDF_UINT2 flag providing a computer readable quality information. The values and meanings of QUALITY_BITMASK can differ from instrument to another and shall be reported in the instrument's dataset description document.

SOC specification: time

Primary time variable « Epoch » gives in CDF_TIME_TT2000

It should be noted that the CDF_TIME_TT2000 data type is defined as an 8-byte signed integer with a fixed Time_Base=J2000 (Julian date 2451545.0 TT or 2000 January 1, 12h TT), Resolution=nanoseconds, Time_Scale=Terrestrial Time (TT), Units=nanoseconds, Reference_Position=Spacecraft barycenter.

Given a current list of leap seconds, conversion between TT and UTC is straightforward:

TT = TAI + 32.184s or
TT = UTC + deltaAT + 32.184s

Where deltaAT is the sum of the leap seconds since 1960; for example, for 2009, deltaAT = 34s).

Will be computed using the SPICE kernels provided by the SOC (spacecraft clock, leap-seconds)

SOC specification: coordinates

The coordinate system conventions for the CDF variables are as follows:

- Level 2 vector and tensor time series should always be presented in a scientific coordinate system. Spacecraft-centric RTN coordinates in a Cartesian representation are the preferred choice for Solar Orbiter.
- Level 1 data should be presented in instrument coordinates, together with the rotation matrix to spacecraft coordinates.
- Coordinate systems will be described using four variable attributes:
    1. COORDINATE_SYSTEM which gives the name of the coordinate system;
    2. FRAME_VELOCITY which can take either the value 'Observatory' where no corrections have been applied to the data or 'Inertial' where quantities (e.g. electric field or plasma flow velocity) have been corrected for spacecraft motion relative to an inertial frame (HCI);
    3. FRAME_ORIGIN which gives the origin of the reference frame where this is not implicit in the value of COORDINATE_SYSTEM;
    4. REPRESENTATION_i which gives the representation (['x','y','z'] for Cartesian; ['r','p','t'] for spherical polar; ['r','p','z'] for cylindrical polar) of the ith dimension of the variable.

1.1.1.2 Spacecraft position

It is suggested that at least the low cadence, normal mode, Level 2 files should also include the spacecraft position as a variable. This should be expressed in HCI Cartesian Coordinates and be treated in the same way as any other variable.

RPW data processing level

RPW data processing levels:

- LZ, L0, L1, HK and ANC data produced by the ROC, from data delivered by the SOC/MOC
- L2 science calibrated data produced by the ROC, using the RPW Calibration Software (RCS) delivered by the analyser/ sensor teams.
- L1, L2 data must comply the SOC specification *[SOL-SGS-TN-0009]*
- LL01 are produced by the RLLP, LL02 and LL03 by the SOC.
- LL01data must comply the SOC specification *[SOL-SGS-ICD-0004]* and the derived data description in [*ROC-OPS-LLD-NTT-00028-LES*]

Level	Description	Users
LZ	Raw RPW telemetry produced by the Solar Orbiter MOC. ApID-separated, sorted, cleaned. Binary packet data encapsulated in XML files, as returned by the Solar Orbiter Data Dissemination System at MOC.	ROC
L0	Uncompressed and decommuted Lz. « Raw » data values. Daily HDF5 format files.	ROC RPW team Archives
HK	Uncompressed and decommuted HK, UTC-tagged. Daily ESA-compliant CDFs, 1 file per sub-system.	ROC RPW team Archives
L1	Uncompressed and decommutated L0 + UTC-tagged, waveform and spectral data in telemetry units (uncalibrated) in spacecraft coordinate system. Data affinity group. E + B components in the same files. Daily ESA-compliant CDFs, Quik Look and daily/orbital summary plots	ROC RPW team Archives
L2	L1 + waveform and spectral data in fully calibrated physical units [V, mV/m, nT, W/m^2/Hz, nT^2/Hz] in spacecraft and heliophysical coordinates systems. Separated E and B Waveform products. ESA-compliant CDFs, Quik Look and daily/orbital summary plots	ROC RPW team Solar Orbiter science team Science community Archives Other end users (archives, virtual observatories, etc.)
L3	L2 + VxB removal for DC E-field measurement, offsets and corrections with data quality flags. Poynting flux. Plasma density. Spacecraft potential. Merged B. Merged density and temperature. Goniopolarimetry. ESA-compliant CDFs, Science data plots.	
L4	Event time tags and parameters	
CAL	Calibration data	ROC
	Data format as appropriate	RPW team
ANC	Ancillary data Data format as appropriate	ROC RPW team Science community
LL01	LL engineering data, output of the LL pipeline Specific CDF format files	SOC/MOC ROC
LL02	Operational LL data, enhanced with S/C HK Specific CDF format files	SOC/MOC ROC
LL03	Visualisation of operational LL data, in “quicklook” format Data in PNG or JPG2000 (TBC)	SOC/MOC ROC

ROC-PRO-DAT-NTT-00006

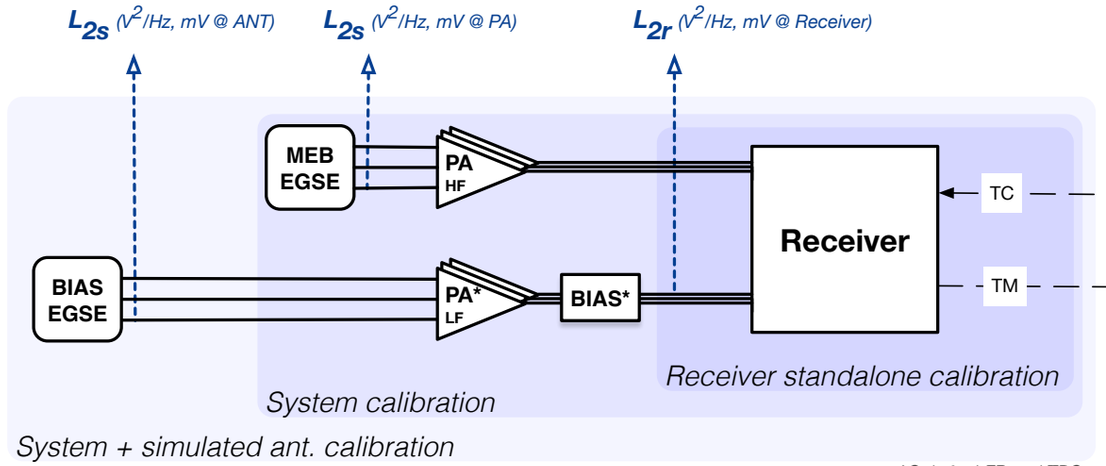
L2R/L2S data levels

RPW internal data processing levels:

- 2 intermediate data levels introduced for the calibration campaigns
  - L2R (receiver) level, produced by TDS/LFR/THR teams RCS from L1 data
  - L2S (system/stimuli) level, produced by TDS/LFR/THR/ BIAS/SCM teams from L1 data
- Do we have to used these levels for the L2 production during the mission?

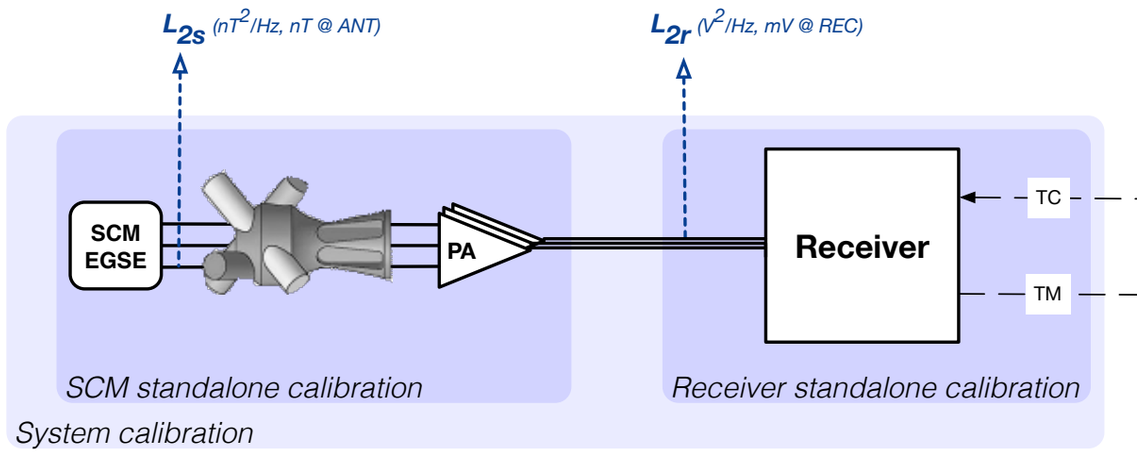
L2R	RPW Level 2 calibrated science data at receiver level. Time-tagged.	CDF, as produced by the calibration S/W. Contains calibrated science data derived from L1 data.	ROC, RPW teams
L2S	RPW Level 2 calibrated science data at system level. Time-tagged.	CDF, as produced by the calibration S/W. Contains calibrated science data derived from L2R data.	ROC, RPW teams

Electric data levels:



*Only for LFR and TDS

Magnetical data levels:



ROC-TST-GSE-NTT-00017-LES_Iss02_Rev01

RPW data set concept

RPW data set

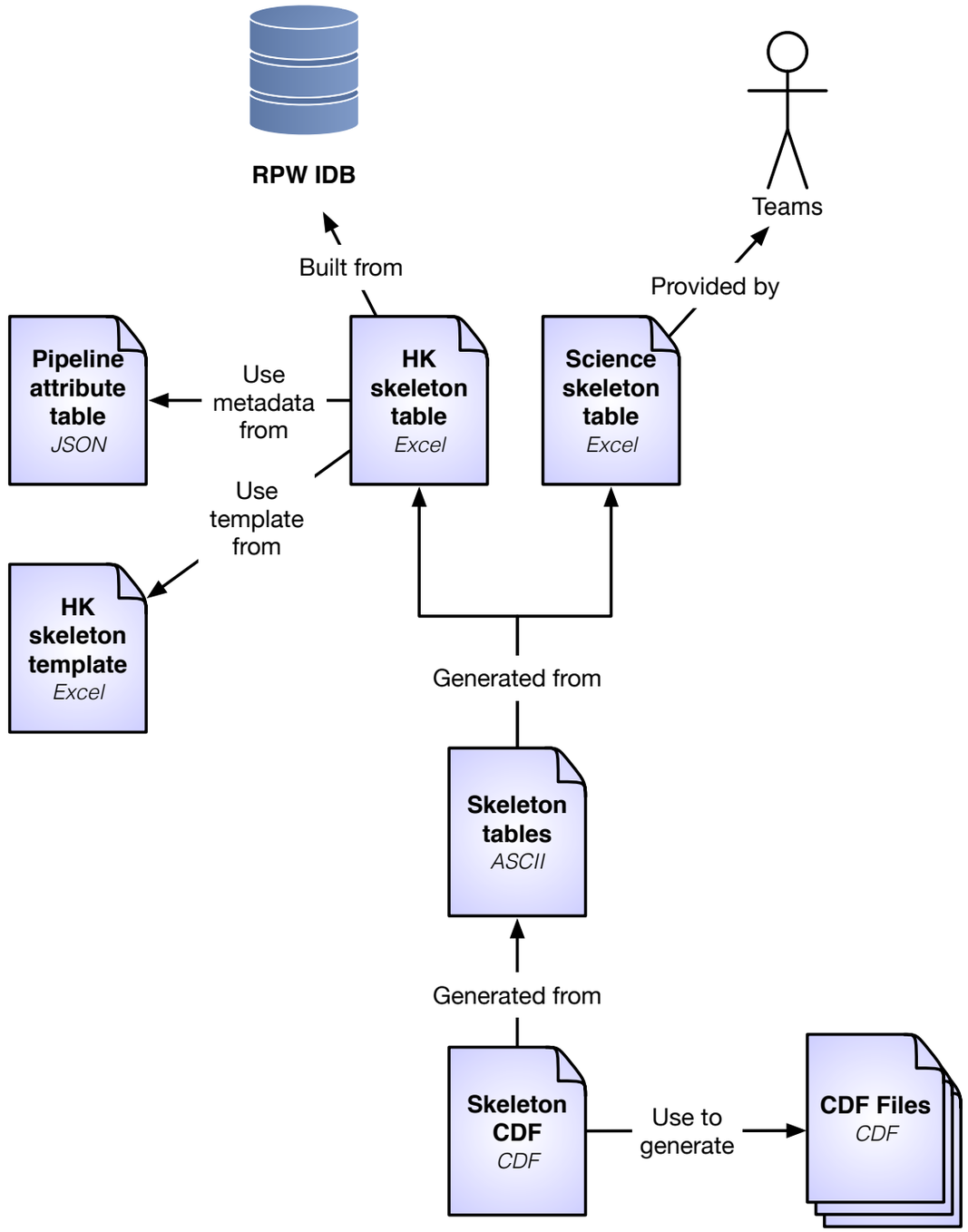
- RPW data set definition:
  - Must be generated by the RSS
  - Must be uniquely identified with a ROC DS ID in the RSS
  - Must follow the convention defined in [RD10] (e.g., 1 CDF skeleton per data set)
- ROC DS ID organized by source, level, receiver, mode and science products, using the CDF global attributes:
  - SOLO_L2_RPW-LFR-SBM1-BP1

- Descriptor based on instrument-receiver/sensor-mode-producttype
- All of the RPW data sets to produced during the mission is listed in the *rpw_datasets_iss01_rev00.xlsx [RD13]*
- Concept already applied for the ROC-SGSE tool during EM2/PFM calibrations campaigns

CDF skeleton workflow

CDF skeleton philosophy

- CDF data files produced using CDF template files called « CDF skeleton » (or « master CDF »)
- ROC and RPW teams produces Excel format files which are converted into CDF skeleton, using a dedicated program*
- CDF skeletons of HK are automatically generated from the Instrument database (IDB) by the ROC-SGSE
- There is one skeleton per ROC data set
- List of ROC-SGSE CDF skeletons are stored in the ROC SVN repository
- Structure and content of the CDF skeleton automatically check by a dedicated program* (in progress)



* https://github.com/maserlib/maser4py

RPW Data products

Philosophy

- 1 CDF skeleton per data set
- CDF structure between L1 and L2 data must be as much as possible the same
- Convention and structure for similar data products (LFR CWF and TDS LFM CWF) must be as much as possible the same (V <—> Voltage)
- Spectral and specific data products (BP1/BP2, HIST1D/ HIST2D, …) are calibrated by the receiver teams
- Waveform data products are divided into two products B and E between L1 and L2 levels (but the structure should not change)

RPW L2 science data production responsibilities overview

Software	Team in charge	Inputs	Outpus
THR_CALBAR	THR	L1 THR	L2 THR
TDS_CALBA	TDS	L1 TDS	L2 TDS, except waveforms *L2R LFR waveforms (TBC)*
LFR_CALBUT	LFR	L1 LFR	L2 LFR (except waveforms) *L2R LFR waveforms (TBC)*
BICAS	BIAS	*L2R TDS/LFR E waveforms (TBC)*	*L2 TDS/LFR E waveforms (TBC)*
SCML2RL2S	SCM	*L2R TDS/LFR B waveforms (TBC)*	*L2 TDS/LFR B waveforms (TBC)*

THR_CALBAR current products

Input ID	Output ID	Structure
SOLO_L1_RPW-TNR-SURV	SOLO_L2_RPW-TNR-SURV	1 CDF record per spectrum (4 * 32 freq.)
SOLO_L1_RPW-HFR-SURV	SOLO_L2_RPW-HFR-SURV	1 CDF record per sample (1 freq.)
Specific products for B data?		

TDS_CALBA current products

Input ID	Output ID	Structure
SOLO_L1_RPW-TDS-SURV-RSWF	SOLO_L2R_RPW-TDS-SURV-RSWF	1 CDF record per SWF
SOLO_L1_RPW-TDS-SURV-TSWF	SOLO_L2R_RPW-TDS-SURV-TSWF	1 CDF record per SWF
SOLO_L1_RPW-TDS-SURV-HIST1D	SOLO_L2_RPW-TDS-SURV-HIST1D	1 CDF record per HIST1D
SOLO_L1_RPW-TDS-SURV-HIST2D	SOLO_L2_RPW-TDS-SURV-HIST2D	1 CDF record per HIST2D
SOLO_L1_RPW-TDS-SURV-STAT	SOLO_L2_RPW-TDS-SURV-STAT	1 CDF record per STAT
SOLO_L1_RPW-TDS-SURV-MAMP	SOLO_L2_RPW-TDS-SURV-MAMP	1 CDF record per MAMP
SOLO_L1_RPW-TDS-LFM-RSWF	SOLO_L2R_RPW-TDS-LFM-RSWF	1 CDF record per SWF
SOLO_L1_RPW-TDS-LFM-CWF	SOLO_L2R_RPW-TDS-LFM-CWF	1 CDF record per WF sample
SOLO_L1_RPW-TDS-LFM-SM SOLO_L1_RPW-TDS-LFM-PSD	SOLO_L2_RPW-TDS-LFM-PSDSM	1 CDF record per SM/PSD
SOLO_L1_RPW-TDS-SBM1-RSWF	SOLO_L2R_RPW-TDS-SBM1-RSWF	1 CDF record per SWF
SOLO_L1_RPW-TDS-SBM2-TSWF	SOLO_L2R_RPW-TDS-SBM2-TSWF	1 CDF record per SWF

LFR_CALBUT current products

Input ID	Output ID	Structure
SOLO_L1_RPW-LFR-SURV-ASM	SOLO_L2_RPW-LFR-SURV-ASM	1 CDF record per ASM
SOLO_L1_RPW-LFR-SURV-BP1	SOLO_L2_RPW-LFR-SURV-BP1	1 CDF record per BP1
SOLO_L1_RPW-LFR-SURV-BP2	SOLO_L2_RPW-LFR-SURV-BP2	1 CDF record per BP2
SOLO_L1_RPW-LFR-SURV-CWF	SOLO_L2R_RPW-LFR-SURV-CWF	1 CDF record per WF sample
SOLO_L1_RPW-LFR-SURV-SWF	SOLO_L2R_RPW-LFR-SURV-SWF	1 CDF record per SWF
SOLO_L1_RPW-LFR-SBM1-CWF	SOLO_L2R_RPW-LFR-SBM1-CWF	1 CDF record per WF sample
SOLO_L1_RPW-LFR-SBM1-BP1	SOLO_L2_RPW-LFR-SBM1-BP1	1 CDF record per BP1
SOLO_L1_RPW-LFR-SBM1-BP2	SOLO_L2_RPW-LFR-SBM1-BP2	1 CDF record per BP2
SOLO_L1_RPW-LFR-SBM2-CWF	SOLO_L2R_RPW-LFR-SBM2-CWF	1 CDF record per WF sample
SOLO_L1_RPW-LFR-SBM2-BP1	SOLO_L2_RPW-LFR-SBM2-BP1	1 CDF record per BP1
SOLO_L1_RPW-LFR-SBM2-BP2	SOLO_L2_RPW-LFR-SBM2-BP2	1 CDF record per BP2

SCML2RL2S current products

Input ID	Output ID	Structure
SOLO_L2R_RPW-LFR-SURV-CWF	SOLO_L2_RPW-LFR-SURV-CWF-B	1 CDF record per WF sample
SOLO_L2R_RPW-LFR-SURV-SWF	SOLO_L2_RPW-LFR-SURV-SWF-B	1 CDF record per SWF
SOLO_L2R_RPW-LFR-SBM1-CWF	SOLO_L2_RPW-LFR-SBM1-CWF-B	1 CDF record per WF sample
SOLO_L2R_RPW-LFR-SBM2-CWF	SOLO_L2_RPW-LFR-SBM2-CWF-B	1 CDF record per WF sample
SOLO_L2R_RPW-TDS-SURV-RSWF	SOLO_L2_RPW-TDS-SURV-RSWF-B	1 CDF record per SWF
SOLO_L2R_RPW-TDS-SURV-TSWF	SOLO_L2_RPW-TDS-SURV-TSWF-B	1 CDF record per SWF
SOLO_L2R_RPW-TDS-LFM-RSWF	SOLO_L2_RPW-TDS-LFM-RSWF-B	1 CDF record per SWF
SOLO_L2R_RPW-TDS-SBM1-RSWF	SOLO_L2_RPW-TDS-SBM1-RSWF-B	1 CDF record per SWF
SOLO_L2R_RPW-TDS-SBM2-TSWF	SOLO_L2_RPW-TDS-SBM2-TSWF-B	1 CDF record per SWF
SOLO_L2R_RPW-TDS-LFM-CWF	SOLO_L2_RPW-TDS-LFM-CWF-B	1 CDF record per WF sample

BICAS current products

Input ID	Output ID	Structure
SOLO_L2R_RPW-LFR-SURV-CWF	SOLO_L2_RPW-LFR-SURV-CWF-E	1 CDF record per WF sample
SOLO_L2R_RPW-LFR-SURV-SWF	SOLO_L2_RPW-LFR-SURV-SWF-E	1 CDF record per SWF
SOLO_L2R_RPW-LFR-SBM1-CWF	SOLO_L2_RPW-LFR-SBM1-CWF-E	1 CDF record per WF sample
SOLO_L2R_RPW-LFR-SBM2-CWF	SOLO_L2_RPW-LFR-SBM2-CWF-E	1 CDF record per WF sample
SOLO_L2R_RPW-TDS-SURV-RSWF	SOLO_L2_RPW-TDS-SURV-RSWF-E	1 CDF record per SWF
SOLO_L2R_RPW-TDS-SURV-TSWF	SOLO_L2_RPW-TDS-SURV-TSWF-E	1 CDF record per SWF
SOLO_L2R_RPW-TDS-LFM-RSWF	SOLO_L2_RPW-TDS-LFM-RSWF-E	1 CDF record per SWF
SOLO_L2R_RPW-TDS-SBM1-RSWF	SOLO_L2_RPW-TDS-SBM1-RSWF-E	1 CDF record per SWF
SOLO_L2R_RPW-TDS-SBM2-TSWF	SOLO_L2_RPW-TDS-SBM2-TSWF-E	1 CDF record per SWF
SOLO_L2R_RPW-TDS-LFM-CWF	SOLO_L2_RPW-TDS-LFM-CWF-E	1 CDF record per WF sample
?	SOLO_L2_RPW-BIA-SWEEP	?

ROC-SGSE: Status & future works

Status:

- With some efforts (thanks to teams), the ROC-SGSE has been successfully used to process RPW data of the 1822 EM2 and 3608 PFM tests
- All of these data are available on the ROC Web site
- ROC-SGSE data distribution interface on the ROC Web site is operational, but not really user-friendly
- TV-SGSE is uncompleted (according to the initial requirements)
- There are still few bugs and updates (https://jira-lesia.obspm.fr/browse/ROCDATPRO-23)

Future works

- Fixing bugs (e.g., leap seconds) and update some features (e.g., TDS SWF missing packet management)
- Fixing CDF skeletons
- Updating the ROC-SGSE to be used during the mission to analyse data from tests performed on-ground on the RPW « spare » model.
- Carrying on the analysis of the data produced during the PFM calibrating and generating L2R/L2S CDF data sets
- Archiving of ground calibration data at LESIA

Current status and to be done

RCS status

- L2R/L2S role must be clarified (main objectives of this meeting)
- List of data products and content shall be updates (CDF skeletons in consequence) using ROC-SGSE data sets
- Interface and integration tests must be carried-on (see next slide)

Documentation

- We need to complete the « RPW data products » document [ROC-PRO-DAT-NTT-00006-LES] (description of data products, quicklooks, L3 derived data, quality/bitmask, extra variables)
- Each team will have to deliver a software user manual (template will be delivered)
- We might ask for a software requirement specification (srs) document

Schedule

To be discussed

Document(s)	Version	Due date
SRS	Preliminary version	2017-03-31 (TBC)
SRS / SUM	First release / Preliminary version	2017-10-31 (TBC)
SUM	First release	2018-03-31 (TBC)

Validation Test	Description and main objectives	Due date
RCS ICD validation test	Test the RCS command line interfaces are compliant with the RCS ICD.	2017-03-31 (TBC)
RCS implementation test	ROC team to test the RCS implementation into the RODP.	2017-06-30 (TBC)
RCS data products validation	Test to validate that data files produced by the RCS are fully compliant with the ROC data format and metadata definition.	2017-10-31 (TBC)
Full validation test	An end-to-end test to check the full process is ready for the mission.	2018-03-31 (TBC)

Schedule

Team	Software name	Software function	Version	Delivery date
THR	THR CALibration softwARe SGSE (THR CALBAR-SGSE)	Produce THR calibrated data during ground calibration campaigns	1.0.0	31/10/2016
THR	THR CALibration softwARe (THR CALBAR)	Produces L2 electrical spectral data files for THR during the Solo mission	TBD	31/10/2017 (TBC)
LFR	LFR CALiBration UnitT SGSE (LFR CALBUT-SGSE)	Produces L2s HF electric component and L2r data files for LFR during the on-ground tests	1.0.0	31/10/2016
LFR	LFR CALiBration UnitT (LFR CALBUT)	L2 data files for LFR during the Solo mission	TBD	31/10/2017 (TBC)
TDS	TDS CALibration SoftwARe SGSE (TDS CALBAR-SGSE)	Produces L2s HF electric component and L2s data files for TDS during on-ground tests	1.0.0	31/10/2016
TDS	TDS CALibration SoftwARe (TDS CALBAR)	Produces L2s HF electric component and L2r data files for TDS during SolO mission	TBD	31/10/2017 (TBC)
BIAS	IRFU_MATLAB SGSE	Produces L2s data files involving BIAS during the ground tests	1.0.0	31/10/2016
BIAS	IRFU_MATLAB	Produces L2 data files involving BIAS during the SolO mission	TBD	31/10/2017 (TBC)
SCM	SCML2RL2S SGSE	Produces L2 waveform data files involving SCM during the on-ground tests	1.0.0	31/10/2016
SCM	SCML2RL2S SGSE	Produces L2 waveform data files involving SCM during the SolO mission	TBD	31/10/2017 (TBC)

Extra slides