

RPW Data Release Notes

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About RPW data release philosophy

RPW public data are released by LESIA on daily basis. Only L0/L1/L2 data older than 90 days are freely accessible. If a public data file needs to be re-processed, the new version is made available within 48 hours following its generation.

The release notes below gives the history of the RPW public data, which have been re-processed during the mission (i.e., except for the first delivery on September 2020, "release" and "re-processing" terms are equivalent in these notes).

Only main changes relevant for the science community are reported in the tables for each products. For a detailed modification history, including technical updates, please read the software changelog in [ROC gitlab site](#) (restricted access).



The first version of RPW data file is always generated with a sequence number "V01" (corresponding to the "Data_version" global attribute's entry in the CDF). This number is incremented each time a new version of the file is produced. For a given data product and release, public files can hence have different version numbers.

Make sure to always use the file with the highest sequence number.

N.B. Official data providers (LESIA, ESAC, NASA, CDP) will always supply as a first choice the latest version of the RPW data products.

RPW L2 science data release notes

Following releases notes are classified by [RPW Data Products](#).

SOLO_L2_RPW-HFR-SURV

Change log (deltas since the previous release)	Release date	Software version
<ul style="list-style-type: none">• First release	September 2020	THR_CALBAR V2.2.3
<ul style="list-style-type: none">• NEW calibration procedure -- added 2 dB to V0 due to the 75 ohm cable as observed in the BW test on ground	March 2021	THR_CALBAR V2.3.3

<ul style="list-style-type: none"> Fix a bug in Epoch times in SOLO_L1_RPW-HFR-SURV 	June 2021	THR_CALBAR V2.3.3
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SOLO_L2_RPW-LFR-SURV-ASM

Change log (deltas since the previous release)	Release date	Software version
<ul style="list-style-type: none"> First release 	September 2020	LFR_CALBUT V1.3.0
<ul style="list-style-type: none"> Reads the validity file from each team to obtain the calibration filename to use. 	March 2021	LFR_CALBUT V1.5.5
<ul style="list-style-type: none"> Add a factor four to compensate the use of Hanning window Add all the products in SRF frame Fill MODS global attributes 	November 2021	LFR_CALBUT V2.0.1

SOLO_L2_RPW-LFR-SURV-BP1

Change log (deltas since the previous release)	Release date	Software version
<ul style="list-style-type: none"> First release 	September 2020	LFR_CALBUT V1.3.0
<ul style="list-style-type: none"> Calibration improved. Now BP1 are divided by ASM frequencies. Days with only burst mode are now correctly computed. Reads the validity file from each team to obtain the calibration filename to use. 	March 2021	LFR_CALBUT V1.5.5
<ul style="list-style-type: none"> Add NVEC in SRF frame Add a factor four to compensate the use of Hanning window for PB and PE Correct calibration of BP1 Sx Fill MODS global attributes 	November 2021	LFR_CALBUT V2.0.1

SOLO_L2_RPW-LFR-SURV-BP2

Change log (deltas since the previous release)	Release date	Software version
<ul style="list-style-type: none"> First release 	September 2020	LFR_CALBUT V1.3.0
<ul style="list-style-type: none"> Calibration improved at F2 frequencies. Now BP1 are divided by ASM frequencies. Days with only burst mode are now correctly computed. Reads the validity file from each team to obtain the calibration filename to use. 	March 2021	LFR_CALBUT V1.5.5
<ul style="list-style-type: none"> Add a factor four to compensate the use of Hanning window Add all the products in SRF frame Fill MODS global attributes 	November 2021	LFR_CALBUT V2.0.1

SOLO_L2_RPW-LFR-SURV-CWF-B

Change log (deltas since the previous release)	Release date	Software version
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<ul style="list-style-type: none"> • First release 	September 2020	SCMCAL V0.12.1
<ul style="list-style-type: none"> • Corrects gAttr TIME_MIN and TIME_MAX • Improves the accuracy of the time range where the heaters alter the magnetic measurements (bit1 of L2_QUALITY_BITMASK) 	March 2021	SCMCAL V0.14.0
<ul style="list-style-type: none"> • uses V13 skeletons • the SCMCAL version comes from the descriptor and not from the configuration file • the names of the CDF masters are given by the "template" keys in the descriptor file (and not in the configuration file) • optimization of the computation time of CalibrateWave() • optimization, transfer functions and transfer matrices were recalculated when not needed. • improves the calibration of continuous waveforms (by overlapping) • improves the calculation of Brtn (the M_scm_rtn matrix is calculated every second) • corrects CALIBRATION_TABLE_INDEX (which was wrong as soon as a change occurred during the file) • resizes the output TDS snapshots • accepts resized or not resized L1R TDS snapshots 	June 2021	SCMCAL V1.0.0

SOLO_L2_RPW-LFR-SURV-CWF-E

Change log (deltas since the previous release)	Release date	Software version
<ul style="list-style-type: none"> • First release 	September 2020	BICAS V3.1.0
<ul style="list-style-type: none"> • Zero order AC data de-trending (remove mean; previously removed linear fit), but no AC data re-trending. This removes earlier artificial offsets and artificial linear components, in particular in snapshots. • Using improved fits and extrapolations of the BIAS AC transfer functions, in particular for low frequencies. • Using modified inverted transfer functions for AC data below 7 Hz (constant gain) to prevent low frequency noise from being amplified. • Sets quality variables based on manually identified thruster firings. • Better CDF standards compliance. 	March 2021	BICAS V5.0.0

SOLO_L2_RPW-LFR-SURV-SWF-B

Change log (deltas since the previous release)	Release date	Software version
<ul style="list-style-type: none"> • First release 	September 2020	SCMCAL V0.12.1
<ul style="list-style-type: none"> • Corrects gAttr TIME_MIN and TIME_MAX • Improves the accuracy of the time range where the heaters alter the magnetic measurements (bit1 of L2_QUALITY_BITMASK) 	March 2021	SCMCAL V0.14.0
<ul style="list-style-type: none"> • uses V13 skeletons • the SCMCAL version comes from the descriptor and not from the configuration file • the names of the CDF masters are given by the "template" keys in the descriptor file (and not in the configuration file) • optimization of the computation time of CalibrateWave() • optimization, transfer functions and transfer matrices were recalculated when not needed. • improves the calibration of continuous waveforms (by overlapping) • improves the calculation of Brtn (the M_scm_rtn matrix is calculated every second) • corrects CALIBRATION_TABLE_INDEX (which was wrong as soon as a change occurred during the file) • resizes the output TDS snapshots • accepts resized or not resized L1R TDS snapshots 	June 2021	SCMCAL V1.0.0

SOLO_L2_RPW-LFR-SURV-SWF-E

Change log (deltas since the previous release)	Release date	Software version
<ul style="list-style-type: none"> First release 	September 2020	BICAS V3.1.0
<ul style="list-style-type: none"> Zero order AC data de-trending (remove mean; previously removed linear fit), but no AC data re-trending. This removes earlier artificial offsets and artificial linear components, in particular in snapshots. Using improved fits and extrapolations of the BIAS AC transfer functions, in particular for low frequencies. Using modified inverted transfer functions for AC data below 7 Hz (constant gain) to prevent low frequency noise from being amplified. Sets quality variables based on manually identified thruster firings. Better CDF standards compliance. 	March 2021	BICAS V5.0.0

SOLO_L2_RPW-TDS-LFM-CWF-B

Change log (deltas since the previous release)	Release date	Software version
<ul style="list-style-type: none"> First release 	September 2020	SCMCAL V0.12.1
<ul style="list-style-type: none"> Corrects gAttr TIME_MIN and TIME_MAX Improves the accuracy of the time range where the heaters alter the magnetic measurements (bit1 of L2_QUALITY_BITMASK) 	March 2021	SCMCAL V0.14.0

SOLO_L2_RPW-TDS-LFM-CWF-E

Change log (deltas since the previous release)	Release date	Software version
<ul style="list-style-type: none"> First release 	September 2020	BICAS V3.1.0

SOLO_L2_RPW-TDS-LFM-RSWF-B

Change log (deltas since the previous release)	Release date	Software version
<ul style="list-style-type: none"> First release 	September 2020	SCMCAL V0.12.1
<ul style="list-style-type: none"> Corrects gAttr TIME_MIN and TIME_MAX Improves the accuracy of the time range where the heaters alter the magnetic measurements (bit1 of L2_QUALITY_BITMASK) 	March 2021	SCMCAL V0.14.0
<ul style="list-style-type: none"> Fixes all known bugs in SWF data products, e.g., VOLTAGE data is filled, calibration bugs fixed. New calibration tables are released. They are not replacing the previous ones, but extending valid calibration after the TDS flight software update, i.e., old tables are still used before October 20, 2021. Some minor changes in global and variable attributes have been made, e. g. Parents and Data version global attributes are fixed. Parent_version global attribute is omitted. 	December 2021	SCMCAL V1.0.0

SOLO_L2_RPW-TDS-LFM-RSWF-E

Change log (deltas since the previous release)	Release date	Software version
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<ul style="list-style-type: none"> First release 	September 2020	BICAS V3.1.0
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SOLO_L2_RPW-TDS-SURV-HIST1D

Change log (deltas since the previous release)	Release date	Software version
<ul style="list-style-type: none"> First release 	September 2020	TDS_CALB A V0.9.6
<ul style="list-style-type: none"> Bug in CHANNEL_OVERFLOW flag for waveform snapshots fixed. Antenna lengths for RPW_ANTENNA_RTN data in snapshot waveforms added. Now both directions in RTN and effective lengths are provided. Feature to process the resized L1 files for the redundant LFM modes implemented. New calibration table released. A major problem in calibrations of MAMP, STAT, HISTxD fixed (mismatch in a calibration table). CHANNEL_CONFIG replaced by CHANNEL_REF in all concerning data products. TDS antenna configuration is now represented by number (e.g. 10 = ANT1-GND or 23 = ANT2-ANT3). Feature to process the resized L1 files implemented. Signs for waveform and voltage snapshots fixed. Some issues with the ISTP/SPDF compliance resolved, metadata variables added dimensions for existing zVars changed. Mandatory Global Attributes filled. Mismatch in modes for the waveform snapshot calibration fixed. Time vector in MAMP product adequately created. The first SOAR release (known bugs: bad sign for VOLTAGES in all waveform snapshots. Bad calibrations for MAMP and STAT for some of the TDS modes. Incorrect time vector for MAMP. BAD flag for CHANNEL_OVERFLOW in MAMP, TSWF and RSWF data products). 	March 2021	TDS_CALB A V1.0.2

SOLO_L2_RPW-TDS-SURV-HIST2D

Change log (deltas since the previous release)	Release date	Software version
<ul style="list-style-type: none"> First release 	September 2020	TDS_CALB A V0.9.6
<ul style="list-style-type: none"> Bug in CHANNEL_OVERFLOW flag for waveform snapshots fixed. Antenna lengths for RPW_ANTENNA_RTN data in snapshot waveforms added. Now both directions in RTN and effective lengths are provided. Feature to process the resized L1 files for the redundant LFM modes implemented. New calibration table released. A major problem in calibrations of MAMP, STAT, HISTxD fixed (mismatch in a calibration table). CHANNEL_CONFIG replaced by CHANNEL_REF in all concerning data products. TDS antenna configuration is now represented by number (e.g. 10 = ANT1-GND or 23 = ANT2-ANT3). Feature to process the resized L1 files implemented. Signs for waveform and voltage snapshots fixed. Some issues with the ISTP/SPDF compliance resolved, metadata variables added dimensions for existing zVars changed. Mandatory Global Attributes filled. Mismatch in modes for the waveform snapshot calibration fixed. Time vector in MAMP product adequately created. The first SOAR release (known bugs: bad sign for VOLTAGES in all waveform snapshots. Bad calibrations for MAMP and STAT for some of the TDS modes. Incorrect time vector for MAMP. BAD flag for CHANNEL_OVERFLOW in MAMP, TSWF and RSWF data products). 	March 2021	TDS_CALB A V1.0.2

SOLO_L2_RPW-TDS-SURV-MAMP

Change log (deltas since the previous release)	Release date	Software version
<ul style="list-style-type: none"> First release 	September 2020	TDS_CALB A V0.9.6

<ul style="list-style-type: none"> Bug in CHANNEL_OVERFLOW flag for waveform snapshots fixed. Antenna lengths for RPW_ANTENNA_RTN data in snapshot waveforms added. Now both directions in RTN and effective lengths are provided. Feature to process the resized L1 files for the redundant LFM modes implemented. New calibration table released. A major problem in calibrations of MAMP, STAT, HISTxD fixed (mismatch in a calibration table). CHANNEL_CONFIG replaced by CHANNEL_REF in all concerning data products. TDS antenna configuration is now represented by number (e.g. 10 = ANT1-GND or 23 = ANT2-ANT3). Feature to process the resized L1 files implemented. Signs for waveform and voltage snapshots fixed. Some issues with the ISTEP/SPDF compliance resolved, metadata variables added dimensions for existing zVars changed. Mandatory Global Attributes filled. Mismatch in modes for the waveform snapshot calibration fixed. Time vector in MAMP product adequately created. The first SOAR release (known bugs: bad sign for VOLTAGES in all waveform snapshots. Bad calibrations for MAMP and STAT for some of the TDS modes. Incorrect time vector for MAMP. BAD flag for CHANNEL_OVERFLOW in MAMP, TSWF and RSWF data products). 	March 2021	TDS_CALB A V1.0.2
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SOLO_L2_RPW-TDS-SURV-RSWF-B

Change log (deltas since the previous release)	Release date	Software version
<ul style="list-style-type: none"> First release 	September 2020	SCMCAL V0.12.1
<ul style="list-style-type: none"> Corrects gAttr TIME_MIN and TIME_MAX Improves the accuracy of the time range where the heaters alter the magnetic measurements (bit1 of L2_QUALITY_BITMASK) 	March 2021	SCMCAL V0.14.0
<ul style="list-style-type: none"> uses V13 skeletons the SCMCAL version comes from the descriptor and not from the configuration file the names of the CDF masters are given by the "template" keys in the descriptor file (and not in the configuration file) optimization of the computation time of CalibrateWave() optimization, transfer functions and transfer matrices were recalculated when not needed. improves the calibration of continuous waveforms (by overlapping) improves the calculation of Brtn (the M_scm_rtn matrix is calculated every second) corrects CALIBRATION_TABLE_INDEX (which was wrong as soon as a change occurred during the file) resizes the output TDS snapshots accepts resized or not resized L1R TDS snapshots 	June 2021	SCMCAL V1.0.0
<ul style="list-style-type: none"> Fixes all known bugs in SWF data products, e.g., VOLTAGE data is filled, calibration bugs fixed. New calibration tables are released. They are not replacing the previous ones, but extending valid calibration after the TDS flight software update, i.e., old tables are still used before October 20, 2021. Some minor changes in global and variable attributes have been made, e. g. Parents and Data version 	December 2021	SCMCAL V1.0.0 (TDS_CAL BA V2.2.1)

SOLO_L2_RPW-TDS-SURV-RSWF-E

Change log (deltas since the previous release)	Release date	Software version
<ul style="list-style-type: none"> First release 	September 2020	TDS_CALB A V0.9.6

<ul style="list-style-type: none"> Bug in CHANNEL_OVERFLOW flag for waveform snapshots fixed. Antenna lengths for RPW_ANTENNA_RTN data in snapshot waveforms added. Now both directions in RTN and effective lengths are provided. Feature to process the resized L1 files for the redundant LFM modes implemented. New calibration table released. A major problem in calibrations of MAMP, STAT, HISTxD fixed (mismatch in a calibration table). CHANNEL_CONFIG replaced by CHANNEL_REF in all concerning data products. TDS antenna configuration is now represented by number (e.g. 10 = ANT1-GND or 23 = ANT2-ANT3). Feature to process the resized L1 files implemented. Signs for waveform and voltage snapshots fixed. Some issues with the ISTEP/SPDF compliance resolved, metadata variables added dimensions for existing zVars changed. Mandatory Global Attributes filled. Mismatch in modes for the waveform snapshot calibration fixed. Time vector in MAMP product adequately created. The first SOAR release (known bugs: bad sign for VOLTAGES in all waveform snapshots. Bad calibrations for MAMP and STAT for some of the TDS modes. Incorrect time vector for MAMP. BAD flag for CHANNEL_OVERFLOW in MAMP, TSWF and RSWF data products). 	March 2021	TDS_CALB A V1.0.2
<ul style="list-style-type: none"> Fixes all known bugs in SWF data products, e.g., VOLTAGE data is filled, calibration bugs fixed. New calibration tables are released. They are not replacing the previous ones, but extending valid calibration after the TDS flight software update, i.e., old tables are still used before October 20, 2021. Some minor changes in global and variable attributes have been made, e. g. Parents and Data version global attributes are fixed. Parent_version global attribute is omitted. 	December 2021	TDS_CALB A V2.2.1

SOLO_L2_RPW-TDS-SURV-STAT

Change log (deltas since the previous release)	Release date	Software version
<ul style="list-style-type: none"> First release 	September 2020	TDS_CALB A V0.9.6
<ul style="list-style-type: none"> Bug in CHANNEL_OVERFLOW flag for waveform snapshots fixed. Antenna lengths for RPW_ANTENNA_RTN data in snapshot waveforms added. Now both directions in RTN and effective lengths are provided. Feature to process the resized L1 files for the redundant LFM modes implemented. New calibration table released. A major problem in calibrations of MAMP, STAT, HISTxD fixed (mismatch in a calibration table). CHANNEL_CONFIG replaced by CHANNEL_REF in all concerning data products. TDS antenna configuration is now represented by number (e.g. 10 = ANT1-GND or 23 = ANT2-ANT3). Feature to process the resized L1 files implemented. Signs for waveform and voltage snapshots fixed. Some issues with the ISTEP/SPDF compliance resolved, metadata variables added dimensions for existing zVars changed. Mandatory Global Attributes filled. Mismatch in modes for the waveform snapshot calibration fixed. Time vector in MAMP product adequately created. The first SOAR release (known bugs: bad sign for VOLTAGES in all waveform snapshots. Bad calibrations for MAMP and STAT for some of the TDS modes. Incorrect time vector for MAMP. BAD flag for CHANNEL_OVERFLOW in MAMP, TSWF and RSWF data products). 	March 2021	TDS_CALB A V1.0.2

SOLO_L2_RPW-TDS-SURV-TSWF-B

Change log (deltas since the previous release)	Release date	Software version
<ul style="list-style-type: none"> First release 	September 2020	SCMCAL V0.12.1
<ul style="list-style-type: none"> Corrects gAttr TIME_MIN and TIME_MAX Improves the accuracy of the time range where the heaters alter the magnetic measurements (bit1 of L2_QUALITY_BITMASK) 	March 2021	SCMCAL V0.14.0

<ul style="list-style-type: none"> • uses V13 skeletons • the SCMCAL version comes from the descriptor and not from the configuration file • the names of the CDF masters are given by the "template" keys in the descriptor file (and not in the configuration file) • optimization of the computation time of CalibrateWave() • optimization, transfer functions and transfer matrices were recalculated when not needed. • improves the calibration of continuous waveforms (by overlapping) • improves the calculation of Brtn (the M_scm_rtn matrix is calculated every second) • corrects CALIBRATION_TABLE_INDEX (which was wrong as soon as a change occurred during the file) • resizes the output TDS snapshots • accepts resized or not resized L1R TDS snapshots 	June 2021	SCMCAL V1.0.0
<ul style="list-style-type: none"> • Fixes all known bugs in SWF data products, e.g., VOLTAGE data is filled, calibration bugs fixed. New calibration tables are released. They are not replacing the previous ones, but extending valid calibration after the TDS flight software update, i.e., old tables are still used before October 20, 2021. Some minor changes in global and variable attributes have been made, e. g. Parents and Data version global attributes are fixed. Parent_version global attribute is omitted. 	December 2021	SCMCAL V1.0.0 (TDS_CAL BA V2.2.1)

SOLO_L2_RPW-TDS-SURV-TSWF-E

Change log (deltas since the previous release)	Release date	Software version
<ul style="list-style-type: none"> • First release 	September 2020	TDS_CALB A V0.9.6
<ul style="list-style-type: none"> • Bug in CHANNEL_OVERFLOW flag for waveform snapshots fixed. Antenna lengths for RPW_ANTENNA_RTN data in snapshot waveforms added. Now both directions in RTN and effective lengths are provided. • Feature to process the resized L1 files for the redundant LFM modes implemented. • New calibration table released. A major problem in calibrations of MAMP, STAT, HISTxD fixed (mismatch in a calibration table). CHANNEL_CONFIG replaced by CHANNEL_REF in all concerning data products. TDS antenna configuration is now represented by number (e.g. 10 = ANT1-GND or 23 = ANT2-ANT3). Feature to process the resized L1 files implemented. • Signs for waveform and voltage snapshots fixed. Some issues with the ISTEP/SPDF compliance resolved, metadata variables added dimensions for existing zVars changed. • Mandatory Global Attributes filled. Mismatch in modes for the waveform snapshot calibration fixed. Time vector in MAMP product adequately created. • The first SOAR release (known bugs: bad sign for VOLTAGES in all waveform snapshots. Bad calibrations for MAMP and STAT for some of the TDS modes. Incorrect time vector for MAMP. BAD flag for CHANNEL_OVERFLOW in MAMP, TSWF and RSWF data products). 	March 2021	TDS_CALB A V1.0.2
<ul style="list-style-type: none"> • Fixes all known bugs in SWF data products, e.g., VOLTAGE data is filled, calibration bugs fixed. New calibration tables are released. They are not replacing the previous ones, but extending valid calibration after the TDS flight software update, i.e., old tables are still used before October 20, 2021. Some minor changes in global and variable attributes have been made, e. g. Parents and Data version global attributes are fixed. Parent_version global attribute is omitted. 	December 2021	TDS_CALB A V2.2.1

SOLO_L2_RPW-TNR-SURV

Change log (deltas since the previous release)	Release date	Software version
<ul style="list-style-type: none"> • First release 	September 2020	THR_CALBAR V2.2.3
<ul style="list-style-type: none"> • NEW calibration procedure -- factor 2 in the voltage V0 (input voltage for the calibration) • Corrections on max/min in gattr writing; remove gattr1 from antennas_params • Variable FREQUENCY added 	March 2021	THR_CALBAR V2.3.3