

RPW Science Data Validation versus Verification (reminder)

- Reminder (cf. Sonny Lion slides at the ROC validation workshop #1):
 - Validation is a punctual activity to ensure the compliance against specifications
 - Verification is a routine activity to be performed during the exploitation of the instrument in-flight
- Both activities often share mutual infrastructures (test/check tools)
- The RPW Science Data Validation and Verification Plan (ROC-SCI-PLN-00077-LES) presents these activities

RPW Science Data Verification Approach Overview

- "Technical verification"
 - Check the data integrity, format and data/metadata compliance against specifications (SOL-SGS-TN-0009).
 - Will be automatically performed by the ROC at LESIA (TBC for L3) after each data file production.
- "Science verification"
 - Check calibration and data quality.
 - Requires human intervention (but can be helped by software, TBC). Done by the ROC (with the support of Lead Col teams) for the L1/HK CDF. Done by the Lead Col teams for L1R/L2 CDF.

RPW Science Data Verification Schedule

- Assuming 3 months of "proprietary" period:
 1. Every day, the ROC pipeline processes new RPW TM raw data retrieved from MOC, and produced LZ, L0, L1, HK and preliminary L1R/L2 files (+ quicklooks). Technical verifications are performed automatically and BITMASK/QUALITY flags are computed.
 2. Successfully verified files are made available via the ROC Web site (private access). Bad files are moved into dedicated space. List of files with automated verification results is reported in daily log files also accessible.
 3. RCS teams can retrieve and check these data
 4. If upgrades are needed, RCS teams can submit new RCS version or related inputs (i.e., calibration tables) to the ROC. Except in case of big issue (i.e., not working software), the ROC envisages to integrate into the operational pipeline the new RCS version once a month. (will be described in ROC-GEN-SYS-NTT-00019-LES_Issue02_Rev01(Engineering_Guidelines_For_External_Users).Draft.pdf)
 5. Nominal data re-processing will be planned at the beginning of each month (see REQ-ROC-018 in ROC requirements). Data version will be not incremented as long as files are not publicly available (but we can think about using internal versioning system, TBD)
- This workflow will be progressively implemented during the cruise phase (but the main concept must be tested/validated before launch! —> RSS4VC)
- At this stage of the project, the ROC would avoid the use of fully automated verifications based on statistical thresholds (can be investigated when in-flight data will be more known).

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RPW Science Data Validation Schedule

- Need to plan dedicated validation campaigns consistent with the planning at Solar Orbiter and RPW levels:
 - On-ground before launch:
 - RSS4VC (mid-2019):
 - ROC performs "technical" validation using its infrastructure and validate "engineering" L1/HK content (with support of the Lead Col teams)
 - A priori "science" validation not relevant (and calibrations already done during ground campaigns on PFM)
 - After launch
 - RSS5VC (end of the commissioning phase)
 - First in-flight validation of science data (calibration, quality)
 - RSS6VC (end of cruise phase) —> TBC
 - Validation before nominal phase, should be the last validation in theory (except maybe for specific data such as SBM1/SBM2 data, TBC)