

Rosetta Lander Preliminary Calibrated MAG

Data Review Comments

rl-XXX-romap-3-XXX-mag-v1.0

rl-XXX-romap-5-XXX-mag-v1.0

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Overview

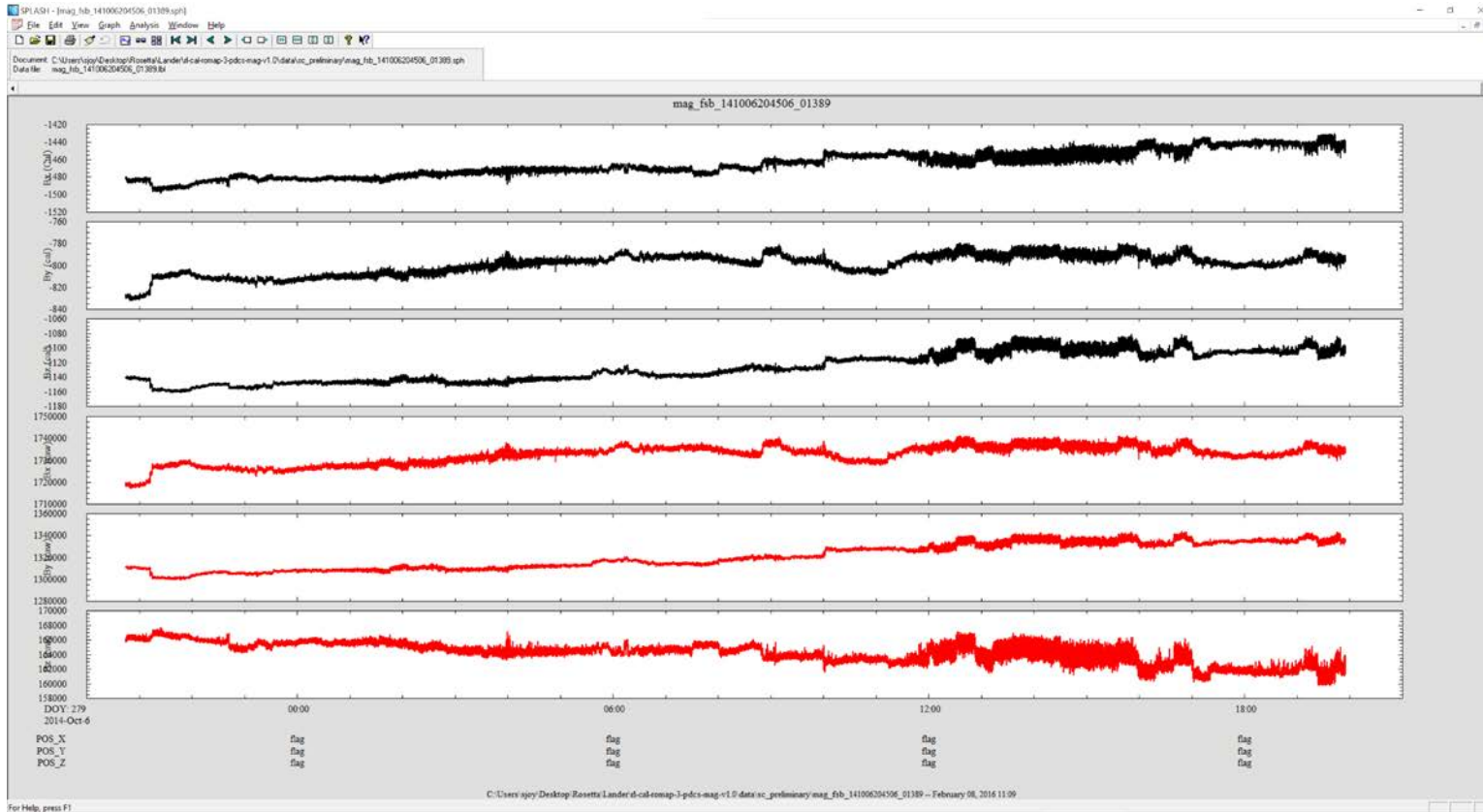
- All of the rl-XXX-romap-3-XXX-mag-v1.0 and rl-XXX-romap-5-XXX-mag-v1.0 review volumes share a large number of common files:
 - catalog files, documents, required files (Xxinfo.TXT), etc.rather than repeating comments on those files in this presentation, those comments were provided in Rosetta_Lander_common.pptx
 - For the rl-XXX-romap-5-XXX-mag-v1.0 data sets, it is unclear how these qualify as derived rather than merely level 3 with a better calibration.
- Furthermore, the format files for all of the raw lander mag data are identical so I will discuss them only once
- Dataset catalog files
 - All of these files are extremely sparse, with their only really useful information being the start/stop time and citation descriptions
 - Error in RL-C-ROMAP-3-FSS-MAG-V1.0 terse description: "This data set contains raw data referred to FSS Mission Phase"
 - It might be helpful to at least direct the user to other more useful files on the volumes like the EACID and calibration description

Data sets

- ✓ rl-cal-romap-3-pdcs-mag-v1.0 (data and labels appear to be valid)
- ✓ rl-cal-romap-3-phc-mag-v1.0 (data and labels appear to be valid)
- ✓ rl-c-romap-3-fss-mag-v1.0 (data appear to be valid, **labels have error**)
- ✓ rl-c-romap-3-rbd-mag-v1.0 (data and labels appear to be valid)
- ✓ rl-c-romap-3-sdl-mag-v1.0 (data and labels appear to be valid)
- ✓ rl-cal-romap-5-pdcs-mag-v1.0 (data and labels appear to be valid)
- ✓ rl-c-romap-5-fss-mag-v1.0 (data appear to be valid)

Each data set contains preliminary calibration of the magnetic field data (sc_preliminary) and the associated housekeeping data (HSK). Sample plots of each data set follow.

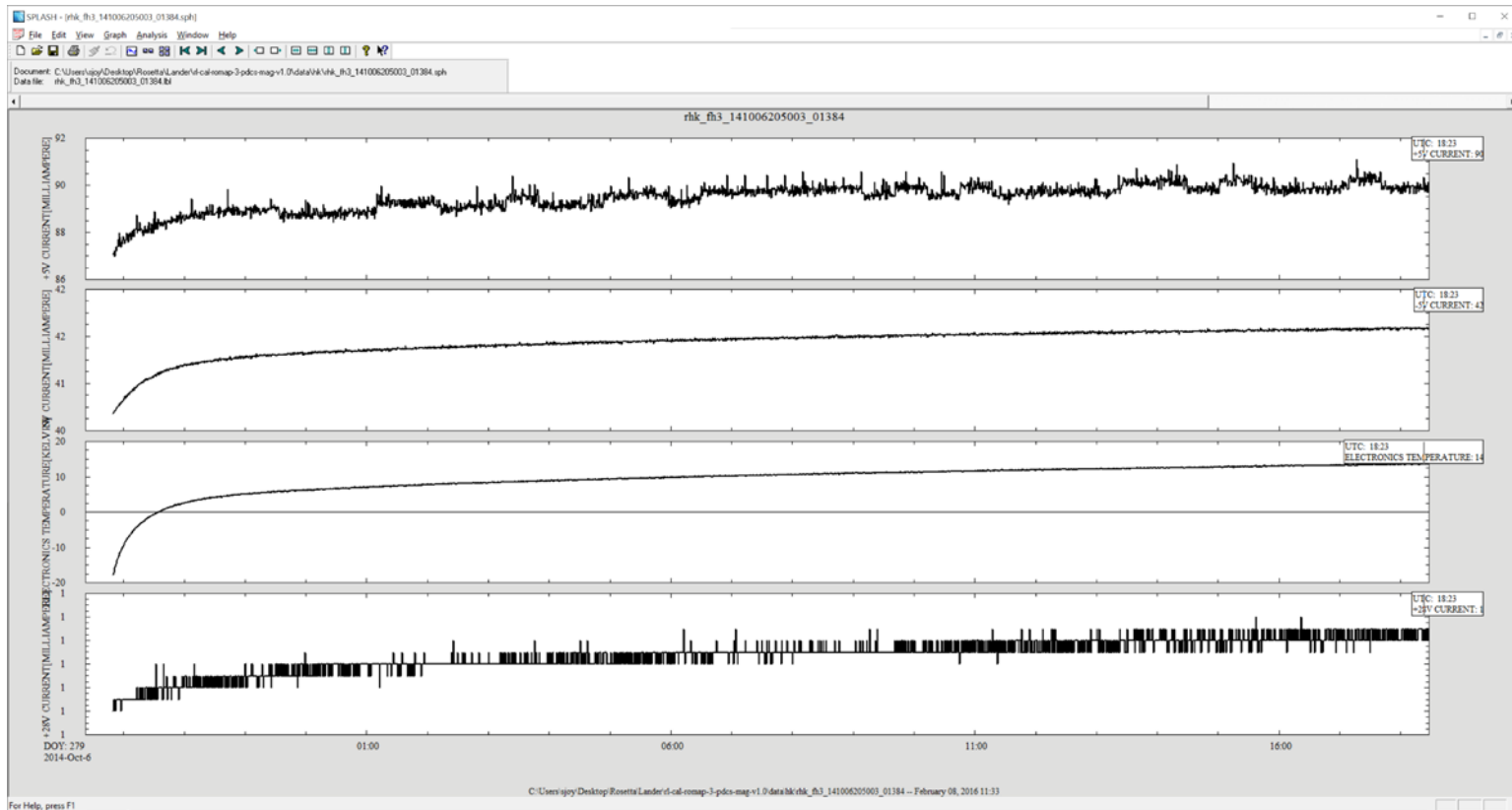
SC Data: RL-CAL-ROMAP-3-PDCS-MAG-V1.0



Plot generated from data file by reading label `mag_fsb_141006204506_01389.tbl` and format file `romap_mag_calscb.fmt` (labels valid). Black traces are calibrated data, red traces are the raw data for the same time period. Trajectory columns are all missing data flags in all data files.

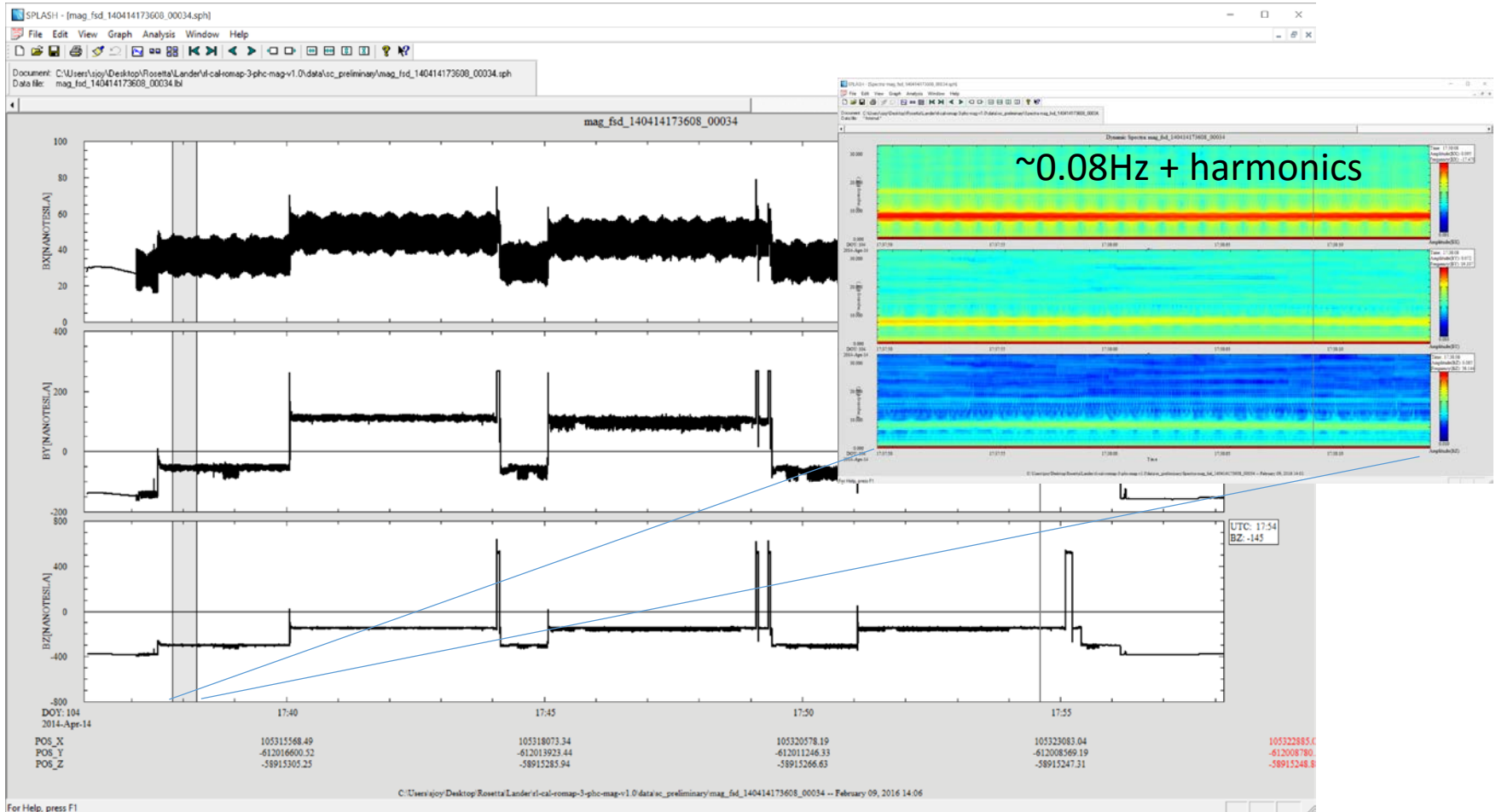
Data appear to be poorly calibrated, events that appear to be s/c related remain, IMF field is orders of magnitude smaller than these data indicate.

HK Data: RL-CAL-ROMAP-2-PDCS-MAG-V1.0



Plot generated from data file by reading label rhk_fh3_141006205003_01384.tbl and format file romap_calhk.fmt (labels valid)

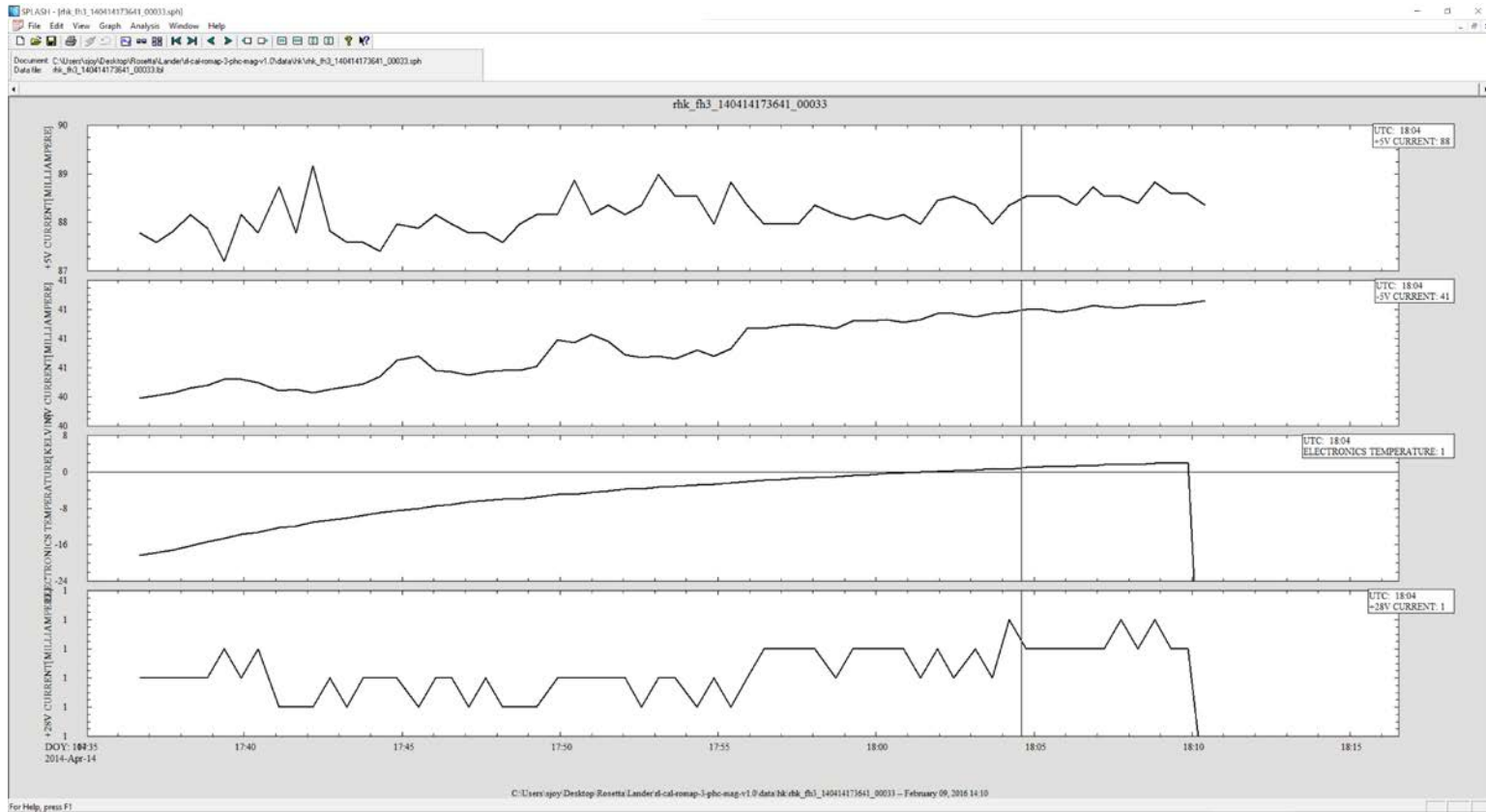
SC Data: rl-cal-romap-3-phc-mag-v1.0



Plot generated from data file by reading label `mag_fsd_140414173608_00034.tbl.tbl` and format file `romap_mag_calscd.fmt` (labels valid – verified that format files a-d have identical structure differing only by the coordinate systems of the values.)

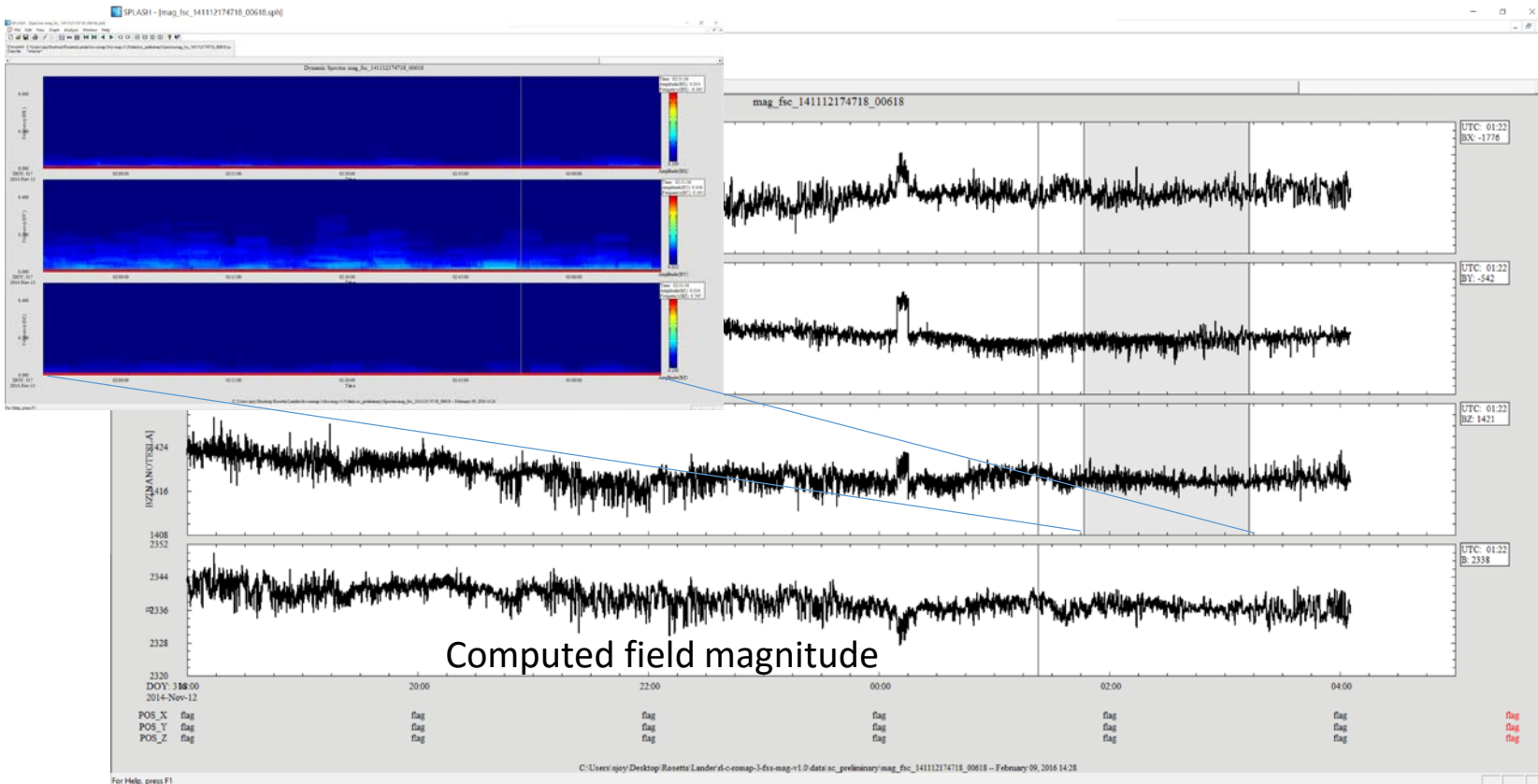
Calibration has not removed non-physical phenomenon.

HK Data: rl-cal-romap-3-phc-mag-v1.0



Plot generated from data file by reading label `rhk_fh3_140414173641_00033.lbl` and format file `romap_calhk.fmt` (labels valid)

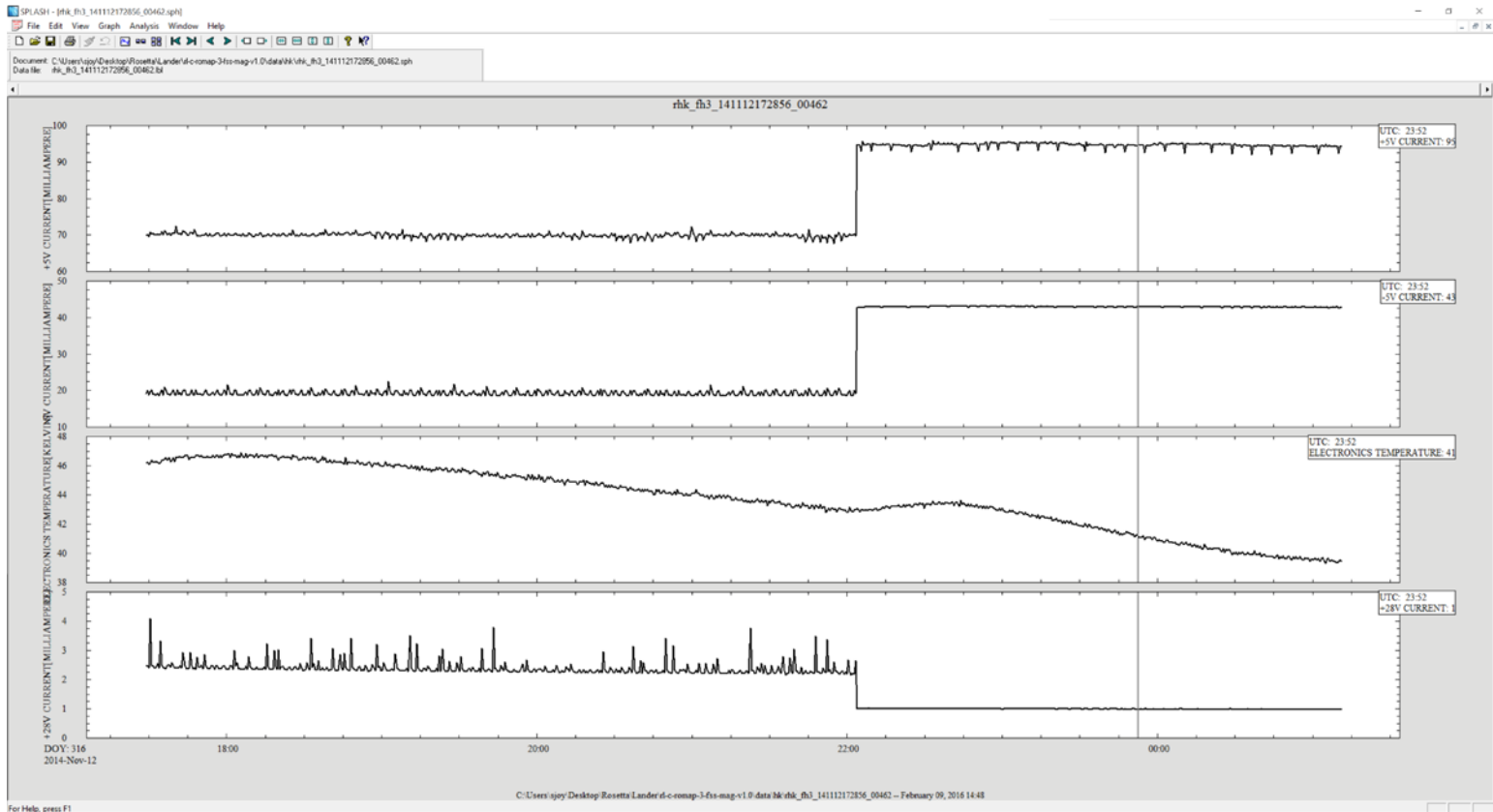
SC Data: rl-c-romap-3-fss-mag-v1.0



Plot generated from data file by reading label `mag_fs2_141112174718_00618.tbl` and format file `romap_mag_rawsc.fmt` (labels valid)

Data appear nominal, most of the noise present before separation is gone, field is still much stronger than expected.

HK Data: rl-c-romap-3-fss-mag-v1.0

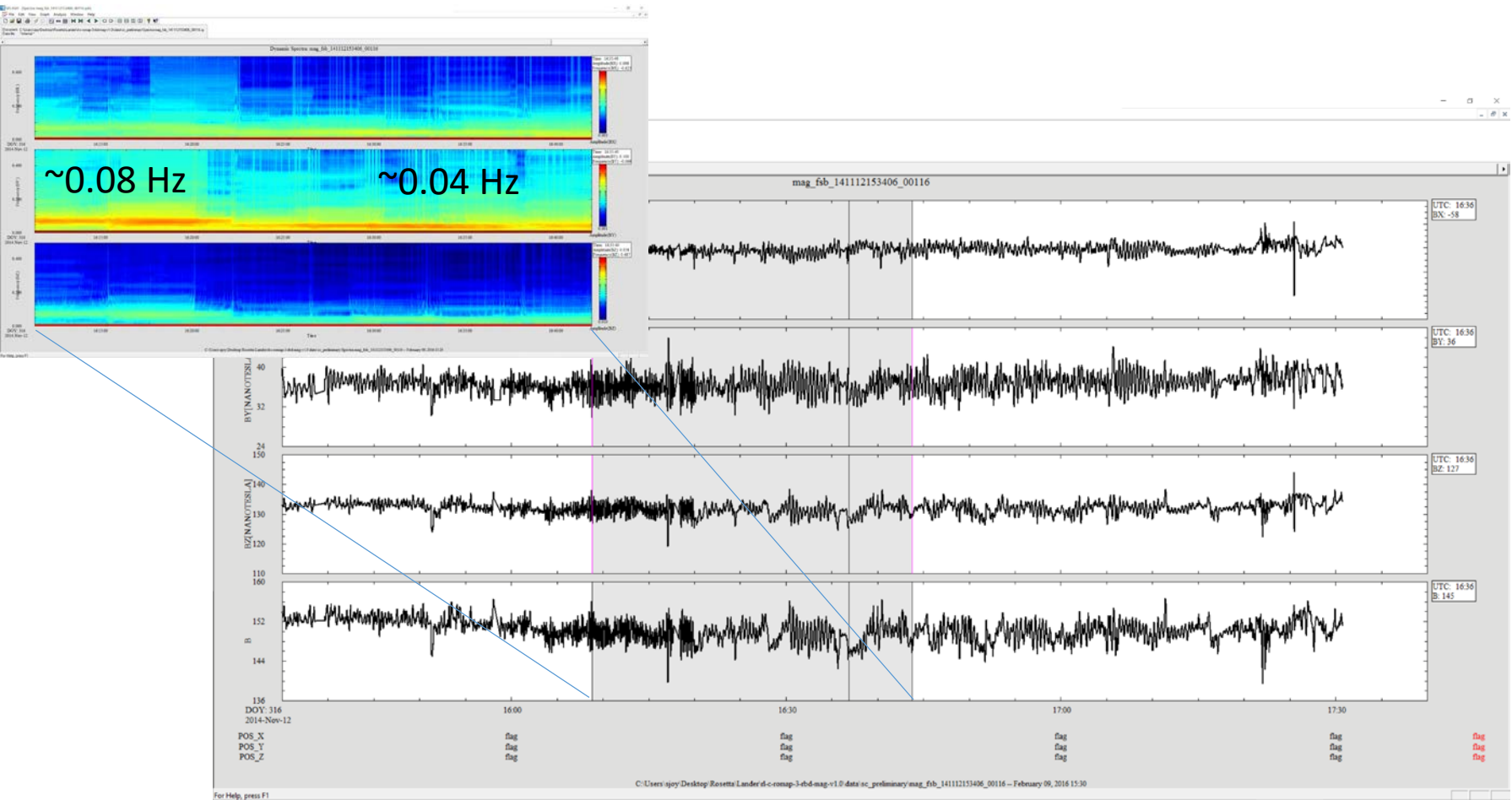


Plot generated from data file by reading **EDITED** label rhk_fh3_141112172856_00462.lbl and format file romap_calhk.fmt (labels valid)

RID: All data label files have incorrect record length (165 -> 168)

Format file and TABLE object (row_bytes) are correct

SC Data: rl-c-romap-3-rbd-mag-v1.0

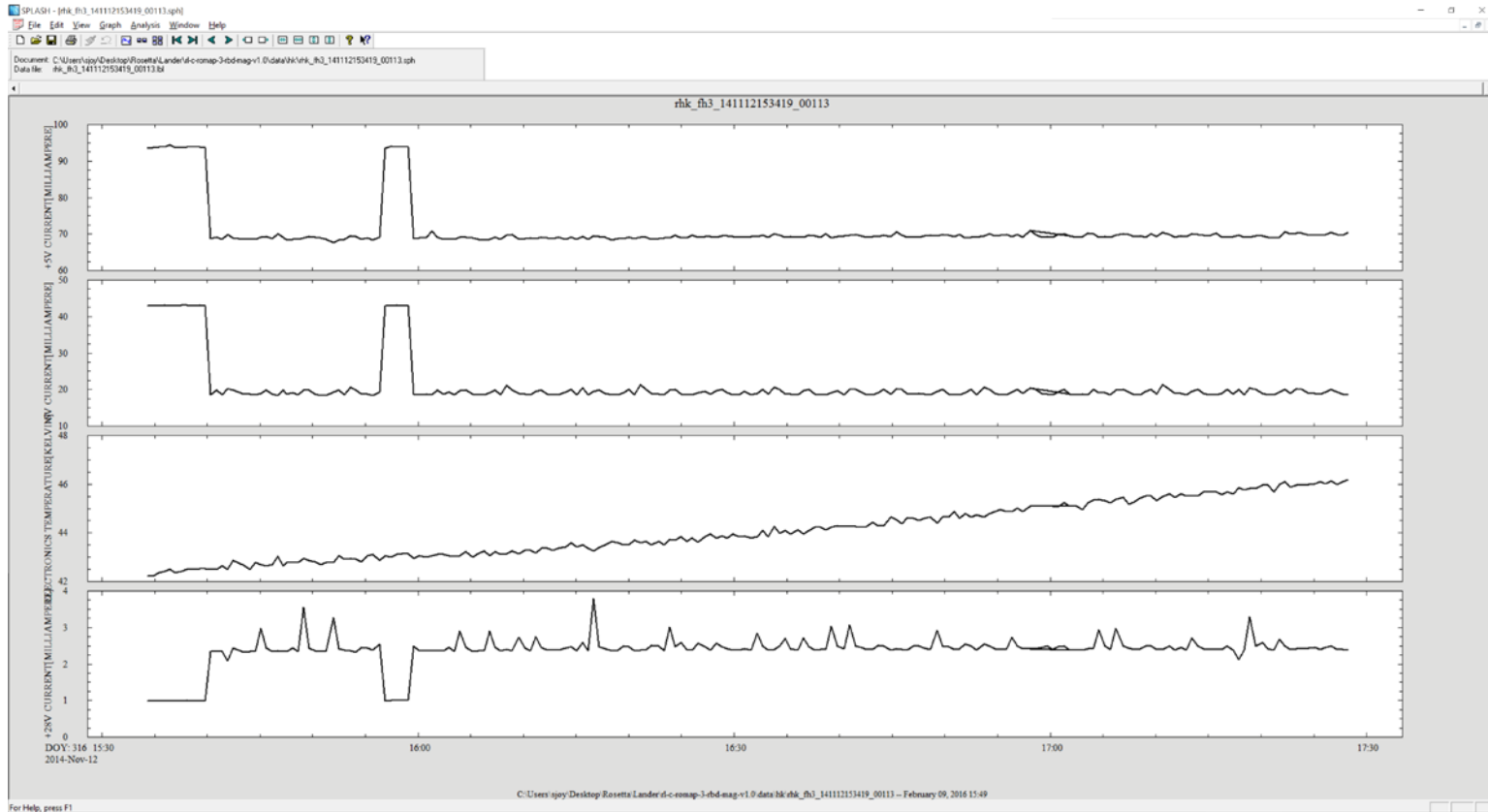


Plot generated from data file by reading label `mag_fsb_141112153406_00116.tbl` and format file `romap_mag_calscb.fmt` (labels valid)

Data appear nominal, noise frequency changes at $\sim 16:20$

No “c” or “d” data files to match format files provided

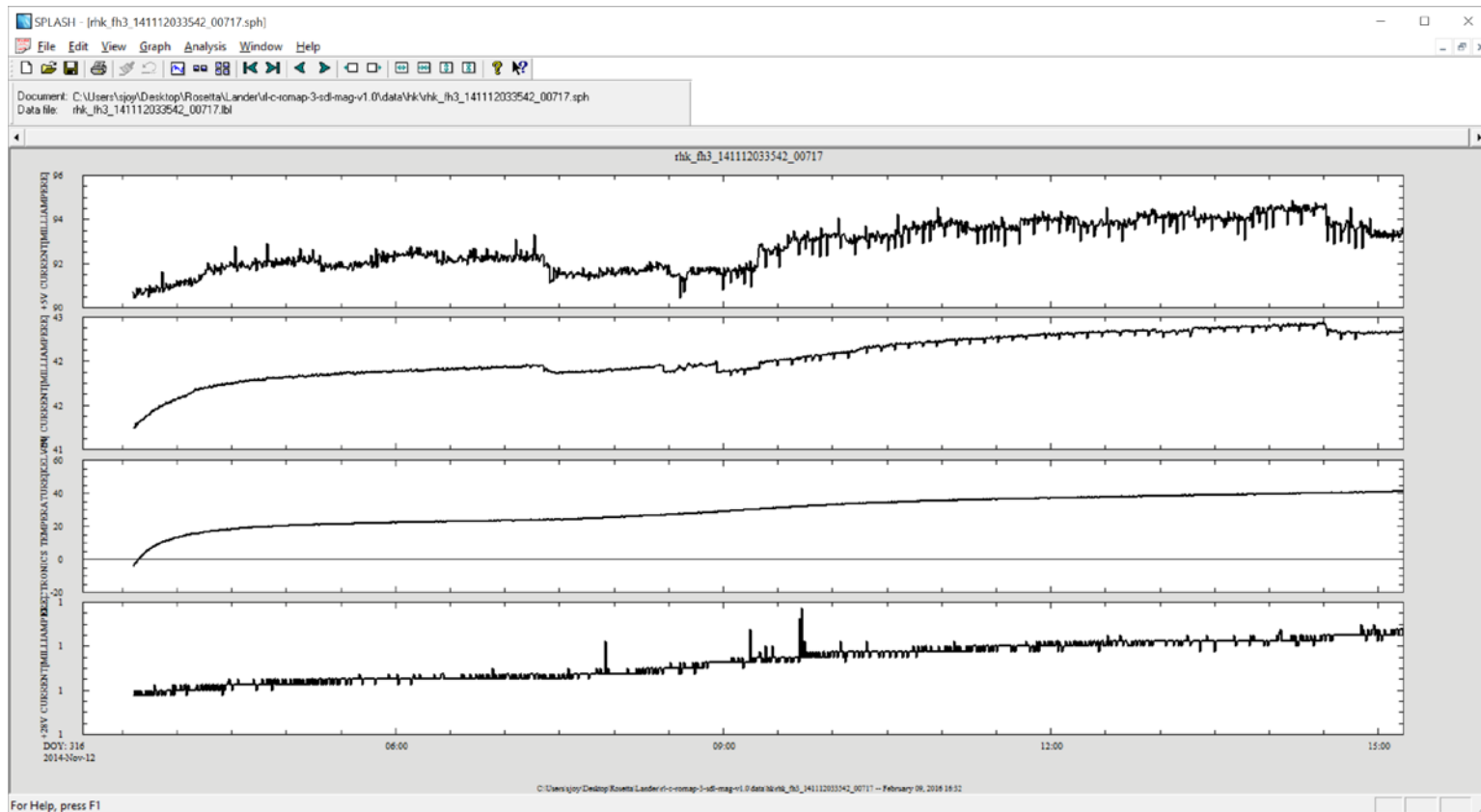
HK Data: rl-c-romap-3-rbd-mag-v1.0



Plot generated from data file by reading label rhk_fh3_141112153419_00113.lbl and format file romap_calhk.fmt (labels valid)

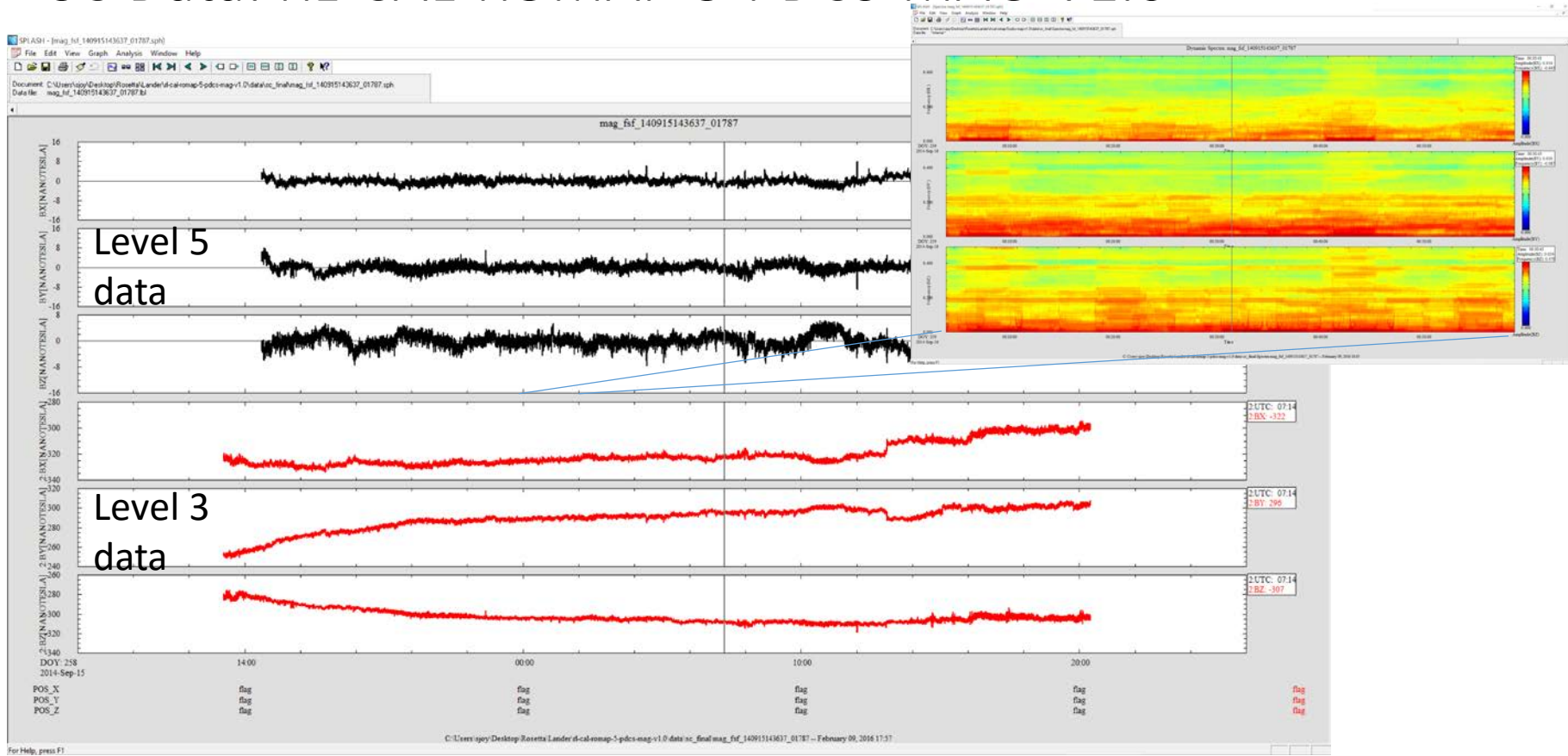
Variation in reference voltages NOT associated with change of frequency content.

HK Data: rl-c-romap-3-sdl-mag-v1.0



Plot generated from data file by reading label rhk_fh3_141112033542_00717.tbl and format file romap_calhk.fmt (labels valid)

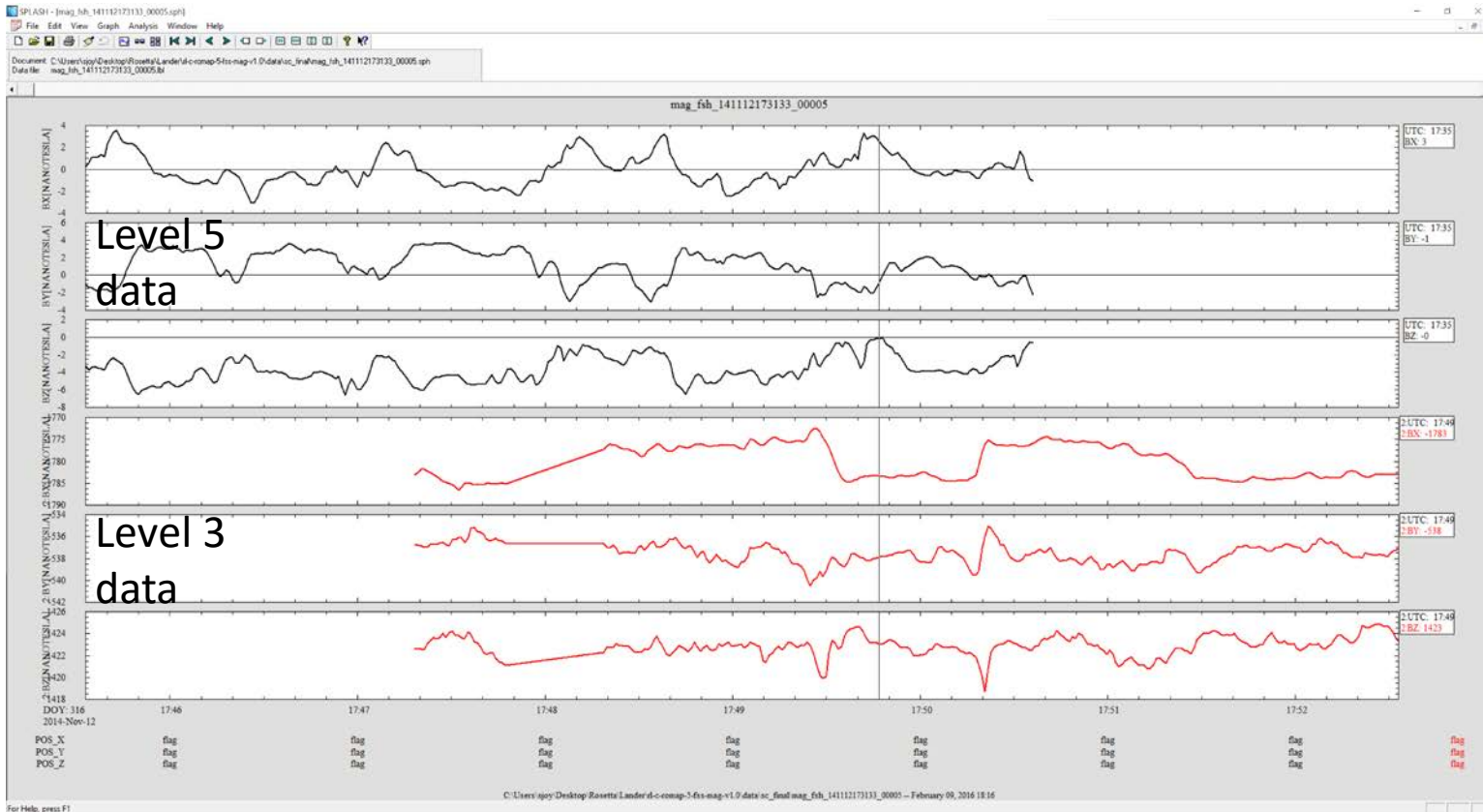
SC Data: RL-CAL-ROMAP-5-PDCS-MAG-V1.0



Plot generated from data file by reading label `mag_fsf_140915143637_01787.tbl` and format file `romap_mag_calscf.fmt` (labels valid). Black traces are derived data, red traces are the preliminary data for the same time period. Trajectory columns are all missing data flags in all data files.

Derived data appear to be moderately well calibrated, events that appear to be s/c related in the preliminary calibration are removed and the IMF field is physically possible. Some artifacts remain.

SC Data: RL-C-ROMAP-5-FSS-MAG-V1.0



Plot generated from data file by reading label `mag_fsh_141112173133_00005.tbl` and format file `romap_mag_calsch.fmt` (labels valid). Black traces are derived data, red traces are the preliminary data for the same time period. **Trajectory columns are all missing data flags in the data file.**

Derived data appear to be well calibrated, events that appear to be s/c related in the preliminary calibration are removed and the IMF field is physically possible.

Summary – Lander Calibrated (-3-) MAG data sets

- In general, the preliminary calibrations that have been applied to these data do not remove all of the instrumental/spacecraft contamination
 - The field magnitude is commonly off by orders of magnitude
 - There are numerous quasi-periodic noise sources with periods between 10-30 seconds
 - While it is understood that the calibration is preliminary, the data set catalog descriptions could/should(?) be updated to describe the noise sources and if any further attempt will be made to remove them
- RIDs
 1. RL-C-ROMAP-3-FSS-MAG-V1.0 - Error in dataset.cat terse description: "This data set contains raw data referred to FSS Mission Phase"
 2. RL-C-ROMAP-3-FSS-MAG-V1.0 - Error in the record_length (165 -> 168) in all data labels
 3. Fix typos/misspelled words in various files

Summary – Lander Calibrated (-5-) MAG data sets

- In general, the final calibrations that have been applied to these data remove most of the instrumental/spacecraft contamination
 - The field magnitude is plausible (<10 nT)
 - There are numerous quasi-periodic noise sources in the pre-delivery data set
- These data are generally in good shape!
- RIDs
 1. Fix typos/misspelled words in various files