

Solar Wind Around Pluto

SWAP

PRINCIPAL INVESTIGATOR
Dave McComas, Princeton University

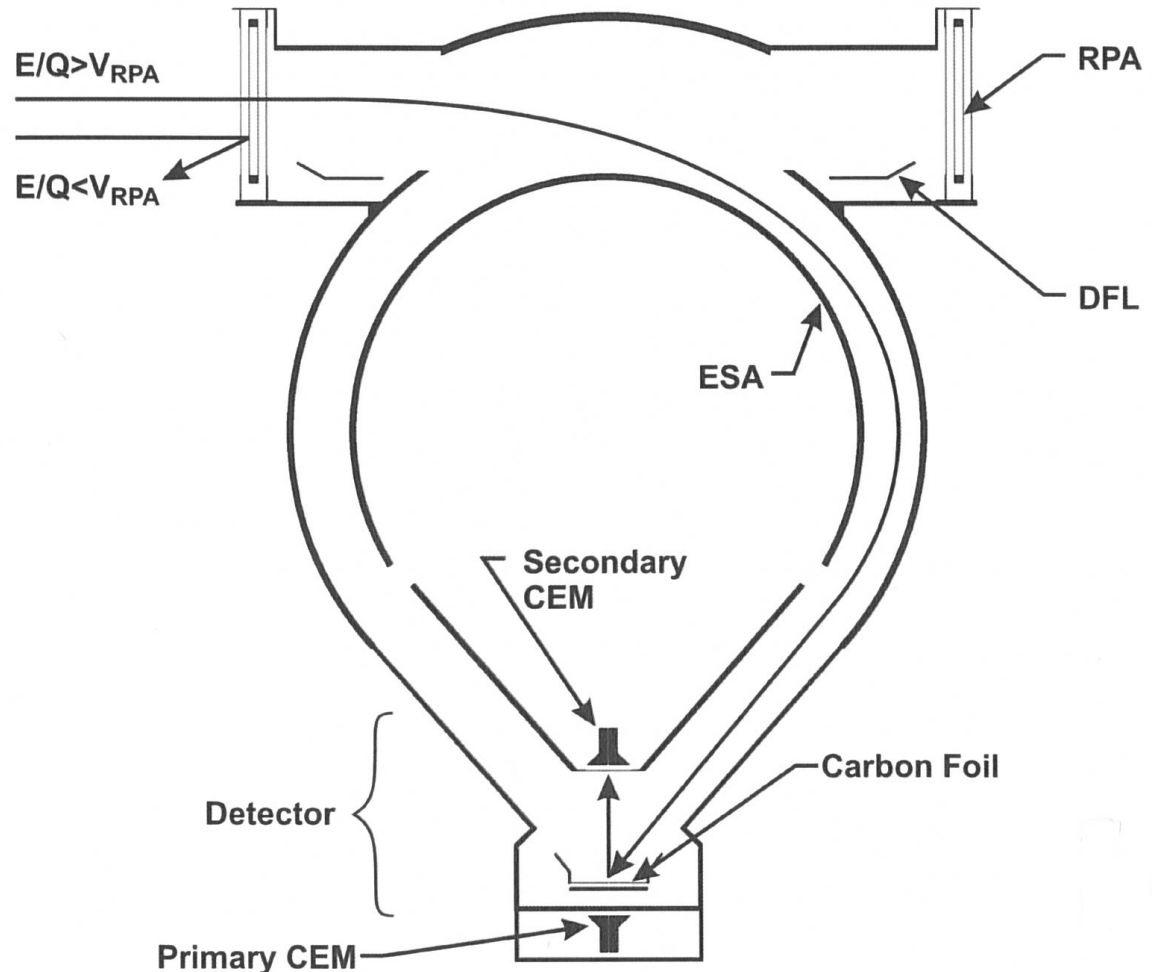
DESCRIPTION
Low Energy Plasma Instrument

ENERGY RANGE
30 eV - 7.7 keV

FIELD OF VIEW
270° x 10°
(deflection angles up to +15°)

ENERGY RESOLUTION
1 eV (< 2 keV); 9% (> 2 keV)

SPECIES
All Ions



New Horizons SWAP Data Sets

2

RAW Data Sets:

nh-a-swap-2-kem2-v1.0

CALIBRATED Data Sets:

nh-a-swap-3-kem2-v1.0

New Horizons SWAP Data Set Evaluation Tools

Staging, Evaluation, and Data Processing -
Machine: Dell Precision Tower 5810
Operating System: Rocky-8 linux

Minor Diagnostics -
Machine: Sun Ultra-60
Operating System: Sun Solaris OS 5.1

Minor Diagnostics -
Machine: Dell 7520
Operating System: Fedora 33 linux

SWAP RAW and CALIBRATED Documentation Evaluation

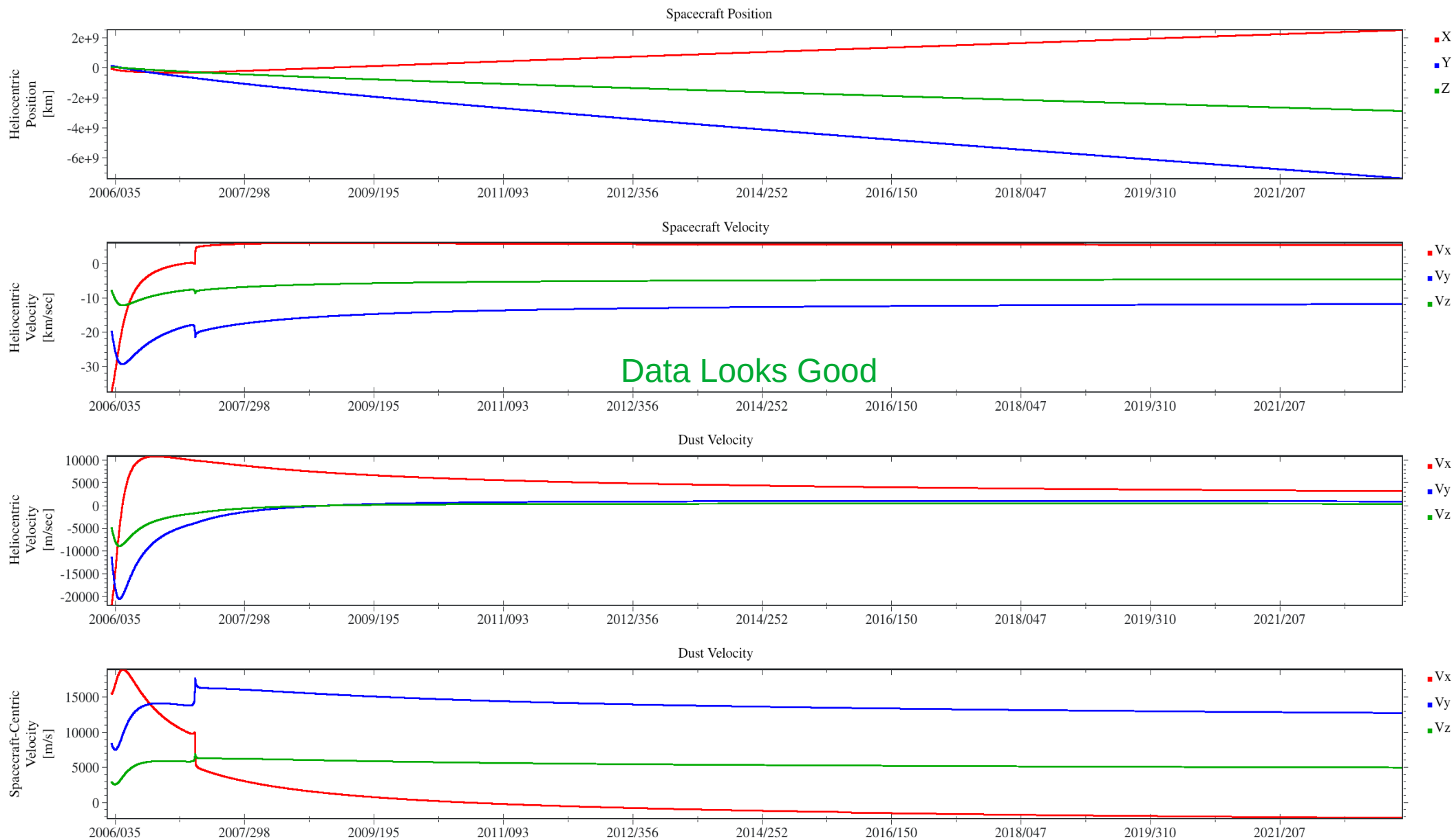
nh-a-swap-2-kem2-v1.0/document nh-a-swap-3-kem2-v1.0/document docinfo.txt

5

```
+-->/DATA_SUMMARY_PLOTS/*      Sub-directories with summary plots of  
|                               SWAP data  
|                               +->*.PNG      Data summary plotted images catagorized  
|                               |           by time intervals.  
|                               +->DATA_SUMMARY*.LBL  Catagorized data summary PDS labels
```

The described data files were not found in this location, but these additional sub-directories were found: 001day, 010day, 025day, 100day, 1annual. There are multiple *.png and *.lbl files as described above within each sub-directory. Comparing with previous version, it is noticed that the summary plot directory was updated, but this file was not. Please update this file to reflect the proper sub-directory structure.

nh-a-swap-2-kem2-v1.0/document nh-a-swap-3-kem2-v1.0/document nh_mission_trajectory.tab



nh-a-swap-2-kem2-v1.0/document
nh-a-swap-3-kem2-v1.0/document
seq_swap_kem1.tab

7

GOOD, sequences added

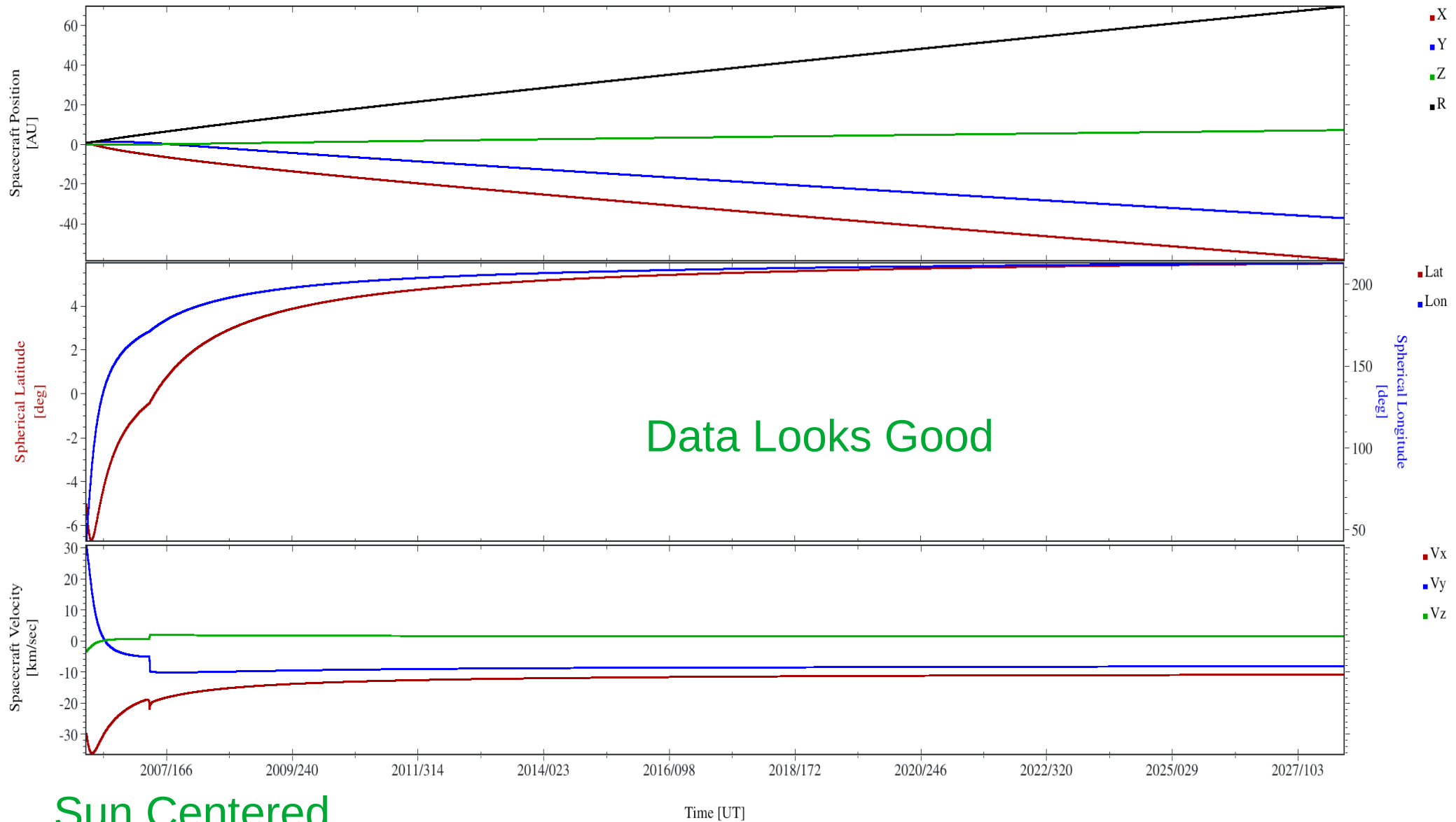
nh-a-swap-2-kem2-v1.0/document
superseded_files_swap-2.lbl &
superseded_files_swap-2.tab

8

GOOD, but I am not sure why these are included only in Level 2 data and not also in Level 3 data. If the Level 2 files contain extra data, why are not the Level 3 files superseded as well.

nh-a-swap-2-kem2-v1.0/document nh-a-swap-3-kem2-v1.0/document traj/traj_2006_2028_1d.tab - HCI

HCI Coordinate System - Sun Center



nh-a-swap-2-kem2-v1.0/document nh-a-swap-3-kem2-v1.0/document traj/traj_2006_2028_1d.tab - ECLIPDATE

ECLIPDATE or HAE_DATE Coordinate System - Sun Center



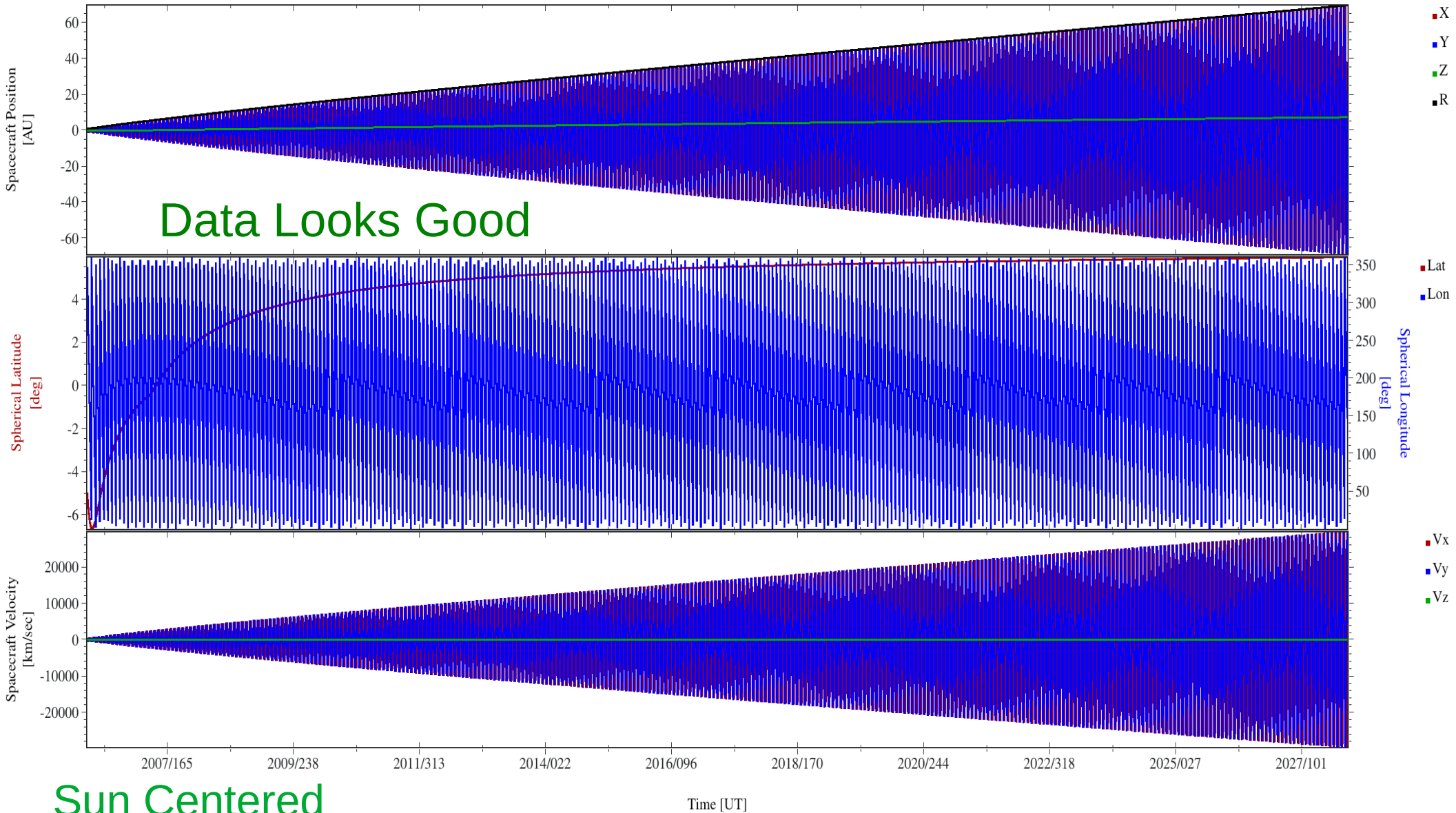
nh-a-swap-2-kem2-v1.0/document nh-a-swap-3-kem2-v1.0/document traj/traj_2006_2028_1d.tab - ECLIPJ2000

ECLIPJ2000 or HAE_J2000 Coordinate System - Sun Center



nh-a-swap-2-kem2-v1.0/document nh-a-swap-3-kem2-v1.0/document traj/traj_2006_2028_1d.tab - IAU_SUN

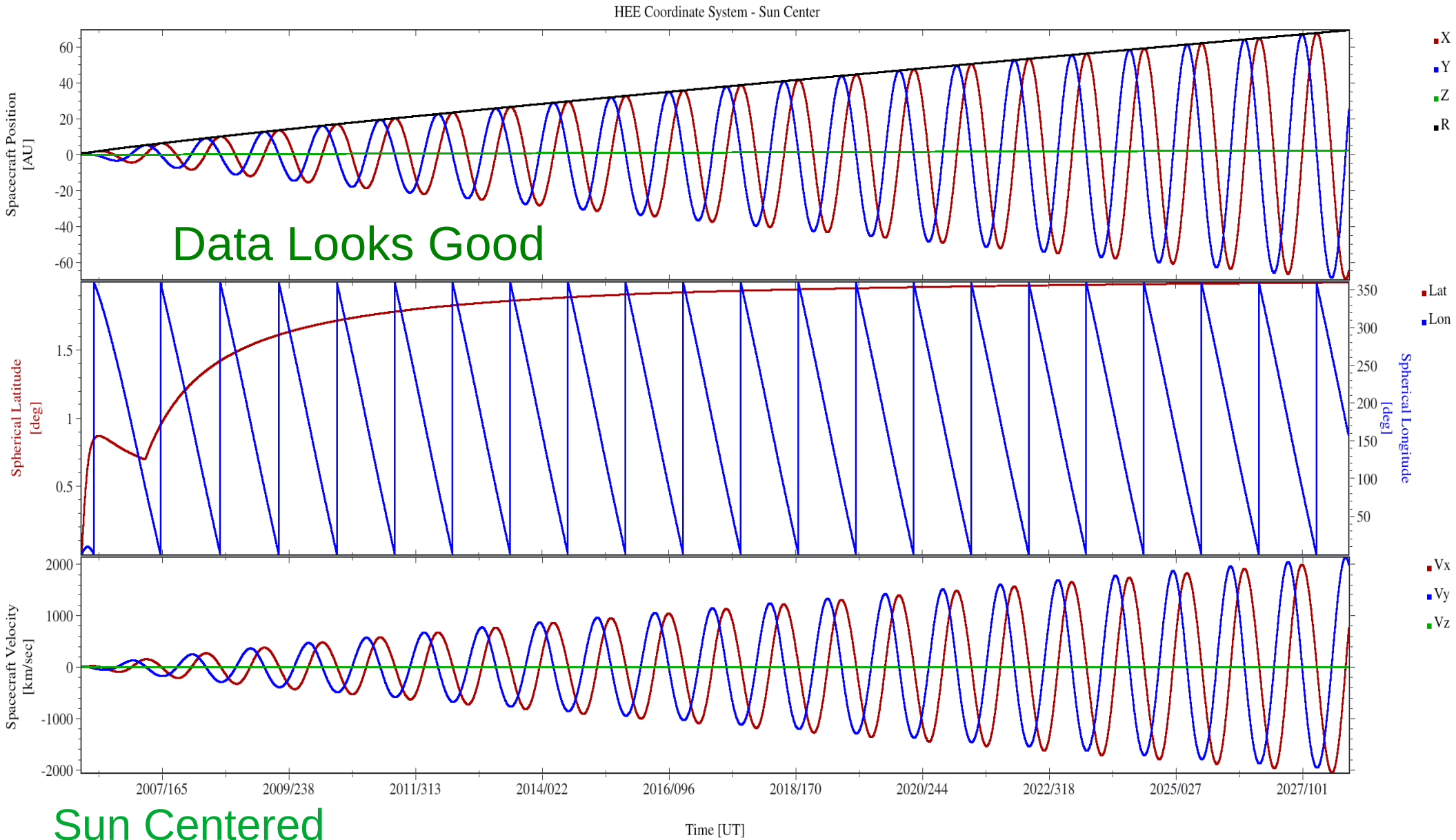
IAU_SUN Coordinate System - Sun Center



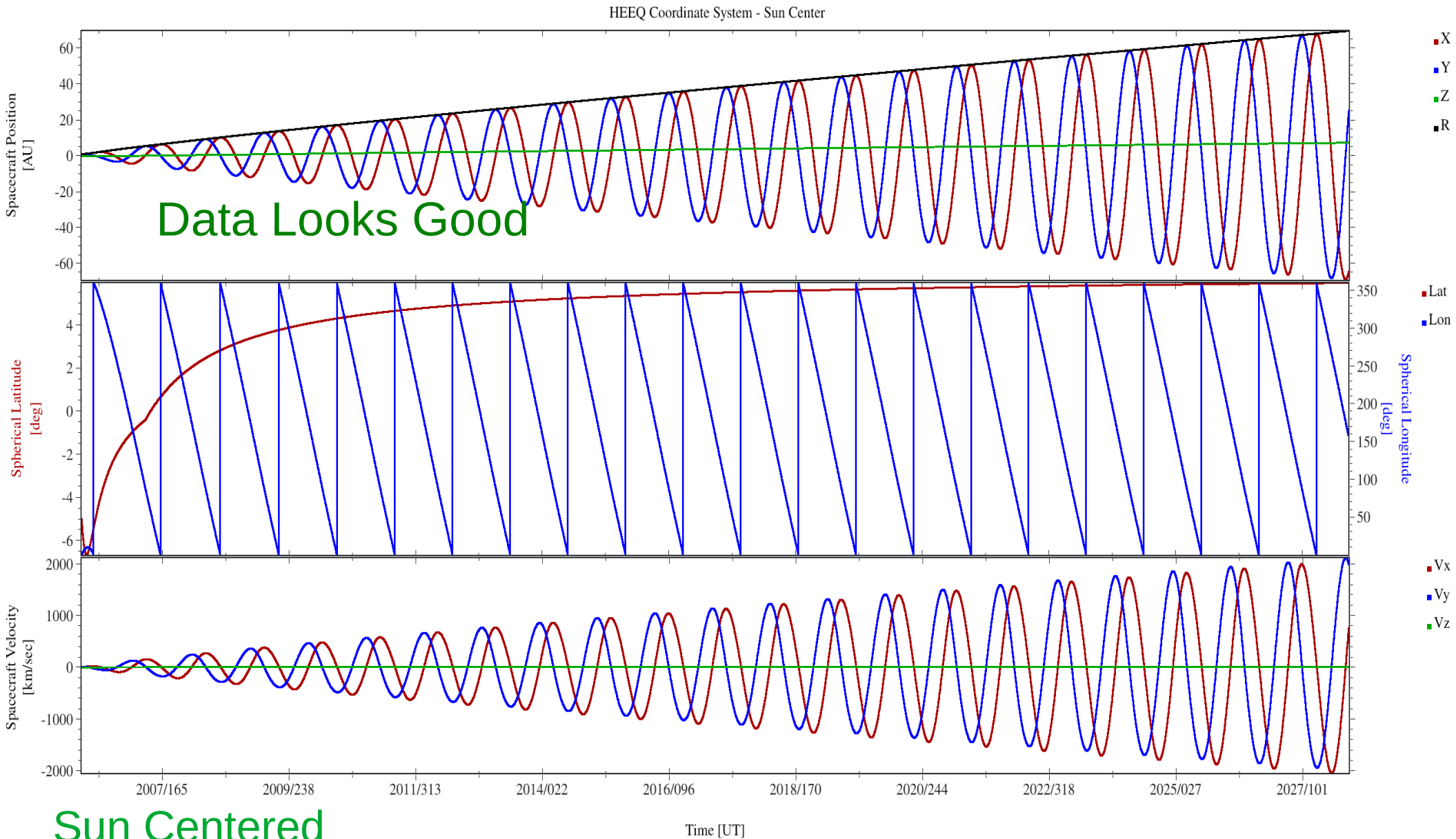
Sun Centered

Time [UT]

nh-a-swap-2-kem2-v1.0/document nh-a-swap-3-kem2-v1.0/document traj/traj_2006_2028_1d.tab - HEE

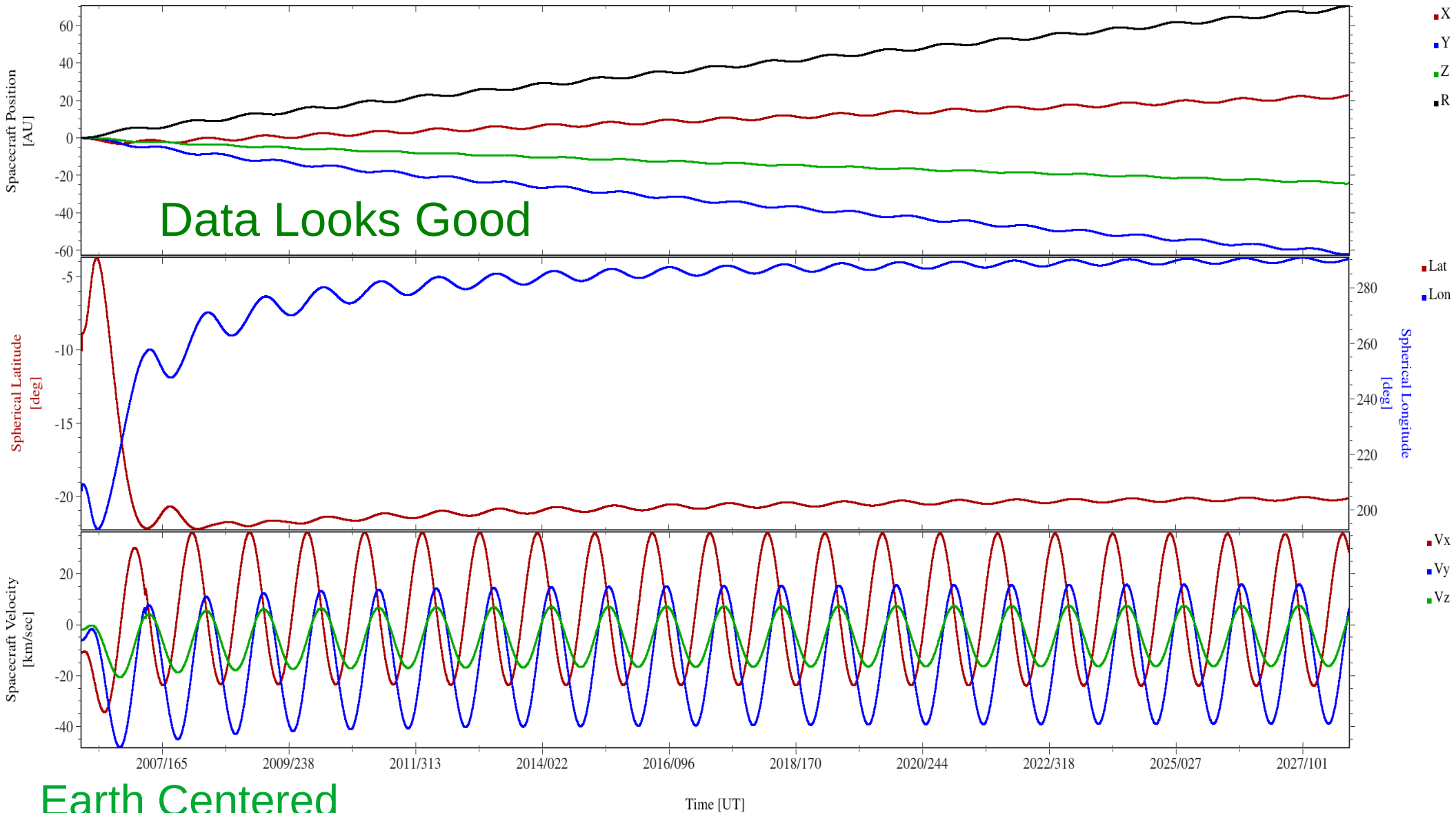


nh-a-swap-2-kem2-v1.0/document nh-a-swap-3-kem2-v1.0/document traj/traj_2006_2028_1d.tab - HEEQ



nh-a-swap-2-kem2-v1.0/document nh-a-swap-3-kem2-v1.0/document traj/traj_2006_2028_1d.tab - J2000

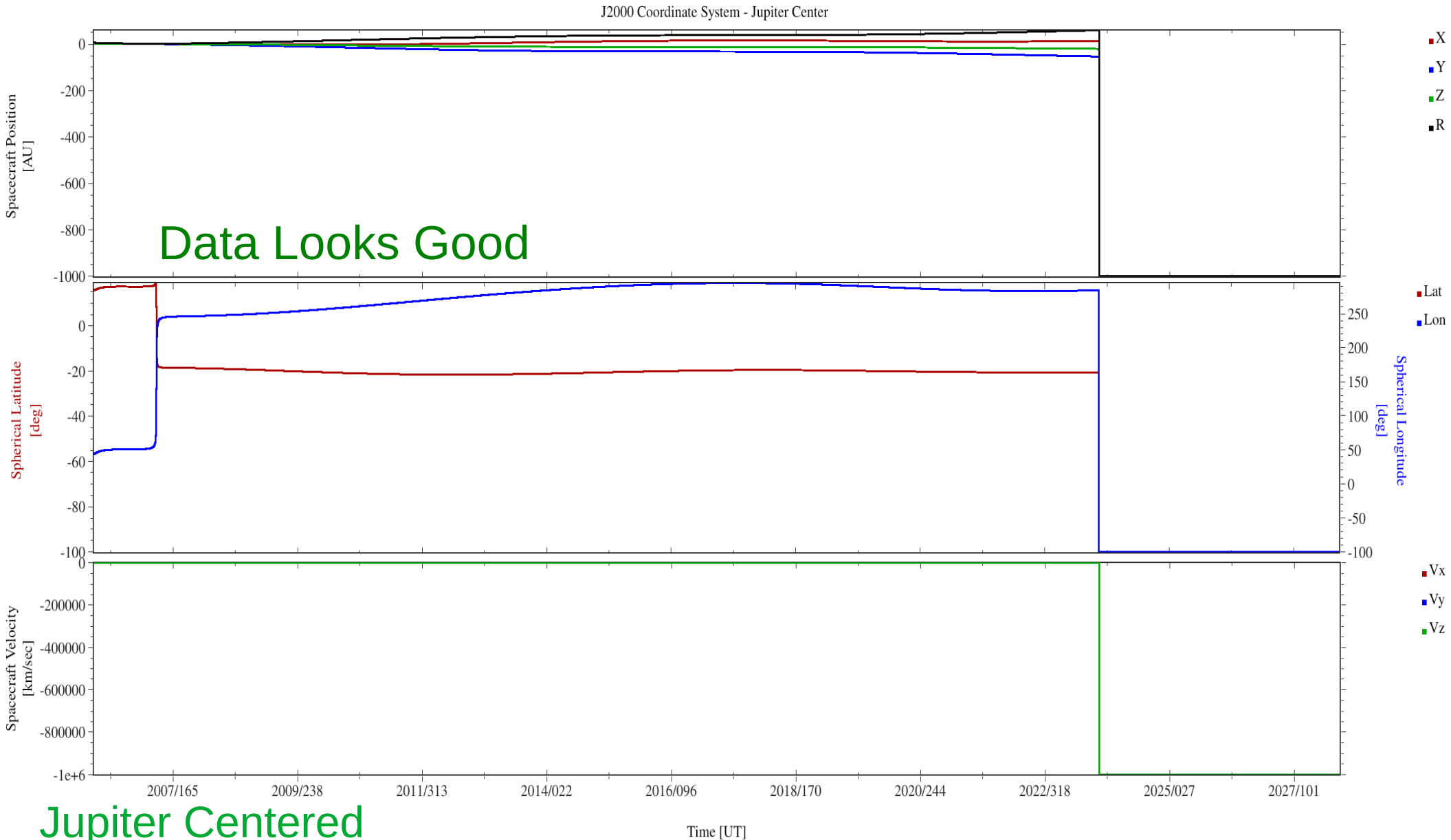
J2000 Coordinate System - Earth Center



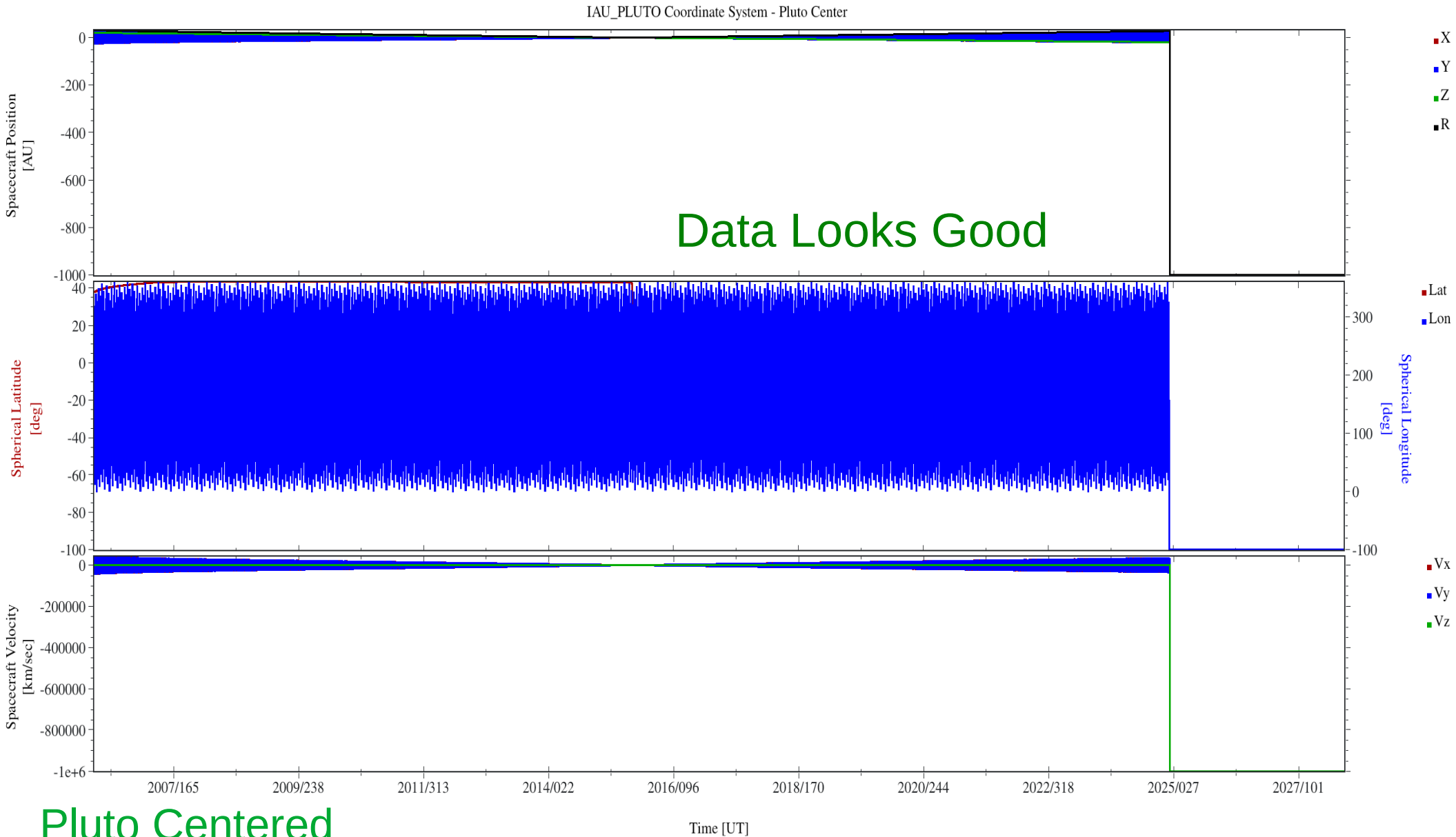
nh-a-swap-2-kem2-v1.0/document nh-a-swap-3-kem2-v1.0/document traj/traj_2006_2028_1d.tab - J2000



nh-a-swap-2-kem2-v1.0/document nh-a-swap-3-kem2-v1.0/document traj/traj_2006_2028_1d.tab - J2000

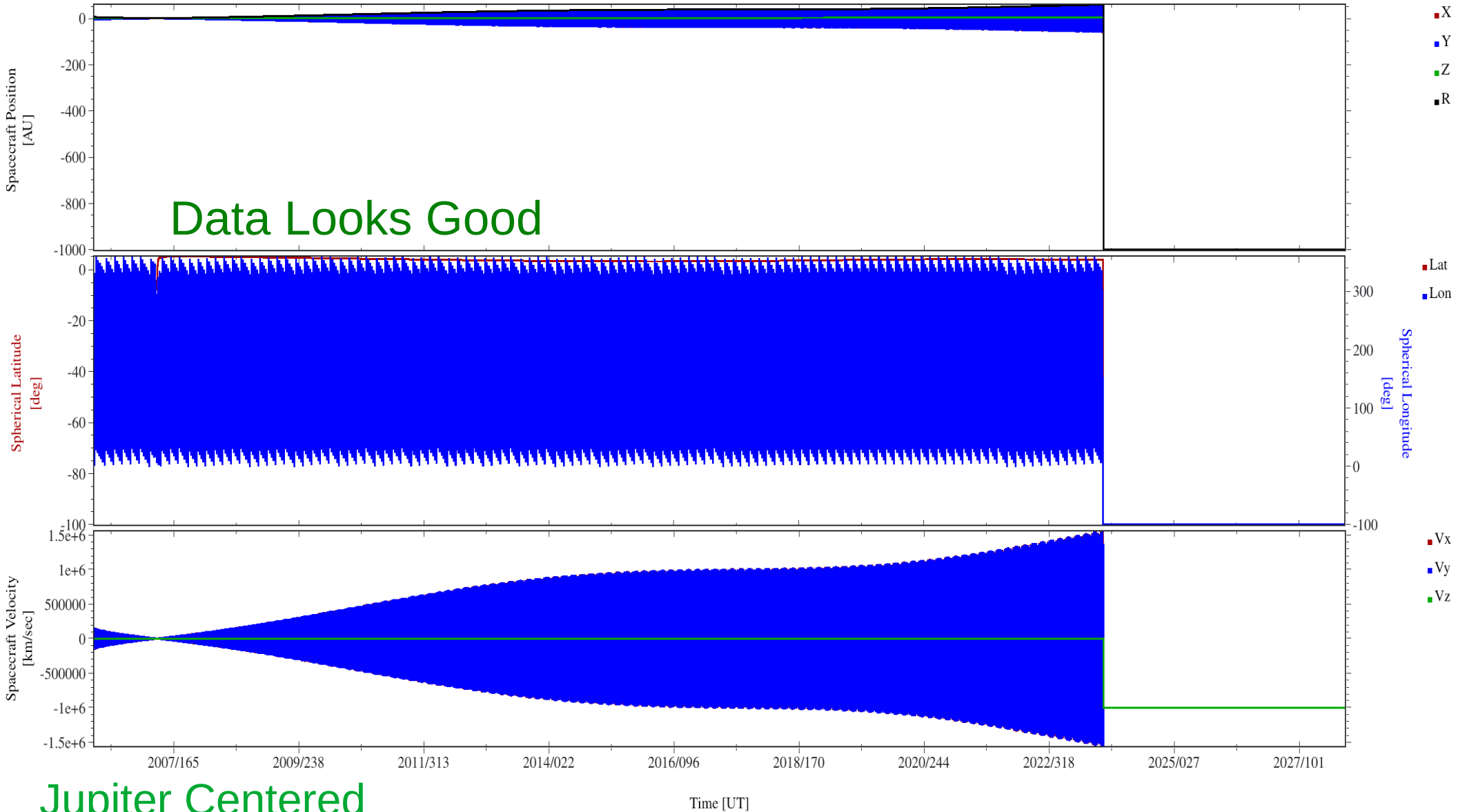


nh-a-swap-2-kem2-v1.0/document nh-a-swap-3-kem2-v1.0/document traj/traj_2006_2028_1d.tab - IAU_PLUTO



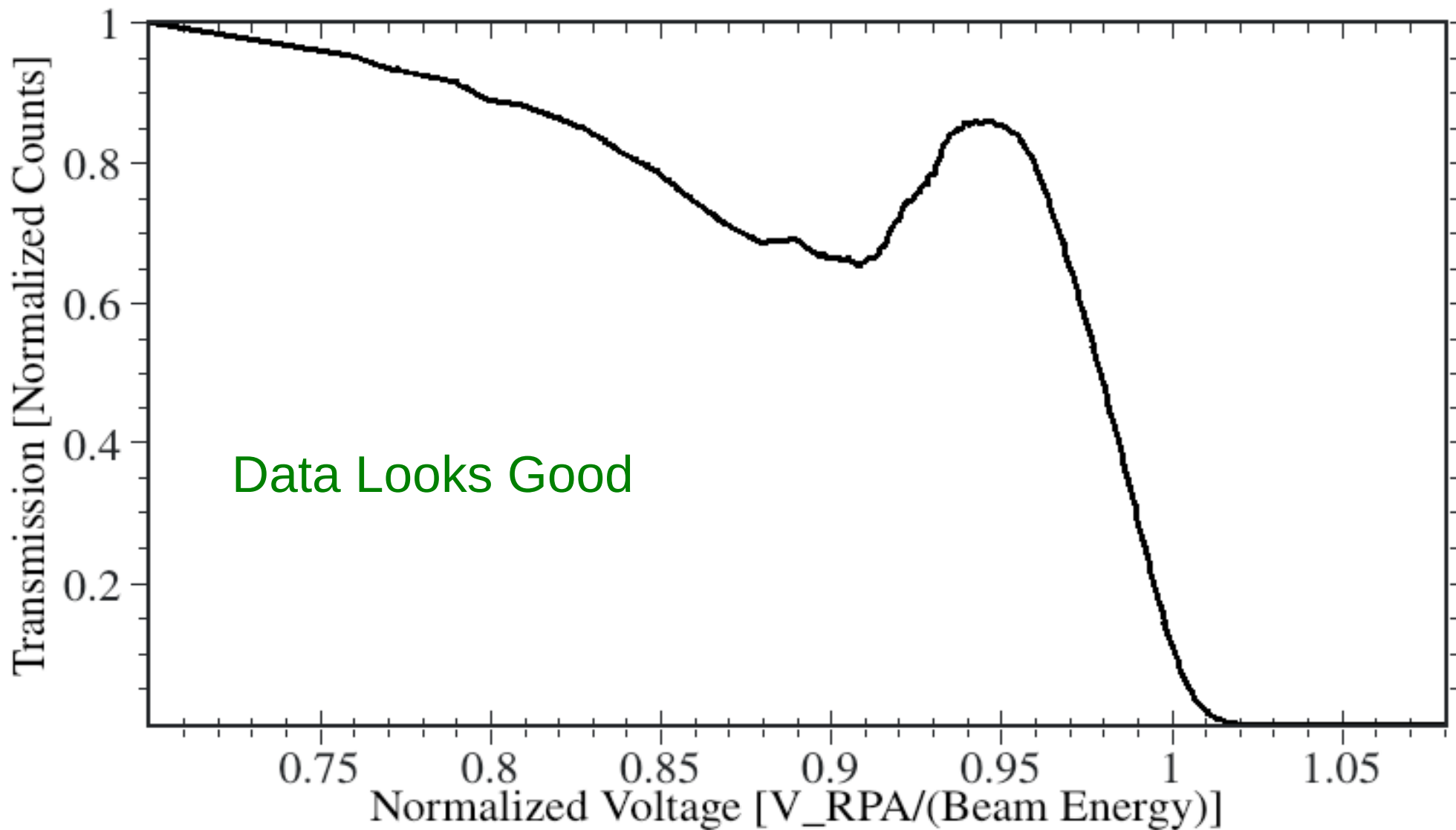
nh-a-swap-2-kem2-v1.0/document nh-a-swap-3-kem2-v1.0/document traj/traj_2006_2028_1d.tab - IAU_JUPITER

IAU_JUPITER Coordinate System - Jupiter Center



nh-a-swap-2-kem2-v1.0/calib
nh-a-swap-3-kem2-v1.0/calib
rpa_shape.tab

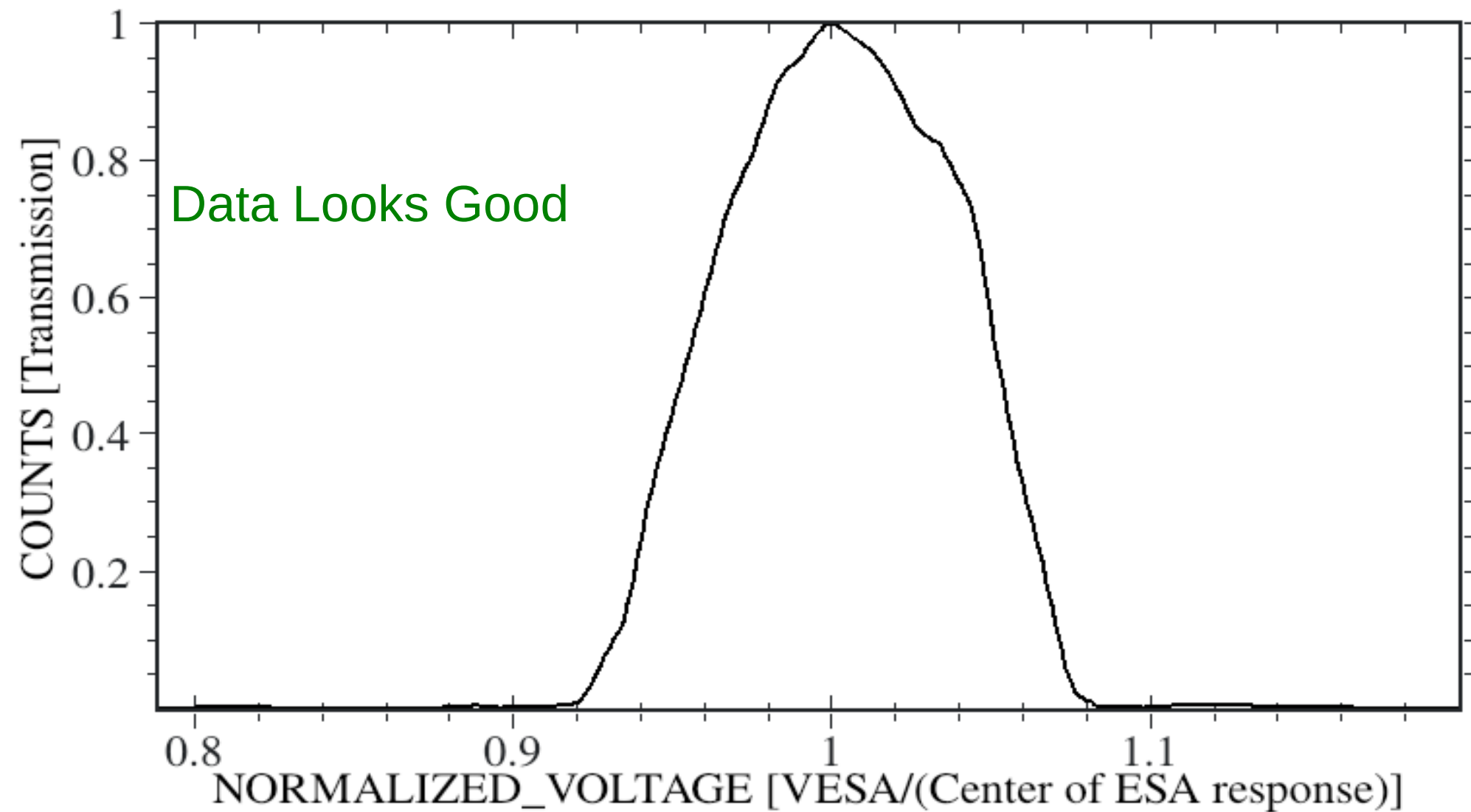
RPA Response Curve



Data Looks Good

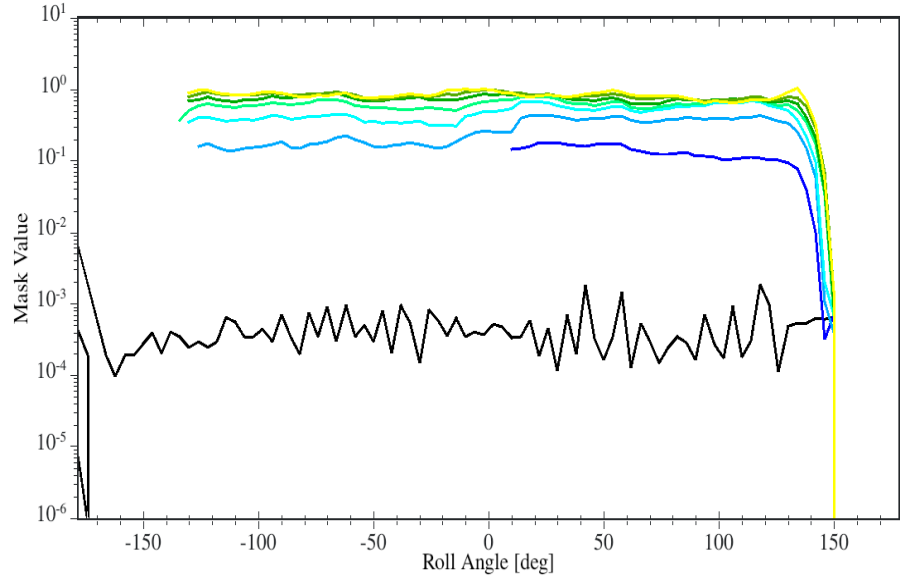
nh-a-swap-2-kem2-v1.0/calib
nh-a-swap-3-kem2-v1.0/calib
esa_shape.tab

SWAP esa_shape.tab

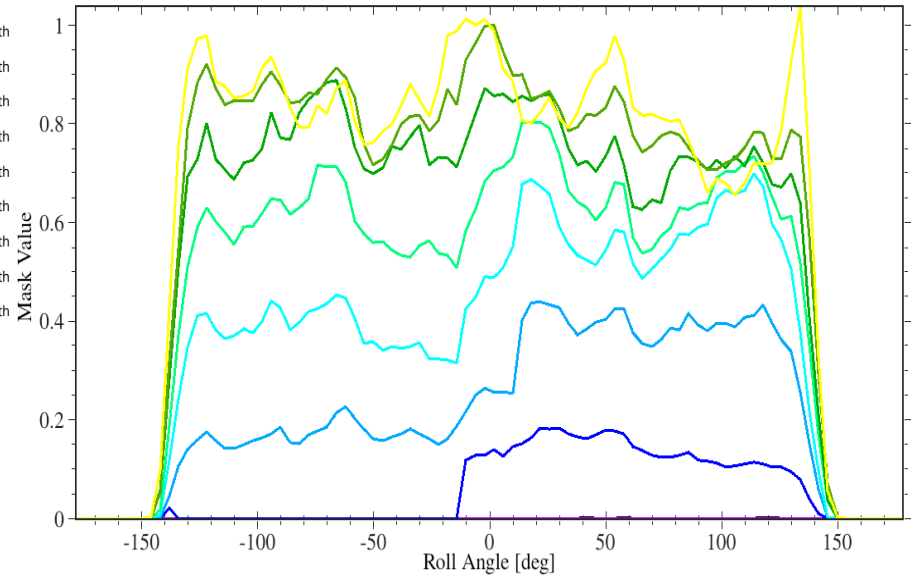


nh-a-swap-2-kem2-v1.0/calib nh-a-swap-3-kem2-v1.0/calib fov_mask_2d.tab

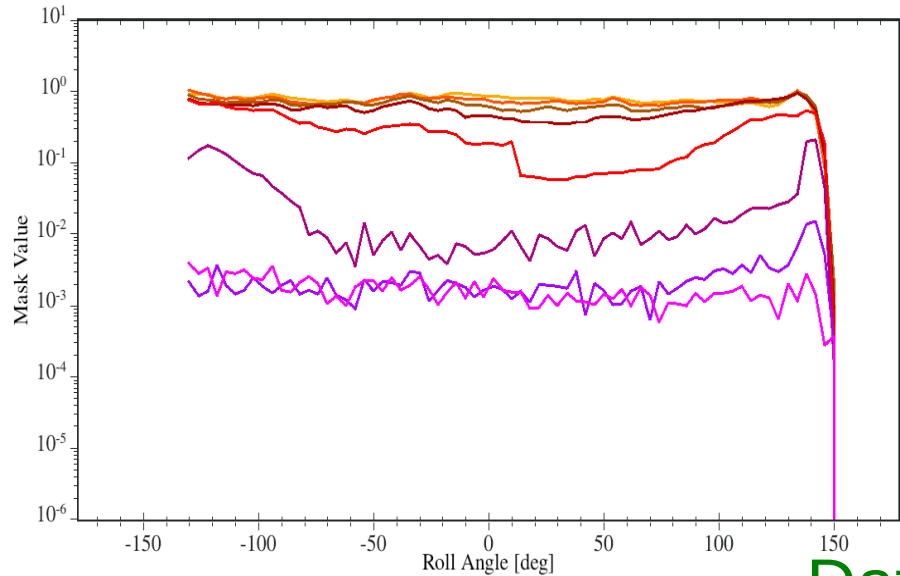
SWAP FOV Mask (Negative Azimuth)



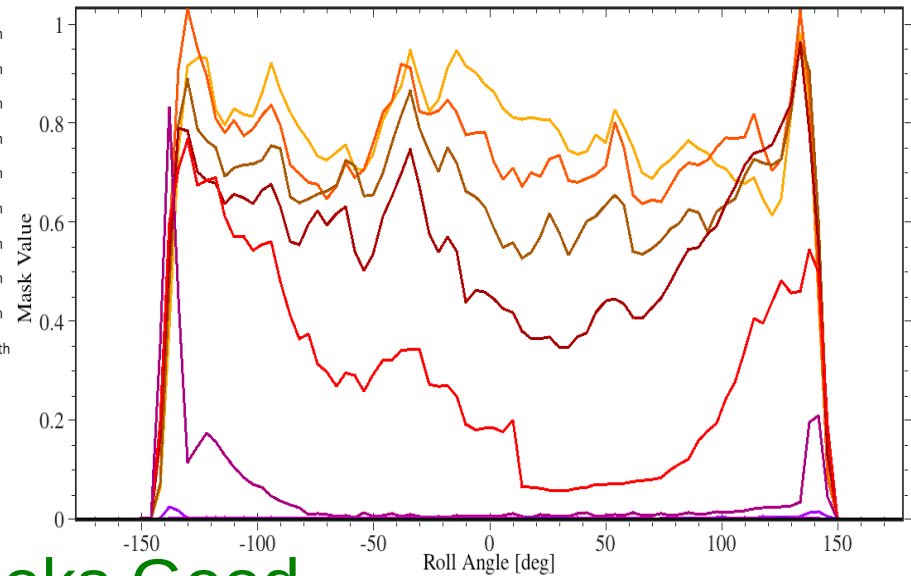
SWAP FOV Mask (Negative Azimuth)



SWAP FOV Mask (Positive Azimuth)



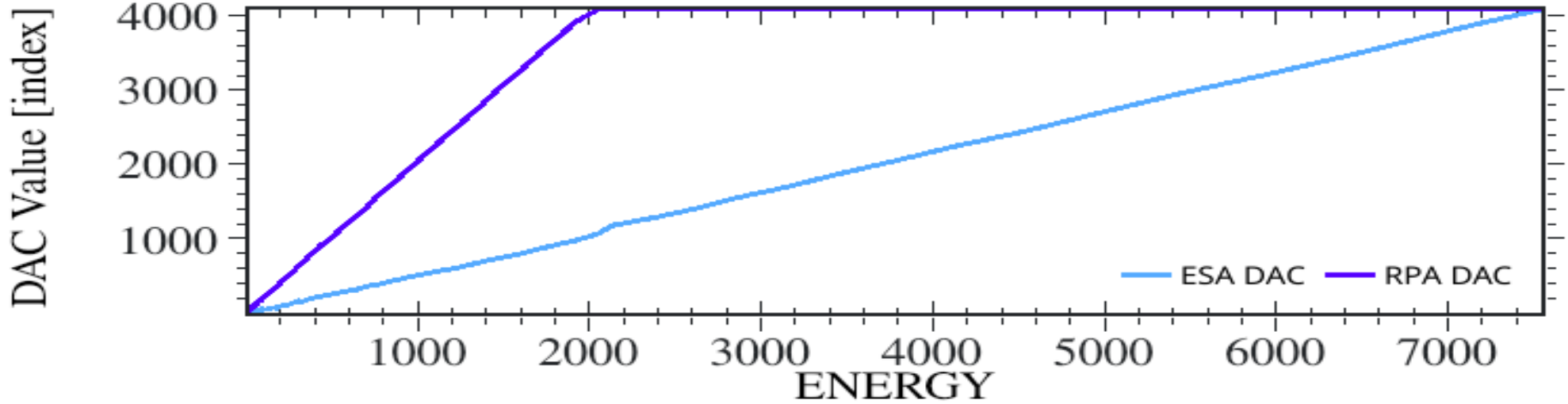
SWAP FOV Mask (Positive Azimuth)



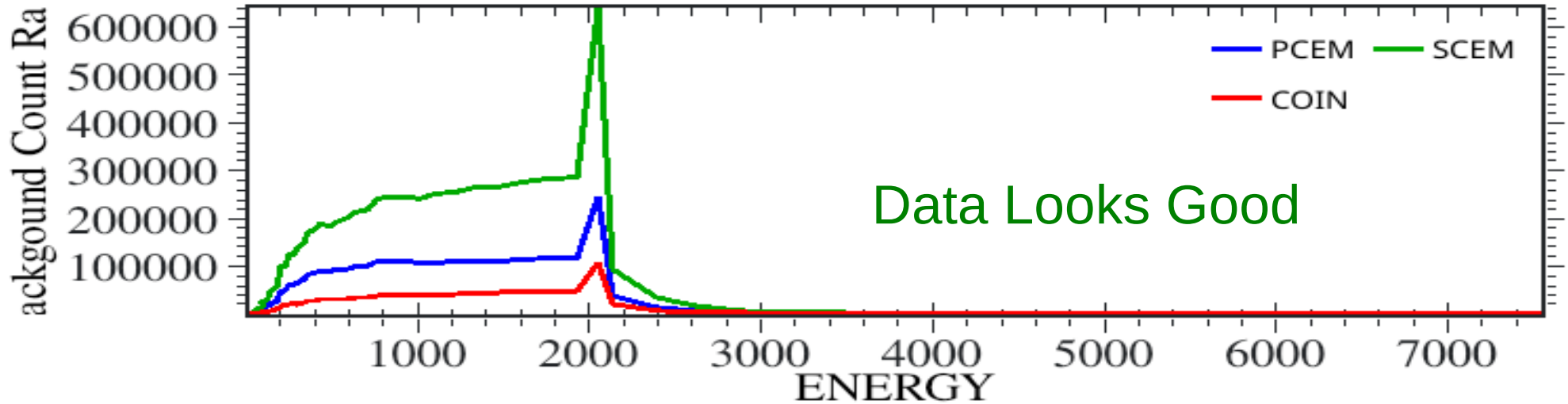
Data Looks Good

nh-a-swap-2-kem2-v1.0/calib
nh-a-swap-3-kem2-v1.0/calib
background_009_dac.tab

SWAP background_009_dac.tab: Plan 3, Sweep 3

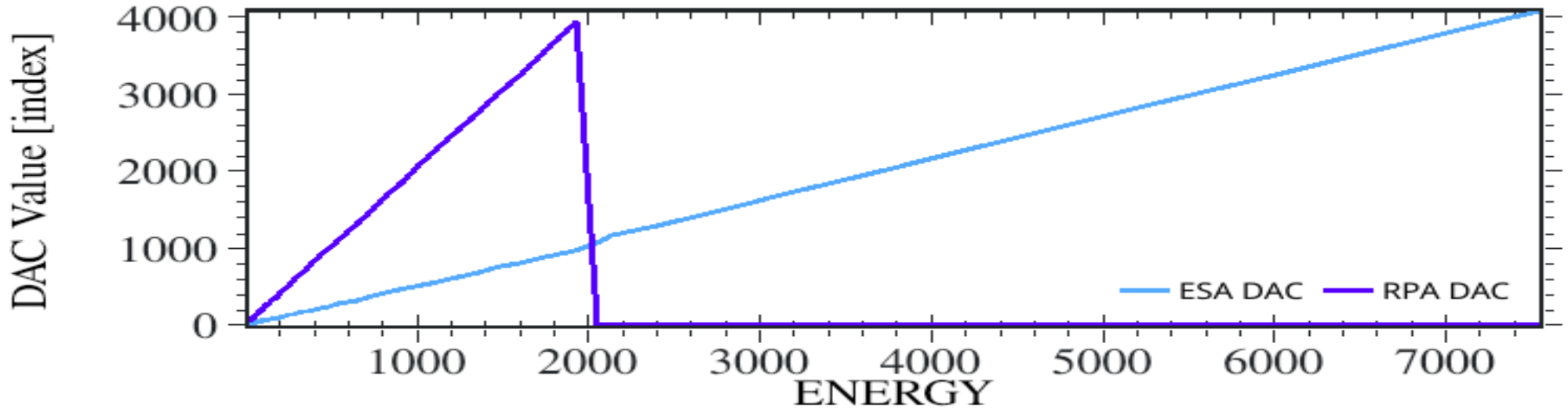


SWAP background_009_dac.tab: Plan 3, Sweep 3

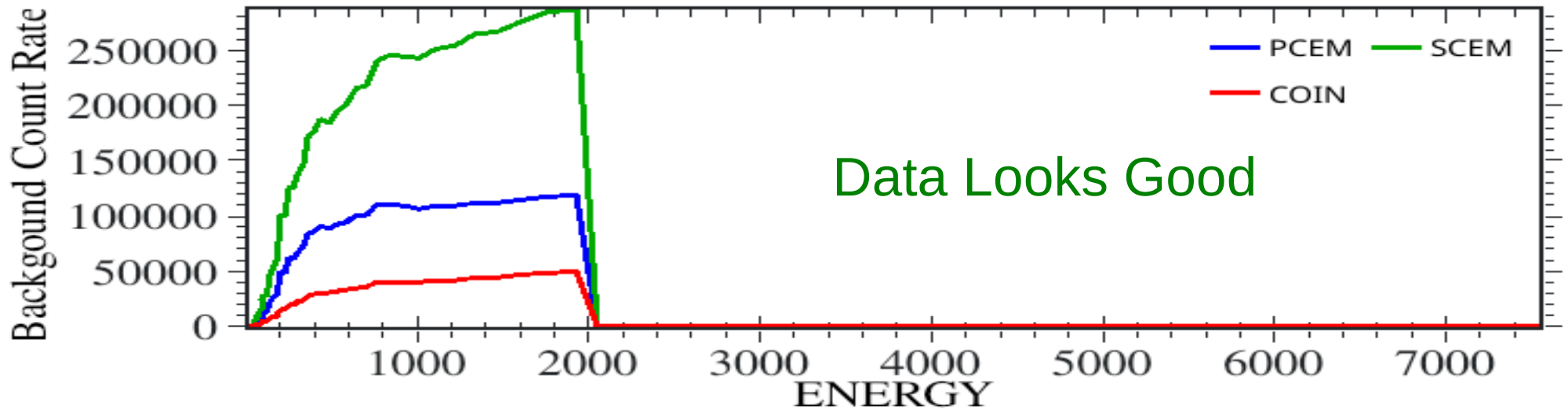


nh-a-swap-2-kem2-v1.0/calib
nh-a-swap-3-kem2-v1.0/calib
background_009_dac_jup.tab

SWAP background_009_dac_jup.tab: Plan 0, Sweep 0



SWAP background_009_dac_jup.tab: Plan 0, Sweep 0



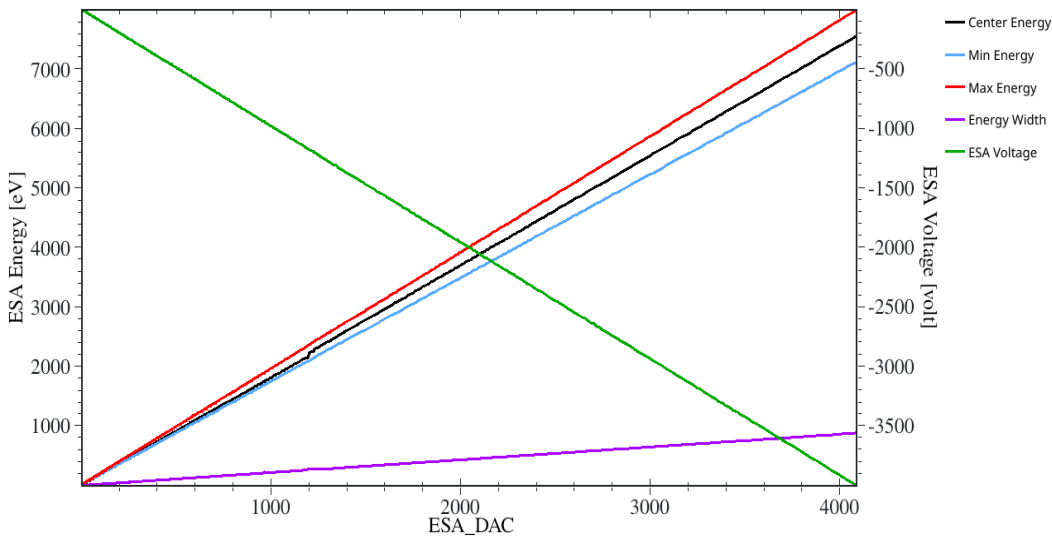
Data Looks Good

nh-a-swap-2-kem2-v1.0/calib

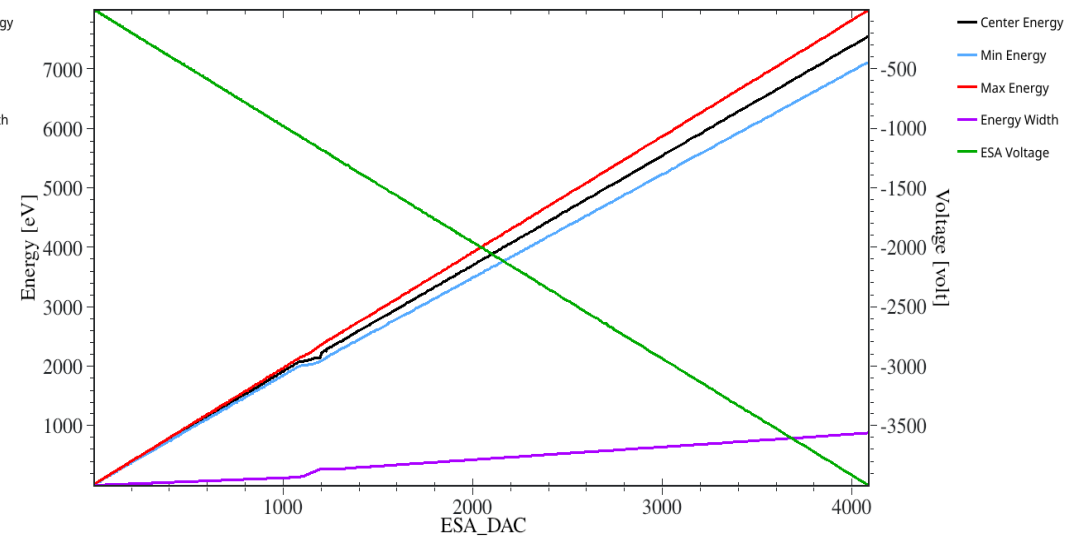
nh-a-swap-3-kem2-v1.0/calib

esa_rpa_v16_energy_binsf_new.tab

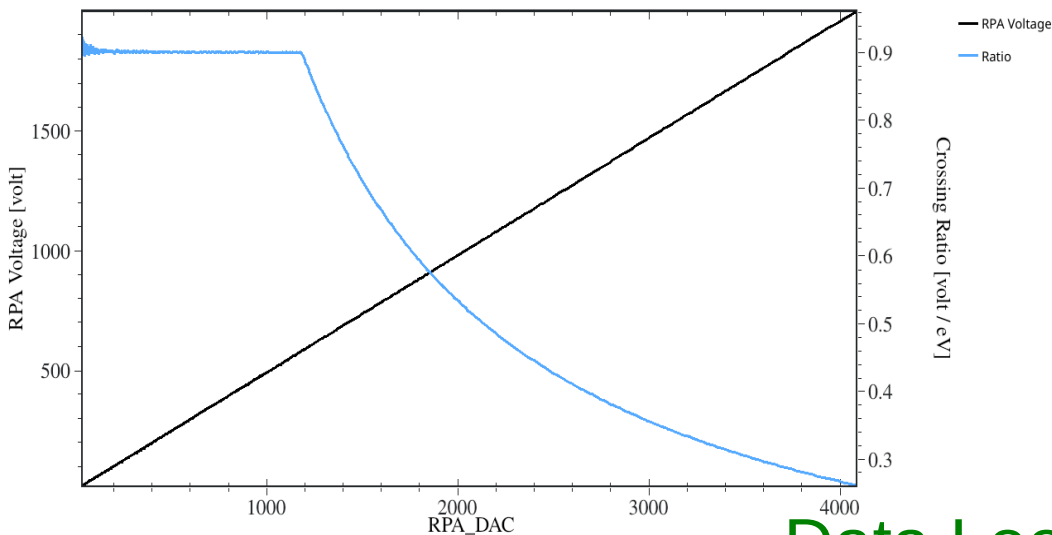
SWAP esa_rpa_v16_energy_binsf_new.tab: Plan 0, Sweep 0, 1st Entry



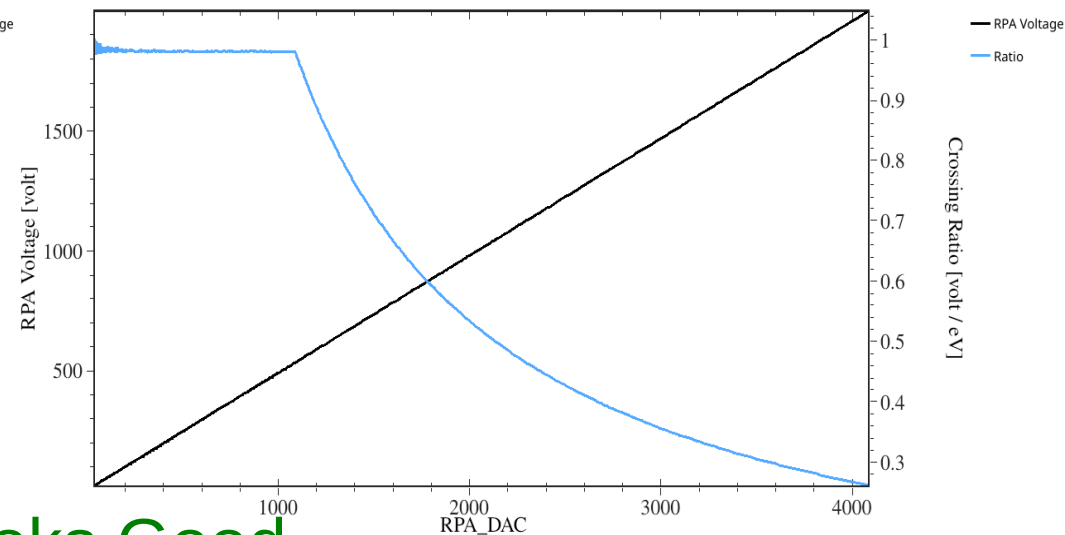
SWAP esa_rpa_v16_energy_binsf_new.tab: Plan 0, Sweep 0, 2nd Entry



SWAP esa_rpa_v16_energy_binsf_new.tab: Plan 0, Sweep 0, 1st Entry



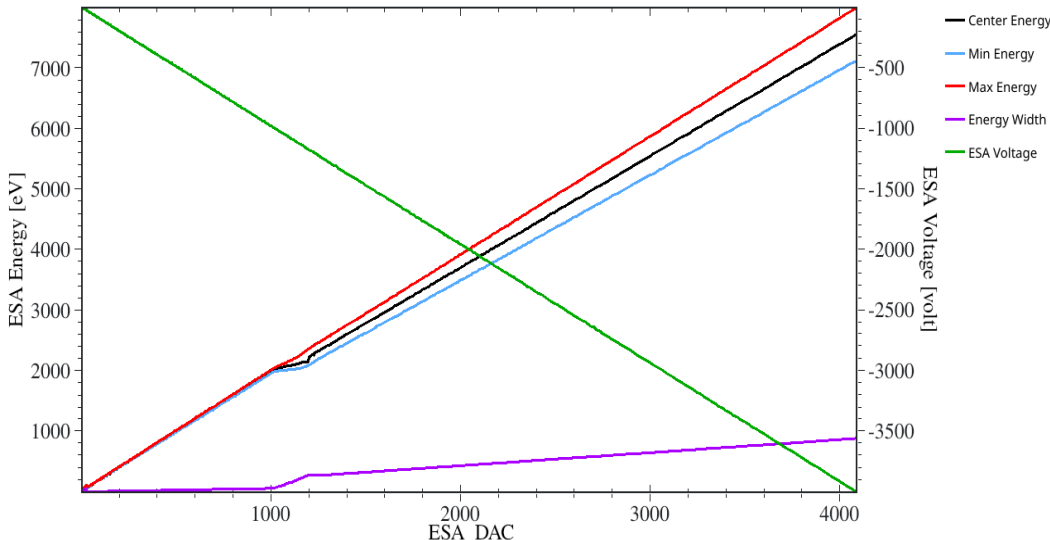
SWAP esa_rpa_v16_energy_binsf_new.tab: Plan 0, Sweep 0, 2nd Entry



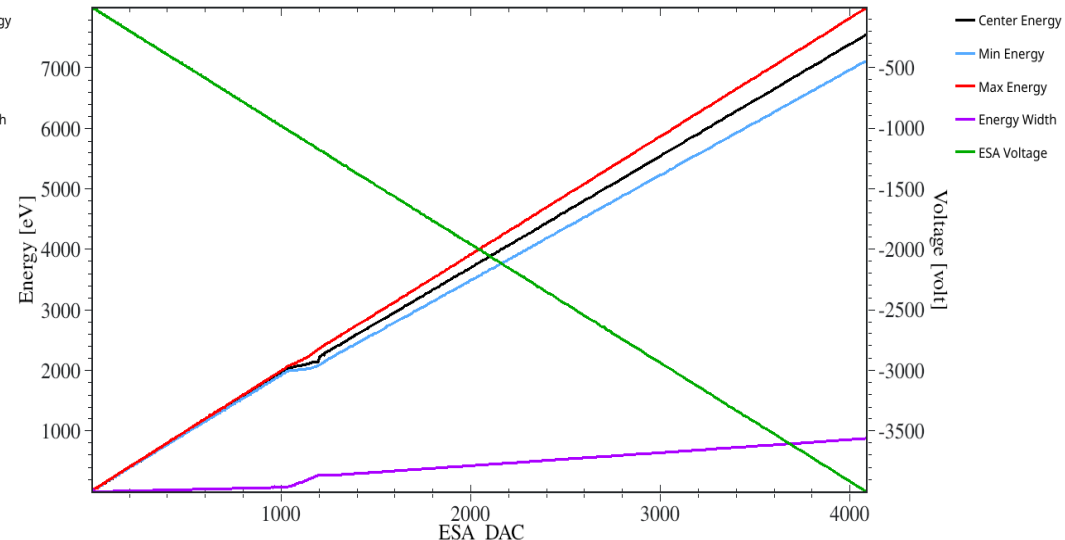
Data Looks Good

nh-a-swap-2-kem2-v1.0/calib nh-a-swap-3-kem2-v1.0/calib esa_rpa_v18_energy_binsf_new.tab

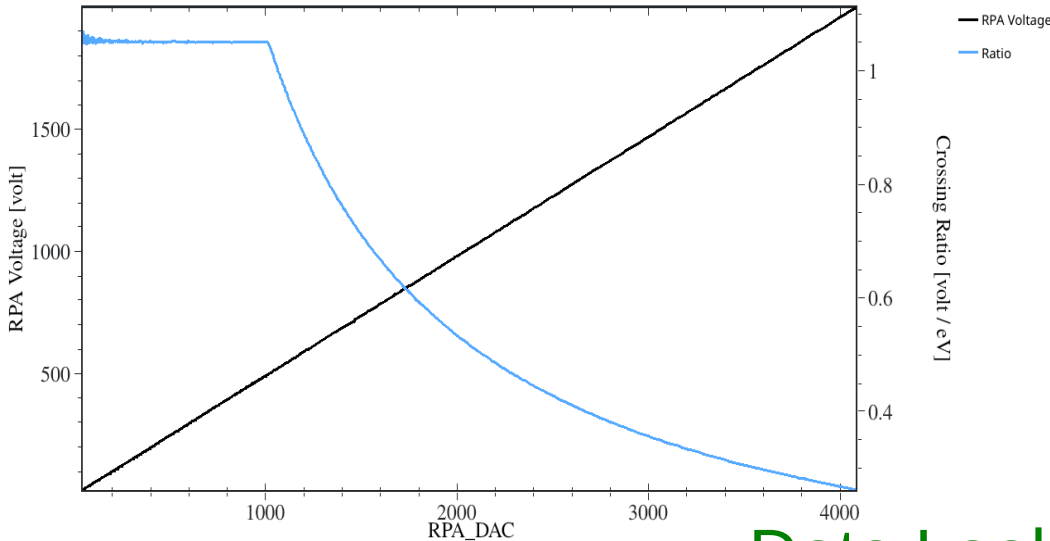
SWAP esa_rpa_v18_energy_binsf_new.tab: Plan 3, Sweep 3, 1st Entry



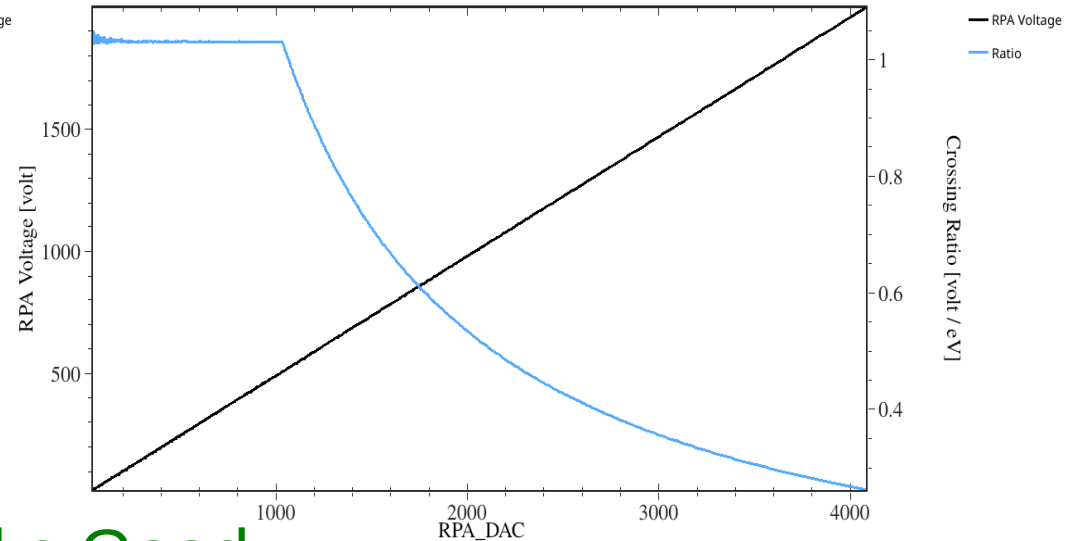
SWAP esa_rpa_v18_energy_binsf_new.tab: Plan 4, Sweep 4, 2nd Entry



SWAP esa_rpa_v18_energy_binsf_new.tab: Plan 3, Sweep 3, 1st Entry



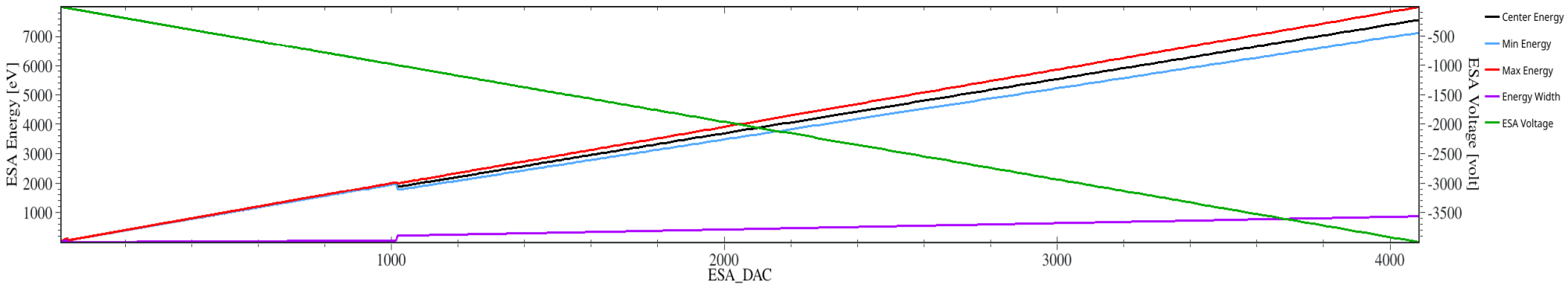
SWAP esa_rpa_v18_energy_binsf_new.tab: Plan 4, Sweep 4, 2nd Entry



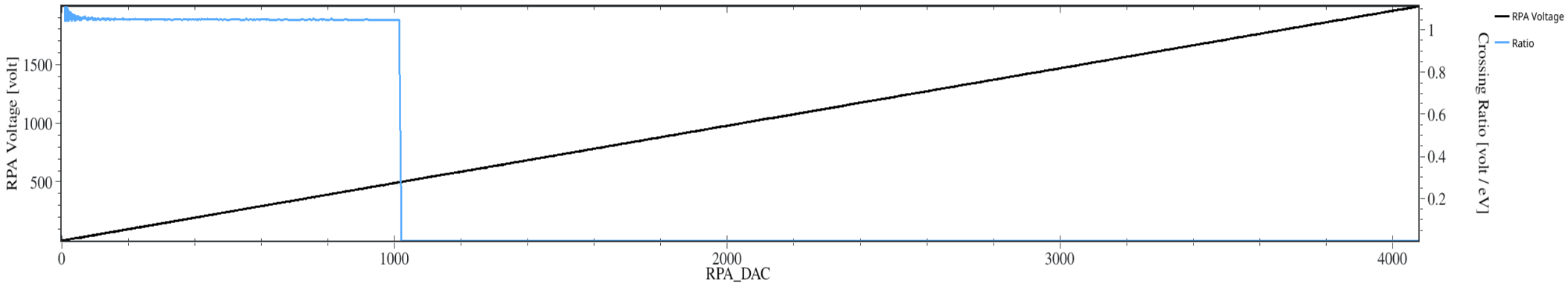
Data Looks Good

nh-a-swap-2-kem2-v1.0/calib nh-a-swap-3-kem2-v1.0/calib esa_rpa_v19_energy_binsf_new2.tab

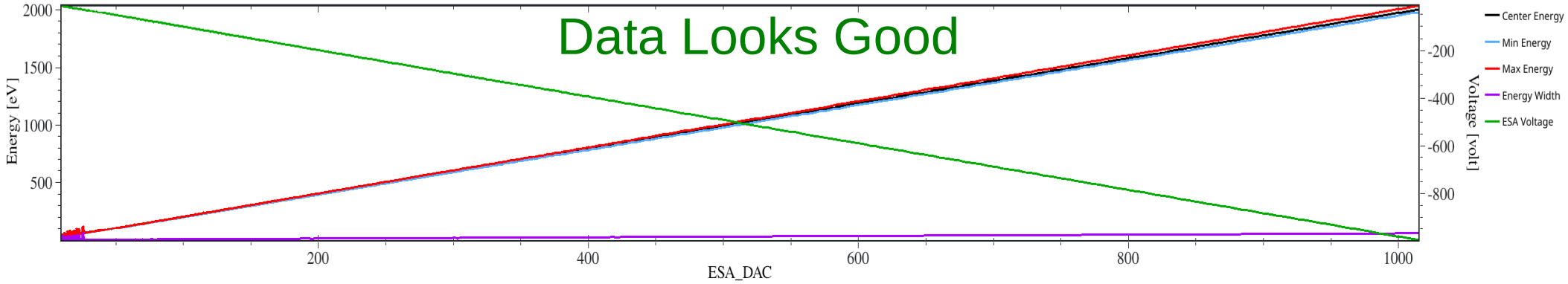
SWAP esa_rpa_v19_energy_binsf_new2.tab: Plan 0, Sweep 0, 1st Entry



SWAP esa_rpa_v19_energy_binsf_new2.tab: Plan 0, Sweep 0, 1st Entry



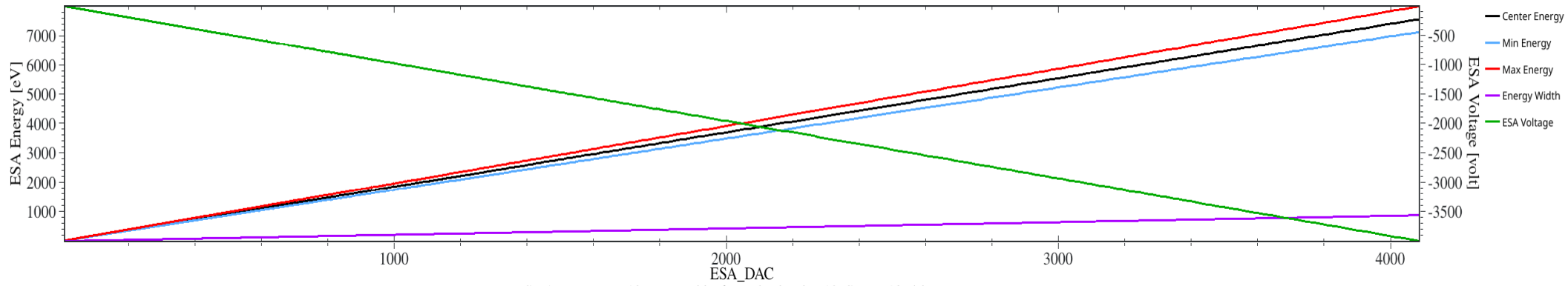
SWAP esa_rpa_v19_energy_binsf_new2.tab: Plan 5, Sweep 5, 2nd Entry



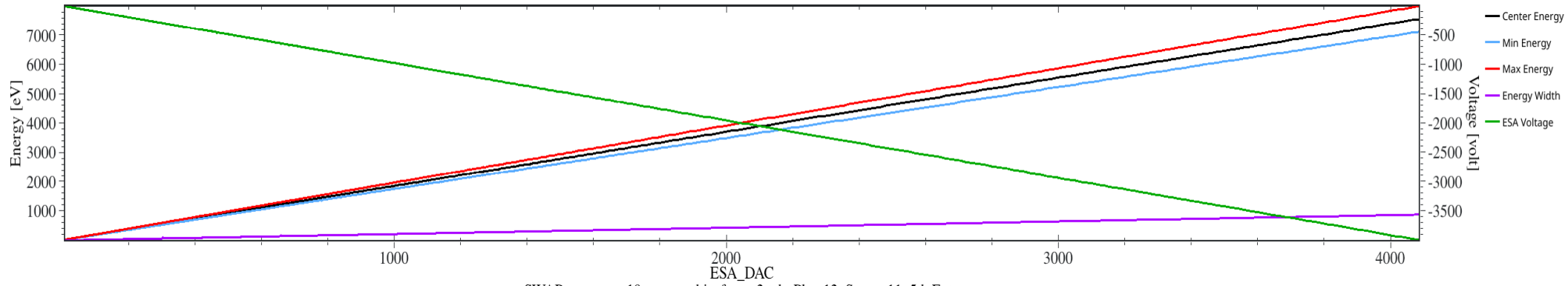
Data Looks Good

nh-a-swap-2-kem2-v1.0/calib nh-a-swap-3-kem2-v1.0/calib esa_rpa_v19_energy_binsf_new2.tab

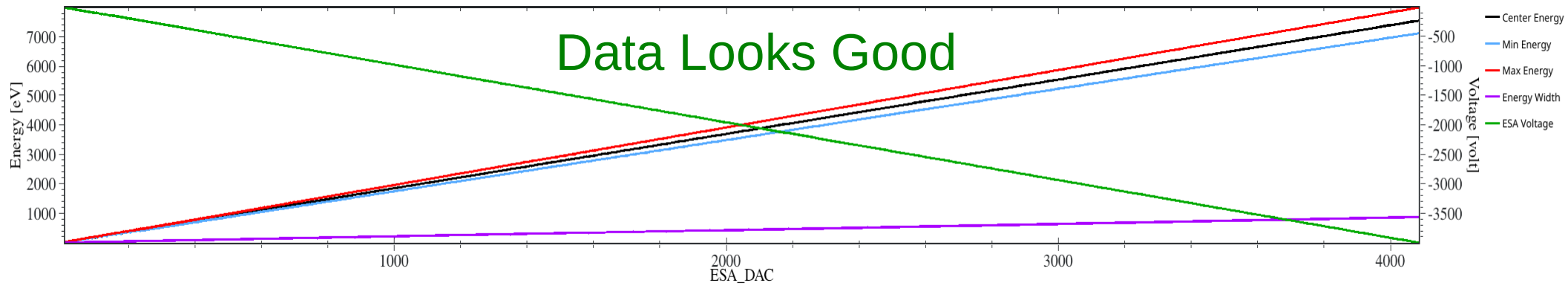
SWAP esa_rpa_v19_energy_binsf_new2.tab: Plan 2, Sweep 2, 3rd Entry



SWAP esa_rpa_v19_energy_binsf_new2.tab: Plan 12, Sweep 10, 4th Entry

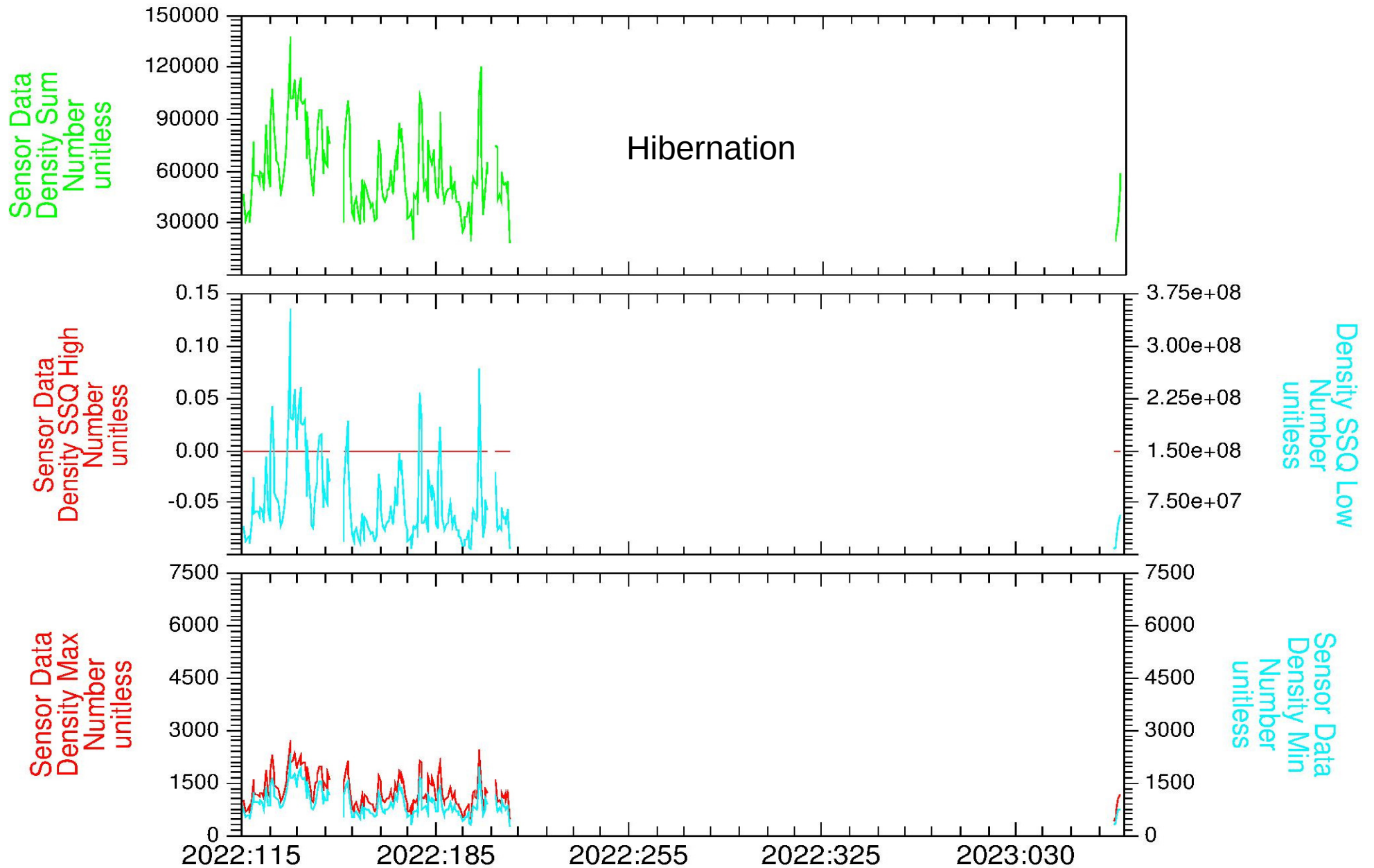


SWAP esa_rpa_v19_energy_binsf_new2.tab: Plan 12, Sweep 11, 5th Entry

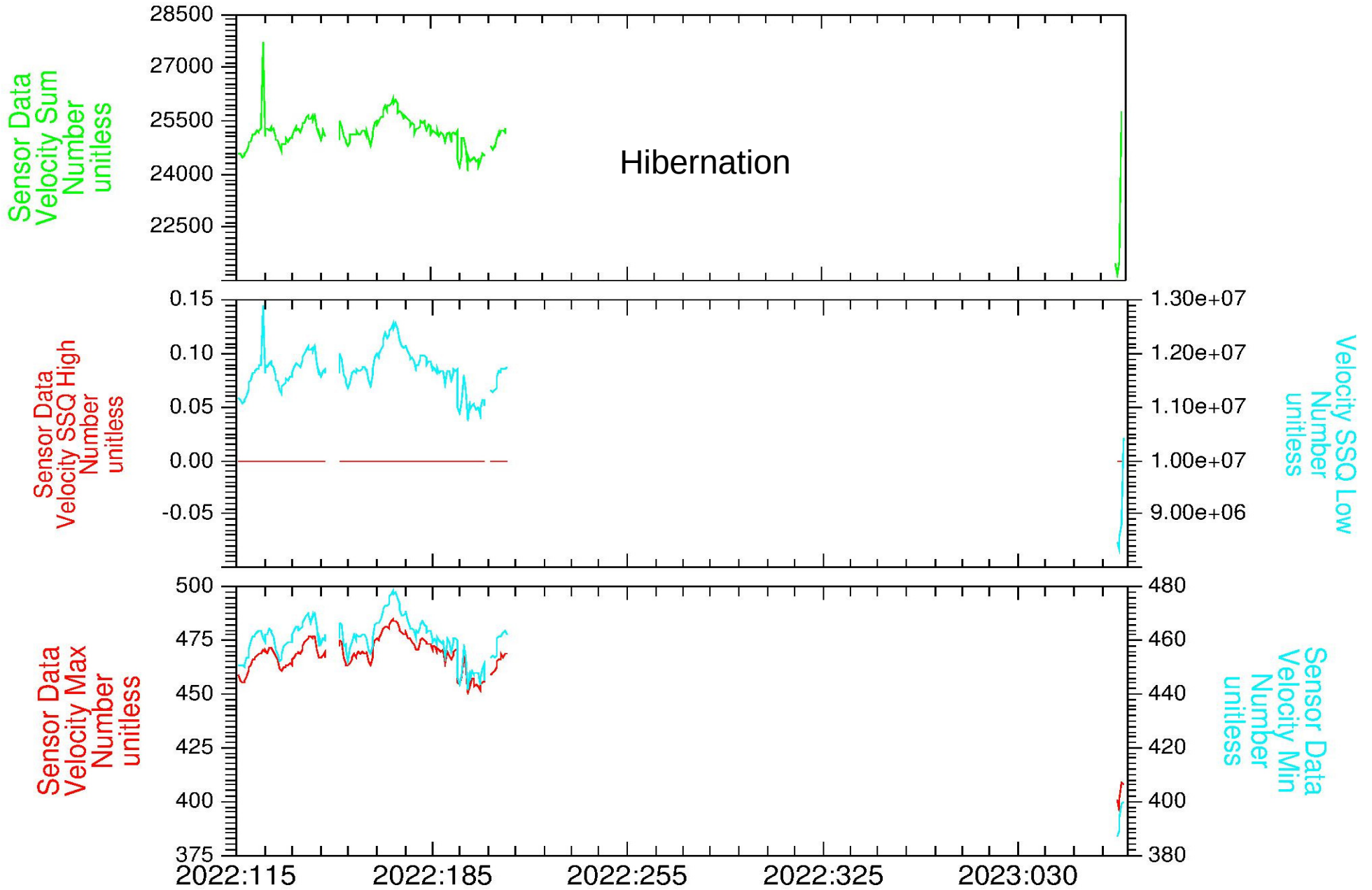


SWAP RAW and CALIBRATED Data Evaluation

nh-a-swap-2-kem2-v1.0/data Summary Data (0x585) - Density

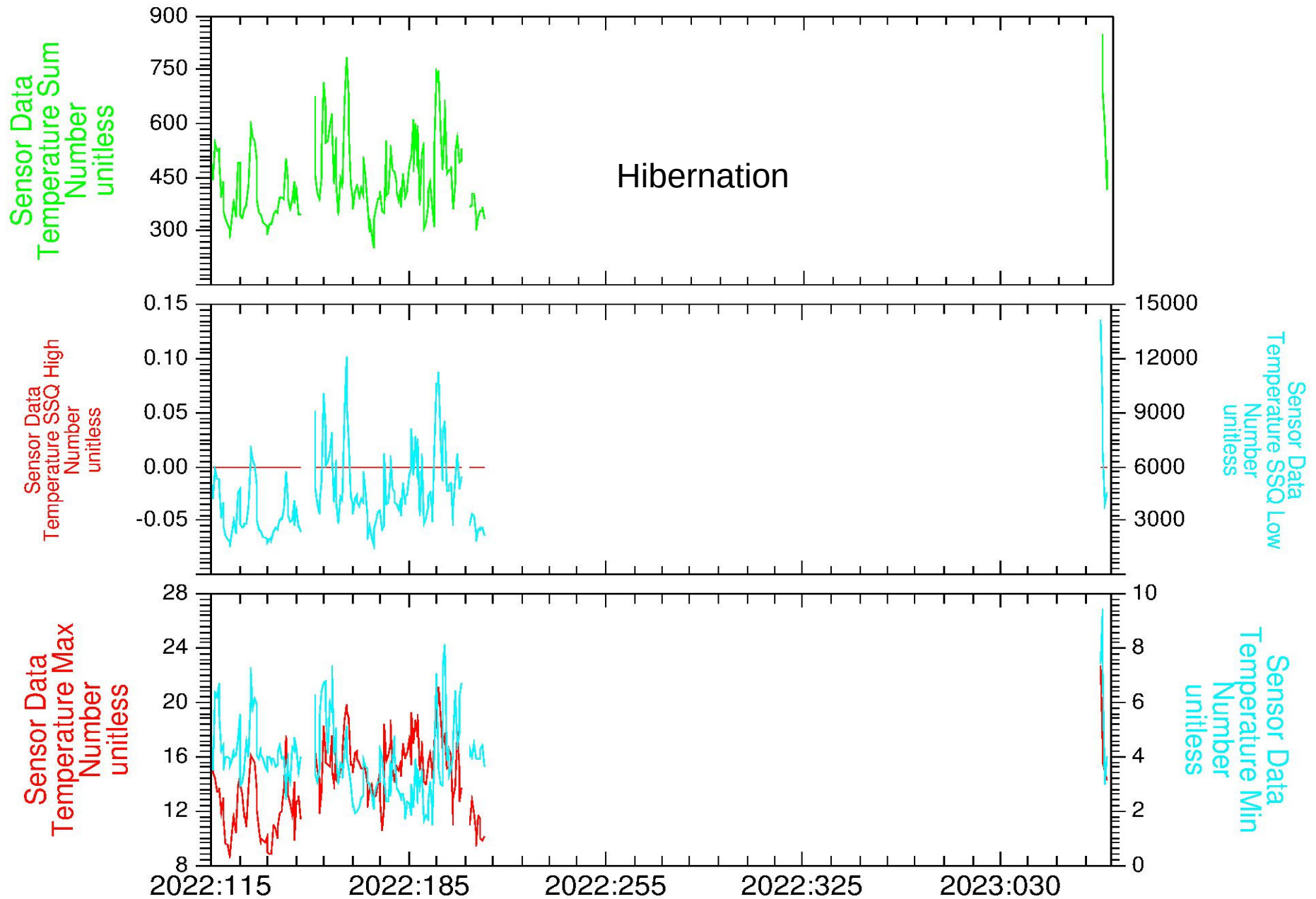


nh-a-swap-2-kem2-v1.0/data Summary Data (0x585) - Velocity

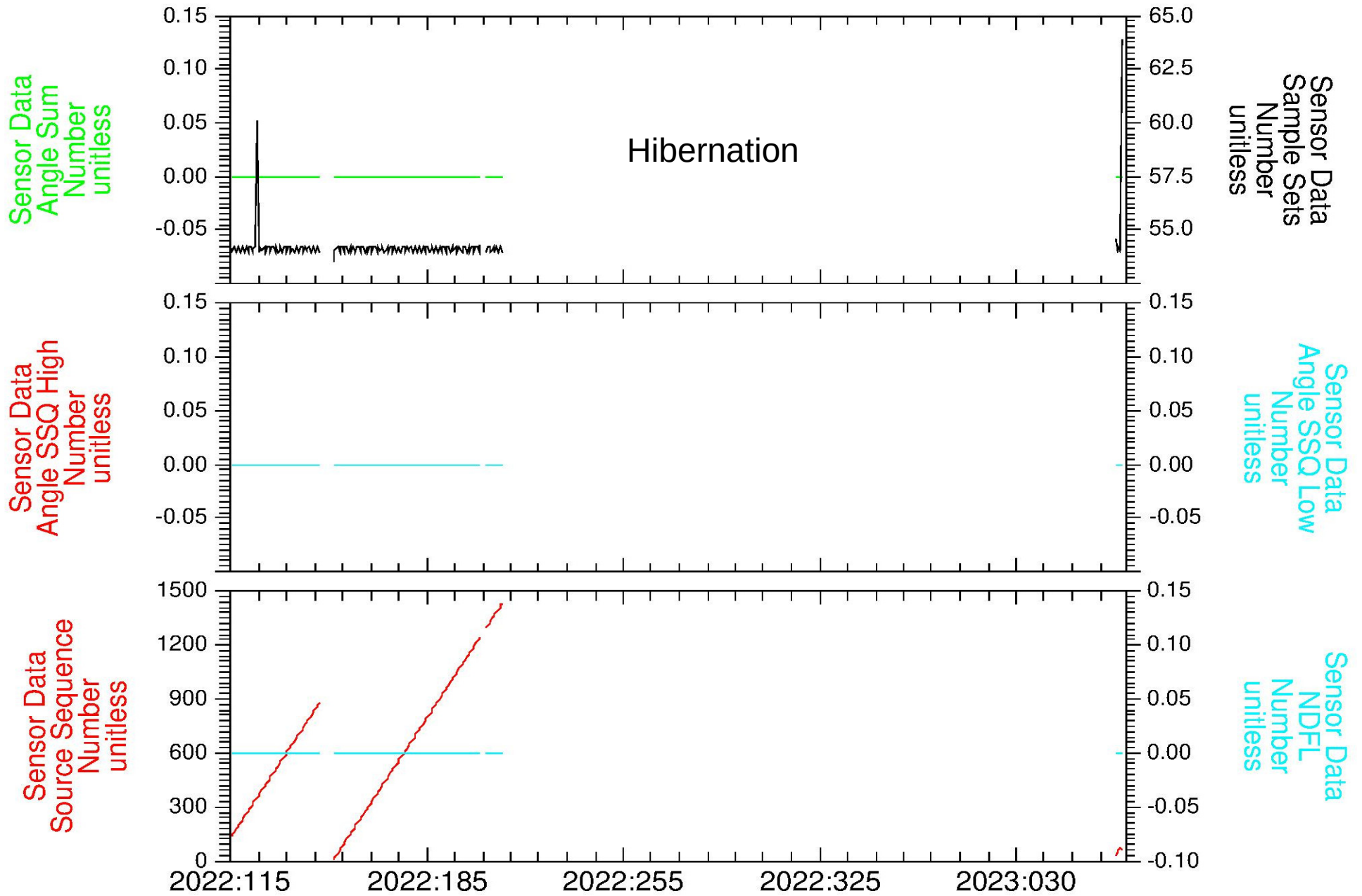


nh-a-swap-2-kem2-v1.0/data

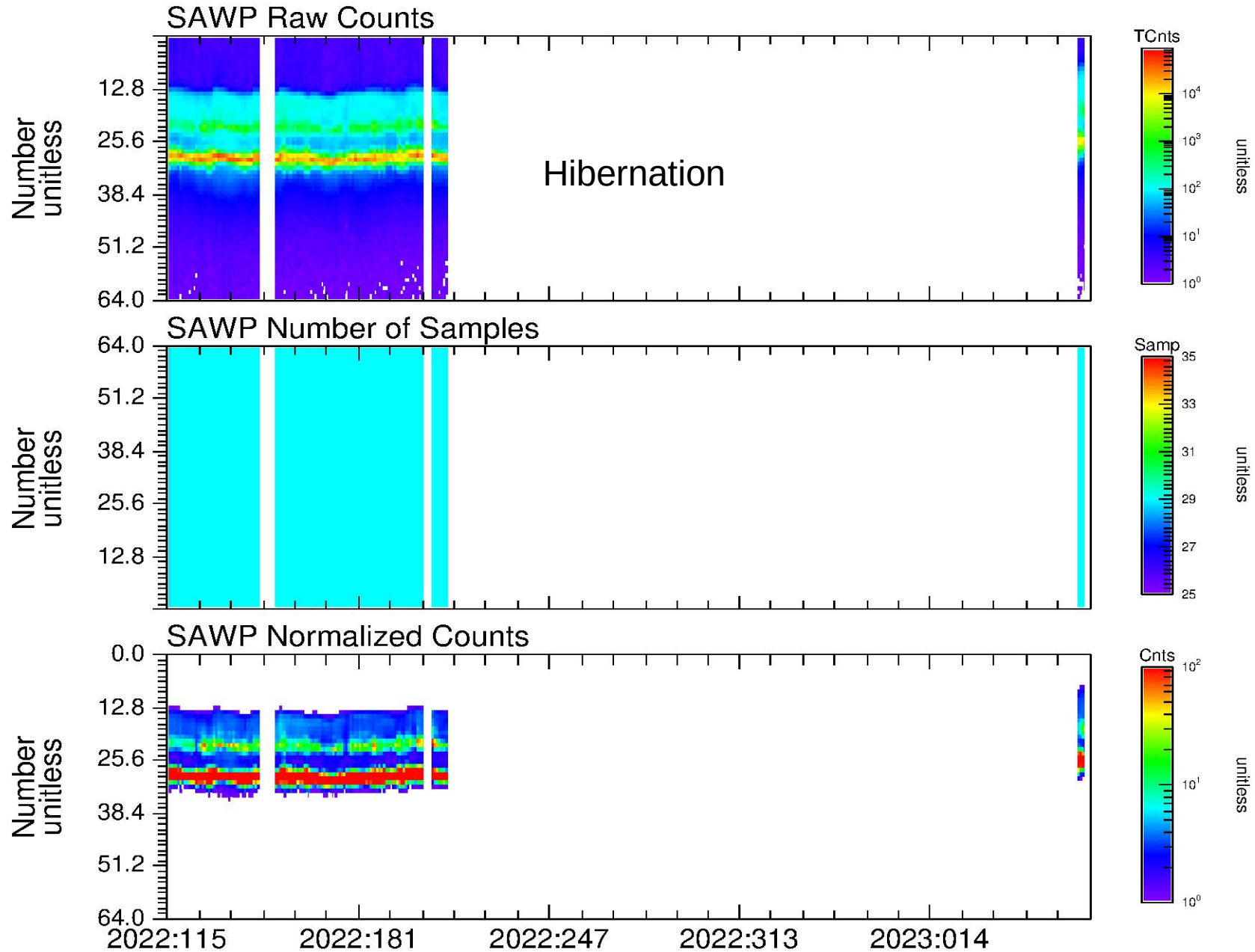
Summary Data (0x585) - Temperature



nh-a-swap-2-kem2-v1.0/data Summary Data (0x585) – Other

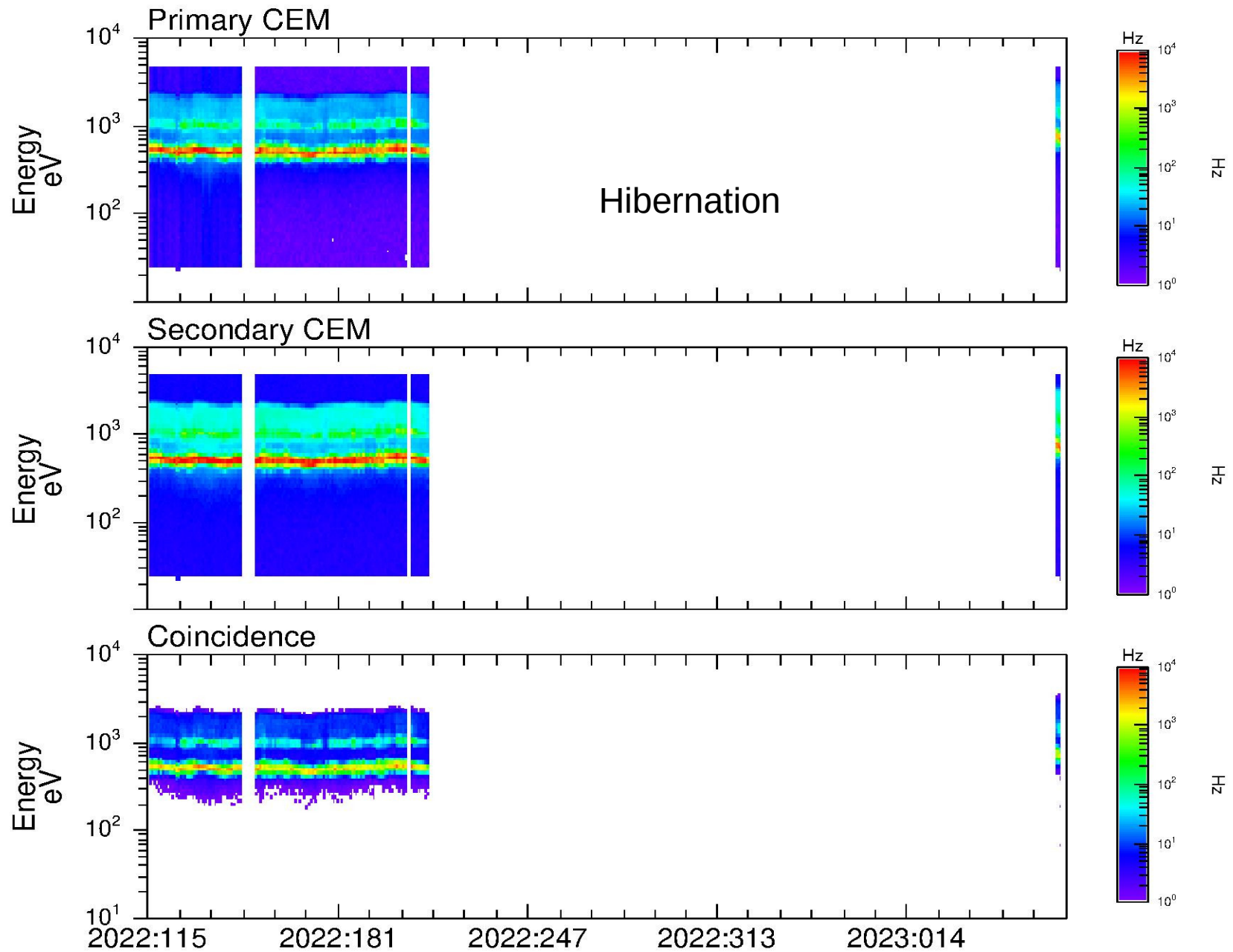


nh-a-swap-3-kem2-v1.0/data Histogram Data (0x586) Type 3



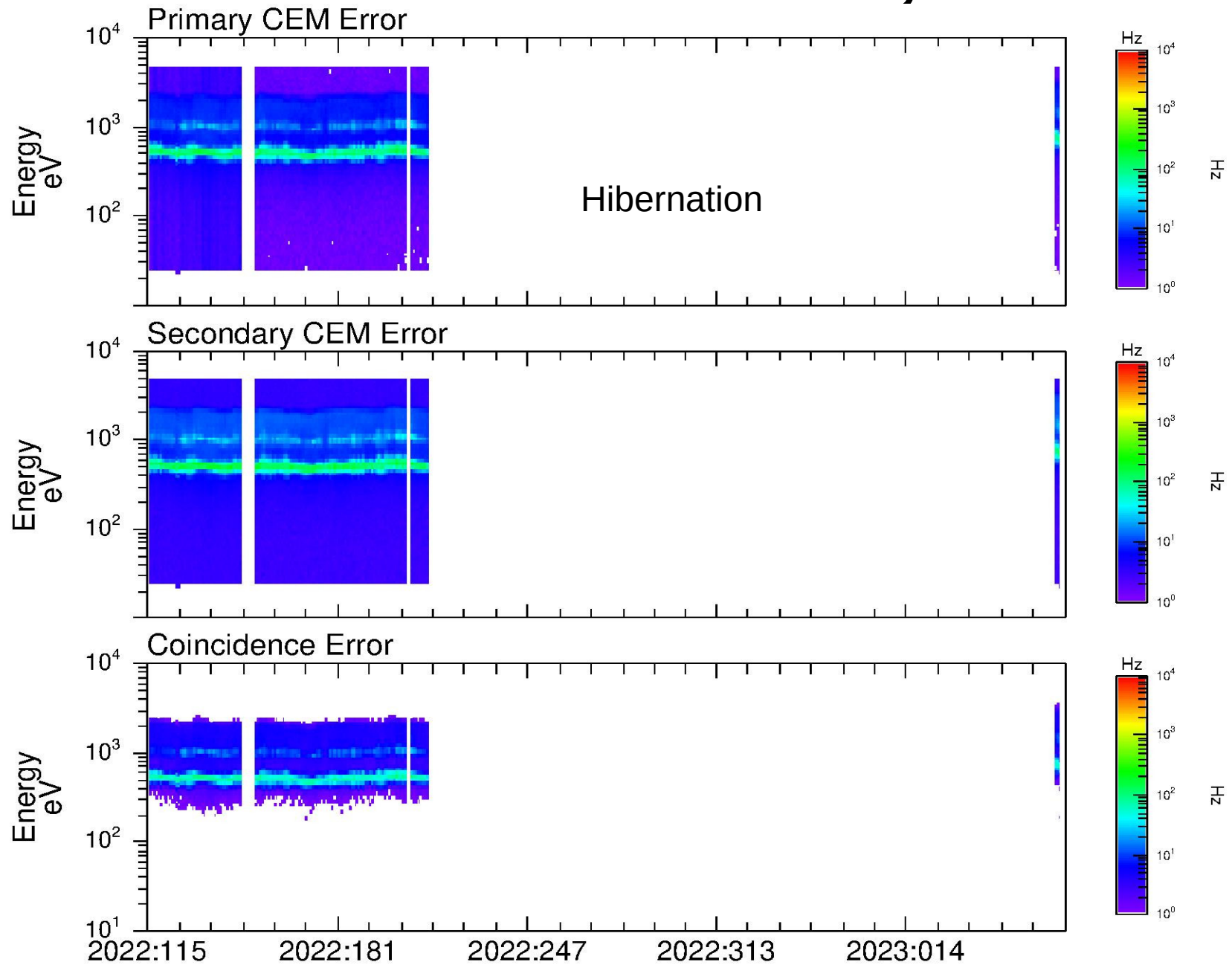
nh-a-swap-3-kem2-v1.0/data Science Data (0x584)

35



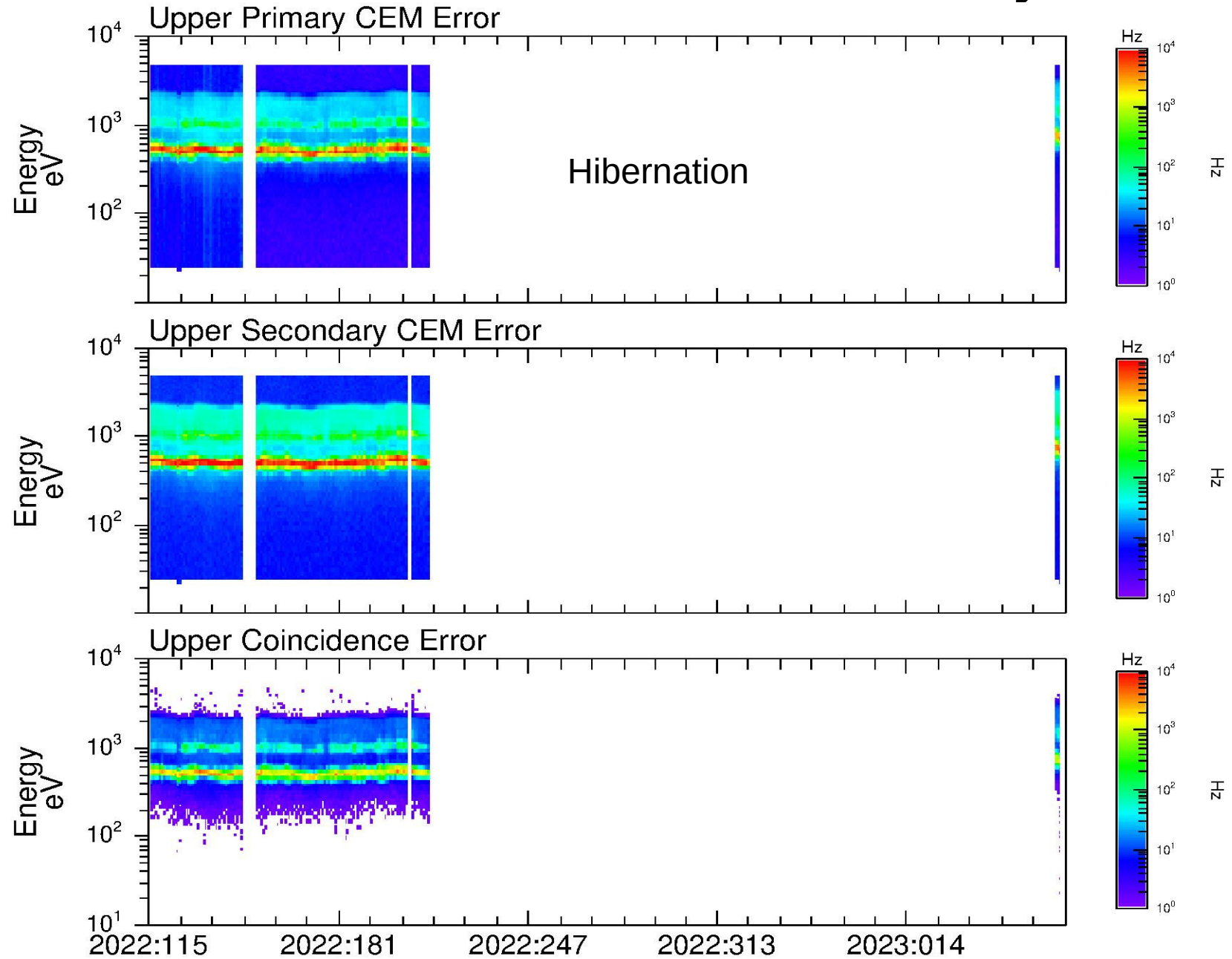
nh-a-swap-3-kem2-v1.0/data

Relative Uncertainty



nh-a-swap-3-kem2-v1.0/data

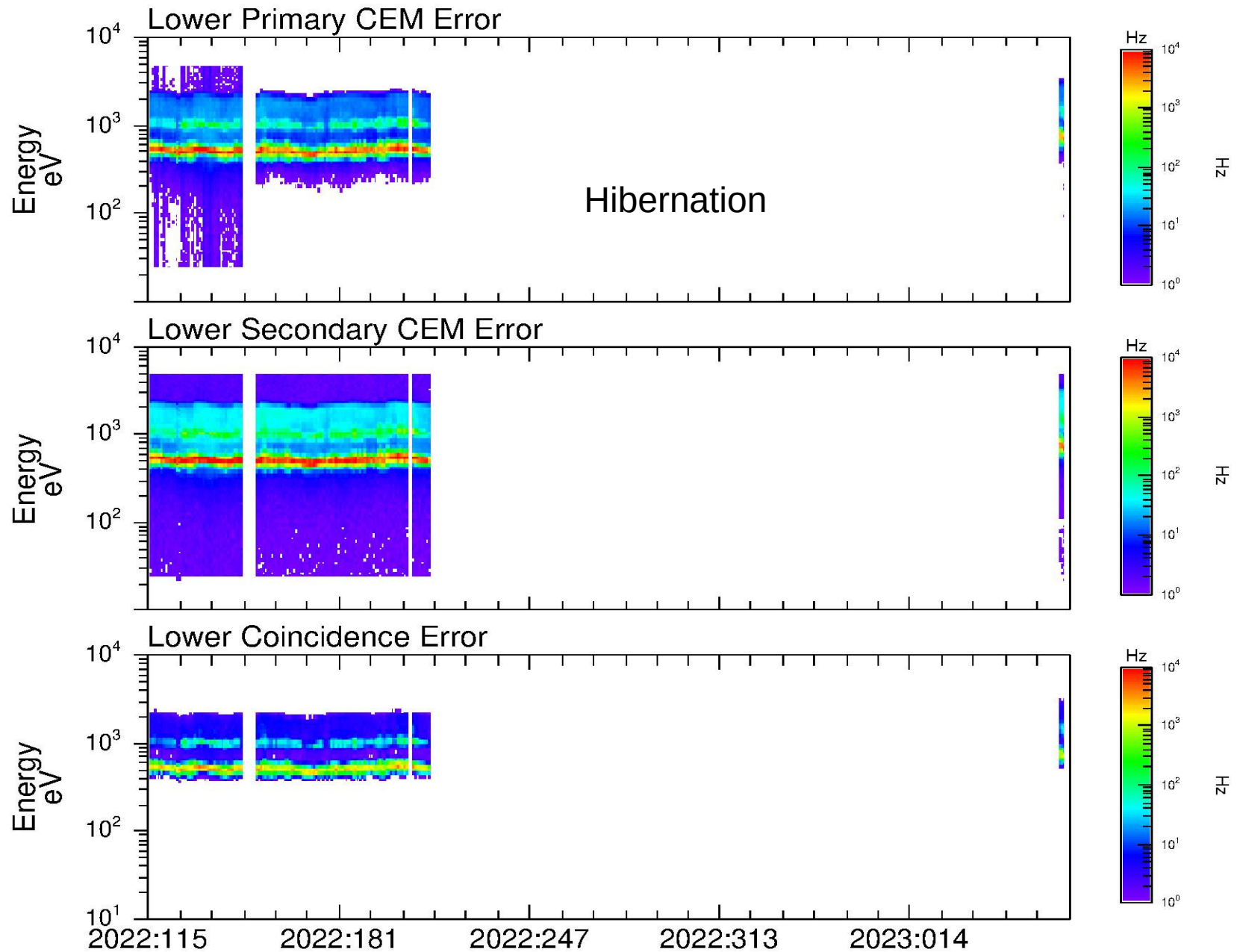
Absolute Maximum Uncertainty



nh-a-swap-3-kem2-v1.0/data

Absolute Minimum Uncertainty

38



Certification Recommendation

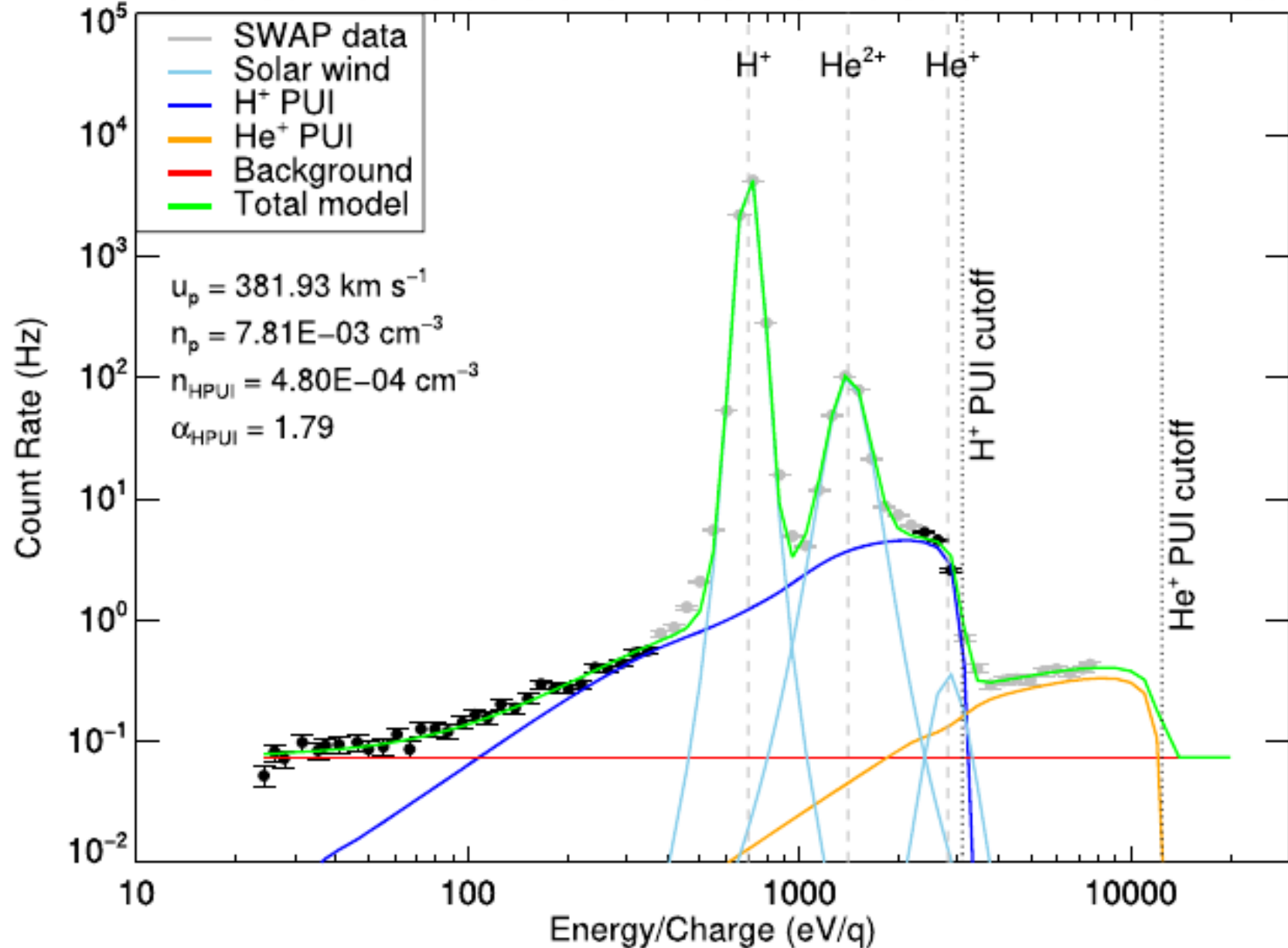
- 1) Update docinfo.txt (should not take more than a few minutes)
- 2) Resolved Superseded list in Level 3 archive.
- 3) Certify data after that.

BACK-UP SLIDES

Example Spectrum

Swaczyna et al., *Astrophysical Journal*, 2020.

2012-06-18T18:08:02/2012-06-19T18:08:01 $r = 23.44$ au



nh-a-swap-2-kem2-v1.0
nh-a-swap-3-kem2-v1.0
aareadme.txt

GOOD

nh-a-swap-2-kem2-v1.0
nh-a-swap-3-kem2-v1.0
voldesc.cat

GOOD

nh-a-swap-2-kem2-v1.0/catalog
nh-a-swap-3-kem2-v1.0/catalog
catinfo.txt

GOOD

nh-a-swap-2-kem2-v1.0/catalog
dataset.cat

GOOD

nh-a-swap-3-kem2-v1.0/catalog
dataset.cat

GOOD

nh-a-swap-2-kem2-v1.0/catalog
nh-a-swap-3-kem2-v1.0/catalog
nh_kem.cat

GOOD

nh-a-swap-2-kem2-v1.0/catalog
nh-a-swap-3-kem2-v1.0/catalog
nh_kem2.cat

GOOD

nh-a-swap-2-kem2-v1.0/catalog
nh-a-swap-3-kem2-v1.0/catalog
nhsc.cat

GOOD

nh-a-swap-2-kem2-v1.0/catalog
nh-a-swap-3-kem2-v1.0/catalog
ref.cat

GOOD

nh-a-swap-2-kem2-v1.0/catalog
nh-a-swap-3-kem2-v1.0/catalog
swap.cat

GOOD

nh-a-swap-2-kem2-v1.0/document
nh-a-swap-3-kem2-v1.0/document
codmac_level_definitions.lbl
codmac_level_definitions.pdf

GOOD

nh-a-swap-2-kem2-v1.0/document
nh-a-swap-3-kem2-v1.0/document
lunineetal1995.tbl & lunineetal1995.pdf

GOOD

nh-a-swap-2-kem2-v1.0/document
nh-a-swap-3-kem2-v1.0/document
nh_fov.lbl & nh_fov.png

GOOD

nh-a-swap-2-kem2-v1.0/document
nh-a-swap-3-kem2-v1.0/document
nh_met2utc.tbl & nh_met2utc.tab

GOOD, table update not needed

nh-a-swap-2-kem2-v1.0/document
nh-a-swap-3-kem2-v1.0/document
nh_mission_trajectory.tbl

GOOD

nh-a-swap-2-kem2-v1.0/document
nh-a-swap-3-kem2-v1.0/document
nh_swap_v200_ti.txt

GOOD

nh-a-swap-2-kem2-v1.0/document
nh-a-swap-3-kem2-v1.0/document
payload_ssr.lbl & payload_ssr.pdf

GOOD

nh-a-swap-2-kem2-v1.0/document
nh-a-swap-3-kem2-v1.0/document
quat_axyz_instr_to_j2k.lbl
quat_axyz_instr_to_j2k.asc

GOOD

nh-a-swap-2-kem2-v1.0/document
nh-a-swap-3-kem2-v1.0/document
seq_swap_kem1.lbl

GOOD

nh-a-swap-2-kem2-v1.0/document
nh-a-swap-3-kem2-v1.0/document
seq_swap_kem2.tbl & seq_swap_kem2.tab

GOOD

nh-a-swap-2-kem2-v1.0/document
nh-a-swap-3-kem2-v1.0/document
swap_ssr.lbl & swap_ssr.pdf

GOOD

nh-a-swap-2-kem2-v1.0/document
nh-a-swap-3-kem2-v1.0/document
swap_cal.tbl

GOOD

nh-a-swap-2-kem2-v1.0/document
nh-a-swap-3-kem2-v1.0/document
soc_inst_icd.tbl & soc_inst_icd.pdf

GOOD

nh-a-swap-2-kem2-v1.0/document
nh-a-swap-3-kem2-v1.0/document
traj/trajinfo.txt

GOOD

nh-a-swap-2-kem2-v1.0/document
nh-a-swap-3-kem2-v1.0/document
traj/traj.fmt

GOOD

nh-a-swap-2-kem2-v1.0/document
nh-a-swap-3-kem2-v1.0/document
traj/traj_2006_2028_1d.tbl

GOOD

nh-a-swap-2-kem2-v1.0/calib
nh-a-swap-3-kem2-v1.0/calib
calinfo.txt

GOOD

nh-a-swap-2-kem2-v1.0/calib
nh-a-swap-3-kem2-v1.0/calib
rpa_shape.lbl

GOOD

nh-a-swap-2-kem2-v1.0/calib
nh-a-swap-3-kem2-v1.0/calib
esa_shape.lbl

GOOD

nh-a-swap-2-kem2-v1.0/calib
nh-a-swap-3-kem2-v1.0/calib
fov_mask_2d.lbl

GOOD

nh-a-swap-2-kem2-v1.0/calib
nh-a-swap-3-kem2-v1.0/calib
background_009_dac.lbl

GOOD

nh-a-swap-2-kem2-v1.0/calib
nh-a-swap-3-kem2-v1.0/calib
background_009_dac_jup.lbl

GOOD

nh-a-swap-2-kem2-v1.0/calib
nh-a-swap-3-kem2-v1.0/calib
list_energy_files.lbl & list_energy_files.tab

GOOD

nh-a-swap-2-kem2-v1.0/calib
nh-a-swap-3-kem2-v1.0/calib
esa_rpa_v16_energy_binsf_new.lbl

GOOD

nh-a-swap-2-kem2-v1.0/calib
nh-a-swap-3-kem2-v1.0/calib
esa_rpa_v18_energy_binsf_new.lbl

GOOD

nh-a-swap-2-kem2-v1.0/calib
nh-a-swap-3-kem2-v1.0/calib
esa_rpa_v19_energy_binsf_new2.lbl

GOOD

nh-a-swap-2-kem2-v1.0/index
nh-a-swap-3-kem2-v1.0/index
indxinfo.txt

GOOD

nh-a-swap-2-kem2-v1.0/index
nh-a-swap-3-kem2-v1.0/index
index.lbl & index.tab

GOOD

nh-a-swap-2-kem2-v1.0/index
nh-a-swap-3-kem2-v1.0/index
slimindx.tbl & slimindx.tab

GOOD

nh-a-swap-2-kem2-v1.0/index
nh-a-swap-3-kem2-v1.0/index
checksum.tbl & checksum.tab

GOOD