



RPW/BIAS

Status

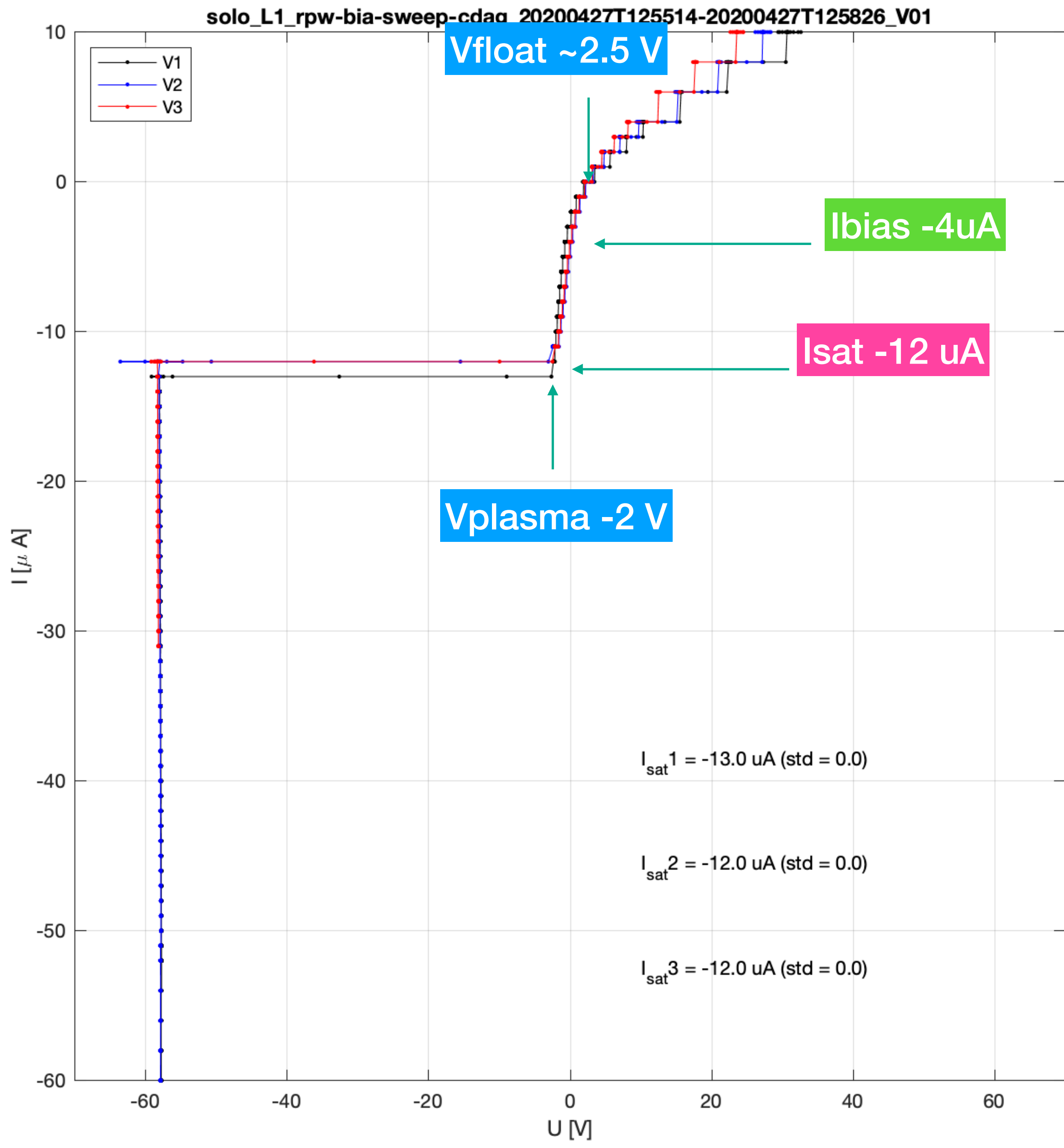
Yuri Khotyaintsev, 2020-06-26

BIAS Team

- Yuri Khotyaintsev (IRF) - lean Col
- Erik Johansson (IRF) – lead software engineer
- Niklas Edberg (IRF) - sweep analysis and bias current
- Daniel Graham (IRF) - wave calibration
- Andris Vaivads (KTH) - calibration support
- Anders Eriksson (IRF) - calibration support
- Andrew Dimmock (IRF) - science
- Thomas Karlsson (KTH) - science
- Michiko Morooka (IRF) - science
- Emiliya Yordanova (IRF) - science

Status of datasets

- L2
 - E - OK, new version with sweeps removed is under testing
 - Sweeps - some issues remaining
 - Bias current - OK
- L3
 - DC E - started, initial procedure implemented
 - Spacecraft potential - started, initial procedure implemented
 - Electron density based on ScPot - started

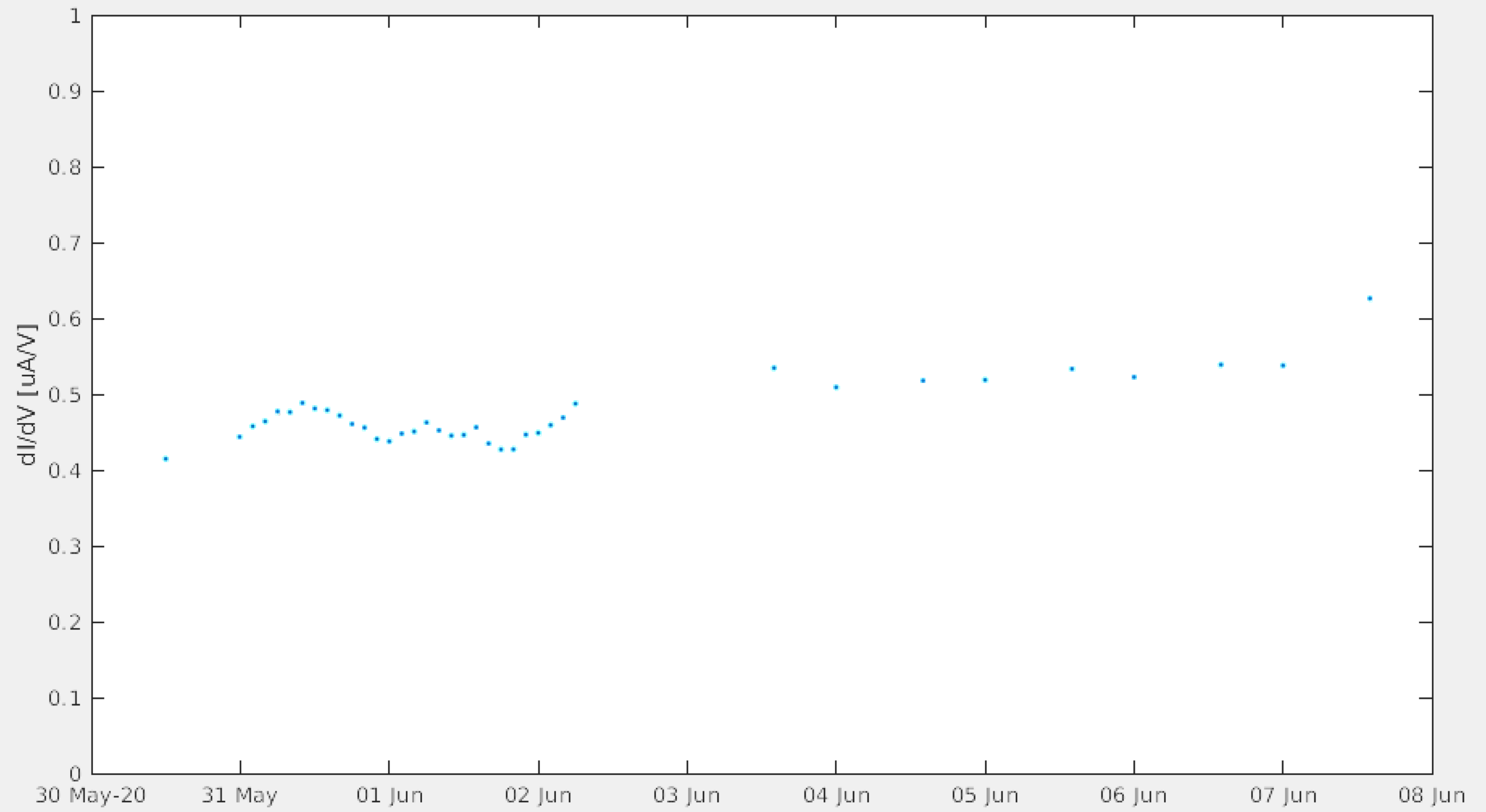
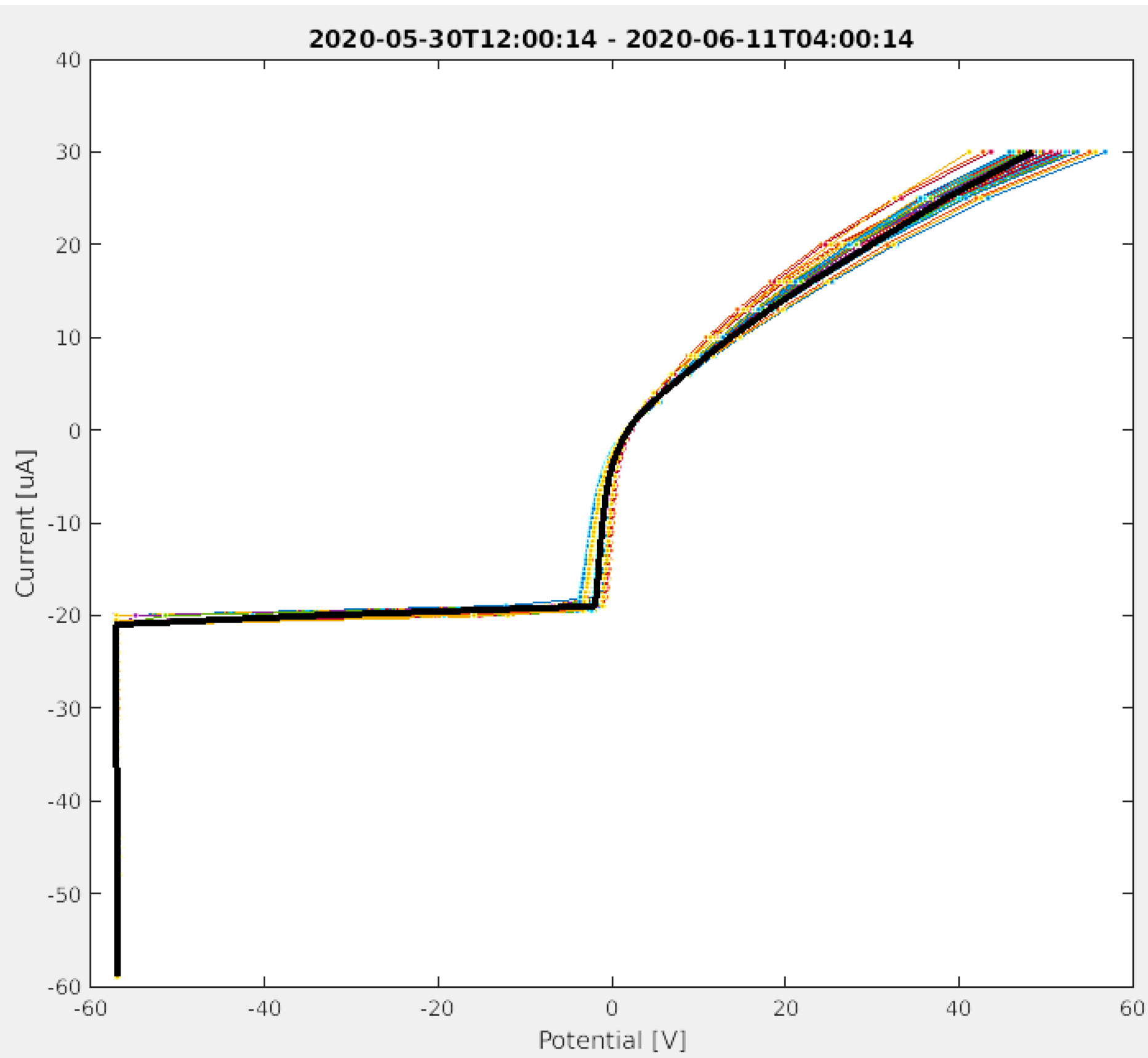


BIAS sweep analysis

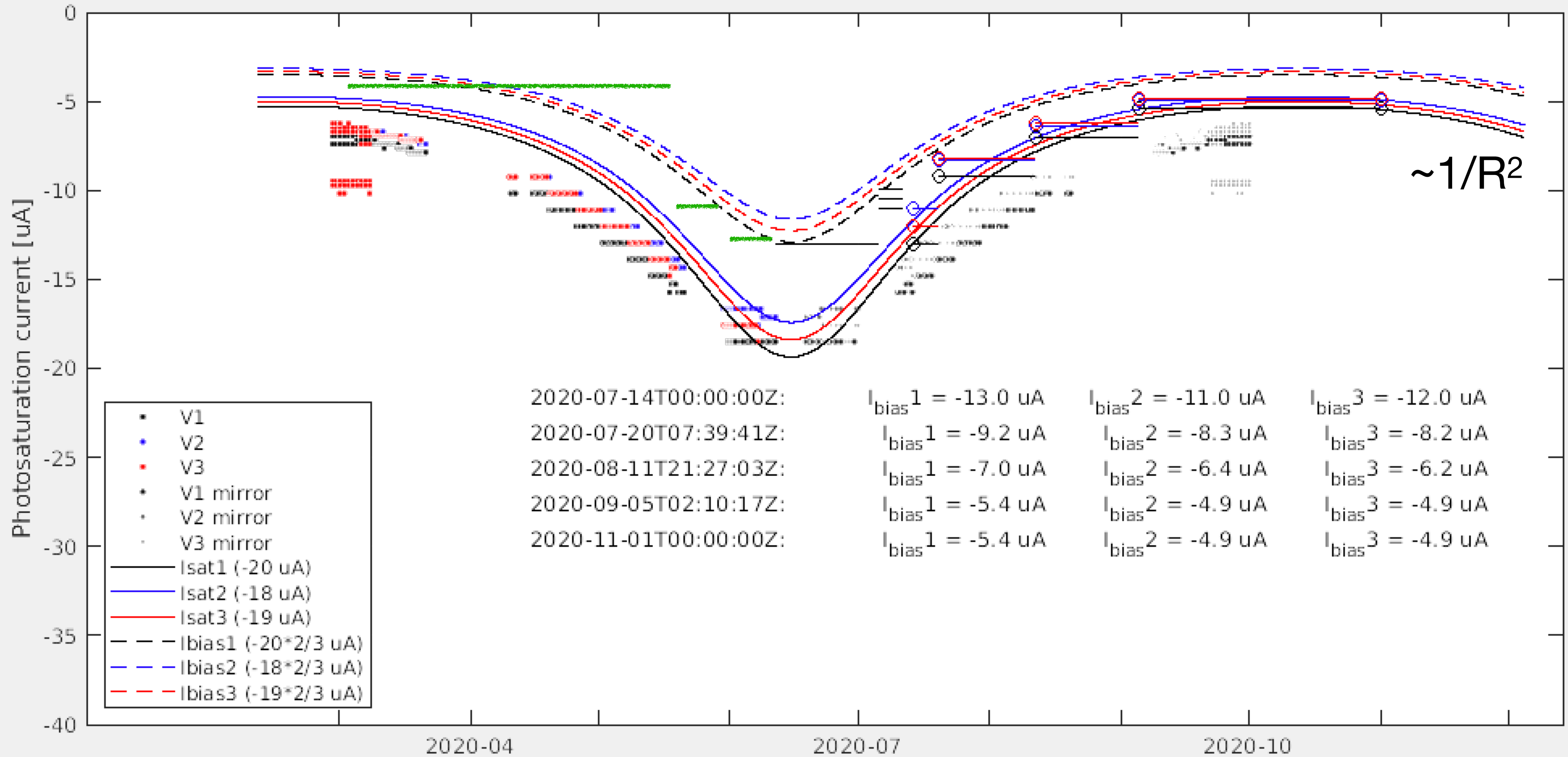
Niklas Edberg

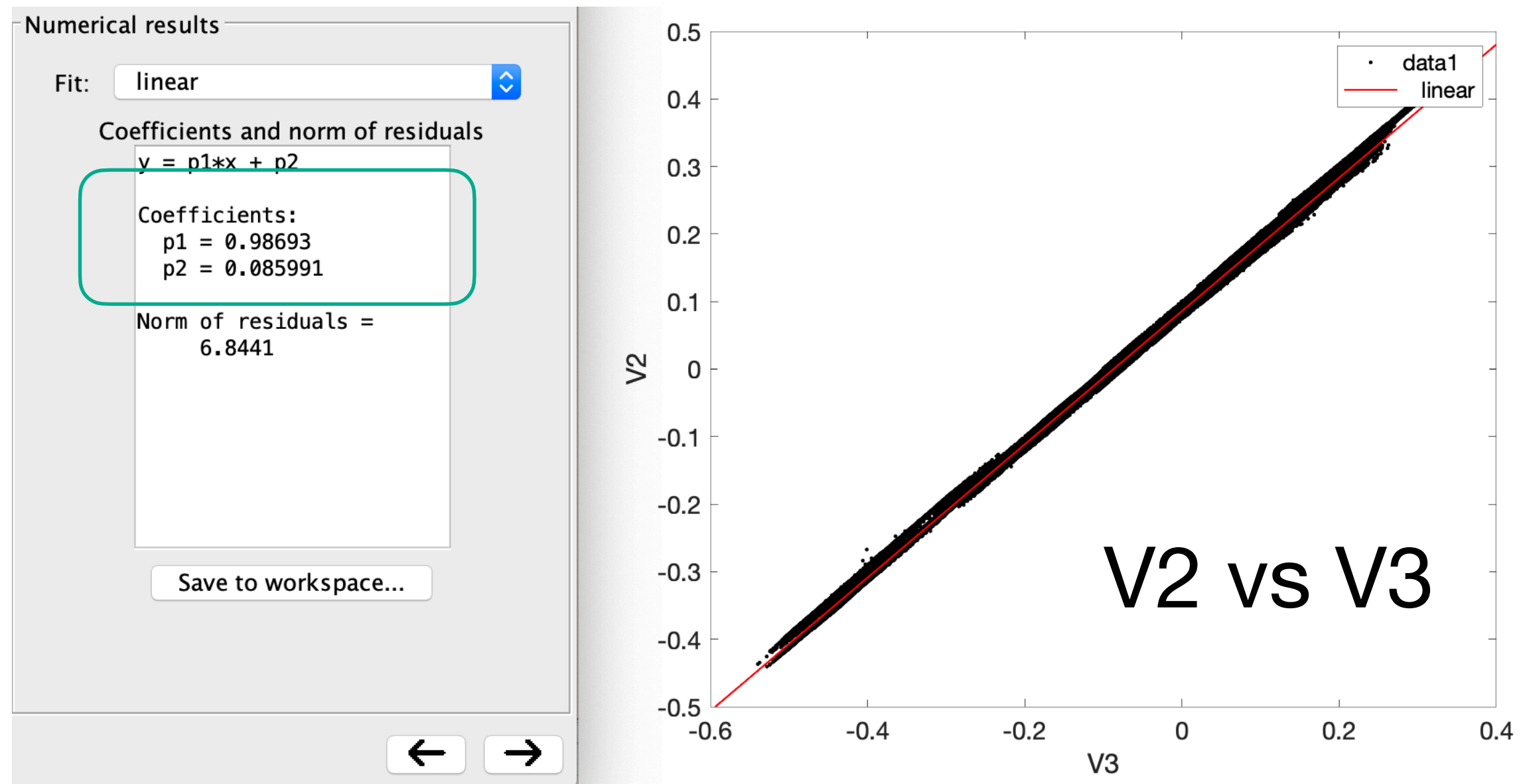
Comet tail sweeps

Niklas Edberg



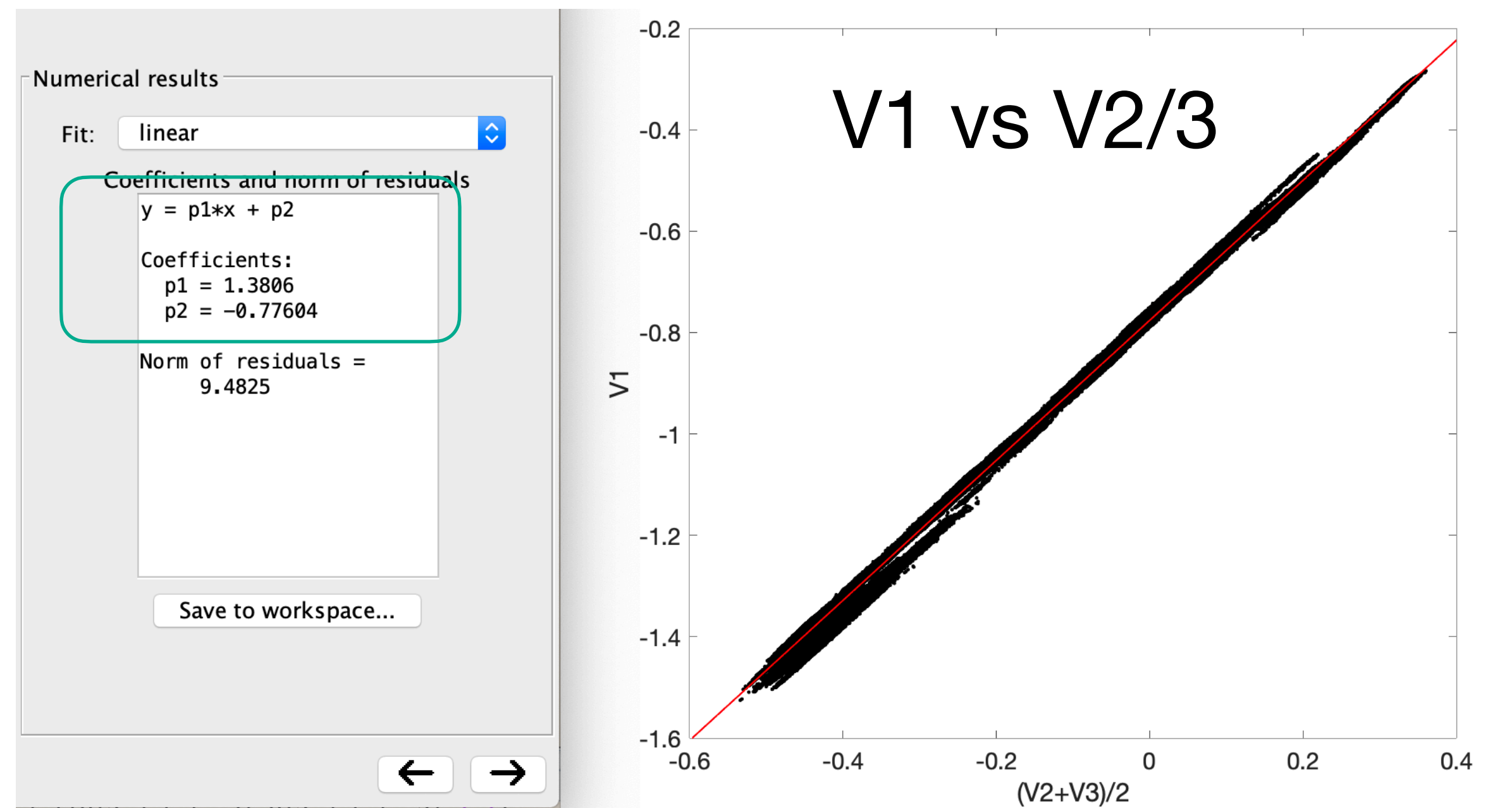
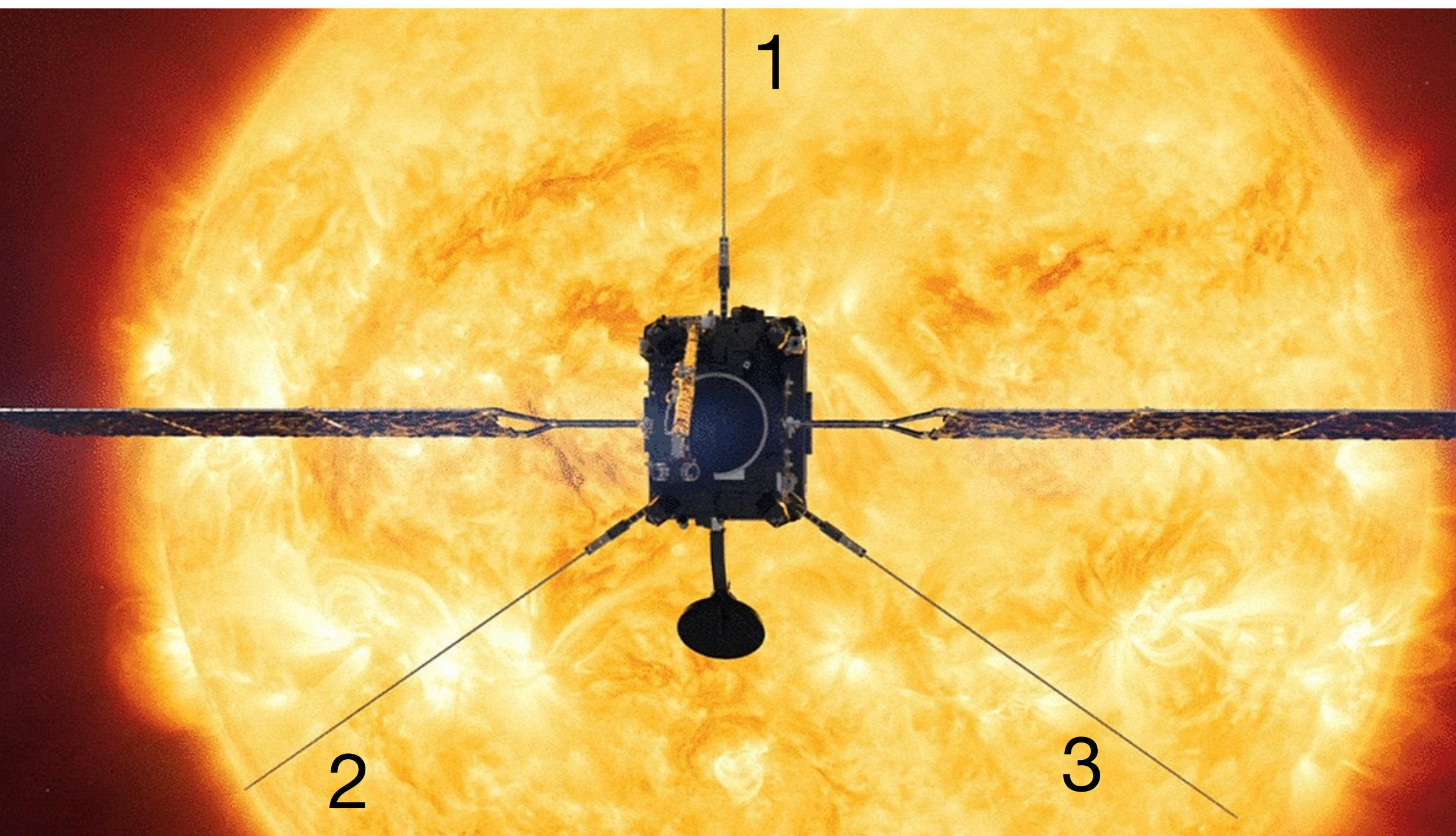
BIASing



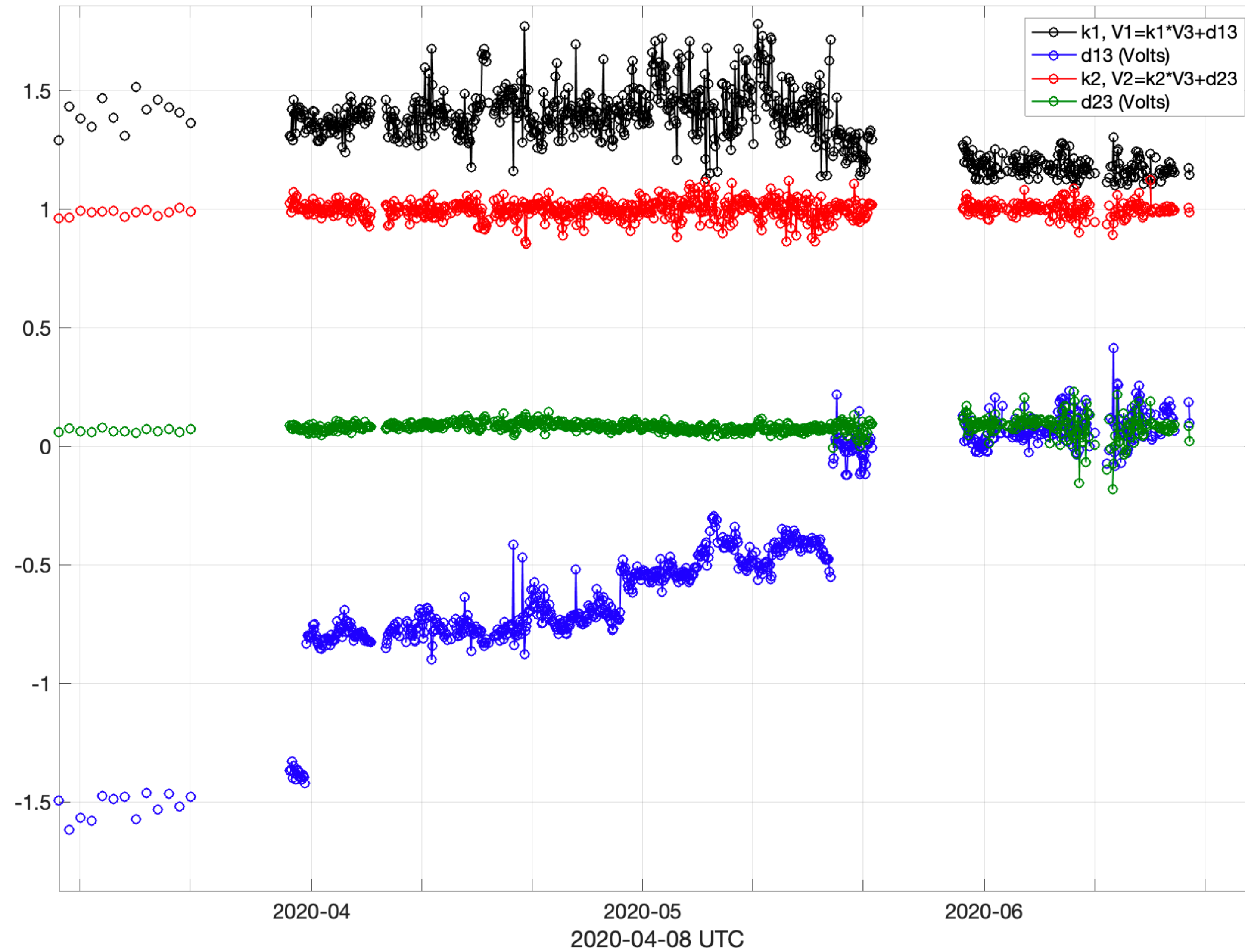


V2 is very similar to V3 - Good!

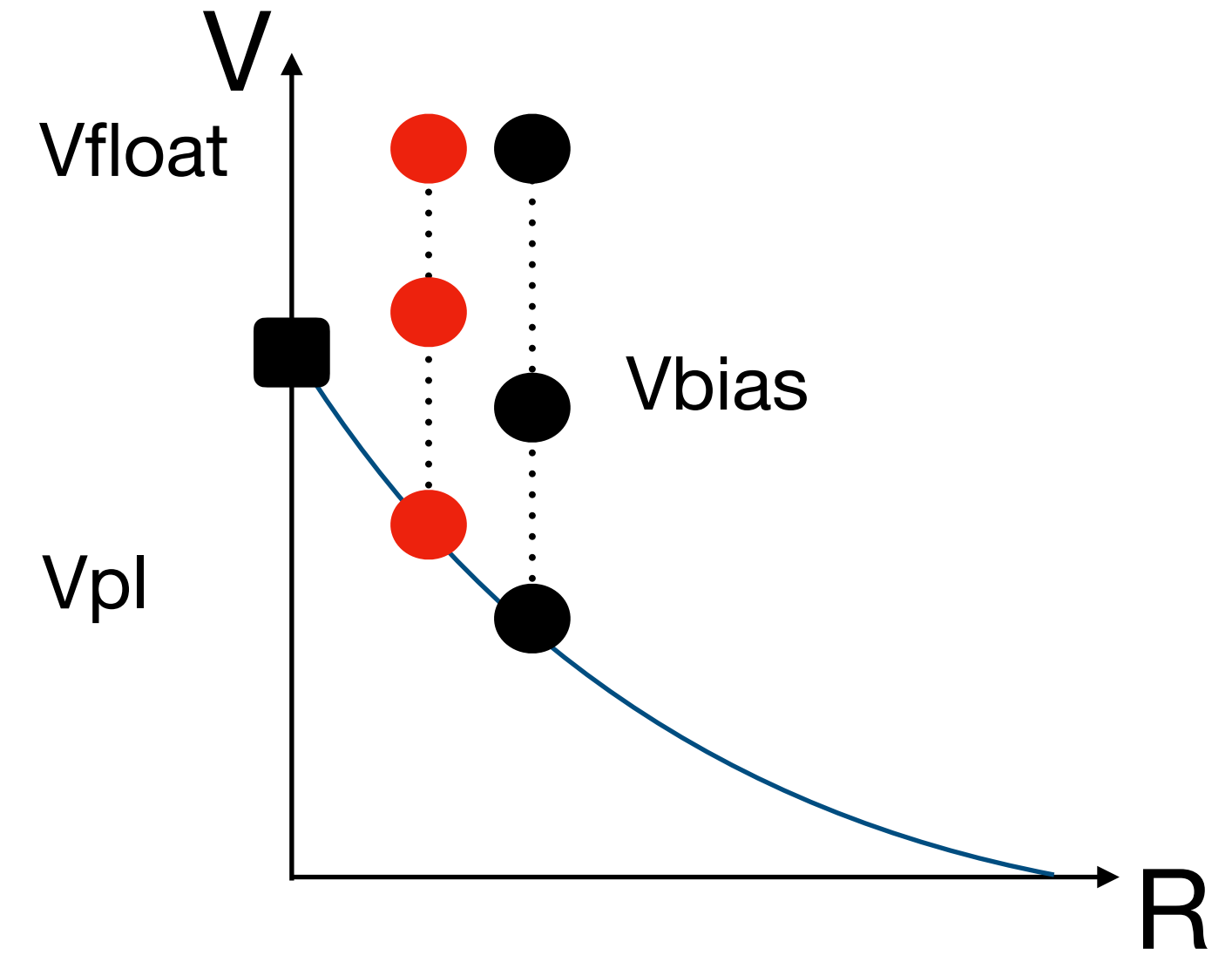
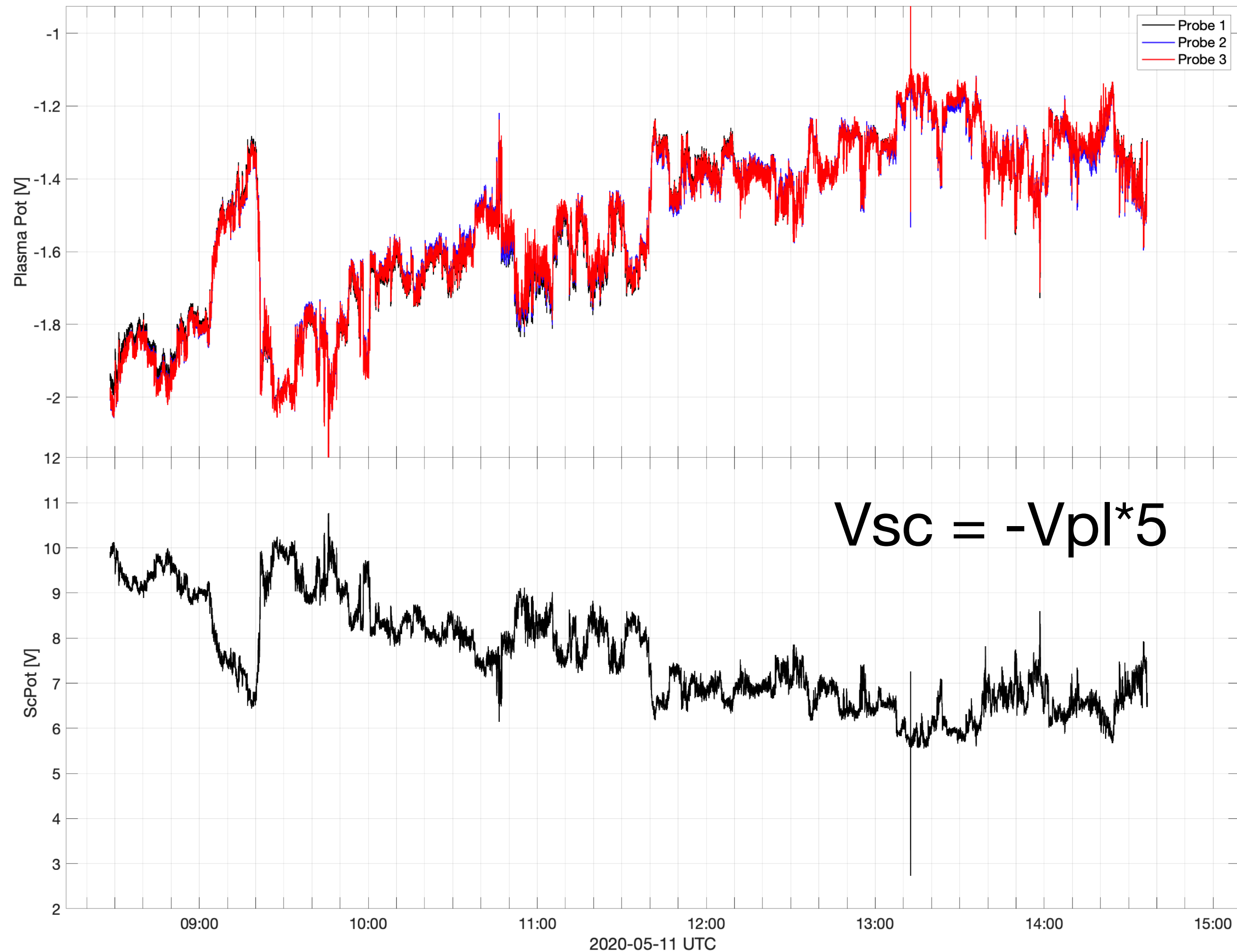
V1 is somewhat different from V2&V3



Evolution of differences between the probes



Spacecraft potential

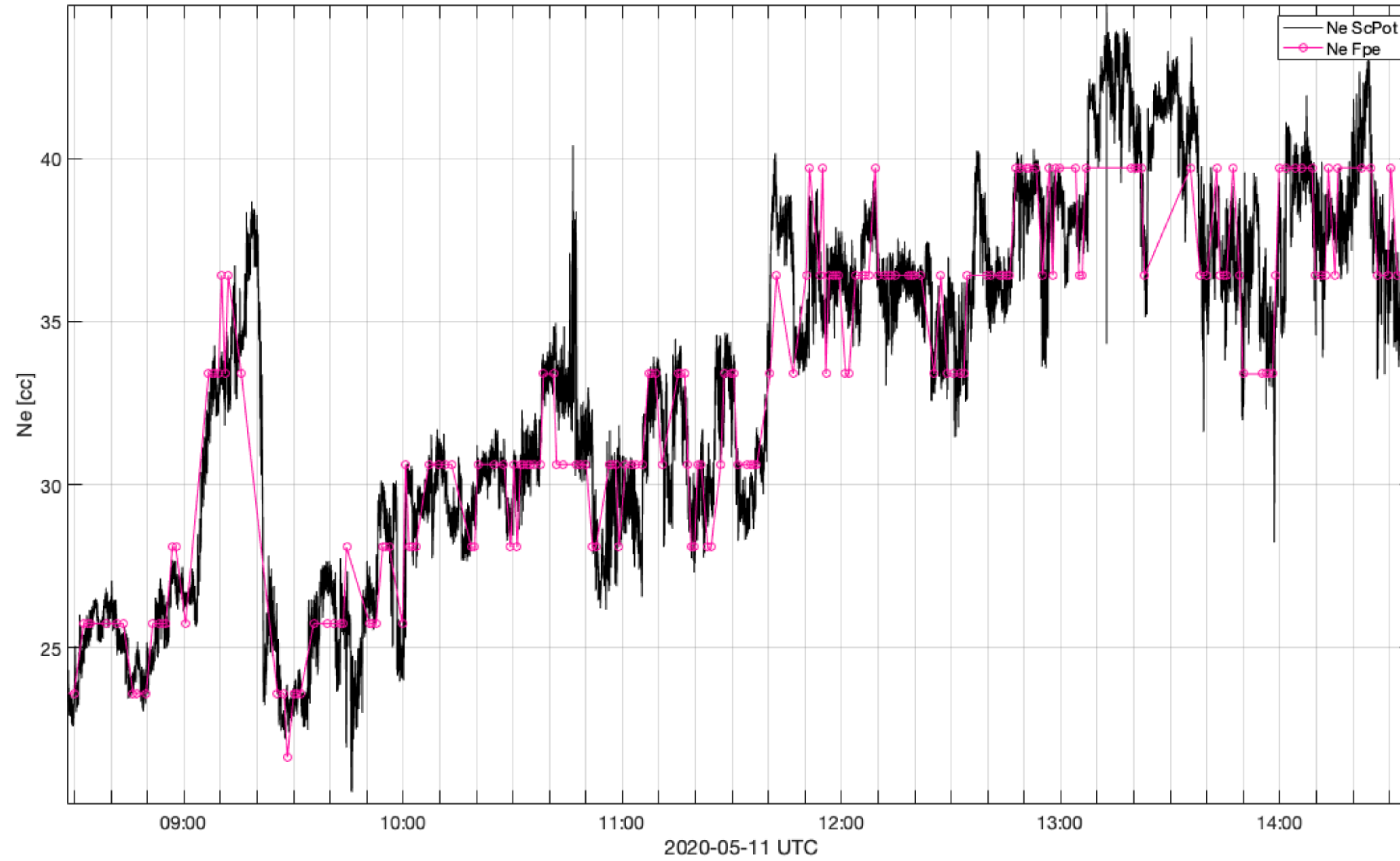


Status

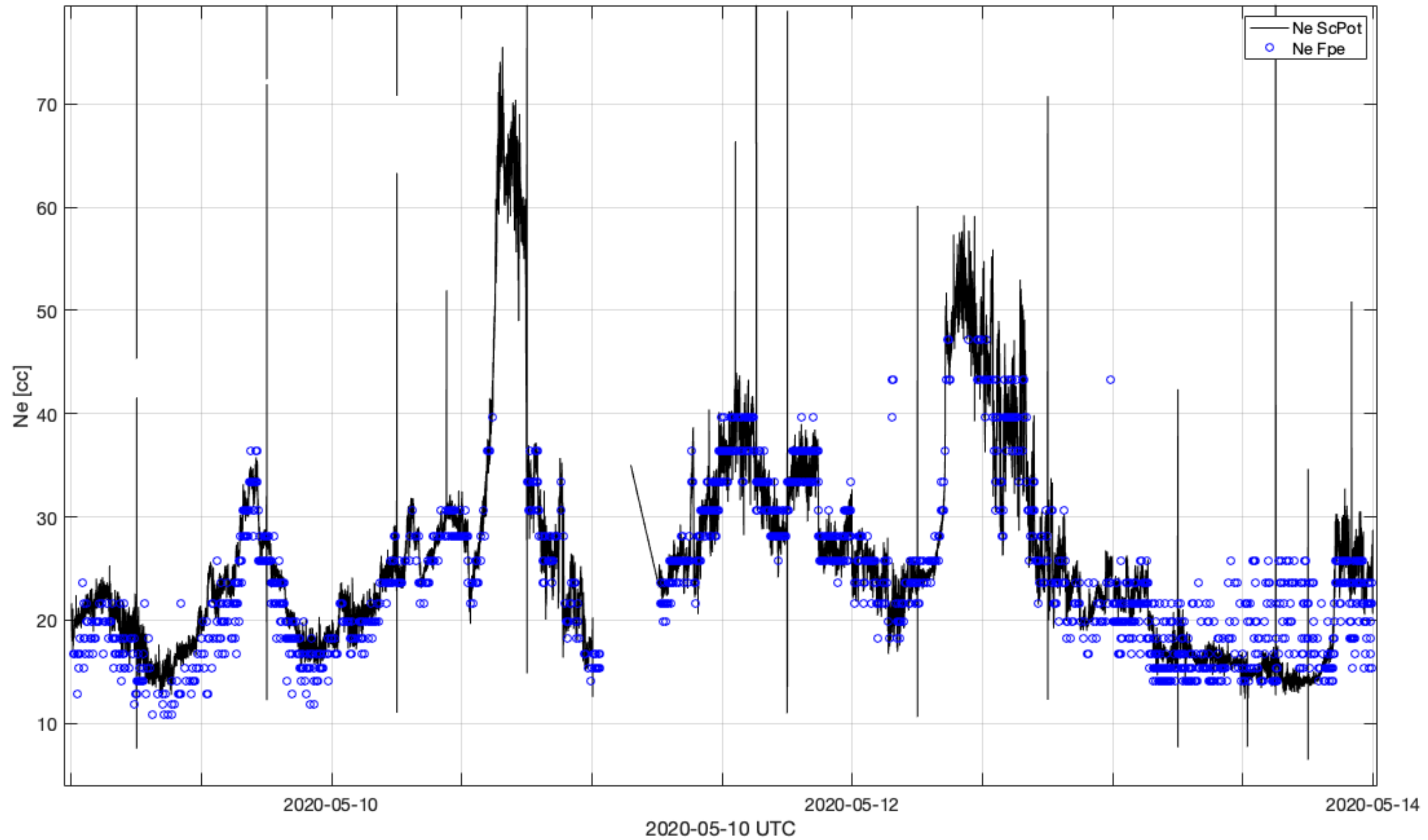
Initial results look good

Cross-calibration
with SWA-EAS started
More systematic analysis of
the Sweep needed
Final

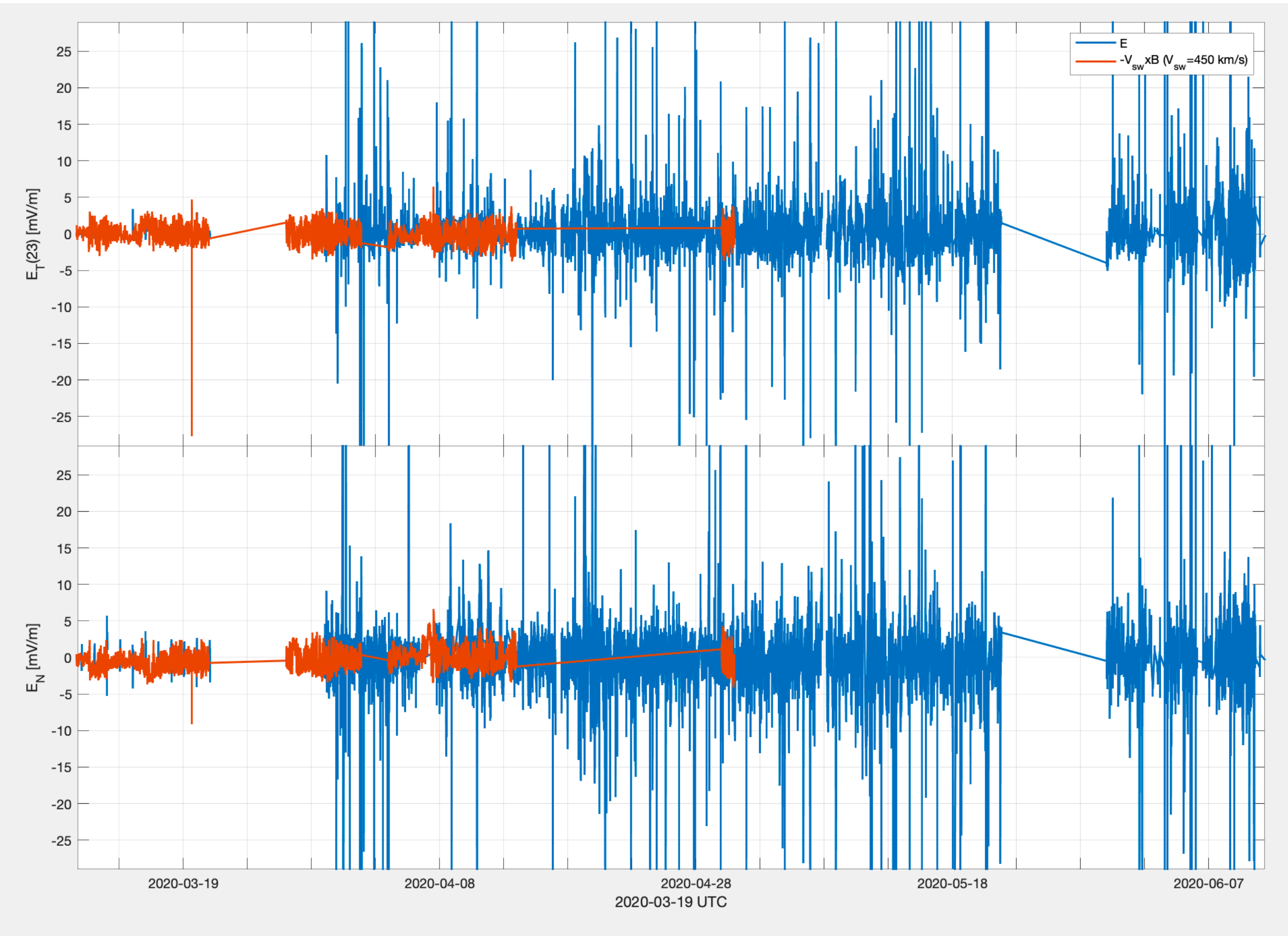
Spacecraft potential -> Ne



Spacecraft potential -> Ne



DC E-field



DC E-field example

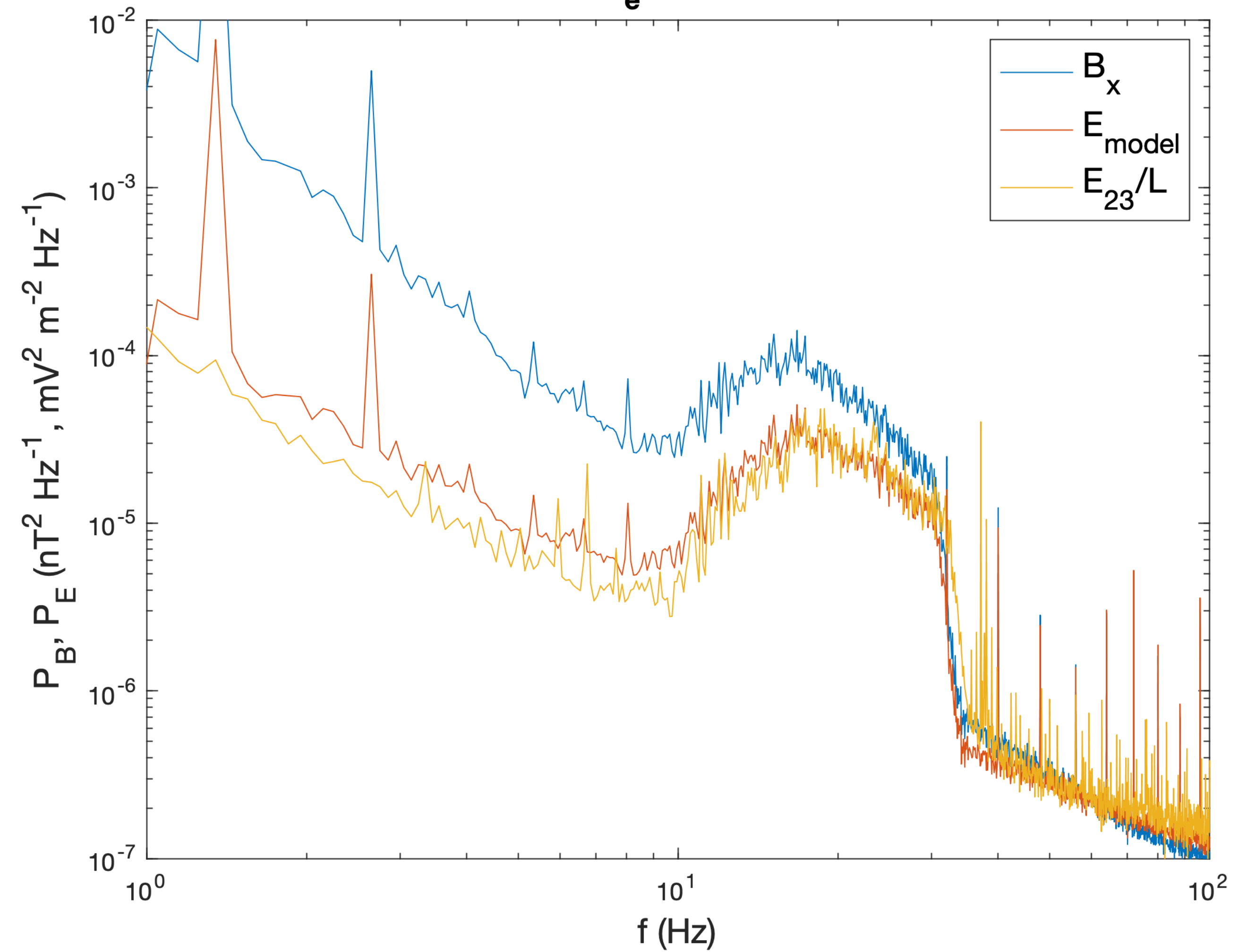
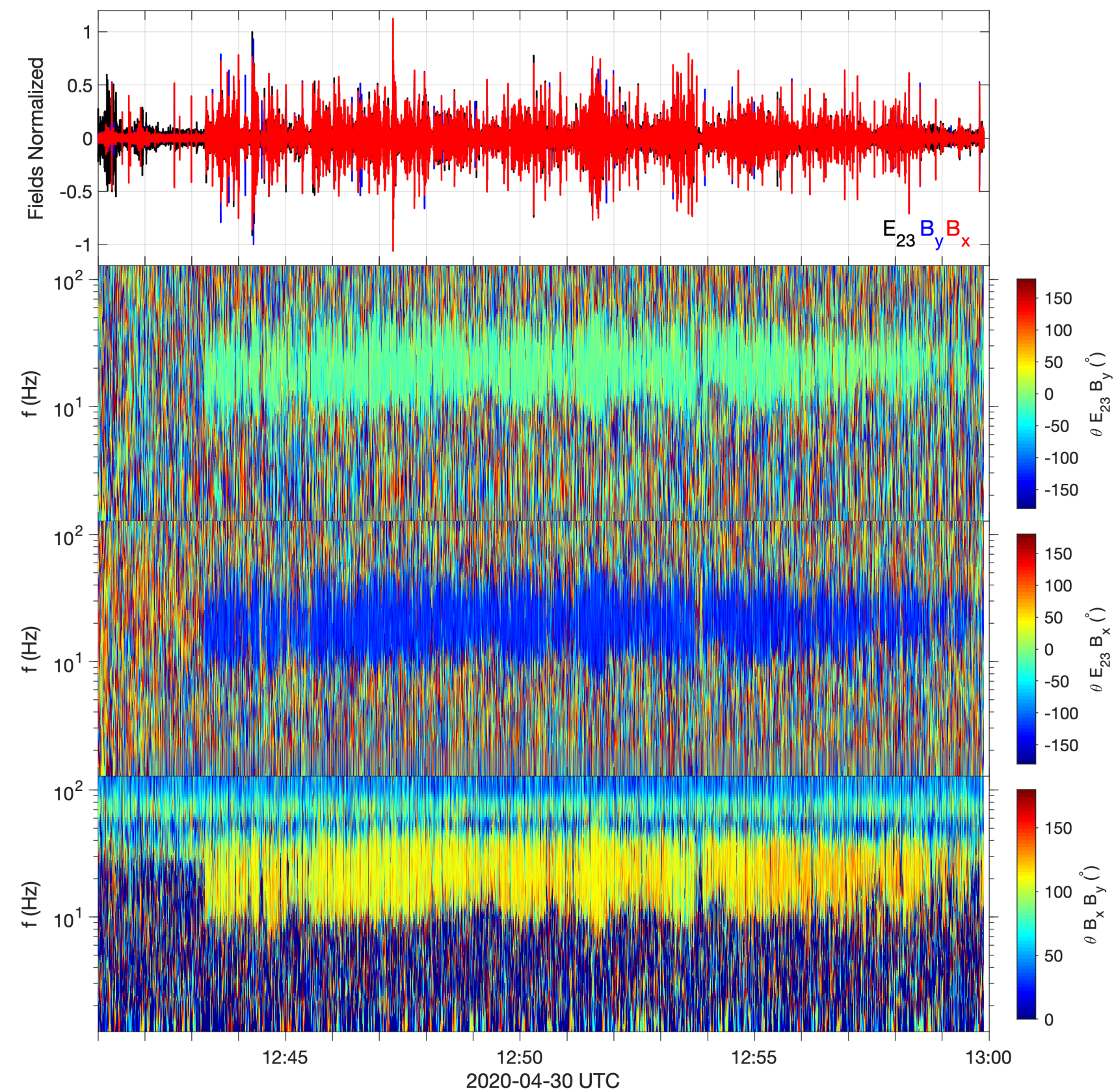
$$E_{23} = (V_3 - V_2)/L, \quad L = 6 \text{ m}$$



Whistler calibration

Daniel Graham

$B = 7.5 \text{ nT}; n_e = 10 \text{ cm}^{-3}; L = 7.9$



Data release

- Cross-calibration difficult (No data in CDAG). I have MAG data until mid April. No particle data.
- L3 DC-Electric field not possible before cross-cal
- We can release L2 data in september
- Probably also so spacecraft potential proxy (1-sec resolution)

Publication plans

- Shocks
- CME sheath
- Reconnection
- Langmuir waves
- Microphysics of discontinuities
- Dust

Summary

- Photo-saturation current evolves as expected
- Probes 2 and 3 are very similar - good E_T component
- Probe 1 is different. More work is needed. Better biasing might improve the situation
- Effective antenna length looks reasonable ~ 6 m.