

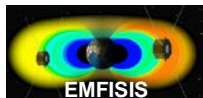
Van Allen Probes

EMFISIS

Science Investigation Status

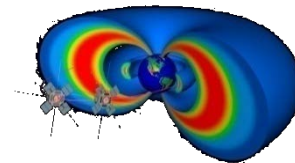
Craig Kletzing
University of Iowa

26 February 2013

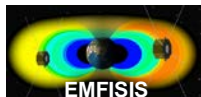




On Orbit Status

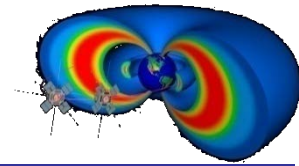


- All aspects of EMFISIS functioning nominally
- Recent table upload improves on-board calibration of spectral components for both E and B
- Planned software upload in the next few weeks to simplify commanding
- Single and multi-bit errors seen on a regular data, but all are corrected by EDAC algorithms on board
- Data throughput has been excellent. EMFISIS is easily meeting its burst data rates.

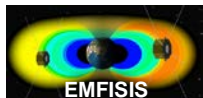




Planning and Operations

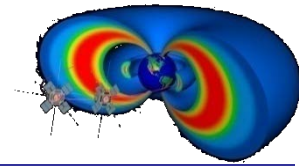


- EMFISIS supported the BARREL campaign with regular, targeted bursts during conjunctions with the BARREL balloons.
- EMFISIS coordinates with HOPE by sending burst requests when EMFISIS is taking burst data
- Current burst ops: 20 best 6 second burst captures every hour on orbit
 - Triggered by chorus power around apogee
 - Triggered by lower frequency power near perigee
- EMFISIS will return to having aperiodic coordination telecons with other teams.

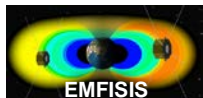




EMFISIS SOC Status



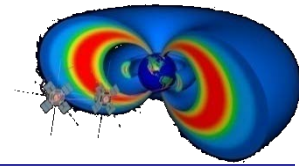
- **Continuing clean up of CDFs**
 - Improving attribute and support variable documentation
- **Located TDAS bug when handing TT2000 epoch**
 - Proper inclusion of leap seconds is important!
- **Autoplot improvements**
 - Caching layer will help with large data sets such as MAG data
 - Helpful scripts being developed



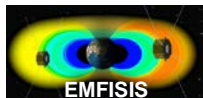


EMFISIS SOC Product Status

Magnetometer



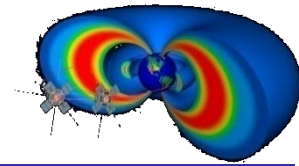
- **L2**
 - Routinely producing UVW product
 - All products have new sensor zeros (released in early January)
 - Working on updating calibrations
 - Improved zeros (tracking any drifts)
 - Improved gains
- **L3 – GSE, GEI, GSM, etc.**
 - Holding on production of L3 products due to attitude solution jitter in the spice kernels that produces undesirable oscillations in the final product.
 - Working with SC team on a solution.
 - Special thanks to Scott Turner for his support!





EMFISIS SOC Product Status

Waves

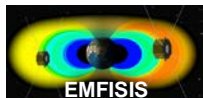


- **L2**

- HFR Survey – Routine production
- WFR Survey – Routine production
- WFR waveforms (calibrated at midband frequency) – Routine production
 - Improving calibration values
- WFR Burst waveforms – Routine production
- Onboard WNA
 - Testing new processing algorithms

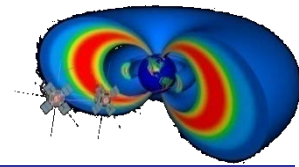
- **L4**

- Wave normal analysis in process

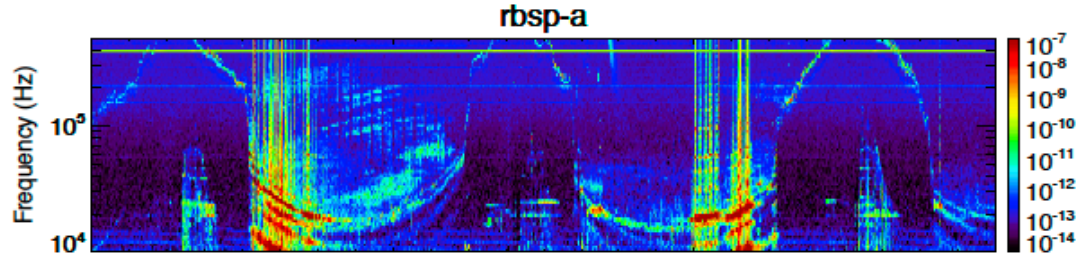




EMFISIS Wave Spectra Data Example (2012/09/18)

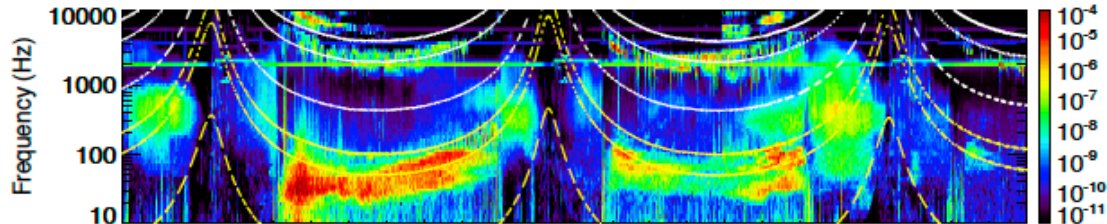


E-HFR



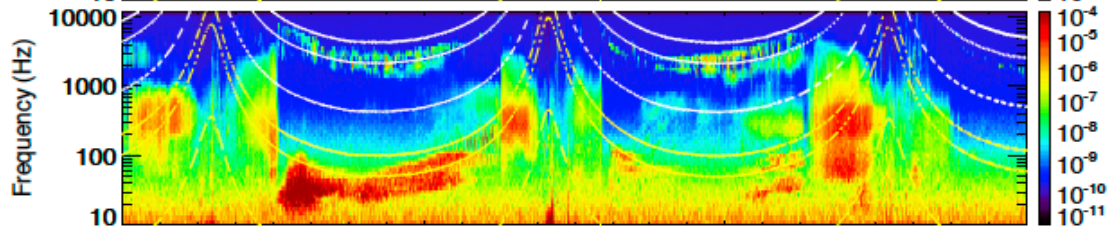
HFR (single channel):
10 kHz-400 kHz

E spec sum



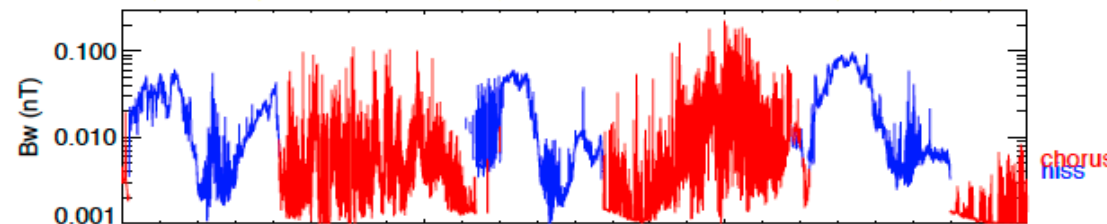
Vector E:
10 Hz-12 kHz

B spec sum

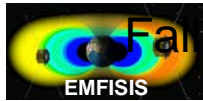


Vector B:
10 Hz-12 kHz

Wave amplitude (B_w)

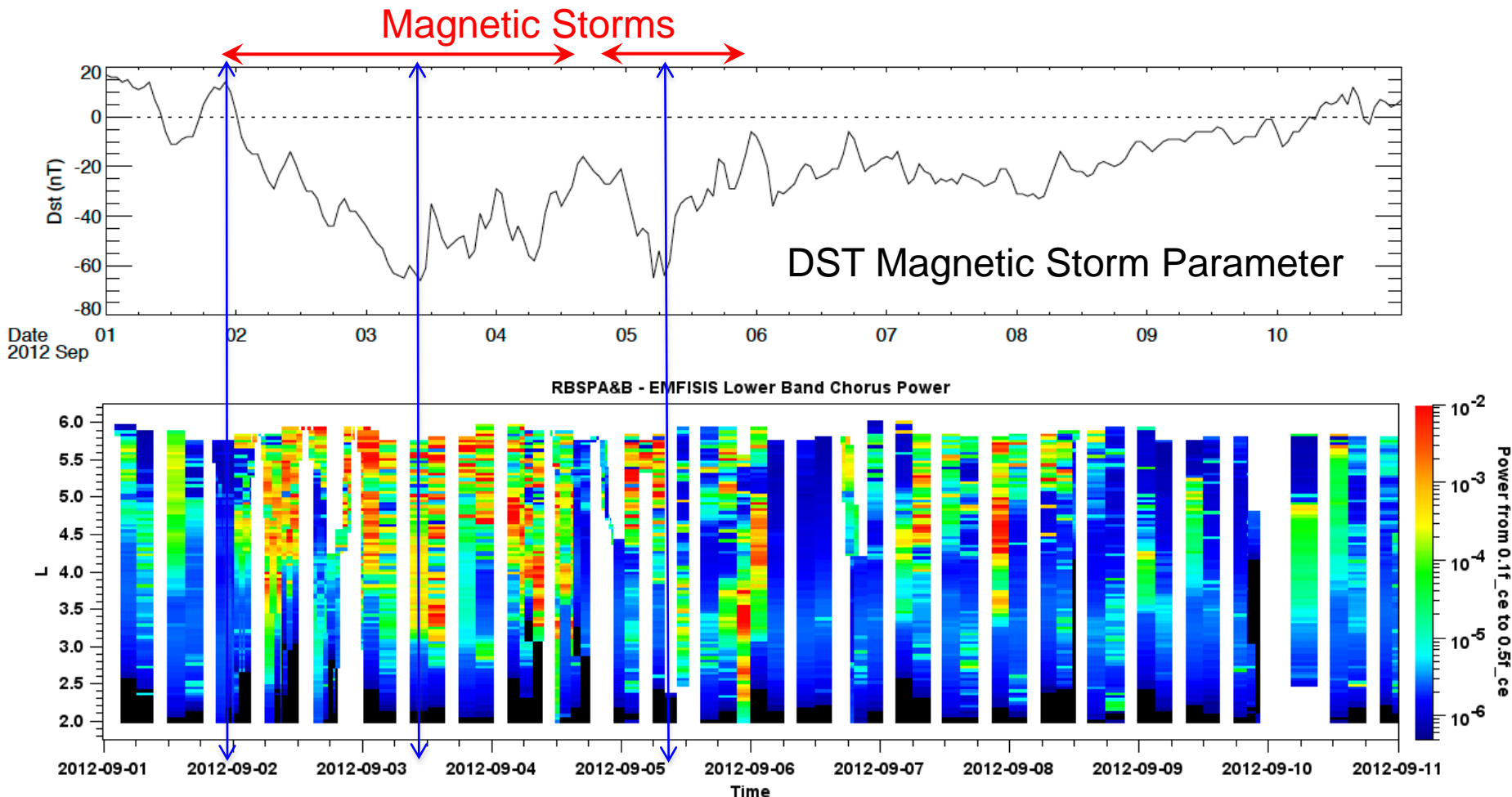
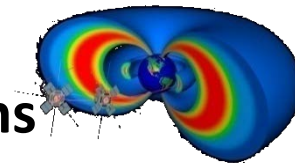


L	5.2	5.5	5.8	5.9
MLT	9.3	8.4	7.7	7.0
LAT	-15.1	-2.6	2.6	-11.4
hhmm	0000	0800	1600	0000
2012	Sep 18			Sep 19





Van Allen Probes measurements show strong correlation between chorus waves and magnetic storms



Power at 0.1 to 0.5 fce clearly correlated with Dst.

