



100 YEARS OF U.S. AIR FORCE
SCIENCE & TECHNOLOGY

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Update on DSX: Demonstration and Science Experiments

June 2017

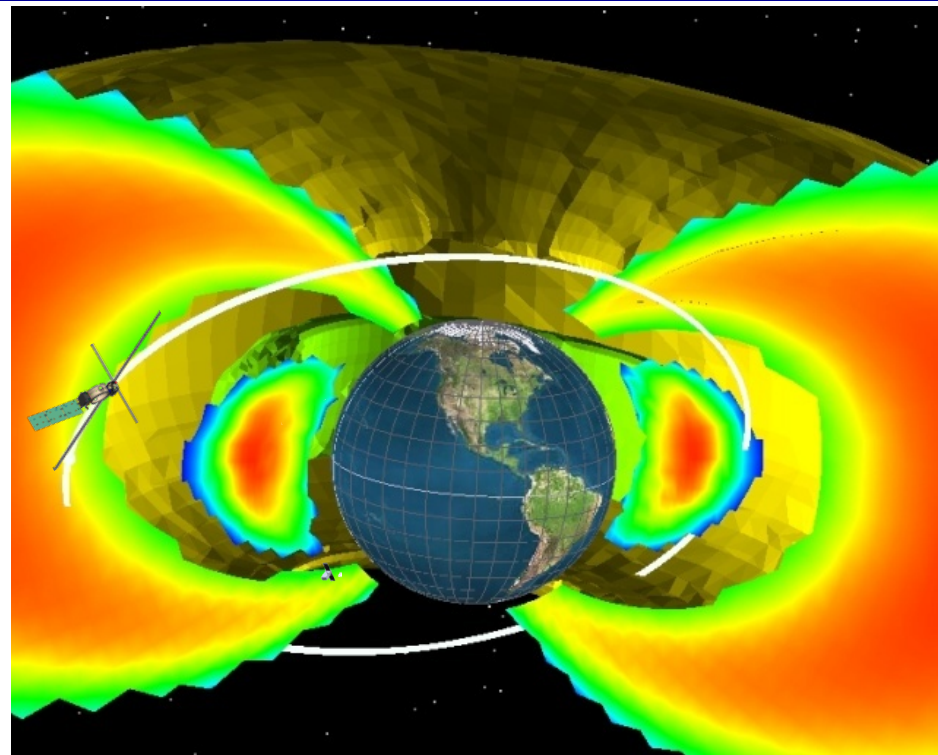
James McCollough
DSX PI



DSX Overview

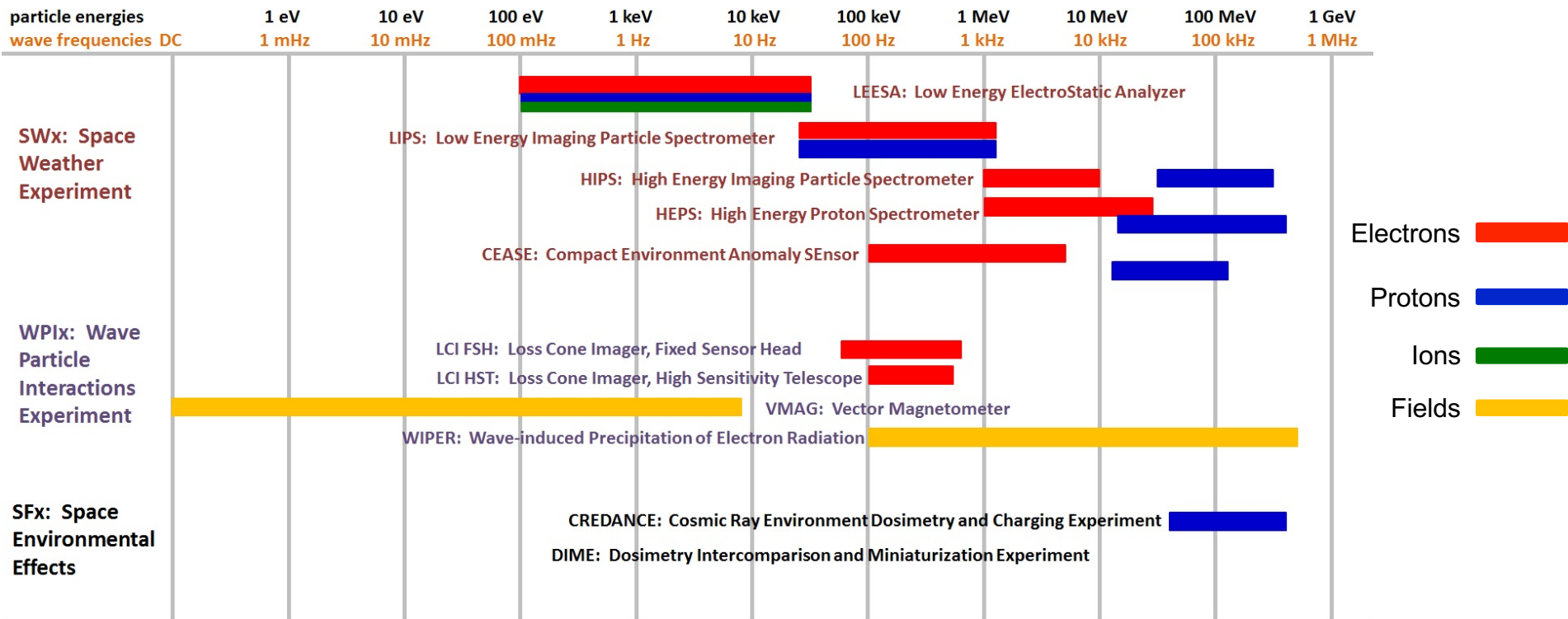


- Planned launch in April 2018, nominal one year mission
- 6000 x 12000 km orbit, 42° inclination, 5.3 hour period
- Primary experiment: **Wave Particle Interactions**—high power VLF transmissions in slot region
- Secondary Experiment: **Space Weather**—characterize slot region environment
- Secondary Experiment: **Space Effects**—Understand impacts to components





Energy and Spectral Coverage





Collaborative studies



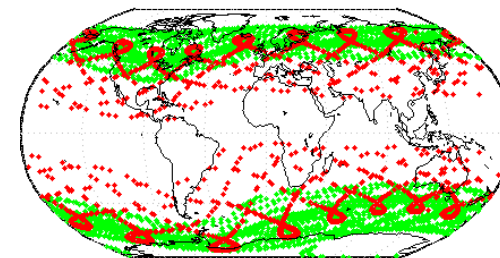
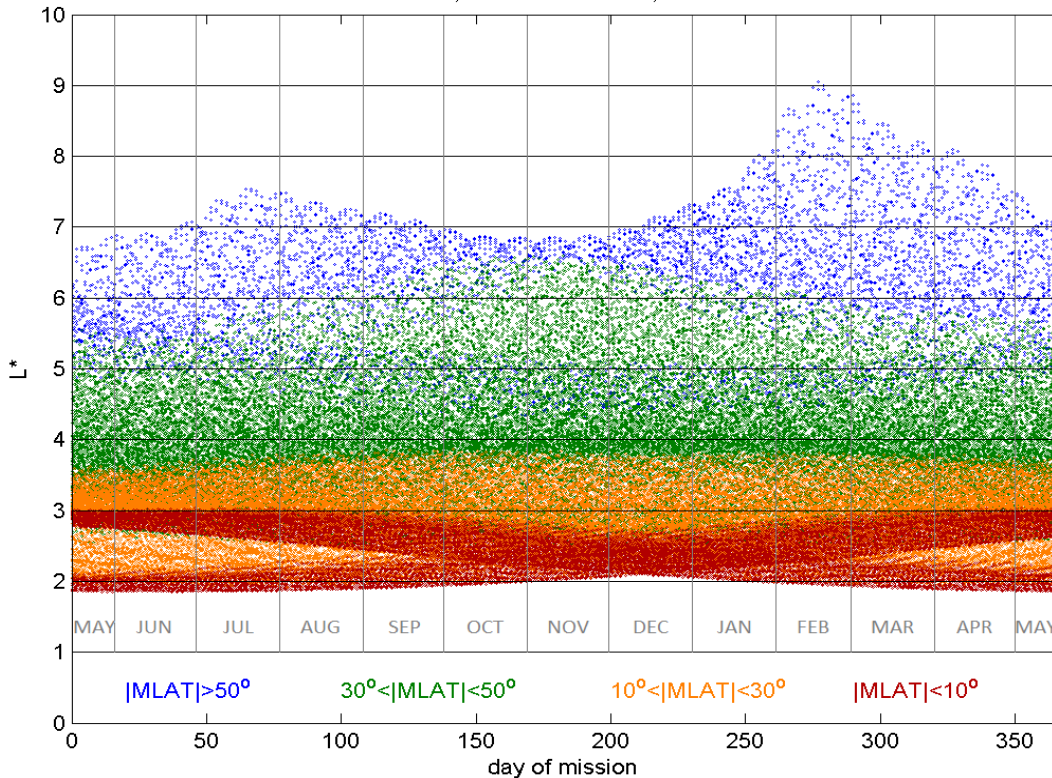
- We prioritize coordinated campaigns during conjunctions with other satellites in order to:
 - Detect transmitted waves and resulting particle effects
 - Diagnose the environment during transmission
 - Augment global coverage of particles and waves
- Details of the data-sharing policy are being finalized
 - SWx (particle) data and DSX orbit/ephemeris are already approved for release to collaborators
 - Wave data still under discussion (similar clearance expected)
- Science planning cycle works one week at a time, two weeks in advance
- Particulars on high power transmissions:
 - Up to the kW level at 2-50 kHz
 - Up to 30 min per orbit occurring near the magnetic equator ($|\text{MLAT}| < 20^\circ$ or $L < 3.5$)
 - Will coordinate with conjunction target teams with specifics



DSX Spatiotemporal Coverage

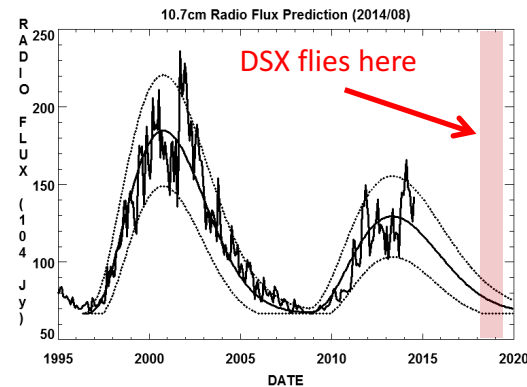


DSX, start=15MAY2016, i=42°



DSX RBSP
24-Nov-2012 06:00:00 - 01-Dec-2012 05:55:00

Magnetic footprints, typical week





Questions

