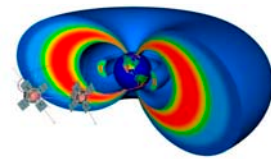
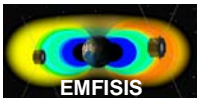




EMFISIS Science Topics: Low Hanging Fruit

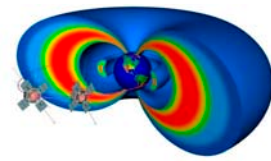


- 1) Correlations between various wave modes across the two satellite orbit. By start of normal ops (~60 days) the satellites should be well separated.
 - General correlative studies - what wave modes happen at both satellites as a function of separation and location? What is the spatial coherence of chorus for small separation?
 - Chorus-hiss (modulated together) as a test of chorus being the parent wave for hiss.
 - Micro-bursts on BARREL correlated to chorus or other wave modes
 - Chorus modulation with density changes, look for HOPE changes with this.
 - Chorus modulation and association with pulsating aurora
 - Correlate with auroral intensity using the THEMIS network
 - Studies of waves and distribution functions: HOPE and pancake distributions as function of scattering by upper-band chorus





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2) EMIC studies

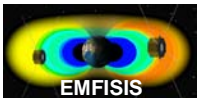
- Look at EMLC waves where are they excited in this sector (probably during quiet times). Comparison studies with HOPE to look at composition for effect on wave properties. Stop-band models suggest that for low Helium or warm/hot plasma, the He stop band can disappear in these cases.
- Comparison with HOPE, MagEIS, to look at composition and effect on dumping of MeV electrons.

3) Search for large amplitude chorus.

- Do wave normal vector distributions change with amplitude?

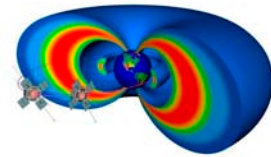
4) Wave normal vector distributions

- Chorus
- Magnetosonic waves





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- 5) Initial studies of the statistics of occurrence maps of chorus and other wave phenomena.
- Most statistical studies come from CRRES which observed for 9 months. Do these hold up when we look at the RBSP data?
 - This includes building the statistics in the frequency bands that we are sending as space weather quantities to provide context for their use.
- 6) Examination of chorus and lightning whistlers to verify that we are getting the wave propagation and wave normal properties we expect.
- This is an essential calibration check and adds to our statistical knowledge of whistlers.
- 7) Inner belt wave observations and electron enhancements
- Waves associated with varying lifetimes of electron enhancements
 - Transmission of VLF signals through the ionosphere to magnetosphere

