ULF and Periodic VLF Waves Induced by Magnetopause Dynamics

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Example Event

- ULF wave amplitude decreases with distance away from the magnetopause
- Compressional ULF: radial V and azimuthal E

 Themis spacecraft configuration

- Probe the realistic magnetopause position
- Probe ULF intensity at different radial distances
THEMIS monitor ULF waves for several hours

Example Event

Ground Observations

ULF observations from THEMIS and ground-base magnetometers (at the conjugation location) enable to separate temporal and spatial ULF variations
Preliminary Statistics

**ULF intensity, after being normalized to ground-based ULF observations, shows clear decrease away from the magnetopause.**

ULF waves drive VLF (whistler) waves with a clear intensity/correlation decrease away from the magnetopause.

**ULF waves can drive VLF waves, which can then scatter electrons and lead to quasi-periodic pulsations over a wide range of L-shells.**