

THEMIS/ARTEMIS Post-AGU SWT

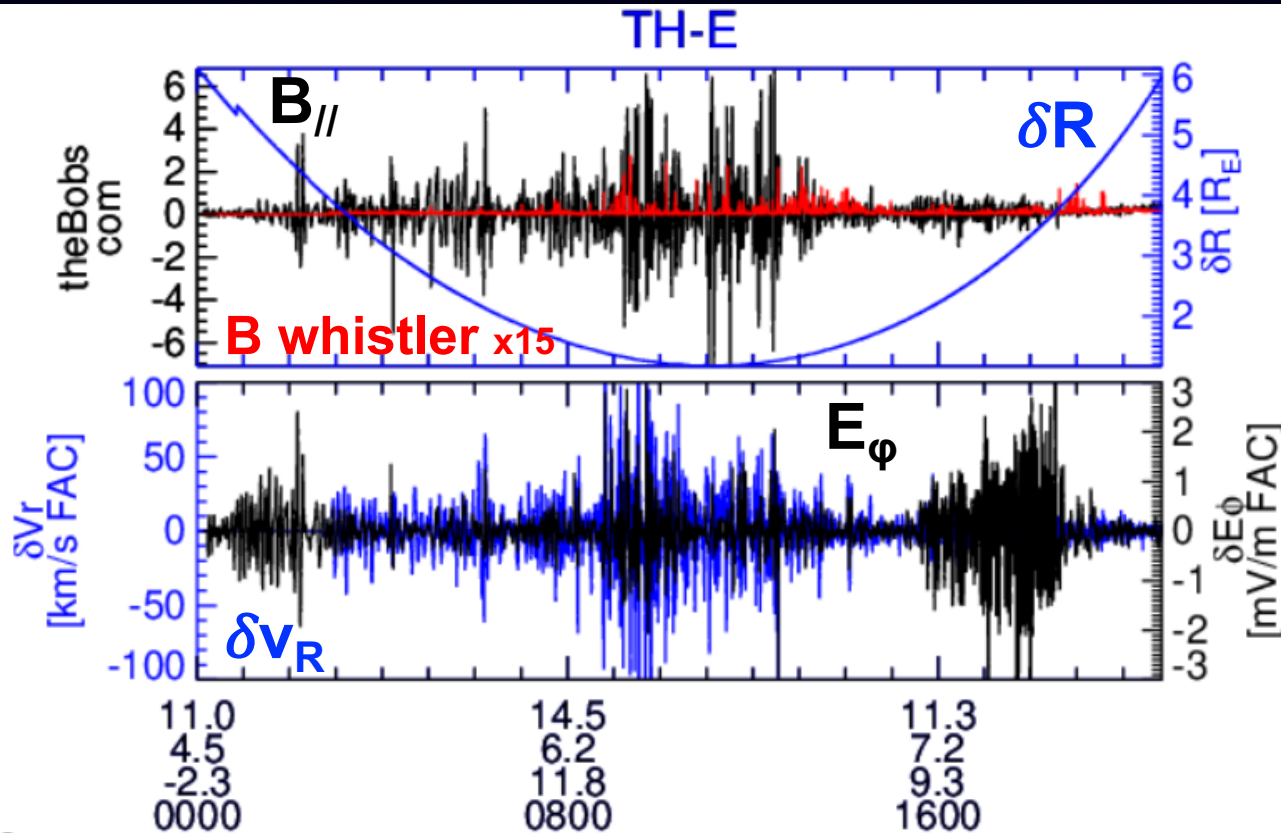
**ULF and Periodic VLF Waves Induced by
Magnetopause Dynamics**

Xiao-Jia Zhang

University of California, Los Angeles

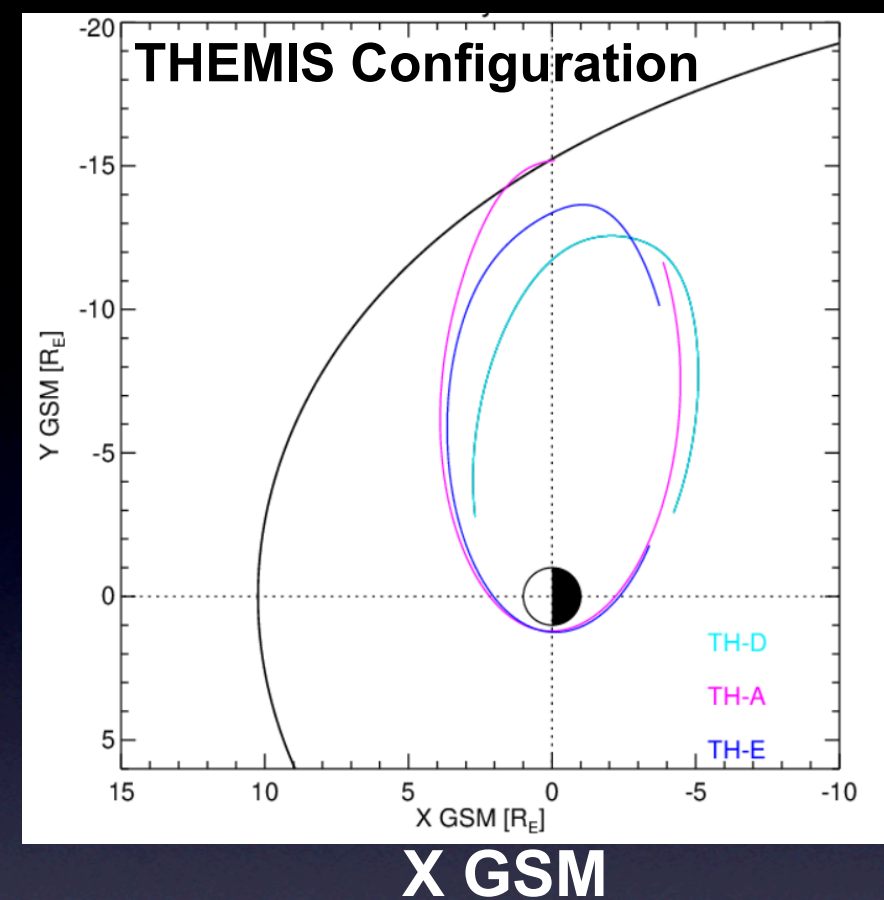
Example Event

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



L
MLT
LAT
hhmm
2019 Jan 19

Y GSM

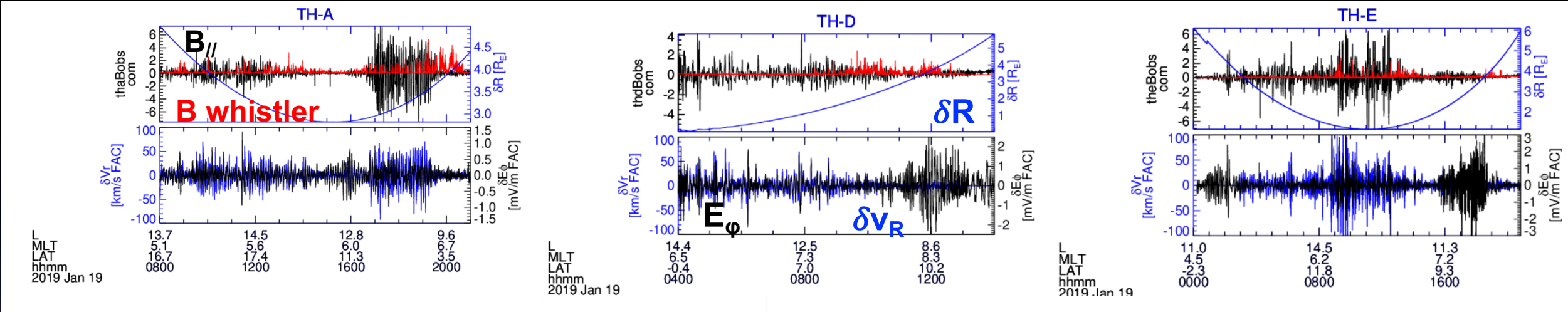


Themis spacecraft configuration

- Probe the realistic magnetopause position
- Probe ULF intensity at different radial distances

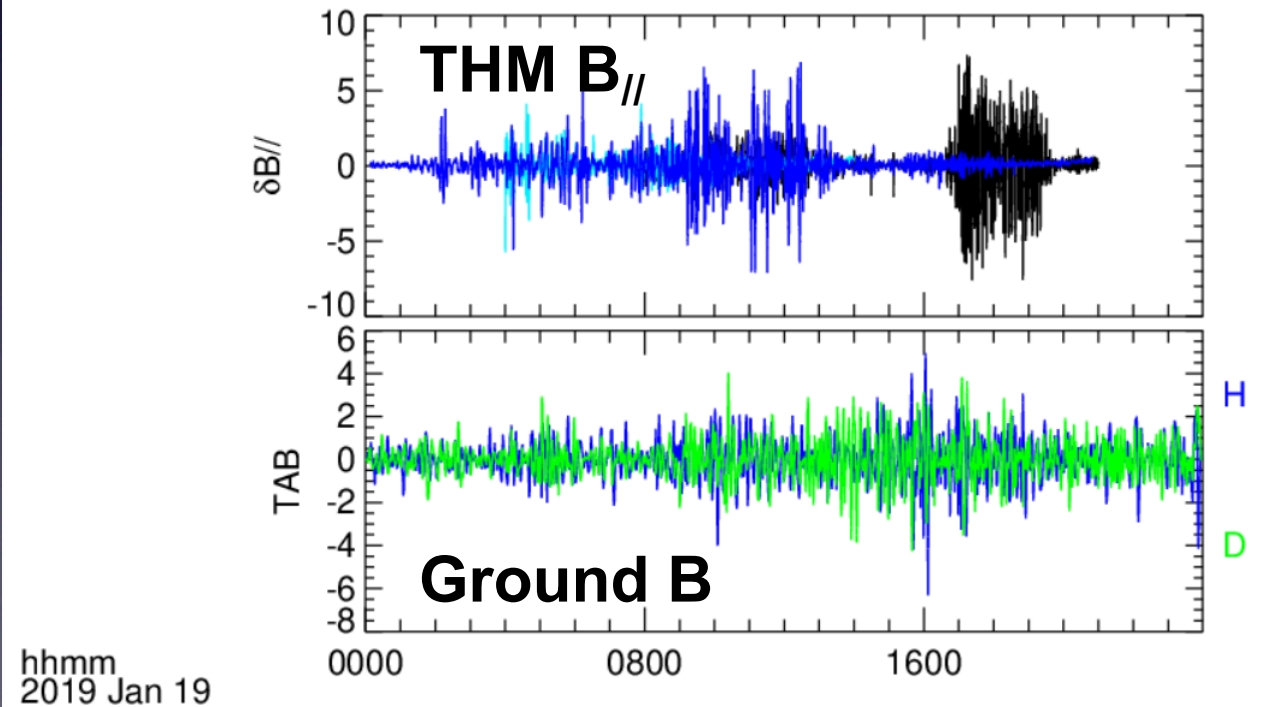
Example Event

THEMIS monitor ULF waves for several hours



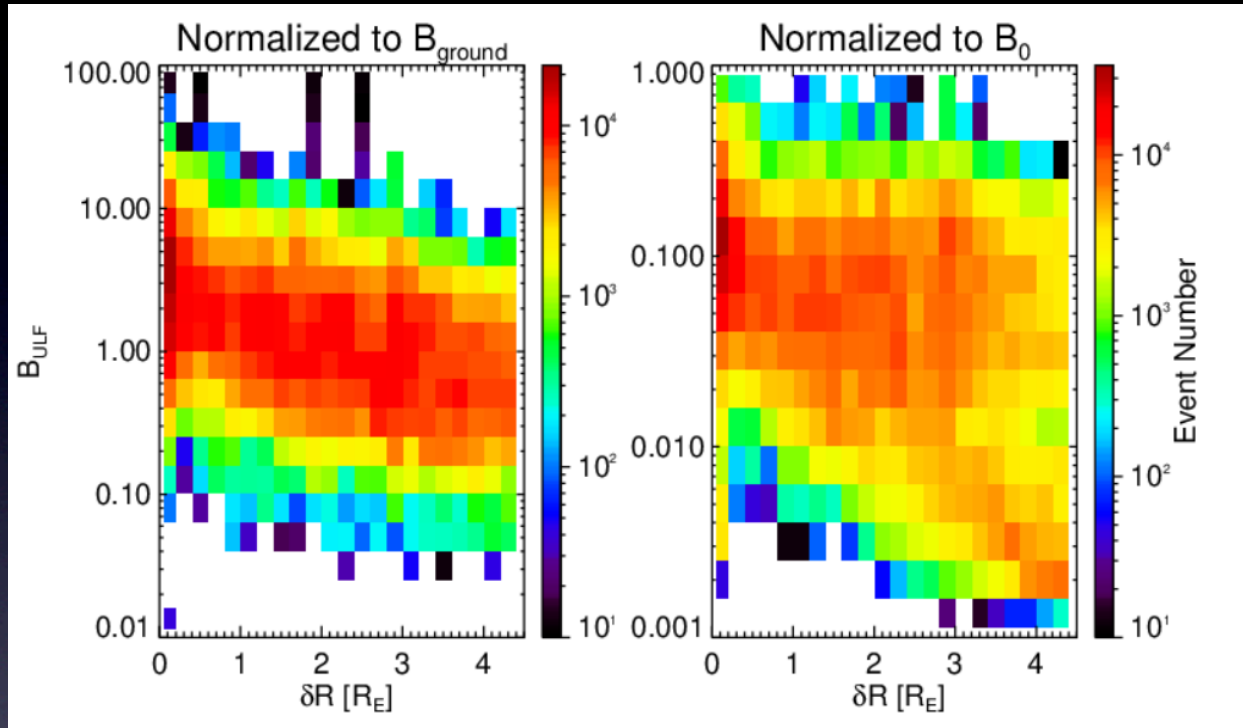
Ground Observations

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



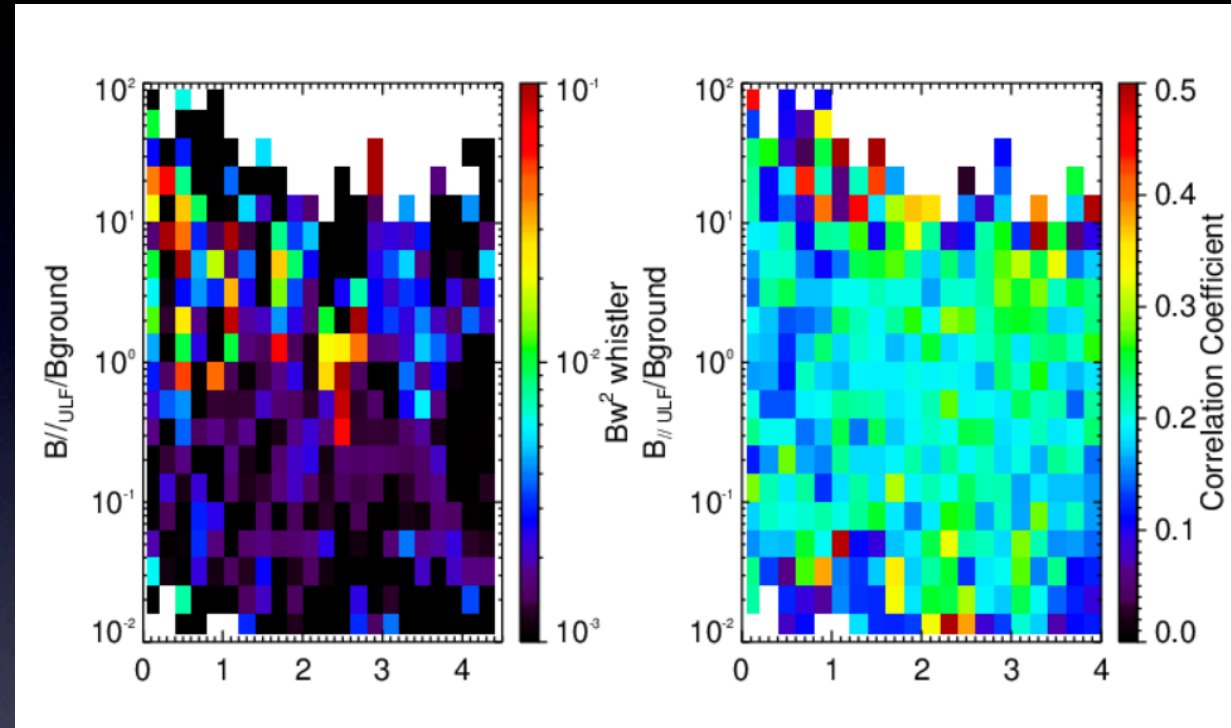
Preliminary Statistics

ULF wave amplitude v.s. distance



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

Correlation between ULF and VLF



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