Contribution ID: **1104** Type: **Oral (Student, In Competition) / Orale (Étudiant(e), inscrit à la compétition)**

Statistical investigation of anisotropic ion temperature enhancements observed by the CASSIOPE/e-POP satellite

Tuesday 14 June 2016 13:45 (15 minutes)

Terrestrial ion outflow and loss to space is the result of acceleration to escape speed of ionospheric ions that normally are strongly bound to earth through gravity. Previous research suggests this acceleration takes place in multiple steps. We investigate low-energy (<10 eV) ion initial energization processes in the topside ionosphere in both hemispheres using data from the SEI, MGF and RRI instruments onboard the CASSIOPE/e-POP satellite. Using the high-frame-rate (100 Hz) two-dimensional ion distribution function data measured by the SEI, we statistically investigate anisotropic ion temperature enhancements, where ion temperatures perpendicular to B rise by more than 0.4 eV relative to the background values while temperatures parallel to B decrease, and study their morphology and Kp dependence. Multiple field-aligned current (FAC) sheets are found to be always associated with these events based on magnetic data from the MGF instrument. For some events, signatures of broad-band extremely low frequency (BBELF) plasma waves, auroral hiss and chorus are detected by the RRI instrument. We study the causal relations between the anisotropic ion temperature increases and the magnitudes of the FACs and the power spectral density (PSD) of plasma waves.

Author: SHEN, Yangyang (University of Calgary)

Co-authors: KNUDSEN, David (University of Calgary); MILES, David (University of Alberta); JAMES, Gordon (Communications Research Council); BURCHILL, Johnathan (University of Calgary)

Presenter: SHEN, Yangyang (University of Calgary)

Session Classification: T2-4 Ground-based and In Situ Observations II (DASP) / Observations sur terre et in situ II (DPAE)

Track Classification: Atmospheric and Space Physics / Physique atmosphérique et de l'espace (DASP-DPAE)