**Observational evidence on MHD and kinetic Alfven waves driving different types of discrete auroras**

Sheng Tian, ts0110@atmos.ucla.edu, Department of Atmospheric and Oceanic Sciences, UCLA

It has been well known that the auroral oval is located at the ionospheric footprint of the magnetic field lines threading the plasma sheet and plasma sheet boundary layer. Coincidentally, significant Earthward flowing Poynting fluxes are often observed along these field lines. The correlation between Poynting flux and auroral oval has been well established. However, within the auroral oval, many types small scale structures known as the discrete auroras exist, and it remains largely unclear which types of discrete auroras are associated with Poynting flux. Here, we present improved ground and in-situ instrumentation to investigate discrete arcs and auroral beads -- two common types of discrete auroras. Our observations reveal that both types of discrete auroras are linked to Poynting flux in the plasma sheet. Discrete arcs are likely driven by the Poynting flux associated with MHD Alfven waves. Although both MHD and kinetic Alfven waves were observed, the primary wave power is attributed to MHD Alfven waves. On the other hand, auroral beads are found to be driven by kinetic Alfven waves that are generated around the magnetic equator. The parallel electric field associated with these waves accelerates electrons to several 100s eV locally and can further accelerate them to keV at lower altitudes.