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Quantifying the Global Spatial and Temporal Behavior of Kinetic Alfven Waves in the Auroral Zone

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Alfven waves have been discovered in many astronomical plasmas, such as the Sun and other planets of the Solar System (e.g., Jupiter, Saturn), and it is believed that they are ubiquitous in the entire universe. In particular, Alfven waves are important for the dynamics of Earth's magnetosphere. They participate in the transport of energy and the energization of particles. Generated in various magnetospheric regions, much of their energy carried to the auroral zone is deposited inside the auroral acceleration region (AAR). In this presentation, we discuss the kinetic regime of Alfven waves (KAW), which is an important part of the Alfven wave spectrum. We present statistical results, using multi-year satellite data. The following questions will be addressed: (1) What is the global spatial distribution and total power of KAW above the AAR under various geomagnetic conditions? (2) What is the contribution of KAW to the Alfven wave budget, including the MHD regime?