

# High-latitude Ionospheric Electrodynamics and its Impact on the Thermosphere

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High-latitude ionospheric electrodynamics has a profound impact on the thermosphere. During geomagnetic storms, strong electric fields and currents produce enhanced Joule heating and energetic particle precipitation into the auroral zone. Consequently, the conductivity of the ionosphere is increased, the neutral winds are accelerated, the thermosphere is heated, and its composition is modified. In order to better understand the thermospheric responses to storms, more realistic specifications of high-latitude ionospheric electrodynamics such those provided by the Kamide-Richmond-Matsushita (KRM) magnetogram-inversion method and by the Assimilative Mapping of Ionospheric Electrodynamics (AMIE) method are critically important. This talk will highlight some salient features of the KRM and AMIE methods and their utility in numerical modeling of the coupled ionosphere-thermosphere system.