

Properties of Auroral Electron Backscatter

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Electron precipitation is an important and significant magnetosphere-ionosphere (M-I) coupling component. Understanding the net, rather than just downward, energy and number flux contribution and where that energy is deposited for different precipitation types and conditions is an important part of the SW-M-I-T system. We present the results of a number of related studies on backscatter properties that reduce the energy and number flux input to the ionosphere from electron precipitation and provide electron outflow. These include a straight-forward empirical backscatter model for primary and secondary backscatter based on ~13 years of FAST 2d distribution data that is accurate to within a few percent, a quasi-static acceleration net precipitation model including trapping of backscatter, and the results of an empirical study of backscatter reprecipitation effects in the conjugate hemisphere.

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