

## Satellite Remote Mapping of the Precipitation of Energetic Electrons and their Effects on the Earth's Upper Atmosphere

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The X-ray camera PIXIE (Polar Ionospheric X-ray Imaging Experiment) flown on the Polar satellite enables us to study the temporal and spatial distribution of precipitating high energy electrons during substorms and geomagnetic storms. At the same time the UVI camera on Polar provides information on the electron precipitation at lower energies. The electron precipitation is affecting the upper atmosphere in different ways. We have been investigating the effects on the electrical conductance and find that during active periods the Hall conductance is strongly influenced by the high energy electrons captured from the PIXIE data. We have also studied the effects on the Nitric Oxide (NO) density in the lower thermosphere. The NO density is measured by the SNOE (Student Nitric Oxide Explorer) satellite. For specific events, we find a close relation between the electron energy deposited into a region in the atmosphere and the increase in NO density in the same region.