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**Wave-Particle Interactions in the Polar Cap and Magnetopause Boundary Layers:
An ISTP POLAR/GEOTAIL Correlative Study**

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The POLAR satellite's plasma wave experiment detects intense broadband ELF and VLF waves near the spacecraft apogee ($r/R_E - 7$) about 100% of the time. It will be demonstrated that these waves are a permanent feature of the magnetosphere. The properties of these waves will be illustrated and a comparison will be made to waves previously observed within the low latitude boundary layer (LLBL). In addition, the evidence from POLAR particle instruments for high altitude heating of upflowing ionospheric ions, through wave-particle interactions, will be presented and discussed.

The POLAR wave and particle data for a few of these events have been correlated with similar measurements made on the GEOTAIL spacecraft as it was skimming the magnetopause and when both spacecraft were crossing the same magnetic field lines. GEOTAIL observes these same ions after they have propagated into the magnetopause boundary layer through heating and acceleration. These observations, together with other pertinent measurements, will be discussed in order to help gain a better understanding of the magnetopause boundary layer and the transport and acceleration processes that take place in and near the magnetopause region.