Ion-Electron Behaviour near Plasma Sheet Boundary Layer During Substorm

Manju Prakash
(Department of Physics and Astronomy, SUNY at Stony Brook
Stony Brook, New York 11794- 3800.)

Recently Parks et al. (1997) have reported correlated observations based on WIND spacecraft data on the characteristics of ions and electrons near the plasma sheet boundary layer (PSBL). The ion distribution is anisotropic with multiple beams and, therefore departs from Maxwellian. The ion distribution often includes several different populations. The electron distribution is usually composed of a single component which is nearly isotropic. Correlated observations with POLAR UVI show that during substorm times the ion distribution is dynamic and undergoes large changes. For example, each component can vary independent of the other components. The electron distribution remains relatively stable. The counter streaming ion beams are predominantly observed in a layer between the PSBL and the lobe. The present work examines theoretically the origin of the complex features of the plasma.

Parks et al., Plasma behavior in the vicinity of the plasma sheet boundary layer during global substorm activity, *IAGA abstract book,* pg. 355, 1997.