Geophysical Research Abstracts
Vol. 14, EGU2012-4250-1, 2012
EGU General Assembly 2012

Density holes in the cusp and polar cap regions

S. Haaland (1,4), K. Svenes (2), B. Lybekk (3), and A. Pedersen (3)

(1) Max-Planck Institute, Germany (stein.haaland@issi.unibe.ch), (4) Department of Physics and technology, University of Bergen, Norway, (2) Norwegian Defense Research Establishment, Kjeller, Norway, (3) Department of Physics, University of Oslo, Norway

Observations have shown that spatially limited density depletions are ubiquitous features of the solar wind and bow shock regions. Recent observations from the Cluster satellites indicate that such density holes also exist at or near the exterior cusp. The density holes are often associated with strong electric fields and high parallel electron velocities. Since the plasma densities are often very low, it is often not possible to determine the density from conventional particle instruments. In this study, we have used high resolution spacecraft potential measurements to obtain more accurate density estimates as well as size and motion these structures. Typical electron densities are in the range 0.01 - 0.1 ccm and the spatial dimensions varies from a few hundred to several thousand km.