Geophysical Research Abstracts
Vol. 13, EGU2011-6307, 2011
EGU General Assembly 2011

Field-aligned plasma density profiles obtained from CLUSTER observations in the plasmasphere

Johan De Keyser and Fabien Darrouzet
Belgian Institute for Space Aeronomy, Brussels, Belgium (johandk@aeronomie.be)

The multi-spacecraft Cluster mission has been launched in 2000 and is still providing lots of high-resolution and high-quality data in the Earth's plasmasphere. The spacecraft have been able to determine the plasma density using several instruments and methods. Establishing field-aligned plasmaspheric density profiles has remained a difficult task, which is not at all obvious. We present a technique to infer plasmaspheric field-aligned density profiles from the individual density profiles observed by each spacecraft as well as from the density gradient computed from the 4-spacecraft measurements. Knowing the field-aligned density distribution is interesting because it relates directly to the plasma refilling process in the plasmasphere. It is also useful for studies of plasmaspheric substructure, because it allows data obtained at different magnetic latitudes to be projected onto the equatorial plane, thus giving a better multi-point view of substructure.