

# **Analysis of Storm-Time Patterns in Topside Electron Density Reconstructions based on CHAMP Data**

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Space-based GPS measurements onboard Low Earth Orbiting (LEO) satellites provide a unique possibility for exploring space-weather effects in the ionosphere/plasmasphere system. The CHAMP satellite mission has yielded more than 190,000 vertical electron density profiles from radio-occultation measurements. Furthermore, a three-dimensional imaging of the electron density distribution of the topside ionosphere between CHAMP and GPS orbit height is performed by using TEC data derived from navigation measurements of the zenith-viewing antenna onboard CHAMP.

Studying the topside reconstructions by epoche analysis of ionospheric storms, we observed a variable plasmopause position as a function of the storm development. Difference plots of the electron density distribution with respect to the corresponding medians indicated an enhanced plasmaspheric electron content at the day side just before the storm onset defined by  $D_{ST}$ . At the night side, an inward motion of the plasmopause is seen immediately after storm onset. This is probably due to a compression of the plasmasphere by storm-induced magnetospheric electric fields.