Geophysical Research Abstracts, Vol. 7, 08392, 2005 SRef-ID: 1607-7962/gra/EGU05-A-08392 © European Geosciences Union 2005



The Storm Time Equatorial Belt reveals ring current behaviour during major storms.

F.Søraas (1), M. Sørbø (1), K.Aarsnes (1), K. Oksavik(2), D.S. Evans (3) 1.Department of Physics and Technology, University of Bergen, Norway.(finn.soraas@ift.uib.no)

2. Johns Hopkins University Applied Physics Laboratory, USA.

3.NOAA Space Environment Center, Boulder, Colorado, USA,

The precipitation of energetic ions and electrons into the upper atmosphere is a direct manifestation of their acceleration and pitch angle scattering in the magnetosphere. Electric fields inject/convect the particles from the tail plasma sheet towards the earth, and when closer to the Earth they spread in local time (LT) due to magnetic field forces. The electrons drift towards the morning sector and the ions towards the evening sector thus creating the ring current. An important decay process for the ring current protons is through charge exchange. The ENAs (Energetic Neutral Atoms) from this process create a well defined belt or region of ENA and protons, the STEB, observed at low altitudes along the geomagnetic equator. This belt reveals important aspects of the ring current such as: the ring current injection region, the drift of ring current-particles, and convection losses of the ring current particles through the dayside magnetopause, and its asymmetric and symmetric behaviour.