



Substorm onset asymmetries derived from conjugate auroral imaging

N.Ostgaard (1), S. B. Mende (2), H. U. Frey (2), J. B. Sigwarth (3), A. Aasnes (4)

(1) Department of physics and technology, University of Bergen, Norway, (2) Space Sciences Laboratory, University of California, Berkeley, California, USA, (3) Goddard Space Flight Center, Greenbelt, Maryland, USA, , (4) Los Alamos National Laboratory, Los Alamos, New Mexico, USA, (Nikolai.Ostgaard@ift.uib.no [+47 5558 2794])

Simultaneous imaging in the ultraviolet wavelengths by IMAGE and Polar, enable us to examine auroral features in the conjugate hemispheres. With an imaging cadence of 2 min and 1 min for IMAGE/FUV and Polar VIS Earth camera, respectively, we have examined both dynamic features as substorm onsets and cusp precipitation as well as slowly varying phenomena as theta aurora. For substorm onset locations, we have found that there exists a systematic displacement in one hemisphere compared to the other. The relative displacement of onset locations in the conjugate hemispheres is found to be controlled primarily by the IMF clock-angle. Compared with some of the existing magnetic field models, the observed asymmetries are an order of magnitude larger than the model predictions. These results have been compared with the statistical distribution of substorm onsets in the southern and northern hemispheres for different clock angles. Based on 3000 substorm onsets in the Northern hemisphere and 1000 in the southern hemisphere observed by IMAGE we find a remarkable support for our previous findings.