

TEMPORAL EVOLUTION OF TWO AURORAL ARCS AS SEEN BY THE CLUSTER II SATELLITE AND ON THE GROUND

A. Aikio (1), K. Mursula (1), O. Amm (2), K. Kauristie (2), G. Marklund (3), M. Dunlop (4), F. Forme (5), M. André (6) and A. Balogh (4)

(1) University of Oulu, Department of Physical Sciences, P.O. Box 3000, FIN-90014 University of Oulu, Finland (anita.aikio@oulu.fi), (2) Finnish Meteorological Institute, Geophysical Research, P.O. Box 503, FIN-00101 Helsinki, Finland, (3) Division of Pla

The four Cluster II s/c passed over Northern Scandinavia on February 6, 2001 from south-east to north-west at a distance of about 4.4 Re in the post-midnight sector. When mapped along geomagnetic field-lines, the separation of the spacecraft in the ionosphere was confined within 110 km in latitude and 40 km in longitude. This constellation allows us to study the temporal evolution of plasma with a timescale of a few minutes. Optical data is provided by two all-sky cameras situated at Sodankylä and Abisko. The Cluster s/c crossed two arcs, located close to the equatorward and poleward edge of a large-scale density cavity. The equatorward arc was quiet and drifted southward, whereas the more poleward arc formed, intensified and developed a fold during the Cluster passage. Electric and magnetic fields were measured by three satellites during the time of interest by the EFW and FGM instruments, respectively. Particle instruments were switched on later, so we have PEACE measurements of electrons in the poleward arc. We will discuss the temporal evolution of electric fields, field-aligned currents and electrons associated with the arcs.