



Electric fields associated with post-noon auroras

A. Kozlovsky (1), T. Turunen (1), A. Aikio (2), T. Pitkanen (2), K. Kauristie (3) and S. Massetti (4)

(1) Sodankylä Geophysical Observatory, Finland, (2) University of Oulu, Finland, (3) Finnish Meteorological Institute, Finland, (4) IFSI-INAF, Italy (Alexander.Kozlovsky@oulu.fi)

In November 2006 and January 2008, special EISCAT campaigns were performed on Svalbard to investigate electric fields associated with the post-noon (12-17 MLT) auroral arcs observed by the all-sky cameras in Longyerbyen and Ny Alesund. The observed auroras are poleward moving auroral forms (PMAF) occurring during different IMF conditions (southward, northward, and near-zero IMF Bz). The electric field perpendicular to arcs was inferred from plasma flows measured by the EISCAT Svalbard Radar with the radar beam directed to west or north-west. Possible mechanisms of auroral arc formation are discussed: dayside reconnection driven by southward IMF, interchange instability which is likely to occur during northward IMF, and flow shear created by magnetospheric eigenmode toroidal oscillations. The electric field (plasma flow) patterns are shown to be an important indicator for the arc generation mechanism.