

## **COORDINATED OBSERVATIONS OF AURORAL ARCS WITH ALIS AND THE EUROPEAN INCOHERENT SCATTER RADAR**

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In March 2008, we carried out a coordinated observation campaign of auroral arcs between the European Incoherent Scatter Radar (EISCAT) located in Tromsø, Norway, and the Auroral Large Imaging System (ALIS) located near Kiruna, Sweden. The ALIS network consists of 6 ground-based stations equipped with optical cameras observing simultaneously the same volume of the sky located at altitudes around 90-100 km. From optical observations, we reconstruct the three-dimensional (3D) volume rate emissions of the aurora with tomographic-like inversion techniques and we retrieve a 2D map (in longitude and latitude) of the energy spectra of precipitating electrons at the top of the ionosphere. From radar observations, we can also infer the energy spectrum of electrons but only along the magnetic field line (1D). These results are compared to test the assumptions used in the models as well as the reconstruction techniques. We use the energy spectrum of electrons deduced from ALIS data as input to TRANS4 (a proton-electron kinetic/fluid transport code) to simulate the density and temperature profiles observed by EISCAT. The electron energy fluxes are then used to obtain the 2D field-aligned potential drops between the upper ionosphere and the magnetosphere by using a Knight-like relationship.

Auroral arcs, auroral tomography, EISCAT data

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