



The high-latitude D-region ionosphere as seen by the EISCAT Svalbard continuous 1-year IPY radar experiment

Antti Kero (1), Carl-Fredrik Enell (1), Esa Turunen (2), Ingemar Häggström (2), and Pekka Verronen (3)

(1) University of Oulu, Sodankylä Geophysical Observatory, Sodankylä, Finland (antti.kero@sgo.fi), (2) EISCAT Scientific Association, Kiruna, Sweden, (3) Finnish Meteorological Institute, Helsinki, Finland

The EISCAT Svalbard Radar was operated in a continuous type mode during the entire first year of the International Polar Year (IPY) interval, starting on 1 March 2007 and ending on 29 February 2008. The ISR experiment used a specially written IPY mode, which was optimized to ensure also a good coverage in the ionospheric lower E and D regions, in addition to covering the more standard experiment target, the ionospheric F peak and reaching into the topside ionosphere. While the ESR IPY data in the altitude range 100-500 km have been extensively used, for example in studies including the major initiative in high latitude ionospheric modeling, which was supported by funding from the International Space Science Institute in Berne, Switzerland; the low altitude IPY data has not yet been utilized.

We present analysis of the ionospheric D-region data, where backscattered power measurements, with 3 km range resolution and 2.25 km steps, start from the altitude of 45 km. Data is subject to sea and/or tropospheric clutter, which is variable with season/day up to 65 km. However, normally data is usable for altitudes higher than 70 km. To demonstrate the scientific potential of this uniquely long continuous dataset, we investigate statistically the variability of the quiet daytime D-region affected by the preceding ionization events.