

2.3 Anomalous variations in the quiet daytime D-region ionosphere during the 1-year IPY experiment at the EISCAT Svalbard radar

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The EISCAT Svalbard Radar (ESR) was operated in a continuous mode during the International Polar Year (IPY), starting on 1 March 2007 and ending on 29 February 2008. By using this unique continuous dataset gathered during the solar minimum, we show that anomalous variability of the quiet daytime electron density in the D region can be explained by the varying in NO concentration.

Our focus is especially on September-October 2007, where the quiet daytime electron density suddenly increased by a factor of 7-10. This enhancement, most clearly seen at sunsets, lasted for several days. Using a detailed chemistry model (SIC) we can show that an enhanced nitric oxide density, probably related to preceding EPP events during the geomagnetic storm, explains the anomalous electron density enhancement at 92 km.

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