IPY 2007-2008 EISCAT Svalbard Radar event studies for the MISW FP7 project

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Satellite navigation at high latitudes suffers from disturbances (scintillation) caused by the structured and rapid ionospheric electron density variations caused by magnetospheric particle precipitation and solar energetic particle events. The MISW FP7 project (MItigation of Space Weather threats to GNSS services) aims at a better understanding of such effects and their mitigation.

This study presents electron density profiles from the D region to the topside ionosphere, analysed for several representative space weather cases during the 1-year EISCAT radar run on Svalbard during the International Polar Year 2007-2008. Calibrated electron density profiles from the EISCAT Svalbard radar will be used to model and compensate the scintillation observed by collocated GNSS receivers.

This paper presents case studies from the IPY radar run with the aim of designing dedicated radar experiments for mitigation of ionospheric space weather effects on GNSS receivers, which may include satellite tracking with the EISCAT Svalbard and mainland radars.