



Ionospheric Signatures Associated with the 21 February 2008 Svalbard Earthquake

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Previous studies have used different methods to search for a correlation between earthquakes and ionospheric perturbations, including VLF/LF propagation, TEC data, and data from the DEMETER satellite. This study looks for ionospheric disturbances associated with the 21 February 2008 Svalbard earthquake using the EISCAT Svalbard radar(ESR). This earthquake had a moment magnitude of 6.0 and occurred during the International Polar Year(IPY) 2007-2008. As part of the IPY-ICESTAR project the ESR ran continuously during a full year from March 2007 to February 2008, and therefore we have continuous measurements from the time of the earthquake. This is a unique opportunity to study the effects of an earthquake in the ionosphere.

From the EISCAT radar, information about electron density, electron temperature, ion temperature and vertical ion velocity, together with the uncertainties of these, for a range of different altitudes, are determined. In this study the main focus has been on a search for signatures in the D-layer electron density. In addition a search for signatures in VLF signals is carried out. Different theories, as enhanced radon emission from the ground and acoustic gravity waves, have been proposed to explain the cause of possible ionospheric signatures associated with earthquakes. The results obtained will be used to test these theories.