Ionospheric disturbances observed by oblique backscatter method

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The aim of this work is to investigate some peculiarities of variation and structure of the subauroral ionosphere above northern Europe during the widely known magnetospheric storm on January 6 - 11, 1997 by oblique backscatter (OBS) means. The OBS implement located near St.Petersburg is a small radar BIZON. Data of radar are being compared with geophysical data of the high-latitude observatories of Sweden, Finland, Norway, Russia as well as the Internet. The local substorm within the interval 15 - 17 UT has been learned in detail and 52 OBS ionograms are obtained. Types of reflection from the polar edge of the main ionospheric trough and the narrow trough of ionization are identified. Some results are presented below.

1. The OBS method with the help of the BIZON facility has demonstrated the complex picture of signals inverse scattered from irregularities of E-and F-regions of the ionosphere. Different types of the oblique backscatter traces (discrete, diffuse, flat, with group delay, rapid arising and disappearing) reflect the essence of happened geophysical phenomena.

2. The considered experiment showed the possibility to interpret the complex ionospheric phenomena and structures on the OBS ionograms of the BIZON facility during geomagnetic storms or substorms.

3. Similar investigations are able to contribute to studying the solar-terrestrial physics and particularly problems formulated in the framework of some International programs like CEDAR, ISTP, GEM, NSWP and COST 271.