

Space Studies of the Upper Atmospheres of the Earth and Planets including Reference Atmospheres (C)

Advances in Remote Sensing of the Middle and Upper Atmosphere and Ionosphere from the Ground and from Space, including Sounding Rockets and Multi-Instrument Studies (C02)

Consider for oral presentation.

AURORAL IONOSPHERE IN VERY HIGH TIME RESOLUTION: THE NEW SODANKYLÄ IONOSONDE

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In time for the IPY, the Sodankylä Geophysical Observatory in Northern Finland (6722'N, 2638'E) has taken a new vertical ionospheric sounder into use, which was built entirely in-house. The new instrument does not transmit in pulses of different frequencies. Instead, a frequency-modulated continuous-wave chirp is performed at the rate of 500 kHz/s from 500 kHz to 16 MHz.

The instrument is thus capable of performing one sounding per minute. It has been operated in this mode since the beginning of the IPY and it has revealed many rapid changes in the ionosphere, which cannot be observed with standard operation modes of typically one sounding per 15 minutes. Due to the ever-decreasing costs of digital storage space, at the end of the IPY the decision was made to run this mode indefinitely.

The current, very deep solar activity minimum provided us with the very rare opportunity to observe the ionosphere in its least disturbed condition and thus to reveal fine structures not seen before. Here we present the new ionosonde and the first results obtained.