

## Polar mesosphere HF radar echoes during a solar proton event

# Tadahiko Ogawa[1]; Nozomu Nishitani[2]

[1] STE Lab., Nagoya Univ; [2] STELAB, Nagoya Univ.

On November 9, 2000, the Finland SuperDARN HF radar (13.2 MHz) detected for the first time echoes induced by a solar proton event that occurred on November 8. The same echoes, which are called polar mesosphere winter echoes (PMWE), were also observed at 63-75 km altitudes with an MST radar at ESRANGE in Sweden, about 650 km NNW of the HF radar site (Kirkwood et al., 2002). The HF radar data show the followings: 1) echo ranges between 450 (geomag. lat. 62 deg.N) and 700 km, 2) echo powers less than 30 dB, 3) Doppler velocities between -20 and +20 m/s, and 4) Doppler spectral width less than 20 m/s. Although we do not know echo altitudes from the current HF radar experiment, the above facts 3 and 4 strongly suggest the echoes to be returned from the mesosphere with elevation angles of a few degrees. Echo targets might not be produced through a plasma instability under strong electric fields, but were due to neutral turbulence and/or charged aerosols, as suggested by Kirkwood et al.. The SuperDARN radars are useful to know a two-dimensional distribution and its temporal variation of PMWE as well as PMSE.