



INVESTIGATION OF GRAVITY WAVES IN THE UPPER TROPOSPHERE/LOWER STRATOSPHERE WITH COLLOCATED VHF RADARS NEAR THE SCANDINAVIAN MOUNTAIN RIDGE

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To investigate the properties of long period gravity waves in the upper troposphere/lower stratosphere, a combined measuring campaign took place using continuous VHF radar data on both sides of the Scandinavian mountain ridge at Andenes (69.3°N, 16.0°E) and Kiruna (67.9°N, 21.1°N), and supported by additional radiosondes at Andenes. It has been recently shown (Peters et al., Meteorol. Z., 12, No.1, 25-35, 2003) that a tropospheric jet in connection with a poleward Rossby wave-breaking event can generate such waves. Here we are focussing to study, how these waves are influenced by mountain waves orographically generated at the Scandinavian mountain ridge. The planning of the campaign to investigate the wave processes were based on 5-day forecasts of the meteorological fields. For selected periods, radiosondes have been launched at Andenes every 6 hours.

Based on wavelet transforms of the data sets, the dominant vertical wavelengths for constant times as well as the dominant periods for constant altitudes have been investigated. The wave parameter estimation is mainly based on the Stokes spectra analyses for each radar location and on the complex cross-spectral analyses of the results of both radars. Furthermore, the latter method has been used to discuss the temporal and spatial differences of the waves observed over a distance of about 250 km. Finally, the obtained results and their interpretation will be compared with the results of the mesoscale modelling work using the MM5 model code for the investigated campaign.