



Investigating of short period gravity waves using multi-beam experiments above Andenes in the polar summer mesopause

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In summer 2013 the Middle Atmosphere Alomar Radar System (MAARSY) conducted a multi-beam scanning experiment using 65 different beam directions. These systematic scanning experiments are analysed with respect to gravity waves with periods from 4 minutes up to 8 hours using polar mesospheric summer echoes (PMSE) as tracer. The gravity waves are investigated by decomposing the wind field into a mean wind and superimposed tidal components (diurnal, semidiurnal and terdiurnal). After subtracting these mean winds and tides we get a residuum wind dominated by the gravity waves with periods shorter than 8 hours. Using this approach we have been able to identified significant wave burst, with amplitudes as high as 50 m/s and 10-20 m/s for the horizontal and vertical wind components, respectively. In addition, we have identified events that indicate the development of KH-instabilities.