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## Investigation of inertia-gravity waves in the upper troposphere/lower stratosphere over Northern Germany observed with collocated VHF/UHF radars

A. Serafimovich<sup>1</sup>, P. Hoffmann<sup>1</sup>, D. Peters<sup>1</sup>, and V. Lehmann<sup>2</sup>

<sup>1</sup>Institute of Atmospheric Physics, Kühlungsborn, Germany

<sup>2</sup>Meteorological Observatory, Lindenberg, Germany

**Abstract.** A case study to investigate the properties of inertia-gravity waves in the upper troposphere/lower stratosphere has been carried out over Northern Germany during the occurrence of an upper tropospheric jet in connection with a poleward Rossby wave breaking event from 17-19 December 1999. The investigations are based on the evaluation of continuous radar measurements with the OSWIN VHF radar at Kühlungsborn (54.1 N, 11.8 E) and the 482 MHz UHF wind profiler at Lindenberg (52.2 N, 14.1 E). Both radars are separated by about 265 km. Based on wavelet transformations of both data sets, the dominant vertical wavelengths of about 2-4 km for fixed times as well as the dominant observed periods of about 11 h and weaker oscillations with periods of 6 h for the altitude range between 5 and 8 km are comparable. Gravity wave parameters have been estimated at both locations separately and by a complex cross-spectral analysis of the data of both radars. The results show the appearance of dominating inertia-gravity waves with characteristic horizontal wavelengths of 300 km moving in the opposite direction than the mean background wind and a secondary less pronounced wave with a horizontal wavelength in the order of about 200 km moving with the wind. Temporal and spatial differences of the observed waves are discussed.

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