



Inertia-gravity waves observed by the UK MST radar

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We present an analysis of fifteen years' data from the UK MST radar at Aberystwyth, Wales, to determine the occurrence and properties of long-period, quasi-monochromatic oscillations in the wind vector identified with inertia-gravity waves. The algorithm starts by filtering vertical wind profiles to remove large-scale variations, then calculates 3-hourly mean wind perturbations. A band-pass filter in time selects oscillations with periods 4-8 hours or 12-24 hours. By searching for altitude regions where the wind vector rotates systematically with height, and fitting ellipses to such sections, the properties of inertia-gravity waves can be derived. Results show that waves in the stratosphere are dominated by upward energy propagation (clockwise rotation) and those in the troposphere by downward propagation, consistent with the dominant source for inertia-gravity waves being at tropopause level. Long-period waves (>12 hours) in the lower stratosphere are observed 70% of the time, twice as often as the shorter-period waves. Inertia-gravity waves were found 10-15% of the time in the troposphere. The waves have typical amplitudes 1-2 m/s and vertical wavelength 2 km.