
MSD030-04

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Characteristics of temperature perturbations in the stratosphere observed with GPS radio occultation missions

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Using temperature profiles observed by the GPS radio occultation (GPS-RO) measurements with the CHAMP and COSMIC satellite missions, we have analysed temperature variance in the stratosphere caused by meso-scale disturbances. Specifically, the data allow the resolution of waves with vertical wavelengths of around 2 km ? 10 km. Long-term CHAMP data resulted in the climatological characteristics of atmospheric waves in the equatorial region. Compared to earlier GPS-RO results, a more detailed understanding of global and regional scale gravity wave activity on shorter time intervals in the lower stratosphere is obtained up to about 30 km altitude on time scales of the order of one week. Using these data, we have studied convectively generated gravity waves in the tropical region, and observed hemispheric and regional scale changes in wave energy which are related to the convective source as well as background wind conditions.

Keywords: GPS radio occultation, atmospheric waves, stratosphere, CHAMP, COSMIC