

3-years Occurrence Variability of Concentric Gravity Waves in the Mesopause Observed by IMAP/VISI

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We report the first statistical study on concentric gravity waves (CGWs) in the mesopause by using 3 years data obtained by IMAP/VISI. 235 CGWs events were found with horizontal wavelength ranging from 40 to 250 km and maximum radius of 200 to 3000 km. Occurrence of the CGWs was significantly higher during non-solstice months (February-May and August-November) than solstice months (June-July and December-January), suggesting low to moderate wind are preferable for CGWs upward propagation. The latitudinal distribution of the CGWs centers had peaks in mid latitude (40°N and 40°S) and minimum at low latitude (10°S). More events were found in the summer hemisphere mid-latitudes, with a clear transition between north and south hemisphere around equinoxes. The information of the preferable regions seen in the global distribution map and the seasonal distribution could be useful for region and seasonal selection of CGWs' future studies.

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