3-years of Concentric Gravity Wave Variability in the Mesopause as Observed by IMAP/VISI

Septi PERWITASARI[1], Takeshi SAKANOI[1], Takuji NAKAMURA[2,3], Mitsumu EJIRI[2,3], Masaki TSUTSUMI[2,3], Yoshihiro TOMIKAWA[2,3], Yuichi OTSUKA[4], Atsushi YAMAZAKI[5], Akinori SAITO[6]

[1] *Tohoku University, Sendai, Japan*
[2] *NIPR, Tokyo, Japan*
[3] *SOKENDAI, Tokyo, Japan*
[4] *Nagoya University, Nagoya, Japan*
[5] *ISAS/JAXA, Sagamihara, Japan*
[6] *Kyoto University, Kyoto, Japan*

We report a statistical study on concentric gravity waves in the mesopause (~95 km) using 3 years nightglow imaginary 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. The latitudinal distribution of the CGWs centers had peaks in mid latitude (40°N and 40°S) and minimum at low latitudes (10°S). More events were found in the summer hemisphere mid-latitudes, with a rapid transition between northern and southern hemisphere around the equinoxes. Occurrence probability of the CGWs was significantly higher during non-solstice months (February-May and August–November) than solstice months (June-July and December-January), suggesting that they are able to survive breaking and critical level absorption to reach the mesopause region more often during these periods. Information regarding preferred regions seen in the global map and the seasonal distribution could be useful for the planning of CGWs' future studies.

Key words: concentric gravity wave, mesopause, 762 nm nightglow, IMAP/VISI