

CHARACTERISTICS OF EQUATORIAL GRAVITY WAVES DERIVED FROM MESOSPHERIC AIRGLOW IMAGING OBSERVATIONS

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We present the characteristics of small-scale (<100 km) gravity waves in the equatorial mesopause region derived from OH airglow imaging observations at Kototabang (100.3E, 0.2S), Indonesia, from 2002 to 2005. A part of gravity waves propagating upward in the mesosphere are considered to penetrate into the thermosphere/ionosphere and transport energy and momentum from lower atmosphere. It is also considered that such waves can triggers various ionospheric irregularities. However, the observational evidence on characteristics of gravity waves in the mesosphere is very limited, especially at the equatorial region. The Kototabang imager was installed as part of the Optical Mesosphere Thermosphere Imagers (OMTIs) and started imaging observation of mesospheric gravity waves from October 2002. We adopted a method that could automatically detect gravity waves in the airglow images using two-dimensional cross power spectra of gravity waves. The propagation directions of the waves were likely controlled by zonal filtering due to stratospheric mean winds that show a quasi-biennial oscillation (QBO) and the presence of many wave sources in the troposphere.

gravity wave, airglow imaging, equatorial mesosphere

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