

Filtering characteristics of gravity waves in the lower atmosphere over the Indian tropical station of Gadanki

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Gravity waves generated in the lower atmosphere (troposphere) are believed to make significant contribution to long period oscillations (seasonal to interannual) in the stratosphere and mesosphere and short period (few minutes to few hours) fluctuations even in the thermosphere and ionosphere phenomena. For example, the equatorial Quasi-Biennial-Oscillation (QBO) in the lower stratosphere, Semi-Annual-Oscillation (SAO) in the upper stratosphere and mesosphere, the traveling ionospheric disturbances (E region) and the seeding of spread-F events are now associated successfully to the lower atmospheric gravity waves. When these gravity waves propagate to higher heights and happen to meet the critical level conditions, they dissipate their energy and impart momentum to the background winds. Though Kelvin and Rossby gravity waves can explain the westerly and easterly phases of the QBO respectively, addition of the gravity wave information to these long period oscillations is nowadays realized an essential one. So, it is very important to study the vertical propagation and filtering characteristics of gravity waves generated in the lower atmosphere. Using the MST radar located at the Indian tropical station, Gadanki, we report in this paper that how certain frequencies of gravity waves generated in the lower atmosphere are filtered near the tropopause region and how the filtering characteristics of gravity waves vary in different seasons of different years.