

Studies on Convectively Generated Gravity Waves Using Indian MST Radar

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VHF radar is a promising tool to study convective systems and their dynamical effects. Atmospheric Gravity waves play a significant role in controlling the middle and upper atmospheric dynamics. A special campaign has been conducted with the Indian MST Radar located at Gadanki (13.5oN, 79.2oE) to study the convectively generated gravity waves in the lower atmosphere. Convection is one of the important source mechanisms for the generation of gravity waves in the tropics. The excitation and vertical propagation of gravity waves are found to display specific characteristics pointing convection as a main source. The important characteristics of gravity waves are enhancement of signal strength from near the ground to the lower troposphere and are coupled with increase in both vertical velocity and turbulence. We observed the convective phenomena within a time span of 3-4 hours on 17-18 October 2002. The vertical velocity during this period was found to be 6-8 m/s in the troposphere. Present results illustrate that the rapid growth in wind disturbances, which we infer to be gravity waves, is the result of a temporally growing and moving tropical convective system. The dominant wave periods and their height profiles of amplitudes are studied. The vertical wavelength and the propagation direction of gravity waves are determined and the detailed discussions and the results will be presented in the full paper.