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Space Studies of the Upper Atmospheres of the Earth and Planets including Reference Atmospheres (C)
Whole Atmosphere Wave Coupling and Interaction Processes (C2.2)

PLANETARY WAVE ACTIVITIES IN THE MIDDLE LATITUDE MLT REGION OBSERVED BY AIRGLOW AND WINDS

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Upper mesosphere and lower thermosphere (MLT) airglow emissions, temperatures and wind structures in the middle latitude (42 N) over Japan have been observed in 2005 and 2006. Periodic oscillations of these parameters within 2 to 20 days were investigated. Both the airglow and wind variations demonstrated clear 2, 8, 10 and 16 day periodicities. The wave activity was higher during the period from the autumn equinox to winter, and upto the spring equinox. We understand that these oscillations are generated by Rossby normal mode Planetary waves. Atmospheric density and temperature oscillations by the planetary waves are estimated from the amplitude of oscillation of the airglow emission rates. Vertical transport of atomic oxygen induced by the waves could also be estimated by the airglow intensity variations between OI 557.7 nm and OH emissions.