



Atmospheric gravity waves in IRS P4 OCM derived Aerosol Optical Depth

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Four cases of detection of atmospheric internal gravity waves, with wavelengths ranging over ~ 1.9 to 7.7 km, in the IRS-P4 OCM derived aerosol optical depth (AOD) are reported in this work. These cases provide an example of the possibility of monitoring atmospheric processes as they are reflected through the spatial and temporal variation in the satellite derived AOD in different spatial and temporal scales. An attempt has been made to suggest a mechanism of generation of these waves in terms of the prevailing physical conditions of the atmosphere.

Examination of NCEP reanalysis wind fields on the corresponding dates revealed the presence of vertical wind shear and a high velocity mid tropospheric jet on three occasions and a lower level low velocity jet with no appreciable wind shear on another occasion. On all the four days, an inversion in relative humidity was present but with no inversion in the temperature profile. A possible mechanism for the waves to be visible is the modulation of AOD due to the variation in the scattering cross section of the hygroscopic marine aerosols as they move in and out of the regions of higher relative humidity by the vertical motions of the gravity waves. In addition to the presence of a jet, the latent heat released by the condensation of water vapour may also be a source of energy for the growth of these waves.