Geophysical Research Abstracts, Vol. 7, 03093, 2005
SRef-ID: 1607-7962/gra/EGU05-A-03093

Study of the abrupt amplitude increase of total neutral density fluctuations with height in the thermosphere

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Measurements of the total neutral density of high temporal resolution carried out on board of the Italian satellite San Marco V have shown that amplitude of density fluctuations increases abruptly at certain height in the thermosphere. This height indicates diurnal variation with minimum values by night and maximum values by day. Study of this phenomenon resulted in an explanation related to neutral equilibrium due to the temperature in the upper thermosphere approximating a limit value, the exospheric temperature. Thus, temperature variations connected with density fluctuations greater than the adiabatic temperature gradient could generate convective instability.