

Evidence of Lunar Tides in the Ionosphere

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The lunar tides have been observed and studied in the ionospheric and geomagnetic measurements and they have been pointed out as very important to the dynamics of the mesosphere-thermosphere-ionosphere coupling. In this work, evidences of the lunar tides in the foF2 e hmF2 have been observed from the digisonde data collected at Cachoeira Paulista (23 ° S, 45 ° W). To study the lunar tides in the ionosphere, a methodology that consisted in separating it from the solar effects was used. The solar effects are dominant for both parameters, from the data. After, it was necessary to convert the time to the lunar reference and a spectral analysis was used to estimate the amplitudes and phases of the diurnal and semidiurnal oscillations. The results show there is a strong temporal variability in the amplitudes of the lunar tides. Since the sources of the lunar tides are well known, the present result suggests that the middle and upper atmosphere are changing the background condition to the propagation of the lunar tides.