

Study on Planetary wave Propagation in the Lower Thermosphere using Wind Measurements from Fabry-Perot Interferometers

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This research is focused on the study on planetary wave oscillations (PW) propagation in the lower thermosphere. The Fabry-Perot Interferometer (FPI) is a passive optical sensing instrument used to estimate thermospheric winds and temperature. The data used in this paper were captured by the FPIs which are located at São João do Cariri (7.4°S, 36.5°W) and Cajazeiras (geographic location : 6.9°S, 38.5°W) with geomagnetic coordinates (35.8° E ,0.48° N). This research aims at looking for periodicities in the wind measurements with periods longer than few days in both components of wind. This was done by using airglow emission of Atomic Oxygen OI630.0 nm the red line during the nighttime, i.e., from 20:00 to 03:00 local time (LT). Lomb–Scargle analysis was used to process the thermospheric winds and temperature. Phases (time of maximum) and amplitudes of these oscillations were estimated by using Least Square fitting method (LSF). Almost all of periodicities of propagation of planetary waves were above 2 days. Strong oscillations of 6-8 days were observed from September to December 2013.