SEMIDIURNAL LUNAR TIDE AND IONOSPHERIC PLASMA BUBBLES OVER BRAZIL

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Abstract: Using OI6300 airglow images collected over São João do Cariri (7.4°S, 36.5°W), the start time and zonal drifts of equatorial plasma bubbles (EPBs) were calculated. A strong day-to-day variability was observed in the calculations due to the complex dynamics of the nighttime thermosphere-ionosphere system near the equator. The present work investigated the contribution of the semidiurnal lunar tide (SLT) M_2 during period form 2000 to 2007, which includes high and low solar activities. Besides the influence of the solar cycle on those parameters, the seasonal effects were investigated as well. Regarding the start time of EPB, the M_2 amplitude was 13.5 min, while the amplitude of the M_2 in the EPB zonal drifts was 5.6% of the average values. Influences of the seasons and solar activity on the amplitudes of the SLT tide were investigated as well. The results suggest that the M_2 has a significant influence on the EPB appearance and development over the Brazilian equatorial region.

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