

RELEVANT ASPECTS OF THERMOSPHERIC DARK BAND STRUCTURE RELATED WITH MIDLATITUDES SPREAD F OBSERVED BY ALL-SKY IMAGING SYSTEM IN THE SOUTHERN HEMISPHERE OVER TWO FULL SOLAR CYCLE

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By using ground-based measurements we investigate the occurrence of Dark Band Structures (DBS) in the OI 630 nm nightglow emission all-sky images in the Brazilian low latitudes region related to midlatitude Spread F, during over two full solar cycles. The OI 630 nm images obtained during these periods show thermospheric dark band structures in low latitudes region propagating from southeast to northwest. These dark patches moved with average speed of about 50-200 m/s at an altitude of 220-300 km, which is the typical OI 630.0 nm airglow emission altitude range. Only during low solar activity period (LSA), ascending solar activity period (ASA) and descending solar activity period the DBS occurrences were observed in the OI630 nm nightglow emission all-sky images. However, during high solar activity (HAS) we didn't observe the DBS in the all-sky images. In addition, ionospheric data over two stations in Brazil, one at the magnetic equator (São Luís: 2.6°S, 44.2°W, dip angle = -0.5°) and the other close to the southern crest of the equatorial ionization anomaly (Cachoeira Paulista: 22.7°S, 45.0 °W, dip angle = -28°) were used to study this kind of structures during high and low solar activity periods. It should be pointed out that these thermospheric/ionospheric events are not related to geomagnetic disturbed conditions. In this work, we present and discuss this phenomenon in the Brazilian sector over two full solar cycles under different solar activity conditions. A possible mechanism for generation of these dark band structures is presented.

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