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FINDINGS OF THE UNUSUAL PLASMA BUBBLE OCCURRENCES AT DAWN DURING THE RECOVERY PHASE OF A MODERATE GEOMAGNETIC STORM OVER THE BRAZILIAN SECTOR

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In this work, we observe for the first time the unusual pre-sunrise Equatorial Plasma Bubbles (EPBs) during a moderate geomagnetic storm recovery phase caused by the High-Speed Solar Wind Stream (HSS) on February 17, 2015, over the Brazilian sector. Therefore, this study aims to explain the generation mechanism of this uncommon event, which started at 08:00 UT on February 18, 2015. We used Multiple Global Navigation Satellite Systems (Multi-GNSS, GPS, and GLONASS) data to produce two-dimensional maps of the Rate Of TEC index (ROTI) that show EPB features elongated in magnetic meridians. Also, Digisonde data from São Luís

(2.53° S, 44.30° W, dip angle: -8.57°), Boa Vista (12.81° N, 60.67° W, dip angle: 33.71°), and Campo Grande (20.44° S, 54.64° W, dip angle: -25.98°), and magnetometer data at São Luís and Eusébio (3.89° S, 38.45° W, dip angle: -17.96°). Our analysis shows that the unusual pre-sunrise plasma bubbles lasted longer after sunrise, around 1 hour. Finally, we showed that these EPBs are likely driven by a disturbance wind dynamo effect, which helps to understand the role of the external factors in EPBs development.