UNUSUAL OBSERVATION OF FILAMENTARY STRUCTURES IN OI 557.7 nm EMISSION OVER PANHALA (17^{O}N, 74.2^{O}E GEOGRAPHIC; 8.43^{O}N GEOMAGNETIC LATITUDE)DURING A MODERATE MAGNETIC STORM

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All-sky nightglow imaging observations made over low latitude site Panhala (17^{o}N, 74.2^{o}E Geographic; 8.43^{o}N Geomagnetic latitude) during February 1, 2008 revealed anomalous filamentary structure formation (referred to as 'streaks') in OI 557.7nm emission. These structures were observed on pre-midnight sector only in OI 557.7nm emission and are not seen on other wavelengths including OI 630.0nm. They were transient and extended from south to north with a tilt of ~13^{o} to the geomagnetic meridian. In addition they possessed westward drift with speeds of 30-50 m/s. They are narrow with widths up to 10 km and lengths ranging from few tens of km to ~200km. These estimations were based on an assumed height of 100 km for the OI 557.7 nm emission. A recurrent geomagnetic storm of moderate strength (minimum quick look Dst = -44) was on progress during the observation of streaks. Equatorial ionospheric soundings made over Tirunelveli (8.7^{o}N, 77.8^{o}E Geographic; 0.17^{o}N Geomagnetic latitude) showed intense blanketing after midnight confirming excessive night time ionization on that day. Wide plasma depletion was observed on OI 630.0 nm emission while streaks were observed in OI 557.7nm emission. In this work we discuss the observations in detail and speculate about their possible cause. This is an extremely puzzling observation made from very low geomagnetic latitude during the main phase of a moderate recurrent geomagnetic storm in the declining phase of solar cycle. Hence understanding of such unusual and rare events is expected to substantiate our knowledge on the coupling processes at equatorial region.

OI nightglow emissions, geomagnetic storms

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