

MAGNETOSPHERE-IONOSPHERE COUPLING AND THE CHANGES IN THE THERMOSPHERIC DAYGLOW EMISSION INTENSITY OVER DIP EQUATOR – A CASE STUDY

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Systematic measurements of the emission intensity of the thermospheric dayglow are being carried out using a unique Multiwavelength Dayglow Photometer over Trivandrum (8.5 °N, 76.5°E, 0.5°N diplat.), a geomagnetic dip equatorial station in India. Simultaneous collocated measurements of the magnetic field induced at the surface are also taken using a proton precision magnetometer (PPM). On August 8, 2005, the dayglow emission intensity exhibited two rather prominent and short-lived (~ mins) enhancements coincident with similar and fast variations in the magnetic field. In fact, the magnetic field revealed some very fast changes throughout the day. Interestingly, these variations in field were not observed over off equatorial stations.

The analysis reveals that these short-term changes in the airglow intensity and the magnetic field are caused by the solar wind forcing. It is important to note that August, 8 was geomagnetically not a very active day. The planetary level of geomagnetic disturbance (Ap) was around 6. The observations can only be understood through coupling prevailing between the Thermosphere-ionosphere over the equatorial and the polar latitudes. The results are unique and presented in context of the manifestations of the magnetosphere-ionosphere coupling in the equatorial thermosphere-ionosphere region.

space weather, dayglow, dipequator

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