

# **F3 LAYER OVER THE DIP EQUATOR – A CASE STUDY OF THE EQUATORIAL THERMOSPHERE-IONOSPHERE DYNAMICS DURING ACTIVE SPACE WEATHER EVENTS**

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The presence of an additional stratification in the F2 layer at equatorial latitudes, known as the F3 layer, has been known for quite a long time. The possible generation mechanism of the F3 layer and its statistics of occurrence including the day-to-day variability have also been reported in recent years. It has been agreed upon that the generation of F3 layer does not involve any new sources. In fact, it has been shown that with the progress of time, the original F2 layer drifts upward over the equator and forms the F3 layer, while the new layer develops into the usual F2 layer. Overall, The F3 layer has been associated with the electrodynamic changes in the equatorial region. In this context, it has been realized that the study of F3 layer formation and evolution would provide us an important insight into the processes controlling and influencing the variability in the equatorial electrodynamics. Though there have been observations of the F3 layer during both geomagnetically quiet as well as disturbed days in recent times, its evolution during latter is not properly understood.

In this context, this paper reports the observations of the formation and evolution of the F3 layer in the various phases of geomagnetic storms over Trivandrum, a dip equatorial station. Quarter hourly ionograms recorded at Trivandrum and the off-equatorial location of SHAR using the KEL IPS 42 digital Ionosonde have been used in the present study. The generation and evolution of F3 layer is discussed in context of the relative importance of electrodynamics and neutral dynamics of the equatorial region during active space weather events of 23<sup>rd</sup> solar cycle. It has been shown that the strong equatorward thermospheric winds may not always account for the occurrence of F3 layer over and around the dip equator. The results will be presented in detail.

F3 layer, geomagnetic storm, thermosphere

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