



## **Response of Indian equatorial ionosphere-thermosphere system (EITS) to moderate geomagnetic storms**

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The response of Indian equatorial ionosphere-thermosphere system to moderate geomagnetic storms of 11th Feb 2004 and 9th Mar 2004 has been studied using the ground and space borne measurements from the Indian equatorial and low latitude region. Prompt penetration of eastward electric fields in to equatorial and low latitudes is inferred from the large vertical drift of the F-layer at the equator followed by a nearly simultaneous onset of Spread-F on ionograms and scintillations at VHF (244 MHz) and L-band (1.5 GHz) frequencies during the early evening periods when a simultaneous decrease (-20 to -25 nT/hr) in Sym-H index is observed. The Spread-F and scintillations continued to exist for longer durations up to post-midnight to pre-dawn hours, possibly due to the combined effect of prompt penetration and long-lived Disturbance Dynamo electric fields. Due to prolonged geomagnetic activity during the subsequent days (morning-to-noon hours), strong reversal in the Equatorial ElectroJet current is also observed and the Equatorial Ionization Anomaly (EIA) is significantly inhibited under the influence of westward electric fields. The presence of westward electric field due to disturbance dynamo action is clearly evident from sudden disappearance of q-type Es in the ionograms of equatorial station, Trivandrum. The post-sunset enhancements in the vertical drift of the equatorial F-layer are also reduced significantly from their quiet day values and the subsequent occurrence of Spread-F and scintillations is also inhibited. The effects of these space weather events on space based navigational systems such as GPS have been studied and the results are discussed in detail.