

## Equatorial ionospheric response to Tropical Cyclone-a short note on TC-Nisarga

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This paper presents an investigation to explore different characteristics of a possible coupling between tropospheric and ionospheric activity using IIT Indore GPS station data, during the Tropical cyclone (TC) Nisarga, which hit the west coast the Indian subcontinent. Studies reveal that a TC can generate a wide spectrum of Gravity Waves(GWs) from the strong convective cells from tropospheric altitude which can propagate up to the F region of ionosphere[1,2]. TC Nisarga originated as a depression as shown in Figure 1a and at 7 UT on 3 June, it made a landfall near the town of Alibag, at peak intensity which is 700 kms away from the Indore(GPS-IIT) station. The signatures of this TC on the ionosphere can be a possibility based on the geographical location on IITI-GPS station and the landfall location of TC Nisarga. The Figure 1(b) presents the ionospheric response to TC Nisarga during 1 to 5 June 2020 for IITI-GPS station. The DST index for this period which has not dropped below the value of -30nT, indicating favorable conditions to record the ionospheric response during this period. As shown in figure 1(b) on 3 June 2020, the VTEC values shown, is lower on the day of landfall, which was contrary to few of the early experimental studies on various tropical weather phenomenon[1,3]. The reason that a depletion of VTEC value on landfall day of TC Nisarga can open various research experiments in propagation of lower atmosphere GW to upper atmosphere and aid in understanding the coupling phenomenon of lower and upper atmosphere.

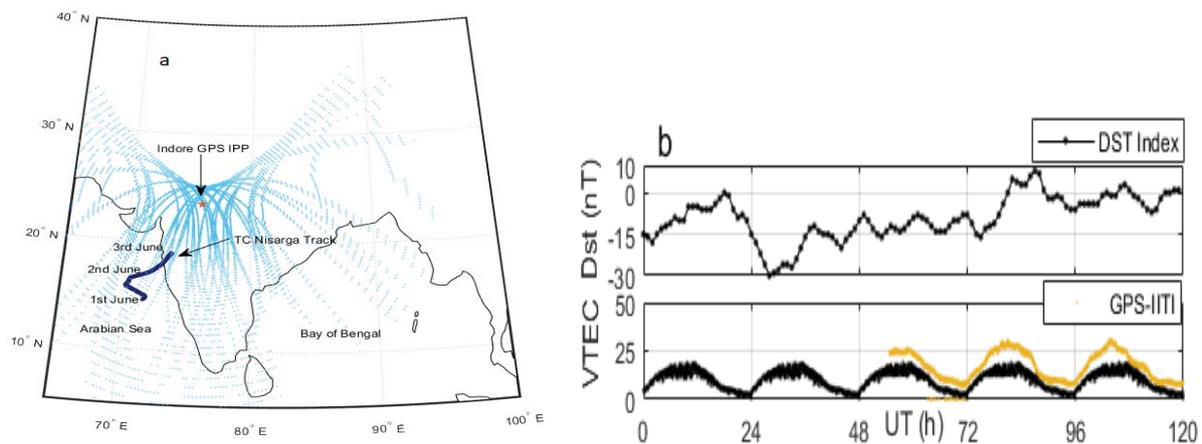


Figure 1(a). Ionospheric pierce points as observed from IITI-GPS station and the track of TC Nisarga (b) The Dst Index values (top) and ionospheric response i.e, VTEC values (bottom) for June 1-5, 2020 for TC Nisarga period are shown as observed from GPS-IITI where the golden line indicates the diurnal VTEC and black line indicated the monthly mean of VTEC.

## References

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