

# **Simulation of Track and Landfall of Tropical Cyclone Viyaru and Its Associated Rainfall & Storm Surges Using NWP Model**

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## **ABSTRACT**

Simulation of track and landfall of the tropical cyclone **Viyaru** that formed over the southern Bay of Bengal has been carried out using Weather Research and Forecasting (WRF) and MRI model. The WRF model was run in a single domain of 9 km horizontal resolution using KF cumulus parameterization schemes, WSM6 micro physics and YSU planetary boundary layer scheme. The model was run for 24, 48, 72 and 96 hrs using NCEP FNL initial and lateral boundary condition. The model has successfully predicted the tracks, re-curvature, areas and time of landfall of the selected tropical cyclone Viyaru. Even in the 96 hrs predictions the model has successfully predicted with high accuracy. The lowest position error was found only 44 km and lowest time error was found 01 hour. The results clearly demonstrate that the track prediction error increases as the forecast hours increases except 24 hrs simulation. However, these results show the advantage of using WRF model with high resolution in prediction of the selected tropical cyclone Viyaru over the Bay of Bengal. Model simulated rainfall was compared with that of TRMM 3B42RT (V7) and BMD observed rainfall and found that the model has captured the rainfall in reasonably well. The storm surges was also simulated by MRI model at the time of landfall of Viyaru and compared with the BMD estimated storm surges data. It is found that the model has also simulated the storm surges due to Viyaru in 24-hrs advance of landfall time.

**Key words:** Track, Landfall, Storm Surge, WRF Model, MRI Model.