

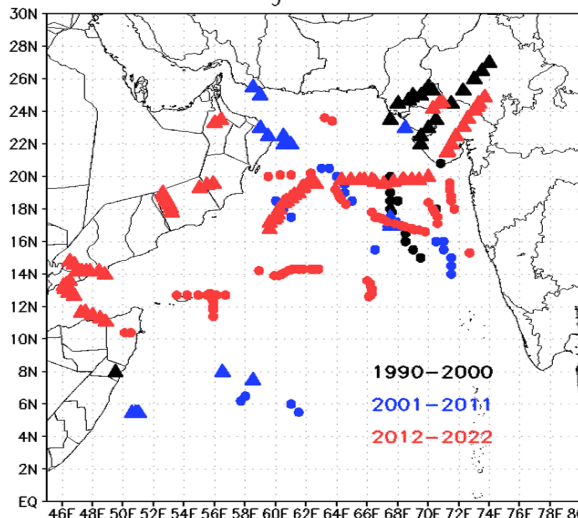
# Prediction of rapid intensification and inner core structure of intense tropical cyclones (TCs) over the North Indian Ocean (NIO) using cloud resolved WRF model

## Graphical Abstract/ Lavout

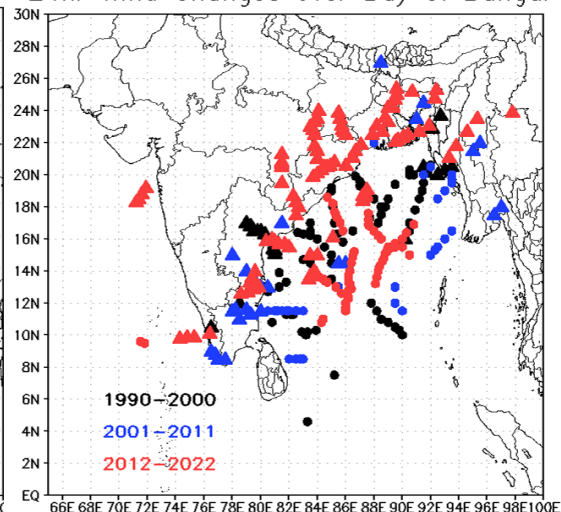


**Principal Investigator**  
 Dr. Kuvar Satya Singh  
 Assistant Professor  
 Centre for Disaster Mitigation &  
 Management (CDMM)

24hr Wind Changes over Arabian Sea



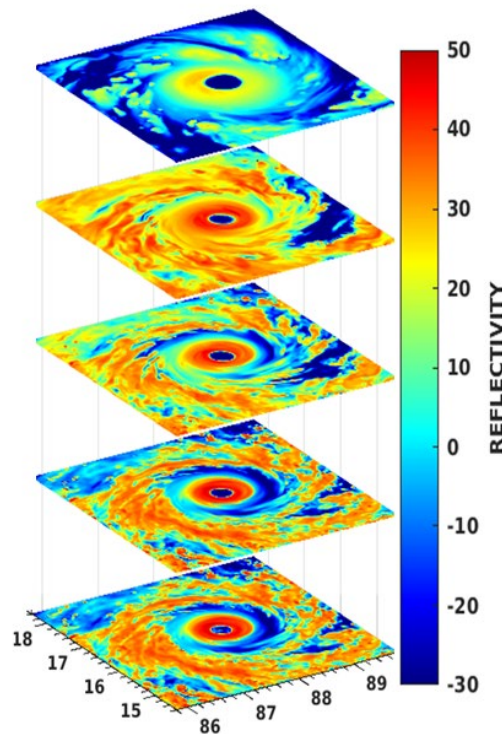
24hr Wind Changes over Bay of Bengal



Locations of Rapid intensification associated with tropical cyclones over the North Indian Ocean during years 1990-2022.

### Project Description

The outcome of the proposed study is to improve the quality of the forecast of the severe tropical cyclones (TCs) over the North Indian Ocean using cloud resolved WRF model. The outcomes can be concise as follows: The expected results of the proposal are related to improvement in track, intensity and structure of the severe TCs with accuracy and could be useful for disaster management & planning to minimize the loss of life and property in a warming climate. The results will provide the feasible model resolution in a cloud resolving horizontal resolution to provide better results in terms of forecast of rapid intensification. The horizontal resolution is not sufficient to capture the structure and intensity of the severe TCs in the inner core region, this gap can be fulfilled by using physical parameterization schemes to the forecast of eyewall replacement cycle and secondary eyewall formation. The improved model initial conditions through assimilation of satellite radiances will provide better forecast of the intense TCs.



Prediction of primary and secondary eyewall using WRF model

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**Name of the Funding Agency**  
 Science and Engineering Research  
 Board (SERB)

**Name of the Scheme**  
 SERB International Research  
 Experience (SIRE)

**Sanctioned Amount (in Rupees)**  
 Rs. 16,81,570

**Duration of the Project (years)**  
 0.6