Prediction of Severe Tropical Cyclones Over Bay of Bengal During 2007-2009 Using High Resolution Meso-scale Model.

[1]P.V.S. Raju, [1]Jayaraman Potty and [2]S. M. Oo

[1]Regional Integrated Multi-hazard Early warning System (RIMES)
Asian Disaster Preparedness Center (ADPC), AIT Campus, Klong Luang, Pathumthani, Thailand
Email: pemmani@gmail.com
[2] Department of Meteorology and Hydrology, Yangon. Myanmar

Economic and human losses associated with the severe tropical cyclones are immense. High winds, heavy rainfall and storm surges are the major disaster elements of tropical cyclones. The precise track prediction is most critical to determine the geographical location where damages due to wind and rain are large. Therefore, an accurate and long lead forecast of intense cyclones along with appropriate mitigation strategy will lead to substantial reduction in loss of lives and livelihoods. In this paper, we discuss the high resolution meso-scale prediction of tropical cyclone over Bay of Bengal during 2007-2009. The state-of-the-art Advanced Weather Research Forecasting (WRF) meso-scale modeling system (ARW core) is used for prediction of three severe tropical cyclones [Sidr, Nargis and Aila] over the Bay of Bengal. The initial and boundary conditions for all the simulations are provided from global operational analysis and forecast products of National Center for Environmental Prediction (NCEP) available at 1 deg lon/lat resolution. The extreme weather parameters such as heavy rainfall, strong wind and track of those three severe tropical cyclones are critically evaluated and discussed by comparing observed track and intensity obtained from Joint Typhoon Warning Center (JTWC). Tropical Rainfall Measurement Mission (TRMM) precipitation is also used to evaluate the performance of the model simulation of heavy rainfall associated with tropical cyclones. The study shows that the track error with respect to location and time, intensity in terms of central pressure and wind etc. are well simulated by the model. The rainfall predicted by the WRF model is also in good agreement with the TRMM analysis.