MM5-based Typhoon Model and Its Real-Time Application

H. JOE KWON[1] and SUNG-HEE WON[1]
[1]*Department of Atmospheric Sciences / Typhoon Research Center Kongju National University*

This presentation is on an operational typhoon forecasting model based on the community model MM5, which is the product of the multi-year collaboration between Korea Meteorological Administration (KMA) and Kongju National University.

The community model MM5 has been quite successful in the sense that the model has been used in the very wide area of the numerical modeling and prediction including tropical cyclone (Liu *et al*. 1999; Bao *et al*. 2000; Xiao *et al*. 2000). However, there must be a few factors for a numerical model to be used as a real-time typhoon/hurricane model. Firstly, the model should have a good or decent dynamical and physical framework. Secondly, the initialization of the tropical cyclone, i.e., TC bogussing is required. Lastly, there should be a function of the autonomous moving nest. We present here that MM5 can be used in the operation of typhoon track/intensity forecast with the GFDL TC bogus and the autonomous moving nest.

Since the prototype of the model has been developed in 2002, tremendous amounts of work are added. Most of them are on the tuning for the operational environment of the KMA. The performance of the model is very comparable to the operational model of other typhoon centers.

References

[1] Bao, J.-W., J. M. Wilczak, J.-K. Chio, and L. H. Kantha, 2000: Numerical simulation of air-sea interaction under high wind conditions using a coupled model: A study of hurricane development. *Mon. Wea. Rev*., **128**, 2190-2210.

[2] Liu, Y., D.-L. Zhang and M. K. Yau, 1999: A multiscale numerical study of Hurricane Andrew (1992). Part II: Kinematics and inner-core structures. *Mon. Wea. Rev*., **127**, 2597-2616

[3] Xiao, Q., X. Zou, and B. Wang, 2000: Initialization and simulation of a landfalling hurricane using a variational bogus data assimilation scheme. *Mon. Wea. Rev*., **128**, 2252-2269.