



Improvement of Initial Conditions of Sea Fog Modeling with Cycling 3DVAR-WRF

S. Gao (1), G. Fu (1), W. Wu (2), and X. Xu (3)

(1) Dept. of Marine Meteorology, Ocean University of China, Qingdao 266100, China (gaosh@ouc.edu.cn), (2) Shandong Meteorological Bureau, Jinan 250031, China, (3) Qingdao Meteorological Bureau, Qingdao 266003, China

Among the seas of China, the Yellow Sea (YS) experiences sea fog most frequently, especially during the spring and summer seasons. Recent studies of sea fog modeling over YS have suggested that data assimilation is a key important issue for sea fog modeling, because simulation result is significantly sensitive to initial conditions. In this talk, a heavy sea fog over YS occurred from 6 to 7 March 2006 is carefully studied by using Weather Research and Forecasting (WRF) model. The evolution of sea fog area is demonstrated by the Multi-functional Transport Satellite (MTSAT)-1R visible imagery and infrared data using dual channel difference method. A cycling 3DVAR scheme with 12-h assimilation window is designed and employed to generate the initial conditions for this sea fog simulation. The result shows that the simulated sea fog area is greatly improved compared to the result without cycling 3DVAR. Additionally, the initial conditions with cycling 3DVAR-WRF are also used to force the Regional Atmospheric Modeling System (RAMS) model to simulate this sea fog case. We find that the simulated sea fog coverage is much better than the result with RAMS original isentropic analysis.