Improving numerical simulation of typhoon LEKIMA(2019) through assimilating ATMS radiance data

Lei Zhang and Baode Chen
Shanghai Typhoon Institute of China Met Administration, Shanghai, China (lzhangsea@163.com)

Lacking of high-resolution observations over oceans is one of the major problems for the numerical simulation of the tropical cyclones (TC), especially for the tropical cyclone inner-core structure's simulation. Satellite observations plays an important role in improving the forecast skills of numerical weather prediction (NWP) systems. Many studies have suggested that the assimilation of satellite radiance data can substantially improve the numerical weather forecast skills for global model. However, the performance of satellite radiance data assimilation in limited-area modeling systems is still controversial.

This study attempts to investigate the impact of assimilation of the Advanced Technology Microwave Sounder (ATMS) satellite radiances data and its role to improve the model initial condition and forecast of typhoon LEKIMA(2019) using a regional mesoscale model. In this study, detailed analysis of the data impact will be presented, also the results from different data assimilation methods and different data usage schemes will be discussed.