

4a.3 Assessing the Impact of Profiler and Surface Data on Fog Forecast Using WRF-3DVAR: A case study on a dense fog event over North China

Huiqin Hu, *Peking University, China*, Juanzhen Sun, *National Center for Atmospheric Research*, and Qinghong Zhang, *Peking University, China*

As fog is high-impact weather, there is a great need for its accurate prediction. Since fog forecast is very sensitive to initial conditions, how to make the full use of observations to improve the model initial conditions is one of the main concerns for accurate fog prediction. Wind profiler provides high-frequency wind information at different vertical levels. Automated Weather Stations (AWS) include surface information of temperature, humidity, horizontal wind and pressure with high temporal and spatial resolutions. Effective assimilation of these two types of observations is very important for improving the skill of operational forecast of fog. This study focuses on exploring the impact of wind profiler and AWS on fog prediction and the methodology for effectively assimilating these two types of observations using a dense fog event over North China on 21 February 2007. WRF-3DVAR is adopted to examine the impact of the different observation types, different densities and distributions of each observation type, and the cycling assimilation-forecast strategy on fog forecast through observing system simulation experiments (OSSE). Our preliminary results demonstrated that the assimilation of wind profiler and AWS had obviously positive impact on fog forecast for this case, especially when cycling assimilation-forecast strategy is used. Some more results and the physical explanation will be presented in the conference.