Geophysical Research Abstracts
Vol. 14, EGU2012-1525, 2012
EGU General Assembly 2012

The application of CNOP in the target observations for a winter storm in the middle-lower branches of Yangtze River

S. Peng
China (speng@scsio.ac.cn)

In order to improve the numerical prediction of winter storms in the middle-lower branches of Yangtze River, a targeting observation experiment for a winter storm case (a high-impact weather event) is presented in this paper using the conditional nonlinear optimal perturbation (CNOP) method. A set of observing system simulation experiments (OSSEs) is performed to evaluate the feasibility of the method in determining the sensitivity area. The results show that the sensitivity area corresponding to the high-impact weather event is effectively identified by the CNOP method. By improving the quality of the initial conditions in the sensitivity area, the 24-h accumulated rainfall prediction errors and total energy prediction errors in the verification region are significantly reduced compared to the "truth". Further analyses reveal that the improvements of the initial conditions (such as the water vapor flux and the low-level cold air activities) in the sensitivity area can not only well describe the initial structures of the high-impact weather system but also more accurately reproduce the temporal evolution features of the weather system, thus resulting in the decrease of the prediction errors in the verification region. The results indicate that it is feasible to use CNOP method in the study or practice of the targeting observations for high-impact weather events in the middle-lower branches of Yangtze River.