

## **Study on Impact of Regional Uncertainties of the Initial State upon Numerical Forecast of Mesoscale Low on Meiyu Front**

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Present study is related to the key idea underlying targeted observations of the initial state for numerical forecast of mesoscale low on Meiyu front, which is called in China, Baiu in Japan and Changma in Korea and is the main synoptic system that brings rainfall to those countries during summer monsoon season every year. Mesoscale low on Meiyu front is one of important mesoscale heavy rainfall systems. In this paper, we focused on the effect of regional uncertainties of the initial state upon numerical forecast of mesoscale low on Meiyu front. The estimate of initial uncertainties is obtained by the differences between the NCEP and T106 reanalysis data. Control experiment is performed with NCEP data in whole model region. The impact of regional initial uncertainties is studied by a change of initial data from NCEP to T106 reanalysis first in whole model region, and then inside or outside the selected regions.

Results show that regional uncertainties of the initial state have important impact on the numerical forecast error. Some improvement of numerical forecast may be obtained by improving the quality of initial state in certain region. However, this kind of effect is complex in that it is associated with weather pattern, individual case and the interaction between uncertainties of different region. The regional uncertainties of the initial state, which have important impact on numerical prediction of mesoscale low on Meiyu front, should locate on and in the vicinity of Meiyu front zone. Probably, the wind field plays an important role and the better depiction of low-level wind shear and jet could result in the improvement of numerical forecast of mesoscale low on Meiyu front.

Keywords: Targeted Observations; Regional Uncertainties of the Initial State; Numerical Forecast; Mesoscale Low; Meiyu front

### **References**

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