

# Precipitation Verification of the MM5 Ensemble Forecast

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## ABSTRACT

This study presents precipitation verification, in the Taiwan area, for a real-time MM5 ensemble forecast system during the 2000 and 2001 Mei-yu seasons. The forecast system consists of 6 MM5 models with different physics settings that are separately run by 4 universities (NTU, NCU, NTNU, CCU) and 2 government institutes (CWB, CAA) in Taiwan.

It is found that the GR model outperformed the other 5 members. Therefore, it is strongly recommended that MM5 simulations in the Taiwan area during Mei-yu seasons should consider using Grell cumulus scheme and Resiner I microphysics process (the GR model). Generally speaking, the score of precipitation forecast from ensemble mean is the second or the third highest within all the members.

In addition to the ensemble mean, we also use 2 weighting methods to produce ensemble precipitation forecasts. In ensemble weight1, the weighting of each ensemble member for computing ensemble rainfall at 12-24 and 24-36 hours is determined according to the performance of its 0-12 h rainfall forecast. Ensemble weight2 utilizes the ETS score of rainfall forecast of each member in 2000 to obtain its weighting for ensemble rainfall forecast in 2001. The result shows that the 2 ensemble methods help increase the accuracy of ensemble precipitation forecasts. They both in general outperformed the ensemble mean and each single member.

**Key words :** MM5, Ensemble forecast, Precipitation verification