Abstract Details

AOGS 1st Annual Meeting > Ocean and Atmospheres > MM5 ENSEMBLE PRECIPITATION FC IN THE TAIWAN AREA FOR THREE MEI-YU SEASONS >

Corresponding Author : Prof. Fang-Ching Chien (jfj@cc.ntnu.edu.tw)

Organization: National Taiwan Normal University

Category: Ocean and Atmospheres

Paper ID: 57-OOA-A1318

Title: MM5 ENSEMBLE PRECIPITATION FORECASTS IN THE TAIWAN AREA F THREE MEI-YU SEASONS

Abstract:

This study presents precipitation verification of individual members a ensemble means in the Taiwan area for a real-time mesoscale ensem prediction system, during the 2000, 2001, and 2002 early-summer convective (Mei-yu) seasons. The ensemble system, using the fifth-generation Pennsylvania State University-NCAR Mesoscale Model (MM forecast model, consists of six members, each run with a different combination of moisture physics schemes. Precipitation forecasts with 15-km domain were verified against the observational data from the gauge stations on the island. In general the GR model, which utilized Grell cumulus parameterization scheme (CPS) and the Reisner I micro scheme, had the best forecast skill among the six members. This phy combination is therefore recommended for MM5 rainfall simulations in Taiwan area during the Mei-yu season. The Kain-Fritsch CPS dominate rainfall process and generally underforecast rainfall at high rainfall thresholds. The Betts-Miller CPS overforecast rainfall, especially at hig thresholds. The equitable threat scores of the ensemble mean were n highest, but were in general above the average among all members. other methods were examined for determining an ensemble mean (or weighted mean) rainfall forecast. WT1, which calculated rainfall by giv each member weightings determined by model performance of the m in rainfall forecast of the A period (0-12 h), generally outperformed th ensemble mean and every single member in the B period (12-24 h). T advantage did not extend to the C period (24-36 h), because the rela model performance between the C and the A periods became weaker. in which weightings were determined according to the performance of member in rainfall forecasts of the preceding year, performed slightly than WT1 in the B period while it did better than WT1 in the C period. Another method that utilized the multiple linear regression technique calculate weightings also showed positive impact on improving the ra forecast at medium to heavy precipitation thresholds. Unfortunately, i weightings appeared inadequate for another year's rainfall forecasts probability matching method helped reduce the bias problem inherent ensemble mean.

Presentation Mode: