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Evaluation of Probabilistic Precipitation Forecast Using TIGGE data over Huaihe Basin

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The precipitation forecast of three ensemble prediction systems (ECMWF, NCEP and CMA) from the TIGGE-CMA archiving center (TIGGE, THORPEX Interactive Grand Global Ensemble) were assessed against observations of 19 stations located in the Dapoling-Wangjiaba sub-catchment of Huaihe basin. It covers a period of 37-days beginning on July 1st, 2008. The Threat Score (TS), the Brier Score and a percentile method are employed to evaluate the performance of the three ensemble prediction systems (EPSs) and their grand ensemble. The temporal and spatial distribution of percentile precipitation of the heavy rain events occurred during 22-23 July 2008 are also investigated.

The verifications of TS and Brier Scores show that grand ensemble usually gives the better results than the ensemble mean of any of the three EPSs. The verification of Brier Scores indicates that some members of the three EPSs captured the extreme event even with a lead time of 10 days. However, such probabilities displayed with the Brier Scores were greatly weakened by the ensemble mean. Grand ensemble increased the probabilistic skill of heavy precipitation prediction. Whereas the simulation tends to have more underestimate in comparison to the observation as the lead days range from 1 to 10. That means the probability forecasts are more skillful with a grand ensemble in comparison to a single EPS. The heavy rain event analyzing indicates that the skills of probabilistic prediction with the grand ensemble could be improved not only in space distribution of precipitation, but also in the intensity.

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