Verification of Quantitative Precipitation Guidance Forecast (QPGF) Based on Fine-mesh and Rain gauge Stations in China

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The fine-mesh quantitative precipitation guidance forecast(QPGF) is to meet the demands of national preventing and mitigating disasters, major social activities, and fine weather services. According to fine-mesh precipitation guidance forecast from May 2017 to August 2017 released by National Meteorological Center(NMC), the fine-mesh QPGF at a resolution of 0.05[U+F0B0]*0.05[U+F0B0] has been verified against two datasets. One dataset is by using the Quantitative Precipitation Estimation(QPE) based on merging multiple data in China, the other dataset is daily rain gauge observation dataset over 50000 spots which released by National Meteorological Information Center (NMIC). The verification has be done against two datasets using Threat Score (TS), Equitable Threat Score (ETS), Peirce Skill Score (PSS) and Confidence intervals (Bootstrap), Mean error (ME), Mean absolute error (MAE), Root mean square error (RMSE) ,etc, which followed standardized verification of NWP products released by WMO.

The precipitation was divided into five grades with the consistency of operational standard at the National Meteorological Center (NMC) as no rain, little rain, moderate rain ,heavy rain and torrential rain with thresholds of 0mm,0.1mm (including), 9.9mm (including), 24.9mm (including) and 49.9mm (including) respectively. The results show that little rain in 24h forecasting, the TS score in rain gauge stations is higher than that in the fine-mesh spots. False alarm rate and missing alarm rate are similar in both datasets. The TS score descends with the rainfall increasing. The probably main reason is that the verification based on fine-mesh is effected by the accuracy of the QPE, which are not as real as it on the rain gauges. Meanwhile, the inspection methods contributed to this result.