Verification of quantitative precipitation forecasts from operational ensemble prediction systems over India

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ABSTRACT. In this paper the performance of four operational Ensemble Prediction System (EPS) of the European Centre for Medium-Range Weather Forecasts (ECMWF), the UK Met Office (UKMO), the US National Centers for Environmental Prediction (NCEP) and the Japan Meteorological Agency (JMA) available from “The Observing System Research and Predictability Experiment” (THORPEX) Interactive Grand Global Ensemble (TIGGE) database are studied over India in short to medium range time scale. The rainfall prediction skill of these EPS is examined in both deterministic and probabilistic senses. Results suggest that the ensemble mean forecast of all four EPS could reproduce the seasonal mean heavy rainfall belts along the west coast, over north east and central India reasonably well. The active rainfall (positive anomaly) and weak or break condition of rainfall (negative anomaly) activity is well captured by all EPS ensemble mean forecasts. The ensemble mean rainfall forecast from ECMWF EPS generally has the highest skill, followed by UKMO, NCEP and JMA EPS. For the probability forecast, the NCEP and UKMO EPS appeared to have more or less similar skill when measured using BSS, RPSS and ROC over India in the medium range.

Key words – THORPEX, TIGGE, EPS, Indian monsoon, Ensemble prediction system, Comparison, Rainfall prediction skill.