

Value-added quantitative medium-range rainfall forecasts for the BIMSTEC region

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Abstract: Daily operational forecasts from the global models run at the National Centre for Medium Range Weather Forecasting (NCMRWF), India were assessed for their skill during the southwest monsoon for member countries of the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC). The rainfall forecasts from two models, NCMRWF Global Forecast System (NGFS) and NCMRWF Unified Model (NCUM), were used to carry out the verification study for July and August 2013 and 2014. The skills were analysed in terms of equitable threat score (ETS), Hansen-Kuiper skill score (HKS) and the economic value for various rainfall thresholds. The ETS had a positive value for all of the thresholds up to the Day 10 forecast for both years. The HKS and economic value for binary forecast of Yes rain (prediction that rainfall event will occur) suggest that the model has significant positive skills. Deterministic forecast for four rainfall thresholds show negative skills, suggesting that false alarms increase as forecasts are made for smaller rainfall thresholds. To improve the skill scores, forecasted data were processed using simple bias correction, relative co-efficient of variance (Rvar) method and the best easy systematic error (BESE) correction method. Correlation of the processed forecasts with model forecasts suggests an improvement using the bias correction and Rvar method but not using the BESE method. Significant improvement in the HKS and economic value of processed forecasts using the bias correction method has been noticed over most parts of the BIMSTEC region, except for the Western Ghats.