

A verification of spatio-temporal monsoon rainfall variability across Indian region using NWP model output

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Abstract

Evaluation of weather forecasting systems and assessment of existing verification procedures are essential to achieve desirable seamless rainfall prediction. Prediction of wet and dry spells is quite useful in agriculture and hydrology but very few attempts have been made so far to resolve the issue using numerical model output. Performance of five state-of-the-art global atmospheric general circulation models and their ensemble mean has been examined in predicting the parameters of wet and dry spells (WSs/DSs) during monsoon period of 2008–2011 over seven subzones of the Indian region. The number of WSs across the region is found to be underestimated, while total duration and rainfall amount of WSs (DSs) overestimated (underestimated). Start of the first WS is late and ends of the last WS early in the model forecast. More uncertainty is noticed in the prediction of DS rainfall and its duration than that of the WS. The percentage area of India under wet conditions (rainfall amount over each grid is more than its daily mean monsoon rainfall) and rainwater over the wet area is overestimated by about 59 and 32 %, respectively, in all models