

Multi-Model Ensemble (MME) prediction of rainfall using canonical variates during monsoon seasons in India

Ashok Kumar, A. K. Mitra, A. K. Bohra, G.R. Iyengar and V. R. Durai

National Centre for Medium Range Weather Forecasting (NCMRWF)

A-50, Institute Area, Sec- 62, Noida, UP – 201 307, India

India Meteorological Department, New Delhi- 110 003, India

(Received 8 June 2010, Modified 11 April 2012)

E mails: ashok@ncmrwf.gov.in; akm@ncmrwf.gov.in; gopal@ncmrwf.gov.in, durai.imd@gmail.com

ABSTRACT. The prediction of Asian summer monsoon rainfall at various space-time scales is still a difficult task. Compared to mid-latitudes, proportional improvement in the skill in prediction of monsoon rainfall in medium range had been less in recent years. Global models and data assimilation techniques are being further improved for monsoon and tropics. However, multi-model ensemble (MME) forecasting is gaining popularity, as it has the potential to provide more information for practical forecasting in term of making a consensus forecast and reducing the model uncertainties. As major centres are exchanging the model output in near real-time, MME is a viable inexpensive way for enhancing the forecast skill. During monsoon 2009, apart from simple ensemble mean, the MME predictions of large-scale monsoon precipitation in medium range was carried out NCMRWF/MoES, India. The canonical variates techniques is used for it. The skill scores are computed, which indicate that multi-model ensemble forecast has higher skill than individual model forecasts and also higher than the simple ensemble mean in general. Although the skill of the global models falls beyond day-3, but a significant improvement could be seen by employing the MME technique upto day-5.

Key words- Monsoo-rainfall global-models, Multi-model-ensemble (MME), Canonical-variates.