

Performance of high resolution ensemble prediction system in capturing extreme events over
Indian region

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The monsoon seasons of 2018 and 2019 experience number of extremely heavy rainfall events over Indian region. Among all these, the state of Kerala received unprecedented rainfall during the month of August in consecutive two years. The excessive rain of August led to devastating flood over the state causing huge loss to public life and properties. Evaluation of forecast from state of the art ensemble prediction systems of Indian GFS, NCUM and ECMWF have been carried out. While the deterministic forecast of the models did capture the events with shorter lead time, the ensemble prediction systems show capability of predicting the higher probability with longer lead. Observational evidence shows that the heavy rainfall over Kerala is mostly contributed by the shallow warm cloud and not the manifestation of deep convection. The models could capture the shallow nature of convection. However this analyses demonstrate that way forward for predicting extreme events with longer lead is the ensemble prediction system. This study also discusses the possible role of large scale atmospheric circulation in triggering the extremely heavy rainfall episodes over Kerala.