



Asian summer monsoon seasonal prediction skill in the Met Office GloSea5 model and its dependence on mean state biases

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Predicting the circulation and precipitation features of the Asian monsoon on time scales of weeks to the season ahead remains a challenge for prediction centres. Current state-of-the-art models retain large biases, particularly dryness over India, which evolve rapidly from initialization and persist into centennial length climate integrations, illustrating the seamless nature of the monsoon problem.

We present initial results from our Ministry of Earth Sciences Indian Monsoon Mission collaboration project to assess and improve weekly-to-seasonal forecasts in the Met Office Unified Model (MetUM) coupled initialized Global Seasonal Prediction System (GloSea5). Using a 14-year hindcast ensemble of integrations in which atmosphere, ocean and sea-ice components are initialized from May start dates, we assess the monsoon seasonal prediction skill and global mean state biases of GloSea5. Initial May and June biases include a lack of precipitation over the Indian peninsula, and a weakened monsoon flow, and these give way to a more robust pattern of excess precipitation in the western north Pacific, lack of precipitation over the Maritime Continent, excess westerlies across the Indian peninsula and Indochina, and cool SSTs in the eastern equatorial Indian Ocean and western north Pacific in July and August. Despite these mean state biases, the interannual correlation of predicted JJA all India rainfall from 1998 to 2009 with TRMM is fairly high at 0.68. Future work will focus on the prospects for further improving this skill with bias correction techniques.