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Assessment of prediction skill for sub-seasonal rainfall variability over Brazil in ensemble-based prediction systems

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Accurate forecasting of sub-seasonal to seasonal (S2S) variations in rainfall can help mitigate hydrological hazards throughout the tropics. It is therefore essential to analyse the skill of contemporary S2S forecasts systems and investigate whether there are windows of opportunity within which these systems may be more skilful, based on the regional- or large-scale atmospheric circulation. As part of DUBSTEP (Diagnosing and Understanding Brazilian Subseasonal Tropical and Extratropical Processes) project, we examine prediction skill for sub-seasonal rainfall variability over Brazil and surrounding regions in all seasons and analyse conditional skill during the El Niño-Southern Oscillation (ENSO) and Madden-Julian Oscillation (MJO) during the austral summer season (December-January-February). We evaluate hindcasts from three global models; the Met Office (UKMO) Global Seasonal Forecasting System (GloSea5) Global Configuration 2.0 (GC2), the National Centers for Environmental Prediction (NCEP) Climate Forecast System (CFSv2) and the European Centre for Medium Range Weather Forecasts (ECMWF) Integrated Forecasting System (IFS), for the common period of 1999-2010, against observed precipitation estimates from the Global Precipitation Climatology Project (GPCP). Our results highlight possible model deficiencies over the wettest regions and potentially weaker ENSO teleconnections than observed.

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