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Title:	Evaluation of Potential Predictability of Indian Summer Monsoon Rainfall in ECMWF's Fifth-Generation Seasonal Forecast System (SEAS5)
Authors:	Attada, Raju (/jspui/browse?type=author&value=Attada%2C+Raju)
Keywords:	Potential Predictability Fifth-Generation Seasonal Forecast System (SEAS5)
Issue Date:	2022
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Citation:	Pure and Applied Geophysics, 179(12), 4639-4655
Abstract:	Forecasts of Indian summer monsoon rainfall (ISMR: June to September, JJAS) are issued prior to the onset of rainy season. Thus, an assessment of both potential and actual forecast skills for Indian summer monsoon rainfall should be based on a longer lead time. Based upon the European Center for Medium Range Weather Forecasts (ECMWF) fifth-generation seasonal forecast system (SEAS5), two lead times are considered: one with an April initial condition (IC) and the other with a May IC from 1981 through 2019 (39 years). Our results show that SEAS5 successfully represents the spatial patterns and variations in the mean JJAS precipitation in the ISMR region compared with the observed rainfall patterns. However, there seem to be significant discrepancies in the simulation of mean precipitation, particularly over topographical regions. SEAS5 is capable of reproducing the observed annual precipitation cycle in India. Moreover, the model is able to better predict the realistic ISMR teleconnections with El Niño-Southern Oscillation and the Indian Ocean Dipole at May ICs. The resulting forecasts across the region are characterized by moderate significant potential and actual skill in both leads, and it decreases as lead time increases. The predictability of SEAS5 is directly related to its ability to correctly predict the forcing of the tropical sea surface temperature and its teleconnections. In spite of this, both lead forecasts have a significant number of unpredicted events and false alarms. This study highlights model discrepancies, shows poor performance in predicting ISMR, and highlights the need for further research on this crucial issue of social relevance.
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