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Evaluation of East Asia Summer Climate in NCEP Climate Forecast System Version 2 (CFSv2) Retrospective Forecast

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The East Asia summer climate in NCEP Climate Forecast System Version 2 (CFSv2) Retrospective Forecast is evaluated in this study. The simulations of summer (JJA) precipitation, atmospheric circulation factors such as geopotential height at 500hPa and wind field at 850hPa, sea surface temperature and East Asia Monsoon Index during 1982-2009 by CFSv2 are employed to compare with observations and reanalysis. This analysis focuses on the ability of the system to predict inter-annual variation. Precipitation is the most concerned factor in seasonal forecast. However, the forecast system shows low capability of predicting the inter-annual variation of summer precipitation over East Asia. For the atmospheric circulation factors, the system shows better performance than precipitation. Over most of the tropical area, CFSv2 could present reasonable simulation of inter-annual variation of these factors in lead month 0 and 1. The system shows high performance in forecast of sea surface temperature. In lead month 0, most of the areas except some regions around the Antarctic, are with significant correlation between CFSv2 and observation. There is still significant correlation over the North Pacific, North Indian Ocean, equatorial and southwest Pacific when the lead month is 7. And CFSv2 also show high capability of East Asia Summer Monsoon index forecast. In forecast of all 0-7 month lead, the predicted index is significantly correlated to that estimated using reanalysis. These results show that although CFSv2 show low capability of predicting summer precipitation, it has potentiality in seasonal forecast while combine with statistical forecast approaches.