Evaluation of WRF-CFSv2 seasonal climate forecasting model over Thailand: the 2016 real-time seasonal forecasts

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The Weather and Research Forecast (WRF) model was used for dynamically downscaling the NCEP's operational seasonal forecast model Climate Forecast System version 2 (CFSv2) to evaluate the 2016 seasonal climate forecasts over Thailand. The model configuration, physical parameterizations, and performance results are described in this work. The three sets (March-August, April-September, and May-October) of WRF-CFSv2 real-time seasonal forecast results were analyzed. The WRF-CFSv2 model performance is evaluated against near surface observations for precipitation, temperature, relative humidity and wind field (both speed and direction) available from Thai Meteorological Department (TMD). The statistical measures considered are correlation coefficient, mean bias (MB) and root mean square error (RMSE). It is found that the high-resolution downscaled datasets from WRF-CFSv2 seasonal climate model bring significant improvement in the seasonal temperature forecasts compared to the raw CFSv2 global prediction, especially in the northern Thailand where the geography is the most complex terrain. On average, WRF-CFSv2 downscaling forecasts reduced wet bias and errors of seasonal mean precipitation from CFSv2 prediction.