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Evaluation of Seasonal Simulation Results Using KIM (Korean Integrated Model)

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Korea Institute of Atmospheric Prediction Systems (KIAPS) started to develop a new global atmospheric model in 2011 and launched semi-real time forecast since July 2015 named the Korean Integrated Model (KIM). Various experiments are being performed using KIM to examine the characteristics of the model and evaluate its performance. In this study, we design two seasonal simulations using the latest version of KIM (version 3.1) to evaluate the performance of the model and to check its stability for long-term integration. Five member ensemble runs for each experiment are performed with initial data at 24 h interval starting from 00 UTC 1 May 2017 for summer season and from 00 UTC 1 November 2016 for winter season. Surface boundary condition such as sea surface temperature was updated every 24 hours using Global Forecast System (GFS) analysis data. For evaluation, we compare the atmospheric variables against Integrated Forecasting System (IFS) analysis and precipitation for Tropical Rainfall Measuring Mission (TRMM) Multisatellite Precipitation Analysis (TMPA). In case of atmospheric variables, large-scale seasonal distribution and structure are similar to those of IFS. However, warm bias in low-level troposphere over the Tropics leads to the change of Hadley cell. For 2m temperature, there is relatively large bias over the Northern Hemisphere high-latitudes region, which might be associated with sea-ice thickness. Precipitation shows comparable spatial distribution with TMPA, but overestimation of total amount, especially over the ocean. As a result of the evaluation, we are able to understand characteristics of our model and find out the direction of model improvement.