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Development of extended medium-range reforecasting system based on the Korean Integrated Model (KIM)

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The Korean Integrated Model (KIM) is a global numerical weather prediction (NWP) system developed by the first phase project of the Korea Institute of Atmospheric Prediction Systems (KIAPS) and has been used as the operational NWP system at the Korea Meteorological Administration (KMA) since April 2020. The second phase project of KIAPS aims at developing a next-generation NWP system to seamlessly predict from very short-range to extended medium-range. To improve the extended medium-range forecast, one of the main goals of KIAPS is to develop the ensemble prediction system with coupling to land, ocean, and sea ice. The production of extended medium-range reforecast data is necessary to understand the climatological characteristics and model biases of KIM. KIAPS developed an initial version of reforecasting system based on the KIM atmospheric model. The system has a spatial resolution of 50 km (NE090NP3) and consists of 91 vertical layers. We produce reforecast of the cold season cases for 20 years (from 2001 to 2020) and perform the diagnosis and verification of reforecast data. A suite of sensitivity experiments are also performed to investigate the impact of initial perturbations on the ensemble prediction system.