

양방향 등지격자 기법을 활용한 ICON 모델의 겨울철 계절예측

김가은, 오재호*

부경대학교

Seasonal Prediction using ICON Model Applying Two-way Nesting Method

Gaeun Kim and Jaiho Oh*

Department of Environmental and Atmospheric Sciences, Pukyong National University

The most common technique to produce a detailed climate for selected regions is using Regional Climate Models (RCMs). A regional model is initialized by global model output and forced at its lateral boundaries. A number of researches have been showed that there is a limitation when applying RCMs such as the necessity of additional interpolation, inconsistency, and getting different results for each location and size of the subdomain. However, by using two-way nesting method, these problems can be averted. In this study, the seasonal prediction for December-January-February (DJF) with a horizontal resolution of 40-km for the global domain, and 10-km for the nested domain using two-way nesting method is conducted. The model used for this study is ICOSahedral Non-hydrostatic (ICON) model which uses non-hydrostatic dynamical core on an icosahedral-triangular grid. It represents the globe on an icosahedral sphere so that the globe can be divided into the same size of triangles and each triangle can include an equivalent amount of energy. ICON model support two-way nesting with capability for multiple nests per nesting levels to replace additional process for downscaling and full hybrid MPI and OpenMP parallelization. The global domain with a horizontal resolution of 40-km and two pre-set child domains with a horizontal resolution of 20-km and 10-km for child domain are set. All domains have 90 levels of vertical resolution.

* Correspondence to : jhoh@pknu.ac.kr