Development and preliminary results of a global ocean data assimilation system for the NEMO-SI3 model

KIAPS (Korea Institute of Atmospheric Prediction Systems) has developed a global ocean data assimilation system based on KMA (Korea Meteological Administration) GODAPS (Global Ocean Data Assimilation and Prediction System). The ocean data assimilation (DA) system is based on NEMOVAR, and uses a 3-Dimension Variational data assimilation – First Guess at Appropriate Time DA method. Our actual first goal is to develop a weakly-coupled DA system that combines Korean Integrated Model (KIM)'s existing atmosphere/land DA system with a separate DA system for the NEMO (Nucleus for European Modelling of the Ocean) model that has been chosen for use within the KIM coupled model.

In order to make the system suitable for weakly-coupled DA with KIM, we have developed the ocean DA analysis window cycle from 24hours to 6hours to match the atmospheric DA cycling strategy for the weakly-coupled atmosphere-ocean DA system. Additionally, the ocean model has been upgraded from the NEMO version 3.6 to 4.0, and the sea ice model has been changed from CICE (Los Alamos Sea Ice Model) to SI3 (Sea Ice modelling Integrated Initiative). In this study, we will compare the performance of analysis and prediction fields of the new system, and to assess the impact of data assimilation in ocean-sea ice models.

Hyeyeong Jang, Eunbyeol Ko, Jiyoun Kim, Yonghwan Kwon, Adam Clayton, In-Hyuk Kwon

Author affiliations: KIAPS(Korea Institute of Atmospheric Prediction Systems)