

Experimental Seasonal Climate Prediction Using CFES

*Nobumasa Komori¹, Bunmei Taguchi^{1,2}, Akira Kuwano-Yoshida^{1,3}, Takeshi Doi¹, Masami Nonaka¹

1. Japan Agency for Marine-Earth Science and Technology, 2. Research Center for Advanced Science and Technology, The University of Tokyo, 3. Disaster Prevention Research Institute, Kyoto University

An experimental seasonal climate prediction system has been developed based on the Coupled atmosphere-ocean general circulation model for the Earth Simulator (CFES). Following the well-established system based on the SINTEX-F model, initial conditions for seasonal climate prediction are constructed by strongly nudging sea surface temperature (SST) to observed one.

The atmospheric component of CFES has the resolution of T119 in the horizontal and 48 sigma-layers in the vertical with the top level placed at about 3 hPa. The oceanic component has a resolution of 1/2 degree in the directions of both longitude and latitude and 54 levels in the vertical. They are coupled every hour.

At this stage, 6-member ensemble 6-month predictions from the 1st day of March, June, September, and December have been conducted from 1983 through 2017, after 32-years of coupled spin-up integration with SST-nudging to the observed climatology. The experimental system exhibits skill in predicting SST variability in the tropical Pacific. Detailed analysis of the prediction skill, including comparison with the SINTEX-F system, will be shown in the presentation.

Keywords: experimental seasonal climate prediction, global coupled atmosphere-ocean GCM, atmosphere-ocean interaction, sea-ice variability