

Resolution dependence on tropical intra-seasonal oscillation in an aqua-planet global non-hydrostatic model

TANIGUCHI, Hiroshi^{1*}, WANG, Bin¹, KIKUCHI, Kazuyoshi¹

¹International Pacific Research Center, University of Hawaii, Honolulu, U.S.A.

We conducted an aqua-planet experiment with a time-independent zonally asymmetric Sea surface temperature (SST) of zonal wave number 1 component by the global non-hydrostatic model, NICAM in order to understand tropical intra-seasonal oscillation and their associated nonlinear multi-scale interactions of organized tropical convection.

The integration time of each experiment is 1-year. A preliminary result for low-resolution (224-km, 112-km, 56-km, and 28-km) experiment with Arakawa-Schubert cumulus parameterization scheme shows that an westerly component of low-level wind appears over the center of convection area (the warmest SST area) in climatology more clearly for the case with higher resolution.

A comparison to zonally symmetric SST case with 224-km resolution reveals that there exists less eastward propagation of convection over the lower SST area. A detail of resolution dependence of convection on the other cumulus parameterization schemes (Tiedtke scheme and Chikira scheme) will be shown on the presentation.

Keywords: Tropical intra-seasonal oscillation, Global non-hydrostatic atmospheric model, Cumulus parameterization