



## **Impact of local sea surface temperature on changes of summer precipitation components over Northeast Asia in mid-1990s**

Eun-Chul Chang (1), Sang-Wook Yeh (2), and Kei Yoshimura (3)

(1) Department of Atmospheric Science, Kongju National University, Gongju, South Korea (eunchul.chang@gmail.com), (2) Department of Marine Sciences and Convergent Technology, College of Science and Technology, Hanyang University, Ansan, South Korea, (3) Atmosphere and Ocean Research Institute, University of Tokyo, Kashiwa, Japan

In this study, the new global atmospheric analysis dataset (DA126) which is produced by the global and regional integrated model system (GRIMs) global model program (GMP) is used to identify changes of the summer precipitation components in mid-1990s over Northeast Asia. The convective rain ratio (CRR) is used as the index to find changes of the precipitation component, which is the proportion of convective precipitation to the total precipitation. The CRR shows increasing trend over Northeast Asia where includes the Korea-Japan region for recent 30-years, whereas precipitation anomaly does not have a distinct trend over this region. The increased CRR shows a significant relationship with the increased local sea surface temperature (SST) variability. To investigate effects of the local SST on the summer precipitation components over Northeast Asia, two experiments are performed by utilizing the GRIMs regional model program (RMP). The CNTL experiment is forced by the observed SST whereas the CLIM run is forced by the climatological SST. Lateral boundary condition for two regional model experiments is provided by the GRIMs GMP run forced by the historical SSTs over tropical region to exclude mid-latitude SST effect. The SST warming increases the convective precipitation through the increased convective available potential energy and does not have large effects on the large-scale rainfall component. Consequently, the total amount of the precipitation and the CRR are increased by the local SST warming over Northeast Asia.