

Interannual Variability of the East Asian Monsoon in June, July, and August in Objective Analysis and Global Nonhydrostatic Simulations

Tomoe NASUNO¹, Yoshiyuki KAJIKAWA³, Chihiro KODAMA¹, Hisayuki KUBOTA¹, Yohei YAMADA¹, Akira T. NODA, and Masaki SATOH^{2, 1}

¹ *Japan Agency for Marine-Earth Science and Technology, Yokohama, Japan*

² *Atmosphere and Ocean Research Institute, the University of Tokyo, Kashiwa, Japan*

³ *RIKEN Advanced Institute for Computational Science, Kobe, Japan*

The climatology and interannual variabilities of the East Asian summer monsoon are examined based on monthly mean fields during boreal summer (June, July, and August). The Japanese 55-year Reanalysis (JRA-55) and Atmospheric Models Intercomparison Project (AMIP)-type simulation using a global nonhydrostatic model, NICAM (Kodama et al. 2015) are analyzed with Western North Pacific Monsoon Index (WNPMT, Wang et al. 2001) and North Pacific Subtropical High index (NPSH, Kawatani et al. 2008). The 30-year mean WNPMT in NICAM simulation is close to that in JRA-55 in June and July, but underpredicted for August, as a result of a northward bias of the westerly axis associated with the monsoon trough. The NPSH in the model extended northward and westward in July and August than that in JRA-55. Coherence of interannual variabilities in June, July and August is better for WNPMT than in that in NPSH, suggesting different source of variability. The standard deviation of the interannual variability in NPSH is smaller in June than in July and August, consistent with Kawatani et al (2008)'s finding. In the 30-year time series a decadal scale variation is found in June, which is not detected in July and August. The effects of these variabilities on the tropical cyclone activity will be also discussed.

Key words: Asian summer monsoon, Global high-resolution simulation

References

- Kawatani, Y., K. Ninomiya, and T. Tokioka, 2008: *J. Meteor. Soc. Japan*, **86**, 505-530.
- Kodama, C., Yamada, Y., Noda, A. T., Kikuchi, K., Kajikawa, Y., Nasuno, T., Tomita, T., Yamaura, T., Takahashi, T. G., Hara, M., Kawatani, Y., Satoh, M., Sugi, M., 2015: *J. Meteor. Soc. Japan*, **93**, accepted.
- Wang B, R. Wu R, K. M. Lau, 2001: *J. Climate*, **14**, 4073–4090.