



Error growth of JMA one-month forecast projected on the MJO phase space

Yuiko Ichikawa and Masaru Inatsu

Hokkaido University, Japan (iyui@mail.sci.hokudai.ac.jp)

This study investigates bias and initial-value dependency of submonthly forecast on the Madden Julian Oscillation (MJO), in terms of the MJO state and its time evolution on the phase space, by using the Japan Meteorological Agency (JMA) one-month forecast in 2008 to 2013. The root-mean-square error bias projected onto the MJO phase space is large when MJO-related convection is located over the maritime continent. In contrast, the bias is large with small MJO amplitude when MJO-related convection is located over the western Indian Ocean. Forecast-mean tendency shows inward and leftward bias anywhere and the results are related to the erroneous convection tendency in the western Indian Ocean growing by the forecast lead time. These results suggest the phase dependency of MJO forecast bias was emphasized due to systematic model bias that is not directly related to the MJO. The ensemble spread, say initial-value dependency, is approximately one-fifth of bias and the ensemble forecast expands isotropically in the MJO (158 words).