Japan Geoscience Union Meeting 2012
(May 20-25 2012 at Makuhari, Chiba, Japan)

AAS23-P11 Room:Convention Hall Time:May 22 17:15-18:30

Covariability between the Baiu Precipitation and Tropical Cyclone Activity through Large-Scale Atmospheric Circulations

YAMAURA, Tsuyoshi[1*], Tomohiko Tomita[2]

[1]Kumamoto University, [2]Kumamoto University, JAMSTEC/RIGC

Interannual variations of the Baiu precipitation and tropical cyclone (TC) activity in the western North Pacific (WNP) are linked to large-scale atmospheric circulations associated with the El Nino/Southern Oscillation (ENSO) and the Tropospheric Biennial Oscillation (TBO) of the Asian monsoon. This work examines covariability between the Baiu precipitation and the TC activity through the large-scale atmospheric circulations of the ENSO and the TBO.

In years when sea surface temperature (SST) anomalies are low in the eastern tropical Pacific with respect to the ENSO, the number of TCs increases around the Philippines in the Baiu season, June and July. On the other hand, in years of low SST anomalies in the eastern tropical Pacific related to the TBO, the strength of TCs is significantly enhanced to the southeast of Japan. Each of the two TC activities enhances a specific large-scale cyclonic circulation, which shifts the axis of monsoon westerlies and causes the anomalous Baiu precipitation. These modifications are dependent on the phase of the ENSO and the TBO. In years of high SST anomalies in the eastern tropical Pacific, the anomalous TC activity is small and sometimes has opposite impacts on the large-scale atmospheric circulations. Thus, the Baiu precipitation covaries with the TC activity through specific large-scale circulations, and the covariation is dependent on the phase of the ENSO and the TBO.

Keywords: Baiu, Tropical cyclone activity, the East Asian summer monsoon, ENSO, TBO