Cross-Equatorial Northerly Surge and Intraseasonal Oscillation of Precipitation in the Maritime Continent

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Cold surge in the northern South China Sea (hereafter CS) is pointed out to correlate to convective activity over the Maritime Continent (Compo et al. 1999, Chang et al. 2005). But occurrence of the surge in the equatorial region has not been explained. In this study, we defined "cross-equatorial northerly surge" (CENS) as the event which has northerly sea surface wind component over 5 m s^{-1} at the equator averaged between 105 and 125ºE using QuikSCAT data, and investigated pattern of occurrence and relationship with intraseasonal variation of precipitation.

CENS was extracted 37 times in 10 years between 2000-2009, and most of which were accompanied by not only CS but also westward-propagating tropical disturbance (Fig. 1, CENS with (without) tropical disturbances were called CS+EW (CS)). Intraseasonal variation of precipitation between 5 and 15ºS in 2008 was found to increase when CENS occurred (not shown). In addition, precipitation in CS+EW event was more abundant in the Maritime Continent region than that in CS event.

Keywords: winter monsoon; maritime continent; cold surge.

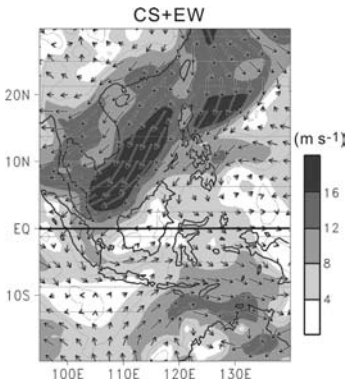

Figure 1. Composite of the wind and its velocity (contour) at 925 hPa for the top 5 event of CS+EW in the wind speed at the equator using JCDAS data.

References

[1] Compo, G. P., G. N. Kiladis, and P. J. Webster, *Q. J. R. Meteor. Soc.*, **125**, 29-54 (1999).

[2] Chang, C. P., P. A. Harr, and H. J. Chen, *Mon. Wea. Rev.*, **133**, 489-503 (2005).