Japan Geoscience Union Meeting 2013
(May 19-24 2013 at Makuhari, Chiba, Japan)

AHW02-P06 Room:Convention Hall Time:May 21 18:15-19:30

Recent Interdecadal Variations of Autumnal Precipitation in Vietnam

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In some parts of Southeast Asia, (e.g., central Vietnam), a large amount of rainfall occurs in boreal autumn to early winter (September-December: SOND). In the present study, we investigate interdecadal variations of rainfall in SOND in Vietnam and its vicinity for the period 1961-2010, based on rain gauge observational data obtained from the Southeast Asian countries. As a result, it is very obvious that rainfall have increased [decreased] to the south [north] of 17N along the coastal area of Vietnam. There are many stations with statistically significant decrease over the Red River Delta region (north of 20N; denoted as region A hereafter). In this region, SOND rainfall has decreased since late 1980s. In northern part of central Vietnam (17-20N; denoted as region B), the rainfall decrease has been observed since late 1990s. In southern part of central Vietnam (12-17N; denoted as region C), on the other hand, SOND rainfall has largely increased since late 1990s. From comparison of seasonal marches of rainfall over the 3 regions between 25-year averages of 1961-85 and 15-year averages of 1996-2010, we find that the amount of rainfall in region A has clearly decreased in August-October, indicating the recent earlier withdrawal of summer rainy season. In region B, rainfall has decreased during a whole rainy season in boreal autumn. In region C, on the other hand, the rainfall increase is very obvious and long-lasting during a whole period of August to December. Atmospheric circulation changes based on some gridded datasets suggest that recent stronger lower-tropospheric cyclonic circulation over the southern part of the South China Sea might be responsible for the recent increasing trend of rainfall over region C, though the significance of the atmospheric changes varies between the gridded datasets.

Keywords: climate variations, Vietnam, precipitation