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Interannual Variability of Water Origins Over Indochina Related to the Asian Monsoon

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Stable isotopes in precipitation are strongly influenced by the water vapor source and trajectory history and can be used to reconstruct the atmospheric circulation (Burnett et al., 2004). Water origins of daily precipitation over Indochina were estimated from 1979 to 2003 using colored moisture analysis (Yoshimura et al., 2004). Ichiyanagi et al. (2005) considered the transition of the water origins in Thailand. A new definition of the withdrawal date of the Asian monsoon was proposed that considers the transition of water origin from the Indian Ocean to the Pacific Ocean. The onset and withdrawal date and the length of monsoon season over Indochina from 1979 to 2003 are calculated depend on the transition of water origins. Mean onset and withdrawal dates for 25 years are 11 May and 19 September, respectively. Mean onset and withdrawal dates are almost same and one month earlier than former definition by using rainfall patterns (Wang and Ho, 2001). Mean length of monsoon season is approximately 130 days. Also, standard deviations of onset and withdrawal date are 13 days and 9 days, respectively. It shows that the interannual variability of onset date is larger than that for withdrawal date. The correlation between onset and withdrawal date is not significant. Also, the correlation between the length of monsoon season and onset date is much larger than that for withdrawal date. It suggests that the length of monsoon season over Indochina is mainly defined by the onset date of Asian monsoon. There are negative and no correlations between onset date and Southern Oscillation Index (SOI) in April and May, respectively. And also, there are negative correlations between withdrawal date and SOI in September.