

Recent changes in heavy precipitation occurrences along the eastern coast of the Indochina Peninsula

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Long-term changes of the frequency of heavy precipitation occurrence along the eastern coast of the Indochina Peninsula were analyzed using daily data from six Vietnamese meteorological stations for the period September–November of 1961–2010. The heavy precipitation days were defined by the 50 and 100 mm/day threshold values. The frequency of the coastal heavy precipitation days were decomposed into tropical cyclone (TC)-induced heavy precipitation days and non-TC heavy precipitation days, and their contribution to a recent increase in the coastal precipitation was examined. Over the 50-yr period, heavy precipitation occurrence indices show a significant increasing trend that is linked to an increasing trend in seasonal amount of the coastal precipitation. A rapid increase in the coastal heavy precipitation days was found from the mid-1990s through the 2000s. This marked increase is basically due to non-TC heavy precipitation events, suggesting that TC passages do not play a role in the recent increase in the seasonal precipitation amount and the heavy precipitation events. A role of tropical synoptic-scale disturbances (TSDs) as non-developing disturbances for TC formation in the non-TC heavy precipitation events was also explored. About 70% of the non-TC heavy precipitation events are associated with TSDs originated from the western North Pacific–South China Sea region. TSD passages are responsible for the recent increase in non-TC heavy precipitation events.

Keywords: heavy precipitation, synoptic-scale disturbances, Indochina Peninsula