



Diurnal rainfall pattern over and around the Indochina Peninsula observed by TRMM-PR

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This study addressed a diurnal rainfall pattern during summer monsoon season (May to September; e.g., Takahashi and Yasunari 2006) over and around the Indochina Peninsula focusing on its relationship to terrain, using 10-year (1998-2007) Tropical Rainfall Measuring Mission Precipitation Radar (TRMM-PR) observation. First, we compared TRMM-PR rainfall to 30-year mean rain-gauge rainfall over land, which indicated that TRMM-PR can capture the spatial distribution of summer-mean rainfall amount.

We investigated a 3-hour mean diurnal pattern of rainfall. Previous studies of diurnal cycle of rainfall over the whole Asian monsoon region (e.g., Hirose and Nakamura 2005) showed the evening peak in rainfall over land and morning peak over the sea near land. Focusing attention on the regional-scale diurnal pattern in rainfall over the Indochina Peninsula, a daytime maximum of rainfall occurs along the Indochina mountain ranges, and evening rainfall was observed over a windward foot of mountain range, a valley, and basin-shaped plain, for example, around Bangkok, Thailand and plains in Cambodia. In addition, heavy rainfall in early morning was found around the coasts over the eastern Gulf of Thailand and the Bay of Bengal, as well as eastern Khorat Plateau. Note that the evening rainfall did not continue until the middle of the night. Hence, the early-morning rainfall was likely to be newly-developed, although the mechanism of triggering of the early-morning rainfall has not been clarified.

Rainfall intensity and rainfall occurrence rate were also investigated to understand characteristics of rainfall. The examination of rainfall occurrence rate and rainfall intensity showed that both factors contributed to the heavy rainfall in early evening. In addition, we found that the spatial distribution of total rainfall was very similar to that of rainfall amount during early-morning. Therefore, the early-morning rainfall probably contributes to forming of the climatological spatial pattern of total rainfall.