

Seasonal Transition of Summer Rainy Season over Indochina and Adjacent Monsoon Region

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ABSTRACT

The mean onset and withdrawal of summer rainy season over the Indochina Peninsula were investigated using 5-day averaged rainfall data (1975–87). The mean seasonal transition process during onset and retreat phases in Indochina, India and the South China Sea is also examined using 5-day mean OLR (1975–87) and 850 hPa wind (1980–88) data. It was found that the onset of summer rainy season begins earlier in the inland region of Indochina (Thailand) in late April to early May than in the coastal region along the Bay of Bengal. This early onset of rainy season is due to pre-monsoon rain under the mid-latitude westerly wind regime. The full summer monsoon circulation begins to establish in mid-May, causing active convective activity both over the west coast of Indochina and the central South China Sea.

In case of withdrawal, the earliest retreat of summer rainy season is found in the central northern part of Indochina in late September. The wind field, on the other hand, already changes to easterlies in the northern South China Sea in early September. This easterly wind system covers the eastern part of Indochina where post-monsoon rain is still active. In late October, the wind field turns to winter time situation, but post monsoon rain still continues in the southern part of the Indochina Peninsula until late November.

Key words: Seasonal transition, Rainy season, Summer monsoon onset

1. INTRODUCTION

It is well known that the Asian summer monsoon accompanied by abundant rainfall both over India and China advances from south to north in early summer (e.g. India Meteorological Department, 1943; Ramage, 1971; Tao and Chen, 1987). However, the onset maps of rainy season over whole monsoon region by Kurashima (1959), Ramage (1971) and Tao and Chen (1987) were based on several studies applying different onset criteria. The withdrawal map of summer rainy season has rarely been presented for the whole monsoon region except Kurashima (1959). In such preceding maps, no information was presented in the inland region of the Indochina Peninsula. Recently some studies present onset and withdrawal of summer rainy season by using satellite derived cloud data (e.g., Tanaka, 1992; Murakami and Matsumoto, 1994), which provide uniform information over the wide region. According to these studies, the onset of summer rainy season over the Indochina Peninsula is ahead of the advance of the monsoon rainfall over South India. In more than 40 years ago, Yin (1949) tried to explain why summer monsoon rainfall arrives earlier in Burma than in India.

The map in Tao and Chen (1987) indicates that the earliest onset of summer monsoon over the whole monsoon Asia is located in the northwestern part of the South China Sea in early May. Lau and Ding (1995) depicted in the Science Plan of the South China Sea Monsoon Experiment that the onset of East Asian summer monsoon is heralded by the sudden shift of the Intertropical convergence Zone (ITCZ) from the equatorial region to the South