

Climatological onset date of summer monsoon in Vietnam

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The objectives of this study are to investigate the summer monsoon onset date in Vietnam by using 5-day averaged of 1) observed rainfall, maximum temperature, minimum relative humidity at 54 selected meteorological stations in the region and 2) horizontal winds, temperature, specific humidity and geopotential height at pressure levels from JRA25 reanalysis data during the 1979-2003 period. The averaged convective activity is also examined by the OLR (Outgoing Longwave Radiation) data provided by NOAA (National Oceanic and Atmospheric Administration).

The result suggested that the summer monsoon onset date varies considerably among sub-climatic regions in Vietnam. The earliest onset is generally found in the northwestern mountainous region around late April. Later, the westerlies summer monsoon start dominating over the Indochina Peninsula in mid-May, bringing the rainy season in the Red river delta in the north and Mekong river delta in the south of Vietnam. In case of central coastal area, being very different from others, as a result of Foehn wind, from mid- to late- May, sudden increase of temperature and gradual decrease of minimum relative humidity are indicted as summer monsoon onset date for this region. Over the Indochina and SCS (South China Sea) region, the most significant changes of convective activity and 850-hPa circulation fields occur in 28th pentad (16-20 May). Moreover, there is clear linkage between the beginnings of Meiyu season with the onset of summer monsoon in the SCS. In addition, in the upper atmosphere (200-hPa level), the retreat northward of sub-tropical westerly jet and the formation of TSE (Tropical Strong Easterly), consequence from the difference in heating over Indian inland and cooling over ocean, also play an important role in summer monsoon circulation.

Keywords: summer monsoon, monsoon onset, tropical strong easterly, Meiyu front, Vietnam, Foehn wind