



## **Break of the Western North Pacific Summer Monsoon in Early August**

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Although the monsoon break is a well known phenomenon for the South Asian summer monsoon, it has not been well documented for the other monsoons, for instance, the western North Pacific (WNP) summer monsoon. This study identified a distinct monsoon break over the WNP by analyzing the subseasonal evolution of atmospheric convection and precipitation. This WNP monsoon break occurs climatologically in early August (August 3–8), but shows a strong variation, in either intensity or timing, from year to year. For about 30% of years, the rainfall amount reduces by more than  $10 \text{ mm day}^{-1}$  over the northeast WNP ( $10^{\circ}$ – $20^{\circ}$ N,  $140^{\circ}$ – $160^{\circ}$ E) in early August, and is even less than that before the monsoon onset. However, for other 30% of years, the subseasonal evolution of rainfall tends to be out of phase with the climatology and rainfall reduction appears in mid-August. Furthermore, the 10–25-day oscillations, which originate at the equatorial western Pacific and propagate northwestwards, are found to play a crucial role in forming the monsoon break. The 10–25-day oscillations exhibit a strong interannual variation, associated with the WNP monsoon trough during the period from late July to mid-August, and contribute greatly to the year-to-year variation in both the timing and intensity of the monsoon break. Considering the close link in subseasonal evolution between the WNP and East Asian monsoons, the present results indicate the necessity to investigate the possible role of the WNP monsoon break on the weather and climate over East Asia.