



## **Impact of Land-Sea Breezes at Different Scales on the Diurnal Rainfall in Taiwan**

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The formation mechanism of diurnal rainfall in Taiwan is commonly recognized as a result of local forcings involving solar thermal heating and island-scale land-sea breeze (LSB) interacting with orography. This study found that the diurnal variation of the large-scale circulation over the East Asia-Western North Pacific (EAWNP) modulates considerably the diurnal rainfall in Taiwan. It is shown that the interaction between the two LSB systems - the island-scale LSB and the large-scale LSB over EAWNP - facilitates the formation of the early morning rainfall in western Taiwan, afternoon rainfall in central Taiwan, and nighttime rainfall in eastern Taiwan. Moreover, the post-1998 strengthening of a shallow, low-level southerly wind belt along the coast of Southeast China appears to intensify the diurnal rainfall activity in Taiwan. These findings reveal the role of the large-scale LSB and its long-term variation in the modulation of local diurnal rainfall.