

Li, Z., Y. Luo, Y. Du, and J. C. L. Chan, 2020: Statistical characteristics of pre-summer rainfall over South China and associated synoptic conditions. *J. Meteor. Soc. Japan*, **98**, 213-233.
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Plain Language Summary: After the South China Sea (SCS) monsoon onset, an increase in domain-averaged rainfall accumulation and a generally enhanced convective intensity over South China (SC) during Apr-Jun were previously noticed. This study comparatively examines the characteristics of rainfall over the west-inland, east-inland, and coastal regions of SC during pre- and post-monsoon onset periods, and discuss the associated synoptic conditions and physical mechanisms.

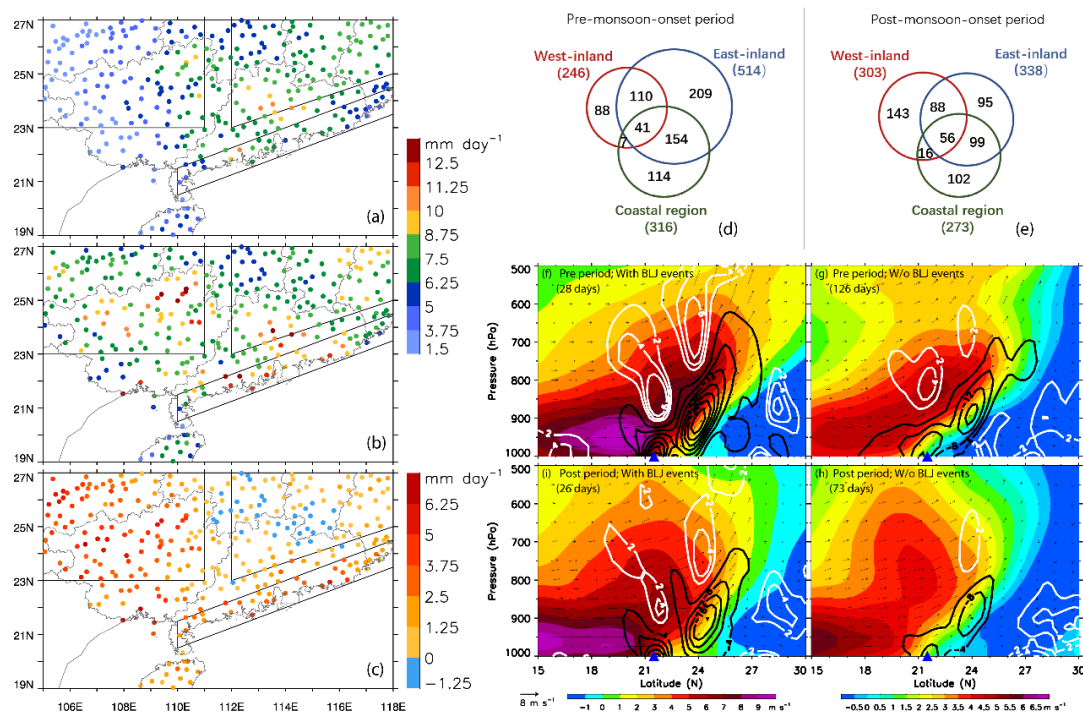


Figure 1. Spatial distribution of the rainfall amount during (a) the pre- and (b) post-monsoon-onset periods, respectively, and (c) the difference between the two periods. Numbers of the long-duration rainy days over the west-inland, east-inland, and coastal regions during the (d) pre- and (e) post-monsoon-onset periods. (f-h) Vertical cross sections of meridional wind speed (shading), in-plane flow vectors (vectors), convergence/divergence (black/white solid) along 112°E averaged on the days with rainfall over both the coastal and east-inland regions (f, i) with or (g, h) without a boundary layer (BL) jet (BLJ) event over SC and northern SCS.

- After the monsoon onset, accumulated rainfall amounts increase over the west-inland and coastal regions, whereas remain nearly unchanged in the east-inland region due to its enhanced intensity but fewer occurrences of rainfall.
- Favorable dynamic instability and thermodynamic conditions for the inland rainfall result from collective effects of a subtropical low pressure/front/shearline and southwesterly air flow of tropical origin.
- The deceleration of the southerly BL flow over the northern SCS leads to convergence of BL high- θ_e air near the coast, which is a key factor in producing the coastal, warm-sector rainfall. However, heavy rainfall could occur near the coast even the southerly air flows in the BL and lower troposphere are too weak to be considered as jets.