

Jian, H.-W., W.-T. Chen, P.-J. Chen, C.-M. Wu, and K. I. Rasmussen, 2021: The synoptically-influenced extreme precipitation systems over Asian-Australian monsoon region observed by TRMM Precipitation Radar. *J. Meteor. Soc. Japan*, **99**, <https://doi.org/10.2151/jmsj.2021-013>.

**Plain Language Summary:** This study investigates the synoptic-scale flows associated with extreme rainfall systems over the Asian-Australian monsoon region observed by precipitation radar onboard TRMM satellite. The extreme rainfall systems are classified into four categories based on the synoptic flow patterns and the vicinity to coastlines. The spatial-temporal variation of the four categories and their internal structures are examined.

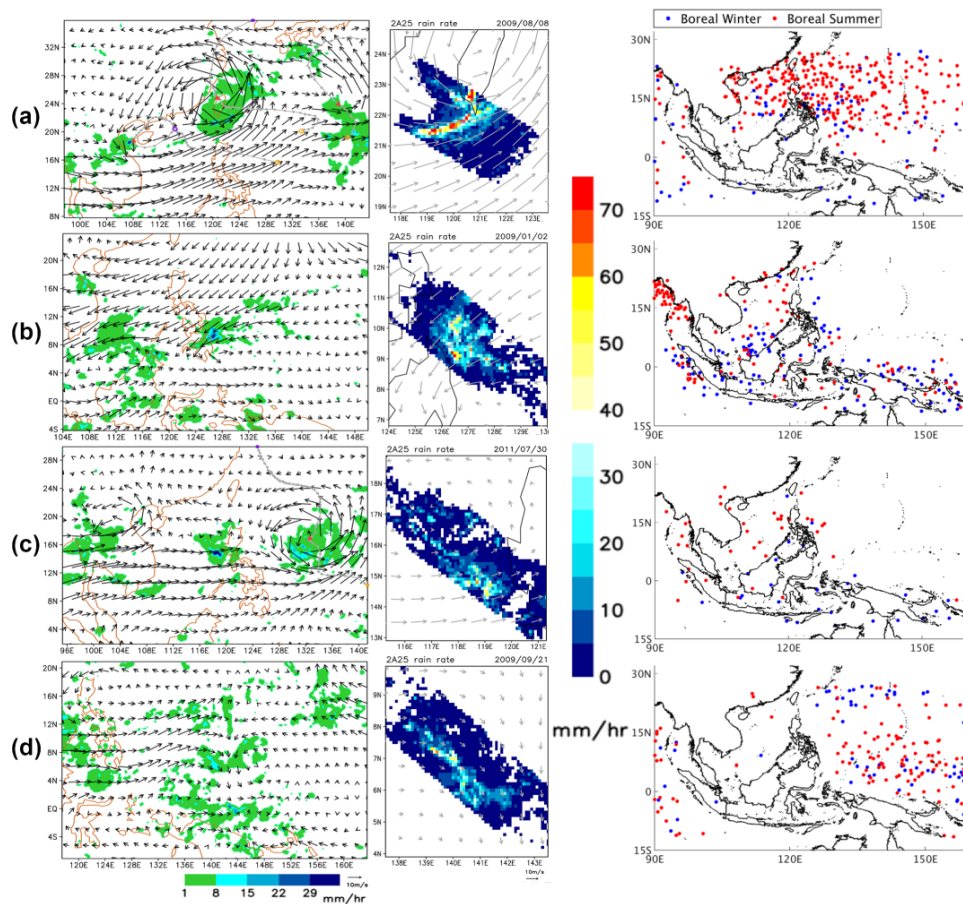


Figure 1. Examples of four extreme rainfall systems with their synoptic flows and precipitation (left) and detailed near-surface precipitation from TRMM 2A25 (middle) and seasonal distribution (right): (a) Vortex type, (b) Coastal type, (c) Coastal with Vortex type and (d) None of above type.

- Areas with high total column water vapor and low-level vertical wind shear are consistent with the hotspots of Coastal and Coastal with Vortex types of extreme precipitation systems.
- Despite the different synoptic environments, these extremes show a similar internal structure, with broad stratiform and wide convective core rain.
- The maximum rain rate in the extreme systems occurs at the boundary of convective and stratiform regions.