The tropical convective evolution with different peak intensities over Western and Eastern Pacific

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Tropical convection is a key player in the interaction between moisture and tropical atmospheric circulation. The multiscale processes underlying these interactions, however, remain to be understood in further detail. In this study, measurements from the TRMM PR and the GSMaP product are analyzed for examining the variability in precipitation types under different rainfall intensities to investigate the evolution of tropical convection. Composite time series are constructed around the GSMaP precipitation maxima for different precipitation types of shallow, deep convective, and stratiform rain events as identified by the TRMM PR. The composite evolution is further broken down into weak, moderate, and strong precipitation systems divided by quartiles in the peak rainfall as estimated by GSMaP. In the western Pacific, regardless of the system intensity, convective precipitation predominates. Conversely, in the eastern Pacific, while precipitation in the strong systems is primarily attributed to deep convective and stratiform precipitation, the contributions of shallow and deep convective precipitation in the moderate and weak systems are comparable to each other, highlighting the relative importance of shallow precipitation in the eastern Pacific. The regionality in precipitation systems of various intensities will be further discussed.

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