

Behavior of sub-monthly wave patterns over the East Asian monsoon area during
July-August season

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Abstract

The sub-monthly behavior of the circulation features in the western North Pacific during July and August was studied over 1991-2001. This quasi-periodic phenomenon exhibits a wave-like pattern that propagates northnorthwestward from the southeastern Philippine Sea to the East China Sea. The wavelength is about 4000 Km and the phase speed is about 5m/s. The fluctuation of this wave-like pattern reveals a 10-25 day timescale with a spectral peak at 12.5 days. More than seventy percent of the selected cases occur concurrently with recurving tropical cyclones, which propagate along with the wave-like pattern. Therefore, these recurving tropical cyclones are part of the wave-like pattern instead of isolated vortices. The wave-like pattern seems to co-exist with a large-scale flow characterized by an enhanced monsoon trough that extends eastward into the Philippine Sea, and a strong ridge protruding westward from the subtropical high. It is suggested that the present study could be useful in bridging the weather and the climate by investigating the relationship between the tropical cyclones, sub-monthly wave patterns, and the monsoon system..