

The Evolution of the Large-scale Extratropical Flow Pattern Associated with West Pacific Tropical Convection Prior to the Genesis of Superstorm Sandy

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Past research has associated organized tropical convective modes with the modulation of the extratropical circulation pattern and the development of high-impact weather events (e.g., tropical cyclones) downstream. Rossby wave trains are excited through the amplification of mid-latitude flow in association with upper-tropospheric divergent outflow linked to organized tropical convection. As these wave trains amplify, they are often observed to break, which can enhance subtropical ridging and simultaneously excite low-level circulations in the tropics by driving high potential vorticity (PV) air equatorward. Thus, organized tropical convection over the West Pacific can influence the evolution of large-scale flow patterns favorable for the genesis of tropical cyclones downstream.

A preliminary analysis suggests linkages between organized tropical convection over the Maritime Continent and West Pacific, and the evolution of the downstream flow prior to the development of Superstorm Sandy. Associations between organized tropical convection, the amplification of the subtropical jet, and persistent wave breaking prior to the genesis of Sandy are examined in this analysis.