The Tropical Transition of TS 16W during TCS-08

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The Tropical Cyclone Structure (TCS) 08 field program provided a unique opportunity to study the tropical transition process of a system called TCS037 in the Western Pacific basin. This system was monitored in realtime and probed by research aircrafts in its early stage of development before becoming tropical storm 16W. This study examines the evolution of TCS037 from its early stage of sustained deep convection in a strong vertically sheared environment, known as a detrimental factor for tropical cyclogenesis, to its development into a weak tropical storm. The influence of an extratropical potential vorticity (PV) streamer to sustain deep moist convection is examined with high resolution (0.3\textdegree) European Center for Medium-Range Weather Forecasts (ECMWF) analysis data. A Lagrangian framework is invoked to investigate the importance of diabatic heating on the erosion of upper-level PV and hence the reduction of the deleterious vertical wind shear, ultimately resulting in a favorable environment for tropical cyclogenesis.