

# Investigation of the Local Torrential Rains in Ordos on July 7-10, 2016

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Using the conventional meteorological observation data, NCEP/NCAR reanalysis data, satellite and radar, and dense surface automatic meteorological station data, analysis of the local torrential rains in Ordos on July 7-10, 2016 is performed. The results showed that: (1) Under the stable circulation of subtropical high ridge controlling in Midwest Area of Inner Mongolia on 500 hPa, the local torrential rains occurred, and small trough led a cold air to Hetao Area in Inner Mongolia. This process had characteristics of smaller scale, long-lasting short-time strong rainfall and high precipitation. (2) The pumping action at the right of entering place of the upper jet provided the favorable dynamic condition to the formation of torrential rains over the rainstorm area in Ordos, without the formation of convergence system in the lower troposphere. (3) The ascending motion of torrential rains occurred from 750 to 300 hPa, and the strongest center was in the 600 hPa. There was a weak downdraft below 750 hPa, and was different from the typical rainstorm in Inner Mongolia. (4) The abundant water vapor conditions through the atmosphere in rainfall area and good vapor transport condition, vertical wind shear of 50-60m/s from 850 to 200 hPa, were very favorable to the generation of the convective system. (5) The torrential rains mainly occurred in the left of cloud system, and it related to the growth to upper air jet flows after convective system entering into the lower stratosphere. (6) Radar reflectivity echo showed block, slow-moving, continuous intensity, and has characteristics of continual precipitation. Local heavy rain occurred in Wushenzhao Station, but it was neither the place with the greatest radar reflectivity factor nor the longest duration of precipitation echo. However, there was obvious convergence on the radial velocity map. Short-term heavy rain occurred in the convergence zone, the convergence zone maintained, and the heavy rain occurred in the convergence zone.

Keywords: Local Torrential Rains, Radar, Vertical Wind Shear, Upper Jet