



## **Study on the three-dimensional structure of the heavy rain by severe tropical storm (BILIS) using Dual-Doppler radar data**

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The severe tropical storm No. 0604 (Bilis) lands again on Xiapu, Fujian province on 1250 LST 14 July 2006. It causes heavy rainfall in Fujian province. The three dimensional wind fields are retrieved from Ximen and Longyan Doppler radar data using Dual-Doppler radar wind retrieve technology. The 3D structure of the mesoscale convective system producing the most severe heavy rainfall at Changtai and Zhangzhou are analyzed by radar reflectivity and retrieved wind.

The retrieved wind fields indicate that the SW-NE oriented mesoscale convergence lines at the low and middle levels play an important role in the heavy rainfall. The convergence line is quite important for the formation, broken and maintenance of the heavy rainfall too. In the formation stage of the heavy rainfall, the convergence line change from weak to strong. On the other hand, the convergence line became dissipation according as precipitation weakening.

Due to the effect of the southwest moist flow and the mesoscale convergence line, meso- $\gamma$  convective cells occurred frequently in the southwest of the mesoscale convective echo band. The cells that move in the SW to NE direction along the convergence line develop and merge to each other quickly. The mesoscale convective line and the cells embedded in it produce the severe rainfall at Changtai and Zhangzhou. The 3D dynamic conceptual model of the cloud system structure of the heavy rainfall is also proposed in this paper.