

Mechanism analysis on lower-level wind shear on 20 Jun 2017

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One lower-level wind shear process occurred at Hefei International Airport on 20 Jun 2017. Based on automatic meteorological station, radiosonde, automated weather observing system at the airport, Doppler radar, NCEP reanalysis, ECMWF model product data, the environmental conditions and influencing elements had been analyzed. The mechanism for the formation of the wind shear process was discussed emphatically. The results were as followings. [U+2474] Atmospheric stratification of upper-level dry and lower-level humid was a favorable condition for the occurrence and development of lower-level wind shear weather near Hefei airport, and the surface mesoscale convergence line provided a mechanism triggering severe convection. [U+2475] Northern and southern side of Hefei airport had one gust front respectively. Hefei airport had experienced twice sudden wind direction and speed changes, that is, there were two gust fronts. The northern storms were stronger than southern storms so that the northern gust front was significantly more intense than the southern side. [U+2476] Northern gust front occurred during continued decline with the storm top, maximum reflectivity factor height, centroid height, VIL. Because the high-pressure block and south wind, southern gust front became to static front. [U+2477] The rapid growth and elimination of Meso- γ scale convective cell induced by perturbations of mesoscale convergence line directly led to the occurrence of northern gust front. A height drop of two strong reflectivity factor kernel directly led to the occurrence of southern gust front. Generated from the converge of two gust fronts [U+FF0C] meso- γ scale convective cell was the main cause of the wind shear occurrence. The intersection of two gust fronts caused new cell, and the disorder airflow of its bottom was the reason causing the wind shear of Hefei airport.