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The verification of WRF forecast of squall lines in the Jianghuai

Zhou Kun, Tao Wei, and Wu Ruijiao
Anhui Meteorological Bureau, Anhui Meteorological Observatory, Hefei, China (old_chen@sohu.com)

Based on the statistics of squall lines in the Jianghuai during the 18-yr period of 2000-2017, the squall lines have the maximum length of 200-250km, the maximum intensity of 60-65dBZ, and the duration of 3-4h. The ten cases are selected for the prediction verification of WRF. The detailed analysis of the strongest case of the July 30, 2014 squall line is carried out in the weather background. The result is: (1) When the North westerly trough with cold air moving south, maintaining the Northwest Pacific subtropical high, sometimes high edge typhoon activity, from India ocean or the bay of Bengal the southwest low Jet transport warm air along the edge of the subtropical high to the Jianghuai, and CAPE>1500J•kg-1, CIN< 80 J•kg-1,0-6km vertical wind shear >12m•s-1 LCL<960hPa,Si<272.45K, 850hPa temperature >293.15K, we can judge the potential occurrence of squall line. (2) The prediction of WRF is good when there is systematic precipitation, the squall line appears in the precipitation area or its south side, for example the squall line on June 30, 2016 and July 5, 2013. However, WRF failed to predict the formation of a short isolated squall line. Such as June 5, 2016 squall line. Although the prediction intensity is weak, the length is short, the position and time are slightly deviant, others squall line cases can be predicted by WRF. (3) The prediction of WRF is commonly consistent with the formation, organization and structure of the squall line. Such as the patterns for parallel stratiform and broken line on June 22, 2000, embedded areal and trailing stratiform on June 30, 2016, back building and the frontal wave-like echo on April 30, 2005, leading stratiform and broken areal on July 30,2001, the line-like echo on July 30,2014.
Key Words: squall line, WRF, verification