



General Features of Squall Lines with Disastrous Gale in the Jianghuai

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Abstract: Based on the Doppler radar data, surface observation and rawinsonde data in April to September during the 18-yr period of 2000-2017, 35 squall line cases are identified in the Jianghuai, with a maximum frequency of occurrence in the plain to the north of the Yangtse River. The squall lines peak in July and a large proportion of them generate in early afternoon, mature in late afternoon, and dissipate in evening. The squall lines have a dominant southeast motion at the speed of 8-16 m•s⁻¹. They are characterized by the maximum length of 200-250km, the maximum intensity of 60-65dBz, and the duration of 3-4h. The squall lines commonly form in a broken-areal mode, display a trailing-stratiform pattern, and dissipate in a reversed broken-line mode. The environmental flows of the squall lines are classified into five synoptic patterns: pre-short trough, pre-long trough, cold vortex, around subtropical-high and post trough. About 62.9% of the squall lines form in the dominant pre trough pattern. Favorable conditions of the different patterns have been analyzed in the terms of instability, vertical wind shear and so on.