Continue Environmental Condition for a Long-Lived, Quasi-Stationary MCS

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Abstract

During 31 May --1 June 2010,the extraordinary rainstorm process in southern China experienced three concentrated precipitation periods, and about 4 times mesoscale convection ystems(MCSs) activities, including a quasi-stationary TL/AS MCS maintained more than 10 hours in central Guangxi province, resulting in extreme precipitation events appeared in the multiple stations. Using observation data and simulated results, the observation characteristic and continue environmental condition of the training line/adjoining stratiform(TL/AS) MCS that occurred in the center of Guangxi province are analysed. The results show that the quasi-stationary TL/AS MCS developed in a upper divergence and mid-lower cyclonic circulation environment, The MCSs formed in thermodynamic environments characterized by very high relative humidity at low levels, moderate convective available potential energy (CAPE), and very little convective inhibition (CIN). the presence of a strong low-level jet (LLJ) and weak midlevel winds led to a pronounced reversal of the wind shear vector with height. The vertical wind shears are largely perpendicular to convection line at low-level but main parallel to convection line at mid-level，This wind shear characteristics may be the reason for the TL/AS MCS quasi stationary. Lifting and destabilization associated with the interaction between the LLJ and the midlevel circulation assisted in initiating and maintaining the long-lived, slow-moving MCSs.

Keywords: long-lived period; quasi-stationary TL/AS MCS; observation characteristic; continue environmental condition

Supported by the National Natural Science Foundation of China (41375057)
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