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Ageostrophic Wet Q-Vector Analysis and Its Application to a Heavy Rainstorm in North Sichuan Basin

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Abstract: Using the routine observation data, the circulation feature of a regional heavy rain process in North Sichuan Basin on 18~19 July 2005 was analyzed. A dynamic diagnosis was made by using the ageostrophic wet Q-vector theory. The results showed as follows: This heavy rain process attributed to the influencing of upper and lower shear lines, the surface cold front and the southerly low-level jet streams blocked by Northwest Pacific subtropical high together. The heavy rain occurred in the area of updraft triggered by the wet Q-vector. There was obvious secondary circulation around the updraft. The convergence center of the wet Q-vector and the convergence area between the north and west of the center on 700 hPa were the areas where the torrential rain occurred. Along with the development of heavy rain system, the convergence area could correspond to the heavy precipitation area better.

Key words: Wet Q-vector; heavy rain; diagnosis

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由中国科学院水利部成都山地灾害与环境研究所编写的《如何防范地震次生灾害·地质灾害》科普宣传读物，已由科学普及出版社出版。该读物系中国科学技术协会科普专项资助出版。读物图文并茂、简明易懂，重点介绍了与地震有关的山地地质灾害的防治知识，以求服务灾区，在帮助当地群众防范地震次生山地地质灾害，恢复生产、生活等方面发挥积极作用。其中部分图片由成都山地灾害与环境研究所等赴抗震救灾一线的科研人员提供，真实地反映了“5.12”汶川大地震前后重灾区山地景观变化及山地地质灾害状况。

（卞 哲）