

论文

## 庄河地区一次大暴雨过程的多因子诊断分析

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**摘要** 采用常规资料、自动站资料、多普勒雷达资料和NCEP每6 h 1次, 1°×1°的实时分析资料, 对2007年8月10—12日庄河地区出现的一次大暴雨天气过程进行诊断分析。结果表明: 受副热带高压后部深厚的暖湿气流及西风带高空槽、切变线及气旋倒槽等动力系统共同影响, 庄河地区出现了大暴雨天气, 但没有出现强雷暴, 此过程主要影响系统是地面气旋倒槽; 700 hPa和850 hPa低涡、切变线使中低层辐合加强, 形成了较强的动力抬升和水汽辐合; 庄河地区处于强而宽的假相当位温锋区中, 位势不稳定的建立是造成此次强降水的必要条件。造成本次大暴雨天气的水汽通道有2条: 一条来自孟加拉湾和减弱的热带低压, 另一条来自东海。

**关键词**

大暴雨过程; 副热带高压; 切变线; 气旋倒槽; 假相当位温; 位势不稳定; 诊断分析

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## Multiple factors' diagnostic analysis of a heavy rainstorm process in Zhuanghe region, Liaoning province

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**Abstract** Based on the conventional observation data, the automatic weather station data, Doppler radar data and NCEP 1°×1° data, a heavy rainstorm process on August 10-12, 2007 was analyzed with radar echo and physical vector diagnostic analysis methods in Zhuanghe, Liaoning province. The results indicate the heavy rainstorm process in Zhuanghe is generated by the conjunct actions of deeply warm-wet air current in subtropical high pressure back, west wind belt upper trough, shear line and cyclone inverse trough, but there is no strong thunderstorm. The main influencing system of this process is ground cyclone inverse trough. 700 hPa and 850 hPa lower vortex and shear line make the middle and lower levels convergence strong and come into being the dynamic lift and water vapor convergence. Zhuanghe is located in the strong and wide potential pseudo-equivalent temperature frontal zone, so the establishment of potential instability is indispensable conditions of this process. The water vapor causing the heavy rainstorm weather comes from (1) the Bay of Bengal and the weakened tropical depression, and (2) from the East China Sea.

**Key words** [Heavy rainstorm process](#) [Subtropical high pressure](#) [Shear line](#) [Cyclone inverse trough](#) [Potential pseudo-equivalent temperature](#) [Potential instability](#) [Diagnostic analysis](#)

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