國立中央大學大氣物理研究所書報討論

Date : 2024/10/18
Location : S1 713
Speaker : Chi-Chun Su
Advisor : Prof. Wei-Yu Chang

Radar Observed Structural Features and Evolution Mechanism of a Squall Line-Like Rainband in a Linear Mesoscale Convective System

Abstract

A linear Mesoscale Convective System (MCS) event occurred on the eastern slope of Taihang mountain from August 12-13, 2018. In the study, weather radar data and station observations were used to analyze the structure of the Squall Line-Like Rainband (SLLR) that accompanied the convective system. From the analysis results, the SLLR was located to the north of MCS, showing significant variations in reflectivity both horizontally and vertically. The front-to-rear inflow was lifted in front of cold pool, forming the rearward-tilting updrafts, which resulted in heavy rainfall.

When the SLLR started to move northeastward, a sequence of life stages was observed: intensification, weakening, and re-intensification, which persisted for almost 2.5 hours. These stages were caused not only by the interaction between the cold pool and environmental vertical wind shear, but also by the development of the rear inflow jet. Additionally, the topography played a crucial role in enhancing convection and influencing the structures of the Squall Line-Like Rainband and Mesoscale Convective System.

Keywords
Cold pool

Reference

Kang, Y., Chang, J., Peng, X., Liang, X., & Wang, S. (2022). Radar observed structural features and evolution mechanism of a squall line-like rainband in a linear mesoscale convective system. *Earth and Space Science*, ***9***, e2022EA002309. https://doi.org/10.1029/2022EA002309