

國立中央大學大氣物理研究所書報討論

Date : 2024/09/27

Place : S1-713

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Characteristics of the Marine Boundary Layer Jet over the South China Sea during the Early Summer Rainy Season of Taiwan

Abstract

This article aims to investigate the characteristic of marine boundary layer jets (MBLJs) over the northern South China Sea during the early summer rainy season over Taiwan. The study using 5-yr (2008–12) NCER Climate Forecast System Reanalysis data, shows that different from the low-level jets associated with the subsynoptic frontal systems, the MBLJs have a wind speed maximum around the 925-hPa level and occur during the second half of the monsoon rainy season over Taiwan.

The MBLJs are mainly related to the pressure gradients related to a relatively deep mei-yu trough over southeastern China and a stronger west Pacific subtropical high. Because the friction velocity and ageostrophic wind decrease during daytime, the MBLJs are strongest at night and close to geostrophic flow in the early evening. The MBLJs play an important role in horizontal moisture transport from the northern South China Sea to the Taiwan area, and the rainfall production is mainly related to vertical motions in the frontal zone or orographic blocking and lifting.

Keywords

Low-level jets

Reference

Tu, C., Y. Chen, P. Lin, and Y. Du, 2019: Characteristics of the Marine Boundary Layer Jet over the South China Sea during the Early Summer Rainy Season of Taiwan. *Mon. Wea. Rev.*, 147, 457–475, <https://doi.org/10.1175/MWR-D-18-0230.1>.