

國立中央大學大氣物理研究所書報討論

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Microphysical processes of super typhoon Lekima (2019) and their impacts on polarimetric radar remote sensing of precipitation

Abstract

Quantitative Precipitation Estimation (QPE) has been used to evaluate the rainfall rate for years. By utilizing the newly established WZ-SPOL radar data, the microphysical process within the landfall period of super typhoon Lekima (2019) was investigated. A series of Quality Control (QC) processes were applied to radar data, disdrometer and rain gauge data in order to maintain quality for further QPE. After retrieving the expected differential reflectivity ($\hat{Z}_{DR}$) and compare it with the corrected differential reflectivity (Z_{DR}^C), a large area of break-up dominated feature were observed. In the mountainous area where the strongest precipitation occur, area with strong collision-coalescence was observed through DSD parameters (D_0, N_w, LWC). Other microphysics process such as hydrometeor size sorting can also be observed prior landfall. The QPE result showed overall overestimation outcome with different estimation method, such issue was most severe in $R(Z_H, Z_{DR})$. Overall, $R(Z_H^C)$ and $R(K_{DP})$ showed similar and consistent result which also perform best in statistical measure.

Keywords

Quantitative Precipitation Estimation (QPE)

Reference

Gou, Y., Chen, H., Zhu, H., and Xue, L.: Microphysical processes of super typhoon Lekima (2019) and their impacts on polarimetric radar remote sensing of precipitation, *Atmos. Chem. Phys.*, **23**, 2439–2463, <https://doi.org/10.5194/acp-23-2439-2023>, 2023.