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Application of Water Vapor Imagery and AMVs of GK2A during Typhoon Turning Track

Junghoon SON, Jinho SHIN, Hyun-Kyoung LEE, Kwang-Myoung SONG, Byunghyun SONG
NMSC / KMA

Several factors influence the movement of typhoons, with the most significant being the impact of the environmental structure surrounding the typhoon. This environmental structure is primarily determined by anticyclones around the typhoon, such as the Subtropical Ridge (STR) and the Equatorial Ridge (ER). The location and development of these anticyclones play an essential role in shaping the synoptic environmental conditions that influence typhoons. As a result of these influences, typhoons in the Northwest Pacific typically exhibit a typical movement pattern, initially moving northwest and then shifting northeast. However, in recent times, typhoon paths affecting South Korea have become more diverse, displaying complex movements. Therefore, this study selected three typhoon cases exhibiting a southward movement trend, deviating from the typical northwest-to-northeast trajectory. These cases include Typhoon Saola in 2023, Typhoon Hinnamnor in 2022, and Typhoon Chanthu in 2021. The study analyzed the synoptic conditions around the typhoons, including the positions of anticyclones, using initial data from the UM model. Furthermore, we compared 7.3μm water vapor imagery with the Geo- Kompsat 2A(GK2A) data with Atmospheric Motion Vector (AMV) data. The utilization of 7.3μm water vapor imagery and AMV data is expected to support typhoon track prediction tasks by allowing for the early identification of differences between real-time conditions and models.