

## A Case Study of Interaction between a Typhoon and Synoptic Wave by GFDL Bogusing Method

## SHIN-WOO KIM<sup>1</sup> and GYU-HO LIM<sup>1</sup>

<sup>1</sup>School of Earth and Environmental Sciences, Seoul National University, Seoul, South Korea

Many of Typhoons which cause extensive damage by strong wind and heavy rainfall over the Korean Peninsula interacted with synoptic waves. Previous studies have focused how synoptic system affects the movement track and the strength of a typhoon. In this study, we investigated how typhoon influenced the associated synoptic scale system. Heavy rainfall over the middle part of the Korean Peninsula on August 6, 2003 shows a synoptic environment in which a band-shaped heavy rainfall area was dominated by a squall line in the back side of a cold front. The low pressure system had developed strongly over the continent and produced the front with warm and moist air mass provided by ETAU, the 10th typhoon in 2003.

The GFDL bogusing method is to separate the component of typhoon from the given initial analysis data and to remove the former at first, and to incorporate a new component of typhoon that can be substituted for the area of which typhoon has been removed. In order to examine the change by the existence of typhoon, the removed data as well as the bogused data is used. From our various calculations, the case without a typhoon shows that the low pressure system is intensified and the movement of front toward the south is faster. In the simulation with a bogus typhoon, the strong stationary fronts are produced at the middle part of the Korean Peninsula with enough moisture supply by a typhoon and the associated strong winds. The analysis of frontogenesis indicates that bogus typhoon increases the strength of the confluence term and the intensification of the front. On the other hand, the removal of typhoon shows continuous rainfall with a line shape in the middle part, which is similar to rainfall observation.

Keywords: Interaction, Typhoon, Synoptic Wave, GFDL Bogusing

## References

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