



Evolution patterns of El Niño and characteristics of typhoon precipitation over East Asia

Young-Il Moon (1), Jong-Suk Kim (1), Chan-Young Son (1), and Sun-Kwon Yoon (2)

(1) Department of Civil Engineering, The University of Seoul, Seoul, Korea, (2) Climate Research Department, APEC Climate Center, Busan, Korea

Many studies have been conducted on the characteristics of the activity of a tropical cyclone (TC) in the Pacific region regarding the effect of El Niño. Also, recent research has shown that change in the abnormal pattern of sea surface temperature (SST), which is higher than usual in the northwest Pacific region, has progressed considerably, and specifically, that there has been an increase in the frequency of the occurrence of the Central Pacific (CP) El Niño, which has a higher temperature characteristic than usual in the CP region. Consequently, this study conducted a comparative analysis of changes in TC genesis, TC track, and TC intensity focusing on typhoons that affected the Korean peninsula according to three evolutionary patterns (prolonged, abrupt, and symmetric-decay) of the abnormal SST in the CP region. As a result of the analysis, for the years of prolonged-decay and symmetric-decay, precipitation from typhoons during the summer on the Korean peninsula was found to rise markedly compared with usual levels. In the case of the years of abrupt-decay, a reducing pattern of precipitation during the summer appeared throughout the Korean peninsula, and an analysis showed a statistically significant change in the Han River basin and some parts of the southern basin. Such a change should show the obviously changing characteristics of local rainfall owing to change in the air circulation pattern, which is subsequent to change in the activity characteristic of typhoons according to the evolution pattern of the surface of the Pacific. The results are expected to be utilized in the future as basic information for reducing damage by typhoons and establishing realistic solutions concerning the management of water resources in a changing change.

Keywords: Evolution patterns of CP El Niño, Tropical cyclone, Summer rainfall