Modeling of typhoon translation velocity based on past typhoon track data

NAKANO, Shin'ya[1]* ; ITO, Kosuke[2] ; SUZUKI, Kazue[1] ; UENO, Genta[1]

[1]The Institute of Statistical Mathematics, [2]Faculty of Science, University of the Ryukyus

The motion of a typhoon is mainly controlled by the background large-scale wind velocity field. The pattern of typhoon trajectory can thus vary due to the variations of the background wind velocity field. Since a typhoon may cause a serious disaster in the East Asia region, it is important to evaluate the variations of the motion pattern of typhoons. We have developed a model of the spatial pattern of the typhoon translation velocity field based on the typhoon track data for about sixty years. This model was obtained by using the Gaussian process regression technique, which enable us to represent typical typhoon translation velocity as a function of latitude, longitude, day of year, and year. We will discuss the characteristics and current problems of the proposed modeling technique.

Keywords: typhoon, tropical cyclone, Gaussian process regression, spatial statistics