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Seasonal prediction of typhoon genesis frequency and track patterns in the North West Pacific area

Yoosun HYOUN (1), KiRyong KANG (2), and Do-Shick SHIN (3)

(1) National Typhoon Center Jeju, Seogwipo, 699-942,Republic of Korea (yousun642@korea.kr), (2) National Typhoon Center Jeju, Seogwipo, 699-942,Republic of Korea (krkang@kma.go.kr), (3) National Typhoon Center Jeju, Seogwipo, 699-942,Republic of Korea (sindo@korea.kr)

This study is to investigate the performance of the typhoon seasonal predictability using a dynamical model. The check items are the monthly statistics for total number of typhoon genesis in Western North Pacific (WNP) area and possible threat to Korean peninsula among them, and the probability of each categorized track pattern. As the dynamical model the Florida State University/Center for Ocean-Atmospheric Prediction Studies (FSU/COAPS) was used, and it uses five ensemble members including control run are generated using time-lagged methods and the resolution of T126L27 (a Gaussian grid spacing of 0.94º). The model initial conditions are obtained from the National Center for Enviromental Prediction Global Forecast System (NCEP GFS) and the SST from Climate Forecast System with bias correction was used for ocean surface boundary condition. The summer (Jun-Jul-Aug) season prediction is made one month prior to target season. The detection of tropical cyclone used in this system is based on six criteria. First, the isolated vortex type minimum sea level pressure should be below 1008hPa. Second, the maximum wind speed is larger than 17m s-1. Third, the magnitude of the maximum relative vorticity at 850hPa exceeds 3.5x10-5s-1. Fourth, the average temperature difference from the area mean of surrounding region at 300hPa, 500hPa, 700hPa exceeds 2.5K. Fifth, the maximum wind speed at 850hPa is larger than that at 300hPa. Sixth, this identified vortex should last more than two days. These criteria were chosen after close examination from model-observation comparison. In this study, we will focus on performance of the system typhoon frequency and track pattern in the WNP area during 2004-2013.