

Perspective on Landfalling Frequency and Genesis Location Variations of Southern China Typhoon During Peak Summer

*Chengyang Zhang¹, Chundi Hu^{2,3,4}, Gang Huang⁴, Cai Yao¹, Zhihai Zheng⁵, Song Yang^{2,3,6}, Dake Chen^{3,7}

1. Climate Center & Guangxi Institute of Meteorological Sciences, Guangxi Meteorological Bureau, Nanning, China, 2. School of Atmospheric Sciences & Guangdong Province Key Laboratory for Climate Change and Natural Disaster Studies, Sun Yat-sen University, Zhuhai, China, 3. Southern Marine Science and Engineering Guangdong Laboratory (Zhuhai), Zhuhai, China, 4. State Key Laboratory of Numerical Modeling for Atmospheric Sciences and Geophysical Fluid Dynamics, Institute of Atmospheric Physics, Chinese Academy of Sciences, Beijing, China, 5. Laboratory for Climate Studies, National Climate Center, China Meteorological Administration, Beijing, China, 6. Institute of Earth Climate and Environment System, Sun Yat-sen University, Guangzhou, China, 7. State Key Laboratory of Satellite Ocean Environment Dynamics, Second Institute of Oceanography, Ministry of Natural Resources, Hangzhou, China

Abstract: Increasing intense landfalling typhoons (LFTYs) are of great coastal threatens to southern China. However, changes in genesis location and landfalling frequency of western North Pacific (WNP) LFTY dedicated to southern China remain unclear. Here we identified such LFTYs during peak summer and found that most LFTYs formed south of 20°N and the LFTY genesis locations over southern WNP have also experienced a sharp interdecadal shift since 1998, which are mainly attributed to the large-scale environment changes induced by the Mega-La Niña-like climate shift. However, LFTY frequency (= “landfalling frequency of southern China typhoon”) shows a slight increasing trend but without significant interdecadal variation. Variations of LFTY frequency are mainly affected by the easterly steering flows near 20°N over the South China Sea and the Philippine Sea, which are closely linked to the WNP subtropical high activity. Our results provide a new perspective on the LFTY activities dedicated to southern China.

Keywords: landfalling typhoon, steering flows