Abstract Details

AOGS 1st Annual Meeting > Ocean and Atmospheres > Simulation of Surface Wind Structures of Typhoon Winner(1997) During Landfall >

Corresponding Author : Dr. Shudao Zhou (zhousd70131@sina.com)

Organization: Institute of Meteorology

Category: Ocean and Atmospheres

Paper ID: 57-OOA-A522

Title: Simulation of Surface Wind Structures of Typhoon Winner(1997) During Landfall

Abstract: It is very important to simulate the near coast storm surge with a well produced surface wind direction and speed of typhoon during landfall, and the surface wind near coast region is also a hot topic in the corresponding research field(Zhang et al.,1999). In this paper, we discuss the surface wind features simulated by use of a triply nested nonhydrostatic mesoscale numerical model MM5 during landfall, the grid distance is 45, 15 and 5km, respectively. The physical processes selected in model integration is similar to that of Xiao et al.(2000). We focus on the detailed structures and evolution of surface wind simulated by the finest domain (i.e. ,5km grid). From Figures of stream line and isotachs before, at and after landfall of Winner(1997), it could be seen clearly that the distribution of wind speed surrounding the center is asymmetric in all the stages, the Radius of Maximum Wind(RMW) is about tens of kilometers, and the peak wind region (>40m/s) is in the northeast quadrant before and at landfall, and oscillates as the center of Winner approaching to the shore. After landfall, there is still a peak wind region (>30m/s) over the ocean near the coast region, which is maintained for a long time and verified by observations, while another peak wind in RMW is in the northwest quadrant. It is worthy to indicate that the impact of friction on wind speed seems smaller in eye region, for the isotachs are not parallel with the coastline and the wind speed here is relatively weaker. Out of the eye wall, the effect of friction appears obviously, for the isotachs are almost parallel with the coastline. Further diagnostic study on the evolution of intensity after landfall with the high-resolution model output reveals the effect of friction and the corresponding weaken convection are responsible for the depression of Winner.

Presentation Mode:

Keywords: Typhoon, Surface wind, Structure, MM5, Simulation

Status: Reviewed.

Co-Authors

No.	Title	First Name	Family Name	Organization
1	Dr.	Zhong	Zhong	Institute of Meteorology