Risk Assessment of Tropical Cyclone Disaster over the Seas around China under Climate Change

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In order to understand the variation trends and disaster risk of tropical cyclone in the background of climate change, this paper investigated the characteristics of intensity and frequency of tropical cyclones over China’s surrounding sea and assessment its risk based on CMA-ST tropical cyclone path set and ship track data. From the point of view of risk analysis, a conceptual framework of tropical cyclone disaster risk was constructed. Then, an index system and assessment model was developed. Finally, the calculation and zoning of the risk of tropical cyclone disasters in the surrounding waters of China was carried out through GIS technology. The results show that the frequency and the extreme peak wind-speed of tropical cyclones were slightly declined during 1950-2010 when the typhoon and strong wind were rising significantly in the first 10 years in 21st-century. Taking into account the danger of tropical cyclones, the vulnerability of disaster-bearing bodies (such as marine vessel) and the ability of disaster prevention and mitigation, the risk of tropical cyclone is the highest over the central and northern parts of the South China Sea and the Philippine Sea, while the risk is very low in the southern part of the South China Sea, in the north-central Yellow Sea and in the Bohai Sea.

Keywords: Meteorological Disaster, Tropical Cyclone, Risk Assessment, GIS Regionalization

