The Study of Establishment of GIS Information System for Coastal Typhoon Disaster Prevention

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ABSTRACT

The typhoon disaster of coastal areas was carried out to explore the properties of coastal disaster and induced mechanism. Application of Geographic Information System software Arc View and combined the technology of supporting decision system of prevention disaster space, to build and integrated coastal typhoon disaster information system database. In order to establish the marine typhoon disaster information system data bank, the relationship between the typhoon characteristics and the distribution of disaster were discussed. This research is from the viewpoint of the ocean geotechnical engineering, by use of Geographic Information System spatial analysis functions to analyze of Taiwan's coastal areas of the coastal topography, coastal types, geological structure, near-shore water depth, land development case, the distribution of marine structures and coastal disaster information. From the results of analysis, it can indicate that the impact of typhoon storm, disaster distribution and the location and scope of the cluster and the disaster-prone areas of each disaster types. In addition, it can provide a reference of follow-up studies on the potential disaster region.

KEY WORDS: Coastal disaster; Geographic Information System; disaster prevention information system

INTRODUCTION

The relationship between typhoon characteristics and disaster distribution was discussed through establishment and application of information system database. Furthermore, the results of spatial statistics from typhoon disaster was also obtained in this study.

LITERATURE OF MARINE GIS INFORMATION SYSTEM

The marine GIS in Taiwan was applied firstly at Zang-Bing industrial area since 1991 which studied the influence for environment after exploitation by Tainan hydraulic testing institution. Related application of marine GIS studied after that time in Taiwan. Such as the studied results of storm module with GIS by the Industrial Technology Research Institute (ITRI, 1993), the GPS and GIS applied in fishery planning at coastal area (Shie and Lee 1993), and the planning study of the marine monitoring and ocean environment database (Chinese Ocean Underwater Technology Association, COUTA, 1994). The study of spatial exploitation planning system (Yen, 1996), and the possibility of establishment for marine GIS in national park (Lin, 1996). The establishment of water depth investigation for coastal area and environment database under sea (COUTA,1998), the establishment of geographical information database in harbor area and coastal room(Shie and Lee 1999), the study of establishment for artificial structure (Liu,2000) and the establishment of coastal tourism safety information and monitoring system (COUTA,2003).

Environmental data and analysis results were established for displaying spatial analysis. The performance of this system not only provide coastal coastal environment shapefile but also realize natural environment,landforms,geology constitution and soil distributed condition at Taiwan coastal zone. To reach the destination of region precaution computerize and future policy decision analysis, discussing problems of disaster time, type and spatial analysis through spatial information which refer to spatial analysis.

COLLECTION AND INVESTIGATION OF COASTAL DATA