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Geovisualization prevention warning information service for maritime disaster

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The target of this study is diversified development and uploading and sharing of prevention warning (or inquiry) information in real time, and geovisual display the information after analyzing the observations and predictions, making it easier for the government and the public to browse the latest various marine meteorological information. Terrible marine environment such as large tidal difference, swell, typhoon huge waves, and storm surge, etc. could easily cause severe maritime disasters of trapped by high tide, missing in the sea, ships to hit the reef, collide or even capsize, causing oil spills. In response to these disasters around Taiwan water, Taiwan maritime disaster prevention and environmental information service platform has been developed after nearly 3 years technological R&D under commissioned and supported by Central Weather Bureau (4-year project, 2017-2020). In order to confirm the rationality of these products, the verification were done through the past maritime disaster events.

As traditional, static maps have a limited exploratory capability, GIS and geovisualization allow for more interactive maps and display on a computer or smartphone, including the ability to explore different layers of the map, to zoom in or out, and to change the visual appearance of the map. Further, geographic information infrastructures need to be integrated with the database of observations and predictions to ensure that government agencies have timely access to real time geographic information so that decisions on sustainability and disaster resilience can be effectively done. Visualize each warning (or inquiry) information through a GIS system in this study, including coastal tideline forecast, tracking drifting objects, coastal swell warning, historical typhoon wave and storm surge query, marine meteorology information for vessel route, ship sailing safety warning and oil spill tracking etc. will increase the ability of implement early warning and prevention for various maritime disaster events, effectively reduce the losses caused by various disasters. For instance, coastal swell warning to improve the safety of coastal recreation through warning colours; the ship sailing safety warning can instantly provide the impact of future wave conditions on various types of vessels to improve the safety of navigation operations.