



Development of operational maritime disasters prevention and environmental information service platform

Yang-Ming Fan, Ping-Chang Hsueh, and Chia Chuen Kao

Coastal Ocean Monitoring Center, National Cheng Kung University, Tainan City, Taiwan, (R.O.C.)
(ymfan@mail.ncku.edu.tw)

Terrible marine environment such as extreme wave, swell, storm surge, wave runup, and overtopping can easily cause ship crashes into reef, collision or even capsizes, and may cause people fall into the sea or oil spills. This also threatens the lives and property of coastal residents. Therefore, accurate marine meteorology information is an indispensable element of reducing the occurrence of unexpected disasters and reducing the risks to life and property.

The object of this 4-year project (2017-2020) which was commissioned and supported by Central Weather Bureau is to develop the Taiwan maritime disaster prevention and environmental information service platform. The development strategy is to integrate real-time marine observing and forecasting, data management and information services using state-of-the-art technologies and capabilities. That is to combine the applied technologies for maritime disaster prevention on the basis of science and technology and a huge and correct of Northwest Pacific marine database, and then present maritime disaster products base on GIS interface so that users can easily operate and get information. The applied technologies including typhoon extreme wave early warning, flooding warning from tsunami and storm surge, ship sailing safety, spilled oil tracking, trapped by high tide, and search and rescue objects missing at sea. In addition to the daily operational observing and forecast data of Central Weather Bureau, the public marine meteorology monitoring and forecast information will also be imported into the database. So far, the sub-platforms of oil spill tracking, typhoon extreme wave early information, ship sailing safety information, regional wave climate, coastal swell forecasting, and tsunami real-time analysis information system have been developed. And we confirm the rationality of these products after the verification through the past maritime disaster events. For instance, The ship sailing safety information module can instantly provide the impact of future wave conditions on various types of vessels to improve the safety of navigation operations; the regional wave climate module provides historical wave statistics as a reference for planning routes; coastal swell forecasting to improve the safety of coastal recreation. The tsunami real-time analysis module provides instant monitoring of abnormal sea level such as tsunami and provides rapid and complete monitoring of seawater level by national disaster prevention units.

Further, due to this platform is mainly to serve the government disaster prevention agencies, the developed technologies will continue to improve according to the feedback from the government disaster prevention agencies, such as ship sailing safety information, coastal swell forecasting and tsunami real time analysis information system. Through the integration and provision of real-time marine meteorology monitoring and early warning information services, the government will increase the ability of implement early warning and prevention for various catastrophic maritime disaster events, effectively reduce the losses caused by various disasters.