Wave characteristics in Sabah waters

Abstract

Problem statement: This study was conducted to identify and compare the wave characteristics in Sabah waters at five different key locations so as to determine the effects of the Northeast Monsoon (NEM) and the Southwest Monsoon (SWM) along the east and west coasts of Sabah. Approach: Monthly wave height and wave period data for 8 years covering offshore areas of Labuan, Kota Kinabalu (KK), Kudat, Sandakan and Tawau were collected from the Meteorological Department, Sabah Branch. The data was analyzed at different areas through the Probability Density Function (PDF) to estimate the most likely wave height and wave period in the study area. Wave power was also calculated using the wave power formula to identify the strength of waves in Sabah waters. The significance of wave characteristics during the NEM and the SWM for the east coast (Sandakan and Tawau) and west coast (Labuan and KK) of Sabah are presented in this study. Results: The range of wave heights in coastal waters surrounding Sabah was found to be 0.5-2 m. Wave height is usually higher than 1 m in the west coast during NEM while the east coast has a wave height of ~0.5 m for both monsoons. The wave power per unit width in the west coast is significantly higher (~5 kW m-1) especially during NEM than during SWM. The wave power in the east coast is less than 1 kW m-1 for both monsoons. Conclusion: The findings of this study can be useful for local fishermen in navigation purpose and coastal zone management activities.