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Monsoonal influences on rip current hazards at recreational beaches along Pahang coastline, Malaysia

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Abstract

Rip current is a type of wave-inducing current that forms nearshore and flows towards the sea. It is a major global hazard in the marine environment that had claimed the lives of hundreds of people due to drowning and recorded thousands of rescue missions around the world. In Malaysia, the Pahang coastline recorded over 30 drowning cases due to rip currents from 2006 to 2018. However, studies on rip current especially on the east coast of Peninsular Malaysia are very limited. Therefore, this study was conducted to classify the beach morphodynamics associated with rip current formations during the southwest monsoon (SWM) and northeast monsoon (NEM) along the Pahang coastline. Five recreational beaches were selected along the Pahang coastline, namely Balok (B1), Batu Hitam (B2), Teluk Cempedak (B3), Sepat (B4), and Air Leleh (B5) as the study site. Sediment samples and beach profile were collected for both monsoonal seasons. It was found that the Pahang coastline was composed of rip-dominant intermediate beaches with several beaches categorised as barred (B), low tide terrace with rip (LTTR), and low tide bar and rip (LTBR). As intermediate beaches are known as rip current dominated beaches, most beaches at Pahang coastline are found to be composed of different risk level of rip current such as high risk (B3 and B5), moderate risk (B1 and B2) and mixed risk (B4). The findings in this study provide useful insights for coastal management planning along the Pahang coastline and the development of beach safety and rescue missions in the event of an emergency related to rip current. © 2021 Elsevier Ltd

Author keywords
Beach hazard; Dimensionless fall velocity; Morphodynamic; Pahang coastline; Rip current

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Engineering controlled terms
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