

The mechanism of mangrove tree in wave energy propagation

ABSTRACT

The role of mangrove trees in reducing the tsunami waves during the tragedy of Andaman tsunami occurred on December 26, 2004, has been credited and these indirectly raise awareness about the role of mangroves forest as a natural breakwater on the beach. This paper will focus on the mangrove trees from *Avicennia* and *Rhizophora* species in order to identify the methods of breaking wave energy that has been carried out by the mangrove roots and stems. Analysis of the mangrove roots coordination pattern had been conducted by gathering data at study site located at Kemaman, Terengganu and the data had been plotted in Gambit software for simulation purpose in Fluent Inc software. Hence, the simulation result showed that the ratio of wave height and velocity reduction may vary depending on factors such as the species of the mangrove trees and density of the roots that grow around the tree. Consequently, the study will be examining the waveform that is mitigated by the both species *Avicennia* and *Rhizophora* using turbulent flow and experiment will be conducted to validate the data obtained by the simulation.

Keyword: *Avicennia*; Breakwater; Mangrove; Mitigation; Propagation; *Rhizophora*; Wave