

## **ABSTRACT**

Mangrove forest is a unique type of coastal vegetation that living in a brackish water environment. It serves as habitat for many types of fish, crab, shrimps, etc. Moreover, the root system of the mangrove forest serves as a protection for the coastline as well as to prevent abrasion. There have been many research that investigating the effectiveness of the mangrove forest in dissipating energy of long wave such for solitary wave, especially for tsunami modelling. In this paper, we investigate numerically the effectiveness of mangrove forest in dissipating short wave such as regular wave. Since the short wave requires a dispersive wave model, here, we use a Boussinesq model as the wave model for simulating the phenomenon. The model is implemented numerically by using Finite Volume method in a staggered grid scheme. The dissipation of mangrove is modeled by adding a corresponding Manning's coefficient in the bottom dissipation that is calibrated with drag coefficient from physical experiment. The numerical model is validated by comparing results of simulation with available experimental data from hydrodynamic laboratory. Result of comparison shows a good agreement between the numerical simulation with the experimental data. Moreover, various scenarios of numerical simulation are performed for various width of mangrove forest to investigate the effectiveness of the mangrove in dissipating the wave height of regular wave.

**Keywords:** Mangrove forest, Boussinesq model, Regular wave, Finite Volume, Staggered Grid.