# ABSTRACT

On 26 October 2010 an earthquake occurred in South Pagai, Mentawai Islands which cause a tsunami, with a magnitude of 7.7 magnitude centered at 3.464 LS - 100.084 BT, the wave height reaches 5-7 meters along the coast of South Pagai. The impact of the tsunami resulted in material damage and casualties. In this study wave propagation will be modeled using numerical simulations in the equation Shallow Water Equations (SWE) in which the characteristics of the waves generated depends on the size of the simulation area (grid) used and the direction the wave is limited by the shape of the grid. In solving the equations used method of Smoothed Particle Hydrodynamics (SPH) to simulate the fluid to ensure their momentum and energy of each particle. Application of Smoothed Particle Hydrodynamics SPH method is processed by using the tools SWE-SPHysics. In this final simulation grid area was made into three areas on open positions boundary which aims to determine the effect of the position open boundary of the altitude and speed of the waves and simulated into the second dimension in order to see the wave propagation towards the coast of South Pagai.

*Key word* : Mentawai, *Tsunami*, *Shallow Water Equation* , *Smooth Particle    Hydrodynamics*, *SWE-SPHysics*.