

Introduction

Numerical modeling is a technique applied to overcome simple geological problems or complex problems by making numerical simulations. One example of numerical modeling is to model disaster events. The disaster that has recently been the subject of discussion is a disaster related to water waves. Here, water waves can be formed by several factors, one of them is due to movement at the bottom of the water surface. The movement of the surface water here can be caused by anything, ranging from the movement of sediments, underwater landslides, and the movement of living things on the surface of the water. The effect of movement on the surface of the water will cause the surface water to move, which will cause a wave at a specific time following the movement of the water surface. With this problem, we need an experiment to find out the effects of movement on the surface of the water. Research with experiments has been carried out by [1] [2]. The study experimented to find out real data, and later a wave modeling or simulation would be made. To model the water wave, a model is needed to present it. Many models have been developed to simulate water waves, including the shallow water equations model. Where shallow water equations is a hyperbolic system equation commonly used to visualize the movement of waves in an ideal fluid assuming the fluid depth is relatively small compared to the wavelength [3]. In 2018, at [4] shallow water equation simulations had been done, and there are still many examples of the use of SWE in [5], [6]. In this paper, nonlinear shallow water equations are used to present waves due to the bottom motion of the results of the experiments. Previously simulated bottom motion movements are available in [7], [8]. To use the nonlinear shallow water equations model, the staggered grid scheme is used to help carry out the nonlinear shallow water equation model. This paper is developed as follows. In Part II, the nonlinear shallow water model and its discretization explained. A general description of the experiment will be explained in part III. Then, in part IV the numerical method and the experimental results will be applied. Finally, the conclusion is drawn in Part V.