When a tsunami propagates, reflected and scattered tsunami during the propagation arrive as later phases of tsunami. The later phases of tsunami are generated by the change of water depth that could influence the height estimation and the inundation that are two key factors in the disaster mitigation. Tsunami of the maximum height could arrive after the plural arrivals of tsunami, and it is necessary to think of the effects of the seafloor topography on the propagation of tsunami. It is, however, difficult to simulate the later phases that could influence plans for the tsunami disaster mitigation. In our study, we make a tsunami simulation code, using 3 dimensional in-equally spaced grids in FDM(Finite Difference Method), which is developed to calculate the propagation of tsunami considering variable seafloor topography. Our results by this method indicate that the simulation of later phases of tsunami could be performed using in-equally spaced grids for complex seafloor topography. The simulated tsunami shows the influences from the seafloor topography and the estimated travel time is coincident with that from the liner long wave theory. Then we study about the accuracy of the calculation, considering how the changes of the grid intervals in the simulation code affect the expression of tsunami that propagates over the topography. When the grid intervals are changed, the later phases of tsunami also change in terms of the amplitude and phase, so we conclude the precision of calculation in grid intervals strongly affects the prediction of tsunami in later phases.