



# Simulation of Tsunami Wave Propagation Using the Finite Difference Method for Disaster Early Warning System

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**Abstract:** Indonesia is a country that is the meeting point of three active tectonic plates in the world and it is located in the Pacific Ring of Fire, which makes it prone to disasters. One of the disasters that may occur is a tsunami that appears due to an earthquake or an active volcano that erupts in the sea. Tsunami waves are one of the fluid problems, tsunami waves modelling can be solved using the Finite Difference Method. This research aims to model the propagation of tsunami waves. This modelling is important for early detection of a tsunami formed and can calculate its impact. This research uses the finite difference as a method for constructing discretization equations to find a numerical solution for tsunami propagation modelling. From the modelling results, the highest tsunami wave was 0.005 km at the 0th km, then the wave height decreased at the 30<sup>th</sup> and 60<sup>th</sup> seconds by 0.0034552 km and 0.0031604 km at the 3rd and 9th km, and at the 90th second, the waves rose to 0.0036794 km at the 14<sup>th</sup> km.

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