

Supervised Artificial Neural Network approach for Tsunami Inversion: A Case Study from 2018 Gunung Anak Krakatau

Nunun Abdurrahman
School Of Computing
Telkom University
Bandung, Indonesia
nununabd@student.telkomuniversity.ac.id

Didit Adytia
School Of Computing
Telkom University
Bandung, Indonesia
adytia@telkomuniversity.ac.id

Nugrahinggil Subasita
-
Next Waves-ID
Bandung, Indonesia
n.subasita@gmail.com

Adiwijaya
School Of Computing
Telkom University
Bandung, Indonesia
adiwijaya@telkomuniversity.ac.id

Abstract—The eruption of Gunung Anak Krakatau (GAK) in 2018 caused a flank failure which resulted in a tsunami that affecting the coast of Western Java and Southern Sumatra. However, the location and mechanism of the landslide are still unclear. In this study, the location of the avalanche point, and the initial shape of the tsunami will be predicted by using a tsunami inversion via soft computing approach. The inversion utilized the measured signals from four buoy stations in the Sunda Strait. To that aim, a soft computing approach Artificial Neural Network (ANN) is used for the inversion. Training data for the ANN model are obtained by performing several scenarios of tsunami numerical simulations. The numerical simulations are simulated by using SWASH model. Ten shapes of initial conditions are simulated for every 2 hours of simulation with the aim to obtain signals at four buoy locations. These four measured signals are then used for the inversion. The result of inversion shows a promising result, i.e. with the accuracy of R value of 0.96.

Index Terms—tsunami inversion, Anak Krakatau, artificial neural network, SWASH, ANN

REFERENCES