

## Determination of Hypocenter Location in Sumani and Sianok Fault Segments, West Sumatra region Using Oct-Tree Importance Sampling Method

\*Ade Surya Putra<sup>1</sup>, Nanang Tyasbudi Puspito<sup>2</sup>, Andri Dian Nugraha<sup>2</sup>, Pepen Supendi<sup>3,1</sup>

1. Geophysical Engineering, Faculty of Mining and Petroleum Engineering, Institute of Technology Bandung, 2.

Global Geophysics Research Group, Faculty of Mining and Petroleum Engineering, Institute of Technology Bandung,

3. Agency of Meteorology, Climatology and Geophysics (BMKG), Indonesia, Bandung, Indonesia

Sumani and Sianok segments are two of the many fault segments in Sumatra Fault Zone (SFZ) that have a considerable history of seismicity and cause significant impacts. An important effort to overcome this problem is the need to analyze tectonic structures in detail through one of them by elaborating an accurate hypocenter location. In this study, we conducted hypocenter determination by using a non-linear approach with the oct-tree importance sampling method through NonLinLoc software by using local velocity components for earthquakes in Sumani and Sianok Segments in the range of 2009-2017. The results of hypocenter determination in this study indicate an improvement in picking arrival time of P and S wave. The increment is denoted by the results of residual picking P and S wave arrival times using oct-tree sampling method that dominant at frequency of 0.1 seconds and there is a correlation between hypocenter location cluster in this study with a location of major earthquakes that have occurred in Sumani and Sianok Segments.

Keywords: Hypocenter, Oct-tree importance sampling, Fault segment, Sumatra Fault Zone