

## **Identification of 3-D Shear Wave Velocity Structure Beneath Sulawesi Island Using Ambient Noise Tomography Method**

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*Sulawesi Island has a complex tectonic setting. This condition is related to the geographical position of the island which is located in the active collision of three major tectonic plates, the Pacific Ocean Plate that relatively moving to the west, the Australia-Indies Plate that relatively moving to the north, and the Eurasian Continental Plate that relatively stable. Furthermore, this condition results some geological manifestations, such as fault systems, volcano zones, diverse lithologic conditions, and unique Sulawesi geometry that resembles the letter 'K', illustrate the tectonic processes that make up the island, are interesting to be investigated. Based on these conditions, the authors are interested to identify the subsurface structure of Sulawesi Island and its surroundings by applying Ambient Noise Tomography (ANT) method.*

*In this research, the daily seismic data of the BMKG and GSN network are used. The network contains 21 broad-band seismic stations in Sulawesi Island, and the data come from six months recording (from 1<sup>st</sup> July to 31<sup>th</sup> December 2016). In the data processing stage, the empirical Green function is calculated based on cross-correlation process for each station pair data. The characteristics of the Green function are associated with the structure of the subsurface seismic velocity, making it possible to be used as the input data in subsurface modeling stage.*

*From this research, obtained the 3-D structure of shear wave velocity ( $V_s$ ) in the southern of Sulawesi, North Sulawesi, and the Gorontalo Basin. In the South Sulawesi Arm obtained sub-surface structures with range of depth of 5 - 25 km, while in the North Sulawesi Arms and Gorontalo Basin are in the range of 5 - 30 km. From the resulted tomograms, can be identified several geological structures such as basin, fault, and also volcanic zone. The structure of the basin is associated with low velocity anomaly while the fracture is associated with a boundary between the velocity contrast, and volcanic zone is associated with high velocity anomaly.*