

# INVESTIGATION OF SUMATRA FAULT BASED ON MAGNETOTELLURIC AND GPS MEASUREMENTS

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On 26 December 2004, a large earthquake of  $M_w=9$  occurred in the Sumatra area located in the western part of subduction zone, Indonesia. The Sumatran subduction is where the convergence between the Indo-Australian plate and the Sundaland plate occur at 4-5 cm/yr. Several multidisciplinary studies have been involved to investigate the cause of the earthquake such as seismic and geodynamic studies.

Through research collaboration among Nagoya University, Tokyo Institute of Technology, Bandung Institute of Technology and Syiah Kuala University, We were carried out Magnetotelluric and GPS surveys. Magnetotelluric measurement was done at 12 sites crossing the Sumatra fault and Seulimeum fault. Two components of horizontal electric field, two components of the horizontal magnetic field and one component of the vertical magnetic field were used in this survey. In this profile, we have carried out MT measurement along a 65 km long SW-NE profile. MT data have been modeled using two dimensional inversion including sea to become reality. The 2D final model has shown an extreme resistivity value has been found around the fault at a depth of 5 km from the surface. Western part of Sumatra fault is characterized by low resistivity. In contrast just beneath the Sumatra fault characterized by high resistivity. By comparison to GPS result, there is a good agreement between resistivity structure and relative motion based on GPS measurement.

2D MT Inversion, GPS, Sumatra Fault, Resistivity structure

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