

# **TWO DIMENSIONAL MODELING OF ELECTRICAL CONDUCTIVITY OF KELUD VOLCANO, INDONESIA USING MAGNETOTELLURIC DATA AFTER 2007 ERUPTION**

NURHASAN<sup>1</sup>, D. Sutarno<sup>1</sup>, U. Fauzi<sup>1</sup>, W. Srigutomo<sup>1</sup>, E. J. Mustopa<sup>1</sup>, Y. Ogawa<sup>2</sup>

1 Physics Department, Bandung Institute of Technology, Bandung, Indonesia

2 Volcanic Fluid Research Center, Tokyo Institute of Technology, Tokyo, Japan

Kelud volcano is a composite stratovolcano built by the accumulation of numerous lava flows (eastern and northeastern flanks) pyroclastic flows, pyroclastic surges and lahar deposits from the youngest activity of the volcano. The 2007 last eruption was experiencing a "slow eruption" and was unlikely to explode as it had done many times in the past century. The new lava dome is growing in the middle of Kelud's lake and covered the lake water.

In 2008, a magnetotelluric measurement was carried out along east-west direction across the summit of the volcano. Two dimensional inversion of Ogawa and Uchida code (1996) was used to invert of the MT decomposed data. The final 2D inversion result shows that the important resistive structure, resistive conduit-like, appears just beneath the lava dome (summit). The surface 500-m thick layer of high resistivity underlain by a 1000 m thick conductive layer was detected in the eastern part of the profile. The resistivity structure was compared with the other geophysical studies such as geochemistry, geology, GPS leveling and seismicity distribution. Our interpretation of the resistive conduit-like as fluid or magmatic gas from the reservoir (magma) was supported by the analysis of geochemistry data. The conductive layer in the eastern part of the profile was interpreted as clay mineral.

2D MT Inversion, Kelud Volcano, Resistivity structure

Nurhasan; nurhasan@fi.itb.ac.id