

Inversion of Vertical Electrical Sounding Data to Identify Hot Groundwater in Geothermal Prospect Area in Bumiaji Region, Malang, Indonesia

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Abstract

Field survey with geoelectric method has been conducted in the Bumiaji geothermal prospect area, Malang, Indonesia. This area is located between Mount Arjuno and Mount Welirang. The aim of this study is to identify the distribution of hot groundwater. Subsurface resistivity data acquisition is done by using Vertical Electrical Sounding (VES) in the four sounding points around the hot springs with a maximum path length of 160 meters. Data from this measurement is the apparent resistivity that be a response model of the subsurface rock model parameters at each depth. The true resistivity of the subsurface model parameters is determined by inversion modeling. Result of data processing generates a resistivity model of each layer of rock at depth. This study successfully estimate the hot groundwater aquifer layer in the study area. The layer of hot groundwater aquifer is identified by low resistivity in the VES-1 point, VES-2 point and VES-3 point with different depth and thickness. Resistivity of hot groundwater layer is about 19.5-43.1 ohmmeter with the largest thickness in VES-3 point with the direction of orientation from Mt. Welirang to southeast.