

Towards enhancement of detection accuracy of geothermal reservoir by a combination of remote sensing analysis and field survey data

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Development of more accurate geothermal-resource exploration is necessary for enhancement of geothermal energy use which is limited because of high exploration cost at present. One of the effective solutions is to improve the regional analysis by remote sensing using satellite imagery and topographic data. A fracture modeling through topographical analysis and an extraction of hydrothermal alteration zone using reflectance spectral data are efficient for the estimation of regional geothermal system. Besides, a combination of field survey result and regional analysis can provide more detailed information about a study area. Based on that background, this study is aimed to identify geothermal fluid paths by remote sensing analysis and field survey. Wayang Windu area located in West Java of Indonesia in which there is a geothermal power plant in operation was selected as a study site. As the remote sensing analysis, lineament mapping using a digital elevation model with *m spacing and estimation of alteration zones by ASTER image are implemented. Moreover, the radon survey was carried out in the study site. Radon survey is suitable to identify geothermal fluid paths because the radon concentration is sensitive the existence of fracture and the pressure and temperature condition of reservoir. Measurement wells with the 5 m depth at the maximum were prepared to measure correctly the radon concentration affected by the reservoir condition and this measurement has been repeated. We integrate these results obtained by different methods to increase the identification accuracy of fluid paths and deepen the geothermal system of the study site.

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