

Identification of Geothermal Prospect Zone In Mount Lawu Using Geospatial and Geological Analysis

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SUMMARY

Indonesia prospect of geothermal potential energy is Mount Lawu area as indicated by surface manifestation such as hot spring. Mount Lawu, located in Karanganyar District, Central Java and Magetan District, East Java. Mount Lawu has a manifestation of volcanic activity in the form of craters that still a fumaroles, hot springs, alteration rocks and lava domes, namely Selayur. The manifestation oriented North - South, follow trending fault Sidoramping together and passed through a mountain peak Lawu. It can be analysed using geospatial and geological data validation.

Data are obtained from topographic map, Digital Elevation Model (DEM), geological map, and field observation. The purpose of this research is to conduct a preliminary survey in identifying potential geothermal areas Mount Lawu, using geospatial and geological data. In order to identify the prospect zone of Mount Lawu geothermal area, a Digital Elevation Model (DEM) analysis and geological mapping were conducted. From the DEM analysis, lineaments were delineated to produce the Fault Fracture Density (FFD). These faults and fractures assumed as weak plane that act as fluid thermal movement. Field observations has been done to locate major structure, lithology distribution and collect springs data.

The analysis showed that pattern structure straightness of alignment in the area of Mount Lawu has a straightness of West-East direction and Southeast - Northwest and based on known geological mapping that area composed lithology by mudstone units and sandstone units. The result of this shows that the area geothermal prospects slopes of Mount Lawu is at the southwest of the summit of Mount Lawu and the area of Mount Jobolarangan. This is supported by the emergence of geothermal manifestations such as hot springs at high FFD and the contact area between lava layers (impermeable), the top covered with volcanic breccia (permeable).

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