

Numerical modeling for a broad geothermal system of Kuju Volcano

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The Kuju volcanic field is located in the southwestern part of Oita prefecture, Japan, and consists of some andesitic volcanoes. There are many hot springs and several geothermal power stations (Hatchobaru, Otake, Takigami etc.) in this field. In the previous studies on the Kuju volcanic field, the numerical models were mainly for the power station areas or the center of Kuju Volcano where fumarolic activity appears. Therefore, we constructed a new conceptual model that includes the center of the volcano and all of the geothermal power station areas in order to attempting to construct an integrative numerical model of a broad geothermal system that has the scale of the volcanic field to explain the existence of the hydrothermal systems, which are generated by a heat source like a magma chamber in the volcanic field. Based on this conceptual model, we constructed a numerical model that replicates the hydrothermal systems of the geothermal power station areas roughly although the numerical model is relatively simple.

Keywords: Kuju Volcano, broad geothermal system, hydrothermal system, numerical model