

The transference of geothermal solution in the northeast of the Unzen volcano

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It is famous that the Unzen volcano killed about 40 persons because of the pyroclastic flow in 1990's. In volcano areas, there is some hydrothermal systems which are developed by the heat source such as magma. The results of Unzen volcano Scientific Drilling Project in 1999 showed that the geothermal gradient was divided in 3 types: the peak (47 degrees celsius) at the depth of 42m, constant at the depth of 100-370m, and increase at deeper than 430m. And lost

circulation occurred at the depth of 55m and 245-352m. At the depth of 55m, groundwater was found, so it is thought that there is some relation between the geothermal gradient and the lost circulation. And it is showed that there are 3 types of the permeability structure in this area from the viewpoint of the personality of the rock: impermeable mud flow sediments at the depth of 0-100m, permeable pyroclastic flow sediments at the depth of 100-400m, and impermeable sediments at deeper than 400m. However, there is no data of the resistivity at the depth of 0-100m and the permeability has not been measured yet in actual. In this research, we estimated the resistivity structure in the northeast of the Unzen volcano (at the deep of 0-300m). The results are as follows: we found that there were low resistivity layers at shallower than 100m and at the depth of 200-300m. In addition, we will estimate the permeability structure in this area by using the FMI images: the images of the wall of the borehole. Thus, we aim to convince the result of the resistivity structure and that of the actual permeability structure which is obtained from the FMI images.