The relation of resistivity structure and geothermal solution in the shallow of the volcano

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We surveyed the resistivity structure in the northeast of the Unzen volcano by VLF-MT, AMT and high-density electrical survey.In this area, existence of geothermal solution is suggested in the depth of 40m by logging of the temperature of borehole (Ikeda et al, 2002). And the resistivity distribution by VLF-MT suggests that geothermal solution flows in the direction of northeast from the lava dome which formed in 1990's eruption (Kagiyama et al, 2005). In this study, we researched the resistivity structure in the direction of depth.

We obtained the resistivity structure : in the depth of 10-20m, the resistivity starts to decrease and in the depth of 30-50m, it gets minimum (a few Ohm-m).It is possible that geothermal solution which is suggested to flow in the depth of 40m decreases resistivity.

We surveyed the stratal permeability by using the drill core samples of USDP-1.If geothermal solution exists in the depth of 40m,it is suggested that stratum deeper than the depth of 40m function as impermeable layer.As a result,stratum from depth 67m to 100m is rough grain and catamus is bad.On the other hand,stratum from depth 67m to 100m is minute grain compared with the upper layer and it is clayey.These things suggest that the stratum in a part that is deeper than 67m in depth becomes an impermeable formation the geothermal solution exists in the upper layer.

From these results, it is suggested that the low resistivity of 30-50 in depth depends on the geothermal solution.