

# Study of Generation Mechanism of Volcanic Gases by Electric Resistivity Survey using High-Density Array

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We worked out a series of electric resistivity survey using high-density array, boring survey of geological structures, and direct inspection of underground conditions with a bore-hole camera. Accordingly, The above-stated work has led us to a conclusion that the comprehensive interpretation of data from (a) geochemical studies on surface distribution of volcanic carbon dioxide gas, mechanism of their generation and stagnant, and (b) geophysical prospecting of underground structures in which the volcanic gas penetrate to the surface spouting, is critically important for effective investigation of the generation mechanism of volcanic gases and the related features of volcanoes.

## 1. Introduction

We worked out a series of electric resistivity survey using high-density array, boring survey of soil structures, and direct inspection of underground conditions with a bore-hole camera.

## 2. Items of survey

The electric resistivity survey using high-density array enables our visual observation of electric current flow under the ground. Accordingly, it is useful to detect the cavity, if it exist, as well as underground water-flow and the geologic boundaries in the ground. We set-up five survey traverse of the resistivity survey, so that they may cross the sites of high-density gas spouting, in reference to the surface distribution of volcanic gas and topographic and geologic features of the land. Also, boring surveys were focused at such sites, where the cavities, underground-water, and land-sliding were judged to predominate.

## 3. Results of the survey

The sites of high gas spouting coincided well to the plane of land-sliding in the past, or to the boundaries of geologic structures as recognized by developed fissures. The boring surveys were also consistent to this finding, proving the geomorphic clay-minerals. Accordingly, we proposed a speculative model to explain the mechanism to form the disastrous volcanic depressions.

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