

## The study of Aogashima volcanic by airmagnetic survey

# Jun Matsuo[1]; Nobuhiro Isezaki[2]; Masashi Tsukui[3]; Yoichi Sasai[4]; Makoto Harada[5]

[1] Chiba University; [2] Dep. Earth Sci, Chiba Univ.; [3] Graduate School of Science Chiba Univ.; [4] Disaster Prevention Division, Tokyo MG; [5] IORD, Tokai Univ.

### 1 Introduction

Aogashima volcanic island is located at the southern edge of the Izu Island Arc. Aogashima is the ellipse shape island with an area of 5.98 km<sup>2</sup>, and the circumference of the island is about 9km. The latest volcanic hazards occurred from 1780 to 1785. It evacuated villagers from to Hachijo Island. Even now, if volcanic eruption occurs, the residents of Aogashima will be evacuated. Considering evacuation from the island, the residents should escape far from the island promptly. Besides, some studies show there is a possibility that the phreatomagmatic eruption occurs, because the sea water goes into the island at same level of the sea.

In these situations, authors started the Aogashima Study as the following targets;

- i Approach to detect the location of the magma chamber.
- ii Approach to grasp the weak area in Aogashima geological structure.
- iii Approach to know the groundwater properties.
- iv Approach to monitor the tectonic movement relate to the volcanic eruption.

### 2 Aogashima study by geophysics approach

#### 2-1 Approach to detect the location of the magma chamber

Helicopter-borne aeromagnetic survey was carried out over the Aogashima Island on 6th December 2006. Now we are analyzing data According to the total magnetic intensities, we found that the northern part of island is low magnetic intensity, and the southern part of island is high magnetic intensity. We try to detect a location of the magma chamber after choosing the signals of the deeper geological feature.

#### 2-2 Approach to grasp the weak area in Aogashima geological structure

The spontaneous potential survey and the temperature survey at 0.5 m were carried out at Aogashima Island. As the result, the high spontaneous potential area was correspondent to the area of high temperature. Additionally, a lot of high-temperature steams are found after rainfall. Therefore, we defined them as the active area. This situation seems to be reflected by the geological structure, and then authors carried out the magnetotelluric surveys at two points of active area and non-active area.

#### 2-3 Approach to know the groundwater properties

The sediment of explosive eruption was found in near Fureai Sauna. The phreatomagmatic eruption, therefore, seems to have occurred the volcanic event during 1780-1785. Besides, because some studies show that sea water at the sea level even at Ikenosawa, at the next eruption, we have to consider the phreatomagmatic eruption. In order to confirm the water level at Ikenosawa, we will make an offer to provide the data of water property to the village office.

2-4 Approach to monitor the tectonic movement relate to the volcanic eruption. To detect the tectonic movement, GPS receivers were installed at two points. One is located at Fureai Sauna, which is at geothermally active area, and the other is located at the southern part of Maruyama, which is at non-active area. The data are stored in the PC. In the near future, we will develop an on-line observation system to catch anomalous crustal movement immediately.

### 3 Conclusion

Authors made a plan of the study as three time stages. The first step is the filed work for collecting data since May of 2006 to April of 2007. The second step is the analyses of data which will be obtained at the first step. The third step is to prepare the scenario of next volcanic eruption, which was predicted at the future considering the geological structure of Aogashima.

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