

1m deep underground temperature measurement at Izu Oshima volcano

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1. Introduction

At the 1986, Izu Oshima volcano is observed expansion of the thermal anomaly zone in the crater before the eruption and emergence of the gas at the caldera edge after the eruption. We need to catch the precursor phenomenon and thermal activity of the next eruption, so we need to understand thermal activity now.

Japan Meteorological Agency measure underground temperature and surface temperature by thermal infrared at the Miharayama (Yanagisawa et al., 2016), but we don't catch thermal activity in the caldera area since the air thermal infrared observation in January 2008. Here, we measure 1 m underground temperature to catch the thermal infrared in caldera area. And, we also investigate the influence of weather etc.

2. Observation

Now, we measured underground temperature in gas activity area and southern caldera area from October 27th and November 16th to the 24th. First, we opened small holes in the ground with a pile, after that we inserted a T type thermometer to measure. After that, we measured underground temperature after 30 minutes. The total number of measurement points is 124 points. Also, we set the reference point to catch the influence of time change in the caldera during the measurement period

3. Result

Time change

We founded the following from results at the reference point: 1) The underground temperature is recognized decrease of approximately 1 °C on October 27 and after November 16, 2) November 16 to 22, it is found decrease underground temperature of about 0.7 °C, 3) We recorded a total of 99 mm of precipitation at the foot of the mountain on November 23. After that, the underground temperature was low approximately 2 °C for about 2 days, 4) The underground temperature change about 0.7 °C for a day. In Fukutomi (1951), it was recognized decrease underground temperature by measurement time. However, it is suggested that the precipitation affects the decrease of the underground temperature. In general, the day change of the underground temperature 1 m depth is suppressed. But we think the scoria layer can not be to correct influence of the day change.

Spatial distribution

The 1m underground temperature was gas area in the southern caldera area. The about 20 °C or more of underground temperature was the northeastern side and the southwestern side of the Mihara volcano crater, and it is recognized gas area in under of the Kushigatayama and near the kusigatayama. The southwest edge of the caldera was measured the underground temperature of 31.6 °C. This place is recognized gas area after the 1986 eruption.

These area is almost underground temperature of 12 to 15 °C, because we think measurement altitude (500 m to 750 m) is normal underground temperature. At the altitude of 16 m in coast is measured lower

than 18.1 °C .From Fukutomi (1951), we think it is affected altitude of the normal underground temperature.

And, a part of measurement data has a low underground temperature. It can not be to correct of reference point. We think the influence of precipitation is difference by the measuring points.

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