

Repeated survey of ground temperature and hot springs around Iwo-yama, Kirishima Volcanic Group

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Iwo-yama Volcano is located in the northwest of Karaguni-dake Volcano, central part of Kirishima Volcanic Group. This area had intense fumarolic activity before 1990's. After 1990's, fumarolic activity disappeared but hot spring activity has continued. However, volcanic tremors occurred frequently after 2014. And fumarolic activity appeared again at the summit of Iwo-yama in December 2015. The authors have carried out repeated measurements of electrical conductivity of hot spring waters; Western and Northeastern Flank of Iwo-yama and Ashiyu hot spring. Chemical composition was also analyzed.

Repeated measurements of electrical conductivity of spring water indicate EC of the W&NE springs are affected by rain water, but EC of Ashiyu water shows a significant change; 225 mS/m in 2008, 235-245 mS/m after the eruption of Shinmoe-dake in 2011, 256 mS/m in December 2015. According to the chemical analysis, SO₄ ion increased from 1060 mg/l to 1130 mg/l in Ashiyu, while the ratio of Cl/SO₄ changed from 0.12 to 0.09. On the other hand, Cl/SO₄ increased from 0.002 to 0.014 in the W Flank of Iwo-yama. This means SO₄ ion increased in Ashiyu after the beginning of volcanic tremor in August 2014, but in W Flank of Iwo-yama, both SO₄ ion and Cl ion increased.

Ground temperature at 1m depth has been observed at the central part of Ebino Heights. High temperature about 40C was detected in this area by the 1980's. But no anomalous temperature was detected. This means geothermal activity is limited within the summit area now.

Keywords: Kirishima Volcanic Group, Iwo-yama, Geothermal activity, Electrical conductivity, Volcanic activity