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Conductivity distribution of the surface layer around Kirishima Volcanic Group - on the aspect of failed eruptions

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Kirishima volcanic group consists more than 20 volcanoes; Shinmoe-dake, Ohachi, Iwo-yama, etc. Many geophysical and geological researches have been carried out since the large eruption of Shinmoe-dake in 2011. The authors carried out VLF-MT survey around Kirishima to clarify electrical conductivity distribution in the surface layer and also carried out repeated observation of electrical conductivity of hot spring water in and around Iwo-yama. The results are as follows.

1) High conductive areas were found around Iwo-yama, and along the trend of volcanoes from Shinmoe-dake to Ohataike. This trend is followed by the trend from Ohjibaru to Chishanoki hot spring in the east of Kirishima. Seismic activity is also determined along these trends. This result indicates magmatic gas is supplied along the fault system in Kirishima. On the other hand, low conductivity was found around the volcanoes in the southeastern Kirishima; Ohachi, Takachiho-nomine. High conductive area is also found on the southwestern flank of Kirishima.

2) Repeated measurement indicates gradual increase in conductivity of hot spring water around Iwo-yama. This may reflect the increase of supply rate of magmatic gas.

Keywords: Kirishima Volcanic Group, Conductivity distribution, volcanic activity, failed eruption