[EJ] Evening Poster | S (Solid Earth Sciences) | S-TT Technology & Techniques

[S-TT49]Airborne surveys and monitoring of the Earth

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Airborne surveys are useful to better understand the whole and/or the detailed structures of the Earth and their variations. They can be implemented from a traditional manned and newly-developed unmanned aircraft to efficiently map very large or remote areas with difficult access. We invite studies on theory, instrumentation, processing, modeling or inversion and applications of airborne surveys.

[STT49-P08]Geothermal system of the Niseko volcanoes area deduced by the magnetization structure

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In the geothermal development, it is important to estimate the geothermal heat source, the geothermal reservoir, and the upflow path of the geothermal fluid. And it is considered that one of the path is developed a fracture zone along the border of the intrusive rock (Hanano, 1994). Igneous rocks such as intrusive rocks generally have strong magnetization, so magnetic anomalies are generated around them. By analyzing the measured magnetic anomaly distribution, it is possible to estimate the intrusion rock distribution in the subsurface.

The Niseko volcanic mountain range located in the southwestern Hokkaido is one of the regions with high geothermal potential in Japan. In 1980s, New Energy and Industrial Technology Development Organization (NEDO) made leading investigations at the geothermal potential areas including the Niseko volcanic mountain range, and airborne geophysical explorations (airborne gravity deviation surveys, airborne electromagnetic surveys, airborne magnetic surveys) were conducted by Japan Oil, Gas and Metals National Corporation (JOGMEC) from 2012. According to the survey by NEDO, the approximate location of the heat source was estimated in the vicinity of the Niimi hot spring in the Niseko volcanic mountain range, but there is not much discussion about the upflow path of the geothermal fluid has not done (NEDO, 1987). In this study, in order to reveal the ring path of the geothermal fluid by delineating the magnetization structure of the Niseko volcanic mountain range, we conducted three-dimensional magnetic imaging to the airborne magnetic data acquired by JOGMEC.

As a result, the magnetization structure of the shallow part was roughly consistent with alteration zone distribution and paleomagnetic orientation measurement of the surface layer (NEDO, 1987). Regarding the magnetization structure of the deep part, a large-scale magnetiztaion high (reverse magnetization) was seen in the southern part of Niimi Hot Spring. This high may imply that magma intruded in the past and have already solidified and acquired strong magnetization. It seems that the high zone continues up to near the Niimi hot spring where shallow part of the geothermal manifestation is seen. Furthermore, since it is close to the estimated heat source by NEDO, it was revealed that the geological boundary

between host rock and its intruding rock (magnetization high) may be an upflow path of geothermal fluid.