後生掛地熱地帯での自然電位分布の変遷

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Changes of distribution of the self-potential at Goshogake geothermal area, Towada-Hachimantai National Park, northeast of Japan

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We have conducted SP (Self-potential) surveys at five times since November 2019 at Goshogake geothermal area. The area is in a part of Towada-Hachimantai National Park, northeast of Japan and located on the foot of the Akita-Yakeyama active volcano. Goshogake geothermal area has active fumaroles, mud pots, hot springs etc. So far, in order to investigate the subsurface hydrothermal structure, we have carried out geophysical prospecting including GPR (Ground Penetrating Radar), induction method by the instrument called GEM-2, and ERT (Resistivity method). We have found that GPR scatterings are outstanding at resistive zones beneath a survey line along the shore of the Ooyunuma hot pond and that characteristic subsurface conductivity distribution related to alteration by GEM-2.

The positive anomalies of SP in this area is appeared around Ooyunuma hot pond and along the series of hot springs like as Oname-Motome and Konya-jigoku. On the other hand the negative anomaly is appreciated at the area surrounding Oodorokazan. The positive anomalies of SP are in accordance with the geological alteration zones and the high temperature of 1 m depth.

The change of distribution of SP is inferred to include the seasonal change. Consequently we try to construct the time-change model of SP distribution with seasonal change. At first glance it is difficult to grasp the tendency of change of SP distribution but we can put up a model and can explain the outline of SP changes and predict the SP change in near future.