

Self potential (SP) survey at the Rokugo alluvial fan in Akita Prefecture, Japan

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Self-Potential (SP) observation is one of the geophysical exploration. It has been used in the volcanic and geothermal area in order to investigate the hydrothermal water convection. Although a large number studies have been made on the relationship between SP and groundwater flow, a little is known as relationship between "topographic effect" and groundwater flow or groundwater level.

In this study, SP survey was carried out at the shallow groundwater field. And, we estimate of possibility to observe what "topographic effect" of SP at shallow groundwater field. It was investigated in a place where there is a lot of groundwater level data and gradient data.

We have selected Rokugo alluvial fan in Akita prefecture, is because of the groundwater level data has been recorded. Rokugo alluvial fan has an area of approximately 4km from east to west, and approximately 5km from north to south. Its area is 14km². SP Observations at Rokugo area were carried out in September-November, 2015.

From the observation result, it was possible to find a SP decreases section as the altitude increases. In the case of Rokugo alluvial fan, the topographic effect is -1.0 ~ -3.7mV/m.

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