

Comparison of the estimated distribution of groundwater chemistries and the investigation of Audio Magnetotelluric (AMT) Survey

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The Horonobe Underground Research Laboratory Project has been carried out by Japan Atomic Energy Agency in the Horonobe-cho northern part of Hokkaido. This project is over a period of about 20 years for the geoscientific research and R&D on geological disposal technologies.

Three dimension distributions of groundwater chemistries were estimated by using a geostatistical method (inverse-distance interpolation method) based on the borehole location and sampling depth. As the result, the distribution of groundwater chemistries changes from the fresh water system (Na-HCO₃ type) to saline water system (Na-Cl type) with the depth. It is understood that the boundary depth of the fresh water and saline water is different on the east side and the west side.

The 2D cross sections of the resistivity were observed by AMT surveys. The results of AMT surveys show the high-resistivity zones along the Omagari Fault. This high resistivity zones are consistent with the location of the low concentration of the salinities in the groundwater.