

Electromagnetic investigation of high-salinity groundwater zones in a coastal plain

Yuji Mitsuata[1]

[1] AIST

<http://unit.aist.go.jp/georesenv/>

Estimating saline water intrusion into aquifers in coastal plains has been becoming an important subject in terms of site characterization for the geological disposal of radioactive waste. In addition, delineating the distribution of high-salinity groundwater zones is valuable when using groundwater for municipal, industrial, and agricultural purposes. Conventionally, the electrical conductivity of groundwater is measured in hydrogeological surveys to estimate salinity concentration. However, if there are no boreholes available, electrical and electromagnetic exploration methods are employed. In such cases, a qualitative hydrogeological interpretation of estimated electrical resistivity or conductivity distribution is usually made. To simulate the future transport of salinity, a quantitative estimation of the current salinity distribution is essential. In this paper, I introduce a case study of an electromagnetic investigation in the Kujukuri coastal plain, eastern Japan and evaluate the equivalent NaCl concentration of pore water from formation resistivity values obtained from the electromagnetic investigation.