

## Investigation of Anisotropic Permeability and Estimation of Fresh Water-Salin Water Boundary

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The investigation of the anisotropic permeability and estimation of the fresh water-saline water boundary was carried out using cores taken from the Kokumoto layer (between GL-26 and -200m) covered with a coastal sand layer. The anisotropic permeability of core was measured by the triaxial and volume-fixed measurement methods at each corresponding depth. The average permeability of the horizontal axis was found to be about two times larger than that of the vertical axis. The chemical composition and the electro conductivity of the inner water was measured with water samples taken from cores by the compression. It was found that the total concentration of anions and cations in the water sample must be corrected by the artificially originated  $\text{CaSO}_4$  concentration to estimate the saline water-fresh water boundary, underground. Thus, the abrupt concentration increase of the saline water concentration was observed to be GL-30 m and -200 m. This result suggests two possible saline water-fresh water boundaries. The chemically measured concentration change of total ions to the direction into the depth was found to be agreeable to that of the fine structure of the electro conductivity measurement result. The possible old landscape change to explain two boundaries obtained and the dispersion of ions in the underground water was discussed.

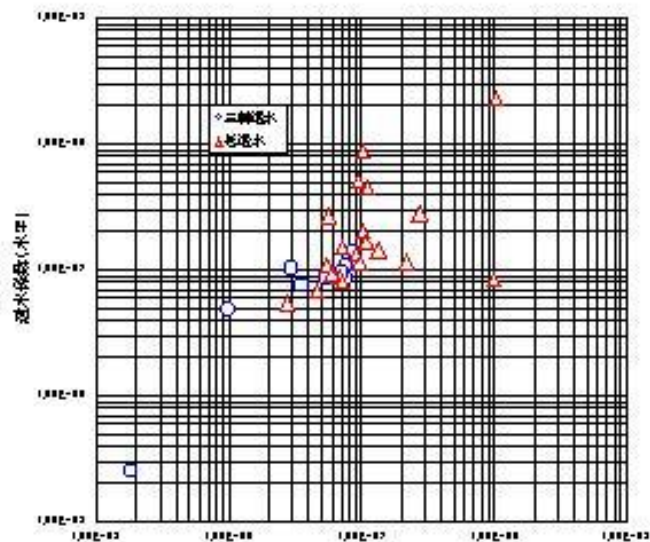


図1 透水試験結果

透水係数(無次元)

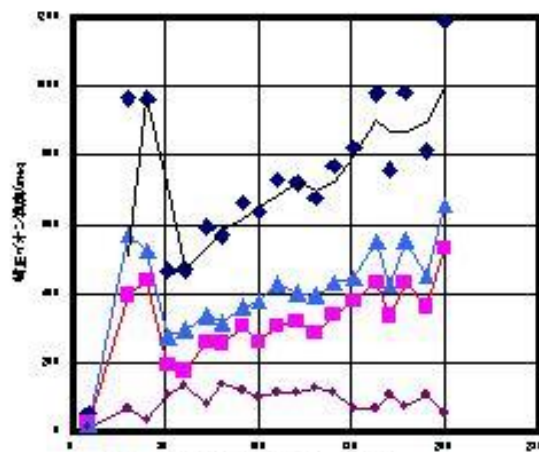


図2 補正イオン濃度vs深度

◆ Na+Cl-SO<sub>4</sub>-Ca      ■ Na-SO<sub>4</sub>  
▲ Cl-Ca                  ● 1/2CaSO<sub>4</sub>補正要因

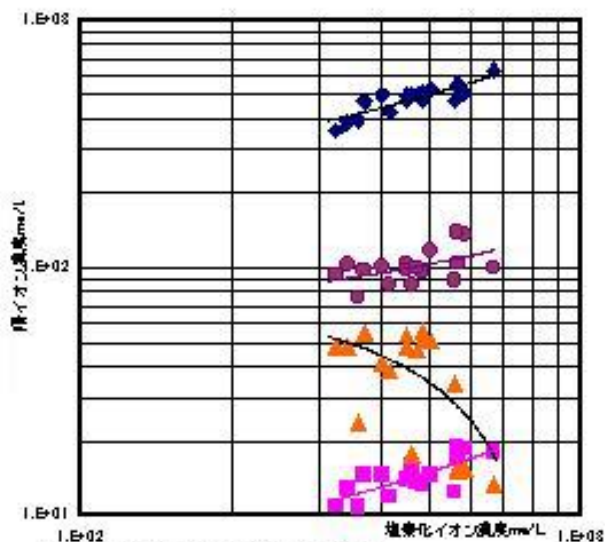


図3 陽イオンvs硫酸化イオン相関

◆ Na      ■ K      ▲ Ca      ● Mg

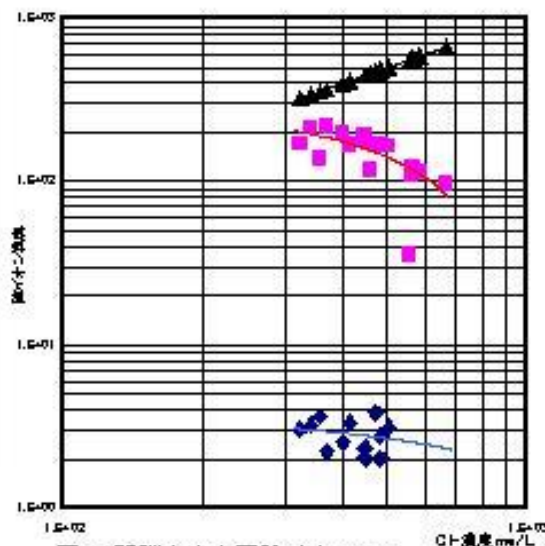


図4 間隙水中主要陰イオンvsCl

◆ HCO<sub>3</sub><sup>-</sup>      ■ SO<sub>4</sub><sup>-</sup>      ▲ Cl<sup>-</sup>