

Developing advanced techniques for assessing coastal seawater/freshwater interfaces and fault structure

Groundwater RG; Exploration Geophysics RG

【Outline】

We conducted research on the evaluation of the deep zone geology and hydrological environment of coastal regions as part of research on the development of basic technologies for geological storage commissioned by the Agency for Natural Resources and Energy, Japan. We have a research with observation wells through an interface of seawater/freshwater, and have conducted integrated geophysical surveys including a shallow sea area. We have found several new understandings about hydro-geological environment in deep zone.

【Details】

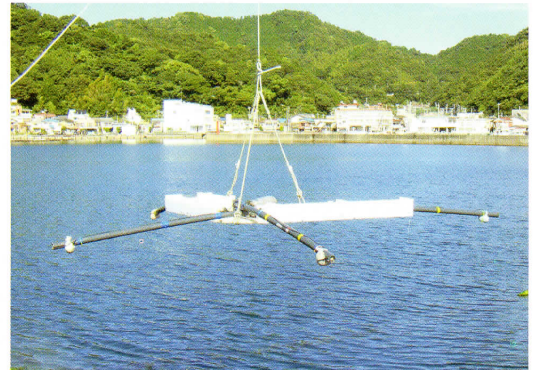
We have applied some new concept borehole tests in Horonobe, Hokkaido, to forecast changes in groundwater flow caused by long-term changes in the global environment and to identify safe and stable areas of groundwater. We are seeking to develop new techniques for ascertaining stable areas of groundwater by making use of the differences in absorption of groundwater observed in geological samples collected from deep strata. We are also working on the development of geophysical exploration techniques for coastal zones. We are developing a seafloor electromagnetic instrument for shallow water zones and techniques for combined interpretation of land and sea data including electromagnetic and seismic reflection surveys.

【Applications of research results】

The survey and analysis techniques, databases and other outcomes of this trial will be used to assess the geological stability and environment of candidate locations for waste disposal. The knowledge gained from this research can also contribute to research on CO₂ geological storage and geothermal resource utilization.



Drilling in midwinter at Horonobe



A seafloor electromagnetic instrument currently being developed