多点型CTセンサケーブル（その2）

―地下水調査用システムの開発と塩水侵入域の観測井での塩分・水温観測―

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Abstract

We have developed a multi-sensor, salinity/temperature measurement system based on the XCTD (Expendable Conductivity, Temperature & Depth Profiling System) and applied it to an observation well for a groundwater survey in a salt intrusion area. Five CT sensors made by modification of XCTD probes were connected by a cable, and the distances between sensors were adjustable. The cable was 50m long and connected at its end on the ground to a measurement control and data logging system consisting of a notebook computer and peripheral components. In addition, a pressure sensor for measuring fluctuation of water level in the well was included in the system.

Observation experiment using this system was carried out in the observation well of the 50m depth in the embankment (about 8.7km upstream from the river mouth) of the River Gonokawa located in the western part of Shimane Prefecture, Japan. We obtained conductivity, salinity, temperature and water-level data every 5 minutes for about two months.

By the long-term observation of salinity and water temperature by the CT sensors, it was clarified that the fresh-salt water interface in the groundwater was fluctuating with time. Furthermore, there was a correlation between fluctuation of the ground water level and water-level/flow rate of River Gonokawa.