Evaluations of submarine groundwater discharge by resistivity and seabed temperature measurements in Yuza, Japan

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Submarine groundwater discharge (SGD) is recognized as an important pathway from land to ocean, not only for water and dissolved material transports but also for ecosystem in the coastal zone. Measurements of resistivity and sea bed temperature had been made in the coastal area of Yuza, Japan, as well as seepage meter measurement to evaluate the submarine groundwater discharge. The ratios of fresh water component among SGD were also analyzed by Conductivity-Temperature sensor in the chamber of the seepage meter. The relationships between hydrological conditions in each bay at Yuza and Sr isotope ratio were also examined. The seepage meters (for SGD flux), piezometers (for groundwater sampling), thermometers (for sea bottom temperature) and resistivity (fresh-salt water distribution) measurements had been applied at the transect lines which are perpendicular to the coastal line. The SGD flux increased with decreasing the sea bed temperature. The relationships between the fresh water component of SGD and resistivity have been examined. A combination of the measurements of resistivity, seabed temperature, and seepages meter may enable us to evaluate the SGD flux and distribution of fresh groundwater near the coast.