[EE] Evening Poster | A (Atmospheric and Hydrospheric Sciences) | A-HW Hydrology & Water Environment

[A-HW22]Hydrological Cycle and Water Environment

convener:Seiya Nagao(Institute of Nature and Environmental Technology, Kanazawa University), Isao Machida(Geological Survey of Japan), Shin'ichi Iida(国立研究開発法人森林研究・整備機構森林総合研究所森林研究部門森林防災研究領域水保全研究室, 共同), Takeshi Hayashi(Faculty of Education and Human Studies, Akita University)

Thu. May 24, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe)

We focus on various issues of water cycle and environment and aim to answer questions of hydrological and earth system sciences including 1) surface, subsurface and evapotranspiration processes of water cycle; 2) natural and anthropogenic hydrothermal systems, 3) environments issues and studies on a watershed or global scale, 4) water-related issues with ecological, environmental, and geochemical aspects, and 5) other issues in hydrological sciences. This session welcomes presentations regarding various kinds of approaches and techniques such as field survey, remote sensing, isotope tracers, numerical simulation, and theoretical analysis.

[AHW22-P07]Research of submarine groundwater discharge using ^{222}Rn in Nanao West Bay

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Biological production is more active in coast areas than in open sea because large amount of nutrients from terrestrial areas are carried by rivers. On the other hand, contribution of nutrients from groundwater to coast areas is also important, but identification of submarine groundwater discharge (SGD) is tedious work. Many scientists have been using ^{222}Rn to specify the contribution of groundwater. ^{222}Rn is a daughter nuclide of ^{226}Ra, water-soluble and noble gas. The sedimentary layer is rich in ^{238}U and ^{226}Ra which belong among Uranium series, so the concentration of ^{222}Rn is higher in groundwater than surface water. ^{222}Rn is lost in surface water because of diffusion to atmosphere. Moreover ^{222}Rn has a half-life of 3.83 days and is used to specify the contribution of groundwater with short residence time. In this study, research was carried out at Nanao West Bay, which is located at the Noto Peninsula and is the semi-closed feature, to identify the presence of SGD by measuring ^{222}Rn concentration. Surface and bottom sea waters were collected at 11 sites in May and November 2017. Water quality such as salinity, water temperature, dissolved oxygen was determined by Conductivity Temperature Depth profiler. The six liter of sea water samples was measured for ^{222}Rn concentration by electronic Rn detector (RAD 7: Durridge) after the sample collection. Figure 1 shows ^{222}Rn concentration in the bottom sea water in November 2017. The concentration of ^{222}Rn ranged from 30.4 to 78.2 Bq/m^3 and was higher in the center-east area of Nanao West Bay. Figure 2 shows ^{222}Rn concentration as a function of salinity. The solid line indicates the mixing between river water and seawater outside the bay and dashed line indicates the mixing between groundwater and seawater outside the bay. The higher ^{222}Rn concentration collected at three sites is plotted at the closed area of dashed line. The results suggest that SGD is observed at the center-east area of Nanao West Bay.