AHW018-P10   Room: Convention Hall   Time: May 27 17:15-18:45

Estimation of groundwater discharge to the river, using 222Rn tracer and nutrient

Yoshiaki Kato[1*], Shin-ichi Onodera[1], Yuta Shimizu[1], Mitsuyo Saito[2], Hidehiro Takahashi[3], Yasuyuki Hirayama[1]

[1]Graduate School of Integrated Sciences, [2]Ehime University, [3]NARO

In this research, we aimed to estimate spatial variations in groundwater discharge and nutrient supply to the river from headwater to river mouth in the watershed of 860 km2, using 222Rn tracer and nutrient. The study area is located on the Asida River watershed flowing into Seto Inland Sea. In the watershed, there are three alluvial planes with the average altitude of 300m, 30 m, and 10m from the upstream to downstream, respectively. We collected samples of river at the interval of about 1km and groundwater at the 50 wells, respectively. Groundwater discharge at three alluvial planes is confirmed, based on 222Rn and nutrient. The 222Rn tracer is useful to determine groundwater discharge in the upstream area rather than in the downstream, because the 222Rn of groundwater in the upstream was higher than that in downstream. On the other hand, phosphorus in groundwater is higher in the downstream than in upstream. The redox potential was lower and phosphorus was more soluble in groundwater of downstream. Consequently, phosphorus in river was higher in downstream. In addition, N/P ratio decrease from upstream to downstream.

Keywords: 222Rn, Dissolved Inorganic Phosphorus, Silicon, groundwater discharge