

ACG035-P02

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## Effect of groundwater discharge and seawater on nutrient component of tidal river

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Nutrient condition in water environment controls the ecosystem. Ground water discharge to the oceans is significant as nutrient supply (Slomp et al, 2004 etc). This situation is similar to the nutrient condition in rivers. In coastal urban area, land fill has generally been conducted in offshore and tidal flat. Groundwater gradient is generally declined by these constructions of new lands, and submarine groundwater discharge tends to stop in coastal areas. On the other hand, groundwater would discharge to rivers in a terrestrial area. In this research, we aimed to confirm effects of groundwater on nutrient supply to tidal river. The study area is located on the river mouth area of Asahi River in Seto Inland Sea watershed, western Japan. We collected water samples at one station of the river mouth area for the analysis of <sup>222</sup>Rn and nutrient elements at five times on each tide level. In addition, groundwater near the river sampling station, bottom sea water in Seto Inland Sea, upstream river water and tidal river water at 5 points from the station to the 4km upstream area were collected.

The result of the hourly changes in <sup>222</sup>Rn and nutrient concentrations at the river mouth station in each times shown, the <sup>222</sup>Rn concentration was highest at the low tide level, and it was twice of that at the low concentration of <sup>222</sup>Rn. On the other hand, the relationship between <sup>222</sup>Rn and nutrient suggests the P, Si and NO<sub>3</sub>-N discharge by groundwater to the tidal river. Especially, the phosphorus concentration was high in the tidal river. This would be supplied by the diffusion from river bed sediment as well as by groundwater discharge. Based on these results, we estimated the TP discharge by groundwater to be about 30%-60% of the tidal river nitrogen input to the study area.

Keywords: nutrient, groundwater discharge, <sup>222</sup>Rn, tidal river