

Estimating phosphate supply via submarine groundwater discharge in Osaka bay, Japan.

ONODERA, Shin-ichi^{1*}, SHIMIZU, Yuta², SAITO, Mitsuyo³, Masato Fukuoka²

¹Graduate school of Integrated Arts and Sciences, University of Hiroshima, ²Hiroshima University, ³Center for marine environmental studies, Ehime University

Nutrient condition in water environment controls the ecosystem. Groundwater discharge to the oceans is significant as nutrient supply (Slomp et al, 2004 etc). Especially, phosphorus and silica concentration generally are relatively high in coastal area. However, it has not been enough to confirm the source of phosphorus in coastal groundwater in previous studies. This study aims to confirm hydrogeological properties in coastal groundwaters, and estimate the possible phosphorus sources of groundwater.

The study areas are Osaka, Marugame, Okayama, and Fukuyama alluvial plains and small island groundwaters in Hiroshima prefecture. We arranged hydrogeological and groundwater quality data sets in previous studies of Hiroshima University. The phosphorus concentrations were high in anoxic condition. In addition, shallow aquifers around alluvial clay had high concentrations. The phosphorus contents in alluvial sediments of Okayama plain were relatively high around alluvial clay. These results suggest the contribution of phosphorus from alluvial sediment to groundwater.

Keywords: submarine groundwater discharge, phosphate, semi-enclosed bay