

## Evaluation of fresh groundwater contributions to the nutrient dynamics at shallow subtidal areas adjacent to metro-Bangkok

# Yu Umezawa[1]; Tomotoshi Ishitobi[1]; Shinichi Onodera[2]; Tsutomu Yamanaka[3]; Chikage Yoshimizu[4]; Ichiro Tayasu[5]; Toshi Nagata[6]; Makoto Taniguchi[1]

[1] RIHN; [2] Integrated Sci., Hiroshima Univ; [3] TERC, Univ. of Tsukuba; [4] JST; [5] Center for Ecological Research, Kyoto Univ.; [6] CER, Kyoto Univ

Both submarine groundwater discharge (SGD) and Chao Phraya River are major agents to supply terrestrial nutrients into the Gulf of Thailand. With the development of the city and population increase, however, lowered groundwater level due to over-pumping suggests decreases of fresh groundwater flux into the sea. In this study, we investigated nutrients dynamics at intertidal bed adjacent to Bangkok city with multiple physical and chemical approaches. As reported in previous study, simple multiplication of nutrient concentrations in porewater and upward fluxes measured by automated seepage meter seemed to show substantial contribution of groundwater-derived nutrients into the coastal area. However, time-series resistivity monitoring under the seabed adjacent to Bangkok city actually did not show any symptom of fresh groundwater fluxes, and  $dD$  and  $d^{18}O$  signatures in porewater also followed this phenomenon. Consequently, observed upward water flux was considered to attribute to mainly recirculation of the overlying water.  $d^{15}N$  and  $d^{18}O$  values in nitrate existing around inter- and sub-tidal seabed suggested that nitrate was mainly supplied via river, and rapidly reduced in the surface suboxic sediment. On the other hand, remineralized ammonium and phosphate in sediments were substantially released into the overlying water. It turned out that river water-derived nutrients and organic matter could be still important as original sources of nutrients fluxes via higher fluxes of SGD at Gulf of Thailand.