

[A-HW28_30PM2]Water and material transport and cycle in watersheds: from headwater to coastal area

Convener:*Kazuhiisa Chikita(Department of Natural History Sciences, Faculty of Science, Hokkaido University), Tomohisa Irino(Faculty of Environmental Earth Science, Hokkaido University), Shin-ichi Onodera(Graduate School of Integrated and Arts Sciences, Hiroshima University), Shinji Nakaya(Department of Civil Engineering, Faculty of Engineering, Shinshu University), Masahiro Kobayashi(Forestry and Forest Products Research Institute), Mitsuyo Saito(Graduate School of Environmental and Life Science, Okayama University), Seiko Yoshikawa(Narional Institute of Agro-Environmental Sciences), Noboru Okuda(Center for Ecological Research, Kyoto University), Chair:Shin-ichi Onodera(Graduate School of Integrated and Arts Sciences, Hiroshima University)

Wed. Apr 30, 2014 4:15 PM - 5:45 PM 314 (3F)

We focus on water and material transport and cycle in watersheds. The area includes headwater to coastal or estuarine area. We welcome these new topics in various scales and fields. For example, material transport in soil, slope and watershed scale, suspended material transport interacting with dissolved material, groundwater flow system and material transport, heterogeneity and dynamics, scale up from soil to watershed, effect of human activity and climate change for long period, N and P cycles, contaminant transport, river - groundwater interaction, new tracer methods, and sediment analysis etc.

5:15 PM - 5:30 PM

[AHW28-P07_PG]Seasonal variation in nutrient dynamics in the tidal zone of Yamato river

3-min talk in an oral session

*Shin-ichi ONODERA¹, Mitsuyo SAITO², Yuta SHIMIZU³, Yutaka MARUYAMA¹, Kunihide MIYAOKA⁴, Guangzhe JIN¹, Daiki ARITOMI¹ (1.Hiroshima University, 2.Okayama University, 3.NORO, 4.Mie University)

Keywords:seasonal variation, nutrient dynamics, tidal river, pollution, phosphorus

In coastal megacities, severe groundwater depression and water pollution occurred. These impacts affected to river environment change. Especially, the river mouth area has been deposited the polluted matters. These areas have characteristics of water level fluctuation which causes river water-groundwater interaction and the associated change in dynamics of nutrients. However, these effects on the nutrient transport in tidal reaches and nutrient load to the sea have not been fully evaluated in previous studies. Therefore, we aimed to clarify the nutrient dynamics with the river water-groundwater interaction in the tidal river of Osaka metropolitan city. We conducted the field survey from the river mouth to the 7km upstream area of Yamato River, which has a length of 68km and a watershed area of 1070 km². In addition, model simulations were also conducted. Spatial variations in radon (²²²Rn) concentrations and the difference of hydraulic potential between river waters and the pore waters suggest that the groundwater discharges to the river channel in the upstream area. In contrast, river water seeped into the groundwater in the river mouth area. It may be caused by the lowering of groundwater level associated with the excess abstraction of groundwater in the urban area. The spatial and temporal variations in nutrient concentrations indicate that nitrate-nitrogen (NO₃-N) concentrations changed temporally and it negative correlated with dissolved organic nitrogen (DON) concentrations. Inorganic phosphorous (PO₄-P) concentrations showed the increasing trend with the increase of the river water level. Based on the mass balance, nutrient reproduction from the river bed was suggested in tidal reach during a summer, especially phosphorus was large.