
[EE] Evening Poster | A (Atmospheric and Hydrospheric Sciences) | A-HW Hydrology & Water Environment

[A-HW20]Materials transport and nutrient cycles in watersheds; Human and climate impacts

convener:Mitsuyo Saito(Graduate School of Environmental and Life Science, Okayama University), Shin-ichi Onodera(Graduate School of Integrated and Arts Sciences, Hiroshima University), Takahiro Hosono(熊本大学大学院先導機構, 共同), Adina Paytan(University of California Santa Cruz)

Mon. May 21, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe)

This session aims to synthesize watershed sciences in order to understand dynamical processes of materials transport and nutrient cycles in watersheds from headwaters to coastal seas focusing on human and climate impacts. The session will be integrating a variety of research disciplines including limnology, ground water hydrology, coastal oceanography, meteorology, pedology, sedimentology, forestry, agriculture, fishery, social science and more. The watershed sciences also challenge us to solve environmental issues emerged in the watersheds through our profound understanding of relations between humanity and nature. For instance, on one hand, human land uses alter water resources, dynamics of sediments, nutrients and pollutants in waters and soils on watershed scales, while changing climates may alter water cycle, the frequency and intensity of materials transport and natural disaster, sometimes having catastrophic effects on the watershed systems. This session also calls for ideas on new methods for the watershed sciences, such as tracer and molecular technique, hydrological modeling, paleontological approaches, laboratory and field experiments, social-scientific evaluation of ecosystem services and social-ecological systems, and so on, in order to elucidate physical, chemical and biological mechanisms for shedding light on natural phenomena and their changes over time in complex and dynamic watershed systems. Through this session, we would like to facilitate interdisciplinary collaboration among participants to create new knowledge on watershed sciences.

[AHW20-P24]Feasibility study for toxicity evaluation of river sediments by bioassay using *Chironomus yoshimatsui*

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Keywords:river sediment, bioassay, biologic toxicity

Huge numbers of anthropogenic toxic chemicals are newly produced every year and some chemicals are leaking into environment. River sediment is one of the largest sink of toxic chemicals. The toxic chemicals in river sediments are mobile with sediments via river flow and can spread toward seabed. However, there are too many chemicals produced annually to experimentally evaluate the risk of each chemical.

In this study, we measured the hatchability of *Chironomus yoshimatsui* and several toxic trace elements, which is extracted by batch test based on Environment Agency notification No.46 in 1991, in the river sediment and factory waste sludge samples to evaluate the biologic toxicity. Although the concentration of each toxic trace element in the samples is under the level specified in the environmental quality standards for water, the hatchability was zero or nearly zero for several river sediments and factory waste sludge. This indicates that the hatchability works as an indicator to biologic risk. The hatching rate also tends to decrease with the increase of arsenic in samples. Our study supports the toxicity evaluation of river sediments by bioassay using *Chironomus yoshimatsui* is feasible for the unknown chemicals and/or the combination of known toxic chemicals in a river sediment.