[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 synthetize 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-P18]Effect of over-levee irrigation on nutrient concentration in paddy field

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Keywords:Nutrient, Paddy field

Anthropogenic nutrient loads to aquatic ecosystems has caused serious water pollution and eutrophication due to industrialization and urbanization. To prevent the progression of eutrophication, developed countries have controlled nutrient loads from point source through low enforcement and growing awareness. In contrast of point source, controlling the loads from non-point source is difficult. Paddy field is one of main non-point source in Japan, and thus, decrease of the loads from paddy field are a key to remedy of water eutrophication problems.

Over-levee irrigation of paddy field is a traditional irrigation system before paddy field improvement project in 1960s, in which water is supplied from upper paddy field to lower paddy fields to save water resources. Over-levee irrigation may increase the residence time of water and decrease runoff volume compared with current paddy field, in which water is supplied from the irrigation canal to every paddy field. Increase in residence time may reduce nutrient loads by promoting consumption of nutrients by sedimentation, soil adsorption and absorption by living things.

The aim of this study is to test the effect of over-levee irrigation systems on nutrient loads from

paddy field to river. We investigated nutrient concentration in surface water in six over-levee irrigated paddy field for two months. In our presentation, we will introduce these results.