
[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-P22]Zooplankton Community Structure in the Littoral Zones of Laguna de Bay reflects Land Cover and Nutrient Loading in near-shore areas

*Mary Michelle Villanueva Guinto¹, Hazel A. Guerrero², Jonathan Carlo A. Briones^{1,2,3}, Rey Donne S. Papa^{1,2,3}, Noboru Okuda⁴ (1.The Graduate School, University of Santo Tomas Thomas Aquinas Research Complex, Ground floor España Manila, Philippines, 2.Research Center for the Natural and Applied Science, University of Santo Tomas Thomas Aquinas Research Complex, Ground floor España Manila, Philippines, 3.Department of Biological Sciences, College of Science, University of Santo Tomas Espana Blvd., Sampaloc, Manila, Philippines, 4.Research Institute for Humanity and Nature 457-4 Motoyama, Kamigamo, Kyoto P.O. BOX 603-8047 Japan)

Keywords:eutrophication, lake monitoring, freshwater zooplankton, cyclopoid-calanoid ratio

Laguna de Bay plays a vital role in providing drinking water, food, and livelihood not only to lakeshore inhabitants, but to those residing in its watershed areas. However, anthropogenic influences have led to the decrease in the lake's water quality, and this situation calls for an appropriate monitoring tool of lake's status. Zooplankton quickly respond to changes in water quality, making them a viable addition to the lake's monitoring programs. Thirty-three littoral sites around the lake were sampled, and eighteen species were identified. Cluster analysis using euclidean similarity index of zooplankton biodiversity indices and water quality parameters revealed that the lake has three major divisions that coincided with land cover in the adjacent watershed - northern, southern and Talim Island.

The computed Cyclopoida-Calanoida ratios showed that calanoids were more abundant than cyclopoids in the lake. This should have indicated good water quality, however, the lake's calanoid copepod is the invasive *Arctodiaptomus dorsalis* - a known eutrophic tolerant species. This was further supported by the abundance of the rotifers *Keratella* and *Brachionus* which validated the eutrophic status of the lake. The results of this study show how responsive zooplankton community structure is to prevailing environmental conditions which in turn is influenced by land cover in the surrounding watershed.