
 [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-P13]Changes in the surrounding water environment due to Ontake volcano (140927)

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Keywords: Mt. Ontake, Eruption, Volcanic ejecta, Melting snow, Water quality

1. Introduction

The steam explosion eruption of Mt. Ontake in 2014 released the volcanic ejecta and affected the lake water in the summit area and the surrounding river water used as drinking water. Therefore, we compared water quality of lakes and rivers after eruption with water quality before eruption or eruption in 1979, grasp how the water quality changed due to this eruption.

2. Results and Discussion

2.1. Change in pH and EC

The Outaki River after the confusion of the Nigori River, which received strong influence of the volcanic ejecta, became opaque, the pH was low and the value of the electric conductivity (EC) was high. After that, the pH increased, the EC value decreased. The impact of snowmelt began to appear in February and peaked at the end of April. Contrary to the initial hypothesis, since the value of EC decreased with decreasing pH. Since June, after the rainfall due to the rainy season or typhoon, the decrease in pH and the rise in EC value were measured.

2.2. Comparison with 1979 eruption

The composition of water quality about one month after the eruption was very similar between 1979 and

this time, and its distribution was also consistent. However, when comparing the water quality composition of the Nigori River immediately after the eruption, it was a calcium sulfate type in 1979, whereas in this case there was a difference in the sodium chloride type, and the concentration of each component was also different.

3. Conclusion

The influence of the eruption and its course on the water environment in Ontakeyama area could be grasped. I would like to continue the survey and continue to see how the water quality will continue to change.