
 [JJ] Evening Poster | H (Human Geosciences) | H-TT Technology & Techniques

[H-TT18]Development and applications of environmental traceability methods

convener:Ichiro Tayasu(Research Institute for Humanity and Nature), Takanori Nakano(Research Institute for Humanity and Nature, Inter-University Research Institute Corporation National Institutes for the Humanities), Keisuke Koba(京都大学生態学研究センター)

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Modern society uses almost all the elements present in the natural world. Although there have long been calls for the sustainable use of the resources that provide these elements and the building of human societies that are in harmony with the environment, the survival of the human race is increasingly at risk as a result of qualitative changes to the environment as a whole. Implementation by the society of methodologies for diagnosing and tracking these various elements of the natural environment and their relationships with humans are now required.

Elements transport in the spheres on the surface earth and the human society and human body. Information on the concentrations and stable isotopes of elements is powerful in tracing the transportation of materials and have been applied in studies on the atmosphere-hydrosphere circulation, ecological service, and the life, health and history of humans. We propose a session to discuss development and applications of environmental traceability methods to achieve traceable system.

Especially, we encourage to present a research based on Environmental Isotope Study, which integrates isotopic studies in various disciplines, such as geochemistry, hydrology, ecology, geology, mineralogy, anthropology, food science (identification of origins), and forensics.

[HTT18-P07]Geochemistry of river waters collected from the Okayama and Tottori Prefectures, Japan

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A detailed geochemical and isotopic study of river waters from the Okayama and Tottori Prefectures, Japan, has been undertaken in order to evaluate the water-soil (rock) interaction, as well as human impact on the geochemical nature of the river water. A total of 646 samples were collected from 442 locations since 2011. The pH, EC, and water temperature were measured on site, and the major dissolved components, trace element (47 elements) concentrations, and O-H-S-Sr isotope ratios were measured in the laboratory. These data are being used to construct the geochemical maps of the river water of the two prefectures.

In 2017, we focused on the investigation of the central to western Tottori Prefecture. The river waters in the area are generally characterized by high Rb and Cs concentrations, which likely reflect the presence of dacitic lava and volcanic sediments of the Daisen volcano. A similar pattern is also observed for Si and V concentrations.

The oxygen isotope ratio displays a clear altitude effect. The d-excess value is high in the northern

Okayama and Tottori Prefectures (>20), compared to the southern Okayama prefecture (5~15). This regional variation can be explained by taking into account the oxygen and hydrogen isotope ratios of the meteoric water (Mao 2017), as well as the sharp contrast in the amount of rainfall during the winter season.

The concentrations some elements such as Ca, Cr and Ni also display regional variations that seem to correlate well with the geochemical characteristics of rocks exposed in the area. On the other hand, the concentrations of other dissolved constituents such as SO_4 and NO_3 seem to correlate better with the population density. The high resolution geochemical maps of these, as well as other representative elements and isotopes, will be presented at the meeting.