[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)

Tue. May 22, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe) 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-P03]Spatial variation in chemical soluble ions of the surface snow in the Tateyama Mountains in Toyama Japan

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The chemical soluble ions in snow are derived from various sources such as sea salt, terrestrial surfaces, volcanos, and anthropogenic activities. The composition and concentration of ions in snow vary depending on the distance from the sources, emission rate, and the wind direction. Therefore, the spatial variation in chemical soluble ions in a snow field reflects the transportation process of the aerosols. In addition, the chemical soluble ions in snow are important to evaluate the characteristics of melt water and its effect on the ecosystems along the streams. In Tateyama Mountains in Toyama prefecture of Japan, a large amount of snow accumulates during winter, and remains until summer. Snow contain chemical soluble ions derived from fumaroles of Jigoku valley, desert dust from far west of China and anthropogenic substances. This study aims to describe the spatial and seasonal variations in chemical soluble ions in the surface snow in the Tateyama Mountains.

We collected the surface snows in Tateyama Mountains in April, May, June, July and August 2017 and measured the water stable isotopes and the concentrations of major ions (Cl⁻, NO_3^{-} , SO_4^{-2-} , Na^+ , NH_4^{++} , K^+ , Mg^{2+} , Ca^{2+}) of the samples. Based on the results, we created maps of their spatial variation using a GIS software.

The results show the concentration of Cl⁻ was relatively higher in the area near the fumaroles in Jigoku

valley during the study period. This is probably due to HCI contained in the volcanic gas emitted from the fumaroles. The concentrations of ions other than Cl⁻ were generally higher in the southern area of the Murododaira in April. This suggests that the aerosols are mainly supplied from the Tateyama caldera located in south of the mountain. These spatial variations of soluble ions may affect vegetation and microbial activity in snow.