[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-P08]Sulfur and oxygen isotopic ratios of sulfate in precipitation at Chugoku region and Chinese desert sand

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Monthly precipitations at 6 sampling points in Tottori and Okayama have been sampled in order to observe seasonal and secular variation of cross-border pollution from China. Oxygen isotope ratio of sulfate ion in precipitation, which is not measured in previous studies of acid rain, is measured in this study in addition to sulfur isotope ratio. Last year preliminary study suggested that there is the forth endmember observed in spring having high oxygen isotope ration in addition to the previously assumed three endmembers, sea-salt, sulfate originated from Chinese coal combustion and sulfate originated from domestic coal combustion. In this study, three non-sea-salt endmembers are estimated as follows: Group A which has high δ^{34}S (δ^{18}O=+7.0‰, δ^{34}S=+7.4‰) affected by Chinese coal combustion in winter,
group B(δ^{18}O=+7.0‰, δ^{34}S=-1.1‰) which has low δ^{34}S mainly affected by domestic oil combustion in summer, and group C which has high δ^{18}O (δ^{18}O=+17.0‰, δ^{34}S=+4.0‰) observed in spring. Oxygen isotope ratio of non-sea-salt sulfate varies simultaneously with non-sea-salt Sr isotope ratio. Group C may be affected by the component related to the yellow sand, because non-sea-salt Sr isotope ratio becomes high at yellow sand event. Sulfur and

oxygen isotope ratios of 11 desert sand samples were measured. Sulfur isotope ratios of desert sand samples range from +4.8 to +11.2‰, and oxygen isotope ratios from -3.7 to +14.0‰. These results do not agree with isotope ratio of group C. Thus, source material of yellow sand may not be directly related to the source material of group C. Further investigation is required to specify the source material of group C.