

## Environmental studies using environmental traceability methodology

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Stable isotope ratios of elements, together with the concentrations of elements, can trace a matter flow, the environmental condition of sites, ecosystem structure and food products. Spatio-temporal variation of multiple isotope ratios can be used for studying the earth systems from local to global point of view. By using the traceability function of the multiple isotope ratios, we can conduct research that contributes to solving global environmental problems covering various regions and time scales. Spatio-temporal variation of multiple isotope ratios can be used for studying earth systems, ranging from local to global scales. The information may serve as a key decision-making factor for local people to consider water, food and environmental security, all of which are fundamental for the sustainability of human society.

We have conducted a research for establishing a methodology for how to use the concept of environmental traceability from 2017 to 2019. A combination of quantitative and qualitative tools, including “Multi-Isoscapes” (use of multiple elements and multiple isotope ratios, together with GIS-based mapping technique), social surveys, and workshops, were deployed to investigate the role of environmental traceability in confronting environmental issues. We hypothesized that the role and perception of traceability methods in transdisciplinary processes will differ among stakeholders and that the co-production of “Multi-Isoscapes” can act as an effective “bridging tool” for understanding and explaining variation in local environments. Based on the research results, we have established an internet website to serve as a platform that shares and develops the environmental traceability methodology. The website will continue to connect providers of the environmental traceability methodology with potential users.

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