

Building an ontology of isotope environmental science

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In its Midterm Master Plan Phase 3 (FY 2016-2021), the Research Institute for Humanity and Nature (RIHN) will promote research and development in the visualization of isoscapes, or spatial information on environmental isotope ratios, including the disclosure and sharing of measured isotope data. As a preliminary study in this area, the authors built an ontology of isotope environmental science using the following method. First, in a brainstorming session with researchers of informatics and isotope environmental science, participants sorted the relationships of vocabularies extracted from lectures in the RIHN citizen seminars by posting sticky notes on a wall. This brainstorming session successfully organized the ontological relationships of terms in isotope environmental science, particularly in hydrology, ecology, geochemistry, and the social sciences. Then, the ontology was structured and visualized by using an analytical program called Hozo (<http://hozo.jp>). To continue this approach, the ontological model should be extended to other related fields of research, such as archaeology and geography. Furthermore, the authors plan to apply the RDF (Reference Description Framework) for describing the ontological relationships within the triple of subject, predicate, and object.

Keywords: Isotope environmental science, ontology, knowledge base, terminology

