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Introducing a semantically-enabled, ontology-supported software tool for the multicriteria, multidimensional assessment of natural hazard risk

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The assessment and management of risks imposed by natural hazards is increasingly in the focus of decision-makers and the public. Firstly, risk management, i.e. the reduction of unacceptable high risk, needs to be based on potentially exhaustive information. That is why risk assessment needs to properly reflect on the individual characteristics of those elements of the nature (i.e. environmental), built (i.e. economic) and societal system which are at risk of being flooded. Secondly, decision-makers and stakeholders require decision making support in risk assessment as well as disaster and risk management. Semantically-enabled, ontology-supported software tools provide a thorough basis for tackling these aforementioned needs. Ontologies allow for a machine-interpretable, reusable and sharable encoding of scientific as well as local knowledge. We present such a software tool and its underlying ontology and demonstrate its application for risk assessment. We furthermore show how the use of an ontology for knowledge encoding can help to adapt an existing tool for multi-hazard problems.