

Reviewing and Visualising Interaction Relationships for Natural Hazards

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This talk discusses the potential of one natural hazard triggering or increasing the probability of another natural hazard occurring. For example, a volcanic eruption as a primary hazard can trigger many different secondary hazards, including earthquakes, tsunamis, landslides, floods, lightning and extreme temperatures, with each of these in turn triggering or increasing the probability of other hazards, thus resulting in multi-hazard cascades. Constraining hazard interactions is particularly relevant when considering countries which experience a high frequency and breadth of natural hazards. In this talk, we present case examples of potential interaction relationships between natural hazards. We then consider 21 natural hazards, drawn from six hazard groups (geophysical, hydrological, shallow Earth, atmospheric, biophysical, and space hazards). Using a wide-ranging review of grey- and peer-review literature, we present a broad overview, characterization, and visualization of 90 interaction relationships between these 21 natural hazards. A synthesis is presented of the identified interaction relationships between these hazards (also termed 'multi-hazards'), using an accessible visual format particularly suited to end users. Our approach allows those undertaking research into single hazards to place their work within the context of other hazards. It also communicates important aspects of hazard interactions, facilitating an effective analysis by those working on reducing and managing disaster risk within the policy and practitioner communities. Knowledge of these potential interactions reinforces holistic or multi-hazard approaches to natural hazard assessment.