



## **Finding the right metrics of vulnerability: correct and incorrect simplifications of behavioral factors**

Jamie McCaughey (1,2), Michael Feener (3), Ibnu Mundir (4), Hayat Hayatullah (4), and Patrick Daly (1)

(1) Earth Observatory of Singapore, Singapore, Singapore (jmccaughey@ntu.edu.sg), (2) Institute for Environmental Decisions, ETH Zürich, Switzerland, (3) Oxford Centre for Islamic Studies, Oxford University, UK, (4) International Centre for Aceh and Indian Ocean Studies, Banda Aceh, Indonesia

Vulnerability to natural hazards arises from a complex combination of geographical, physical, engineering, economic, cultural, and behavioral factors. To develop vulnerability indices or other assessment tools that can feasibly be used under limited project time, expertise, and budgets, we must strip out most of the detail and nuance underlying any one factor. In so doing, however, we must be sure to choose simplifications that are crudely correct rather than misleadingly incorrect. In this presentation I illustrate how commonly accepted simplifications of fatalism can lead to fundamentally incorrect interpretations of vulnerability.

In efforts to reduce vulnerability to natural hazards and increase resilience, fatalism is often seen as a barrier. In this view, people who express fatalistic beliefs about disasters are considered to be less likely to take protective actions. We show this view to be false, using a combination of surveys and interviews with residents and religious leaders in post-tsunami Aceh, Indonesia. People believe deeply that their fate is ultimately in the hands of God, but also believe that it is an obligation of their faith to do their best to keep themselves, their families, and their communities safe from hazards. Many people have moved to safer areas, while those who live near the coast evacuate when there are signs of danger. In cases where people do not take protective actions, it is often due to other constraints, such as the post-tsunami international reconstruction having provided housing aid only to rebuild in-place near the coast. People have woven together their religious views of disasters with scientific information that was widely disseminated after the 2004 tsunami. These findings indicate that while fatalism is tied to deeply held beliefs, fatalistic statements about disasters may indicate the presence of practical, not cultural or religious, barriers to preparedness actions. For research, this implies that fatalism does not necessarily cause vulnerability, thus should not be represented as such in indices or other assessments. For practice, interventions need not focus on countering fatalism, but rather on lowering practical barriers to preparedness actions, working with religious leaders to do this in a culturally congruent way.