

MEGA QUAKE: CASCADING EARTHQUAKE HAZARDS AND COMPOUNDING RISKS

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MEGA QUAKES: CASCADING EARTHQUAKE HAZARDS AND COMPOUNDING RISKS

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Aftermath of the 2011 Tohoku earthquake and tsunami in Otsuchi, Iwate, Japan.

Image: Nobuhito Mori.

Large-scale earthquake hazards pose major threats to modern society, generating casualties, disrupting socioeconomic activities, and causing enormous economic loss across the world. Events, such as the 2004 Indian Ocean tsunami and the 2011 Tohoku earthquake, highlighted the vulnerability of urban cities to catastrophic earthquakes. Accurate assessment of earthquake-related hazards (both primary and secondary) is essential to mitigate and control disaster risk exposure effectively. To date, various approaches and tools have been developed in different disciplines. However, they are fragmented over a number of research disciplines and underlying assumptions are often inconsistent. Our society and infrastructure are subjected to multiple types of cascading earthquake hazards; therefore, integrated hazard assessment and risk management strategy is needed for mitigating potential consequences due to multi-hazards. Moreover, uncertainty modeling and its impact on hazard prediction and anticipated consequences are essential parts of probabilistic earthquake hazard and risk

assessment. The Research Topic is focused upon modeling and impact assessment of cascading earthquake hazards, including mainshock ground shaking, aftershock, tsunami, liquefaction, and landslide.

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