

Session ID: SHR-13

Title

HIGH-RESOLUTION SIMULATION OF REGIONAL EARTHQUAKE RISK AND RECOVERY

Convenors

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Description

Emerging information technologies and computational modeling tools offer unprecedented capabilities for high resolution simulation of earthquakes, their damage to buildings and lifeline systems, and recovery of communities. These advanced simulations employ physics-based model and detailed databases that provide higher fidelity than more traditional methods (e.g., Hazus), which rely on empirical models with coarsely aggregated building inventory data. By modeling earthquake impacts with higher resolution, the simulations can extend beyond estimating aggregate losses to examining the unique risks to communities and ways to mitigate the risks through seismic retrofit, recovery planning, and other interventions. Moreover, higher resolution modeling of impacts to local communities affords the opportunity to examine questions related to social justice, e.g., disproportionate impacts of disasters on marginalized communities. Assembling the modeling tools and data required for high-resolution simulations is facilitated by the development of computational workflows to seamlessly connect modeling software components and databases from earth sciences, engineering, and social sciences. This session will feature developments in advanced regional simulation software, by the NSF-sponsored Computational Modeling and Simulation Center (SimCenter, <https://simcenter.designsafe-ci.org/>) and other groups, along with application of high-resolution simulations in several landmark studies.

Invited Speakers

E. Taciroglu ³, R. Costa ⁴, B. Stojadinovic ⁵, K. Soga ²

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