

Session ID: SHR-15

Title

RECENT ADVANCES IN REGIONAL RISK ASSESSMENT

Convenors

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Description

In the last two decades, the performance-based earthquake engineering framework developed by the PEER Center has gained much attention from researchers and practitioners not only in the U.S. but also in most seismic-prone countries. The approach provides a rational probabilistic framework that explicitly considers and propagates various sources of uncertainty. This framework was focused on individual structures under seismic hazards. However, large earthquakes occurring close to large urban regions may strike and affect thousands or even millions of structures simultaneously, leading to large numbers of casualties and significant disruptions to the normal functionality of communities. On the other hand, regional risk assessment has been performed using overly simplistic approaches both for the characterization of seismic hazard and to estimate in one step the level of damage and loss through simplified vulnerability functions. The latter are typically assigned for building classes often grouping, for example, buildings over a range of heights. Adoption of performance-based approaches at the regional scale requires broader definitions of stakeholders and performance metrics to evaluate the seismic risk of groups of structures that are spatially distributed within a region, referred to as regional seismic risk.

The main goal of this session is to convey experts to make presentations summarizing recent research related to the development or improvement of regional seismic risk assessment methodologies within a probabilistic framework that explicitly quantifies, incorporates, and propagates uncertainties at the different stages of the analysis, to provide improved information for decision-makers. The session will be planned such that it does not focus on presentations on one aspect of the process, but on the overall procedure from exposure modeling, seismic hazard modeling, seismic response, damage estimation, and impact assessment.

Invited Speakers

T. Rossetto ³, C. Arteta ⁴, A. Acevedo ⁵, V. Silva ⁶

Affiliations

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