

14TH INTERNATIONAL CONFERENCE ON STRUCTURAL SAFETY AND RELIABILITY - ICOSSAR 2025

June 1-6, 2025 | University of Southern California Los Angeles, CA, USA

SESSION 37 | OVERVIEW

RECENT ADVANCES IN VULNERABILITY MODELLING FOR THE BUILT-ENVIRONMENT

As global urbanization accelerates, the resilience of infrastructure against natural hazards—such as earthquakes, floods, and tsunamis—has become increasingly crucial. The rising frequency and severity of these events underscore the need for advanced methodologies to assess and mitigate risks, minimizing the impact on the functional recovery of communities at risk.

This session will explore the latest advancements in vulnerability modeling to enhance the accuracy of probabilistic regional risk assessments for various building and infrastructure types.

KEY TOPICS

- Innovative tools and statistically robust models to assess both direct and indirect economic losses, environmental impacts, downtime, business interruption, and functional recovery;
- Integrating diverse datasets and managing large-scale data for precise risk assessments;
- Case studies from various regions worldwide, showcasing real-world applications and validating these models in practice.

IASSAR

DEADLINE: DECEMBER 31, 2024

CALL FOR SUBMISSIONS

We invite submissions related to:

- Reliable consequence models (e.g., damage-to-loss ratios, generalized storey loss functions);
- Region-specific or global fragility assessments associated with relevant building classes andaccounting for damage to structural and/or non-structural components and/or contents;
- Datasets or vulnerability functions for improved quantification of direct and indirect economiclosses, environmental impact due to damage to structural and non-structural components;
- Datasets or vulnerability functions for improved characterization of functional recovery associatedwith downtime and business interruption models for contingency planning due to earthquake impacts;

SESSION GOALS

By bringing together experts from multi-disciplinary backgrounds such as hazard sciences, social andenvironmental sciences, and catastrophe risk modelling, this session aims to encourage interdisciplinary collaboration and explore both current practices and future research directions. Through this exchange, participants will gain insight into data-driven strategies designed to mitigate the impacts of natural disasters on global infrastructure, contributing to a more resilient built environment worldwide.

CONVENORS



AL MOUAYED BELLAH NAFEH
Physical Vulnerability Lead
GEM Foundation
mouayed.nafeh@globalquakemodel.org



MEERA RAGHUNANDAN
Associate Professor
Indian Institute of Technology Bombay
meera.r@iitb.ac.in



EYITAYO OPABOLA
Assistant Professor
University of California, Berkeley
tayo@berkeley.edu

