



Risk and Reward: Working at the Boundaries of Earthquake Science

Laurie Baise, PhD, PE

Professor and Chair, Civil and Environmental Engineering, Tufts University

EERI, 2025 Joyner Lecture

New England Lecture Series

Thursday, March 13, 2025, 4:30 – 6:00 PM (Eastern Time)

Hybrid Event (In-Person and Virtual)

Address: Verisk Extreme Event Solutions, Lafayette City Center,
2 Avenue de Lafayette, 2nd Floor, Boston, MA 02111

For registration, please visit:

https://us06web.zoom.us/meeting/register/K8_9xaD4Q1isrGLVqdmIOW

Award: The Joyner Lectureship is jointly awarded by EERI and SSA to those who have provided outstanding earth science contributions to the theory and practice of earthquake engineering or outstanding earthquake engineering contributions to the direction and focus of earth science research—together with demonstrated skills of communication at the interface of earthquake science and earthquake engineering. The lecture honors the distinguished career of William B. Joyner at the U.S. Geological Survey and his abiding commitment to continuing communication and education at the interface between research findings of earthquake science and the practical realities of earthquake engineering.

For more information about the Joyner Lecture Award, visit the SSA website at www.seismosoc.org/awards/joyner

Abstract: Working at the boundary of geology, seismology, and earthquake engineering can be both rewarding and challenging. In this lecture, Prof. Laurie Baise will talk about bridging the gap between earthquake engineers and earthquake scientists through geospatial proxies for site effects and liquefaction and the importance of regionally informed models. She will highlight her contributions developing both geospatial liquefaction and site effects models for both global and regional use. In the lecture, she will discuss some of the challenges that were the impetus for these contributions. Challenges related to using geostatistics to interpolate liquefaction potential across Boston led her to explore geological and geospatial approaches to characterizing liquefaction potential. Similarly, her identification of challenges in predicting one-dimensional site response using vertical arrays in Japan and the importance of regional wave propagation in San Francisco Bay led to her work on site response complexity and her recent contributions on geospatial topography derived site and basin terms for ground motion models.

Biography: Laurie Baise has continuously worked at the interface of earthquake science. Baise's research has spanned earthquake site response, liquefaction, site characterization, regional wave propagation, ground motions models and earthquake damage assessment. Baise's interest in regional seismic hazard efforts stemmed from her work in the northeastern United States, where she has documented liquefaction and ground-shaking potential throughout New England. Her work as president and founding member of the New England Chapter of EERI and her development of the first earthquake engineering research group at Tufts brought renewed attention to a region where earthquake hazards are often unappreciated. Her work in New England has highlighted the unique characteristics of soil amplification in glaciated terrains and the importance of models that can be adapted to different regional contexts. Baise's research contributions at the interface of seismology and earthquake engineering include a new approach for predicting liquefaction extent after earthquakes, called geospatial liquefaction modeling. The approach has fundamentally advanced the mapping of liquefaction risk across broad geographical regions. Her work inspired an analogous model for landslides, and the two models are now integrated into the U.S. Geological Survey's earthquake monitoring systems and by hazard modelers in the insurance industry. She is currently working on comparable geospatial models for site amplification for use in ground motion models and the National Seismic Hazard Maps.