University at Buffalo
Department of Civil, Structural and Environmental Engineering
School of Engineering and Applied Sciences

ENGINEERING SEMINAR

## EERI Friedman Family Visiting Professional Lecture

# Rapid Reconnaissance Technologies for Multi Hazards


## Sissy Nikolaou, PE, F.ASCE

**Principal, Multi-Hazards & Geotechnical Engineering, WSP Geotechnical & Tunneling**
**WSP Technical Fellow of Earthquake Engineering**



## Abstract

Extreme multi-hazards of earthquakes, tsunamis, hurricanes, landslides, floods, or terrorist attacks have generated unfortunate, yet valuable, lessons that reveal risks to our built environment and population. These lessons offer invaluable case studies that can improve and validate empirical methodologies and lead to modification of design codes. Reconnaissance immediately after a disaster, observation and documentation of failures but also successes, and long-term monitoring of the recovery and rebuild are inherently necessary for engineers to advance the state of practice and benefit the society by creating safer designs.

Reconnaissance methods have evolved dramatically due to advancements in instrumentation and visualization technologies that have become an essential tool that was absent in the early years of observing natural disasters. This presentation will highlight the importance of post-hazard observations with selected historical examples and focus on technologies for multi hazards geotechnical reconnaissance through example case studies. Dr. Nikolaou will share her reconnaissance experience after Hurricane Sandy, 9-11, and several earthquakes including the recent 2016 Ecuador earthquake focusing on the role of observations in: (i) understanding effects of extreme events; (ii) studying the behavior of designs to identify flaws for improvement, or successes for replication in the future and advancement of design codes; (iii) collecting data to enhance knowledge and prepare for the next event; (iv) disseminating data to response and rescue teams; (v) organizing and using data as case histories that can assist in developing empirical methodologies.


## Biography

Sissy Nikolaou is a practicing earthquake engineer with more than 20 years of experience. She is a Principal with WSP, where she leads the firm's multi-hazard resilience engineering practice. Her education includes a Diploma from the NTUA, Greece and MSc and PhD degrees from UB, where she is now on the Advisory Board of the Dean of Engineering. Her technical capabilities span from structural to geotechnical engineering with emphasis on performance-based design, seismic hazard, liquefaction evaluation and mitigation and risk/resiliency assessment of critical facilities under extreme events. In New York, her focus has been to bring earthquake awareness and establish the practice standard addressing local geology and tectonics. Around the globe, she develops unique, creative solutions in challenging infrastructure, bridge, and private development projects that require cross-cultural interaction of multidisciplinary teams.

Dr. Nikolaou has had many leadership roles in organizations like the Earthquake Engineering Research Institute (EERI) and the Applied Technology Council (ATC), where she currently serves as member of the Board of Directors, and has chaired the seismic committee of the 2014 NYC Building Code. For her contributions, Dr. Nikolaou has been recognized with the Prakash Prize for Excellence in Earthquake Engineering, the Fellow title of the American Society of Civil Engineers, and was invited by President Obama to participate in the 2016 White House Earthquake Resilience Summit.

**Date: Friday, April 28th, 2017 Time: 11.00 am**
**Location: 140 Ketter Hall, North Campus, University at Buffalo**