HURRICANE KATRINA: GEOSYSTEMS IN CRISIS

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Hurricane Katrina was one of the greatest natural disasters of modern times. It literally changed U.S. policy from a post 911 focus on defense of critical infrastructure to the development of resilient communities. Professor O’Rourke will explore the concept of resilience in terms of civil infrastructure and its dependence on the geosystems that surround and underpin the City of New Orleans. He will discuss the dynamics of the Mississippi River, loss of wetlands, and increasing exposure to storm surge and river flooding that have influenced planning and politics for over two centuries in the Louisiana delta. He will describe the levee system that was constructed to protect New Orleans and the geotechnical conditions that affected its performance during Hurricane Katrina. He will discuss the technical reasons for failure of the levee system, including the mechanisms of failure where breaches occurred and the foundation characteristics and soil properties influencing failure. He will discuss the consequences of failure, with select descriptions of its influence on the energy infrastructure of New Orleans and Gulf of Mexico. He will describe current and planned improvements in the levee system, and will discuss prospects for the future.

Professor O’Rourke is a member of the US National Academy of Engineering and a Fellow of American Association for the Advancement of Science. He serves on the U.S. National Academies Committee on New Orleans Regional Hurricane Protection Projects, which was commissioned to review the investigations of the US Corps of Engineers and their future plans for levee improvements. He authored or co-authored over 300 technical publications, and has received numerous awards from professional and academic organizations. His research interests cover geotechnical engineering, earthquake engineering, underground construction technologies, engineering for large, geographically distributed systems, and geographic information technologies and database management.