6th Annual Web Conferences 2020
Technical Committees

Live Streaming Daily – Technical Case Studies

December 6 – 10, 2021

The Geo-Institute Embankments Dams and Slopes Technical Committee will live-stream the session "*Extreme Events on Dams, Landslides, and Flowslides*" on Thursday, December 9 at 11 AM EST. The topics include:

"Hurricane and Storm Damage Risk Reduction System (HSDRRS) Performance during Hurricane Ida," **Adda Athanasopolous-Zekkos**, Ph.D., M.ASCE and Navid H. Jadfari, Ph.D., M.ASCE

This presentation will provides an overview and lessons learned from the performance of the Hurricane and Storm Damage Risk Reduction System (HSDRRS) from Hurricane Ida, along with the historical precedence from prior hurricanes Katrina in 2005, Gustav in 2008, and Ike in 2012. An emphasis will be placed on the hydraulic and geotechnical components and how these subsystems integrate to reduce storm surge, waves, and rainfall damage, which is especially important as rainfall is an increasing hazard in New Orleans.

"Three-Dimensional Stability Analysis of the 2014 Oso, Washington Landslide," **Pourya Kargar**, S.M.ASCE, **Abdolreza Osouli**, Ph.D., P.E., M.ASCE and **Timothy D. Stark**, Ph.D., P.E., D.GE., F.ASCE

This presentation will discuss a three-dimensional analysis of the 2014 Oso Landslide near Seattle, Washington. The topography of the slope prior to this landslide was complex due to the occurrence of several historical landslides on the same slope and three-dimensional (3D) features of the slope. This presentation will describe an inverse 3D limit equilibrium analysis to propose a 3D failure mechanism and sequence for the 2014 Oso Landslide. The 3D mechanism consists of two main phases (Phase I and II) with three retrogressive slides that were identified during field reconnaissance and confirmed via the 3D limit equilibrium slope stability analyses. The 3D analysis includes the complexities of the ancient landslide bench along with surrounding slope geometry and features, which help explain the initiation and direction of slide movement.

"Simulation of large deformations and soil-water-structure interactions with the Material Point Method," **Alba Yerro Colom**, Ph.D., M.ASCE

This presentation will discuss the development of solution schemes capable of predicting the deformation process from failure initiation to post-failure dynamics in multi-phase environments to predict the triggering and runout of landslides, slope instabilities, river levees, and tailings dam failures. In this lecture, the Material Point Method is presented by means of different case studies as an emerging numerical technique capable of modeling the whole instability process in dry, saturated, and unsaturated porous media as well as soil-water-structure interaction problems.

"Undrained Torsional Ring Shear Testing of Marine Sediments From the Mississippi River Delta Front," **Jack Cadigan**, Ph.D., M.ASCE and **Navid H. Jafari**, Ph.D., M.ASCE

Seafloor instability in the Mississippi River Delta Front presents a severe risk oil and gas and wind energy and telecommunication infrastructure. Repeat passage of hurricanes have caused submarine movement, including most recently Hurricane Ida in August 2021. Quantifying the large-displacement undrained behavior of these sediments requires knowledge of the undrained shear strength across a range of forcing rates from sub-decadal (annual river floods) to major hurricane passages (Hurricane Ida, 2021). In this presentation, the large-displacement, rate-dependent undrained shear strength of these sediments was measured using the constant volume torsional ring shear device, and the results are compared with radionuclide testing and sedimentological properties on piston cores to identify the potential mechanisms behind seafloor movement in the Gulf of Mexico.