ERDC-CHL Researchers Participate in Panel Discussions at Geo-Congress 2023

Drs. Brian Harris and Ian Floyd of ERDC-CHL participated in panel discussions at ASCE's Geo-Congress 2023 in Los Angele, CA and presented on-going USACE efforts.

Drs. Brian Harris (CHL-Coastal Engineering Branch) and Dr. Ian Floyd (CHL-Rivers and Estuarine Branch) were invited to present on-going USACE efforts at ASCE's Geo-Congress 2023 in Los Angeles, CA.

Dr. Harris participated on the "Unmanned Aerial System (UAS) Applications for Infrastructure health and Monitoring and Geotechnical Asset Management" panel where he provided a talk entitled "UAS Monitoring of Wetland Surface Elevation Post Beneficial Use." The USACE districts require cost-effective methods to monitor the placement of beneficial use dredged material (BUDM) in back-bay environments, however traditional terrestrial and satellite methods commonly lack sufficient spatial or temporal coverage. Dr. Harris provided two field examples on monitoring BUDM in New Jersey in collaboration with the Philadelphia District (USACE-NAP) to demonstrate the superior resolution and accuracy UAS-based methods offer. The goal of this work unit is to provide districts with accessible and sufficiently accurate methods to monitor geomorphology post BUDM to facilitate better management and offer a means to quality control geotechnical modeling efforts.

Dr. Ian Floyd participated on the "Mitigation of Wildfire Effects Using Naturally-Sustainable Practices" panel where he provided a talk entitled "Naturally-sustainable efforts to mitigate the adverse effects of wildfires as adopted by the Corps of Engineers. Efforts include; measures to control debris flow and sediment management of post-wildfire using in situ materials, hydraulic modeling of watersheds to predict flooding downstream, and MICP to treat wildfire-altered soils aiming to improve their erodibility, infiltration and strength properties." The intensity and frequency of wildfires are increasing bringing immense devastation that may be compounded by precipitation events and debris flows. Destructive non-Newtonian flows (or debris floods) can be 1,000-times larger than pre-wildfire floods and are common following wildfires. In the past, a limited understanding of the increased risk left fire-torn communities particularly vulnerable to flooding. USACE developed a fast and reliable method to assess the risks of wildfire impacts on flood risk management, as well as quantitative approaches to predict changes in streamflow and sediment runoff for planning and designing flood control measures. Incorporating non-Newtonian physics and simple yet effective empirical-based hydrology approaches to account for wildfire effects into existing USACE hydrologic and hydraulic (H&H) numerical modeling systems has significantly increased model simulation time and accuracy.

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Figure 1. (Left) Title slide of Dr. Harris's talk. (Right) Dr. Harris presenting.