Demonstration of DSS-WISE Web, A Web-Based, Automated Dam-Break and Levee Breach Flood Modeling System

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Extended Abstract

The National Center for Computational Hydroscience and Engineering (NCCHE) at the University of Mississippi has been developing and operating the Decision Support System for Water Infrastructural Security (DSS-WISE) Lite and DSS-WISE Web since November 2016. With funding from FEMA, DHS S&T, and others, this simple and easy-to-use tool has been relied upon by over 1,600 users from the dam safety community to submit over 50,000 simulations. The locations of these simulations are shown on the left image of (Figure *1*). Most simulations can be set up in under 5 minutes, and detailed, GIS-compatible results are available within 30 minutes for 87% of cases. This tool has been designed to allow users to get a first-level analysis of flood inundation, flood arrival time, and Human Consequences (HCOM) for prioritization and screening using only a minimum set of inputs without requiring them to obtain expensive software, servers, or numerical modeling expertise. An example of HCOM outputs is shown on the right of (Figure *1*). The system uses an automated data preparation procedure to input into a verified and validated numerical model running behind a secure web-based portal for setup and results access and download. This live computer model demonstration will show simulation setup and results visualization and querying along with an explanation of the easy-to-use web interface that saves users the trouble of downloading data, setting up a numerical model, or running simulations on their own. The web-based interface for

the DSS-WISE Lite model was recently updated to version 3.0, which brought several new and improved capabilities. These features include the ability to model dams in series, the ability to model levees for terrain modification, a breach parameter calculator, and improved terrain elevation visualization and querying, among others. During the live model demonstration, a test case will be set up using these new features, and the results of a simulation will be shown along with the ability to query results right from the user's web browser. Finally, an HCOM simulation will be demonstrated to capture and map the various levels of human flood hazard caused by the simulated event.

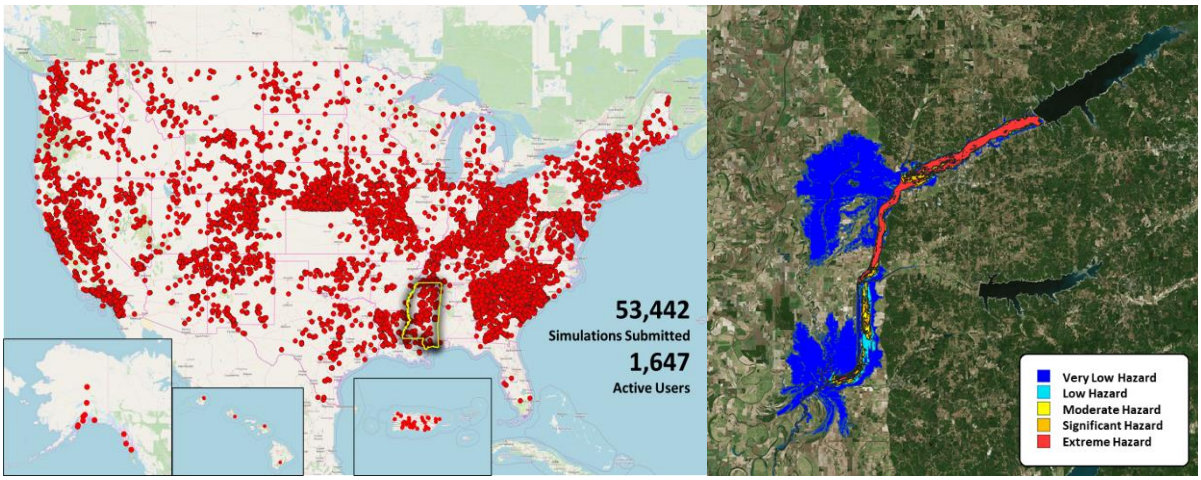

Figure 1: Left: Locations of DSS-WISE Lite simulations since 2016. Right: Flood hazard categories for Sardis Dam, MS.