

DHS Science and Technology Directorate

SUMMIT for Homeland Emergency Response and Planning (SHERPA)

Enhancing Use of Science-based Tools for Emergency Preparedness and Management

Preparing State, local, tribal, and territorial governments responders for a rapidly evolving, and diverse set of hazards and threats is a major challenge. The Department of Homeland Security (DHS) Science and Technology (S&T) Directorate has funded the development of Standard Unified Modeling, Mapping, and Integration Toolkit (SUMMIT) for Homeland Emergency Response and Planning (SHERPA), a software toolkit that will provide the DHS operational components with a scalable modeling and simulation platform to efficiently generate science-based data on hazards and their complex, cascading effects for the emergency preparedness community.



Figure 2. Linking of models in SHERPA templates

Mission Impact for the Emergency Planning Community

The emergency planning community lacks a mechanism to efficiently produce data for multiple scenarios or archive, share, and reuse any data used in plan creation for future planning, comparative analysis, or during emergency operations. Moreover, DHS operational components are not making full, effective use of modeling and simulation to support disaster response planning and operations.

The cutting edge modeling and simulation framework in SHERPA will address three key technical challenges in planning and response: 1) integration, 2) uncertainty incorporation, and 3) data reuse. Results produced by the capability will enable superior and more timely understanding of the variability and uncertainty of decision-making factors resulting in an enhanced, cost-effective response and planning ability.

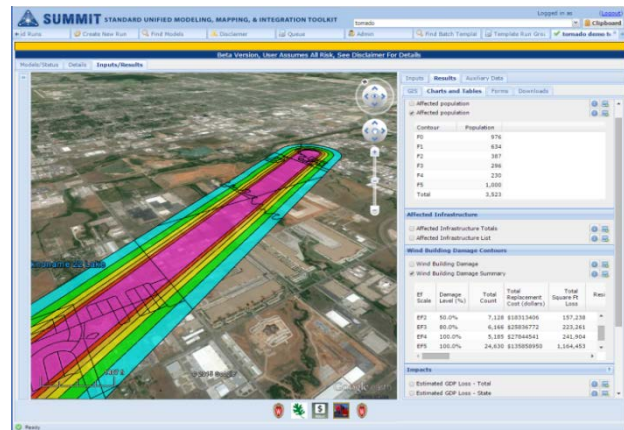


Figure 1. Wisconsin Tornado Model in SHERPA

SHERPA Users and Partnerships

SHERPA is partnering with multiple agencies to provide emergency management communities across all levels of government with coordinated and impactful modeling and analysis products. To date, SHERPA has provided modeling and simulation support to over 20 federal, state and regional preparedness and operational planning efforts including: the National Hurricane Program, FEMA's Threat and Hazard Identification and Risk Assessment planning process, Presidential inauguration planning, National Level Exercises, and multiple US-Sweden international exercises. DHS S&T continues to both extend SHERPA's capabilities (e.g., advanced technology development to support planning operations); and expand SHERPA's applications.

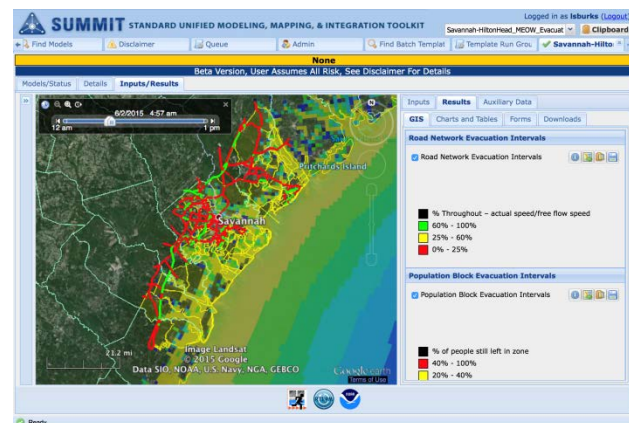


Figure 3. Evacuation model in SHERPA