

Sinkhole Formation Vulnerability Mapping Project

Information & Facts

*Florida Department of Environmental Protection
Florida Geological Survey*

INFORMATION

- WHAT:
 - o To create a map illustrating the state's relative vulnerability to sinkhole formation.
 - Two maps will be produced: 1) pilot study area, 2) statewide
 - o The map(s) will be used by state and county hazard mitigation planners to create strategies to reduce the impact to Florida's residents and property from future sinkhole disasters.
 - o The map(s) will be used to enhance the State Hazard Mitigation Plan (SHMP), which is coordinated by the Florida Division of Emergency Management's (DEM) Mitigation Section. <http://www.floridadisaster.org/Mitigation/State/Index.htm>
- HOW:
 - o Utilizing a geographic information system (GIS), a **data-driven modeling method**, such as Weights-of-Evidence (WofE), will be used to model the pilot area's and state's relative vulnerability to sinkhole formation.

Year One - Pilot Study – A pilot study encompassing three counties (Suwannee, Hamilton, & Columbia) will be conducted during which a modeling method will be chosen and the contributing model inputs will be refined. These adjoining counties were selected because they generally represent Florida's various types of geologic settings and had sinkholes form following TS Debby.
 - o Years Two & Three – Statewide – Model refinements based on what was learned from the pilot study will be extended to applying the model to the entire state.
 - o What types of data will be collected and used (but not limited to) to model:
 - Top of rock (top of carbonate rocks in which cavities form)
 - Overburden thickness (thickness & type of sediments above top of rock)
 - Soils (structure or pedality)
 - Potentiometric surface maps
 - Water Level data (well)
 - Lineaments
 - Stream/surface water shape and abundance
 - Closed topographic depressions
 - Consumptive use capacities
 - Subsidence Incident Reports/Sinkholes, existing and new
 - Known sinkholes
 - o Modeling process will include sensitivity analysis and validation
 - o Triggering mechanisms will be evaluated and discussed in the final products

FACTS

- Total Project Duration: 3 years
 - o Pilot Mapping Area: year 1
 - o Statewide Map: years 2 & 3
- Total Cost of Project: \$1,080,161.00
 - o 75% funded by the Federal Emergency Management Administration (FEMA)
 - Through the Florida Division of Emergency Management (DEM)
 - Funding part of Tropical Storm Debby relief funds attained by the State of Florida through FEMA's Hazard Mitigation Grant Program (HMGP)

<http://www.floridadisaster.org/Mitigation/Hazard/index.htm>
 - o 25% funded by the State of Florida, Florida Department of Environment Protection (DEP), Florida Geological Survey (FGS)
- Project Catalyst:
 - o June 2012, Tropical Storm Debby drops record volumes of rain on Florida triggering scores of sinkholes to form across the state
 - o December 2012, representatives from DEM's Mitigation Section approached the FGS requesting a better tool to conduct mitigation planning for sinkholes
 - o January 2013, FGS submits proposal to map sinkhole vulnerability statewide

CONTACTS

Co-principal Investigators:

Clint Kromhout
 Professional Geologist
 Florida Geological Survey
 Geological Investigations Section
Clint.Kromhout@dep.state.fl.us

Alan Baker
 Professional Geologist
 Florida Geological Survey
 Applied Geoscience Section
Alan.Baker@dep.state.fl.us

[Florida Geological Survey](#)
[Florida Department of Environmental Protection](#)

903 West Tennessee Street
 Tallahassee, Florida, 32304-7716
 Phone: (850) 617-0302
 Fax: (850) 617-0341

MEDIA INQUIRIES:

- [DEP Office of Communications](#)
 - o (850) 245-2112