



University of Mississippi

Mississippi Groundwater, Surface Water, and Dam Inventory and Vulnerability Assessment – Groundwater and Surface Water Vulnerability Assessment Tools



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Prevent, Protect, Respond, Recover

Homeland Security Challenge:

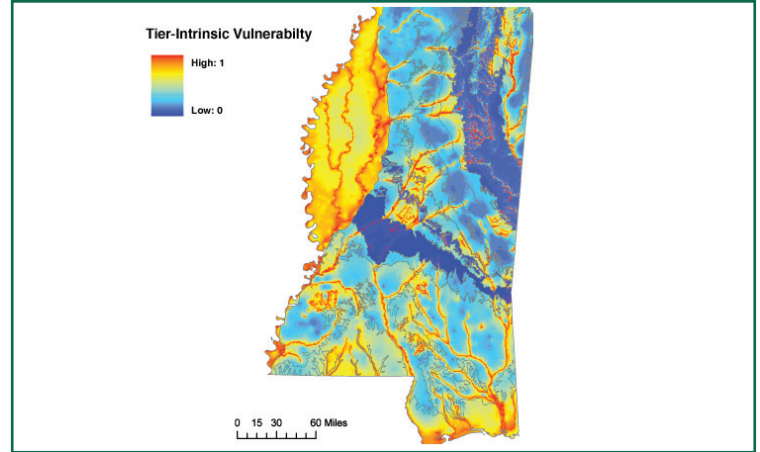
Surface water accounts for 58% of the irrigation withdrawals and 63% of the public-supply withdrawals. Continued availability of these key resources is essential for the maintaining U.S. public health and economic wellbeing. Risk-based vulnerability assessments of surface water and groundwater resources are required to identify and reduce risks, prioritize resources, develop emergency response plans, and guide disaster recovery efforts.

Research Project Solution:

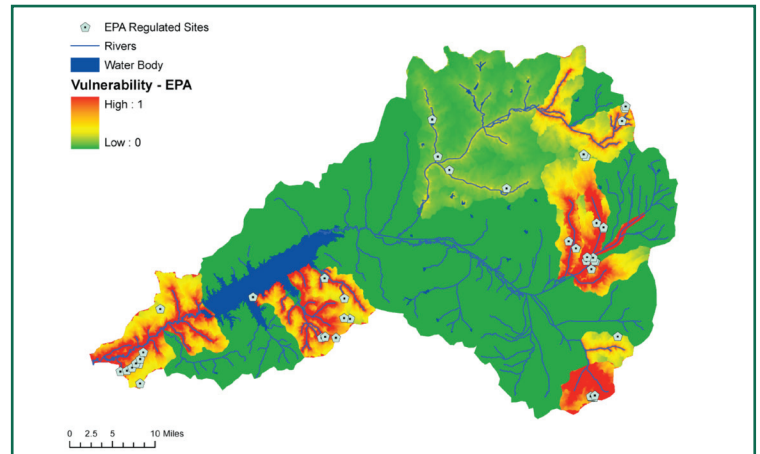
The objective of this research project is to develop GIS-based vulnerability assessment tools that can be used to assess risk for dams and for groundwater and surface water resources in the State of Mississippi. Over 95% of Mississippians rely on groundwater for drinking water from over 3,400 public water supply wells and over 60,000 private drinking water wells. Additionally groundwater and, to a limited extent, surface water are used for agricultural and industrial purposes. Groundwater and surface water vulnerability assessment tools capable of considering intrinsic vulnerability (due to resource characteristics), extrinsic vulnerability (external risks), and consequences (human or economic) are developed and applied to the state of Mississippi. The project includes collaboration and training with the Mississippi Department of Environmental Quality.

National Implications:

GIS based, rapid, risk-based vulnerability assessments of surface water and groundwater resources are now possible for federal agencies, states, and communities. The vulnerability assessment tools developed by this project for the State of Mississippi can easily be customized and applied to other states. The tools are highly flexible and scalable and can be used to support a variety of applications such as water resource planning and protection; environmental protection; flood plain assessments; emergency response planning; and evaluation and prioritization of vulnerability activities.



Intrinsic vulnerability for groundwater resources in the state of Mississippi. Vulnerable regions are shown in red, while less vulnerable regions are shown in blue.



Total vulnerability (including intrinsic vulnerability, extrinsic vulnerability, and consequences) of surface water to EPA regulated sites in a Mississippi surface water basin. Vulnerable regions are shown in red, while less vulnerable regions are shown in green.

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SERRI is managed by the Department of Energy's Oak Ridge National Laboratory for the U.S. Department of Homeland Security