



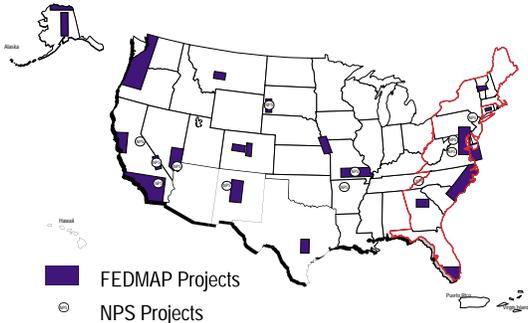
Association of American
State Geologists

in cooperation with

United States
Geological Survey

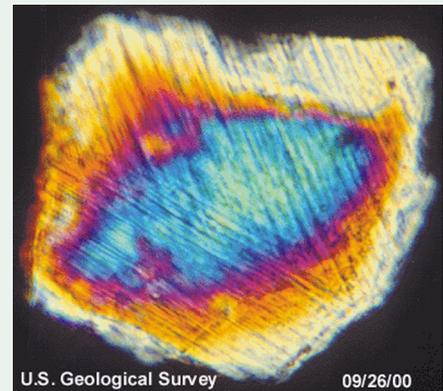


National Cooperative Geologic Mapping Program



Eastern United States

The **Chesapeake Bay Impact Crater Project** is contributing to a five-year federal-state cooperative aimed at providing a geologic framework for a revision of the regional ground-water-flow model for the Coastal Plain of the Commonwealth of Virginia. Thirty-five million years ago, near what is now the mouth of the Chesapeake Bay, a large meteor struck the continental shelf of eastern North America and blasted through water and thousands of feet of sediments into the underlying continental crust. The resulting 56-mile-diameter crater corresponds to an unusually large, inland salt-water reservoir that severely impacts the ground-water resources of southeastern Virginia. The project is developing new geologic maps and subsurface information to improve understanding of the effects of the impact and resulting crater on the hydrologic, tectonic, geologic, and seismic evolution of southeastern Virginia, as well as providing important data for interpreting the processes involved during and after a large impact in a marine-shelf environment.

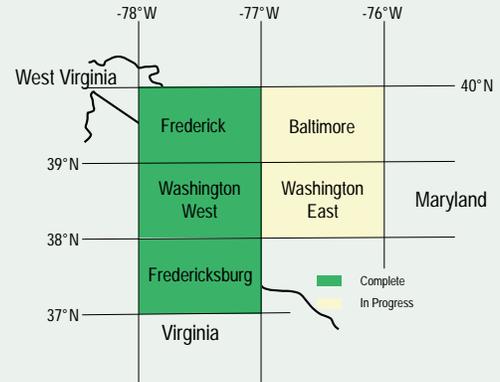


The new **Carolina Continental Margin Project** begins in FY 2001 as a consortium of universities, State Geological Surveys, and the Coastal and Marine Geology and NCGM Programs. Through geologic mapping and extensive drilling, this project will better define the evolution of the Coastal Plain and improve understanding of ground-water resource and quality issues. The project is built on the foundation provided by the Southeast Coastal Plain Project, a geologic mapping and subsurface stratigraphy project, which ended in FY2000. This project has significantly improved our understanding of three-dimensional sedimentary architecture of the Coastal Plain of South Carolina, and has again demonstrated that Passive Margins are not Passive, and simple layer-cake sedimentary models, used in previous ground-water flow modeling of the Coastal Plain, are misleading. The sedimentary architecture provides insight into the evolution of the Coastal Plain and the uplift and erosion history of the southern Appalachians. It is also crucial to understanding the structure and continuity of aquifers that supply drinking water in the Charleston area and that are used to resolve multi-state issues of ground-water quality related to the Savannah River Site.

Contact Information:

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Spatial geologic information is needed to address societal issues in the Mid-Atlantic region where rapid development is superimposed on three centuries of urban growth. The **Appalachian Regional Geology and Hydrology (ARGH) Project** is responding to this need by creating geologic maps that are data delivery systems to support interdisciplinary research. ARGH produces digital geologic maps and databases of bedrock and surficial deposits for use in solving land use issues. ARGH is completing the most comprehensive geologic map and database in the eastern United States and researching how the data can best contribute to understanding ground water in fractured rock, the distribution of industrial minerals, and the origin of soils.



Surficial Processes and Landslides in the Central and Southern Appalachian Highlands Project is developing methods to quantitatively assess landslide hazards based on field mapping of historic and prehistoric debris-flow events and GIS analyses of spatial data sets. Emphasis is placed on debris flows caused by tropical storms in the central and southern Appalachians and threshold rainfall criteria for triggering debris flows, which can be applied to real-time warning systems. The project is providing guidance for state and local decisionmakers for mitigation of future disasters.

The **Bedrock Regional Aquifer Systematic Study** performs geologic mapping and related structural studies to better understand the geologic controls on ground-water resources. A large percentage of drinking water supply wells in the United States withdraw water from fractured bedrock. State and local governments are increasingly facing issues of water quantity, quality, and protection in bedrock terrains where the hydrology is poorly understood and, at the present time, cannot be modeled reliably. Aquifer location and yield is also difficult to predict and no credible guidelines exist for protection of these aquifers. Comprehensive geologic maps provided by the effort are recording the locations and characteristics of fractures and other geologic structures that can provide the framework for understanding fractured-rock aquifers. NCGMP efforts in the field are conducted in cooperation with the USGS Water Resources Division and State Geological Surveys.



The **Atlantic Estuarine Systems Project** is providing critical environmental data needed to formulate sustainable restoration strategies for the Chesapeake Bay. The Chesapeake Bay is under intense scrutiny by scientists and politicians at local, state, and federal levels regarding ways to restore and maintain its health. The Project is contributing to the development of regional models that provide an understanding of the influence that climate change and disturbance exert on the Bay and will help managers establish realistic goals. These studies will move to other Atlantic estuaries in future years. Cooperator include the NOAA National Estuary Reserve Program, the Fish and Wildlife Service Programs, the Alliance for Chesapeake Bay, the Chesapeake Bay Foundation, EPA region 3 and 4 estuaries programs, and National Wildlife Refuges.

Past NCGMP efforts in the Eastern United States include:

- Florida Cooperative Mapping Project (1995 – 1998)
- Southeastern Coastal Plain Project (1995 – 2000)