

# **Preservation of North Carolina Legacy Geologic and Topographic Maps: A Cooperative Effort with the North Carolina Geological Survey, North Carolina State University and the Library of Congress**

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Geologic and historic maps are in high demand, and are critical for earth science instruction and research. Digital georeferencing of scanned maps provides new capabilities not possible with paper maps by allowing other data to be overlain by, and analyzed with, these map images using GIS software. Therefore, geologic and topographic maps for North Carolina are being collected, scanned, georeferenced, and preserved in a collaboration between the North Carolina Geological Survey (NCGS) and North Carolina State University Libraries (NCSU Libraries). The legacy geologic and topographic maps have no digital counterparts, and paper copies are scarcely accessible.

Geologic maps, including collars, are scanned with a large format (42-inch) HP Designjet 815 mfp scanner-plotter device to create a 300 dpi TIF file. Using ArcMap 9.1's georeferencing extension, at least four geographic locations were interactively selected from the TIF, based on coordinates and grids printed on the maps. ArcMap creates a table of these selected coordinate values, and with U.S. Army Corps of Engineers Corpscon software, each coordinate pair is converted to NC Stateplane NAD83 meters and then appended to the table. ArcMap then creates a TFW world file and transforms the TIF image so that it is represented in the data view in Stateplane Coordinates (NAD83). Each image file is rectified with ArcInfo workstation and compressed with MrSID. The

workflow is shown in Reid et al. (2006a), Reid et al. (2006c), and Essic et al. (2006); Ramakrishnan (2006) also provided details. Previously, Cahill et al. (2002) reported on the scanning and delivery of historic maps over the Internet as done by the Library of Congress.

The TIF images and world files will become part of the North Carolina Geospatial Data Archiving Project, a partnership between NCSU Libraries and the Library of Congress (North Carolina Geospatial Data Archiving Project, <http://www.lib.ncsu.edu/ngcdap>). As of June, 2006, the inventory consists of 101 U.S. Geological Survey geologic maps, 130 North Carolina Geological Survey geologic maps, 47 maps from theses and dissertations, 8 N.C. Department of Transportation maps, and 165 legacy 15-minute topographic maps, all 451 of which are backed up on multiple secure servers (<http://wfs.enr.state.nc.us/NCGeologicMaps/>; Reid et al. (2006d)).

Data are planned for dissemination through the North Carolina Geological Survey's Geologic Map Catalog, (<http://wfs.enr.state.nc.us/NCGeologicMaps/>), the NCSU Library's campus-wide server (<http://www.lib.ncsu.edu/gis/geolmaps.html>) pointing at the NCGS' Geologic map catalog URL, and by contribution to NCONemap (<http://www.nconemap.com>) and the National Geologic Map Database's Map Catalog (<http://ngmdb.usgs.gov/>).

The compressed MrSID geologic and topographic maps accompanied by their world files and supplemental

data (MS Excel and ESRI shape files) are in Reid et al. (2006d). The legacy topographic maps are now online at: <http://www.lib.ncsu.edu/gis/historictopos.html> in JPEG 2000 format. Other geologic maps to fill in geographic gaps are actively sought. An annual map service and data listing update is planned.

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