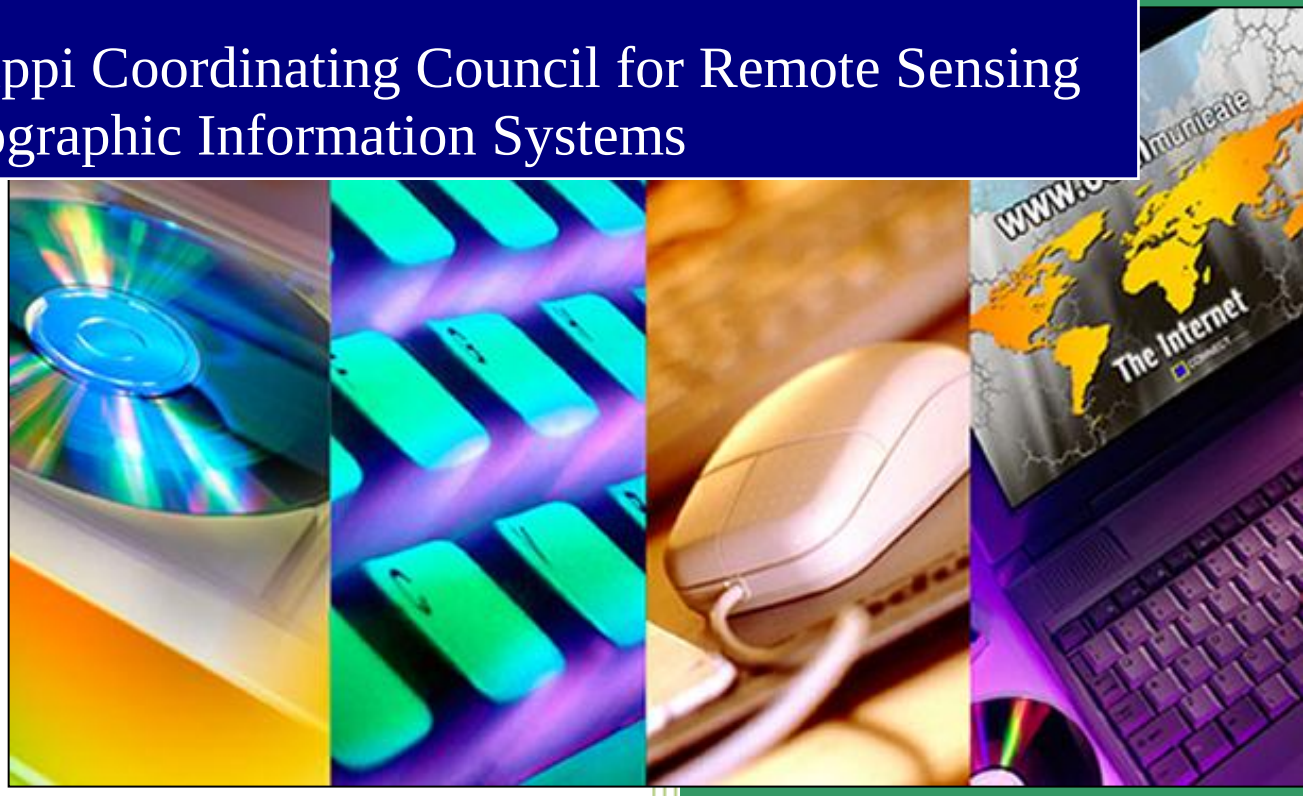
2010 Annual Status Report

Mississippi Coordinating Council for Remote Sensing and Geographic Information Systems



December 2010

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Council Members

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Executive Director, Mississippi Department of Environmental Quality

David Litchliter, *Vice-Chair*
Executive Director, Mississippi Department of Information Technology Services

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Mike Womack, Jr.
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Mississippi State Senate

Representative Dannie Reed
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Chairman, Mississippi Department of Revenue

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Joel Yelverton
Yelverton Consulting; Policy Advisory Committee

Talbot Brooks
Director, Center for Interdisciplinary Geospatial Information Technologies, Delta State University; Technical Users Group

Introduction

The Mississippi Coordinating Council for Remote Sensing and Geographic Information Systems (MCCRSGIS) was established by the 2003 Legislature to ensure coordination of the development, purchase, storing, and sharing of remote sensing and geographic information system data by state and local governmental entities. House Bill 861 established a clear purpose for the Council, as well as a specific list of responsibilities. The Council is directed to set and assure enforcement of policies and standards to make it easier for remote sensing and geographic information system users around the state to share information and to facilitate cost-sharing arrangements to reduce the costs of acquiring remote sensing and geographic information system data. The Council's responsibilities include, but are not limited to:

(a) Coordination of remote sensing and geographic information system activities within Mississippi;

(b) Establishing policies and standards to guide Mississippi Department of Information Technology Services (MDITS) in the review and approval of state and local government procurement of both hardware and software development related to remote sensing and geographic information systems;

(c) Oversight of MDITS' implementation of these responsibilities;

(d) Preparing a plan, with proposed state funding priorities, for Mississippi's remote sensing and geographic information system activities, including development, operation and maintenance of the Mississippi Digital Earth Model;

(e) Oversight of the Mississippi Department of Environmental Quality's development and maintenance of the Mississippi Digital Earth Model, including establishing policies and standards for the procurement of remote sensing and geographic information system data by state and local governmental entities and establishing the order in which the seven (7) core data layers shall be developed;

(f) Designating Mississippi's official representative to the National States Geographic Information Council and to any other national or regional remote sensing or geographic information system organizations on which Mississippi has an official seat;

(g) Establishing and designating the members of an advisory committee made up of policy level officials from major state, local, regional and federal agencies, as well as members of the private sector;

(h) Creating a staff level technical users committee; and

(i) Coordinating with the Mississippi Department of Revenue to assure that state and local governmental entities do not have to comply with two (2) sets of requirements imposed by different organizations.

The law also directed the Mississippi Department of Information Technology Services to work closely with the Council to bring about effective coordination of policies, standards and procedures relating to procurement of remote sensing and geographic information systems (GIS) resources. In addition, MDITS is responsible for development, operation and maintenance of a delivery system infrastructure for geographic information systems data and is charged with providing a warehouse for Mississippi's geographic information systems data.

Additionally, the Mississippi Department of Environmental Quality (MDEQ), Office of Geology and Energy Resources, is given the responsibility for program management, procurement, development and maintenance of the Mississippi Digital Earth Model, which includes the following seven (7) core data layers of a digital land base computer model of the State of Mississippi:

(a) Geodetic control;
(b) Elevation and bathymetry;
(c) Orthoimagery;
(d) Hydrography;
(e) Transportation;
(f) Government boundaries; and
(g) Cadastral

For all seven (7) framework layers, the Mississippi Department of Environmental Quality, Office of Geology and Energy Resources, is designated as the integrator of data from all sources and the guarantor of data completeness and consistency and shall administer the Council's policies and standards for the procurement of remote sensing and geographic information system data by state and local governmental entities. Additionally, the Council will establish metadata standards that will apply to the seven framework layers.

Activities to Date

With collaboration and cooperation firmly set as its number one priority, the Coordinating Council has established seven key elements necessary to achieve this goal:

1. The Council developed and adopted a set of standards for the Mississippi Digital Earth Model (MDEM) that allows easy transfer of digital map information between state agencies, local government, and the private sector. MDEM is a three-dimensional representation of natural and man-made features in Mississippi comprised of these layers: geodetic control, digital orthoimagery, digital elevation model and contours, property ownership, hydrography, transportation, and governmental boundaries. The Council

continues to monitor federal data standards and update state standards as necessary.

2. The Council developed an express products list that will allow state agencies and local governments to easily obtain geographic information systems (GIS) hardware and software at the best prices. That dynamic list continues to be expanded and updated.
3. The Council has led an effort to coordinate data acquisition, a key element in achieving cost savings through economy of scale. Collaboration by state agencies, local government, and even federal agencies has produced better and cheaper products for everyone to utilize.
4. The Council has developed a warehouse/clearinghouse for GIS data - the Mississippi Geospatial Clearinghouse.
5. Despite the lack of direct state funding, development of the seven layers of MDEM continues through the cooperative efforts of state, local, and federal governmental entities. State-wide seamless 2-foot pixel orthoimagery collected during the 2005 - 2006 flying season, as well as the 1-foot and 6-inch imagery collected in 2007 over five Gulf Region counties (Hancock, Harrison, Jackson, Pearl River, and Stone) has been completed, and many counties are using that data as the basis for their new cadastral (tax) maps. Over the past year a state-wide elevation data set including DTM and 5-foot Class 2 contours was being developed from the 2006 2-foot imagery. All MDEM data is stored and distributed through the Mississippi Geospatial Clearinghouse. Council members and staff continue to pursue new and creative funding sources to allow for continued MDEM development.
6. The Council continues development of a business model for funding and maintenance of the data development and delivery system.
7. Education and outreach continues to be a critical part of the overall plan for the Coordinating Council. The educational component serves to train, through formal and continuing education, the current and next generation of GIS professionals, as well as educating the various stakeholder groups on the value and power of GIS. Outreach utilizes the network of knowledgeable and experienced professionals. A coordinated outreach effort also leverages the Council's authority and effectiveness.

The Mississippi Coordinating Council for Remote Sensing and Geographic Information Systems will continue to move forward with its strategic plan to accomplish these goals of collaboration and cooperation during the coming year.

Updated Strategic and Business Plan

The Policy Advisory Committee (PAC) continues and is actively working to develop an updated strategic and business plan for the RS/GIS Coordinating Council. Membership of the PAC includes:

Joel Yelverton – Yelverton Consulting, Chairman
Melinda McGrath – MDOT
Keith Harkins – MDEQ
Craig Orgeron – ITS
Knox Ross – Mayor, Pelahatchie
Wes Burger – GRI
Scott Delano – Developer (State Representative)
Charles Williams – Stone County Tax Assessor
John Hendrix – Choctaw Nation
Warren McKinnon – Mississippi Department of Revenue

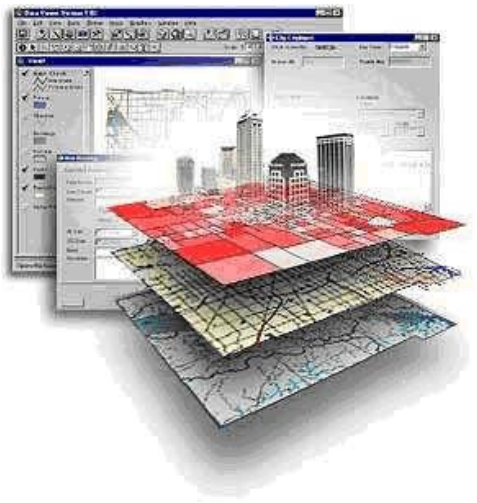
At the end of 2009, the Geosystems Research Institute at Mississippi State University, on behalf of the Coordinating Council, advertised for and let the contract on a consulting firm to assist in developing this comprehensive plan. Fairview Industries, which is a nationally recognized firm with strong local ties and understanding of the unique challenges and opportunities in Mississippi, has been providing assistance in coordinating input from all relevant stakeholders, and provided information on successful strategies nationally. At the Council's October 5, 2010 meeting representatives of Fairview Industries presented a draft review of the Geospatial Strategic Business Plan. At year end a final Plan is expected to be delivered for the Council's consideration.

- Mississippi has created the necessary infrastructure to coordinate the collection and dissemination of geospatial data at all levels of government in the state. The Coordinating Council has aggressively pursued avenues to create a sustainable method for collection and dissemination of the framework data layers. The infrastructure is in place, demonstrations of the data utility have been given, training has occurred, and the time is right for development of a business plan that will allow the transition from reliance exclusively on federal funding to partnerships with state agencies and local government entities. This project will provide a draft business plan based on information collected from other states, combined with an understanding of the unique laws, policies, and agency responsibilities in Mississippi.

Mississippi Geospatial Clearinghouse

The Mississippi Geospatial Clearinghouse (MGC) was placed in production in September 2007 and serves as the state's premier portal for the Geographic Information System (GIS) community to search, discover, share, and use a comprehensive warehouse of Mississippi's geospatial resources. The goal of the MGC is to make the application of spatial information GIS technologies within the state of Mississippi more efficient by eliminating the duplication of spatial data production and distribution through cooperation, standardization, communication, and coordination. Moreover, the MGC is the primary location for the Mississippi Digital Earth Model (MDEM). The MGC is housed in the State Data Center at the Mississippi Department of Information Technology Services (ITS).

State agencies, county government, city government and the public can download data that has been stored in the MGC. This data provides the foundation for applications to be developed using GIS technology to meet business needs of the governmental agencies and/or public interest.



The requirement to provide operational storage and dissemination of high-resolution digital contour maps from recent MDEM data collection activities and the development of new technologies has prompted the need for a major software upgrade and updated design to the MGC. The upgrade, now in development, will reflect a new information delivery interface utilizing up-to-date software releases that will lay the groundwork for future upgrades as needed. The design will provide the user with simple and easy routes to the three delivery mechanisms: visualization, information search, and data download. The visualization will utilize the web-browser add-on, Adobe Flex. This easy to navigate and responsive viewer will access ESRI map services and ITS-hosted map and image services. The viewer will retain or improve on available user tools to allow for locating, drawing graphics, measuring, printing, and exporting maps as seen by the user. The information search mechanism will be made more user-friendly by differentiating between MDEM and non-MDEM datasets, allowing for a natural flow to data download. GIS data will be available in "Quick Download" packages or through custom online requests.

This data, primarily the MDEM, provides the foundation for applications to be developed using GIS technology to meet the business needs of the governmental agencies and/or public interest. ITS is continually focused on the development and enhancement of the MGC, as well as maintenance of GIS hardware and software procurement instruments for state agencies and local governing authorities. The projects described in the following paragraphs leverage the MGC infrastructure.

Applications

ITS Telecommunication Division/MapITS

The Telecommunication Services Division of the Mississippi Department of ITS currently manages all voice and data systems for Mississippi state government via the MySoft software package from Compco. The Telecommunication Services Division uses MySoft to locate and process repairs or changes to voice-related hardware. The exact physical location of this hardware is determined through a hardware naming convention and through historical knowledge. This project provides the functionality to geographically locate all existing buildings in the Capitol Complex, inter-connecting lines, and access points and link these locations to the MySoft database.

Even though this application will remain non-GIS centric, the system will require the collection of GIS data in the form of building footprints, communication centerlines, and access points. An internal web based mapping application has also been written to allow staff to explore telecommunication assets through a viewer that can link to the data in MySoft. Currently in the final phase of testing, this application provides a high-level management tool and help desk aid.

Architectural and Historic Structures

The State Historic Preservation Office (SHPO) of the Mississippi Department of Archives and History (MDAH) has been tasked with developing a GIS based system that will map archaeological sites, National Register properties, and above ground historic resources that are situated within the disaster areas defined by Presidential Declaration FEMA-1604-DR and its amendments. This system should improve the public's knowledge about the range and extent of historic and prehistoric sites within the Mississippi Gulf Coast Region and will provide the SHPO with a new tool to better evaluate and manage these cultural resources.

The Architecture and Archaeology divisions of MDAH are currently managing information about historic places in slightly different ways. The level of completeness with regard to this information is different for each division. The opportunity exists to bring the information in both divisions to the same completion level and provide management of this information through a common interface. The daily maintenance of these combined records management systems will be housed at the State Data Center. This electronic data will have support and can be accessed twenty-four hours a day, seven-days a week. In addition, all upgrades and maintenance to the combined records management systems will be performed by ITS staff which will free resources at MDAH.

Once completed, the proposed system will provide a tool for the staff of MDAH to add and maintain records, create reports, perform research, perform cross-divisional regulation tasks, and provide for the easy review of historic building surveys. This project is in the final phase of testing and is planned to be in production January 2011.

Archaeology and Historic Sites

The State Historic Preservation Office (SHPO) of the Mississippi Department of Archives and History (MDAH) has been tasked with developing a website to publish the rich, but not well-known archaeological history of Mississippi. This project intends to educate the citizens of Mississippi about their archaeological heritage through an interactive website that includes virtual tours of archaeological sites. The website will reach citizens as well as teachers, students, and professionals. The website will include key sites in the Mississippi coastal area but will be designed to include information statewide when available. The virtual tours will guide users to experience historic sites that are now non-existent or inaccessible. The site will also guide users, through the use of podcasts and downloadable content to visit actual sites. This project is currently in development.

Small Community Assets

The Asset Development Group of the Mississippi Development Authority (MDA) has been tasked with developing a GIS-based system that will highlight the resources of small communities in Mississippi.

MDA created the Asset Development Group to focus on non-traditional economic development opportunities unique to Mississippi. Such opportunities often require longer term development, guidance, vision and support. This system will showcase resources of small communities to the public. The site will provide tools to tourists, the film industry, and businesses. A tourism-focused application foundation will be created with expandable functionality and the ability to include program areas as data sources become available. The foundation will be an application that has all of the basic functionality that is necessary in any web-based mapping program. This will include multiple base maps, keyword search, address search, zoom/pan, multimedia pop-ups and other basic functions. The foundation will be designed in a way to provide for the easy expansion of more complex functions such as a trip planner. Through the use of standard web feeds, like GeoRSS, the foundation can be designed to consume these feeds as they become available. The project is currently in development.

Express Products List (EPL)

Express Product Lists are multi-vendor awards that meet Mississippi requirements for legal purchases. The use of EPLs is governed under Procurement Instruments as stated in the ITS Procurement Handbook.

Engineering and GIS level workstations and mobile workstations are now part of the Micro EPL. Large Format printers and scanner/plotters, such as those used for GIS mapping, are also a part of the Micro EPL.

ITS also maintains EPLs for Environmental Systems Research Institute (ESRI) software and Intergraph software.

All EPLs are available on the ITS website at www.its.ms.gov/EPL.shtml

Mississippi Flood Map Modernization Initiative

The Mississippi Flood Map Modernization Initiative (MFMMI) is a partnership between the State of Mississippi and the Federal Emergency Management Agency which is in the process of modernizing and updating the nation's Flood Insurance Rate Maps used by FEMA to support the National Flood Insurance Program (NFIP) and all local government Floodplain Management Programs. This 5-year (FY2003-FY2008) FEMA program is called MAP MOD (Map Modernization). State agencies involved in the program are MEMA, which handles the State NFIP and Floodplain Management Program, and MDEQ with its contractor MGI, LLC, which handles the engineering and mapping activities for the program.

In September 2010, FEMA's total funding for flood mapping in MS between 2003 and 2010, rose to over $23,978,165.00 with the addition of FY2010 FEMA Flood Map funding of $2,369,705.00. FEMA FY2010 funding is for the first year of a new 5-year program called Risk MAP. This program's primary goals will be DFIRM map maintenance, the addressing of unmet mapping needs not covered during the MAP MOD program, and remapping areas with levee accreditation issues. New activities may be added including new topography development (Lidar) and other mapping work which may be used in flood mitigation, flood risk assessment, flood planning and other floodplain management activities of local city and county governments.

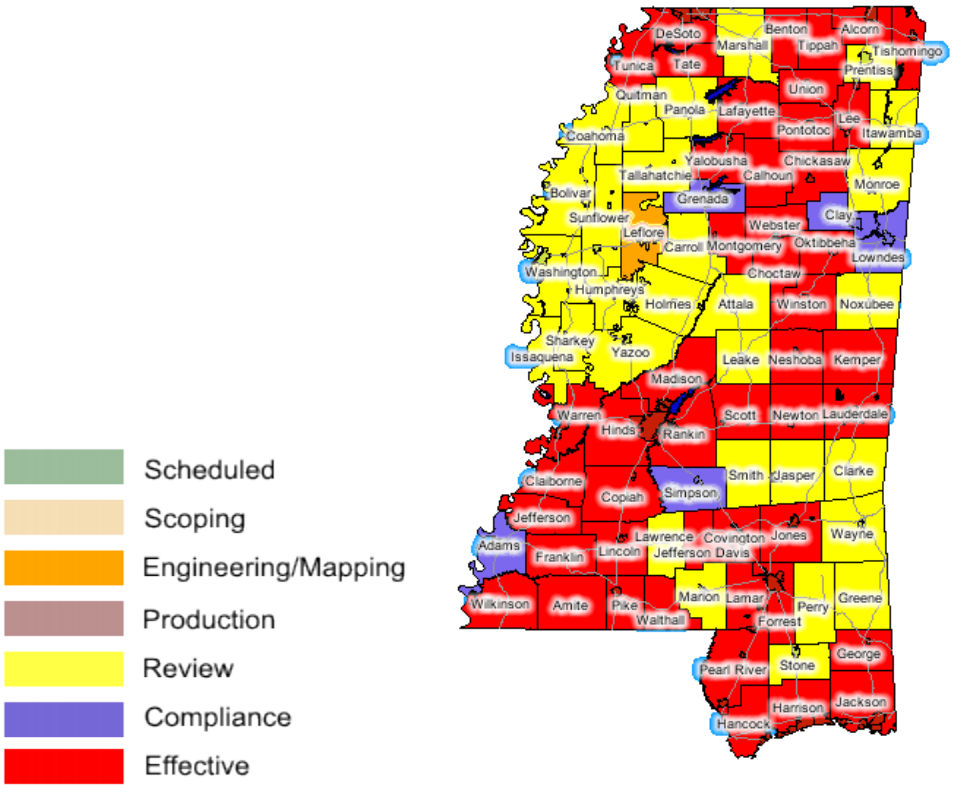
Project Status:

- MAP MOD Status: As of the end of 2010, forty-seven (47) of Mississippi's 82 counties have new countywide effective Digital Flood Insurance Rate Maps (DFIRMs) and thirty-four (34) additional Mississippi counties have had Preliminary DFIRMs delivered to the local officials for review. Preliminary DFIRMs for the remaining Mississippi county is expected to be completed and delivered in January, 2011.

- Risk MAP: Early in 2010, the scoping reports for seven (7) counties were completed submitted and finally approved in early May by FEMA Region IV. This work is covered under FY2009 FEMA funding. The FY2009 mapping year is considered a transition year in funding between FEMA's MAP MOD program and the Risk MAP program which will begin with FY2010 funding and run through FY2014.

FEMA Funding Year	# of County Projects Funded	# of County Preliminary DFIRMs Delivered	# of County DFIRMs Effective
FY03 Map Mod	5	5	5
FY04 Map Mod	6	6	6
FY05 Map Mod	8	8	8
FY06 Map Mod	20	20	17
FY07 Map Mod	21	21	9
FY08 Map Mod	20	19	
Totals	80 + 2*	79 + 2*	45 + 2*

*Rankin and Pearl River Counties separate funding



Mississippi County Flood Mapping Status

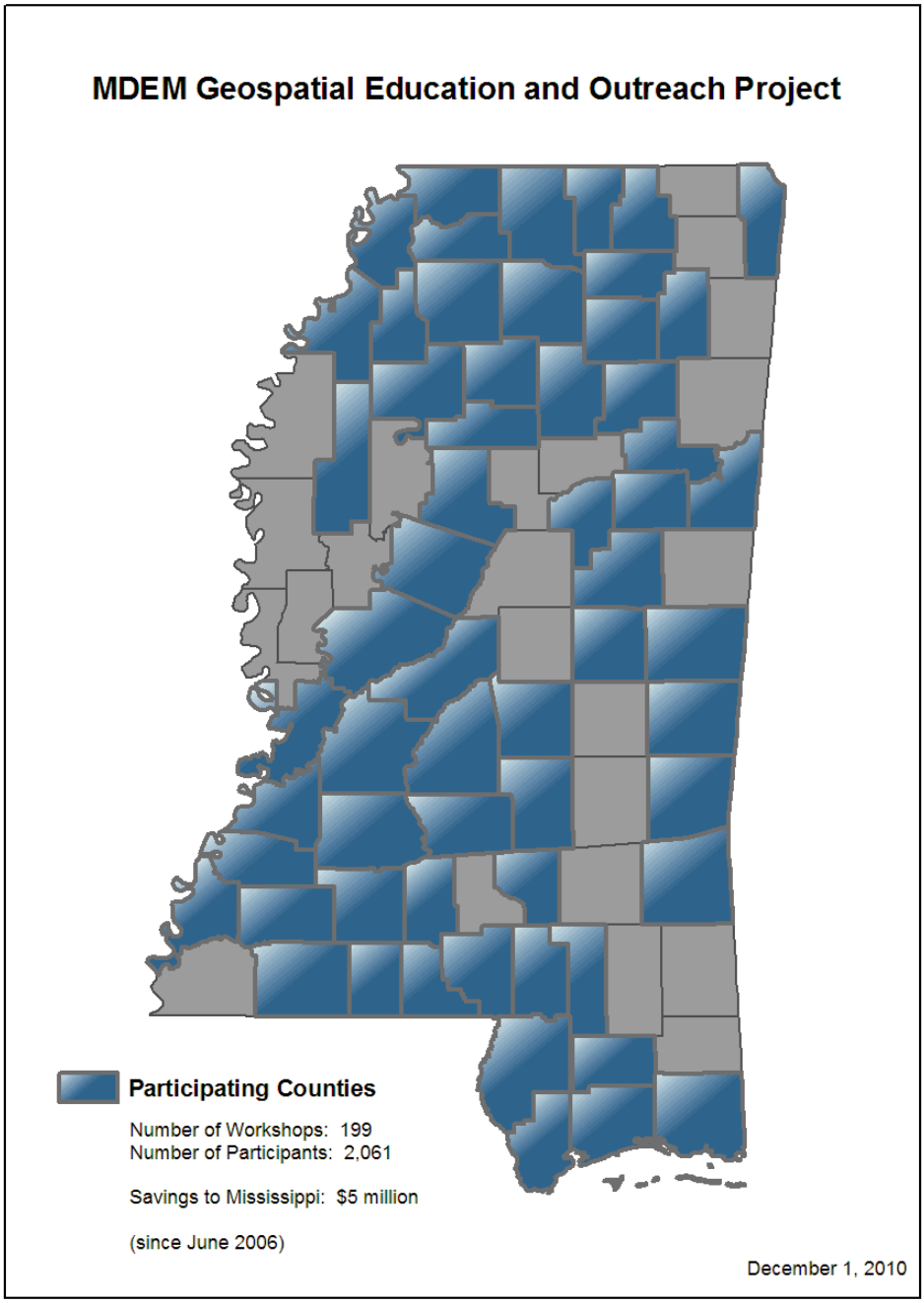
Education and Outreach

A coordinated outreach effort leverages the Coordinating Council's authority and effectiveness. The Geosystems Research Institute at Mississippi State University has served as the education and outreach mechanism since 2004. They have provided training in geospatial technologies to local governments to improve the efficiency of daily routine tasks, such as tax mapping, as well as helping them prepare to provide services during natural or man-made disasters. By offering classes, the Geosystems Research Institute has provided continuing education to the current and next generation of GIS professionals, as well as providing technical support on the local level. The outreach by this network of knowledgeable and experienced professionals allows various stakeholder groups to see the value and power of GIS.

Project Status:

- Since June 2006, the Geosystems Research Institute has provided 199 GIS workshops for 2,061 people from 68 Mississippi counties under the Coordinating Council's education and outreach program – an estimated savings to the state of over $5 million.

- The Mississippi Geospatial Clearinghouse has received increased exposure to local governments during the GIS classes. Participants are introduced to the resources available through the Mississippi Geospatial Clearinghouse.


MDEM Geospatial Education and Outreach Project
Participating Counties
Number of Workshops: 199
Number of Participants: 2,061
Savings to Mississippi: $5 million
(since June 2006)
December 1, 2010

Mississippi Digital Earth Model

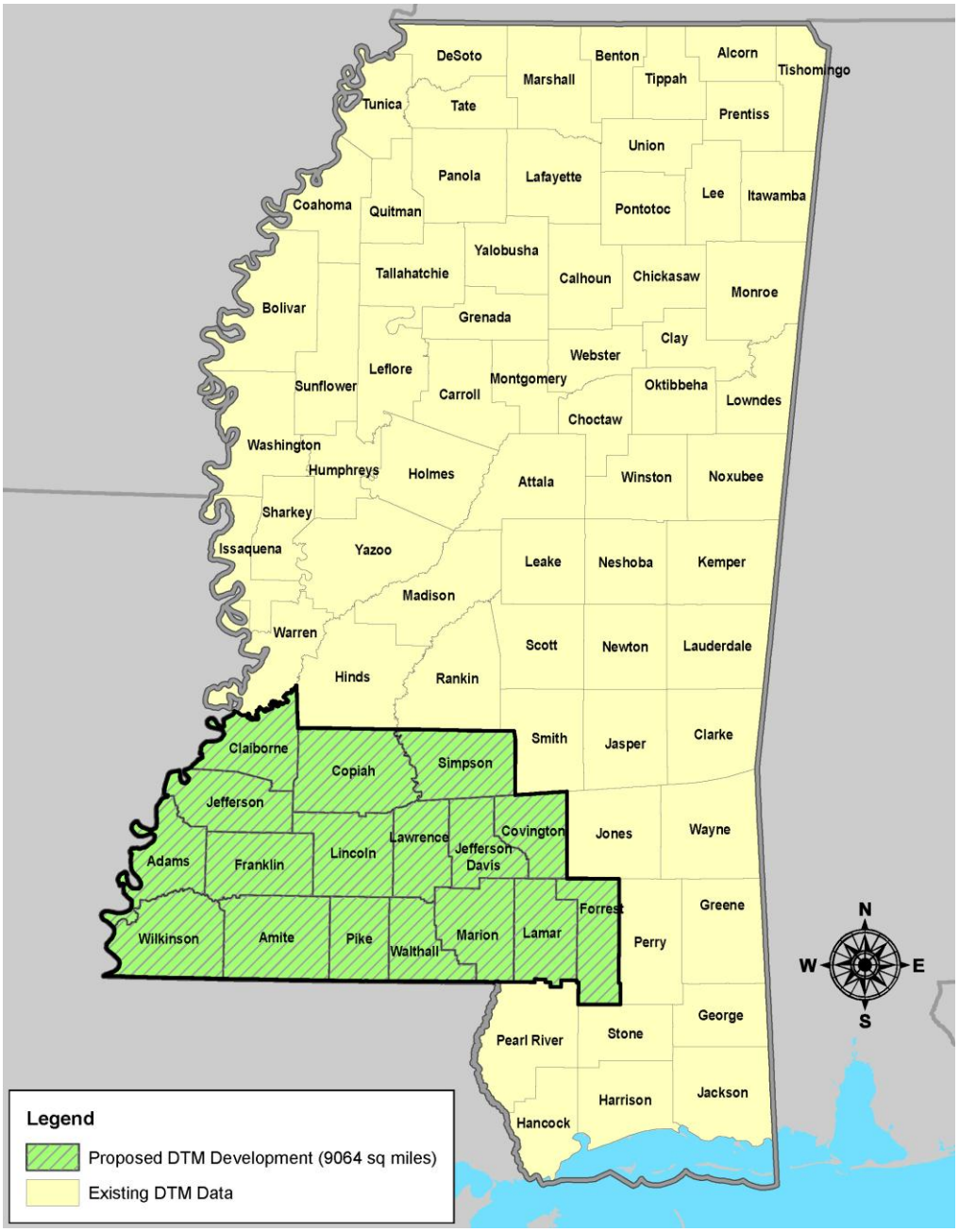
The Mississippi Department of Environmental Quality, Office of Geology, is charged under state law to develop seven base layers of geographic information for the state. These seven layers are referred to as the Mississippi Digital Earth Model (MDEM). MDEM is a seamless, statewide, geospatially-referenced information management and mapping system. The seven key component layers include transportation, hydrography (rivers, streams, lakes, and other water bodies), geodetic control, geo-political boundaries, digital orthoimagery, cadastral layer and a three-dimensional topographic model of the ground surface. In the long term, the program will be largely self-sufficient through coordination of state and local government funding by the Mississippi Coordinating Council for Remote Sensing and Geographic Information Systems. In the near term, however, federal grant funding will help transition into an operational implementation of MDEM.

Project Status:

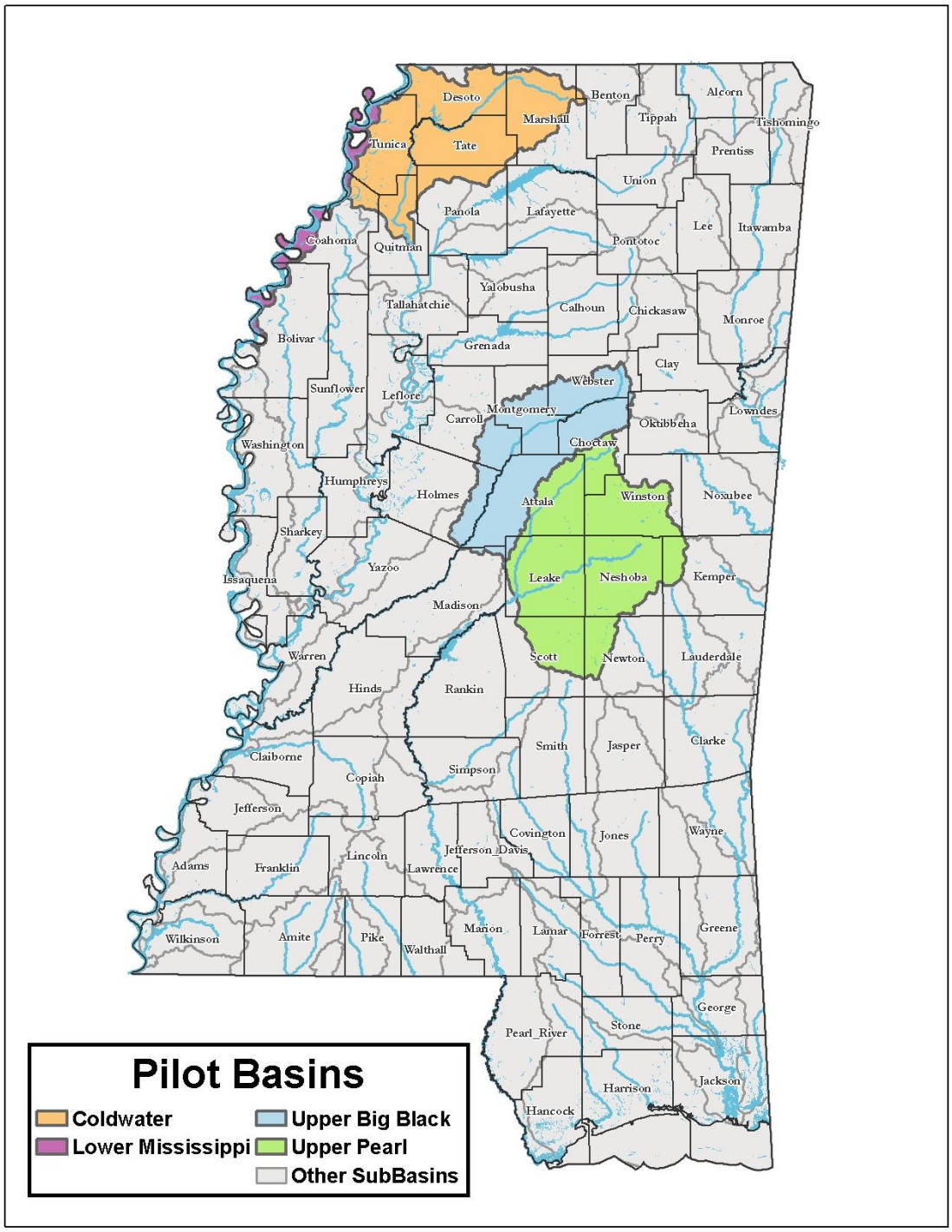
- Collection and dissemination of all of the state-wide, seamless 2-foot pixel orthoimagery collected during the 2005 - 2006 flying season, as well as the 1-foot and 6-inch imagery collected in five Gulf Region counties (Hancock, Harrison, Jackson, Pearl River, and Stone) has been completed, and many counties are using that data as the basis for their new cadastral (tax) maps.

- One of the most pressing needs as far as MDEM framework data layer development is concerned, is high resolution digital contour maps for the state that are aligned and compatible with the state-wide orthoimagery base layer of MDEM. Digital terrain models and contours have been developed for the entire state, with the final seventeen counties in the southwest part of the state being completed in 2010.

- Hydrography is another one of the seven priority MDEM framework layers. In 2010 four basins were selected to cover two distinct geographic areas of interest in central and northwest Mississippi for development of high-resolution datasets that are aligned and compatible with the state-wide orthoimagery base layer of MDEM.

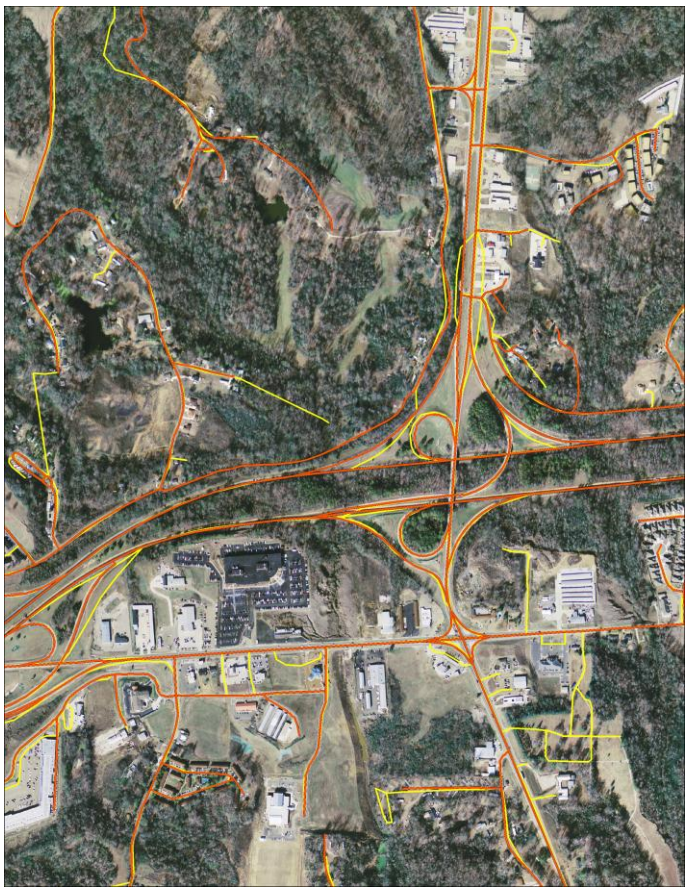


Digital terrain development in SW Mississippi



Hydrography pilot basins

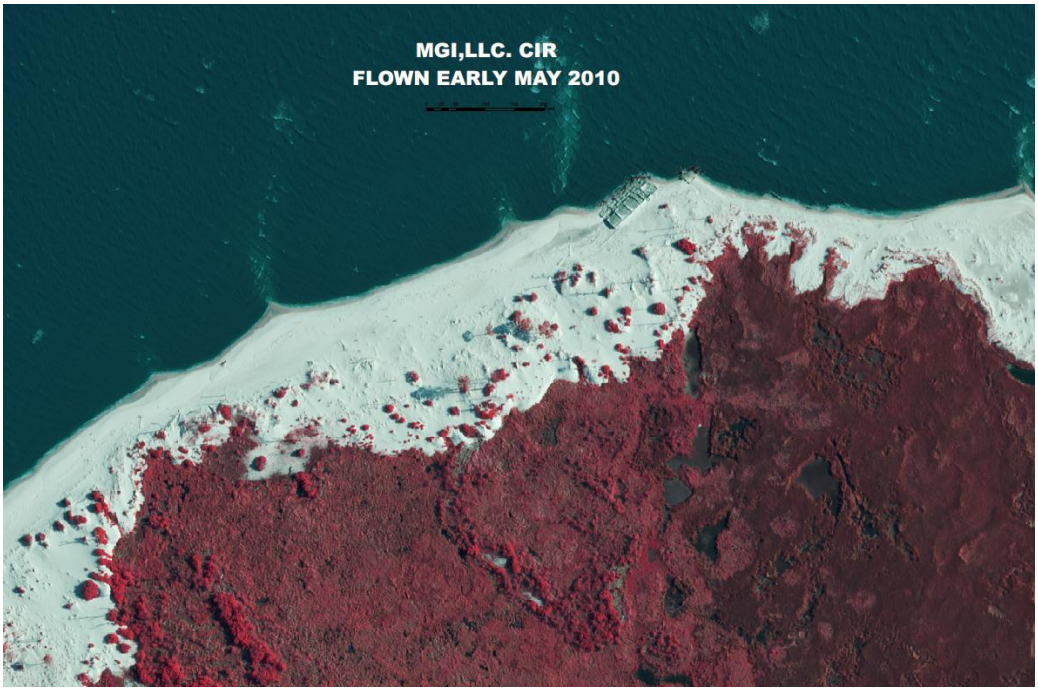
- The need for development of a high accuracy, seamless road centerline dataset based on the state-wide orthoimagery was begun in a 17-county area covering the Delta during 2010.



Example from Warren County showing current data in yellow and corrected road centerlines in orange

- The explosion and sinking of the Deepwater Horizon drilling rig and subsequent massive oil spill in the Gulf of Mexico challenged the State of Mississippi to develop a pre-disaster resource baseline, including high-resolution multi-spectral datasets in the potential impact areas. Complete datasets were collected on the barrier islands and the Mississippi coastline from the Louisiana state line to the Alabama state line. Additional data was collected in estuary areas of St. Louis Bay, Back Bay of Biloxi, and the mouth

of the Pascagoula River, from the land/water interface to 200 feet inland. Datasets will be distributed through the GIS Clearinghouse upon completion of the Natural Resource Damage Assessment process.



- Through funding provided by the U. S. Department of Housing and Urban Development *Recovery Action Plan*, a number of datasets were developed in support of the Gulf Coast Regional Infrastructure Program in the five Gulf Region counties. This work supports implementation of the water and wastewater infrastructure improvements, including developments that will ensue for years to come. The elements of this work included:

    - Public Land Survey System Improvement – the framework on which property ownership data and juristictional boundary data are based. This element will create an integrated, regional PLSS that will support accurate, georeferenced locations of the water and wastewater infrastructure improvements.

    - Parcel Publication – the element that creates the publication standard for parcel data and provides the resulting data sets for the State for distribution through the MS Geospatial Clearinghouse to those end users within the Gulf Region who most need the data.

- Parcel Improvement and Address Plan – resulting in data that will constitute a seamless, regional property ownership data set that can be used by the State in the infrastructure program, by Federal agencies, and by various units of local governments in their continuing recovery efforts.

- Building Footprint and Address Point Collection – complementing the contents of the county parcel record databases.

- Jurisdictional Boundaries – resulting in a standard, uniform municipal and county boundary for each of the Gulf Regional counties, including the county utility authorities responsible for implementation of the infrastructure program.