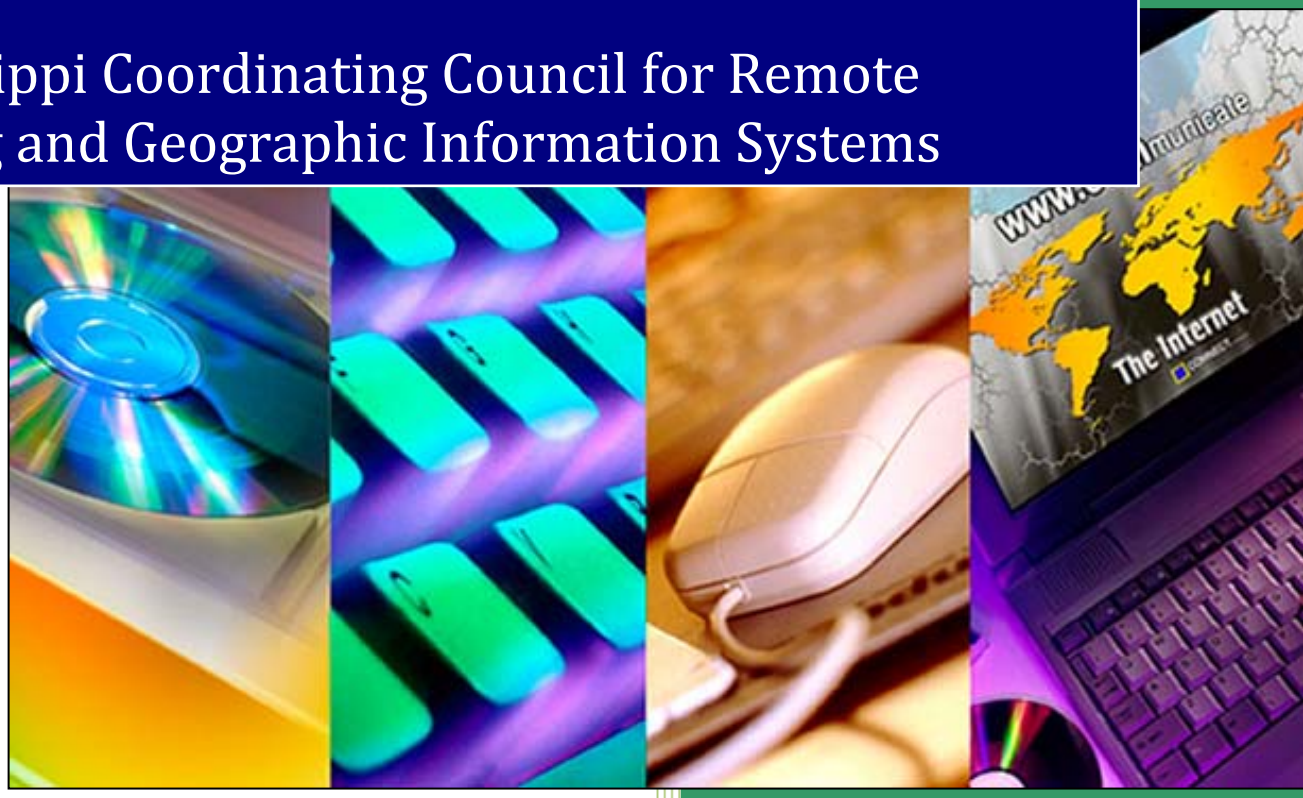
2009 Annual Status Report

Mississippi Coordinating Council for Remote Sensing and Geographic Information Systems



December 2009

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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 State Tax Commission 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. The imagery 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 is 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 is actively working to develop an updated strategic and business plan for the RS/GIS Coordinating Council. The Geosystems Research Institute at Mississippi State University, on behalf of the Coordinating Council, recently 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, will provide assistance in coordinating input from all relevant stakeholders, and will provide information on successful strategies nationally. This will ultimately lead to a final report from the Policy Advisory Committee in late fall 2010,

in time for the Council's consideration and development of potential recommendations for legislation in the 2011 session.

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. Moreover, the MGC is the primary location for the Mississippi Digital Earth Model (MDEM). The seven framework layers comprising MDEM are the standard components of digital maps used by GIS communities throughout the world.

The goal of the MGC is to make the application of spatial information technologies within the State of Mississippi more efficient by eliminating the duplication of spatial data production and distribution through cooperation, standardization, communication and coordination.

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

MGC STATUS:

- Clearinghouse functionality (www.gis.ms.gov):
  - "One-Click" to content channels;
  - Contextual help and quick start tutorials;
  - Home page contains a comprehensive site description including search capabilities;
  - Three major functions (Map viewer, Advanced Search, and Download) have been implemented;
  - Users have the ability to create an account for personalization. Also, users can be assigned to a group role for metadata publishing, channel stewardship, providing access to data and the ability to access secure data;
  - Site is accessible to the public through the Internet.

- ITS has gathered statistics on the use of the MGC from 4/01/2009 to 12/21/2009 using Web Traffic Analyzer:
  - Total number of visitors recorded: 183,170
  - Average daily hits to MGC: 16,682
  - Total number of MGC registered users: 1171
  - Total number of published metadata records: 339
  - Total number of Internet map services: 29
  - Total number of personalized saved maps: 528
  - Total number of unassisted data requests: 8,960
  - Most popular data: Imagery
  - Estimated total of all data transferred: Over 50 TB

- Estimated MGC Costs To Date:
  - Clearinghouse Development Costs: $ 954,130
  - Clearinghouse Infrastructure Costs: $ 767,983
  - Annual Operational Costs: $ 500,000 - $ 750,000

Applications

Mississippi Development Authority

The Mississippi Development Authority (MDA) Asset Development/Regional Services Division is in the process of developing a GIS application using the resources of ITS and the MGC. The application is being developed in phases and will display community assets in a geographical format.

Project Status:

- Phase 1 has been completed. This application consists of a viewer that was developed using ESRI tools at version 9.2 and can be viewed at www.gis.ms.gov/mda.

- Phase 2 is in the planning stage. The application will be moved to a FLASH viewer, and communities and assets will be continually added.

Mississippi Department of Archives and History

The Mississippi Department of Archives and History (MDAH) is in the process of developing a GIS application using the resources of ITS and the MGC. The application will allow the agency to present state historical information and assets in a geographical format. This application will have a secure internal component that will allow the agency to track assets and a public component that will allow the assets to be available to the public via the Internet. There will also be an e-government piece designed into the application that will allow the MDAH to collect fees from researchers.

Project Status:

- The project is in the development phase with test and production estimated for January 2010.

Mississippi Department of Archives and History - Historic Preservation Office

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.

Project Status:

- Proposal has been delivered to the Mississippi Department of Archives and History - Historic Preservation Office.

ITS Telecommunication Division

The Mississippi Department of Information Technology Services (ITS) Division of Telecom Services is in the process of developing a GIS application using the resources of the MGC. The application will allow division management and staff to view the capital complex telecommunications resources in a geographical format.

Project Status:

- The project is in the testing phase with production estimated for January 2010.

Mississippi Emergency Management Agency (MEMA)

The Mississippi Emergency Management Agency is in the planning stage for Enterprise GIS capabilities. GIS is currently used in emergency planning and response but has been restricted to desktop users and has been single-event driven. The plan is to develop a GIS system that can be used by all staff members and eventually all responders to plan, share data, and respond to emergency situations. It will also include a browser-based tool that provides a common operational picture. The Mississippi Analytical Geospatial Network (MAGNet) that was developed for the Mississippi Office of Homeland Security will be used as the starting point for development of an executive dashboard viewer. The proposed viewer will have the ability to consume information from not only the Enterprise database, but also from other sources. These sources include public feeds (e.g. National Weather Service Maps, traffic cams) and internal feeds that will be created. Also, the WebEOC will provide the Daily Event Logs in a format that can be consumed by the application.

Project Status:

- A proposal has been delivered to the Mississippi Emegency Management Agency.

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/epls.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 August, 2009, FEMA's total funding for flood mapping in MS between 2003 and 2009, rose to over $21,690,460.00 with the addition of FY09 FEMA Flood Map funding of $2,315,167.00. FEMA is planning a new 5-year program called Risk MAP which is to begin with FY2010 FEMA funding. 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.

Project Status:

- MAP MOD Status: As of the end of 2009, fifteen (15) of Mississippi's 82 counties have new countywide effective Digital Flood Insurance Rate Maps (DFIRMs) and forty (40) additional Mississippi counties have had Preliminary DFIRMs delivered to the local officials for review. Preliminary DFIRMs for the remaining 27 Mississippi counties are expected to be completed and delivered during the first three quarters of 2010.

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	2
FY06 Map Mod	20	19	
FY07 Map Mod	21	15	
FY08 Map Mod	20		
Totals	80 + 2*	53 + 2*	13 + 2*

*Rankin and Pearl River Counties separate funding

- Risk MAP: During 2nd half 2009, the pre-scoping and scoping of seven (7) counties was completed with county scoping reports being submitted in early November to 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.

SEE APPENDIX FLOOD MAPPING 2009 STATUS MAP

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 allow various stakeholder groups to see the value and power of GIS.

Project Status:

- To date, the Geosystems Research Institute has provided GIS classes to 1,681 people from 67 Mississippi counties under the Coordinating Council's education and outreach program – an estimated savings to the state of over $1.7 million.

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

- Several municipal and county government agencies have received on-site technical assistance following participation in the classes in order to facilitate successful adoption and implementation of GIS.

- The Geosystems Research Institute has collaborated with ESRI in the development of a software grant program for underserved local governments. Fifteen agencies have received temporary licensing of GIS software to undertake community projects addressed in their respective proposals. Participants will receive long-term licensing upon successful completion of proposed activities. ESRI has requested permission to publicize the education and outreach project as well as the community projects of the grant recipients.

- An overview of the education and outreach project has been compiled into a 2-page publication. The document has increased visibility of the project in the target audience. A bookmark has also been published, featuring the Coordinating Council and the Mississippi Geospatial Clearinghouse.

SEE APPENDIX STATUS MAP
SEE APPENDIX PROJECT FLYER
SEE APPENDIX PROJECT BOOKMARK

Emergency Preparedness

The Coordinating Council is charged with 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. This Public Advisory Committee (PAC) receives research and development assignments from the Council.

The Council's response after Hurricane Katrina demonstrated the applicability of geospatial information science and technology in a disaster response setting. Although prior emergencies and disasters in Mississippi utilized "hard copy" maps, this was the first event where GIS

technology exhibited its potential for enhanced management technologies. Decision makers used a standard suite of maps, as well as specific maps developed in response to specific questions. These maps were used in a variety of settings, including field operations, news conferences, and general information dissemination. Maps are mission-critical tools for emergency managers and first responders. The Coordinating Council assigned the PAC the task of preparing a GIS plan for disaster and emergency management in Mississippi.

Project Status:

The PAC has developed a plan in cooperation with the Mississippi Emergency Management Agency (MEMA) for integration of geospatial information science and technology (GIS&T) into MEMA's activities as Mississippi's lead agency for disaster and emergency management. This plan defines guidelines for MEMA that address the need to improve mitigation and response through the effective use of GIS&T. The plan should be revised and updated as needed to adapt to the changing requirements of MEMA. Guidelines are compatible with the standards established by the Federal Geographic Data Committee (FGDC) and the Mississippi Coordinating Council for Remote Sensing and Geographic Information Systems (Coordinating Council) consistent with the guidance and recommendations set forth in the National Incident Management System (NIMS), the National Response Plan (NRP), and the Incident Command System (ICS).

Concept:

The overarching operational concept is to use existing GIS&T resources in the state to provide a multi-level, rapid response in support of any event as these resources are requested by MEMA. The GIS&T resources will be activated through a request from MEMA Planning and initially be staffed by GIS&T personnel in the Jackson, MS area. The GIS&T resources and personnel will be activated in a multi-level approach, based on the degree of need and the type of event. The three types of events, based on the time to prepare for response and the duration of the response are:

Now- : rapid storms, i.e. tornadoes
GIS&T support will be provided locally (personnel and equipment located in close proximity to MEMA headquarters);

Pre- :48 hours advance warning, i.e. hurricane
Advance warning will enable MEMA to request personnel and equipment from a wider range of agencies, a broader base of technical skills, and an expanded area; and

Catastrophic – long term response
Catastrophic events can be both 'Now-' and 'Pre-', with the major differences being the amount of damages and the number of agencies involved. For 'Pre-' and 'Catastrophic' events, MEMA Management will coordinate geospatial response efforts with the Mississippi Coordinating Council for Remote Sensing and GIS (the Coordinating Council).

Support:

GIS&T support will be provided by volunteer personnel from state agencies and educational institutions. As state personnel, they should be available through Emergency Management Assistance Compact (EMAC interstate agreements) and Statewide Mutual Aid Compact (SMAC intrastate agreements).

- Specific roles of the GIS support groups:
  The specific roles of the GIS&T support group include the following:
  GIS&T Lead – will be on the SEOC floor at one of the two GIS stations and will be responsible for the coordination of GIS&T support for MEMA to provide maps, imagery, and geospatial intelligence/analysis products for decision makers and emergency responders.
  Logistics and Administration Group – tasked with logistics organization, personnel resource scheduling, project scheduling, acquisition of expendable supplies, transportation of support personnel and resources, and ad-hoc needs.
  Data Management Group – tasked with enhancing existing geographic databases or creating new data sets and disseminating this information to all internal and external entities in a secure and recognizable format using appropriate FGDC metadata. This group will provide the GIS data for use by all groups.
  Cartography Group –create maps in sufficient number, format, and size for either hardcopy output or for distribution on the internet. These maps come from a variety of sources including modeling (e.g. HAZUS), static data, and/or data transmitted from the field.
  Technical Support Group – responsible for servicing, support, and maintenance of all GIS&T equipment including printers, generators, GPS units, and communication devices.
  GPS and Field Operations Group – provide GIS&T support for MEMA activities in the field. This includes but not limited to, the use of GPS devices to locate lost/buried critical infrastructure, navigation support, local mapping, and field data collection. When deployed, the roles and responsibilities as described above will be mirrored for each team deployed.
  Special Operations Group – composed of experts from IHL member institutions and state agencies who have specialized knowledge and skills as they may relate to a specific event. Individuals in this group should be identified by the GIS&T Lead and approved by MEMA.

Agreements: When disaster incidents warrant the activation of GIS&T personnel from universities, an agreement should be in place that enables rapid deployment of GIS&T personnel to MEMA headquarters (or other locations in necessary). The agreement should include the specific steps necessary for rapid reimbursement of expenses to the universities and to the GIS&T personnel.

GIS&T Personnel:

GIS&T personnel will be notified by and assist MEMA based on need and characterization of one of the three types of events and the Knowledge, Skills, and Abilities of GIS&T personnel at

the various locations. **Each university contact will develop and maintain a summary document that specifies the KSA's available at that institution.**

Now- : rapid storms, i.e. tornadoes
Local GIS&T personnel in close proximity to MEMA will be activated. Most 'Now' events occur with little warning and local entities will be activated initially (MARIS).

Pre- : 48 hours advance warning, i.e. hurricane
Contacts at universities and other entities will be notified of an upcoming incident and all available GIS&T personnel at each location (e.g., universities) selected by MEMA will be put on 'Alert' status. Each notified contact will hold briefings with their GIS&T personnel and report back to MEMA via teleconference with names and KSA's of their GIS&T personnel that are available. Once the list of available GIS&T personnel has been finalized, the contact in cooperation with MEMA will schedule the deployment of personnel needed to fill the GIS&T positions at MEMA including rotation of relief personnel (4 positions/24 hour period).

Catastrophic – long term response
An initial determination of the need for the GIS bus will be made. The Mississippi Coordinating Council for Remote Sensing and Geographic Information Systems will identify a liaison between MEMA and the university contacts to assist coordination of the long-term response and recovery needs. This liaison will identify the KSA's available at each university and develop a plan for GIS&T personnel deployment and relief. Notification of contacts will be made once the long-term GIS&T personnel deployment and relief plan is in place. An accommodations plan will be developed and implemented.

Data Requirements:
Data available to MEMA comes from many sources. Some data are currently maintained at MEMA headquarters and those data will be catalogued and indexed. It is advised that MEMA seek input from GIS&T personnel concerning the geospatial accuracy of data and ways to improve the data for use in geospatial analysis.

The Technical Users Group (TUG) of the Mississippi Coordinating Council for Remote Sensing and Geographic Information Systems has been tasked with defining standards source and accuracy of data. GIS&T personnel, through coordination with a 'Council' liaison should be knowledgeable of the various response cultures and requirements for data products that meet needs of different agencies.

Map Products:
Most short term events, the 'now' and 'pre' events, will require map products to be produced on an ad-hoc basis. However, there will be some standard maps products needed for response and recovery. A standard list of map products should be developed during the early stages of any event, especially catastrophic events, so that the requests and production of these products can be streamlined and more effective.

Training:
Preparation of emergency responders and GIS&T personnel alike chould be done through basic training in various subjects as ICS, emergency management, map reading, national mapping standards, and other topics as needed. The GIS&T support personnel need this training to better prepare them to better understand the processes required to provide the most effective response to save the lives and property of Mississippi residents. In addition, training is needed for MEMA and other agencies on the capabilities of GIS&T, the data needs for effective GIS&T, and potential new applications for GIS&T.

Available Training:
ICS online training is available via the FEMA website and
http://www.training.fema.gov/EMIWeb/IS/is100.asp
Minimum training for university contacts includes:

IS-100 - Introduction to Incident Command
IS-200 - Basic Incident Command (Single Resources and Initial Action Incidents)
IS-700 - Introduction to the National Incident Management System
IS-800 - Introduction to the National Response Plan

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, 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 to help transition into an operational implementation of in developing the initial layers based on recently collected high-resolution digital orthoimagery is being used.

2009 MDEM Data Development Project Status:

- Through funding provided by the U. S. Department of Housing and Urban Development *Recovery Action Plan*, during 2009, work was completed on the development of DTMs and 2 foot (1" = 100' scale) and 5 foot (1" = 200' scale) ground contours developed from the 1-foot and 6-inch imagery collected in 2007 over the five Gulf Region counties (Hancock, Harrison, Jackson, Pearl River, and Stone). In addition to the DTM and contours, other layers developed include pavement planimetrics, road centerlines and bridges (transportation layer), and hydrography. Data deliveries were being by MDEQ and its contractors in late 2009 to county GIS personnel and the Mississippi Geospatial Clearinghouse.

- Also through the funding provided by the U. S. Department of Housing and Urban Development *Recovery Action Plan*, the remaining work in support of the Gulf Coast Regional Infrastructure Program has neared completion in 2009. This work is the integration of property ownership data within the five Gulf Region counties with previously acquired base mapping data. The work product will support implementation of the water and wastewater infrastructure improvements, including developments that will continue for years to come. Final deliveries of these data are scheduled for early 2010. The elements of this on-going work includes:

    - Public Land Survey System Improvement – the framework on which property ownershpi data and juristictional boundary data are based. This element will create an ingtegrated, regional PLLS that will support accurate, georeferenced locations of the water and wastewater infrastructure improvements.
    - Parcel Publication – the element that creates the publication standard forparcal 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 foverments 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

- Through funding provided by the National Oceanic and Atmospheric Administration's Coastal Services Center, a digital terrain model (DTM) and associated elevation contours are being developed for 34,660 square miles of the state (approximately 72%). This data is developed from the 2' orthoimagery collected for MDEM in 2005/2006. The DTM includes mass points and breaklines – data that will serve the needs of local, state, federal, and private sector high-end users. The contours are being developed with a horizontal accuracy of approximately +/- 4' and a vertical accuracy of approximately +/- 3' and delivered at a 5' interval. Initial delivery of DTMs began in December, 2009, with final deliveries in early 2010. These contours will be readily accessible to the casual user.

DTM and 5 foot contour development area.

- Also through the funding provided by the National Oceanic and Atmospheric Administration's Coastal Services Center, 2009 data development work in the Gulf Region nearing completion in early 2010 is the Gulf Region Centerline Attribution project. The attribution information being developed is for the Gulf Region Transportation Layer street centerline discussed earlier. The attribution information that will be added to the existing street network will consist of street names and address ranges. The street centerline names are being populated using the best available public data. E-911 addressing files are the primary source for the address ranges. Delivery to MDEQ will be in February, 2010.

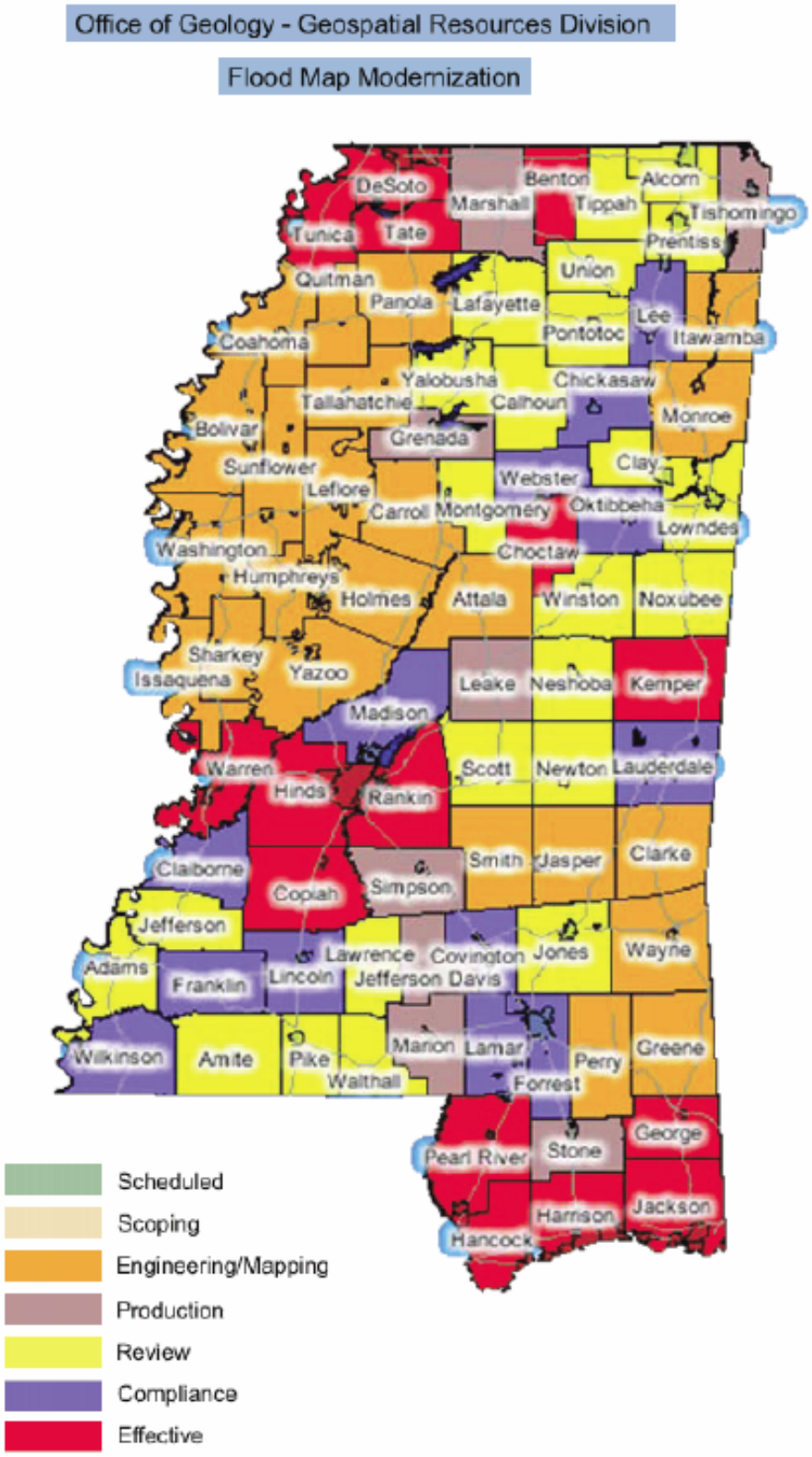
- In addition to continuing the Mississippi educational program being conducted by the Extension Service component of the Geosystems Research Institute at Mississippi State University, educational directions have been expanded to include relevant national organizations in an effort to expand the applicability of the MDEM program on a more national scale. As a first stage of this effort, the Northern Gulf Institute partnered with the NOAA Coastal Services Center and it Digital Coast program. NGI and CSC are partnered the National Association of Counties (NACO), the National States Geographic Information Council (NSGIC), the Association of State Floodplain Managers (ASAFPM), The Nature Conservancy (TNC), and the Coastal States Organization (CSO) to organize and prioritize efforts on coastal digital geographic information. Funds have

been provided to these organizations to collect input from their constituencies, meet with NGI and CSC to guide Digital Coast development, and to coordinate efforts to maximize benefits of the resulting efforts. In the future, benefits for the State of Mississippi from this Digital Coast partnership will continue. Some of the early benefits provided to Mississippi coastal communities in 2009 are:

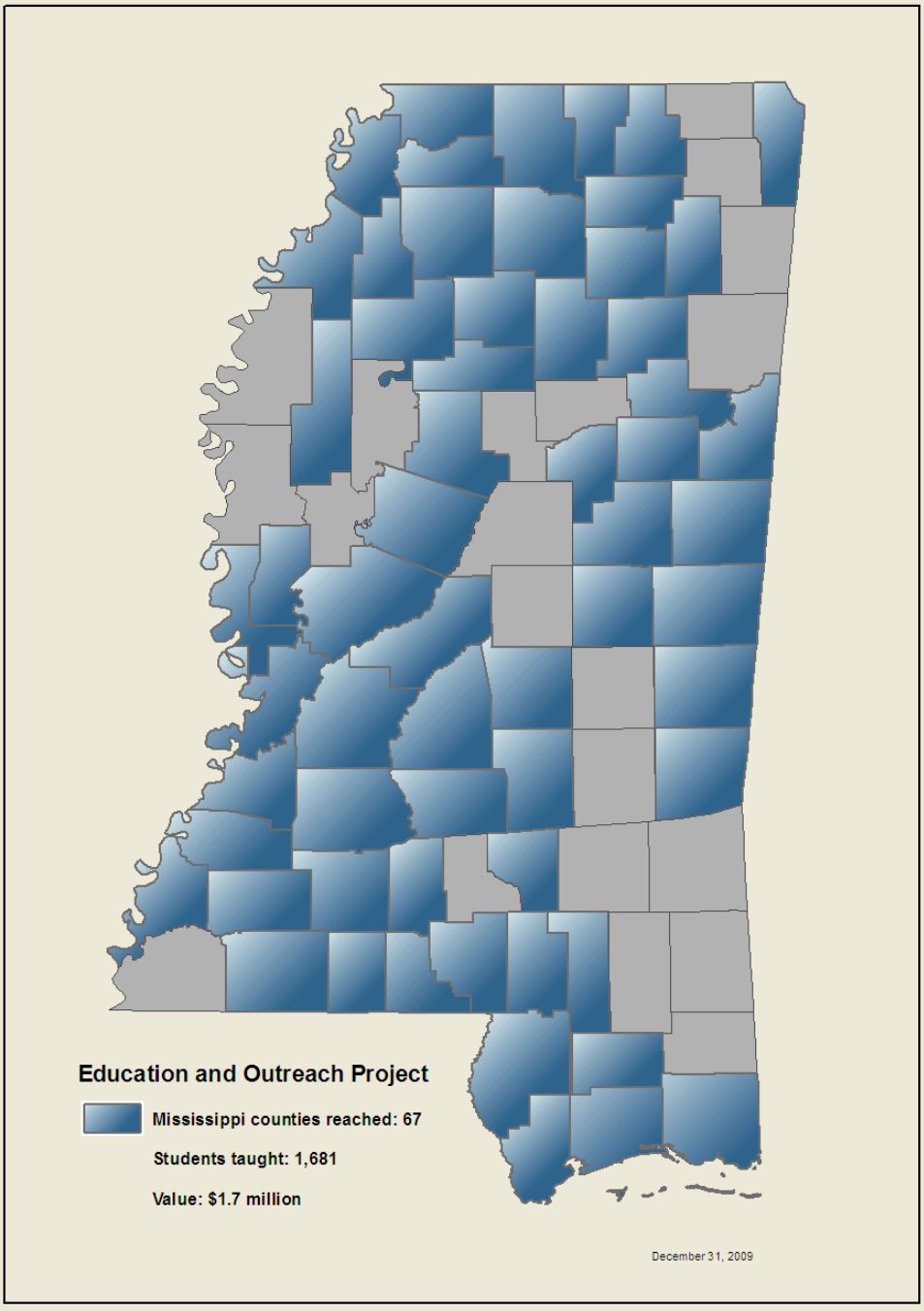
- The Digital Coast website provides data (elevation, land cover and imagery data) to aid state and local officials in different ways including planning initiatives and as data inputs for models and other tools.
- Technical training about geographic information systems (GIS) and remote sensing were provided to Mississippi personnel from federal, state, and local agencies. Local hosts included the NOAA Coastal Services Center, the Geosystems Research Institute of Mississippi State University, and Grand Bay National Estuarine Research Reserve. Each training session includes information about Mississippi topics such as the Digital Coast and the Mississippi Geospatial Clearinghouse. The Mississippi Geospatial Clearinghouse is also the featured data resource on the Digital Coast data page, which received 5,500 visits from across the United States since July 2009.
- A regional "Risk Communication and Riskwise Behavior" workshop was brought to Mississippi and led by the NOAA Coastal Services Center and Northern Gulf Institute. Participants explored ways to use social marketing methods to effectively communicate risk and hazards information to communities.
- One of the most impressive tools added to the Digital Coast in 2009 is the Coastal Inundation Toolkit, which helps state and local coastal agencies determine where their locales are most vulnerable to coastal flooding and what steps can be taken to reduce this risk.

❖ As the additional data sets are developed for the Mississippi Digital Earth Model, the necessity to provide additional computational and data storage equipment continues to be a priority. Under state statute, the Mississippi Department of Information Technology Systems is charged with development and maintenance of the MDEM data delivery system. Currently, funding is being supplied to MDITS to expand the operational delivery system to provide adequate data storage for the three-dimensional topographic model being developed under this grant.

APPENDIX FLOOD MAPPING 2009 STATUS MAP



APPENDIX STATUS MAP



APPENDIX PROJECT FLYER

GIS Education and Outreach in Rural Mississippi

Hurricane Katrina slammed into the Mississippi Gulf Coast on August 29, 2005, obliterating buildings, coastal roads and street signs and emphasizing the need for county and local paper maps and records to be converted to Geographic Information Systems (GIS). Under direction of the Mississippi Emergency Management Agency, Mississippi State University GIS faculty and personnel went to emergency operations centers in the state's hardest-hit counties immediately after landfall and remained to assist and direct GIS volunteers in the ongoing recovery effort. Without local landmarks to guide rescuers, state and local agencies became aware of how little georeferenced digital data was available to coordinate emergency management operations.

Impact:

Counties: 64
Participants: 1453
Value: >$1.5 Million

Geosystems Research Institute Extension Professor Scott A. Samson, who along with others directed GIS volunteers in the field, saw the need for statewide geospatial education to aid local governmental agencies in making the transition from paper maps to georeferenced digital databases. The Mississippi Coordinating Council for Remote Sensing and Geographic Information Systems, a consortium of GIS professionals from state agencies and educational institutions, adopted Dr. Samson's proposal to create and administer an Outreach and Education arm of the Mississippi Digital Earth Model, an ongoing paper-to-digital conversion initiative. Dr. Samson identified GIS skills needed by local governments and organized a series of workshops. Commercial GIS software, available to local governments through a state contract with ESRI, Inc., is used in all workshops.

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Instructor Nel Ruffin travels the state with "laptop labs" configured with the latest ESRI software. Federal seed grants allow the team to take GIS training directly to Mississippi counties and municipalities, offering the trainings to local agencies and first responders free of charge. Community College Workforce Development Centers, the Mississippi State Tax Commission and Extension Service county offices are among the cooperating agencies working with the MSU team to contact participants and arrange logistics. Workshops are presented at Mississippi State University Extension Service county offices, Community Colleges, Emergency Operations Centers, police stations, and even courtrooms.

A fully equipped mobile lab takes GIS to training sites and disaster locations. The MSU Extension Service bus features 12 desktop computers configured with GIS and GPS-support software. The bus has its own server and a pair of onboard generators. Satellite Internet access has recently been added via a 1.3 meter dish antenna.

Qualifications of Instructors

Samson, Olson and Ruffin are authorized by ESRI to teach many of the courses taught by ESRI personnel. To become an Authorized Training Partner (ATP), a person must (1) have 200 hundred hours of experience with the ESRI software, (2) complete a pre-qualification review, (3) pass rigorous exams (85% is a passing grade) and (4) demonstrate teaching abilities before ESRI personnel. This process is repeated for each course taught by Samson, Olson and Ruffin. The team is authorized to teach 9 courses developed by ESRI, ranging from fundamentals of GIS to advanced database concepts.

At MSU, assistance with GIS does not end with workshops. GRI Research Associate Gunnar Olson assists municipal and county personnel in making the transition from paper cadastres and soil maps to a georeferenced digital database. All counties, cities and emergency responders who participate in the training program are eligible to receive assistance in designing and creating a GIS application needed in their community.

Email contact for additional information:
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APPENDIX PROJECT BOOKMARK

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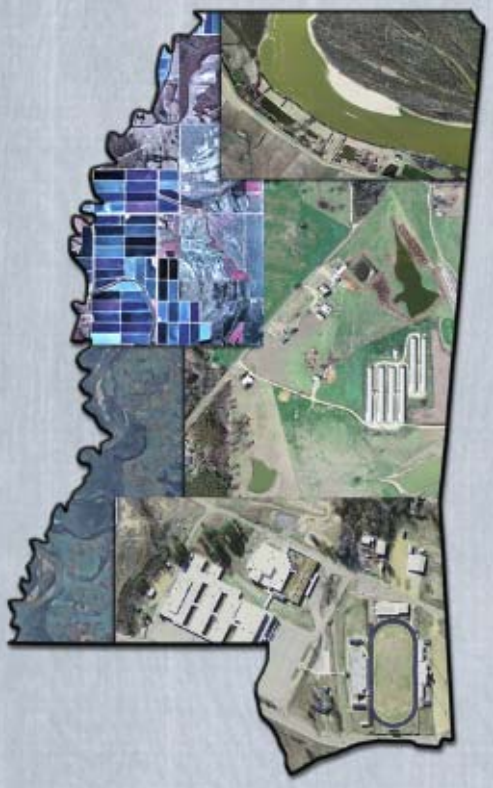
Mississippi Geospatial Clearinghouse

"Provides access to a comprehensive spatial information warehouse" of GIS resources of Mississippi for use by government, academia, and the private sector.



www.gis.ms.gov

Mississippi's Official Portal To Digital Data

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Coordinating Council for Remote Sensing and Geographic Information Systems

- Provides Access to Comprehensive Spatial Information Warehouse
- Reduces Duplication of Data Production
- Enhances Data Distribution

Data Sharing for Mississippi at a Lower Cost

www.giscouncil.ms.gov

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