



Geosystems Research Institute

Annual Report 2008

GRI

Mississippi State University





Geosystems Research Institute

Our Vision is to be a world leader in advancing the state-of-the-art in spatial technologies and resource management.

Our Mission is to understand Earth's natural and managed systems and provide comprehensive solutions for socioeconomic and environmental requirements, leading to an improved quality of life.

The Geosystems Institute serves as a partner and research resource for government agencies at the state, local, federal, and international level, as well as for commercial entities desiring to expand their current technical capabilities or to diversify into new market opportunities. Our programs are built upon the wide range of expertise and infrastructure available across the University, and through cooperative agreements with other academic and research groups.

Using the infrastructure and expertise of one of the largest high-performance computing centers in the United States, the GRI provides capabilities in remote sensing, computational technologies, visualization techniques, natural resource management, and the transition of these into operational agency research, planning, and decision-support programs.

Mississippi State
UNIVERSITY



From the Director

"2008 proved to be an incredible year for the Geosystems Research Institute. New initiatives and expanded programs occurred with almost every program we have, leading to a funding level of over \$28M in this past fiscal year.

The NOAA-funded Northern Gulf Institute, newest in NOAA's cooperative institutes program, is a partnership of five academic institutions – MSU (as lead), University of Southern Mississippi, Louisiana State University, Florida State University, and Dauphin Island Sea Lab. It is in strong partnership with NOAA units at Stennis Space Center and nationally, as well as a number of other federal and state agencies, as well as industry and non-governmental organizations.

The fundamental philosophy of operations for the NGI is integration—integration of the land-coastal-ocean-atmosphere continuum; integration of research to operations; integration of the collaborating institution's research and technical strengths; and cooperative integration with other entities.

GRI has also taken the lead in developing a NASA-funded Small Satellite program, the first of its kind in the U.S. In partnership with Surrey Space Technology, Ltd., as well as several other companies, this program is focused on bringing small satellite technology to Mississippi and the U.S. Thus, it will be a tremendous engine for economic development. It also has a strong element of education – a new concentration in Small Satellite Engineering at the Ph.D. level in the Bagley College of Engineering is being offered.

The success that GRI has achieved comes through only one means – dedicated and innovative faculty, staff, and students. There are literally hundreds associated with the Institute, and teamwork and collaboration are the hallmarks of the many successful programs that have been built. GRI is committed to working closely with the departments and colleges at MSU, as well as researchers at other institutions and federal agencies, practitioners in the field, and policymakers in the federal and state government.

Through these new as well as our existing programs, GRI continues to demonstrate its commitment to high quality research and education/outreach that is relevant, visionary, and engaged. 2009 holds promise for even greater things! "



A handwritten signature in black ink that reads "David R. Shaw".

David R. Shaw

Director and William L. Giles Distinguished Professor

Mississippi State
UNIVERSITY

SMALLSAT PROGRAM

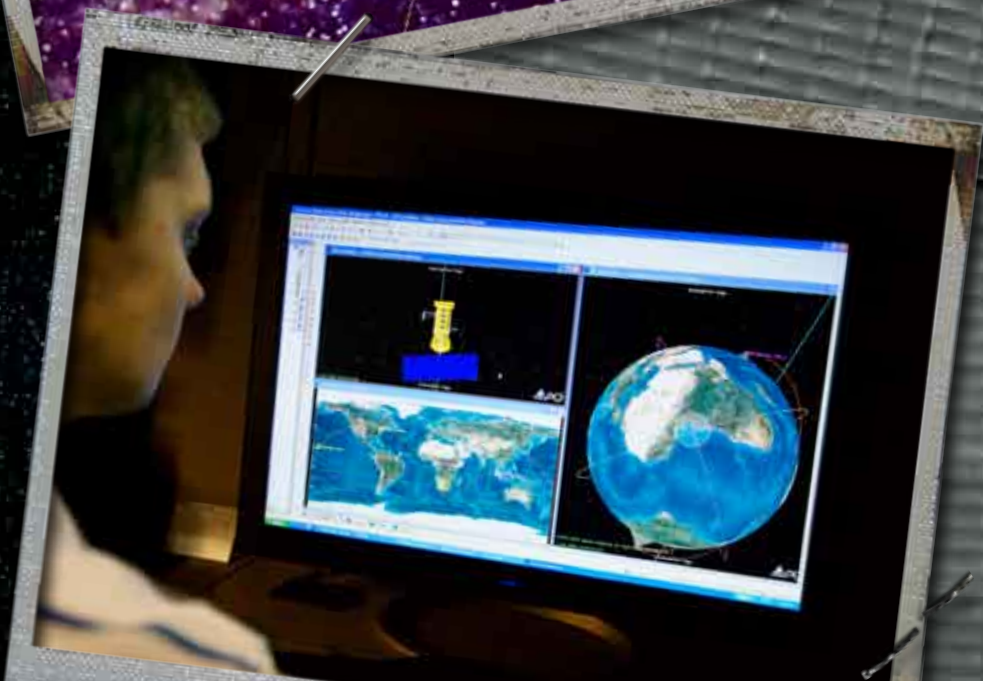
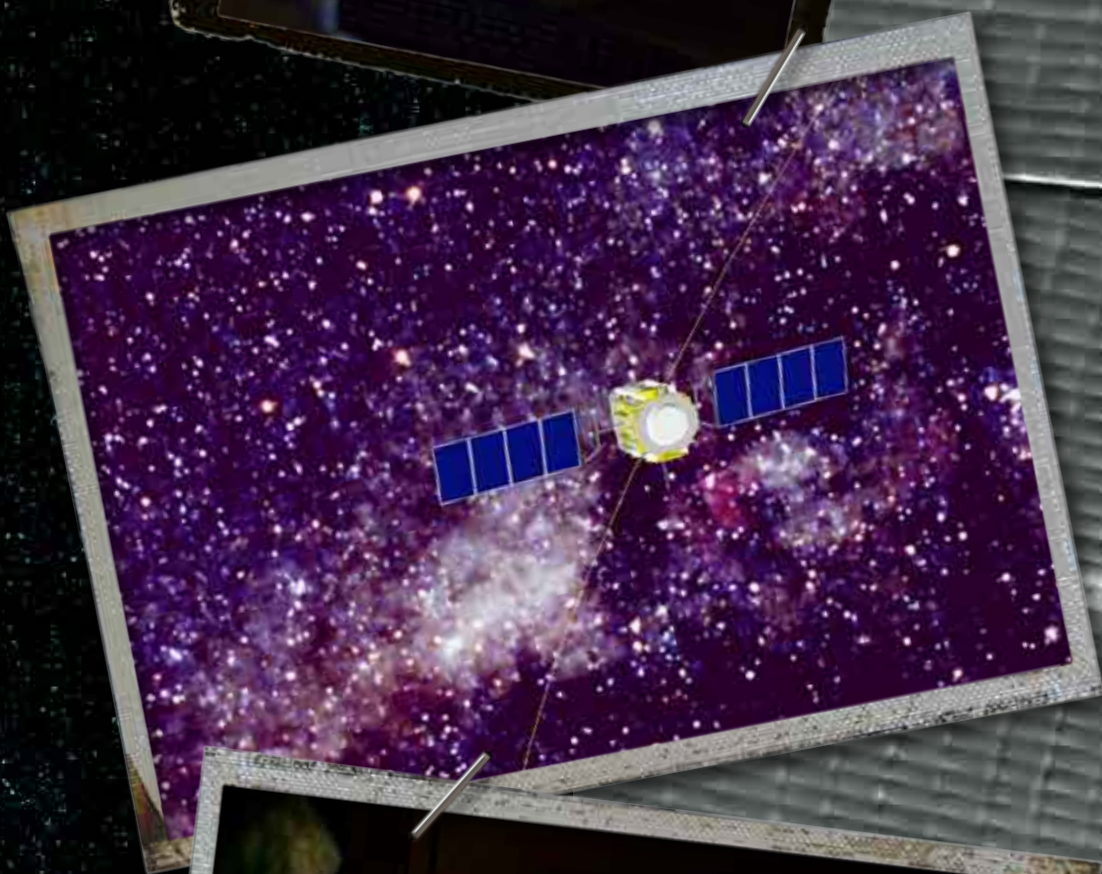
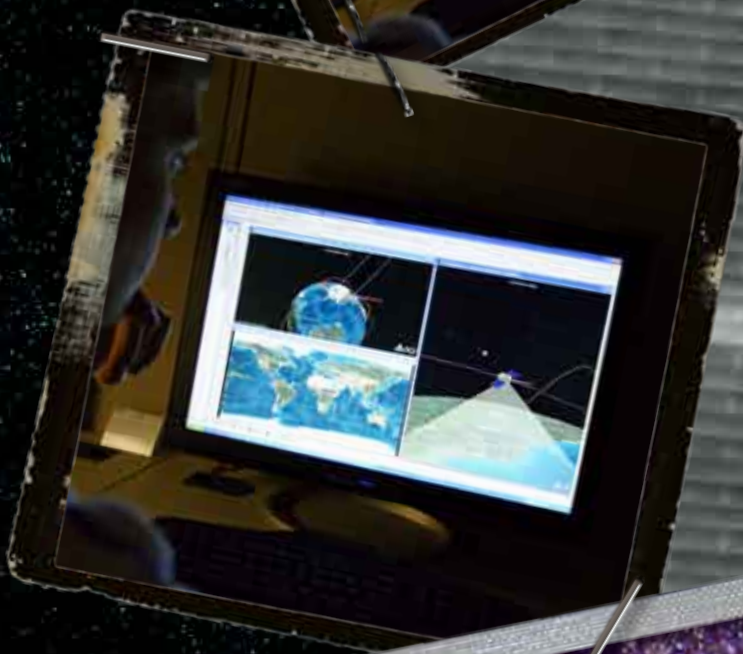
Mississippi State University (MSU) has recognized the pressing need for advanced, low-cost spacecraft technology. Researchers at MSU's Geosystems Research Institute and the Bagley College of Engineering are responding to this need by developing a research, education, training, and applications program that will lead to a comprehensive low-cost space capability for federal agencies and the private sector. The small spacecraft capability emerging at MSU will offer a more compact and less expensive space capability meeting application needs ranging from earth observations (e.g. disaster response, ocean monitoring, agriculture, coastal management) to navigation and communication service.

MSU has partnered with the Surrey Space Technology, Ltd (SSTL) in the U.K., the world leader in successful small satellite design, manufacturing, testing, and operations. With a 20-year history of remarkable innovations, SSTL has worked internationally with countries and private businesses to develop satellite capabilities and has notched over 25 successful spaceflight missions. MSU plans to extend that track record to the U.S., continue developing strategic partnerships, and significantly advance the technology and applications of small spacecraft systems along the way. With international collaboration and training already underway, MSU will be positioned as the leading U.S. research and development center for small, low-cost space system research, training and development.

The University has very strong intent in developing a spin-off company to work with the U.S. research and operational

agencies in developing less expensive, but highly effective technologies that can be deployed quickly. A new partnership will be an institutional commitment to bring world-class capabilities to the Magnolia State. MSU has developed a mission control and ground station operations center that will enhance the University's research programs while fostering economic development through innovation and commercialization. MSU's Bagley College of Engineering also offers a cross-disciplinary graduate degree concentration in small satellite engineering. The degree programs are dynamic and will benefit from cooperative agreements between MSU, NASA, SSTL, and the University of Surrey in the U.K., as well as other industrial and government partners.





IDAHO SURVEYS AND GOVERNOR'S RECOGNITION

A TEAM OF GRI RESEARCHERS HAVE COMPLETED SURVEYS OF LAKE PEND OREILLE, THE LARGEST LAKE IN IDAHO, AND RECEIVED PERSONAL THANKS FROM IDAHO GOVERNOR BUTCH OTTER FOR THEIR EFFORTS. ECONOMIC AND ECOLOGICAL THREATS POSED BY EURASIAN WATERMILFOIL PROMPTED THE DEVELOPMENT OF A STATE-WIDE ERADICATION PROGRAM LED BY THE IDAHO STATE DEPARTMENT OF AGRICULTURE. THE RESEARCH WAS ALSO SUPPORTED WITH ASSISTANCE FROM IDAHO'S BONNER COUNTY AND THE AQUATIC ECOSYSTEM RESTORATION FOUNDATION.

AT LEAST TWO MEMBERS FROM DR. JOHN MADSEN'S INVASIVE SPECIES TEAM WERE IN IDAHO AT A TIME DURING THE FOUR-MONTH STINT TO SURVEY FOR EURASIAN WATERMILFOIL AND OTHER SPECIES. THE GRI TEAM USED GLOBAL POSITIONING SYSTEMS TO CONDUCT TWO GRID SURVEYS OF THE ENTIRE LAKE, AND TO SURVEY SMALLER SECTIONS WHERE THEY FOUND INVASIVE SPECIES BEFORE AND AFTER CHEMICAL OR MECHANICAL TREATMENT. THE TEAM ALSO TOOK OVER 300 BIOMASS SAMPLES WHICH THEY ANALYZED TO DETERMINE THE MOST EFFECTIVE TREATMENT METHOD.

IN ADDITION TO GOVERNOR OTTER'S ACCOLADES TO MADSEN FOR THE SURVEY WORK AND ITS VALUE TO THE IDAHO EURASIAN WATERMILFOIL ERADICATION PROGRAM, THE BONNER COUNTY PUBLIC WEEDS SUPERINTENDANT ALSO SENT SPECIAL THANKS. "IT REALLY CAN HUMBLE ONE'S HEART TO FIND THIS KIND OF COOPERATION AND DEDICATION AMONG AGENCIES AND PROFESSIONAL PEOPLE IN THE INDUSTRY," STATED BRAD BLVEMER OF SANDPOINT, IDAHO.

AS A RESULT OF THE EXTREMELY SUCCESSFUL PROGRAM IN IDAHO, GRI'S INVASIVE SPECIES TEAM HAS NOW GAINED ATTENTION FROM OTHER STATES AS WELL. THE TEAM WILL SOON BE SURVEYING EURASIAN WATERMILFOIL IN MONTANA RESERVOIRS.



call the last one
hate this shit
i never got
this last one
really all
this fucking world
never look back

INVASIVE species



Applications for the Gulf of Mexico Region

Unmanned Aircraft Systems

Gulf Region

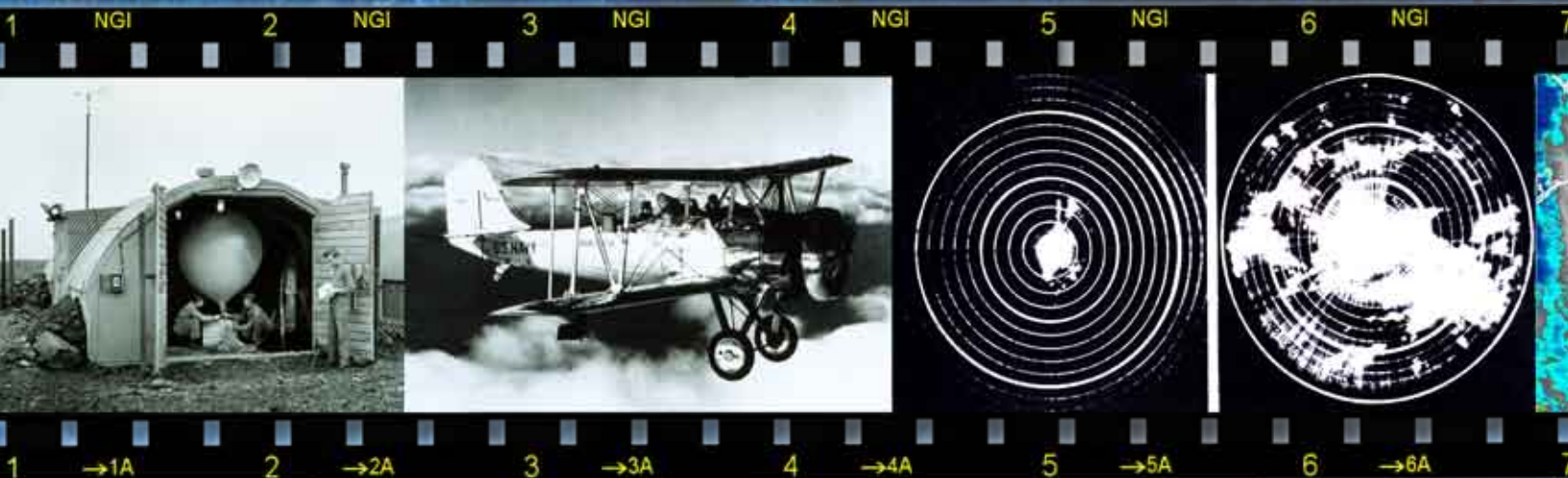


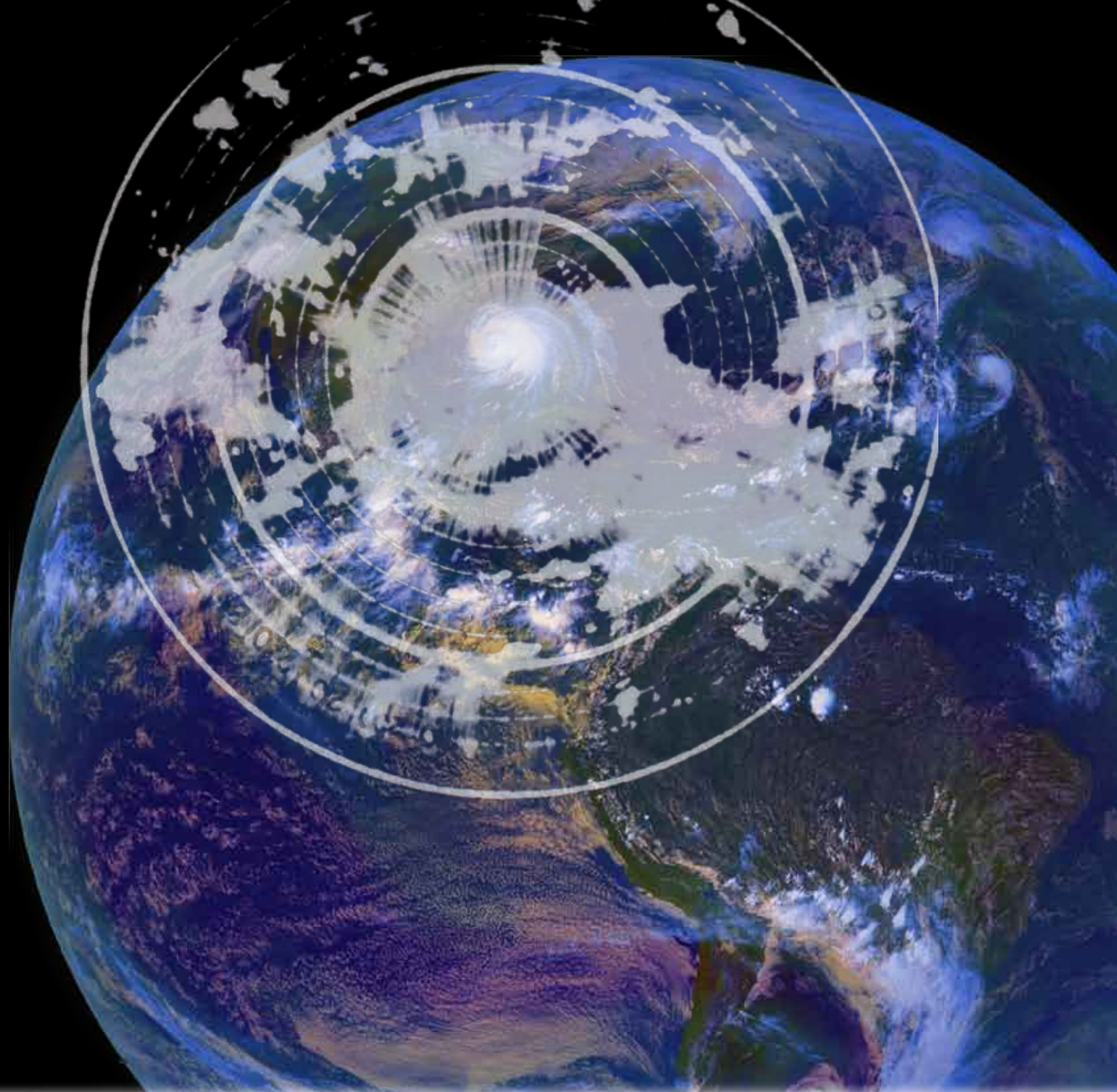
Hurricanes and tropical storms cause many deaths and average billions of dollars in damages each year. Increased forecast accuracy and lead-time in predication enable better planned evacuations, securing property and infrastructure before the storm hits. The stakes are high. Forecast errors in either direction are expensive. Money spent to improve the accuracy of hurricane prediction is a good investment.

Improved forecasts and warnings have demonstrably saved lives and property. They also reduce the costs inherent in responding to the hurricane threat. The devastating impacts of hurricanes like Katrina require that we make the best possible and most authoritative information available to decision-makers to help them determine whether to implement mandatory evacuations and other costly preparatory actions for approaching hurricanes. Unmanned Aircraft Systems (UAS) offer the ability to add critical time and knowledge needed for disaster preparedness, evacuation planning, and securing of critical infrastructure.

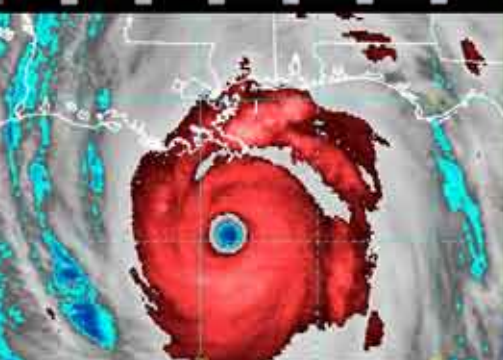
The Gulf of Mexico region faces some of the most pressing environmental issues of our day, including hurricanes, hypoxia, wetland loss, ecosystem degradation, and water quality. To protect and enhance ecosystem and community resiliency, science must go beyond the current state-of-the-art in collecting critical data from the ocean and atmosphere. One of the emerging sensor platforms that has the potential to make significant advancements in this regard is Unmanned Aircraft Systems.

While the potential benefits of UAS technologies are great, efficient use of this emerging resource is needed if we are to effectively meet the diverse needs of the Gulf of Mexico community. The Geosystems Research Institute and the corollary Northern Gulf Institute at Mississippi State University are working with the National Oceanic and Atmospheric Administration (NOAA) to bring together regional constituents to establish requirements that are best met through the use of UAS applications. This effort will rely upon a broad group of local, state, regional and federal stakeholders to help define UAS-based operational and research requirements that are specifically designed to help better understand, monitor, forecast and mitigate the potentially devastating impacts hurricanes can have on the Gulf of Mexico community.





7 NGI 8 NGI 9 NGI 10 NGI 11 NGI 12 NGI 13



7 →7A 8 →8A 9 →9A 10 →10A 11 →11A 12 →12A 13



GIS Outreach and Education in for 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, MSU faculty and personnel went to emergency operations centers in the state's hardest-hit counties immediately after landfall and remained to assist and direct 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.

GRI 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.

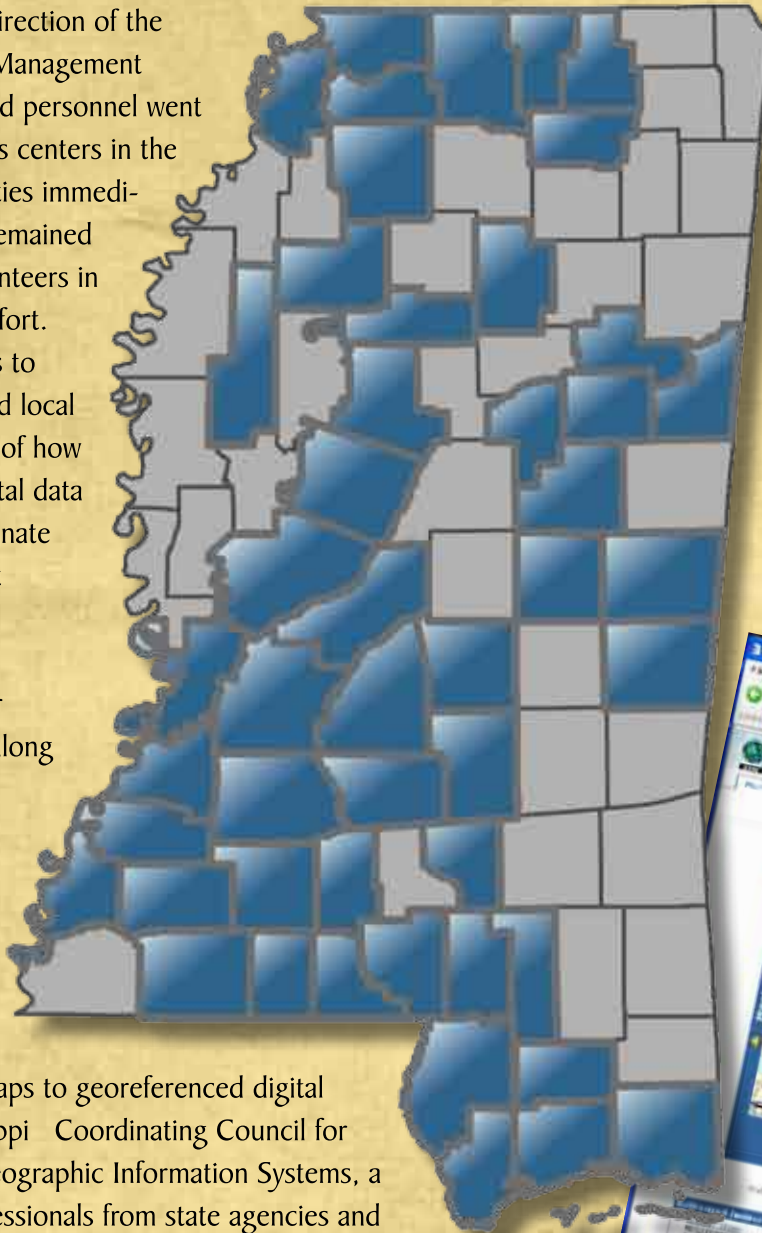
Instructors travel the state to help a broad spectrum of clients learn the basics of GIS in workshops all over

the state. Federal seed grants make it possible to take GIS training directly to Mississippi counties and municipalities, offering the training to local agencies and first responders free of charge. Workshops are

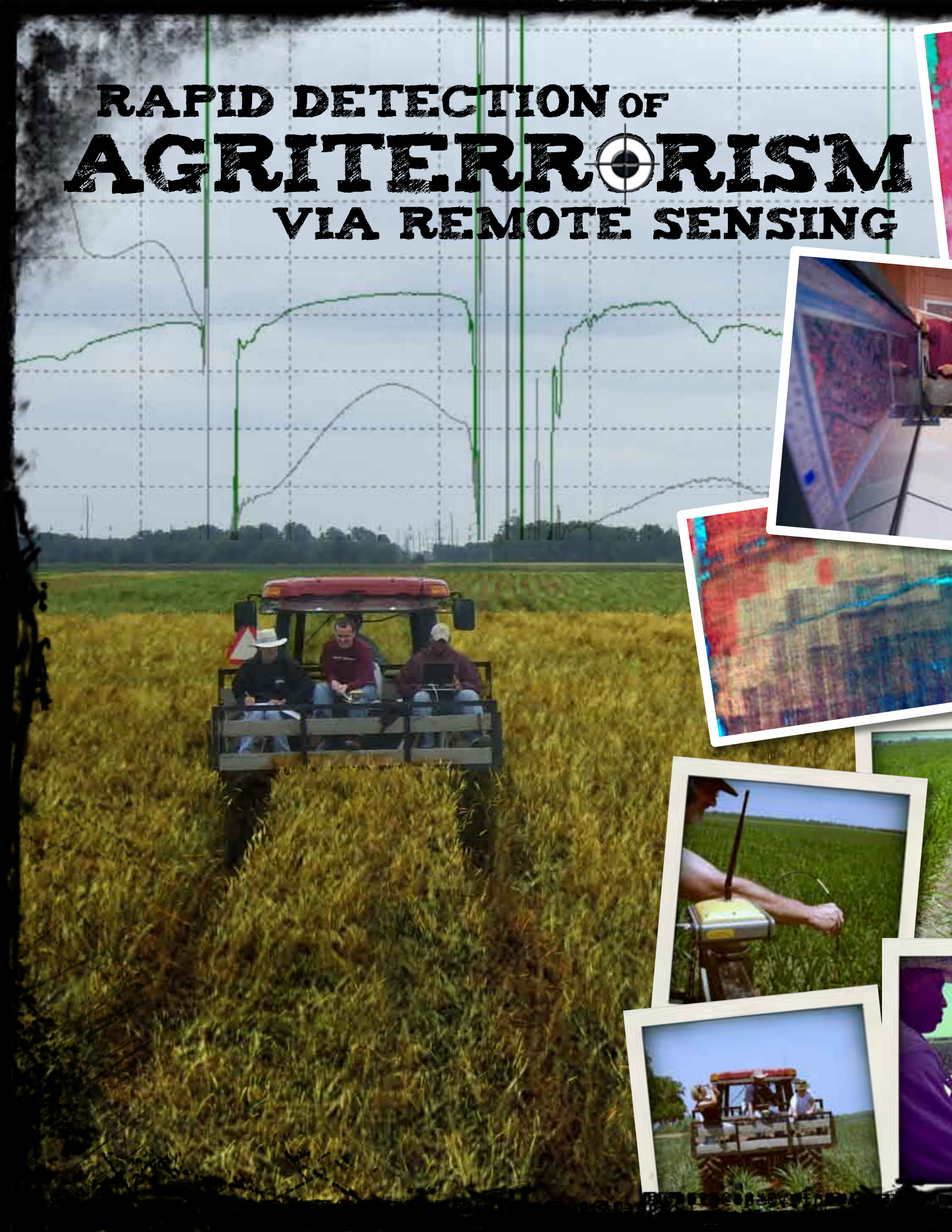
presented at MSU Extension

Service county offices, community colleges, emergency operations centers, police stations, and even courtrooms.

And, the GIS help doesn't end with workshops. All counties, cities and emergency responders who participate in the training program are eligible to receive assistance in designing and creating a GIS project of their choice.



RAPID DETECTION OF AGRITERRORISM VIA REMOTE SENSING



TRANSPORTATION: STREAMLINING ENVIRONMENTAL

In a study sponsored by the U.S. Department of Transportation (DOT), Research and Innovative Technology Administration (RITA), new and innovative approaches to streamlining environmental and planning processes (SEPP) for transportation corridors are being demonstrated by the application of commercial remote sensing data and spatial information technologies. Partner research institutions led by the Geosystems Research Institute at MSU, including Oak Ridge National Laboratory and Michigan Tech Research Institute, are collaborating with partner DOT agencies to compare and quantify benefits of new and innovative approaches versus traditional methods for completing tasks in the Environmental Impact Statement (EIS) process. A completed EIS for a planned segment of I-69 that traverses Memphis, TN, and Northwest Mississippi, serves as the research test bed to quantify benefits delivered by the technology deployment project. In addition, the project also addresses Hurricane Katrina lessons learned to derive nationally significant motivations toward enhanced geospatial preparedness for application to transportation planning practices.

A consortium of research and agency partners are conducting research guided by an organized Advisory Panel that comprises local and national representatives spanning the combined competencies of transportation project development processes. Key components of the research project include tasks and activities typical of a transportation corridor planning and environmental assessment process, but each activity considers how remote sensing and spatial information technologies may add efficiencies, reduce costs, and/or improve the quality and outcomes of the task or activity. Advisory panel input ensures targeted development of key project aspects to make sure that focus is placed on activities that will deliver the best payoffs and will ensure that the project is highly connected to relevant communities of practice and ensure that communities of practice receive feedback in an ideal manner about project progress and outcomes.



Streamlined

Proposed Action

Background

Background and Purpose/Needs

- Planning
- integration of plans
- state
- national
- local
- MPO
- Gathering of data

Alternatives Considered

- Communication with:
 - Resource Agencies
 - Citizens
- Gathering of Data

Background Data Conversion to GIS

National Consortium for Remote Sensing in Transportation
Streamlining Environmental and Planning Processes

ncrstr
sepp

+ PLANNING PROCESSES



Environmental Impact Statement

Impact Analysis

Land Use
Economic Impacts
Environmental Justice

*REMI *GIS *Remote Sensing

Wetland Impacts
Protected Species
Section 4(f)
Hazardous Materials
Cultural Impacts

*Remote Sensing *GIS *REMI

Integration of
Spatial
Technology
Impact Data

Distribution
of Data
and
Communication

Resource Agencies
Planning Agencies
Citizens

If no preferred alternative is
selected, other alternatives
must be chosen and
analyzed.

Preferred
Alternative
Selection
and
Data
Warehousing

Permitting

Signed
Environmental
Impact
Statement

Construction
and
Design Phase

Awards and Recognitions

Cai, S. S. 2008. Graduate Research Assistant of the Year Award Nominee. Graduate Student Association, Mississippi State University.

Cheshier, J. C. 2007. South Carolina Aquatic Plant Management Society 2007 Scholarship. South Carolina Aquatic Plant Management Society.

Du, Q. 2008. Outstanding Researcher. Bagley College of Engineering, Mississippi State University.

Ervin, G. N. 2007. Beverly B. and Gordon W. Gulmon Dean's Eminent Scholar. MSU College of Arts & Sciences.

Prasad, S. 2008. Centers and Institutes Graduate Student Research Award. Mississippi State University.

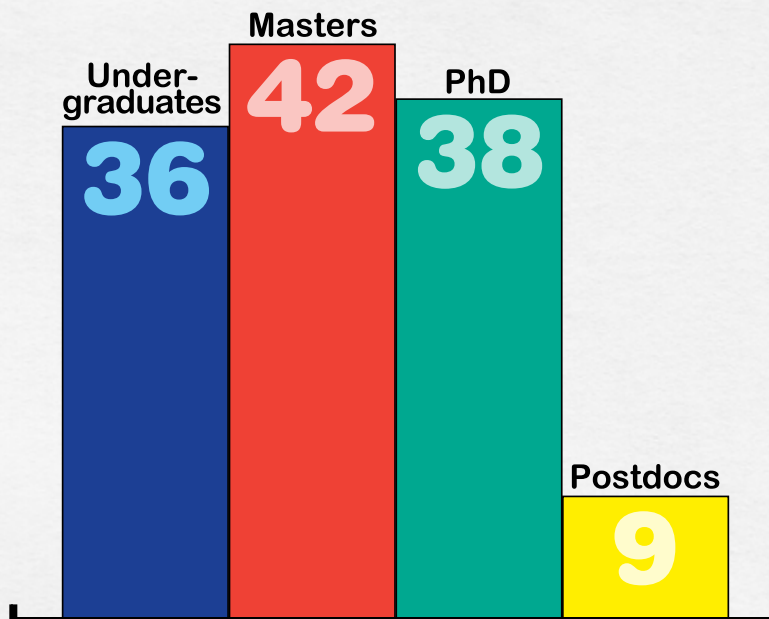
Shaw, D. R. 2007. Fellow of the American Association for the Advancement of Science.

Wersal, R. M. 2007. Awarded 1st place in the student poster competition. 47th Annual Meeting of the Aquatic Plant Management Society.

Wersal, R. M. 2007. Awarded 3rd place in the student paper competition. 47th Annual Meeting of the Aquatic Plant Management Society.

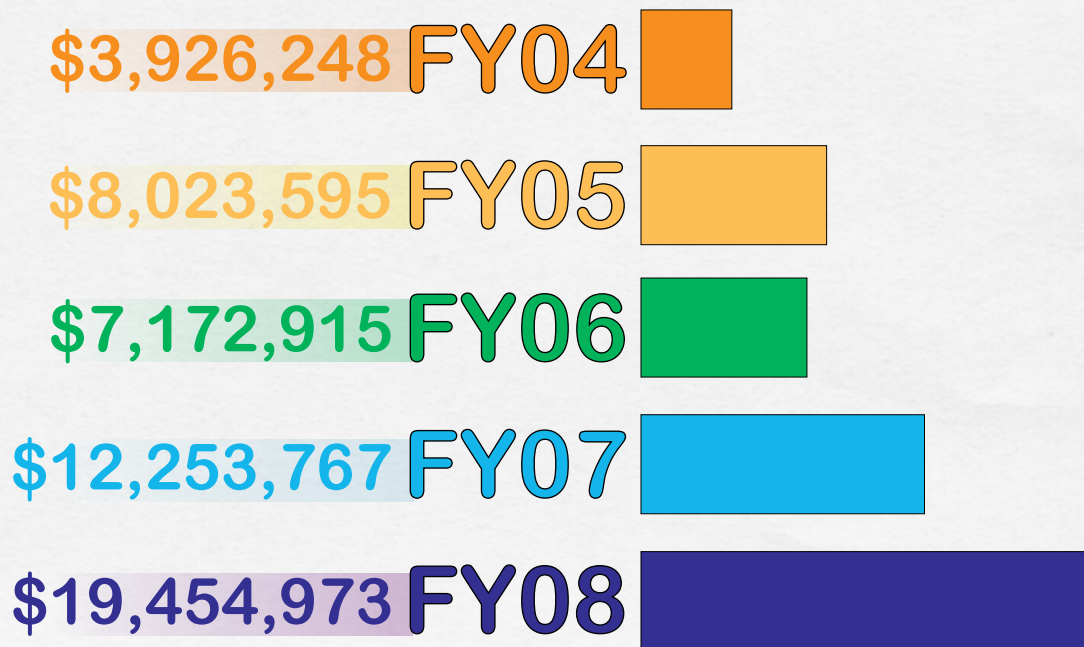
Wersal, R. M. 2008. Awarded 3rd Place in the Student Paper Competition. Midwest Aquatic Plant Management Society 28th Annual Meeting, March 1-3, Sanduskey, OH.

Wersal, R. M. 2008. Geosystems Research Intitute Research Associate of the Year, May 2 2008.

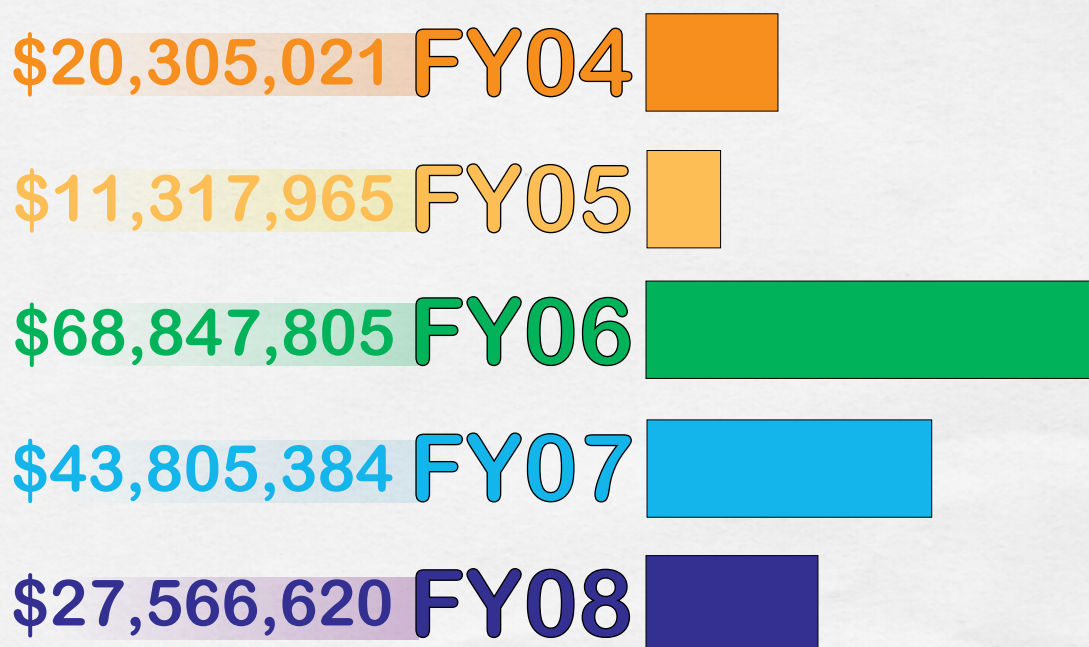


125 Students involved in GRI Research

GRI Expenditures



GRI Proposal Submissions



Books and Book Chapters

Du, Q. 2007. Realtime Online Processing of Hyperspectral Imagery for Target Detection and Discrimination. High-Performance Computing in Remote Sensing. 397-409.

Fitzpatrick, P. J. 2008. The Debate over Tropical Cyclones and Anthropogenic Climate Change. World History Encyclopedia. Vol. ABC-CLIO.

Fitzpatrick, P. J. 2008. Global Warming. World History Encyclopedia. Vol. ABC-CLIO.

Nobrega, R. A. A., C. G. O'Hara, J. A. Quintanilha. 2008. An Object-based Approach to Mine Roads over Informal Settlements in Sao Paulo City. Spatial Concepts for Knowledge-Driven Remote Sensing Applications, Series: Lecture Notes in Geoinformation and Cartography. ISBN: 978-3-540-770572. 815.

Peer-Reviewed Journals

Ball, J. E., L. M. Bruce, N. H. Younan. 2007. Hyperspectral Pixel Unmixing via Spectral Band Selection and DC Insensitive Singular Value Decomposition. IEEE Geoscience and Remote Sensing Letters. Vol. 4, No. 3. 382-386.

Boettcher, J. B., J. E. Fowler. 2007. Video Coding Using a Complex Wavelet Transform and Set Partitioning. IEEE Signal Processing Letters. Vol. 14. 633-636.

Bried, J. T., B. D. Herman, G. N. Ervin. 2007. Conservation Umbrella Potential of Wetland Plants and Dragonflies: a Quantitative Case Study Using the Umbrella Index. Journal of Applied Ecology. Vol. 44. 833-842.

Bried, J. T., G. N. Ervin. 2007. Intraspecific Models and Spatiotemporal Context of Size-Mass Relationships In Adult Dragonflies. Journal of the North American Benthological Society. Vol. 26. 680-692.

Cai, S. S., Q. Du, R. J. Moorhead. 2007. Hyperspectral Imagery Visualization Using Double Layers. IEEE Transactions on Geoscience and Remote Sensing. Vol. 45, no. 10. 3028-3036.

Diaz-Ramirez, J. N., V. J. Alarcon, Z. Duan, M. L. Tagert, W. H. McAnally, J. L. Martin, C. G. O'Hara. 2008. Impacts of Land Use Characterization in Modeling Hydrology and Sediments for the Luxapallila Creek Watershed, Alabama/Mississippi. Transactions of the ASABE. Vol. 51. 139-151.

Du, Q. 2007. Modified Fisher's Linear Discriminant Analysis for Hyperspectral Imagery. IEEE Geoscience and Remote Sensing Letters. Vol. 4. 503-507.

Du, Q., N. H. Younan, R. L. King, V. P. Shah. 2007. On the Performance Evaluation of Pan-sharpening Techniques. IEEE Geoscience and Remote Sensing Letters. Vol. 4. 518-522.

Du, Q., N. Chang, C. Yang. 2008. Combination of Multispectral Remote Sensing, Variable Rate Technology and Environmental Modeling for Citrus Pest Management. Journal of Environmental Management. Vol. 86, No. 1. 14-26.

Du, Q., I. Kopriva. 2008. Automated Target Detection and Discrimination Using Constrained Kurtosis Maximization. IEEE Geoscience and Remote Sensing Letters. Vol. 5, No. 1. 38-42.

Du, Q., N. Raksuntorn, A. Orduyilmaz, L. M. Bruce. 2008. Automatic Registration and Mosaicking for Airborne Multispectral Image Sequences. Photogrammetric Engineering & Remote Sensing. Vol. 74, no. 2. 169-181.

Du, Q., N. Raksuntorn, S. Cai, R. J. Moorhead. 2008. Color Display for Hyperspectral Image Analysis. IEEE Transactions on Geoscience and Remote Sensing. Vol. 46, No. 6. 1858-1866.

Ervin, G. N. 2007. An Experimental Study on the Facilitative Effects of Tussock Structure Among Wetland Plants. Wetlands. Vol. 27. 620-630.

- Feideropoulou, G., M. Trocan, J. E. Fowler, B. Pesquet-Popescu, J. C. Belfiore. 2007. Rotated Constellations for Video Transmission over Rayleigh Fading Channels. *IEEE Signal Processing Letters*. Vol. 14. 629-632.
- Fujisaki, I., D. L. Evans, R. J. Moorhead, D. W. Irby, M. J. Mohammadi-Aragh, S. D. Roberts, P. D. Gerard. 2008. Stand Assessment through LiDAR-Based Forest Visualization Using a Stereoscopic Display. *Forest Science*. Vol. 54, No. 1. 1-7.
- Holly, D. C., G. N. Ervin. 2007. Effects of Intraspecific Seedling Density, Soil Type, and Light Availability Upon Growth and Biomass Allocation in Cogongrass, *Imperata Cylindrica*. *Weed Technology*. Vol. 21. 812-819.
- Kakani, V. G., K. R. Reddy. 2007. Temperature Response of C4 Species Big Bluestem (*Andropogon gerardii*) is Modified by Growing Carbon Dioxide Concentration. *Environmental and Experimental Botany*. Vol. 61. 281-290.
- Liu, Z. P., R. J. Moorhead. 2007. An Effective, Robust, and Fast Loop Detection Strategy for Interactive Placement of Evenly-Spaced Streamlines. *IEEE Computing in Science and Engineering*. Vol. 9. 86-91.
- Maddox, V. L., J.M. Goatley, Jr., W. Philley, B. Stewart, D.W. Wells. 2007. Maximizing 'Cimarron' Little Bluestem Establishment as Secondary Rough for a Golf. *Applied Turfgrass Science*. 10.1094/ATS-2007-. 0802-01-RS.
- Madsen, J. D., R. M. Stewart, K. D. Getsinger, R. L. Johnson, R. M. Wersal. 2008. Aquatic Plant Communities in Waneta Lake and Lamoka Lake, New York. *Northeastern Naturalist*. Vol. 15. 97-110.
- Madsen, J. D., R. M. Wersal. 2008. Growth Regulation of *Salvinia Molesta* by Ph and Available Water Column Nutrients. *Journal of Freshwater Ecology*. Vol. 23. 305-313.
- Majure, L. C. 2007. The Vascular Flora of the Chunky River (Mississippi). *The Journal of BRIT*. Vol. 1. 1179-1202.
- Martin, J. P., J. E. Swan, R. J. Moorhead, Z. Liu, S. Cai. 2008. Results of a User Study on 2D Hurricane Visualization. *Computer Graphics Forum*. Vol. 27. 991-998.
- Mostovoy, G. V., V.G. Anantharaj, R.L. King, M.G. Filippova. 2008. Interpretation of the Relationship Between Skin Temperature and Vegetation Fraction: Effect of Subpixel Soil Temperature Variability. *Int. J. of Remote Sensing*. Vol. 29, #10. 2819-2831.
- Pantoja, A., E. Abreu, J. Pena, W. Robles. 2007. *Paracoccus Marginatus* Williams and *Granara De Willink* (Homoptera: Pseudococcidae) Affecting Papaya in Puerto Rico. *Journal of Agriculture University of Puerto Rico*. Vol. 91(3-4). 223-225.
- Prasad, S., L. M. Bruce. 2008. Decision Fusion With Confidence-Based Weight Assignment for Hyperspectral Target Recognition. *IEEE Transactions on Geoscience and Remote Sensing*. Vol. 46. 1448-1456.
- Robles, W., A. Pantoja, E. Abreu, J. Pena, J. Ortiz, M. L. Lugo, M. Cortes, R. Macchiavelli. 2007. Efecto de Practicas Agronomicas sobre el Nivel Poblacional de Afidos y Virosis en Carica Papaya. *El Manejo Integrado de Plagas y Agroecologia (Costa Rica)*. Vol. 77. 38-43.
- Singh, S. K., V. G. Kakani, D. Brand, B. Baldwin, K. R. Reddy. 2008. Assessment of Cold and Heat-tolerance of Winter-grown Canola Cultivars by Pollen-based Parameters. *Journal of Agronomy and Crop Science*. Vol. 194. 225-236.
- Wersal, R. M., J. D. Madsen. 2007. Comparison of Imazapyr and Imazamox for Control of Parrotfeather (*Myriophyllum Aquaticum* (Vellozo) Verdecourt). *Journal of Aquatic Plant Management*. Vol. 45. 132-136.

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- Anantharaj, A., U. S. Nair, A. Song, L. Wasson, S. Christopher, P. J. Fitzpatrick, R. King. 2008. Numerical Model Simulations of Regional Weather and Climate Impacts Due to Changes in Historical Landuse in Lower Mississippi River Valley. 88th Annual Meeting of the American Meteorological Society, New Orleans, LA.
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- Ball, J. E., L. M. Bruce. 2007. Level Set-Based Core Segmentation of Mammographic Masses Facilitating Three Stage (Core, Periphery, Spiculation) Analysis. *Proc. 29th Annual International Conference IEEE Engineering in Medicine and Biology*.

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Doshi, R. A., R. L. King, G. W. Lawrence. 2007. Wavelet-SOM in Feature Extraction of Hyperspectral Data for Classification of Nematode Species. Geoscience and Remote Sensing Symposium, 2007. IGARSS 2007. IEEE International. 2818-2821.

Doshi, R. A., R. L. King, G. W. Lawrence. 2008. Self-Organized Maps-Based Spectral Prediction of *Rotylenchulus Reniformis* Population numbers. Geoscience and Remote Sensing Symposium, 2007. IGARSS 2007. IEEE International. 444-447.

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Fitzpatrick, P. J., C. Hill, Y. Lau, D. Stettner. 2008. Analysis of the Tropical Cyclone Environment using COSMIC Data. 88th Annual Meeting of the American Meteorological Society, New Orleans, LA..

Fitzpatrick, P. J., Y. Li, C. Hill, H. Karan, E. Lim, Q. Xiao. 2008. The Impact of Radar Data Assimilation on a Squall Line in Mississippi. 88th Annual Meeting of the American Meteorological Society, New Orleans, LA..

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Fowler, J. E. 2008. Compressive-Projection Principal Component Analysis for the Compression of Hyperspectral Signatures. Proceedings of the IEEE Data Compression Conference. 83-92.

Lim, E., Q. Xiao, J. Sun, P. J. Fitzpatrick, Y. Li, J. L. Dyer. 2008. The Impact of Doppler Radar Data on Rainfall Forecast: a Case Study of a Convective Rainband Event in Mississippi Delta using WRF 3D-Var. 88th Annual Meeting of the American Meteorological Society, New Orleans, LA.

Liu, Z. P., R. J. Moorhead II. 2008. Interactive View-Driven Evenly Spaced Streamline Placement. Proceedings of IS & T / SPIE Conference on Visualization and Data Analysis (VDA '08). 1-12.

Madsen, J. D., G. N. Ervin. 2007. Invasive Plant Atlas for the Mid-South (IPAMS): The Collaboration of Volunteers and Citizen Scientists in Locating Key Invasive Plants for Modeling Land-use Interactions. Agronomy Society of America-Crop Science Society of America-Soil Science Society of America Annual Meeting, November 6, 2007, New Orleans, LA.

Main, J. L., M.W. Shankle, T.F. Garrett. 2008. Influence of a Plant Growth Regulator on Sweetpotato Yield. HortScience. Vol. 43(3). 621-622.

Masutani, M., J. S. Woollen, R. Errico, Y. Xie, T. Zhu, H. Sun, J. Terry, R. Yang, S. Greco, N. Prive, E. Andersson, T. W. Schlatter, A. Stoffelen, F. Weng, O. Reale, L. P. Riishojgaard, G. D. Emmitt, S. J. Lord, Z. Toth, G. J. Marseille, V. Anantharaj, K. Fielding, G. McConaughy, S. J. Worley, C. F. Shih, et al. 2008. Progress in Joint OSSEs - Three Joint OSSE Nature Runs and Simulations of Observations. 88th Annual Meeting of the American Meteorological Society, New Orleans, LA.

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