



**The Alabama Department of Revenue,
Alabama Department of Transportation,
and the National Geodetic Survey
Presents:**

Alabama Height Modernization Forum

April 8, 2008
Renaissance Riverfront Plaza Hotel
Mobile, AL 36602

Grand Ballroom

8:00 a.m. - 5:00 p.m.

Limited seating, please RSVP by April 4, 2008

WHAT IS HEIGHT MODERNIZATION?

Height modernization is a program of the National Geodetic Survey, the nation's positioning agency. The program is to enhance the vertical component of the National Spatial Reference System (NSRS). The NSRS is a consistent national reference framework that specifies latitude, longitude, height (elevation), scale, gravity, and orientation throughout the United States. NSRS provides accurate knowledge of the size, shape, and position of our environment, as seen in the design, construction, and safety of roads and buildings, the transportation of goods and people by car, ship, or plane, as well as in the monitoring and protecting of our environment. The horizontal component of the NSRS is in place and functioning. The vertical component of the NSRS is not, and therefore the full potential and national benefits of real-time measurement of heights are not yet a reality.

Height Modernization –
the importance of accurate elevations

Height Modernization provides the basis for Intelligent Transportation Systems (highway, rail, air, water) for improved safety and efficiency.

Modern society is becoming increasingly dependent on geographic data that is spatially referenced – horizontally and vertically.

- In FEMA's National Flood Insurance Program, risk is measured by elevations, so accuracy is critical
- Denser control reduces survey costs and improves accuracy of geospatially related data such as LIDAR, photogrammetry, GIS, RTK, construction plans, and evacuation routes
- Benefits include more accurate floodplain and insurance rate maps
- Monitoring and management of water resources (groundwater vs. surface water) is improved in areas susceptible to subsidence or erosion

- Accurate water levels referenced to accurate, standardized land elevations enable safe and efficient maritime shipping and navigation
- Integration of surface weather and water with road elevations benefits commerce, tourism, and emergency preparedness (planning) by providing near real-time monitoring and positioning information on weather and road conditions (response)

Precision Agriculture applies GPS technology and management strategies to individual fields to protect the environment, improve productivity, and save time and money.

- Terrain modeling derived from GPS/Remote Sensing data results in more accurate field boundaries and slope (contour) management for land utilization
- Geographic information (GIS) integrating planting and yield rates results in well-defined fertilizer and pesticide application saving resources and reducing run-off
- GPS controlled precise steering of farm equipment available today, with remotely operating machinery anticipated in the near future

Relative (local) and absolute (national) height inconsistencies are eliminated through the use of a common vertical datum – NAVD88.

NOAA's National Geodetic Survey
Height Modernization Program
Juliana Blackwell, Program Manager
Email: himod@noaa.gov
Visit: www.ngs.noaa.gov/heightmod/

University of California, San Diego/Scripps • Wisconsin Department of Transportation • Harris-Galveston Coastal Subsidence District • California Spatial Reference Center • North Carolina Geodetic Survey • South Carolina Geodetic Survey • NOAA's National Ocean Service
Federal Emergency Management Agency • Louisiana Spatial Reference Center • NOAA's National Weather Service • Spatial Reference Center of Washington • U.S. Army Corps of Engineers • Washington Department of Natural Resources • Alabama Department of Revenue
Louisiana State University • NOAA's Coastal Services Center • U.S. Geological Survey • Alabama Department of Transportation • North Carolina A & T State University • University of Southern Mississippi • NOAA's Center for Operational Oceanographic Products & Services

NATIONAL HEIGHT MODERNIZATION PROGRAM

In 1998, the U.S. Congress directed the National Geodetic Survey, the nation's positioning agency and an office within the National Oceanic and Atmospheric Administration (NOAA), Department of Commerce, to conduct a National Height Modernization Study. The purpose of the study was to determine the effectiveness of height modernization in California and North Carolina, and its potential benefits to the nation. Up until the time of the study, there were many indications that considerable efficiencies and cost savings could be achieved through the utilization of Global Positioning System (GPS) technology when applied to surveying and in particular, the measurement of heights. This study proved this and projected in some cases a 90 percent cost savings over conventional surveying methods. Moreover, the study indicated the emergence of many height modernization applications ranging from improvements to air and marine navigational safety, to precision farming and mining, and from high accuracy flood mitigation and mapping to real-time monitoring of gravity and aquifer-based water systems. These findings caught the attention of Congress and the Administration, and over the past six years, more than \$18 million has been appropriated with 90 percent going to participating states to initiate the implementation of the study nationwide.

**Alabama Height Modernization Forum
Tuesday, April 8, 2008**

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| 7:00-8:00 | Registration |
| 8:00-8:30 | Keynote Speaker
Dr. Gary Jeffress, RPLS
Texas A&M University-Corpus Christi |
| 8:30-9:30 | National Height Modernization Program
Renee Shields, NGS |
| 9:30-9:50 | Break |
| 9:50-11:00 | Alabama Height Modernization Program
John Russell, ALDOT |
| 11:00-12:00 | Vertical Datums
Ronnie Taylor, NGS |
| 12:00-1:00 | Lunch on your Own |
| 1:00-2:00 | NGS Grav-D Program
Mark Eckl, NGS |
| 2:00-3:00 | GPS for LIDAR Collection and Post-processing
Mark Brooks, Optimal Geomatic, Inc. |
| 3:00-3:20 | Break |
| 3:20-4:00 | CORS and Precision Agriculture
Shannon Huber Norwood,
Auburn Agricultural Extension Service |
| 4:00-4:30 | Gulf of Mexico Alliance Program
Todd Davison, NGS |
| 4:30-5:00 | Discussion -- Adjourn |

**Renee Shields, Height Modernization Project Manager
National Geodetic Survey, NOS,NOAA**

Ms. Shields is a geodesist in the Geodetic Services Division of the National Geodetic Survey (NGS). She received a bachelor's degree in Mathematics from the University of Massachusetts/Boston in 1976. Ms. Shields has been with NGS since 1980, and has experienced major involvement in the geodetic adjustments for the North American Datum of 1983, and integration of new Global Positioning System (GPS) projects into the National Spatial Reference System (NSRS). This included assisting in the development of the constrained adjustment guidelines, primary responsibility for the High Accuracy Reference Networks adjustments, and the state-wide readjustment of several states. She has extensive experience in GPS and Geoid Height analysis, and has successfully used this experience to develop and conduct workshops around the country on incorporation of data into the NSRS. Renee is currently Project Manager for the Height Modernization Program, an effort that has 10 states as regular participants and additional activities in a number of other states. She coordinates and manages the program, through outreach activities, education, and development of policies and guidelines, with the goal of establishing nationwide implementation of Height Modernization.

**John D. Russell, PLS,
Alabama Department of Transportation**

Mr. Russell has been employed with the Department of Transportation for 23 years. He began work on a state-wide survey crew and now serves as an Assistant to the Location Engineer. In his current position he oversees the aerial mapping contracts, QA/QC of State and Contractor surveys, County funding assistance for remote-sensed data, and serves as the Height Modernization Project Manager for the Department.

**Ronnie L. Taylor, Florida Advisor
National Geodetic Survey, NOAA**

Ronnie L. Taylor is a Geodesist with the National Oceanic and Atmospheric Administration (NOAA), National Geodetic Survey NGS. Mr. Taylor attended Cumberland College, Williamsburg, Ky., 1967-1968; U.S. Army Advanced Geodetic School, 1981; and Oregon Institute of Technology, 1985-1986. He resides in Tallahassee, Florida and serves as the National Ocean Service (NOS) Advisor to the State of Florida. In his job he advises federal, state, local governments, and the private sector in all aspects of geodetic control, tidal observations, and marine boundary issues. Mr. Taylor is a member of the Florida Surveying and Mapping Society (FSMS), American Association for Geodetic Surveying (AAGS) a member organization of the American Congress on Surveying and Mapping, and other associations related to the GIS, Mapping, and Surveying community.

Mark C. Eckl
National Geodetic Survey
National Ocean Service, NOAA
Silver Spring, Maryland 20901-3282

Mark C. Eckl received his B.S. degree in Surveying and Mapping from the University of Florida, Gainesville, Florida in 1992 and a M.S. degree in Surveying and Mapping from the University of Florida, Gainesville, Florida in 1998. He has worked in Silver Spring, Maryland for the National Geodetic Survey (NGS) since 1998.

Mr. Eckl's surveying experience began at Paul Smith's College, New York where he studied Forest Technology. After graduation he went to work for a Surveying and Engineering firm in Sarasota, Florida where he supervised a survey crew. During his time at the University of Florida he worked on multiple land administration projects specializing in cadastral surveying for developing countries. At the National Geodetic Survey (NGS) Mr. Eckl has worked on various project related to the development of spatial reference systems in a number of countries and accuracy assessment of the National Continuously Operating Reference Station (CORS) network. He has served on the National CORS accuracy assessment team, assists in development and presentation of CORS workshops and demonstrations, and provides technical support. Currently he serves as Branch Chief for the NGS Field Operations and as Delaware Geodetic Advisor.

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Shannon Huber Norwood
Multi-County Extension Agent-Precision Agriculture
Alabama Cooperative Extension System
Tennessee Valley Research and Extension Center

I am a Precision Agriculture Extension Agent with the Alabama Cooperative Extension System where I coordinate and conduct education, research and outreach programming for geospatial technologies in Alabama. Our focus is to increase profitability and productivity for Alabama growers through the use of GPS, GIS and remote sensing technologies. Current projects include on-farm yield monitoring and mapping, optical sensors to improve input efficiency, guidance demonstration programs and variable-rate technologies.

Education
B.S. Agronomy & Soils, Auburn University 1997
M.S. Agronomy & Soils, Auburn University 1999
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A. TODD DAVISON

Mr. Davison was hired by the NOAA Coastal Services Center (CSC) in August of 2006 to manage NOAA's Gulf Coast Service Center located at the NASA Stennis Space Center. In addition, he is the lead for CSC's Hazards Team and plays a key coordination role for NOAA's Community Resilience effort.

Mr. Davison, a native of Baton Rouge, La., was named Director of the FEMA Region IV Mitigation Division in 1996. His service with FEMA dates back to 1985. Prior to then he was employed by the Louisiana Department of Natural Resources for five years in floodplain and coastal zone management programs, including assistance in developing and managing the Louisiana Flood Control Grant Program.

Mr. Davison holds both Bachelor of Science and Master of Science degrees in physical geography and geology from Louisiana State University and completed other graduate work at the University of Maryland.

He spent 10 years at FEMA headquarters where he managed the Technical Assistance and Compliance Branch. He has authored or co-authored more than 40 state, trade association and agency publications pertaining to floodplain management, coastal hazards, and post-disaster mitigation, including nine publications in peer-reviewed, professional scientific journals.

Awarded a FEMA Congressional Fellowship in 1989, he spent a year in the office of the ranking member of the National Flood Insurance Program (NFIP) Oversight Committee, drafting legislation that became the National Flood Insurance Reform Act of 1994.

Mr. Davison has directed mitigation operations following Hurricane Iniki, the Houston floods, Hurricane Marilyn, Hurricane Fran, Hurricane Bonnie, and Hurricane Floyd, plus all of the Florida hurricanes in 2004 and Katrina in 2005. He was also designated as a deputy Federal Coordinating Officer for FEMA's National Response Team.

INTERSTATE COLLABORATION INCREASES RESILIENCY OF COASTAL COMMUNITIES

Todd Davison, Director, NOAA Gulf Coast Service Center

The Florida Hurricanes of 2004 (Charley, Jeanne, Ivan and Frances) and Hurricanes Dennis, Rita, Katrina and Wilma in 2005 represent an unprecedented sequence of major storms to ravage one province of the country--the Gulf of Mexico. In the history of European settlements, no other region has had to recover from such a series of devastating events. These storms caused approximately \$60 billion in federal damages alone, not to mention costs to state and local government and the private sector.

In the face of these statistics, the five Governors recognized the need for interstate collaboration to increase the resiliency of coastal communities. Consequently, the Gulf of Mexico Alliance (GOMA), a governance compact among the five Gulf states, has been expanded to include a Priority Issue Team for Resiliency. This team is composed of members from floodplain and emergency managers, natural and coastal resource managers, Sea Grant program agents and scientists, and others. After the ordeals of 2004-2005, many local governments are keenly interested in increasing their ability to survive and quickly recover after storms. This includes the built and natural environments as well as social and economic systems. The GOMA Resiliency Team works closely with the five states to promote and implement a series of pilot projects in each state, taking the mitigation and recovery knowledge and experience of each state and applying lessons-learned in a regional framework. This presentation reports the accomplishments to date of the GOMA Resiliency Team.

Registration Form

There is no Registration Fee for this Forum, but due to limited seating please
RSVP by April 4, 2008

First Name	Middle Initial	Last Name	

Organization

Address

City	State	Postal Code	Work/Office Phone

Mobile Phone	Fax	Email Address	

Citizenship	
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Please return this form NO LATER THAN Friday, April 4, 2008 to:

**Alabama Department of Transportation
1409 Coliseum Blvd. Montgomery, AL
36130
ATTN: Design Bureau, John Russell**

Or

**Fax to: (334) 269-4689 ATTN: John Russell
Phone (334) 242-6139
Russellj@dot.state.al.us**

Accommodations

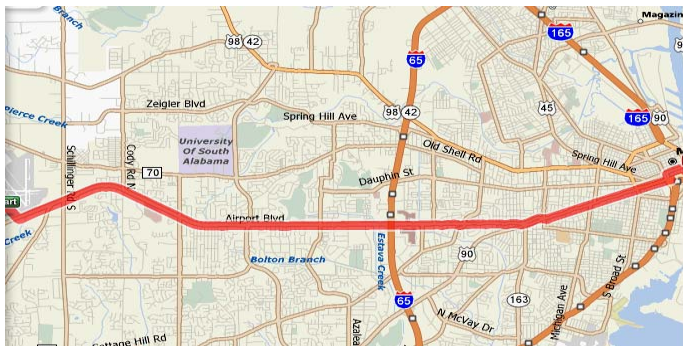
Renaissance

Riverview Plaza Hotel

64 South Water Street Mobile, AL 36602 Phone: (251)438-4000 Fax: (251)415-0123



Driving Directions from **I-65 S**: Take the I-165 S Exit 9- towards PRICHARD/DOWNTOWN MOBILE. Continue straight ahead to go onto N WATER ST.



Driving Directions from **Mobile Regional Airport**: Start out going SOUTHEAST on JOSEPH DRAWNS DR toward AIRPORT BLVD/CR-56W (0.3 Miles). Turn LEFT onto AIRPORT BLVD/CR-56 E. Continue to follow CR-56 E (9.7 Miles). Turn SLIGHT LEFT onto GOVERNMENT ST/US-90/AL-16. Continue to follow GOVERNMENT ST/AL-16 (2.3 Miles). Turn LEFT onto S JACKSON ST. (0.1 Miles). Turn RIGHT onto DAUPHIN ST (0.3 Miles). Turn RIGHT onto S WATER ST (<0.1 Miles). End at 64 S WATER ST.