

2013 North Carolina Hurricane Workshop

a collaboration of
The North Carolina Division of Emergency Management,
Department of Public Safety
and



Department of English
East Carolina University





Workshop Summary

Introduction and Welcome

Welcome and Opening remarks

Mike Sprayberry, Director, North Carolina Division of Emergency Management

Director Sprayberry welcomed attendees to the workshop and noted the opportunity to build relationships. He encouraged participants to talk together and use the relationships built at the workshop to work together when there is an emergency. He said that the Governor would soon be touring the state operations center and that the state emergency division makes the support of local governments and county emergency managers its top priority.

Dr. Ron Mitchelson, Interim Vice Chancellor, Research and Graduate Studies, ECU

Dr. Mitchelson welcomed attendees on behalf of ECU and described the importance of hurricanes in the region. He described his experience of Hurricanes Dennis and Floyd which occurred shortly after he moved to Greenville. He observed that ECU has served the region by organizing hurricane conferences since 2000 to discover lessons learned. He thanks partners and leaders that made the workshop possible.

Dr. Jamie Kruse, Director, Center for Natural Hazards Research, ECU

Dr. Kruse welcomed attendees on behalf of the organizers of the workshops and the Center for Natural Hazards Research. She briefly discussed the definition of a disaster— you know it when you see it.

Panel– Tools for Risk and Emergency Communication

Dr. Donna Kain, Department of English, ECU (moderator)

Dr. Kain introduced the first panel theme of communication and introduced the speakers. Her presentation, Social Media Management Systems (not included in the video), overviews the tools that social media managers can use on multiple platforms and apps. She demonstrates the software managers Tweetdeck and Hootsuite.

Steve Hawley, Public Information Officer, City of Greenville

Mr. Hawley described some of his experience with Hurricanes in the past, such as Hurricane Floyd and his recent experience managing social media messages for the City of Greenville during Hurricane Irene. They use multiple social media platforms for both city information and alerts. One is used just for emergency notifications. Hawley highlighted the importance of both regular posting and professionalism in the management of social media. He relayed a story about how a photograph posted on the site inadvertently caused controversy and highlighted their need for a social media policy.

Gloria Putnam, Coastal Resources and Communities Specialist, NC Sea Grant

Ms. Putnam shared the goals and purposes of North Carolina Sea Grant. She described how they have become more involved with issues of sea level rise and climate change. She noted that we will see changes in the environment long before we see inundation in North Carolina, but that this will affect people. They wanted to improve the way that they communicated about sea level rise and to that end they developed a working group to better identify risk and adaptation strategies. A couple of workshops the previous month brought together communicators include some people from emergency management, but more involvement is desired. She encouraged anyone interested in joining the working group to contact her for more information.



Dr. Tom Allen, Department of Geography, ECU

Dr. Allen described the development of a new project that emerged from the applied approach to tackling research questions used by the former RENCi center at ECU. The North Carolina Coastal Atlas project is designed to make research in the coastal area more accessible to regional and local users within the state. The on-line mapping portal has followed successful projects in other states such as Oregon and Maryland. Many of the new coastal atlases are being developed by federal agencies, but these lack information that is useful at the local level. The NC Coastal Atlas will provide a hyper-local place-based perspective. Past work has resulted in storm surge awareness tools that has allowed the visualization of the impact of a Category 3 storm on the Outer Banks and a map of potential inundation due to sea level rise for the Town of Plymouth. The NC Coastal Atlas will expand on these past projects. There will be tools for uploading, downloading and printing maps. The first maps they have developed focus on sea level rise and coastal shorelines. Coarse sea level rise maps paired with the location of local infrastructure can assist planning and decision-making. Dr Allen asked “What would be useful for emergency managers and responders? What needs do you have that are not being met?” and invited participants to explore the atlas at computers set up in the back of the room.



Panel-Modeling and Planning for Storm Surge

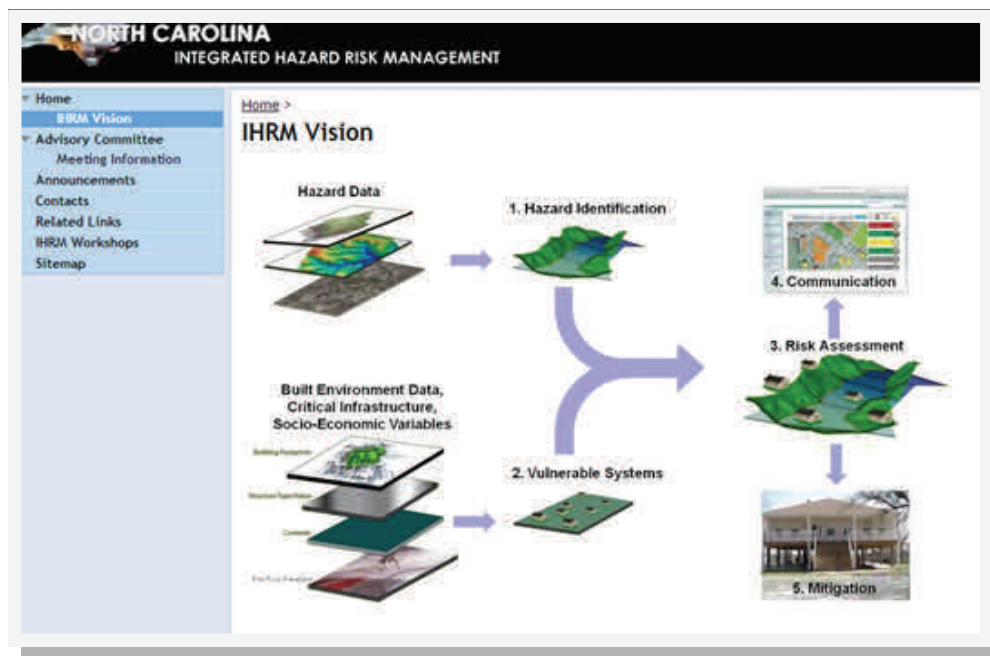
Jessica Losego, Research Meteorologist, UNC Institute for the Environment

Jessica Losego discussed the CERA (Coastal Emergency Risk Assessment)-Atlantic portal that is part of the DHS Coastal Hazards Center of Excellence housed at UNC Chapel Hill. She showed examples of the five-day forecasts that are generated based on ADCIRC coastal circulation and storm surge models that produce deterministic wave and surge forecasts. The layers of the map include storm track, water height, waves, wind speed and gauge stations located on a Google map. The format allows a user to click on any part of the map and find a legend with corresponding colors that indicate inundation and how a particular area will be affected. While this website has been available for several years, recent improvements have been made in response to feedback from emergency managers. They found that emergency managers need information 72 hours before landfall and they need a best guess for decision-making. The onset of tropical force wind is important to emergency managers and although there are many ways to get the hurricane track, it is hard to get information about river flooding and connect that to surge. New changes include color scale changes and more intuitive page design.

John Dorman, Director, Assistant EM Director for Geospatial & Technology Management and Director, North Carolina Floodplain Mapping Program

Mr. Dorman discussed planning for resilience in our communities in North Carolina and their new data center that is working toward determining the probability and impact of future storms. They would like to get a real time common operating system which would include stream gauges and wind gauges to give real time information for decision-making. The office has collected statewide building footprints and use the latest imagery to determine flood levels. The first floor elevations for

almost all of the building has been determined and they know everything that would be flooded up to 16 feet. Color coding shows which roads will be flooded and which ones will be impassable. All of the data is in the Enterprise Risk database which can be accessed through FRIS and iRisk, the multiple hazards database. This will assist the development of hazards mitigation plans. Real-time data is in ReadyNC. After Hurricane Irene, they were able to install seven new coastal gauges. Using gauge data and map libraries, along with data from Hurricane Irene, they are now able to better predict hotspots where the most damage is likely to occur.



Dr. Traci Birch, Department of Geography, ECU

Dr. Birch spoke about coastal resilience in Louisiana which is an area particularly vulnerable to coastal land loss due to sea level rise. Other hazards include oil spills which were not viewed as a problem until recently. Many of the communities are built on a delta and over an 80 year time the shape of the state has changed because they lose about one football field size area of marshland every 45 minutes. In the last 25 years, the area has been hit with 16 named storms, including 4 out of 5 of the costliest (before Sandy). Each of these events has increased the loss of land. Oil spills increase the land loss since wetland erode at a greater rate when oiled, due to oil or dispersants. Since 25% of oil and gas moves through the state, before 2010 more than every other coastal state combined, vulnerability for land loss is high. Over the last 8 years there has been more resilience planning activity. While there is no official policy, the transportation department is using sea level rise maps to plan. They are also trying to restore wetlands as quickly as possible. An authority was created to administer and manage resilience planning programs. It was a unique opportunity to do master plans and determine priorities for the future. Competitive grants drove the local process, but over the last 8 years there is a growing realization that they need to plan and resilience is past of the lexicon. Lessons learned were that equity is important, implementation is difficult, having priorities identified in advance moves the process forward, educational resources are needed and each process facilitates the next.

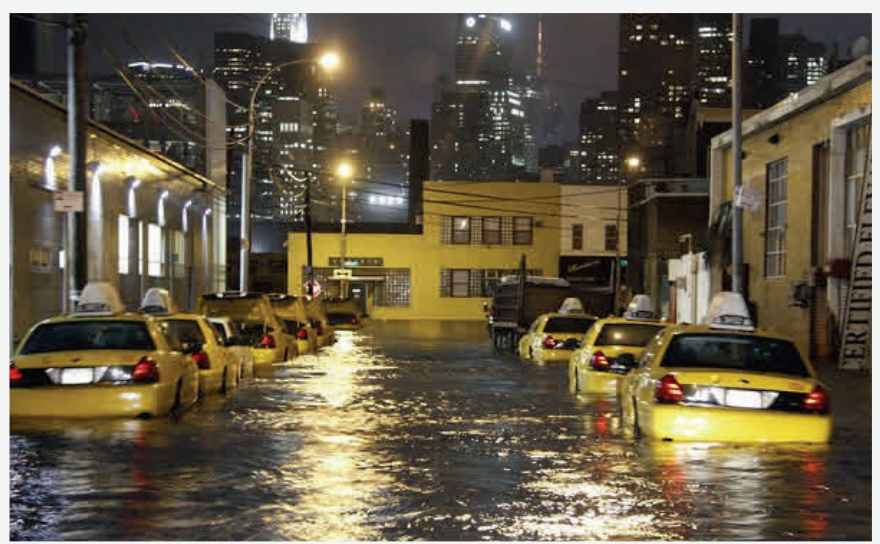
Keynote Speaker

Commander Linda Sturgis, Chief of Emergency Prevention, Coast Guard Sector, New York

Keynote speaker Linda Sturgis described the impact that Hurricane Sandy had on the coast of New York and Northern New Jersey, an area in which she was responsible for safety, transportation and navigation. The effects are still being felt. The statue of Liberty is not open yet, not because the monument was damaged, but due to damage to the docking facilities on the Island. Ellis Island was heavily damaged including many archives stored there. The weather buoys measured water height at 9 feet and 10 feet and then suddenly off the scale. Some people said there was 42 foot wave and they are probably right, but it was not measured. What affected people most, Sturgis said, was shipping, especially petro-chemical products because the anchorages in New York serve a large region and have the second largest refinery in the country, operating since 1905. The entire system was disrupted, including areas currently being dredged to accommodate larger ships. Widespread power outages effected millions of people. In lower Manhattan, many of the neighborhoods in which first responders live were hit hard. Many transportation routes were disabled for days.

One of the biggest problems was control systems. When the flooding came in, it was difficult to control anything. The whole energy grid was flooded which affected the whole North East supply chain.

One of the important lessons learned was that emergency personnel should know their energy supply chain and what happens if it is impacted by a storm. Sturgis said that you should always have a back-up plan and networking is important so that you know who to call. They had to manage the emotional impact and know that recovery is a long process. She said the Red Cross did a phenomenal job. The NOAA Navigation Response Team were the unsung hero. They predicted the storm surge and surveyed 75% of the channel so that recovery operations could travel in and out.



They had 1400 buoys and many of them were destroyed. They had to get them restored. There was a lot of hazardous materials remediation to address containers that went all the way across the water onto land. Sturgis had to work with media outlets, which she found interesting, and deal with marine port security since that became an issue after the storm. Commander Sturgis advised to not let the command and control construct come in the way of your recovery operation. Recommendations are welcome, but let the people in the field make decisions and work to the system. She said, "It is all about the relationship and be flexible about getting it done."

Panel-Hurricane Sandy

Darlene Johnson, Deputy Operations Chief/EOC Manager for NCEM

Ms. Johnson overviewed the EMAC process for providing mutual aid to other states during an event. She said that if first responders are sent on a mission to work in another state during an emergency, they are able to function and should be paid in the same way as if they are in their home state. This includes liability protections. She described the reimbursement and other procedures that are involved in the process including forms and contacts.

Gary Szatkowski, Meteorologist-in-Charge, National Weather Center, Philadelphia/Mount Holly, NJ Forecast Office

Mr. Szatkowski described the experience of Hurricane Sandy from the point of view of forecast meteorologists working in New Jersey area hit by the storm. His office in Mount Holly began issuing warnings forty hours before the storm and knew that coastal flooding was the biggest threat. They anticipated record breaking water heights and made a personal plea to people to be prepared by showing photographs of storm damage from the hurricane in 1902 that devastated the area. Sandy hit at high tide with a storm tide of 12-15 feet. Mr. Szatkowski said that the governors of New Jersey and Delaware issued the evacuation orders when they needed to and did a great job in the run up to the storm. The New Jersey governor ordered a mandatory evacuation, but the New York mayor did not. In extreme events, past experience fails to inform good decisions. For example, the New Jersey railway made the mistake of putting trains in an area that did not flood in past hurricanes, but this time lost 400 million dollars in equipment. Some people did not



evacuate because they thought Hurricane Irene the year before was less intense than anticipated. In a study, researchers found that 76% of people said that they “experienced” a hurricane, but only 37% reported suffering damage from Hurricane Irene. Mr. Szatkowski observed if you did not experience damage or other problems, you did not really experience the hurricane. Climate change is also expected to make future severe weather events worse. The trend in sea level rise is acceleration, which will raise storm tide levels. It is very difficult to confront this problem because it is long term and outside personal experience. Looking ahead— even though forecasting has gotten better and is expected to improve, it is difficult to get people to understand the impact of a hurricane.

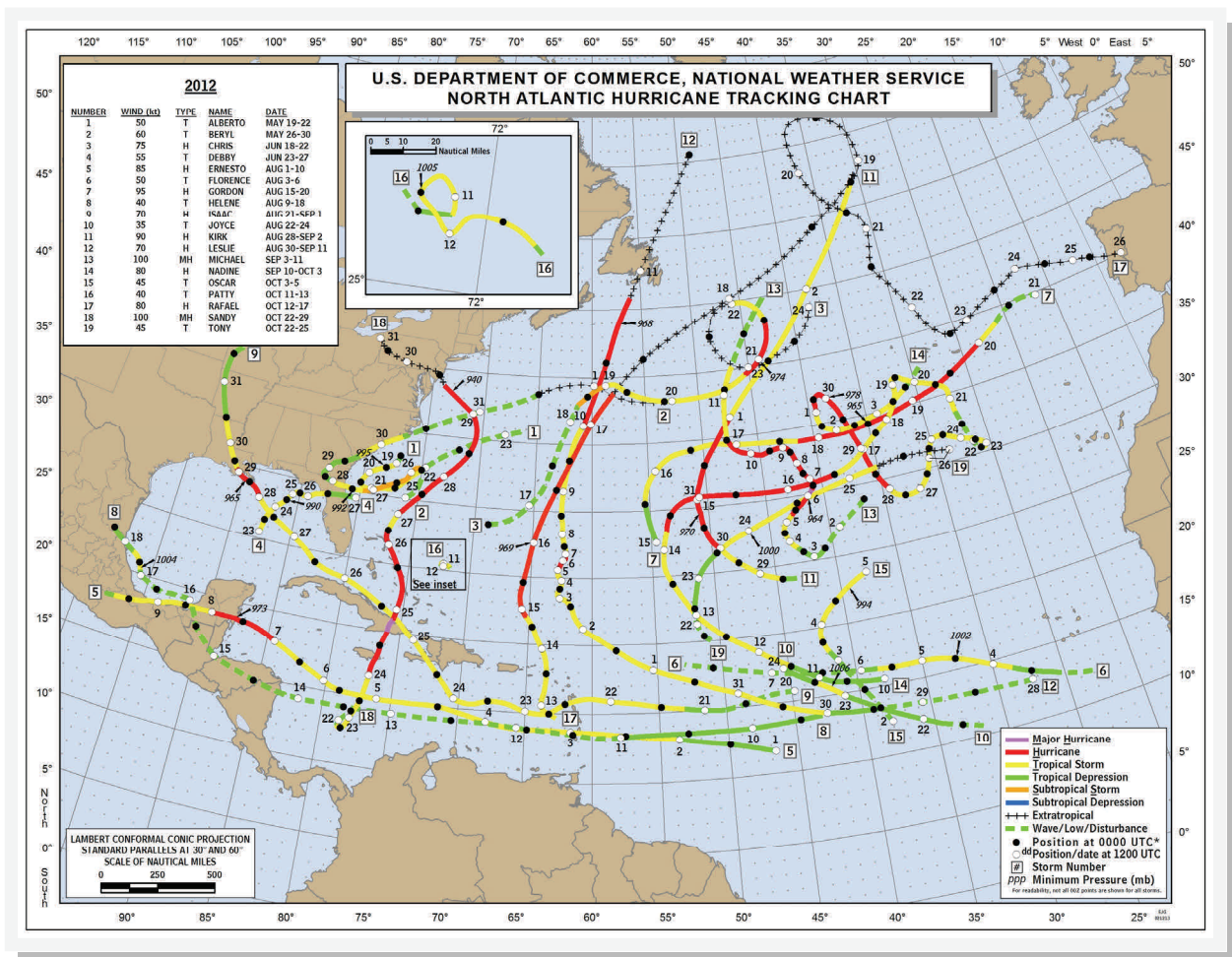
Craig Smith, Greensboro Fire Department

Mr. Smith described the experience of the swift water rescue team from Greensboro Fire Department that was deployed to Crisfield, Maryland during Hurricane Sandy. The unit tries to be self-sufficient and can live out of their trailer for three days. They encountered teams that deployed before the hurricane that were busier than their team. They took 6 people up to Maryland and 14 people to Hyde County in 2011 for Hurricane Irene.

2013 Hurricane Season Forecast

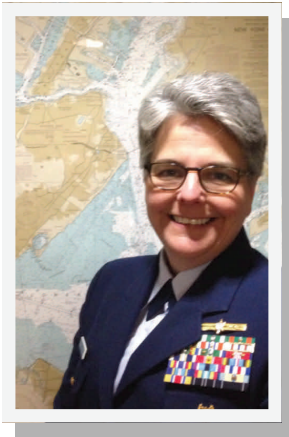
Gary Szatkowski, National Weather Service

Mr. Szatkowski described the 2012 hurricane season. In 2012 there were 19 named storms, 10 reached hurricane strength and 2 were major hurricanes. This exceeded the average number. This year is likely to exceed last year because the ACE, Accumulated Cyclone Energy is estimated to be higher than last year. The forecast has not been released from the Hurricane Center yet, but it can be expected to be an above average active season. Mr. Szatkowski cautioned that the U. S. is experiencing the longest period without a major hurricane striking land based on long term averages. Chances are that we can expect a major hurricane before long.



Speaker Biographical Information

Keynote Speaker



Commander Linda Sturgis

Chief of Emergency Prevention, Coast Guard Sector, New York

Commander Linda Sturgis is originally from Virginia Beach, Virginia. She began military service in the U.S. Army in 1988 and graduated Old Dominion University in 1992. Shortly after college graduation, she changed military services and attended Coast Guard Officer Candidate training in 1993. She was stationed on USCGC MELLON where she conducted fisheries enforcement, undocumented migrant and drug interdiction operations in the Bearing Sea, the Caribbean, and South Pacific Ocean. She has been assigned to the Coast

Guard Headquarters budget formulation office and Marine Safety Offices across the country including Seattle, Miami, Cleveland as Commanding Officer and is currently assigned to Coast Guard Sector New York on Staten Island, New York.

Her current position as Prevention Department Head at Coast Guard Sector New York includes overseeing domestic ice breaking, aids to navigation, waterways management, commercial vessel inspections, waterfront facility inspections, law enforcement boardings on deep draft commercial vessels prior to entering port, and marine casualty investigations. She holds a Masters Degree in Marine Affairs and business certificate in Global Trade and Transportation from the University of Washington. Commander Sturgis will be rotating from Sector New York during the summer of 2013 and will be assigned as a senior military fellow at the Center for a New American Security in Washington DC.

Panelists- Tools for Risk and Emergency Communication

Donna Kain, Associate Chair, Department of English; Research Faculty, C-SIM, CNHR

Donna Kain joined the ECU faculty in the fall of 2004 after two years as an Assistant Professor in the Technical Communications Department at Clarkson University in Potsdam, New York. She has taught courses in rhetoric, technical communication, writing for business and industry, digital video production, and Web design. Her recent research includes the rhetoric and instrumental discourse of the Americans with Disabilities Act and related public policies, information technology applications for the classroom, and the uses of genres in professional settings. Her professional positions have included senior staff analyst for Compuware Corporation, Milwaukee, Wisconsin; technical writer/editor for Engineering Animation Inc., Ames, Iowa; and Web site manager for the Center for Agricultural and Rural Development at Iowa State University



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Steve Hawley, Communications Manager, City of Greenville

Steve Hawley is communications manager and public information officer for the City of Greenville where his work has won Excellence in Communications Awards from North Carolina City and County Communicators. He is the host of the city of Greenville's public-access television show "City Scene.



Gloria Putnam, Water Quality Planning Specialist, NC Sea Grant, Raleigh

Gloria joined the staff at NC Sea Grant in 2007 and specializes in providing education and assistance to local governments and communities on water quality planning and coordination. She came to NC Sea Grant after nine years with the NC Department of Environment and Natural Resources where she developed and managed projects for improving compliance with water quality regulations, conducted state and local program assessments, and provided education and training for regulated and non-regulated communities. Gloria holds a B.S. in biology and fisheries management from NC State University and an M.S.P.H. from UNC Chapel Hill in environmental policy and management.

Tom Allen, Associate Professor of Geography; Director, NC Coastal Atlas Project, ECU

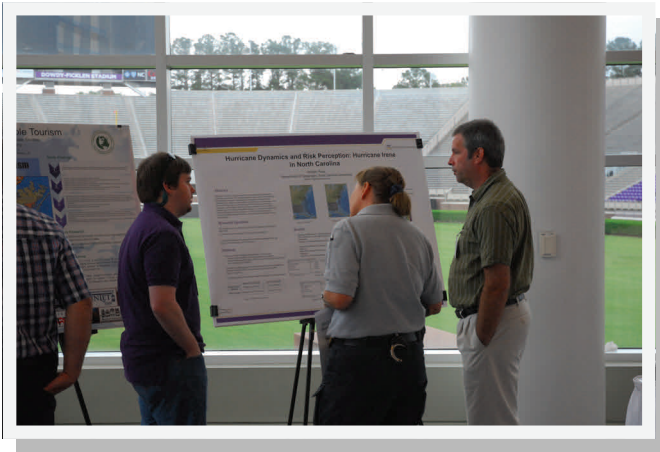
Dr. Allen is the director of C-SIM at ECU and the co-director of ECU's Center for Geographic Information Science. He is interested in understanding spatial and temporal change in the natural environment, particularly vegetation and related environmental processes in order to inform human actions. His research therefore emphasizes the development of geospatial technologies such as satellite remote sensing, geographic information systems (GIS), and global positioning systems (GPS). His primary areas of study are coastal and mountain environments of North America, Central America, and Fennoscandia. His current research projects include spatial analysis of coastal barrier morphodynamics; mapping mangroves and coastal change in Costa Rica; developing new algorithms for satellite remote-sensing monitoring and change detection; remote sensing and GIS data fusion for characterizing estuarine processes; and investigating biophysical patterns and processes in subarctic, alpine, and mountain environments.



Panelists-Modeling and Preparing for Storm Surge

Jessica Losego, Research Meteorologist; UNC Institute for the Environment

Jessica Losego has worked extensively with the North Carolina emergency management (EM) community since starting as a meteorologist at the University of North Carolina seven years ago. During this time, she developed and managed the NC-FIRST weather education and information program for EMs in North Carolina. Since it began in 2007, over 1,000 users in the EM community have been trained, and NC-FIRST is now a standard tool used across the state. In addition to NC-FIRST, Jessica now works on the collaborative Weather and Emergency Management project funded by NOAA to learn about the critical decisions and use of weather information by the entire EM community, not just county directors, to help NWS improve decision support. Jessica earned a B.S. in Meteorology from Penn State and a M.S. in meteorology from the University of Oklahoma. She also has received a graduate certificate from UNC in Disaster Management and Community Preparedness.



John Kay Dorman, Assistant EM Director for Geospatial & Technology Management and Director, North Carolina Floodplain Mapping Program

John Dorman is the Assistant EM Director for Geospatial and Technology Management in the North Carolina Division of Emergency Management. In this capacity, he is responsible for the design, acquisition, analysis, and dissemination of data, models, systems and applications associated with hazard and threats. Mr. Dorman has facilitated and managed the statewide acquisition of LiDAR-derived elevation data, digital orthophotography, building footprints, and special flood hazard areas. Mr. Dorman is currently managing three national risk management demonstrations: Integrated Hazard Risk Management; Digital Flood Risk; and, Sea Level Rise Impact Study.

Traci Birch, Assistant Professor of Coastal Planning, East Carolina University and Managing Partner, The Verdant Group

Traci Birch a managing partner with The Verdant Group – a woman-owned urban planning firm based in New Orleans. In this position she specializes in land use and environmental planning, and has worked extensively in Louisiana and across the Gulf Coast on disaster recovery and resiliency planning. In particular, she has worked with many at-risk communities to develop land use plans and development codes that focus on sustainability and hazard resiliency. In addition, Dr. Birch is an adjunct professor at the University of New Orleans, where she teaches coastal and environmental planning. She will be joining the faculty of East Carolina University in the fall of 2013, where she will be teaching coastal and environmental planning in the Department of Geography.



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Panelists- Reports from the Field: Hurricane Sandy

Darlene M. Johnson, Deputy Operations Chief/EOC Manager for NC Emergency Management.

Darlene began her Emergency Service career as an intermediate with the Angier Black River Rescue Squad where she served for 10 years. She began working with the State in 1986 with the Division of Victim and Justice Services where she assisted Crime Victims and their families with lost wages, medical and burial expenses. She began working with NC Emergency Management in Jan 92' as a Population Protection Planner, became the Emergency Services Coordinator in 1998 where she worked many storms including Hurricane Floyd. In 2005 she was promoted to EOC Manager and 2009 added the duties of Deputy Operations Chief. She oversees Emergency Managements 24 Hr. Operations Center, Emergency Services and Human Services Programs.

Gary S. Szatkowski, Meteorologist-in-Charge, National Weather Service, Philadelphia/Mt. Holly NJ Forecast Office.

Gary Szatkowski began his career with the National Weather Service in 1980 after graduating from St. Louis University with a Bachelor of Science degree in Meteorology. Gary has worked at duty stations for the National Weather Service in San Juan, Puerto Rico, Oklahoma City, OK and Washington, DC. Since 1997, Gary has been the Meteorologist-in-Charge at the National Weather Service Office in Mt. Holly, NJ. The Mt. Holly office provides weather forecast and warning services for the residents of New Jersey, Delaware, eastern Pennsylvania and northeast Maryland. As Meteorologist-in-Charge at the Mt. Holly office, he is responsible for all products and services provided by that office. He is a member of the American Meteorological Society & the National Weather Association. Gary has been recognized as a 'Hurricane Sandy Hero' by the Newark Star-Ledger newspaper and received the Weather Hero Award for 2012 from the Weather Research Center for his work during Hurricane Sandy.





**Fourth Annual Hurricane Workshop
May 22, 2013**



We wish to recognize the following people for their assistance in organizing, facilitating, and supporting this event.

Mike Sprayberry, Director, NC Division of Emergency Management

Charles Tripp, Area 2 Coordinator NCEM

Ron Mitchelson, Interim Vice Chancellor, Research and Graduate Studies, ECU

Jamie Kruse, Professor, Department of Economics,
Director, Center for Natural Hazards Research, ECU

Tom Allen, Associate Professor, Department of Geography, ECU

Donna Kain, Associate Professor, Associate Chair, Department of English

Michelle Covi, Outreach Coordinator, ECU

Chris Jackson, Administrative Associate, Center for Natural Hazards Research, ECU

Dianne Curtis, NCEM Eastern Branch Manager