Hurricane Workshop Presenters (from left): Dr. Patrick Long, Dr. Catherine Smith, Dr. Burrell Montz, Mr. Mike Sprayberry, Dr. Ken Wilson, Dr. Jamie Kruse, Dr. Tom Allen , Dr. Donna Kain (not pictured)

During the week that coastal communities turned their attention to hurricane preparedness, the North Carolina Division of Emergency Management in partnership with the East Carolina University's Center for Natural Hazards Research and the Renaissance Computing Institute Engagement Center at ECU (RENCI at ECU) held a Hurricane Workshop for Emergency Managers. About 100 emergency management personnel, ECU faculty, National Weather Service meteorologists, and emergency technology specialists from Renci attended the May 26, 2010, workshop at The Murphy Center at ECU in Greenville. The workshop provided participants with information about the technological improvements in hurricane forecasting, response, and decision-making. Sessions focused on meteorology, Hurrivac software, evacuation and sheltering and recovery.

2010 Updates from the Workshop

HURREVAC 2010. Rebecca Jennings, Hurricane Program Specialist with the FEMA, demonstrated the 2010 version of HURREVAC, which includes a revised interface, more reporting capabilities, and automatic updating. The software integrates real-time data from the National Hurricane Center (NHC) and a variety of other data collection points with information from FEMA about human activity. The software can be customized to develop local evacuations clearance times based on factors that emergency managers can select. To register and download the software, go to www.hurrevac.com; users must have a “dot gov” email address to download.

CRES-SOG. Mike Sprayberry, Deputy Director and Operations Chief of the NC Division of Emergency Management, discussed revisions to the Coastal Region Evacuation & Sheltering Standard Operating Guide (CRES-SOG). The CRES-SOG—developed with input from residents, county emergency management, non-profits, transportation officials, and health services professionals among others—is designed to assist all NC counties in developing and coordinating evacuation and sheltering plans. The Guide also covers plans in the neighboring states of Virginia and South Carolina and procedures of the state Emergency Operations Center (EOC). One important initiative underway for planning is the development of a strategic fuel plan to mitigate the threat of fuel shortage. The CRES is available on the state website and on the web EOC and other places.

Recovery Planning. Joe Stanton, NC Division of Emergency Management Disaster Assistance Branch Manager and Deputy Recovery Chief, highlighted important issues for recovery planning. He discussed several resources available including a new guide to procedures for different types of disasters and information about state and federal recovery assistance programs that can downloaded from the NC Division website. Stanton emphasized that emergency managers should review policies for public assistance before a crisis so that they know what can be reimbursed. In particular, FEMA has tightened what is reimbursable over the last few years. Emergency managers should also have a debris management plan. NCEMA and NC DOT have been meeting to determine best debris removal for the roads and will be seeking input from communities. In addition, a recovery plan template is in the works that will allow counties to develop recovery plans and have them accredited by EMAP. The template which stresses a phased approach with both short term and long term actions beginning with the response and impact assessment, should save time and money.

Meteorology Development Update, National Weather Service (NWS) and The Renaissance Computing Institute (RENCI). Meteorologists from the National Weather Service and specialists from RENCI presented updates on meteorology and storm visualization. John Cole of the NWS explained storm surge modeling including ehe SLOSH model (Sea Lake, Overland Surges from Hurricanes) and variations, which provide real-time surge forecasting for first response and recovery. The NWS begins issuing hurricane watches and warning based on SLOSH models 36 hours prior to the arrival of tropical storm winds and subsequently every 6 hours as the storm gets closer. Models are posted on the NWS ftp site as shapefiles and users can configured them for specific situations.

Following Mr. Cole, Bill Sammler, NWS, discussed conditions for the 2010 hurricane season. The 2009 season was the least active since 1999. This year, ocean temperatures are warmer and above average indicating a more active season. The Colorado State University forecast is at that the season will be at least average, and maybe above, for all kind of storms. Changes of note in weather forecasting include the elimination of storm surge from Saffir-Simpson scale and the extension of watches and warnings by 12 hours. This year, watch will be issued at 48 hours and warnings at 36 hours. The public advisory

format is also changing to make it easier to read and use; advisories now have headers and can be parsed by computer.

Jeff Orrock, also of the NWS, demonstrated tools for probabilistic wind forecasts available from the National Hurricane Center. Three categories of wind speed are used in predictions that take into account combined uncertainty in tack, intensity; and size. The forecasts go out 5 days. The model uses the NHC five-year average error, so it is up to date and it can be loaded into Google Earth and HURREVAC. The model can also shows the chances of the how the hurricane will develop, probability of different wind and rainfall impacts, although interactions with other weather systems affect the amount and location of rainfall. The closer the storm, the better the forecast, so emergency managers need to keep checking the forecast. Orrock noted the need for contingency forecasts for key decision-makers to plan for response, noting the example of Hurricane Ernesto in which the river was forecasted to rise 20 feet at Rocky Mount, but when storm track shifted, much less flooding occurred than was predicted.

Brian Etherton, Renci, invited members of the Emergency Management community to participate in a one-year RENCI project beginning this winter that uses social science, meteorology, and computer science to explore impacts of weather information on the Emergency Management decision process. One goal of the project is to collaborate with the Emergency Management community to get decision making tools to the stakeholder audience.

Tom Allen of the RENCI Engagement Center at East Carolina University discussed several tools and initiatives including the NCCOHAZ internet portal that provides access to visualizations, emergency plans, and hazard mitigation plans. One of the featured visualizations is the Inlet opening potential for hurricane Isabel. A new web-based tool in development, SurgeVis, will use SLOSH, Google Earth, and interactive maps to communicate risks of storm surge to the public. A new HAZUS user group is emerging in the state. ECU has a HAZUS specialist and is helping with mitigation planning for Dare County and other counties. Dr. Allen also demonstrated the risk awareness website, Storms to Life, which includes photographs, news clips, video, and timelines of historic hurricanes and interactive features for comparing storms.

Research on Social Responses. ECU faculty presented a panel on social responses to natural hazard risks. Burrell Montz, Chair of Geography, ECU, introduced the audience to WAS*IS, a capacity building movement that aims to integrate social science, meteorology, hydrology and and emergency management. The goal is foster interdisciplinary relationships between emergency management, forecasters, and researchers in ways that can improve emergency management and response. Dr. Muntz plans to develop a WAS*IS workshop in North Carolina in the next year.

Jamie Kruse, Senior Advisor for Environmental Social Science, NOAA, and Professor of Economics, ECU, presented preliminary results of a study of risk perception for four types of risks including flood, hurricane, nor'easter, and coastal erosion. Findings of note include that the number of years people have lived on the coast and level of education have no influence on people's estimation of risk. People whose primary residence is on the beach tend to overestimate risks from floods and the likelihood of nor'easters occurring but underestimate beach erosion. People who have experienced a loss due to flood are more likely to overestimate flood risks but are less likely to over-or under-estimate coastal erosion. Understanding how people assess their risks can help those involved in emergency management target messages about risks.

Catherine Smith and Donna Kain, Department of English, ECU, discussed preliminary results of a 2008-2010 study examining emergency communication, plans, and behaviors of residents, businesses and organizations. In the run up to a severe storm, about a third of residents plan to stay, a small number leave, but most people (60%) look for more information. People consult a mix of sources but cite TV as the most used and most trusted. The study shows that internet lags well behind older media. The most important considerations cited in deciding to evacuate were the strength and direction of a storm and mandatory evacuation orders. More than half of businesses have an emergency plan; however only one-third shares their plans with local emergency management. Neither proximity to the ocean nor length of time in business increases the likelihood that a business will have a plan. Having more employees and participating in a communication network does.

Ken Wilson and Christa Reiser, Department of Sociology, ECU, discussed their study of pets and evacuation decisions. Americans have more pets than ever and treat them as part of our families, which means that pet owners are less likely to leave in an evacuation and are some of the first to re-enter an area. The study of residents in 6 coastal counties showed that the most common reasons people did not evacuate were that did not think the threat was serious enough, that the storm would not affect them, and that they could not leave their pets. Two-thirds of residents have pets and are less likely to evacuation. While not the majority of pet owners, a significant number of people did not evacuate during a severe storm because of pets. However, people who had a plan or had experience were more likely to evacuate. Programs to help pet-owners develop evacuation plans for themselves and their pets could encourage over 15,000 people to evacuate who otherwise wouldn't.

Pat Long, Center for Sustainable tourism, ECU, noted the importance to the area of economic activity associated with tourism. Area businesses and seasonal tourists alike are impacted by severe weather emergencies but tourists may be dependent on area businesses for help and information. Typically businesses use crisis management teams and crisis communication teams to make emergency issues as

simple as possible. Acceptance of crisis management and crisis planning is growing, but only a minority of businesses that have plans. In a recent study, Long found that only 43% of business submitted crisis management plans. These plans are not all professional and the ability to implement plans is in question for many. Emergency management and tourism-dependent businesses need to work together to mitigate the potential of situations negatively impacting local economics and communities.