

**2011 SEDAAG Poster
Abstracts**

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Gendered Perspectives for Conservation Agriculture: Mapping Gendered Landscapes and Local Soil Knowledge in Sank'ayani Alto, Bolivia

Keri Agriesti
Virginia Tech

In smallholder farming communities, men and women have access to and control over different spaces in the landscape, forming gendered knowledges, beliefs, and perceptions based on their experiences. In the Andean region of Bolivia, these gendered knowledges and landscapes are marked by varied mountain geography, diverse cultural practices, and a history of land reform and agricultural changes. This research will present preliminary findings of student fieldwork documenting gendered landscapes of local soil knowledge and access to resources in a Quechua-speaking, smallholder farming community. Participatory mapping and participant observation were used to capture gendered access to land and livestock to people's everyday connection with the soil. The purpose was to identify gender-related factors that contribute to conservation agricultural production systems (CAPS) as a means to address soil erosion in gender-inclusive and gender-equitable ways. This work contributes to an understanding of nature-society relationships from a gender perspective. Research design was influenced by literature from ethnopedology, political ecology, and feminist political ecology. Methods included participatory mapping, photo interpretation, focus groups, GPS mapping of fields, activity charts, participant observation, and a host-family stay. Initial analysis of data illustrates men and women's different knowledges in correlation with their different use of and access to various landscape features.

Climate Change during the Maya Classic & Postclassic derived from a Belizean stalagmite

Pete D. Akers
University of Georgia

A high-resolution paleoclimate record spanning 850 years (800-1650 cal yr BP {300-1150 AD}) was created from BZBT1, a 92 mm tall stalagmite from the Cayo District, Belize. A novel method of dating organic material trapped within the stalagmite was used to determine the chronology of stalagmite growth. Multiple proxies from BZBT1 provided evidence for climate changes during the growth period, with the best records obtained from stable isotopes and petrographic analysis. The region experienced a generalized climate pattern of wet-dry-wet-dry conditions beginning around 1370 cal yr BP (580 AD) and extending through the final growth of BZBT1. The wet periods correspond to times of Maya cultural and demographic expansion, while the dry periods correspond to times of decline and abandonment. The findings of this study match well with other regional and world climate records and contribute more evidence suggesting adverse climate played a role in the decline of Classical Maya civilization.

Application of Remote Sensing Data to describe Spatiotemporal Characteristics of Fire in Nepal

John D. All, Kamal Humagain*, Sean T. Hutchison, and Ryan D. Gourley. Department of Geography and Geology, Western Kentucky University, KY

Fire is integral and complex aspect of environmental systems throughout the world. Understanding the influences on fire patterns is essential to effective natural resource management. Nepal, a south Asian country with ineffective resource management, is especially susceptible to the consequences of uncontrolled fires. This research describes a methodology to track fires using satellite remote sensing and geographic information systems. This study employed MODIS satellite data from 2000 to 2010 to generate spatial and temporal statistics describing the characteristics of fire in Nepal. Elevation, moisture, seasonality, and other spatiotemporal layers were used to describe the pattern of fires. Areas with human influence, particularly agriculture and grazing, experienced more burned area overall. Fires occurred more frequently during springs and winters. Major causes behind such distributions are grazers, medicinal plant collectors, poachers and smokers or travelers whilst poor resource management overshadows all these factors. Conservation areas were also particularly susceptible to fires, raising doubts about the effectiveness of resource management strategies.

PRESBYTERIAN CHURCH USA: JULY 2011
Presbytery Votes on Ordaining LBGT as Church Officers: Majority Approves
Amendment

Authors: Charles J. Altendorf and Tiffany N. Mullins
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In the past two years, a galvanizing issue in the American Church, specifically the Presbyterian Church of the United States of America (PCUSA), has been the admission of those who identify themselves with a sexual orientation of lesbian, bi, gay and/or transgender (LBGT) to pastoral-ship or elder-ship. The goal of this project was to spatially represent the votes of the presbyteries for adopting or not adopting Amendment 10-A (the amendment allowing LBGT church members to become elders or pastors), the strength of their votes in favor of the amendment, the size of their presbyteries and the change in their voting patterns since Amendment 8 (which is similar). The results were surprising because they did not appear to match the political ideologies commonly associated in the media with their regions in the United States. Further research clearly should be done into how other major denominations geographically would vote on a similar amendment, how the average American in these regions would vote on the issue, and how these votes have gone the past.

Community dynamics in a Carolina hemlock community at Bluff Mountain Nature Preserve, North Carolina, USA.

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Appalachian State University

Carolina hemlock (*Tsuga Caroliniana*) is a threatened endemic species found in the southern portion of the Appalachian Mountains. Five plots were established at Bluff Mountain, North Carolina to examine the forest structure of Carolina hemlock-dominated forests. The Carolina hemlocks at Bluff Mountain are located on ridgetop stands that provide a unique opportunity to investigate the role that *T. Caroliniana*, plays in community dynamics. Carolina hemlock is susceptible to the hemlock woolly adelgid (HWA). The HWA will cause dramatic changes in community dynamics as populations continue to increase. To describe the Carolina hemlock community at Bluff Mountain, density and relative density were calculated for seedlings, saplings, and trees (≥ 5 cm diameter at breast height). Crown class was recorded for all trees to examine the vertical class distribution. Species composition and biodiversity were calculated using species richness, evenness, and Shannon diversity. Forest succession will continue to be monitored to evaluate the current threat of HWA, which is becoming more abundant in the Carolina hemlock stands.

GIS Analysis and Web GIS to Support Microhydro Assessment for Residential Energy in Western North Carolina

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Appalachian State University

The DOE's Office of Energy Efficiency and Renewable Energy (EERE), NC GreenPower, NC Sustainable Energy Association, and ASU's Western North Carolina Renewable Energy Initiative all list micro hydroelectric systems (< 5 kW) as a viable renewable energy resource eligible for renewable energy financial incentives. However, there is limited research and few well-monitored microhydro systems that can be used to determine its contribution and economic feasibility as a green energy source relative to other well-studied renewable energy sources such as wind and solar. The only prior work on this topic pertaining to the North Carolina region is from a 1983 study carried out by collaborators from ASU and regional scientific organizations. With research support from the State Department of Energy, the NC-MARE project has been re-evaluating these previous findings using ArcGIS, hydrological data, and land parcels records with focus on Ashe County as the primary test area. This research describes GIS methods used to estimate microhydro potential and development of a database of land parcels with viable sites for microhydro systems. In addition, a webGIS application of microhydro power potential has been developed with ESRI's ArcServer application to disseminate information on the potential of this renewable energy source for homeowners.

A Geo-anthropological Survey of Two Unique Southern Cultures: A Case Study of the Gullah and the Southern Highlander

Rob Batson
University of North Alabama

In our modern world, technological advances have increased the integration and assimilation of many different cultures. Distinctive societal characteristics, cultural origins, customs, traditions, language, and art are all being blurred, and are even disappearing. For the Gullah of the Low Country and the Southern Highlander of the Appalachians, geographical isolation has worked to preserve two very unique cultures of the Southeastern United States. A cultural heritage can function to hold a unique society together, foster group cohesion, and preserve traditions in the face of a rapidly progressing world. The most prominent findings of this research are that given geographical isolation, these two groups have kept many important characteristics of their cultural heritage intact. Equally fascinating are the similarities between these two very different cultures. Customs, traditions, art music literature, diet, language, all play important roles in the preservation of each. The origins of both groups are essentially diametrical: the Gullah's journey to America was involuntary, unlike that of the Scotch Irish, English, Dutch, German, French, and other Europeans who settled in the Appalachians. The geographical isolation, however, forced each group to be self-reliant and also served to preserve their unique heritage, much more so than other cultures.

The Gambles Mill Corridor: Mapping Sustainability of Transport and Environment

Kate Billups and MacKenzie Price
University of Richmond

The City of Richmond and the Virginia Department of Transportation want to rehabilitate the Gambles Mill Trail connecting the University of Richmond (UR) to the intersection of Huguenot and River Road. Planners envision this trail as a sustainable model for the reduction of nutrient and sediment flow and as a vital path in a city-wide network of bike and pedestrian trails. Nevertheless, until now, no substantive studies exist on the trail or the corridor linking the trail to the south side of the James River through the hazardous River-Huguenot Road intersection and the Huguenot Bridge currently under construction. The University of Richmond's Geography 221 Course, Mapping Sustainability: Cartography and Geographic Information in an Environmental Context, is working with a variety of stakeholders (public, private, and community-based) to map the past, present, and future of the Gambles Mill Corridor and influence local and regional sustainability of transportation, hydrology, and recreation in a floodplain ecosystem. Maps produced will include a variety of scales: local corridor, UR to the River, The City of Richmond's sustainable transport network, and a temporal scale tracing previous transportation routes in the area such as the 1930s street car system and the colonial canal system.

Understanding the Roles of Color and Position in User Responses to Tornado Warning Graphics

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Ronald Schumann, III, Department of Geography, University of South Carolina
Kevin Ash, Department of Geography, University of South Carolina

The devastation and suffering caused by the 2011 tornado outbreaks in the American Southeast and Midwest have renewed interest in understanding how to best communicate tornado risk. In light of recent weather modeling advancements, the National Weather Service (NWS) has expressed interest in probabilistic warning models for tornado hazards. However, it is not known how the public may perceive the relative danger with respect to such communications. Our research seeks to examine public comprehension of potential probabilistic tornado warnings by assessing individuals' affective and intended behavioral responses based on warning designs and geographic situation. Fifty university students were surveyed using combinations of three warning graphics and eight position scenarios. The findings of this pilot study show that a respondent's geographic situation is more associated with fear and protective action than graphic color. The probabilistic designs seem to help respondents to correctly determine hazard zone risk. However, we also observed a "threshold" effect, meaning that respondents were less likely to take protective action near the warned area's periphery. Future phases of this study will seek to develop a more definitive picture of perceived risk over space through larger-scale survey deployments, using both paper and online survey methods.

Creative Class Afoot: Migrating Engineers and Artists

Charlynn Burd
University of Tennessee

The creative class is presented as a heterogeneous group of individuals that are moving to similar places at a regional scale. It is suggested that there are three distinct knowledge-bases within the creative class (Asheim and Hansen 2009). This poster uses Census Bureau 2006-2008 ACS and other data to examine the migration patterns of engineers and artists in city regions with a population of one million or more. It begins to address the research question: what is the relationship between residential location choice and creative class occupation?

Utilizing an islands studies approach to local government development in the Caprivi
Strip of Namibia

Campiz, Nicholas
University of Florida

Due to their isolation, islands face special challenges to development. Small local markets and dependency on the external for services such as defense and high education force islands to negotiate relationships and dependencies with the mainland metropolitan. Islands are also home to strong communities and unique societies. A sub-field of islands studies looks how sub-national island jurisdictions have been able to negotiate unique political and economic relationships. This study looks at the current development of local control and capacities in the isolated Caprivi Region during a time of devolution of government within Namibia. While control over capacities such as natural resource and environmental policy parallel those seen in islands, unique circumstances have caused some differences. The main departure is the strong control of NGOs, in particular in developing a community-based management regime (CBNRM). While strengthening villages and towns, CBNRM in this case inhibits a strong government of the region as a whole. In contrast many islands have strong governments that singularly negotiate with the larger national government.

Mixed-Methods Analysis of Media Communication of the Deepwater Horizon Oil Spill Disaster

Dylan Philyaw and Christopher A. Badurek
Appalachian State University

In April 2010, the Deepwater Horizon oil rig leased to BP exploded in the Gulf of Mexico leading to an estimated 4.9 million barrels of leaked oil over a five month period. The impacts have been compared to the 1979 Ixtoc and 1989 Exxon Valdez oil spills. This project examined what effect the media and personal politics may have had in influencing the public's knowledge and opinions on this disaster. A study of knowledge and opinions of participants in regards to the Gulf Coast oil spill was conducted using a mixed methods approach of a series of focus groups, surveys, statistical analysis, and an assessment of web mapping applications. Results indicate overall negative impression of both BP and governmental recovery efforts but a generally optimistic view of the likelihood of the economic and environmental recovery as well as opinion of how well the media covered the disaster. Extensive variability in the extent of and changes to the plume's location among the map information sources was also found. Findings from this study suggest media source, coverage, and data sources for cartographic representation play a role in public perception of the intensity of disasters and response activities by government agencies.

Race in the Memphis & Shelby County School District

Janna Caspersen & Daniel Swedien
University of Wisconsin – Eau Claire & East Carolina University

The exploration of race and racism takes many forms and creates numerous opportunities to promote social justice and multicultural understanding. This poster seeks to quantify spatially and map the racial divide between the Memphis and Shelby School District's public and private schools. To do this we utilized Geographic Information Systems to map and spatially analyze as well as graphing software, to quantify the racial divide. The results from our spatial analysis indicate that there is a distinct racial variation between the public and private schools in both districts; public schools are primarily populated with students of color while the majority of students at most private schools are white. The results are proof that the Civil Rights Movement is not yet over, segregation still exists, and racial divides still run deep; though the style of racism may be less socially overt, it is still systematically structured and deep-seated.

Gender and Participatory Mapping: Local Knowledge and Empowerment in Development Research

Maria Elisa Christie, Virginia Tech
Candice Luebbering, Virginia Tech
Keri Agriesti, Virginia Tech
Megan Byrne, Virginia Tech
Kellyn Montgomery, Virginia Tech
Emily Van Houweling, Virginia Tech
Laura Zselezky, Virginia Tech
Mary Harman, Virginia Tech

Participatory mapping as a research technique has been cited as a means for women to express their spaces and resources. Looking at mapping as both a process and product in field work with smallholder farmers in Latin America, Africa, and Asia, this poster draws on experiences including women in the mapping process and of mapping gendered spaces. Examples include mapping Kitchenspace, mapping the “path of the peanut,” the “path of the pesticide,” and agricultural value chains, as well as mapping local knowledge of soils. It considers challenges and benefits of using participatory mapping, gendered and non-gendered findings, and the role of the mapping facilitator. The authors conclude that participatory mapping provides opportunities for semi-literate and illiterate women to contribute their knowledge and perspectives to development research projects as well as providing pedagogical opportunities for action research. Discussion with mapping participants and a gender analysis of the resulting maps can contribute to improved understanding of social, cultural, economic, and environmental issues.

Examining the Distribution of Wind Speed and Radar Reflectivity About Landfalling Hurricanes Using Ground Based Radar and the H*Wind Data Set

Ian Comstock and Corene Matyas, University of Florida

Landfalling tropical cyclones tend to lose much of their symmetry about their wind fields and rain shields as they interact with the continental environment. Distributions of radar reflectivity and wind speed are examined at the time of landfall in this study to test for significant differences between distributions among individual storms. Level-III base reflectivity and the Hurricane Research Division's H*Wind data set were converted to point shapefiles and analyzed in a GIS. The distributions of wind speed and reflectivity intensity over land and over water were then evaluated at fifty kilometer intervals from each TC center out to 200km, all within the radius of gale force winds. The results of this study, through one-way analysis of variance, showed that while some TCs shared similar rainband structures and similar maximum wind speeds, significant differences existed in their distributions within substorm regions. Hurricanes Ivan, Katrina, and Rita were examples of landfalling TCs with such a relationship.

Cultural and Spatial Perceptions of Miami's Little Havana

Hilton Cordoba
Florida Atlantic University

Miami's 'Little Havana' is known by many for its famous Southwest 8th Street, the Calle Ocho festival, and for the many Latin people, particularly Cubans, that live in the area. However, the current name of the neighborhood hides all of the dynamics of neighborhood change and creates the notion that Little Havana is a static monoculture. This study measured people's perception of Little Havana by surveying 153 residents to identify the cultural associations and to capture the participant's spatial perceptions of Little Havana. This study found that survey participants from inside the study area associated Little Havana more with Cuban culture and had more positive things to say about the neighborhood. Finally, this study suggests that the core of Little Havana was encompassed by West Flagler Street on the north, Southwest 8th Street on the south, Southwest 27th Avenue on the west, and Southwest 4th Avenue on the east.

In the Eye of the Storm: A Participatory Human-Environment Course on Coastal Storms

Scott Curtis
East Carolina University

This poster introduces a hazards course with key human-environment and geospatial components, which are somewhat lacking within geography curriculum today. The objectives and content of *Coastal Storms* and *Advanced Coastal Storms* at East Carolina University (offered five times over six years), are presented. Students are expected to evaluate recent scholarly discovery, analyze spatial patterns, engage in independent research, and identify the key aspects of storm dynamics, preparation, mitigation, and recovery. The additional requirement for Advanced Coastal Storms is in-depth exploration through a class presentation and online modules. The content spans meteorology, oceanography, observing systems, physical impacts, social impacts, vulnerability, history, and cultural expressions such as hurricane graffiti. Tools include textbook-based and original GIS labs, UCAR MetEd online tutorials and quizzes, and field based observations. Feedback from students has generally been positive and suggests that the stated goals of human-environment understanding and GIS integration are effective: "Labs are helpful and interesting and show real world application of the software we used". Finally areas for improvement and possible modification will also be presented.

A Comparison of the 2011 Tornado Outbreak with Alabama Tornado Climatology

Amy Curtis and Dr. Jonathan Herbert
Jacksonville State University

The April 27, 2011 tornado outbreak produced 60 tornadoes and led to 247 deaths in Alabama. It was clearly an event of historic proportions. This study presents an overview of the 2011 tornado outbreak in Alabama and compares it with the state's tornado climatology. A tornado risk index is developed based on tornado data from 1981-2010. This index classifies each county as low, medium, or high risk, based on the number and strength of tornadoes that affected it over the thirty-year period. Tornado tracks from the 2011 tornado outbreak are compared with this risk index to determine how unusual this event was in the context of the recent past.

Disputed Causality of the Justinian Plague: A Solution through Spatio-temporal Mapping,

Andrew Davidson, Dr. Mark Welford, and Dr. Brian Bossak
Georgia Southern University.

The causality of the Justinian Plague is traditionally believed to be bubonic plague, yet this is disputed. New techniques of analysis have revealed evidence against the classification of a comparable epidemic, Medieval Black Death, as bubonic plague. By using similar tactics mapping the velocity of spread, seasonal peaks of wavelike patterns and any correspondence to trade routes, comparison of these epidemics reveal patterns incongruent with those exhibited by modern bubonic plague. As a part of this study all relevant data were collected, compiled into a geo-coded database, and said characteristics mapped. These maps reveal the Justinian Plague to have possessed a particularly high velocity of spread and peaks of intensity during the summer months, especially along established trade routes, which traits are not characteristic of bubonic plague and serve to discredit that theory. Increasing global interaction and the disappearance of traditional barriers to the spread of disease, dictate that we understand the responsible agent of such a 'plague'. Combined with the idea that such catastrophes may emerge every 700-800 years, this study takes on even more significance.

Vegetation patterns of urban and non-urban dry washes of the Sonoran Desert.

Michael W. Denslow (Department of Geography and Planning, Appalachian State University), Gabrielle L. Katz (Department of Geography and Planning, Appalachian State University), Juliet C. Stromberg (School of Life Sciences, Arizona State University)

Relatively little is known about the riparian vegetation associated with non-perennial streams in dryland regions. This research addressed the following questions: Do the species in urban washes in the Sonoran Desert fall into distinct community groups and if so what are the primary environmental and anthropogenic drivers? Do urban and non-urban riparian sites contain similar species and what environmental and anthropogenic variables account for any differences observed? We sampled woody vegetation and stream channel conditions at 61 sites in Arizona, USA at various stream network positions, including small ephemeral washes as well as larger river segments with ephemeral, intermittent and perennial flow. Classification analyses of the urban sites revealed four distinct groups, differing in moisture requirements and disturbance tolerance. The community composition of the urban sites reflected environmental and anthropogenic variables, including channel size, stream network position, and degree and style of urbanization. The community composition of the non-urban sites displayed a strong hydrologic gradient with flow permanence explaining 70% of the variation in community composition. When combined, the ordination analysis of the urban and non-urban data sets confirmed that site hydrology was an important gradient, as well position within the stream channel network and degree of urbanization.

Multiscale analysis of disease-environment relationships in a heterogeneous landscape

Whalen W. Dillon
University of North Carolina at Charlotte

Species-environment interactions are often studied at a single spatial scale even though ecological processes change across spatial extents. Multiscale sampling strategies address this issue and may be especially useful for invasive species when little is known regarding their dispersal biology. I conducted a multiscale field-based analysis on the invasion of the exotic plant pathogen *Phytophthora ramorum* across a heterogeneous landscape in California to assess the scales at which transmission and infection processes are operating. I established twenty-three 15m-diameter field plots, each surrounded by a grid of plots sampled across increasingly broader extents (0.36, 1.96, and 4.84-ha). For each nested scale, I developed generalized linear models of infection prevalence based on two biotic predictors, host density and force of infection, in combination with several abiotic predictors. Force of infection predicted prevalence across all scales, except 0.36-ha ($p < 0.05$). In contrast, host density predicted prevalence only in the 15m core plot ($p < 0.001$). Effects of the abiotic factors varied across the four spatial extents. These results demonstrate the scale dependence of disease spread in natural environments and suggest that using a single scale of analysis may be insufficient for management and control of biological invasions over broad geographical areas.

Toponymy of Hispanic Place Names in the Southeastern United States

Clifton 'Skeeter' Dixon and Suzanne Struve

The University of Southern Mississippi and Blinn Community College

This study examines toponymy of Hispanic settlement names in the southeastern United States. Research focuses upon locations of settlements with Hispanic-rooted place names and the reasons for why the settlements were named and when the name was applied. The goal of the research is to connect places with Hispanic names to the settlement history of the South and local and regional histories where these settlements are located. For the South, Hispanic place naming was associated with, but not restricted to: Spanish exploration, the Texan War for Independence, the Spanish American War, Mexican war battle sites, geographic features, noted Hispanic places, points of colonial entry, railroad companies, and even Postmasters and state assemblies. The findings highlight the relationships between early settlement history, exploration, cultural diffusion, individual and group travels to other regions and back to the South, and perception of places in the South. The study provides insight into frontier history for geographers and other southern studies scholars to better understand the interrelatedness of people and places in the settlement of the South.

Understanding Municipal Code Violation in the City of Mount Pleasant, Michigan, 1998-2008

Godwin Djietror
Marshall University

One of the primary functions of local governments is the enforcement of the municipal code; and municipalities in the United States have spent enormous amounts of financial resources and human-hours instituting corrective as well as punitive action in the event of code violations. This study aims to identify predictors of municipal code violation in the City of Mount Pleasant, Michigan, from 1998 to 2008. Trends in municipal code violations over the 10-year period were examined. This was followed by spatial analysis of the data using GIS. The results will be described in this presentation, with specific focus on residential, commercial, and industrial land uses, and on policy options to preempt the occurrence of violations.

Spatial Evidence for Culture Change at Hickory Ground, a Multi-Component
Archaeological Site in Elmore County, Alabama

Kelly M. Ervin
Philip L. Chaney
John W. Cottier
Auburn University

The way in which people make use of space is culturally conditioned and socially produced. This paper presents preliminary investigations on the effect of culture change on community space between a late pre-contact and post-contact Native American community at the archaeological site 1EE89. The changing landscape between two Native American cultural traditions, the Proto-Historic (1500-1700CE) and the Historic Creek (1700-1800CE) is represented in a GIS to evaluate spatial changes within the community during the time of European contact. At the archaeological site and Historic Creek town of Hickory Ground, or 1EE89, American Indian culture that had progressed over the past 12000 years in the American Southeast underwent a significant change in response to European expansion and colonization of the New World. Field maps taken during the 2002-2007 excavations at 1EE89 are digitized and georeferenced in GIS creating layers of archaeological features such as structural post holes, fire hearths, middens, and human burials. The spatial patterning and organization among these features will become evident in the GIS to suggest or reject a correlation between changing community space and changing cultures.

Inter- and intra-annual pollen deposition on McCall glacier, Alaska

Michael E. Ewing
The University of Southern Mississippi.

Polythermal valley glaciers may contain unique paleoecological records with the possibility of high-resolution pollen analysis. However, very little is known about modern pollen deposition on valley glaciers. This information is important for an accurate interpretation of the pollen record within the ice core. Presented in this poster is a study of inter- and intra- annual pollen deposition using 3 consecutive years of snow deposition/ablation data in conjunction with 3 firn pit samples collected at 10cm resolution. The strongest pollen signals came from *Alnus*, *Betula*, *Picea* and *Poaceae*. Weaker signals came from *Artemisia*, Asteraceae, Cupressaceae, *Pinus*, *Populus*, and *Salix*. Overall, pollen counts were extremely low. The only the summer-melt layer sampled (F1, 90-97cm) consisted of markedly higher pollen counts, concentrations, and a larger assemblage variety which may corroborate the findings of Nakazawa and Suzuki (2008), who found that snow melt serves to concentrate pollen at the surface. However, much is still unknown about this process. Thus, intra-annual resolution may be difficult to achieve.

Utilizing Remote Sensing & GIS as tools for Environmental Assessment and Analysis
towards Sustainable Development in Puerto Rico.

Kimberly G. Ferran
Florida Atlantic University

This project is carrying out a time series analysis of the link between development and the decline in the marine resources of the community of La Parguera, located in the SW region of PR which has been designated a region of special interest for Ecotourism Development. This will inform the level of appropriate development for an area zoned for ecotourism in order to meet the economic needs of stakeholders and facilitate a transition to sustainability. This is being accomplished by analyzing land use changes and patterns of development in the community over the past 50 years in conjunction with the decline in the marine resources using biological and physical parameters as an indicator of disturbance. Methods for this project include:

- Image enhancements and subsetting of original aerial photos of the region using Photoshop CS5.
- Image rectification using an USGS digital raster graphic map of the area using ERDAS Imagine 9.3 & ArcGIS 10.
- Unsupervised classification & Multi-temporal compositing to carry out coastal change detection analysis using ERDAS Imagine 9.3.
- Creation of an animation in ArcGIS 10 that includes spatial analysis of a database for land use changes and the biological and physical parameters of inshore reef.

Development of a Remote Sensing Technique for Woody Vegetation in Rotenberger Wildlife Management Area in Palm Beach County, Florida

Sarah Franklin and Charles Roberts
Florida Atlantic University

The purpose of this study was to develop a viable method for monitoring woody vegetation in expansive wetland communities, such as the Florida Everglades. The study area selected was Rotenberger Wildlife Management Area in southeastern Palm Beach County. Aerial photographs at 2-foot spatial resolution from 2006, 2008, and 2010 were used to develop a new technique for remotely monitoring changes in woody vegetation. Imagery each year was classified into woody and non-woody categories using Adobe Photoshop's Magic Wand Tool to employ a supervised classification method. Classified pixels in Time 1 within 4 feet (2 pixels) of classified pixels from Time 2 were considered the same canopy. The pixels were selected and merged to create a layer containing pixels present in both times. Percentage of omitted canopy was calculated for each time pair and each layer containing pixels present in only 1 time was adjusted accordingly. Overall accuracy for the study was 98%. The results of this study indicate coarse pixel classification methods using Adobe Photoshop may be a suitable alternative to field-based vegetation monitoring techniques in expansive wetland systems.

Spatial Variability of Multi-Decadal Temperature Trends in Urbanized and Urbanizing Areas of the Southeastern United States

Tanya Gallagher, Dr. Jason Ortgren
University of West Florida

It is widely accepted that worldwide temperatures have exhibited a general increase in the last 40 years due to anthropogenic effects such as the increase of greenhouse gases in the atmosphere. Scientists have particular concern with the influence of the urban environment on temperature. Many scientists claim that warming is a regional, rather than a global phenomenon. This poster investigates the differences in multi-decadal temperature trends in urbanized and urbanizing areas of the Southeastern United States.

Temperature data for Atlanta, Georgia; Charlotte, North Carolina; Columbia, South Carolina; Jacksonville, Florida; and Orlando, Florida were collected from the National Climatic Data Center. Maximum and minimum temperatures were examined for four seasons represented by the months of March, June, September, and December. Temperature data were analyzed using a sequential Mann-Kendall rank statistic test to identify trends within each dataset.

The specific objectives of this poster are: 1) test for trends in air temperature over a 40-year period in urbanized and urbanizing areas in the Southeastern United States; 2) analyze the difference in temperature trends between urbanized and urbanizing areas; and 3) examine the spatial distribution of temperature trends within the selected metropolitan regions.

The Tornado Outbreaks of April 2011 in the Southeast U.S.:
A Case Study

Gensini, Victor and Bedel, Anthony

Department of Geography
The University of Georgia

April 2011 produced some of the most historic severe weather outbreaks in recent memory. Along with parts of the Mid-Atlantic and Midwest regions, the Southeast especially suffered from the most active tornado month on record. According to the Storm Prediction Center (SPC), the 753 tornadoes reported in April 2011 shattered the previous monthly record of 542 tornadoes in May 2003 (National Oceanic and Atmospheric Administration 2011). In fact, the average number of tornadoes for April over the past ten years in the U.S. is about 160, over 4.5 times less than the 2011 figure. Furthermore, the National Weather Service (NWS) states that 364 people lost their lives during April 2011 to severe weather, with 321 of those deaths occurring during the April 25-28, 2011 tornado outbreak in the Southeast. An improved understanding of an event such as this is vital to the improvement in safety measures in the future for forecasting and alerting the general public on the potential impacts of such severe weather events.

Can a Neighborhood “Built to Fail” Reverse the Trend? Qualitative Analyses of Windy Ridge, Charlotte, NC

Sara Gleave
University of North Carolina at Charlotte

Charlotte, North Carolina has been among those cities in the Southeast hardest hit by the recent foreclosure crisis. A thriving economy and comfortable climate contributed to rapid growth and suburbanization in the region throughout the 1990s, and by 2000 Charlotte had one of the largest new home markets in the nation. When the housing bubble burst in 2005, Charlotte’s starter-home subdivisions were especially impacted by the foreclosure crisis. These first-time and low-income homeowners found themselves in neighborhoods plagued by foreclosures, low community involvement and high resident turnover. In one such neighborhood northeast of downtown Charlotte, Windy Ridge, coordinated research efforts have been employed by the Charlotte Research Action Project (CHARP) to facilitate resident involvement in a neighborhood “built to fail” using community organizing and participatory action research. The present study utilizes qualitative methods to examine CHARP’s involvement in Windy Ridge: interviews to gauge researcher perceptions; participant observation to document the current community climate; and document analysis to identify and provide commentary on the planning process and subsequent challenges faced by residents and researchers as they collectively work to develop community involvement and pride in Windy Ridge.

Cartographic Techniques for Visualizing Potential Sea-Level Rise Inundation

Matthew Carey, Brent Gore, Travis Hill, and Michelle Covi
East Carolina University

This poster features a map created with specific cartographic techniques aimed for more effective communication of potential inundation from future sea-level rise (SLR). Techniques included in this map are aquification, exaggerated relief, and custom color symbology. These cartographic techniques may be used within educational pamphlets, incorporated into interactive tools available on the internet or as stand-alone maps to help people better understand the challenges posed by future SLR along the coast.

A Case Study of the Argo-Forney Tornado of April 27 2011

Victoria Gosnold and Dr. Jonathan Herbert
Jacksonville State University

The Argo-Forney tornado was one of many tornadoes that took place in the April 27, 2011 tornado outbreak in the state of Alabama. This case study describes the tornado track and documents the impacts of the tornado. The tornado was produced by the same thunderstorm as the Tuscaloosa-Birmingham tornado. It was on the ground for just under two hours and traveled nearly 100 miles. It killed 22 and injured 81 people. The track of the tornado is mapped and described here. The impacts of the tornado in Calhoun and Etowah Counties are still evident and are documented through photographs taken several months after the event.

Utilization of Aerosol Optic Depth (AOD) data from MODIS for Real Time Regional Air Quality Assessment: A Feasibility Study

Erik Green
North Carolina Central University

Particulate Matter (PM) in ambient air has been known to cause detrimental health effects on humans. For that reason, the ambient PM levels have been monitored in both rural and urban areas in various places in the world. The PM monitoring, however, is a labor intense procedure that also consumes valuable resources. In the recent past years, NASA has been collecting spectrometric data by measuring aerosol optical depth (AOD) by the Moderate Resolution Imaging Spectroradiometer (MODIS) unit equipped in AQUA and TERRA satellites orbiting around the Earth. A few attempts have been made lately to utilize the AOD data to assess the air quality associated with ambient PM levels. This study looked to explore the relationship between AOD and air quality (using PM 2.5 data) for states in the Southeastern United States. However, technical limitations do exist. Due to the resolution limitation imposed at AOD (HDF file), the size of an area for investigation would be “regional” instead of “local”. In addition, a rather complex process was required to convert HDF files to a GIS compatible format. The feasibility of the proposed approach was confirmed by testing the hypothesis with a selected data set of PM and AOD.

Regional of Evapotranspiration and Rainfall Deficit for Non-Urbanized Watersheds in South Florida

Rachelle Leah Grein
Florida Atlantic University

South Florida is an interesting area for study of evapotranspiration (ET) and rainfall deficit due to its Tropical Wet-Dry climate type and the interactions of the El Niño and La Niña cycles of increased rainfall followed by decreased rainfall. This study looks at the differences between thirteen of the non-urbanized watersheds within the South Florida Region chosen for less than 15% percent urbanization, spatial location, and variation in landuse. Each watershed will be characterized by land cover and soils. Then a basic statistical analysis of potential evapotranspiration (ET), rainfall and rainfall will be processed. This will include mean, median, minimum, maximum, and quartile for each watershed by year, month, wet season and dry season and transition months. ET seems to be fairly consistent between the watersheds both wet and dry seasons. Rainfall seems to be the much more variable with less variability in the dry season that the wet. The Cape Sable has the largest range in rainfall deficit where the surplus is greatest in the wet season and the deficit deepest in the dry season. This study may help identify watersheds prone to greater rainfall surpluses and watersheds prone to the largest rainfall deficits.

Patently Good Ideas: Innovations and Inventions in U.S. Onion Farming, 1883-1939

Margaret M. Gripshover, Western Kentucky University and Thomas L. Bell, University of Tennessee and Western Kentucky University

This study focuses on spatial and temporal changes in onion farming-related patents filed in the United States between 1883 and 1939. There are strong linkages between the geographic distributions of patent holders and specialized onion farming regions. In fact, tracing the evolution of patent applications for labor-saving improvements in onion-growing is almost tantamount to tracing the rise of new localized growing districts across the United States as measured by market output. During the study period, 97 onion-related inventions were patented by 81 inventors. Inventors were often immigrants or sons of immigrants with occupations including farming, carpentry and blacksmithing. There were exceptions to this generalization. A few inventors had little farming experience and not all were male—there was one female patent holder. Most inventors held only one patent and rarely found commercial success with their invention. The handful of inventors with commercially assigned patents were less likely to be farmers and more likely to live near agricultural implement manufacturing centers. Not all innovations were patented but the patents themselves provide valuable insights into the creation of material culture within the onion-growing industry.

Using GIS to select appropriate sites for the re-introduction of *Sarracenia oreophila* (Green pitcher plant) into Little River Canyon National Preserve, northeastern Alabama

Nicholas Haney and Dr. Kelly D. Gregg
Jacksonville State University

Sarracenia oreophila, the Green pitcher plant, is an extremely endangered species. Three years ago, *S. oreophila* was re-introduced into a single re-conditioned bog. This success prompted, in 2011, an effort to re-introduce this species to multiple locations within nearby Little River Canyon National Preserve. A first step was the selection of suitable sites. Previous research indicated that three factors were of particular importance: hydrology, soils and the presence of certain associated plants. Known existing populations of *S. oreophila* were GPSed and plotted in ArcGIS. These were compared to layers representing wetlands, bogs, soils and vegetational assemblages to indicate conditions favored by existing populations. This information was then applied in reverse to locate potential new sites. Each was thoroughly ground-truthed to ensure that these sites were indeed suitable for re-introduction. Five potential sites were identified. Reconditioning through mechanical clearing and burning began in Fall 2011 and will continue for the next four years, at which time the re-introduction *S. oreophila* grown in greenhouses from seed will occur.

Dendrochronological analysis of the southernmost outlier population of Emerald Ash
Borer (Coleoptera: Buprestidae)

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Emerald ash borer (EAB) (*Agrilus planipennis*, Fairmiare, Coleoptera: Buprestidae) is an invasive, phloem-feeding beetle that has caused extensive mortality in North American ash trees (*Fraxinus* spp.). Since the identification of this non-native pest in 2002, EAB has been responsible for wide-spread destruction of ash trees in forest and urban settings throughout the midwestern United States and eastern Canada. The most recent and southernmost documented infestation is located in Knox County, Tennessee, USA. Here, we present a dendroecological analysis aimed at estimating the onset of EAB infestation at this location. We analyzed raw measurements and detrended indices (age-related and climatic growth trends removed) of annual growth rings to identify growth suppressions related to EAB, and compared the pattern of radial growth in EAB-infested ash trees to non-host, red oak trees (*Quercus rubra* L.) growing at the same site. A sustained reduction of radial growth was detected in both raw and detrended ring widths of ash trees beginning in 2007, indicating a population of EAB large enough to affect radial growth was present at this site for at least three years prior to detection of the infestation. No such reduction was observed in the non-host trees. Continued application of dendrochronology to understand the timing of EAB infestations will enhance efforts aimed at controlling and managing this pest.

Adapting to Climate Change in Alaska's National Parks: Towards an Adaptive and Scenario Based Framework

Kassie Hauser
University of Tennessee

The state of Alaska is dealing with some of the most severe impacts of climate change in the world. Forest fires are increasing in size and duration, glaciers are melting, caribou herds are changing their migration times, tidal flats are transitioning into spruce forests due to isostatic rebound, and cultural sites of significance are disappearing due to rising sea levels. Federal public land managers, who operate approximately 60% of the total land in Alaska, are faced with the challenge of responding to climate change without a national policy. This lack of a national policy framework for climate change has created a variety of responses from departments of the federal government that own land in Alaska. This poster focuses on the ways in which the National Park Service is responding to climate change in Alaska. It investigates the current National Park Service response that consists of the collecting and monitoring of data, educating the public, and responding to climate change-related events on a case-by-case basis. This poster also investigates the governance framework of adaptive management and scenario planning that the National Park Service is developing for all of its national parklands in Alaska.

GIS Analysis of Mortality Clines in Relation to Transportation Networks during the Medieval Black Death

Kathryne Henderson, Brian Bossak, Mark Wleford
Georgia Southern University

The Medieval Black Death (MBD) was the most lethal epidemic to strike Europe in recorded history, killing 30-50% of the population in a few years. The cause has never been determined with scientific certainty. We utilized GIS and basic spatial analysis to determine whether locations with recorded mortality during this epidemic were randomly situated in the European spatial domain or were clustered around intense human activity. The results strongly suggest that transportation networks and nodes were associated with MBD mortality sites. These results add further evidence at odds with the dominant etiologic theory of this deadly disease episode.

Exploring Patterns of DUI Fatalities Across the United States

Nelson Holden., North Carolina Central University
Timothy Mulrooney, Ph.D., North Carolina Central University

Fatalities related to Driving Under the Influence (DUI) transcend all segments of the population in the United States. Almost 1/3 of all traffic deaths are caused by drunk driving. However, their prevalence and rates show spatial patterns throughout the United States. While states such as California, New York and Florida have the highest number of DUI fatalities, they are also the most populated states. When standardized by population (number of DUI fatalities per 100,000 people), Wyoming leads all states. The rate for Wyoming is more than 35% higher than the next highest state, Montana. While Upper Rocky Mountain States have high rates of DUI fatalities, the Deep South also experiences high rates of DUI fatalities. As a matter of fact, South Carolina ranked third in the United States. There are many reasons for these patterns. This poster will explore relationships between metrics related to DUI fatalities and some of the factors which may cause them. While many of these factors are qualitative in nature, other factors such as population density, road density and urbanity have shown distinct relationships to DUI fatalities. This poster will show data for the United States, but will focus more specifically on the Southeast.

CITY OF LONG BEACH, MISSISSIPPI EMERGENCY RESPONSE ADDRESS UPDATE

Brennan Collins
University of Southern Mississippi

Maps are often utilized by government for city management and public safety. This project focuses on updating the Address Emergency Response Database for the city of Long Beach, Mississippi. The map updates were based on county satellite imaging (2009), address database, structure footprints, and parcel outlines. In order to create a comprehensive database, a system was created to verify all commercial and residential buildings had structure footprints and address labels. The method included a grid placed over the city and each square (area) reviewed to identify missing structure footprints or footprints missing address identification.

The final map will enable Emergency Response Personnel to identify locations within Long Beach by inputting the physical address. For location identification, the address information (attribute data) was linked to the structure footprints (spatial data). Most missing address labels were identified using mapping programs, but some fieldwork was required. Since the city of Long Beach does not currently have GIS capability, a plan is under consideration for the Department of Geography and Geology to maintain the dataset for city use.

Mapping the City Cemetery of Long Beach, Mississippi Post Katrina

David Holt
Tim Sutherlin
Brennan Collins
Megan Moran
Christina Skadowski
University of Southern Mississippi

In 2005, during Hurricane Katrina's storm surge, the city of Long Beach, Mississippi lost many city documents, including most associated with the city cemetery. Without these documents, even the most basic questions required "walking" the aisles in search of the correct headstone. The purpose of this project was to solve this problem by using the best available data – the headstones themselves – to create an accurate and easy to update map and searchable database of every known burial at the site. Six-inch aerial imagery was used to digitize preliminary plot outlines in ArcGIS, followed by an extensive field survey to correct irregularities. During the survey, every headstone was photographed to capture burial data added as attributes in the GIS. The finished map and database makes the job of managing the cemetery much easier for city officials, and can also be used for historical, genealogical and actuarial research.

Mapping small-scale distribution of improved sanitation in Kenya

Peng Jia, Richard Rheingans
University of Florida

Improved sanitation is important to enhance population health, however, it is not evenly distributed in many African countries. The goal of this study is to figure out how the improved sanitation were distributed across Kenya in different wealth levels and find out where the large gaps between the poor and the better off existed so that future intervention activities can be tailored for each wealth group and especially when resources are limited, conducted towards the areas of greatest need. The wealth index was constructed, on the basis of DHS household-level data in 2008, to divide all the households into quintiles. IDW and Kriging with various semi-variogram models were utilized to interpolate the improved sanitation in unknown regions. After removing unreliable points, interpolating revised dataset and comparing different results repeatedly, the most appropriate interpolation method was selected for each quintile. By calculating the statistics within administrative units on different levels, the distributions of improved sanitation in different wealth levels were mapped across the whole country and the districts and divisions with large gaps between the poor and the better off were recognized.

Interactive Web-Based Mapping of Health and Social Factors in North Carolina

Katherine Jones, Center for Health Services Research and Development, East Carolina University

Christopher J. Mansfield, Professor, Department of Public Health, East Carolina University, and Director, Center for Health Services Research and Development, East Carolina University.

According to many public health professionals, web-based mapping is an important way to provide information to health officials and the public. Facilitating access to spatial health data in a user-friendly format, however, can be a challenge. This poster describes one attempt by researchers in geography and public health to develop a publicly-accessible health database with mapping and analytical capabilities. The North Carolina Health Data Explorer is an interactive, web-based mapping tool that displays a wide variety of county-level data for the state of North Carolina. The Explorer provides access to health data through a user-friendly atlas of maps, tables, and charts.

This poster will describe the evolution of the North Carolina Health Data Explorer, demonstrate its capabilities, provide an overview of the ways in which it is being used by the public and health professionals in North Carolina, and discuss its possible uses by geographers for research, teaching, and public outreach. As a user-friendly tool for mapping and comparing health data, the Explorer has significant potential in geographic education and as a public interface between the university community and end users of health information.

A Geodetic Method to Calculate Mass Balance of Nuptse & Its Surrounding Glaciers in Nepal

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Mississippi State University

The sum of accumulation and ablation in a particular hydrological year gives the net mass balance of a glacier. Any variation in mass balance of a glacier is directly linked to climatic factors. Hence, regular monitoring and documenting changes in glacier mass balance is essential to climate change studies. We used ASTER satellite images for the years 2002 and 2005. We also used geodetic method to estimate mass balance change of Nuptse and its surrounding glaciers in the Himalayan range in Nepal. We created DEMs from each image and find the elevation differences in glaciated areas. The result indicated that there was an increase in the mass balance of the Nuptse glacier between 2002 and 2005. However, many surrounding glaciers in the study region showed negative mass balance during the study period.

Nineteenth Century Sediment Yield and Sediment Source in Southern Appalachia

Linda Kennedy
UNC-Greensboro

Evidence of landscape response to changing land use patterns during the nineteenth century in Southern Appalachia is presented. Powell Mill dam was located at the mouth of the 1.55 Km² Rocky Cove Branch sub-basin, Bent Creek watershed, Buncombe County, North Carolina. Mill pond sediment, deposited between 1880 and 1895, yielded data used to quantify average sediment yield and address the issue of sediment source during this period. These are preliminary results of dissertation research conducted at the first of three nineteenth century mill pond sites identified in the Bent Creek watershed. An average annual sediment yield of 101.5 tKm⁻²y⁻¹, between 1880 and 1895, was determined using coring data, Golden Surfer software, and the Heinemann trap efficiency curve. Mass adjusted magnetic susceptibility values (X_{lf}) taken from four channel profiles, indicate (1) that multiple single erosional/hydrological events played a significant role in delivering magnetically enhanced sediment to the channel, (2) a longitudinal increasing trend in susceptibility values in sediment from upstream to downstream, and (3) that overall, an increasing trend in susceptibility values from the base to the surface of each profile is evident, strongly suggesting that sediment source changed over time.

Mapping nearshore hardbottom habitat on a tight budget

Kelly C. Kingon
Florida State University

Unlike the terrestrial environment, marine maps are scarce and usually lack the detail required to identify and delineate habitats. A relatively inexpensive, commercially-available product may help marine researchers overcome this obstacle. This system, manufactured by Humminbird for fishermen, produces sidescan imagery, bathymetry data, and GPS coordinates simultaneously for under \$2000. It can reveal geologic features and habitat types as well as schools of fishes and other marine animals. An advantage of this particular system is the ability to record all the collected data to a SD card. From which, it can be downloaded to a computer, converted into a usable format and incorporated into a mapping program to create georeferenced habitat maps. Using the Humminbird, I mapped several sites in the northeastern Gulf of Mexico. The mapping consisted of recording one 400 m track at a time in the north/south and/or east/west direction. Then four additional parallel and partially overlapping tracks were recorded to create 160,000 m² area maps of each site. Ledges, rocky outcrops, and artificial reef materials were identified and accurately mapped using this approach. The Humminbird system has great potential and should benefit future marine habitat studies.

Storage of Mining Sediment in Floodplain Deposits of the Big River, Missouri

Scott A. Lecce (East Carolina University), Robert T. Pavlowsky (Missouri State University), Mark Owen (Missouri State University), and Derek J. Martin (University of Tennessee)

The Old Lead Belt is a historic lead (Pb) and zinc (Zn) mining district in southeastern Missouri that was a major producer of Pb worldwide from 1864 to 1972. Past and ongoing releases of tailings to the Big River have resulted in the large-scale contamination of channel sediment and floodplain deposits with toxic levels of Pb along 90 miles of the Big River. The purpose of this paper is to quantify patterns of storage of sediment contaminated by lead mining in floodplain deposits of the Big River. Overbank floodplain deposits are contaminated above the residential soil probable effects concentration (PEC) of 400 ppm Pb along the entire length of the river below Leadwood to a depth of 1 to 4 meters or more, with the highest concentrations exceeding 12,000 ppm. About 86,800,000 m³ of contaminated sediment and 226,000 Mg of Pb remains stored in floodplain deposits along the Big River. Of the total amount of contaminated sediment stored in the channel-floodplain system, we estimate that 88% resides in floodplain deposits.

Assessment of Natural Resource Conditions for Colonial National Historical Park

Todd R. Lookingbill
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University of Richmond
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Integration and Application Network

The Natural Resource Condition Assessment (NRCA) represents a relatively new approach to investigate current conditions and trends of natural resources and resource stressors within the nation's national parks. Our assessment examined Colonial National Historical Park (COLO) located within the Coastal Plain of Eastern Virginia, adjacent to the Chesapeake Bay. To gain insight into the natural resource condition of COLO, an assessment framework was established based on existing data sources, management priorities and extent of ecological cover types. The framework considered 24 metrics including measures of air quality, water quality, biological integrity and landscape dynamics. These metrics were used as the foundation for habitat-based conceptual models of four habitat types: Forest, Grasslands, Tidal Wetlands and Nontidal Wetlands. Each habitat type was assessed along a spectrum from desired to degraded condition within COLO. The results indicated Forest (58% of included measurements were above reference thresholds), Grassland (48%) and Tidal Wetland (54%) habitats as being in fair condition and Nontidal Wetlands (62%) as being closest to desired conditions. Invasive species air quality, and landscape connectivity were identified as resources of special concern. The condition of natural resources in the park cannot be considered in isolation of its historical, legislative mission, and geographic context.

QUANTIFYING AND EXPLAINING LANDCOVER CHANGES IN THE DISTRICT OF GOMA, DEMOCRATIC REPUBLIC OF CONGO

Onyumbé Lukongo
Mississippi State University

This paper analyzes land cover change in the district of Goma, Democratic Republic of Congo as the outcome of institutional failures at the local, national and regional levels. We use normalized difference vegetation index derived from Landsat satellite images to quantify land cover change between 1987 and 2011. We explain the role of institutional factors such as trans-border trade networks, refugee influx (1.5 and 2 million refugees) due to ethnic conflicts in Rwanda, Congolese civil wars, and the activities of international nongovernmental organizations on land cover change. We find a major land cover change in terms of increase in non-vegetation areas in the district of Goma. Increased economic opportunities, humanitarian operations and the coltan boom resulted in higher revenues, and higher reinvestments in real estate, and numerous new constructions; it in turn stimulated population expansion, and altered spatial structure in the district of Goma.

Accessibility and University Populations: Effects on Non-Motorized Transportation in the Tuscaloosa-Northport Area

Benjamin Lundberg
University of Alabama

Accessibility and connectivity are important concepts in the study of mobility and transportation. Since 2004, the University of Alabama at Tuscaloosa (UA) has experienced considerable growth. While growth is typically encouraged, rapid growth can also have disadvantages, as expansion and increased enrollment tend to change the overall accessibility of university resources. Transportation accessibility, especially, can be affected. Non-motorized transportation is a viable and sustainable alternative that has become a part of the growing movement to counter growth and urban transportation accessibility issues.

This presentation addresses these issues through a study of non-motorized accessibility and connectivity of individuals that are associated with UA and live within 3-Euclidean miles of UA's campus. In geographic information systems (GIS), various impedance values were used to model the shortest-path(s) along the pedestrian and bicycle network. GIS was also utilized to measure connectivity of the pedestrian and bicycle network within an individual's neighborhood. This presentation will also discuss the results of an on-line survey of the sample population's views on non-motorized travel in Tuscaloosa. Ultimately, this research will identify travel habits to UA, examine the degree at which UA's campus is accessible to users of non-motorized transportation, and characterize views on non-motorized accessibility for UA's population.

Environmental Change in the Wake of a Hurricane: A MS Gulf Coast Case Study

Brittney Markle
Katherine Correll
Arleen Hill
University of Memphis.

Disasters leave a distinct signature on places. While changes to the built environment attract our immediate attention, changes to the physical environment can be equally dramatic. Here remote sensing and GIS data and techniques are used to explore environmental changes associated with Hurricane Katrina. These changes include damage to and loss of vegetation observable in the immediate aftermath of Katrina and intentionally extend through recovery. Our work focuses on Harrison County, Mississippi and is part of an effort to detect the signature of place-based disaster recovery synthesizing the housing, economic, environmental, and social sectors. This poster presents change detection, Normalized Difference Vegetation Index (NDVI), and statistical analysis performed on a series of 28 Landsat-5 Thematic Mapper images collected between 2000 and 2011. Patterns revealed through image and statistical analyses were then compared with ancillary agricultural productivity and environmental health information available from the State of Mississippi to determine the relationship between initial damage level and the nature, extent and duration of environmental recovery and change. Findings suggest that while changes induced by natural ecological functions/cycles and changes associated with hurricane impact can be observed and documented, distinguishing the two is not always possible.

Wage and Employment potential in GIS-Related Fields: A spatial analysis of job opportunities in the continental United States

Scott Markley
Georgia State University

As a rapidly growing field, Geographic Information Science (GIS) has emerged as a popular career choice among college graduates in the United States. Possibly as a product or perhaps a harbinger of the surge of the GIS-related job opportunities, university certificate programs and GIS support systems, such as the University Consortium for Geographic Information Science (UCGIS) have also emerged across the nation. The aim of this project is to analyze and measure the correlation, if any, between the wages and number of jobs in the highly GIS-related career fields of cartographers and photogrammetrists in respect to the locations of university GIS certificate programs and UCGIS member universities and organizations. To do this, this paper combines advanced GIS mapping techniques and spatial analysis using ArcGIS 10.

GIS Modeling of Medieval Black Death Velocity

Adam R. Middleton, Justin B. Marsh, Dr. Brian H. Bossak, Dr. Mark R. Welford
Georgia Southern University

Europe first witnessed cases of the Medieval Black Death (MBD) in 1347. The disease began in southern Europe and quickly made its way north, killing millions of people within five years until its last major outbreak in 1351. Utilizing Geographic Information Systems modeling and historical records, we mapped MBD mortality to investigate the possibility of human-to-human transmission based on the epidemic velocity through Europe. Geostatistical analysis (including kriging) was used to generate prediction maps and in turn, gives an estimate of the epidemic velocity of the Medieval Black Death as it spread across Europe. Shaded contours were used to illustrate the wave of MBD mortality as it spread across Europe. In order to calculate the epidemic velocity, an extension of the GIS software called Digital Shoreline Analysis System (DSAS) was used. These maps represent the first attempt at using descriptive statistical data, Geographic Information Systems, kriging methodologies, and epidemic velocity analysis to more accurately determine the spread of a disease which killed as many as half of Europeans in a relatively short time span.

Exploring Changes in the Vegetation Biomass Cycles in Jamaica: February 2000 to November 2010

Mario Mighty
University of Florida

The island of Jamaica experienced a prolonged drought from the middle of 2009 into early 2010 which affected the urban regions in eastern and central regions as well as several agricultural areas in the west. Reported impacts included severe water restrictions in the capital, Kingston and surrounding towns as well as crop losses due to lack of water for irrigation. The 16-day enhanced vegetation index (EVI) product from the MODIS instrument on the EOS *Terra* satellite was used to explore the changes in vegetation biomass across the island seeking a link between the changes in vegetation and changes in monthly precipitation. Covering the time period of February 2000 to November 2010, this study utilized the Earth Trends Modeler (ETM) component of IDRISI Taiga to explore trends in the dataset. It was found that the short term variations in vegetation changes were not readily identifiable but instead long term trends were identified. These include shifts in seasonal greenness and areas of biomass loss and gain in various sections of Jamaica. Also found was that though there were linkages between EVI and precipitation, rainfall cannot be used in isolation as an explanation of these changes.

The Carolina Thread Trail: Common Threads in Regional Heritage and Place-Making

Tyrel Moore and John Metcalf
UNC Charlotte

Population and urban growth places Charlotte in a nationally significant mega region that extends from Raleigh to Atlanta. Accompanying losses of open space in the Charlotte Region have led to the planning and development of the Carolina Thread Trail, a proposed greenway system launched by the Catawba Lands Conservancy in 2007. The system has ambitious goals that ultimately would create a trail network across 15 counties and two states. This research seeks to point out that the regional interest in the Thread Trail represents an opportunity to recognize the longer role of heritage and a recent renewal of interest in opportunities that give new place-making definitions to the region and its communities. The name and the logo for the Thread Trail are reminders of the area's important textile history and its town forming and place-making character. The 21st century emphasis on environmental quality introduces a new sense of place for the region. Data used to communicate this finding in poster form come from local planning documents, a textual analysis of newspaper articles, and in tabular form, from field investigation of greenways and adjacent land uses.

Identifying Medieval Black Death Etiology using Mortality data from Spain and Portugal between 1351-1801

Andrew T. Mosley, Mark R. Welford, and Brian H. Bossak
Georgia State University

Bubonic Plague, caused by a bacterial infection of *Yersinia pestis*, is typically accepted as the cause for the Medieval Black Death (MBD) and subsequent outbreaks of 'plague' in Europe between 1348 and 1801. This type of bacterial infection is known to spread in a rat-flea-human manner. However, recent analysis of historical data suggests that a rat-flea-human method of transmission is unlikely. Despite recent advances in transportation, the MBD during its primary wave, from 1348 to 1351, propagated between 13 and 88 times faster than modern plagues. Through geospatial analysis of data gathered from historical records and previous research, it is possible to identify key characteristics, such as plague velocity, intensity, and epidemic patterns of the MBD. As a result, it is feasible to infer the probable method of transmission of the MBD. In addition to identifying mode of transmission, return frequencies have been determined that allow for additional comparisons to be made. This research will focus on the plague epidemics in Spain and Portugal and may be compared to ongoing research on the spread of the MBD in the remainder of Europe.

Legacies of In-Stream Mining on the Bouie River, Mississippi

Joann Mossa and Jim Rasmussen
University of Florida

Human activities can leave pronounced and long-lasting impacts on the form and process of rivers, which may be obvious for decades or beyond. The Bouie River, a 1732 km² tributary to the Leaf and Pascagoula Rivers in the coastal plain of southern Mississippi, has a planform morphology that suggests considerable disturbance. The lower 5km before it joins the Leaf River has been altered by floodplain sand and gravel mining, but perhaps more so by historical in-stream mining that began in the 1940s and ended in 1995 due to environmental regulation. Through GIS channel planform and field work which compares unaltered and altered reaches, we document the depth and dimensions of some of the along channel pits and make conservative estimates of material removed from the system. Some reaches are more than 5 times wider and deeper than unaltered reaches, creating some unique channel forms, unusual ecologic environments, potential engineering concerns, and impacts that extend to the adjoining mainstem river.

Navigating the Terrain of Discrimination: Mapping *The Green Book* and African American Tourism during Jim Crow

Alison Murray, Cory Mullen, Richard Kennedy, and Derek H. Alderman, Center for Sustainable Tourism, East Carolina University

RESET (Race, Ethnicity, and Social Equity in Tourism) is a research and outreach initiative based out of East Carolina University's Center for Sustainable Tourism. One of the initiative's goals is to conduct research on African American travelers and investigate the way in which the tourism industry has traditionally marginalized, if not ignored, them. To gain an understanding of the African American travel experience during the Jim Crow era, we discuss the practical and symbolic importance of *The Negro Travelers' Green Book*, which was published from 1936 to 1964. The *Green Book* was a travel guide used by middle class black motorists to locate, by state and city, travel accommodations without having to face the humiliation of racial discrimination. Our poster provides a detailed introduction to the *Green Book*—including a brief history of the Book's origins and development, maps showing spatial variation in the location of African American-friendly accommodations, and a broader interpretation of what the Book symbolizes about the African American travel experience. On the one hand, the *Green Book* provides insight into the ways in which tourism and America's auto culture were socially constructed in unequal and unjust ways. The relative paucity of "safe" accommodations found in the travel guide for certain parts of the United States point to the hostile landscape that many African American travelers faced when on the road. On the other hand, the *Green Book* also speaks to how the Jim Crow landscape, while certainly filled with obstacles for black motorists, could also be navigated in creative and resistant ways. The businesses highlighted in Victor Green's travel guide represented places of refuge for black travelers and served as early sites for creating the African American tourist we see today. Mapping the *Green Book*, in a conventional geographic sense and in terms of what it meant to African Americans, could contribute to a heritage tourism industry that is increasingly interested in the historical landscapes of racial segregation and resiliency.

Ruralization of the Urban: Visualizing Social Networks of Locally Grow Food using Thiessen Polygons

Michael Nesius
Florida State University

Understanding the structural changes accompanying the localization of food networks may provide insight into changing network properties such as resilience and the influence this localization has on food accessibility. This study examines local food networks from the vantage point of the farm products as they flow through the short-food-supply chains centered around Tallahassee, Florida. Customers and farmers are surveyed to collect information regarding the existence and strength of the social/economic ties incumbent in the food network. Network metrics are calculated and joined to geocoded points representing the nodes of the networks: customers, markets, and farmers. Thiessen polygons are calculated to estimate a distance-based measure of the spatial domain of each market and overlaid census data. This rudimentary visualization is then used to launch a theoretical investigation into the processes involved in the discontinuous and uneven ruralization of the urban, particularly how this dynamic is mediated by social networks.

Ancient Civilizations in the American Southwest

Mollie Nunez

University of Southern Mississippi

This poster looks into ancient artifacts left behind by civilizations in the American Southwest. The area studied is Tapia Canyon in New Mexico. As these ancient cultures took rise in this area, they left behind many signs that human presence existed inside this canyon. Students from the University of Southern Mississippi used GPS units for research in Tapia Canyon. There are numerous markings – pictographs and petroglyphs – that exist high and low on the canyon walls along with cave dwellings. Researchers are studying these markings to depict what happened to these civilizations, as they tell stories of their travels and existence. This poster will show the mapping of each artifact, marking, and dwelling in Tapia Canyon that was found.

Improved Method for Rapid Extraction of Land Cover Classification Data in Remote Areas

Doug Oetter¹, John Kirkwood², Kristen Whitbeck², Nancy Hoalst-Pullen³, Mark Patterson³, and Jorge Alfaro⁴

1- Georgia College & State University, 2- McGill University, 3- Kennesaw State University, 4- Comisión Nacional de Riego, Chile

Building land cover maps based on satellite imagery in remote international areas requires the ability to quickly collect accurate ground reference data, often at a tremendous cost of time and money. We developed an inexpensive method to allow the rapid collection of hundreds of land cover data points across two dozen or more land cover classes using automobiles, GPS units, and hand-held digital cameras. High-resolution panoramic digital photographs were collected from dozens of pre-informed vantage points and georegistered to a GPS system. Upon return to the research lab, our analysts used the panoramic photography to co-locate and inform a detailed ground reference data database. The high-resolution photographs allowed us to extract information from points up to 1.5 km distant on clear days with ideal conditions. This method significantly reduced the time and expense we were required to spend in the field, while still returning accurate ground reference data in many aspects better than those obtained with classic air photo interpretation methods.

Accuracy Assessment of ASTER DEM in the Himalayas

Hunter Pate
Mississippi State University

The objective of this study is to assess the accuracy of three digital elevation models (DEM) created from ASTER (Advanced Spaceborne Thermal Emission and Reflection Radiometer) satellite images using different parameters in the Himalayan range. A high resolution ASTER satellite image for the year 2004 of Sagarmatha National Park in Nepal was used to create DEMs. Compared to elevation values from topographic maps, the DEM created 96.48% accuracy at high relief, medium relief at 95.50%, and low relief at 95.15%. ASTER image derived DEMs are thus suitable for study of glaciers in the difficult terrain of the Himalayas. However, accuracy of the DEM ultimately depends on the number and accuracy of the ground control points and tie points used in the model.

Nutrient and Suspended Sediment Loads from a Suburban Development in the Missouri Ozarks

Robert Pavlowky and Marc Owen, Missouri State University and Erin-Hutchison-Martin, University of Tennessee

Eutrophic conditions at Table Rock Lake in southwest Missouri in the 1990s were linked to phosphorus loads from urban areas located upstream in the James River Basin. Subdivision-style developments were assumed to be a major contributor of total phosphorus (TP), total nitrogen (TN), and suspended sediment (TSS) to local streams due to increased storm runoff rates, soil disturbances, and by wide-spread use of chemical fertilizers. This poster reports the results of an event-scale storm water monitoring study of a 35 acre subdivision with 47% impervious area in one of the fastest growing counties in Missouri using an automated sampler and standard analytical methods. Flow-weighted mass loads were calculated for 23 storm events using continuous rainfall and runoff measurements coupled with discrete, time-weighted water quality sampling. While TP and TSS loads were relatively high in comparison to management guidelines, annual load values were lower than expected loads based on regional land use-based trends. These results quantify nutrient loads from residential developments that can be used to calibrate water quality models used to assess the impact of nutrient contributions from these types of developments to impaired streams in the area.

Examination of stand structure on an elevation gradient in a subalpine forest in South
Central Colorado

Kayla Pendergrass, Christopher Gentry, William Ellison, James Kelly, and Emilie
Ethridge
Austin Peay State University

The Sangre de Cristo wilderness area provides the optimal setting to observe the influence of elevation on stand structure in a subalpine forest. Located in south-central Colorado, the wilderness area has elevations which range from approximately 3050m – 4375m. This research examined the differences in species, tree height, canopy height, diameter, canopy class, crown class, and quantity of coarse woody debris of five stands at varying elevations. Overall canopy height, crown height, and dbh showed a consistent decline with increasing elevations. DBH was slightly higher in the 3500m stand due to the quantity of multi-stem trees. Canopy classes in all but the 3500m stand were dominated by co-dominant and intermediate classes. The quantity of CWD was similar in most stands with the exception of the 3400m elevation. This stand had a significantly larger number of CWD due to its proximity to an avalanche path. A dramatic species shift was found to occur between the 3400m and 3500m stands. At this elevation the *Picea engelmannii* – *Populus tremuloides* association common in stands at lower elevations was replaced by a stand dominated by *Pinus aristata*. Future research will examine how the age structure of these stands is influenced by elevation.

Mixed-Methods Analysis of Media Communication of the Deepwater Horizon Oil Spill Disaster

Dylan Philyaw and Christopher A. Badurek
Appalachian State University

In April 2010, the Deepwater Horizon oil rig leased to BP exploded in the Gulf of Mexico leading to an estimated 4.9 million barrels of leaked oil over a five month period. The impacts have been compared to the 1979 Ixtoc and 1989 Exxon Valdez oil spills. This project examined what effect the media and personal politics may have had in influencing the public's knowledge and opinions on this disaster. A study of knowledge and opinions of participants in regards to the Gulf Coast oil spill was conducted using a mixed methods approach of a series of focus groups, surveys, statistical analysis, and an assessment of web mapping applications. Results indicate overall negative impression of both BP and governmental recovery efforts but a generally optimistic view of the likelihood of the economic and environmental recovery as well as opinion of how well the media covered the disaster. Extensive variability in the extent of and changes to the plume's location among the map information sources was also found. Findings from this study suggest media source, coverage, and data sources for cartographic representation play a role in public perception of the intensity of disasters and response activities by government agencies.

The Influence of Fire on Stand Dynamics at Cerro Bandera Cinder Cone,
New Mexico, U.S.A.

Alex Pilote
Henri D. Grissino-Mayer
The University of Tennessee

The historic role of fire and its subsequent effect on stand structure and composition in ponderosa pine-dominated and mixed-conifer forests of the American Southwest is of great concern to land management agencies throughout the area and a better understanding of this complex relationship will greatly aid in restoring this ecosystem to a healthy state. Stand structure and dynamics of the mixed-conifer forest of the Cerro Bandera cinder cone were analyzed at four plots, composed mostly of ponderosa pine (*Pinus ponderosa* Douglas ex C. Lawson). We cored 224 trees and dated all tree rings using dendroecological techniques to determine establish dates. Age structure, as well as rates of recruitment and regeneration of these stands, were compared with the previously constructed historic fire regime of the site based on fire-scar analyses. This comparison demonstrates the extent of fire disturbance at this site and the effects of both fire and fire suppression on the structure and dynamics of these stands. Our results indicate alterations to stand density and composition caused by human interference to the natural regimes of the area. The results and implications of this project will be applicable to many other similar sites in the region and across the U.S.

Sustainability Through a Universal Karst Assessment and Repository Tool that Measures and Evaluates Human-Environmental Impacts on Karst Environments

Jason S. Polk, Leslie A. North, Victoria A. Allen, Taylor Hutchison, Chris Groves
Western Kentucky University

Karst environments are complex, coupled landscape/aquifer systems vulnerable to anthropogenic impacts. The Karst Disturbance Index is one method of evaluating the anthropogenic disturbances in a karst landscape using a various data sources. We aimed to develop a universal online karst assessment tool (uKARST) for public consumption that provided an educational resource and data repository for evaluating impacts to karst environments. We performed a participatory needs assessment with stakeholders to determine how to develop this online tool. The KDI was applied to Warren County, Kentucky to evaluate how readily the KDI can be applied by non-experts in karst research in an area with arguably one of the highest concentrations of available data in the world. This process revealed the need for a modified approach to holistically evaluate karst landscapes, and a more centralized and accessible online resource to aid in this type of assessment. Thus, based on a preliminary research and the results of the evaluating the application process of the KDI to Warren County, we have developed a beta version of uKARST and are testing its application in other regions. Future research will focus on its refinement to provide a user-friendly and holistic tool for evaluating impacts on karst landscapes.

Retail Drinking Water Shelf Space as a Measure of Perceived Water Quality in Southern Appalachia

Shae Prater
Eastern Kentucky University

A major effect of mountaintop coal mining is the impact it has on ground water, wells, and other drinking water sources. This study examined whether the shelf space devoted to bottled water in grocery stores in coal country communities is a reliable secondary measure of citizen's concerns about the quality of their household drinking water. It is expected that shelf space will increase as citizen's perceptions of poor water quality increases. However, there may be little correlation between perceptions of water quality and actual water quality.

A survey was conducted among people observed to be purchasing drinking water in 20 grocery stores located in coal country communities in eastern Kentucky. For comparison, an additional eight grocery stores were located outside of coal country. Total volume of shelf space devoted to drinking water was also measured at each grocery store visited. The stores are located in seven counties geographically distributed across the southern Appalachia region representing a range of known or suspected drinking water contamination ranging from very little to very high. A GIS was then used to compare shelf space observations and citizens' perceptions of drinking water with existing datasets of water quality.

Frequency and intensity of tornadoes produced by tropical cyclones and tropical lows in landfalling gulf coast storms

Cory Rhodes
University of Alabama

Tropical cyclone tornadoes (TCT), including those in both hurricanes and tropical storms, and tropical low tornadoes (TLT), storms of tropical depression strength or weaker, are brief and often unpredictable events that can produce fatalities and create considerable economic loss. Given the uncertainties of both TCT and TLT, a climatological study of the intensity variations among tornadoes of tropical origin will provide further insight as to the characteristics of tornadoes along these two magnitudes. Previous research has examined tornadoes among all levels of storm intensity, including time of day, distance from coastline, and location relative to directional heading. However, no research has been shown analyzing tornado intensity among tropical entities in comparison to their variable wind speeds. While TLT are fewer in quantity, the intensity of various tornadoes has been shown to be as high as or higher than those of TCT nature. For example, Tropical Storm Fay (2008) spawned more tornadoes (including ten F1 tornadoes) during its phase as a tropical depression than as a storm. Hence, individual meteorological case studies of storms best explains the tornado intensity variations between TCT and TLT.

Enhancing Awareness and Understanding by Applying Perceptual Mapping and Public Participation GIS: Safe Routes to School

Thomas Justin Rice
Columbus State University

In fall 2010 Hannan Elementary School administrators saw fewer students walking and biking to school. Hannan plans to join the Safe Routes to Schools program. Our introductory GIS class developed a project to collect student-generated data to identify neighborhood problems that compromised safe routes. We collected, mapped, and analyzed data that could then be given back to the students of Hannan. I prepared the students a presentation on our findings that would be informative and engaging to their particular group. Beyond the goals of SRTS we wanted to educate the students and cultivate spatial awareness of the area surrounding their school.

High-end Automobile Sales in the Southeast (2009-2010)
South Carolina, Georgia and North Florida

Roy Riner and Jill Stackhouse
Georgia State University

Using established sales data from 2009 - 2010, the objective of this project is to produce a business analysis of high-end car model sales in the Southeast Region of the United States. This project has two primary objectives: (1) demonstrate that vehicle sales are determined by factors beyond proximity to the dealership given that they are classified as luxury cars and (2) map the spatial distribution of sales. In addition to past sales patterns, this project seeks to reveal potential target markets and to determine whether proximity to a dealership and advertising radius are factors in purchase decisions. The study targets automotive dealers such as Mercedes Benz, BMW, Porsche, and Audi. Our mapping techniques include a combination of thematic cartography and spatial analysis using buffers and proximity analysis in conjunction with advertising radius from the location of the dealership. Sources of the data are the United States Census and dealer sales and advertising statistics. This project seeks to provide an in-depth view of a market trends in high-end automobiles and factors affecting sales.

The Role of Hurricane Intensity and Track on Evacuation Decision Making of Pensacola, FL Residents

Meganne Rockman
University of Alabama

Over the past four decades there have been numerous studies on hurricane evacuation. Despite voluminous bodies of literature, few studies have offered suggestions on how to improve hurricane evacuation. In this research, residents of Pensacola, FL and surrounding areas will be surveyed to understand the mind-set of residents that occupy a hurricane prone area. A survey was created to understand variables that influence the respondent's decision to stay home or evacuate in the event of a hurricane making land fall near their home. Participants will be shown five different warning graphics of a hurricane, varying in speed and intensity. Respondents will be asked where they are evacuating to, if they choose to evacuate, and to highlight the route they would travel to get their destination for each scenario. Previous studies have found that some people choose to stay behind in life-threatening situations to avoid the inconveniences of evacuation. With this information, public officials may have a better understanding of how people perceive the threat of an incoming hurricane and inform evacuees of safe, efficient routes and destinations for the public to take in the event of an incoming storm.

Measuring Access to Recreational Facilities in Danville, Virginia

Lauren Sams,
Korine Kolivras,
Jennie Hill
Virginia Tech

This study uses an environmental justice framework to examine access to recreational facilities in Danville, Virginia. Studies have shown that communities of color and those of low socioeconomic status are at particular risk for obesity and obesity-related illness. Recreational facilities, if utilized, can offer opportunities for obesity-alleviating exercise. It is critical that people have access to these facilities in order to reap the benefits, however. An absence of accessible recreational facilities could prove to be a barrier to obesity-alleviating exercise for community members. We assessed overall access to recreational facilities for the inhabitants of Danville, Virginia using GIS map templates with layers dedicated to demographic and recreational facility data. To determine basic physical access, buffers were placed around the recreational facilities. The Physical Activity Resource Assessment Tool (PARA) was utilized to evaluate the condition of facilities. Preliminary findings suggest that census block groups with higher percentages of racial minorities and low-SES residents actually contain more free-for-use facilities than census block groups with white, higher SES residents. Availability of these resources does not necessarily translate to accessibility, however. Analysis of PARA data and additional survey questions will provide additional insight on the level of access the residents experience.

The Impact of the Housing Choice Voucher Program on the Anacostia Housing Market

Derrick Scott
University of Maryland, Columbus State University

From the time of the New Deal legislation in the 1930s the Federal government has provided some kind of housing relief for poor people. Today's program is the Housing Choice Voucher Program (HCVP), which subsidizes rents for poor people to live in places where rents would be above their economic means. Many low-income neighborhoods are undergoing gentrification. In these neighborhoods the new market value for rents is prohibitive for former residents, but they can remain in their neighborhoods with a subsidy through HCVP. Landlords are assured full rental market value while renting to low-income tenants. The residents of the Anacostia neighborhood in Washington, D.C. are predominately poor and African American and this neighborhood is undergoing gentrification. Using Anacostia as a case study, this paper shows how HCVP has increased and intensified gentrification and has decreased affordable housing for residents of poor neighborhoods.

A precipitation climatology for the Green River Watershed in Kentucky during 1979-2010

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The purpose of this study is to help predict the transport of pollutants through the Green River Watershed in west-central Kentucky, by conducting a warm-season (spring-summer) precipitation climatology for the period of record 1979-2010. Average rainfall amounts were derived from daily precipitation observations from 29 National Weather Service Cooperative weather stations, and atmospheric circulation types were derived from archived Daily Weather maps NCDC, NEXRAD reflectivity images, and surface METAR. The five different atmospheric circulation patterns (precipitation types) include *synoptic*, *wraparound*, *frontal*, *tropical*, and *other* (where *other* is subdivided into 3 air mass types *MT*, *MM*, and *MP*). Preliminary results show that mean basin warm season rainfall for the POR is 641.68 mm, with some years deviating $\geq 2 \sigma$ from POR normal. Years with large precipitation anomalies, suggest a possible linkage to ENSO. On average the basin receives most rain in the spring (358 mm), with the most precipitation during late April – mid May (150 mm). *Synoptic* events are most frequent and contribute 56% of the annual average precipitation, with *frontal* events contributing 21.1%, and *MT* contributing 11.2%. Average *synoptic* event precipitation was found to be statistically greater (95% confidence interval) than other events, except when compared to tropical events.

FORECLOSURE EFFECTS: THE CHANGING GREEN LANDSCAPE
IN POMPANO/DEERFIELD BEACH, FLORIDA

CINDY SHAW
FLORIDA ATLANTIC UNIVERSITY

The US subprime mortgage crisis was one of the first indicators of the 2007–2010 financial crisis, characterized by a rise in subprime mortgage delinquencies and foreclosures. Falling prices also resulted in 23% of U.S. homes worth less than the mortgage loan by September 2010, providing a financial incentive for borrowers to enter foreclosure. These factors, along with widespread job loss have contributed to a massive foreclosure rate in South Florida.

GIS analysis of infra-red aerial photography of Deerfield/Pompano Beach, Florida is performed using LiDAR data and the TNDVI algorithm. This reveals changes in the landscape, and shows lower TNDVI values for foreclosed properties than for those which have not been foreclosed; in other words, a reduction of green space, or browning of lawns and yards in foreclosed properties in afflicted neighborhoods.

Analysis of Meteorological Triggers of Mountain-Valley Breezes in the Sangre de Cristo Mountains of Colorado

Jessica Sipe, Christopher Gentry, Jeffery Kapke, Patrick Pierce, and Chianne Smith
Austin Peay State University

Mountain-valley breezes are winds that occur diurnally over regions that are characterized by significant topographic relief. During the day, slopes of a mountain will heat more quickly than the air at the same altitude above the valley. The cooler air above the valley begins to sink, while the air along the slopes become warm and start to flow upslope. At night, the surface of the mountain slopes begin to cool more rapidly than the air at the same height causing winds to flow down slope. For this research, two sites were selected in the Sangre de Cristo Mountains of South Central Colorado with the objectives of examining the relationship between meteorological variables and the movement of mountain-valley breezes. Data was collected at five minute intervals over five 24 hour day periods. Wind rose graphs were then created depicting the wind speed and wind direction for each site. Comparisons between temperature, pressure, and wind speeds were performed using linear regression models, however, no significant relationship between the variables were found. Mountain-valley breezes while dependent on the contrast of surface temperatures can be affected by many other variables, therefore additional time and exploration would be required to further examine this topic.

A comparison of the climatic drivers for radial growth between co-occurring ponderosa pine and Douglas-fir trees in the northern Rockies

Peter T. Soule, Appalachian State University and Paul A. Knapp, The University of North Carolina-Greensboro

We examined radial growth rates of co-occurring Douglas-fir (DF - *Pseudotsuga menziesii* var. *glauca*) and ponderosa pine (PP -- *Pinus ponderosa* var. *ponderosa*) trees growing within the USFS Region 1 of the Northern Rockies to determine if there are differential climate responses between these two species and whether these responses are consistent among multiple sites that are topographically and climatologically diverse. We collected samples and developed standardized tree-ring chronologies from five sites, with each site a matched pair of DF and PP. For each individual chronology we examined the climate response of radial growth by comparing the mean standardized ring widths to a suite of monthly, seasonal, and annual climatic variables. We examined temporal changes by comparing pre- and post-1950 growth rates and climatic conditions. A combination of spring/summer moisture conditions related positively to radial growth and the primary climatic drivers were consistent both between species and within the region. None of the climate variables identified as the primary growth drivers displayed long-term trends or differences between the pre- and post-1950 period. We conclude that any changes in radial growth rates of DF and PP are not being driven by concurrent changes in climate.

A Geographical Investigation of Auburn University Football Fans

Orion M. Stand-Gravois and Philip L. Chaney, Auburn University

In Auburn, AL, football, and especially college football, reigns supreme. Particularly, interest is placed on the Tigers, the team representing the local institution, Auburn University. This paper presents findings that are indicative of the spatial characteristics of Auburn's football fan region and their relationship with the team. Sources used to map Auburn's fan region included records of 2010 season ticket holders, Auburn booster club locations and membership figures, records regarding where Auburn played and how often, and an existing radio coverage map. The fans are predominantly found in Alabama and Georgia. Heavy concentrations are seen in the Atlanta, Auburn, Birmingham, Montgomery areas. Surveys of Auburn fans focused on socio-economic characteristics. The majority of those surveyed were Caucasian (88%), between ages 19-44 (81%), had currently or previously attended Auburn (71%), and had family members who had attended Auburn (69%). Fans commonly mentioned words like family, tradition, and atmosphere when describing why they liked Auburn Tigers football.

Investigating the Environmental Controls on the Distribution of the Rare Aquatic Plant
Hymenocallis coronaria at Multiple Scales

William J. Stangler
Department of Geography, University of South Carolina

Understanding why certain species occur where they do is one of the basic tenets of biogeography and landscape ecology and is crucial for the effective management of species of concern. This poster examines the environmental controls on the distribution of the rare aquatic plant *Hymenocallis coronaria* (rocky shoals spider lily) at multiple scales, from the broadest scale covering its entire range across South Carolina, Georgia and Alabama to the finest scale within individual stream channels. This work highlights the importance of geologic patterns, streamflow conditions and channel characteristics in shaping the distribution of this species. The poster concludes with a case study of the *H. coronaria* monitoring and restoration efforts taking place on the Broad River in Columbia, South Carolina.

Ethnic Diversity in Houston, Texas: The Evolution of Residential Segregation in the
Bayou City, 1990-2000

John B. Strait
Sam Houston State University

The increased racial and ethnic diversity in the United States has been shown to significantly alter the residential landscapes within urban areas. This research investigates the impacts that increased diversity has had on the levels of residential segregation among racial and/or ethnic groups in Houston, Texas from 1990 to 2000. Empirical analysis entailed the measurement of two dimensions of segregation evident among Non-Hispanic whites, African-Americans, Hispanics and Asians. Measures of residential exposure were decomposed in order to investigate the relative impacts of metropolitan-wide compositional change and intra-urban redistributive change on segregation among the four groups. During the 1990s, all non-white groups became increasingly segregated from whites and increasingly integrated with one another. Results suggest that both whites and Asians exhibited some degree of “ethnic (or racial) self-selectivity” that functioned to concentrate these groups residentially, although these forces were partially overwhelmed by other redistributive and compositional changes. The evidence further suggests that the degrees of segregation experienced among minorities were strongly impacted by the residential behavior of whites.

Age Composition and Population Change in the Outer Banks and Coastline Counties of North Carolina

Jamie L. Strickland and Phillip D. Goins
UNC Charlotte

Since the 1960s, the United States population located in coastal areas has grown at a faster rate than the country as a whole. Between 1960 and 2008, the population in coastline counties grew by 84.3%, compared to 69.6% for the United States as a whole and 64.3% for noncoastline counties (Wilson and Fischetti 2010). Although roughly 10% of the resident population of North Carolina lives along its coasts, the recent landfall of Hurricane Irene in August 2011, and its subsequent damage and loss of life, illustrates the importance of understanding the composition and dynamics of that population (Wilson and Fischetti 2010; Henderson 2011). The purpose of this poster is to examine age structure and concentration in the coastline counties of North Carolina, as well as a selection of Outer Banks communities.

Modeling cloud-to-ground lightning along an urban gradient

Ona Strikas, James B. Elsner
Florida State University

Though the meteorological phenomena of cloud-to-ground (CG) lightning is well studied, the spatial distribution of repeated storm events is less examined. This GIS-based study investigates the spatial variation of CG lightning from summer air-mass thunderstorms in northern and central Georgia. The dataset includes flashes from May-September 1995-2008, with spatial and temporal information. This study compares the flash frequency against Census tract population data; DEM topography; road density data; interstate density; impervious surface density; land cover; E-W grid number; and 1999 land-use data as explanatory variables. Where multicollinearity exists, only the most correlative explanatory variable is chosen. The analysis is repeated for 1 km², and 90 km² grids, with upcoming analysis for 4 km², 16 km², and 64 km². Pointwise correlation (G-function) provides evidence for clustering of lightning events using data over the entire period and for individual years. Results from the initial 90 km² grid indicates road density is a significant variable for all years ($p < .001$, $r^2 = .202$), as well as each summer's flash individually – except 1995 and 1997 ($p < 0.05$). The significance of the E-W grid number indicates including spatial autocorrelation will improve the regression model. This spatial variation of lightning demonstrates possible effects of urban development in storm electrification.

Monitoring the BP Oil Spill: The Application of UAVSAR

Leanne Sulewski
University of South Carolina

After approximately 84 days of leaking oil into the Gulf of Mexico, the source of the Deepwater Horizon oil spill was finally sealed on July 15th, 2010. Unfortunately, due to its potentially large spatial extent and inaccessibility of the marsh environment, mapping impacted areas is problematic. In such a case as this, remote sensing and geographic information systems technologies may provide a more holistic and accurate view of the extent and damages attributed to this oil spill. Though not without its limitations, synthetic aperture radar has become one of the most widely used remote sensing technologies in monitoring and detecting oil spills due to its ability to capture data in all-weather and night-time regimes over a large area. In this research we examined the changes two sets of NASA and JPL's Uninhabited Aerial Vehicle Synthetic Aperture Radar's imagery of part of the Louisiana coast impacted by the oil spill.

The Impact of Social Network Communication During the April 27, 2011 Tuscaloosa, Alabama Tornado

Courtney N. Thompson
University of Alabama

The evening of April 27th 2011 brought an EF-4 tornado that changed Tuscaloosa, AL and those that live there forever. Among the survivors were many members of the University of Alabama community. The majority of the UA community had experienced a tornado warning but had not experienced one of this strength. The tornado has provided an opportunity to assess the tornado hazard perception and warning communication amongst a diverse, high-density population. This research focuses on assessing the influence of social networks (Facebook and Twitter) on the dissemination of the tornado warning and post event communication within Tuscaloosa and within the University of Alabama (UA) campus community. Over 190 people were surveyed in person during the days following the tornado from the areas affected, while over 2,300 surveys were completed online by the UA community. With the uniqueness of this event, many individuals relied on Facebook and Twitter at all 3 stages of the event for weather and storm aftermath information. This type of media could potentially shape individual hazard perception and affect how weather information is disseminated.

Lake Tuscaloosa and the North River: An Analysis and Plans to Improve Water Quality,

Zachary Tyler
University of Alabama

Lake Tuscaloosa and the North River of Tuscaloosa, Alabama are on the Environmental Protection Agency's (EPA) 303 (d) list which is used to identify waterbodies that do not meet federal standards originally set with the Clean Water Act of 1972. The City of Tuscaloosa has set a goal to remove these waterbodies from the 303 (d) list. City and county officials are in the process of developing plans to achieve this goal. The objective of this research was to analyze past water quality and compare it to present water quality through statistical analysis. Data was used to identify influences of possible factors that may have contributed to the decrease in water quality, such as land use change. An evaluation of current plans for Lake Tuscaloosa and the North River, and plans other communities have used to improve water quality was completed. Understanding causes of poor water quality and ways to improve the quality of those water resources is vital knowledge for every community.

Civil Rights Movement in St. Augustine, Florida:
Using Web-Based and Three-Dimensional Mapping
for a Community Outreach Project

Austin Valk and Jill Stackhouse
Georgia State University

In the past five years, there has been considerable effort to educate the population about the civil rights movement in St. Augustine Florida. Its rich history and noted events in the past often go unnoticed by those who visit this historical city. The objective of this project is to assist the ACCORD Freedom Trail organization and Dr. David Nolan, a St. Augustine historian in bringing information about the historical civil rights movement in St. Augustine to the general public. Through the use of web-based applications and three-dimensional mapping techniques, we will use geographic information and advanced cartographic techniques to sufficiently represent the historical sites in St. Augustine Florida. This project will create a helpful representation of the city and the locations of the historical sites for tourists or anyone interested in the history of the civil rights movement.

American chestnut to red oak: A dendroecological study of forest succession in the Blue Ridge Mountains, North Carolina, USA

Saskia L. van de Gevel], Appalachian State University

Justin L. Hart, The University of Alabama

Mark D. Spond, Appalachian State University

Philip B. White, Appalachian State University

Megan N. Sutton, Mountains Stewardship Program Manager, The Nature Conservancy,
NC

Henri D. Grissino-Mayer, The University of Tennessee

The purpose of this study was to assess how tree species composition and age structure have changed as a consequence of chestnut blight, grazing, ice storms, and fire in an old-growth northern red oak forest on Bluff Mountain Preserve, NC. This research fills an important gap in our understanding of the historical ecology and climate response of red oak communities in the high elevations of the southern Appalachian Mountains. The Bluff Mountain chronology was anchored from 1671 to 2009, after crossdating remnant logs with old-growth northern red oak tree cores. Samples collected from living northern red oak on the Bluff Mountain Preserve indicate some of the trees are more than 250 years old. The northern red oaks responded climatically to cool March temperatures. We were surprised to find that the northern red oaks responded more significantly to temperature than precipitation or drought. Stand-wide release events corresponded to cessation of grazing around 1900, the loss of American chestnut in the 1930s, and to numerous ice storms between 1960 and 2009. The northern red oak forest is transitioning into a mixed mesophytic forest. Sugar maple will be the most dominant species in the next few decades. Sustainable forest management is recommended to reduce the density of sugar maple in the understory.

A Spatial-Temporal Analysis of Influenza Clusters in Florida
Ying Wang
University of Florida

To minimize morbidity and mortality of influenza through prevention and control measures, it is imperative for us to know how to detect influenza clusters and analyze risk factors for the spread of influenza. For many existing disease surveillance systems, however, daily analyses of population-at-risk information such as hospital emergency department visits or pharmacy sales are unavailable. Due to the aforementioned limitation, this study aims to adopt the number of influenza cases only to complete cluster detections through scan statistics. People affected by influenza in 67 counties in the state of Florida from the year 1998 to 2008 will be included. Using space-time influenza data, several high risk clusters are identified, and factors that contribute to influenza spread are also examined. Through multiple regression analysis, factors such as density of students (aged between 5 and 17), school density and AADT density are found to have significant impact on influenza clusters.

Multidecadal Warm-Season Drought Variability in the Southeastern U.S.A.:
Regionalization and Identification of Low-Frequency Ocean-Atmosphere Influences.

Ashley Weatherall, University of West Florida
Jason Ortegren, University of West Florida

From the 44 state climate divisions comprising the Southeastern U.S., we identified three distinct subregions of homogeneous summer drought variability using Factor Analysis with a Principal Components model. The drought metric was the Palmer Hydrological Drought Index (PHDI) for the period 1895-2008. We labeled the subregions the Southeast Atlantic Coastal States (SEACS), the Eastern Gulf South (EGS), and Florida (FL). Each subregion exhibited multidecadal variability in summer moisture conditions during the observed period. Low-frequency moisture variability in the SEACS is significantly associated with specific ocean-atmosphere oscillations including the Atlantic Multidecadal Oscillation (AMO) and the North Atlantic Subtropical Anticyclone. Neither the EGS nor FL drought variability is significantly ($p = .10$) associated with the climate indexes in this study. This indicates that known relationships between summer drought variability in the Southeastern U.S. and climate indexes are strongly reflected in the SEACS, with weaker and often insignificant signals in the EGS and FL. The results may be useful to water resources managers in the Southeast and may help in drought forecasting and preparedness in a region that suffers from even short-lived summer droughts.

Food resources at the University of West Georgia

Jonathan Wells
University of West Georgia

In this study, I examine food options at the University of West Georgia. Freshman living on campus will be the main group of focus when examining food availability. Although the population served at the University of West Georgia may be low compared to other places, there are still many reasons to be concerned about food options. These include disadvantages associated with living a typical college lifestyle such as a potential lack of transportation, an inconsistent or full schedule, and lack of money availability, including ease at which funds can be drawn. These problems of college students will be compared with the geography of available food sources at and near the University of West Georgia.

Although eating on campus has advantages in availability and time management, it can become repetitive and stressful, not to mention costly. Many students do not have time to cook full meals, so on campus eating is beneficial, but also gives no chance for a break from the college campus. When the stress of living somewhere new combines with the workload that comes with courses, a break from school can have benefits to college students. Being on campus all day can in plain terms, get old.

Although eating on campus can be repetitive, many students will simply have to for financial reasons. There are many ways that people, including college students receive money. Consider a poor college student that as a freshman on campus does not receive any aid from family, did not qualify for any grants and only received enough refund money to pay for his books for that semester. This student likely has no options but campus life the rest of the semester.

College takes a lot of time. A full time student spends anywhere from twelve to eighteen hours a week in classes and also spends time studying. That is another reason many college students, especially freshman college students, rarely leave campus for a relaxing meal. For most students, grabbing a quick bite on campus, although not satisfying or relaxing, is the fastest, most efficient way to consume well needed calories. A busy schedule also affects the ease at which they can access certain services. For example, a student may need to run errands, but by the time they get done going to class and reviewing material, the service they needed to use has closed, and so has the on campus food resources.

Transportation can become an issue for students living on campus who cannot obtain a vehicle. Having to bum rides from people or sit at home can be a stressful part of college living. Assuming that a student does not have access to daily transportation, food options off campus become very slim. A handful of restaurants exist within walking distance of the University of West Georgia campus, and out of those, only a couple of them have healthy food options available. It is challenging to cook because of food storage deficits. This leaves students who have limited transportation confined to eating at a select few locations, and only during particular hours of a twenty-four hour day.

Eating a well-balanced diet can be challenging for full time college attendants. College students in particular tend to be limited by loss in transportation, lack of resources, and busy schedules. Food resources create problems associated with ease of access and hours of operation. These problems associated with on campus living can best be recognized by comparing the food needs of students and the geography of the campus in which they live.

A Stitch in Time: National Civil War Quilt Trail
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In Today's world, quilts are typically made for decoration purposes; however, during the Civil War era quilts were used as military supplies, comfort items, and signals for the Underground Railroad. The Stewart County Arts and Heritage council is bringing back the historic past of Civil War quilts. The council has been painting quilt patterns on square art boards and hanging them on the sides of buildings across Stewart County. After learning about the council's work, we offered to fulfill their GIS needs and map their Civil War quilt trail. Using ArcGIS software, our group created a map containing quilt location points and four quilt trail loops. The map, a brochure, and a video of the quilt patterns' histories will be located in multiple visitor centers in Stewart County. Using data created during this project, we will place an online Google Earth map on the Stewart County Library website. We will present the map and brochure of the National Civil War Quilt Trail at the 150th Anniversary of the Civil War at Fort Donelson in February 2012.

Campus Sustainability at the University of West Georgia

Caelia Wysocki
University of West Georgia

Campus sustainability has become an important issue facing today's universities. Campuses can have serious impacts on the environment because of their large size and population. Many universities have taken measures to be sustainable in order to reduce their impact on the environment. In this project ongoing sustainability practices at the University of West Georgia are investigated. The food services provided on campus have become more concerned with sustainability. The recycling program has also grown substantially over the past few years. Instead of throwing away recyclables students now have the option to recycle them. In this project the information gathered from campus sources on sustainability was assessed and mapped. A campus green map shows all locations where green efforts are taking place. From recycling to rain gardens, the map shows students where they can take part in campus sustainability.

Exploring Gender Relations and Pest Management in the Brong-Ahafo Region of Ghana

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The purpose of this research was to explore gender relations in the Brong-Ahafo region of Ghana to identify gender-based constraints and opportunities for Integrated Pest Management (IPM) interventions in the country using participatory mapping and other techniques.

Data was collected through eight focus group discussions, 30 household visits, field visits, participant observation, and interviews with key informants. Maps produced during the focus groups and household visits revealed that the three main sites in the “path of the pesticide” are the agrochemical store, the house, and the field. All respondents drew the path ending in the field, although interviews revealed that many farmers perceived the existence of pesticide residues on their tomatoes. Field visits and observations revealed the importance of the agrochemical store as a space for socialization and knowledge exchange among farmers, mostly men, as well as storage of the containers and sprayers used to apply and mix the pesticides in the bedroom, kitchen, or storage room with food or animals.