

Florida Society of Geographers

**Annual Meeting
January 23-25, 2009
St. Augustine, Florida**



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2009 FSG Meeting Schedule:

Friday 5:00-7:00

Registration

Lobby

Friday 7:00-10:00

Reception

TBA

	<u>Room I</u>	<u>Room II</u>
Saturday 8:00 – 10:00	Applications of GIS	Florida Demography
Saturday 10:30 – 12:30	Land Use Land Cover Change	Environment, Policy & Technology
Saturday 2:30 – 4:00 4:00-5:30	Climatology Posters	Political Geography Posters
Sunday 8:00 – 9:40	Florida Karst	Cultural Geography

Applications of GIS :

Chair: Bruce *Marti*:

Ursula A.B. **Garfield**: *Correlation of Stream Characteristics to Specific Stream Power: A Paired Basin Analysis of Rivers With and Without Mining Activity in Mississippi.*

Samantha **Krause**: *Mapping Material Culture – the Role of GIS in Meso-American Archaeology.*

Youliang **Qiu** and Peter Waylen: *Building Spatial Consensus Ontology Based on Integrated Geo-enabled Service Oriented Architecture.*

Keith **Yearwood**: *Downstream Effects of the Closure of the Sinclair Dam on Planform Change in the Oconee River.*

Environment, Policy and Technology:

Chair: Ron *Schultz*:

Sandra **Kling**: *Comparative Analysis of Greenhouse Gas Accounting Protocols in the United States.*

L. Lines, **R. Schultz**, M. Kuby and Z. Xie: *Hydrogen Fuel Cell Refueling Station Locations in Florida: Strategy and Optimization.*

Naimish **Upadhyay**: *Analysis of Green Building Policies of Florida Local Governments.*

Michael **Somerville**: *DDT Levels in Soils in Sprayed and Unsprayed Urban Areas of Southern Belize*

Alecia **Brantley**: *Analysis of the Death of Large Trees within the Sedudu Valley, Chobe National Park, Botswana.*

Climatology:

Chair: *Corene Matyas:*

Kevin D. **Ash** and Corene J. Matyas: *Tropical Cyclone Formation and Landfall Probabilities for the Southwest Indian Ocean Basin.*

Mario **Cartaya**: *Analyzing Convective Rainfall Locations in Relation to the Center of Hurricanes Katrina (2004) and Lili (2002) After Landfall.*

Anna **Szyniszewska**: *Understanding the Relationships between Monthly and Daily Rainfall Totals: A Case Study of Central and NE Thailand.*

Peter **Waylen**, Kwadwo Owusu and Youliang Qiu: *Spatial Extent of Intra-annual, Interannual and Inter-decadal Variability in the West African Rainy Season.*

Corene J. **Matyas** and Andrew M. Carleton: *Associations between Convective Rainfall and Land Surface Conditions in the U.S. Midwest.*

Florida Demography:

Chair: *William Stronge:*

John W. **Mcewen**: *An Examination of Election Results Anomalies in the Bible Belt in Florida.*

Fan **Li**: *Surface Modeling of Population Distribution Using Parcel Data.*

William B. **Stronge**: *Retirees as Economic Pioneers, a History of Retirement in Florida.*

Alberto **Nieto**: *From Nowhere to Nowhere: Can GIS Help the JTA Skyway go Somewhere?*

Kris **Bezdecny**: *A Tale of Two Oranges: A Comparative Sociopolitical Geography.*

Land Use Land Cover Change:

Chair: *Charles Roberts:*

Sam **Schramski**: *No Two Ovens are the same: Charcoal Production and Land Use/Land Cover Change in Calakmul, Mexico*

Alisa **Coffin**: *Road Networks and Landscape Fragmentation in the Santa Fe River Watershed of North Central Florida from 1975 to 2005.*

Charles **Roberts**: *Mapping Boca Raton with Historical Satellite Imagery.*

Jaclyn **Hall**: *The Spectral Signature of Forest Disturbance.*

Jane **Southworth**, Stephen Perz, Youliang Qiu, Matt Marsik, Karla Rocha and Forrest Stevens: *Roads, Rates of Change and Linking Patterns to Process: Infrastructure Change and Resilience in a Social-Ecological Systems: The Case of Southwestern Amazonia.*

Political Geography:

Chair: *Betty Smith:*

Petr **Rumpel**: *The role of “soft factors” in the restructuring and Development of Old Industrial areas of the Czech Republic.*

Nicholas **Campiz**: *The Political and Economic Arrangement of Islands Jurisdictions: Newfoundland and the Faroe Islands.*

Julie **Mura**: *Accessibility of Geospatial Technologies in Post-Soviet Space: Deficiencies in South Ossetia.*

Betty E. **Smith**: *Land Use Planning on San Cristobal Island, Ecuador.*

Abe **Goldman**, Joel Hartter, and Amy Panikowski: *Historic Narrative and Demographic Trajectory around a Forest Park in East Africa.*

Florida Karst:

Chair: *Robert Brinkmann:*

Philip **Reeder**, Grant Harley, Jason Polk and Philip van Beynen. *Terrestrial Cave Management Priority, Sensitivity, and Disturbance: A Case Study from West-Central Florida.*

Jason S. **Polk** and Philip E. van Beynen. *A High-Resolution Speleothem Record from Florida of Atmospheric Teleconnections Since 1,500 Years Ago.*

Leslie A. **North**, Philip E. van Beynen, and Mario Parise: *Interregional Comparison of Karst Disturbance: West-Central Florida and Southeast Italy.*

Robert **Brinkmann**: *Sustainability Approaches in Subtropical and Tropical Karst Landscapes.*

Cultural Geography:

Chair: *Nigel Smith:*

Joe **Bryant** and Heidi Lannon: *Mental Mapping and Gender Peculiarities.*

Caitlin **Finlayson**: *Traditional Sacred Sites of Oahu, Hawaii.*

Joshua **Birky**: *The Modern Community Garden Movement in the United States: Its Roots, Current Condition and Prospects for the Future.*

Brad **Huff**: *Land Use Restrictiveness and Religious Affiliations.*

Nigel **Smith**: *Cinderella Fruits of the Amazon*

Tropical Cyclone Formation and Landfall Probabilities for the Southwest Indian Ocean Basin.

Kevin D. Ash and Corene J. Matyas
Department of Geography
University of Florida

Tropical cyclones (TCs) present a significant threat to lives and infrastructure around the globe for nations within or adjacent to tropical ocean basins. Many of the TC prone nations in the Southwest Indian Ocean (SWIO) region lack sufficient resources to provide early warnings for TCs, enforce strict building codes, carry out mass evacuations, or mobilize aid in a storm's wake. A better understanding of TC formation and movement patterns in the SWIO is therefore important in the process of improving TC risk mitigation strategies in both southeastern Africa and the islands of the SWIO. This study utilizes the JTWC (Joint Typhoon Warning Center) tropical cyclone best track database from 1945-2007 for the Southern Indian Ocean west of 90°E longitude. Using ArcGIS, probabilities are derived in a five degree by five degree grid west of 90E for TC formation in each respective grid in a given year. In addition, the GIS is used to derive landfall frequencies for the nations of the SWIO. Near-miss probabilities are likewise determined out to 100 and 200 km to better represent the frequency with which the SWIO nations are affected, even peripherally, by TCs.

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A Tale of Two Oranges: A Comparative Sociopolitical Geography.

Kris Bezdecny

Department of Geography

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and ESRI, Redlands, CA

Orange County, Florida is best known around the globe as the home to Walt Disney World. This vision began, however, in its counterpart, Disneyland, located in Orange County, California. This paper compares the historical and contemporary sociopolitical landscapes of the two Oranges, and how these landscapes led to complementary development at opposite ends of the U.S. The many differences between the development of the two tourist sinks will be explored, as will the implications the subsequent tourist development has had on their respective regions, particularly as it relates to the sociopolitical tensions existing in both. Finally, the role that tourism plays in highlighting the tension between global and local processes will be examined from the perspective of these two cases.

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**The Modern Community Garden Movement in the United States: Its Roots,
Current Condition and Prospects for the Future.**

Joshua **Birky**

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Researchers have shown that community gardens have the potential to eliminate numerous problems that many in the United States and the rest of the world are facing. Yet, throughout history community gardens have been seen as improper elements of urban landscapes and used predominately for crises mitigations and not as sustainable solutions. Recent shifts in societal views, however, would indicate that the United States is currently resting on a delicate fulcrum between the typical separation of rural and urban elements and the more progressive view that would utilize community gardens as a vital part of a new style of urban design.

In order to see if the moods and motives concerning community gardens have changed a study of the history of European allotment gardens and U.S. community gardens are discussed and used (in combination with current data and research) to indicate patterns and trends concerning the role of gardens in the urban realm. The historical trends are validated by multiple histories of U.S. and European urban planning and environmentalism while the present events and patterns are validated by modern proceedings and by data collection (surveys and interviews) that reveal many aspects of society's current interaction with community gardens.

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Analysis of the Death of Large Trees within the Sedudu Valley, Chobe National Park, Botswana.

Alecia **Brantley**

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The Chobe National Park in Northern Botswana harbors a significant elephant population that is suspected to play a major role in vegetation change within the park. The Sedudu Valley, located within the park between the Sedudu entrance gate and the Chobe River,

shows a noticeable change in vegetation in the form of an overwhelming number of large, dead trees. There are several controls on vegetation which may be responsible for the death of these trees including; fire, flood or drought, soil salinity, insect damage, elephant damage, and the death of even aged stands. To analyze why so many large trees are dead in Sedudu Valley, trees of 8 meters or higher were sampled for the following attributes: DBH, species, GPS coordinates, percent of green vegetation in crown, elephant damage to bark, elephant damage to branches, fire damage, elevation, and whether trees were dead or alive. A spatial analysis was completed to verify whether the spatial pattern shown in the Sedudu Valley matches any of the patterns which are commonly associated with the aforementioned controls on vegetation. The data indicate that the most likely control on vegetation within the Sedudu Valley is the over-utilization of trees by elephants.

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Sustainability Approaches in Subtropical and Tropical Karst Landscapes.

Robert **Brinkmann**

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University of South Florida

In the last several years, international organizations, nations, local governments, non-profits, and businesses have developed distinct approaches to benchmarking sustainability within their groups. Matrices that include data about greenhouse gas emissions, energy and water use, transportation, and a variety of other factors, help to measure how sustainable an organization is relative to another or how a particular enterprise, such as construction, ranks within sustainability measures. However, most approaches do not take into consideration local natural conditions including climates, ecosystems, or landform types. Yet such local conditions influence the range of choices available to organizations seeking to enhance sustainability efforts. This is especially true in karst landscapes, particularly those in tropical and subtropical settings, where issues of ground stability, carbon cycling, and water supply and storage influence sustainability approaches. In this paper, a review of how organizations in Florida have developed innovative approaches to sustainability while considering the natural karst systems is presented. It is evident that Florida's approaches can serve as models for similar environments

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Mental Mapping and Gender Peculiarities

Joe **Bryant** and Heidi Lannon

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Gender variations in spatial abilities have been the subject of amusement in the media, and Ferber (2008) found that female chimpanzees are more adept at noticing and remembering their surroundings. Palermo et al. (2008) noted variations in gender-related

abilities, and Waterman and Gordon (1984) concluded female mental maps contained more inaccuracies.

Mental maps were prepared by students at Santa Fe College, depicting either their route to Santa Fe, or the trips they took in the last week. As anticipated by Lynch (1960) paths and landmarks dominate the maps. The majority of maps contained road references, and common landmarks included grocery stores, traffic signals, gas stations and banks. More familiar areas, such as the origin and destination were depicted in greater detail (Clump, 2005, Pinheiro, 1998). The 65 sample maps were separated by author gender and the maps revealed that males used more color, and were more likely to use 3 dimensional art to depict landmarks. Females chose the weekly trip map option more than the route, and oriented their paper in a portrait direction (north south) more frequently. The most surprising result was that males were more than 6 times more likely to put compass directions on their maps.

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The Political and Economic Arrangement of Islands Jurisdictions: Newfoundland and the Faroe Islands.

Nicholas Campiz

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In the 1990s, the cod fishery collapsed across the North Atlantic, sending economies reliant on the fishery into deep recessions. This paper will look at the differing political responses to the economic recession and recovery of two island provinces: Newfoundland and Labrador, a province of Canada, and the Faroe Islands, a highly autonomous province of Denmark. Entering the recession, both provinces were on different developmental trajectories and narratives with Newfoundland attempting closer integration into the Canadian federation, while the Faroes were working towards sovereignty and independence. Using prior literature, media accounts, and fieldwork in both provinces, an argument will be made that the recession derailed both narratives and sent the provinces towards an increasingly prevalent political setup seen in island jurisdictions: one of high autonomy, but with a continued connection with a metropole. Thus, the differing starting political arrangements entering the recession led to two different political responses from the provinces as they emerged and even to today. The final part of the paper will explore how this move to an autonomous setup not only affects the island and its relationship with the metropole, but internal affairs of the metropole, as well its external affairs on the regional and global levels.

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**Analyzing Convective Rainfall Locations in Relation to the Center of
Hurricanes Katrina (2004) and Lili (2002) After Landfall**

Mario Cartaya

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Tropical cyclones pose a significant threat to those living in coastal regions in the southeast U.S. due to high wind speeds, storm surges, tornadoes and freshwater flooding. It can be argued that of these threats, freshwater flooding resulting from convective rainfall poses the most significant threat because it can not only endanger those living near the coast, but those miles inland over a long period of time. It is hypothesized that as North Atlantic tropical cyclones intensify over water, convective rainfall tends to concentrate around the center of circulation. Analysis of Hurricanes Katrina and Lili indicate that as tropical cyclones weaken over land, convective rain bands tend to expand away from the center of circulation, endangering those many miles from the storm track. Results from this research can be applied to create improved evacuation routes and flood warnings.

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**Road Networks and Landscape Fragmentation in the Santa Fe River Watershed of
North Central Florida from 1975 to 2005.**

Alisa Coffin

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University of Florida.

Roads are known to have numerous ecological effects. It is postulated that networks of roads have cumulative ecological effects that are unaccounted for in the analysis of single road effects. Common ways researchers account for road networks include the calculation of road density or distance to road metrics. Transportation network analysis provides an alternative, quantitative measure of road networks that also provides about the structure and function of the road network. Road networks in the Santa Fe River Watershed of north central Florida were studied using network analysis to understand how the network has changed from 1975 to 2005. This investigation was coupled with a parallel analysis of landscape fragmentation in the same region. As low-order rural roads were added to the network, the network expanded but the overall network connectivity decreased. The landscape became more fragmented as effective mesh size, a connectivity based measure of fragmentation decreased over time. While accessibility of the landscape increased over time, accessibility of the road network declined. The use of network analysis can provide additional information about how roads fragment landscapes and the dynamics of landscape change caused by road networks.

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Traditional Sacred Sites of Oahu, Hawaii

Caitlin **Finlayson**

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Although traditional Hawaiian religion is no longer practiced, numerous sacred sites, including *heiau*, remain on Hawaii's islands. Oahu, which is by far the most populous of Hawaii's islands, is home to several significant sacred sites which are also common attractions for visitors. However, cultural sites that are also tourist attractions do not always accurately reflect cultural beliefs and values. It is also important to remember that all sacred sites, traditional or modern, rely on various sources of funding for maintenance, and are subject to many outside pressures.

The object of this paper is to map the location of existing sacred sites of Oahu, Hawaii, primarily *heiau*, or ancient Hawaiian temples, using GIS software, analyze trends in site preservation, and determine which sites are most at risk for future development. It is expected that numerous factors will determine which sites have been preserved over time, including interest from visitors and proximity to scenic areas or other tourist sites.

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Correlation of Stream Characteristics to Specific Stream Power: A Paired Basin Analysis of Rivers With and Without Mining Activity in Mississippi

Ursula A.B. **Garfield**

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The purpose of this analysis is to compare river planform changes in two tributaries of the Leaf River: Bogue Homo River and Thompson Creek, MS to stream power. The measured changes in the river system were compared to stream power to determine if stream power is an important variable influencing change processes in human-impacted rivers. Change variables include change indices, lateral migration rates and change in point bar area.

Other factors likely had a greater influence on lateral migration and channel change, including geological and vegetative resistance. Changes were most pronounced in areas where severe human impacts caused headcuts near junctures of very disturbed tributaries, where large pits were prone to avulsion and capture, and where bare surfaces with minimal vegetative protection contributed excess sediment during higher flows.

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Historic Narrative and Demographic Trajectory around a Forest Park in East Africa

Abe Goldman¹, Joel Hartter², and Amy Panikowski¹

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The history of park conservation in Africa has been dominated by the experience of savanna parks in semiarid and subhumid environments. Expulsion, exclusion, and the imposition of external control have characterized the narrative depiction of these parks. Mid- and higher altitude forest parks, in contrast, are usually located in areas highly suitable for crop agriculture, and both their historic experience and subsequent evolution contrast with savanna parks. This paper examines the narrative history of settlement, land use, and demographic expansion around Kibale National Park in western Uganda and implications for conservation policy. The historic experience in this and other similar forest regions has mainly been one of frontier settlement and in-migration rather than expulsion and exclusion from an ancestral homeland, and enormous population growth has taken place around the park. Despite this, the ecological integrity of the park itself has been maintained, although the natural areas around the park have declined dramatically. The very large and growing human population around the park have both positive and negative implications for people's attitudes to the park as well as the park's sustainability over time. Demographic conditions also constrain future options for park management, although this also has positive and negative implications.

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The Spectral Signature of Forest Disturbance.

Jaclyn **Hall**

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Remote sensing of the environment depends on high quality field data that can be analyzed used to describe meaningful patterns in floristic and habitat data that can then be correlated to spectral reflectance data. In the montane rain forests of Tanzania, visual inspection of images, combined with expert knowledge of the ecosystems, reveals that image texture and low spectral reflectance may correlate with both disturbed forest areas, and with mature older growth forest. Dense humid forests are visually separated from drier forests because of lower reflectance values and texture. Is increased texture of the canopy the also cause of lower the reflectance values in disturbed and agroforests? Descriptions of canopy structure on the scale of 0.5 ha relates to the spectral signal and texture of the set of Landsat pixels that lie over the canopy location and an inverse relationship is described between canopy complexity and aspects of the spectral signature and reveals a U shaped relationship of several spectral bands and indices. Capturing the relationship between biological data and satellite spectral data will require an understanding of how canopy complexity affects energy reflectance. These results help reveal how spectral wave lengths are reflected and scattered by various canopy structures.

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Location Value Signature and Externalities in an Urban Environment.

Zhuojie **Huang** and Tim Fik
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A methodology is developed for the identification of real estate submarkets based on the concept of general substitutability in relation to location, amenities, structure, and various site and situation variables. We propose that each location within the urban system has a unique location value signature, and that signature reflects the nature of externalities that affect the selling price or market value of a housing unit. Furthermore, we expect that units within the same submarket but different geographical locations will be simultaneously affected by submarket forces that are both spatial and aspatial. It is, therefore, important that housing valuation models integrate strategies to account for both local and city-wide/submarket factors to more effectively explain variations in price or value. The modeling framework adopted in this paper will rely on Casetti's expansion method in the construction of a hedonic model that is sensitized to both local and city-wide factors.

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Land Use Restrictiveness and Religious Affiliations .

Brad **Huff**

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Land is one of the most fundamental linkages in life. What an owner does with owned land impacts not only the owner, but also the neighbors, communities, and future generations. To mitigate the potential adverse impacts and promote potential synergy of positive impacts of various land uses on one another government exercises its police powers to establish and enforce land use regulations. Jurisdictions draw from a buffet of regulatory options to restrict private and public land use. In this study, land use restrictiveness is a measure of how many of these regulatory options are employed by a jurisdiction. Since land use restrictiveness is not uniform across jurisdictions, reading these studies begs the question, what influences the degree of restrictiveness exercised in land use regulation? Over the past 30 years there has been a growing sensitivity to land stewardship issues in various religious traditions. This paper involves the initial exploration of potential linkage between land use restrictiveness and religious affiliation. The author expects to find that holding steady for various demographic considerations various religious traditions are correlated with land use restrictiveness, some by supporting more restrictive and others by supporting less restrictive packages of regulations.

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Comparative Analysis of Greenhouse Gas Accounting Protocols in the United States.

Sandra Kling

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Guidance for quantifying greenhouse gas emissions and reductions emerged in the 1990s to provide methodologies for countries reporting to the United Nations Framework Convention on Climate Change under the Kyoto Protocol. In the United States, no standardized guidance exists for state and local governments or for organizations (e.g., universities, corporations, land managers, and carbon offset providers). As a result, a number of protocols and methodologies have been developed for participants in voluntary climate change programs and for entities wanting to understand their carbon footprint. This paper will provide a comprehensive summary of United States climate change programs and greenhouse gas accounting protocols; a discussion of key similarities and differences between them; and strategies for quantifying and reporting greenhouse gas emissions in preparation for pending climate change policy in the United States.

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Mapping Material Culture -the Role of GIS in Mesoamerican Archaeology

Samantha Krause

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Although many distinct civilizations were formed in the Americas during Pre-Columbian times, it is a great oversight to assume that these cultures did not interact. An often overlooked topic is that of cultural and material trade between the Formative Maya of Central America and the pre-Inka cultures of coastal Ecuador and Peru. In his paper entitled “Archeological Linkages with North and South America at La Victoria, Guatemala”, Coe describes a Formative Maya site that shares many artifact similarities with Ecuadorian coastal sites from the same time period. This is just one example of many instances of cultural contact between early “Nuclear American” civilizations.

GIS is often used by various scientific disciplines, including archaeology, as a powerful analytical tool. Archaeologists have begun to utilize this powerful tool to synthesize and display data from various sites. The purpose of this research is to evaluate qualitative and quantitative data collected at various pre-Columbian sites in South and Central America and to demonstrate the ways in which GIS mapping can be used to illustrate multi-site management and to aid in predictive modeling in regards to mapping trade routes and movement throughout the pre-Columbian world.

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Surface Modeling of Population Distribution Using Parcel Data

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The importance of spatial population distribution to understand human-environment interactions has been widely recognized. Studying population distribution using census data suffers from problems of spatial aggregation and temporal comparability in large area. In many applications, methods for modeling population distribution in small-area level with fine resolution are needed. This paper describes a GIS-based method to better model and analyzes population distribution using parcel data to provide gridded population data in Alachua county of Florida. Depending on an assumption that residential parcels in the same block group have the same population density, residential parcel data is overlay with block group census data and population is allocated to each residential parcel; and then a 200*200 square meter vector grid is overlaid and population of all resident parcels in a grid are assigned to each grid to generate population surface model. Compared with the other population distribution estimation methods, this method not only provides the population distribution in smaller and more accurate unit than census data does, but also applies vector grid coordinate to describe spatial location more exact. The result of this research can be applied as a foundation for many applications including disease distribution, urban growth and transportation.

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Associations between Convective Rainfall and Land Surface Conditions in the U.S. Midwest.

Corene J. Matyas¹ and Andrew M. Carleton²

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²Department of Geography, and Earth and Environmental Systems Institute,
The Pennsylvania State University

Previous research has demonstrated that spatial heterogeneities in soil moisture and/or vegetation cover promote the development of convective clouds. We examine the intensity of convective precipitation for the Midwest U. S. Corn Belt in the summers of 1999 and 2000, which had contrasting synoptic circulation, atmospheric humidity and soil moisture conditions. For days when synoptic-scale atmospheric forcing is weak, we calculate a Convective Severity Index (CSI) based on radar reflectivity composite values. Our results suggest that boundaries between soil types and cropland and forest vegetation types in the western portion of the Corn Belt enhance the development of convective precipitation. In the eastern part of the Corn Belt, less convection occurs, but we find a positive correlation between the intensity of convection and soil moisture conditions. Our results also demonstrate that the CSI is a simple yet effective technique for identifying where deep convection occurs relative to lighter precipitation.

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An Examination of Election Results Anomalies in the Bible Belt in Florida.

John W. Mcewen,

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Florida State University

Over the past several decades, population surveys and analyses of Florida culture have shown that there are two regions of the state, one of which is known as the Bible Belt. The Bible Belt is considered a region in the panhandle of Florida whose southern boundary extends from the “inside corner” of Florida’s Gulf Coast, up to Northeast Florida near the Jacksonville area. This paper will look at the share of votes by major political party in the Bible Belt region of Florida. The Bible Belt region of Florida is a culturally conservative area of the state and largely votes Republican in presidential elections. While this is the case, there are anomalies where voters lean heavily Democratic. Using GIS as a tool for data analysis and visualization, this paper will examine differences between precincts which voted Democratic and the surrounding precincts which voted Republican in the 2000 presidential election. The results will shed light on local variances in party preference in the panhandle region of Florida known as the Bible Belt.

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Accessibility of Geospatial Technologies in Post-Soviet Space: Deficiencies in South Ossetia.

Julie Mura

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This paper attempts to address the significant challenges of accessibility of available data and geospatial technologies in Post-Soviet space. Particular deficiencies are highlighted in the Caucasus Region and the statelet of South Ossetia. The region of South Ossetia is among multiple post-Soviet statelets facing territorial conflict coupled with issues of autonomy. The post-Soviet statelets are also among conflict regions which exemplify the lacking end of the spectrum in academic and agency-oriented access to geographic information systems, satellite imagery, and remote sensing. The contention of this paper is to examine reports of satellite imagery which was acquired by the Science and Human Rights Program of the American Association for the Advancement of Science (AAAS) to assess recent conflict in South Ossetia in an effort to correlate ground accounts gathered by Amnesty International (AI). The wider scope of this analysis points to the lack of accessibility to geospatial technologies within the entirety of post-Soviet space and the correlation of vulnerability to conflict. The direction and analysis of the scope of this research lends to the rhetoric of the Association of American Geographers and their ensuing efforts towards an AAAS Geospatial Technologies and Human Rights project.

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From Nowhere to Nowhere: Can GIS Help the JTA Skyway go Somewhere?

Alberto Nieto

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The city of Jacksonville, FL currently exemplifies a problem in U.S. tendencies for urban and transportation planning. The city's dependency on the automobile and roadways for transportation have created numerous problems for the city's future. Pollution, traffic congestion, urban sprawl, overextended services, and a weak downtown area are just some of the many problems the city currently faces. The main ingredient that the city lacks is an efficient mass transit system to help connect residential areas with commercial districts and sites of interest throughout the city.

The current JTA Skyway Transit System in Jacksonville was developed to alleviate this problem, but misplaced stations and routes that service a low proportion of users have made the program a failure in the eyes of many residents. The program currently runs at a loss and many residents suggest the JTA Skyway takes people "from nowhere to nowhere". A proposal is then suggested that the current system be expanded to include a larger service area with new stations and routes using GIS analysis. Instead of letting the program slowly decay, additional routes and stations would use the existing infrastructure and technology to implement a successful mass transit system in Jacksonville.
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Interregional Comparison of Karst Disturbance: West-Central Florida and Southeast Italy.

Leslie A. North¹, Philip E. van Beynen¹, and Mario Parise²

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The karst disturbance index (KDI) consists of 30 environmental indicators contained within the five broad categories: geomorphology, hydrology, atmosphere, biota, and cultural. The purpose of this research is to apply the KDI to two distinct karst areas, West Florida, and Apulia, Italy. Through its application, the utility of the index can be validated and important comparisons can be made, such as differences in the karst legislations implemented in each region and effect of time exposure to human occupation to karst terrains. West-central Florida is more populated than southeast Italy also establishing differences in the scale of human occupation between the two studied areas. These differences allowed for the determination of whether length of human occupation or population density is most influential in the anthropogenic destruction of karst terrains. Italian karst is more diverse than the karst found in west-central Florida, aiding in the evaluation of the applicability of each KDI indicator through the application of the index in distinctly different karst terrains. Overall, major impacts for southeast Italy include

quarrying, stone clearing, and the dumping of refuse into caves, while west-central Florida karst suffers most from the infilling of sinkholes, soil compaction, changes in the water table, and vegetation removal.

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A High-Resolution Speleothem Record from Florida of Atmospheric Teleconnections Since 1,500 Years Ago.

Jason S. **Polk** and Philip E. van Beynen
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Understanding atmospheric teleconnections between tropical, subtropical, and higher-latitude regions of the North Atlantic Ocean is necessary to better evaluate the anthropogenic contribution to climate change. Here, we present a precisely dated, high-resolution speleothem record of stable isotopes and trace elements from Florida spanning the last 1,500 years. By using a multi-proxy approach, the different climatic influences were detected, including the NAO, ENSO, PDO, and ITCZ, which all can affect our region. Further comparison using time-series analysis between our data and other high-resolution records covering this same period reveal differing influences of these teleconnections on geographic regions. Our record shows both the influence of changing rainfall above the cave where the speleothem was collected and the influence sea surface temperatures on atmospheric convection caused by atmospheric-oceanic variability over time.

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Building Spatial Consensus Ontology Based on Integrated Geo-enabled Service Oriented Architecture

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Different people have different conceptualizations of the world. GIS databases are always created independently of these conceptions, with different entities and attributes conveying different meanings. OpenGIS standards and solutions can only deal with the problem at the syntactic level while ontology-based solutions can deal with the problem in the semantic level. However, no universal or even well accepted spatial ontology yet exists, thus individual ontologies prevail and the ontology solution becomes unachievable. It is therefore essential to build a consensus spatial ontology to enable the sharing of semantically rich Geo-information. This paper describes a methodology by which information from disparate sources can be associated spatially, organized, and merged automatically without a global ontology. Any pair of spatial ontologies can be related indirectly through a spatial semantic bridge consisting of many other, previously unrelated, ontologies, even if vague and imprecise spatial information is included. An evaluation of the methodology has been developed and implemented into a website: Geolife.me, which is based on geo-enabled service oriented architecture.

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Terrestrial Cave Management Priority, Sensitivity, and Disturbance: A Case Study from West-Central Florida.

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Active cave management, which represents any continuous action to conserve, restore, or protect a cave environment, is virtually non-existent in west-central Florida. This study focuses on developing an inventory to rank terrestrial caves in west-central Florida by management priority. The inventory was applied to 36 terrestrial caves that demonstrated a wide range of sensitivity and disturbance. The results show that by relying solely on sensitivity and disturbance scores, management priority may not be accurately determined. Further examination revealed that ownership and management status also affect management priority. The management priority of caves in west-central Florida depends on a number of complicated, interwoven factors. Each cave must be individually examined for its sensitivity, disturbance, resources, management, and social and physical context in order to gain an understanding of management priority. The cave inventory system developed for this project was used to gain a general understanding of which caves should hold management priority, based on a cave manager's objectives. However, in order to ensure the conservation and protection of west-central Florida terrestrial caves, support from county or state government, combined with cave inventory data, is crucial in developing sound management policy.

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Mapping Boca Raton with Historical Satellite Imagery

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In February of 2009 the Landsat archive of historical satellite imagery will become available for downloading for free. To test the feasibility of creating a time series of urban growth, five Landsat scenes from 1973 to 2002 were acquired, and mapped using a simple textural classification. Each classification map was ground truthed with historical high resolution aerial photographs and an accuracy assessment was conducted. Three products were derived from the time series.

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The Role of “Soft Factors” in the Restructuring and Development of Old Industrial Regions of the Czech Republic.

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No Two Ovens are the same: Charcoal Production and Land Use/Land Cover Change in Calakmul, Mexico

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Natural hazards have the potential to shock socio-ecological systems, the most vulnerable of which can be found in the rural developing world. Populations in these environments face obstacles in overcoming droughts, fires, hurricanes and other extreme events. In one of Mexico's poorest and most densely forested regions—Campeche's Calakmul Municipality—the effects of natural hazards are acutely felt. Additionally, traditional swidden agriculture and attempts at wide scale access to the market have been flouted by a diverse set of actors. In August 2007, category 5 Hurricane Dean made landfall on the peninsula devastating subsistence agriculture, and leaving many farmers without viable livelihood strategies. Both prior to the hurricane and during its aftermath charcoal production surfaced in the area, the latter due to a relaxation of post-hurricane timber harvesting permits. Subsequent interviews immediately after the hurricane, and in the summer following, were had with households in two peasant communities to determine the effects of the hurricane upon livelihood. Results indicate that while many respondents did not acknowledge the hurricane as a driver of their production, their responses illustrate notable increases in production in the initial weeks and months following. The research speaks to possible shocks to a stable socio-ecological system, wherein farmers have quickly shifted from reliance upon traditional swidden agriculture, and conservation authorities have begun to focus their energies on a new livelihood linked to continual deforestation.

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Hydrogen Fuel Cell Refueling Station Locations in Florida: Strategy and Optimization.

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We review the outcome of our work on commercialization and location strategies for hydrogen refueling stations in Florida. We recommend the creation of a hydrogen fueled rental car fleet at the Orlando International Airport as a commercialization strategy for the public adoption of this new technology. In addition, we model the optimal location of refueling stations that would service this rental car fleet and the more general issue of station locations for all Florida adopters of hydrogen fueled vehicles.

This work was sponsored by the Florida Hydrogen Initiative and the U.S. Department of Energy.

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Land Use Planning on San Cristobal Island, Ecuador

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Visitors to the Galapagos Islands are often surprised to learn that human population has doubled since 1998 reaching an estimated 30,000 inhabitants. In 2007 the Galapagos Islands were added by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) to the list of thirty world heritage sites in danger. A large archipelago with many pristine ecosystems, the Galapagos Islands and surrounding marine reserves offer an opportunity and a planning challenge to scientists, concerned citizens, and government officials. This research examines the contributions and roles of various institutions to land use planning in the Galapagos Islands. Results of a July 2008 field survey are analyzed and a comparison made between the attitudes of tourists and residents regarding human impacts and solutions to land use planning problems on the island of San Cristobal in the Galapagos Province of Ecuador.

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Cinderella Fruits of the Amazon

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Tropical forests and associated disturbed habitats (successionary communities created by tree falls, landslides, shifting river channels, and clearing by people) are orders of magnitude richer in species than temperate woodlands and consequently have provided ample opportunities for plant domestication. Many crops domesticated in tropical forests are not only important sources of sustenance and income for locals but are also traded extensively in global markets. This is particularly so for the Amazon which has provided us with cacao, the source of chocolate, and now açai, a boom fruit with high levels of antioxidants. Tropical forests, including the Amazon, contain wild populations of many tropical crops, an important resource for further crop improvement because they are a reservoir for many valuable genes not found in the domesticated genepool. Tropical forests are also a cornucopia for new crops. Several hundred wild and domesticated fruits are consumed in the Amazon, and those that have reached national and international markets represent only the tip of an iceberg.

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DDT Levels in Soils in Sprayed and Unsprayed Urban Areas of Southern Belize

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Dichlorodiphenyltrichloroethane (DDT) has been sprayed extensively in Belize to combat malaria and other mosquito-borne illnesses. To determine the possible effects on the environment and human health forty-six soil samples were collected from two towns. DDT concentrations, pH, particle size, and organic matter content were determined using standard USDA and EPA procedures. Statistical analyses performed on the data indicate a strong correlation between DDT levels and the sprayed and unsprayed areas within each town, while no significant differences were found in the DDT levels between the two towns. No effect was observed between DDT concentrations and house types indicating that the different kinds of houses were negligible in altering DDT levels in the soils. While pH and organic matter content showed no significant relationship to the observed DDT concentrations for the two towns, there was a marked correlation between the DDT levels and particle size, particularly silt and clay. DDT levels for most of the sprayed areas were elevated. Comparison with the FAO/WHO 2000 provisional tolerable daily intake (PTDI) of 0.01 mg/kg for DDT suggests that this pesticide, particularly in the sprayed areas of the two towns, may be of health concern.

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Roads, Rates of Change and Linking Patterns to Process: Infrastructure Change and Resilience in a Social-Ecological Systems: The Case of Southwestern Amazonia.

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New or newly paved roads and other infrastructure upgrades bring complex changes to regions, including ecological degradation, social conflict, and economic development. We approach this multidisciplinary topic by drawing on an interdisciplinary complex systems framework, but in a way that allows for empirical testing and evaluation. We focus on social-ecological systems as integrated wholes via the interface of infrastructure and land tenure institutions. We draw on the concept of resilience, a property of complex systems, and reformulate it in terms of system components, relationships, innovations and continuity, which affords a means of observing system properties relevant to the retention or loss of system identity. We also expand on the concept of connectivity to consider its importance not only as infrastructure linkages that bring external shocks from outside regions, but also as networks of local connections among social, institutional and ecological actors and processes. These ideas motivate specific expectations about connectivity and resilience, both at the scale of a social-ecological system and for specific components within a system. This presentation will focus on the land cover change patterns, which vary across the region, as a function of infrastructure changes over the last few decades.

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Retirees as Economic Pioneers, a History of Retirement in Florida.

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Between 1950 and 2000, the population of Florida grew from 2.8 million to 16 million. At the same time the share of Florida's population aged 65 and over rose from 8.6 percent, close to the national figure of 8.1 percent, to 17.3 percent which was far above the national figure of 11.3 percent. Although the expansion of the non-retired population was larger in terms of numbers, the economic impact of in-migrating retirees was greater because their spending was financed by dollars brought into the state and added directly to the economic base.

This paper discusses the factors that led to the influx of in-migrating retirees into the state, especially in the 1950s and during 1967-72. It also traces the impact of the in-migration on the economy, particularly on the industrial structure of earnings and the components of personal income. The impact of retirees on the structure of state and local government spending is also analyzed.

Although recently there has been a slowdown in retiree in-migration, there will be one more uptick in retiree in-migration as the large Baby Boom generation retires. However, incoming retiree cohorts will not necessarily settle in the same geographic areas as previous cohorts and this will impose adjustment costs on some of the older areas as they play host to younger and more diverse populations.

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Understanding the Relationships between Monthly and Daily Rainfall Totals: A Case Study of Central and NE Thailand.

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Daily rainfall attributes are crucial in the risk assessment of climate conditions that may have damaging effects upon agriculture. Although daily rainfall accessibility is frequently limited, monthly rainfall data are most abundant in space and time in Thailand. The daily rainfall totals in four provinces of Thailand (Lopburi, Chachengsao, Buriram and Sisaket) were analyzed in order to establish their relationship to rainfall monthly totals. The study area is characterized by high diversity of crops, thus there is no single criterion that can be set for what may constitute an agro-meteorological shock. Daily rainfall is modeled as a Markov process involving transitions from wet and dry days and the representation of daily rainfall totals, all of which are expected to vary seasonally and spatially. The Generalized Pareto Distribution, which parameters can be simply estimated from the mean and variance, represents the magnitudes of daily rainfalls. The relationship between the observed monthly rainfall total and the transition probabilities, mean and standard deviation of daily rainfall was examined. The probability expressions provide useful

information on climatic shock occurrence probability on the basis of widely available, monthly rainfall data.

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Analysis of Green Building Policies of Florida Local Governments.

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Sustainable construction is becoming popular due to an increased understanding of the ecological impacts of the built environment. Many State and Local Governments in U.S. have instituted policies that promote construction of green buildings. Local Governments in Florida are also incorporating similar policies as part of their overall sustainability efforts. Observations that green building policies in Florida have not been studied prompted me to undertake a state wide survey in order to address this void in environmental policy research. I propose to inventory policies that promote green building certification (or adoption of equivalent construction standards) by two popular certifying bodies – U.S. Green Building Council and Florida Green Building Coalition. The survey will be restricted to cities and counties that have been recognized for their sustainability efforts by either of these organizations. The research will be purely archival – data will be accessed from policy documents on government websites. Results will be presented as a spreadsheet where individual policies will be linked to corresponding green building feature that they intend to achieve. This research will provide a sense of what Florida Local Governments have done to promote sustainable construction and establish state wide benchmarks that could be useful for comparison purposes.

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Spatial Extent of Intra-annual, Interannual and Inter-decadal Variability in the West African Rainy Season.

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Seasonal patterns of rainfall are crucial in determining traditional agricultural practices in West Africa, an area almost exclusively dependent upon rainfed agriculture. The principle control on seasonal precipitation in this region stretching from Liberia to Nigeria, and from the Atlantic Ocean to about 15°N is the West African Monsoon. South of about 8°N this yields major and minor rainy seasons separated by a short dry spell, and a unimodal regime in the Sahelian region further north. This paper presents the results of analyses of monthly and seasonal rainfall totals from both historic records and gridded data sets, 1950-2000 over the area. The dramatic and well documented inter-decadal decline in annual rainfall in the north between 1950-1970 and 1980-2000, is apparent, but becomes less clear in the zone south of 8-10°N, which is characterized by a compensatory increase in rains during the short dry spell and losses during the minor rainy season. Although producing little marked change in annual rainfall, both of these seasonal changes have dramatic effects upon traditional agricultural practices.

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Downstream Effects of the Closure of the Sinclair Dam on Planform Change in the Oconee River.

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Dams modify the flow regime of streams by regulating stream flow discharge and significantly curtail sediment delivery downstream of the dams. Lateral migration of a river (called planform change) across its floodplain is related to bank erosion and deposition creating meanders and subsequent cutoffs. This propensity of a channel to shift is a measure of its stability. This paper uses sinuosity, proportional area change ratios and channel migration rates between time periods to determine stability. Eight decades (also called time steps) of aerial photographs from 1937 to 2005 are analyzed to measure spatial and temporal planform change before and after the dam. Spatial geometric techniques are used for comparative analysis of rates of change for different time periods both before and after the time when the dam was closed. Results show that planform changes vary with distance downstream of the dam, as well as through time. Overall there is greater stability of the river after completion of the dam yet this general trend does not hold true between time steps.

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Mapping Urban Growth in Boca Raton over a Thirty Year Period

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Urban growth is a growing issue in many countries globally. It has had both its positive and negative effects. It has led to a number of issues including: uncontrolled population growth, which has led in turn to loss of agricultural lands, and disruption of the ecological cycle. Therefore, monitoring urban growth is essential as this will aid in implementing appropriate measures to mitigate the negative effects of urban growth.

This poster shows the mapping of urban growth in Boca Raton, Florida over a period of thirty years, using textural analysis and tinted overlays over a 2004 Landsat TM image. The multi-temporal analysis utilized five Landsat images obtained from SE Florida between the years 1973 to 2002. The satellite images that are used in this study includes: 1973 MSS (Multi- spectral scanner), 1978 MSS, 1986 TM (Thematic Mapper), 1995 TM, and 2002 TM. Each time period have been color coded, giving an indication of each growth period and the extent of urban growth which occurred in each of these time periods. This will give the observers the ability to easily analyze the process of growth that occurred in Boca Raton during this specified time period.

Textural analysis is a technique that has become important in assessing landcover/landuse systems. Geographical Information Systems (GIS) and remote sensing provide the tools with which one can do this. Aerial photographs interpretation has been and continues to be the standard tool for the mapping and the interpretation of landuse/

landcover at detailed scale. Satellite imagery classification is based on the reflectance value of the imagery (C. Roberts 1992). More recently researchers have used textural features in combination with spectral information to carry out landcover mapping and have received positive results.

In this study, supervised classification was performed on all five images, to delineate urban and non-urban areas. The classification was performed in Erdas Imagine, after which they were imported into ArcMap where the urban areas were then separated from the non-urban areas. The urban areas for the various periods were then unioned together to determine the growth that had occurred between the various periods. Therefore, the growth periods are: 1973, 1973-1978, 1978-1988, 1988-1995 and 1995-2004. An appropriate transitional color ramp ranging from red to light yellow was selected to represent each growth periods. From these colored growth periods, the tinted overlays were created overlaying a 2004 Landsat TM imagery and having a transparency of 35%. The percentage of transparency was selected because it proved just appropriate that it would allow the observer to see the underlying urban areas underneath and not too transparent that the tinted colored overlays would not be easily detected. The research shows how well textural analysis works when it is used to detect, map and interpret landcover/landuse in various areas.

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The Application of the Active River Area Conservation Framework in 3 Watersheds in Florida

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Freshwater systems are among the most biologically diverse and rich systems in the world (Decamps, 1997; Master et al., 1998). Since this biodiversity is related to the dynamic nature of these systems, effective river conservation must take on a holistic approach that considers the protection of key physical and ecological processes throughout the watershed addressing aquatic and riparian habitats as well as associated upland habitats. In April 2008, scientists with the Eastern Resource Office of The Nature Conservancy presented a new conservation framework for systematically identifying portions of a watershed most critical to maintaining the essential functions of the associated active river system. This framework is referred to as the *active river area*. The active river area is spatially explicit and consists of 5 primary components namely, 1) material contribution zones, 2) meander belts, 3) floodplains, 4) terraces, and 5) riparian wetlands. Geospatial datasets such as digital elevation models (DEM) and stream line networks serve as inputs into the Geographic Information System (GIS) based active river area model. The model produces a network of spatially defined areas within a watershed necessary for natural processes and disturbance regimes to occur. The Florida Chapter of The Nature Conservancy implemented the active river area framework in 3 different watersheds in Florida – Nassau River, Choctawhatchee River, and Pensacola

Bay – and the results are presented in this map poster. The active river area presents a robust approach to the protection, management, and restoration of river and riparian ecosystems.

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Land Use, Deforestation, and Rural Livelihoods in the East Usambaras, Tanzania.

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The East Usambara Mountains in northeastern Tanzania are a region renowned for their high biodiversity. Increased rural commercialization of cardamom over the past few decades has led to rapid rates of deforestation and conversion to agricultural land. Deforestation is driven by multiple underlying factors that occur at multiple scales, ranging from the household level to the wider environment. This paper evaluates land-use systems from a socio-economic perspective in order to understand how opportunities and constraints operate at multiple scales and impact decision making at the household level. Forests provide private use values in addition to regional and global ecosystem services. Therefore, policies that integrate conservation and rural livelihood development require an understanding of local conditions. Two hundred household surveys reveal that significant variation exists between villages with respect to cardamom production and land use systems. Understanding the reasons for these differences is imperative in creating sustainable policies that fulfill multiple objectives of local and international stakeholders. Payments for Environmental Services (PES) and improved agroforestry systems are mechanisms to incentivize support for forests and biodiversity, but only in so far as these alternatives are competitive and perceived as opportunities by poor rural farmers. This study contributes to understanding the effects of diverse socioeconomic factors upon households.

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Detection of Drainage Infrastructure Weakness from Two Landfalling Tropical Cyclones in the Carter Creek Basin, Highlands County, Florida.

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Carter Creek drainage basin is located in the northeast corner of Highlands County Florida. This small drainage basin, which is approximately 90 km² in area, contains a small tributary of the Kissimmee River. During the 2004 North Atlantic hurricane season two storms, hurricanes Frances and Jeanne, passed just north of the basin. Both storms were rather intense, Francis a category 2 and Jeanne a category 3. The

landfalls of each storm occurred within a month of one another and thus had a profound effect on the landscape. This study examines the rainfall that occurred as a result of each storm and models flooding conditions within the basin. The research question asks how did Hurricanes Francis and Jeanne (2004) affect drainage infrastructure? Particularly, in what areas was flooding a factor? By illustrating the weaknesses in canals, monitoring stations and output locations the Southwest Florida Water Management District can better prepare for intense storms that will undoubtedly track through the area. This study combines ArcHydro, HEC-GeoHMS, and HEC-HMS to produce models of the basins hydrograph using radar data, SURGO soils data, and DEMs. Results show gauging stations and canals were inundated with rainfall during the tropical cyclones. Specifically, flooding occurred in low-lying areas just upstream of small canals or culverts, implying that drainage infrastructure is insufficient for large but predictable storms.

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Location Value Signature and Externalities in an Urban Environment

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A methodology is developed for the identification of real estate submarkets based on the concept of general substitutability in relation to location, amenities, structure, and various site and situation variables. We propose that each location within the urban system has a unique location value signature, and that signature reflects the nature of externalities that affect the selling price or market value of a housing unit. Furthermore, we expect that units within the same submarket but different geographical locations will be simultaneously affected by submarket forces that are both spatial and aspatial. It is, therefore, important that housing valuation models integrate strategies to account for both local and city-wide/submarket factors to more effectively explain variations in price or value. The modeling framework adopted in this paper will rely on Casetti's expansion method in the construction of a hedonic model that is sensitized to both local and city-wide factors.

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The Effect of the AMO on U.S. Landfalling Atlantic Hurricane Locations.

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This study will compare the landfall location for every hurricane that has made U.S. landfall between 1925 and 1994 to see if there is any correlation with the Atlantic Multidecadal Oscillation (AMO). The AMO is a tendency for hurricane seasons to have

above or below average activity for a few decades at a time, primarily caused by a shift in the Atlantic Ocean's sea surface temperature. A phase of below average activity stretched from 1965 to 1994, and the previous phase of above average activity occurred from 1925 to 1964. This study will compare the locations of U.S. landfalls for hurricanes at the county level during these two periods. The results will show if there is a difference in where hurricanes tend to make landfall in accordance with their AMO phase. This study could be useful for predicting which areas of the U.S. are more at risk during certain AMO phases. Furthermore, data from 1995 to 2008, a period of above average activity, will be analyzed to see if they support the findings from the first two phases.

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Mapping Greenspace – Impervious Area at the Lot Level using Digital Image Analysis Procedures

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This poster will demonstrate the feasibility of producing a report for each lot that documents the area of greenspace, the exact square footage that needs to be watered and fertilized, and the lots contribution to run off.

Utilizing a simple digital image analysis procedure, we are able to classify the urban lots into two categories, greenspace and runoff, calculate the area of each category and the percent of land cover that falls into each category.

This information would be useful to homeowners. They will be able to know how much fertilizer would be needed for their lawn. This information will also be useful to storm water managers. They will gain the knowledge of how much runoff, in square feet, comes from runoff from each individual lot as well as all total lots.

Images represent the study area which is the city of West Palm Beach, Florida as a raw images as well as a supervised parallel piped classification into two-categories: greenspace and impervious image. Next, in order to accurately assess the classification between the two categories of greenspace and impervious a 211 stratified random point sample was conducted. A classification accuracy report was produced. Other images will include an analysis of structure of the errors. Images with such errors as tree canopy falsely classified as impervious, grass incorrectly classified as impervious due to shadow effects, sidewalks and roads misclassified as greenspace, light colored rooftops mistakenly classified as greenspace, and automobiles also wrongly classified as greenspace.

Lastly, images for the city of West Palm Beach, Florida parcel and building data at the lot level with greenspace and impervious area will be shown. Steps taken as to how the exact square footage was calculated for the area of greenspace and the area of impervious at the lot level will also be included.

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Perceptions of Beach Nourishment at Pensacola Beach.

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To assess perceptions of beach users at Pensacola Beach, Florida, survey interviews were conducted in summer 2006. Based on a Likert scale of agreeability, Pensacola Beach users identified those characteristics of the beach most important to them, and described the importance of beach width, sand dunes and beach nourishment. Relationships between demographic information and responses to Likert-scale items were analyzed, as well as relationships between responses to Likert-scale items. It was found that respondents valued sand dunes more than beach width and approved of beach nourishment at Pensacola Beach as a means to address coastal erosion. However, respondents were less likely to say that they approved of the effectiveness of beach nourishment for protection of the island from hurricane-induced damage. Beach users also felt that beach nourishment was important to the economy of the beach, and identified some general problems they had with Pensacola Beach, such as litter and lack of parking.

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Flood, Magnitudes, Durations and Depths in Florida Rivers.

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Flooding is associated with many potential consequences to society, such as economic damage of floodplain infrastructure, but it also has many potential benefits including providing for spawning, nurseries and habitat for fish populations, and supporting and maintaining various types of biotic communities dependent upon wetlands and river-floodplain exchanges. Generally, floodplains are inundated by comparatively shallow depths and are occupied by rivers only a small percentage of the time (Wolman and Leopold 1957). However, rivers in the coastal plain of the southeastern USA can be subjected to frequent and prolonged flooding (e.g. Hupp 2000), although little analysis of this topic has been conducted. Using historic discharge and stage data from the USGS, coupled with flood stage data from NOAA, this paper examines the magnitude and duration of floodplain inundation of some moderate to larger rivers in Florida. Potential applications include developing reasonable expectations for floodplain evacuation and management, better understanding of biological drivers of healthy ecosystems and developing appropriate targets for river restoration.

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Assessment of Direct Hurricane Strikes for Oil Rig Locations along the Gulf Coast

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With the expiration of the offshore drilling ban, domestic oil production will be sought along the Florida Gulf coast. It is important to assess the risk for a direct hurricane strike along the Florida Gulf coast in order to determine the best possible locations to place oil rigs. We utilize a GIS to analyze the frequency of hurricane tracks going through a particular area along the Florida Gulf coast (Eastern Gulf coast) compared to the current region of domestic drilling along the Louisiana and Texas coast (Western Gulf coast). Areas highly susceptible to hurricanes are identified through a line density analysis within the GIS. In comparison to the Western Gulf Coast, the Eastern Gulf Coast was not as susceptible to landfalling hurricanes. The Eastern Gulf Coast would be at less risk of direct hurricane strikes than the Western Gulf Coast, which is the current location of oil rigs. The data collected showed a higher frequency of hurricane storm tracks through South Florida and the panhandle of Florida. Lower frequencies were shown to be near Tampa, FL and northward to the panhandle. These areas of low activity are better suited to having oil rigs positioned off shore.

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Fatal Florida Tornadoes from 1950 to 2007: A study of Time, Location and Tendency.

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Any tornado can turn deadly, especially when people are asleep or unaware of the current weather conditions. This study looks at the state of Florida and examines the correlation between the time of day and season when tornados touchdown, their location in the state, and their resulting fatalities. The data archived by NOAA's Storm Prediction Center from 1950 to 2007 suggests that a significant number of fatalities occur during the hours when people are unaware of severe or tornadic weather and thus more vulnerable due to their inability to prepare. NOAA weather radios are designed to notify the public by sending an alert that activates the device and announces local severe weather or tornado statements. This study, via data analysis and statistical testing, deduces that NOAA weather radios could enhance severe weather readiness and could reduce the number of fatalities resulting from severe weather and tornadoes if put into use when and where people are most susceptible.

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Mapping Automobile Space through Digital Image Analysis of DOQQs of Pompano Beach, Florida

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In a 1974 article in the *Geographic Review*, Ronald Horvath documented a methodology for mapping the proportion of urban areas devoted to the automobile. The technique was rarely or never utilized because of the labor-intensive methods for gathering field data and drafting maps with pen and ink. This project demonstrates the feasibility, comparatively low cost and accuracy of producing maps of automobile-dominated space in the urban context from digital orthophotos, utilizing digital image analysis procedures in a GIS environment. The resulting data layer consists of a raster map of Pompano Beach, Florida classified as either machine (automobile) space or human space.

The initial image used for processing is a 1999 color infrared DOQQ of Pompano Beach, quad 1801. This was imported into ERDAS Imagine and subset to encompass approximately 2 square miles of the northern part of the quad. The image was degraded by a factor of 2, so that further processing might eliminate sidewalks and footpaths.

Normalized Difference Vegetation Index (NDVI) was applied to the image, which was then density-sliced into two categories; vegetation and "other". Up to this point,

“other” includes water, roads, buildings, soil, and anything which has a low reflectance in the infrared band.

The resulting image was imported into Adobe Photoshop. With the assistance of Virtual Earth, ground truthing methods were used to remove all buildings and features which are not devoted to the automobile, leaving roadways, driveways, parking lots and commercial entities which provide auto services. Pompano Air Park, which in this case is considered to be air space, was assigned its own polygon in a third color.

The Pompano Beach subset was then imported into Arc Map, and rectified to the Broward County road shape file, in order to restore road area lost to shadow. The Broward County water shape file was also applied, and assigned a fourth color.

When this final image was reopened in Photoshop, there were now 4 colors representing air space, water space, people space and auto space. The accompanying histogram displayed 4 spikes, representing these 4 categories, how many rasters in each category, and total rasters. These numbers were then used to calculate total automobile space: water and air space rasters were subtracted from the total, leaving people and automobile space, from which a percentage could be derived.

The low cost and time required for deriving this type of data demonstrates the relative ease of facilitation to town planners, environmental entities and new urbanists in evaluating future plans for sustainable development of urban areas.

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A Study of Tropical Cyclone Genesis with Taiwan Landfall

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Tropical cyclones are the most costly and deadly natural disasters affecting much of the northwest Pacific Ocean basin. This study examines the locations of genesis of tropical cyclones that made landfall in Taiwan from 1950 to 2007. A spatial analysis of the tracks of the tropical cyclones was performed using ArcGIS. As previous researchers have found that shifts in storms tracks are related to the current state of the El Nino - Southern Oscillation (ENSO), the 58 years in the current study were separated into El Nino years, La Nina years and neutral years. The state of ENSO was identified by the Oceanic Nino Index (ONI), which is the running 3-month mean SST anomaly for the Nino 3.4 region (5°N-5°S, 120°-170°W). On average, 3 to 4 tropical cyclones make landfall over Taiwan per year. While the genesis locations shifted eastward during El Nino years, the number of tropical cyclones that made landfall in Taiwan is not significantly different between El Nino, La Nina, and neutral years at the 95% confidence level. This result suggests that despite the current state of ENSO, people living in Taiwan should be prepared for multiple tropical cyclone landfalls each year.

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