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ASSOCIATION OF AMERICAN GEOGRAPHERS

Department of Geography  
Michigan State University  
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ABSTRACT OF PAPERS AND POSTERS  
(alphabetical by presenter)

Aerts, Jessie. MDOT NMU

**Title:** Superior Region-Central Road and Trail Bicycling Guide

**Abstract:** The Superior Region-Central Road and Trail Bicycling Guide map offers an up-to-date route-planning tool for Michigan's cycling community. The map covers six counties (Alger, Dickinson, Delta, Marquette, Menominee, Schoolcraft) in Michigan's Upper Peninsula and was created in association with the Central Upper Peninsula Planning & Development Regional Commission (CUPPAD) and the Michigan Department of Transportation (MDOT). The map coverage is based on ten MDOT regions, this being one of the three maps covering the Upper Peninsula. In addition to cycle routes, the map also delineates features such as parks, amenities, scenic and historic areas, and an assortment of hiking, off-road recreational, and snowmobile trails. The motivation behind the map is to replace dated county-based bicycle maps and move the geospatial information into a GIS environment. They will be distributed to local business, welcome centers, chamber of commerce's, state parks, and interested individuals, all free of charge.

Aichele, Steve. U.S. Geological Survey

**Title:** Effects of urban land-use change on streamflow and water quality in Oakland County, Michigan, 1970-2003, as inferred from urban gradient and temporal analysis

**Abstract:** Various adverse hydrologic effects on streams have been attributed to urban development and expanded impervious surface area, including increased high flows, decreased low flows, increased variability, nutrient enrichment, and increased dissolved solids concentrations. These effects are often observed through the use of urban-gradient studies, which compare hydrologic characteristics among watersheds with different levels of development. This technique is frequently applied when comparable prior data are not available for the watersheds of interest. Despite substantial change in land use during 1980 - 2000, with urban land covers replacing open space, forest, and agriculture, little evidence is found in the time-series data of alteration of the daily streamflow characteristics or nutrient enrichment in the study watersheds. However, a distinct shift is observable in chloride concentrations. However, strong positive correlations exist across the urban gradient between development and increased peak flows as well as between development and increased flashiness. This apparent contradiction may be caused by the differences in the changes measured in each analysis. The change-through-time approach describes change from a fixed starting point of approximately 1980; the gradient approach describes the cumulative effect of all change up to approximately 2000. These findings indicate that although cumulative

urbanization results in most of the effects observed in the literature, relatively few of the anticipated effects have occurred during the past three decades. This relative stability despite rapid land-cover change may be related to efforts to mitigate the effects of development and a general decrease in the density of new residential development.

Arbogast, Alan. MSU Geography

**Title:** Repeat Photography of Lake Michigan Coastal Dunes: Dune Stabilization During Low Lake Phase

**Abstract:** The coastal dunes along the shore of Lake Michigan may comprise the largest body of freshwater dunes in the world. In the past fifteen years a variety of geomorphic investigations have focused on the age and evolution of dune landscapes between Muskegon and Indiana Dunes National Lakeshore. Prior to these investigations it was generally believed that the largest (~ 60-m-high) dunes grew during low lake stages when beaches were relatively wide and sand supply was high. The recent studies have suggested through radiocarbon dating of buried soils that growth of dunes may be more linked to high lake levels as per the perched dune model. Conversely, dunes hypothetically stabilized during low lake stages when wave erosion of dune faces was reduced. Water levels in Lake Michigan are currently near historic lows. This low phase provides an opportunity to empirically test the validity of the perched dune model to large dunes along Lake Michigan. Repeat photography of study sites between 2000 and 2007 demonstrates that vegetation has rapidly expanded across dune exposures in the past few years. These observations provide good evidence that the dunes tend to stabilize during low lake stages, which thus supports the perched dune model for dune evolution.

Archer, Jonathan and Kristy Stanley, Geography, Michigan State University

**Title:** Characterization and Mapping of Patterned Ground in the Saginaw Lowlands, Michigan

**Other Authors:** J.L.F. Holmstadt - MSU Geography D.P. Lusch - MSU Geography R.J. Schaetzl - MSU Geography R.L. van Dam - MSU Geology C.L. May - MSU Geology

**Abstract:** Affected by numerous glacial advances and proglacial lakes, the Saginaw Lowlands of Michigan is a region dominated by low-relief topography and fine-textured tills and lake sediments. In this study, we identified, mapped and characterized >1020 km<sup>2</sup> of patterned ground in the Saginaw Lowlands. The patterned ground, which we believe is a relict permafrost feature, exhibits a strong N-S orientation. The majority of patterned ground is found between the shorelines of Glacial Lakes Warren and Elkton, thereby constraining formation of these features between 14.8 and 14.3 cal. ka. The subtle morphology and edaphic characteristics of the patterned ground suggest that thermokarst erosion, rather than ice-wedge replacement is responsible for its development.

Arnold, B. J. Kent State University

**Title:** The paleohydrology of the Chautauqua Tunnel Valley Network, NW Pennsylvania

**Abstract:** While many glacial features can be directly attributed to the abrasion and quarrying associated with moving ice, the role of meltwater cannot be overstated and continues to draw a substantial amount of attention and controversy within the glacial community. The considerable volume of the Laurentide ice sheet (LIS) and its release as water in just over 10,000 years, makes the significance of meltwater impossible to ignore. The meltwater hypothesis promotes the formation of some subglacial landforms, such as drumlins and tunnel valleys, by outburst floods larger than any known floods within historical time, but other researchers question the requirement that such large quantities of meltwater could be stored either below or on top of the ice and suddenly released. This study, which includes field investigations and remote sensing techniques, targets the Chautauqua Tunnel Valley Network, named for the Chautauqua Drumlin Field that it is associated with. These valleys located in NW Pennsylvania have received little attention from researchers and were initially interpreted as proglacial meltwater features. These valleys have since been interpreted as subglacial in origin and are known to contain extensive sediment deposits which will help to answer questions about tunnel valley formation, including the hydrological conditions under which the sediments in the valleys were deposited. This study will aid in

reconstructing the paleohydrology of the Erie Lobe of the LIS and the role that the Lake Erie Basin immediately to the north, played in the formation of the tunnel valley network.

Bacyinski, Eric. University of Michigan - Dearborn

**Title:** Correlating Voting Trends with Beer, God and Books in Plymouth, MI

**Other Authors:** Dr. Jacob Napieralski; University of Michigan - Dearborn

**Abstract:** Voting trends are reflections of societal change and are crucial to understanding our past and predicting future patterns. These trends have been utilized by political machines to aid in campaign management and planning. The onset and use of GIS in the political forum has allowed analysts to study these trends more efficiently and with a greater precision. This project focuses on Plymouth, Michigan and the 18,000 registered voters that inhabit the Wayne County community. The voting records of 18,000 persons were analyzed to find possible correlations between cultural demographics, trends in recent elections and voters' geographical proximity to local places of interest. The demographics examined include household income, resident age, gender and educational attainment. The election data includes voting records from all registered voters in the Plymouth community for the 2000, 2002, 2004 primary and general elections, which also incorporates party affiliations. Local bars, churches, schools, railroad tracks and a major intersection were used as centers of ½ mile buffer zones where all encompassed voter data was clipped to determine possible impacts on voting trends. Various trends were noted; including a tendency shown by residents who live near bars to vote in fewer elections than other Plymouth residents. As a result of this project, insight regarding the social and political demographics of the Plymouth community has been attained. This project provides for a large amount of future work, including the performance of a similar analysis on larger towns, cities and counties and can be used in campaign management and planning.

Baker, Kathleen. Western Michigan University

**Title:** Fraxinus (Ash) in a Great Lakes Urban Street Tree Community, Kalamazoo, Michigan

**Other Authors:** Dave Lemberg, Western Michigan University

**Abstract:** Biodiversity is of increasing concern in urban systems because it impacts both sustainability of the environment and perceptions of aesthetics within a community. The recent spread of the emerald ash borer and its impact on the genus *Fraxinus* in the Great Lakes region has increased local concern for health of urban ecosystems. In this study we examine an urban street tree dataset for Kalamazoo, Michigan using richness, diversity, and evenness metrics. Hierarchical cluster analysis results indicate five types of tree communities in Kalamazoo's neighborhoods. *Fraxinus pennsylvanica* is a dominant species in nearly every neighborhood, making up between 2 and 6 percent of individuals. Northside neighborhood is unique, with the lowest number of dominant species and lowest species richness in the city. Northside also has the highest percentage of *F. pennsylvanica* in the city. These characteristics make Northside especially vulnerable to the emerald ash borer. Because Northside also has the lowest socio-economic status of Kalamazoo's neighborhoods, assistance should be given to residents for replanting purposes if the overall diversity of the city is to be maintained or increased.

Campos, Annalie. Geography Michigan State University

**Title:** How Local Roads Spending Relates to Urban Sprawl

**Abstract:** This paper focuses on "non-highway" spending and describes the results of an analysis of the causal relationship between local roads spending and urban sprawl in the context of the Detroit Metro Area between 1992 and 2002. The purpose of the study was to evaluate whether or not local roads spending facilitates population growth in local communities, particularly those communities located outside of a central city. Local roads spending and other amenities, locational, and demographic factors that were hypothesized to explain household relocation were regressed on population change via a spatial regression analysis, specifically a spatial errors model. Results suggest that in the context of the Detroit Metro Area, factors other than local roads spending tend to explain locational behavior of individuals and

households. Community level road spending does not facilitate population growth. However, the location of a community, measured by the distance of a community from a central city (coeff. =0.44, p<0.05), and local parks spending (coeff. =0.07, p<0.001), were significant predictors of population growth. The fiscal health factor, proxied by property tax revenue (coeff. = -0.11, p<0.07), and the percent nonwhite population (coeff. = -0.24, p<0.05) negatively predicted population change at a significance level of less than 10% and 5%, respectively. Implications of these findings are discussed.

Chapa, Domonique. Wright State University

**Title:** The Relationships Between Pediatric Respiratory Diseases and Socioeconomic/Urban factors in Montgomery County, Ohio

**Paper Abstract:** The study explored the spatial relationship of pediatric asthma and bronchitis rates (hospital discharge of children 0-17 years of age) with socioeconomic/urban variables in Montgomery County, Ohio to potentially identify contributing risk factors of the chronic pediatric respiratory diseases. The pediatric asthma and bronchitis risks were associated with poverty, average household size, single parent families and vegetation levels which explained 89% of the spatial variation. The highest rates of pediatric asthma and bronchitis were located in the most urbanized area of Montgomery County. Studies have shown the effects of urbanization expose various populations to health risks that initiate or increase the severity of chronic diseases. Efforts to reduce pediatric asthma and bronchitis will require further assessment of the social and physical environment of children. Models to identify at-risk children can assist public officials in decreasing the exacerbations of pediatric respiratory diseases and target resources to improve of the quality of life for children.

Chattopadhyay, Sutapa. University of Minnesota-Duluth

**Title:** ADIVASI INSURGENCIAS AND POWER IN COLONIAL INDIA

**Abstract:** In traditional days, the Adivasis subsisted both culturally and economically on nature, in a sustainable manner. This tribal tryst with the nature fizzled out with British colonialism. The British expropriated lands and resources from the tribal communities to serve their commercial needs. Subsequently, more and more lands were extorted by money lenders, merchants and landlords reducing the Adivasi self-sufficiency to sheer marginalization. The Adivasis protested at various stages against the covert practices and unfair policies of state forestry practices. The history of state forestry is therefore marked by the history of social conflict. I analyze the Adivasi insurgencies to comprehend reasons for resistance, state strategies of dominance, and tribal techniques of struggle in colonial India.

Craft, Andrea. DePaul University

**Paper Title:** Beyond Boystown: critically mapping Chicago's queer spaces

**Other Authors:**

**Paper Abstract:** The Chicago neighborhood of Boystown has an international reputation as the local and regional center of gay life, which is symbolized by the spectacles of rainbow street architecture and commodified hyper-sexuality. Gay and lesbian residents report displacement as the area becomes even more exclusive to the upper classes, yet it remains the hotspot for gay social and commercial life. In light of gentrification in Boystown, I ask whether the neighborhood remains a central area where gay residents are concentrated, as opposed to a more dispersed residency that commutes to the area. I mapped the locations of same-gender partnered households, using data from the 2000 U.S. Census, which I use as one indicator of reported gay or lesbian residencies. Comparing this data with common assumptions about queer spaces in Chicago reveals gendered and racialized differences in spatial residency patterns and proximity to areas where LGBT resources are concentrated. Although gay and lesbian couples do tend to cluster in what Chicagoans consider "gay neighborhoods," there is greater dispersion throughout the city that is largely unrecognized. I question whether existing infrastructure for support and service to the community is adequately taking into account what this spatial organization actually looks like. Finally, I call on either a decentralization of funding from politicians and non-profits that would advantage

grassroots community-based queer spaces, or for LGBT institutions to geographically decentralize themselves in order to improve access to their resources.

Daniel Hammel, Daniel. National Science Foundation

**Title:** Funding Opportunities at the U.S. National Science Foundation

**Abstract:** This presentation will describe funding opportunities for regional scientists at the National Science Foundation and offer general advice regarding the preparation of proposals seeking support from NSF and other funding sources.

Dean, David. The University of Toledo

**Title:** Application of GIS Technology to Oil Spill Contingency Planning and Response

**Abstract:** Area Contingency Plans are locally prepared, site specific documents that outline the steps to be taken to protect ecologically, culturally and economically sensitive areas in the event of an oil or hazardous chemical spill. The goal of contingency planning is to improve the speed and efficiency of the response to an incident; whether it is an oil or chemical spill in water, an accidental release of hazardous chemicals from a manufacturing or storage facility or an accident involving hazardous substances transported on the road or rail networks. Currently, most contingency plans are published on paper in notebooks; if they are in digital form, they are typically scanned pages of the paper plans and not modifiable. These paper based plans with associated maps and graphics are expensive and difficult to update and distribute. Geographic Information Systems have matured into a useful tool to develop and update contingency plans. Geographic Information Systems are an enabling technology that permits digital contingency plans' data, maps, graphics and tables to be updated regularly and published as frequently as necessary. The flexibility of a GIS makes it practical for contingency planners to develop multiple combinations and permutations of their contingency plans and to keep the plans up to date and easily available to responders.

DeVisser, Mark. MSU Geography and Center for Global Change and Earth Observations

**Title:** Evaluating the Performance of Public Land Use and Land Cover Data Sets Used for Modeling Tsetse Fly Habitat in Kenya

**Other Authors:** Dr. Joseph Messina

**Abstract:** Tsetse flies have long been known to be the vector for trypanosomosis (sleeping sickness in humans) a disease that affects both humans and livestock across the continent of Africa. In Kenya it has been estimated that roughly 37% of the country is potential tsetse fly habitat, the consensus is that the insect vector requires mixed open woody vegetation for shelter, a minimum precipitation of 500mm annually to prevent pupae desiccation, and a maximum elevation of 2200m, which is generally used as a surrogate for minimum temperature. Current models of tsetse fly habitat primarily use remotely sensed data derivatives of vegetation, temperature, and moisture. Resources for tsetse fly control within Kenya are limited, and in lieu of ever changing climate, land use and land cover (LULC), a model predicting tsetse habitat suitability would be beneficial. In an attempt to develop such a model, the available LULC data sets, Africover, GLC2000, CLIPcover, and MODIS Derived Land Cover, must be evaluated in order to determine which one most accurately models the ecological variables that influence tsetse fly distributions. These LULC data sets differ by production methodology, classification systems employed, and their intended uses. This poster illustrates the significant differences in predicted tsetse habitats by utilizing present climate data (USAID Climate Data) and terrain information (SRTM DEM) combined with each LULC data set.

DeVries-Zimmerman, Suzanne. Geology Department, Hope College

**Title:** Pollen and sand from small lakes from the Lake Michigan coastal zone: proxies of dune movement?

**Other Authors:** Kimberly Jongsma, Hope College; Sarah Dean Hope College; Tim Fisher, University of

Toledo; Ed Hansen, Hope College

**Abstract:** Concentrations of windblown sand in small lakes within coastal dunes have been used to reconstruct chronologies of dune growth and migration along the eastern coast of Lake Michigan. These reconstructions indicate periods of dune activity punctuated by longer periods of dune stability.

Vegetation on Lake Michigan dunes undergoes a well-established ecological succession, suggesting that pollen could be another proxy for dune activity. This hypothesis was tested by examining pollen and sand concentrations in a lake sediment core from Goshorn Lake near Saugatuck, Michigan. There are higher abundances of pine and lower abundances of oak pollen in the upper portion of the core which may reflect an increase in the influence of dune communities as the dunes migrated eastwards towards Goshorn Lake. However, grass pollen has relatively low abundance throughout the core (<5%) and does not show a tendency to increase towards the top of the core. Cores from the western lake edge (adjacent to the dunes) contain higher sand abundances than cores from the eastern edge indicating that the dunes are the major sand source. Peaks in sand concentrations may correlate with periods of especially active dune growth and migration. However, there is no correlation between sand peaks in the core and the abundances of grass, pine, or oak pollen. Thus, it does not appear that pollen abundances of these groups can be used as a proxy for periods of active dune growth and migration.

Eichstaedt, James. Western Michigan University

**Title:** Mixed-Use Development Proposal

**Abstract:** This presentation will focus on the possibility of a mixed-use, college oriented commercial development on or near Western Michigan University campus. To clarify, the term mixed-use, college oriented commercial district is used to describe a new development that is in extreme proximity, or on the college campus that contains services and housing styles that are geared toward a universities student population. The data presented will be on the student perceptions of the Western Michigan campus and what the students would like to see adjacent to campus with future development. The data was collected using a survey written by the author. This survey helped ascertain what services the student body is really looking for near campus. There were also questions regarding what kind of housing the students look for in their future years here at WMU. There were questions on spending habits of the students to help determine how much money they spend, when they “go out” for a basic spending analysis of students. The rest of the presentation will show the areas of possible development, traffic studies of two locations and a literature review of relevant scholarly work in the field of college towns and university development.

English, Emily. Northern Michigan University

**Title:** Upper Peninsula Forest Composition Change 1850s to 1990s

**Abstract:** In the 1850s the Upper Peninsula was primarily untouched forest. This quickly changed with the partitioning and selling of much of the land from 1850 onwards. Prior to settlement, forests disturbances were the result of natural events such as fire, windthrow, and disease. As Europeans settled the land they began to change the natural landscape. At first the changes were minor. Settlers focused on military actions, missionary work and the fur trade. However, as settlers began to expand their interests to farming, logging, and mining their impact on the forests increased. Though most of the UP remains forested, the composition of the forests is very different from what it was prior to European settlement. A comparison of the percentage of the Upper Peninsula (UP) covered by each species at the time of the Government Land Office Survey (1850s) and the time of the Forest Inventory Analysis (1990s) offers an idea of how the forest composition has changed. A few species such as Sugar Maple, Spruce and Red Pine have changed only slightly, however, other species have changed drastically. Hemlock and Tamarack, species that were prominent in the 1850s had by the 1990s declined to less than a quarter of their earlier coverage. Aspen and Red Maple have done the opposite. Understanding the changes these species have gone through leads to a clear understanding of the UP forests and how they continue to change.

Evered, Kyle. Michigan State University

**Title:** Demirel and the Duck: Lake Burdur and the Political Ecologies of Wetlands in Turkey

**Abstract:** In the developing world, socio-economic imperatives for rapid development and a lack of environmental considerations, especially among developers and state planners, can be cataclysmic for specific species and even entire ecosystems. Given the frequent lack of recognition of their economic value and ecologically significant functions, even in developed societies, wetlands can suffer under intense pressures to develop. In the nation-state of Turkey, this problem is encountered commonly. Based on fieldwork in Turkey's lakes region, this paper examines the political ecologies of wetlands in Turkey and analyzes the geographic relationships at different spatial scales that are critical to protecting these vital eco-systems. In particular, it considers the local, regional, nation-state, and global pressures exerted on specific localities that contribute to wetland destruction and/or conservation. In doing so, it assesses how the state attempts to reconcile the needs of wetland ecosystem protection with pressing socio-economic and political imperatives to develop the locations and economies of adjacent urban centers and surrounding regions. In most cases, combinations of domestic and international concern for the local sites in question can be decisive in guaranteeing their survival.

Grant Wilson, Grant. University of Toledo

**Title:** A Random Walk In Chicago, Illinois

**Abstract:** One often experiences an unfamiliar city through the dictates of travel guides, printed tourist maps and sight seeing brochures. While these guides and maps aim to provide the visitor an experience of the city, they often demand a pre-determined parade through attractions and

Green, Jerry. Miami University

**Title:** Railroad Transfer Boats on the Inland Rivers

**Abstract:** For nearly sixty years, railroad transfer boats were used in place of bridges on some locations on the inland rivers of the U.S. This paper investigates the location of those operations, the type of vessels used and the land uses that became an associated part of the transfer operations.

Grove, Alan. University of Cincinnati

**Title:** Following Tracks in the Snow: Tracking Geopolitical Theory in the Arctic

**Abstract:** This paper examines geopolitical theories focused on formal political control of the Arctic and traces the evolution of this control and reviews major theories in an attempt to understand the evolving importance of control of the Arctic. This paper will also suggest why states place geopolitical and economic importance on the Arctic region. The Arctic region holds an increasingly important role in the strategy and diplomatic focus of the surrounding states. The shrinking ice sheet in the Arctic and the recent flag planting mission by Russia, exploratory missions by Denmark and Norway, the formation of new military bases by Canada and the muted diplomatic response from the United States have again brought this barren space to the forefront of geopolitical interest. The region is a new site for geopolitical contestation that has captured the attention of all the states in the region. These states want control over resources such as oil and natural gas deposits as well as the control over the opening shipping lanes in the famed Northwest and Northeast passages. The importance of control in the Arctic can be understood by historical geopolitical theory first put forth by Renner and de Seversky and followed by Roucek, Heininen and Nicol, and Hagland, for example.

Gwynn, David. Rutgers University/Michigan State University

**Title:** Turning Remotely Acquired Imagery into Socially Relevant Information: Collaboration Potentials

**Abstract:** Remote sensing platforms offer an excellent means for monitoring dynamic phenomena on the landscape. While direct spatial data analysis from these sources was dominated by natural scientists and/or geospatial experts in the past, new initiatives in land change science have expanded the field of direct users to include a suite of applied and social scientists. In order to maximize the collaborative

potential among the growing user groups examining these types of data, it is important to understand the relationship between people and images of the earth from above. This paper will review three items. First, it will examine some historic uses of imagery as a data source, including those preceding satellite imagery and aerial photography. Second, it will compare the variety of ontological viewpoints among research practitioners in selected disciplines. Third, it will use a case study based on public opinion polls to discern popular opinions on landscape change. Considered together, these elements will offer insight to best practices for future imagery-based collaborative research projects.

Islas, Marina. Aquinas College

**Title:** A Changing Ethnic Landscape: A Look at the Spatial Distribution of Hispanics in Grand Rapids, Michigan

**Abstract:** With a 37% population increase among Hispanics in the United States between 1990 and 2000, immigration issues have come to the forefront of political rhetoric and Grand Rapids is no exception. The increase in the Hispanic population has been significant. Neighborhoods once characterized by Dutch, Polish or German ethnics are now barrios dominated by a variety of Hispanic migrants and their kin. The ethnicization of commerce has occurred as well. U.S. census data and fieldwork indicate that the Hispanic commercial sectors are located within the vicinity of Hispanic neighborhoods. This study seeks to explain the pattern of Hispanic settlement in Grand Rapids and the relationship between the ethnic residential communities and businesses.

Johnson, Daniel. Wright State University

**Title:** Employing Multiple Remotely Sensed Vegetation Indices in Mosquito Vector Surveillance

**Abstract:** Previous research involving remote sensing investigations of vector habitat typically employ a lone vegetation index to be a discriminator or predictor of vector activity. Lacking in the literature is an exploration of multiple vegetation indices used in such a context. Typically such investigations rely solely on the Normalized Difference Vegetation Index (NDVI). There are numerous alternative indices available and it is deemed important to begin an exploration of their efficacy in epidemiological pursuits, especially as it relates to vector control. This study uses NDVI plus an additional eight vegetation indices to construct linear models of association with captured adult mosquitoes. This demonstrates a unique approach within epidemiology, vector ecology and remote sensing. Using LandSAT ETM+ imagery acquired in July of 2003 a relationship was sought between the area calculated above and below the mean for all nine vegetation indices employed. These areal values were then compared to the captured adult mosquito population over a three year period. The mosquito population variables were compared to areal values of each index as well as to factor loadings on the range of the indices. Results show that the areal values for 3 vegetation indices were slightly significant in relation to Culex and Ochlerotatus capture rates. Atypical was the indication that NDVI presented as insignificant in all models explored. It is demonstrated that multiple vegetation indices should be used in concert in regard to vector habitat surveillance. This allows for the entire strength of all vegetation models in remote sensing to be brought to bear on the problem. Additionally, further analysis on previous studies which only used NDVI is warranted. The approach is unique and is potentially capable of additionally enhancing surveillance of the phenomena with a method of empirical adult mosquito trap placement. Overall, the study provides clues to the stability of remote sensing in such investigations.

Johnson-Webb, Karen. Bowling Green State University

**Title:** Racist Landscapes in Ohio: The Case of Mercer County

**Abstract:** In 1846, the predominately German Catholic farmers of Mercer Co. Ohio barred over 300 newly manumitted ex-slaves from Virginia from entering the county to claim land that had been willed to them. Moreover, in 1847, they resolved to forcibly relocate all blacks currently residing in Mercer Co. to destinations outside of the county. These kinds of forcible removals were not uncommon in the North. However, little research has been conducted on Mercer Co. and the events at the all black town of

Carthagena. While being renowned as a haven for those traveling on the Underground Railroad, Ohio also had its hardened racist elements. This paper explores the landscape of racism that existed in Mercer Co. which fomented these actions by the white majority against the black population.

Keough, Sara Beth. Saginaw Valley State University

**Title:** Cultural Policy and Changing Radio Technologies: A Case Study of National Identity in Newfoundland, Canada

**Abstract:** As our access to information increases with the aid of communication technologies, there is concern that cultural homogenization threatens to become a reality. Ironically, in the face of globalization in the media, the local often becomes increasingly important. This study explores how Canada's cultural policy, known as the Canadian Content regulations, has helped to foster a feeling of local identity in Newfoundland. I examine how Canadian Content regulations apply to radio, and how these radio regulations influence broadcasting in the St. John's, Newfoundland radio market. Interviews with radio station personnel (DJs, program directors, music librarians, etc.) and radio listeners show that many radio stations in St. John's emphasize local (Newfoundland) music in the face of more popular Canadian and American music. Furthermore, the act of broadcasting local music on the radio in St. John's has allowed radio listening to become incorporated in to several of the listeners' Newfoundland cultural traditions and thus, an integral part in development of a Newfoundland identity.

Kotval, Zeenat. Michigan State University

**Title:** The Social Dynamics of Accessibility, Travel, and Physical Activity in the Detroit Region

**Other Authors:** Igor Vojnovic (Michigan State University), Jieun Lee (Michigan State University), Perry Varnakovida (Michigan State University), Shannon Smith (Kimberly-Clark), Joseph Messina (Michigan State University), Bruce Pigozzi (Michigan State University), Joe Darden (Michigan State University)

**Abstract:** The research objectives are to build and explore measures of accessibility, isolate the role of income, race, age and gender in conditioning accessibility, quantify pedestrian activity, and examine potential associations with physical activity and obesity theoretically integrated under complex systems, urban design, and social structures. The research team hypothesizes that neighborhood accessibility is a precondition in encouraging pedestrian activity. Class, race, along with the sense of value of exercise and sense of safety will be key determinants of pedestrian activity. The team will gather data from six two-mile square neighborhoods in the Detroit Region. Surveys will be mailed to 1600 households in the two Detroit neighborhoods and 800 households in the four suburban sites. This will enable the research team to focus on urban form, travel behavior, physical activity, and obesity within the context of diverse socioeconomic conditions and race/ethnic populations. Research objectives involve: 1) measuring neighborhood accessibility and quantifying functional differences for six Detroit area neighborhoods; 2) exploring how travel behavior vary by income, race, age, and gender; 3) exploring differences in terms of distance and frequency among the inner-city Detroit residents walking/cycling behaviors compared to residents in Birmingham, Ann Arbor, Bloomfield, and West Bloomfield; 4) exploring the association between obesity, based on body mass index (BMI), and accessibility, physical activity, walking/cycling, income, race, age and gender; 5) exploring urban structural modifiers of behavior including system feedbacks, thresholds, and dynamics in a complex systems simulation framework.

LaLonde, Tara. Department of Geography, Michigan State University

**Title:** Error Assessment of the Shuttle Radar Topography Mission (SRTM) Elevation Model Using Light Detection and Ranging (LiDAR)-derived Data

**Abstract:** This research analyzes the characteristics of the Shuttle Radar Topography Mission (SRTM) digital elevation model (DEM) in reference to Light Detection and Ranging (LiDAR)-derived and National Elevation Dataset (NED) data. The SRTM DEM is a near-global elevation model, which presents many opportunities for geographical and environmental analysis at the international scale. LiDAR-derived elevation models are created at a high resolution and high accuracy. The objective of this

research is to identify how SRTM error is related to the landscape characteristics of land cover and slope. SRTM characteristics are significant for its fitness of use in applications. Analysis at the coarser resolution of the SRTM (90m) may experience different results compared to an elevation model of finer resolution and greater accuracy, such as the LiDAR-derived model (5m) or the NED model (30m). SRTM, along with LiDAR-derived data and NED, were obtained for an area of southern Louisiana for an accuracy assessment. Spatial data was obtained from public online repositories, including the United States Geological Survey (USGS) and ATLAS, the Louisiana statewide geospatial source. The methodology of this investigation utilizes GIS (geographic information systems), spatial analysis, and error assessment. The relationships of SRTM error and landscape characteristics are investigated. Implications are drawn about the use of SRTM in locations where a higher quality elevation model isn't available. Future research is directed towards comparison of SRTM error characteristics for different landscape characteristics.

Lawrence, Patrick. University of Toledo

**Title:** What we learned from the Red Cedar Creek at Michigan State University: Planning for the Ottawa River at the University of Toledo

**Abstract:** In 2005 University of Toledo President Dan Johnson established the President's Commission on the River. A primary goal of the Commission was to engage faculty, students, staff and community members in planning efforts and to solicit ideas and proposals from those stakeholders for maximizing the beauty, leisure-time use, scientific exploration and environmental features of the river. The Commission began its work in March 2005, creating three work teams and holding monthly meetings. As part of its work effort, the Commission reached out to stakeholders through a planning charette conducted in April 2006. The primary result of the charette was the creation of three design concepts that incorporated ideas from the charette participants and from the on-going work of the Commission's three work teams. The Commission is recommending the administration to move forward and create the "UT Meadow/Boardwalk" concept. The major elements of this plan include: Lowering the existing river dike between the bridge adjacent to the Law College and the Stadium Drive Bridge (near Snyder Memorial and the HHS building) creating a meadows-like area extending between these bridges to the east and west and south from the river towards the Academic House; establishing a River View Plaza on the north side of the river that would extend from the southwest corner of Carlson Library, the area between Carlson and the Student Union and to the eastern corner of the Student Union; and establishing a nature preserve incorporating a series of rain gardens (bio-swales) that trap and transform storm water runoff.

LeBeau, Jim. Crime Studies Center, Southern Illinois University Carbondale

**Title:** Mapping Out and Modeling Jury Duty in Cook County, IL: 2005

**Abstract:** During 2005, the Circuit Court of Cook County, Illinois summoned 698,575 out of 4,126,618 citizens for jury service. By the end of the year only 20,868 people had served two or more days on jury duty. It is this outcome of the jury selection process that receives the most attention and scrutiny because of allegations that jurors are not representative of a county's population and that the composition of a sitting jury might be biased against racial/ethnic and social minority defendants. While empanelling a jury is the most important and the last stage of the jury selection process in it accounts for less than three percent of those summoned. The outcomes for the remaining summoned jurors are: served only one day (154,940); excused from reporting (173,533); summons returned as undeliverable (131,823); juror did not report (130,429); and juror remained in the pool by the end of 2005 (86,990). The goal of this research is to assess if the same or different variables explain the spatial variation of the different outcomes of the jury selection process. This research, at the census tract scale (1,343), involves constructing spatial regression models testing the relationships between dependent variables measuring the degree that each census tract is over or under represented in regards to a particular outcome of the jury selection process with socio-economic, and demographic variables, and measures of paroled and released inmates.

Mandy Nyerges, Mandy. DePaul University

**Title:** Sustainable Coastal Tourism Management

**Abstract:** Over the past thirty years, the coastal economies have shifted to become tourist-dependent economies making coastal shorelines and the zone play a very important role in local business. Indicators, defined as quantitative variables measured periodically to reflect the condition of important environmental, economic and social issues, play a key role in measuring the sustainability of the coastal zone to ensure longevity and vitality for the local economy. This study focuses on developing a set of indicators within a GIS model using geostatistics methods to analyze and monitor progress towards sustainable coastal tourism and management of the Ft. Myers Beach area of Lee County, Florida. Interpolation methods, specifically inverse distance weighting, and weighting factors are applied to the indicator sets to produce the images in GIS. Literature on the subject suggests concentrating on the strong relationship between social, economic and environmental factors of sustainable tourism management. Findings suggest the most degrading areas of sustainability, based on the weighted indicators in this study, appear on the coastal areas.

Martinka, Gus. Western Michigan University Geography Dept.

**Title:** Assessing CSOs, and Their Impacts on Water Quality in Grand Rapids, Michigan

**Other Authors:** Dr. Chansheng He, Professor, Western Michigan University, Geography Dept.

**Abstract:** Assessing CSOs, and Their Impacts on Water Quality in Grand Rapids, Michigan. Combined sewer overflows (CSOs) occur when the capacity of the wastewater collection systems that collect both sanitary sewer waste and storm water in the same pipes are surpassed due to heavy rainfall and/or rapid snowmelt. Such events release many pollutants to water bodies and threaten human and environmental health. Supported by the National Oceanic and Atmospheric Administration's (NOAA) Center of Excellence for the Great Lakes and Human Health, we are mapping occurrences of CSOs in Grand Rapids, Michigan. CSO databases were acquired from the Michigan Department of Environmental Quality. Locations of CSOs are geo-coded and identified in a (GIS) database. The results will be used to estimate probabilities of sewer spills from the CSOs for specific locations and enable the management agencies to target those critical areas for management practices. Problems encountered in mapping the CSOs in Grand Rapids will be discussed with suggestions to improve the management of CSOs and the recording of them.

Messina, Joseph. Michigan State University

**Title:** Geography and Big Science: Tips and Traps in the Proposal Generation Process

**Abstract:** The modern research enterprise requires ever increasing funding from any source. Academics, and particularly early career people, are encouraged by administrators and peers to compete for the prestigious federal funding sources. These sources generally offer the greatest total dollar amounts, support the widest variety of research projects, and offer the greatest overhead provisions. Geography and geographers are well placed as researchers to take advantage of the ever increasing funding for interdisciplinary science. However, geographers competing for these interdisciplinary or transdisciplinary awards face particular challenges and often fall into common and easily avoided traps that doom many proposals. This presentation details personal experiences with NSF, NIH, NASA, and DOD and offers suggestions for successful proposal generation common to each and highlights special cases particular to each. The material presented is suitable anyone interested in the proposal generation process, but graduate students and assistant professors are particularly encouraged to attend.

Miles, Allison and Michelle Rigg. Wright State University

**Title:** Asthma and the Built Environment

**Other Authors:** Dr. Daniel Johnson, Wright State University

**Abstract:** Asthma is a chronic disease that can be life threatening if not treated properly. It is treated as a disease of the environment because most people develop it by breathing substances from the air. Several

previous studies have shown that the rates for asthma are disproportionately high in urban environment. This study is exploring the relationship of asthma hospital discharge rates in Dayton, Ohio and New York City. This study will also examine several socioeconomic/urban variables in order to identify contributing risk factors for the disease. This study will help to determine which socioeconomic variables may be at a greater risk of developing asthma.

Munro-Stasiuk, Mandy. Kent State University

**Title:** Classifying and mapping drumlins in the Chautauqua Drumlin Field, NW Pennsylvania: some preliminary results using an object-oriented approach

**Other Authors:** Kakoli Saha, Kent State University; BJ Arnold, Kent State University

**Abstract:** Digital Elevation Models (DEMs) provide detailed information about the surface of the landscape on which we now live. They have been used extensively by geomorphologists to analyze terrain shape, slope, aspect, and especially by glacial geomorphologists, to visualize the complex imprint of the last great ice sheets through qualitative analysis of hill-shade maps. The ultimate aim of this research is to eliminate potential viewer error by objectifying, quantifying, and automating the identification process through the use of the software package Definiens Professional. This remote sensing package classifies spatial datasets through spectral analysis of individual pixels (not unlike regular remote sensing software), but also follows the concept that information necessary to interpret an image is not represented in single pixels but in image objects and their mutual relations. These objects can have form, texture, neighbor relations and context. They are identified through a segmentation process (polygon creation) that can be performed at a number of scales depending on the size or complexity of the features to be identified. We will present results from a small portion of the Chautauqua Drumlin Field, NW Pennsylvania. The 30m resolution National Elevation Dataset (NED) for this region was analyzed using three hierarchies of segmentation. For drumlins specifically, we will present some of the major components that are generated for each polygon, and the relationships between them, that can then be used in the classification and mapping process. These include, but are not limited to: area, length, width, shape, direction, symmetry, asymmetry, and number of neighbors.

Nalepa, Nick. University of Michigan-Dearborn

**Title:** Comparing the Reliability of Different Compactness and Shape Indices to Measure Drumlin Form

**Other Authors:** Jacob Napieralski University of Michigan-Dearborn

**Abstract:** Drumlin form is significant to glaciologists because it may be an indicator of subglacial ice conditions; more elongated drumlins are formed by faster subglacial ice conditions than less elongated drumlins. Numerous studies have attempted to describe drumlin shape, relating them to similarly-shaped objects, such as tear drops, torpedoes, and aircraft wings, fitting mathematical curves and ellipsoids. However, most descriptions of drumlin shape rely on relatively crude ratio variables, such as elongation. Therefore, the purpose of this project was to compare calculations of elongation against multiple compactness indices and mathematical curves, assessing their potential viability as a proxy for elongation. Eighteen drumlins were extracted using a 10 meter Digital Elevation Model (DEM). Morphometric measurements of length, width, area, and perimeter were calculated for a comparative analysis of 12 shape indices, using a correlation matrix to evaluate how these shape indices correlate with elongation. Results indicate that indices with Area/Length and Area/Width variables correlated more with elongation ( $r^2=0.91-0.98$ ), whereas mathematical curves, such as the rose curve and ellipticity correlated less with elongation ( $r^2=0.62-0.85$ ). Indices with Area/Perimeter variables produced the lowest correlation values ( $r^2=0.77-0.79$ ). Since drumlin elongation has been extensively used in past research, using indices that correlate well with elongation could provide a relationship between past and current work. Future work may allow these shape indices to be used as surrogates for elongation.

Nemeth, David. Department of Geography and Planning, University of Toledo

**Title:** Mount Halla from “Thou” to “It”: The Contamination and Commodification of a Natural Sublime

**Abstract:** Mount Halla (Hallasan in Korean) is a dormant oceanic volcano of considerable height located "in splendid isolation" in the northern reaches of the East China Sea. Hallasan in translation means "The Peak that Touches the Milky Way." Long considered a natural sublime and sacred among East Asians, and especially so by its indigenous inhabitants, its status diminished as its isolation from the rest of the world rapidly decreased over the last century. Discovery and exploration of Hallasan by Western peoples has marked its transition from a "Thou" to an "It". My paper addresses the sequence of contamination and subsequent commodification of Hallasan as Western footprints began to penetrate the interior of the island, finally reaching and defiling the mountaintop itself. With that act of contamination, occurring in October, 1901, the ancient symbolic connection between Hallasan and Heaven was suddenly severed. Commodification of the island thereafter began in earnest and continues to this day.

Paslowski, Cynthia. University of Michigan - Dearborn

**Paper Title:** Using Geographic Information Systems to Create a Management Plan for the Removal of Buckthorn

**Other Authors:** Matthew Beer; University of Michigan – Dearborn, Jacob Napieralski; University of Michigan - Dearborn

**Abstract:** There is an increasing interest in managing invasive plants, as there is a better understanding of the importance of protecting native species. One such area in need of managing is a 90-acre nature sanctuary on University of Michigan-Dearborn property which is frequently used as an "outdoor laboratory" by students from the university and other local schools. To create an effective plan to manage Buckthorn, several steps were taken. A ground survey was conducted to count and map Buckthorn. Walking-trails in the natural area will be digitized, and the density of the Buckthorn will be shown as the number of plants per foot along the trails. Buckthorn forms dense thickets which crowd and shade out native shrubs and flowers. Preliminary results indicate several trends, including (1) Buckthorn is densest along the edges of the woods, typically within 10 feet of either side of the trails, (2) little Buckthorn was found within the forest, (3) Buckthorn was prevalent near or along ponds, and (4) trails nearest the campus had high densities of Buckthorn. Results from this project prove that Geographic Information Systems (GIS) is an efficient tool for mapping and managing data and creating a plan for vegetation removal. Furthermore, the results can be used to determine where the invasive species originates: here the Buckthorn is believed to have originated from campus where it was used as a vegetation "wall". As a result, understanding the distribution of this invasive plant will make it easier to monitor and manage in the future.

Prawiranata, Haryono. MSU Geography

**Title:** Estimation the Impact of Land Surface Cover on Surface Hydrology in Michigan

**Other Authors:** Jeffrey Andresen, William Northcott, and Steven Miller, MSU

**Abstract:** Estimation of surface hydrologic variables in a given area is necessary for understanding the long term sustainability of various water uses or diversions. The objective of this study was an examination of major hydrologic variables under various representative land cover types during the past century. The Soil and Water Assessment Tool (SWAT), a continuous, daily time-step process-based model was used to simulate the long-term water balance at five locations across Michigan for the climate station periods of record approximately 1900-2005. Input variables examined at each location included soil type (four major categories based on drainage from well- to poorly-drained) and land use/cover types, which ranged from forest to cropland to urban (five total). As expected, mean runoff was greatest and aquifer recharge was least with the urban surface. For the other vegetated surfaces, there tended to be a negative correlation between evapotranspiration and aquifer recharge, with the greatest recharge associated with a grassland surface (associated with lower ET rates due to forage harvest and relatively earlier senescence) and least with the forest cover. Collectively, the simulations suggest major discernible differences in hydrological balance and aquifer recharge rates for differing surface cover types, even under relatively similar climatological conditions.

Radden, Lydia. University of Michigan Dearborn

**Title:** Discovering new territory, using Arc/GIS to correlate higher AIDS percentages with: the capital gross national income, life expectancy at birth, literacy rate, fertility rate, unemployment, and human poverty index.

**Other Authors:** Prof. Jacob Napieralski, University of Michigan Dearborn

**Abstract:** Since the onset of the AIDS epidemic, the American public has been constantly bombarded with ambiguous and inconsistent information about this deadly virus, its origins [where and how it originated], mode of transmission [through blood, saliva, semen, fecal, or other bodily fluids], and which group[s] was considered high-risk [initially homosexual males were targeted as high-risk]. However, the purpose of my study is not to debate opposing views, but to find if a correlation exists between countries reporting higher AIDS percentages and the capital gross national income, life expectancy at birth, literacy rate, fertility rate, unemployment, and human poverty index using Arc/GIS. After considerable research, data obtained from several international organizations (e.g. WHO and UNAIDS) was used to create an information database [attribute table] documenting the number of reported AIDS cases globally, and the six variables. A “weighting scheme” was designed to calculate and rank the data, resulting in six maps, along with a “focal point” map, displaying which countries were considered high to low risk. The results did reveal some inconsistencies or error due in part to the lack of reporting and underreporting data in some regions, particularly, the Middle-Eastern and Northern African areas. However, notwithstanding these discrepancies there was clearly a correlation between the higher percentage of reported AIDS cases and the six variables used in this study. This method should prove tremendously beneficial to socio-scientists, anthropologists, and infectious-disease medical professionals trying to enhance their understanding and thwart the continuous spread of this deadly virus.

Ramirez, Ivan J. Michigan State University/ Center for Capacity Building, NCAR

**Title:** El Niño Affairs: a Climate and Development Model for Latin America

**Abstract:** El Niño Affairs is a capacity building initiative for Latin American populations that fosters capacity through comprehensive and collaborative educational programs that target and train trainers, educators, policymakers, local leaders, college students, and young people about climate, environment, and society interactions. It is a systems-based approach that addresses impacts of climate variability and extreme weather events on human environment interactions across different levels of organization and across different time scales throughout the development of the El Niño cycle. The program is designed to emphasize the importance and necessity of the contributions of physical, biological, social sciences, and humanities to the understanding of air and sea interactions in the equatorial Pacific Ocean and its worldwide implications. Furthermore, it helps to address and identify some of the ethical issues that arise from climate, water, and weather phenomena and natural disasters in the context of global economic and environmental change. This study presents an overview of El Niño Affairs and results from research conducted at the National Center for Atmospheric Research in Boulder, Colorado while developing the program.

Ravuri, Evelyn. Saginaw Valley State University

**Title:** Reassessing the Guayana Project: Life-Time Migration to and from Bolivar State, Venezuela, 1950-2001

**Abstract:** By the mid twentieth century in many developing countries population and economic resources had become concentrated in the capital city and this was not conducive to developing the peripheral regions of the country. Planned industrial cities became an important mechanism for helping to develop a more balanced urban system in developing countries. Venezuela boasts one of the most impressive planned industrial cities with its construction of Ciudad Guayana in the resource rich, but inaccessible Southeastern part of Venezuela in 1959. This study examines life-time migration to and from Bolivar State, the location of Ciudad Guayana, for 1950, 1971, and 2001 to determine changes in the patterns of life-time migration to and from Bolivar and to determine the factors which were significant for migration to and from the state. Results indicated that whereas the majority of life-time immigrants originated from

the neighboring Northeastern States in 1950 and 1971, that by 2001 the Capital Region was more represented. For life-time outmigrants, the destination states became more diverse and less focused on the Capital Region. Regression analysis revealed distance to be the primary determinant of migration to Bolivar State for each year, but by 2001 total population also was significant showing that Ciudad Guayana had attained a population which could attract potential migrants from states further away. Income was significant for migration flows from Bolivar for each year, but by 2001 distance had entered the equation suggesting that life-time outmigrants from Bolivar were less attracted to the states of the Capital Region.

Rigg, Michelle and Allison Miles. Wright State University

**Title:** Asthma and the Built Environment

**Other Authors:** Dr. Daniel Johnson, Wright State University

**Abstract:** Asthma is a chronic disease that can be life threatening if not treated properly. It is treated as a disease of the environment because most people develop it by breathing substances from the air. Several previous studies have shown that the rates for asthma are disproportionately high in urban environment. This study is exploring the relationship of asthma hospital discharge rates in Dayton, Ohio and New York City. This study will also examine several socioeconomic/urban variables in order to identify contributing risk factors for the disease. This study will help to determine which socioeconomic variables may be at a greater risk of developing asthma.

Sadler, Richard. University of Michigan - Flint

**Title:** Suitability Analysis to Environmental Planning at Camp Tapico

**Abstract:** The conservation of natural forests and wetlands has become increasingly important as urbanization continues to reduce the quantity and quality of undisturbed places. The goal of this project was to make recommendations on future development to ensure the long-term ecological preservation of Camp Tapico—a Boy Scout camp in the northeast quadrant of Excelsior Township, Kalkaska, Michigan. This research adopted the weighted linear combination (WLC) method of capability/suitability modeling to provide a basis for “best use scenarios” for resource planning at the camp. Based on the input from local experts, suitability scores were tabulated by weighting several factors based on the importance of each factor. This project simulated five scenarios (i.e. wetland preservation, campsite desirability, etc) with different weight combinations. The evaluating criteria included: proximity to roads, electricity, and waterlines; and distance from existing campsites and wetlands. To compensate for the vagueness associated with unequal weights used in WLC, an uncertainty analysis was utilized to assess reliability of the results of the suitability analysis. In the past, environmental consequences were overlooked when making land use decisions at the camp. The research indicated the central portion of Camp Tapico along the south side of the lake to be the most suitable site for future development, a suggestion that aligns with current development planning guidelines. Providing the suitability map under various scenarios allows camp rangers and council committees to make more informed choices concerning building construction, forestry operations and summer camp program implementation.

Sandberg, Eric. Michigan State University Geography Department

**Paper Title:** Viticulture Suitability in Michigan

**Other Authors:** Mark Finn, MSU Geography

**Abstract:** During the last two decades, there has been an increase in the total vineyard acreage in Michigan. While the Lake Michigan coast has remained the primary region for viticulture in Michigan, an emergence of grape cultivation has occurred in other non-traditional areas. We used climatic, soil, land use, and terrain factors to generate a statewide high-resolution suitability map for grape growing. Techniques such as multivariate regression, neighborhood analysis, and map algebra were used to create suitable/unsuitable 30 meter resolution raster grids for each element. We added the individual grids together to create a final ordinal scale of viticulture suitability. Results confirm the highest suitable area is

the southwest corner of the state in which vineyards are presently concentrated. Analysis of the suitability map reveals greater areas of land throughout the Lower Peninsula suitable for grape growing than currently utilized. Mapping suitability at such a fine resolution can provide decision support for farmers considering developing viticulture in non-traditional areas.

Santos, Carolina. Michigan State University

**Title:** Multi-Sensor Data Fusion for Modeling African Palm in the Ecuadorian, Amazon

**Other Authors:** Joseph P. Messina, Center for Global Change and Earth Observations & Geography Department Michigan State University

**Abstract:** African Oil Palm (*Elaeis guinensis*) is the most productive oil seed. Globally, the oil palm industry plans to double the area under cultivation to meet growing demands for both vegetable oils and biodiesel. Accurate assessment and monitoring of African Palm extensification and intensification for both development and sustainability is crucial given that these crops are replacing the natural high-biodiversity forests as well as local subsistence agriculture. Using a simultaneous collection of RADARSAT synthetic aperture radar (SAR) and ground based digital video, we describe and model the spatial distribution of African Palm and explore its lifecycle placing it in the regional ecological context of the Ecuadorian, Amazon. We evaluate the strengths and limitations of integrating RADARSAT texture information, LANDSAT ETM+, and digital video data, to distinguish African oil palm plantations from other land use and land cover (LULC) categories. The grey-level co-occurrence matrix (GLCM) and a separate hybrid classification approach using a concatenation of SAR/optical products were tested. A significant improvement in the classification accuracy of African Palm in the context of the Ecuadorian Amazon was obtained through the fusion of optical and RADARSAT texture measures as compared to single sensor classifications. The fusion of single ETM+ bands with texture measures achieved the highest user and producer's accuracy with 83% and 90% respectively.

Savage, L. Crosby. Michigan State University

**Title:** Characteristics of a mountain slope flow and its interactions with synoptic scale forcing

**Abstract:** Boundary layer observations taken during the METCRAX field study in October of 2006 near Winslow, Arizona revealed a frequent presence of a near-surface wind maximum on nights with relatively quiescent synoptic conditions. Data from a sodar, a radar wind profiler, several surface stations, and frequent high-resolution rawinsonde soundings were used to characterize this boundary-layer wind phenomenon, establish its relation to synoptic conditions, and understand the physical mechanisms for its formation. The data analyses are augmented by high-resolution mesoscale numerical modeling. It is found that the observed nocturnal boundary layer wind maximum is part of a regional-scale downslope flow converging from high terrains of the Coconino National Forest towards the Little Colorado River at night. The depth of this downslope flow is between 100 and 250 m with a peak speed of 4-6 m s<sup>-1</sup> occurring usually within the lowest 50 m above ground. Observations of varying synoptic conditions demonstrated the impact of the strength and direction of the ambient flow upon the characteristics of the drainage flow near the surface. Due to the larger scale of the region, the coriolis parameter and other physical variables were examined through numerical modeling simulations, which found similarities with previously well-studied local scale mountain slopes.

Schoewe, Douglas. Wright State University

**Title:** Radon and Lung Cancer of Ohio

**Abstract:** The purpose for this project is to analyze and statistically calculate the spatial relationship between radon and lung cancer. Medical research attributes approximately 12 percent of lung cancer cases to radon. Geology research indicates indoor radon levels are related to the types of geological formation under which a home was built. No spatial correlation has yet been done to examine whether or not there is a definitive spatial relationship between the location of naturally occurring radon levels and the incidence of lung cancer of Ohio.

Seamount, Simon. MSU Department of Geography

**Title:** Historical Resources Illustration: Visualizing Urban History with a Dynamic Atlas

**Abstract:** Urban planners, archaeologists, historians, geographers and researchers in social sciences may visualize urban history by mapping changes to create a dynamic atlas with mirror world tools like Google Earth and SketchUp. I obtained maps and photos for buildings in Lansing, Michigan, created between 1860 and 1913, which I used to create 3D models for presentation on the mirror world Google Earth. Recreating historical urban landscapes provides time-enhanced views of urban development and social transformations. I discuss tools, data, design methods, and results for historical resources visualization. I consider aspects of sources, availability and accuracy of data about how a city existed in the past, including archives, libraries, insurance maps, photographs, oral reports and building plans. I analyze and present design methods and difficulties in georeferencing maps and building plans, using photographs and building plans to design models, and problems associated with accurate positioning of models in presentation on a mirror world globe.

Shears, Andrew. Kent State University

**Title:** Erasing Space: May 4, 1970 at Kent State University

**Abstract:** On May 4, 1970, a group of Ohio National Guardsmen fired into a crowd of Kent State University students protesting the U.S. invasion of Cambodia. In the span of 13 seconds, 67 shots were fired, resulting in the deaths of four students, while nine additional students suffered injuries. News of the shootings shocked the nation and further galvanized the popular peace movement against the Vietnam War. At Kent State, final exams were cancelled and the university closed for six weeks. The incident caused a marked decline in enrollment at Kent the following fall semester, which led to a redefinition of the campus logo and moniker from "Kent State" to "Kent." The attempts to change the university's image were not limited to the name; indeed, spaces on campus were changed as well. The location of the shooting lacked a formal memorial until 1990, some 20 years later. In the 37 years since the event, the university has greatly changed the landscapes of the events of May 4, rendering the spaces unrecognizable to students who attended the university at that time. Through carefully designed memorials and changes to the campus, Kent State University has worked to erase space, specifically that of the May 4 shootings.

Shellito, Bradley. Youngstown State University

**Title:** 3D Campus Modeling with Google SketchUp and Google Earth

**Abstract:** Utilizing three-dimensional geospatial techniques, an interactive 3D model of the Youngstown State University campus has been developed. Through the use of the Google SketchUp and Google Earth software packages, all campus buildings (and nearby prominent buildings) and featured campus objects, statues, ornamentation, and greenery have been designed in 3D. Special considerations including 3D design, terrain placement, georeferencing of models, and images and textures have been included. The delivery platform for the model is on the web at: <http://www.yzu.edu/campusmap> (users will require the most recent versions of Flash Player and Google Earth to utilize all the features). Users can download individual buildings or sections of campus into Google Earth or play video clips of the models. The model will be of further use in campus planning and expansions and redevelopments of the campus.

Shortridge, Ashton. Michigan State University

**Title:** Recrafting the graduate GIS degree: evolving Michigan State's MS-GIScience program

**Other Authors:** Jessica Moy Dept. of Geography, Michigan State University

**Abstract:** The Department of Geography at Michigan State University developed a professional masters program in geographic information science (MS-GIS) in 2000. Since then, the program's graduates have found much success in the rapidly growing field. The department has struggled to balance its traditional focus with the particular demands of a professional program. This presentation describes the evolution of the MS program from a largely complementary component of the department's research-oriented academic program to one more focused on the ever-changing, multi-sector GIS industry. We present an

overview of the industry and the educator's role, the variety of student backgrounds and expectations, discuss our curriculum changes, and challenges of course staffing.

Thomas, Morris and Amber Schultz, Michigan State University

**Title:** Why Michigan is Square: The Legacy of the Baseline and Michigan Meridian

**Abstract:** The baseline and meridian of Public Land Survey System (PLSS) have had a lasting impact on what we see on the Michigan landscape. Beginning in 1815, these two lines were drawn to generate a grid work of about 1400 townships in Michigan and Ohio. The baseline is used to delineate towns (T) north (N) and south (S) while the Michigan Meridian measures ranges (R) east (E) and west (W). As a result each township has a unique designation such as, T19N; R15W, Michigan Meridian. Over a thirty-nine year time period the deputy surveyors changed the cultural landscape of Michigan forever. Property descriptions, roads, lakes and place names are some of the results of the legacy of these two lines.

Timothy Elkins, Timothy. University of Michigan-Dearborn

**Title:** Spatial Storm Distribution and the Effects of Permeability on Runoff within the University of Michigan-Dearborn Campus

**Other Authors:** Dr. Jacob Napieralski, University of Michigan-Dearborn

**Abstract:** General monitoring of storm events is often a coarse representation of the spatial distribution of storm precipitation, across many different environments. Building tops, parking lots, forested areas and ground covers represents a range of surface types with varying permeability. These surface types differ in their ability to hold water, and affect the volume of runoff to the local watershed. Rainfall measurements were collected from the UM-D campus for the purpose of: 1) determining variability of rainfall distribution within campus and, 2) calculating the amount of runoff from campus for the 10 year/ 24 hr and the 100yr/ 24 hr storms. Six non-recording rain gauges were distributed throughout campus to measure spatial variations in rainfall. ArcGIS 9.2 was employed to digitize land uses on campus and each land use was designated a curve number to reflect level of imperviousness. The precipitation data (Theissen polygons) were intersected with the curve number dataset (polygons) to generate a prediction of runoff volume. Total volume of runoff achieved a maximum estimated value of 24,625 cubic meters for the 24 hour ten year storm and 36,191 cubic meters after the 24 hour one hundred year storm. These results provide some basis to better manage stormwater runoff and could alert campus to the impacts of surface materials on the watershed. Building planning and landscape design can reduce runoff volume, slow water movement and store precipitation. This information could have further value in understanding water quality and the influence of the UM-D campus on the Rouge River watershed.

Van Dam, Remke L. Geology Michigan State University

**Title:** Depositional History of a Large Freshwater Birdfoot Delta Using Geophysics and Cores; St. Clair Delta, Michigan

**Other Authors:** Joep E.A. Storms, Delft University of Technology, Department of Civil Engineering and Geotechnology

**Abstract:** Lake St. Clair, mid-way between Lake Huron and Erie on the border between Michigan and Ontario, is the smallest of the Great Lakes. The evolution of Lake St. Clair has been influenced by Late-Wisconsin ice re-advances, isostasy, and changes in outlet points of the Great Lakes system during deglaciation. A shift to the Port Huron outlet during the Nipissing-I highstand around 5500 years BP, prior to which Lake St. Clair was a separate basin, resulted in Lake Huron/Michigan draining through the St. Clair and Detroit Rivers to Lake Erie. Loss of stream competence at the inflow of Lake St. Clair led to the formation of a deltaic system, which currently has a surface area of approximately 230 km<sup>2</sup>. Compared to the other Great Lakes, the postglacial history of Lake St. Clair in general and the depositional history of the delta in particular are poorly studied. We used coring, ground-penetrating radar, and electrical resistivity methods to characterize this deltaic system. Our results show four main depositional phases. The sequence starts with Wisconsin-age glacial till (Phase I), followed by late glacial

(glacio-) lacustrine deposits (Phase II). Phase III is an Early Holocene swamp environment (Scirpus & Brassicaceae seeds were dated at  $9620 \pm 50$  years BP). Phase IV is a typical coarsening upward delta progradation sequence with lacustrine clays, silts and sands. A paleosol (Eleocharis & Scirpus seeds dated at  $1630 \pm 50$  years BP) in the upper part of the deltaic sequence indicates a possible lake-level low.

Van Sledright, Malinda. Western Michigan University

**Title:** Resource Base of the Aguaje Palm (*Mauritia flexuosa*) in the Peruvian Amazon.

**Abstract:** The aguaje palm (*Mauritia flexuosa*) is the most economically important palm species in western Amazonia and is especially valuable in Peru. The palms have a patchy distribution and are found in swamps called aguajals. The fruit from the palm is marketed to produce various products. To reach the wild fruit, these tall palms are cut down, thus reducing the resource genetically and economically, for future generations. Aguaje is a dioecious species; only the female trees produce fruit, and cutting them down leaves a preponderance of unproductive male palms within the aguajals. An assessment of these aguajals near the Reserva Comunal Tamshiyacu-Tahuayo (RCTT) in the province of Loreto was completed based on plot inventories taken at various locations within the swamps. The perimeter and area of the palm swamps were also acquired with GPS to map their locations in relation to each other and to nearby villages. This paper examines preliminary results of this research and addresses why this information is important for conservation.

Varnakovida, Pariwate. MSU Geography

**Title:** Hospital cluster evaluation: correlation between travel time and hospital visits for the state of Michigan

**Other Authors:** Joseph P. Messina and Mark Finn, Michigan State University

**Abstract:** Community hospitals are situated where they are for many reasons. Many facilities were built to serve large populations living close by; others were intended to provide regional coverage across less populated areas. The precise settings of these hospitals were dictated by diverse factors of geographical and historical contingency, including distribution of population at the time each facility was constructed, the physical characteristics of available sites, and the human and political context of the moment. Many hospitals were grouped into cluster according to common utilization; however, those clusters are overlapped. Many people may still have to travel in distance outside the cluster for specific healthcare. This research assesses Michigan community's hospital clusters and help to better understand the relationships between travel time and hospital visits within the same zip code areas. The method used in this research quantify access to existing hospitals statewide in same cluster grouping by the state of Michigan, taking into account factors such as distance to nearest hospital and road network density to estimate travel time. Areas falling below a particular time threshold would be identified as relatively outside of cluster, and could be employed as a criterion in the evaluation of new community hospital cluster methodology. The results showed that many people traveled further than 30 minutes outside of the existing cluster for healthcare. This could help policymakers understand some of the spatial complexity of both the demand and the accessibility dimensions of the problem.

Vojnovic, Igor. Michigan State University, Geography

**Title:** The Urban Built Environment, Travel Behavior, and Physical Activity: A Lansing, Michigan Context

**Other Authors:** Angelo Podagrosi (Map Info), Shannon Smith (Kimberly-Clark), Zeenat Kotval (Michigan State University), Perry Varnakovida (Michigan State University), Jieun Lee (Michigan State University), Joseph Messina (Michigan State University), Bruce Pigozzi (Michigan State University), Joe Darden (Michigan State University)

**Abstract:** Obesity is a leading health issue in the U.S., generating considerable health risks for large segments of the population. According to the Centers for Disease Control and Prevention (2004), approximately 37% of the U.S. adult population is overweight, and 22% of adults are obese. The State of

Michigan has been leading national trends in obesity. Michigan ranks sixth in the U.S. in the proportion of population overweight and obese. Physical activity is considered an important variable in affecting overweight prevalence and associated health costs. In fact, the Governor's Council on Physical Fitness revealed that the cost of inactivity in Michigan was \$8.9 billion in 2002. In meeting physical activity objectives, analysts have recognized the role of urban form as one variable that might influence pedestrian activity. While the relationship between accessibility and non-motorized travel is well-known, much less is known of how variations in income, race, age, and gender affect pedestrian activity. The objectives of this research are to: measure neighborhood accessibility for two inner-city Lansing sites, quantify functional differences and the differences among these two sites compared to four suburban sites based on socioeconomic conditions and ethnicity; explore how perceptions of walking vary by income, race, age, and gender; explore whether inner-city residents are walking less in terms of distance and frequency than suburban residents; and explore the association between obesity, based on BMI, and walking, accessibility, income, race, age and gender.

Whately, C. Elizabeth. Western Michigan University

**Title:** Habitat Suitability Modeling for *Tanacetum Huronense* Nutt in the Great Lakes Region

**Abstract:** Lake Huron tansy (*Tanacetum huronense* Nutt.), listed as threatened within Michigan, is one of the state's 668 protected plant and animal species. Little scientific research has been published that addresses the habitat requirement of the Lake Huron tansy. Adequate protection of the tansy, as well as the location of new populations, and the ability to locate potential restoration sites for the species all depend on identifying the variables that define suitable habitat and then locating areas of suitable habitat within the state. Partitioned Mahalanobis distance ( $D_2(k)$ ) was used to model habitat suitability. A GIS-based model was created of the study area comprised of 1610m inland from the Great Lakes for 14 counties in the northern Lower Peninsula and the eastern half of the Upper Peninsula of Michigan using 11 habitat variables: elevation, slope, cosine aspect, sine aspect, distance to the shore, growing season cumulative growing degree days, cumulative winter temperature, growing season precipitation, percent gravel, percent sand, and pH. Preliminary results suggested that percent sand, percent gravel, growing season temperature, winter temperature, and proximity to the shore were important variables for describing suitable tansy habitat. More shoreline habitat was labeled suitable than expected; further work needs to be conducted, with the goal of increasing the specificity of the model. The results also indicated that modeling habitat for a shoreline/dune specialist species presents challenges to traditional GIS methods.

Yang, Li. Western Michigan University

**Title:** Authenticity in Ethnic Tourism

**Abstract:** Authenticity is an important concept in ethnic tourism studies as well as a critical issue in tourism practice. This research examines tourists' perceptions of ethnic cultural attractions and products, and the levels of satisfaction with their experiences based upon empirical research in a well-known tourism destination in China – Xishuangbanna, Yunnan. Multiple research methods, including surveys, interviews, informal discussions and observations were adopted in the case studies. The findings indicate that most tourists have little knowledge of ethnic culture, and they judge authenticity by stereotyped images on their own. The spectacular images of performance and traditional architecture portrayed in mass media, tourism advertising, and literature are mainly used to evaluate authenticity. Tourists' perceptions of authenticity are thus blurred and fluid.

Yansa, Catherine. Michigan State University

**Title:** Paleoindian Environments of Eastern Wisconsin

**Other Authors:** David F. Overstreet, Archaeological Research Center, Marquette University

**Abstract:** Plant fossil analysis of materials collected from three Paleoindian sites in eastern Wisconsin reconstructs the landscape context for the earliest Native Americans in the mid-continent. Microscopic

pollen and plant macrofossils (seeds, leaves and other plant remains) recovered from sediments encasing two human-butchered mammoth skeletons excavated at the Hebior and Schaefer sites in Kenosha County indicate that a spruce-sedge parkland existed at this time. These sites provide the earliest undisputed evidence for humans in North America, both dating to 14,700 calendar years ago, predating by at least a millennium the Clovis people of the American Southwest who similarly consumed mammoths as part of their diet. In Wisconsin, these earliest people and megafauna occupied a swampy environment, close to what was then the shoreline of glacial Lake Chicago. Similarly, archaeological and paleobiogeographic data from the Fabry Farm site, in the Green Bay area to the north, indicate that Late Paleoindians inhabited the shoreline of glacial Lake Algonquin at least three times between 13,000 and 10,100 calendar years ago, presumably to utilize local sedge wetland resources. The data from these three sites suggest that the earliest Native Americans occupied fairly inhospitable environments – the shorelines of glacial lakes, not far from the ice margin, which hints at their resilience and versatility in land use and resource exploitation.

Zaker, Antoniette. University of Michigan-Dearborn

**Title:** There's no Place like Home: Using GIS to Determine the Potential Inundation of Land and Displacement of People in the State of Florida Due to Future Sea Level Rise

**Other Authors:** Dr. Jacob Napieralski, University of Michigan-Dearborn

**Abstract:** With the continuation of global temperature rises and glacier melting, global sea levels are expected to rise anywhere between 0.5 m to 6 m by 2100, putting heavily populated coastal regions, such as Florida, at high risk of inundation. To determine the impact these projected sea level changes have on Florida, several GIS models are developed to (1) illustrate how far inland the sea level can potentially rise and, as a result, the area of land inundated, and (2) estimate the approximate number of people displaced. Topographic data representing predicted sea level rise (in increments of 1 m) and population densities (county) generated from 2000 US Census data is converted to 1 km<sup>2</sup> grid cells. Raster calculators are used to determine the area inundated and total displacement of people due to projected sea level rises. In addition, the same method is applied to a case study that compares population displacement that would occur in 2 counties on a block basis. Results indicate sea level rises of 1 m and 6 m submerge a total of 6480 km<sup>2</sup>, and 40,606 km<sup>2</sup> in Florida, respectively. While the displacement of people is based on present day population density, results suggest that between 694,000 and 6,228,000 people may be affected. Predicted sea level rise will change the landscape of Florida, displace millions of people and destroy national landmarks and unique ecosystems. Results from this study can be used to manage physical and human issues caused by rises in sea level.

Zhang, Chuanrong. Kent State University

**Title:** A Framework of Real-Time Feature Level Spatial Data Sharing for Disaster Management

**Other Authors:** Weidong Li Department of Geography, Kent State University

**Abstract:** The use of GIS for disaster management can readily fail due to the unavailability of spatial data in real-time. Although Internet GIS provides proprietary ways to allow users to quickly access, display and query spatial data over the web, the heterogeneity of existing GIS and the file-level data sharing systems over the web causes problems for time-critical disaster management that need real-time data access to the most up-to-date information. This paper proposed a framework of real-time spatial data sharing at feature level by using geospatial semantic web services. The results from an implemented prototype show that the approach has great potential towards data sharing in real time over the web for disaster management applications. However, several challenges of the approach illustrate that we still seem far away from the ideal of seamless access to geospatial information and services for effective disaster management.