

UNIV. OF TENNESSEE
GEOSYM2018

University of Tennessee Geography Research Symposium



Mapping Outside the Lines:
Geography as a Nexus for
Interdisciplinary and Collaborative Research

February 15 & 16, 2018



Welcome to the Department of Geography at the University of Tennessee. Our department offers B.A., M.S., and Ph.D. degrees in geography. Our faculty and students, including undergraduate students, conduct research in Tennessee, the southeastern United States, and across the globe. The Department is a lively, talented, and congenial community devoted to nurturing students, serving their intellectual passions and vocational goals, and providing them the best learning environment possible—all while advancing the frontiers of geographic knowledge.

Students work alongside award-winning and renowned scholar-teachers who place great value on field work, international travel and scholarship, mapping and location analysis, the natural environment and sustainable development, state of the art technology and data analysis (quantitative and qualitative), community engagement, responsible planning, and social justice. Our faculty, students, and staff hail from a diversity of backgrounds, cultures and world regions, and we welcome prospective students from all walks of life and disciplines. After you check out our campus, consider visiting the Department in the Burchfield Geography Building, built for us in 2000 and centrally located on campus.

Many thanks to our generous sponsors:

The Student Programming Allocation Committee, the Department of Geography, the Department of Journalism & Electronic Media, and the Department of Classics

Dear Conference Participants and Guests,

The organizing committee warmly welcomes you to UT Geography's third biennial research symposium. Our committee, composed of a team of undergraduate students, graduate students, and faculty advisors, is thrilled to share this weekend with you. What began over five years ago as an idea for us to share our research with each other has become a departmental tradition featuring students from across the UT community and the region. We have worked hard to make this a weekend to remember!

Please take a look through the program and see what we have in store for you. We've also included information about where to eat and play nearby on campus and in downtown Knoxville, so we hope you'll take some time to enjoy the city.

Thanks so much to our cosponsors, listed on the second page, for your generous support. Also, last, but certainly not least, thank you to our office staff, Pamela Sharpe, Tracy Branch, and Norma Galyon, for going beyond the call of duty to help make this weekend happen. This has truly been a team effort, and we are lucky to be part of such a supportive university community.

Best Wishes,

The Geography Symposium Steering Committee

Student Leaders:

Savannah Collins-Key, Co-Chair

Emma Walcott-Wilson, Co-Chair

Maegen Rochner, Physical Geography Coordinator

Emily Frazier, Human Geography Coordinator

Jonathan German, GIS/ORNL Coordinator

Jordan Brasher, Digital Content Manager

Ethan Bottone, Undergraduate Outreach

Faculty Advisors:

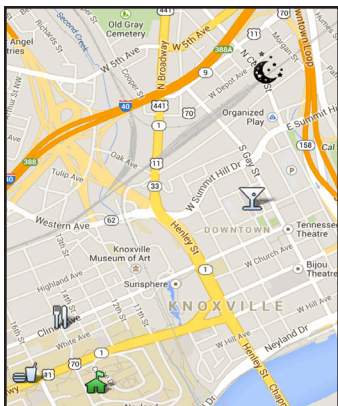
Dr. Isabel Solange Munoz

Dr. Henri D. Grissino-Mayer

Dr. Tyler W. Sonnichsen

Dr. Robert N. Stewart

Welcome to Knoxville, Tennessee!



	Burchfiel Geography Building 1000 Philip Fulmer Way
	Chaiyo Thai & Sushi Bar Our department's go-to lunch destination. Thai and sushi. 601 James Agee Street
	Market Square Knoxville's boutique dining and shopping district. knoxvillemarketsquare.com
	Old City Knoxville's Night Life district. At the intersection of E Jackson Ave. and N Central St. Enjoy dinner at department favorites Crown and Goose and Jig & Reel.
	"The Strip" Restaurants, bars, and retail, including: Chipotle Mexican Grill, Noodles & Company, Firehouse Subs, Wendy's, McDonald's, and more...just walk west down Cumberland Ave.

THE PANHELLENIC CENTER

ACCESSIBILITY

- There are no accessible activation buttons to Panhellenic entrances/exits. Restrooms are not accessible. There is no access via an elevator between first and second floors.
- Please contact the Office of Disability Services to find out more about their services, including interpreters, please call **865-974-6087 (V/TTY)** or visit: <http://ods.utk.edu/>

ACCESSIBLE ENTRANCES

- **First floor:** Cumberland Avenue entrance: Cumberland Avenue
- **Access:** walkway between College of Law and the Panhellenic Building or access from the 16th Street ramp.
- **Second floor:** West entrances - access via ramp at the northern most entrance from 16th Street.

PARKING

- Please utilize the Volunteer Hall Parking Garage for guest parking needs, located on White Avenue between 16th and James Agee Streets.
- For more information, please contact **Parking & Transit** at 865-974-6031, or visit: <http://parking.utk.edu/>

Welcome!

*All regular sessions will be in
Panhellenic Center; the Keynote
 Address will take place in
Lindsay Young Auditorium in
 Hodges Library.*

Schedule:

Thursday, February 15th

Poster Presentations on Display All Day in Panhellenic Multipurpose Room

7:00-8:00	1st Floor Lobby	Registration; Breakfast by Aramark
8:00-10:00	Room 202	SOCIO-ECONOMIC GEOGRAPHY
10:00-11:40	Room 201	BIOGEOGRAPHY
12:00-1:00	<i>Lunch provided by Aramark in Multipurpose Room</i>	
1:00-3:00	Room 202	CULTURAL LANDSCAPES
1:10-3:00	Room 201	Lightning Talks (Session 1)
2:00-3:00	Room 201	Lightning Talks (Session 2)
3:30-5:00	Room 206	SPECIAL PANEL SESSION

Friday, February 16th

9:00-11:00	Room 201	CLIMATE & ENVIRONMENT
	Room 202	GIS & POPULATION GEOGRAPHY
11:00-11:30	Move from Panhellenic to Hodges Library	
11:30-12:25	<i>Lunch provided by Jason's Deli in Lindsay Young Lobby</i>	
12:30-2:00	Lindsay Young	KEYNOTE ADDRESS

Closing Remarks

Thursday, February 15th

7:00-8:00 Registration (*Available All Day*)

Posters on Display All Day in Multipurpose Room:

Odd Fellows Cemetery: A Community Based GIS Project

Christian Allen, Department of Anthropology, University of Tennessee, Knoxville.

Experiments with Magnetic Susceptibility of Lake Sediments

Luke Blentlinger, Department of Geography, University of Tennessee, Knoxville.

Comparing Size Measurements of Prehistoric Maize Pollen Grains in Costa Rica and the Dominican Republic

Eric Collins, Department of Anthropology, University of Tennessee, Knoxville.

The Geography of Opiate Addiction, Overdose, and Treatment in Tennessee

David Leventhal, University of Tennessee, Knoxville.

Soil Charcoal in a Deciduous Forest in East Tennessee

Elizabeth Maclennan, Department of Geography, University of Tennessee, Knoxville.

Combining forest change measurements from Forest Inventory and Analysis (FIA) and remote sensing products in South Carolina

Brooke Rose, Department of Geography, University of Tennessee, Knoxville.

8:00 - 10:00 SOCIO-ECONOMIC GEOGRAPHY (RM 202):

8:00 - 8:20 A Tale of Two (Tennessee) Cities: How Chattanooga and Knoxville Interpret Livability

Madison Allen, University of Tennessee, Knoxville.

8:20 – 8:40 An assessment of landowners' willingness to promote bioenergy crop production: a case-study in northern Kentucky
Sandhya Nepal, Department of Geography, University of Tennessee, Knoxville.

8:40 – 9:00 Temporary Clusters and Knowledge Exchange: Trade Fair Educational Programs and Access to Remote Knowledge
Jonathan German, Department of Geography, University of Tennessee, Knoxville.

9:00 – 9:20 Graffiti and the City: Krog Street Tunnel
Katharine Agbenohevi, University of Tennessee, Knoxville.

9:20 – 9:40 Are 'Water Smart Landscapes' Contagious? An epidemic approach on networks to study peer effects
Christa Brelsford. Geographic Information Science & Technology Group, Oak Ridge National Laboratory.

9:40 – 10:00 Coupling data science with participatory planning for equity in urban renewal programs: An analysis of Atlanta's Anti-Displacement Tax Fund
Jeremy Auerbach, Department of Geography, University of Tennessee, Knoxville.

10:00 - 11:40 BIOGEOGRAPHY (RM 201):

10:00 – 10:20 Annual growth zones in stems of *Hypericum irazuense*: a new fire proxy in highland Costa Rica
Matthew Kerr, Department of Geography, University of Tennessee, Knoxville.

10:20 – 10:40 Climate Change in a High-Elevation Whitebark Pine Ecosystem, Beartooth Mountains, Wyoming, USA
Maegen Rochner, Department of Geography, University of Tennessee, Knoxville.

10:40 – 11:00 Intra-Island Growth Variation between Balsam Fir (*Abies balsamea*) and White Spruce (*Picea glauca*) Trees, Isle Royale National Park, Michigan, USA
Zachary Merrill, Department of Geography, University of Tennessee, Knoxville.

11:00 – 11:20 Dendrochronology in the Southeastern U.S.: Status, Updates, and Key Projects

Henri Grissino-Mayer, Department of Geography, University of Tennessee, Knoxville.

11:20 – 11:40 Limnological Observations at Five Costa Rican Lakes

Sally Horn, Department of Geography, University of Tennessee, Knoxville.

12:00-1:00 Lunch Break

Lunch provided by Aramark in Multipurpose Room!

1:00 - 3:00 *Concurrent Sessions*

CULTURAL LANDSCAPES (RM 202):

1:00 – 1:20 Using Twitter to Examine the Geography of Memory

Janna Caspersen, Department of Geography, University of Tennessee, Knoxville.

1:20 – 1:40 The Micro-geographies of Mammy: Southern Nostalgia and Roadside Racism

Bradley Hinger, Department of Geography, University of Tennessee, Knoxville.

1:40 – 2:00 The politics of beauty: aesthetics and authenticity at plantation house museums

Emma Walcott-Wilson, Department of Geography, University of Tennessee, Knoxville.

2:00 – 2:20 From south of the Mason-Dixon Line to south of the Equator: analyzing the transnational Confederate memorial landscape

Jordan Brasher, Department of Geography, University of Tennessee, Knoxville.

2:20 – 2:40 Mortal Injustices: Interpersonal Abuse and Health Inequity in Geographies of the Intimate

Heather Davis, Department of Geography, University of Tennessee, Knoxville.

2:40 – 3:00 “The Music Never Stopped”: Naming Businesses as a Method for Remembering the Grateful Dead
Hannah Gunderman, Department of Geography, University of Tennessee, Knoxville.

Lightning Talks - Session 1 (RM 201):

1:10 – 1:15 Lyrics, Letters, and the Lives of Ben Irving
Tyler Sonnichsen, Department of Geography, University of Tennessee, Knoxville

1:16 – 1:21 Dendrochronological dating of inexplicable hackberry mortality in Augusta, GA
Savannah Collins-Key, Department of Geography, University of Tennessee, Knoxville

1:22 – 1:27 Utilizing Augmented Reality Sandtables for K-12 Instruction
Michael Camponovo, Department of Geography, University of Tennessee, Knoxville

1:28 – 1:33 Inclusion of Climatic Data to Improve LandScan HD Deep Learning Models
Katherine Wakefield, Geographic Information Science & Technology Group, Oak Ridge National Laboratory.

1:34 – 1:39 Dendrochronological Dating of Historic Red Cedar Samples from Norris Basin, TN
Laura Smith, Department of Geography, University of Tennessee, Knoxville

1:40 – 2:00 **Q&A**

Lightning Talks - Session 2 (RM 201):

2:00 – 2:05 A New Underground Railroad: Examining Historical African-American Travel Patterns through the “Green Book”
Ethan Bottone, Department of Geography, University of Tennessee, Knoxville

2:06 - 2:11 A Comparison of Growth Rates between Fir and Spruce Trees at Isle Royale National Park, Michigan, USA
Zachary Merrill, Department of Geography, University of Tennessee, Knoxville

2:12 - 2:23 A Multiproxy Record of Paleoenvironmental Change from a Belizean Pine Savanna
Jacob Cecil, Department of Geography, University of Tennessee, Knoxville

2:18 - 2:23 The Role of Urban Redevelopment in Memorialization
Mimi Thomas, Department of Geography, University of Tennessee, Knoxville

2:24 - 2:29 Scale
Adam Alsamadisi, Department of Geography, University of Tennessee, Knoxville

2:30 - 2:34 Cultural Factors That Drive Occupancy Numbers in the Population Density Tables Project
Lauryn Bragg, Geographic Information Science & Technology Group, Oak Ridge National Laboratory.

2:35 - 3:00 **Q&A**

3:30 - 5:00 Special Panel Session (RM 206)

Friday, February 16th

9:00 - 11:00 *Concurrent Sessions*

CLIMATE & ENVIRONMENT (RM 201):

9:00 - 9:20 Potential Contamination Risk in Tennessee Aquifers from Oil and Gas Drilling

Emma Reed, University of Tennessee, Knoxville.

9:20 - 9:40 A Non-Parametric Distance-Based Method Using All Available Indicators for Integrated Environmental Assessment - A Case Study of the Mid-Atlantic Region, USA

Liem Tran, Department of Geography, University of Tennessee, Knoxville.

9:40 - 10:00 Understanding the Dynamics of Urban Heat Islands

Adam Brandt, Urban Dynamics Institute, Geographic Information Science & Technology Group, Oak Ridge National Laboratory.

10:00 - 10:20 Winter Climate Variability in the Southern Appalachian Mountains, 1910-2017

Montana Eck, Appalachian State University.

10:20 - 10:40 Analysis of tornadic storm modes in Tennessee National Weather Service county warning areas

Daniel Burow, Department of Geography, University of Tennessee, Knoxville.

10:40 - 11:00 Migration of the Lifetime Maximum Intensity of Tropical Cyclones

Kelsey Ellis, Department of Geography, University of Tennessee, Knoxville.

GIS & POPULATION GEOGRAPHY (RM 202):

9:00 - 9:20 VIIRS Day/Night Band (DNB) data for Monitoring Power Recovery: Application and Challenges

Susan Kotikot, Geographic Information Science & Technology Group, Oak Ridge National Laboratory.

9:20 - 9:40 Estimation of electricity consumption at urban scales using geospatial data and its implications for urban sustainability
Pranab Roy Chowdhury, University of Tennessee, Knoxville.

9:40 - 10:00 Upper and Lower Class and PDT
Beth Clifton Holcomb, Geographic Information Science & Technology Group, Oak Ridge National Laboratory.

10:00 - 10:20 Systemic Expansion of PDT to Incorporate Heritage Sites as Potential Indicators of Social and Political Change in Movement and Landscape
Sarah Walters, Geographic Information Science & Technology Group, Oak Ridge National Laboratory.

10:20 - 10:40 Topography and Refugee Vulnerability in the Kutupalong Refugee Camp, Bangladesh
Rachel Palumbo, Geographic Information Science & Technology Group, Oak Ridge National Laboratory.

10:40 - 11:00 Fostering Integration Through Housing: Refugee Resettlement in the United States
Emily Frazier, Department of Geography, University of Tennessee, Knoxville.

11:00-12:00 Break

12:00 - 12:25:

Please join us for refreshments before the keynote address in the lobby of Lindsay Young Auditorium!

12:30-2:00 Keynote Address: Dr. J. Marshall Shepherd
Lindsay Young Auditorium, Hodges Library



**Zombies, Sports, and Cola:
Implications for Communicating
Climate Change**

Dr. J. Marshall Shepherd is a leading international expert in weather and climate and is the Georgia Athletic Association Distinguished Professor of Geography and Atmospheric Sciences at the University of Georgia. Dr. Shepherd was the 2013 President of American Meteorological Society (AMS), the nation's largest and oldest professional/science society in the atmospheric and related sciences. Dr. Shepherd serves as Director of the University of Georgia's (UGA) Atmospheric Sciences Program and Full Professor in the Department of Geography where he is Associate Department Head. Dr. Shepherd is also the host of The Weather Channel's Award-Winning Sunday talk show Weather Geeks, a pioneering Sunday talk show on national television dedicated to science and a contributor to Forbes Magazine.

Dr. Shepherd currently chairs the NASA Earth Sciences Advisory Committee and was a past member of its Earth Science Subcommittee of the NASA Advisory Council. He was a member of the Board of Trustees for the Nature Conservancy (Georgia Chapter), National Oceanic and Atmospheric Administration (NOAA) Science Advisory Board, Atlanta Mayor Kasim Reed's Hazard Preparedness Advisory Group United Nations World Meteorological Organization steering committee on aerosols and precipitation, 2007 Inter-governmental Panel on Climate Change (IPCC) AR4 contributing author team, National Academies of Sciences (NAS) Panels on climate and national security, extreme weather attribution, and urban meteorology.

**Please join us for refreshments before the keynote
address in the foyer of Lindsay Young Auditorium.**

Abstracts are listed according to the first authors' last names.

PAPER ABSTRACTS:

Katharine Agbenohevi, *University of Tennessee, Knoxville*. "Graffiti and the City: Krog Street Tunnel." Occupying an unmistakable aspect of many American urban cities, the perception of graffiti elicits either ire or praise in contested spaces, depending on the perception of its viewers. The power of graffiti lies in its ability to recreate the visual representation of urban spaces. With urban spaces, power dynamics are influential in determining who has the right to express themselves in public spaces and the form that this expression is supposed to take place. Graffiti draws ire due to the perception that it unravels the established order and ushers chaos upon the city. Anti-graffiti task forces have arisen in cities in hope of relegating art to museums, effectively creating classifications of legitimate and illegitimate art by determining where it ought to exist. This complex story of public interests and contested space can be told through the lens of the Krog Street Tunnel located in Atlanta, Georgia. Connecting the old factory neighborhood of Cabbagetown to Atlanta's first street car suburb, Inman Park, the art contained within the tunnel attracts individuals searching for evocative art within the city. In 2011, clashes between local members of the surrounding neighborhood and ticket holders at masquerade event revealed internal frustrations of a community that saw its artistic output being commodified. In this presentation, I will present alternative ideas of graffiti as a means for marginalized communities to assert control over the city and the unintended effects of graffiti task forces through the lens of the Krog Street Tunnel.

Madison Allen, *University of Tennessee, Knoxville*. "A Tale of Two (Tennessee) Cities: How Chattanooga and Knoxville Interpret Livability." Knoxville, Tennessee, home of the Vols, is nestled in the foothills of the Great Smokey Mountains. Chattanooga, Tennessee, home of the Chattanooga Choo Choo, is nestled in the valley of surrounding mountains. The cities are less than a two-hour car ride from each other, yet offer varying depictions of what is considered a "livable" city. Some people argue that a city is livable when it provides physical amenities such as waterfront access, like the Tennessee River. Others will say social amenities such as the Riverbend Music Festival, or the home football games Knoxville hosts each fall. There are also the factors of safety, climate, environment, and human capital that all play a role into the idea of livability. Both Knoxville and Chattanooga have developed over the years to make its

city attractive not only to locals, but outsiders as well. This paper explores what makes Chattanooga and Knoxville livable, and how both cities can improve in the years to come.

Jeremy Auerbach, *Department of Geography, University of Tennessee, Knoxville*. “Coupling data science with participatory planning for equity in urban renewal programs: An analysis of Atlanta’s Anti-Displacement Tax Fund.” We estimate the cost and impact of a proposed anti-displacement program in the Westside of Atlanta (GA). This program intends to fully subsidize property tax increases for eligible residents of neighborhoods where there are two major urban renewal projects underway, a stadium and a multi-use trail. We first estimate household-level income eligibility for the program with machine learning approaches applied to publicly available household-level data. We then forecast future property appreciation due to urban renewal projects using machine learning techniques applied to historic tax assessment data. Combining these projections with household-level eligibility, we estimate the costs of the program for different eligibility scenarios. We find that our household-level data and machine learning techniques result in more accurate numbers of eligible homeowners and program costs, both of which were found to be considerably larger than the original proposal. The eligibility estimates and property appreciation forecasts we generated were also incorporated into an interactive tool for residents to determine program eligibility and view their expected increases in home values. Community residents have been involved with this work and provided greater transparency, accountability, and impact. Residents can also correct and update the information which will increase the accuracy of the program estimates and validate the modeling.

Adam Brandt, *Urban Dynamics Institute, Geographic Information Science & Technology Group, Oak Ridge National Laboratory*. “Understanding the Dynamics of Urban Heat Islands.” Urban areas across the world are growing rapidly in size and population density, which is forcing significant physical changes to landscapes and human activities therein. One major effect of this is the well-documented urban heat island (UHI) phenomenon, simply defined as the temperature difference between an urban setting and its surrounding countryside. Urban growth not only increases the demand on energy, water, and other infrastructures, but also on transportation infrastructures to meet the demand of increased capacity for mobility. While changes in land use, land cover and configuration (e.g. converting grassland to asphalt) are understood to be the primary drivers of UHI, it is not well understood whether, and to what degree, mobility (i.e. road networks, vehicle volume) contributes to UHI. Using the city of Knoxville,

TN as a case study, this pilot project focuses on exploring the relationship between UHI, land coverage and mobility by examining the following questions: (i) does mobility impact UHI intensity over time? and (ii) to what extent does mobility contribute to UHI intensity as compared to other contributors, such as land cover? Understanding the correlation between mobility and UHI has important implications for urban growth and (micro)climate modelling, which informs urban planning policies regarding infrastructure resilience and UHI mitigation strategies. Therefore, future work will involve applying the methodology developed herein to other cities across the United States.

Jordan Brasher, *Department of Geography, University of Tennessee, Knoxville.*

“From south of the Mason-Dixon Line to south of the Equator: analyzing the transnational Confederate memorial landscape.” In recent years the tragic events unfolding in places like Charleston, South Carolina in 2015 and in Charlottesville, Virginia in 2017 have reignited debate over the very public presence of the Confederacy on the memorial landscape. The legacies of white supremacy reflected in and refracted through Confederate memorialization practices appear on the surface to be a southern if not national public issue, but Confederate memory is a much more globalized phenomenon than most people recognize. The issue of how we remember the histories of slavery and racism cuts across international borders and is circulated transculturally. After the defeat of the Confederacy in the American Civil War, thousands of expatriated Confederate soldiers and their families boarded ships bound for Brazil and formed colonies on the outskirts of São Paulo. Today, Portuguese-speaking descendants of these Confederate soldiers—Confederados—celebrate their Confederate ancestry and heritage each April with a festival (festa) in which women in traditional belle hoop skirts and men clad in Confederate uniforms dance and sing ‘Dixie’, reenact Civil War battles, and consume traditional cuisine from the American South. This paper explores potential research questions around the transnational circulation of the ‘Lost Cause’ myth and the performance of race, memory, and heritage at the annual Festa Confederada.

Christa Brelsford, *Geographic Information Science & Technology Group, Oak Ridge National Laboratory.* “Are ‘Water Smart Landscapes’ Contagious? An epidemic approach on networks to study peer effects.” We test the existence of a neighborhood based peer effect around participation in an incentive based conservation program called ‘Water Smart Landscapes’ (WSL) in the city of Las Vegas, Nevada. We use 15 years of geo-coded daily records of WSL program applications and approvals compiled by the Southern Nevada Water Authority and Clark County Tax Assessors rolls for home characteristics. We use this data to test whether a spatially mediated peer effect

can be observed in WSL participation likelihood at the household level. We show that epidemic spreading models provide more flexibility in modeling assumptions, and also provide one mechanism for addressing problems associated with correlated unobservables than hazards models which can also be applied to address the same questions. We build networks of neighborhood based peers for 16 randomly selected neighborhoods in Las Vegas and test for the existence of a peer based influence on WSL participation by using a Susceptible-Exposed-Infected-Recovered epidemic spreading model (SEIR), in which a home can become infected via autoinfection or through contagion from its infected neighbors. We show that this type of epidemic model can be directly recast to an additive-multiplicative hazard model, but not to purely multiplicative one. Using both inference and prediction approaches we find evidence of peer effects in several Las Vegas neighborhoods.

Daniel Burow, *Department of Geography, University of Tennessee, Knoxville.* “Analysis of tornadic storm modes in Tennessee National Weather Service county warning areas.” This study surveys the convective modes of tornadic thunderstorms occurring from 2003 to 2014 in the county warning areas (CWAs) of the three National Weather Service offices (Memphis, Nashville, and Morristown) located in Tennessee. The state of Tennessee, like much of the southeast United States, has one of the highest tornado fatality rates in the country, which has prompted a recent increase in cross-disciplinary research on severe weather in the Southeast. Here, we use Storm Prediction Center records and radar archives to classify each tornadic cell in the study period into one of four convective modes: discrete supercell, cell in cluster, cell in line, or quasi-linear convective system. We then examine relationships between convective mode and other variables, including location, time of day, time of year, fatalities, and Enhanced Fujita rating. These results will be paired with interviews of NWS forecasters regarding the influence of convective mode on forecasting and warning techniques to provide an introspective analysis of the effect of convective mode on severe weather procedures.

Janna Caspersen, *Department of Geography, University of Tennessee, Knoxville.* “Using Twitter to Examine the Geography of Memory.” The posting of experiences and opinions through platforms such as Twitter have dramatically expanded public expression and contribution to the project of remembering, interpreting, and re-interpreting the past. Using Twitter data to examine the geography of memory recognizes that social media posts provide an important source of not only quantitative but also meaningful qualitative data for scholars to understand how the legacy and reputation of individuals and organizations are communicated, consumed, and co-constructed by the

public. This presentation is meant to further explain the process of using a crowd-sourced approach to understanding geography and memory.

Heather Davis, *Department of Geography, University of Tennessee, Knoxville.*

“Mortal Injustices: Interpersonal Abuse and Health Inequity in Geographies of the Intimate.” My paper discusses the issue of interpersonal abuse / violence (IPA/V), particularly amongst ethnically and racially marginalized populations, as a health inequity (HI) and, therefore, a multi-scalar geography of the intimate (i.e., body as landscape for violence) that is both caused by and impacts on far reaching geographical and intersectional areas of human experience. I provide a cross-country comparison (Scotland and the US) of the issues of both health inequities and IPA/V, taking into account the theoretical frameworks that underpin the Scottish and US perspectives of HI and IPA/V. Using the intersectionality framework of gender, race, and class, as well as sociocultural context, stigma, discrimination and group norm enforcement, special consideration is taken for understanding of and interventions for ethnically and racially marginalized populations who are affected by IPA/V. Additionally, I discuss the special consideration of mental ill health and IPA/V. I also discuss the health impact of violence / trauma on the body as a result of IPA/V, the statistics of which make IPA/V not only a health inequity but also a public health crisis. Finally, I discuss solutions (prevention versus interventions) from an intersectional point of view, with a particular focus on the effectiveness of community based solutions, providing an overview of the Creative Interventions creation of what can be considered the original community based solution intervention program. This paper is the initial contribution to my wider dissertation research proposal, focusing on cross-country comparisons between Scotland the US on health inequalities, particularly mortality, with a sub-focus on HI in regards to ethnically and racially marginalized populations. This research is intended to aid in policy recommendations to US and Scottish national and local governments regarding the impact of health inequalities on their respective populations, in light of cross-country similarities. It is my joint co-supervised PhD project between NHS Health Scotland, the health inequalities agency (NHS Board) of the Scottish Government and the University of Tennessee, Department of Geography.

Montana Eck, *Appalachian State University.* “Winter Climate Variability in the Southern Appalachian Mountains, 1910-2017.” This paper investigates climatic variability of the winter season in the southern Appalachian Mountains and identifies the associated large-scale atmospheric forcing patterns. Recognized as an anomalous region regarding climate change, this study identifies long-term trends and variation

of temperature and snowfall during climatological winter (DJF) from 1910 to 2017. The identification of several teleconnection patterns, namely ENSO, NAO, and PDO, allow for further understanding of how this region has remained a climatic anomaly. Results of this study indicate that the southern Appalachian Mountains have experienced a statistically significant long-term cooling trend since the early 20th century, with recent decades suggesting a reversal of this cooling. Snowfall is characterized by high interannual variability, with the 1960s and 1970s producing anomalously high amounts of snowfall. Several atmospheric forcing couplings are identified that align with anomalous conditions in the region. Most notably, negative temperature anomalies and higher snowfall amounts are frequently found during moderate El Niño and negative NAO seasons, with the opposite being true during strong La Niña and positive NAO winters. The influence of these teleconnection patterns is spatially dependent, with areas east of the Blue Ridge Escarpment highly dependent on the phase of ENSO, whereas higher elevations and western slopes favor the NAO. The identification of these pattern couplings is critical to not only improving understanding of the anomalous climate of the southern Appalachian Mountains but also in enhancing seasonal forecasting and predicting future climate change in the region.

Kelsey Ellis, *Department of Geography, University of Tennessee, Knoxville*. “Migration of the Lifetime Maximum Intensity of Tropical Cyclones.” The climatology of tropical cyclones is an immediate research need, specifically to better understand their long-term patterns and elucidate their future in a changing climate. One important pattern that has recently been detected is the poleward shift of the lifetime maximum intensity (LMI) of tropical cyclones. This study further assessed the recent (1977–2015) spatial changes in the LMI of tropical cyclones, specifically those of tropical storm strength or stronger in the North Atlantic and northern West Pacific basins. Analyses of moving decadal means suggested that LMI locations migrated south in the North Atlantic and north in the West Pacific. In addition to a linear trend, there is a cyclical migration of LMI that is especially apparent in the West Pacific. Relationships between LMI migration and intensity were explored, as well as LMI location relative to landfall. The southerly trend of LMI in the North Atlantic was most prevalent in the strongest storms, resulting in these storms reaching their LMI farther from land. The relationship between intensity and LMI migration in the West Pacific was not as clear, but the most intense storms have been reaching LMI closer to their eventual landfall location. This work adds to those emphasizing the importance of understanding the climatology of the most intense hurricanes and shows there are potential human impacts resulting from LMI migration.

Emily Frazier, *Department of Geography, University of Tennessee, Knoxville*. “Fostering Integration Through Housing: Refugee Resettlement in the United States.” Highly politicized during the 2016 U.S. election, refugees were thrust further into the national spotlight after a series of executive orders that, among other provisions, suspended the United States Refugee Admissions Program for 120 days. A protracted legal battle ensued, causing widespread uncertainty among refugees and resettlement agencies in the U.S. and dramatically lowering projected admissions for FY 2017. Because resettlement agencies receive arrival-based funding to provide services, the fall-out from the executive order(s) and subsequent admissions cuts has severely curtailed local agencies’ ability to welcome and support refugees already en route as well as those already settled who require assistance for integration. Advancing neoliberal policies have cultivated an increasingly uneven and fragmented landscape of resettlement service provision, and recent cuts magnify existing vulnerabilities generated by these systemic flaws. The combined effect is felt most severely at the municipal level as agencies struggle to effectively support integration. Scholars and service providers reiterate the importance of support services, particularly in housing, as essential to the process of integration for resettled refugees. Through a scalar focus on housing this presentation examines the process of refugee integration as mediated by state- and non-state actors involved in the provision of housing for refugees in a southeastern U.S. city. The purpose of this presentation is to identify gaps that exist in the provision of refugee housing and how civil society participates in such services in order to critically examine how integration is operationalized, thereby probing notions of integration as a “two-way” process between refugees and society.

Jonathan German, *Department of Geography, University of Tennessee, Knoxville*. “Temporary Clusters and Knowledge Exchange: Trade Fair Educational Programs and Access to Remote Knowledge.” Knowledge is one of the most desirable commodities within any industry. Due to a continually globalizing world market, firms seek new venues in order to access pertinent information that will aid in their success. Significant sources of knowledge for industrial markets are the temporary agglomerations that have been around for years: international trade fairs. The goal of this paper is to explore how firms in the solar photovoltaic (PV) industry utilize educational programs during the largest solar trade fair in North America with regard to accessing and exchanging remote knowledge in a localized environment. Analyses of firm-level survey data gathered at a recent solar PV trade fair suggest that the importance attributed to participation in educational programs had a significant relationship with the importance of

accessing remote knowledge that is often difficult to obtain within local, permanent clusters. The results suggest that firms participate in trade fair educational programs as a pathway to access remote knowledge that is critical to their success in a globalizing economy. Moreover, the analyses intimate that firms that accord high levels of importance for knowledge exchange with customers and competitors also exhibit high levels of importance for educational program attendance. Evidence is provided through the examination of relationships between firm characteristics and types of educational programs offered that SMEs show significant preference for brief, content-heavy sessions on industry specific topics. Finally, relationships between the importance of exports, trade fairs as export strategies, and the importance of educational programs are also examined.

Henri Grissino-Mayer, *Department of Geography, University of Tennessee, Knoxville*. “Dendrochronology in the Southeastern U.S.: Status, Updates, and Key Projects.” The University of Tennessee has housed the Laboratory of Tree-Ring Science for nearly 20 years and the lab and its personnel have been involved in some of the more interesting projects conducted by tree-ring labs anywhere in the world. In the Southeastern U.S., by far, the most common request for tree-ring services we receive concern our ability to use tree rings for dating the years of construction of historic structures. We’ve recently initiated research on President Abraham Lincoln’s Boyhood Home in Hodgenville, Kentucky, recently dated for the first time two dugout canoes from North Carolina, and will soon be taking samples from another dugout revealed when Hurricane Irma pounded Florida. We continue to analyze past climate from the tree-ring record and have been collecting samples of whitebark pine in the Beartooth Mountains of Wyoming to learn more about landscape response to long-term climate episodes over the past 1000 years. We’ve recently been contacted by the TVA to inquire about an integrated streamflow/drought reconstruction for eastern Tennessee, and plan on using a new species (eastern red cedar) to learn about past regional hydrology. An exciting new project was initiated last year on Isle Royale National Park in Lake Superior, to investigate the relationship between wolf and moose populations from the tree-ring record. Finally, our lab has been at the forefront of wildfire research using the tree-ring record, and we’ve been prominently featured over the past year for our insights on the Gatlinburg wildfire of November 2016.

Hannah Gunderman, *Department of Geography, University of Tennessee, Knoxville*. “The Music Never Stopped”: Naming Businesses as a Method for Remembering the Grateful Dead.” Memorialization on the cultural landscape is a common method of

celebrating the legacy of an event or person significant to the history of geographical location. In an effort to preserve the excitement and creativity associated with a musical phenomenon, it is commonplace to dedicate items on the landscape in memoriam to their legacy. The Grateful Dead is a band that continues to define the ideals of the late-1960s San Francisco Sound through their music’s creative freedom and inclination toward experimentation. Although the original lineup of the Grateful Dead is no longer intact, the spirit of the music they created and their psychedelic appeal has been preserved on the cultural landscape. Through the naming of businesses after the band, hundreds of business owners in the United States have collectively worked to preserve the Grateful Dead’s legacy. In this paper I explore the distribution of businesses in the United States with Grateful Dead-related names, their correlation with the band’s U.S. tour locations from 1965-1995, and how the presence of these business names enriches the cultural landscape with the memory of the band’s music as a product of the iconic San Francisco Sound. I also feature interviews with the owners of businesses named after the band, providing ethnographic detail to the spatial distribution of these businesses on the visual landscape of the U.S. This mixed-methods research highlights the longevity of the Grateful Dead’s legacy, and reiterates how landscape memorialization has allowed the culture and emotions associated with their music to continue strong.

Bradley Hinger, *Department of Geography, University of Tennessee, Knoxville*. “The Micro-geographies of Mammy: Southern Nostalgia and Roadside Racism.” The Dog Patch is a souvenir shop and a gun vendor off I-75 in London, Kentucky that sells a variety of typically “Southern” souvenirs from liquor flavored cooking sauces to cowboy hats to Civil War themed memorabilia. The store depends upon a nostalgic appeal to the antebellum South to make a profit. However, this appeal to “Southernness” depends upon an historical ambivalence. Among the seemingly innocuous Southern items are a variety of Mammy and Uncle Ben figurines of various sizes. Through these objects, we examine how selling the South depends upon a simultaneity of remembrance and forgetting and through this forgetting reifies white supremacy. When racist caricatures are sold alongside valiant depictions of the Confederacy, a white supremacist version of U.S. national history is reproduced and normalizes its existence in the present. The Dog Patch sells supremacy by covering legacies of racist violence through the nostalgia for the ‘Lost Cause.’ One of a number of examples, the Dog Patch’s selling of Mammy represents the capitalization on the racist romanticizing of a period marked by an enslavement of Black bodies, the repercussions of which are the normalization of white supremacist institutions seen as harmless and merely a vestige of the country’s history.

Beth Clifton Holcomb, *Geographic Information Science & Technology Group, Oak Ridge National Laboratory*. “Upper and Lower Class and PDT.” The Population Density Tables (PDT) project at Oak Ridge National Laboratory (ORNL) focuses on understanding night, day, and episodic occupancy for 55 different categories of buildings around the world. A country’s residential occupancy typically relies on census and survey data reporting. To accomplish this task, the REVENGC tool developed in support of PDT at ORNL reverse engineers censored Census and survey data to calculate statistics about the likely distribution of the population. For better reporting and clarity, upper and lower-class distinction is paramount in PDT, though yet not readily available. Due to each country’s own standard of living and definition of poverty, there is no global understanding or standard for these distinctions. For the US, variables from Census such as Percentage of the Poverty Interval, Income, and Housing Characteristics can be used to define Residential Upper, Middle, and Lower Class in urban and rural distribution while similar variables are analyzed for other countries. The discussion will include how these variables can be used to define the PDT Residential classes for the US compared to other countries.

Sally Horn, *Department of Geography, University of Tennessee, Knoxville*. “Limnological Observations at Five Costa Rican Lakes.” Costa Rica has hundreds of lakes, many of which have never been scientifically described or sampled. We collected basic limnological data and samples at five small lakes (0.2–1.7 ha) in the southern Pacific lowlands (365–490 m elevation) as a contribution to the documentation of lake diversity in Costa Rica, and to support parallel paleolimnological investigations. Four lakes appear to owe their origin to landslide events, and one is an artificial impoundment. Radiocarbon dates on plant macrofossils indicate that Laguna Los Mangos formed over 4100 years ago, while Laguna Danta formed prior to 1320 CE and Laguna Carse formed ca. 1550 CE, near the time of the Spanish Conquest. More than two dozen archaeological sites are located within 1–3 km of these natural lakes. Lake water temperatures and water chemistry were in keeping with observations at lakes throughout Costa Rica. All five lakes are probably polymictic lakes that turn over frequently; none evinced stratification. The surface lake sediments showed similar organic matter content (22–29%), with values falling near the middle of the range of lakes previously sampled in Costa Rica. Phytoplankton samples included taxa previously reported from small lowland lakes, but differed between lakes and included dominant taxa that were subdominant or uncommon at other lakes surveyed. Our investigation adds to knowledge of lake characteristics and diversity in Costa Rica, and provides benchmarks

for assessing future changes in these lakes and their watersheds resulting from human activity, natural disturbances, and regional and global climate change.

Matthew Kerr, *Department of Geography, University of Tennessee, Knoxville.*

“Annual growth zones in stems of *Hypericum irazuense*: a new fire proxy in highland Costa Rica.” The high peaks of the Cordillera de Talamanca in Costa Rica support shrub- and grass-dominated páramo ecosystems that experience frequent stand-replacing wildfires. The dry season that facilitates these fires results in dormancy in plant growth and provides an opportunity to use dendrochronological analyses to determine ages of plants in burn sites to support studies of fire history and postfire vegetation recovery. Our study investigated the formation of annual growth zones in stems of the common shrub *Hypericum irazuense*. Unlike other páramo shrubs, *H. irazuense* rarely resprouts following fire, instead recovering through seedling recruitment following seed dispersal from the unburned periphery. Laboratory analysis of 19 prepared cross sections from 15 stems shows that samples of *H. irazuense* from burned areas can provide an estimate of the minimum number of years since the previous fire. Including a time lag for seedling recruitment or resprouting refines that estimate. The presence of annual growth zones in *H. irazuense* places the species within a relatively small group of woody Neotropical species for which annual rings or growth zones have been demonstrated.

Susan Kotikot, *Geographic Information Science & Technology Group, Oak Ridge National Laboratory.* “VIIRS Day/Night Band (DNB) data for Monitoring Power Recovery: Application and Challenges.” Months after the landfall of Hurricane Maria in Puerto Rico on 20th September 2017, the lack of power remains to be one of the major problems. Restoration efforts are hindered by the damage to transportation and communication infrastructures compounded by infrastructure interdependency. This project explores the usability of remote sensing imagery for power restoration and recovery efforts. Given that the Visible Infrared Imaging Radiometer Suite (VIIRS) DNB data are available approximately three hours after each fly-over of the Suomi National Polar-orbiting Partnership satellite, and the DNB data show low-light emissions from the earth’s surface under varying illumination conditions, they are used as proxy for night lights due to electricity. By comparing pre- and post-hurricane imagery, it is possible to determine areas experiencing power outage, and monitor power restoration progress along with population and customers that are still without power. This paper presents the answers to the following questions: (i) how effective is remote sensing imagery in providing near real-time power availability information? and (ii) what is the

accuracy of results derived from using DNB data? In addition to the preliminary findings of the methodology implemented to help decision makers with power restoration efforts in Puerto Rico, the paper also discusses the errors and biases introduced due to variation in spatial resolution of input data sets and assumptions about uniform spatial population distributions in regions where non-exist, and future directions for using remote sensing data to help with emergency management activities.

Zachary Merrill, *Department of Geography, University of Tennessee, Knoxville*. “Intra-Island Growth Variation between Balsam Fir (*Abies balsamea*) and White Spruce (*Picea glauca*) Trees, Isle Royale National Park, Michigan, USA.” Isle Royale National Park in Lake Superior is well-known for advancing research in island biogeography with its research on the longest continuous predator-prey relationship studies, involving moose (*Alces alces*) and wolves (*Canis lupus*). The effect moose herbivory has on balsam fir (*Abies balsamea*) plays a major role in the life history of moose, especially the winter diet in which balsam fir becomes one of the only available browse species. Selective browsing by moose of preferred nitrogen-rich species has influenced the successional trajectory of the forest and changed forest composition and stand dynamics over time. Our research concerns the trees on which this trophic relationship depends. For example, what is the effect of moose herbivory on balsam fir tree growth, as well as the overall vigor of balsam fir-dominated forests? Can the growth of fir and associated white spruce (*Picea glauca*) be analyzed using dendrochronological methods to determine the effects of moose on growth patterns of tree species? We used tree-ring widths as a proxy to determine if growth rate suppression of balsam fir was evident and to what degree. We randomly located 20 belt transects each 100-m in length to collect core and cross-section samples from both species of various sizes and ages. Early evidence suggests moose-induced suppression in the tree-ring record, especially in the early 1990s when the moose population exploded to over 2,500 individuals. A period of release after this widespread growth.

Sandhya Nepal, *Department of Geography, University of Tennessee, Knoxville*. “An assessment of landowners’ willingness to promote bioenergy crop production: a case-study in northern Kentucky.” There is a growing interest in bioenergy in the southern US mainly because of the favorable climatic conditions to highly productive bioenergy crops. Establishing bioenergy crops in this region requires participation from landowners as they own majority of land. A crucial step is then to understand whether landowners intend to harvest bioenergy feedstocks in their property and to explore how they view and react to both the opportunities and challenges presented by bioenergy. We

used a questionnaire survey in a four-county study area in northern Kentucky to evaluate landowners' perception on bioenergy and their willingness to promote bioenergy crop production. Results indicate that several factors (including current land management practices, social and environmental factors) affect landowners' land use decision for promoting bioenergy crop production. Findings from the study shows landowners' intent for bioenergy production which will be helpful for future estimation of large scale bioenergy expansion in the study area and beyond. Further, landowners' opinions on bioenergy and their preferences for land use decisions will help identify what policies, technologies and investment they seek to promote bioenergy crop production. Lastly, results can also be used to develop outreach programs to increase adoption of bioenergy crops in the study area, thus increasing the potential for profitability for the landowners.

Rachel Palumbo, *Geographic Information Science & Technology Group, Oak Ridge National Laboratory*. "Topography and Refugee Vulnerability in the Kutupalong Refugee Camp, Bangladesh." At least 626,000 Rohingya refugees from Myanmar have entered the Cox's Bazar district of Bangladesh since August 25, 2017, bringing the total in the district to about 830,000. Rapid expansion of high density settlements into nearby natural areas, forest preserves, and agricultural areas, is causing significant disturbance and deforestation, increasing the vulnerability of ecosystems, host communities, and refugees dependent on the ecological services and resources of the area. Seasonal monsoon rains, topography, geology, and disturbance increase the potential for landslides and flooding, exacerbating extant vulnerabilities. Using GIS and applying shelter occupancy estimates from the Population Density Tables (PDT) project at Oak Ridge National Laboratory (ORNL), this project is a preliminary investigation into topographic and geologic features that increase the vulnerability of refugees and their shelters to natural disaster in the Kutupalong Refugee Camp and surrounding expansion camps. Steep slopes and those degraded by deforestation, depressions and waterways, and shelters were identified and mapped, visualizing shelter occupancy in potential risk areas.

Emma Reed, *University of Tennessee, Knoxville*. "Potential Contamination Risk in Tennessee Aquifers from Oil and Gas Drilling." The practice of drilling for oil and gas raises environmental concerns for potable drinking sources such as underground aquifers since contamination is an associated risk. About 16,000 oil and/or gas well permits are in existence in the state of Tennessee, according to public record. A large portion of the permits date back to as early as the middle of the twentieth century and

others pre-date regulations requiring permits, indicating that many wells existed before the middle of the 20th century as well. The question of whether older wells introduce a greater risk of contamination is up to debate. Therefore, the objective of this research is to qualitatively assess the potential risk of contamination in Tennessee aquifers due to oil and natural gas drilling using temporal and spatial characteristics. This study uses public records that provide information on the wells' location, purpose, and depth. The dates and statuses of the well permits are taken in account to determine which aquifers are at risk for contamination due to dated equipment, improper or defective sealing, poor management, etc. Using Esri's ArcMap software, the study analyzes the density of in-operation, pre-permit, plugged, and abandoned wells within each county to determine the relative risk of contamination. This information may help manage and regulate old or abandoned wells by prioritizing those that pose a greater risk to groundwater supplies. Also, this information may be presented to governmental agencies to address the issue of missing data, and provide them with valuable insight into the practice of oil and gas drilling.

Maegen Rochner, *Department of Geography, University of Tennessee, Knoxville.* "Climate Change in a High-Elevation Whitebark Pine Ecosystem, Beartooth Mountains, Wyoming, U.S.A." Whitebark pine ecosystems of the western United States and Canada are currently threatened by anthropogenic influences, including climate change and exacerbated threats, such as the native mountain pine beetle and invasive white pine blister rust. As part of a complicated network of ecological relationships, natural and invasive threats, and human intervention, these ecosystems represent a management challenge. Continued study is necessary to improve understanding of which threats are and will be the most detrimental to the survival of whitebark pine ecosystems, especially in light of ongoing climate change. For this study I used methods in dendrochronology to investigate late Holocene climate change and evaluate possible modern analogues in a high-elevation whitebark pine ecosystem. Using data from remnant and living whitebark pine and Engelmann spruce, I examined the influence of the Medieval Warm Period (MWP) and Little Ice Age (LIA) on establishment and mortality and investigated climate-growth relationships. Findings support the hypothesis that large whitebark pine and Engelmann spruce trees thrived at my study site during the MWP and perished during the LIA. However, while these trees most likely thrived during the purported warmer and drier conditions of the MWP, results from climate-growth analyses suggest that high-elevation species, and especially whitebark pine, may not respond positively to future climate, especially if drier conditions accompany warming. Emerging negative growth responses to pre-

vious summer temperatures, along with emerging, and in some cases strengthening, positive growth responses to previous summer moisture, suggest that the moisture conditions that accompany warming will greatly influence future growth.

Pranab Roy Chowdhury, *University of Tennessee, Knoxville*. “Estimation of electricity consumption at urban scales using geospatial data and its implications for urban sustainability.” Electricity consumption is a vital component of urbanization that has also been linked to increased resource utilization, greenhouse gas emission, and future energy security. Hence, the patterns of electricity consumption at urban areas need to be analyzed to understand its effects on urban and environmental sustainability and energy security. However, electricity consumption data for cities and urban areas remain scarce. The nighttime lights data has been widely used by researchers to understand electricity consumption and greenhouse gas emission. However, this approach is not able to capture the electricity usage for heating and cooling needs as well as industrial and commercial usage, which could lead to erroneous measurements especially at local scales. We developed an electricity consumption model for the year 2015 for the contiguous United States, using ancillary information on climatic degree days, number of establishments, population, and built-up area. We then spatially disaggregated the estimated electricity consumption at 500-meter resolution using the VIIRS Day Night Band yearly composite. Here, we will discuss our results along with the strengths and limitations of our model. We will also briefly explain the insights learned from the analysis of the relationship between electricity consumption and size of urban areas, and its implications for urban sustainability.

Liem Tran, *Department of Geography, University of Tennessee, Knoxville*. “A Non-Parametric Distance-Based Method Using All Available Indicators for Integrated Environmental Assessment – A Case Study of the Mid-Atlantic Region, USA.” The paper presents a multivariate measure useful for integrated environmental assessments. It is a weighted distance measure applied to metric data but based on nonparametric statistical procedures. The proposed measure allows all environmental indicators to be used directly without any reduction in dimension (e.g., as in principal component analysis) nor losing variance while being able to tolerate possible non-normality of the indicators as well as non-linear relationships among them. Results of the hypothetical example and the Mid-Atlantic case study show that the proposed measure is suitable and valuable for integrating multiple indicators into a single index, an important task in integrated environmental assessment.

Emma Walcott-Wilson, *Department of Geography, University of Tennessee, Knoxville*. “The politics of beauty: aesthetics and authenticity at plantation house museums.” Aesthetic choices at museums are not intrinsic, unproblematic characteristics but something actively produced and consumed as part of the heritage atmosphere. Importantly, the politics of aesthetics recognizes that creating, promoting, and seeking out beauty as an authentic experience can be connected to larger social practices and relations that engender or shut down certain ideologies or ways of thinking about places and people. The politics of aesthetics at plantation sites in the U.S. South have been both emancipatory and repressive when it comes to the history of African enslavement. Using adornments, performance, and design, enslaved laborers made aesthetics an expression of agency by resisting, co-opting, mocking, reinterpreting, and re-imagining the aesthetics of white supremacy. In the contemporary context of a plantation house museum, aesthetics is the consumable result of deliberate planning to re-imagine a place of work as a place of rest. The centrality of “the Big House” and the marginality or invisibility of labor at many plantation house museums reproduce imagined atmospheres of the romantic southern aristocracy. Using data from more than 200 interviews with visitors to plantation house sites in and near Charleston, S.C., we examine how the how the aesthetic experiences of tourists shape their understanding of slavery and how tourists invoke a politics of beauty within their political utterances about the plantation as a place. Central to our analysis is an exploration of authenticity as inexorably linked to aesthetics and how these nebulous and atmospheric contexts elucidate or conceal the brutality of chattel slavery across time.

Sarah Walters, *Geographic Information Science & Technology Group, Oak Ridge National Laboratory*. “Systemic Expansion of PDT to Incorporate Heritage Sites as Potential Indicators of Social and Political Change in Movement and Landscape.” The bounded, oft-protected nature of Heritage Sites – both cultural and natural – necessarily influences, if not directly impacts, the development and placement of settlements and key-infrastructure, as well as directs and/or restricts the movement and distribution of people across the landscape. A wide variety of factors/considerations (e.g. religion; cultural affiliation; historic or geologic value) dictate that Heritage Sites are unique in their ability to draw large numbers of people to (sometimes remote) areas that might otherwise be of little interest. Heritage Sites also have an exceptional (sometimes unique; often near symbiotic) relationship with surrounding communities. As Heritage Sites are frequently the target of illegal/terrorist activity,

and/or are specifically chosen to effect destabilization or erase the territorial claims of a previous regime, the resulting, often-singular, economic dependence created has, from a humanitarian perspective, the real potential to render a region's people more vulnerable than those supported elsewhere through multiple and diverse means of economy. While the Population Density Tables (PDT) Project – part of Oak Ridge National Laboratory's Geographic Information Science and Technology Group – has categorized several Heritage Sites, the influence of Heritage Sites on human dynamics indicates that systematic increase in the number of related records in the PDT database will serve to enhance and expand the utility of existing purposes and framework, while also providing a baseline for future research. Once a framework has been established and built-out, for example, changes affecting surrounding communities may serve as primary indicators vis-à-vis shifts in demographics and/or population distribution within the larger socio-political landscape.

POSTER ABSTRACTS:

Christian Allen, *Department of Anthropology, University of Tennessee, Knoxville.* “Odd Fellows Cemetery: A Community Based GIS Project.” The Odd Fellows Cemetery was purchased in the early 1880s for the purpose of burying African-Americans of Knoxville. People from a variety of backgrounds are buried in the cemetery including former slaves, political leaders, community leaders, business persons, and educators. However, the full extent of the names and locations of individuals buried in the cemetery remains unknown. This project aims to make cemetery data and location more easily assessable to the community and others interested in the data. We utilize a data collecting app called “Collector for ArcGIS” to obtain gravestone and contextual information. Additionally, we use a handheld Trimble GPS unit to give use sub-meter data point accuracy. These two datasets were combined in ArcGIS and exported to Google Maps (goo.gl/r1sZ7K), making the data accessible to community members and researchers. In the future, we plan to continue the project to collect all known and available gravestone data at the Odd Fellows Cemetery.

Luke Blentlinger, *Department of Geography, University of Tennessee, Knoxville.* “Experiments with Magnetic Susceptibility of Lake Sediments.” In paleoenvironmental reconstructions, multi-proxy analyses of sediment profiles recovered from lakes and other inland water bodies can result in a more detailed characterization

of past conditions in and surrounding the water body compared to a single-proxy approach. Paleolimnological researchers are often faced with the obstacle of obtaining the maximum amount of information from a limited amount of irreplaceable sediment. One method to maximize data is to use the same sediment sample for multiple analyses when their pretreatment protocols are the same or similar. This study assesses the viability of using the same material for magnetic susceptibility (MS) and X-ray fluorescence (XRF) analyses without contaminating data. Specifically, we tested how the exposure to metal utensils in sampling and pretreatment can affect MS readings and whether XRF cells for an Olympus BTX profiler can serve as a suitable vessel for MS analysis in a Bartington MS2B sensor.

Eric Collins, *Department of Anthropology, University of Tennessee, Knoxville.*

“Comparing Size Measurements of Prehistoric Maize Pollen Grains in Costa Rica and the Dominican Republic.” The identification of pollen grains of maize (*Zea mays* subsp. *mays*) in sediment cores from lakes and wetlands in the Neotropics typically relies on grain diameter, which is larger for maize pollen than for most other grasses. However, grain diameters overlap for maize and its close relative teosinte, and methods of preparing pollen samples and slides can affect the pollen dimensions. Microscopes and measuring systems could also affect grain size data. As pointed out by Sluyter (*Palynology* 21:1, 1997), maize pollen sizes appear to be space-time dependent. Patterns are not well understood, and would be enhanced by a controlled study in which pollen samples from sediment cores collected across the region were prepared and measured in the same lab using identical procedures. As a first step toward designing such a study, we examined large grass pollen grains on pollen slides from previous studies in Costa Rica and the Dominican Republic. We measured maize grain and pore diameters (including annuli) at 400X using a calibrated eyepiece reticle. We found the diameter range of maize grains in the sediments of Laguna Bonillita, Costa Rica to be smaller than originally reported, although pore diameters were similar. These findings suggest initial observer error or that maize pollen diameters change with long-term slide storage. Small sample sizes complicate comparisons with previous data and between time periods and sites. Our results underscore the need to process new samples to examine spatial and temporal patterns, using techniques to concentrate maize pollen grains that will enable size-frequency analysis.

David Leventhal, *University of Tennessee, Knoxville.* “The Geography of Opiate Addiction, Overdose, and Treatment in Tennessee.” Opioid addiction and overdose has become a national epidemic in the United States over the past 30 years. Accord-

ing to the Centers for Disease Control and Prevention, more than 20,000 Americans died from prescription drugs alone in 2014 – far more than alcohol-related car accidents – and many more addictions continue to plague families at home. In fact, drug overdose is the leading cause of accidental death in the US, with an astonishing 52,404 lethal drug overdoses in 2015. Opioid addiction is the driving force behind the drug overdose epidemic in the US, with 20,101 overdose deaths related to prescription pain relievers and 12,990 overdose deaths related to heroin in 2015.

Elizabeth MacLennan, *Department of Geography, University of Tennessee, Knoxville*. “Soil Charcoal in a Deciduous Forest in East Tennessee.” We collected, identified, and dated soil charcoal at three study sites in a deciduous forest in east Tennessee to document past fires and forest composition. Our sites were located at approximately 300 m elevation at the University of Tennessee Arboretum in Oak Ridge, Tennessee. We used an Eijkelkamp root corer to collect samples in successive 5 or 10 cm increments to the depth of refusal. After soaking soil increments in water overnight, we sieved them using sieves with a 2 mm mesh. Charcoal fragments were identified and picked from the retained material, rinsed with distilled water, and dried in glass vials. We randomly selected six charcoal fragments for radiocarbon dating from samples we collected in Spring 2017 and material collected previously. The samples included charcoal identified as White Pine, Oak, and possibly Maple, all taxa that grow at the site today. The radiocarbon dates on the charcoal fragments range from ca. 200 to 2900 radiocarbon years before present. Two dates showed overlapping calibrated age ranges during the last 500 years, and two dates overlapped during the period of ca. 1200–1000 cal yr BP. Two fragments were much older, with calibrated age ranges of ca. 3150–2900 cal yr BP and 1900–1600 cal yr BP. The age ranges overall are similar to those found in studies of soil charcoal in the western portion of Great Smoky Mountains National Park, but the frequency and abundance of charcoal is much lower in the more mesophytic forests of the UT Arboretum.

Brooke Rose, *Department of Geography, University of Tennessee, Knoxville*. “Combining forest change measurements from Forest Inventory and Analysis (FIA) and remote sensing products in South Carolina.” The U.S. Forest Service measures forest disturbance in a variety of ways. The Forest Inventory and Analysis (FIA) program monitors forest condition and disturbance with field data collected at sample plots. Separately, the North American Forest Dynamics Project uses Landsat time series to generate annual, wall-to-wall estimates of forest disturbance. The USFS TimeSync project uses human interpretation of Landsat time series on a sample of point loca-

tions to generate estimates of disturbance. Researchers do not yet understand all of the differences between disturbance measures that are produced by these different methods. We will explore and compare disturbance measures between different products for a study site on the coast of South Carolina. This study site was impacted by Hurricane Hugo in 1989 and is also subject to urban grown as well as occasional wildfires. The abundance of disturbance events and types make it an ideal location for disturbance detection analyses. We hope that our analyses will lead to better forest disturbance estimates and predictions in the Southeastern U.S., and help inform forest management practices in the region.

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