Annual Meeting

25-28 October 2017

in
conjunction
with

Texas Map Society

Huntsville, Texas

OFFICERS AND LOCAL HOSTS

SWAAG (2017)

Chair: Jason Julian, Texas State University
Secretary: Matthew Fry, University of North Texas
Treasurer: Amy Frazier, Oklahoma State University
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SWAAG: www.sw-aag.org
Facebook: https://www.facebook.com/southwestaag

SWAAG Regional Councilor (2015-2018)

Darren Purcell, University of Oklahoma

Texas Map Society (2017-2018)

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Local Host Committee
Sam Houston State University

Samuel Adu-Prah
Donald Albert
Brian Cooper
Keith Jenkins
Ava Fujimoto-Strait
John Strait

WELCOME

Welcome everyone to the annual meeting of the Southwest Division of the American Association of Geographers (SWAAG), which is being held in conjunction with the Texas Map Society Fall Meeting. I look forward to this meeting every year so that I can reconnect with all my colleagues from around the region, and to meet new geographers. SWAAG meetings are filled with both tradition and youthful enthusiasm. One of my favorite parts of the meeting are the student competitions: papers, posters, and GeoBowl. Attend these to see how bright the future is for SWAAG. As you look over the program, you will see a variety of research fields, which captures the diversity of SWAAG. Other highlights of the meeting include an opening reception, field trips, two keynote addresses, an awards banquet, our SWAAG business meeting, and a social Friday night sponsored by the Texas Map Society. When not at the meeting, explore the rich culture and history of Huntsville.

On behalf of all SWAAG members, we owe many thanks to Don Albert and the Department of Geography and Geology at Sam Houston State University for organizing and hosting this special meeting. On behalf of the SWAAG Board, we greatly appreciate the generosity of all the sponsors, whose support allows us to have such a productive conference. We also thank all the presenters for sharing their important research with our community. I encourage you to attend as many talks as possible, but also step outside of your comfort zone and explore the diverse breadth of geography. I also encourage you to meet many new geographers. One of SWAAG's strengths is its collegiality. Take advantage of it. Now go mingle.

Jason Julian
Associate Professor, Department of Geography
SWAAG Chair
Texas State University

KEYNOTE SPEAKERS

Derek Alderman

Derek H. Alderman (dalderma@utk.edu) is Professor of Geography at the University of Tennessee and President of the American Association of Geographers (AAG). His research and teaching specialties include race, public memory, heritage tourism, critical place name study, and the African-American experience—including slavery, the Jim Crow and Civil Rights eras, and more contemporary social and spatial justice campaigns. He is the author of over 110 articles, book chapters, and other essays along with the award-winning book (with Owen Dwyer), *Civil Rights Memorials and the Geography of Memory*. Alderman is part of a multi-university team completing a study of the politics of remembering slavery at southern plantation museums and identifying places for making interventions in the historical neglect of enslaved identities and struggles. He is also engaged in a project (with Josh Inwood) that explores the role of resistant geospatial intelligence and counter-mapping within SNCC (Student Non-violent Coordinating Committee), one of the important organizations of the Civil Rights Movement in the 1960s. The National Science Foundation has funded both projects. Alderman is a strong advocate of a greater incorporation of civil rights, social justice, and critical race study within geographic education. He is the recent recipient of the Distinguished Mentor Award from the National Council for Geographic Education and the Distinguished Career Award from the Ethnic Geography Specialty Group of the AAG. As President of the AAG, Alderman is developing the "Geography is REAL (Responsive, Engaged, Advocating, and Life-Improving)" initiative, which encourages and supports greater public intellectualism, communication savviness, and disciplinary promotion. Alderman can be followed on Twitter @MLKStreet.

Jeffrey Littlejohn

Jeffrey L. Littlejohn serves as Professor of History at Sam Houston State University (SHSU). A native of Dallas, Texas, and a devoted Cowboys fan, he completed his undergraduate degree at Belmont University in Nashville, Tennessee, and his MA and PhD at the University of Arkansas. His first book -- co-authored with Dr. Charles H. Ford -- was entitled *Elusive Equality: Desegregation and Resegregation in Norfolk's Public Schools* and appeared in the University of Virginia Press in 2012. He has also published numerous articles with Dr. Ford, including: "Booker T. Washington High School: History, Identity, and Educational Equality in Norfolk, Virginia" (*Virginia Magazine of History and Biography*), "Arthur D. Morse, School Desegregation, and the Making of CBS News, 1951-1964" (*American Journalism*); "The Crisis Responds to Public School Desegregation" (*Protest and Propaganda: W.E.B. Du Bois, The Crisis, and American History*); and "Reconstructing the Old Dominion: Lewis F. Powell, Stuart T. Saunders, and the Virginia Industrialization Group, 1958-1965" (*Virginia Magazine of History and Biography*). Littlejohn and Ford have also collaborated with many of the outstanding graduate students at Sam Houston State University to publish works on local history. In 2015, they co-edited *"The Enemy Within Never Did Without": German and Japanese Prisoners of War at Camp Huntsville, Texas, 1942-1945*. Twelve of Littlejohn's students wrote chapters for the project, which told the story of a large and important World War II POW camp in Huntsville, Texas.

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Texas Map Society
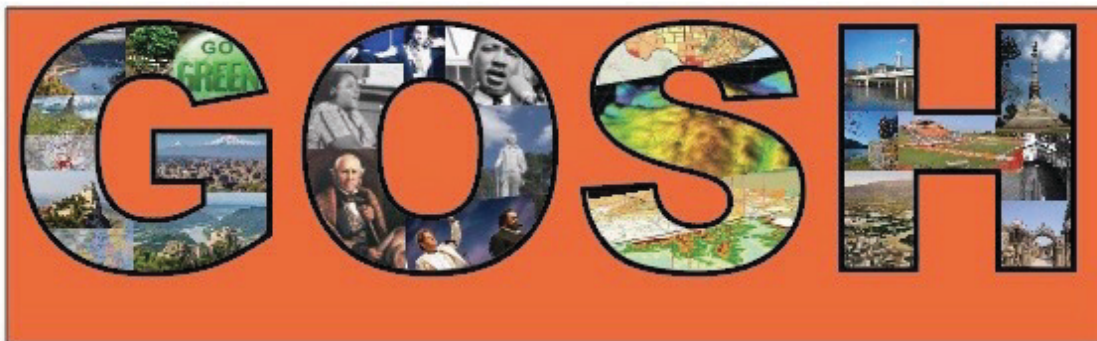
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CONFERENCE HOTEL

Hampton Inn & Suites, Huntsville, Texas

Room rate for SWAAG meeting participants: $129 + tax

Reservations at the conference rate required before 2 October 2017

Room blocks include king suites with pull-out queen sofa and standard king rooms

Meeting Rooms: Lonestar and Sam Houston Rooms located on 1st floor

Amenities: Hampton's Free Hot Breakfast, fitness room, outdoor pool

Location: 120 Ravenwood Village Drive, Huntsville, Texas, 77340

Phone: 936-439-5228

CONFERENCE VENUE

Katy and E. Don Walker, Sr. Education Center

This year's meeting is at the Katy and E. Don Walker, Sr. Education Center, located on the grounds of the Sam Houston Memorial Museum (1402 19th Street, Huntsville, Texas 77340).

Directions to the Museum

From Interstate 45 North or South:

Take exit #116 on I-45.

Head east on 11th Street (also called Hwy 30) into town until you reach Sam Houston Avenue.

Turn right on Sam Houston Avenue. (It is the stop light at the town square which is the Walker County Courthouse).

Head south on Sam Houston Avenue until you reach 19th Street. (You will pass our main museum on the right.)

Turn right on 19th Street. (It is a stoplight and is the only way to turn.)

Turn right into the Katy and E. Don Walker Sr. Education Center Driveway (1400 19th Street) and drop off your students at the front door.

Phone: (936) 294-1832

PARKING INFORMATION

For those planning to park at the conference site on Thursday and Friday, there are just over 50 parking spaces available around the south and west of the Walker Education Center. These are clearly marked for museum visitors and are available for SWAAG attendees (see parking map: Zone 3, Lot 46 - 47).

On Saturday, those SWAAG participants attending the Texas Map Society event being held in the Lee Drain Building of the Sam Houston State University campus can park in Zone 1 West, Lot 26 (intersection of Sam Houston Avenue and Bowers Blvd.). See conference website for a link to the 2017-2018 Sam Houston State University Parking Map.

COMPLIMENTARY SHUTTLE SERVICE

Thursday (October 26)

8:30 AM to 10:00 AM

4:30 PM to 6:30 PM

Friday (October 27)
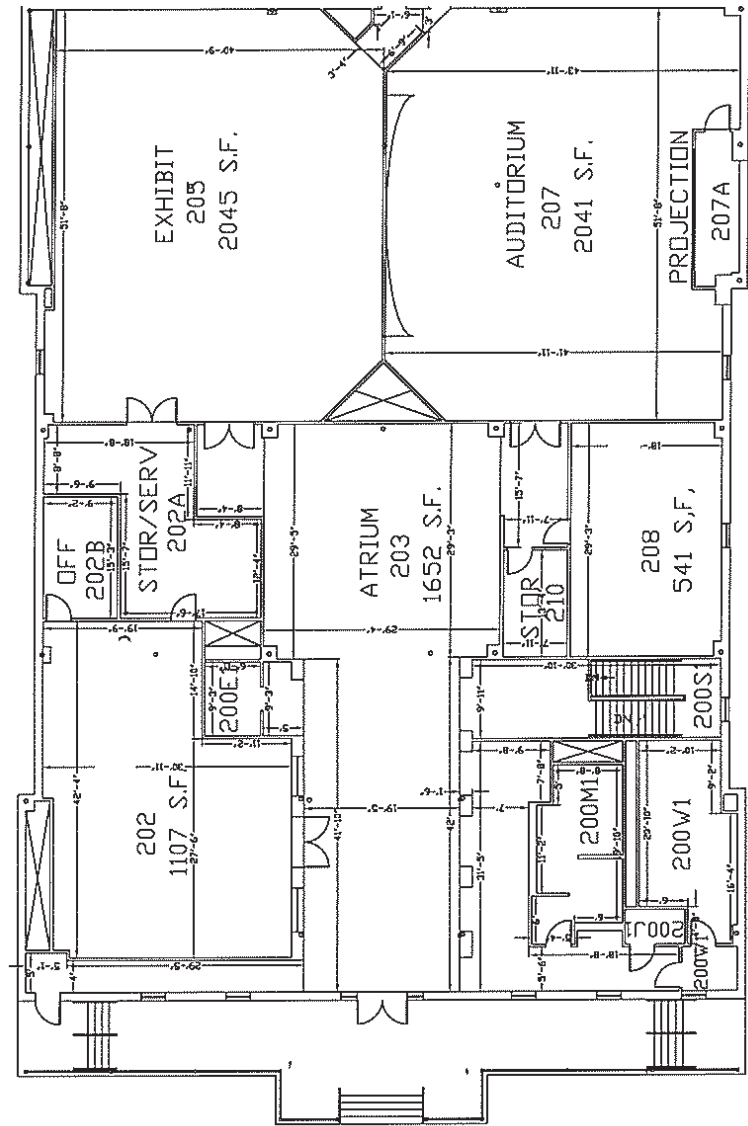
7:30 AM to 9:30 AM

4:30 PM to 6:30 PM

Starts (Stop) from Hampton Inn & Suites

Stops at Holiday Inn Express

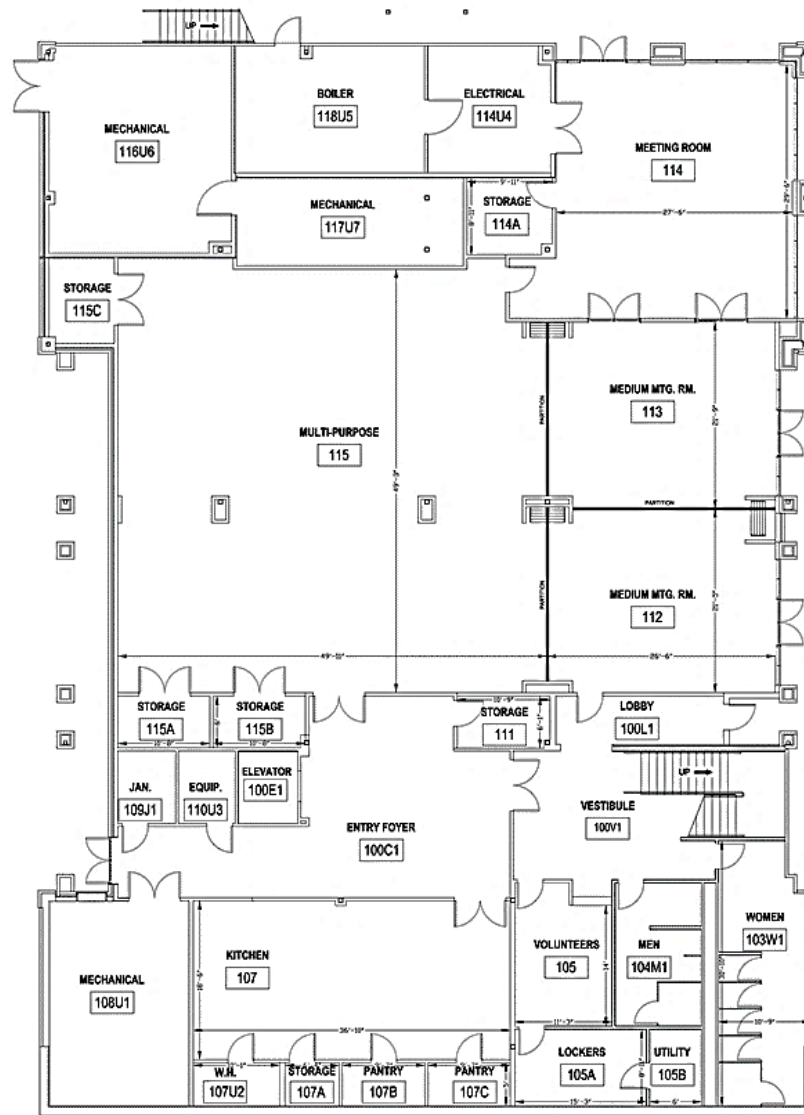**Stops (Start) at the Walker Education Conference Center**

WALKER CONFERENCE CENTER, 2ND FLOOR
(ENTER FROM 2ND FLOOR, SOUTH SIDE)

WALKER EDUCATION CENTER
SECOND FLOOR

WALKER CONFERENCE CENTER, 1ST FLOOR

MECHANICAL
116U6

BOILER
118U5

ELECTRICAL
114U4

MEETING ROOM
114

MECHANICAL
117U7

STORAGE
114A

STORAGE
115C

MEDIUM MTG. RM.
113

MULTI-PURPOSE
115

MEDIUM MTG. RM.
112

STORAGE
115A

STORAGE
115B

STORAGE
111

LOBBY
100L1

JAN.
109J1

EQUIP.
110U3

ELEVATOR
100E1

ENTRY FOYER
100C1

VESTIBULE
100V1

MECHANICAL
108U1

KITCHEN
107

VOLUNTEERS
105

MEN
104M1

WOMEN
103W1

W.H.
107U2

STORAGE
107A

PANTRY
107B

PANTRY
107C

LOCKERS
105A

UTILITY
105B

WALKER EDUCATION BUILDING
FIRST FLOOR - REMODELED

CONFERENCE SYNOPSIS

PRECONFERENCE **WEDNESDAY, OCTOBER 25, 2017**	
6:00 PM - 10:00 PM	**Registration @ Hampton Inn & Suites**
6:00 PM - 10:00 PM	**Social @ Buffalo Wild Wings**
CONFERENCE **THURSDAY, OCTOBER 26, 2017**	
8:00 AM - 5:00 PM	**Registration @ Walker Education Center**
10:00 AM - 11:40 PM	**Concurrent Sessions**
12:00 PM - 1:20 PM	**Luncheon, Opening Welcome**
1:20 PM - 3:00 PM	**Concurrent Sessions**
3:00 PM - 3:20 PM	**Break**
3:20 PM - 5:00 PM	**Concurrent Sessions**
7:00 PM - 9:00 PM	**Geography Bowl @ Hampton Inn & Suites**
CONFERENCE **FRIDAY, OCTOBER 27, 2017**	
7:45 AM - 5:00 PM	**Registration @ Walker Education Center**
8:00 AM - 9:40 AM	**Concurrent Sessions**
9:40 AM - 10:00 AM	**Break**
10:00 AM - 11:40 PM	**Concurrent Sessions**
12:00 PM - 1:50 PM	**Luncheon, Keynote and Awards**
2:00 PM - 3:40 PM	**Concurrent Sessions**
3:40 PM - 5:00 PM	**Concurrent Sessions**
5:00 PM - 6:00 PM	**SWAAG Business Meeting**
8:00 PM - 9:00 PM	**Social @ Hampton Inn & Suites**
FIELD TRIP **THURSDAY, OCTOBER 26, 2017**	
1:20 PM - 3:00 PM	**Campus Tour @ Walker Education Center**
FIELD TRIP **FRIDAY, OCTOBER 27, 2017**	
2:00 PM - 3:30 PM	**Sam Houston Memorial Museum** **@ Walker Education Center**
FIELD TRIPS **SATURDAY, OCTOBER 28, 2017**	
8:30 AM - 12:30 PM	**Departing from Hampton Inn & Suites (Lobby)**
	Huntsville's Prisons: Culture and Landscapes
	Enchanting, Recycled, and Affordable Housing

2017 SWAAG MEETING: FIELD TRIPS

We are offering a variety of field trip choices at this year's meeting. Go online http://www.sw-aag.org/field-trips.html or sign up at the SWAAG registration desk.

Sam Houston University Tour
Thursday, 26 October 2017, 1:20 PM to 3:00 PM
Host: Sam Houston State University Visitor Center
Limit: Open with no limit
Cost: Free - just sign up at the conference registration desk

Sam Houston Memorial Museum Tour
Friday, 27 October 2017, 2:00 PM to 3:30 PM
Host: Sam Houston Memorial Museum
Limit: Open with no limit
Cost: Free - just sign up at the conference registration desk

Huntsville's Prisons: Culture and Landscapes
Saturday, 28 October 2017, 8:30 AM -12:30 PM
Description: This trip explores the culture and landscapes evolving out of Huntsville's long history with prisons. Our host is Mitchel Roth, author of "Convict Cowboys: The Untold History of the Texas Prison Rodeo." The trip includes a visit to the Texas Prison Museum, and a driving tour that includes views of our existing prisons including the "Walls Unit," remnants of the Texas Prison Rodeo, and other significant sites. The field trip will end with lunch at a local barbeque joint before returning to the Hampton Inn & Suites.
Host: Mitchel Roth, Sam Houston State University
Duration: Half Day (8:30 am to 12:30 pm)
Limit: 10 participants
Cost: $15 (not including lunch)

Enchanting, Recycled, and Affordable Housing
"Affordable housing" is a function of unsustainable cultural expectations that demand new material, space beyond basic needs, and marketed design strategies. A lecture and tour of Phoenix Commotion houses feature small scale, energy efficient houses using 75-85 percent recycled and salvaged material. The building model is different from mainstream ideas and results in whimsical, odd houses—from treehouses and bone houses to a cowboy boot. The field trip will end with lunch at a local barbeque joint before returning to the Hampton Inn & Suites.
Host: Dan Phillips, Phoenix Commotion
Website: http://www.phoenixcommotion.com/
Duration: Half Day (8:30 am to 12:30 pm)
Limit: 20 participants
Cost: $15 (not including lunch)

Texas Map Society Fall Meeting

in conjunction with the annual meeting of the

Southwest Division of the American Association of Geographers (SWAAG)

TMS (Oct. 28) • SWAAG (Oct. 25-28)

Sam Houston State University • Huntsville, Texas

Huntsville, Texas

The SWAAG meeting begins on Wednesday, October 25 and runs through October 28.
TMS Members are invited to attend some of their sessions as well as to tour the Sam Houston Memorial Museum
on Friday afternoon and attend an evening reception on October 27. Follow our website for further details
https://texasmapsociety.org/events/ and see SWAAG's website at http://www.sw-aag.org/

Program

FRIDAY, OCTOBER 27

2:00-3:30 pm
Tour Sam Houston Memorial Museum with members of SWAAG*

3:30-5:00 pm
Attend SWAAG conference sessions on your own*

8:00-9:00 pm
Reception with SWAAG members • Hampton Inn Suites Meeting Room

*TMS members may attend SWAAG sessions on Friday at the times listed above by first registering (free) at the Main Lobby of the Walker Education Center, Sam Houston State University.

Above Image (left to right): Sam Houston State Teachers College, Huntsville, Texas, colorchrome postcard (Chicago: Curteich "C. T. American Art" Post Card, n.d., with verso note in graphite "Lenderman 6-2-41") UTA Libraries Special Collections, the Jenkins Garrett Postcard Collection, AR416; Detail from *Texas* (New York: J. H. Colton & Co., 1855). University of Texas at Arlington Libraries Special Collections; and Sam Houston Memorial Museum, Huntsville, Texas (Tulsa: Gough Photo Service, ca. 1960s).

SATURDAY, OCTOBER 28

Trammel's Trace: The First Road to Texas from the North
Gary Pinkerton, Independent Author

Have Those Looking for Santissima Trinidad Taken a Wrong Turn?
Dr. Jim Tiller, Professor of Geography, Sam Houston State University

The Capitol Syndicate and the Case of the Mistaken 103rd Meridian
Jacob Jones, History Graduate Student, The University of Texas at Arlington

The Deep West: Mapping Larry McMurtry's Lonesome Dove (1985), Cowboys, Cattle-Drives and Climate Change
Dr. Charles Travis, Assistant Professor of Geography, Department of History, The University of Texas at Arlington

Connecting Texas: Three Centuries of Roads, Rails, and Trails
James Harkins, Director of Public Services, Texas General Land Office

ACCOMMODATIONS

Texas Map Society has a block of rooms reserved at the Holiday Inn Express. • 148 I-45 • Huntsville • 936-295-4300

Mention **"Texas Map Society"** for special rate.

SESSIONS & ACTIVITIES AT A GLANCE

WENESDAY, OCTOBER 25

Time	Registration	Social
6:00-10:00 (evening)	*Hampton Inn & Suites*	*Buffalo Wild Wings*

THURSDAY, OCTOBER 26

Time	Room 207 Auditorium	Room 115	Room 112	Room 205 Gallery	Room 203 Atrium
10:00-11:40	*Cultural Geography*	*Weather & Climate*	*Political Geography*		
12:00-1:20		*Opening Welcome/ Luncheon*			
1:20-3:00	*Rivers, Shorelines & Sinkholes*		*Graduate Paper Competition*	*Poster Session*	*Field Trip Campus Tour*
3:20-5:00	*Medical & Health*	*Human-Environment*	*Graduate Paper Competition*	*Poster Session*	
7:00-9:00	*World Geography Bowl - Hampton Inn & Suites*				

FRIDAY, OCTOBER 27

Time	Room 207 Auditorium	Room 115	Room 112	Room 205 Gallery	Room 203 Atrium
8:00-9:40	*Energy Geographies I*	*Geospatial Capturing Technologies*		*Poster Competitions*	
10:00-11:40	*Energy Geographies II*		*Social Geographies I*	*Poster Session*	
12:00-1:40		*Keynote Address & Awards Luncheon*			
2:00-3:40	*Curriculum & Training*		*Land Use & Demographics*		*Field Trip Museum*
3:40-5:00	*Soil & Vegetation*	*Social Geographies II*	*In Memoriam Karl W. Butzer*		
5:00-6:00	**SWAAG Business Meeting**				

SATURDAY, OCTOBER 28

Time	To/From Hampton Inn & Suites (Lobby)
8:30 AM - 12:30	*Huntsville's Prisons: Culture and Landscapes Enchanting, Recycled, and Affordable Housing*

SWAAG 2017
WEDNESDAY, OCTOBER 25

REGISTRATION   W 6:00-10:00 (Evening)   HAMPTON INN & SUITES
120 Ravenwood Village Drive, Huntsville, Texas

SWAAG SOCIAL   W 6:00-10:00   BUFFALO WILD WINGS
203 IH-45 S Huntsville, TX

SWAAG 2017
THURSDAY, OCTOBER 26

REGISTRATION   TH 8:00-5:00   ATRIUM 203
Local Host: Donald Albert

GRADUATE FORUM   TH 8:00-5:00   ROOM 114
Organizer: Adu-Prah, Samuel

CULTURAL GEOGRAPHY   TH 10:00-11:40   AUDITORIUM 207
Chair: John Strait

10:00   Roth, Jeffery E., Stephen F. Austin State University
Conceptualizing spatial identity and imbedded narratives in a contested cultural landscape: Black Texans in Nacogdoches, 1836-Present

10:20   Strait, John B., Sam Houston State University
Geographical processes behind American roots music: The transcultural nature of Delta Blues

10:40   Crotty, Sean, M., Texas Christian University
The red-light network: Analyzing the contemporary geography of the world's oldest profession

11:00   Nelson, Velvet, Sam Houston State University
A typology of travel blog narratives about food and eating in Peru

11:20   Carter, Isaac; **Banks, Evan M.; Drake, Dawn M.**, Missouri Western State University
Mobile food economies: The food cart culture in Portland, Oregon

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WEATHER AND CLIMATE   TH 10:00-11:40   ROOM 115

10:00   Hatzis, Joshua; **Jennifer Koch**, University of Oklahoma
Frequency of near-misses for violent tornadoes

10:20   Adu-Prah, Samuel, Sam Houston State University; **Aboagye, Dacosta**, Kwame Nkrumah University of Science & Technology; **Appiah-Opoku, Seth**, University of Alabama
Spatiotemporal evidence of recent climate variability in Ghana

10:40   Chu, Gregory, University of Wisconsin-La Crosse; **Park, Jinwoo**, Texas A&M University
Climate change challenges in Korea and the National Atlas of Korea Vol. II

11:00   Park, Jinwoo, Texas A&M University
Korea's environmental issues and The National Atlas of Korea, Vol. II

POLITICAL GEOGRAPHY   TH 10:00-11:40   ROOM 112

10:00   Cowan, Christopher, G., University of Arkansas
Wither, Iron Brothers: Underacknowleged strains on the Sino-Pak relationship

10:20   Holland, Edward, University of Arkansas
The decline in political violence in Russia's North Caucasus

10:40   Hanks, Reuel; **Penna, Giovanni**, Oklahoma State University
Patterns of Islamic religiosity in Kazakhstan: Implications of new data from the north and east Regions

11:00   Blue, Sarah; **Hartsell, Alisa**; **Torres, Rebecca; Flynn, Paul**, University of Texas-Austin
The uneven geography of asylum and humanitarian relief: Central American migrant youth in the United States judicial system

11:20   Carr, John, University of New Mexico
Mobilizing geographies of spatial Justice beyond politics of left and right

OPENING WELCOME   TH 12:00-1:20   ROOM 115

Moderators: Donald Albert & Jason Julian

Andy Brauninger, Mayor of Huntsville, Texas
Megan Buro, Marketing Coordinator
DeAunte Theall, President, Geographers of Sam Houston
Jason Julian, Chair, Southwest Division of the American Association of Geographers
John Strait, Assistant Chair, Department of Geography and Geology, SHSU
Derek Alderman, President of American Association of Geographers

FIELD TRIP: CAMPUS TOUR   TH 1:20-3:00   ATRIUM 203

Staff: Visitor Center

RIVERS, SHORLINES & SINKHOLES   TH 1:20-3:00   AUDITORIUM 207

Chair: Jason Julian

1:20   Aucoin, Lindsey, Sam Houston State University
Land use and cover in Grand Isle and West Grand Terre on the Gulf Coast of Louisiana: 1998-2017

1:40   Hanson, Kyndra; **Friedman, Jack**; **Plassin, Sophie**; **Paladino, Stephanie**; **Koch, Jennifer**, University of Oklahoma
Developing a conceptual model of the Rio Grande/Bravo coupled human-natural system

2:00   Plassin, Sophie, University of Oklahoma; **Vache, Kellie**, Oregon State University; **Koch, Jennifer**; **Hanson, Kyndra; Paladino, Stephanie; Friedman, Jack**, University of Oklahoma
A spatial agent-based model for the Rio Grande/Bravo coupled human-natural system

2:20   Malone, Dawnelle, Sam Houston State University
Cave openings and sinkhole detection in karst topography using Lidar data on the Edwards Plateau in Travis County, Texas

2:40   Julian, Jason P.; **Daly, Graham**; **Weaver, Russell C.**, Texas State University
Cross-scale connections among stakeholders of freshwater ecosystem services in the San Marcos River watershed

GRADUATE PAPER COMPETITION   TH 1:20-3:00   ROOM 112

Organizer: Amy Frazier

1:20   Haffner, Matthew; Mathews, Adam J.; Fekete, Emily; Finchum, G. Allen, Oklahoma State University
Location-based social media behavior and perception: Views of university students

1:40   Hassani, Kianoosh; **Sack, Dorothy**, Oklahoma State University
Mapping Quaternary sediments in Tule and Snake Valleys, Lake Bonneville, Utah using Hyperion and Landsat data

2:00   Liu, Cuiling; **Wang, Fahui**, Louisiana State University
Analyzing population density pattern in China with GIS-automated regionalization methods: Hu Line revisited

2:20   Rindy, Jenna E.; Ponette-González, Alexandra G.; Barrett, Tate E.; Luce, Brett W.; Sheesley, Rebecca J., University of North Texas
Urban trees as sinks for soot: Elemental carbon retention on leaves and litterfall flux to soil

2:40   Sadeghinaeenifard, Fariba; Dong, Pinliang, University of North Texas
Tree crown discrimination using three-dimensional shape signatures derived from LiDAR point clouds

POSTER SESSION   TH 1:20-3:00   GALLERY 205

Contact: Donald Albert

Brock, Courtney, University of New Mexico
Urban animals: GIS analysis of stray canines and felines in Albuquerque, New Mexico

Bunsen, **Michael,** Texas A&M University; **Prout, Erik**, Texas A&M University
Preliminary analysis of homeless on public land

Craig, Jonathan, University of Oklahoma
Bridging the Gap: A geospatial analysis linking Oklahoma's transportation infrastructure and state political institutions

Day, Britney, Stephen F. Austin State University
Geography of Texas wardrobes: Mapping your clothes and the textile industry

Forbes, William, Stephen F. Austin State University
Aldo Leopold and East Texas land ethics

Villamero, Renzo, University of North Texas
The effects of cool roofs on the urban heat island

Watson, Emily; Watson, Jarrod; Peralta, Christina, University of New Mexico
Mapping historic corrales New Mexico: Challenges of modernizing an outdated addressing system

Woody, Tanya; Widener, Jeffrey M., University of Oklahoma
Perceptions of neighborhood historic preservation and energy efficiency in an American college town

BREAK   TH 3:00-3:20

MEDICAL & HEALTH   TH 3:20-5:00   AUDITORIUM 207
Chair: Shadae Dixon

3:20   Christian, Debbie, University of North Texas
Computational challenges in mapping the spatial patterns of disease burdens

3:40   Dixon, Shadae; **Blanchard, Denise**, Texas State University
Dialysis patients perceptions and preparedness in a disaster

4:00   Zhang, Yan; Angulski, Kate; Dittmann, Layne, *Sam Houston State University*
The spatial relationship between methadone treatment centers (MTCs) and drug arrests: Exploring the Not-In-My-Backyard phenomenon (NIMBY)

4:20   Portillo, Ethan Robert, *University of North Texas*
Analyzing the change in the population characteristics serviced by retail clinics pre and post Affordable Care Act

4:40   Henry, Tri Keah; **Zhang, Yan**, Sam Houston State University
Examining the effects of concentrated illegal gun possession and its relationship to other violent crimes

HUMAN-ENVIRONMENT   TH 3:20-5:00   ROOM 115
Chair: Don Jonsson

3:20   Martin, Ross H., Texas State University
The geomorphology of mountain bike trails

3:40   Sills, E. Cory, University of Texas at Tyler
Sharing space: Football meets the 5,000-year-old LSU campus mounds

4:00   Jonsson, Don, Austin Community College
The geopolitical struggles of the Golden-cheeked Warbler

4:20   Allen, Ashley, Louisiana State University
Impacts of tornado experiences on memory and identity

GRADUATE PAPER COMPETITION TH 3:20 - 5:00   ROOM 112

Organizer: Amy Frazier

3:20   Hemingway, Benjamin L.; **Frazier, Amy E.**; **Elbing, Brian R.**; **Jacob, Jamey D.**, Oklahoma State University
Vertical sampling scales for atmospheric boundary layer measurements from small unmanned aircraft systems (sUAS)

3:40   Maleki, Shadi; Julian; Jason P.; Weaver, Russell C., Texas State University
Social demand of urban wilderness

4:00   Xu, Yaping; **Wang, Lei**; **Liu, Chengliang**, **Liu, Cuiling**, Louisiana State University
Identifying unlawful constructions in cultural relic sites based on subpixel mapping: A case study in Mangshan Tombs, China

POSTER SESSION   TH 3:20-5:00   GALLERY 205

Contact: Donald Albert

Cardinal, Christine, Sam Houston State University, **Ratnapradipa, Kendra L.**, Saint Louis University, and **Ratnapradipa, Dhitinut**, Sam Houston State University
Potential impacts of Hurricane Harvey on risk communication for superfund sites in Southeast Texas

Fisk, Nicholas; Acevedo, Rafael; Carlton, Gerald; Jackson, Shelby; Johnson, Deandre; Thompson, Derek; Roth, Jeffery, Stephen F. Austin State University
Houston and Hurricane Harvey: Implementation of smart growth in rebuilding for the future

Hodge, Joshua, Texas State University
The impacts of Tropical Storm Cindy on a study site at McFaddin National Wildlife Refuge, Texas

Lopez, Christina, Texas State University
A tale of Texas water troubles: Water audits and loss

McGregor, Kent, University of North Texas
Reconstruction of Hurricanes Harvey and Irma with reanalysis data

Nichols, Sarah; Vaughan, Cody; Chisolm, Brett; Wheatley, Kendall; Roth, Jeffery, Stephen F. Austin State University
Lessons from Hurricane Harvey: Are we doomed to repeat the disaster?

O'Brien, Shayne, Fort Hays State University
Identifying precipitation trends in the Southwest United States, 1950-2106

WORLD GEOGRAPHY BOWL TH 7:00 - 9:00 HAMPTON INN & SUITES

SWAAG 2017
FRIDAY, OCTOBER 26

REGISTRATION   F 7:45-5:00   **ATRIUM 203**
Local Host: Donald Albert

GRADUATE FORUM   F 8:00-5:00   **ROOM 114**
Organizer: Adu-Prah, Samuel

ENERGY GEOGRAPHIES I   F 8:00-9:40   **AUDITORIUM 207**
Organizer: Christian Brannstrom

8:00   Hilburn, Andrew, Texas A&M International University; **Fry, Matthew**, University of North Texas
Stepping outside of proximity buffers: An augmented methodological and conceptual approach to quantifying environmental injustices in Mexico's oil and gas territories

8:20   Fry, Matthew, University of North Texas
A historic future reserve: Volumetric imaginaries of Mexico's Chicontepec Basin

8:40   Cummings, Anthony R., University of Texas at Dallas
Guyana's oil discovery and implications for local and international relations

9:00   Murphy, Trey, University of North Carolina at Chapel Hill
Fanstasma spaces: Legal landscapes from the Texas mineral subsurface

9:20   Loder, Thomas, Texas A&M University
"To keep a small portion of North Dakota North Dakota": The fight over Measure 5 in North Dakota newspapers

GEOSPATIAL CAPTURING TECHNOLGIES   F 8:00-9:40   ROOM 115
Chair: John Swab

8:00   Colten, Craig, Louisiana State University
Capturing long-distance landscapes: Gopro time-lapse photography

8:20   Comer, Jonathan C.; Wikle, Thomas, A., Oklahoma State University
Recreational drone ownership patterns and demographics

8:40   McLaughlin, Brian; Cummings, Anthony, University of Texas at Dallas
Creating survey-grade orthomosaics using consumer-grade UAVs

9:00   Swab, John J., University of Oklahoma
Creating an intellectual framework for a geographic exploration of Gordon-Matta Clark's Fake Estates

9:20   Harrison, Hayden A.; **Mathews, Adam J.**, Oklahoma State University
An object-based image analysis of land cover change in Stillwater, Oklahoma from 2003 to 2015

POSTER COMPETITIONS   F 8:00-9:40   GALLERY 205
Organizer: Amy Frazier

UNDERGRADUATE

Jackson, Nathan, University of Oklahoma
U.S. national forest hiking trail suitability in the State of Oregon

Luce, Brett; **Barrett, Tate E.**; **Ponette-González, Alexandra G.**, University of North Texas
Urban cyclist exposure to fine particle pollution in a rapidly growing city

Yip, Chi Chen; Kedron, Peter, Oklahoma State University
The impact of scale on relationships between social vulnerability and the physical environment

GRADUATE

Bosarge, Jeanett, Texas State University
Spatio-temporal patterns of recreational use along the upper San Marcos River, Texas, USA

Keenen, Avonlea, Oklahoma State University
Patterns in the locations of U.S. mass shootings

Kyle, Aubry, Louisiana State University
Between risks: Assessing perceptions of emergency support services in New Orleans, Louisiana, following an August 5th flood event while monitoring Hurricane Harvey

Lu, Fangda, Texas State University
Houston commuter rail planning and how will it help us to evacuate

Omotere, Olumide, University of North Texas
Using improved daily diagnostic equation to estimate root zone soil moisture

ENERGY GEOGRAPHIES II   F 10:00-11:40   AUDITORIUM 207

Organizer: Christian Brannstrom

10:00   Stadler, Steve; Oklahoma State University; **Greene, J. Scott**, University of Oklahoma; **Wood, Lauren**; Oklahoma State University
Oklahoma wind pushes through opposition

10:20   Farias de Souza, Wallason, Universidade Federal do Ceará; **Brannstrom, Christian**, Texas A&M University; **Jeovah de Andrade Meireles, Antonio**, Universidade Federal do Ceará
Discourse analysis of environmental reports for the licensing of wind farms in the State of Ceará, Brazil

10:40   Leite, Nicolly, Universidade Federal do Ceará; **Brannstrom, Christian**, Texas A&M University; **Gorayeb, Adryane**, Universidade Federal do Ceará
Quantitative analysis of the perception of wind farms in a traditional coastal community in Ceará, Brazil

11:00   Brannstrom, Christian, Texas A&M University
Wind power conflicts in Bahia, Brazil

SOCIAL GEOGRAPHIES I   F 10:00-11:40   ROOM 112

Chair: Kelly Haggerty

10:00   Haggerty, Kelly; **Fazzino, David**, Louisiana State University
Oral histories of ecological and economic change in Franklin City, and Greenbackville, Virginia

10:20   Kedron, Peter J.; **Holler, Joseph**, Oklahoma State University
Assessing general indices of social vulnerability in their local context

10:40   McDonald, Darrel L.; Oliphant, Emmerentie; Avant, Freddie, Stephen F. Austin State University
Reaching across the "Street": A geographer's role in community engagement

11:00   Groll, Shannon, Louisiana State University
Limits of hashtag activism in southern racial justice organizing: Urban and rural community responses to police brutality in Louisiana

POSTER SESSION F 10:00-11:40   GALLERY 205

Contact: Donald Albert

Aney, Gjertrud (Sierra); Buenemann, Michaela, New Mexico State University
Spatio-temporal dynamics of tree mortality and survival in northern New Mexico during the global change-type drought of 2002/2003

Jandick, Brittany, University of North Texas
Corporate responsibility in the Barnett Shale: Are operators practicing what they preach?

King, Kayla, Oklahoma State University
Short-term geomorphologic change in the dunes of the Little Sahara State Park, Oklahoma

Landers, Kate, University of North Texas
Predicting runoff potential based on land cover and soil infiltration capacity on the University of North Texas main campus

Sosa, Elizabeth, Sam Houston State University; **Gonzalez, Stephanie**, University of California, Los Angeles; **McKinnon, Innisfree**; University of Wisconsin-Stout
Riparian buffer impact on stream health in the Wilson Annis Watershed, Dunn County, WI

Weaver, Kobi, Louisiana State University
The application and analysis of anthrosoils in the Maya Region

Zamanisabzi, Hamed, University of Oklahoma
Evaluating climate change impacts on Red River Basin to recognize and prioritize critical areas to implement water-environmental conservation actions under potential climate change scenarios

AWARDS LUNCHEON   F 12:00-1:50   ROOM 115

Moderators: Donald Albert & Jason Julian

Richard Eglsaer, Provost, Sam Houston State University

Mac Woodward, Director of Sam Houston Memorial Museum

Jeff Littlejohn, Keynote Address, Department of History, Sam Houston State University

Matthew Fry, SWAAG Secretary, University North of Texas

Amy Frazier, SWAAG Treasurer, Oklahoma State University

Jason Julian, SWAAG Chair, Texas State University

FIELD TRIP: SAM HOUSTON MUSEUM   F 2:00-3:30   ATRIUM 203

Organizer: Mac Woodward

CURRICULUM AND TRAINING   F 2:00-3:40   AUDITORIUM 207

Chair: Patrick Hagge

2:00   Frazier, Amy E.; **Wikle, Thomas**; **Kedron, Peter**, Oklahoma State University
Exploring the anatomy of Geographic Information Systems and Technology (GIS&T) textbooks

2:20   Hagge, Patrick, Arkansas Tech University
Initial assessment of geography education at Arkansas Tech University: From mapping locations and preferences to teaching GIS "on the fly"

2:40   Mathews, Adam J.; Wikle, Thomas A., Oklahoma State University
Assessing professional benefits of GIS certification

3:00   Muniz, Osvaldo; Cascante, Alejandro, Texas State University
Multi-efficient strategy to enhance platforms for online geography education

LAND USE AND DEMOGRAPHICS   F 2:00-3:40   ROOM 112

Chair: Michelle Brym

2:00   Brym, Michelle, University of Central Oklahoma
Religion, ethnic communities and the spatial integration of immigrants

2:20   Drake, Dawn M., Missouri Western State University
The rural-urban fringe: Agriculture lost or found?

2:40   Le Caro, Yvon, University Rennes 2 (France)
Urban spatial features in the countryside: some evidence from a topological approach studying farmers' experience in western France

3:00   Leipnik, Mark; **Mehta, Sanjay S.**, Sam Houston State University
Lessons for the 2020 U.S. decennial census that can be learned from the 2016 on-line Australian census debacle

3:20   Zhao, Yun; **Kedron, Peter**; **Frazier, Amy**, Oklahoma State University
Measuring urban patterns and identifying their relationships with changes in land use intensity

SOIL AND VEGETATION   F 3:40-5:00   AUDITORIUM 207

Chair: Michaela Buenemann

3:40   Buenemann, Michaela; **Coetzee, Marina**; **Kutuahupira, Josephat; Herrick, Jeff**, New Mexico State University
Soil maps: Current issues and potential solutions

4:00   Guida, Ross, Sam Houston State University
Shifting vegetation patterns as a response to climate change in the Newberry Mountains, Nevada

4:20   Hoffpauir, David R.; **Adu-Prah, Samuel**, Sam Houston State University
Geographic analysis of current and historical vegetation of East Texas

4:40   Manning, Aspen, Texas State University
Natural succession and riparian forest recovery following a major flood on the Blanco River, Texas

SOCIAL GEOGRAPHIES II   F 3:40-5:00   ROOM 115
Chair: Eric Sarmiento

3:40   Koch, Jennifer; Boyer, Tracy; McCarthy, Heather; Kedron, Peter; Zhou, Qingtao; Ghimire, Monika; Cha, Wonkyu; Zhao, Yun, University of Oklahoma
The Oklahoma City ENVISION model: Linking land management, water use, and human well-being

4:00   Northeim, Kari, University of North Texas
Improving accuracy of ozone estimates: Challenges in developing a fine-scale spatio-temporal model of ozone concentrations

4:20   Sarmiento, Eric; Furness, Walter; Rosenberg, Alex Von, Texas State University
Can markets make food systems more just?

4:40   Williams-Blackshear, Destinee; Chatterjee, Ipsita, University of North Texas
Homelessness and neoliberalism in Denton

In Memoriam: Karl W. Butzer   F 3:40-5:00   ROOM 112

3:40-4:20   Mathewson, Kent, Louisiana State University
Karl W. Butzer (1934-2016): In memoriam

4:20-5:00   Open Discussion

2017 SWAAG BUSINESS MEETING   F 5:00-6:00   AUDITORIUM 207
Chair: Jason Julian

SWAAG 2017
SATURDAY, OCTOBER 28

FIELD TRIPS   SAT 8:30-12:30   HAMPTON INN & SUITES
Organizer: Donald Albert

Mitchel Roth, Huntsville's Prisons: Culture and Landscapes

Dan Phillips, Enchanting, Recycled, and Affordable Housing

ABSTRACTS SWAAG 2017

Adu-Prah, Samuel, Sam Houston State University; **Aboagye, Dacosta**, Kwame Nkrumah University of Science & Technology; **Appiah-Opoku, Seth**, University of Alabama
Spatiotemporal evidence of recent climate variability in Ghana

Climate change continues to be a global concern with impacts varying from region to region. Studies and observations establishing the evidence of climate change have often focused on global, regional and national levels to the neglect of agro-ecological differences. Using trajectory and time series analysis of temperature anomalies and rainfall distributions for the agro-ecological zones of Ghana, this paper establishes a strong evidence of local climate change across the country in diverse agro-ecological zones. The evidence is based on the spatiotemporal analysis of the varying temperature and rainfall data observed from 1981- 2009. The analysis shows local increases in temperatures for the period ranging from 0.5°C to 1.0°C with varying inter-annual rainfall distributions. The results explained the spatial differences in the agro-ecological zones in Ghana as a result of climate variability. The study provides supporting evidence for climate change using locally observed in-country data to compliment studies at global, regional, and national levels.

Key Words: spatiotemporal, climate change, temperature, rainfall, Ghana

Allen, Ashley, Louisiana State University
Impacts of tornado experiences on memory and identity

This paper explores the impacts of experiencing tornadic events on memory and identity. To conduct this study, I interviewed multiple survivors of historically deadly tornado events across Oklahoma, focusing on the Woodward, Antlers, and Pryor tornadoes. By analyzing how these specific experiences changed the way these survivors interact with the world and share their stories, we can better understand the cultural significance of extreme weather events.

Key Words: cultural geography, historical geography, memory, identity

Aney, Gjertrud (Sierra); Buenemann, Michaela, New Mexico State University
Spatio-temporal dynamics of tree mortality and survival in northern New Mexico during the global change-type drought of 2002/2003

Tree die-off driven by extreme atmospheric conditions and insect infestations presents a major problem for land managers across the U.S. Southwest. In 2002/2003, for example, a global change-type drought and associated bark beetle outbreak triggered severe tree mortality in the pinyon-juniper woodlands of New Mexico. This outbreak has resulted in increased fire risk due to more standing dry fire-fuel; habitat loss for woodland and forest organisms; and altered rates and patterns of land surface energy, water, and nutrient exchanges. Sustainable land management requires an understanding of the relationships between tree mortality/survival and topoedaphic, climatic, and anthropogenic variables. Our major objective was to move us one step closer toward such an understanding by mapping spatio-temporal changes (2001-2004) of tree cover in a 20,000 km2 area in north-central New Mexico. To do so, we completed three major tasks. First, we applied Multiple Endmember Spectral Mixture Analysis (MESMA) to Landsat 5 Thematic Mapper imagery (30 m spatial resolution) of 2001, 2002, 2003, and 2004. Next, we assessed the accuracy of our results using fractional tree cover data derived from high spatial resolution aerial photographs (1 m spatial resolution). Finally, we assessed differences between four time periods (2001-2002, 2002-2003, 2003-2004, 2001-2004) using image differencing. Our results indicate that tree mortality and survival varied across space and through time, with mortality being most pronounced in mid-elevations (where pinyon pine is most common) and in the time period that captured the first year following the onset of the major drought (2002-2003).

Key Words: remote sensing, Landsat, drought, tree mortality, New Mexico

Aucoin, Lindsey, Sam Houston State University
Land use and cover in Grand Isle and West Grand Terre on the Gulf Coast of Louisiana: 1998-2017

Sea level rise, seasonal storms, and erosional forces are driving change along the Gulf Coast of Louisiana. A small percentage of Louisiana's population resides on Grand Isle, one of Louisiana's largest barrier islands. The community is susceptible to hurricanes and was affected by Katrina in 2005. Coastal engineers are attempting to reduce the effects

of hurricanes and sea level change on habitable land, and the island is closely monitored. This study uses high resolution Digital Orthophoto Quarter Quadrangles to identify locations of change on Grand Isle and neighboring Isle West Grand Terre between 1998 and 2017. Image comparison techniques in ERDAS Imagine identify 1 square meter cells with more than 50% change in reflectance intensity. Supervised classification was used to identify water, sand, vegetation, and urban land types. Classification comparison illustrates urban growth, sediment movement, and vegetation growth. Noticeable changes include urbanization of land in the northern marshes of Grand Isle, and sediments that migrated along the shore from the southwest beaches to the southeast beaches. Isle Grand Terre underwent extreme changes in 19 years, including northward coastal retreat of about 200 meters near Fort Livingston in the southwest and a land area gain estimated near 500, 000 square meters in the northeastern marsh. The effects of human activity on Grand Isle and West Grand Terre are noticeable within this 19-year period.

Key Words: remote sensing, DOQQ, change detection, Grand Isle, Gulf Coast

Blue, Sarah; **Hartsell, Alisa**; **Torres, Rebecca; Flynn, Paul**, University of Texas-Austin
The uneven geography of asylum and humanitarian relief: Central American migrant youth in the United States judicial system

As the number of unaccompanied migrant children (UMC) crossing the US-Mexico border 'surged' during 2014 and remained high through 2016, the number of youth seeking relief through the immigration court system in the United States is at a record high. A crisis of representation and of disparity in granting asylum or other humanitarian relief across Department of Justice (DOJ) immigration courts and among individual judges creates an unequal geographical landscape for young migrants awaiting their day in court. This study uses empirical data from over 232,000 UMC cases to analyze the effect that place of residence may have on access to a fair hearing in DOJ immigration court. This research adds to previous studies by emphasizing the importance of place for unaccompanied minors who have been released to sponsors across the United States. Given that court adjudications vary considerably from judge to judge and across courts; and that access to legal resources vary from city to city and across regions where a UMC resides has a major impact on the likelihood of a fair hearing. That there is substantial unequal access to quality legal representation and favorable immigration courts, depending on place of residence, is a troubling finding that has major implications for unaccompanied minor migrant youth.

Key Words: immigration, unaccompanied minor, deportation, asylum

Bosarge, Jeanett, Texas State University
Spatio-temporal patterns of recreational use along the upper San Marcos River, Texas, USA

As population and tourism continue to flourish in the City of San Marcos, so too will the need to effectively balance the management of ecosystem services. The objective of this study is to reveal patterns in recreation along the San Marcos River (SMR) to provide reliable information. Recreational services available along the SMR are of immense value to the city and provide benefits to a wide-range of users. The study area for this project is comprised of six parks located along the SMR and within city limits. Using an Unmanned Aerial Vehicle (UAV), photos covering the entire study area were taken between Memorial and Labor Day holidays with each day consisting of morning, midday, and afternoon observations. These photos were processed to produce high-resolution orthomosaic images, and subsequently analyzed to quantify recreational usage by detecting the number of people present across space and time. Comparisons have been made for different days and times in addition to determining which parks or areas are the most popular. The following results are from one average Saturday, meaning it was not a holiday and there were no major local events: At approximately 9 AM, there were 183 people counted within the six parks, of which 76 were actively using the river. By 12 PM, the total count was 947 with 565 using the river, and by 5 PM there were 1,401 people in the parks with 798 using the river actively. High-resolution spatio-temporal data like these have the potential to inform adaptive natural management.

Keywords: ecosystem services, unmanned aerial vehicles, river recreation, remote sensing

Brannstrom, Christian, Texas A&M University
Wind power conflicts in Bahia, Brazil

Rapid wind-power expansion in Brazil's northeastern region is a response to problems in electricity power generation and a high quality wind resources. But accumulating evidence indicates that environmental impacts, territorial conflicts, and livelihood erosion have developed as a consequence. Land-tenure insecurity has allowed wind firms and local elites to usurp lands for wind farms policies in coastal areas, where the wind resource is high. Dynamics in

Brazil's vast interior are not well described. Here I present a model of wind power governance, which I apply to preliminary empirical data from interior regions of Bahia state, soon to be Brazil's leading state for wind power. Three different emergent issues regarding wind farms are apparent: on lands with secure title, rents are paid through contracts, but some houses need to be demolished and landowners are skeptical of widely variable rent payments; on uncontested lands without title, wind farms are established through the actions of local elites to enclose commons; on contested lands without title, wind farms threaten the existence of traditional communities, such as Afro-Brazilian quilombola groups, who struggle to obtain official recognition to their common property. The findings emphasize the need to understand wind power conflicts through land tenure security. Local elites play a key role in negotiating with state officials and wind power investors for access to large land areas at the margins of economic activity.

Key Words: wind, conflict, land, Brazil

Brock, Courtney, University of New Mexico
Urban animals: GIS analysis of stray canines and felines in Albuquerque, New Mexico

The research that I have conducted for my graduate thesis, supported by the University of New Mexico's Department of Geography and Environmental Studies, centered around the use of GIS technologies to better understand the urban animal geography of Albuquerque's stray feline and canine populations. While both topics hold precedence within their own departments, a GISystem has yet to be adopted by Albuquerque's Animal Welfare Department to assess the stray animal populations it works so hard to protect. I truly believe that through the use of GISystems the stray animal geography of this city can be better understood and through my research I have highlighted the reasons why.

Key Words: animal geography, urban animal landscape

Brym, Michelle, University of Central Oklahoma
Religion, ethnic communities and the spatial integration of immigrants

Today, diverse immigrant groups, largely from Latin America and Asia, establish new types of ethnic communities in the non-traditional destinations where they settle. Places of worship have been identified as important nodes in immigrant communities that are often otherwise invisible in the suburbs where they reside (Jones-Correa, Michael 2008). As important markers of immigrant groups' presence on the landscape, places of worship provide insights into the permanency and political-economic integration of the community. Geographers have not paid much attention to the connections between religion and migration (Holloway and Valins 2002). Therefore, with a focus on the location of religious sites within immigrant communities in the Oklahoma City Metropolitan Area, this study will contribute to a better understanding of the influence of religion on current settlement patterns of the foreign-born in non-traditional destinations. The plurality of places of worship in Oklahoma City Metropolitan area that serve an immigrant community reflect the religious, ethnic/racial and economic diversity among recent immigrants. The location of religious sites that serve immigrant communities within the metropolitan area illustrates the differences in spatial mobility among immigrants. Ongoing qualitative research with members of different religious groups provides a deeper understanding of the differences in spatial patterns among newcomers in the city.

Key Words: immigration, ethnic communities, religion

Buenemann, Michaela; **Coetzee, Marina**; **Kutuahupira, Josephat; Herrick, Jeff**, New Mexico State University
Soil maps: Current issues and potential solutions

Spatial soil information is urgently needed by a diversity of stakeholders to address issues ranging from local to global scales (e.g., farm-level land management to global climate change adaptation and mitigation). However, the quality of existing soil maps is largely unknown. To address this problem, we evaluated the quality of seven spatial soil databases using topsoil texture as an example soil property and Namibia as a case study area. We found that the maps ranged in overall accuracies from only 13% to 42%, with substantial confusion occurring among all texture categories. Visual comparisons of the maps moreover showed that the maps differ greatly in the spatial composition and configuration of topsoil texture areas. None of the maps capture the diversity and spatial heterogeneity of topsoil textures on the ground. The use of these existing maps for policy- and decision-making is thus highly questionable. The need for better soil map predictions, in contrast, is clear. We argue that there are two major options for meeting this need: 1) produce better on-site estimates of soil properties and 2) improve the downscaling of soil property estimates. For option 1, we propose the use of open source mobile and web apps that facilitate the collection and recording of georeferenced data on various soil properties. For option 2, we reiterate some strategies for digital soil

mapping proposed by others, encourage research that identifies new modeling directions, and suggest the exploration of citizen science and crowdsourcing for producing better soil geographic knowledge.

Key Words: soil mapping, crowdsourcing, land management, Land Potential Knowledge System, uncertainty

Bunsen, **Michael,** Texas A&M University; **Prout, Erik**, Texas A&M University
Preliminary analysis of homeless on public land

The objective of this project is to understand the cultural identity of long-term stayers on public land in the state of Colorado. Cultural identity will include, but is not limited to: societal self-identification, causes of lifestyle form whether that be through choice or due to chronic homelessness, style and types of living conditions and whether they vary per person or illustrate patterns across space and cultural norms or deviations associated with long-term stayers. We will be analyzing the effects of the natural conditions, both topographic and ecological, on these human populations in question as well as their effect on their surrounding environment. This information will initially be gathered through literature reviews which will demonstrate previous information gathered on this topic as well as give a foundation for further research. We will further attempt to form a questionnaire to be given via phone interviews with local authorities in affected areas to gather original data on how these people groups are influenced by local law or not as well as their known presence amongst Colorado communities. We will analyze our results in an attempt to draw conclusions that identify these peoples' culture, the dynamics that exist within the local communities and the society that exists therein. The ultimate end goal will be to understand the cultural landscapes these communities that exist on public land create and to make inferences about their presence as it relates to both their surrounding natural and built environments.

Key Words: homelessness, cultural identity, long-term stayers, cultural landscapes, natural and built environments

Cardinal, Christine, Sam Houston State University, **Ratnapradipa, Kendra L.**,Saint Louis University,
and **Ratnapradipa, Dhitinut**, Sam Houston State University
Potential impacts of Hurricane Harvey on risk communication for superfund sites in Southeast Texas

Since the 1980s, hazardous waste sites of greatest threat to human and environmental health have been prioritized for cleanup and listed on the National Priorities List as Superfund sites. When sufficiently remediated, these sites are deleted from the priorities list but may require continued monitoring. Active superfund sites are at risk of potential toxic leakage, particularly during natural disasters such as hurricanes, as evidenced in the aftermath of hurricanes Katrina (2005) and Sandy (2012). From August 25-30, slow-moving Hurricane Harvey caused widespread, intense rainfalls throughout southeast Texas, with total accumulation of more than 50 inches reported in some areas and the entire area receiving 20-40 inches of rain. Flooding continued in the following week as waterways continued to surge above flood stage. Twenty superfund locations across five of the impacted counties therefore potentially contaminated the floodwaters in nearby residential areas. This presentation seeks to highlight how GIS can be used to help target superfund risk communication to communities impacted by the recent flooding. Mapping of superfund locations in Brazoria, Galveston, Harris, Liberty, and Montgomery counties juxtaposed against rainfall totals and waterway flooding maps. Superfund locations and 1-mile radius reports obtained from US Environmental Protection Agency interactive map. Data tabulation and mapping will be created for analysis.

Key Words: hurricane, superfund sites, environmental health risk communication

Carr, John, University of New Mexico
Mobilizing geographies of spatial Justice beyond politics of left and right

The current political moment has intensified ongoing debates about the failure of current cultural, political, economic, and ecological paradigms, and the desperate need for new directions forward. In response, this research presentation seeks to begin to offer a preliminary normative framework for what a spatially just society might look like. My analysis is based on the premise that current destructive patterns of consumption and production have faced few serious political or cultural challenges in part because of a lack of compelling alternative approaches to producing fair, equitable and compelling societies. And as well documented by human geographers, the barriers to creating a truly fair society are formidable precisely because human geographies are inherently unequal, with every place having unique and uneven accessibility to rivalrous resources, exposure to hazards and cultural meanings. Accordingly, I draw upon existing geographic scholarship to offer conceptual cornerstones for what a spatially equitable vision for human thriving might look like and how that vision might speak beyond our current articulations of left and right politics.

Key Words: spatial justice, political geography, critical geography, utopic geography

Carter, Isaac; **Banks, Evan M.; Drake, Dawn M.**, Missouri Western State University
Mobile food economies: The food cart culture in Portland, Oregon

Location is critical to the success of any business. When that location can be virtually anywhere, as is the case with a mobile business, it is both a blessing and a curse. There are certain steps a mobile business owner can take to increase the likelihood of success. For owners and operators of food trucks in Portland, Oregon, understanding these steps is essential. Owners are faced with a choice of 1) a brick and mortar shop that branches out into the food truck culture, 2) a small operation with a food truck that expands their business into a brick and mortar operation, or 3) being content with the low overhead and high profit margin of a food truck with no desire to expand. All of these approaches can be successful, but some more than others. Understanding the motivations behind why people choose to locate their businesses where they do and what form the business will take will allow future entrepreneurs to make wiser decisions. The mobile nature of a food truck presents an interesting case study in the movement of goods and services as they pertain to human geography. This paper uses a field study in Portland, Oregon to discuss the motivations for the placement of a business, how surrounding businesses affect the achievements of an establishment, and how limitations and allowances placed by the government can adversely or advantageously affect the businesses' prosperity.

Key Words: economic geography, business geography, Portland, Oregon

Christian, Debbie, University of North Texas
Computational challenges in mapping the spatial patterns of disease burdens

Geographic Information Systems are commonly used as tools to collect, manipulate, and manage geospatial data. GIS is also used by researchers to develop methodologies that examine associations between spatial processes and diseases. Increasing volumes and complexity of data require the development of computational tools to uncover relationships within disparate data. Increasing complexity of data makes integration of information challenging due to differences in the structure of input variables. Further, large volumes of data may impact the efficiency with which data can be processed. While hardware capabilities are rapidly improving, the sheer volumes with which data are collected have increased exponentially in comparison. For example, in a hypothetical case where health and population data are available at the individual level through modern electronic health records, the computational effort needed for construction of a disease map using kernel density estimation methods is in the order of $O(n^2)$ where n represents the number of data points in the system. The time needed for such analyses can exceed most practical expectations. Although individual-level data is collected for many diseases, data is not released for use by researchers due to privacy constraints. This leads to data aggregation which degrades the quality of the map as significant information is lost. Software systems that can automatically analyze such data are needed. Linking health data to environmental risks introduces additional complexities due to inconsistencies in how such data are collected. My research develops a computational system that efficiently processes such data and can scale to accommodate large datasets.

Key Words: GIS, data aggregation, geospatial data, kernel density estimation

Chu, Gregory, University of Wisconsin-La Crosse; **Park, Jinwoo**, Texas A&M University
Climate change challenges in Korea and the National Atlas of Korea Vol. II

Just like most of the nations, South Korea is mindful of the effects of Climate Change on its land, air, waters, and people. The chapter on Atmosphere and Hydrosphere in the National Atlas of Korea, Vol.II provides a robust set of contents that outlines the challenges Korea faces in the mitigation of climate change. Several datasets collected by the Korea Meteorological Administration (KMA) provide ample data for modeling various scenarios. Working in close collaboration with other ministries, the KMA maps actual phonological events as well as modeling future scenarios in projected temperature rise, precipitation patterns, migration of ecosystems, changes in the boundaries of subtropical regions, and documentations of sea level rise. Based on guidelines of the Intergovernmental Panel on Climate Change (IPCC), the National Atlas of Korea produced several maps that are results of research on Representative Concentration Pathways (RCP). The paper attempts to highlight the findings from these type of modeling scenarios.

Key Words: Korea, climate change, phenology, spatial shifts, national atlas

Colten, Craig, Louisiana State University
Capturing long-distance landscapes: Gopro time-lapse photography

In the 1930s, Fred Kniffen traversed Louisiana highways recording and classifying vernacular housing. His work stands as a pioneering "windshield" cultural resource inventory. In the absence of the so-called "cultural spoor," what can we learn from the roadside landscape in the 21st century? During the spring of 2017 using the time-lapse function of a dash-mounted Gopro camera, I traveled over 5000 miles recording the driver's-eye view of the state's blue highways. This field work documented the state's diverse landscapes to create a baseline for future repeat time-lapse photography and analyze the current landscape. Excerpts of the time-lapse photography illustrate the strengths and weaknesses of this documentary technique and its potential for use in subsequent repeat photography of long-distance routes. The vernacular landscape of today offers a profound view of commercial abandonment along less-traveled roads, the decline of small-towns, and the multiple stages of roadside re-development. While obvious to those who have driven these roads for decades, the images captured in these videos expose the historical processes at work along the state's highways, especially when re-photographed over time. Also, the time-lapse function enables viewers to experience a long-distance drive in a short period of time and to view the broad regional scale of landscape change. While the details observed by Kniffen, traveling at a more deliberate pace, are invisible using this technique, other insights abound.

Key Words: landscape, time-lapse photography, Louisiana

Comer, Jonathan C.; Wikle, Thomas, A., Oklahoma State University
Recreational drone ownership patterns and demographics

In 2016 monthly sales of unmanned aerial vehicles (drones) to U.S. consumers exceeded 15,000 units with the largest number purchased for recreational uses such as aerial photography and videography. Concerned about safety and personal privacy, some states and cities have implemented laws and ordinances restricting the use of drones in parks and in the vicinity of public events. Likewise, federal agencies such as the National Park Service prohibit all recreational drone use on some of the lands they manage. The Federal Aviation Administration (FAA) has also placed restrictions on drone use through requirements that drones be flown no higher than 400 feet above the surface and that airport mangers receive prior notification if a drone will be used within five miles of an airport. In June 2016, the FAA also began requiring drones weighing more than 0.55 pounds to be registered through an online system. This paper explores the extent to which restrictions and other factors such as limited open space, influence spatial patterns of recreational drone ownership. Data comes from the FAA drone registry database (460,000+ records), U.S. National Aerospace System boundaries, and the U.S. Census of Population. We investigated the relationship between recreational drone ownership as defined by zip code counts and socio-demographic factors tied to communities including population density, income, and education level. An additional variable investigated was the influence of federal airspace restrictions including proximity to airports.

Key Words: drones, airspace, privacy, geofences

Cowan, Christopher, G., University of Arkansas
Wither, Iron Brothers: Underacknowleged strains on the Sino-Pak relationship

The "Iron Brotherhood" - the bilateral relationship between China and Pakistan - is often judged as one of the most stalwart bilateral relationships in the world, and certainly a foundation for the contemporary South Asian geopolitical order. This perception has grown in recent years, especially with widely touted Chinese economic initiatives such as "One Belt One Road" and the "China Pakistan Economic Corridor." Even prior to these flashy overtures, however, the Sino-Pak relationship represented one that had evolved through mutual experiences - war, diplomatic crises, commerce, regional issues, internal insurrection, ethno-nationalist separatism, and a mutual suspicion of India. Such experiences have forged a relationship wherein mutual benefits are seemingly inherent, and a relationship which Pakistan, the weaker of the two countries, would be foolish to jeopardize. Despite such public perceptions, however, a number of intrastate strains and state polices place underacknowledged strains on the relationship, threatening the "Iron Brotherhood" and even the geopolitical balance in South Asia itself. This paper assesses these underacknowledged strains on the Sino-Pak relationship with specific emphasis on the threat to the relationship posed by Pakistani internal politics and conditions, state policies, and broader events within Afghanistan and Pakistan, as well as China's own shortcomings. More specifically, numerous trends - violent transnational Salafism, Islamist and ethno-nationalist insurgency, capricious internal politics, and potentially destabilizing state behavior - should not be discounted as critical influences upon the Sino-Pak relationship.

Key Words: Pakistan, China, South Asia, state stability, international relations, insurgency, terrorism

Craig, Jonathan, University of Oklahoma
Bridging the Gap: A geospatial analysis linking Oklahoma's transportation infrastructure and state political institutions

Local and state governments are both critically important to many facets of everyday life for all Americans. Despite this fact, the general electorate remains largely unaware of many of the institutional trends and major political actors at these levels. This becomes especially problematic when certain state institutions, either by law or by circumstance, are subjected very directly to those influences. One example of this issue is the funding structure the state of Oklahoma used to fund road and bridge projects prior to 2005. In this old system, all projects administered at the state level of government required direct approval by the state legislature, which left these projects subject to all manner of direct and indirect influencers in terms of budget and geographic placement. Even after the funding structure was reformed, the problem of institutional influencers affecting placement and budget has not likely disappeared. However, this case has the potential to provide a geospatial link between these amorphous and abstract political concepts and concrete results of those influencers via visualization. This project aims to map Oklahoma's past road and bridge projects, and attempt to link this geospatial approach with qualitative context regarding Oklahoma's political institutions.

Key Words: GIS, political geography, historical geography

Crotty, Sean, M., Texas Christian University
The red-light network: Analyzing the contemporary geography of the world's oldest profession

Sometimes referred to as "Erotic Massage Parlors" or "Asian massage parlors," Illicit massage businesses (IMB's) act as nodes within human and sex trafficking networks across the United States, where exploitation, involuntary servitude, and contemporary slavery are common occurrences. IMBs represent the largest component of the commercial sex industry trend toward 'indoor' sex work, in which meeting locations for sex workers and customers are prearranged, so there is no requirement that sex workers be publicly visible for customers to identify them. The lower visibility of contemporary sex work makes it difficult to identify locations where sex work occurs. As a result, research examining spatial, temporal, and economic prevalence of IMB's draws almost entirely on anecdotal evidence, and the accuracy of the analyses is somewhat questionable. This study begins to address this problem in an examination of the IMB industry urban areas throughout Texas. The research draws on user-generated-data from online IMB review sites to identify IMB locations which are then mapped and analyzed to better understand the geographic distribution of IMB's in each city, as well as the spatial and situational characteristics most correlated with active IMB's at the metropolitan and state-scales.

Key Words: spatial analysis, illicit economy, urban geography

Cummings, Anthony R., University of Texas at Dallas
Guyana's oil discovery and implications for local and international relations

 It seemed like Tobler's first law of geography would be proven incorrect when it came to Guyana and its oil potential. For decades, national, regional and local authorities alike have been paying keen attention to the soil to ensure the signs of oil were not missed. When Exxon reported in 2016 that oil in quantities that could make Guyana a major oil producer was found in its coastal waters, many hopes and dreams of national development would have been rekindled. However, the discovery of oil by Guyana, a country already dealing with border disputes with Suriname and Venezuela, could see tensions with its neighbors reignited. Historically, Venezuela has claimed close to two-thirds of Guyanese territory while Suriname has claimed upwards of 20%. These international tensions have resulted in the citizens of Guyana, Venezuela, Suriname, and Brazil, being caught in the crosshairs of disputes, and these may become more important in an oil-producing landscape. When these international tensions are coupled with the fact that Guyana has created a niche on the global stage as an emerging low-carbon development economy, the stage is set for national-level tensions to emerge. In this paper, we examine the literature and archival data to review some of the tensions that have existed between Guyana and its neighbors and those that occupy the national-level discourse to determine their implications for an emerging Guyanese oil economy. Our paper draws on these historical tensions to provide insights into how they may change as oil begins to flow.

Key Words: Guyana, Venezuela, Suriname, international tensions, oil, territorial disputes

Day, Britney, Stephen F. Austin State University
Geography of Texas wardrobes: Mapping your clothes and the textile industry

Most Americans overlook a common question: "What countries produced my wardrobe?" Apparel tags offer an opportunity to examine and map the country of origin and determine the spatial characteristics of the international textile industry along with the extent U.S clothing importations. While most Americans realize their clothing was manufactured abroad, the absence of U.S. manufactured apparel items proves unsettling when considered in context with labor and environmental conditions in the places of production. This project covers the origin of the textile industry, and the events that led the United States to move clothing manufacturing from within the states to outside of the country as well as the technological changes that may lead to return of the industry. Data was collected in four clothing categories including jackets, shirts, pants, and shoes. For each of the four categories, 100 people were randomly selected and asked to examine their clothing tags which provides a sample which shows country of origin for common items worn in the United States. Spatial analysis of the data represents a clear visualization of manufacturing that occurs in the developing world, as well as elements of economic geography and networks of international trade.

Key Words: economic geography, international trade, industrial location theory

Dixon, Shadae; **Blanchard, Denise**, Texas State University
Dialysis patients perceptions and preparedness in a disaster

This study investigates disaster perceptions and preparedness among dialysis patients in two different states; in the regions of Houston, Texas and Brooklyn, New York. In addition to this, participants from this study required three visits to a dialysis center every week to receive treatment and must travel to a center regardless of weather conditions. Results suggested that 41% of the patients living in the Texas region believe that their dialysis center will "somewhat likely" experience damage by a hurricane in the future compared to 24% of the New York participants. Also, 86% of the Texas participants does not have an alternative dialysis center. Previous studies have shown, interruptions in critical infrastructures (e.g., water, electricity, or transportation systems) translated into a life-threatening event for dialysis-dependent patients. For example, after Hurricane Katrina a number of increased hospitalization became one of the many adverse outcomes for dialysis patients. Additionally, an increased in knowledge of early dialysis is likely to lead to a number of decreased ED visits during a major hurricane; this is illustrated in this research where participants in New York had a higher count of having knowledge about early dialysis than participants living in Texas. Furthermore, dialysis patient's perceptions and preparedness in a disaster might also be associated with dialysis centers educating their patients more on emergency preparation.

Key Words: dialysis, preparedness, disaster, perceptions, hurricane

Drake, Dawn M., Missouri Western State University
The rural-urban fringe: Agriculture lost or found?

The 1920 US Census marked the first time that more Americans lived in cities than rural areas. From that point forward, as more and more Americans opted to leave the agrarian lifestyle, cities grew and sprawled, encroaching into any available open space. That sprawl created a new region, one that is not yet urban or suburban, but also one where traditional rural land uses are under pressure. This area of transition is the rural-urban fringe. This paper examines the dynamics for agriculture in the rural-urban fringe. It is a place where traditional agriculture is pressured by rising land values, increased traffic, and incompatible neighbors. Farmers facing this new paradigm make a variety of choices. In some cases the lure of a large pay day and the promise of fewer hassles leads to total industry exit. Others embrace the opportunities that new residents' arrivals present, shifting operations to focus on niche production and high value crops. Still others choose a path somewhere in between. Through a series of case studies, the paper highlights some of the various options real-life farmers in Megalopolis choose to deal with the influx of new residents into the rural-urban fringe. A combination of humorous stories and more serious anecdotes helps answer the question, is agriculture lost or found in the rural-urban fringe.

Key Words: agriculture, economic geography, rural geography, land use change

Farias de Souza, Wallason, Universidade Federal do Ceará; **Brannstrom, Christian**, Texas A&M University; **Jeovah de Andrade Meireles, Antonio**, Universidade Federal do Ceará
Discourse analysis of environmental reports for the licensing of wind farms in the State of Ceará, Brazil

The state of Ceará is located in northeastern of Brazil and is the country's fourth leading state for installed wind power capacity with 1651.9 MW, which corresponds to 43.36% of the state's electricity generation. The main objective of this study is to analyze the discourse used in the environmental reporting (Simplified Environmental Reports) required for licensing and implementation of wind farms in and test whether they represent a case of green grabbing. The analysis of one of the sixteen environmental studies collected offers a proof of concept, through careful reading, search for key words and expressions, and answers to questions in each of the dimensions of green grabbing. The preliminary results provided strong evidence of green grabbing related to the implantation of wind farms in coastal Ceará: crisis was used as a justification for the implementation of the project; privatization and appropriation of communally used land occurred; communities were made invisible and livelihoods and subsistence were compromised; financialization of natural resources and environmental systems was observed; and the state appears as a fundamental agent in making legislation more flexible and in financing projects through public banks. The preliminary research motivated further analysis of other environmental studies of wind farms in Ceará, using the ATLAS.ti software, coding, word cloud creation, semantic networks and description webs based on discourse analysis.

Key Words: discourse analysis, wind farms, green grabbing, Brazil

Fisk, Nicholas; Acevedo, Rafael; Carlton, Gerald; Jackson, Shelby; Johnson, Deandre; Thompson, Derek; Roth, Jeffery, Stephen F. Austin State University
Houston and Hurricane Harvey: Implementation of smart growth in rebuilding for the future

In the United States, automobile-centric sprawl characterizes the layout of most American metropolitan areas, in contrast to more ideal urban designs that utilize much higher population densities. In the region around Houston, Texas, haphazard zoning and a passion for the automobile combine to create an urban environment dominated by transportation systems and unsustainable networks of infrastructure. Texans constructed the fourth largest metropolitan area in the United States according to real estate developers plans and profit rather than the well-being of citizens. As the Houston area rebuilds, public officials must consider new planning concepts and oppose real estate developers who focus solely on market forces rather than the public interest. The needs of residents should have priority over all other city planning decisions. This project demonstrates the benefits of urban planning focused on decreasing vulnerability to environmental hazards, mixed used neighborhoods with higher population densities, and development practices which improve transportation efficiency, decrease infrastructure expense, increase economic growth, and boost quality of life. Further, this project examines several regional case studies and published literature on the subject of mixed use urban development to provide ideas to guide Houston's public officials in the aftermath of Hurricane Harvey.

Key Words: urban geography, environmental justice, smart growth, sustainable urban development

Forbes, William, Stephen F. Austin State University
Aldo Leopold and East Texas land ethics

This poster documents renowned conservationist Aldo Leopold's visit to East Texas in the early 1900's and summarizes trends in East Texas conservation since that time. The poster also offers examples of implementation of his famous land ethic, as described in his 1949 conservation classic A Sand County Almanac. Leopold visited East Texas near the beginning of his career in 1909, through a Yale Forestry School field camp located 75 miles east of Huntsville at the northern end of the Big Thicket. Leopold visited before major reduction in both long leaf pine habitat and wildlife populations such as black bear and quail. The late 1800's "lumber baron" era of many small and large sawmills ended in the 1930's, with national forests created on some cut over lands and better stewardship created on private forest industry lands. The 1980's and 90's saw challenges to national forest management, with wilderness areas created and threatened woodpecker habitat preserved. A recent trend is change of ownership from traditional forest industries to timber investment management organizations, with increased responsibility to stockholder returns. Leopold's land ethic can be seen in various enterprises, including volunteer best management practices implemented by forest industries (especially with respect to riparian conservation), conservation and restoration of long leaf pine and bottom land forest habitat, prescribed burning of upland forest under stories, and efforts to restore wildlife populations such as black bear, quail, woodpecker, and wild turkey.

Key Words: Leopold, conservation, East Texas

Frazier, Amy E.; **Wikle, Thomas**; **Kedron, Peter**, Oklahoma State University
Exploring the anatomy of Geographic Information Systems and Technology (GIS&T) textbooks

Choosing a textbook is among the most important decisions instructors make in preparation for an academic term. Geographic Information Systems and Technology (GIS&T) textbook development has been influenced by a unique set of circumstances, mainly the rapid development of the discipline within an interdisciplinary environment, which has resulted in a continuous state of evolution. We examine the anatomy of GIS&T textbooks through a comparison of their organization, content, and depth of coverage. Specifically, utilizing the Geographic Information Science and Technology Body of Knowledge (BoK) as a comprehensive reference, we categorize the content of 26 of the most widely used introductory GIS textbooks. Our results show there has been consistent coverage of topics over time, with analytical methods and geospatial data being the most prominent topics covered in texts. However, individual textbooks place varying emphasis on the BoK knowledge areas, which is potentially useful to instructors seeking books that emphasis particular knowledge areas. Additionally, long term trends indicate a shift toward an emphasis on new forms of geospatial data (e.g., social media). Ongoing efforts to expand and revise the BoK reflect how the discipline continues to manage its own evolution as new geographic research linked to GIS and GIScience emerges.

Key Words: GIS education, GIS curriculum, GIScience, content analysis

Fry, Matthew, University of North Texas
A historic future reserve: Volumetric imaginaries of Mexico's Chicontepec Basin

Mexico's Chicontepec basin first produced oil in the 1950s, but isopach and structural maps depicting the subsurface deposit were not developed until the 1970s. During that decade, advances in seismology and geologic research allowed for technology-informed interpretations of the basin's petro-geologic structure. With these new data, Petróleos Mexicanos (Pemex) first announced reserve estimates for the Chicontepec in 1978. Representing 42% of Mexico's total crude-oil reserves at the time, Pemex's president called it one of the largest oil fields in the Western Hemisphere. However, since then, the Chicontepec has maintained consistently low petroleum yields and despite large investments in exploration and unconventional production techniques in the 2000s the basin's potential oil production remains elusive. In this paper, I draw on resource materiality and sociotechnical imaginaries scholarship to critically examine the rationalities and practices behind Chicontepec reserve estimates. As projections of future availability, oil reserve estimates depend on oil prices at the time as well as available production technologies. Consequently, oil reserve estimates are volumetric imaginaries that merge technologies of calculation and visualization with technological feasibilities, market fluctuations and economic probabilities to produce highly speculative and uncertain geologic potentials (Kuchler 2017; Weszkalnys 2015; Bridge 2013). In turn, as the Chicontepec case illustrates, volumetric imaginaries of hydrocarbon potentials can become powerful tools in the service of states and corporations to "at once describe attainable futures and prescribe futures that [they] believe ought to be attained" (Jasanoff and Kim 2009, 120).

Key Words: governance, hydrocarbons, resource materialities, sociotechnical imaginaries

Groll, Shannon, Louisiana State University
Limits of hashtag activism in southern racial justice organizing: Urban and rural community responses to police brutality in Louisiana

Anti-racist organizing models employed by #BlackLivesMatter are not successful in southern organizing outside of large cities. Analyzing two cases of racial justice organizing in Louisiana, one urban & one rural, this project examines hybrid digital & physical geographies to identify barriers faced by anti-racist organizers in Louisiana. Both cases center around the shooting death of Black men by white police officers (Alton Sterling, murdered in Baton Rouge, LA on 7/5/16; DeJuan Guillory, murdered in Mamou, LA on 7/6/17). Qualitative data comes from interviews with organizers & community members. GIS data maps protests & spatial reach of respective hashtags #JusticeForAltonSterling & #JusticeForDeJuan. Despite the reach of digital activism, it fails to foster in-person resistance communities which are focal points of #BlackLivesMatter in northern & urban places. Organizations attempting to build power & mobilize in the south face structural & cultural challenges specific to region, further compounded in rural areas.

Key Words: digital ethnography, GIS, police violence

Guida, Ross, Sam Houston State University
Shifting vegetation patterns as a response to climate change in the Newberry Mountains, Nevada

In Southern Nevada, like other areas worldwide, certain vegetation species have persisted, while other species have been retreating upslope where more water is available and temperatures are lower. This study uses 100 common vegetation survey plots over three time steps to assess vegetation changes in Southern Nevada's remote Newberry Mountains, where the Mojave Desert transitions into the Sonoran Desert. These 100 plots were sampled in 1979, 2008, and 2016, allowing for analyses of temporal and spatial changes in a relatively low-impact study area managed by the Bureau of Land Management (BLM) and the National Park Service (NPS). Using Parameter-elevation Relationships on Independent Slopes Model (PRISM) climate data and Maxent ecological niche modeling, the habitat niche of precipitation-sensitive desert vegetation species was mapped and quantified. For each species, ten replicates were conducted, and area under the curve (AUC) values exceeded 0.85 for all runs, resulting in high model accuracy. A sensitivity analysis was also conducted to determine the impact of five or ten year climate steps leading up to the vegetation data collection years. While the model was sensitive to the climate step used, all higher-elevation species showed general declines in potential habitat between 1979 and 2016, predominantly due to increasing minimum temperatures and decreasing precipitation. While this trend is in line with previous work in the Newberries and other areas globally, the pace exhibited between the shorter 2008-2016 time step is concerning and will make it difficult for NPS and BLM officials to limit climate impacts on native habitat.

Key Words: Biogeography, vegetation, climate change, Maxent, ecological modeling

Haffner, Matthew; Mathews, Adam J.; Fekete, Emily; Finchum, G. Allen, Oklahoma State University
Location-based social media behavior and perception: Views of university students

Location-based social media (LBSM), a specific type of volunteered geographic information (VGI), is increasingly being used as a spatial data source for researchers in geography and related disciplines. Many questions, though, have been raised about VGI data in terms of its quality and its contributors. While a number of studies have explored users' demographics and motivations for contribution to explicitly geographic forms of VGI, such as OpenStreetMap and Wikimapia, few have focused on these aspects with implicitly geographic forms of VGI, such as LBSM (for example, Twitter and Instagram). This study, through use of an online survey, specifically assesses the LBSM behavior and perceptions of 253 university students, noting differences found in gender, race, and academic standing. We find that the greatest differences are those between males and females, rather than through race or academic standing, and LBSM appears less biased than other forms of VGI.

Key Words: location based social media, volunteered geographic information, geotagging, Twitter

Hagge, Patrick, Arkansas Tech University
Initial assessment of geography education at Arkansas Tech University: From mapping locations and preferences to teaching GIS "on the fly"

At Arkansas Tech University, a Geography faculty has administered anonymous map quizzes and map preference surveys on the first day of Geography lecture courses for several semesters, allowing the instructor to gauge the initial overall classroom geographic knowledge of a particular class. There are dual applications of "first day" map surveys, leading to two research questions: first, what are the specific geographic results of these "first day" questions? Second, how can mapping and GIS concepts be introduced in an otherwise lecture-based non-GIS class? For the first research question, initial analysis of student results suggest certain converging takeaways of global locational knowledge and Arkansas-specific locational preferences. For the latter question, specific cartographic and GIS concepts can be easily introduced to non-GIS audiences in a traditional lecture setting. An important result for student learning is an "on the fly" GIS exposure for students earlier in their academic career, instead of a delayed exposure through student progression of formal GIS training. Broader applications of these map quizzes indicate the repeatability of these lecture classroom moments for expanding student knowledge of GIS.

Key Words: geography education, GIS, cartography

Haggerty, Kelly; **Fazzino, David**, Louisiana State University
Oral histories of ecological and economic change in Franklin City, and Greenbackville, Virginia

Scientists and the general public continue to grapple with a series of overlapping, and at times, contradictory occurrences and impacts of climate change. This paper adds to discussions of climate vulnerability and community viability through examinations of local perceptions of changing ecologies. We do this through analysis of archives from the Eastern Shore of Virginia and oral history narratives with current and former residents of Franklin City and Greenbackville, Virginia. Specifically, in the past century the people that resided the shoreline of the state of Virginia have experienced a series of fires, hurricanes, floods, aquatic population extinctions, increase in fishing regulations and economic downfall. Each occurrence has challenged resident's ideologies and drastically altered local understandings of place and landscape. Too, we distinguish various perspectives of environmental impacts on the socio-economics of the region. We situate broader concerns of residents and highlight the perceived role of ecological and economic vagaries on the household and community level. We conclude with reflections on how materials collected may continue to spark discussions in institutional and local contexts.

Key Words: ecology, economy, Virginia, coastal resilience, oral histories

Hanks, Reuel; **Penna, Giovanni**, Oklahoma State University
Patterns of Islamic religiosity in Kazakhstan: Implications of new data from the north and east Regions

Previous work explored the spatial patterns of Islamic religiosity in three urban regions in southern Kazakhstan. The data presented here were gathered in the northern and eastern regions in Kazakhstan where a large Russian/Slavic minority has been present for over a century. According to assimilation theory, given the impacts of Soviet religious policy, Russian cultural hegemony, and limitations on Islamic activity invoked by the Kazakh regime, hypothetical expectations would be for a diminished level of Islamic religiosity in these regions. Yet the limited data indicate that in fact young Kazakhs who came of age after the Soviet era are recovering their Islamic heritage and identity via heightened levels of religiosity, even among those populations strongly influenced by Russian values and mores. The social and political implications of increased Islamic religiosity among this population for building a civic, non-secular national identity, long a goal of the Nazarbayev government, may be profound.

Key Words: Central Asia, Kazakhstan, Islam, Religiosity

Hanson, Kyndra; **Friedman, Jack**; **Plassin, Sophie**; **Paladino, Stephanie**; **Koch, Jennifer**, University of Oklahoma
Developing a conceptual model of the Rio Grande/Bravo coupled human-natural system

The Rio Grande River basin (RGB) stretches through Colorado, New Mexico, Texas and Mexico before it reaches the Gulf of Mexico, spanning a politically, socio-economically, and environmentally diverse region. Management decisions in this highly complex coupled human natural system (CHANS) may lead to unintended outcomes throughout the basin, upstream and downstream. The interaction between the Rio Grande River, the basin's landscape, and the people that rely on these land and water resources, has not been addressed in a whole-basin modeling approach, which has left a gap in knowledge regarding plans for differences in water availability due to climate change. To address this, a multitude of in-person interviews with water managers, large agricultural water users, and non-governmental actors who influence water management decisions in the RGB were used to develop two different types of concept maps. One map was developed making use of a text analysis software, Gensim, to discover the topics of concern raised during interviews. The second map was developed by the researchers conducting the in-person interviews utilizing Mental Modeler, a fuzzy-logic cognitive mapping software. We use these conceptual maps as tools to further our understanding of decision making in the RGB and to steer our model development. In this paper, we will discuss the approach to and importance of the conceptual map development, and how they can support model development process.

Key Words: landsystems, coupled human-natural systems, Rio Grande Basin, integrated modeling

Harrison, Hayden A.; **Mathews, Adam J.**, Oklahoma State University
An object-based image analysis of land cover change in Stillwater, Oklahoma from 2003 to 2015

The city of Stillwater, Oklahoma, which houses Oklahoma State University, has experienced steady growth over the past several decades. According to the U.S. Census, the city of Stillwater contained 39,065 residents in 2000, which increased to 49,504 persons by 2016. This continual increase of population has impacted the city in several ways;

namely, in converting natural areas to developed areas (e.g., new apartment complexes, shopping centers and retail spaces). The extent to which the city's land area has changed has yet to be quantified. The purpose of this study is to quantify land cover change in Stillwater between 2003 and 2015 using high spatial resolution (1 m) aerial imagery downloaded from the National Agricultural Imagery Program. We opt to utilize an object-based image analysis (OBIA) approach to examine change. Unlike more common pixel-based approaches, OBIA segments imagery into discrete objects that can be compared over time. Results indicate rapid land use conversion in the western and northeastern portions of the city due from natural open areas to suburban and commercial development respectively.

Key Words: remote sensing, object-based image analysis, land cover change, Stillwater, Oklahoma

Hassani, Kianoosh; **Sack, Dorothy**, Oklahoma State University
Mapping Quaternary sediments in Tule and Snake Valleys, Lake Bonneville, Utah using Hyperion and Landsat data

Lake Bonneville was the largest of several water bodies that accumulated in the American Great Basin during the late Pleistocene and much evidence of the lake remains are still evident in the landscape today. This research investigates the use of Landsat-8 data for mapping the Quaternary deposits in the Tule Valley portion, and Hyperion data for mapping part of the adjacent Snake Valley, Lake Bonneville. Maximum likelihood classification was applied for Landsat 8 data, and linear spectral unmixing and spectral angle mapper (SAM) were applied to the Hyperion dataset. Furthermore, X-ray diffraction (XRD) analysis of a Lake Bonneville marl sediment sample characterized the dominant minerals in that sample. This research relied on Sack's (1990) Quaternary geologic map of Tule Valley as the reference for the remote sensing analysis. The present research examines the possibility of producing, using remote sensing, reliable Quaternary surficial material maps at similar detail and quality to traditional air photo and field-based maps and how employing different remote sensing approaches affect the quality of map-unit classification results. Results illustrated that hyperspectral and multispectral data have potential value for Quaternary geological mapping. However, complete separation between several lacustrine and alluvial classes was not achieved. The Hyperion classification results discriminated relatively well among the three endmembers of calcite, gypsum, and quartz across portions of the Snake Valley study area. The results indicate that these methods have value for mapping extensive unmapped portions of Lake Bonneville and other desert lake basins faster and more efficiently than has previously been possible.

Key Words: multispectral remote sensing, hyperspectral remote Sensing, Quaternary sediments, Lake Bonneville

Hatzis, Joshua; **Jennifer Koch**, University of Oklahoma
Frequency of near-misses for violent tornadoes

In the hazards literature, a near-miss is defined as an event which had a nonzero probability of causing loss of life or property but did not because of chance. Since these are non-events they are often ignored in hazards research, but they represent an important aspect of risk, that which could have happened. Violent tornadoes rarely hit heavily populated areas, but when they do they can cause significant loss of life. It is unknown, however, how frequently violent tornadoes narrowly miss a populated area. To address the question of near-misses for violent tornadoes this study looks at the distribution of possible exposures of people and houses to violent tornadoes. Tornado damage paths for all violent tornadoes (rated five or higher on the Enhanced Fujita scale) were estimated using tornado tracks from the Storm Prediction Center's SVRGIS database. Raw population and housing unit counts, at the census block level, were interpolated onto a fixed grid using area-weighted sums. An 80 x 80 km grid with a 0.5 km resolution was created around each violent tornado path for the period between 1990 and 2016. Each tornado path was replicated 16,000 times across the grid (once every 0.5 km starting from the centroid of the first grid cell). The number of people and housing units exposed to each replicate path was then estimated, again using area-weighted sums. In this presentation, I will discuss how the resulting exposure distributions vary spatially and temporally and what this says about violent tornado risk.

Key Words: near-miss, hazard, tornado, exposure

Hemingway, Benjamin L.; **Frazier, Amy E.**; **Elbing, Brian R.**; **Jacob, Jamey D.**, Oklahoma State University
Vertical sampling scales for atmospheric boundary layer measurements from small unmanned aircraft systems (sUAS)

The lowest portion of the Earth's atmosphere, known as the atmospheric boundary layer (ABL), plays an important role in the formation of weather events. Simple meteorological measurements collected from within the ABL, such as temperature, pressure, humidity, and wind velocity, are key to understanding the exchange of energy within this region, but conventional surveillance techniques such as towers, radar, weather balloons, and satellites do not provide

adequate spatial and/or temporal coverage for monitoring weather events. Small unmanned aircraft, or aerial, systems (sUAS) provide a versatile, dynamic platform for atmospheric sensing that can provide higher spatio-temporal sampling frequencies than available through most satellite sensing methods. They are also able to sense portions of the atmosphere that cannot be measured from ground-based radar, weather stations, or weather balloons and have the potential to fill gaps in atmospheric sampling. However, research on the vertical sampling scales for collecting atmospheric measurements from sUAS and the variabilities of these scales across atmospheric phenomena (e.g., temperature and humidity) is needed. The objective of this study is to use variogram analysis, a common geostatistical technique, to determine optimal spatial sampling scales for two atmospheric variables (temperature and relative humidity) captured from sUAS. Results show that vertical sampling scales of approximately 3 m for temperature and 1.5,2 m for relative humidity were sufficient to capture the spatial structure of these phenomena under the conditions tested. Future work is needed to model these scales across the entire ABL as well as under variable conditions.

Key Words: unmanned aerial vehicles (UAV); drones; geostatistics; meteorology; spatial sampling

Henry, Tri Keah; **Zhang, Yan**, Sam Houston State University
Examining the effects of concentrated illegal gun possession and its relationship to other violent crimes

Rates of crime and victimization have been longstanding issues of importance to the general public and criminologists studying this issue. Trajectories of crime in the United States have steadily declined over several decades, after peaking in the early 1990s. However, public perceptions of crime, specifically violent crime, do not always reflect this trend. A substantial amount of U.S. citizens (approximately 63%) perceive crime to be on the rise, despite the sustained decline in victimizations. The current study investigates the relationship between gun violence and the occurrence of other crimes. Specifically, we examine whether the concentration of illegal weapons possessions impacts the occurrence of other types of violent crimes (i.e. robbery and aggravated assault, and murder) in surrounding areas using spatial regression analysis techniques.

Key Words: crime, violence, weapons, GIS

Hilburn, Andrew, Texas A&M International University; **Fry, Matthew**, University of North Texas
Stepping outside of proximity buffers: An augmented methodological and conceptual approach to quantifying environmental injustices in Mexico's oil and gas territories

This study investigates social and economic marginality in localities near oil and gas infrastructure and within newly-delineated hydrocarbon bidding blocks activities in Mexico's four major terrestrial hydrocarbon-producing basins. Our empirical approach combines well location, storage/transportation infrastructure, and post 2014-Energy Reform hydrocarbon lease block data with locality-specific census data on social and economic marginality to statistically identify environmental injustice. Our analysis considers two spatialities of environmental injustice in the study area. First, we compare differences of means for social marginality indices in localities within a 1-km buffer of any active well and hydrocarbon infrastructure (batteries, transfer stations, cracker plants…) against localities in the four hydrocarbon basins but outside the buffer to draw attention to marginalized populations living with greater risk of oil and gas-related hazards. Additionally, we consider that hazards and risks related to hydrocarbon activities extend beyond proximity buffers but to areas within hydrocarbon blocks and thus differences of means for marginality will be compared between localities within the 2014 Energy Reform lease blocks and those within the same four basins but outside the blocks. Lastly, we broaden this latter, more ample spatial EJ frame by highlighting how property regime arrangements, subsurface land tenure laws, local labor organization, and land uses, among other phenomena, also inform the spatial character of environmental injustice, thus adding to and complicating traditionally-employed Euclidean proximity measures.

Key Words: environmental justice, oil and gas, Mexico, GIS

Hodge, Joshua, Texas State University
The impacts of Tropical Storm Cindy on a study site at McFaddin National Wildlife Refuge, Texas

Field work conducted at McFaddin National Wildlife Refuge, Texas coincided with the landfall of Tropical Storm Cindy in June 2017. It is known that powerful hurricanes can serve as geologic agents on coastal marshes along the Gulf Coast in Southeast Texas; however, there is a paucity of information on how small tropical storms impact the coastal marshes of this region. The arrival of Tropical Storm Cindy presented a serendipitous opportunity to document how a small tropical storm impacts a study site on McFaddin National Wildlife Refuge. Photography and on-the-ground field exploration were used to document these effects. Results indicate that the storm surge was too small to

deposit any sediment onto the marsh. This result is valuable and adds to the body of knowledge regarding how the dynamics of tropical cyclone strength and storm surge height influence storm surge sedimentation.

Key Words: McFaddin National Wildlife Refuge, Tropical Storm Cindy, coastal marshes, storm surge, storm surge sedimentation

Hoffpauir, David R.; **Adu-Prah, Samuel**, Sam Houston State University
Geographic analysis of current and historical vegetation of East Texas

This study uses two secondary data sources to compare vegetation communities in East Texas and analyze change over the past eight decades. The first source is a hand-drawn timber survey map generated by the U.S. Department of Agriculture, circa 1935. The second data source is the Texas Parks and Wildlife Department's Ecological Mapping Systems of Texas, from 2014. The digitized classification boundaries of the 1935 map created an overall area of interest and defined clip boundaries for the second data source. The resulting attribute data contained no mechanism for a data join, so a third data source, McMahon's The Vegetation Types of Texas, Including Cropland, is used to crosswalk between the two principal sources based on "Common Name" and LU/LC value. Associated area values indicate a conversion of 2.49% to urban use, underscoring an overall rise in population. This drives the need for natural resources and conversion of ecosystems to other land uses. Of the 'Shortleaf, Loblolly, Hardwood' classification, 34% is now devoted to timber production. In the 'Bottomland Hardwood' classification, reservoirs account for 13% of total area and 56% of areas that were once longleaf pine are now pine plantation. The greatest impact on the 'Loblolly, Hardwood' classification has been urban development at 10.3%. Invasive species are also evident. Of the 'Loblolly, Hardwood' classification, 3.7% is now invasive Chinese Tallow (Triadica sebifera). Beneficially, such comparison allows for general assumptions about environmental impact and provides an analytical mechanism by which to mitigate future loss due to human or natural influences.

Key Words: historic vegetation, geographic information systems (GIS), remote sensing, East Texas

Holland, Edward, University of Arkansas
The decline in political violence in Russia's North Caucasus

This paper provides a geography of insurgency in the North Caucasus of Russia since 2010. Corroborating other work on the incidence of violence in the region, we document a sharp decline in the absolute number of conflict events. This decline is attributable to a range of factors both domestic and international. Domestically, the securitization of the region around the 2014 Winter Olympics in Sochi deflected any discontent associated with ongoing economic stagnation, the continued use of the power vertical as a system of political management, and the broader adoption of harsh management tactics at the regional and republic scales. Internationally, potential insurgents have left Russia to fight in the Middle East and Ukraine. Using a conflict-event dataset (N=18,960) from August 1999 through the end of 2016 and focusing on the period since the creation of the North Caucasus Federal District in January 2010, we identify a set of notable trends within the decline, including a proportional increase in the number of arrests carried out by Russian security services. The conclusion considers the long-term prospects for violence in the North Caucasus, specifically in light of Syria's continuing civil war, low-level fighting in eastern Ukraine, and Russia's domestic challenges.

Key Words: geography of conflict, North Caucasus, Russia

Jackson, Nathan, University of Oklahoma
U.S. national forest hiking trail suitability in the State of Oregon

Within the state of Oregon, the rate of population growth has increased substantially over the past several years, with a total population growth of 6.8% since 2010. Since natural beauty is what often draws so many people to Oregon, new residents are intrigued to explore the wilderness that the state has to offer via hiking. Unfortunately, the influx of new residents could potentially over-concentrate trails throughout the state and possibly damage the its reputation as a place to escape densely populated areas. Thus, the purpose of this project is to locate trail systems that residents and tourists alike can hike while remaining in far from large groups of people. A suitability analysis was conducted on U.S. Forest Service Trail Systems within the State of Oregon to determine the trails that met criteria for hiker enjoyment as well as their health and safety. Completion of the analysis resulted in a series of trails that met all sets of criteria and were deemed most optimal to hike. This project serves as a possible solution to limit, and possibly reduce, the over-concentration of hikers and bring an economic stimulus to small communities in close proximity to these trail systems in the state or Oregon.

Key Words: suitability analysis, hiking trails, population

Jandick, Brittany, University of North Texas
Corporate responsibility in the Barnett Shale: Are operators practicing what they preach?

Disclosure and corporate social responsibility (CSR) in extractive industries, especially oil and gas, is historically absent in the United States. Because many states do not have disclosure regulations, nor do they require oil and gas industries to publish CSR statements, the public lacks information about oil and gas practices. This is the case in Texas, where most companies practice hydraulic fracturing, a highly polarizing practice, without much knowledge of health and environmental impacts. So how do corporate claims compare to their practices? In this study, I examine the corporate governance practices of Barnett Shale oil and gas operators in Denton, Johnson, Tarrant, and Wise counties by comparing voluntary CSR statements to state-mandated chemical disclosure practices from 2012 to 2017. The purpose of this study is to determine the transparency of Barnett Shale oil and gas operators to add to literature on corporate governance strategies and practices in extractive industries. To determine if operators are practicing what they preach, I am analyzing the operator's CSR statements and examining their disclosure on FracFocus, a public database designed for the operators to disclose the chemicals in their fracking fluids. The preliminary findings are that of thirty-eight operators, ten have CSR statements, and they have all disclosed chemical data on FracFocus. Most wells owned by the top ten operators are outside municipal boundaries, most wells were drilled in 2012, and Tarrant County has the most wells. This research contributes to broad discussions about oil and gas development, local community impacts, and environmental policy-making.

Key Words: corporate social responsibility, fracking, disclosure, Barnett Shale

Jonsson, Don, Austin Community College
The geopolitical struggles of the Golden-cheeked Warbler

The Golden-cheeked Warbler (Setophaga chrysoparia) is an endangered species that nests and breeds exclusively in Central Texas. The State of Texas filed a lawsuit against the federal government, specifically the U.S. Fish & Wildlife Service and the Department of the Interior, in an attempt to remove the Golden-cheeked Warbler from the endangered species list. The State of Texas claims that this bird has cost the state millions of dollars due to restrictions on road construction and development. Google maps is used to locate impending conflict spaces between environmentalists and developers in Central Texas.

Key Words: human-environment interactions, Golden-cheeked Warbler, endangered species, Google Maps, Texas

Julian, Jason P.; **Daly, Graham**; **Weaver, Russell C.**, Texas State University
Cross-scale connections among stakeholders of freshwater ecosystem services in the San Marcos River watershed

Central Texas is the fastest growing region in the USA. Caught in the middle of this emerging mega-region is the San Marcos River watershed, which provides a suite of ecosystem services to one of the fastest growing cities in the USA, a rapidly growing University student population, and over a million tourists each year. In order to assess the supply and demand of ecosystem services provided by the San Marcos River and its watershed, we conducted 3,193 surveys among these three stakeholder groups. The results from our 49-question survey revealed that use, preference, and value of ecosystem services were significantly influenced by educational and life experiences among all stakeholders. The highest usage of the river was by nonstudent residents, with a median annual visitation of 30 days. Students visited 10 days/year and tourists 6 days/year. We found that as temporal use of the river increased at the regional scale, a negative feedback occurred where people at the community scale (particularly residents) avoided the river. A positive feedback occurred where as individual use of the river increased, so did their value and preference of particular ecosystem services. Overall, our findings demonstrate that within this social-ecological system, actors at the individual, stakeholder, community, and regional scales interact to define the supply and demand of ecosystem services. Our study provides insight into the dynamic effect of rapid regional growth on an already sensitive social-ecological system and the multiple feedback loops generated during this process.

Key Words: ecosystem services, social-ecological systems, parks

Kedron, Peter J.; **Holler, Joseph**, Oklahoma State University
Assessing general indices of social vulnerability in their local context

Vulnerability to environmental hazards is generally considered a function of a community's level of exposure, sensitivity, and capacity to adapt to an adverse event. Vulnerability, or the potential to sustain harm due to future hazards, is a complex phenomena dependent on the unique characteristics of regions and the hazards that affect them. Social vulnerability indices aim to increase the effectiveness of disaster policies by distilling the complex social dimensions of community sensitivity and adaptive capacity learned from case study research into a generalized quantitative indicators comparable across regions. However, progress in validating social vulnerability indicators has been limited by the lack of data on negative hazard outcomes, the heterogeneity and specificity of past hazard events, and a failure to fully control for the exposure and sensitivity components of the vulnerability formula. Accordingly, we currently do not have a good understanding of how well social vulnerability indices, commonly used to guide policy decisions, capture vulnerability to different types of hazards in different types of regions. To address this issue, we propose and analyze a regression-based validation procedure for two commonly applied indices for a variety of hazard types in Oklahoma. The climate variability and diverse social and ecological landscapes of Oklahoma make it an ideal site for the study of hazard vulnerability. Our findings have implications for researchers interested in assessing the relevancy of indices of social vulnerability to different hazard and regional contexts, as well as, for practitioners interested in using measures of social vulnerability to guide risk reduction policy.

Key Words: social vulnerability, hazards

Keenen, Avonlea, Oklahoma State University
Patterns in the locations of U.S. mass shootings

Mass shootings are topics of intense public concern and debate. Unfortunately, most previous research examining mass shootings within the U.S. has focused on motivations or other characteristics of the shooter(s) with less attention directed at places or communities where the violence has occurred. This study explores mass shooting locations as unique sites marked by tragedy with the goal of revealing patterns associated with mass shooting locations. Such patterns may include community characteristics, the influence of state gun policies, and the proximity of shooting events. Three research questions are considered: 1) What community attributes are associated with locations where mass shootings have taken place? 2) To what extent are state firearm policies associated with the locations of mass shootings? and 3) What patterns, if any can be identified in terms of the spatial and temporal proximity of mass shootings? Approximately 1,000 observations from the Gun Violence Archive (2014-16) are used within a regression analysis to address research questions.

Key Words: mass shootings

King, Kayla, Oklahoma State University
Short-term geomorphologic change in the dunes of the Little Sahara State Park, Oklahoma

The Little Sahara State Park is a popular tourist attraction for all-terrain vehicle (ATV) riding on active dunes and camping in Northwestern Oklahoma, but such activities depend on the geomorphological processes that maintain the dunes. However, intense winds and ATV-riding activity have created geomorphic changes that are affecting neighboring lands and habitats. Such changes are apparent in the movement of the dunes outside the ATV-riding area. The importance of documenting these changes through mapping them is highlighted by the pros and cons that come from the existence of the park. Using imported Google Earth images and ArcGIS, it is possible to accurately map and observe these changes since the early 1990s. Sequential images are used to map dune features and geomorphic changes over a period of 27 years. The changes found in the sequence of images are compared with Mesonet wind data, park visitor attendance, and building of infrastructure. The research is an attempt to predict the future changes and serve to better understand the dynamic of the local environment in and around the park.

Key Words: geomorphology, eolian processes, state parks

Koch, Jennifer; Boyer, Tracy; McCarthy, Heather; Kedron, Peter; Zhou, Qingtao; Ghimire, Monika; Cha, Wonkyu; Zhao, Yun, University of Oklahoma
The Oklahoma City ENVISION model: Linking land management, water use, and human well-being

Oklahoma's highly variable weather and large precipitation gradient work together with population growth and resulting urban expansion to create a diverse landscape that is extremely vulnerable to climatic extremes. As shown

by the prolonged drought in 2011-2013, Oklahoma's municipal water supply has come under stress due to additional demand. To develop sustainable natural resource supplies that support a vibrant economy with healthy and productive citizens, we need to develop robust knowledge about the complex relationships in coupled social and ecological systems, which can be used to empower city planners and other decision makers to effectively adapt to climate variability and climate change. In order to improve our understanding of this complex system, we have been developing a spatio-temporal, integrated socio-ecological systems model for the Oklahoma City Metropolitan area. The model helps elucidating the relationship between climate, urban development, domestic water use, and cover/condition of vegetation. To date, some of our major outcomes are the development of sub-models to determine spatio-temporal development patterns and an understanding of the factors driving household water use and landscape greenness. These intermediate results have already led to an improved understanding of the system under study. For example, we initially expected that landscape greenness, reflecting both vegetation cover and condition, would be strongly influenced by household water use (capturing irrigation), which would allow the landscape to be buffered against drought and other climate stress. Contrary to this expectation, we have found that climate, particularly precipitation and temperature are much more important drivers of vegetation greenness. However, characteristics of land parcels, such as parcel size and house age, are also major determinants of vegetation cover. Overall, we have found that human and natural drivers interact in unexpected ways to influence water use by households and consequent landscape characteristics. In this talk, we will describe our approach to combining our findings and the different sub-models into one spatio-temporal simulation model making use of the ENVISION multi-paradigm modeling framework. We will furthermore introduce how model development, scenario development, as well as alternative future scenario simulations can be documented and visualized in form of story maps and how the model and the story maps may help effective decision support.

Key Words: scenario simulation, land systems science, Oklahoma City, socio-ecological systems, ENVISION

Kyle, Aubry, Louisiana State University
Between risks: Assessing perceptions of emergency support services in New Orleans, Louisiana, following an August 5th flood event while monitoring Hurricane Harvey

Emergency preparedness experts use a wide variety of indicators to map vulnerability in anticipation of providing targeted emergency support services to those in need during extreme weather events. This poster presents the results of research conducted in two neighborhoods in New Orleans, Louisiana that do not meet the parameters for categorically high vulnerability based upon the Social Vulnerability Index used by local health services agencies, but were adversely affected by flooding on August 5th, 2017. On this date, the local Sewerage and Water Board failed to warn residents of reduced pumping capacity, and heavy rains caused severe localized flooding. Research regarding perceptions of risk and city services was conducted within a two-week period, via questionnaire and interview, with 15 households in each neighborhood, representing 87 individuals, as those individuals dealt with the aftermath of flooding in their neighborhoods and prepared for the possibility of evacuating for Hurricane Harvey with the knowledge of reduced pumping capacity in their neighborhoods. Results show that while overall categorical vulnerability indicators, such as income, educational level, and disability status for respondents indicate low vulnerability, negative perceptions and mistrust of the city combined with low knowledge of available support services and flooded vehicles and properties served to create a unique "situational vulnerability" that deserves consideration in future emergency planning protocols.

Key Words: social vulnerability index, situational vulnerability, perceptions of risk, emergency support services

Landers, Kate, University of North Texas
Predicting runoff potential based on land cover and soil infiltration capacity on the University of North Texas main campus

Urban stormwater runoff management is an issue demanding more and more attention from expanding cities. It includes any rainwater that is not able to infiltrate, especially because to alterations of the landscape and ground cover by humans. The purpose of this poster is to present research currently in progress about the effects of land cover and soil type on stormwater runoff at the University of North Texas main campus in Denton, TX. The University of North Texas (UNT) is a patchwork of different urban land cover types including asphalt parking lots, buildings, streets, lawns, and a community garden. UNT is expanding rapidly both in student body size and new development. As a result, an increasing amount of natural land cover and vegetation is being replaced by man made materials, threatening the natural hydrology of Denton. The study area includes land owned and operated by the University of North Texas on the main campus. Aerial photography, GIS maps, and soil data from the USGS will be used to identify patches

within the UNT area of interest boundary. Precipitation data and an infiltrometer will be used to determine infiltration capacity of soils and quantify runoff for the representative sample locations in each patch. The infiltration capacity and consequent runoff of identical land cover patches will be compared across the soil classes. The result will be a modeling of the effects on the local watersheds as land cover and infiltration rates change on the UNT campus.

Key Words: stormwater runoff, patch identification, urban land cover, soil infiltration

Le Caro, Yvon, University Rennes 2 (France)
Urban spatial features in the countryside: some evidence from a topological approach studying farmers' experience in western France

The paper aims to show how farmers deal with urbanization at the farm scale. On the one hand, agriculture, farmed landscapes and the farmers are an essential part of the countryside, the basis for defining it and core of its social representations. On the other hand, under the urban-industrial hypothesis, following a period of modernization agriculture is now being challenged by urbanization. This is happening in a triple process: urban sprawl, not only in peri-urban areas but also in the villages; diversification of rural population (back-to-the-land movement); and diffusion of the urban models and values, even in farmers' own minds. The question is therefore to find how urban influences are at work in places that, whether nearby or far away from cities, remain country landscapes. Agriculture is taking on more and more functions considered as urban because they were initiated by urban dwellers' needs or aspirations, before being recognized as legitimate by the whole society. In some cases, opportunities opened up by urban desires are explicitly marketed by farm businesses as diversification projects, but the mainstream is made of rural-urban spatial designs that can be understood as agricultural or urban externalities. The former are produced by farmers (hedgerow landscapes, drinkable water, etc.), the second are tolerated or accepted as inclusions in the farmed countryside's framework (windmills, hamlet dwellings, highways, etc.). Thirteen farmers (men and women) were surveyed in three local areas in Brittany, Normandy and Poitou-Charentes (France), by means of "wellington boot interviews", over the farm landscapes. Spatial features of urbanity are numerous, diffuse and generally well integrated in the landscapes and farm systems surveyed. For these features the paper proposes a classification, a map made on a single farm and therefore a topological analysis of their inclusion in the spatial system of the farm, stressing the potential of geographical analysis for understanding agri-urban interactions at local scale. Most of the farmers questioned give evidence of their skilfulness in making their farm ready for inclusion of exogenous trends that have or will have a direct impact on the place where they work: that is how they generate a new countryside, hybridized with urbanity, which anyone can find at least partly familiar.

Key Words: agriculture, urbanization, agri-urban interactions, multifunctionality, externalities, neighbourhood, environment, topological analysis

Leipnik, Mark; **Mehta, Sanjay S.**, Sam Houston State University
Lessons for the 2020 U.S. decennial census that can be learned from the 2016 on-line Australian census debacle

Geodemographic data from censuses is a tool for geographers, market researchers, etc. Accurate and complete census data from decennial census in the USA (2020) and in Australia every 5 years (last in 2016) is essential. Response to census instruments is falling in the USA due to the gradual but irreversible decline of land-line telephones and mail. Australia also faces administration problems for their more frequent census. In 2006 and more fully in 2011, Australia made use of the Internet. In 2016, Internet use was mandatory and Australia geared up outreach and sanctions to obtain on-line responses from over 20 million households on a single day. The effort fell victim to a series of distributed denial of service attacks that crippled the effort. The U.S. Census Bureau has plans to make the 2020 partially on-line. The Australian debacle will be explored in the presentation, and insights into the dangers of this strategy will be presented. The material used in the research was based on formal reports by Australian authorities into the 2016 failure and on USCB planning documents for the 2020 effort. The conclusion of the paper is that the dangers of an on-line census outweigh the benefits, given the state of internet authentication and fraud prevention capabilities.

Key Words: census, geodemographics, denial of service attack

Leite, Nicolly, Universidade Federal do Ceará; **Brannstrom, Christian**, Texas A&M University; **Gorayeb, Adryane**, Universidade Federal do Ceará
Quantitative analysis of the perception of wind farms in a traditional coastal community in Ceará, Brazil

Recent research on renewable energy has indicated that participatory justice is an essential element for the successful development of wind projects at the local level. In the state of Ceará, Northeast Brazil, the opinion and participation

of communities regarding wind power is not well described. This research aims to measure the perception of the community of Amarelas, Ceará, about a neighboring wind farm in operation since 2009. The methodology relied on random application of questionnaires among 62 residents, defined by statistical sampling techniques. The questionnaire was adapted from Walker, Baxter and Ouellette (2014, 2015) and consists of statements with five levels of response considering support for the project and community involvement. We found that the community of Amarelas supports the existing wind farm with 48.8% of total agreement. However, there was low community participation in planning, with 87.1% of the sample in disagreement to the statement "I participated in the public hearing for approval of the wind farm," 69.4% disagreeing with "I had a great opportunity to express my concerns and clarify doubts before the project was approved" and 41.9% disagreeing with "my community was consulted about the wind farm project." The findings suggest that implantation of wind farms in Ceará occurs with low community participation, which can promote dissatisfaction.

Key Words: wind energy, perception, traditional communities, Brazil

Liu, Cuiling; **Wang, Fahui**, Louisiana State University
Analyzing population density pattern in China with GIS-automated regionalization methods: Hu Line revisited

"Hu Line", a famous population demarcation line proposed by H-Y Hu (1935), begins from Heihe, Heilongjiang Province in the northeast to Tengchong, Yunnan Province in the southwest of China. In the northwest of the line, there is a population of only about 4% of the country's total, while in the southeast of the line there is a population of nearly 96% of the totals, and the two side have about the same area size. Most studies about Hu Line analyze the population change for both sides of the line. Seldom are researches about how to verify this line, and quantitatively and comprehensively analyze the reasons for the population distribution. This research attempts to simulate a demarcation line by a rigorous GIS-automated regionalization method termed the REDCAP (Regionalization with Dynamically Constrained Agglomerative clustering and Partitioning). The method seeks to divide China into two regions that each, with similar area sizes, has the maximum similarity in population density with it but the maximum dissimilarity between them. The result indicates that the simulated demarcation line is better in capturing the population disparity in China. Meanwhile, a habitation environment suitability evaluation index (HESI) is developed to evaluate the influence of the environmental factors on population distribution. The result shows the HESI can largely explain the disparity of population distribution.

Key Words: Hu line, REDCAP, regionalization, demarcation line

Loder, Thomas, Texas A&M University
"To keep a small portion of North Dakota North Dakota": The fight over Measure 5 in North Dakota newspapers

The oil and gas boom in North Dakota's Bakken Shale (2007-present) has brought tremendous growth to a rural region that had been seeing significant declines in both population and economic activity for several decades. However, a host of challenges have accompanied this newfound prosperity: a lack of affordable housing, strains on infrastructure and social service provision, increased criminal activity and environmental woes related to petroleum extraction, production and transport. In order to address this latter concern, a coalition of non-profit groups in the sporting and conservation sectors initiated a statewide ballot measure for 2014 which would have redirected a small portion of oil extraction taxes into a state-controlled fund intended solely for conservation projects. Although the North Dakota Clean Water, Wildlife and Parks Amendment (designated on the ballot as Measure 5) was rejected by voters by a nearly four-to-one margin, the measure and its purported effects provoked months of heated debate in the editorial sections of the state's leading newspapers. This presentation reviews the major arguments advanced by Measure 5 supporters and opponents and seeks to contextualize them within the broader tropes and discourses they rely on. The key findings are threefold: 1.) many arguments were proxies for broader debates about Dakotan values and identity, 2.) measure opponents showed a greater degree of uniformity of message than supporters and 3.) measure supporters were strongly over-represented in editorial coverage due to the outsized influence of newspapers located in larger, more liberal cities outside of the rural Bakken region.

Key Words: energy, hydraulic fracturing, discourse, rural

Lopez, Christina, Texas State University
A tale of Texas water troubles: Water audits and loss

Texas is notorious for water woes: too much or not enough. Texans seek to solve this problem and become leaders in water conservation. In this study, 106 Water Loss Audits from Region C (Dallas-Fort Worth Metroplex) and Region

K (Austin/Lower Colorado River) were evaluated for accuracy and to determine the amount of water loss and the value of that water. How much water is being lost? What is the value of that water? In answering those questions, issues of data validity in auditing become apparent as well as issues in how Water Service Providers assign a value to the water that is lost once inside the distribution system. By quantifying a conservative estimate of economically recoverable water, loss in these two regions is over 21,000 million gallons annually with a value range of $85 - $111 million.

Key Words: water conservation, water loss audits, Texas water, economically recoverable water

Lu, Fangda, Texas State University
Houston commuter rail planning and how will it help us to evacuate

Houston has experienced numerous extreme weather events associated hurricane. Following Hurricane Rita, Houston mandated evacuation, but it failed because of excessive reliance on automobiles, resulting in traffic congestion and fuel shortages. When Hurricane Harvey came, the mayor gave evacuation up, but also caused casualties. Simultaneously, Houston has serious commuting problems in peacetime, citizen spent 74 hours in average in traffic 2015. According to both reasons, this project tries to make a commuter rail planning can relieve traffic pressure, and can be used for evacuation if needed. This plan examines the exist railroad corridors in Houston metropolitan, then selected some has free capacity or room for expansion, next screened out the line oriented to high-density residential area. In order to reach the needs of rapid transit, the short-distance connection with exist light rail has been considered as priority. On the basis of above, this plan also take cost into account. The station location selection committed to utilize the open space or low-density land cover area where able to act with urban revitalization process, such as raise real estate prices to increase taxes or build high capacity parking lot as a source of income. As for evacuation time, this project uses a hill shade raster to look for safer places as assembly sites for residents along and transfer them without dispersed evacuation hassles. The estimation results show that it is a very effective commuter tool and is also an important complement to the evacuation plan. Some operating tips are mentioned inside.   Houston, evacuation, commuter rail, transprtation

Luce, Brett; **Barrett, Tate E.**; **Ponette-González, Alexandra G.**, University of North Texas
Urban cyclist exposure to fine particle pollution in a rapidly growing city

Urban cyclists are exposed to elevated atmospheric concentrations of fine particulate matter (particles <2.5 µm or PM2.5), which is small enough to penetrate the lungs. Major urban sources of PM2.5 include the incomplete combustion of fossil fuels from vehicle exhaust. "Hotspots" are locations with high concentrations of PM2.5, including traffic signals, intersections, bus stations, parking lots, and inclined streets. The aim of this research is to map and measure "hotspots" within the city of Denton, Texas, a rapidly growing urban area located in the Dallas-Fort Worth metroplex, where urban cyclists commuting to the University of North Texas are most exposed to fine particulate pollution. To identify "hotspots", a bicycle equipped with a battery-powered particle counter (Dylos 1700) coupled with a Trimble Geo 5T handheld GPS (≈1 m ± resolution) will be used to map and measure PM2.5 mass concentrations along predetermined routes from areas of high student populations to campus during morning rush hours. Additionally, traffic counts will be conducted along the routes coinciding with monitoring times. Preliminary findings from three days in September show atmospheric PM2.5 concentrations ranging from 7.9 to 13 µg m-3, with a mean of 9.4 µg m-3. The EPA standard, based on a 24-hour daily average is 35 µg m-3. "Hotspots" were observed in areas with the average concentration increasing to 13 µg m-3. Particle concentrations and the identification of "hotspots" can be used when determining new pollution and exposure mitigation strategies in rapidly growing urban areas.

Key Words: urban, exposure, pollution, PM2.5, hotspots

Maleki, Shadi; Julian; Jason P.; Weaver, Russell C., Texas State University
Social demand of urban wilderness

Population growth and widespread development have increased the pressure on ecosystems and have limited the opportunities for people in urban and suburban areas to experience nature. Within urban landscapes, green spaces and wilderness areas are places where people can experience and connect with their natural environment. Wilderness areas, in particular, support overall ecosystem health due to the resources they provide to stressed communities. While numerous studies have examined the effects of urban green space on physical and mental wellbeing, few studies have focused on human demand and perception of urban wilderness areas. In this paper, I use a case study to assess the

demand for urban wilderness in one of the fastest growing cities in the United States. Our research group conducted 391 face-to-face surveys that assessed the use, perception, preferences, life experiences, and sociodemographics of visitors to Purgatory Creek Natural Area, a large urban wilderness in San Marcos (Texas, USA) with high levels of biodiversity and natural amenities. Most of the survey respondents were young (under 35), white university students who used the park primarily for hiking. Survey responses indicated that, generally, what urban populations desire to see in wilderness areas (e.g. trash bins, bathrooms, and water fountains) does not match the perceived characteristics of urban wilderness. On the other hand, visitors' perceptions and experiences of wilderness elements positively influenced their use. Connecting our study to the broader literature, we suggest that the social demand for urban wilderness is a multi-dimensional balance between natural amenities and cultural amenities.

Key Words: urban wilderness, ecosystem services, parks and protected places, social demand

Malone, Dawnelle, Sam Houston State University
Cave openings and sinkhole detection in karst topography using Lidar data on the Edwards Plateau in Travis County, Texas

Lidar has dramatically changed the level of detail captured in the landscape, and has quickly become one of the main methods to produce digital elevation models (DEMs). Lidar data offers enormous potential for sinkhole detection in karst landscapes. The main goal of the study is to create and use high-resolution DEMs derived from lidar point cloud data, to detect and map sinkholes and potential cave openings in karst topography. Specifically to answer, 1) can the use of lidar improve karst feature detection over conventional methods? 2) Which methodology is most accurate and efficient? and 3) How do the study results help karst land managers? This is the first use of lidar for feature detection on Travis County Balcones Canyonlands Preserve (BCP), an area with fragile karst topography, and home to threatened, and other at-risk species. The fill-difference method will be used for automated sinkhole delineation on the Cuevas and Cuevas East tracts of the BCP on the western edge of the Jollyville Plateau. This method varies, using the hydrology tools in ArcGIS 10.3 to fill sinks in the DEM to the height of their pour points to correctly model surface flow patterns. The filled DEM is subtracted from the original DEM for sinkhole delineation and depth. Results will be compared to existing BCP data, along with field verification of potential new features. Study results are intended to supplement known karst feature data, and to assist in conservation efforts in the BCP.

Key Words: Lidar, karst topography, feature detection, digital elevation model, GIS

Manning, Aspen, Texas State University
Natural succession and riparian forest recovery following a major flood on the Blanco River, Texas

The Blanco River in Central Texas experienced a record flood on May 23, 2015. The flood scoured away much of the riparian forest, including stands of centuries-old bald cypress (Taxodium distichum). Following disturbances severe enough to cause total removal of vegetation, the riparian ecosystems transition from bare ground to riparian forest through the process of succession. The transition follows one or more trajectories that result in the succession in dominance of fast-growing, full sun-tolerant species to a diverse forest of shade-tolerant, slower-growing trees. The main objective of this research is to observe the riparian succession trajectories occurring on the Blanco River following the 2015 floods in order to predict the post-recovery structure and composition of the riparian forest. Field work will take place in three public parks and one private land parcel along a stretch of the Blanco River lying between Wimberley and San Marcos. Woody vegetation at each site will be sampled using stratified random sampling. This research can inform land management and conservation decisions by revealing long-term changes in riparian community make-up and by identifying possible invasions by exotics and other potential problems.

Key Words: Blanco River, succession, riparian, disturbance, flood

Martin, Ross H., Texas State University
The geomorphology of mountain bike trails

Mountain bike trails exist as physical manifestations of direct mountain biker forcing on the landscape. The geomorphic nature of these impacts was evaluated using innovative techniques with accelerometer data as a proxy for mountain biker forcing. Mountain biker forcing variables and landscape scale variables including topography, vegetation cover, and soil type and texture were evaluated in regard to their influence on trail morphology. Trail systems in the Austin, Texas area were used for the study. Each trail system had different trail user groups and management requirements. Trail morphology was found to be correlated with trail user forcing as documented by accelerometers and other movement variables such as speed and turn angles. Trail morphology was shown to be

influenced by vegetation cover and soil type and texture. Trail morphology was also influenced by land management requirements introducing a political component to geomorphic change. Mountain biker generated forcing was most correlated with trail morphology at trails which had higher mountain bike traffic relative to other user groups. Overall use rates, independent of user type, were most influential on trail morphology. Further research is needed to gain better resolution for accelerometer data by sampling riders of various skill levels. As a proof-of-concept project this research provides an entry point for research about the geomorphic nature of mountain bike trails.

Key Words: geomorphology, trails, recreation

Mathews, Adam J.; Wikle, Thomas A., Oklahoma State University
Assessing professional benefits of GIS certification

The certification of geographic information system (GIS) professionals remains a contentious topic. After more than 25 years, the GIS community remains divided over the need to formally recognize GIS professionals who maintain standards of professional competency and conduct. Unfortunately, few studies have examined individuals who have become certified or the professional benefits of certification. This study explores GIS certification through a survey of 1731 geospatial professionals who became geographic information systems professionals (GISPs) between 2003 and 2014. A web-based questionnaire asked GISPs about the certification process, its influence on their compensation and advancement, and other issues. Quantitative and qualitative findings suggest that perceptions about certification fall along a wide spectrum with GISPs employed in private industry seeing fewer benefits compared with those employed in government or not-for-profit organizations. While a large number of respondents conveyed pride in completing the certification process, others expressed frustration over the program's lack of visibility, standards that have enabled less qualified peers to become certified, and the slow progress at which GIS certification has achieved respect compared with programs administered in other fields such as engineering and planning.

Key Words: GIS, certification, geospatial professionals, GISP

Mathewson, Kent, Louisiana State University
Karl W. Butzer (1934-2016): In memoriam

With the passing away of Karl Butzer after a short illness in early May, 2016, in the company of his close circle of family, students, and colleagues in Austin, TX, the SWAAG community and geography in general, lost one of its most accomplished members. While perhaps best known for his pioneering work in geoarchaeology (a term he coined), his contributions to cultural ecology and a deep historical geography, his advocacy of "applied geomorphology," and geographic fieldwork at multiple sites on four continents, deserves not only to be not remembered, but celebrated and emulated. Reviewing his record of self-identified interests and expertise over his sixty-year career, shows several constants with some minor shifts or variations. He lists geomorphology and archaeology from start to finish, adds cultural ecology and historical in the 1980s, and environmental history after 2000. This paper traces Butzer's trajectory from undergraduate studies in mathematics, to graduate work in climatology and geomorphology, to field work in Egypt and the Near East, South and East Africa, Spain and the Mediterranean, Mexico, and Australia, all the while focusing more and more on cultural and historical questions and approaches, but grounding them in solid foundations in physical geography. For the final three decades of his career, Butzer was based in the Department of Geography and the Environment at the University of Texas, Austin. There, he mentored students, taught courses and seminars, led field trips to Mexico, and set an example of geographic craft practiced at its most accomplished level.

Key Words: SWAAG, Karl Butzer, field-work, historical geography

McDonald, Darrel L.; Oliphant, Emmerentie; Avant, Freddie, Stephen F. Austin State University
Reaching across the "Street": A geographer's role in community engagement

Over the last five years, the Geography Program at SFASU has been collaborating with the SFASU School of School Work in helping East Texas develop community engagement models. Recently, an 18-month Appreciative Survey of Wards 1 and 2 in North Lufkin, Texas was completed. The project was funded by the T.L.L. Temple Foundation. The primary objective was to engage community members in an active dialogue to explore and develop a community revitalization vision for their neighborhoods. Organizational meetings were followed by focus groups, key informant interviews and community conversations to identify the critical needs for the Wards. City officials, business leaders, clergy and community activists helped to build public input. Social Work graduate students, directed by faculty facilitated data gathering and analysis. Geography faculty and students added to the conversation through participation in regular meetings and by generating maps of the neighborhoods. In particular, maps were generated from the

American Community Survey portraying the ethnic and age/gender patterns of Wards 1 and 2. Additionally, community resources such as public parks, churches and appraisal maps generated supported the interpretation of the Appreciative Survey. The report includes description of the critical needs of these neighborhoods gleamed from community dialogue.

Key Words: community engagement, cross-disciplinary, revitalization

McGregor, Kent, University of North Texas
Reconstruction of Hurricanes Harvey and Irma with reanalysis data

Hurricane Harvey devastated the Texas Coast with up to 50 inches of rain and caused catastrophic flooding in the Houston area. About a week later Hurricane Irma, one of the strongest Atlantic hurricanes on record, slammed into south Florida and worked its way up the entire length of the peninsula. Within a two week span, these hurricanes became two of the most destructive in U. S. history. The atmospheric environment of these and other hurricanes can be reconstructed with data from the reanalysis model. "Reanalysis" is a comprehensive, global atmospheric data set produced by the National Centers for Environmental Prediction. The historical surface observations, balloon soundings, and satellite data have been reprocessed or reanalyzed with a sophisticated computer model. Thus, the meteorological process operating in these hurricanes may be examined both before and after landfall by analyzing barometric pressure, humidity, vertical velocity, wind shear and lifted index. In addition, the surrounding pressure gradients and winds that guide the hurricane along its track can also be explored. The results indicated that Irma had a conventional guidance structure moving westward along the southern edge of a high pressure cell before making northern turn and striking Florida. In contrast Hurricane Harvey displayed a noticeable lack of atmospheric guidance so showed little movement as the precipitation totals went off the chart.

Key Words: Hurricane Irma, Hurricane Harvey, reanalysis model, hurricane track

McLaughlin, Brian; Cummings, Anthony, University of Texas at Dallas
Creating survey-grade orthomosaics using consumer-grade UAVs

The use of unmanned aerial vehicles (UAV) for collecting high-quality remotely sensed data has now met the mainstream. Across academia, industry and hobbyist, UAV-derived data are being used to address a series of important questions and all projections suggests that their use will only continue to grow. But while data from UAV continue to become available, the quality of such data and how they may align with other data sets, remain in question. This is especially important for civilian applications where UAV applications have tremendous promise. Drawing on the guidelines provided for traditional photogrammetric applications and those available for large-scale UAV mapping projects, we examined the implications of ground control design and placement in eight (8) study site design to determine their influence on absolute survey horizontal accuracy. Two consumer UAV platforms, a DJI Phantom 3 Standard and DJI Phantom 4 Professional, with their accompany sensor systems, were used to obtain imagery across the eight Texas field sites. Our analysis of the location of positions in the real-world from ground control points (GCPs) relative to those in the imagery showed that the consumer grade UAV-derived data provided absolute accuracies comparable with traditional aerial photography. We found that when the number of GCPs increased to take into account the changes in size and shape of study sites, with the required triangulation for horizontal accuracies maintained, survey-grade accuracies were achieved. While horizontal accuracies met the standards for surveying, future work will continue to examine UAV-derived data for vertical accuracies.

Key Words: UAV, ground control points, surveying, UAV orthomosaic, horizontal accuracy

Muniz, Osvaldo; Cascante, Alejandro, Texas State University
Multi-efficient strategy to enhance platforms for online geography education

Full online education to teach geography has been a difficult endeavor when the learning management systems do not have the adequate functionalities that allow students a more efficient assimilation of geographic knowledge. Previous online systematic experiences conducted with domestic undergraduate students and international geography courses demonstrated serious limitations in terms of participation, engagement and interactivity. The researchers initiated a review of Texas State Learning Management System, TRACS, using a multi-efficient approach. The method allows the researchers to investigate interaction, cooperation, and collaboration between facilitator and students as well as among students. The analysis leads to a process of simulation to identify new functionalities in order to enhance synchronous teaching and learning. In addition, the results address potential limitations of such new functionalities.

A projection of this research is the development of a learning management system with new functionalities for an international online geography program in the Pan American world.

Key Words: online learning, learning management system, multi-efficient approach, synchronous learning, geography education

Murphy, Trey, University of North Carolina at Chapel Hill
Fanstasma spaces: Legal landscapes from the Texas mineral subsurface

Through advances in shale drilling, the discovery of billions of barrels of recoverable crude and trillions of cubic feet of natural gas has become a seemingly monthly occurrence in the United States alone, and "Hubbert's Peak" has now been cast forth into the unforeseen future. With increased production, the subsurface materializes as a contested space through which corporations mobilize and maneuver capital to vie for valuable hydrocarbon resources hidden thousands of feet below the surface. Countless surveyors, landmen, and oil company executives lobby mineral owners caught in these powerful economic forces to lease their subsurface estates to oil and gas producers. This is especially true in Texas where there has been a recent concentration of drilling activities and where private interests hold the vast majority of producing mineral estates. Linking physical geography interpretations of landscape with Gavin Bridge, Michael Watts, Gabriela Valdivia, and others, this research offers that geographers should consider the subsurface as a landscape, fraught with the same economic, cultural, and social implications that are found at the surface. Using "landscape" as a tool, this paper then associates archival research conducted during summer 2017 with Matthew Huber's hidden political ecologies, Irus Braverman's hidden legal geographies, and Fernando Coronil's understanding of the magical state to demonstrate how the landscaped subsurface is symbolically hidden. I conclude by offering that the propertied surface-subsurface is a fantasma space, a landscape that is always present yet poorly understood and often spectrally concealed.

Key Words: property, subsurface, landscape, archives

Nelson, Velvet, Sam Houston State University
A typology of travel blog narratives about food and eating in Peru

Although the relationship between food and tourism has received greater attention in recent years, few studies focus on tourists' experiences in emerging food destinations. Travel blogs offer a distinct opportunity to examine tourists' narratives of these experiences. The research discussed in this paper uses a thematic approach to narrative analysis of personal travel blog accounts of food and eating in Peru to gain insight into what tourists are looking for from, and their reactions to, these experiences, as well as what they reveal about themselves in the process. Although Peru is not a traditional gastronomic destination, it has received increased international media attention and awards for its cuisine. The destination was selected as a case study for this research because of the potential to obtain diverse perspectives on food from international tourists ranging from backpackers trekking across the region to luxury tourists traveling to Lima for a long weekend of culture. Forty-five travel blog entries were identified and analyzed, which yielded a typology of narratives regarding food and eating experiences. This included facing challenges, craving the familiar, displaying ambivalence, embracing adventure, and gaining and displaying knowledge. These narratives were often woven throughout a blog entry, so that bloggers displayed different patterns during the course of their trip, depending on the circumstances. Narrative analysis allows greater understanding of these circumstances, with implications for both research and destination stakeholders.

Key Words: Food, narratives, narrative analysis, travel blogs, Peru

Nichols, Sarah; Vaughan, Cody; Chisolm, Brett; Wheatley, Kendall; Roth, Jeffery, Stephen F. Austin State University
Lessons from Hurricane Harvey: Are we doomed to repeat the disaster?

This project evaluates hazards planning in the Houston-Baytown Metropolitan area. Specifically, we address the Texas Association of Regional Councils and Gulf Coast State Planning Region 16 in response to Hurricane Harvey. This presentation reviews the mission statements of the area's hazard response agencies to determine their effectiveness post Harvey. We examine agency disaster response, determine its effectiveness, compare and contrast the response plans, and identify a path towards more effective urban design to mitigate the effects of future disasters. The criteria for evaluation focuses on current zoning and infrastructure, the potential for mixed use high-density neighborhoods, and the implementation of regional law and new policies as tools for change. Additionally, we estimate fiscal impacts of Hurricane Harvey for a cost benefit analysis based redevelopment program. We reference a variety of agency

documents, relevant environmental studies, and provide a literature review. In addition to these sources, we consult a variety of current open source data to identify shortcomings evident in specific agency mission statements and available planning resources.

Key Words: hazards geography, Hurricane Harvey, urban development

Northeim, Kari, University of North Texas
Improving accuracy of ozone estimates: Challenges in developing a fine-scale spatio-temporal model of ozone concentrations

Ozone and atmospheric pollution is a concern for the Dallas-Ft. Worth region as it does not meet the National Ambient Air Quality Standards (NAAQS) set by the EPA. Surface ozone has been identified as one of six criteria pollutants harmful to human health as it relates to cardiopulmonary and respiratory mortality. Associations between surface ozone and adverse health outcomes have been identified for both short-term and long-term exposures. An accurate assessment of ozone concentrations in the DFW area is currently not possible due to inadequate spatial coverage of sensors and the lack of secondary transport knowledge. Existing sensor data will be analyzed from Texas Commission on Environmental Quality sensor network and modeling will be improved by adding additional ozone sensors in selected static testing environments, focused on a downwind pollutant transport model. Preliminary initial ozone testing indicates a difference in surface level measurements (in ppb) at distances of approximately 10 and 20 miles from the sensors. The contribution of this research will be in providing data driven modeling on increased ozone exposure due to the downwind transport risk and improving forecasting of ozone exposure with a finer sensor density resolution algorithm to identify areas with higher exposure.

Key Words: air pollution, ozone

O'Brien, Shayne, Fort Hays State University
Identifying precipitation trends in the Southwest United States, 1950-2106

In today's rapidly changing climate, identifying trends in meteorology is becoming increasingly important to understanding how certain characteristics of climate can be expected to change, and how the people affected by the changes may plan contingencies. Precipitation is one of the characteristics that affects everyone. This preliminary study uses daily precipitation data from the NOAA Global Historical Climate Network (GHCN) stations across the Southwest Region of the United States. Sites were selected by completeness of the data record with two stations per state. Trends were analyzed in annual precipitation-per-event average, and annual standard deviation of precipitation. Positive trends in standard deviation of precipitation were identified in, New Orleans, LA; Ruston, LA; Oklahoma City, OK; and Ralston, OK. Positive trends in precipitation-per-event were Identified in Albuquerque, NM; Ralston, OK; and Jarrell, TX. A negative precipitation trend was Identified in Oklahoma City, OK.

Key Words: precipitation, trends, climate, weather, southwest

Omotere, Olumide, University of North Texas
Using improved daily diagnostic equation to estimate root zone soil moisture

Soil moisture information can be used accurately in determining the timing and amount of irrigation applied to plants. The robustness and simplicity associated with a soil moisture estimation method to determine if the method is suitable for predicting soil moisture for scheduling irrigation. Pan (2012), and Pan, et al. (2015) proposed a daily diagnostic equation for estimating daily soil moisture. The diagnostic equation evaluates the relationship between the soil moisture loss function and the summation weighted average of precipitation, and the loss function uses the sinusoidal wave function which employs day of the year (DOY) to evaluate the seasonal changes in soil moisture loss for a given year, and this was incorporated into the daily diagnostic equation to estimate the daily soil moisture for a location. Solar radiation is an energy source that drives the energy and water exchanges between vegetation and the atmosphere (i.e., evapotranspiration), and thus impacts the soil moisture dry-down. In this paper, we introduce two parameters, i.e. the actual solar radiation and the clear sky solar radiation to improve the soil moisture loss function of the sinusoidal wave function. After the Introduction of the solar radiation in soil moisture loss function, we observed some improvements in the estimated daily soil moisture. Pan (2012) observed that generally the correlation coefficient between the estimated and the observed soil is above 0.78 and the root mean square error is 5.0 (%v/v). In our preliminary analysis with the introduction of the solar radiation, the correlation coefficient increases to above 0.81.

Key Word: Soil moisture estimation

Park, Jinwoo, Texas A&M University
Korea's environmental issues and The National Atlas of Korea, volume II

Volume II of The National Atlas of Korea was published in May 2017. Its contents relate to most branches of physical geography but include a substantial portion on environmental issues. The purpose of this paper is to examine the significance of the broad contents of environmental issues that face South Korea today. While many pages of the Atlas may pertain to the entire Korean Peninsula, the approach here is to examine all the pages and determine the most pressing environmental challenges that South Korea will face in the coming decades. Given the growth of the nation in economic developments, infrastructure, urban spaces, and population in the past few decades, South Korea faces a myriad of environmental challenges that need to be addressed. Northeast Asia has some unique environmental issues that transcend international boundaries and add to Korea's burden. Identification of major environmental problems and the government's efforts in mitigating such problems shall be highlighted in this paper based on the analyses of numerous maps that were produced by the relevant government ministries. Findings and conclusions shall be presented in this paper. The Atlas is a treasure trove of information, complete with maps, statistics, photographs, and diagrams that will be of great value for geographic research relating to Korea.

Key Words: Korea, National Atlas, environmental challenges, mitigation, government policies

Plassin, Sophie, University of Oklahoma; **Vache, Kellie**, Oregon State University; **Koch, Jennifer**; **Hanson, Kyndra; Paladino, Stephanie; Friedman, Jack**, University of Oklahoma
A spatial agent-based model for the Rio Grande/Bravo coupled human-natural system

Societies must improve their understanding of coupled human-natural systems in order to face continuing changes and support a more sustainable management of scarce resources. In the transboundary Rio Grande/Bravo Basin (RGB) (US - Mexico), projected climate change and population growth could deeply affect the ecosystems, livelihoods, and water resources. Modeling approaches have already been developed to study future responses of this system, especially hydrological impacts. However, human perceptions and practices regarding river and water management have been underrepresented despite their importance in coupled human-hydrologic feedback loops. The purpose of this study is to develop a spatial Agent-Based Model (ABM) that explores the combined impacts of climatic and demographic changes with new land-use and water resources management strategies on a set of socio-economic and hydrological indicators. The method draws on the use of the spatially explicit and integrated modeling framework ENVISION composed of a hydrologic, a land-use and a multi-agent modeling sub-systems and the integration of theories and empirical data from different disciplines (anthropology, economy, geography and hydrology). The results include the design of a typology of agents (water and land managers) and concept map capturing key relationships between the social and the ecological components, and a draft version of the ENVISION simulation model. The added value of incorporating natural and human dynamics in the proposed ABM through interdisciplinary research lies in its support for understanding the outcomes of management decisions, as well as the ways to foster a more resilient RGB basin system.

Key Words: agent-based model, water management, coupled human-natural system, spatially explicit model; Rio Grande/Bravo

Portillo, Ethan Robert, University of North Texas
Analyzing the change in the population characteristics serviced by retail clinics pre and post Affordable Care Act

Retail clinics are walk-in based clinics designed for convenience and low-acuity conditions. The model began as a way of bringing both convenience, and care to areas of low accessibility. Research has shown that these clinics are located in census tracts with higher income and greater access to primary care. Use among the insured has also shown to be rising and well utilized compared to the uninsured. With the implementation of the Affordable Care Act (ACA), those who were uninsured would now have insurance. This project compares retail clinic locations mapped in Harris County, Texas, in 2008. As previous research is available highlighting healthcare access based on primary care need, and other sociodemographic factors in this county. With this available data a comparison can be made between the landscape before the ACA implementation, and the current landscape. This is done utilizing GIS software, and spatial analysis techniques to compute accessibility. As with previous research data is collected from retail clinic parent websites, publically available census data, and from the Health Resources and Services Administration. Findings are predicted to highlight growth in the number of retail clinics as well as growth into new markets within the county.

Key Words: retail clinics, Affordable Care Act,

Rindy, Jenna E.; Ponette-González, Alexandra G.; Barrett, Tate E.; Luce, Brett W.; Sheesley, Rebecca J., University of North Texas
Urban trees as sinks for soot: Elemental carbon retention on leaves and litterfall flux to soil

Soot, or elemental carbon (EC), a product of incomplete fossil fuel (e.g., diesel fuel) and biomass combustion, contributes to climate warming and human health risks. Urban trees may play an important role in removing EC particles from the atmosphere. The goal of this research is to quantify the magnitude of leaf EC retention and leaf litterfall EC flux to soil for two common urban trees, post oak and live oak, in the City of Denton, Texas. Leaf samples were collected monthly from April to July from 10 post oak and 10 live oak trees and EC was extracted from leaf waxes. The EC content of leaf extracts was determined using a Sunset organic carbon/elemental carbon analyzer. Elemental carbon retention was calculated per unit leaf area (μg/cm2/mo). To estimate leaf litterfall EC flux, litterfall was collected underneath 35 trees (post oak, n = 20; live oak, n = 15) bi-weekly from April to September. Median EC retention over the four-month sampling period was sevenfold higher for post oak (0.07 μg/cm2/mo) than for live oak (0.01 μg/cm2/mo). Trees near EC emission sources consistently had the highest EC retention (max = 1.3 μg/cm2/mo). Total litterfall flux was similar for post and live oaks (~50 g/m2/6 mos). Given observed species differences in leaf EC retention, EC leaf litter flux is likely higher under post oaks than live oaks. These findings show that EC deposition to leaves and soils varies by species and location, with implications for air quality mitigation strategies in urban areas.

Key Words: air quality, fine particulate matter, cities, climate change, ecosystems

Roth, Jeffery E., Stephen F. Austin State University
Conceptualizing spatial identity and imbedded narratives in a contested cultural landscape: Black Texans in Nacogdoches, 1836-Present

This paper emphasizes a method for exploring both spatial identity and invisibility in ethnically diverse places and the consequences of systematic eradication of a people from public memory by a dominant elite class. At present, readily observable historical commemorations of Nacogdoches County overlook the black experience and emphasize a Texan myth of white heroes who championed freedom. In numerous places like Nacogdoches, published literature focuses attention on victimization and contextualizes the process within varieties of antiracist, colonial, or social identity theory. These contributions fall short in providing a description of black identity before 1865 and contribute to social invisibility in the modern era. By collecting nineteenth and twentieth century documents generated through customary legal practice in every state, historical identity may be reestablished in the places where black people lived. A continuing pilot project in Nacogdoches transformed existing interpretations of ethnic identity by integrating the heritage landscape using source material common across the Old South. An emphasis on black identity in cultural landscapes such as cemeteries, churches, and schools resulted in an activist and interventionist method of addressing "whiteness" in literature, society, and spatial commemoration.

Key Words: cultural geography, social justice, historical preservation, applied research methods

Sadeghinaeenifard, Fariba; Dong, Pinliang, University of North Texas
Tree crown discrimination using three-dimensional shape signatures derived from LiDAR point clouds

Following previous studies that demonstrate the effectiveness of shape descriptors in differentiating various tree crowns derived from LiDAR point clouds, this study describes another 3D shape descriptor and evaluates its performance in this context. The methodology consists of three main components, including the point sampling strategy, 3D shape signature production, and analysis of shape signatures from various trees with various crown shapes. In the first component, researchers used a learning approach to categorize LiDAR points into four groups and assigned a specific label to points falling into each group. In the second component, the researchers produced 3D map signatures by applying latitude-longitude transformation of points in each group and labeling them by their pre-assigned label. The point maps are then converted to raster maps by applying nearest neighbor interpolation. Finally, in the third component, the authors examined the similarity of shape signatures generated from trees with the same geometric shape and investigated the differences in shape signatures produced from trees with different geometric shapes. The authors have evaluated the proposed 3D shape descriptor experimentally by selecting LiDAR points captured on three semi-conical and two semi-spherical trees and creating their corresponding latitude-longitude shape signatures. Comparisons of shape signatures from the group of three semi-conical trees and the group of two semi-

spherical trees show that the shape signatures are similar within the groups while different between the groups. So, the results of this study suggest that a latitude-longitude shape descriptor could provide reliable results in differentiating tree crown shapes.

Key Words: LiDAR point clouds, tree crown, discrimination, 3D shape signature

Sarmiento, Eric; Furness, Walter; Rosenberg, Alex Von, Texas State University
Can markets make food systems more just?

In this paper, we consider recent research on social justice in alternative food networks (AFNs), exploring in particular the question of whether AFN practitioners conceptualize justice in terms that emphasize producers, consumers, or structural concerns encompassing both producers and consumers as relational components of an integrated system. Critical food scholars have identified a tendency among AFNs to frame social justice in market-oriented terms that a) emphasize economic viability for small and mid-sized, ecologically oriented producers, and b) rely on consumer preference and demand for alternative foods to effect structural changes in the food system. As such, 'alternative' foods have tended to create specialty niches for relatively privileged consumers within the existing food system, rather than driving fundamental changes to the system as a whole. Conversely, notions of justice that emphasize consumer access and affordability can fail to sufficiently account for the ways that the political economy of growing food structures distribution, access, and affordability. In light of these issues, some AFN practitioners have begun to experiment with hybrid provisioning models such as urban food hubs that foreground democratic participation and facilitate engagement between producers, distributors, and consumers. We conclude that while these approaches potentially go some way toward addressing the problem of emphasizing one end of the food chain over the other, they leave important questions about relying fundamentally on market-based approaches to correct social and ecological problems in the food system.

Key Words: food justice, alternative food networks, environmental politics, food hubs

Sills, E. Cory, University of Texas at Tyler
Sharing space: Football meets the 5,000-year-old LSU campus mounds

This paper will present the history, conflict, and outcomes of the "Preserve the LSU Mounds" campaign initiated by the students, faculty, and administration at Louisiana State University. The Louisiana State University Campus Mounds are two of the oldest indigenous mounds built in North America. This feature is an important record of the indigenous past as well as the cultural heritage of contemporary Louisiana. However, the mounds (as they are referred to locally) have a long historical tradition of use, including political, religious, leisure, and football tailgating events, a tradition that is distinct from their archaeological importance as the oldest mounds in North America. The "Preserve the LSU Mounds" campaign was initiated to restrict access to the mounds on football home games during the fall. As a result, this initiative created a conflict between preservationists and tailgaters regarding the use of the mounds. Preservationists and other concerned stakeholders wanted to temporarily reduce access to the mounds to protect them from further erosion. However, the initiative was challenged by tailgater's who associate the mounds as a public space that centers on tailgating and the university experience. Results of archival research, participant observation, and interviews examines how the mounds have become a prominent public space and a landscape feature on the Louisiana State University campus, one with multiple meanings and uses to the Baton Rouge, Louisiana State University, and regional communities. This research shows that there are many stakeholders who have multiple views of the significance of this landscape.

Key Words: heritage, public space, archaeology, landscape, preservation

Sosa, Elizabeth, Sam Houston State University; **Gonzalez, Stephanie**, University of California, Los Angeles; **McKinnon, Innisfree**; University of Wisconsin-Stout
Riparian buffer impact on stream health in the Wilson Annis Watershed, Dunn County, WI

Riparian buffers, a protective zone of natural vegetation along a body of water, should protect waters from excess runoff such as phosphorus and nitrogen from farms. Wilson Creek and North Wilson Creek, as part of the Wilson Annis Watershed in Dunn County, WI, were chosen to determine buffer benefits because of their proximity to farms. Chemical and physical tests such as temperature, dissolved oxygen, macroinvertebrate, stream velocity, phosphorus, and a fish habitat assessment were taken at fourteen locations. A Pearson's correlation and least ordinary regression tests were conducted. It was determined that riparian buffers positively correlate with fish habitat, meaning better buffers provide better fish habitat. However, downstream creek locations have high sediment and phosphorus

amounts. Therefore, riparian buffers are not able to fully protect from excess runoff but are able to provide efficient fish habitat.

Key Word: riparian buffer

Stadler, Steve; Oklahoma State University; **Greene, J. Scott**, University of Oklahoma; **Wood, Lauren**; Oklahoma State University
Oklahoma wind pushes through opposition

With over 6,600 watts of generation capacity, Oklahoma is the number three state in wind production and will rise to number two in the near future; approximately a quarter of the state's generation is from wind. The wind industry is profitable in the state. However, there have been several vocal groups opposing wind power, resulting in the 2016 Oklahoma Legislature imposing rural zoning on turbine locations and the 2017 Legislature ending all subsidies for new wind farms. As the wind build-out continues, several objections have been voiced. These have been related to diverse concerns such as human health, visual nuisance, tribal rights, transmission right of ways, the export of electricity to other states, wildlife issues, and out-of-state-ownership. Geographically, most opposition has not been from areas where wind turbines have been built. In this paper we examine the opposition arguments and then show how the wind industry is increasing its presence despite unfriendly treatment in the Oklahoma tax structure. Good-paying jobs are being added to population-loss counties and millions of dollars are accruing into in the state as the result of ad valorem taxes. The non-use of water and the non-release of carbon dioxide by wind power generation are environmental pluses not currently in the discussion. So, we believe Oklahoma wind power is experiencing some "bumps" in its maturation and favorable economics will prevail.

Key Words: wind power, Oklahoma

Strait, John B., Sam Houston State University
Geographical processes behind American roots music: The transcultural nature of Delta Blues

As a distinct musical form, American blues music has been extensively studied by musicologists, ethnomusicologists, historians and folklorists. Much of the academic focus on blues music has focused specifically on identifying the geographic roots of this musical form. For example, scholars exploring the "roots" of blues have traditionally placed considerable emphasis on the identification of an extensive range of musical elements thought to have originated on the African continent. Accordingly, this research has been used to reinforce the long held idea that blues is a musical manifestation of the cultural milieu that evolved in the "new world" following the forced migration of African slaves. Offering the concept of "movement" as a mechanism responsible for musical evolution, I argue that traditional assumptions overemphasizing the African roots of blues, at the expense of other possible geographical influences, have been far too simplistic. Rather I maintain that blues music, particularly blues music that evolved in the Mississippi Delta, is truly transcultural in nature. Moreover, the cultural processes responsible for the evolution of this music did not occur in a vacuum, they were generated and facilitated by a complex array of cultural exchanges that occurred over time and space. In this paper, by highlighting Hawaiian, Spanish and African influences, I focus attention on the complex inter-relationships evident between and among different people and different places, and highlight how these complex interactions generated a unique music form that is truly global in scope.

Key Words: culture, transculturation, diffusion, music

Swab, John J., University of Oklahoma
Creating an intellectual framework for a geographic exploration of Gordon-Matta Clark's Fake Estates

The sub-discipline of GeoHumanities was founded on the merging of geographic scholarship with the methods of the creative arts. To date, there are few examples of academic geographers practicing in artistic media as their primary means of output. This presentation seeks to outline a possible concept project to do just that, by recreating the work of the pioneering contemporary artist Gordon Matta-Clark in an explicitly geographic lens. Matta-Clark, raised in New York City's SoHo and trained in architecture at Cornell, returned to the city in the early 1970s at the height of American urban decay. During this time, he produced art that bridged the divide between art and architecture (labeled "anarchitecture" a portmanteau between anarchy and architecture) reflecting the ongoing urban crisis that surrounded him. One famous work entitled Fake Estates involved the purchase of "gutterspace" (by-products of surveying anomalies) in the borough of Queens. Matta-Clark documented these small slivers of land but died before he could do anything significant, however the legacy of this project lives on in the contemporary art community. For a geographer, what inspiration can Matta-Clark's work provide? This presentation outlines a

possible similar, pragmatic project examining surveillance in the city through a recreation of his work. By specifically focusing on surveillance and employing the classic idea of the panopticon, what are some possible insights of a ""real-life"" instillation of a security camera on privately owned, public spaces? Moreover, how might the guise of art cloud or inhibit what we seek to understand?

Key Words: GeoHumanities, surveillance, arts, urban

Villamero, Renzo, University of North Texas
The effects of cool roofs on the urban heat island

The Urban Heat Island is a phenomenon where an urban space has higher temperatures than its surrounding area. This issue has only continued to increase because of expanding cities. A cool roof is a term that is used to describe roofs that have higher reflective and emissive properties. These roofs have been proven to cut energy costs by reducing temperatures within buildings. However, I observe how these cool roofs affect its surrounding area. Houston adopted cool roof codes to require all new commercial buildings to have certified cool roofs. However, single family buildings and multi-family buildings less than three stories are not exempt, this means that most residential buildings do not require cool roofing. I use Weather Underground as well as Google Earth to observe the maximum and minimum temperatures of four locations in Houston. These location characteristics vary in terms of the amount of light colored surfaces, amount of green space, proximity, and land use. The results show that areas with higher cool roof surfaces still have higher temperatures than areas with non-cool roofs. I have observed these non-cool roof areas tend to suburban spaces where as areas with higher amounts of cool roof surfaces were generally urban spaces like city sprawls. Suburban areas have less cool roof surfaces than urban areas, but they have one thing in common and that is green spaces.

Key Words: urban heat island effect, cool roofs, green spaces, Weather Underground, Google Earth

Watson, Emily; Watson, Jarrod; Peralta, Christina, University of New Mexico
Mapping historic Corrales New Mexico: Challenges of modernizing an outdated addressing system

Our project assesses the accuracy of mapping a current small town transportation system. We conducted an entire road network inventory of the Village of Corrales, located in Sandoval County, New Mexico. This inventory entailed cross-referencing the most current versions of Google Earth with the Sandoval County E-911 file. Our research found several name and boundary inconsistencies, including several roads with multiple names, or missing names altogether. The Village requested that we document private versus public roads so that road maintenance and management responsibility could be determined. During this documentation process we found several private driveways leading to two or more separate residences. These driveways will require naming so that they can be added to the Village's digital road network. We conducted a field check to verify road names, boundaries and responsibility for maintenance. Our findings identified potential shortcomings in the Village's ability to provide emergency services due to poor or incorrect addressing that is non-standard, missing signage, or inconsistent numbering. Thus far, we have been able to reconcile most of the issues with duplicate or missing names in our digital maps, but the village needs to address errors and inconsistencies by physically renaming and number streets to correct inconsistencies. These corrections necessitate investments by the Village and residents of Corrales, a serious problem for a community that is already cash-strapped. This lack of money could potentially derail the progress made in this project. The outcome of this project is to rectify errors between digital maps and omissions in road nomenclature to improve quality of life in Corrales, especially during emergencies.

Key Words: mapping, modernizing, inconsistencies, road, inventory

Weaver, Kobi, Louisiana State University
The application and analysis of anthrosoils in the Maya Region

This poster examines the impact of the chemical analysis of anthrosoils in the Maya region over the last 100 years. I review the use of different chemical testing methods, as well as the interpretation of the chemical analysis to determine their impact on the field of geoarchaeology. The application of chemical analysis is discussed in conjunction with data from two specific sites. Data originates from previous research in Blue Creek, Belize, as well as ongoing research at the underwater Site 74 in Paynes Creek Salt Works, Belize. Using multi-element chemical analysis and measuring the organic content of mangrove peat through loss-on ignition, I draw conclusion about original site use. This research builds towards a larger investigation of structure and usage of ancient Maya Salt Works in coastal Belize.

Key Words: geoarchaeology, Maya, salt, chemical analysis, anthrosoils

Woody, Tanya; Widener, Jeffrey M., University of Oklahoma
Perceptions of neighborhood historic preservation and energy efficiency in an American college town

Residential energy consumption and the negative environmental consequences associated with this industry have drastically changed the way homes are designed and built. Historic homes pose specific challenges for homeowners who want to take advantage of new technologies to make energy-efficient renovations while preserving the original character of the home. Historic homes in historic districts, in particular, do not exist as singular entities but rather as parts of a dynamic community where development, energy related or otherwise, is influenced by shifts in residential perception, new generations of homebuyers, and city political agendas. While the established goals of historic preservation place many renovation restrictions on homeowners, the original aim and function of preservation, to maintain and protect architecture that has been deemed culturally significant, is now confronted with a growing public awareness of energy-related issues and homeowners prioritizing energy conservation over historic preservation. This raises the question of whether or not elements of material culture in historic neighborhoods, unique architectural styles, specific window designs, roofing, and siding materials, for example, can coexist with a society that has changed its focus on purchasing energy efficient homes or newer, energy efficient materials to replace elements on a historic structure. This research project examines two designated historic neighborhoods in Norman, Oklahoma, which provide an intriguing window to look through to investigate perceptions of historic preservation and attitudes towards sustainable, energy-efficient home renovations. We find that complex and multi-faceted relationships exist among historic preservation stakeholders, with changing roles and shifting authorities shaping the sustainable evolution of the neighborhoods.

Key Words: historic preservation, sustainability, cultural landscape, planning, Norman, Oklahoma

Williams-Blackshear, Destinee; Chatterjee, Ipsita, University of North Texas
Homelessness and neoliberalism in Denton

In urban areas homelessness is a pressing issue with more than 800,000 people homeless on a given night. With the onset of neoliberal economic policies in the 1980s, there has been a reduction in public expenditures on welfare and other service-related programs leading to an increase in inequality and poverty. Reorganizing of federal spending has forced millions of people who depended upon social services to the brink of poverty, resulting in a steady increase in homelessness. I look at contemporary homelessness and municipal neoliberalism through a case study of Denton. Using interviews with key members of the city government I explore how urban policy toward homelessness has changed. Through participant observation of a soup kitchen "Our Daily Bread," I reconstruct how the urban homeless negotiate everyday life and livelihood to produce unique geographies of survival in the context of decreasing government help. The larger objective is to inform a more humane urban policy toward homelessness and poverty alleviation.

Key Words: neoliberalism, homelessness, poverty, geography of survival, spatial inequality

Xu, Yaping, **Wang, Lei**; **Liu, Chengliang**, **Liu, Cuiling**, Louisiana State University
Identifying unlawful constructions in cultural relic sites based on subpixel mapping: A case study in Mangshan Tombs, China

Monitoring unlawful constructions in cultural relic sites is difficult in remote and unpopulated areas. This paper aims at facilitating cultural relic protection surveys using remote sensing. High-resolution remote sensing images are better alternatives to field visits for locating unlawful buildings. However, these buildings are usually hidden by vast wildness around the cultural relics, which makes the use of high-resolution imagery costly and inefficient. The main purpose of this research is to develop an approach to subpixel building identification from moderate resolution images, such as Landsat 8 OLI with reasonable accuracy based on the mixture-tuned match filtering (MTMF) partial unmixing method. With this method, pixels with high MF scores and low MT scores were identified as candidate locations of possible unlawful buildings. A case study in the Mangshan Tombs, China demonstrated that this method had a better accuracy for identifying constructions than the commonly used fully-constrained linear unmixing model.

Key Words: cultural relic site protection, buildings identification, subpixel mapping, mixture-tuned match filtering (mtmf), Landsat

Yip, Chi Chen; Kedron, Peter, Oklahoma State University
The impact of scale on relationships between social vulnerability and the physical environment

Social vulnerability indices are comparative metrics designed to measure a community's preparedness and ability to respond to the external stresses brought on by natural or human induced disasters. Consisting of several components of vulnerability, themselves derived from census data at either the tract or county level, social vulnerability indices have come into widespread use in hazard research and public policy. While useful as an aggregate measure of a location's social vulnerability, it remains unclear how these indices, or their components, relate to regional variations in the physical environment at multiple spatial scales. If variation in the physical environment represents at least one part of a region's sensitivity to a hazardous event, understanding how those differences relate to that location's social capacity to adapt is important for developing a more complete picture of vulnerability. To evaluate relationships between social vulnerability and the physical environment and their sensitivity to scale, we analyze two commonly applied indices, and their components, at three alternative spatial resolutions. Our analysis focuses on Oklahoma. The climate variability and diverse social and ecological landscapes of Oklahoma make it an ideal site for the study of hazard vulnerability. Analyzing variation in these social-ecological correlations allows us to better understand how the scale decisions of researchers may impact the use of social vulnerability indices.

Key Words: social vulnerability, spatial patterns, scale

Zamanisabzi, Hamed, University of Oklahoma
Evaluating climate change impacts on Red River Basin to recognize and prioritize critical areas to implement water-environmental conservation actions under potential climate change scenarios

Experiencing severe drought followed by exceptional flooding in Red River Basin significantly affected several sectors of industry, agriculture, and the environment. Therefore, projecting and being prepared for the future impacts of climate change on the Red River Basin was crucially important. In this study, based on three appropriately selected global climate models and considering three potential greenhouse gas emission scenarios, we projected and investigated climate change impacts on Red River Basin (RRB). Overall, the projected parameters include precipitation, temperature, and hydrologic parameters of streamflow and lake levels throughout the RRB. Although there are considerable differences among the projected parameters, we still can make conclusions on those parameters as follows: a. Most models predict less precipitation in the western side of the basin and more in the eastern side. b. In term of temperature, considering the worst case scenario of greenhouse gas emission to the atmosphere, we predict that average temperature would increase as much as 6 degrees of Celsius. c. Most models predict slightly more streamflow values in the future, specifically in the eastern side of the basin. In addition, through data analysis we extracted existing patterns on the projected streamflow for the location that specifically are on the Red River. We compared those projected patterns with the historical patterns in order to recognize the critical changes thorough the Red River. Finally, by spatial analysis of the projected meteorological and hydrologic parameters we recognized the areas on RRB that will need water-environmental conservation actions in the future. Furthermore, we provided several spatial maps for future conditions and variabilities of the precipitation, temperature, and streamflow throughout the RRB. By analyzing those spatial maps, we prioritized the areas where need different levels of conservation actions. Those spatial maps also would provide significantly useful information to the regional environment managers, water policy makers, and agricultural and industrial sectors.

Key Words: climate change impacts, water resources management

Zhang, Yan; Angulski, Kate; Dittmann, Layne, Sam Houston State University
The spatial relationship between methadone treatment centers (MTCs) and drug arrests: Exploring the Not-In-My-Backyard phenomenon (NIMBY)

Given the current heroin epidemic and increased attention afforded to heroin treatment, there is a push for increasing the number of methadone treatment Centers (MTCs) across the United States. Along with serious attention and resources aimed at treating heroin addiction, there is also a considerable amount of objection from certain communities in regards to the placement of heroin treatment facilities due to local concerns that their presence will generate and/or attract crime and criminal behavior and reduce the quality of life for community members. This concern is referred to as the not-in-my-backyard (NIMBY) phenomenon. The notion is that citizens may support the construction of businesses or city resources because they may benefit from them, but only if they are not built within close proximity to their homes and/or businesses. The current study examines the spatial relationship between methadone treatment centers (MTCs) and drug arrests to explore the relevance of the NIMBY phenomenon as it relates to these drug

treatment facilities. After identifying and geocoding the addresses for the 16 MTCs located in Houston, Texas, the research team layered geocoded Houston Police Department drug arrest data form January 1, 2010 to December 31, 2010 (n=13,817) Using ArcGIS software. The team then created three buffer zones around each of the 16 MTCs located in Houston in an effort to further explore the legitimacy of NIMBY concerns as it relates to drug crimes. Results from the study and future research plans examining the relationship between MTCs and crime rates will be discussed.

Key Words: methadone treatment centers, crime, Not-In-My-Backyard, Houston, Texas

Zhao, Yun; **Kedron, Peter**; **Frazier, Amy**, Oklahoma State University
Measuring urban patterns and identifying their relationships with changes in land use intensity

Global inter-city competition and a need for sustainability are diversifying the development trajectories of cities and renewing the importance of understanding their spatial structure. To assess the spatial patterns of urban development, several disciplines have created a variety of spatial metrics. Mirroring urban development patterns of the 20th century and the theories developed to explain them, current metrics characterize urban structural change as a process of spatial expansion, interspersion, and densification. However, many spatial metrics have not yet been clearly linked to variations in urban land use that shape the structure of cities. Failing to connect metrics with variations in land use limits the effectiveness of policies designed to address emerging sustainability challenges and new patterns of urban growth and shrinkage. To link pattern with process, we analyze relationships between spatial metrics designed to measure different characteristics of a city's structure and variations in residential and workforce land use in Oklahoma City, OK. The climate variability, diverse social and ecological environments, and shifting growth pattern of Oklahoma City make it an ideal environment for the study of land use and urban structure. Using the Longitudinal Employer-Household Dynamics dataset from the US Census and land cover data from the National Land Cover Dataset, we identify how variations in the intensity of different forms of land use impact urban structural patterns. In doing so, we provide a first step toward improving urban development policies dependent on measures of city structure.

Key Words: urban form, spatial metrics, shrinkage, sustainability

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