2019 Annual Meeting
of the
Great Plains / Rocky Mountain Division of the American
Association of Geographers

Final Program and Abstracts

Find more information about the conference and venue at
gprm2019.ku.edu

Hosted by the University of Kansas
Dept. of Geography and Atmospheric Science
Dear geographer, guest, or friend of geography:

Welcome to the 2019 Annual Meeting of the Great Plains / Rocky Mountain Division of the American Association of Geographers.

As this brochure goes to press, we have 86 registrants, 60 papers, 13 posters, and several Geography Bowl teams. Thus, we will be running five concurrent sessions all day on Saturday. The Geography Bowl will run all afternoon just a short walk away in the Kansas Union.

Everybody loves Lawrence, and I know you will too. Look west, north, or east from the Oread Hotel’s upper floor terraces, and you’ll see the beautiful Kaw Valley. Turn south and you’ll see the rest of Mount Oread, on which we stand, and the campus of KU. Look toward the northeast, and you’ll see Lawrence, often rated as one of the nation’s top ten small college towns.

On Friday morning some of you will head east to Kansas City, which boasts more fountains than any other city on earth except Rome. We’ll take you to the country’s only World War I memorial plus historic neighborhoods and urban delights including the Country Club Plaza with its buildings, tiles, mosaics, and fountains modeled after Seville, Spain. Others will head to Haskell Indian Nations University, one of five federally funded schools for Native American students in the country, and the Wakarusa wetlands.

There will be a reception on Friday evening at 5:00 on the 9th floor terrace (weather permitting) and an awards banquet on Saturday evening, where Amy Lobben, VP-Elect of the AAG, will speak on “Accessible Geography.”

Wifi:
Network: OreadGuest
Password: 1200ave14

Share news about the GPRM meeting via Twitter using: https://twitter.com/gprm2019

Thank you for coming and especially for your individual contribution to this event.

Barney Warf, Chair
Great Plains / Rocky Mountain Division
American Association of Geographers
Acknowledgements

This conference is made possible by the dedicated efforts of faculty and graduate students at KU and throughout the Great Plains / Rocky Mountain Division.

Foremost among these are program chair Dr. Alex Diener and the graduate students (Carolissa Watson and John Paul Henry) who assisted him. Dr. Steve Egbert designed and maintained the conference website and helped arrange the financial matters. Dr. Di Shi designed the conference and departmental posters.

Dr. Jay Johnson led the field trip to Haskell Indian Nations University and the Wakarusa wetlands. Dr. Kirk McClure of the KU Dept. of Urban Planning led the field trip to Kansas City.

Dr. Xingong Li organized and ran the workshop on Google Earth.

Ally Smith assisted mightily with planning, budgeting and administration, Fally Afani Ruzik was central to the creation of the Twitter and social media accounts, Jean Paul Henry served as Twitter master, and Xoe Cranberry provided help with a variety of tasks. Thanks also to the grad students who drove the vans for the field trips, Melissa Fahrenbruch, Katie Grote, and Morgan Okeson.

Matt Fahrenbruch coordinated grad student efforts, including room attendants, van drivers, and the registration desk.

Also thanks to the many grad students who volunteered for many other tasks, including the registration desk and operating as “room runners” in case of difficulties, including Carolisa Watson, Colin Pate, Isaac Christman, Jessie Myer, Jim Cole, Karee Orrick, Katie Grote, Kiera Smith, Matthew Fahrenbruch, Melissa Fahrenbruch, Morgan Okeson, Reece Knapic, Steve Cameron, Taylor Hall, and Yurika Kato.

Student paper and poster awards judges included Drs. Josh Hagen, Alex Diener, Deborah Thomas, Peter Herlihy, Dave Rahn and Dave Mecham.

Andy Allen and Stephanie Willis coordinated the Geography Bowl. Geobowl judges included Matt Fahrenbruch, Andy Allen, Steve Cameron, and Colin Pate.

Musicians Cory Phillips (guitar) and Erin Wood (harp) provided wonderful entertainment.

We much appreciate the financial support of the KU Office of Graduate Studies, and from KansasView.
Meeting Overview
All paper and poster presentations take place at the Oread Hotel;
Geobowl takes place in the Kansas Union English and Pine rooms (Level 6)

Friday, October 11, 2019

9:00 AM – 6:00 PM  Registration (Lobby of Oread Hotel)

Field Trips (gather outside lobby of Oread hotel to meet trip leader):

10:00-4:00 Kansas City – Dr. Kirk McClure, KU Dept. of Urban Planning

1:00-4:00 Haskell Indian Nations University and Wakarusa Wetlands – Dr. Jay Johnson, KU Dept. of Geography and Atmospheric Science

(Both trips depart from the front of the Oread Hotel and return there at 4:00 PM)

2:00-4:00 Workshop: Cloud-based Geospatial Analysis using Google Earth Engine
Dr. Xingong Li, KU Dept. of Geography and Atmospheric Science
Lindley Hall 403

5:00 PM – 7:00 PM  Welcome Reception (9th floor terrace of the Oread, weather permitting)
### Conference Program at a Glance
#### Saturday Oct. 12
(Registration desk open 8:30-12:00)

<table>
<thead>
<tr>
<th>Time</th>
<th>Hancock Ballroom</th>
<th>Hancock Library</th>
<th>Gathering Room I</th>
<th>Gathering Room II</th>
<th>Gathering Room III</th>
<th>All Seasons Den</th>
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<tbody>
<tr>
<td>9:00-10:20</td>
<td>Posters (creator attends)</td>
<td>Critical Geographies</td>
<td>Geographies of Tourism</td>
<td>Place &amp; Mobilities</td>
<td>Imaging Techniques</td>
<td>Story Maps</td>
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<td>10:20-10:40</td>
<td>Coffee Break</td>
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<td>10:40-12:00</td>
<td>Posters Human/Env Interactions</td>
<td>Material Geographies</td>
<td>Ag. Management &amp; Sustainability</td>
<td>GIS &amp; Maps</td>
<td>Urban Geographies</td>
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<td>12:00-1:30</td>
<td>Lunch (on your own)</td>
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<td>1:30-2:50</td>
<td>Water &amp; Climate Change AAG Recruitment &amp; Career Workshop</td>
<td>Himalayan Geographies</td>
<td>Indigenous Politics</td>
<td>Political Geographies</td>
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<td>3:10-5:00</td>
<td><strong>Geobowl</strong> (Kansas Union: English and Pine rooms, both on Level 6)</td>
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<td>5:20-6:20</td>
<td><strong>GPRM business meeting</strong></td>
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<td>6:30-8:00</td>
<td>Banquet and Student Paper and Poster Awards Dinner (Hancock Ballroom)</td>
<td>Welcome: Dr. Chris Brown, KU Vice-Provost for Faculty Development</td>
<td>Student Awards Presentation</td>
<td>Keynote Address: Dr. Amy Lobben, University of Oregon, VP-Elect of the AAG: “Accessible Geography”</td>
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*Note: Room assignments are tentative and subject to change.*
**Paper Sessions**

**9:00 - 10:20**

**Geographies of Tourism (Gathering Room 1)**
Session Chair: Darren Purcell

- Kimberly K Johnson Maier: “Touch, feel, and climb”: Creating an embodied tourist experience at the Ingalls Homestead

- Jason Combs: Nebraska’s exaggeration postcards: Giant grasshoppers and two-ton potatoes along with other facts about the Plains

- Dawn M. Drake: Dining with the Mouse: The spatial and temporal dimensions of EPCOT’s International Food and Wine Festival

- Darren Purcell and Cayton Moore: Selling Southern places: An examination of Delta's *Sky Magazine* city profiles

**Place and Mobilities (Gathering Room 2)**
Session Chair: Brett R. Chloupek

- Jason Holcomb and Stanley D. Brunn: Visualizing abandonment in rural America: From disappearance to renaissance

- Katherine Nelson and Michael Molloy: The sociodemographic landscape of three decades of FEMA buyouts

- Andrew Husa: The Nebraska Roots Migration Survey: Initial findings

- Brett R. Chloupek: A call for the symbolic integration of marginalized ethnic groups in Europe

**Critical Geographies (Hancock Library)**
Session Chair: Mary Lawhon

- Meghan Kelly: Mapping bodies, designing feminist icons

- Lis Pankl: Geographies of disability in the work and life of Frida Kahlo

- John Paul Henry: Picturing slow violence: Eliciting experiences in rural, toxic places

- Mary Lawhon: Red state, green politics: Reflections and resources for teaching critical sustainability
**Imaging Techniques (Gathering Room 3)**
Session Chair: Laura M. Moley

James Matthew Coll and Mike Johnson: Temporal Evapotranspiration Aggregation Method: An application for calculating evapotranspiration metrics, exploring the modifiable aerial unit problem, and shortening the time to science.

Alex R. Mohr: Using remote sensing to detect changes in vegetated and riparian buffer in an agricultural area of Nebraska - Final results

Thomas Edward Cox: Advancing geoarchaeological techniques: Using SFM-MVS to create 3D images to analyze soils and remains associated with Oklahoma mammoth localities

Laura M. Moley and William P. Winslow: Leaf-level spectroscopy for analysis of invasive pest impact on trees in a stressed environment

**Story Maps (All Seasons Den)**
Session Chair: Stephanie Willis

Stephanie Willis: The value of storymaps

Janee Bates, Zechariah Johnson, Alyssiana Gonzales, Amanda Smith: Haskell historical map

Chebon Smith, Diamond Williams, Kayla Jackson, Kathy Littlebull: Haskell’s historic wetland complex

Josiah Candelaria, Adler Aspaas, Garrett Williams, Braden Souders: Surviving LFK and Haskell

**10:40 – 12:00**

**Urban Geographies (All Seasons Den)**
Session Chair: Joshua Hagen

Bradley Bereitschaft: Gentrification and the evolution of commuting behavior within America’s urban cores: 2000 - 2015

Lena Le Roux: Place-claiming and place-making in southern cities: Spatial tensions between modernity and plurality

John Harner: Creating Colorado Springs

Joshua Hagen: The city as a work of art: The composition of public space, iconography, and identity
Human Environmental Interactions (Hancock Library)
Session Chair: Jean Eichhorst

Michael Molloy and Joslin Audrey: Adaptation to coastal environmental change in Louisiana: An analysis of local and state environmental governance relationships

Hilda Onuoha and J.M. Shawn Hutchinson: Long-term grassland trends across the Great Plains ecoregion using BFAST and moderate resolution satellite imagery

Savanah M. Allard and Darrell Napton: Land cover change and native bumblebee status in the Black Hills of South Dakota between the years 1912-2012

Jean Eichhorst: A policy analysis of Nebraska surface water compacts and decrees

Material Geographies (Gathering Room 1)
Session Chair: Anesu Makina

James Baker: On the bottle: Situating the place-based discourse in global production networks - A visual and textual analysis of craft beer labels

Aditi Singh and Suresh Babu: Fuelwood dependents of urban forests: Odds favour the morning walkers

Anesu Makina: Informal waste picking in South Africa: A case from the Pretoria East suburbs

Brice B. Zoungrana: Biophysical and economic impacts of farmer managed natural regeneration system in Burkina Faso

Agricultural Management and Sustainability (Gathering Room 2)
Session Chair: Russel Graves

Rusty Butler and Susan Gilbertz: Sustainability among Yellowstone River agriculturalists: Challenges and opportunities

Reece B. Knapic: Biopolitical implications of agricultural conservation in Kansas

Audrey Joslin: The Conservation Reserve Program and wildfires: Rancher perceptions and shifting land management in southern Kansas

Russell Graves: Lamb jams, side rolls, and agricultural prospects in Sanpete County, Utah
GI Science and Mapping Techniques (Gathering Room 3)
Session Chair: Bruce V. Millett

Dapeng Li: A study on the GIS professional (GISP) certification program in the U.S.

Wenjun Yang, Ting Lei, and Zhen Lei: Conflation of historical administrative boundary data: an optimization-based approach

Chen Liang, Xingong Li, James Matthew Coll, and John Donart: Accuracy assessment of the HAND method for mapping potential inundation extent


1:30 – 2:50

AAG Geography Student Recruitment and Career Resources Workshop
(Gathering Room I)
Session Chairs: Emily Fekete and Coline Dony

Himalayan Geographies (Gathering Room 2)
Session Chair: Rupak Shrestha

Dorje Tashi: “Beautiful countryside”: green development and the making of urban villages in China’s Tibet

Phurwa D. Gurung: Political ecology of a mountain road

Carolisa Watson: Orientalist discourses in Western newspapers: Representations of Tibet from December 1933-March 1940

Rupak Shrestha: Tibetan refugee subjectivities and intimacy in the Nepal-China borderlands

Indigenous Politics (Gathering Room 3)
Session Chair: Stephen L. Egbert

Katie Grote: Cultural crossroads in the Wakarusa Wetlands: Perspectives of the South Lawrence Trafficway Environmental Impact Statements

Cheyanne Sun Eagle: Spatial and temporal patterns of land allotment on the Pawnee reservation

Stephen L. Egbert: "Competent, don't want patent:” The 1917 Cheyenne and Arapaho Competency Commission field notes
Water and Climate Change (Hancock Library)
Session Chair: Paul E. Todhunter

Jawata Afnan Saba and Darrell Napton: Sea level rise impacts on the city of Cape Coral, Southwest Florida from 2020 to 2050

David Weekley: Tracking multi-decadal lake and reservoir dynamics with Landsat and elevation datasets

Paul E. Todhunter, Taufique H. Mahmood, and Diane Van Hoy: “Damn the intermediate processes, full speed ahead!” Hydrological responses to climatic variability in a complex prairie environment

Political Geographies (All Seasons Den)
Session Chair: Robert Shepard

Barney Warf: U.S. corruption in geographic perspective

Adam Dowrenwend: The pendulum swings back: Thoughts on the upcoming Argentine presidential election

J. Clark Archer and Kenneth Martis: Geography, popular votes, and seats in the U.S. House of Representatives

Robert Shepard: Smokestacks, Silos and swing votes: Precinct-level analysis of Iowa voters in recent elections

3:10-5:00
Geobowl
(Kansas Union: English and Pine rooms, both on Level 6)

5:20-6:20
GPRM business meeting
(Hancock Ballroom)
POSTER SESSIONS

Hancock Ballroom 9:00-10:20 (Creators Present) and 10:40-12:00

Ricardo Eller Aranha: Making Cloudy Data Viable: The Case of the Amazon Savannas of Roraima State

Paul Burger: A GIScience Approach to Analyzing Spatial Patterns of Voter Turnout in Omaha, Nebraska

Carissa L. Dowden: Wisconsin’s Upsurgence of Dairy CAFOs: Foe of America’s Traditional Dairyland?

Ian Gambill, Sawyer McFadden, and Kamini Singha: Characterizing Hyporheic Extent Using Electrical Resistivity and Concentration Breakthrough Curves

Rene Ingersoll: Using GIScience and Marketing Geography to Define the Market Area and Segment In-Home Health Care Customers in Des Moines, Iowa

Audrey Joslin: The Conservation Reserve Program and Wildfires: Rancher Perceptions and Shifting Land Management in Southern Kansas

Rebecca Lima Albuquerque Maranhao: Water Storage Variation in the Lake Sobradinho (Northeast Brazil) from 2004 to 2014


Madeline Reiher: A Historical Diffusion of Lacrosse through Canada

Kevin Romig: Geographic Patterns of Barbecue Restaurants

Michael Stumpff: Downslope Transport of Detached Limestone Blocks
ABSTRACTS (PAPERS)

Allard, Savanah M. and Darrell Napton
Department of Geography and Geospatial Sciences, South Dakota State University

“Land Cover Change and Native Bumblebee Status in the Black Hills of South Dakota between the Years 1912-2012”

Bumblebees are charismatic organisms that have recently been subject to decline and extinction. Bumblebees are keystone species that provide both the economy and environment with significant services. Because of bumblebee importance and recent global declines, research is needed in the Black Hills of South Dakota to assess the current status of native bumblebees and to determine if anthropogenic land use changes are causing their demise. I will compare historic and recent bumblebee distributions to historic and recent landscape disturbances in the Black Hills to determine if anthropogenic land use changes in the area have caused native bumblebee population decline over the last 100 years. Because bumblebees are highly susceptible to disturbance, I expect to find a negative correlation between bumblebee distributions and anthropogenic land use change within the study area. As crucial keystone species that provide far reaching ecosystem services, bumblebee decline or extinction could disrupt people’s quality of life and could cause negative ecosystem impacts. Since the Black Hills are a popular vacation destination, evaluating the status of native bumblebees in the landscape offers the chance to show travelers visiting the Black Hills National Forest, current research regarding bumblebee population decline. This research on potential bumblebee decline could have the opportunity to educate travelers about the current status of the charismatic bumblebee and encourage them to develop a land ethic to help save the bumblebees.

Archer, J. Clark and Kenneth Martis
Geography Program, University of Nebraska – Lincoln, NB, and Department of Geology and Geography, West Virginia University

“Geography, Popular Votes, and Seats in the U.S. House of Representatives”

The recent enigmatic US Supreme Court decision in Rucho et. al. v. Common Cause et. al. (June 2019) and the approaching reapportionment and redistricting of the United States House of Representatives which will follow the 2020 U.S. Census of Population prompt an examination of theoretical and empirical relationships between popular votes and seats in the US House of Representatives. The presentation opens with an investigation of the geographical patterns exhibited by the contrasting US House elections of 2016 and 2018, using district level maps for the United States and constituency proportion distribution graphs for each of these elections. Historical background on malapportionment and gerrymandering is then reviewed. Particular attention is devoted to Democratic and Republican gerrymandering in the previous 2012 reapportionment and redistricting cycle. Theoretical seats-votes models are then presented graphically, including a statistical ‘best-fit’ Cube-Law estimated using national data for 1896 to 2018. A recently proposed “Zero Efficiency Gap” model is also examined, and then applied to the results of the 2016 and 2018 elections, as well as to the entire election series studied from 1896 to
2018. County-level maps of the results of 2018 referenda approving the establishment of nonpartisan or bipartisan redistricting commissions or reforms in Colorado, Michigan, Missouri and Utah are presented and discussed. Finally, a map is presented and discussed which shows the currently expected mechanism for 2022 US House redistricting in each state after the 2020 Census of Population.

**Baker, James E.**
Department of Geography, University of Nebraska – Lincoln

“On the Bottle: Situating the Place-based Discourse in Global Production Networks—A Visual and Textual Analysis of Craft Beer Labels”

Place occupies a critical dimension of Global Production Networks (GPNs), underscoring the social embeddedness of economic organization. Using grounded theory methodology, I locate a theory of Place-Based Discourses (PBDs) based on a dataset of beer labels collected, coded, memoed and analyzed between 2011–2019. I argue that the beer label presents a primary site for studying commodity chains, providing a ready space for producers to (re)brand national motifs, such as flags and tartans in the case of Scotch Ales, or depict local working landscapes connoting ecological, social, and economic connections to place. Drawing on conceptualizations of place within the Global Production Networks perspective, this paper contributes to debates about food and drink branding and globalization by generating new ways of examining the sites and processes of representation of place within cultural-material hybrids (such as beer labels) imbricated through globalizing processes. I focus on three attributes of Place-Based Discourses – historical imagination and local identity, thin place and thick networks, and performative globalizations – and I argue that this approach contributes to the geographies of globalization, linking cultural analysis of branding and place to the GPN tradition. Future studies can apply this knowledge to move towards an understanding of other place-based sites and processes within GPNs, with specific research attention directed towards how PBDs can “reveal and rebalance” power structures vis-à-vis the place dimensions of cultural and economic globalization.

**Bates, Janee, Zechariah Johnson, Alyssiana Gonzales, and Amanda Smith**
Haskell Indian Nations University

“Haskell Historical Map”

This map is an interaction map looking at the Haskell Indian Nations University campus. This map will compare an older map of the campus to a more recent map to examine the locations of old buildings that are no longer on campus. Also, to show the land plots surrounding Haskell that the University used to own. This project will illuminate what student life was like in the past while also showing how things have changed in modern times. This map will show the evolution of the campus from its beginning as a boarding school in 1884 to a four-year university educating students from hundreds of tribes covering the United States. The goal of this research is to give a voice to students of the past and emphasize the importance of Haskell’s presence in the greater
Lawrence community. Features of this map will include: geotagged historical photos showing student life, old buildings, athletic competitions, and other events held on campus.

**Bereitschaft, Bradley**  
Department of Geography/Geology, University of Nebraska – Omaha

“Gentrification and the evolution of commuting behavior within America’s urban cores, 2000-2015”

This study examines recent changes (2000 - ~2015) in the socio-economic/demographic make-up of U.S. urban cores (UCs), and potential associations with commuting behavior including mode and time. Based on a sample of 101 UCs and their encompassing urbanized areas (UAs), the data suggest that UCs have undergone substantial demographic change during the first fifteen years of the 21st century, with key attributes of gentrification on the rise. At the same time, commuting via transit has declined faster within UCs than within their encompassing UAs, while the proportion of workers working from home and cycling to work grew faster than any other mode. Using data from the U.S. Census Bureau’s decennial census and American Community Survey (ACS), a series of longitudinal regression models indicated several significant associations between common indicators of gentrification, including proportion of white/non-minority residents, home owners, young adults (18-39), household size, and proportion of college graduates, and changes in non-automotive commute modes (i.e. walking, cycling, transit). This may have implications for transportation infrastructure and policy as urban neighborhoods in the U.S. continue to undergo socio-economic/demographic change.

**Butler, Rusty and Susan Gilbertz**  
Montana State University – Billings

“Sustainability among Yellowstone River Agriculturalists: Challenges and Opportunities”

Based on three lengthy interviews with farmers near Sidney Montana, this paper uses a qualitative analysis of their inputs to map three distinct terrains of sustainability in operation among this group. One farmer has keen interests in economic sustainability issues, with few stated concerns regarding social or environmental concerns. A second farmer speaks of economic issues and explain the need for cooperative agreements so that droughts are managed at the community level. A third farmer is deeply involved in local problem solving for the farm community. His inputs demonstrated that he operates from a position that is comprehensive in terms of sustainability issues. As a group, these farmers demonstrate specific challenges and opportunities for this community to move towards a more sustainable future.
Candelaria, Josiah, Adler Aspaas, Garrett Williams, and Braden Souders
Haskell Indian Nations University

“Surviving LFK and Haskell”

Starting at a new university in a completely new state could be a little overwhelming, especially when one has not visited Kansas. After a group discussion among seasoned Haskell students and collaborative input, an Esri shortlist was created for the ease of understanding a new Lawrence environment. This Esri shortlist supplies general information about the HINU and services offered throughout campus and also pinpoints important services that are available to students throughout the town of Lawrence. Service’s pinpointed cover a broad range of available businesses ranging from car repair, grocery services to restaurant weekly specials. Both continuing and future students can interact with this Esri shortlist to get a better feel of their surroundings and their new temporary life in Lawrence, as they further their academic careers.

Chloupek, Brett R.
Department of Humanities and Social Sciences, Northwest Missouri State University

“A Call for the Symbolic Integration of Marginalized Ethnic Groups in Europe”

Extremist strains of nationalism are on the rise throughout Europe as evidenced by recent national and European Union elections. Often, these political platforms include anti-immigrant or anti-minority sentiments that threaten to fuel segregation and violence if not effectively countered. At the same time, strategies to improve majority-minority relations in many European countries remain elusive or the current situations seems intractable. Symbolic gestures often precede more concrete steps toward cooperation and mutual understanding. This paper calls for the symbolic integration of well-established yet marginalized ethnic groups in Europe as a political strategy to counter ultra-right wing political rhetoric through their inclusion and representation within the semiosphere in the form of commemorative street names. It suggests the Roma ethnic minority in Slovakia as a test case and potential blueprint for further symbolic integration policies throughout Europe.

Coll, James Matthew and Mike Johnson
University of Kansas and University of California Santa Barbara

“Temporal Evapotranspiration Aggregation Method: An Application for Calculating Evapotranspiration Metrics, Exploring the Modifiable Aerial Unit Problem, and Shortening the Time to Science”

Evapotranspiration metrics are often the foundation of parameterizing a variety of earth process systems, and accurate values are critical to the successful use of models. To define these metrics, users either find published values, measure them directly, or look to remote sensing platforms to calculate these for themselves. Before the creation of large-scale remote sensing platforms such as Google Earth Engine, this process was tedious, time consuming, and poorly reproducible. Tools
like the Google Earth Engine JavaScript API alleviate some of these problems but require a modest amount of programming skill to be able to efficiently harness its full potential. Alternatively, if a simple application is created, researchers who are interested more narrowly in parameterizing a region can acquire their metric of choice without having to invest the time into calculating it for themselves. To demonstrate this, a Google Earth Engine Web Application called the Temporal Evapotranspiration Aggregation Method (TEAM) was created where users can point and click over a map to query a desired metric over a specified aggregation unit, and optionally receive metric values for the area or by land cover class. Using this framework, we not only provide an application for parameterizing evapotranspiration values, but also drill into how these metrics are affected by the modifiable aerial unit problem and demonstrate how other remote sensing datasets may be extended into this same framework. See it in action at https://jamesmcoll.users.earthengine.app/view/team

Combs, Jason H.  
University of Nebraska Kearney  

“Nebraska’s Exaggeration Postcards: Giant Grasshoppers and Two-Ton Potatoes Along with Other Facts about the Plains”

In the first few decades of the early 1900s the United States was postcard crazy. Thousands of cards were exchanged daily. Many of the cards were simply a form of “self-congratulation,” often demonstrating signs of development and progress—churches, libraries, prominent residential districts, and schools, for instance. For others, postcards boastfully declared “I belong here,” “This is my place,” and “This is my kind of place.” This project examines Nebraska postcards, specifically not just postcards but exaggeration postcards. For Nebraska, exaggeration cards fall into two categories—the natural world (ducks, fish, grasshoppers, and rabbits) and the so-called developed or “cultured” world (carrots, corn, onions, pumpkins, and wheat). Postcards were not only used for communication and entertainment, but in the case of exaggeration cards they also promoted and “sold” Nebraska to a larger audience. This study begins by evaluating trade cards and the history of postcards, then transitions to focus on the importance of Nebraska exaggeration cards.

Cox, Thomas Edward  
Oklahoma State University  

“Advancing Geoarchaeological Techniques: Using SFM-MVS to Create 3D Images to Analyze Soils and Remains Associated with Oklahoma Mammoth Localities”

Structure from motion multi view stereo (SFM-MVS) has been used in a variety of analysis including: forestry, precision agriculture, vineyard vigor, terrain mapping, digital elevation and surface models (DEMs and DSMs), as well as stream morphology and bathymetry. SFM-MVS technique may be best utilized during archaeological excavations. All too often the excavation process results in the destruction of the soils that once protected and preserved the remains and artifacts in their original context. In a vast majority of cases the remains themselves are destroyed
during removal. Archaeologists often employ total stations, which are costly, as a means to capture measurements and location data of remains and artifacts. However, total stations cannot capture the full context of the object under analysis and how it relates to the entirety of its surroundings, including the soils and landscapes. SFM-MVS, which utilizes the use of an off the shelf consumer grade camera, is a more cost effective and efficient way to capture and analyze archaeological and paleontological localities. Therefore, SFM-MVS must become an integral part of the geoarchaeological tool kit and employed during all excavations. SFM-MVS has the ability to capture the entire context of an excavation, which can then be recreated in the virtual realm. This paper provides an example of how SFM-MVS was employed during the excavation process of Oklahoma mammoth localities in order to recreate 3D images of the remains and soils associated with them.

Dowrenwend, Adam
Department of Geography & Anthropology, Louisiana State University

“The Pendulum Swings Back: Thoughts on the Upcoming Argentine Presidential Election”

Latin American politics has long been described as a pendulum, in which electoral favor swings back and forth between ideologically right-wing and left-wing candidates. Under the current administration of Mauricio Macri, the first elected President in 99 years representing neither the Peronist nor the Radical Civil Union factions, neoliberal policies have been implemented in hopes of attracting foreign investment in an underperforming and fragile economy. Though gradually implemented, the negative consequences of these policies, designed in hopes of reintegrating Argentina into the global marketplace, have fallen largely on those who are already economically marginalized. With the Argentine presidential election taking place in just over two weeks, in which Macri is running for re-election as a massive underdog, this talk intends to act as a status report: examining both historical contexts and contemporary controversies acting as forces influencing the Argentine electorate.

Drake, Dawn M.
Department of History & Geography, Missouri Western State University

“Dining with the Mouse: The Spatial and Temporal Dimensions of EPCOT’s International Food and Wine Festival”

The EPCOT International Food and Wine Festival began in 1995 to celebrate the diversity of food cultures represented by the various countries in the World Showcase section of the park. Over time the festival has continued to expand and grow to include country kiosks well beyond the permanent country displays in the park. In 2019, the twelve week festival included food and beverages from nineteen different countries and regions on every continent, except Antarctica. Guests could sample appetizers, main courses, and desserts as well as sip on beverages ranging from wines and beers to coffee and kid-friendly slushies. Since 1995 the festival has continuously evolved and changed to include new events and themes as well as expanding the number of countries included in the festival. Through the use of blog posts and other online resources, the
geographic profile of the EPCOT International Food and Wine Festival can be mapped. This presentation intends to demonstrate the shift of the festival over time to include more kid-friendly options and more non-western food experiences. While the festival continues to rely heavily on the familiar, with more booths from North America and Europe than Asia and only one booth to cover all of Africa, there is a clear movement to reflect a more global community for all guests to the festival and to EPCOT as a whole, during the festival time period.

Egbert, Stephen L.
Department of Geography and Atmospheric Science, University of Kansas

“‘Competent, Don’t Want Patent’ – The 1917 Cheyenne and Arapaho Competency Commission Field Notes”

The Dawes Act of 1887 divided Indian reservations into individual land allotments in the hope that allotment holders would become sedentary farmers; a 25-year trust period was imposed during which land could neither be leased nor sold. However, the Burke Act of 1906 permitted “competent” allottees to obtain fee patents, i.e., outright ownership. Although the granting of fee patents via competency was initially limited, the Office of Indian Affairs under the Wilson administration became much more aggressive in advocating for the granting of fee patents. To that end, three-man competency commissions were created to interview all allotment holders on every reservation and pass judgment on their competency. Those judged competent were to be recommended for fee patents. The Cheyenne and Arapaho reservation in Indian Territory (Oklahoma) was allotted in 1892 and visited by a competency commission in early 1917. Their field notes are located in the National Archives in Washington, DC, and they provide rich insights into the motivations, thinking, and results of the commission. In total the commissioners conferred with 1181 allotment holders (with 30 not seen). They judged that 177 were competent, of whom 74 signed applications for fee patents, but 103 (nearly 60% of those considered competent) refused. This latter number was clearly frustrating to the commissioners who frequently noted of a person they had interviewed: “Competent – Don’t want patent.” The likely reasons for the refusal of fee patents, along with the apparent criteria used by the commissioners for determining competency, will be discussed.

Eichhorst, Jean
Department of Geography and Anthropology, University of Wisconsin – Eau Claire

“A Policy Analysis of Nebraska Surface Water Compacts and Decrees”

Transboundary rivers wander the Great Plains, requiring states to cooperatively address surface water allocations in order to avoid costly legal litigation and provide beneficial water to its citizens. Using a classical policy analysis tool, I assess Nebraska’s five compacts and decrees along with associated special master reports. A majority of the Great Plains lies west of the 100th meridian, often used as a proxy for the 20” isohyet, designating a need for supplemental water i.e. agricultural irrigation. Although Nebraska is primarily a groundwater state largely relying on the High Plains Aquifer, surface water is hydrologically connected to subsurface and groundwater flows. Further,
groundwater may be considered a non-renewable resource, since irrigation pumping along with return rates from precipitation and other sources may not adequately replace extracted water in a timely manner. Thus, precipitation driven surface water may be considered the only reliable water source. Preliminary results show that the documents have become more explicit and inclusive over time for areas such as policy directives and implementation processes, but gains remain elusive for financial components and outside access. Nebraska’s federal surface water agreements offer insights into our technological, scientific, and social understandings of socio-hydrological interactions. Those insights carry important policy implications for the coming decades, as water demands grow due a changing climate.

Graves, Russell  
Department of Social Science, Snow College  
“Lamb Jams, Side Rolls, and Agricultural Prospects in Sanpete County, Utah”

Farmland continues to make up roughly 20 percent of the land area of Utah, despite advancing suburban sprawl across the Wasatch Front of the Ogden-Salt Lake City-Provo conurbation. Areas of far northern Utah (Box Elder and Cache counties) and central Utah (especially Utah and Sanpete counties) still contain significant rural zones of scattered fields, pastures, and small farming-based communities, having seen little change in economic focus since LDS and European settlers first arrived to these parts of the Utah Territory in the 1850s. Today, though, the pressure to remain economically viable in agriculture challenges many Utah farm and ranch owners, as the overall legislative focus has shifted towards plans for attracting new urban job growth to complement the state’s booming population. In Sanpete County (home to Snow College), farmers depend upon a usually steady supply of snowmelt-recharged groundwater along the base of the Wasatch Plateau as well as occasionally adequate rainfall to support irrigated alfalfa hay production, which in turn has helped support local sheep, turkey, and cattle production operations. Stagnant market prices, higher operating costs, and more-frequent droughts, though, have threatened the future sustainability of farms and ranches for many Sanpete agriculturalists, and subsequently, the economic vitality of local communities. This presentation will discuss the ways that land owners in Sanpete County have dealt with recent environmental, political, and economic challenges to maintain agricultural solvency.

Grote, Katie  
Department of Geography and Atmospheric Science, University of Kansas  
“Cultural Crossroads in the Wakarusa Wetlands: Perspectives of the South Lawrence Trafficway Environmental Impact Statements”

Cross-cultural dialogue in environmental regulations provides substantial opportunities to engage new ways of thought and new solutions to difficult problems. Indigenous perspectives are often assumed to be less scientific and, therefore, less valuable than Western perspectives. Therefore, they are often disregarded in Western-established systems. However, Indigenous-led activist movements occasionally pose challenges to these assumptions. One example can be seen in
northeastern Kansas during the decades-long protest to stop the construction of the South Lawrence Trafficway (SLT) through the Wakarusa Wetlands. The Wakarusa Wetlands have cultural, historical, and spiritual significance to several Indigenous groups, including Haskell Indian Nations University. The attempts to construct the SLT received substantial opposition from Indigenous and non-Indigenous people resulting in several versions of Environmental Impact Statements (EIS). The purpose of this paper is to review the EIS documents and process to assess whether or not the impacts to the Wakarusa Wetlands and Haskell were adequately considered in the record of decision to construct the SLT. Adequate consideration includes the ecological and cultural aspects of the wetlands and its relation to Indigenous populations. This paper will address this question through both Western and Indigenous perspectives. This paper is a preliminary case study for a larger and more systematic issue. Indigenous perspectives, knowledge systems, and ways of life are not adequately considered in environmental regulation. Future research, workshops, and cross-cultural exchanges may provide more insight on potential systematic changes that exalt inclusivity and bridge the divide between Western and Indigenous perspectives.

Gurung, Phurwa D.
Department of Geography, University of Colorado Boulder

“Political ecology of a mountain road”

Nepal’s Karnali region is synonymous with food insecurity and remoteness in the national and international development narratives. Such narratives often express food insecurity as a direct outcome of geographical remoteness associated with lack of motorable roads. Construction of mountain roads—which has taken the center stage of development and political agendas in Karnali—has been increasingly presented as the solution to food insecurity in Karnali. Put simply, road construction would ultimately lead to food security. I challenge this simplistic and celebratory narrative using the concept of infrastructural orthodoxies. Drawing from critical development studies and political ecology, and building on five weeks of ethnographic research, I argue that rather than resolving food insecurity, roads can potentially increase vulnerability. This is not to suggest however that road building projects are inherently negative. Rather as uneven projects of accumulation, they entrench political and economic hierarchies at multiple scales. Specifically, I identify three ways through which such configurations take place in Humla: 1) road as an organizing factor in electoral politics and local governance 2) road building activity as a market in and of itself, and 3) road as a vector of new economic and labor geographies.

Hagen, Joshua
College of Arts and Sciences, Northern State University

“The City as a Work of Art: The Composition of Public Space, Iconography, and Identity”

In The City as a Work of Art, historian Donald Olsen posited “that the city, as the largest and most characteristic art form of the nineteenth century, has something to tell us about the inner nature of that century.” Olsen focused on the bourgeois urbanism of fin de siècle Europe, but this presentation tackles his observation as a starting point for thinking through the spate of recent
displacements and replacements of public monuments, statuary, place names, and other markers of identity, memory, and belonging. Building on Olsen’s analogy of the city as a work of art, we can further conceptualize the city as a type of composition. The idea of “the city as composition” weaves together fundamental concerns across the arts, literature, and geography, including attention to location, form, proximity, flow, and diffusion. The city as composition also frames public spaces as palimpsests and pentimenti; objects subject to continual revision, reorganization, and reinterpretation. Monuments, memorials, and place names are among the most prominent commemorative markers scattered across the urban landscape, but on a more banal level, architecture and urban design also texture the spatiality of identity, memory, and belonging. Cumulatively, these places of memory and memories of places condition public discourses and counterdiscourses and in the process contour geographies of inclusion and exclusion. This presentation sketches out a conceptual framework for thinking through contemporary agitation regarding the (re)composition of public space and iconography.

**Harner, John**
Department of Geography and Environmental Studies, University of Colorado – Colorado Springs

“Creating Colorado Springs”

Shaping Colorado Springs is an exploration into the personality of this city. This book project is a historical geography that analyzes the major movements that shaped the built environment and created a sense of place. I identify eight themes that have fundamentally shaped the city: development of its water infrastructure; the concentration of tuberculosis sanatoriums; locally-based railroads; gold mining and processing from Cripple Creek; spa resorts and the growth of both the recreation and sports economies; the military industrial complex; a libertarian political culture; and politically-active evangelical Christians. These eight big themes drove development of the city during different eras, shaped the built environment, and created a place identity that today defines Colorado Springs. Throughout all of the historical eras, however, Pikes Peak has been the consistent icon for image-making promotion and the city’s relationship to the mountain is the fundamental source of its very identity.

**Henry, John Paul**
Department of Geography and Atmospheric Science, University of Kansas

“Picturing Slow Violence: Eliciting Experiences in Rural, Toxic Places”

Human geography has embraced both empirical and critical visual methods as valuable forms of illuminating place-based experiences. In relation to the experience of toxic places, geographers have begun theorizing Rob Nixon’s slow violence, in which toxic experiences are compounded over decades of living in place, causing health effects and a gradual degradation of life. Thom Davies builds on slow violence by relying on the slow observations of residents as a lens into the everyday life in toxic places and as a temporal lens of place-based environmental change. This paper bridges the gap between slow violence and critical visual methodologies to show that photo-based methods are suited to illuminate nuanced and hidden experiences, thereby making slow
violence visible. My research draws on a combination of open-ended interviews and a mix of photo-based methodologies in which the co-creation of the image adds to the understanding of the hidden nature of industrial toxicity and suffering. I first discuss recent contributions to slow violence. I then analyze visual and critical visual methodologies and their contributions to human geography. Finally, I discuss my case study in which I theorize how the experience of slow violence alters place meaning and show how a comprehensive approach to photo-methodologies allows for flexibility in rural settings, allowing the co-creation of knowledge of hidden toxic places.

Holcomb, Jason, and Stanley D. Brunn
Department of Agricultural Sciences, Morehead State University and Department of Geography, University of Kentucky

“Visualizing Abandonment in Rural America: From Disappearance to Renaissance”

Scholars, regional authors, and members of the media have demonstrated an interest in abandoned places in the rural areas of multiple regions in the United States. Such abandonment is typically portrayed as a sign of depopulation, economic decline, and decay. Indeed, abandoned buildings have become icons of communities in distress. Photographs of abandoned schools, churches, houses, and grocery stores and other main street businesses are symbols of this distress in rural areas with a history of net out-migration, but our research shows a more complex picture. While the number of distressed rural counties increased after the Great Recession, an investigation of buildings along a northwest Iowa transect indicates a continuum of circumstances ranging from vanished settlements to communities in some stage of renaissance. By interviewing residents in northwestern Iowa communities and photographing buildings in towns and along the roadside, we developed a typology of abandonment with five different stages and then placed individual buildings and communities in this framework. We believe this provides a more accurate portrayal of conditions in rural America. Northwest Iowa is the current focus of this project, but we intend to build on it by examining communities in central Appalachia, Maine, and southeastern Illinois.

Husa, Andrew
Geography, University of Nebraska – Lincoln

“The Nebraska Roots Migration Survey: Initial Findings”

The purpose of the Nebraska Roots Migration Survey research is to better understand the factors that influence Nebraskans to stay, leave, or move back to Nebraska. Survey respondents were asked to select all of the factors that influenced them to remain in, leave, or return to Nebraska from a list of potential factors. In addition to selecting factors from a list of possibilities, the survey asked respondents to explain in their own words why they decided to stay, leave, or return. This paper discusses the questions asked by the survey and the implications of the subsequent answers. Distributed from February 4th to March 2nd, 2019, the Nebraska Roots Migration Survey yielded 1,827 responses, including at least one response from each of Nebraska’s ninety-three counties. The survey captured responses from people ranging in age from 19 to 92. To take the survey, a
respondent had to be over the age of 19 and had to have been a resident of Nebraska when they attended high school. This includes residents who lived in Nebraska but attended schools in neighboring states.

Johnson Maier, Kimblery K.
South Dakota State University, Oklahoma State University

“Touch, Feel, and Climb”: Creating an Embodied Tourist Experience at the Ingalls Homestead”

The first rule of the Ingalls Homestead is “Children should touch, feel, and climb.” The Ingalls Homestead, located in DeSmet, SD, is one of the many tourist sites dedicated to Laura Ingalls Wilder and her book series, Little House on the Prairie. Tourism is created through practices and performances where the tourist body is at the center (Crouch 2002). Tourism, when coupled with haptic experiences, helps tourists create meaning, connect to sociocultural knowledge, and influence interpretations of reality, both past and present (Rodaway 1994, Paterson 2009). Unlike other Wilder tourist sites that work to preserve artifacts, the Homestead encourages visitors to touch any artifact they come across. This provides a unique tourist experience where boundaries are removed allowing visitors to better connect to their imagined past. Additionally, in order to enhance their experience, hands-on activities are provided. In part, some of the hands-on activities were chosen because they are featured in the books series. Moreover, I address the various ways the physical landscape presented at the Ingalls Homestead as well as the various landscapes visitors have imagined while reading the Little House series build on that positive experience. The data for this paper includes 290 tourist surveys collected in 2017, interviews with visitors and workers, and participate observations. In this paper, I explore the ways in which sight and touch help create a positive authentic experiences for tourists. These experiences often work to validate and anchor the various activities, descriptions, and interpretations of the past within the Little House series.

Kelly, Meghan
Department of Geography, University of Wisconsin – Madison

“Mapping Bodies, Designing Feminist Icons”

Bodies are nuanced, fluid, and political often combining forms of intersecting identities. Bodies, however, are frequently reduced to points, lines, and polygons on a map, are used to depict other things, or are missing from the map altogether. I draw on feminist perspectives in mapping and design to explore the depiction of bodies in map symbolization, particularly map icons. I apply a feminist semiotic approach to Maki icons to problematize the ways in which bodies are depicted, abstracted, or erased. More specifically, I analyze their symbolization, including: the presence/absence of bodily forms, the presence/absence of an embodied object, and their iconicity. My feminist analysis reveals the underlying conventions, codes, and ideologies in Maki icons that depict bodies and offers design opportunities. I argue that cartographers and designers need to rethink the depictions of bodies in icons and the role of “universal” icon sets, more broadly, through a feminist lens.
Knapic, Reece B.
Department of Geography and Atmospheric Science, University of Kansas

“Biopolitical Implications of Agricultural Conservation in Kansas”

Agricultural conservation efforts in Kansas have been diversifying in response to climate change, threats of the Ogallala Aquifer drying up, soil health, and financial incentives. These conservation efforts are often promoted as ways to make agricultural processes more sustainable. Although there is an element of irony in pinning agriculture and conservation together, since agriculture intentionally changes ecosystems, these efforts aim to reduce the harms of agriculture on the environment. This paper considers some agricultural conservation efforts through the lens of biopolitics. Biopolitics, as described by Foucault, is the intersection of biology and politics where there is a focus on the sustainability of certain kinds of life and order. In the context of conservation, biopolitics most commonly takes the form of categorization, management and “letting die.” These agricultural conservation efforts considered in this paper have biopolitical implications when it comes to deciding which methods are worth pursuing and which methods would have too many negative consequences. Specifically, this paper considers how the framework of biopolitics allows a clearer understanding of power dynamics that underlie agriculture and agricultural conservation in Kansas.

Lawhon, Mary
Department of Geography and Environmental Sustainability, University of Oklahoma

“Red State, Green Politics: Reflections and Resources for Teaching Critical Sustainability”

Many environmental texts for students are set up to either convince the reader of the importance of sustainability through science-facts or teach them how to ‘do’ sustainability. Critical environmental texts typically assume a particular lens and critique various ‘isms’. In my experiences teaching as a political ecologist (first internationally, more recently in politically red areas), I have found the former insufficient and the latter overly dogmatic. My students- many with conservative backgrounds, future workers in the oil industry, trained to respect authority, memorize and repeat- are not the imagined audience and often report feeling ‘preached at’ by critical texts. In response to this, I have sought to think about what it means to teach in a situated way, to meet students where they are and work towards critical analysis of the core concepts that underpin various environmentalisms. I have developed an Open Educational Resource that introduces problem-frames and seeks to work through read-world examples of these frames (e.g. modernity is the problem/modernity is the solution; private/public/common property as the problem or solution; markets are the problem/markets are the solution). We work at identifying what might make each solution work and why it might fail. I seek to help students find a shade of green that logically holds and resonates with their values, as well as to more deeply understand the various forms of ‘green’ they encounter in the world.
Le Roux, Lena

“Place-claiming and place-making in southern cities: spatial tensions between modernity and plurality”

The southern urban critique has worked to dismantle the hegemony of northern-centered, totalizing urban theory. While southern urban scholars have shown empirical differences in non-EuroAmerican cities, there remains a need to critically review and disambiguate urban concepts. My dissertation investigates ‘place’ and seeks to better understand what we might use, and what might need to be provincialized, within place theory. Specifically, I seek to think through how and why place is claimed and made and the ways in which this differs in cities of the global South. Feminist and postcolonial theorists call attention to the contentious politics and power dynamics between differentiated people and places existing along multiple axis of simultaneously occurring moments and interactions in space. However, there has been little analysis on how ‘place’ might be altered conceptually in locations with urban systems that agonistically negotiate modernity and plurality. With only few pockets of wealth as centers for capital circulation, South African cities are profoundly unequal, making them constrained and difficult to dwell in. My study will be undertaken in two historically white suburbs, presently with a strong local commercial economy, adjacent a transport development corridor that connects low-income black urban dwellers to economic nodes. I will use observation (time-lapse video footage), ethnography (mobile interviews and smartphone diaries), and conceptual analysis workshops to develop methodologies for unlearning, co-production and situated research. I will study how and why civil society, urban planners and other decision-makers claim and make ‘place’ as they maneuver spatial tensions of inequality, struggle and uneasiness.

Li, Dapeng
Department of Geography and Geospatial Sciences, South Dakota State University

“A Study on the GIS Professional (GISP) Certification Program in the U.S.”

The GIS Professional (GISP) certification program has enjoyed great popularity in the past few years. However, little research has been done to study the characteristics of the certified GISPs. This paper will first give a brief introduction to the GISP certification program. Then we proceed to examine the spatial distribution, temporal distribution, country, gender, and job title of the certified GISPs. The GISP registry data from the GIS Certification Institute and other ancillary data such as the county/state data from U.S. Census TIGER are used to perform the analysis. The tabular GISP registry data are aggregated by zip code and state, respectively. Then the zip code level data are spatially joined to the county dataset to derive the number of GISPs for each county. We performed Global Moran’s I analysis at the zip code zone and county level. Then we used local Moran’s I to detect the hotspots of the GISPs and identify the primary metropolitan areas where the hotspots are located. The preliminary results reveal that most of the certified GISPs are clustered in the major metropolitan areas in the U.S. A few states such as California, Florida, Texas, and Virginia has the largest numbers of GISPs. This line of research will help GIS researchers and practitioners develop a better understanding of the current status of the GISP
program and shed light on how to further improve this program to advance the development of this field.

**Liang, Chen, Xingong Li, and Zhen Lei**  
Department of Geography and Atmospheric Science, University of Kansas

“Accuracy Assessment of the HAND Method for Mapping Potential Inundation Extent”

As the most devastating natural disasters, floods have killed an average of 87 people annually over the last 30 years (1989-2018) according to NOAA. Although it is impossible to totally prevent them, their negative impacts can be reduced. High risk flood zones can be identified by mapping potential inundation extents, which are crucial for flood risk management and necessary for flood forecasting, mitigation and planning to numerous of stakeholders. Height above the Nearest Drainage (HAND) method, a simplistic flood inundation mapping tool, can rapidly identify inundation extent to inform the public in flood risk assessment and forecast. However, the accuracy of HAND method in flood hazard mapping has rarely been evaluated in the existing literature. This research assesses the performance of the HAND method by comparing flood inundation maps generated by HAND and Landsat satellite observations (ground truth) of past flood events. Our findings suggest that HAND inundation extent overestimates flood extent. The accuracy of HAND method has been decreased when it applied in urban areas with its complicated built and natural environment. Generally speaking, the HAND method can be mainly used to detect inundation areas over a large spatial domain, especially in time–limited emergency response scenarios, but should not be treated as very accurate in any situation.

**Makina, Anesu**  
Department of Geography and Environmental Sustainability, University of Oklahoma

“Informal waste picking in South Africa: A case from the Pretoria East suburbs”

Informal waste pickers are conspicuous in many global South cities. Several theoretical frameworks have been used to attempt to understand this profession, yet gaps remain. By using an emergent framework known as agonistically transgressive appropriations, I expose less studied aspects of waste picking. Specifically, I reveal the reasons waste pickers engage in this profession. This is important because literature portrays their work as an occupation of last resort, yet my data suggests other reasons, such as autonomy or better pay in comparison to other formal and informal occupations. Equally overlooked in studies is the competition for discarded items by people other than waste pickers. As a result, waste pickers have to employ various logics in order to justify claims to specific waste sources but then, conflicts arise. Since claimants lack the legal right to the waste, they do not approach the State for intervention. Instead, conflict resolution is achieved through other means such as violence, or involuntary cooperation.
Millett, Bruce V.
Department of Geography and Geospatial Sciences, South Dakota State University


Analysis, mapping, and visualization are a triad of capabilities within Geographic Information Systems (GIS) technologies useful for identifying spatial patterns in health and exploring potential explanatory factors (ESRI). The research utilizes GIS tools to identify and map statistical trends of incidences of cancer at varying geographic locations in South Dakota. The basic data are the latitude and longitude references encoded in the South Dakota Department of Health Cancer Registry for 2007-2017. This research explores these data with new statistical analyst tools available in ArcGIS Pro. Space-time pattern mining are statistical approaches for analyzing data distributions and patterns in the context of both space and time. Hotspot techniques identify statistically significant spatial clusters of high incidences (hot spots of disease) and low incidences (cold spots of disease). Trend mapping looks at temporal nature of health data. Is the disease spreading or remaining geographically fixed? Is the magnitude of disease increasing or declining? Space-time pattern analysis gives a unique prospective to cancer incidence data in South Dakota. Knowing when and where cancer occurred in the state can be used in conjunction with other spatial-temporal data on known factors increasing the risk of cancer that include poor diet, lack of physical activity, and obesity among others. Results are displayed on a series of map products.

Mohr, Alex R.
Department of Geography and Geology, University of Nebraska at Omaha

“Using Remote Sensing to Detect Changes in Vegetated and Riparian Buffer in an Agricultural Area of Nebraska - Final Results”

Tracking the amount of buffer vegetation lost due to agriculture is important for conservation efforts and protection of farmland. Buffer vegetation provides windbreaks, reduces topsoil erosion, creates wildlife corridors, and filters pollutants from runoff. When this non-crop vegetation is fragmented by expanding fields it creates gaps between patches that reduce cover, habitat and connectivity. This study used remote sensing to assess whether there had been a loss of buffer vegetation and whether landscape fragmentation and other measures of landscape pattern had changed in an agricultural landscape of south-central Nebraska. Landsat satellite images were collected and analyzed to determine the size and location of both forested and non-crop herbaceous patches between 1976 and 2016, and landscape pattern metrics were calculated using Fragstats v3.4 software for the years 1987-2016. Results show there was a decline in buffer vegetation after 1976, creating changes in pattern such as shape, patch size, and fragmentation, mainly due to farming practices. However, the results also show no significant increase or decrease in vegetation amounts after the initial breakup of the landscape. During the research process it was noted there are conservation programs available to increase the buffer vegetation and that there was originally interest, but then program use declined. This could prove important as maintaining the current situation may prove unfavorable as the climate shifts.
“Leaf-Level Spectroscopy for Analysis of Invasive Pest Impact on Trees in a Stressed Environment”

The visible symptoms of Emerald Ash Borer (EAB) infestation do not usually appear until six years after the borer’s arrival, by which time the prognosis is so grim that many communities have resorted to either heavy chemical use that only slows mortality, or clear-cutting the entire ash tree population. In Kansas, many of these plants are already stressed from heat, irregular soil moisture, and endemic fungi. Our project utilizes leaf-level spectroscopy for early detection of invasive pest-related stress, and focuses on the Emerald Ash Borer as it reaches the edges of the geographic range for green and white ash trees (Fraxinus Pennsylvanica and Fraxinus Americana) in North America. Over the course of two full growing seasons, we have sampled trees in two study areas with EAB infestation in Johnson county Kansas, and one area in Riley county Kansas without infestation. Our method utilizes field spectrometer readings for reflectance, along with lab spectrophotometry for estimation of leaf chlorophyll and carotenoid content (using Dimethyl Sulfoxide as a solvent) at several points during the growing season. By tracking response patterns at multiple points in leaf development, we have been able to identify spectral changes that are indicative of specific stressors. This work has the potential to make stress diagnosis more effective, thereby improving response, and decreasing both chemical application and plant loss.

“Adaptation to Coastal Environmental Change in Louisiana: An Analysis of Local and State Environmental Governance Relationships”

Between 1932-2000 coastal Louisiana lost approximately 1,900 square miles of land. Up to an additional 1,750 square miles of land is expected to disappear over the next fifty years. Coastal environmental change is estimated to cost the State of Louisiana $37 billion by 2050, as local communities and industry are affected. With potentially large losses, adaptation to coastal environmental change has become a challenge to state and local governments in Louisiana. This study examines the alignment of adaptation strategies employed by the State of Louisiana, and Lafourche, Terrebonne, and Plaquemines Parishes. In a case study analysis, I utilized key actor interviews, textual analysis, and participant observation. After developing four categories of possible adaptation strategies, I analyzed the alignment of environmental policies employed by the state and local governments. Preliminary results indicate that each parish and the State of Louisiana are aligned in the chosen and implemented environmental change adaptation strategies. While physical infrastructure changes and relocation are dominant strategies employed at both the parish and state scale, there is a difference in portrayal between parishes and the state in the way relocation is stated as relocation in documents. Adaptation strategies are primarily focused on physical responses to coastal change and do not address social changes that are necessary to adapt to a new environment. As a result, current adaptation strategies overlook the changes and loss that
communities face in their sense of place and culture due to declining industries and loss of their land.

Nelson, Katherine and Michael Molloy
Department of Geography, Kansas State University

“The Sociodemographic Landscape of Three Decades of FEMA Buyouts”

Voluntary home buyout programs have gained increasing popularity as a natural hazard mitigation tool over the past couple decades. One of the primary mechanisms for conducting buyouts is via the Federal Emergency Management Agency’s (FEMA) Hazard Mitigation Grant Program (HMGP). With its focus on buying out the most severely, and often repeatedly, damaged structures the FEMA HMGP funded buyouts provide a picture of where many of the most severe natural disasters have intersected with at-risk populations in the U.S. since the 1980s. Given that a benefit-cost analysis is a required part of the FEMA HMGP buyout funds application package it is a given that buyouts are economically beneficial in the long-term. However, the strong focus on the monetary value of disaster mitigation leaves open the possibility of inequity in the distribution of the benefits offered by the program. Using a complete dataset of FEMA funded buyout properties and U.S. Census data we describe the sociodemographic landscape of neighborhoods and communities that have participated in the buyout program since its inception with the goal of identifying potential inequality in who has been at risk and who has benefitted from hazard mitigation funding. Preliminary results suggest that minority populations, while overall less likely to be located in neighborhoods that have received buyouts, are often clustered in high-risk buyout neighborhoods. In addition, we find that communities who successfully receive buyouts are increasingly more urbanized and tend to have above average income levels.

Onuoha, Hilda and J.M. Shawn Hutchinson
Department of Geography, Kansas State University

“Long-Term Grassland Trends across the Great Plains Ecoregion using BFAST and Moderate Resolution Satellite Imagery”

Grasslands covers approximately half of the terrestrial earth surface and provides a plethora of environmental benefits and ecosystem services. They have become one of the most changed biomes in the world and therefore; proper monitoring and management of grasslands cannot be overemphasized. A time-series analysis of Moderate Resolution Imaging Spectrometer (MODIS) 16-day maximum value composite normalized difference vegetation index (NDVI) and Enhanced Vegetation (EVI) data (MOD13Q1 Collection 5) was performed to assess long-term trends in vegetation greenness across the Great Plains ecoregion of the United States. The Breaks for Additive Season and Trend (BFAST) decomposition method was applied to a time series of images from 2001-2017 to derive spatially-explicit estimates of gradual interannual change. Results show more ‘greening’ trend than ‘browning’ and ‘no change’ trends in the study area during the study period. This study is a prerequisite step for future analyses seeking to quantify the influence of
climate and soils, along with key regional anthropogenic factors such as fire, on shaping long-term vegetation dynamics.

**Pankl, Lis**  
University of Utah

“Geographies of Disability in the Work and Life of Frida Kahlo”

Frida Kahlo (1907-1954) was a Mexican painter whose legacy and impact continues to grow all over the world. Kahlo is studied from a multitude of vantage points and Kahlo’s relationship with her disabled reality is most often part of the analysis in any given piece. However, it is my contention that the treatment of Kahlo’s disabilities within both scholarly and popular literature/film is lacking a critical perspective and many times only serves to reinforce dominant and destructive ideas about disability. This is unfortunate because Kahlo’s life and work are powerful examples of the complexity and nuances of disability. In fact, I assert that they disrupt ableist geographies through their engagement with other facets of Kahlo. In my 2015 dissertation, *The Critical Geographies of Frida Kahlo*, I explore how the geographies of hybridity, embodiment, and glocalization are manifested in Kahlo’s work and life. In the creation of my dissertation, I intentionally avoided the element of disability. I took this approach because I found the treatment of Kahlo’s disabilities within the literature to be distasteful. Even though existing research on Kahlo’s disabilities was less than satisfactory, I now realize that this was an unforgivable omission in my doctoral work. In fact, I now see how Kahlo’s engagement with her disabilities intersects closely with the three elements of hybridity, embodiment, and glocalization in my original work. Thus, it is my intent in this presentation to, in effect, create an additional chapter of my dissertation—a chapter that should have been there all along.

**Purcell, Darren, and Cayton Moore**  
Department of Geography and Environmental Sustainability, University of Oklahoma

“Selling Southern Places: An Examination of Delta's Sky Magazine City Profiles”

Delta’s Sky magazine claims to be an influential outlet for entities trying to promote places to investors and tourists. Claiming nearly 6 million readers monthly, the magazine’s profiles of cities, states and regions have the potential to reach the niche audiences that shape the spatial practices of firms and influence individual decisions on tourism expenditures. This paper explores how Sky promotes places in the text of these profiles through the dual use of digital humanities tools and close reading-based interpretation to address the following questions. First, we ask how is the South represented in the Sky profiles? Second, what themes are present in the profile texts, given that all places seek to address both unique elements while addressing common themes of importance to business? We find that place promotion practitioners use very similar themes that have been identified in the literature since the 1980s, primarily accessibility. Efforts to attract the creative class are also present in the Sky profiles. The South poses unique challenges to place marketers, and our findings show a convergence in how profiles tackle the concept of southern culture and identity as it is leveraged in many of the profiles.
Saba, Jawata Afnan and Darrell Napton  
Department of Geography & Geospatial Sciences, South Dakota State University

“Sea Level Rise Impacts on the City of Cape Coral, Southwest Florida from 2020 to 2050”

Sea level rise, a consequence of global climate change, has started threatening U.S. coastal areas. Florida will be affected more than most coastal states, because it has coastlines on both the Atlantic Ocean and the Gulf of Mexico. The City of Cape Coral, Florida, is known as ‘waterfront wonderland’ with over 400 miles of artificial canals. Most of the canals are navigable and some have access to the Gulf of Mexico. More than 180,000 residents of the city will be vulnerable to sea level rise because of its canals as well as its peninsula location between the Gulf of Mexico and the Caloosahatchee River. I will investigate the impacts of various levels of postulated sea level rise on the City of Cape Coral from 2020 to 2050. First, I will develop a coastal vulnerability index for the city from 2010 to 2019 using Principal Component Analysis. Then, I will construct a projected vulnerability index. One important hypothesis of the study is that people characterized by higher incomes and property values will be more sensitive to sea level rise. The study will have several implications. First, given the hypothesis, the projected vulnerability index might reduce the property value of real estate in the city. Second, the study might serve as a guideline for policymakers and developers, because, the vulnerability index will prioritize among protection, preservation, and development of an area. Finally, the study will identify the people who require immediate attention during or after a natural extreme event.

Shepard, Robert  
Geography Program, Department of Anthropology, University of Nebraska

“Smokestacks, Silos and Swing Votes: Precinct-Level Analysis of Iowa Voters in Recent Elections”

After consecutive elections with no change to Iowa’s U.S. House delegation, voters replaced two of the state’s three incumbent Republican representatives with their Democratic challengers in 2018, while only narrowly retaining the third incumbent. This paper presents a highly granular geographical analysis of voting swings across the state of Iowa through recent U.S. House elections, drawing directly from precinct-level voting returns. In order to explore the relationship between vote share changes and local socioeconomic data collected by the American Community Survey, this work aggregates some voting precincts to align with slightly larger, census-defined place and subcounty unit areas. While voting shifts across some educated and wealthier suburban precincts mirrored national trends in 2018, this research also found some significant relationships between local vote share changes and the presence of various occupations, for example declining Republican support across manufacturing-heavy areas.
Shrestha, Rupak
Department of Geography, University of Colorado Boulder

“Tibetan Refugee Subjectivities and Intimacy in the Nepal-China Borderlands”

This paper will explore interactions among extra-territorial sovereignties, state-making practices, and politics of indigeneity in the Nepal Himalayas. I analyze how Chinese extra-territorial sovereignty produces new political affects, and how social and political transformations at the Nepal-China borderlands condition the ways in which Tibetan refugees attach meaning to and claim geographic places. Drawing on feminist methodologies, I examine how everyday interactions and events reveal the messiness of macro-scale Nepal-China geopolitics. Through intimacy, Tibetan refugees in the region strategically place themselves in engagements with Walung indigeneity to negotiate their political being within Nepali state-making practices. In doing so, the Tibetans in the region challenge the discourse of refusal that is increasingly used to theorize broader Tibetan refugee political lives. Interactions among Tibetan refugees and Walung peoples are juxtaposed and conditioned by affect - at times through emotions of sympathy and at others through suspicion. Chinese government has repeatedly coerced Nepali state in surveilling Tibetan political activities and restricting Dalai Lama birthday celebrations within Nepal - more so since 2008. Yet, Tibetan refugees in Phale collaborated with Walungngas from Ghunsa (a village an hour walk from Phale) through affective place-based politics. I argue that dissensus when met with intimacy produces political possibilities in the Nepali Himalayas. Yet, sovereignties have affective futurities. In the backdrop of increasing Chinese presence, everyday life is met with politics of eavesdropping, rumour, and the hypervisibility of extradition.

Singh, Aditi and Suresh Babu
Department of Geography and Environmental Sustainability, University of Oklahoma, and School of Human Ecology, Ambedkar University, India

“Fuelwood Dependents of Urban Forests: Odds Favour the Morning Walkers”

Urban commons are at the center of many resource conflicts in the city. Delhi is a unique city with forest fragments, often referred as ridge forests, which are remnants of Aravali thorn scrub vegetation. We examine Sanjay Van, which is subject to ongoing controversy over land use. Different users treat these forests as recreational spaces, sites of biodiversity conservation, and sources of resources. Several non-state advocacy groups seek to convert Sanjay Van to a conservancy, which would limit fuelwood harvesting. As a part of the developmental plans for these green areas, the Delhi Development Authority (state representative) aims to convert several of these into parks while the forest department aims to impose restrictions on the resource harvest in these urban forests including Sanjay Van. In either of these models, the poor will likely lose access to these woodlands as these commons get appropriated by state agencies and morning-walkers. These models will affect the poor’s way of living, their energy consumption, and will be more exploitative. In this context, this paper examines the unusual case of fuelwood harvest in the middle of a city. In an effort to better understand the fuelwood dependence, we explore the profiles of fuelwood harvesters and quantity of the fuelwood harvested. We find that economically poorer households constitute the highest proportion of fuelwood harvesters in part due to their poor access
to alternate sources of energy, especially LPG. It implies that urban green spaces are locations of inequitable access and questions the legality of city’s residents.

**Smith, Chebon, Diamond Williams, Kayla Jackson, and Kathy Littlebull**
Haskell Indian Nations University

“Haskell’s Historic Wetland Complex”

The Haskell Wetland Complex has a wide and varied history. Haskell Indian Nations University is located in South Eastern Lawrence, Kansas. Our group developed a Storymap in ArcGIS that documented the journey of our Wetland Complex. Haskell was founded in 1884, as a boarding school during the “Kill the Indian, Save the Man” era that gravely impacted the Native American community. As Haskell transitioned through the years, the Haskell Wetland and campus land was reduced and reallocated to various regional institutes. Our wetlands were also part of a contentious and lengthy legal battle regarding the construction of the South Lawrence Trafficway, which is an addition to the K-10 road. The Haskell Wetland has long been a campus favorite of the students that attend Haskell. Students led the legal battle and the wetlands had a historical significance to previous boarding school era students that used the property to exercise their religious rights when they were outlawed and banned by governmental officials. This map will be a visualization of the issues pertaining to the Haskell Wetland Complex.

**Sun Eagle, Cheyen**
Department of Geography and Atmospheric Science, University of Kansas

“Spatial and Temporal Patterns of Land Allotment on the Pawnee Reservation”

This research explores the patterns and consequences of land allotment for the Pawnee Nation of north-central Oklahoma. During the late nineteenth century, the federal government implemented a policy of breaking up tribal land holdings into individual parcels (allotment in severalty), leading to mass dispossession, complicated patterns of heirship, disruption of traditional patterns, and a decrease in land productivity. Although the historical and economic aspects of allotment have been extensively studied, relatively little attention has been paid to the geospatial aspects of allotment, especially the cultural and environmental factors that may have influenced allottees in their land selections. Using records of the Pawnee Indian Agency obtained from the Fort Worth Branch of the National Archives, together with censuses, Indian agent reports, the Public Land Survey System (PLSS), and environmental databases, a historical GIS of Pawnee land allotments was created. With regard to environmental considerations, it was found that stream-bottom land was selected in the vast majority of cases, while upland prairies were widely ignored. Stream bottoms, in addition to running water, offered rich soils for garden plots and agriculture, abundant timber for construction and fuel, and access to game and other food resources. Analysis of familial patterns showed that in a majority of the cases examined, family members selected parcels either adjacent or in close proximity to each other. It was further found that clan associations played a major role in allotment patterns, with the four Pawnee clans generally clustered in distinct groupings on different parts of the reservation.
Tashi, Dorje  
Department of Geography, University of Colorado – Boulder

“‘Beautiful Countryside:’ Green Development and the Making of Urban Villages in China’s Tibet”

Since the central state’s announcement of “Building a New Socialist Countryside” campaign in 2005, China’s rural areas across the country have often been subjected to extensive development projects and campaigns. The “Beautiful Countryside” (meili xiangcun) project, launched in Qinghai Province in 2014, is one such schemes. Unlike previous development projects such as housing and resettlement programs associated with the “Building a New Socialist Countryside”, this newly initiated program highly emphasizes and devotes much attention to the elements of “greenization” and “green” development. Based on participant observation, semi-structured interviews conducted in a Tibetan farming village in Trika County, Qinghai Province from 2018 to 2019, and reviews of Chinese key national documents, this article examines a shift from the state’s emphasis on urbanization to a focus on environmental well-being and aesthetic living environments for rural residents. It explores how the program is implemented on the ground by local bureaucrats and how villagers understand and perceive it. With a particular focus on the key elements of the program, it also seeks to understand how local government officials and villagers, understand and interpret “green” or “greenization”. In doing so, this article suggests that although “green” development is heavily emphasized in all official documents about the construction of “Beautiful Countryside,” the actual implementation of the program on the ground is focused on material improvements more than actual environmental well-being and green development.

Todhunter, Paul E., Taufique H. Mahmood, and Diane Van Hoy  
Department of Geography and GIScience, University of North Dakota; School of Geology and Geological Engineering, University of North Dakota; and Department of Civil Engineering, University of Saskatchewan

“‘Damn the Intermediate Processes, Full Speed Ahead!’ Hydrological Responses to Climatic Variability in a Complex Prairie Environment”

How anthropogenic climate change will affect peak and volume streamflow responses is a topic of great interest to hydrologists. The Northern Great Plains (NGP) is characterized by strong hydroclimatic variability at the interannual, decadal, and long-term temporal scales. A long-term drought-to-deluge transition began in 1980, although multi-year wet and dry periods were still embedded within this wetting trend, and significant interannual variability has persisted within the hydrological record. Hydrological responses to a dry to wet multi-year transition within this long-term wetting trend are examined using the Cold Region Hydrological Model (CHRM), a physically-based, distributed hydrological model developed specifically to accommodate the multiple, complex, non-linear processes that govern regional streamflow in cold regions. We apply the model to the Mauvais Coulee Basin, a major headwater basin contributing to Devils Lake, a terminal lake in northeast North Dakota, over water years 2005-2017. We evaluate the model’s ability to estimate peak streamflow using hour streamflow observations, and the annual water balance using annual water balance totals. Intermediate processes are found to be critical
in controlling the effect of increased precipitation upon basin streamflow. These intermediate processes include antecedent fall soil moisture content, snow fraction, spring rain on snow, maximum snow water equivalent, frozen soil/basal ice layer conditions, the duration of melt runoff-related streamflow, and vapor density difference. The critical controlling intermediate processes vary from year to year depending upon prior and current basin conditions. The results demonstrate the challenges facing assessment of global warming effects upon regional hydrologic response in the NGP.

Warf, Barney
Department of Geography and Atmospheric Science, University of Kansas

“U.S. Corruption in Geographic Perspective”

Corruption—the abuse of public office for private gain—is a globally significant problem, including in the United States. Although it ranks low internationally compared to most countries in this regard, the U.S. nonetheless sees corruption erupt periodically. This paper traces the history of U.S. corruption, including federal corruption scandals, culminating with the Trump White House. It argues that the country’s unique electoral financing and lobbying laws elevate its de facto rates of corruption. Finally, it examines corruption among American states, including grades for good governance and rates of federal prosecutions for corruption. It concludes with observations about attempts to limit corruption.

Watson, Carolisa
Department of Geography and Atmospheric Science, University of Kansas

“Orientalist Discourses in Western Newspapers: Representations of Tibet from December 1933-March 1940”

Western discourses surrounding Tibet range from the factual to the fantastic. The blurring of reality, politics, and fantasy are apparent throughout historical narratives regarding the Tibetan plateau and those who live there. This paper investigates western representations of Tibet and the Dalai Lama in newspapers from the death of the thirteenth Dalai Lama in to the enthronement of the fourteenth Dalai Lama in March 1940. The underlying misconceptions presented in the articles and their origins in other works of the time, such as the writings of the Theosophy Society, Nikolai Aleksandrovich Notovich, Alexandra David-Neel, Sir Charles Bell, *The Tibetan Book of the Dead*, and *Lost Horizon* will be discussed.

Weekley, David

“Tracking Multi-Decadal Lake Dynamics with Landsat and Elevation Datasets”

Water distribution, both spatially and temporally, are critical aspects of the environment with dramatic effects on ecology, economy, and human welfare. While water presence and surface area
are often easy to detect using standard remote sensing techniques, water volume calculations require additional information such as water surface elevation traditionally acquired using in-situ gauge monitoring stations or space-based altimetry satellites, both of which are generally limited to larger lakes and reservoirs. This research uses Google Earth Engine to estimate long-term lake dynamics (surface elevation, surface area, volume, and volume change) for multiple reservoirs using Landsat imagery combined with digital elevation model (DEM) and bathymetric data products. The accuracy of water surface elevation estimates was analyzed using a variety of water indices (NDWI, MNDWI, AWEI), segmentation thresholds, water boundaries, and statistics. Additionally, image contamination, such as cloud cover, shadow, snow, and ice, are identified in each image via the Pixel QA band in the Landsat TOA Tier 1 Collection 1 data product which serves to increase the water surface elevation accuracy as well as provide increased temporal resolution by allowing analysis of “imperfect” imagery. Water surface area, volume, and volume change were then calculated using elevation/surface area/volume relationships derived from the combined DEM/bathymetry data providing 35+ years of lake dynamic data applicable to a wide-variety of fields and interests.

**Willis, Stephanie**
Haskell Indian Nations University

“The Value of Storymaps”

This presentation explores the usage of the Storymaps, an online ArcGIS application, to depict imaginative aspects of a place. The functionality of Storymaps for a novice GIS user will be shown. The author’s dissertation research used a common type of tourist ephemera, the postcard, to investigate the sense of place in Ouray, Colorado. An interactive map was built to explore Ouray postcards through time, therefore illuminating the construction of a story of place. The map built with her postcard collection and the collections of the Ouray County Historical Society will be shown. In this dissertation project, Storymaps was also used to demonstrate local sense of place through a unique interviewing process which incorporated self-directed photography. The resulting Storymap will also be shown and discussed. Furthermore, this presentation will show how Storymaps could be used as a tool in the classroom to add humanistic depth to student research projects.

**Yang, Wenjun, Ting L. Lei, and Zhen Lei**
Department of Geography of Atmospheric Science, University of Kansas, and School of Automation, Wuhan University of Technology, China

“Conflation of Historical Administrative Boundary Data: An Optimization Based Approach”

Polygon conflation aims to match and merge polygon features including administrative boundaries and other spatial units of aggregation from multiple data sources. Effective conflation of polygon features is key to the successful analysis of such data. This study introduces an optimization-based polygon conflation method, which is aimed at choosing a best match plan with minimum total discrepancies between counterpart features. The optimization-based model can be solved
efficiently using Linear Programming (LP). In addition, we have developed a GIS tool for manually matching polygon features to verify the effectiveness of automatic conflation. Our Experimental result proves that the method achieves high accuracy in treating one-to-one and one-to-many matches. We waapplied our method and match two different years of county boundary layers that contain five states in the American Northwest. We verify the effectiveness of the automatic conflation method by comparing its results to the ground truth created from manual conflation and to historical maps and census records. We also perform a case study on historical penitentiary records in Idaho, and demonstrate how conflation can be applied to rectify commonly encountered issues in analyzing historical census data.

Zoungrana, Brice B.
Department of Geography, South Dakota State University

“Biophysical and Economic Impacts of Farmer Managed Natural Regeneration System in Burkina Faso”

Farmer Managed Natural Regeneration (FMNR) is the protection and the management of natural grown trees to increase the value and quantity of wood vegetation on farmlands in parts of West Africa. By protecting the trees, farmers establish a low-cost system to restore degraded land, increase agricultural production, and improve access to energy and food. This ongoing study evaluates the issues of sustainable land use, land change, and land management in Burkina Faso, by looking at the biophysical and economic impacts of Farmer Managed Natural Regeneration. Focus groups in the study area provide the history and the economic impact of FMNR. In addition, soil samples in the villages with and without FMNR will provide a comparative result of the hypothesized changes in the quality of the soil induced by trees. Farmer managed natural regeneration mixes human activities such as agriculture and environmental protection in a sustainable and beneficial way for humans and nature.
ABSTRACTS (POSTERS)

Aranha, Ricardo E.
Department of Geography, Kansas State University

“Making Cloudy Data Viable: The Case of the Amazon Savannas of Roraima State”

The Amazon savanna is an enclave among the neighboring forest formations in the extreme north of Brazil. Although it’s unique formation, there’s still a gap of information for this environment. Most studies describing the area are still very dependent on field work, which is a problem due to the difficulty of access and land conflicts. Regarding remote sensing, the savannas in Roraima are a challenge due influence of the Intertropical Convergence Zone (ITCZ), which makes the imagery very cloudy all year round. The two main goals of this paper are: (1) develop and assess a methodology suitable for denoising imagery in the ITCZ and (2) to verify if the information produced is viable. For reaching the two objectives, a time series from the MODIS sensor was built, with the intention of using the pixel history as an interpretation key for denoising. We used data from 2000 to 2010, with nearly 4500 images in 7 different bands for the time series. In the filtering process a combination of the moving median filter and the Minimal Noise Fraction was applied. This results were then classified by a K-means method and visually compared the official vegetation map. The process yielded a very close delimitation of units compared to the government data, taking in consideration those were generated by segmentation and visual interpretation processes.

Burger, Paul
Department of Geography, University of Nebraska – Kearney

“A GIScience Approach to Analyzing Spatial Patterns of Voter Turnout in Omaha, Nebraska”

Scholars from a variety of disciplines have analyzed voter participation, with most studies focusing on socio-demographic issues to explain turnout. Often overlooked, however, is the geography of voter participation patterns. Omaha, Nebraska presents an economically and ethnically diverse study area to examine geographic factors related to turnout. Over 51 percent of the state’s registered voters live in three counties—Douglas, Sarpy, and Lancaster—which contain the Omaha and Lincoln metropolitan areas. This project employs Geographic Information Science (GIScience) along with electoral geography principles and spatial analysis to evaluate voter participation across the Omaha metropolitan area. Getis-Ord Gi* statistic is utilized to demonstrate statistically significant spatial clustering of high and low values of voter participation and turnout at the census block-group level. This study also examines a number of demographic variables through stepwise regression that help explain voting patterns in the Omaha metropolitan area. Results indicate that, independent of party affiliation, educated, middle-class, white populations in Omaha have higher voter participation rates.
Dowden, Carissa L.

“Wisconsin’s Upsurgence of Dairy CAFOs: Foe of American’s Traditional Dairyland?”

Like much of the Midwest, Wisconsin’s traditional dairy industry has been in decline for decades. Dairy farms are disappearing from the landscape, especially family-run operations, as they presumably cannot compete with the efficiency and sheer size of Concentrated Animal Feeding Operations (CAFOs). This poster analyzes the relationship between the decline in the number of Wisconsin dairy farms with the ever increasing amount of CAFOs in the state, specifically from 1987 to modern day after the creation of the Dairy Termination Act. Historical data from the United States Department of Agriculture Census on the number of farms with milk cows was compared with geocoded data on current CAFO permits from the Wisconsin Department of Natural Resources. These values were mapped to visualize their spatial relationship, and compared to previous dairy studies of the state’s dairy economies. Linear Regression, Pearson’s Correlation, and Spatial Autocorrelation analysis was conducted in the IBM SPSS Statistics app to quantify the spatial relationship between the calculated historical change and CAFO numbers. Results show that, predictably, CAFOs are a part of the story of decline, but not the only explanation. For many communities, the loss of farms was not merely a change in the industry, but also an end to a way of life. Nevertheless, arguably, Wisconsin is, and will always be, America's Dairyland, and the dominating CAFO and large farm culture will never be able to take that legacy away.

Gambill, Ian, Sawyer McFadden, and Kamini Singha
Department of Environmental Science, Haskell Indian Nations University, and Department of Geology and Geological Engineering, Colorado School of Mines

“Characterizing Hyporheic Extent Using Electrical Resistivity and Concentration Breakthrough Curves”

Stream-water systems provide complexity and diversity to ecosystems. Logjam-dense reaches of a stream have been shown to increase stream complexity, therefore, increasing biodiversity potential. The flow of water through slower-moving segments of a stream increases potential for nutrient exchange and pollutant transformation. Many of these processes occur in the hyporheic zone, an area of saturated porous media around streams which provides an interface for stream-water and groundwater interaction. Characterizing hyporheic exchange helps further understand the geochemical and geophysical processes that improve water quality. The goal of this research is to further understand and characterize activity in the hyporheic zone. Traditionally, methods to quantify hyporheic activity were cumbersome and insufficient. We utilized geophysical methods including electrical resistivity (ER), to observe subsurface flow, and in-stream electrical conductivity (EC) to monitor a tracer test. We then created breakthrough curves (BTC) which were used as a proxy for hyporheic and instream transport behavior in two complex reaches of a stream. Within the ER BTC, asymmetry describes the skewness and the tailing behavior indicates solute retention, therefore, indicating hyporheic activity. The ER BTC displayed stronger tailing behavior than instream measurements which indicate that hyporheic behavior is related to longer residence times during solute transport. This study supplies data that demonstrates that ER methods coupled with tracer tests effectively characterize hyporheic activity in complex reaches of a stream,
provides insight into stream systems, and can be used as a comparison with any modelling or research that involves remediation and/or sustainability efforts.

**Ingersol, Rene, Claire Christner, and Natasha Winfield**
Department of Geography, University of Nebraska – Kearney

“Using GIScience and Marketing Geography to Define the Market Area and Segment In-Home Health Care Customers in Des Moines, Iowa”

As the United States population continues to age and life expectancies increase, more Americans are looking for alternatives to retirement centers and assisted living facilities. A growing service industry among this demographic group is in-home health care that allows individuals to remain in their primary residence while receiving a basic level of health and personal care. One such business in the Des Moines, Iowa, metropolitan area is Accessible Home Health Care (AHHC). This study combines the principles of marketing geography and GIScience technology to: A) delineate the geographic extent of the market area, B) identify the socioeconomic and demographic characteristics of customers, and C) prioritize locations within the market area based upon these characteristics. Results from this study are utilized by AHHC in their marketing decision process.

**Joslin, Audrey**
Department of Geography and Geospatial Sciences, Kansas State University

“The Conservation Reserve Program and Wildfires: Rancher Perceptions and Shifting Land Management in Southern Kansas”

During the spring seasons of 2016 and 2017, wildfires burned nearly 1 million acres across southern Kansas. In both cases, ranchers in the region were devastated. The wildfires burned away not only buildings and fencing, but killed thousands of livestock and left pastures in ashes. One response of the US Department of Agriculture was to authorize grazing and haying within enrolled Conservation Reserve Program (CRP) lands. In the wake of wildfires, the CRP-enrolled grasslands appear as a tool for wildfire relief for ranchers by providing lands for emergency grazing and haying without penalties. Yet, recent reports also indicate that ranchers may choose to discontinue enrollment in the CRP program because they fear increased wildfire hazards from CRP lands that may promote the growth of flammable brush. This pilot study draws upon interviews in Meade, Clark, and Comanche counties to examine how wildfire interacts with the incentive mechanisms with the CRP program. Specifically, this research assesses the experience and range of perceptions regarding CRP land interactions with wildfire and outcomes to broader land management practices in and around CRP lands. Findings indicate that local ranchers largely perceive CRP to be a significant source of wildfire hazard, however these perceptions are not the primary factor driving future enrollment decisions. These perceptions of hazard, however, have caused many ranchers to shift land management practices on adjacent land or engage in contract violations on CRP land to reduce wildfire threats.
Lima Albuquerque Maranhao, Rebecca  
Department of Geography and Geospatial Sciences, Kansas State University

“Water Storage Variation in the Lake Sobradinho (Northeast Brazil) from 2004 to 2014”

Although Brazil is one of the few countries in the world that has a high freshwater supply per capita, drought events are common in the Northeast region of Brazil (NEB). The lake Sobradinho, the largest reservoir of NEB, has been affected by a multi-year drought suffering a severe water loss over the years. Poor land management projects have increased the degraded area in NEB and can reduce evapotranspiration affecting the precipitation increasing the occurrence of drought events. Reduction in precipitation may cause devastating consequences for the unique biodiversity in the NEB region and local resource users who depend on it. Our work aims to analyze the water storage variation in the Lake Sobradinho from 2004 to 2014, thus we intend to: (1) Analyze the changes in the reservoir surface area over the years (2) Combine observations of elevation and surface area to estimate water volume storage. The storage estimates were highly correlated with observations (R = 0.85). The reservoir storage variations are in accordance with the known droughts and it was observed a high variation of water volume in the years of 2008 and 2013. El Niño-Southern Oscillation over the Pacific Ocean has a strong influence on the variability of Northeast rainfall however the worst drought occurred when La Niña event was present. The region will be highly affected by climate change, exhibiting the need for public policies that understand the climatic variables as well the human activities impacts in the reservoir for better drought management in the NEB region.

Okeson, Morgan R., P.L. Sullivan, C. Zhang, M. Behm, and D.R. Hirmas  
Department of Geography and Atmospheric Science, University of Kansas.; College of Earth, Ocean, and Atmospheric Science, Oregon State University; Department of Geology, University of Kansas; Conoco Phillips School of Geology and Geophysics, University of Oklahoma; and Department of Environmental Sciences, University of California – Riverside

“How Does Hydrologic Connectivity Respond to Changing Precipitation Patterns on Hillslopes Mantled by Soils with Shrink-Swell Properties?”

In soils with vertic (shrink-swelling) properties, the locations and density of macropores are dynamic. Given that macropores are responsible for roughly 70% of water flow in soils, this transient network of macropores governs both the pathways and residence time of water along a hillslope which feeds back to control groundwater recharge and delivery of solutes to streams. Here, we use a multifaceted field-based approach over multiple seasons to quantify how soils with vertic properties govern hillslope hydrologic connectivity (HHC). To quantify HHC, we installed soil monitoring arrays at several depths in four locations on a hill mantled by shrink-swelling soils. For two years we continuously measured soil moisture and matric potential, collected soil water chemistry data weekly when water was present, and conducted electrical resistivity tomography (ERT) surveys under different seasonal soil moisture states. Preliminary analysis shows a greater degree of vertical connectivity through the soils during summer months when high evapotranspiration rate can dry soil and form macropores, with vertical connectivity observed to
depths of ~1m under given rainfall events, compared to winter months when wetter conditions persist and soils swell. Additionally, greater vertical recharge was observed to occur in the summer marked by intense but infrequent rainfall events, while soils swelled shut between 10-50cm, reducing vertical recharge, when rainfall was less intense but more frequent; Results from ERT surveys support these patterns. Together, these data suggest groundwater recharge patterns and throughflow in hillslopes mantled by shrink-swell soils are highly dependent on precipitation patterns during summer months.

Reiher, Madeline
Department of Geography, University of Nebraska

“A Historical Diffusion of Lacrosse through Canada”

Lacrosse is a sport created by native cultures in the Northeastern United States and the Great Lakes regions. After the sport was adopted by French Canadian settlers and gained popularity in Canada it put down early roots in the United States and spread throughout the world. Today lacrosse is played on five continents. The recent growth from the late 20th century to present time creates a question of how the sport is being diffused across one of its hearths. Our poster will be utilizing GIS, spatial analysis, and mapping techniques to demonstrate the recent growth of the sport in the capital cities of Canada. In addition, we hope to combine previous research on this topic with our own findings to examine the growth of the sport as it aligns with the recent expansions of the professional lacrosse league in Canada, and the emergence of high school teams.

Romig, Kevin
Department of Humanities and Social Sciences, Northwest Missouri State University

“Geographic Patterns of Barbecue Restaurants”

Barbecue cuisine is an important part of U.S. culture, and there are many methods to how people choose their preferred styles of smoked meat. One of the most common methods is barbecue contests such as Memphis in May. This poster takes a different approach. Since many people directly consume barbecue cuisine through established restaurants, I collected recent professional rankings of national barbecue restaurants to find the best in the country. Fourteen different national lists of Top Barbecue Restaurants are the source to create the master list of the Nation’s Best Barbecue Restaurants. In addition, utilizing mapping, the results compiled from the master list show certain clusters of nationally recognized barbecue across the United States.
“Downslope Transport of Detached Limestone Blocks”

The landscapes we live in are dynamic. If we want to increase our understanding of the mechanisms at play and enhance our confidence when making landscape management decisions, then we must deduce what processes are most significant in landform formation. The need for understanding is particularly strong in landscapes that are vulnerable to erosion, for instance landscapes with soft bedrock or covered by less-protective grassy vegetation such as the Flint Hills in Kansas. In such locations, layers of harder lithologies, even when thin, are co-determinants of landscape formation. This is because blocks that detach from harder layers armor soil against erosion and create obstacles behind which soil can accumulate. However, we do not know how properties of the detached blocks impact the effectiveness of these processes. Our objective in this study was thus to understand transport and fate of detached limestone blocks (DLBs) in the Konza Prairie Biological Station by quantifying their position and properties on slopes under hard limestone layers. Preliminary findings show that the type of DLB, classified into thin ‘tiles’ or thicker ‘piles’, is a significant determinant of downhill movement. ‘Tile’ DLBs from thin hard layers appear to fall flat on slopes and then move downslope without changing their relative position, whereas ‘pile’ DLBs from thick hard layers do change their orientation, suggesting a slow undercutting and tumbling over time. This suggests that thin bedrock layers and their DLBs have a larger protective armoring impact on slopes than expected based on their thickness.