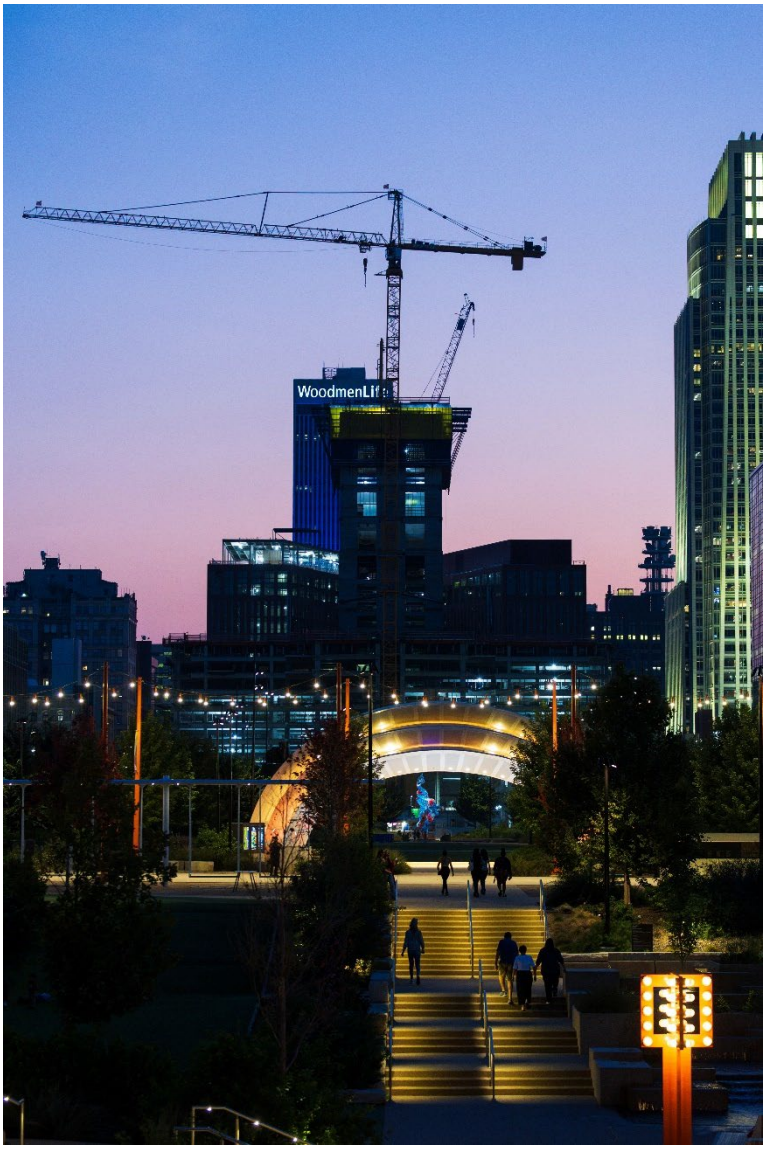
Great Plains/Rocky Mountain Division

58th Annual Meeting

October 17th & 18th, 2025

Final Program and Abstracts



Hosted by:

AAG
American Association of Geographers

University of Nebraska Omaha

Land Acknowledgement

We would like to acknowledge that UNO occupies the traditional treaty lands of the Omaha (UmoNhoN) and Otoe-Missouria Tribal Nations. We would also like to express our respect to the Ponca Tribe of Nebraska, the Winnebago Tribe of Nebraska, the Santee Dakota Tribe of Nebraska, and the 170 plus other tribes represented within the Omaha area. With this acknowledgement comes gratitude, respect for the people and the land, acknowledgement of past wrongs, and hope for future relations.

Acknowledgements

We wish to express our deep gratitude to all, near and far, who have worked to make this conference a success. We are grateful for the planning and coordinating efforts of the National Council for Geographic Education and Geographic Educators of Nebaska (NCGE: Tom Herman and Lisa Marie Tobin; GEON: Harris Payne and the Board), who made the possibility of co-locating two conferences a reality. Thanks to the Geography and Geology Department at UNO for their support: Brenda Todd, Brad Bereitschaft, Alex Mohr, Sarah Nelson, Petr Pavlinek, Scott Robinson, and Dan Vecellio. Thank you to Karen Falconer Al-Hindi and all the judges for their work on the Student Paper Competition. Thanks to our GeoBowl Coordination Team – Kimberly Johnson Maier (SDSU), Alex Mohr (UNL/UNO), and Sarah Nelson (UNO) as well as all those who facilitate the GeoBowl. We greatly appreciate the support and guidance of our Regional Councillor, Becky Buller. And we are very grateful for the support of the AAG office for their patience and support: Eddie McInerney, Becky Pedergast, Elin Thorlund.

GPRM Officers 2024-2025

Co-Chairs	Christina Dando & Rex Cammack University of Nebraska Omaha
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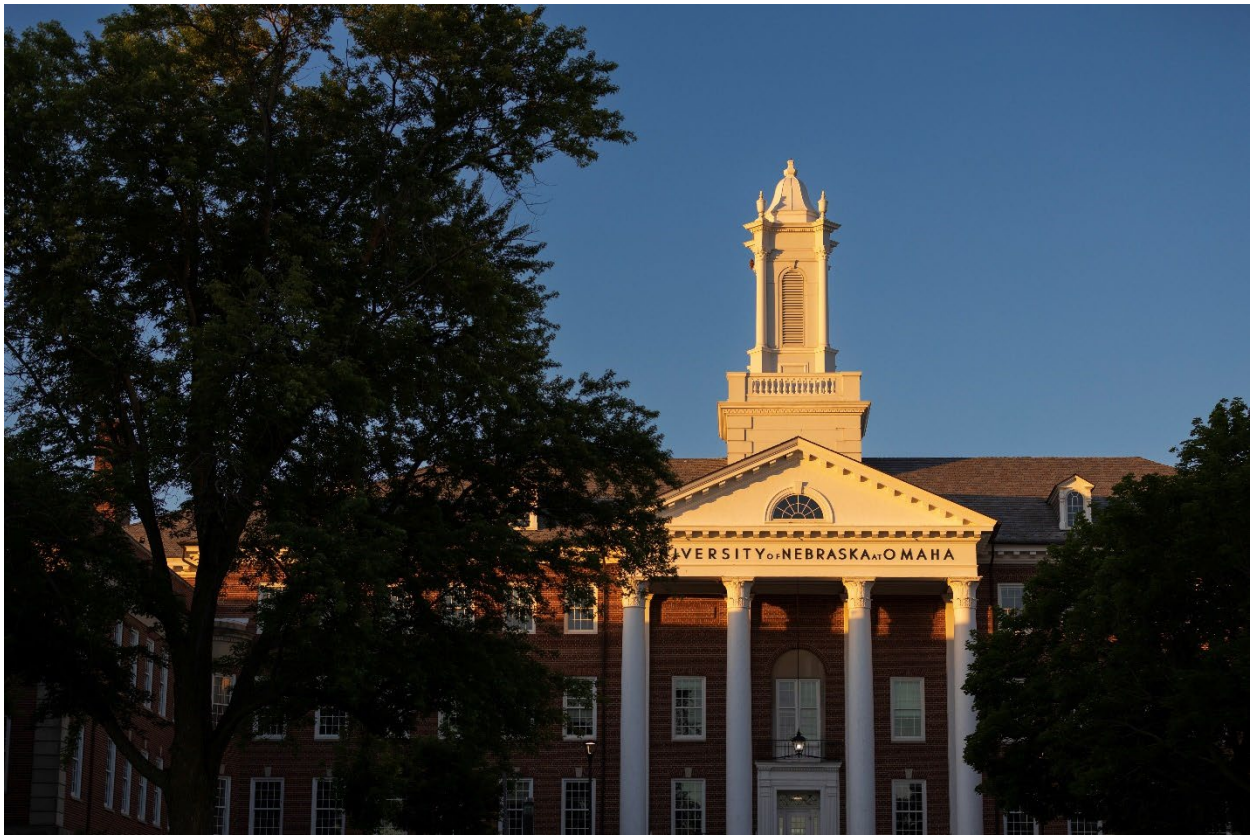

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Conference at a Glance

Grant, Ford, and Eisenhower Rooms are on the 19th Floor of the Double Tree by Hilton

Friday, October 17th: Double Tree by Hilton		
Time	**Event**	**Location**
3:00-8:00pm	Registration	Banquet Level in the Mezzanine area
3:15-4:15pm	A Workshop on the Geography Pipeline from High School to College -- Bill Moseley, Greg Hill, Samantha Serrano	Winnebago Room, Banquet Level
5:30-7pm	NCGE-AAG Joint opening ceremony & reception	Grand Ballroom, Lobby Level

Saturday, October 18th: Double Tree by Hilton			
7:30am	Registration opens		Banquet Level in the Mezzanine area
7:30-9:30am	Continental Breakfast served		Grand Ballroom, Lobby Level
8:00-9:30am	**Paper Session One**		
	Contempo Human Geography Issues Grant Room	*Water, Vegetation, Soils* Ford Room	*Sustaining and Strengthening Depts. in a Time of Rapid Change* Eisenhower Room
9:45-10:50am	**Paper Session Two**		
	Landscapes of Fire Grant Room	*Constructing Spaces* Ford Room	*Teaching Geography in Higher Education* Eisenhower Room
11:00-11:50am	**Poster Session** Eisenhower Room		
12:00-1:00pm	**Keynote Speaker & Lunch** Grand Ballroom, Lobby Level		
1:30-3:00pm	**Paper Session Three**		
	Historical Landscape of Nebraska Grant Room		*Community College Geography: Naming Our Value and Staking Our Place within the AAG* Eisenhower Room
3:00pm	**GeoBowl** Participants meet in Ford Room for instructions. Competitions: Grant, Ford, and Eisenhower		
4:30-5:30pm	**GPRM Business Meeting** Grant Room		
5:30-7pm	**Exhibitor Reception & Geography Trivia** Grand Ballroom, Lobby Level		

Field Trips

Pre-registration was required for all field trips.
Participants should meet at the scheduled time in the lobby of the Marriott Courtyard.

Loess Hills
Rex Cammack
Friday 9am-2pm
Explore the Loess Hills south and east of Omaha with stops at apple orchards, Arbor Day Lodge, Iowa Loess Hill sites, and other local points of interest.
Cost: $30
Limit: 8

And in conjunction with NCGE:

Thursday
4-5:30pm **Omaha as a post-industrial city** walking tour
Cost: $10
Limit: 20 persons

Friday
8am-11am **South Omaha bus tour**: Visit the historic meatpacking and immigrant enclave, now a dynamic community of Central and South American immigrants.
Cost per person: $35
Limit: 54 persons

9-10:30am **Omaha as a post-industrial city** walking tour
Cost per person: $10
Limit: 20 persons

Noon-3pm **North Omaha bus tour** (of Omaha's Black American community, its rich dynamic history, and its challenges)
Cost per person: $35
Limit: 54 persons

1-2:30pm **Omaha as a post-industrial city** walking tour
Cost per person: $10
Limit: 20 persons

Paper Session One
8:00am-9:30am

Contemporary Human Geography Issues
Grant Room
Session Chair: Yue Jing, University of North Dakota

8:00 am **Evaluating human mortality impacts from air pollution as U.S. commuting reaches its extremes** – Yue Jing, University of North Dakota. Co-authors: Yujie Hu, University of Florida; Chen Chen, Rice University; Daniel Cohen, Rice University.

8:20am **Health Experiences and Treatment-Seeking Behavior among Kolkata Slum Residents during the COVID-19 Pandemic: A Qualitative Analysis** – Senjuti Mallik, Mayville State University.

8:40am **Hungry for Change: A Mixed Methods Exploration of Food Insecurity Among College Students in Nebraska*** – Michael Atuahene Djan, University of Nebraska – Lincoln.

9:00am **Anticipating Violent Non-State Actor Exploitation of Geographic Information Systems: A Framework for Malevolent Creativity and Asymmetric Threats*** – Eleanor Ward, University of Nebraska-Lincoln

Discussion

Water, Vegetation, Soils
Ford Room
Session Chair: Jeffrey VanLooy, University of North Dakota

8:00am **Do Self-Restored Peatlands Stabilize Soil Organic Carbon? An Enzyme Assay Approach to Evaluating Carbon Stability at the Marcell Experimental Forest, Minnesota, USA*** – Stephen Adebisi, South Dakota State University. Co-authors: Saraswati Bhusal, South Dakota State University, & Stephen Sebestyen, Marcell Experimental Forest.

8:20am **Geochemical Analysis of Glacier Melt Water in the Andes Mountains of southern Peru** – Jeffrey VanLooy, University of North Dakota. Co-authors: Anai Caparo Bellido, Logan Dietrich, Gregory S. Vandeberg, University of North Dakota.

8:40am **Improving Alfalfa Breeding with Remote Sensing-based Computer Vision, Deep Learning, and Mobile Applications** – Brandon Weihs, University of Nebraska Omaha, DWFI, & Northwest Missouri State University, Co-authors: Zhou Tang, University of Florida; Somshubhra Roy, University North Carolina; Zezhong Tian, University of Wisconsin-Madison; Jo Heuschele, Zhou Zhang, University of Wisconsin-Madison; Zhiwu Zhang, Washington State University; Zhanyou Xu, USDA.

9:00am **Earlier Springs, Faster Drawdowns: Future Hydroperiod Dynamics of Prairie Pothole Wetlands** – Bruce Millet, South Dakota State University. Co-authors: Brett Werner, Centra College, Danville KY, & W. Johnson, SDSU.

Panel -- Maintaining What Matters:
Sustaining and Strengthening Departments in a Time of Rapid Change
Eisenhower Room
Session Chair: Ken Foote

8:00am Panelists:

Marcellus M. Caldas, Kansas State University
Jennifer L. Fluri, University of Colorado
Rex Cammack, University of Nebraska Omaha
Gregory Vandeberg, University of North Dakota

Organizer: Ken Foote, University of Connecticut

Paper Session Two

9:45am-10:50am

Landscapes of Fire
Grant Room
Session Chair: Marcellus Caldas, Kansas State University

9:45am **Prescribed Burn Plans and the (co-) Production of Landscapes of Fire** – Audrey Joslin, Kansas State University.

10:05am **Wildfire Matters: The Perception of Landowners in the Southern Great Plains** – Marcellus Caldas, Kansas State University. Co-authors: Jason Bergtold, Dept. of Agricultural Economics; Audrey Joslin and Helene Avocat, Dept. of Geography and Geospatial Sciences.

10:25am **An Unsupervised Burn Severity Classification Method in Hat Rock State Park, Oregon: A Case Study*** – Lane Stevenson, Brigham Young University. Co-author: Grayson Morgan, Brigham Young University.

Discussion

Constructing Spaces
Ford Room
Session Chair: Jeffrey Smith, Kansas State University

9:45am **Belly Dance in Nebraska: Identity, Social Acceptance, and Perseverance*** – Alex Mohr, University of Nebraska.

10:05am **Reinforcing the Frontier Myth at the Ingalls Homestead: A Relational Site-Scale Approach** – Kimberly Johnson Maier, South Dakota State University.

10:25am **Restorative Places Across Time and Space** – Jeffrey Smith, Kansas State University.

Discussion

Teaching Geography in Higher Education
Eisenhower Room
Chair: Karen Falconer Al-Hindi, University of Nebraska Omaha

9:45am **Highlighting Geography in an Introductory Human Geography Class: An Alternative Course Design** – Glenn Humphress, Southeast Community College.

10:05am **Thinking with feminist geography about online teaching and learning** – Karen Falconer Al-Hindi, University of Nebraska Omaha.

Discussion

Poster Session

11:00am-11:50pm

Ford Room

Keynote Speaker & Lunch

Dr. Jessica DiCarlo, University of Utah

12:00pm-1pm

Grand Ballroom – Lobby Level of Double Tree Hilton.

A leading human geographer and political ecologist, Dr. DiCarlo brings global insight on infrastructure, critical minerals, and environmental change, connecting fieldwork from the Himalayas to Southeast Asia with today's pressing geopolitical challenges. Don't miss her inspiring perspective on the intersections of geography, sustainability, and global development.

Paper Session Three
1:30-3:00pm

Historical Landscapes of Nebraska
Grant Room
Session Chair: Jeannette Gabriel, University of Nebraska Omaha

1:30pm **POW Camp Atlanta*** – James Thorburn, University of Nebraska-Lincoln.

1:50pm **Black Placemaking in the Plains: Charting North Omaha's Commercialism** – Jeannette Gabriel, University of Nebraska Omaha.

2:10pm **Determining Clothier Location Loss and Parking Gain in Omaha's Retail District, 1941-1980*** – Heather Bloom, Louisiana State University.

Discussion

1:30-3:00pm Workshop

Community College Geography:
Naming our Value and Staking our Place within the AAG
Eisenhower Room
Session Chair: Patrick Shabram, Front Range Community College.

Organizer: Patrick Shabram, Front Range Community College. Co-organizers: Lauren Hull, Portland Community College & Tamara Biegas, Harford Community College.

3:00pm GeoBowl

Grant, Ford, and Eisenhower Rooms
Coordinators: Kimberly Johnson Maier (SDSU), Alex Mohr (UNL/UNO), Sarah Nelson (UNO)

PAPER ABSTRACTS

by author's last name, * denotes part of a paper competition

Adebisi, Stephen – South Dakota State University, Stephen.Adebisi@jacks.sdstate.edu
Co-authors: Saraswati Bhusal, South Dakota State University, & Stephen Sebestyen, Marcell Experimental Forest. **Do Self-Restored Peatlands Stabilize Soil Organic Carbon? An Enzyme Assay Approach to Evaluating Carbon Stability at the Marcell Experimental Forest, Minnesota, USA***

Peatlands, though occupying only 3% of Earth's land surface, store over 600 Gt of soil organic carbon (SOC), playing a pivotal role in climate regulation. However, extensive hydrological modifications have degraded many peatlands, raising questions about the long-term stability of SOC in self-restoring systems. This study evaluates SOC stability in a self-restored bog at the S7 watershed of the Marcell Experimental Forest (MEF), Minnesota, by integrating a novel βglucosidase enzyme addition experiment, soil moisture and SOM measurements, and greenhouse gas flux analysis. We established an incubation experiment using peat samples collected at three ditch distances (2 m, 11 m, and 32 m) under two treatments: β-glucosidase and control. Over a 31-day period, CO_2 and CH_4 fluxes were measured. Our findings reveal a significant negative correlation between soil moisture content (SMC) and soil organic matter (SOM) ($r = –0.72$, $p < 0.001$), suggesting that wetter, near-ditch zones may not represent intact carbon-preserving conditions. Repeated-measures ANOVA confirmed that gas fluxes varied primarily with time ($p < 0.001$), while β-glucosidase treatment led to modest increases in CO_2 emissions ($p = 0.045$), indicating partial microbial activation of labile carbon pools. Notably, CH_4 fluxes remained temporally dynamic but insensitive to enzymatic addition. These results suggest that while rewetting promotes anaerobic conditions, it does not guarantee SOC stability in formerly drained peatlands. The spatial variability in enzyme responsiveness and carbon loss highlights the need for fine-scale biogeochemical assessments when evaluating peatland restoration outcomes. This study offers a novel enzyme-based lens on carbon persistence in unmanaged, self-restored systems.

Bloom, Heather – Louisiana State University, heather@heatherbloomphd.com **Determining Clothier Location Loss and Parking Gain in Omaha's Retail District, 1941-1980***

In the 1950s, clothiers in major U. S. cities worked to provide parking to compete with newly constructed auto-centric shopping malls. This dissertation researched the spatial movement of Omaha clothing, department, and discount stores between 1941 and 1980, as they abandoned historic business districts for the suburban shopping centers, specifically how [1] clothiers, offstreet parking operators, and the City of Omaha addressed the need for automobile parking, [2] urban redevelopment changed Retail District land use availability for clothiers, and [3] post-World War II population relocation encouraged suburban clothier growth. Omaha City Directories' Street Directories were analyzed and geocoded to determine changing first-floor Retail District parcel land uses from 1941-1980, as much of the population moved to the western fringe of the city, automobiles became more readily owned, driven, and parked downtown, and major private-and-public-funded urban development project began in the 1960s. Of note, the location of this year's conference, 1616 Dodge Street, was the former site of Omaha's post office and part of the Retail District study area. In 1951, it was announced that there would be a new downtown post office in Omaha's future, leaving a mostly empty city block open for redevelopment. In 1966, redevelopment plans were announced for a Hilton Hotel, First National Bank office building, a parking garage, and Omaha's first downtown shopping arcade. This two-block area closed a major downtown street, but 20 years later, land use was stable again.

Caldas, Marcellus – Kansas State University, caldasma@ksu.edu Co-authors: Jason Bergtold, Dept. of Agricultural Economics; Audrey Joslin and Helene Avocat, Dept. of Geography and Geospatial Sciences.
Wildfire Matters: The Perception of Landowners in the Southern Great Plains

Every year, recurrent and severe wildfires have become more common and taken center stage in news and world media, posing threats to natural resources, agricultural landscapes, and communities. In the United States (US), wildfires have burned millions of acres of agricultural lands, grasslands, forests, and property from coast to coast, displacing and harming people, disrupting local infrastructure and rural economies, impacting the agri-food supply chain, destroying wildlife habitat, and causing severe health issues due to air pollution, amongst other effects. Wildfire research has focused primarily on wildfires in forested lands and their consequences at the wildland-urban interface (WUI). A smaller but growing literature has assessed the social, economic, and ecological impacts of wildfires in grassland biomes and agricultural landscapes. Regions like the Southern Great Plains of the U.S. play a central role in US agriculture and food production. In addition, the region is a critical biome for wildlife and one of the least conserved biomes in the world. However, in this region the frequency of wildfires has tripled over the last three decades and total wildfires have represented up to 50% of U.S. wildfires at times. This paper examines landowner's perception of wildfire intensity, severity and mitigation behavior in the Southern Great Plains

Djan, Michael Atuahene – University of Nebraska – Lincoln, michaelatuahenedjan@gmail.com **Hungry for Change: A Mixed Methods Exploration of Food Insecurity Among College Students in Nebraska***

Despite national estimates suggesting that 30–50% of college students experience food insecurity, little is known about its prevalence and character within the distinct geographic and institutional contexts of the Midwest. This mixed methods study investigates food insecurity among students at ten four-year higher education institutions across Nebraska, capturing urban–rural and public–private divides. An online survey of approximately 500 students will quantify prevalence and examine correlations with academic outcomes. Subsequent in-depth interviews with 30 students will explore lived experiences, coping mechanisms, and impacts on well-being. By integrating quantitative and qualitative data, this research addresses a critical regional gap and will generate the first comprehensive profile of campus food insecurity in Nebraska. The findings aim to provide actionable recommendations for university administrators and policymakers to enhance student well-being and academic success across the state's diverse higher education landscape.

Falconer Al-Hindi, Karen – University of Nebraska Omaha, kfalconeralhindi@unomaha.edu **Thinking with feminist geography about online teaching and learning**

Geographers have long been concerned with critical pedagogy and, more recently, with online education. Feminist scholars, too, have been concerned to bring feminist principles into the online teaching and learning environment. This presentation is motivated by curiosity about what a feminist geographical analysis of professors becoming media producers for online education might reveal. I consider the following questions: Is a view of online teaching through the lens of femininity and care work useful? What is distinctive about teaching geography concepts (e.g., mapping) in an online feminist mode? Is online teaching more labor-intensive than on campus teaching? Does the ability to 'teach from anywhere' afforded by teaching online contribute to the devaluation and invisibilization of online teaching efforts? I address these questions through engagement with the feminist and geography literatures on teaching and learning in online environments. The arguments are illustrated with my experiences teaching undergraduate courses. I conclude with three ideas for additional research.

Foote, Kenneth – University of Connecticut, ken.foote@uconn.edu Panel discussion: **Maintaining what matters: Sustaining and strengthening departments in a time of rapid change**

Geography programs in our region and around the country are facing rapid-fire policy changes at the national and state levels. These changes are already having profound impacts on geographical research and education at all levels. This impact has been especially hard on our undergraduate and graduate programs, where changing policies are affecting students, faculty, research, and teaching. This panel

open to anyone interested in sharing concerns and strategies for responding to these unprecedented challenges.
Organizer: Ken Foote, University of Connecticut
Panelists:
Marcellus M. Caldas, Kansas State University
Jennifer L. Fluri, University of Colorado
Rex Cammack, University of Nebraska Omaha
Gregory Vandeberg, University of North Dakota

Gabriel, Jeannette – University of Nebraska Omaha, jgabriel@unomaha.edu **Black Placemaking in the Plains: Charting North Omaha's Commercialism**

In the spring of 1921, *The Monitor*, a national Black newspaper published out of Omaha, ran a ten-part series featuring almost one hundred Black owned businesses throughout North Omaha. *The Monit*or's editor, Reverand John Albert Williams, identified himself as an investigator as he embarked on a walking tour documenting the emergence of a Black business district. This placemaking project was rooted in the New Negro movement's response to racial capitalism with "race businesses" that could provide economic control and employment opportunities. Williams identified a mix of independent small businesses, companies owned by shareholders, and cooperative enterprises set up to provide Black employment. *The Monitor* aligned with hundreds of Black newspapers across the country that promoted this self-sufficiency model. What differed in Williams' approach was charting a visual spatialization of the business district created by walking each block and identifying the economic impact of the various Black owned businesses. This close examination of Williams' project contributes to an emerging counter-mapping scholarship (Dando 2010 2018; McKittrick 2011, Inwood and Alderman 2025, Yessler and Alderman, 2021). Counter-mapping has the power to challenge "who constitutes a map maker, whose interests are served by maps, and even what constitutes a map." (Alderman, Inwood, and Bottone 2021, 68). Like Chicago's Hull House residents who canvassed the neighborhood documenting the community's social needs (Dando 2018), William's investigative project resulted in *The Monitor*'s campaign soliciting Omaha's City Council to improve the lighting infrastructure on North 24 Street.

Humphress, Glenn -- Southeast Community College, ghumphress@southeast.edu
Highlighting Geography in an Introductory Human Geography Class: An Alternative Course Design

An alternative approach to organizing material taught in introductory human geography courses is presented, one that makes core themes of geographic inquiry such as location, place, and spatial interaction the focus rather than the current common focus on social science themes. The goal here is to stimulate discussion about how human geography is presented to students in the introductory course and about how that can potentially influence student interest, or lack thereof, in the discipline including as a potential major.

Jing, Yue – University of North Dakota, jingyue94@hotmail.com Co-authors: Yujie Hu, University of Florida; Chen Chen, Rice University; Daniel Cohen, Rice University.
Evaluating human mortality impacts from air pollution as U.S. commuting reaches its extremes

Commuting significantly influences environmental quality and public health, thereby shaping urban sustainability. However, the effects of air pollution from vehicle emissions and associated mortality at both lower and upper commuting extremes remain unexplored. This study utilizes nationwide commuting flow and geodemographic segmentation datasets to implement a disaggregated excess commuting framework across 918 U.S. metropolitan regions (MSAs). Three reduced-complexity air quality health effect models are then employed to assess changes in vehicle emissions and related mortality for these extreme scenarios. The results, categorized into five urban form types identified

through clustering algorithms, indicate substantial reductions (increases) in emissions and mortality at the lower (upper) commuting extreme. Notable variations are observed across urban forms and geographies, with densely populated polycentric MSAs showing significant changes. In some MSAs, health outcomes do not align with emission changes due to geographic factors that help disperse pollutants. These findings highlight the need for targeted policy interventions.

Johnson Maier, Kimberly – South Dakota State University, Kimberly.JohnsonMaier@sdstate.edu **Reinforcing the Frontier Myth at the Ingalls Homestead: A Relational Site-Scale Approach**

This presentation employs a relational site-scale approach to examine how the Ingalls Homestead cultural landscape represents aspects of the Frontier Myth. Rather than treating the site as an isolated or neutral location, I demonstrate how the Ingalls Homestead guides, positions, and selectively includes information and embodied experiences to promote and make durable a selective settler history, couched within the Little House on the Prairie book series. I examine tourist engagement at the Lookout Tower and how those experiences affect meanings that may be (re)made on the ground at the Homestead. I first show how the Lookout Tower facilitates relational connections for tourists through a sign listing towns, distances, directions, and significance to Laura Ingalls Wilder is included. By analyzing the sign and viewing, I show how tourists relate to and imagine these faraway places within the context of Little House, Laura Ingalls Wilder, as well as the historical awareness they bring with them. I then illustrate how the Lookout Tower enables tourists to experience the prairie, surrounding agricultural fields, and buildings (e.g., dugouts, claim shanties, Little Prairie School, and West Bethany Church) that collectively materialize and reproduce a selective settler history. Using key examples throughout the tourist landscape, I demonstrate how tourist views, in both senses of the word, of what constitutes frontier historical geography are both widened and narrowed in ways that include only selective experiences associated with settlers.

Joslin, Audrey -- Kansas State University. ajoslin@ksu.edu **Prescribed Burn Plans and the (co-) Production of Landscapes of Fire**

Fire itself possesses a kind of agency. Its behavior shaped by wind, fuel, and humidity rather than human intention, thus making it a source of risk and unruly partner in land management. A burn plan document, however, is an attempt to reduce that risk. It specifies how, when, and under what conditions a prescribed fire will take place, outlining responsibilities, environmental thresholds, ignition patterns, and safety procedures. This paper explores how burn plans produce landscapes of fire as governable spaces. In addition to burn plans themselves, I analyze data from participant observation from prescribed burn association workshops, annual meetings, and burn events in Kansas to identify 3 interrelated dimensions to the burn plans: 1) epistemic, which aligns experiential, technical, and institutional ways of knowing fire; 2) the bureaucratic, which transforms that knowledge into legitimacy and legal protection through documentation; and the 3) social dimension coordinates communication, labor, and shared responsibilities. These intersect in a spatial outcome that materializes as a landscape of fire that is bounded, safe, and manageable. As such, burn plans can be understood as boundary objects that bridge diverse knowledges and enable the application of fire as a land management tool. The analysis shows that prescribed burning depends on the ongoing coordination of knowledge, authority, and labor to produce governable landscapes where fire can be practiced safely and legitimately.

Mallik, Senjuti – Mayville State University. senjuti.mallik@mayvillestate.edu **Health Experiences and Treatment-Seeking Behavior among Kolkata Slum Residents during the COVID-19 Pandemic: A Qualitative Analysis**

India suffered terribly from the coronavirus pandemic and has the third-highest number of deaths (533,570) in the world from COVID-19. Kolkata has a population exceeding 14.85 million (2020), and a

population density of 24,306 people per square kilometer, with one-third of Kolkata's population living in slums. The slums of the city are most vulnerable because of their high population density, unhygienic living conditions, and lack of access to basic amenities like clean water, sewers, drainage, and timely waste collection. The objectives of this article are to explore the health challenges and treatment-seeking behaviors of slum dwellers during the pandemic. Between May and August 2023, face-to-face interviews were conducted with 23 participants in the slums of Kolkata, including 20 slum residents and three doctors. The interview questions were designed to elicit information on various aspects, encompassing the overall health experiences, health-seeking behavior, and health-related challenges encountered by slum residents during the pandemic. The collected data underwent qualitative analysis through a thematic content analysis approach. The study's findings highlight financial constraints that hinder healthcare access, hesitancy surrounding COVID-19 testing, the role of massive unemployment, the persistence of social stigmatization, and various other socioeconomic inequalities among participants. Social stigmatization has resulted in profound alienation and othering of those afflicted, causing considerable psychological distress. The results of this research indicate a notable absence of a comprehensive support system for residents by the government. Policy implications and suggestions for future research have been highlighted based on the findings.

Millet, Bruce – South Dakota State University, bruce.millett@sdstate.edu Co-authors: Brett Werner, Centra College, Danville KY, & W. Johnson, SDSU. **Earlier Springs, Faster Drawdowns: Future Hydroperiod Dynamics of Prairie Pothole Wetlands**

The Prairie Pothole Region (PPR) provides exceptional biodiversity and ecosystem services but faces accelerating pressures from climate warming, land conversion, and drainage. We applied the WETLANDSCAPE (WLS) system-dynamics model, using downscaled CMIP5 climate inputs (MACA for the U.S. and PCIC for Canada), across 19 weather stations under RCP 4.5 and RCP 8.5 to evaluate twenty-first-century changes in seasonal wetland hydroperiods. Across 150 experiments, mean hydroperiods declined almost universally by 3.5–44% (≈3–41 days), with larger losses under higher emissions. Projections show earlier hydrologic spring and faster summer drawdown, making long-duration hydroperiods (≈80–120 days) markedly less frequent —conditions essential for invertebrates, amphibians, and waterbirds. Geospatially, viable hydroperiods shift east–southeast; Canadian PPR wetlands are unlikely to offset U.S. losses because evapotranspiration increasingly outpaces precipitation gains. Compared with models emphasizing single-month "May ponds," WLS's full-season hydroperiod metric reveals stronger drying under hotter summers, underscoring the importance of continuous hydrologic dynamics for climate-impact assessments. These results indicate a pervasive contraction of wetland habitats and associated services, with implications for species assemblages and North America's migratory flyways. Conservation efforts should prioritize maintaining existing protections, restoring basin depth and cover heterogeneity in degraded sites, and targeting restoration and enhancement to relatively wetter subregions to mitigate the effects of regional drying. Given the ongoing loss of drainage and grassland, proactive, landscape-scale mitigation is necessary to preserve functional wetland networks that support life cycles and buffer communities from climate-driven hydrologic changes.

Mohr, Alex – University of Nebraska, amohr20@huskers.unl.edu **Belly Dance in Nebraska: Identity, Social Acceptance, and Perseverance***

Belly dance is inherently geographic, as seen through its places of origin, music and movement styles, global spread, practitioners, and practice spaces. However, it has not been wellrepresented in geography, including in the United States' Great Plains. It is often a contested art due to tensions over dress, terminology, and cultural practices within its community because the dance originated outside the United States. Additionally, inaccurate association with exotic dancing often results in stigma, and need arises to prove its legitimacy to outsiders. This qualitative dissertation explored the cultural/dance

identities formed by belly dancers in the central Great Plains, specifically Nebraska, to discover why Nebraska people belly dance, why Nebraska belly dancers continue to dancing despite stigma, and if belly dance in Nebraska is a safe space welcoming to all bodies. This study found that Nebraska belly dancers enter into the dance and stay for similar reasons as those in the literature, that stigma is present in Nebraska, and that the dance appears to be welcoming to all Nebraska people and bodies. My research adds to the field of geography by its use of both cultural and feminist geographic methods to focus on belly dance in a specific state of the Great Plains region, by the examination of who is allowed to use the belly dance space, and by the updating of literature on belly dance and the study of stigma. It also helps to educate Nebraskans and others outside the state about the belly dance community that lives here.

Shabram, Patrick – Front Range Community College, patrick.shabram@frontrange.edu
Co-organizers: Lauren Hull, Portland Community College & Tamara Biegas, Harford Community College.

Workshop -- Community College Geography: Naming our Value and Staking our Place within the AAG

Community college geography programs are on the forefront of Geography education and workforce development, yet their faculty, staff, and students frequently have fewer opportunities to engage with our professional associations and 4-year counterparts (4YC). This workshop centers on 2-year programs (2YC) as an untapped resource in sustaining and advancing the geographic discipline by exploring these questions:

-What innovations/successes do 2YC faculty/programs bring to the geographic discipline and the AAG?

-What barriers exist for 2YC faculty engaging with the AAG and it's regional/national meetings?

-What changes could be made to regional/national meetings and AAG programmatic efforts to make them more valuable to 2YC faculty?

-What supports do 2YC faculty/programs need from their professional associations to enable engagement?

-What collaboration opportunities exist between and among 2YC programs, 4YC programs, and professional associations like the AAG?

At a time when geography degrees and programs are in decline, the inclusion and engagement of community college programs with professional associations and 4-year institutions not only strengthens our discipline as a whole, but our individual and programmatic efforts in geography. Come join the conversation, make connections, and expand opportunities for collaboration.*

*This workshop is a product of an NSF Workshop Series "Strengthening Engagement between Disciplinary Societies and Community Colleges" led by the Geography Discipline Team composed of Lauren Hull (Portland Community College), Tamara Biegas (Harford Community College) and Patrick Shabram (Front Range Community College).

Smith, Jeffrey – Kansas State University, jssmith7@ksu.edu **Restorative Places Across Time and Space**

Humanity is facing a mounting mental health crisis, with rates of anxiety and depressive disorders up 27 percent above pre-pandemic levels. According to the CDC, in the United States nearly one in five adults experience a mental health disorder each year. Treatments range from an alphabet soup of pharmaceutical therapies to yoga, with increasing emphasis on naturebased remedies. Research on restorative environments emerged in the late 1950s and by the 1990s scholars were actively investigating environmental conditions that foster physical and emotional recovery. Yet, despite this growing body of work, little research has looked at the historic and geographic background of locations used to restore the human condition. This paper examines key milestones and socio-cultural forces in U.S. history that have influenced the use of nature-based settings as a means of addressing mental,

emotional, and physical illness. It contributes to the literature by highlighting a nuanced character of place.

Stevenson, Lane – Brigham Young University, countrylane007@gmail.com Co-author: Grayson Morgan, Brigham Young University. **An Unsupervised Burn Severity Classification Method in Hat Rock State Park, Oregon: A Case Study***

Remote sensing of wildfire burn severity is essential for post-fire assessment, land management, and ecological recovery planning, particularly in underrepresented environments such as semi-arid shrub-steppe ecosystems. This study presents an unsupervised classification framework that integrates multi-index spectral differencing, percentile-based thresholding, and k-means clustering to map burn severity. Because of the lack of ground reference data, threshold outcomes were compared against k-means clustering. Using pre- and post-fire Landsat imagery of the 2023 Hat Rock Fire in northeastern Oregon, nine spectral indices were evaluated for their effectiveness in characterizing post-fire conditions. Biophysical indices such as NDVI, EVI, MSAVI, and SAVI showed high internal agreement ($\kappa \geq 0.998$), while CVI, though poorly correlated with other indices, produced burn severity maps that visually aligned with high-severity areas in Sentinel-2 imagery and achieved the highest agreement with the kmeans output ($\kappa = 0.265$). Principal components analysis showed that only three components explained over 99% of variance across spectral index (SI) rasters, revealing interesting behaviors among indices. Our method offers a transparent, replicable alternative to the widely used but flawed dNBR-based classification schemes. This framework contributes to the development of adaptable remote sensing tools for post-fire analysis as wildfire regimes intensify under climate and land-use pressures.

Thorburn, James – University of Nebraska-Lincoln, jimmyt6549@gmail.com **POW Camp Atlanta***

This presentation covers the German prisoner of war (POW) camp in Atlanta, NE. Operating from 1943 to 1946, Camp Atlanta held nearly 3,000 German soldiers captured in North Africa and Europe. This presentation explores the camp's role within the broader wartime landscape of the Great Plains, how it supported the U.S. war effort and created cross-cultural encounters in rural Nebraska. Using archival records, interviews, and photographs, the talk examines daily life inside the camp, including labor programs that placed POWs on area farms, interactions between prisoners and Nebraskan civilians, and the camp's lasting legacy in regional memory. By understanding Camp Atlanta within both global and local histories, this presentation reveals how a remote Nebraska community became an emblem of wartime humanity, where enemies lived side by side in uneasy peace with civilians on another continent.

Ward, Eleanor – University of Nebraska Omaha, ecward31@gmail.com **Anticipating Violent Non-State Actor Exploitation of Geographic Information Systems: A Framework for Malevolent Creativity and Asymmetric Threats***

This poster introduces a novel analytical framework for assessing of the potential for malevolent creativity—the deliberate, innovative misuse of creativity in a myriad of capacities to cause harm—within the context of Geographic Information Systems (GIS). Specifically, it examines how violent non-state actors (VSNAs), including those committing acts of terrorism or extremist targeted violence, might exploit open-source GIS tools, publicly available spatial data, and emerging AI assistance to identify, model, or target critical infrastructure vulnerabilities. To operationalize this assessment, the poster presents the Tiered Threat Indicator Framework for Malign Use of Geographic Information Systems, which categorizes exploitation potential across three levels of sophistication. The analysis further addresses originality bias, where known threat patterns are favored over novel combinations of tools and data, hampering counter-threat analytical capabilities. To do so, the Tiered Threat Indicator

Framework was then applied by two testers of differing GIS backgrounds at all levels of the framework, resulting in insights drawn from four preliminary case studies demonstrating how VSNAs could employ GIS creatively to simulate, prototype, or communicate attacks without immediate detection. This poster provides a structured means of anticipating adversarial imagination in the geospatial domain, contributing a new framework and advancing the conversation around emerging geotechnological threats.

Weihs, Brandon – University of Nebraska Omaha, DWFI, & Northwest Missouri State University, bweihs@nwmissouri.edu Co-authors: Zhou Tang, University of Florida; Somshubhra Roy, University North Carolina; Zezhong Tian, University of Wisconsin-Madison; Jo Heuschele, Zhou Zhang, University of Wisconsin-Madison; Zhiwu Zhang, Washington State University; Zhanyou Xu, USDA. **Improving Alfalfa Breeding with Remote Sensing-based Computer Vision, Deep Learning, and Mobile Applications**

The second Green Revolution is currently happening, with breeders and researchers focused on improving plants like alfalfa via phenotyping and breeding for improved abiotic stress tolerances such as drought, or nutrient deficient/toxic soils. Our research group has been focused on analyzing a host of different traits for alfalfa, namely its roots, stems, flowers, and digestibility (to name a few) within silico image analyses methods such as computer vision, artificial intelligence, and machine learning. In addition to our multiple analyses regarding different plant traits, we're also developing a mobile app designed to help stakeholders and producers optimize their management and harvesting decisions by employing our machine learning pipelines in a real-time, mobile, application for the field.

VanLooy, Jeffrey – University of North Dakota, jeffrey.vanlooy@und.edu Co-authors: Anai Caparo Bellido, Logan Dietrich, Gregory S. Vandeberg, all of the University of North Dakota. **Geochemical Analysis of Glacier Melt Water in the Andes Mountains of southern Peru**

Water availability is becoming a greater concern around the world as the climate continues to warm. Specifically in the Andes Mountains of Southern Peru, the ecosystem and communities rely on glacial meltwater for irrigation and drinking water particularly during the dry winter season (June through September). While the meltwater is a necessary resource, previous studies in nearby regions have noted the existence of harmful material within glacial meltwater due to the natural occurring elements in the mountains, and elements deposited on the glaciers from nearby mining activity. Despite the importance of the meltwater, as well as the possible contaminants it contains, very little research has been conducted in the Andes to analyze the quality of the glacial melt water. The overarching goal of this research is to determine the quality of the glacial melt water across the Mapacho watershed located within the Cordillera del Vilcanota in Southern Peru. Water samples were collected at seven glacially fed lakes as well as from two downstream locations, and from glacial ice to analyze the glacial water quality. Results indicate that the lakes are largely free of high levels of heavy metals, however three of the lakes indicated higher Aluminum (1.28 - 2.39 mg/L) and Iron (1.22 - 1.68 mg/L) levels as compared to the other lakes in the region, which may be due to specific geological conditions.

POSTER ABSTRACTS

by author's last name, * denotes part of a paper competition

Badal, Samuel – Brigham Young University, sbadal@byu.edu Co-authors: Dallin Hartsell, BYU, & Grayson Morgan, BYU. **Submarine Cable Vulnerability***

Submarine cables span the globe, connecting countries and economies. Damaged or cut cables have severe impacts on communications and the world economy. In recent years, there have been growing concerns over hostile countries intentionally damaging cables to disrupt their communications. We set out to find out which submarine cables are the most vulnerable to being sabotaged using GIS analysis of the cables based off of several factors including proximity to hostile countries, whether the cable passes through a chokepoint and if the country is near an ongoing conflict. We found that cables south of Europe and Asia are the most vulnerable to sabotage.

Brady, Sylvia -- Metropolitan State University of Denver. sarriaga@gmail.com Co-authors: Nels Grevstad, Sarah Schliemann, Charis Glatthar, all of Metropolitan State University of Denver.
Transportation, Ride-hailing and Discrimination Among the Blind and Low Vision Community

Individuals with disabilities, including those who are blind or have low vision (BLV), travel less frequently than non-disabled individuals due to persistent barriers across transportation modes. Ride-hailing services such as Uber and Lyft offer the potential to enhance mobility for the BLV community by providing flexible, on-demand travel options. However, many BLV individuals also experience discrimination when using these services, and there is a lack of research on their transportation and discrimination experiences. This study used an online survey as the first part of a mixed-methods research project to document and quantify the transportation experiences of BLV individuals, with a focus on ride-hailing. We explored differences in user satisfaction and perceptions of discrimination between Uber and Lyft and examined whether guide dog use contributes to higher rates of service denial or mistreatment. Our findings indicate that while ride-hailing services significantly improve access to destinations for BLV users, they are also the mode in which discrimination is most frequently reported. Guide dog users face notably higher rates of ride refusals. Respondents expressed slightly greater satisfaction with Lyft than with Uber. These findings underscore the dual nature of ride-hailing for BLV individuals: it offers greater independence but also introduces new challenges. This research has implications for ride-hailing companies seeking to improve accessibility, and for public agencies partnering with these platforms to deliver equitable, on-demand transportation services.

Burger, Paul -- University Of Nebraska – Kearney, burgerpr@unk.edu Co-author: H. Jason Combs, Dept. of Geography and Geospatial Sciences, South Dakota State University. **Rural–Urban Patterns in Nebraska's Medicaid Expansion Vote**

Medicaid, created in 1965, was expanded in 2010 to include low-income working adults. In 2012, the U.S. Supreme Court ruled that states could not be required under the Affordable Care Act to expand Medicaid, leaving the decision to each state. In Nebraska, the approved expansion is anticipated to provide coverage for roughly 90,000 residents between the ages of 19 and 64 whose annual income falls at or below 138 percent of the federal poverty line.

Combined with existing Medicaid costs, the expansion is projected to make the program the state's second-largest general fund appropriation. Spatial voting patterns of Nebraska's Initiative 427, the 2018 ballot measure on expansion, are of interest. The measure succeeded with 356,891 votes in favor and 309,533 against, yet only nine of Nebraska's ninety-three counties supported the initiative while eighty-four opposed it. This rural–urban division was also evident at the legislative district level. Of the forty-nine legislative districts, twenty-eight voted for the measure, but twenty-four of those were in the Omaha and Lincoln metropolitan regions. Only four districts outside these urban centers supported expansion. A similar rural–urban voting pattern was visible in the 2018 gubernatorial election as well, when Governor Ricketts, a Republican, defeated his Democrat challenger by a wide margin (59.0 percent to 41.0 percent).

Craig, Thomas – South Dakota State University, thomas.craig@sdstate.edu Co-authors: Jordan Brasher, Auburn University; Gustavo Ovando-Montejo, Utah State University; Matthew Haffner, University of Wisconsin - Eau Claire. **Where is Introduction to GIS Taught? Mapping Course Placement Across U.S. Curricula**

This poster presents findings from a survey of over 200 U.S. colleges and universities, examining how introductory Geographic Information Systems (GIS) courses are positioned within curricula. As the demand for GIS professionals continues to grow, it is increasingly important to understand how institutions are structuring their foundational course offerings. We find that while GIS education is broadly available, its accessibility varies in counterintuitive ways. Our analysis shows that large universities, many with dedicated GIS majors, are often more likely to place introductory courses at higher levels, potentially delaying student entry into the field. In contrast, many smaller programs, typically without GIS majors, often situate this introductory course earlier in the curriculum, making it more accessible to a wider range of students. The findings highlight how curriculum design decisions can either serve as a gateway that broadens student access or as a gatekeeper that inadvertently restricts entry into this critical field.

Dillon, Jeremy – University Of Nebraska – Kearney, dillonjs@unk.edu **A Last Glacial Maximum Pollen and Plant Macrofossil Assemblage from a Buried, Spruce Forest / Sedge Wetland Landscape in the Platte River Valley, South-Central Nebraska**

Subsurface investigations in support of a geologic mapping project (USGS STATEMAP) recovered a 9.1 m core from a loess-mantled alluvial surface in the Platte River valley in south-central Nebraska. The core revealed ~6.3 m of Peoria loess overlying 3 m of silty alluvium. The core terminated in alluvial sand and gravel. The lower portion of the core is organic-rich and contains well-preserved plant remains. Samples of Picea (spruce) needles from the upper and lower levels of the deposit yielded calibrated AMS radiocarbon ages of ~22.6 ka and ~23.4 ka, respectively. Additional coring demonstrates that the deposit extends for at least 1.6 sq km and is up to 5 m thick. Wood sampled from the upper and lower portions of the deposit yielded calibrated ages of ~22.7 ka to ~26.7 ka.

The plant macrofossils are mostly Picea needle fragments, Carex (sedge) and Pilea fontana (clearweed) seeds, abundant wood fragments, and a large amount of unidentifiable plant debris. We also collected insect remains, including an intact rove beetle (Staphylinidae). Pollen

analysis recorded 28 pollen types, mostly Picea and Cyperaceae (sedges). Minor amounts of Pinus (pine), Salix (willow), and Cupressaceae (juniper family) as well as non-arboreal pollen types and spores such as Poaceae (<37μm, grass). Aster type (composite type), Artemisia (composite family), and Polypodiaceae (ferns) are present. Picea stomata were also recorded. Based on the pollen and macrofossil evidence we suggest that a dense spruce parkland with interspersed sedge wetlands exists in the Kearney area ~23,00 years ago.

Fiorda, Federico – University of North Dakota, federico.fiorda@ndus.edu Co-authors: Gregory Vandeberg & Johannes Van der Watt, University of North Dakota. **GUI Tool for Industrial Residues Reutilization***

CO2 Mineralization has been a topic of relevance in the last decades, with growing interest due to its ability to sequester CO2 in solid form, supporting carbon management and enabling its use across various markets. By using CO2 as a reagent, it benefits residues that would have been otherwise destined to landfills by recycling them into the market, allowing waste reduction and landfill reclamation, production of sustainable materials, reduction of the CO2 footprint, and economical benefits from valuable byproducts. In the Midwestern U.S, several industrial residue locations have been identified, and if assessed properly, they have potential to have a significant turnout in both carbon management, but also commercialization of CO2 Mineralization byproducts and techniques. For a correct and efficient assessment of these residues we introduce a GIS model developed with ArcGIS Pro Model Builder that integrates GIS mapping, techno-economical assessment and Carbon Lifecycle Analysis (LCA) into an exportable Graphical User Interface (GUI) tool. Three major workflows are involved in our model's workflow: (1) candidate selection with the highest attribute value for Carbon capture potential, (2) nearest processing facility in the vicinity of the industrial residue location, and (3) routing trucking distance for computing the shortest route that will ensure minimal emissions and trucking cost. Additionally, maps have been produced displaying the residue locations within our area of interest (AOI).

Gregory, Avan – University of Nebraska at Kearney, gregorya@lopers.unk.edu Co-author: Jeremy S. Dillon, University of Nebraska at Kearney. **19th Century "Bird's Eye View" Maps of Omaha, Nebraska: Potential Resources for Research in History and Geomorphology***

In 1868, Albert Ruger published a Bird's Eye View of the City of Omaha, Nebraska. The map was compiled from notes and sketches of the individual buildings and features in Omaha at the time. Augustus Koch produced another Bird's Eye View map of Omaha in 1876. The city has experienced expansive growth and change since the 1860's and 70's. Many of the buildings and landforms shown on the maps no longer exist, or have been modified significantly, but some can still be identified today. In this paper we explore the usefulness of the Bird's Eye View map as a potential research tool for both History and Geomorphology. We demonstrate that, while the map is not perfect, certain buildings and landforms were portrayed at a level of detail that can aid historical and geomorphological research, as well as surficial geologic mapping in a modern, highly urbanized environment.

Lureen, Daniel – University of North Dakota, daniel.lureen@und.edu Co-author: Enru Wang, University of North Dakota. **The Economic Diversity of North Dakota: A Spatiotemporal Analysis***

The economic diversity of North Dakota is relatively low compared to most other states. This is primarily due to North Dakota's reliance on agriculture and extractive industries, such as oil and natural gas. This reliance, while lucrative for the state, comes with long-term risks to North Dakota's long-term economic security. The research of this study examines the economic diversity of North Dakota at the state and county levels over the period from 1980 to 2020. This study also focuses on the spatial clustering patterns of North Dakota's economy. To do this, the study examines the occupations that the population comprises. This study finds that, by implementing the Hachman Index, North Dakota's economic diversity is one of the lowest in the nation. This is mainly due to the state's dependence on industries such as agriculture and fossil fuel extraction. At the county level, this can be seen as well, with the counties that rely more heavily on agriculture and fossil fuel extraction having lower Hachman Index scores. These findings from this study have the potential to help influence the future of North Dakota's economy because they show how the state needs to become more economically diverse. Being more economically diverse will not only help North Dakota avoid the booms and busts of the agricultural and extractive industries but also will help the state's long-term sustainable development.

Osei, Ernestina – Fort Hays State University, e_osei@mail.fhsu.edu **Identifying Socio-Economic Areas of Concern Towards Inclusion in GIS Hazard Management, Detroit, Michigan***

Urban hazard impacts are rarely distributed evenly, with socio-economic inequalities shaping who is most at risk and how quickly communities recover. This study will analyze socioeconomic areas of concern for inclusion in GIS-based hazard management. The study area is Detroit, Michigan, a city marked by economic decline, population loss, and infrastructural decay. By combining socio-economic factors such as medically underserved areas, housing abandonment, crime rates, and accessibility to critical services like hospitals and fire stations, the study will utilize a spatial model that highlights patterns of vulnerability. A time-series NDVI vegetation study will also be conducted to analyze potential impacts of urban blight looking at vegetation encroachment. Both vector and raster-based GIS analysis will include: overlay operations, network analysis, reclassification, and weighted suitability modeling. The research will identify spatial clusters of high vulnerability, particularly in underserved neighborhoods characterized by limited emergency accessibility, changes in vegetation, and potential environmental hazards. It seeks to contribute to more equitable urban hazard planning by offering a framework for inclusive disaster preparedness, response, and mitigation strategies in Detroit and similar urban contexts.

Pegg, Michael – Kansas State University. michaelpegg1794@gmail.com **Ecological Consequences of Armed Conflict: Vegetation Change in Ukraine from Remote Sensing and Conflict Intensity Modeling***

Russia's war of aggression against Ukraine has generated widespread humanitarian crises, but its environmental consequences remain underexplored. This study investigates how warfare influences vegetation dynamics across Ukraine by integrating remote sensing and conflict modeling. Vegetation trends were first quantified using Breaks for Additive Season and Trend (BFAST), classifying areas of positive, negative, or stable change. Conflict intensity was then modeled along the frontline with a Bayesian Poisson framework implemented in R-INLA, producing predicted explosion counts and spatial patterns of attacks. Finally, vegetation

change was assessed in relation to both conflict and environmental drivers by linking BFAST-derived trends to predicted explosion counts, mean annual temperature, cumulative precipitation, and soil characteristics. Results will provide evidence on the extent to which vegetation dynamics are shaped by warfare relative to natural environmental factors. Beyond advancing methods for monitoring ecosystems during armed conflict, this research highlights the often-overlooked ecological costs of war and provides a framework for real-time environmental assessment that can inform both scientific inquiry and post-conflict recovery planning.

Rahman Sakib, Md Nasifu – University of North Dakota, nasifur281999@gmail.com
Co-authors: Ishrat Jahan Chadni & Nahrin Jannat Hossain, Jagannath University, Dhaka, Bangladesh.
Integrated Flood Susceptibility Analysis in Bogura District, Bangladesh: A Comparative Study using AHP with GIS and RS Techniques*

The Bogura district of Bangladesh is extremely vulnerable to riverine floods, which damage crops, property, and infrastructure. The main objective of this research was to develop and test a methodology for identifying flood hazard zones in this district. Multiple indicators and indices, including slope, rainfall, land use and land cover, drainage density, distance from the river, distance from the road, normalized difference vegetation index, topographic wetness index, and digital elevation models, were used to assess the flood susceptibility in the study region. The Sentinel-2A images and data from other secondary sources were used in AHP and GIS platforms to obtain the results. The findings show that among the six upazilas in the district, the susceptibility to flood hazards differs significantly. Significant areas from Shibganj, Gabtali, Sonatola, Sariakandi, Sherpur, and Dhunat upazilas have emerged as highly susceptible to riverine flood hazard. About 779.4891 square kilometers of area were identified as high floodprone areas. The other upazilas, such as Bogura Sadar, Kahalu, Adamdighi, Dupchanchia, Nandigram, and Shajahanpur, are less susceptible to riverine floods. About 857.4201 square kilometers were identified as low flood-prone areas. In the changing scenario of climate, the risk of riverine floods might increase even more. Therefore, the findings could help policymakers and planners in developing a preparedness system that would limit property loss and wealth in the Bogura district of Bangladesh.

Ruto, Caroline – Kansas State University, carolineruto@ksu.edu Co-author: Audrey Joslin, KSU.
Generational and Digital Divides in Prescribed Burn Associations*

Prescribed Burn Associations (PBAs) are key organizations supporting landowners in applying prescribed fire as a management practice across the Great Plains. PBAs bring together members with diverse backgrounds, ages, and levels of burn experience, raising questions about how these factors shape technology adoption in fire planning and implementation. This study draws on a survey of two Kansas PBAs to analyze members' current use of fire-related technologies, perceptions of their benefits, and confidence in use across different age groups and experience levels. Findings show that while most members are everyday users of technology, few identify as technology experts. Members in older cohorts (66+) report lower confidence and narrower use of technologies, even when they have substantial burn experience. At the same time, enthusiasm for technology exists across generations, contingent on training and resources. The respondents acknowledge the potential benefits of technology if used in burn planning, weather monitoring, and hotspot detection,

aligning with the barriers they fear most, such as "insufficient number of people" and "unexpected wind shifts/weather changes." As such, this study suggests that PBAs may serve as important cross-generational knowledge brokers for technology applications in prescribed burning, and that bridging digital divides may be important to sustaining technology use in prescribed burn associations.

Wellbrock-Talley, Max – Kansas State University, maxwt@ksu.edu **Negotiating Subnational Sovereignty and Caspian Geopolitics through Infrastructure Discourse in Kalmykia***

In 2007 at the St Petersburg International Economic Forum (SPIEF), then-President of Kazakhstan Nursultan Nazarbayev proposed the construction of a new shipping canal to bridge the Black and Caspian Seas. At roughly 1000 km shorter than the existing Volga-Don Canal, this "Eurasia Canal" would greatly expand Central Asian access to maritime shipping through Russia's borders, reducing costs and geopolitically transforming polities along the Caspian and throughout Central Asia. Rerouting Eurasian trade flows through the expanded canal would turn states like Kazakhstan into potential maritime powers. The Republic of Kalmykia, one of Russia's ethnic republics on the Caspian, would also enjoy this new geopolitical status, as proposed port construction in the city of Lagan (the Caspian terminus of the canal) promises to turn Kalmykia into a major shipping economy. Understanding the pursuit of such projects as the realisation of complex interests among actors at different scales, this study employs discourse analysis of the Eurasia Canal and related projects via Russian, republican, international, and non-State actors. In doing so, I aim to explore how such discourse becomes the ground for the negotiation of Kalmyk sovereignty, a comparatively challenging and underexplored case for Russian federal relations. Early results suggest both important continuities and developments in the Kalmyk-Russian federal dyad since Soviet times and may point to an eventual typology of when major transportation projects succeed and when they remain 'infrastructural rumours.'

Westfall, Luca – Brigham Young University, westfal4@byu.edu **Using GIS Tools for Predictive Modelling for the Effects of Airport Ambient Noise Footprint Pollution***

As air travel becomes an increasingly integral part of everyday life, the noise associated with airports becomes a larger issue. The extent of noise pollution has a direct effect on dense city populations. The author explores the use of GIS to model the effects of noise pollution on the population surrounding major airports. Decibel levels are analyzed at the following locations: Chicago O'Hare, Seattle SeaTac, Los Angeles International, and Dallas Fort Worth. A threshold of 50 decibels is used to determine noise coverage. This threshold is not based on FAA standards and is solely used to demonstrate modelling capabilities. Predictive models are used to determine potential noise footprints for a noise reduction of 5 and 10 decibels. Population data is compared to the noise areas to determine levels of impact. Comparison between the current population within the >50 dB noise footprint and the 5 dB reduction footprint indicated significant results. An up to 80.7% reduction between currently affected and the 5 dB reduced system was predicted for the lower population density area of DFW and 66.7% reduction under identical parameters was predicted for the high population density area of LAX. Noise reduction techniques are explored that can be applied to airports across the United States, many of which are already being experimented in European airports.

White, George W. – South Dakota State University, george.white@sdstate.edu Co-authors: Kimberly K Johnson Maier & Robert H Watrel, South Dakota State University. **Limiting Non-Citizen Voting in the 2024 General Election**

Republican-led legislatures in eight states proposed ballot measures that were intended to amend their respective states' constitutions regarding voting rights. Though the constitutions of these states stated that either "all" or "every" U.S. citizen had the right to vote, backers of the proposals wanted new language to make sure that non-citizens could not vote. Some thought that it was just a ploy to get more conservative voters to the polls, which in turn would help Republican candidates. This study investigates this assertion by looking at the voting results. The analysis undercovers mixed results in regard to the assertion but also shows distinct urban-rural differences in voting behavior.

Vandeberg, Gregory – University of North Dakota, gregory.vandeberg@und.edu Co-authors: Grace D Agbozo Yankey Mbongowo Mbuh, and Jeffrey VanLooy, all of the University of North Dakota.
Hazard Impact Assessment of Brine Spills on Groundwater Pollution in Western North Dakota

The rapid expansion of oil and gas production in North Dakota's Bakken Formation has heightened environmental concerns, particularly groundwater contamination from brine spills. Brine, a highly saline byproduct of oil extraction, poses a serious threat to water quality due to its chemical composition. This study examines brine spill impacts from 2013 to 2024 across Williams, Mountrail, McKenzie, and Dunn counties using GIS and the DRASTIC model, enhanced with Analytical Hierarchy Process (AHP) and Fuzzy Overlay techniques. A total of 57,013.539 barrels (2,394,568.64 gallons) of brine were spilled in western North Dakota during this period. Essential hydrogeological factors were analyzed to produce vulnerability index maps. Furthermore, spatial autocorrelation (Moran's I), Optimized Hot Spot Analysis, and Emerging Hot Spot Analysis were employed to identify spill patterns over time. Results show a strong spatial correlation between brine spill hotspots and high-vulnerability zones particularly near surface water and shallow aquifers. The findings highlight critical areas for targeted management and inform sustainable groundwater protection in oil-producing regions of North Dakota.

GPRM Annual Meetings

2025 University of Nebraska Omaha (co-located with NCGE)
2024 Utah Valley University & Brigham Young University
2023 South Dakota State University at Sioux Falls
2022 University of Denver
2021 University of Nebraska-Lincoln
2020 Cancelled due to Covid
2019 University of Kansas
2018 Kansas State University
2017 University of North Dakota
2016 University of Colorado, Colorado Springs
2015 University of Nebraska at Kearney
2014 University of New Mexico (joint with SWAAG)
2013 University of Nebraska at Omaha
2012 University of Utah
2011 University of Colorado-Denver
2010 University of Kansas
2009 Utah State University, Logan
2008 University of North Dakota
2007 University of Denver
2006 University of Nebraska-Lincoln (joint with East Lakes)
2005 University of Wyoming
2004 EROS Data Center, Sioux Falls, SD
2003 Kansas State University
2002 University of Montana
2001 University of Nebraska at Omaha
2000 Brigham Young University
1999 University of Colorado, Colorado Springs
1998 University of Kansas
1997 Montana State University
1996 University of Northern Colorado
1995 University of North Dakota
1994 University of Utah
1993 University of Colorado, Boulder
1992 Kansas State University
1991 University of Wyoming
1990 University of Nebraska at Kearney
1989 Weber State University
1988 US Air Force Academy
1987 University of Regina
1986 University of Nebraska at Omaha
1985 Montana State University
1984 University of Kansas
1983 University of Colorado at Boulder
1982 University of Wyoming
1981 South Dakota State University
1980 University of Utah
1979 University of North Dakota
1978 Metropolitan State University, Denver
1977 University of Calgary
1976 Kansas State University
1975 Utah State University
1974 University of Northern Colorado
1973 University of Nebraska-Lincoln
1972 Weber State University
1971 US Air Force Academy
1970 University of Kansas
1969 University of Utah
1968 Loretto Heights College, Denver
1967 US Air Force Academy