

The background of the entire page is a photograph of a park in Laredo, Texas. In the foreground, there are several tall palm trees. In the middle ground, a multi-lane highway bridge spans across the scene. In the background, there are more palm trees and a large, modern building with a sign that says "W. SACO". The sky is blue with some light clouds.

S W A A G 2 0 2 3

ABSTRACTS, AUTHORS, AND AFFILIATIONS

**ANNUAL MEETING OF THE SOUTHWEST DIVISION OF THE
AMERICAN ASSOCIATION OF GEOGRAPHERS**

**LA POSADA HOTEL - LAREDO, TEXAS
NOV 1-4, 2023**

**HOSTED BY TEXAS A&M INTERNATIONAL UNIVERSITY AND
THE CITY OF LAREDO**

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| Last name | First name | Affiliation | Co-Authors | Co-author Affiliation | Title | Abstract |
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| Abdoli | Nastaran | University of Oklahoma | Jennifer Koch | University of Oklahoma | Oil and Gas Explorations and Extractions: Evaluating the Landscape Effects in the Permian Basin | Worldwide population growth has led to increased energy consumption. Oil and gas production have surged due to advancements in drilling technologies and in an effort to meet the increased energy demand. Predictions suggest a 50% global energy demand increase by 2050, with the United States leading the production of oil and gas; however, concerns have emerged regarding the growth in energy-related activities and the corresponding environmental impacts. Studies have linked energy development, particularly oil and gas, to various environmental issues, including land use and land cover changes (LULCC), which is the focus of this study. LULCC occurs because of immediate and direct human actions like oil extraction. Our study area, the Permian Basin, covers 169,000 km ² , covering 61 counties in western Texas and southeastern New Mexico. This area has been identified as the top fracking region in the U.S. This research focuses on the above-ground impacts of extraction-related activities on LULCC, focusing on infrastructure such as well pads, pipelines, access roads, storage units, and other facilities. This study aims to identify the distribution and growth trend of wells, pipelines, and access roads over time and understand the patterns, characteristics, and drivers of LULCC in the Permian Basin. The study uses Landsat images, 30m NLCD landcover data, and high-resolution NAIP aerial imagery along with shapefiles acquired from the U.S. Census and other official data sources to assess oil and gas development and LULCC patterns. This will help us to understand better the proximate and underlying drivers of LULCC in the Permian Basin. |
| Arima | Eugenio | University of Texas at Austin | | | Mapping violence risk with survey data in Mexico | In the past few decades, Mexico has experienced increased violence perpetrated by organized crime groups involved in illicit drug production and trafficking. Although systematic data on violence collected by government agencies exist, they are typically at the municipal level, hindering understanding of more nuanced spatial patterns of violence risk. Similarly, direct collection of such data is impractical and dangerous to the observer. Here, data from 160 interviews conducted in June 2023 in Jalisco and Michoacán states, México, are spatially interpolated to create maps of violence risk. We discuss how these risk maps vary according to some demographic information and knowledge of the landscape. We end the paper by discussing the shortcomings of our method and survey and by highlighting extensions to the model that could be easily incorporated into future analyses. |
| Atkins | Dane | Texas State University | | | Ride or Die: A Two-Wheeler's Ethnography | Bicycles and motorcycles both share a unique status in the hierarchy of urban mobilities: set against the seemingly inalienable dominance of the 'normal' four-wheelers, these two-wheeled conveyances represent an impenitent 'other'. While public opinion varies from admiration to outright hostility, there's no mistaking the risks inherent to moving through the world without a 'cage'; these risks -- their empirical basis and the riders' perceptions -- are explored through an autoethnographic method that tethers academic discourse to contemporary cultural representations. The results help to clarify the interactions and effectiveness between professional rider training programs, personal protective equipment, and rider behaviors. Beyond these well-supported clarifications, a broader conclusion is provided: a call for the resurrection of a radical geography, so timed to coincide with the emergence of a new cultural rebellion against automotive dependence -- not just for the two-wheelers, but for all. |

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| Barajas | Miguel | Texas State University | | | Measuring Sustainability of the Mezcal Industry in San Dionisio Ocotopéc, Oaxáca, Mexico. | The purpose of this applied research project is threefold. First, using the literature, this research develops a sustainability evaluation tool for mezcal production. Second, it assesses sustainable mezcal production in San Dionisio Ocotopéc, Oaxáca, Mexico using sustainable dimension components. Finally, based on the assessment, recommendations to improve sustainable mezcal production in San Dionisio Ocotopéc, Oaxáca, Mexico are made. A forward-thinking long-term sustainability evaluation tool is proposed that can have the potential of creating a sustainable future in Oaxáca, Mexico and within the mezcal industry. The creation and implementation of a sustainability evaluation tool can have far-reaching implications for mezcal production in San Dionisio Ocotopéc, Oaxáca, Mexico and beyond. Through the creation of sustainable metrics and dimensions, sustainable accountability for all stakeholders involved in mezcal production can be measured and realized. |
| Bhatta | Anupa | Texas State University | Jason P Julian | Texas State University | Geodemographics and Spatial Inequity of Urban Blue and Green Spaces in San Marcos, Texas | Almost 60% of the global population is expected to live in urban areas by 2050, amplifying the demand for ecosystem services (ES) in cities. Urban blue and green spaces (UBGS) provide a range of ES, enhancing the livability of cities, and are critical for promoting human health and wellbeing. However, UBGS are often located inequitably across socioeconomic gradients, leading to Environmental Justice (EJ) issues. This study utilizes the concept of geodemographics, i.e., the linkages of spatial and socioeconomic traits shaping lifestyles in a geographic region, to examine the fair distribution of UBGS in the context of EJ principles. In this study, we examined the distribution of UBGS in San Marcos, Texas within the context of the 14 Lifestage Summary Groups of Esri's Tapestry Segmentation at the tract level. The study findings highlight a concentration of a greater quantity of urban green spaces within the north-western region of San Marcos. This area predominantly accommodates the Affluent Groups of ExUrbanites and GenXUrban, as identified by Esri's Tapestry analysis. The southern part of San Marcos, where groups DowntheRoad and CollegeTowns were prevalent, appeared to have fewer urban parks. In the context of blue spaces, the Affluent Groups are located at a greater distance from the natural blue space, the San Marcos River corridor, which brings a potential risk of flooding. Our study establishes a basis for future conservation and EJ research regarding the accessibility of urban semi-natural spaces. |

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| Bhattarai | Injal | University of North Texas | Rijan B Kayastha | Kathmandu University | Assessment of Rangeland Biodiversity Shift to Higher Altitude Areas in Upper Mustang, Nepal | Climate change is a global phenomenon and its impact on vegetation cannot be truly measured because vegetation is one of the factors that keep sustaining life on this planet. Among vegetation types, rangelands are one of the most vulnerable types to climate change. The change in vegetation pattern must be studied from time to time for future planning and management. Vegetation of Upper Mustang has seen major changes even with small changes in temperature and precipitation. This research has been done to understand the vegetation change in one of the susceptible areas to climate change. The trend analysis of the mean of monthly maximum and minimum temperature was done and was found to be increasing at the rate of 0.0004°C and 0.0031°C per month at Jomsom and Thakmarpha respectively while it was found to be decreasing at Chhoser at the rate of 0.0061°C per month during the study period. The monthly precipitation rate at Jomsom and Chhoser increased at the rate of 0.0128mm and 0.002mm per month while it was found to be decreasing at a rate of 0.00010mm per month at Thakmarpha during the study period. In 1990 A.D. the vegetation area in Upper Mustang was 2.4% which later increased to 9.39% in 2020. Thus, the research shows that there was significant growth of vegetation in the higher altitude of the Upper Mustang region. |
| Blue | Sarah | Texas State University | | | Safe Haven for Asylum Seekers: Differential Treatment at the US-Mexico Border | Refugees and migrants arriving at the US-Mexico border looking for safe haven face US immigration policies focused on deterrence. Record numbers of families and unaccompanied minors have arrived at the US' southern border in the past five years. Shifting US policies, often responding to border management and to internal political debates, have resulted in a dynamic, complex, and geographically uneven experience for refugee-migrants who wish to seek asylum in the United States. Their varying experiences of (im)mobility and vulnerability during their trek to the United States, their wait at Mexico's northern border, and their experience once in US territory often differs according to their nationality. This paper draws on policy analysis and empirical data gathered in Texas' Rio Grande Valley in 2023 to explore how policy shapes the options available to refugee-migrants wishing to seek asylum in the United States and ultimately their experience with the US' Customs and Border Patrol (CBP) at the border. We argue that whether individuals or families are turned away, detained, deported, or released to sponsors once they cross into the United States is tied to policies that differ by a migrant's nationality and how they enter the country (i.e., as part of a family unit, between ports of entry, or under the new CBP One mobile app). |

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| Bose | Priyanjali | Texas State University | | | Drought Dynamics in the Canadian River Basin, United States | <p>The American Meteorological Society explains the condition of drought as “something which causes increasing deficiency in atmospheric moisture leading to devastating impacts on the system” (Svoboda et al 2002). It may also be defined as a “deficiency in monthly or annual precipitation over the percentage of normal precipitation” (Palmer 1965). The complex conditions (interconnections between factors) often push back the efforts to quantify drought parameters by climate scientists (University of Nebraska-Lincoln, IANR 2023). Even though it is hard to predict, drought is widely studied as an important driver of ecosystem and society at large (Slette et al 2019). Canadian river basin has been chosen as a case study because of its unique geography in a region that is least studied parts amongst the South-Central United States. My approach will be strengthened with incorporation of universally accepted Indices: “Standard Precipitation Index” (McKee et al. 1993), “Extreme Low Flow Conditions” (Indicators of Hydrologic Alterations, Nature Conservancy 1990) and “Number of low flow days” (Vaughn et al. 2015) to analyze drought dynamics (Kogan 2013). The purpose of this investigation is to map and analyze drought patterns within the Canadian River Basin over space and time. My research will be based on how each of the drought types chosen for my study (meteorological, hydrological, ecological) and other factors play will a significant role in influencing each of the mechanisms within this dynamic drought system. The final goal will be to stitch all the mechanisms together and analyze the overall system at work.</p> |
| Boyles | Michael | Texas State University | | | Resurveying the Faynan: Using GIS and remote sensing to monitor contemporary threats to an ancient landscape | <p>Historically, the Faynan region of Jordan and its Bedouin inhabitants have seen little of the conflict between archaeological site conservation and modern land development played out in other areas with a long history of human settlement. During the 2023 field season of the Barqa Landscape Project (BLP), however, it was discovered that the 250-hectare Byzantine-era agricultural field systems of the Wadi Faynan were being used once again, this time for growing watermelons, after a hiatus of over a thousand years. While the new cash crop is a boon to a region that is economically depressed, it comes at the cost of extensive, permanent damage to an assemblage of unique archaeological sites dating from the Bronze Age to the Byzantine period, sites which are, at least theoretically, protected by the Jordanian government. This study details exploratory efforts begun in the summer of 2023 to resurvey a representative sample of the more than 1,500 archaeological sites of the Wadi Faynan and assess their status in light of the renewed agricultural activity. The sites in the chosen study area, which were originally surveyed and photographed by the Wadi Faynan Landscape Survey (WFLS) in the 1990s were resurveyed, rephotographed, and assigned a status based on their current condition. Frighteningly, of the sixteen sites in the study area seven, a staggering 44%, have been either partially damaged or totally destroyed in recent years as a direct or indirect result of agricultural activity.</p> |

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| Brooks | Julie | Texas State University | Thomas W Ptak | Texas State University | Coupling Fire, Heat, Energy and Vulnerability in Austin, Texas | <p>Austin, Texas has the highest wildfire risk of all urban centers in the United States outside of California, ranking sixth for residential risk. Prolonged drought, extreme weather conditions, fuel accumulation, and human activity have compounded socioenvironmental risks shaping energy supply challenges across the Austin metropolitan area in addition to its sprawling WUI. Intensified winter storms and summer heat strain the integrity of supply infrastructure prompting calls for conservation, grid resiliency, and resulting in energy supply outages. Like many major U.S metropolitan areas, Austin’s history of redlining—now enmeshed in the geography and morphology of the city—compounds existing social vulnerability when environmental hazards occur. As human-induced climate change is increasingly manifest through extreme weather conditions and events, social vulnerabilities linked to centralized and largely unjust energy systems are increasingly exposed. To date, social science research on energy supply outages have largely focused on socioenvironmental consequences of events such as hurricanes, or other environmental hazards like Public Safety Power Shutoffs across the western United States. This research seeks to develop a nuanced and spatially centered understanding of relationships coupling wildfire risk, extreme temperatures, energy supply outages, and social vulnerability across the Austin metropolitan area. The primary research question informing the study is as follows: How do socioenvironmental relationships compound risk for socially vulnerable populations in the Austin, TX metropolitan area when coupled with environmental hazards such as heat stress, wildfire, and energy supply outages?</p> |
| Buckmeier | Adam | Texas Christian University | Brendan Lavy, Manuel De Oyarzabal Barba | Texas Christian University | An Equity Analysis of Tree Canopy in Tarrant County, Texas | <p>Trees provide an array of benefits to urban communities, such as oxygen production, flood mitigation, air pollution reduction, increased property value, cooling effects, and cultural services. Tree distribution, however, varies across cities, impacting the delivery of these services from neighborhood to neighborhood. Research has shown that low-income neighborhoods are more likely to have less trees than wealthier neighborhoods, leaving these neighborhoods more vulnerable to health impacts, such as heat-related and respiratory illnesses. The purpose of this study is to analyze tree canopy cover in relation to a set of demographic variables at the US Census block group level to understand if inequities exist in Fort Worth, Texas. We used a geographic information system (GIS) to assess the extent to which age, race, income, and housing characteristics are related to tree canopy. We conducted a correlation analysis between percent canopy cover and the demographic variables. Results suggest that majority minority and low-income block groups possess less canopy cover than predominantly white, higher-income areas in Fort Worth.</p> |

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| Buenemann | Michaela | New Mexico State University | Otis Akraasi | Texas A&M University | Land cover changes in the Darién Gap of Panama before and during the COVID-19 pandemic | <p>The COVID-19 pandemic has raised important questions regarding the role of land cover change in promoting the emergence of novel pathogens and hence the risk of pandemics and, conversely, the role of pandemics in driving land cover change. However, the dynamic linkages between pandemics and land cover change are poorly understood. As a first step toward addressing this knowledge gap, our goal was to characterize land cover changes in the Darién Gap of Panama before and during the pandemic. The region is characterized by high biodiversity and endemism and serves as an important corridor or barrier between North and South America in terms of both the movement of goods and people and the spread of diseases. Our specific objectives were to 1) map land cover in 2018, 2020, and 2022; 2) assess land cover changes before the pandemic (2018-2020) and during the pandemic (2020-2022); and 3) determine how land cover and land cover changes differed a) in the Darién Province vs. the Embérra-Wounaan Comarca, b) in the Darién National Park vs. areas outside this park, c) near roads vs. distant from roads, and d) near water bodies vs. distant from water bodies. To meet these objectives, we generated land cover maps using random forest classifications of Sentinel-2 satellite imagery and quantified land cover changes using intensity analysis. The overall accuracies of the final land cover maps ranged from 87.4% to 93.3%. Land cover and land cover changes differed between both time periods and areas considered.</p> |
| Carey | Lauren | Tarleton State University | | | Blazing New Trails: A GIS perspective on the anthropogenic factors affecting wildfire in the Pineywoods of East Texas. | <p>Like much of the United States, the Pineywoods of East Texas is currently threatened by the latest effects of the Anthropocene: human-caused wildfire. Valued at almost 1.1 billion dollars in its service to Texas (Texas A&M Forest Service, 2013), the Pineywoods is widely respected as an important part of our beautiful state. The objective of this study is to use GIS to evaluate the spatial and temporal aspects of anthropogenic wildfires in the Pineywoods of East Texas. We collected open-source data for this project from the following: TxDOT, Esri, Railroad Commission, and the U.S. Department of Agriculture. Through the use of Kernel Density, Euclidean Distance rasters, and Ordinary Least Squares (OLS) regression; we were able to pinpoint the epicenter of wildfires in Texas as Upshur County in East Texas. We were also able to identify several anthropogenic factors potentially behind it. Regression analysis identified distance from roads as a significant variable, but moreover, it pointed to the significance of the intersectionality between oil wells, transmission power lines, pipelines, and roads. The overall goal of this study is to provide proof of the need for balanced infrastructure, new emergency response tactics, and enhanced preservation efforts.</p> |

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| Cervenka | Abigail | University of Oklahoma | Diana Denham | University of Oklahoma | Behind the Discourse on Plastic Waste Pollution | <p>This paper examines the impact of global plastic waste discourse on policy solutions proposed at the urban scale. Through a review of analytic and policy documents published by non-profit, public, and international institutions as well as observation of meetings taking place among such actors, we examine how the burden and responsibility for plastic waste is distributed discursively and how this framing influences proposed solutions. This work is situated within the theoretical lenses of waste colonialism and urban political ecology. We find that despite an emphasis on the global magnitude of the plastic waste problem, dominant discourse frequently positions cities as a scale at which it can be addressed. Moreover, despite some recognition that global North countries produce the most per capita plastic waste, global South countries – especially in southeast Asia – have been targeted as a focal point of international intervention. Our analysis reveals several critical contradictions. First, while plastic is portrayed as ubiquitous in modern life and a problem of global magnitude, the scale proposed to confront the problem is often urban or municipal. Second, global South countries are often depicted as bearing primary responsibility for the vast problem of oceanic plastic waste. Through this sleight of hand, the role of actual producers of plastic – petrochemical industrial multinationals located mainly in the global North – is minimized. The consequences of such discourse can hardly be understated.</p> |
| Chukwu | Michael-mary | University of Arkansas | Xiao Huang | Emory University | Urban Park accessibility assessment using human mobility data: A systematic review | <p>The rise in human mobility data in recent years provides a new frontier to understanding the spatiotemporal dynamics of mobility to urban parks. These human mobility data offer profound merit in the study of how accessible urban parks are through real-time analytics of individual travel patterns and locations. This study systematically reviewed 46 peer-reviewed publications from the Web of Science and Academic Search Complete databases relevant to human mobility data and urban park accessibility measures. The study aims to provide a comprehensive and quantitative evaluation of the utilization of human mobility data in the field of urban park accessibility research. This objective is pursued through a systematic examination of existing literature within this research domain. We summarize the types of mobility datasets and the modeling tasks adopted. Meanwhile, we grouped the methodological/thematic frameworks from empirical use of human mobility data in park accessibility into seven categories: 1) inequality and inequity level, 2) users' perception and exposure level, 3) frequency and variations in park visitations, 4) park service area or effective service radius, 5) happiness and sentiment level, 6) travel mode choice and trip assignment, and 7) park characteristics. Additionally, we highlighted the obstacles in integrating human mobility data into park accessibility research and engaged in a discussion surrounding prominent ethical dilemmas related to the utilization of big data. These ethical concerns encompassed data privacy, consent, and data ownership.</p> |

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| Clark | Travis | Texas Tech University | Abinash Bhatta- chan | Texas Tech University | Post-fire Shrub Recovery in West Texas | <p>In the United States there has been an increase in burn area due to fires that pose a considerable risk on communities, and strained the flora, and fauna of the affected regions. In Texas, natural fires commonly occur in brushlands and grasslands and are critical in not allowing shrubs to encroach on grasslands. It is important to study these Texas fires to better understand the resilience of the ecosystems and determine how land cover classified as shrubland may change over time due to these fires. Because fires are necessary tools in dryland ecosystems to limit shrub encroachment and favor grass growth, we hypothesize that fires that burn in shrublands allow for grass recovery to occur. To determine how these fires are affecting the Texas landscape, geospatial datasets of fires from Monitoring Trends in Burn Severity (MTBS) and land cover data from the National Land Cover Dataset (NLCD) were acquired for a period spanning the last two decades. We first calculated the total area burned on an annual basis and determined whether the disturbance window, referred to as the period during fires occur has increased in the last two decades. Using the dynamic land cover classification maps, we assess if fires occurring in shrublands have successfully allowed for the recovery of grassland. We will present statistics on the number of shrubland fires that returned to grassland state over time.</p> |
| Clearwater | Tabytha | University of Texas at San Antonio | | | Assessment of climate change vulnerability in Rio Grande Indigenous reservation communities | <p>The Rio Grande has historically constituted a major natural resource for settlements located within its watershed. Alteration of river hydrology coupled with other climate change impacts in the American Southwest may exacerbate existing socioeconomic inequities within local communities. Academic literature and Indigenous voices maintain that reservation communities generally experience increased climate change vulnerability when compared with non-reservation municipalities. However, few studies have assessed climate vulnerability as specifically encountered by reservation communities within the Rio Grande watershed. This research provides a concrete, quantitative estimation of locational climate change vulnerability in an effort to fill this gap. An assessment which considered several variables associated with vulnerability was used to calculate a composite vulnerability index score. Variables included metrics representing climate variation, economic sensitivity, and cultural resilience. These variables were selected based on existing literature and adapted to the unique cultural and physical geography of the Southwest. The ensuing index scores were used in hot spot analysis to assess spatial patterns of climate vulnerability in the region. Results vary as a consequence of spatial, social, economic, and historic similarities and dissimilarities between Indigenous groups. Further analysis will involve isolation of variables most strongly associated with exacerbated vulnerability. Continued academic exploration of climate vulnerability as experienced by Indigenous communities is necessary to the pursuit of future policy promoting climate justice.</p> |

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| de Oyarzabal Barba | Manuel | Texas Christian University | | | Improving Urban Flyways for Bats: The Importance of Tree Canopy Structure | The expansion of urban areas is a threat to wildlife as it fragments habitats and reduces the access to required resources. One way to restore permeability across urban landscapes is improve connectivity through the presence of a network of movement corridors. Linear features, such as the tree canopy, can create such corridors. Thus, the trees in the urban forest present an opportunity to enhance urban landscape permeability if managed effectively. To explore this potential, we first identified tree characteristics that could influence bat movement, including 1) total canopy cover, 2) size of gaps between tree canopies, 3) number of gaps along a corridor, 4) rugosity of the canopy, and 5) tree height. We conducted behavioral observation surveys using thermal technology and acoustic detectors to monitor bat commuting activity along 30 potential corridors with varying tree characteristics in Fort Worth, Texas. We then used a Classification and Regression Tree (CART) analysis to determine which tree metrics in combination created an effective movement corridor. We found that trees >7 m in height and smaller gap distances increased bat activity, while fuller canopies and increased rugosity created more clutter and obstacles for bats to maneuver around, hindering commuting activity. From our study it may be possible to make recommendations on to how to plan and manage the urban forest to improve urban areas for bats and other wildlife. |
| Debbage | Neil | University of Texas San Antonio | | | Weakly Forced Thunderstorms in the Southeast US Are Stronger Near Urban Areas | While cities are well documented to enhance precipitation through the urban rainfall effect (URE), the distinguishing characteristics of urban-influenced storms that help establish the URE are poorly understood. The purpose of this study is to examine the morphological traits (i.e., size, duration, intensity, etc.) and near-storm environmental conditions of weakly forced thunderstorms (WFTs) occurring near urban areas in the Southeast US relative to storms forming in surrounding rural areas. Urban WFTs are found to have higher reflectivities, are more likely to contain hail, and produce more lightning than nearby non-urban storms, but their sizes and shapes are statistically indistinguishable. When disaggregated across individual urban areas, the increase in maximum composite reflectivity among urban storms is the most pervasive morphological difference, with 24 of the 31 cities displaying elevated reflectivities. Urban WFTs also benefit from near-storm environments with greater instability and higher precipitation efficiency, which may further contribute to the URE. |
| Devine | Jennifer | Texas State University | Nicholas Magliocca, Yunuen Reygadas, Kendra McSweeney | University of Alabama, Texas Tech, Ohio State University | The Cattle-Cocaine Economy in Central America | Agroindustry is a leading driver of deforestation, environment degradation, and climate change. Despite decades of conservation efforts, the agro-industrial frontier advances. This failure to halt deforestation exists, in part, due to the intervention of organized crime into legal agroindustries and their supply chains. In this paper, we examine how illicit actors and activities are transforming the Central American beef cattle industry with disastrous environmental consequences. We show how cattle ranching activities and the regional cocaine trade intersect in and around protected areas and along multiple nodes of the cattle supply chain. We argue that the regional cattle industry and the cocaine trade have become so intertwined that they now constitute what we refer to as a hybridized cattle-cocaine economy. Drawing on interviews, participatory mapping, and media analysis, we describe five shared practices connecting the cattle and cocaine trafficking economies. These include: land grabbing in protected areas, narco-capitalized cattle ranching (locally known as “narco-cattle ranching”), cattle and cocaine smuggling, cattle laundering, and money laundering. The case study of the cattle-cocaine economy in Central America’s protected areas will advance knowledge regarding the threats illicit economies pose to global biodiversity conservation and climate change mitigation. |

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| Dwelle | Evangeline | University of North Texas | Paul Hudak | University of North Texas | The Effectiveness of Austin's Watershed Regulations in Protecting Water Quality of Urban Creeks | Riparian buffers are an essential part of comprehensive watershed planning efforts in urban watersheds. Such buffers filter out various pollutants that might otherwise enter streams, potentially harming aquatic life and compromising drinking water supplies. Since 1974, Austin, Texas has been developing policy against the removal of riparian buffers in its watersheds. A study is underway to evaluate the effectiveness of riparian buffers on water quality protection in the city. Data used in this study include satellite imagery, field photographs, and field measurements of total suspended solids at representative stream corridors under varying levels of protection in the Colorado River Basin within Austin city limits. Preliminary observations suggest improved water quality near and downstream of more protected stream segments relative to segments under little protection. Understanding the effectiveness of riparian buffers helps inform planning and policy in efforts in growing urban complexes such as Austin. |
| Flores Garzon | Luis Felipe | University of Oklahoma | Angela Person | University of Oklahoma | Westernization Patterns of Indigenous Achuar Communities in the Amazon Rainforest of Ecuador | This research investigates the architectural and spatial transformations within the Achuar Indigenous group in the Ecuadorian Amazon, resulting from westernization. Despite limited historical documentation, a critical lack of updated information on their settlement patterns since the late 1970s exists, driven by rapid changes in their traditional way of life, urbanization, and external interventions. The research is structured into three key areas. First, the characterization of Indigenous Territories provides a regional overview of the Achuar Indigenous Nationality, emphasizing their role in mitigating climate change and historical external threats. Second, the meso-scale that investigates the state and Indigenous groups' roles over the past 50 years. It explores how architectural design can respect Indigenous rights to self-determination and territorial sovereignty while considering community desires. Third, the Achuar House scale that explores how small changes in traditional dwelling patterns can result in significant transformations in settlement patterns and landscape management. It emphasizes the connection between people, place, and memory through direct observation and conversation with community members. The research methodology prioritizes Indigenous perspectives and sense of place, employing geographical, ecological, and cultural investigations. Qualitative and quantitative data will be gathered through fieldwork and analyzed with ArcGIS. Findings are expected to highlight the Achuar's pivotal role in preserving forests and architectural diversity. Changes in housing and settlement patterns posing risks to ecosystems and cultures will be presented through visual aids. In conclusion, this research promotes a new Indigenous planning theory rooted in local knowledge, aligning territorial organization with the worldviews of Amazon Basin Indigenous groups. |

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| Foroutan | Ehsan | Oklahoma State University | Tao Hu, Hongbo Yu | Oklahoma State University | Assessing Heat Vulnerability in Philadelphia using Geographically Weighted Principal Component Analysis (GWPCA): A Big Data-driven Approach | <p>The impact of climate change, specifically more intense heat waves, has increased concerns about heat vulnerability, particularly among high-risk populations. Under the threat of climate change, there is an urgent need to assess vulnerability to heat-related health effects and identify vulnerable populations and regions to develop effective policies for mitigating heat-related risks. Previous studies on heat vulnerability overlooked the population dynamics, and inadequate assessment of the built environment. Furthermore, the common use of Global Principal Component Analysis (GPCA) in these studies assumes uniformity across the entire study area, without considering spatial heterogeneity. To address these limitations, this research utilizes multi-source geospatial big data and employs Geographically Weighted Principal Component Analysis (GWPCA) as well as GPCA to analyze heat vulnerability in Philadelphia. The GWPCA analysis reveals localized vulnerability differences based on the winning variables of the first four local components, showing distinct patterns across the city. Notably, Sensitivity factors are prominent in the western and southwestern regions, whereas Exposure is dominant in the central and southern parts. This study underscores the significance of considering spatial heterogeneity when assessing heat vulnerability. It also highlights the potential of GWPCA to capture subtle disparities within specific areas. Therefore, the incorporation of an advanced spatial analysis model enables a comprehensive understanding of heat vulnerability in complex urban environments. This progress is crucial in enhancing resilience and adaptation to evolving climate conditions.</p> |
| Fry | Matthew | University of Utah | Lauren A Fischer | University of North Texas | Valuing Property over the Environment: Municipal Landscaping Ordinances in Texas | <p>Municipal governments codify environmental regulations and rules in written laws, or ordinances. Water conservation, trees, green infrastructure, and landscaping are primary targets. However, it remains unclear what values and goals municipalities prioritize with land-use zoning in general and with yard and landscaping regulations in particular. Building on earlier studies that use content analysis to evaluate government plans and ordinances, we examine landscaping policies in the Dallas-Fort Worth (DFW) metropolitan area, one of the U.S.'s largest and fastest growing metropolitan regions. DFW municipalities face substantial growth pressures that are managed through local land regulations. We compiled ordinances for 231 municipalities, 132 have landscaping ordinances, and 98 of 132 have purpose statements. In general, these are larger cities that also adopted tree protection and water conservation ordinances. Using content analysis, we identified common objectives in landscaping purpose statements. Preserving property values is the most frequently cited justification. We speculate that this is due to efforts to maintain property values for taxing purposes, homeowner support for policies that target house values, and regional political culture. Unfortunately, prioritizing property values also likely lessens environmental service benefits. We also identified three clusters of landscaping purposes: Property Value and Aesthetics, Potpourri, and Biological Conservation. Our exploratory analysis suggests that the only statistically significant predictor of a property value cluster is the percent White residents. By focusing on a single metropolitan region, our analysis allows for a comparison of regulatory practices across municipalities within the same regional governance structure and facing the same environmental issues.</p> |

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| Giordano | Alberto | Texas State University | | | Visualizing and Exploring Holocaust Narratives and Testimonies: Towards an Integrated Geography of the Holocaust | In this presentation, I will reflect on a decade-long quest on visualizing and exploring narratives and testimonies from Holocaust survivors, with emphasis on methods. I am particularly interested in mixed methods analysis, transdisciplinary modes of research, and the GIS of place, which I see as keys to an integrated geography of the Holocaust. The tripartition of location, locale, and sense of place, together with the concept of scale, form the conceptual basis of the exploration. Examples will include testimonies and narratives of the Holocaust in Italy and in Hungary. First, I will compare testimonies of Holocaust survivors in the two countries using deep and close reading tools and methods that include corpus linguistics, mapping, and geovisualization. Emphasis will be on gender differences, the language of the testimonies, and the representation of emotions. I will then discuss a representational model for exploring patterns of resettlement of over 70,000 Jewish survivors to Budapest in 1945, from the scale of the city to the scale of the apartment. Taken together, this model and the deep and close reading of testimonies have the potential for scaling up the study of the places and spaces of the Holocaust from the individual to the archive and towards the goal of adding a geographical dimension to Saul Friedländer's famous call for writing an integrated history of the Holocaust. |
| Greiner | Alyson | Oklahoma State University | | | What Did We Say and Just Who Were "We"? A Study of the Geographical Review | The title of this paper is inspired by Ron Abler's Presidential Address to the AAG in 1987, when he asked geographers, "What Shall We Say? To Whom Shall We Speak?" Abler's two questions enabled him to address the spoken and written word in his advice to members of our discipline but, with some re-working, they also provide a meaningful way to begin to consider the accomplishments of our journals. As mouthpieces of our discipline, the contents of journals afford a window on the past as well as the present in terms of the discourse and practice of geography. They also provide some information about who was publishing. This paper, which is part of a larger collaborative project, presents some findings from a study of journal articles published in the <i>Geographical Review</i> in two 15-year slices of time during the twentieth century: 1930 to 1945 and 1960 to 1975. |

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| Heidarian | Najmeh | Texas State University | | | The Woman Life Freedom Social Movement in Iran: A Geospatial and Historical Analysis | <p>This paper aims to analyze Iran's "Women, Life, Freedom" social movement since its inception following the Iranian Morality Police's murder of Masha Amini's on September 16, 2022, for opposing veil compliance rules. In response, people across Iran began participating in public protests, and rallies, and posting online calls for change, which became known as the Women, Life, Freedom (WLF) movement. This paper answers three critical questions: 1) What are the historical and contemporary roots of the WLF movement? 2) Where and when did the protests defining the movement begin, and how have the protests spread around Iran over time and space? 3) And lastly, how has the Iranian dictatorship responded to this movement? To answer these questions, I employ GIS and historical analysis, as well as the use of social media and media reports as primary data sources. I argue that the driving factors fueling this movement include: 1) the long-term violation of a diversity of women's rights that go far beyond veiling 2) Iranian youth exposure to social media, and 3) the ongoing economic crisis following US sanctions in 2018 and the COVID-19 pandemic. This project conducts a geospatial analysis of the protests defining the WLF social movement, which illustrates the social movement's widespread and sustained support across the country and diverse segments of Iranian society. Lastly, I analyze how the Iranian dictatorship employed repressive tactics and violated human rights to suppress the WLF movement. This thesis contributes to interdisciplinary theories of social movements and debates about Muslim feminism.</p> |
| Peyman | Hekmatpour | Oklahoma State University | | | Exploring Between-State Ecologically Unequal Exchange: Network Analysis of Interstate Commodity Flows and Their Impact on Environmental & Public Health Outcomes | <p>The nexus of climate change and public health is highly influenced by the dynamics of ecologically unequal exchange – where wealthier regions disproportionately benefit from resource extraction and environmental degradation in poorer regions – and presents a multifaceted challenge that demands integrated solutions for a sustainable future. This research leverages data from the US Census Commodity Flow Survey (2012 and 2017) to map and unravel the complexities of between-state ecologically unequal exchange. Through a network approach, the analysis calculates the out-degree centrality of the volume of commodity flows weighted by their value as a measure of between-state ecologically unequal exchange. The primary objective is to determine the extent to which this measure of ecologically unequal exchange influences various environmental and public health outcomes. The results reveal strong spatial patterns and correlations between states with high out-degree centrality and adverse environmental and health metrics including the emission levels of CO₂ and other greenhouse gases, deforestation, infant mortality rates, and adult asthma rates. These findings highlight the significant role of interstate commodity flows in shaping local environmental realities and public health outcomes. Furthermore, preliminary findings emphasize the criticality of considering geographical distribution and flow patterns in policymaking, especially in efforts aimed at mitigating environmental degradation and improving public health. This research paves the way for a deeper understanding of the complex web of commodity exchange, environment, and public health, providing researchers with innovative tools and perspectives to address some of today's most pressing challenges pertaining to climate change and sustainability.</p> |

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| Hilburn | Andrew | Texas A&M International University | | | Bounded, Surveilled, Isolated, and Imperiled: Spatial Dimensions of Environmental Injustice in a US-Mexico Border City | In certain circumstances, quantitative approaches to determining distributive environmental justice fail to indicate injustice when it may, in fact, exist. Furthermore, such approaches do not indicate <i>how</i> or <i>why</i> an injustice exists or persists. This is the case in Laredo, Texas, a city of ~250,000 on the US-Mexico Border. Here, a commercial sterilizer that uses ethylene oxide, a known carcinogen, poses an elevated and palpable risk to the community but in geospatially-determined statistical analysis, such a threat remains unclear. Similar weak associations, whether statistically or rhetorically, with regard to air quality, drinking water contamination, extreme heat, and lack of healthcare access are also apparent. Using a carceral geographies approach, this study emphasizes that the practiced and reworked militarized US-Mexico border constrains and traps its residents in an environmentally hazardous area that is both geopolitically and biopolitically sacrificial or what Agamben (1998) calls a "state of exception". By this measure, a considerable environmental injustice becomes apparent. |
| Howe | Mark | New Mexico State University / International Boundary and Water Commission, US Section | Alison Hadley | Texas A&M International University | Falcon Reservoir and the Geography of Archeology | Falcon Reservoir and Dam was completed in 1954 under the 1944 Water Treaty between the United States and Mexico. The main purpose of this dam and reservoir were for power generation, flood control and irrigation water for downstream communities. Since the 1950s and the relocations of towns, ranchos and local communities and flooding of the land, many changes have occurred. The land that is now part of Falcon Reservoir is Federal land and known as the 307 taking line and is considered from the International Border / center of the river to the 307 taking line. This taking line was a topographical elevation, but now has changed into a legal boundary. The 307 taking line is a flood pool level elevation but may be further raised due to extreme water levels of the reservoir due to storm or upstream events. In the last decade as the Cultural Resources Specialist at the International Boundary and Water Commission, part of the work is examining the changes in topography and geography on how water has affected over 900+ archeological sites at Falcon. Landscapes have changed due to the reservoir where sites in the Archaic time frame were buried under 30 to 40 feet of soil and now deeper and older Paleoindian sites are now exposed from over 10,000 years ago. This presentation will show how over the last 70 years water has changed the landscape but how new and previously recorded archeological sites and the area has changed significantly and continues today. |
| Ibrahim | Fahmina Binte | Texas State University | | | Spatial clustering pattern of wildfires in California, USA | Amid California's ongoing struggle with recurrent wildfires, comprehending the spatial patterns of these events is of utmost importance. This study aims to identify high and low-risk wildfire clusters using GIS and statistical models with current data, which can inform fire mitigation, urban planning, and community resilience efforts. Also, the result of this study can contribute to strengthening wildfire management strategies. This study employs the Local Indicator of Spatial Autocorrelation and Hotspot/Cold Spot analysis methods in an integrated GIS and statistical approach. The data are based on the 2020 dataset from the US Department of Agriculture in raster format. The study's results indicate that areas at high risk of wildfire tend to group together, while low-risk areas display a similar spatial correlation pattern. This research can help identify specific factors contributing to wildfires and pinpoint hotspots in California. Furthermore, spatial autocorrelation is crucial for prioritizing resource allocation in high-risk areas, ultimately enhancing wildfire management and community resilience. |

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| Jarin | Nusrat Zahan | Texas Tech University | Abinash Bhatta- chan | Texas Tech University | Spatiotemporal dynamics of Dengue vulnerability in Bangladesh: A GIS based approach | Dengue, also known as breakbone fever, has been prevalent in Bangladesh since 1960. The high monsoon rainfall and temperature provides a suitable breeding ground for the dengue vectors, <i>Aedes aegypti</i> and <i>Aedes albopictus</i> . Although dengue outbreaks in previous years peaked in June, an unusual shift in the seasonality and intensity of dengue incidence has occurred this year as cases have peaked as early as April. This paper explores the seasonal and spatial shift in dengue incidence with the dengue daily reports since 2019 available through the Bangladesh Directorate General of Health Services. Adopting optimal hotspot analysis, we compared the yearly and monthly dengue incidence hotspots in 64 districts of Bangladesh. The primary hotspot results of total monthly incidence per 100,000 population reported a concentric expansion of dengue hotspots from Dhaka to surrounding districts between January and August. Dhaka and southern coastal urban areas showed a significant peak of daily incidence, whereas the northwestern districts showed comparatively lower cases. We will present a dengue vulnerability index by considering eight biophysical and social factors such as maximum temperature, rainfall, elevation, distance to hospitals, population density, land-use, female literacy rate, and household quality. We will employ a multicriteria decision model and water associated disease index to investigate the dengue vulnerable zone, taking into account the human exposure, susceptibility and adaptive capacity indicators. The outcome of this study will be a guide for dengue risk area detection in terms of spatio-temporal differences, for equitable public health interventions and the facilitation of dengue vaccines. |
| Jonsson | Don | Austin Community College | | | Black Bears in Big Bend National Park | In 1944 when Big Bend National Park was established Black Bears were not there. The Black Bears had been exterminated in West Texas by ranchers and local settlers. Black Bears began to return to the Chisos Mountains in Big Bend National Park, migrating north from Mexico, in the 1980s. Park Rangers had to develop bear management policies to accommodate the new wildlife resident that had returned to a protected area in the late 1980s and 1990s. The National Park Service had to post signs warning park visitors that Black Bears now inhabit the park, install bear proof trash cans and food storage facilities. Relying on research and lessons learned from other National Parks in the USA with a faunal assemblage that includes bears, Big Bend National Park is attempting to manage Black Bears by establishing Human Zones and Black Bear Zones within the park to maintain a separation between humans and bears. |
| Julian | Jason | Texas State University | | | Texas State Parks: A century of connecting nature, history, and society | The Texas State Parks system is celebrating its Centennial in 2023. Over the past 100 years, the cultural and biophysical landscapes of Texas State Parks have been dynamic. Using my archival research, historical data analyses, more than a hundred interviews, and visits to all 85 state parks, I describe the interwoven environmental and cultural histories of Texas State Parks. Dominant themes include land use legacies, New Deal impacts, Race & Place, climate change, resilience, relational values, and tourism trends. I close the talk with a glimpse into the next 100 years of Texas State Parks. |

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| Kenney | Matthew | University of Texas at San Antonio | | | How Freeway Capacity Influences Urban Traffic Delays | <p>Since the formation of the United States Numbered Highway System in 1926, federal and state transportation departments' solution to burgeoning traffic has been to widen the congested roadway by adding lanes. In the short-term, adding more lanes grants additional capacity allowing more traffic to pass through without backing up. However, a growing body of research shows that any benefits brought by wider highways are temporary. The flaw with highway widening projects is that any driving time saved by greater traffic capacity is eventually nullified by the influx of new motorists using the highway who otherwise may not have. This phenomenon is an example of induced demand. This project seeks to quantify the relationship between additional freeway lanes and traffic delays in the 64 most populated urbanized areas in the United States. Bivariate and multivariate statistical analysis revealed that a strong positive significant relationship was observed between miles of freeway lanes and total hours of traffic delay. Overall, the findings generally support the notion of induced demand and highlight the need to move beyond the traditional modus operandi of transportation departments to add greater roadway capacity when attempting to resolve urban traffic congestion and its associated problems.</p> |
| Koirala | Shushant | University of North Texas | Apechhya Aryal, Kiran Khatiwada | Paridhi Engineering Solution, Nepal | Preparation of Flood Hazard Map and Review of Flood Hazard Warning and Danger Level at Terai Region of Karnali River, Nepal | <p>Flood-related hazards are more common in the Terai Region of the Karnali River, Nepal. The Karnali River, located in western Nepal, spans an area from 28.2°–30.4° N and 80.6°–83.7° E. The study area for analyzing water and danger levels for floods starts at Chisapani and extends about 40 km downstream to the Nepal-India border. This region frequently experiences destructive flooding, resulting in substantial human and agricultural losses and damage to infrastructure. The floodplain inundation in the study region was produced based on a digital elevation model (DEM), land use data, cross-sections, and varied design year stream flow. The data from the analysis of HEC-RAS modeling results for the Terai Region of the Karnali River shows that the 2-year return flood flow remains confined to the channel boundary, indicating that the flooding is limited to the channel itself. However, in the case of a 5-year return flood, there is significant flooding downstream of the Karnali River. This suggests that the warning and danger levels for the Karnali River should be based on the respective gauge height of the 2-year and 5-year return floods. The previous flood magnitudes include a warning and danger level set at 10m and 10.8m gauge height respectively. In the updated levels, the warning level remains at 10m gauge height, while the danger level is divided into two zones: one with 6 communities at a gauge height of 10.5m and the other for the remaining communities at a gauge height of 10.8m.</p> |

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| Kronenberger | Erica | University of Oklahoma | Lauren E Mullenbach | University of Oklahoma | Health-Related Quality of Life in Fracking Communities: A Case Study in the Eagle Ford Shale | <p>The Eagle Ford Shale region in Texas harbors one of the most productive fracking operations in the U.S. Research has found associations between living near oil and gas development and negative health outcomes. Furthermore, evidence of uneven exposure to fracking infrastructure leaves some communities more vulnerable to health problems. While prior studies have posited that fracking is a public health risk and an environmental justice risk, the psychological and interpersonal consequences faced by fracking communities have been historically disregarded in the literature. This research seeks to fill this knowledge gap and need for more robust methodology. We ask: How is an individual's quality of life impacted by living in a community burdened by environmental hazards caused by fracking activity? We use self-reported physical health, mental health, neighborhood satisfaction, and social capital to evaluate the impacts of fracking on health-related quality of life. Data collection includes interviews with environmental activists and surveys of Eagle Ford Shale residents. Preliminary findings from interviews indicate that residents face significant challenges getting their complaints taken seriously, and they also feel emotionally divided by the benefits and harms brought in by the oil and gas industry. The survey, set to launch this fall, draws from prior research on health and subjective quality of life domains that are related to the social and built environment. Results will provide insight into the health-related quality of life impacts faced by residents of the Eagle Ford Shale and have implications for policy decisions surrounding public health in communities near fracking activity.</p> |
| Lail | Sage | University of Oklahoma | Lauren E Mullenbach | University of Oklahoma | A Comparison of South Central Plains Capital cities Sustainability Efforts with Respect to Health and Environmental Justice | <p>The states of Kansas, Oklahoma, and Texas all take different approaches to addressing environmental and human health in their capital cities. Additionally, each city takes a variety of approaches in acknowledging and alleviating environmental justice concerns. Given this, we ask the following research question: How are the cities of Austin, Oklahoma City, and Topeka addressing environmental health, human health, and environmental justice in their sustainability plans? What is the extent that these plans are being implemented? And what lessons can be learned from planning and implementation? To answer these questions, we conducted interviews with city officials and related individuals involved in the creation of the plans, analyzed the plan documents, and conducted a literature review. The research found three distinct levels of action being conducted by the local governments. Topeka, Kansas took a very inactive, hands off approach to addressing sustainability concerns. Oklahoma City, Oklahoma (OKC) has an active, yet hands off approach to addressing sustainability concerns. Austin, Texas has a very active, hands on approach to addressing sustainability concerns. These results imply there is room for improvement in the approaches to sustainability planning and implementation of Topeka and OKC to meet the standards set by other regional capitals. Improving environmental awareness with permanent sustainability positions with proper influence over planning within the two cities would boost their positive environmental effects as well as benefit the health of the locals.</p> |

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| Landry | Amelia | University of Oklahoma | | | An Organizational Geography of Anti-hunger Work in Central Oklahoma | My project examines the charitable food complex in Central Oklahoma, one of the hungriest states in the nation, through the lens of feminist geography, critical food studies, and organizational studies. I aim to achieve this through a combination of auto-ethnographic reflections upon my own experience working for and managing anti-hunger organizations in tandem with qualitative data collection through interviews with industry professionals, attending a state-wide anti-hunger nonprofit conference, and a discourse analysis of food charity communications materials. I am particularly interested in understanding the motives, worldviews, and goals of people actively engaging with anti-hunger work through the non-profit sector. Additionally, I wish to know how this profession is racialized, gendered, classed, and spatialized. I further intend to explore the relationship between state and municipal policies and the organizational geography of food charities as well as the ability of these nonprofits to deliver their services. My goal is to illustrate how the current food system relies on hunger to solve the moral issue that is food waste, and how the charitable food complex thus acts like a surplus, secondary economy for citizens deemed “surplus” to the primary market. Given such a context, these non-profit organizations become critical nodes of global food supply chains in which power over an object of social control, in this case food, is negotiated. Understanding the perspectives of the decision makers in charitable food networks is therefore a prime topic for study by geographers. |
| Lee | Seungmug (Zech) | Texas A&M International University | | | Measurement of Spatial Displacement/Diffusion of Benefits of Burglar Alarms on Residential Burglary | One negative consequence of crime prevention programs is crime displacement, whether or not crimes prevented are simply displaced to other types of crime, times, places, or tactics. The literature shows that spatial displacement is generally not a common phenomenon, but rigor for scrutinizing such an observation in crime prevention research has been required. In addition, there is a need to speculate a diffusion of benefits from a crime prevention initiative, which is not discussed intensively in the crime prevention research and evaluation studies and does not have enough academic attention in crime prevention discourse. The measurement of displacement and/or diffusion of benefits is notoriously difficult. One problem of the lack of rigorous studies is the absence of a standardized method. The theoretical approach of three nested concentric zones is incorporated with the WDQ conceptual approach into a real situation, using GIS software. Thus, support for the finding of diffusion of benefits at a more micro level was provided by the WDQ analysis. This showed that there was no indication of any spatial displacement of residential burglary from protected houses to nearby houses and indeed that burglar alarms tended to provide protection to these other houses. In short, a burglar alarm, as a target-hardening measure of situational crime prevention, not only protects the home without displacing burglary to nearby houses, but, in fact, also provides these other houses with protection from burglars. |

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| Lomeli | Eric | ESRI | | | Geodesign and Digital Twins: The Road Ahead | <p>Geodesign is the integration of science and values into the planning and design process, a framework for iterative design, assessment and decision making, while geography is about place and processes, the human and the natural, across both space and time. It seeks to organize, understand, and describe the world. GIS is the technology and system with which we organize and analyze geographic information to support decision making. Design is about intent or purpose. A creative act requiring imagination, design can produce something entirely new, or improve upon something that already exists. It often requires the creation of a sketch or model, followed by an iterative process of rapid redesign and evaluation of alternatives in order to attain the desired result. Geodesign combines the best of both of these worlds, providing a new way of thinking that integrates science and values into the planning and design process. This presentation's aim is to be both insightful and practical with real case studies from around the world.</p> |
| Lu | Yujian | University of New Mexico | Xi Gong, Natasha Howard, Christopher P Brown, Yan Lin | University of New Mexico, University of New Mexico, New Mexico State University, University of New Mexico | The long-run effect of redlining practice on social vulnerability in major U.S. cities. | <p>The redlining practice in the United States dates to the 1930s. This study explores the spatial difference among four grades of HOLC (Home Owners' Loan Corporation) neighborhoods in over 200 major U.S. cities based on the impact of historical redlining practice on social vulnerability (SV). We collected SV data in 2018. By using ANOVA analysis, we analyzed the spatial pattern of impacts of historical redlining practice on SV in 196 U.S. cities in 2018. HOLC neighborhoods with four grades were compared using overall SVI value (social vulnerability index), four thematic SVI values (Social economic status, Household composition and disability, Minority status and language, and Housing type and transportation), and SVI values for fifteen SV factors. Overall SVI value in four HOLC neighborhoods differed significantly depending on their grade, with neighborhoods with grade "A" having the lowest value, while neighborhoods with grade "D" having the highest. Our findings also show that there are significant differences between the four HOLC grades regarding four SV themes and most of the SV factors. This finding suggests an implication for urban planners and policymakers to pay more attention to the manner by which historical redlining practice impacts social welfare and work to reduce SV inequity between different HOLC neighborhoods.</p> |

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| Mahama | Saide | University of North Texas | | | Contested Development as Urban Transformation: The Case of Accra, Ghana | Ghana has undergone socioeconomic transformation and infrastructural development since independence. Inequalities in development, however, exist especially between the north and the south, and between rural and urban Ghana. These inequalities have exacerbated rural to urban migration, to the point that this migration is now seen as a burden and a crisis by the local government. Neglect of the poor stands out as a major problem in Accra. These are mainly migrants from the geographical north and some areas of the south. New migrants lack access to basic amenities and live largely in makeshift structures. Due to lack of jobs, they are mostly found doing precarious labor. Since the adoption of Structural Adjustment Programs, and the influence of globalization in the last few decades, Ghana has focused more on the development and implementation of neoliberal policies that do not favor the poor. There has been little attention to the development of pro-poor policies to reduce poverty and inequalities in the country. Besides, successive governments and city authorities have not done much to address the issues of the poor in the cities, especially, Accra. Their neighborhoods are noted for lacking basic social amenities including schools, housing, health facilities, electricity, potable drinking water, toilet facilities, and waste management systems among others. This study seeks to investigate the state of these poor urban dwellers in Accra, using policy documents, public records, reports, previous researches, media reports, and YouTube. |
| Mandal | Debayan | Texas A&M University | Lei Zou, Rohan S Wilkho, Joynal Abedin, Bing Zhou, Heng Cai, Furqan Baig | Texas A&M University, University of Illinois at Urbana-Champaign | Empowering Disaster Resilience through Cyberinfrastructure: A CyberGIS for Multi-Scale Visualization and Management of Urban Resilience to Climatic Hazards | In an era of increased climatic disasters, there is an urgent need to develop reliable frameworks and tools for evaluating and improving urban resilience to climatic hazards at multiple geographical and temporal scales. Defining resilience in the social domain is relatively subjective due to the intricate interplay of socioeconomic factors with disaster resilience. Alongside this, there is a lack of computationally rigorous tools that can support customized resilience assessment. To address these gaps, this study has three objectives: 1. To develop an empirically validated disaster resilience model - Customized Resilience Inference Measurement (CRIM) framework designed for multi-scale community resilience assessment and the identification of influential socioeconomic factors. 2. To implement a CyberGIS module in the high-performance computing CyberGISX platform, enabling users to customize disaster resilience computation and visualization. 3. To demonstrate the utility of the CyberGIS platform through a case study. This framework generates resilience scores, i.e., adaptability, vulnerability, and overall resilience, derived from empirical parameters—hazard threat, damage, and recovery. Computationally intensive Machine Learning (ML) methods are employed to validate these scores and to explain the intricate relationships between these scores and socioeconomic driving factors. The platform provides workflow illustrations, score classification per county, interactive geo-visualizations, and interprets relationships of resilience scores to socioeconomic variables using ML through coefficients, importance scores, and causal relationships. The essence of this work lies in its comprehensive architecture that encapsulates the requisite data, analytical and geo-visualization functions, and ML models needed for resilience assessment. This setup provides a foundation for assessing resilience and strategizing interventions to enhance the same. |

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| Mansourihanis | Omid | Texas Tech University | | | Mapping the Divide: A Spatial Analysis of Air Pollution Disparities Across Income Groups in Texas | Environmental justice issues emerge when specific populations face unequal environmental hazards based on socioeconomic factors. This study will examine the relationship between air pollution and poverty by analyzing their spatial patterns across neighborhoods in Texas. Geospatial techniques will be utilized to assess disparities in air quality between high- and low-income census tracts. The methodology integrates local air monitoring data with socioeconomic indicators from the U.S. Census Bureau. GIS-based statistical and hotspot analysis tools will help visualize and evaluate correlations between elevated pollution levels and poverty measures. Preliminary spatial analysis reveals distinct clustering of poverty and pollution, indicating potential geographic disparities in air quality associated with neighborhood income. Pollution hotspots strongly correlate with lower-income areas, suggesting environmental injustice. This project aims to enhance understanding of linkages between socioeconomic characteristics and environmental exposures specific to Texas. The fine-scale maps will illustrate air pollution disparities based on income groups, allowing risks to be mitigated and policy initiatives to promote equitable healthcare to be targeted. This spatial analysis provides a novel approach to examining connections between poverty and environmental hazards in Texas. |
| Martin-Young | Grace | University of North Texas | | | Deep in the Heart: Homeschooling in the Lonestar State | Homeschooling is an alternative educational format that has existed in the United States since before the signing of the constitution. Though, during the COVID-19 pandemic, the number of families choosing to homeschool more than doubled nationwide. In Texas, these numbers were even higher at 11% due to the lack of homeschooling regulation which attracts homeschooling families. As this population grows, it is important to understand the ways these students differ from traditionally schooled students, as well as each other as we prepare for their entrance into higher education, the workforce and society more broadly. Though homeschoolers are a hard to study population, with sparse existing literature stemming from 1) A lack of trust of outsiders due to the practices former illegality and 2) little quantitative data as the nationwide patch work regulations leaves the students virtually invisible to the state. This pilot study contributes to the body of literature by using qualitative methods including semi-structured in-depth interviews with homeschooling families in the DFW metroplex to highlight the range of motivations and practices within this growing community. The results of this research found that 1) for post-covid homeschool families, social media is central in learning about and engaging in the practice and that 2) despite existing literature viewing homeschool parents as giving up their careers for the practice, that under neoliberal ideologies, many parents are finding ways to add educator to their already existing repertoire of familial duties. |

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| McGregor | Kent | University of North Texas | | | Record Hot Weather during Summer of 2022 and 2023: Evidence of Climate Change | <p>A number of extreme weather events during the summer of 2022 and 2023 in North Texas climbed into the Top 10 record list as measured at the Dallas/Ft. Worth International Airport. These were the total number of 100^o days, the total lack of precipitation during July or August and the number of consecutive days without rain.</p> <p>August 2022 ranks second for the greatest amount rainfall in one while August 2023 ranks second for driest. September 2023 temperatures ranked fourth for highest maximum and highest minimum. NOAA climate scientists have predicted more extreme events will occur with the progression of global warming. They also predicted that nighttime temperatures will be affected more than daytime temperatures. The last two summers the number of 100^o days ranks second and third in the number of days with nighttime minimum temperatures 80^o or more. In addition, the average number of 100^o days has virtually doubled from the 1899-1928 period to the 1993-2023, from 11 days to 22 days. This difference is statistically significant. Given the number of such extreme events, are they, collectively, evidence of climate change in north Texas?</p> |
| Miranker | Molly | Texas State University | | | “Death is Everywhere”: Migrant Death in South Texas | <p>The successive implementations of US Border Patrol’s Prevention Through Deterrence (PTD; 1994) and Consequence Delivery System (est. 2011; MPI 2017) strategies have led to the deaths of many migrants along the US-Mexico border (Martínez et al. 2021; Slack 2019). With the ongoing migrant death crisis, forensic and humanitarian interventions throughout all the southwestern border states have become increasingly prevalent (EAAF 2023; Colirbí 2023; OpID 2023; STHRC 2023). In this paper I share the results of interviews and participant observations I conducted in South Texas in March 2020 and March-July 2021 (IRB 7568). I focus on South Texas because it was selected for some of the earliest PTD deployments and continues to have high migrant death tolls. During my field work I was exposed to the quotidian challenges experienced by myriad people, from situational participants such as funeral homes or fire department rescue services to sheriff’s and humanitarian non-profits. Over my 57 interviews/observations, two common experiences emerged. First, “everyone is involved” with migrant death be it discovery, transport, forensic investigation, or another role. Second, within the current border enforcement paradigm “no one is set up for success,” raising the question, can local responses to migrant decedents be distinguished from the larger goals of US Border Patrol and immigration policy? I discuss the challenges, impossible decisions, and protracted forensic and humanitarian efforts ongoing in the region and the implications to affecting change on a local scale in Texas.</p> |

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| Momen | Mehnaaz | Texas A&M International University | | | Listening to Laredo: A Border City in a Globalized Age | <p>This presentation focuses on local voices that depict the border city they live in and how their view contrasts with the broader national imagination of the border. My book, <i>Listening to Laredo: A Border City in a Globalized Age</i>, brings together issues of growth, globalization, and identity, to trace Laredo’s history, and connect space, memory, and identity through the voices of its people. In contrast to the many studies of border cities defined by the outside—and seldom by the people who live at the border—this volume collects oral history from 75 in-depth interviews that collectively illuminate the existing economic and cultural infrastructure of the city, its interdependence with its sister city across the national boundary, and, most importantly, the resilience of the community to adapt to and even challenge the national narrative on the border. My presentation will focus on the discrepancy in the construction of the border as a social space from local, national, and global perspectives. The intriguing part of the story is the tug of war between and among the different forces and their predisposition to depict the border regions in a selective manner. For more than two centuries Laredo’s social spaces were protected from the national economic narrative even though it was always a trade center. After evolving into the largest inland port of the country, the different storylines are in conflict. I will highlight these conflicts and analyze the implications of these incompatible narratives.</p> |
| Myles | Colleen | Texas State University | | | Everything’s bigger in Texas: Tracing the geography of (fine) wine in Texas | <p>The geography of wine in Texas is increasingly: dispersed, economically significant, and attracting attention from Texans and non-Texans alike. While there are challenges to winegrape growing in the state (environmental risks, climate pressures, a spatial mismatch between the centers for grape production vs winemaking), there are also abundant opportunities. Production (both in terms of tonnage of fruit as well as bottles produced) has increased year on year since the inception of the modern wine industry in the 1970s. Texas is the fifth largest wine producing state in the United States, and, in 2022, Texas was assessed to be a \$20 billion dollar industry. In other words: Wine is BIG business in Texas. But not everyone agrees what (fine) wine is and isn’t in the state—and, certainly, not everyone agrees on how to best make “Texas wine.” Even as various stakeholders have pushed for stronger rules regarding fruit sourcing and production to strengthen the identity and quality of wine in the state, the growing visibility and prestige of the product has put more pressure on the industry in terms of outside investors, and outside producers, showing up and putting down roots (a.k.a., vineyards, wineries, and tasting rooms). Hand-wringing and flag-waving over the constitution, construction, and promotion of “Texas terroir” is at an all time high. Via an analysis of primary and secondary documents, a series of participant observation activities, professional embedding, and key informant interviews, I present a political ecology of fine wine in Texas.</p> |

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| Nakyagaba | Gloria Nsangi | University of Oklahoma | Mary Lawhon, Shuaib Lwasa | University of Edinburgh, Makerere University | Navigating heterogeneous sanitation configurations: How off-grid technologies work and are reworked by urban residents | A range of innovative off-grid sanitation technologies have been developed and deployed to improve sanitation in cities where networked sanitation by publicly managed sewers is insufficient. Studies of such technologies tend to consider toilets as static, where technologies are chosen once, at the project onset and in isolation from each other. In this study we explore off-grid sanitation as heterogeneous infrastructure configurations of people and toilets, roles and responsibilities, costs and benefits. Using two cases from Kampala, we emphasise that there are relationships between the different parts of infrastructure, and that these relationships vary over time and space. Urban residents rework configurations by changing a toilet and changing which toilets are used in order to meet their diverse sanitation desires. We demonstrate technological diversity, connect this diversity to the preferences of users by showing linkages between toilets that are proximate to each other, and show the importance of considering relations between toilets over time. Our analysis demonstrates how operations, cultural orientations, payment mechanisms, and limitations have a significant bearing on feasibility, scalability, and integration into city-wide sanitation, and that this is often not foreseen in planning phases. We thus conclude that sanitation configurations that enable flexibility rather than trying to predict needs may well enable more reliable infrastructure. |
| Ojha | Mina | Texas State University | | | Land use land cover change detection analysis: A case study of Lekhnath Metropolitan city, Kaski, Nepal | In the dynamic context of Pokhara Metropolitan, where the interplay of rapid urbanization, environmental vulnerabilities, and land use/land cover transformations converge, this study explores the critical need for comprehensive analysis and monitoring using GIS and remote sensing techniques. This research utilized aerial and satellite imagery data obtained from USGS, Over the period of 2010 to 2020, with a focus on Landsat 5 and Landsat 8 imagery characterized by minimal cloud cover. A supervised classification approach was used, involving 400 sample points for four primary classes, to analyze land use and land cover changes. The final analysis identified and compared changes between 2010 and 2020, revealing insights into the evolving landscape of Pokhara Metropolitan. The analysis revealed a notable transformation in land use patterns, with an increase in built-up areas, cultivation, and water bodies at the expense of diminishing forested regions. Rapid urbanization has led to haphazard growth, transforming land use due to human activities and climate shifts, including a shift from agriculture to urban areas . Over the decade from 2010 to 2020, Lekh Nath metropolitan city underwent significant land use changes, including a notable increase in urbanization by 2.50 square miles, expansion of agricultural land by 11.5 Square miles, and the growth of water bodies by 0.85 square miles. However, this period saw a substantial loss of 14.92 Square miles of forested areas. Employing GIS and remote sensing, the analysis provided insights into seasonal land use dynamics, importance of sustainable land management planning and environmental conservation strategies. |

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| Olvera | Samantha | Texas A&M International University | Alison Hadley, Kate Houston | Texas A&M International University | Identifying the Dead: Developing a Center in South Texas for the Identification of Remains of Undocumented Border Crossers | Current immigration policies of “prevention through deterrence” have been shown to increase fatalities at the US/Mexico border. These strategies are designed to remove access to safe areas of the border with the aim of reducing border crossings. One consequence of these deterrents is that they force undocumented border crossers into areas that are more treacherous and desolate. Such policies also come at a time when government officials have openly stated that its facilities to process and identify the remains of unidentified border crossers are overwhelmed and understaffed. In this poster, we present a conceptualization of a multi-disciplinary, collaborative research center with the aim of assisting in the cataloging, identifying, and ultimately repatriating remains of unidentified border crossers. We will outline the issue as well as our aims for working with already established NGOs and University centers, to bring together subject-matter experts to try and alleviate the pressures they face. We will discuss challenges and motivate discourse in this area as we move towards establishing the Center for the Identification of Remains of Undocumented Border Crossers (CIR-UBC) at Texas A&M International University. |
| Omidi | Hananeh | University of Oklahoma | Renee A. Mc-Pherson | South Central Climate Adaptation Science Center | Assessing the Impact of Micromobility Programs on Climate Change Mitigation in the U.S.: A Systematic Review | In the face of the pressing challenge of climate change, numerous major cities across the world are actively encouraging communal transportation methods to mitigate greenhouse gas emissions. Shared micromobility (e-bikes and e-scooters) has emerged as a viable transportation option that competes with traditional bicycles, cars, and public transit. Micromobility facilitates the use of e-bikes and e-scooters for short trips or as first and last-mile connections to other modes. However, despite the growth of these programs and the burgeoning interest in their potential environmental benefits, a comprehensive and systematic assessment of their impact on climate change mitigation in the United States is notably lacking. Therefore, the goal of this study is to fill this critical knowledge gap by undertaking a comprehensive review of the impact of micromobility programs on climate change mitigation across the United States. This study uses the guideline of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) to review relevant publications. This review will focus on examining the existing body of literature on this subject using keywords such as “micromobility” OR (“bikeshare” AND “climate change”), with dates ranging from 2013 to 2023. The analysis of published articles, conference papers, and book chapters carries significant policy implications in advancing communal transportation and micro-mobility solutions. By synthesizing empirical evidence, identifying knowledge gaps, and offering insights into the factors that influence program effectiveness, this research aims to inform and guide the ongoing efforts to create more sustainable and resilient urban transportation systems in the face of climate change. |

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| Ononeme | Akpoezi | University of Oklahoma | | | A Day in the Life of Copperhead Snakes in Tennessee | Human-wildlife conflicts are on the rise due to increased demand for spaces and changes in land uses. Rural areas are becoming more urbanized and with the demand for more space, natural environments that are resident to a plethora of biodiversity are continually invaded. This necessitates for a mutual coexistence between humans and wildlife to avoid conflicts or wildlife extinction. Copperhead snakes account for the second most reported snake bites due to their abundance and are of least concern to the International Union for Conservation of Nature (IUCN). However, it is beneficial to study them because of the potential human-wildlife conflicts they present. Some studies propose using fences, wildlife corridors, and selective thinning of bold wildlife to mitigate this conflict. This study uses a time geographic method – Probabilistic Space-Time Prisms (PSTPs) – to analyze copperhead snakes’ trajectory in Overton Park (urban) and Meeman Park (rural) in Tennessee to understand their spatial ecology, daily activity pattern and space-use. It makes recommendations for their habitat preferences, space-time paths for effective wildlife management and conservation as well as reduce human-snake conflicts/persecution. Utilization distribution graphs constructed from PSTPs highlights different space-use and activity hotspots of copperhead snakes in both parks on the same day. |
| Palacios | Virginia | Commission Shift | Martin Castro, Sheila Serna, Andrew A Wheat, Edelmiro Santos | Rio Grande International Study Center, Rio Grande International Study Center, Texans for Public Justice, Independent Consultant | A Modern Framework for Venting and Flaring Oversight in Texas | The Railroad Commission (RRC) is responsible for overseeing venting and flaring from oil and gas wells in Texas and has issued thousands of permits for oil and gas facilities to flare and vent methane in the past four years, but has recorded only a few dozen rule violations each year. Texas accounts for nearly two-thirds of all venting and flaring from oil and gas wells in the U.S. The commission has come under fire in recent years for generously allowing exceptions (i.e. permits) to statewide rule 32, which was initially put in place to prevent waste of natural gas through venting and flaring. The RRC has data at its disposal that could allow it to better enforce venting and flaring limits, yet previous research has found widespread venting and flaring from unpermitted sites. In 2022, the RRC published a new database on its website including flaring and venting exception requests. Modern technologies including infrared satellite imagery and optical gas imaging cameras (OGIC) could be used to more readily cross-check venting and flaring activity with the RRC’s new permit database and operators’ self-reported venting and flaring volumes. A research team led by Rio Grande International Study Center, Commission Shift, and Texans for Public Justice is analyzing all available datasets on venting and flaring in Texas to construct a modern framework for venting and flaring oversight in Texas. |

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| Parvez | Mohammad Shahriyar | University of Oklahoma | Xin Feng | University of Oklahoma | Delineation of the basic units of Social-Environmental Systems for Landscape Planning: An Approach towards Regionalization | Social-environmental systems (SES) are complex systems in which social and environmental components interact at various temporal and spatial dimensions. The characterization of SES at the local scale is essential since landscape design decisions directly impact the provision of environmental services and the well-being of local stakeholders. Most SES analysis and modeling involve various datasets, while limited research can delineate SES units appropriately. Specifically, existing work lacks the capability to simultaneously handle vector and raster data appropriately and established little control over the spatial properties of the resulting SES units. This research aims to identify SES boundaries by developing a framework of geographical information science, spatial analysis, and spatial optimization. Dimension reduction algorithms are incorporated to deal with both vector and raster data for a complex SES. SKATER (Spanning-tree Kernelized Agglomerative Clustering for Ecological Regionalization), a renowned spatial optimization method, is used to manage diverse spatial property requirements of the resulting SES units in a spatially explicit manner. This paper takes the Rio Grande/Río Bravo basin as the study area, and the findings and results demonstrate the feasibility and practicality of the proposed method for delineating boundaries of SES effectively and efficiently. |
| Patelski | Keely | Texas Tech University | Abinash Bhatta- chan | Texas Tech University | Complexities in the Food System: The Case of Nepal | In Nepal, there has been a remarkable increase in forest cover. This forest recovery is linked with the rise in international out migration by working-age Nepalese men. This has led to a decrease in agricultural abandonment and food production. In fact, agriculture has contributed less and less to Nepal's GDP in the recent decades which coincides with a period of rapid increase in out migration. The decrease in agriculture has been supplemented by an increase in food import to sustain a calorie-rich diet, including wheat, grains, and rice. Using data from the Food and Agricultural Organization (FAO), we explore how this increase in food imports coincides with declining agricultural practices. Because water is an essential and large component of agriculture – in my presentation, I will lay the foundation for examining the costs of food production in Nepal and elsewhere, quantified by the use of blue, green, and grey water footprints. I will also discuss the vulnerability of the current food system in Nepal to geopolitical conflicts and climate change. |
| Prout | Erik | Texas A&M University | | | Revisiting Vrin: Romansh culture and Death | Vrin has the highest percentage of Romansh speakers of any community (Communal/Gemeinde) in Switzerland. Vrin is located in a side valley of the uppermost Rhine River (Vorderrhein) in the Surselva, which is the most populous sub-region of Romansh language territory. I visited there on All Saints Day during my dissertation fieldwork nearly 25 years ago, and I recorded observations with photography and field notes. Decades later I'm still trying to understand the images. This paper and presentation are my reflections on the rituals and artifacts I encountered that day. |

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| Ptak | Thomas | Texas State University | | | Coupling Fire, Energy and Social Vulnerability in the Anthropocene: The Hazardous Nature of Public Safety Power Shutoffs in Butte County, California. | Extreme events such as wildfires and winter storms result in disruptions to grid-based electricity delivery. Weather-forced electricity supply disruptions are both reactive, whereby specific events cause damage to physical infrastructure, or anticipatory where electricity suppliers—namely utility companies—preemptively de-energize sections of an electrical grid or distribution network based on elevated potential for weather to damage infrastructure. De-energization has been promoted as a strategy to mitigate risk of wildfire ignition and spread when active fires may encounter distribution/transmission lines. Provision of basic energy services such as electricity are necessary for maintaining a range of essential functions such as communication, which become critical during extreme events. In recent years, Public Safety Power Shutoffs (PSPS) have increasingly been deployed by utility companies in Western U.S states as wildfire risk increases due to combined impacts of human-induced climate change, fuel accumulation, and expansion of development in fire prone lands. While the PSPS policy was designed to reduce liability of utilities in igniting fires, there is a dearth of research critically analyzing how the policy affects social vulnerability for populations subjected to periods of de-energization during high-risk fire conditions. This presentation critically analyzes relationships coupling grid-based electricity outages with social vulnerability characteristics in communities subjected to PSPS in northern California’s Butte County. |
| Purcell | Darren | University of Oklahoma | Katrinka Somdahl | Rowan Univesrity | Framing the Russian Invasion of Ukraine for US Audiences through Humor | The intersections of poular culture and geopolitics (popular geopolitics) have been a focus in geogrpahy since thie mid-1990s and has contineud to develop witht he advent of new technologies of consumption, new genrues and new distribution platforms. This paper examines a corpus of jokes from a traditional genre, the American late-night talk shows and satriical programs. Working froim a corpus of jokes told in advance of the Russian invasion of Ukraine, continuing throught the present, the paper works to highlight trends and tropes in the pattern of jokes told to American audiences, emphasizing how the jokes work with extant stereotypes of the actors in the region, as well as reinfocing understandings of the regional geopolitics s perceived through an American lens. Jokes have tended to mock the image of President Vladimir Putin, play up the military imgae of the comedian-turned President Volodymyr Zelenskyy, and the general disparagement of Russian efforts in the invasion, as well as criticizing efforts at diplomacy. Surprisingly, the jokes are often endorsing support for the Ukrainian cause, in the face of growing partisan criticism of military and financial support of the war effort. |

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| Pursch | Tyler | University of Texas at San Antonio | | | Evaluating the Urban Heat Mitigation Potential of the San Antonio Cool Pavement Pilot | Cool Pavement is a water-based asphalt treatment that can potentially reduce temperature by reflecting more sunlight, absorbing less heat, and emitting less longwave radiation. These properties could help keep the surrounding air cooler and combat the urban heat island effect. In April 2023, the City of San Antonio began installing cool pavement in an effort to reach the goals of the cities Climate Action and Adaptation Plan. Since the dominant findings among other cool pavement programs have been varied, we evaluated the thermal performance of the San Antonio cool pavement installations for 15 days during the summer of 2023. The data collected included surface temperature, air temperature, relative humidity, wind speed, wet bulb globe temperature and components of the net radiation budget. The field work evaluated the cool pavement sites as well as representative control sites to estimate how three different types of cool pavement influenced the street thermal characteristics. Initial findings have indicated that the performance varied notably between the three different cool pavement applications, which will help inform the city's efforts as the aim to expand the cool pavement pilot in the future. |
| Racine | Nathaniel | Texas A&M International University | | | Murder Amid the Orange Groves: South Texas and Settler Colonialism in the Mystery Novels of Todd Downing | Todd Downing, a Native American writer from Oklahoma, has gained recent critical attention for his interest in Native Mesoamerican history and culture, as well as for the way he incorporates Mexican Indigeneity into his series of detective novels written during the 1930s. While many of Downing's contemporaries used such foreign or "exotic" locations to sensationalize their novels, Downing's works are unique in their treatment of the Spanish Colonial legacy and the ever-present influence of the United States in Mexico, whether political, economic, cultural, or otherwise. Interestingly, two of his later works— <i>The Last Trumpet</i> (1937) and <i>Death Under the Moonflower</i> (1938)—shift their physical settings away from Central Mexico to the Lower Rio Grande Valley on the US-Mexico border. In these two novels, Downing directly confronts the phenomenon of settler colonialism within the United States itself. This essay contributes to the study of "literary geography" by applying the lens of critical landscape studies to Downing's work, offering a cultural-literary analysis that intersects with the study of mystery writing and its genre conventions. By using this approach, the reader can better appreciate that, rather than a superficial use of "local color," Downing's work depicts the intersection of the symbolic and political landscapes of the region, revealing the tensions and the unseen forces behind the making of the "Magic Valley" of citrus groves in South Texas. |
| Rahman | Shaikh Sadiqur | Texas Tech University | Jeffrey A Lee, Haijun Li, Tarak Aziz | Texas Tech University, University of Maryland, Texas tech University | Testing "Global Terrestrial Stilling" with ERA-5 Reanalysis Data | "Global Terrestrial Stilling," a noticeable decrease in wind speeds around the globe, has been reported, with implications for energy generation and evaporation. The two leading possible causes are increased surface roughness due to land use changes and general climate changes. However, some long-term regional studies show no trend toward decreasing wind speeds. Global wind speed data since 1979 is available in reanalysis datasets. Here, we use ERA5 to map decadal averages of 10m wind speed. From the decadal mean ten-meter wind speed map, we got that in the 1980s, the average wind speed was 6.29 m/s, and in the 2010s, it was 6.19 m/s. The results show a complicated pattern of small increases (within 5% of zero) and significant increases (10 to 20%) spread out in the equatorial regions. There are also decreases (5 to 10%) in the Polar Regions and parts of southern Asia, Europe, and other places. However, from the 1980s to the 2010s, there was a significant decrease in global wind speed of -2.67%. This trend suggests that wind speeds have decreased over time, with a particularly sharp decline in the past two decades. |

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| Ramos | Chad | Texas Tech University | | | Neighborhood-Scale Wildfire Evacuation Vulnerability in Hays County, TX | Wildfires have increased in severity and range but despite this increase, rapid development in the fire-prone Wildland-Urban Interface (WUI) has continued. WUI neighborhoods are being developed with few upgrades to roads, causing a high ratio of houses to community road-network exits. This risks a difficult evacuation and studies have found many such low-egress neighborhoods, but that research does not include Texas. Hays County is prone to fire and rapid population growth has created a substantial WUI. The goal of this research then is to search Hays County road networks for neighborhoods that face the highest combined risk of wildfire and potential evacuation difficulty due to a high ratio of houses to community exits. This research used GIS spatial analysis to extract neighborhood subnetworks and calculate household to exit ratios. The wildfire risk faced by each neighborhood was assigned based on wildfire threat maps. Neighborhoods were ranked such that the most at-risk neighborhoods are those that have the highest risk of a wildfire occurring within the neighborhood and the highest exit ratios. 26 Hays County neighborhoods were identified with a moderate or higher wildfire risk and an exit ratio of more than 200, including six with a ratio above 500. The highest estimated exit ratio is 1614. In comparison, similar research from 2013 searching the 11 westernmost states found only 32 neighborhoods with a wildfire risk and a ratio above 500. These low-egress neighborhoods carry the risk of a very difficult evacuation in cases when wildfire warning time is short. |
| Rhodes | Emily | Texas Tech University | | | The Desert and the Frontier: The Redevelopment of Oklahoma City | In the decade, Oklahoma City has worked to encourage redevelopment by creating a cosmopolitan image. One such way that it is currently pursuing this is through its place marketing. In 2020, the city's Convention and Tourism Bureau (CVB) changed the tourism slogan to 'The Modern Frontier,' which supposedly showcased the "collaborative, diverse, honest, resilient, authentic, kind, and daring" values of the city while also being a "nod to Oklahoma City's Western heritage while recognizing the city's enterprising nature" (Greater Oklahoma City Chamber of Commerce 2020). These values align with the cosmopolitan project ongoing in the city, however, the frontier has connotations that do not align with the cosmopolitan project. A feature of cosmopolitan Oklahoma City is its foodscape, characterized by diverse restaurants and bars. Yet, this has not been felt equally. The Eastside Black community has long suffered from food insecurity and was labeled a "food desert" by the local media from 2019, after the last grocery store closed, until 2021, when two new grocery stores opened. Yet, with the new grocery outlets, there has also come other new restaurants on the Eastside, making evident the ways that the redevelopment project in Oklahoma City has expanded. Thus, my project is focused on the ways Oklahoma City has created a cosmopolitan image through redevelopment, discourse, and food, while questioning the ways this redevelopment has led to gentrification and uneven development. In this presentation, I will be focusing on the development of my theoretical framework, research questions, and problem statement. |

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| Ritu | Sadia Islam | Texas Tech University | Bruce Millett | South Dakota State University | IMPACTS OF LAND COVER CHANGE ON URBAN HEAT ISLAND (UHI) IN DENVER FROM 1985 TO 2020 | Land cover change due to rapid urbanization has imposed negative environmental impacts and contributed to global climate change at multiple scales. Land surface temperature (LST) has changed dramatically due to urban expansion. Increased temperature leads to the Urban Heat Island (UHI) problem which is a matter of concern for the fastest-growing cities like Denver, Colorado, USA. Monitoring UHIs is the first step to mitigate UHI-related problems. Land cover change dynamics were derived using land change monitoring assessment and projection (LCMAP) data from the United States Geological Survey (USGS). LST was derived from USGS Landsat analysis ready data (ARD) surface temperature. LCMAP analysis detected a 13% increase in developed land cover and a 12% decrease in cropland and grass/shrub from 1985 to 2020. Linear regression analysis between the Normalized Difference Vegetation Index (NDVI) and LST was performed to model the relationship between land cover and LST. Results indicated that seasonal variability, spatiotemporal variations, and other underlying factors affect the bivariate correlations. Seasonal and annual UHI intensity (UHII) distribution and variation were investigated. Results suggested that the mean annual UHII in 2020 was 1°C greater than the mean UHII in 1985 with a consistent spatial distribution in downtown Denver and the center of the city, and the scattered distribution of UHII was examined in non-urban extent. The methods used in this study can be a framework for future research on other cities, and the results can be used to inform sustainable urban planning to mitigate UHI effects in Denver. |
| Saldana | Matt | Texas Tech University | | | Left Behind Places and the Ogallala Aquifer in Texas | The Ogallala Aquifer is a vast underground aquifer that gives life to farming fields on the High Plains and is currently dwindling in water resources. Over the years the aquifer has been pumped at exorbitant rates coupled with record droughts, the aquifer is disappearing. In the panhandle of Texas, the Ogallala Aquifer is responsible for billions of dollars of yields in crops and many farmers utilize center pivots and other irrigation methods with groundwater to keep their crops growing during the harsh summers. All of Texas has been struck with droughts that have an estimated agricultural cost between \$11.1 billion and \$15.5 billion in 2021 dollars. While there are some remedies for these losses in terms of crop insurance and other government programs, some farmers choose to leave the farming industry all together. These farmers leave their communities and take any potential economic benefits with them and workers who no longer have farms to work on leave these communities with their families as well. Due to this, some rural communities in the Texas panhandle are becoming 'left behind' places where jobs and economic opportunities are lost due to the farm closers from water related issues. This work seeks to determine which communities within the Texas panhandle's Ogallala Aquifer region are on track to becoming or could be considered 'left behind'. This work also seeks to find communities that may have replaced lost agricultural jobs with other jobs to prevent the community from becoming or being considered 'left behind'. |

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| Sanchez | Dustin | Texas Tech University | | | The role of conflict in agricultural climate resilience and vulnerability, a Kosovo wine cross-case study. | Global wine production is on the cusp of a change-induced calamity lead by climatic shifts, resource scarcity and conflict. The climate-change emergency will increase conflict with devastating impacts on grape production and growers' need for predictable weather and water availability. The 1999 Kosovo conflict displaced nearly 1 million Albanians, leaving a lasting impact on the citizens and economy of Kosovo. The 4-year lag of planting vines and other conflict-related issues has caused extensive vineyard loss. Many Albanian grape growers and wine makers likely returned to their vineyards with scant hope of recovering crops due to the period of displacement following Serbian military occupation. A heuristic assessment of the conflict-driven disturbance of Kosovo's wine industry can guide efforts towards the practice of resilient agriculture. Losses of Knowledge and price due to conflict have caused delays of development and economic regression of the wine industry. This research aims to assesses the factors that led to the loss of nearly two-thirds of Kosovo's vineyards after their transformation to state-owned enterprises. The research seeks to understand the forces leading to the decline of wine cultivation, to assess the environmental and agricultural impacts of conflict and the impact of directionality within the climate-conflict nexus towards climate resilience and vulnerability. This cross-case study will focus on the wine region of Dukagjina (Metohija) in the Republic of Kosovo. |
| Sarmiento | Eric | Texas Tech University | Rosalie Ray, Emily Rhodes | Texas Tech University | Racial Capitalism and the Birth of Urban Planning in Texoma | To date, histories of urban planning in the early 20th century tend to be national or international in scope and often fall into what Leonie Sandercock calls "heroic narratives"- histories of men attempting to impose a new, modern, rational order upon unruly cities. This research project seeks to regionalize the birth of urban planning, and in so doing, highlight the ways in which what later came to be thought of as "Sunbelt Urbanism" is rooted in manifestations of racial capitalism and an overt linkage between ordering the city and white supremacy. Using textual analysis of the 1920s/30s city plans of Houston (1929) and Oklahoma City (1930), we identify mechanisms of spatial sorting, such as race-restricted areas, and examine a discursive framing that signals the early manifestations of Sunbelt Urbanism, including a tendency towards the valorization of single-family housing, automobility, and reshaping of space to accommodate a racialized division of labor and extractive industries and factories fleeing the unionized north. Lastly, we identify interpretations of modernity as an expression of order and regularity, and find that in Texoma plans, as opposed to more famous early plans in New York and Chicago, the authors' vision of modernity includes explicitly and implicitly placing Black populations as separate and less than. Taken together, our preliminary findings suggest value in a regional understanding of planning that illustrates how the roots of Sunbelt urbanism predate air conditioning and the post World-War II growth boom. |

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| Sharma | Suraj | University of North Texas | | | CLIMATE CHANGE IMPACT ON WATER RESOURCE AND ASSOCIATED ADAPTATION STRATEGIES IN THE MIDDLE MOUNTAIN REGION OF WESTERN NEPAL | Water is an important indicator through which the impact of climate change is felt in various sectors. Emerging uncertainties due to climate change and climate variability are likely to aggravate the problems of water scarcity resulting in pressure on existing water resources. This study explores the impact of climate change on water resources and adaptation strategies of local communities in the mid-hill region (Lamjung district) of Nepal. The study is drawn from the data from household interviews, key informant surveys and focus group discussions. Climatic data from (1990-2021) were acquired from nearby meteorological stations to analyze the variability of temperature and precipitation using a linear time series trend analysis. Quantitative and qualitative data were analyzed with descriptive and inferential statistics. The study revealed that in the year (1990-2021), total annual rainfall is decreasing at the rate of 4.5 mm per year whereas average maximum and minimum temperature is increasing at the rate of 0.644°C/year and 0.0416°C/year respectively in the study area. The non-parametric Friedman rank test showed that the major risk perceived by the respondents posed by climate change was water scarcity at an extreme level. Similarly, adaptation strategies of local households were significantly influenced by the education status, well-being situations, occupation, livestock size, and land ownership of the household. The study recommends encouraging plans that encourage local communities to follow low-cost, locally feasible adaptation practices to address climate change-induced water scarcity. |
| Sheehan | Rebecca | Oklahoma State University | Kimberly Johnson Maier | South Dakota State University | Obfuscating Gender and Race in the American Frontier through Embodied Affect: Historical Fiction Tourism at the Ingalls Homestead in Desmet, South Dakota | Due to their popularity, numerous tourist destinations have developed in towns featured in the <i>Little House on the Prairie</i> book series, literally embodying the novels. At the Ingalls Homestead tourist site in Desmet, SD, visitors come to watch the Laura Ingalls Wilder Pageant, which chronicles the family's settlement in the town. Visitors are encouraged to wear period dress, especially the bonnet for girls and women. Bonnets are available for purchase at the site, and female visitors young and old wear bonnets as they view the pageant and participate in activities at the homestead. Scholars have shown how the bonnet has served as a device to lessen women's contributions in the American Frontier and how it has worked to create a racialized femininity of womanhood. The Ingalls Homestead perpetuates these ideas through the affect created in the pageant and at the site. Using survey, participant observation, interview, and archival data, we explore how the embodied experiences of bonnet-wearing tourists deepens the "ideal" of whiter skinned femininity, signifying privilege and superiority to darker skinned "races." Indeed, the affect promoted by the site through the bonnet and the stories and activities surrounding it fail to acknowledge the complexity of gender and race as well as the sexism and racism in the American Frontier and the book series. Accordingly, we interrogate the ethics of such historical fiction heritage sites that misdirect realities of the past and their consequences on the present and the future. |

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| Simpson | Esmeralda | Tarleton State University | | | A GIS Web-based Application for Identifying and Evaluating Effects of Natural Gas Pipelines in Erath County, Texas | Have you ever wondered what kind of pipelines lay buried under your property and how dangerous they can be? Find out more throughout this research as GIS is utilized to give us answers. The objective of this project is to develop a web-based GIS application to identify and evaluate potential danger zones of gas leaks, fires and explosions located in Erath County, Texas. According to the article <i>Pipeline and Hazardous Materials Safety Administration (2018)</i> mentions, "data shows that from 1998-2017 approximately 18% of pipeline incidents on average were caused by corrosion." Corrosion occurs due to the deterioration of metals that are caused by air, moisture and chemical reactions. However, leaks can also be another factor too as stated by the article <i>Environmental Impacts of Natural Gas (2023)</i> , it suggests that "2.5 million miles of America's pipelines suffer hundreds of leaks and ruptures every year, costing lives and money." The project attempts to perform an array of geoprocessing analysis and create an interactive GIS web application to allow users to enter their addresses and see if they are in the danger zone of gas leaks and ruptures. The pipeline data was provided by FEMA and City of Stephenville (in Erath County). Currently, Erath County does not deploy any web-based applications regarding to this context. This web application can be innovative to facilitate better communication to the general public about near by natural gas pipelines. Lastly, it can be used by city officials and first responders to recover from future damages. |
| Staska | Sophia | Texas State University | Jason Julian | Texas State University | Connecting Texas: The Geography of Water Transfers | Water transfers in Texas, via pipelines or other conveyance infrastructure, change the geography of water resources and can have cascading effects on the environment and society. Visual representation and geographic analyses of interbasin water transfers (IBTs) can reveal patterns and relationships between donor and receiving river basins. This study first examined two readily available geospatial datasets collected from peer-reviewed journal articles centered on creating comprehensive maps and datasets of IBTs. Siddik et al (2023) mapped a total of 132 different IBT projects containing both surface and groundwater dating between 1901-2022. Dobbs et al (2023) mapped a total of 25 interbasin surface water transfers for public water supply dating between 1986-2015. The mentioned datasets represent IBT projects connecting the donor and receiving basins using a polyline; however, using connector points does not show the true path and extent of transfers or connections between multiple surface reservoirs and streams. Further, the published datasets were missing several large water conveyance systems. By creating a comprehensive map of Texas' water transfer systems, we aim to bring awareness to the state's evolving spatiotemporal distributions of water resources. Water development projects play influential roles in alleviating water stress from climate changes, land use changes, and population movements. In addition to changing the natural geography of water, transporting water across river basins transfers resources for future growth toward the receiving basin and away from the donor basin. Future work will assess the environmental and socioeconomic effects of Texas' water transfers. |

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| Su | Haibin | Texas A&M University Kingsville | Brent Hedquist, Gina Garza-Reyna | Texas A&M University-Kingsville | Preparing bilingual pre-service teachers for the social studies exam with National Geographic resources | This paper presents the findings of a grant funded initiative that joined the College of Education and the College of Arts and Sciences at a Hispanic serving institution to address low performing scores on the Social Studies (SS) portion of the EC-6 TExES Content Exam using National Geographic resources. Sixteen pre-service bilingual teachers participated in the grant initiative. As part of their participation the pre-service teachers were enrolled in a redesigned World Geography course that included National Geographic resources. Participants received training on the content taught in PK-6 grade classrooms and tested on the state exam using a technology-enhanced learning approach. Data were collected by providing students with an initial survey containing Likert-scale items. In addition, pre and post tests were given to the participants on the SS topics presented on the state exam for licensure. Participants noted an initial nervousness and ill-preparation toward teaching SS content on surveys. Pre-test scores corroborated this with initial pretest scores averaging 6.14 out of 10. After implementation of the National Geographic resources and structured lessons in the World Geography course post-test scores averaged 8.87 out of 10, indicating a strong preparation for the state exam. |
| Thakuri | Suman Singh | University of North Texas | Sujan Sapkota, Pukar Parajuli, Nabin R Bhatta, Shangharsha Thapa | Kathamandu University, Curtin University, Nepal Open University, Lund University | Comparison of Esri's Global Land Cover Products at Regional Level Using Sentinel Images and Machine Learning Algorithms: A Case Study of Nepal | Accurate land use and land cover (LULC) classification plays a vital role in the sustainable management of natural resources and helps understand how the landscape is changing. The ESA's Sentinel satellites have laid the foundation for land cover products on a global scale. This study aims to evaluate the land cover classification performance of global datasets at the regional level through a case study for three districts (Kailali, Kavrepalanchok and Jumla) of Nepal. The images were acquired by Sentinel-1 and Sentinel-2 for each year from 2017 to 2022 with 10 meters of spatial resolution. and 9 land cover classes. Three supervised classifiers, namely support vector machine (SVM), Smile cart, and random forest/tree (RF/RT), were used to produce land cover maps for the year of 2021, using 9 land cover classes. The results showed that SVM achieved higher overall accuracies and kappa coefficients and the Smile Cart classifier gave less accurate results based on validation using ground sampling points. The land cover maps prepared from SVM classifiers were further compared with Esri global LC product to evaluate the performance of the global product at the regional level. The evaluation concluded a poor result of global LC product while comparing with maps of SVM classifiers and real-world datasets. The use of medium-resolution satellite images like Sentinel for the preparation of land cover maps portrays spatial and thematic inaccuracies mostly in the heterogeneous land cover zones. Therefore, there is a need for in-depth study to add more detailed land cover classes. |

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| Thapa | Binay | Texas State University | | | Indigenous Local Knowledge and Climate Action | <p>Anthropogenic climate change has irreversible impacts on different ecological systems globally. The Indigenous communities living in rural parts of the world suffer the most due to its effects. Indigenous peoples are identified as the natives of a geographic region who have maintained a deep connection to their natural surroundings for generations. Each community's experience of climate change is unique. However, globally, they share a similar predicament of living in the most vulnerable geographical locations. Their interdependence with their natural surroundings, lack of economic opportunities, and exclusion from access to policy planning and public discourses make them highly vulnerable to climate change. This situation also compromises their ability to cope with climate extremes and environmental stressors that occur on a global as well as a local level. Hence, by using an ethnographic approach, I study the impacts of climate change on Indigenous peoples from Jiri, situated in the high hilly region of Nepal, and their perceptions of climate change and Indigenous knowledge, particularly how this knowledge could be valuable in identifying the local impacts of climate change. I argue that the impacts and experiences of climate change are plural and localized even within a specific community and hence demand a nuanced approach to adaptation practices.</p> |
| Thapaliya | Prashant | University of North Texas | Ashmita Dhakal, Rohit Gautam, Aakash Thapa, Shashank Karki, Bigyan Banjara | University of Wisconsin – Madison, Naxa Pvt Ltd, Thammasat University, Virginia Tech, Nepal Government | Deformation Model of Central Nepal Caused by the 2015 Gorkha Earthquake | <p>The geodetic datum shifts slightly due to various reasons such as slow and continuous crustal movement and quickly due to earthquakes. The Gorkha Earthquake of April 25, 2015 and its aftershocks caused severe damage to lives and infrastructures. It also caused deformation on the ground surface of Nepal, shifting the permanently established control points. This project aims to reconstruct the deformation model caused by the Gorkha earthquake and the aftershocks. The deformation measurements were calculated based on continuously observing GPS stations. The data from the series of a network of CORS obtained between April 18, 2015 and May 18, 2015 and the inverse distance weighting (IDW) interpolation were used to reconstruct the deformation model due to the Gorkha earthquake and the major aftershock of May 12, 2015. The IDW interpolation technique available in ArcGIS was used to prepare the model. The results show that the eastern part of the epicenter was hugely affected by the earthquake whereas the western part was less affected. Station DNSG had a minimum horizontal deformation of 1 mm, station KKN4 had a maximum horizontal deformation of 1.87 m, station SYBC had a minimum vertical shift of 5 mm, and station KKN4 had a maximum vertical deformation of 1.37 m because of the Gorkha earthquake and the aftershocks. The Kathmandu Valley was shifted towards the southeast direction and the height has raised by almost 0.7 m whereas the Langtang Valley had subsided by around half a meter.</p> |

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| Thompson | Amy | University of Texas at Austin | Eugenio Y Arima | University of Texas at Austin | Network Algorithms and Modeling Movement of the Ancient Maya | The widespread use of GIS extends beyond geography, providing tools to study anthropogenic and natural processes alike in the past and present. Within the field of archaeology, GIS has been used to evaluate ancient site suitability and predict site location, map social organization and settlement patterns, and model movement and potential trade routes across landscapes. Here, we assess the impact of network algorithms on least cost paths among ancient Maya cities that date to 1000 BCE – 1450 CE. Using a freely available 30m DEM, we run eight least cost path networks among 215 ancient Maya cities. Using four network algorithms (Ordinary, Spanning, Ordered Tree, and Tomlin) and two vertical factors (Tobler’s and differences in height), we discuss the variations in the algorithm outputs, model how pathways may have developed through time based on city foundation date, and combined with archaeological data, identify potential gateway cities on the ancient Maya landscape. These findings help elucidate ancient trade routes and gateway cities while highlighting the impact of differing algorithms in spatial analyses on our interpretations of past human behaviors. |
| Thompson | Lauren | Texas State University | Colleen Myles, Susan Hanson | Texas State University | How technology can help: A case study of using Geographical Information Systems (GIS) for environmental interpretation in San Marcos, TX | The history of environmental interpretation is long-standing and closely intertwined with the past, present, and future of public lands (i.e., state parks, national parks and forests, and other natural spaces) in the United States. Traditionally, interpretation in these spaces often takes the form of informational signage, guided hikes, and other educational programs. However, the use of technology, including spatial analytical tools such as Geographic Information Systems (GIS), is becoming more ubiquitous within the field of environmental interpretation. This paper will describe how GIS was used as a tool within a particular community-based interpretative environmental geography project. The project partners aimed to build a comprehensive interpretive mapping system of the formalized “greenbelt,” a managed network of natural areas, in San Marcos, Texas. These resulting interpretive maps from the project are publicly available in the form of a web-based story map hosted and managed by the City of San Marcos’ Parks and Recreation Department. The maps allow visitors to tour and explore each green space online through identified points of interest, each with corresponding images, locations, and interpretive descriptions. The goal of the project, and thus the interactive maps, was to increase local awareness of the natural areas as a community resource, improve access and visitation rates in those locales, and to create opportunities for those with limited mobility, transportation constraints, or even for educators to tour the spaces virtually. Through an analysis of the process and results of this project, we hope to inform others’ attempts at virtual interpretive mapping. |
| Turner | Greg | Texas State University | | | Becoming the Church Bell Tower | Drawing from Actor-Network Theory and infrastructure poetics, this paper will examine the transformation of the church bell tower from a unitary element possessing a functional role to an assemblage embedded in contemporary cultural change. By means of its acoustical and structural properties, the tower shaped a wide territory in the pre-industrial landscape. Urbanization and building technologies, however, have compressed this space and localized it. At the same time, industrialization has disembodied the once-monolithic church structure, dispersing its fragments around its shrunken environment. This evolution evidences the trajectory from the pre-industrial world through modernism and into post-modern expression. |

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| VanBuskirk | Olivia | University of Oklahoma | Lauren E Mullenbach | University of Oklahoma | Barriers to Climate Justice in Small-to-Medium-Sized Cities: A Case Study of Tulsa, Oklahoma | Small-to-medium-sized cities planning for and implementing climate adaptation initiatives have the potential to pursue environmental justice, though their efforts can end up exacerbating existing injustices. Findings from a preliminary study indicate small-to-medium-sized cities often take a neoliberal approach to climate adaptation, such as relying on private sector investments or providing incentives to developers. These strategies have been shown to perpetuate disparities in access to climate-ready infrastructure along racial and class-based lines. Using document analysis, interviews, and surveys of planners, community leaders, and residents in Tulsa, Oklahoma, our study finds that Tulsa discusses resilience and equity in their published resilience plan but low-income and communities of color continue to receive fewer resources than wealthier, predominantly white areas. This case study contributes to scholarly understanding of how neoliberalism manifests in climate adaptation in small-to-medium-sized cities and contributes to practical application by generating recommendations to the city. Much of our current understanding about climate adaptation comes from large cities, and this case study shows how the resource constraints of small-to-medium-sized cities, and neoliberal or public-private partnership solutions, make achieving justice difficult. |
| Vander Weil | Bren | Texas State University | | | Advanced Placement Human Geography: Program Access and Effectiveness by Grade Level, 2001–2020 | Since 2001, the Advanced Placement (AP) Human Geography program has grown substantially in terms of the sheer number of students taking the course and exam. The program’s growth curve is a marker of increased exposure to complex subject matter in high schools, which is a core AP objective. Viewing AP Human Geography’s growth in the aggregate, however, masks the program’s unequal record of supporting the second fundamental goal of AP, which is to facilitate the college transition of participating students. By grade level, the highest AP Human Geography exam scores on average were earned by high school juniors and seniors. Most of the exams were primarily taken by students in ninth grade outside of New England and the Middle Atlantic. Students in Texas and Florida together accounted for 35 percent of the exams in the peak year of 2019. AP Human Geography’s unintended status as a warmup AP course places it at odds with the College Board’s AP guidance and contemporaneous reports that most students start high school lacking the knowledge and skills for advanced geography coursework. The geography education of younger students would be better served by on-level geography courses and placement tests that are predictive of AP performance later in high school. |
| Verno | Madelyn | University of Oklahoma | | | A National Comparative Analysis of the Impacts of Coal Mining and Fracking on Drinking Water Quality | Coal mining and hydraulic fracturing have documented negative impacts on water quality in the United States. A comparison of the two, coal mining and fracking, related to drinking water quality will allow us to understand their differential impacts. Although previous literature has shown evidence of coal mining and hydraulic fracturing having negative effects on drinking water quality, comparative analyses of the two methods are not commonly found at the national level. I will use data for fracking sites from FracFocus and data on coal mine locations from the National Coal Resources Data System (NCRDS). The health-based drinking water quality violations will be obtained from the Safe Drinking Water Information System (SDWIS). A fixed effects SLX model will be used to analyze the data. I expect to find that there is negative impacts on drinking water quality in counties where mining or fracking are located. |

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| Wiley | Delorean | Texas State University | | | Crafting Water Stewardship: Texas craft breweries at catalytic sites for water conservation | As recurring drought and flooding become the “new normal” for weather in Texas, especially as they occur amidst a slowly changing water policy landscape, water advocates are looking for new and innovative ways to address water supply in the state. This dissertation examines craft breweries as sites for catalytic leadership for water stewardship projects, which are analyzed to examine and uncover the often invisible dynamics that hinder or lead to water conservation and quality knowledge and action. The research was conducted as a participatory action research project in conjunction with industry, academic, governmental, and non-profit actors. Findings from this work show that there are a variety of personal (social), environmental, and legislative drivers that influence whether breweries implement water stewardship activities or not. The research conducted revealed that the best time to plan large operational water conservation is during the brewery-in-planning stage, for breweries that are moving into a new-build space, and when the brewery space is owned and not leased. Through this study donations were raised for the water conservation non-profits, six water education events were held, and two breweries launched on-site conservation projects. In these ways, Texas craft breweries catalyzed a process of experiential learning, which benefitted brewery employees, a diverse group of brewery patrons, government workers, local water non-profits, and the researchers. |
| Wilkho | Rohan Singh | Texas A&M University | Debayan Mandal, Lei Zou, Joynal Abedin, Bing Zhou, Heng Cai, Furqan Baig | Texas A&M University, Illinois at Urbana-Champaign | Disaster Resilience in the Age of Cyberinfrastructure: A Customizable Approach | In an era of increased climatic disasters, there is an urgent need to develop reliable frameworks and tools for evaluating and improving urban resilience to climatic hazards at multiple geographical and temporal scales. Defining resilience in the social domain is relatively subjective due to the intricate interplay of socioeconomic factors with disaster resilience. Alongside, there is a lack of computationally rigorous tools that can support customized resilience assessment. To address these gaps, this study has three objectives: To develop an empirically validated disaster resilience model - Customized Resilience Inference Measurement (CRIM) framework designed for multi-scale community resilience assessment and the identification of influential socioeconomic factors. To implement a CyberGIS module in the high performance computing CyberGISX platform that enables users to customize disaster resilience computation and visualization. To demonstrate the utility of the CyberGIS platform through a case study. This framework generates resilience scores, i.e., adaptability, vulnerability and overall resilience, derived from empirical parameters—hazard threat, damage, and recovery. Computationally intensive Machine Learning (ML) methods are employed to validate these scores and to explain the intricate relationships between these scores and socioeconomic driving factors. The platform provides workflow illustrations, score classification per county, interactive geo-visualizations, and interprets relationships of resilience scores to socioeconomic variables using ML through coefficients, importance scores, and causal relationships. The essence of this work lies in its comprehensive architecture that encapsulates the requisite data, analytical and geo-visualization functions, and ML models needed for resilience assessment. This setup provides a foundation for assessing resilience and strategizing interventions to enhance them. |

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| Williams | Harry | University of North Texas | | | Estimation of Hurricane Harvey washover fan thicknesses on Matagorda Peninsula, Texas, using pre- and post-Lidar DEMs. | Washover fans are a fundamental component of coastal sediment budgets. While fans can be relatively easily delineated on air photos to provide fan area, measurement of fan thickness, which is required for volume estimation, is problematic. Field surveys can be conducted (e.g. digging pits in fans to measure thickness), but field work can be labor-intensive, costly and time-consuming. This study uses pre- and post-Lidar DEMs to estimate the mean thicknesses of ten Hurricane Harvey washover fans on Matagorda Peninsula, Texas. The accuracy of the Lidar-derived fan thicknesses is assessed by comparing the Lidar results to fan mean thicknesses derived from field surveys. Eight out of ten Lidar-based thicknesses underestimated field-survey-based thicknesses, suggesting the presence of systematic bias in the Lidar-derived DEMs. The source of the suspected bias is uncertain; it is possible that compaction of marsh sediments by the weight of the washover fans lowered the fans and reduced their apparent thicknesses. It is concluded that pre- and post-Lidar DEMs can be used to estimate washover fan thickness, but steps should be taken to identify and address potential bias in the DEM data. |
| Wimhurst | Joshua | South Central Climate Adaptation Science Center | John S Greene | University of Oklahoma | Using logistic regression-cellular automata to project future sites for commercial wind energy development | Demands to decarbonize electricity production and improve energy security will continue to drive wind energy development. A Logistic Regression-Cellular Automata (LRCA) model is presented here to project timing and location of this future development and thus aid efforts to meet energy demands. The model's logistic regression equation is trained and tested using aggregated data from key predictors to correctly classify hexagonal grid cells covering the Conterminous United States (CONUS) as currently containing wind farms. The cellular automata component iteratively applies this equation, plus constraints and neighborhood effects, to project grid cells suited for future wind energy development out to the year 2050, with the model's sensitivity to constraint, neighborhood, and scenario definitions also examined. Projected wind farms are concentrated in high wind speed regions currently populated by wind farms (e.g., Central Plains, Midwest). State-level scale projections reveal local influences on future development, such as critical species habitats and infrastructure. Projected wind farm locations are trustworthy since the model correctly classifies over 85% of current grid cell states at CONUS and state-level scales. Current clusters of wind energy development across the CONUS will continue to expand in these projections, with these clusters growing earlier and faster given a larger neighborhood size and looser constraints. Model projections are less sensitive to scenario definitions, with modifications to predictors affecting when existing wind farm clusters expand rather than where new clusters form. Replacement of the wind farm location dataset would allow this model to project other decentralized land use changes, particularly solar energy development. |

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| Wu | Yanan | The University of Texas at Dallas | Yalin Yang, May Yuan | The University of Texas at Dallas | Identify geographical environments influencing emergency response performance | This study investigates the impact of geographic factors on emergency response times in Dallas, Texas. Dallas aims for an 8-minute response time. Previous research has examined response times at a macro level, which can overlook individual-level variations. In contrast, this study focuses on individual-level geographical environments. We analyzed 20,435 emergency incident records from August 2016 and applied an 8-minute threshold to differentiate between successful and unsuccessful dispatches. We used the Random Forest (RF) classifier, which effectively handles complex relationships between geographic variables and dispatch outcomes. The input variables included geographical characteristics, land use, road features, time, socioeconomic factors, and space syntax indices. Thirteen geographic measures were considered in predicting emergency responses. For preliminary results using data from August 2016, the model achieved an overall accuracy of 76.87%, with 77% accuracy for successful dispatches and 74% accuracy for unsuccessful ones. |
| Wynn | Melissa | Oklahoma State University | Melissa Wynn Rory Hill | Oklahoma State University | Bringing atlases back into the classroom: reflections on teaching world regional geography | In 2023, members may have accepted that most if not all of the materials we use in teaching university-level geography are to be found online. There is an array of literature on geography in higher education in which tools such as GIS, Google Maps, Google Earth, and searchable databases are assessed for their pedagogical value. Whilst such value is indisputable, we argue that there is continued relevance and value in the selective use of legacy materials like paper maps and atlases. Such paper-based maps - which tend to be comprehensive in nature - allow students to gain map-reading and spatial awareness skills in a more direct way than some online maps, which may lack relevant detail or be at inappropriate scales for learning. For world regional geography courses in particular, where the relationship between continents, as well as the relationships between countries, cities and physical features, need to be communicated and repeated, we find that atlases have definite advantages. In this paper, we will recount how and why we brought our department's atlases (purchased around the year 2005) out of storage and into the classroom; how undergraduate students responded to these materials; and what we learned about geographical education in the process. |
| Yang | Yalin | The University of Texas at Dallas | May Yuan, Yanan Wu | The University of Texas at Dallas | Discovering co-location patterns in space using Simulation-tested Spatial Association Mining | Spatial co-location analysis enables understanding attractions and relationships between features, but efficiently quantifying multivariate spatial associations poses computational challenges. Spatial statistical approaches are computationally expensive, while data mining techniques often derive spurious colocation patterns without significance testing. We introduce a framework leveraging spatial simulation to resample data and validate discovered associations between targets called Simulation-tested Spatial Association Mining (SimSAM), which enables a robust, interpretable investigation of complex spatial relationships. Two simulated scenarios indicate our approach can efficiently determine significant colocation patterns indicative of geographical and categorical distinctions between spatial entities. We demonstrated SimSAM empirically to quantify associations between urban amenity compositions and social events in the Dallas-Fort Worth metroplex to mine spatial associations between social events with Points of Interest at locations. |

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| Yoder | Michael | University of Texas | | | The Port of Victoria, Texas: A Case Study of Regional Transportation and Industrial Development | Maritime ports and the places with which they connect comprise an important category of functional economic regions. Ports serve as nodes that focus economic activity for their respective regions and are important features of local and regional economic development. They illuminate the key geographic concepts of region, connectivity, and the built environment. This paper summarizes an empirical study of the Texas Gulf Coast port of Victoria as an engine of local and regional economic development. It traces the origins of the port in the mid-20th century and the planning and marketing of it since then. Victoria's shallow barge port on the Intracoastal Waterway is a catalyst for growth of industries relying on bulk cargo, such as petrochemicals, fertilizers, and construction materials. The corresponding navigation district enables the issuance of general revenue bonds to finance improvements. Its most recent development includes the installation of a rail loop to enable local economic developers to promote it as a rail-served industrial facility in addition to a barge port. Although the port's development has raised environmental concerns such as its impact on wildlife habitat and water quality disruptions, the public-private partnerships and tax abatements that have brought about the large-scale infrastructure project are nonetheless popular with taxpayers, given the role it has played in regional economic development. The paper portrays a case study of the geography of economic development and local-scale political geography. |
| Yu | Lixiaona | Oklahoma State University | Tao Hu | Oklahoma State University | Beyond Conventional Proximity Metrics: Using Smartphone Mobility Data to Unveil Health Access Disparities | Travel time is one of the most important factors in evaluating health disparity. Previous extensive research has primarily leveraged the driving time to the nearest health facilities to gauge accessibility. However, such presumed travel time often may not accurately represent real patients' behavior, leading to underestimations of travel time to health facilities. This study aims to systematically understand such gaps by comparing them to actual travel time derived from mobility data and determine how various population groups are most likely to be affected. This study took mental health services as an example and compared these actual travel times with the estimated nearest driving times to mental health facilities. Results indicate that both travel time metrics demonstrate significant disparities between urban and rural areas. Estimated travel times are consistently underestimated across the US. We compared travel times among diverse sociodemographic groups across eight geographical regions. The findings suggest that different age groups have comparable travel times to mental health facilities. Hispanics have a larger percentage of the population being underestimated. However, racial groups exhibit varied travel times. We also employed the Ordinary Least Square (OLS) model to quantify the correlation between travel times and vulnerable populations and diverse racial groups. The results revealed that elder populations and high school dropout rates have positive correlations with both travel times in most regions. Non-Hispanics show positive correlations with both travel times. Overall, this study reveals pronounced discrepancies and underscores the importance of using actual travel times as a measure of health accessibility. |