

## APCG 2018 – Abstracts for Paper Presentations

**Stuart C, Aitken, Li an and Shuang Yang**

Affective Ecologies, Development and Marginalized Families in Fanjingshan, China

In March 2013, several thousand delegates at China's National People's Congress voted to approve the environmentally sensitive and authoritarian Xi Jinping as president. This portended dramatic changes in environmental policies, not least of which was an offsetting of top-down development-at-all-costs dogma with a new official orthodoxy focused on a sustainable and circular economy, with inclusive and more rounded growth. This paper is part of a long-term project (2008-2017) in Fanjingshan National Nature Reserve in Guizhou Province that took place as the political scene in Beijing shifted. The larger project is about human-environment dynamics and complexities focusing on the preservation of snub-nose golden monkey habitat, and the implementation of top-down grain-to-green and national forest conservation programs. This paper is about the contexts of two development projects, one in the reserve and one just outside of it, with very different outcomes. Drawing on the work of Arturo Escobar, Rosi Braidotti and Xiaobo Su we argue for development in a time and place of rapid change as if marginalized farmers and their families mattered, and the possibility of sustainable ethics with a locatable politics. The paper elaborates the potency of this kind of sustainability through the stories of families living on Fanjingshan Reserve in the midst of (i) authoritarian environmental policy proclamations from Beijing and (ii) boisterous local development.

**Clark Akatiff**

"You are where you're at" The March on the Pentagon reconsidered.

Location, location, location say the money men of geography. Place and the actions that lead to ones place are the irreducible essence of being. This will be a review of my 1974 paper in the Annals in light of the conference's theme of Place and the geography of things. More to come.

**Jesus A. Alfaro Contreras, [jalfaro5@calstatela.edu](mailto:jalfaro5@calstatela.edu), California State University, Los Angeles**

LA & Olympic Los Angeles: A Look Back at '84

Los Angeles is an Olympic city. This statement will further be confirmed when the Summer Olympics return to the city in 2028. It will join the ranks of London and tentatively Paris (in 2024) as a city to host the Summer Olympics three times.

Historically, Los Angeles has the reputation for its innovations that have developed the modern Olympic games, such as the first city to create an Athlete's Village in 1932, to becoming the first privately funded games in 1984. This paper will exam the relationship between the residents of Los Angeles and the 1984 Summer Olympics. The methods utilized to historically analyze this relationship will be: define sport, as a social institution; funding, both economic and socially; and the concept of space and place to various actors participating in this mega-event. The end goal is to critically consider each topic when preparing and planning for the 2028 Summer Olympics.

**Daniel D. Arreola, [daniel.arreola@asu.edu](mailto:daniel.arreola@asu.edu), Arizona State University and University of New Mexico**

Mujeres Olvidadas Fronterizas: Female-Authored Landscapes in Mexican Border Towns

Authored landscape refers to a geographic circumstance where an individual shapes a place in a distinctive manner. On the Mexico border during the early to mid-twentieth century, three women—Alice Gatliff, Delfina Rochin de Vergobbi, and Matilde Olague Alvimar—were instrumental in shaping landscapes in Agua Prieta and Nogales, Sonora, and Palomas, Chihuahua, respectively. These women were pioneering entrepreneurs at a time when few businesswomen could be found on the Mexican border. Each launched, operated, and stocked with exotic merchandise the first curio stores in their respective towns. Through the production and distribution of postcards, these women advertised their retail enterprises and promoted tourism and popular landmarks in the towns. This presentation recounts some of the contributions and landscape signatures forged by these forgotten border women.

**Jeff Auer, [jauer@unr.edu](mailto:jauer@unr.edu), University of Nevada, Reno**

Geographic Inclusion/Exclusion in the National Reno Gay Rodeo

From 1976-1984, the National Reno Gay Rodeo was the biggest gay tourism event in the United States. Starting from just 150 people attending in 1976, by 1982 20,000 people from all over the world attended the rodeo. The rodeo ended up bring up issues surrounding inclusion and exclusion at the Washoe County Fairgrounds where the rodeo was held. The idea that the fairgrounds were an open space for a gay tourist event were challenged by city leaders on homophobic grounds and then by right wing AIDS phobic activists. In this paper I will illustrate how these challenges weakened and ultimately ended up causing the demise of the Reno National Gay Rodeo.

**Engrid Barnett, PhD**

## Outlandish!: The Resurrection of the Gaelic Language in Scotland

Scottish Gaelic continues to endure despite 350 years of repression. Following the failed 18th century Jacobite rebellion, Highland culture and the Gaelic language were suppressed for centuries. Originally the first and only language for some 290,000 Scots, it dropped to just 59,000 speakers by 2001. As the older generation aged and passed away, many believed that Scottish Gaelic would disappear. But within the past decade, a revival of the language has started. Increasing numbers of parents and children are speaking the language at home, and some parents are now opting to send their children to Gaelic-medium schools, where the entire curriculum is taught in Gaelic. The hope is that over time, this younger generation of Scots will resuscitate the language to which their nation remains so intimately tied. The effort to preserve and maintain the language can be seen in physical forms including road signs and an entire BBC channel dedicated to Scottish Gaelic. The "Outlander" television series has brought Scottish Gaelic to a wider viewing audience than ever before, and some experts even hope that the rise of Gaelic in Scotland could help Europeanize Britain. But despite these gains, many Brits hold stalwartly to the notion that only English should be spoken in the British Isles creating contention and opposition to the Gaelic language revival. Nevertheless, this paper will explore the impact of popular media on the revitalization of this endangered language.

**Clare Beer, [clarebeer@g.ucla.edu](mailto:clarebeer@g.ucla.edu), UCLA**

## "More Profitable Than Copper": The New Politics of Conservation in Chile

Precisely as the U.S. grapples with unprecedented threats to its public conservation lands from mining interests and political leadership, Chile's conservation lands are undergoing unprecedented expansion. Through a first-of-its-kind public-private partnership between the Chilean state and American eco-philanthropist Kristine Tompkins, over ten million acres in rural Patagonia are being converted into national parks. The partnership increases the amount of federally protected land by nearly 40 percent, resulting in a corridor of 17 national parks spanning 1,500 miles along the remote Southern Highway Route 7. Eponymously known as the Route of Parks, this mega conservation project drastically reimagines Route 7 and Patagonia as a whole. Where once the state courted big industry and ranchers to settle and develop these distant lands, it now pursues rural economic growth through a 'conservation economy' based on tourism and ecosystem services. The Route of Parks signals a notable U-turn in national economic and environmental strategy, begging the question of how such an ambitious plan for environmental protection is emerging in a country known for extractive capitalism par excellence. This paper presents early-stage dissertation research examining how conservation-as-development became

commonsense in Chile. Using the Route of Parks as a lens to study its processes and outcomes, I argue that a new politics of conservation is taking shape with important consequences for environmental, economic, and social change in Patagonia and beyond.

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Mapping changing distributions of dominant species in oil-contaminated salt marshes of Louisiana using imaging spectroscopy

The April 2010 Deepwater Horizon (DWH) oil spill was the largest coastal spill in U.S. history. Monitoring subsequent change in marsh plant community distributions is critical to assess ecosystem impacts and to establish future coastal management priorities. Strategically deployed airborne imaging spectrometers, like the Airborne Visible/Infrared Imaging Spectrometer (AVIRIS), offer the spectral and spatial resolution needed to differentiate plant species. However, obtaining satisfactory and consistent classification accuracies over time is a major challenge, particularly in dynamic intertidal landscapes. Here, we develop and evaluate an image classification system for a time series of AVIRIS data for mapping dominant species in a heavily oiled salt marsh ecosystem. Using field-referenced image endmembers and canonical discriminant analysis (CDA), we classified 21 AVIRIS images acquired during the fall of 2010, 2011 and 2012. Classification results were evaluated using ground surveys that were conducted contemporaneously to AVIRIS collection dates. CDA discriminated dominant species with a high level of accuracy (overall accuracy = 82%, kappa = 0.78) and consistency over three imaging dates (overall 2010 = 82%, overall 2011 = 82%, overall 2012 = 88%). Marshes dominated by *Spartina alterniflora* were the most spatially abundant for all three dates, followed by *Juncus roemerianus* and *Distichlis spicata*. Marsh conversion to open water along oil-contaminated shorelines doubled that of non-oiled shorelines. Only *Spartina alterniflora* dominated marshes were extensively degraded, losing 15% (354,604 m<sup>2</sup>) cover in oiled shoreline zones, suggesting that *Spartina alterniflora* marshes may be more vulnerable to shoreline erosion following hydrocarbon stress, due to their landscape position.

**Kris Bezdecny, kbezdec@calstatela.edu, Cal State LA**

Cities as climate saviors? The role of cities in enacting the Paris Climate Agreement

The Trump Administration announced in June 2017 its intention to withdraw the U.S. from the Paris Climate Agreement, a global attempt through the United Nations Framework Convention on Climate Change to mitigate global temperature rises through the reduction of greenhouse gas emissions. The U.S. would become (as of September 2018) the only eligible nation-state that is not a signatory. In response, many U.S. states, such as California, New York, and Washington, and dozens of cities, with Los Angeles spearheading efforts in the U.S. to focus on policy that provides de facto support for the Paris Agreement. This paper uses Los Angeles and the role of Mayor Eric Garcetti's administration as a case study in how the shifting dynamics of urban global governance intersects with environmental justice at multiple scales through the same urban space, allowing for a city such as Los Angeles to take global leadership in urban environmental justice, including Garcetti's leadership in the Mayors National Climate Action Agenda commitment to adhering to the Paris Climate Agreement, even while struggling with environmental racism and environmental degradation locally.

**Sophia L. Borgias, sborgias@email.arizona.edu, University of Arizona**

Beyond the ranchers-versus-city narrative: reassessing the Owens Valley water conflict

As cities across the United States look to distant rural watersheds to meet the needs of their growing populations, they are met with resistance from rural communities who point to the dangers of becoming "another Owens Valley." But are we gleaning the right lessons from this reference? Debates have tended to remain fixated on the popular ranchers-versus-city narrative about Los Angeles' acquisition of more than 95% of the land and water rights in Owens Valley, California. However, this narrative overlooks the experience of the Owens Valley Paiute and Shoshone, whose water rights remain unresolved to this day after their lands were variably withdrawn, sold, or traded to the Los Angeles Department of Water and Power (LADWP) by the federal government to provide watershed protection for the city. This paper presents the results of preliminary archival and ethnographic research that sheds light on the processes by which public, private, and tribal interests are reconciled over time in the wake of large rural-to-urban water transfers. Drawing on political ecology and legal geography, this research takes a fresh look at the emblematic Owens Valley case in the context of a shifting regulatory and socio-environmental landscape.

**Jonathan Bratt, jdbratt@asu.edu, Arizona State University**

Socioaesthetics and Urban Public Life in Tianjin, China

The global process of urbanization impels consideration and recognition of the social values adequate to contemporary urban life. How do we evaluate whether a city is livable or equitable? One set of urban values pertains to socioaesthetics, the ways in which sociality occurs and is experienced aesthetically. Everyday urban life is suffused with indirect, embodied sensory interaction between people engaged in various activities. In Western urbanist discourse, socioaesthetic qualities such as ‘vibrancy’ or ‘liveliness’ are often upheld as valuable elements of urban public space, with urban design and planning increasingly oriented toward catalyzing the emergence of such qualities in streets, parks, and other public places. China has its own long history of socioaesthetic discourse, with values such as *renao* or ‘heat and noise’ appearing in Chinese-language texts going back more than a thousand years. The pertinence of such values in contemporary urban public life, however, has received sparse scholarly attention, in spite of China’s unprecedented urban growth. This project aims to understand and evaluate socioaesthetic interaction as an element of urban public life in the city of Tianjin, China. How does aesthetic sociality emerge, and in what forms is it a desirable element of urban space? In this paper I report on several fieldwork activities conducted in Tianjin attempting to answer these questions, including a walking experiment and interview, a mapping project, and participant observation.

**Paul Burger, [burgerpr@unk.edu](mailto:burgerpr@unk.edu), University of Nebraska - Kearney**

If You Build It Will They Come? Using GIScience to Estimate Retirement Community Demand and Evaluate Potential Locations in Salt Lake City, Utah

Resort Lifestyle Communities (RLC), a Nebraska-based company, plans to identify a location in the Salt Lake City, Utah metropolitan area containing sufficient demand to develop an upscale retirement community. RLC wants to determine which neighborhood has sufficient demand with the least amount of competition for a new facility with sufficient market share to make it profitable. GIScience provides a framework for the analysis of factors contributing to the location and viability of a retirement community. Given the development’s proposed location along with existing competitors, the goal of this project is to determine how many retirees RLC can expect to choose their facility. The Huff Model in ArcGIS is a probabilistic gravity model used to predict consumer behavior by estimating the portion of demand (retirees) choosing a certain entity (retirement community) over competing locations. Demand surrounding two sites selected from a related project through the location-allocation heuristics of Maximize Market Share (MMS) and Maximize Attendance (MA) are analyzed using the Huff Model. The results provide RLC the basis for acquiring properties with a suitable location for construction of a retirement

community in the Salt Lake City metropolitan area. Keywords: GIScience, Gravity Model, Retirement Community, Site Selection.

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### Fire and Population Expansion in Orange County

Recently passed SB 901 allocates more funding towards fire prevention efforts in California with special emphasis on thinning of dense forests and removing of brush. However, research shows that while a history of fire suppression seems to have led to fuel buildup in forested ecosystems and consequently to more severe or more frequent fires, fire suppression efforts seem to have had very little impact on fire frequency in California brushland systems like chaparral and coastal sage. In these lowland southern California ecosystems, fires are not so much driven by fuel buildup but spread during severe fire weather days. Thus, creating fire breaks via fuel removal and controlled burning probably will not stop intense fires during Santa Ana events. A better long-term strategy to decrease property destruction and the loss of human lives would be to instead consider fire danger when developing neighborhoods in the Wildland-Urban Interface (WUI). This analysis evaluates the interrelationships between population growth, the WUI, and fire in Orange County, which has experienced a 32% population growth since 1990 accompanied by rapid suburban home construction and expansion into highly flammable coastal sagebrush and chaparral ecosystems. In particular, I aim to answer the following questions: 1) Have there been any changes to fire frequency, fire size, or fire timing in recent years? 2) Do most of the fires occur in the WUI? 3) Are there high fire danger areas that burn more frequently than others? 4) What are some of the options for developing more fire-prone communities?

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### Estimating Evapotranspiration in Nicaragua for Drought Monitoring and Water Budget Analysis

With rising temperatures, increasing sea levels, seasonal drought, and other climatic oscillations, tropical countries such as Nicaragua need to prepare for the ramifications of climate change now. The provisioning of freshwater is a crucial ecosystem service that requires better understanding in this context. In this research, we measured and quantified the relationships among precipitation, temperature, evapotranspiration (ET), and change in storage for Nicaragua between 2003 and 2010. We used the

Chelsa gridded climate dataset and the SSEBop model gridded MOD ET evapotranspiration product. We found complex non-linear responses to climatic variation that differed across different watersheds. Generally, temperatures increased from January through May throughout Nicaragua until the rainy season commenced. During the rainy season, ET increased sharply. For example, in Jinotega (north central Nicaragua), temperatures overall increased while ET remained low (20-60 mm) in Jinotega. After the rains commenced in May, NDVI increased, and there was greater loss of ET from land surfaces (60-96 mm). By assessing the quantification of ET in proportion to precipitation across land cover and vegetation types in future analyses, we can assess shifting agricultural practices and explore the potential of less water-intensive land-cover types to reduce ET in a changing climate. A close monitoring of the hydrologic cycle on a regional scale could suggest methods for coping with climatic extremes by accounting for freshwater availability each month.

**Teresa Cavazos Cohn, University of Idaho; Kate Berry, University of Nevada-Reno; Kyle Powys Whyte, Michigan State University; Emma Norman, Northwest Indian College**

Spatio-temporality and tribal water quality governance in the United States

Hydrosocial spatio-temporalities—aspects of water belonging to space, time, or space-time—are central to water governance, providing a framework upon which overall hydrosocial relations are constructed: they are fundamental to the establishment of values and central to socio-cultural-political relationships. Moreover, spatio-temporal conceptions may differ among diverse governing entities and across scales, creating “variability” through ontological pluralism as well as power asymmetries embedded in cultural bias. This paper explores spatio-temporal conceptions related to water quality governance, an aspect of water governance often biased toward technical and scientific space-time conceptions. We offer examples of different aspects of spatio-temporality in water quality issues among Tribes in the United States, highlighting several themes, including spatiotemporal cycles, technological mediation, and fluidity. Finally, we suggest that because water is part of a dynamic network of space-times, water quality may be best governed through more holistic practices that recognize tribal sovereignty and hydrosocial variability.

**Jason Combs, [combshj@unk.edu](mailto:combshj@unk.edu)**

Pioneer Life on Glass: The Balcom-Green Collection

Pioneer Life on Glass: The Balcom-Green Collection From the mid-1890s until the early 1920s, Henry Balcom and his son-in-law Ray Green captured some 1,200 images of central Nebraska. The collection makes a significant contribution to our



understanding of the history and settlement of the central Great Plains by providing an intimate look into Nebraska's past. The images capture private moments that illicit strong emotional responses, the sadness of an infant's funeral to the joy of school children having ice cream. The subtle nuances of pioneer life are also depicted in the photographs in addition to the more significant symbols of progress—horses, cattle and hogs, frame houses and hay barns, shocks of wheat, steam engines, and new motorcars. Beyond landscapes and material advances, the individuals and families portrayed in the photographs convey a sense of achievement and the determination of the men and women who settled the Great Plains is evident.

**Neil Conner, [nconner@csufresno.edu](mailto:nconner@csufresno.edu), California State University, Fresno**

Sports and the social integration of migrants in Dublin, Ireland

In many ways sports are a microcosm of society; providing a window into the world of a place, or more accurately, a mirror reflecting that place's unique identity. As such, sports offer a compelling entry point for geographers to critically engage with larger social issues such as race, ethnicity, and numerous other identity characteristics (as well as their intersections). This paper analyzes several everyday sports in Dublin, Ireland in order to explore the social integration process of immigrants living within the city. Qualitative research conducted over a three year period suggests that these sports can serve as both a bridge and a barrier in the social integration process. The Republic of Ireland has only recently (early 1990s) become an immigrant-receiving nation-state and many of their sporting traditions are coupled with preconceived notions of Irish identity. Ultimately then, this paper examines how the participation in sports by immigrants (and their children) in Dublin is contributing to both the acceptance of and opposition towards immigrants by the Irish-born population.

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Valley Oak Tree-ring Growth Reflects Increasing Variability in Southern California Precipitation.

Analysis of the climate-tree growth association is customarily carried out by examining the relationships among climatic means and annual growth measurements from a tree-ring chronology. Climatic means are not always typical of climate, but may vary considerably from year to year and seasonally. The degree of variability around the mean can also change over time, with some time periods exhibiting stationarity and or low variability, while other periods may have highly variable means, or exhibit stochastic behavior without clear patterns. This paper examines the relationship between precipitation variability (standard deviation) and tree-ring

growth rates in southern California *Quercus lobata* (valley oak). A moving-window approach was used to calculate the running standard deviation of precipitation over 5 and 10-year periods from the historical instrument record, which was then compared to annual growth in a standardized tree-ring chronology. The strength of the relationship between standard deviation of precipitation and tree-ring width was measured using Pearson's  $r$ . The results show a strong correlation between tree growth and precipitation data, both of which display increasing variability, or standard deviation. These results are consistent with climate research, and are encouraging in terms of the utility of *Q. lobata* as a proxy source for future climate studies.

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### Youth Visitor Dynamics in Four Pacific Coast National Parks

Recent media reports have suggested that members of the Millennial Generation (born 1981-1997) and Generation Z (born after 1997) are less inclined to visit national parks, compared to older generations. This study updates previous work and is based on a much larger data set. We used three methods to examine the validity of these media statements: Qualtrics-based social media surveys (on Facebook, Twitter, and Instagram), face to face semi-structured interviews with park rangers at four Pacific coast national parks—Redwood, Crater Lake, Mount Rainier, and Olympic—and on-site visitor counts at visitor centers and on trails. We compared these observations with the limited historical data on visitor ages available from the National Park Service. Our results suggest that media reports are overstated, and that the number of both Millennial Generation and Generation Z members visiting national parks is at least stable and perhaps even increasing. A possible explanation for divergent results is that younger people may be accessing park information through online and social media sources, and therefore bypassing visitor centers and direct contact with park rangers.

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Linking tree-ring based reconstructions of streamflow in the Truckee-Tahoe Basin to watershed histories and western development.

The Truckee River basin (TRB), located in the northern Sierra Nevada Mountains is an important source of water to the state of Nevada. The first US BOR diversion project, was built on the Truckee River to provide water for agriculture to encourage settlement in the state of Nevada. One of the earliest studies to use tree-ring records to reconstruct streamflow was conducted in the TRB (Hardman and Riel, 1936). At that time the region was experiencing an unprecedented drought and it was recognized that

records of water resources in the TRB were too short to ascertain whether a drought of that magnitude was unusual. Many of the statements made in that seminal paper are as true today with the current ongoing drought in the region. Here I will discuss a new tree-ring based streamflow record from the TRB in the context of both settlement and water resource development.

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Investigation of the depositional environment of clustered boulders, Nojoqui Valley, Santa Barbara County, California

Large boulder deposits of uncertain origin were mapped in Nojoqui Valley, Santa Barbara County, California, raising questions concerning the nature of these deposits and their provenance. Using detailed field mapping and remote sensing of the study area, this investigation seeks to explain the geomorphic history of the region based on the lithology and distribution of the boulders, and present and past tectonic and climatic conditions. Field observation shows a large percentage of boulders composed of arkosic sandstone, likely sourced from exposures of the Eocene Matilija Sandstone in the Santa Ynez Mountains directly adjacent to the study area. A smaller percentage of conglomeratic boulders, originally thought to be derived from the Oligocene Sespe Formation, contain exclusively felsic clasts, indicating the most likely source to be a previously unmapped basal conglomerate member of the Matilija Sandstone.

Distribution of boulders expressed as linear and lobate structures across the landscape, suggest deposition by debris flows with the Santa Ynez Mountains as a plausible source for most, but not all of these boulders. Though absolute temporal constraints on the timing of debris flow events cannot be derived directly from this study, a sequence of events for deposition and subsequent displacement along the Santa Ynez fault is interpreted based on locations of groups of boulders. There appears to be an initial deposition of boulders from multiple debris flows followed by a second series of debris flow events that today are found on shutter ridges along the fault. Fluvial transport and removal of material is indicated by boulder deposits perched above the modern valley floor. Incision of the valley floor continues today.

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A Spatial Approach for Understanding Girdled Lizards in Namibia.

Although the region of southern Africa is a biodiversity hotspot that contains many endemic flora and fauna, the biodiversity of reptiles in this region is grossly underestimated in most world-wide studies. In particular, regions in southwestern

Africa are often represented as having depauperate herpetofauna when in fact they have some of the highest reptile diversity in the world. In addition, the misrepresentation of herpetofaunal distributions in these regions is accentuated by a scientific literature knowledge gap in some of these highly biodiverse countries, such as Namibia. In order to improve the representations of southwestern African herpetofauna, we are investigating questions relating to the spatial relationships of Namibian Girdled Lizards through biogeographical, genetic, and GIS techniques. We focus on two genera of Girdled Lizards – *Karusasaurus* and *Namazonurus* – to investigate their spatial aspects, particularly pertaining to varying distribution sizes between species, movements among species, and ecological niche. The spatial information we can obtain, from an individual level to a population and ultimately to the entire species, is crucial data for understanding the Girdled Lizard's biology. We emphasize the importance of collecting spatial information and analyzing the data through a variety of methods (e.g. niche modeling) to understand spatial aspects, such as home range and distributions, of Girdled Lizards.

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Plumbing poverty: mapping hot spots of racial and geographic inequality in U.S. household water insecurity

Household water insecurity is a global threat to human health and development, yet existing metrics lack a systematic consideration of geographic inequality and spatial variation. In this paper, we introduce the notion of plumbing poverty as a conceptual and methodological heuristic to examine the intersectional nature of infrastructure, space, and social inequality. Plumbing poverty is understood in a dual sense: first, as a material and infrastructural condition produced by social relations that fundamentally vary through space, and second, as a methodology that operationalizes the spatial exploration of social inequality. Drawing on millions of census records, we strip household water security down to a single vital measure—the presence of complete household plumbing—to assess its spatial and sociodemographic trends. We identify distinct hot spots (geographic clusters of higher-than-average values) of plumbing poverty, track its social and spatial variance, and expose its fundamentally racialized nature. Our study finds that plumbing poverty is neither spatially nor socially random in the United States. Rather, plumbing incompleteness is spatially clustered in certain regions of the country and is clearly racialized: living in an American Indian or Alaskan Native, black, or Hispanic household increases the odds of being plumbing poor, and these predictors warp and wobble through space. In considering who experiences the slow violence of infrastructural dysfunction, a geography that is simultaneously ignored and unevenly expressed in America, we argue that analyses of

space and social difference are central to understanding household water insecurity and must be prioritized in the development of cross-comparable metrics and global measurement tools.

**Elvin Delgado, delgadoe@cwu.edu, Central Washington University**

Fracking in Northern Patagonia: Assessing the Uneven Impacts of Argentina's Push for Hydrocarbon Sovereignty.

This presentation explores struggles over shale fuel development in the Vaca Muerta formation in the Province of Neuquén in northern Patagonia, Argentina. In particular, the presentation provides a socio-geographical analysis to elucidate the legal framework used to control underground deposits and critically explore the socioeconomic implications of fracking activities in the community of Añelo, where the infrastructure to support fracking activities is being developed. By analyzing the relationships between national strategies to recover hydrocarbon sovereignty to achieve energy self-sufficiency, provincial government attempts to develop shale deposits to increase the revenue generated from their rent, and everyday lives of citizens in Añelo, this presentation aims to illuminate the myriad complexities inherent to issues of access to and control over unconventional deposits and the uneven distribution of the social and economic impacts associated with their extraction in a changing energy landscape. I argue that the socioeconomic impacts experienced in Añelo are not only the direct consequence of the boomtown scenario resulting from the exploitation of Vaca Muerta, but this process is in part the end-result of a national strategy spearheaded by the government to secure the accumulation of capital through shale fuels rent as part of a broader agenda to achieve energy sovereignty. I further contend that changes in Añelo are the direct result of neo-extractivism, where the primary agents responsible for the boomtown scenario in the community are the state-owned YPF, in joint venture with international oil and gas companies.

**Luis Devera, luis.devera.167@my.csun.edu, California State University Northridge**

Carpinteria Salt Marsh: Post-Fire Analysis on Debris Flow Migration and Water Quality Assessment on Polycyclic Aromatic Hydrocarbons

"To the board, I would like to request to present on Saturday Oct. 27." The Carpinteria Salt Marsh was affected by debris flow from the Thomas Fire that occurred in late December 2017. Earlier this year in January 2018 a series of rainstorms occurred that generated mudslides and debris flow. From the Santa Ynez Mountains burnt debris were transported down through Santa Monica Creek and Franklin Creek and washed

up into the salt marsh. In February 2018 a king tide event took place which followed a series of high tides that transported the debris from the wildfire through the mouth of the estuary and inland in the salt marsh. The burnt debris from the wildfire created compounds known as polycyclic aromatic hydrocarbons (PAHs) which were found present in the soil underneath the pile of burnt debris. An aerial survey was operated to locate where the debris have been deposited. A collection of soil samples were collected to find the presence of PAHs in the soil. The survey investigated how the debris were transported in the marsh and also if the area has been contaminated by PAHs from the wildfire.

**Anudeep Dewan, [adewan@uoregon.edu](mailto:adewan@uoregon.edu), University of Oregon**

For the Love of Tea: An Analysis of the Brand of Darjeeling Tea

This study questions the geographic brand of Darjeeling Tea, and explores what Darjeeling Tea means for people who have been responsible for marketing and promoting Darjeeling Tea. These definitions mostly rely on the terroir idea, given the fact that Darjeeling Tea is protected by the Geographical Indicator (GI) status. Mazzarella (2003) notes that advertising executives identify intimately with brands, priding themselves with the voice that the brand speaks, routinely metaphorizing brands as people (Mazzarella, 2015). The companies branding Darjeeling Tea use a particular imaginary of Darjeeling, its agroclimatic condition and its people to advertise where the quality of the tea comes from, letting people all over the world engage with the geography of Darjeeling from afar. In that regard, this research questions the brand and terroir of Darjeeling Tea, that has a history which dates back into the British colonial era, and what it represents and embodies. It analyses the narratives gathered from 13 people working in different levels of the supply chain of Darjeeling Tea production in Darjeeling and Kolkata, India, over the summer of 2018. While issues of fair wages and worker welfare has been ongoing, and are at the heart of the frequent and ongoing activisms in the plantations, Darjeeling Tea relies on the geographical imagination of a romanticized Darjeeling that the product evokes, making it not only a way of recognition of the place and people, but their alterity as well at the same time.

**Theodore Dingemans, [tdingemans@nevada.unr.edu](mailto:tdingemans@nevada.unr.edu), University of Nevada, Reno, and Scott Mensing, [smensing@unr.edu](mailto:smensing@unr.edu)**

Impacts of history, climate, and geography on patterns of environmental change over 3000 years in central Italy

Fossil pollen is a valuable tool for reconstructing environmental change and helping us evaluate the impacts of climate and humans. By comparing history to pollen

records we can begin to evaluate how changes in political control impact the landscape. Here we present a 3000 year pollen record from Lake Ventina, central Italy, and compare it to history and another nearby pollen record from Lake Lungo. By utilizing multiple pollen records in the same region and at similar temporal scales we can better understand local spatial patterns in environmental change. Our findings from Lake Ventina include: chestnut (*Castanea*) and hemp (*Cannabis*) were important cultivates back to the pre-Roman period, Roman conquest did not have a substantial impact on the landscape, and forests were limited prior to 1450 AD and expanded significantly after. Comparison with the Lake Lungo pollen record indicates several deviations between records, including that Ventina has a much more extensive record of chestnut and cannabis cultivation, a clearer early medieval forest regeneration, and less extreme late middle ages forest degradation. We also find the impact of Roman conquest at the two sites is very different, with little impact at Ventina but substantial forest clearance at Lungo. These results have important implications for analyzing interactions between climate, humans, and the environment and illustrate how geographically very similar pollen records can produce somewhat different but complimentary results.

**Ian M. Dunham, [iandunham@sfsu.edu](mailto:iandunham@sfsu.edu), San Francisco State University**

Financial exclusion and the dual financial service system: Neighborhood level predictors of banking deserts

While the majority of Americans regularly utilize mainstream banks and credit unions to fulfill basic banking and credit needs, many low- to moderate-income consumers remain outside of the formal banking system, relying instead upon informal, alternative financial service providers, including check cashing outlets and payday lenders. For these consumers, being unbanked or underbanked may represent a financial burden while also disincentivizing more positive financial decision-making. The availability of brick-and-mortar retail financial services in low-to-moderate income neighborhoods remains a controversial topic. Prior research observes the emergence of a two-tiered banking or dual financial service system, whereby financial products and services are increasingly bifurcated based on socioeconomic status. However, significant questions remain about how to analyze and measure financial inclusion and exclusion, especially as a geographic phenomenon. This research addresses the geographic relationship between retail financial services locations, neighborhood level demographic variables, and mortgage lending activity in American cities. Using geographic information systems and binary logistic regression, this research tests the hypothesis that the independent variables have a predictive relationship on the presence of banking deserts. The results reveal that banking deserts are predicted by comparatively higher population density, lower levels of median

household income, higher proportion of Black and Latinx residents, and higher levels of mortgage application denial. This research contributes to the ongoing debate over the emergence of a two-tiered banking or dual financial service system, whereby financial products and services are bifurcated based on socioeconomic status and geography. Recommendations for promoting more inclusive financial services follow.

**Matthew N. Fockler, [matthewfockler@augustana.edu](mailto:matthewfockler@augustana.edu), Augustana College**

Two-Mississippi: An Analysis of Social-ecological Change on the Upper Mississippi River Since the 9-Foot Channel Project using Repeat Photography and Historical GIS.

In 1930, the United States Congress authorized the construction of the 9-foot navigation project on the Upper Mississippi River. The project had a singular purpose: to bolster the midwestern United States' troubled Depression Era economy by guaranteeing commodity producers a navigable channel from Minnesota to the Gulf of Mexico. Between 1931 and 1940, the Army Corps of Engineers (ACE) constructed 26 lock and dam structures on the Upper Mississippi River and artificially raised water levels. The 9-foot project dramatically altered the social-ecological landscape of the Upper Mississippi River. In the months leading up to dam imposition, the ACE photographed thousands of landscapes soon-to-be impacted by the rising river waters. This paper utilizes repeat photography, field observations, and GIS analysis to assess how the 9-foot project has altered the social-ecological Upper Mississippi system. Systematic evaluation of over than 250 photo pairs taken over a fifty-mile expanse of the Upper Mississippi River exposes trends in social-ecological landscape change under Army Corps management and the 9-foot project. As the Army Corps finalizes a new forest and shoreline management plan, this research offers a compelling visual display and new knowledge for policymakers, managers, and local stakeholders.

**Matthew Fuller, [mtfuller@uvic.ca](mailto:mtfuller@uvic.ca), University of Victoria**

Settler/Indigenous Alliances Combating Fossil Fuels: A Case Study of the Shell No! Movement in the Pacific Northwest

Over the course of several months in 2015, communities in the Pacific Northwest organized to confront the presence of Royal Dutch Shell's Arctic drilling fleet in regional harbors. What would later be called "kayaktivism" involved frontline and eNGO organizers collaborating to confront the localized environmental degradation and climate justice issues resulting from any efforts by Shell to drill in the Chukchi Sea. The movement and its direct actions were often fast-moving and connected Indigenous communities at the frontlines of environmental ruination caused by these industries with local settler activists and organizations. The result was often beautiful, often messy and sometimes harmful. This presentation will examine the Shell No!



movement through interviews with key figures and seek to understand what worked and what didn't work when it came to building local alliances across the Indigenous/settler divide. Though settler allies appear to increasingly want to center the needs and desires of frontline Indigenous communities, on their own terms, it's important to examine how well solidarity work and intersectional social movements grow not just rhetorically but in the actions and behaviors of settler allies and their organizations. The focus here is on those articulations of solidarity during the Shell No! movement and seeks to explore how these alliances can be seen as expressions of trends in political ecological thought, social movements and the decolonization of relations. The primary research and interviews were conducted in the year following the Shell No! movement with local Indigenous and settler organizers.

**Aliona Galkina, [agalkina@sdsu.edu](mailto:agalkina@sdsu.edu), San Diego State University**

**Integrating Community Garden Produce into Local Economies of a Low-Income Urban Neighborhood in San Diego**

Over the past decades, food has become a topic of vigorous study in the field of Human Geography. Multiple scholars have drawn their attention to so-called 'food deserts', categorized by USDA as areas with population experiencing inadequate access to healthy food due to combination of low income and lack of food stores within proximity. San Diego's Mount Hope is one of these areas, located only 4 miles east of downtown, Little Italy, and Gaslamp Quarter - districts booming with farmers markets and trendy eateries. Predominantly Hispanic/Latino and a sizeable Afro-American and Asian population, Mount Hope is a low-income community, with over 25% living below the poverty line. Taking low mobility levels into consideration, various efforts have been made to broaden residents' access to fresh produce, such as establishing a local farmers market and a community garden. Good Food District initiative is seeking to integrate Mount Hope garden with the local food businesses, eventually transforming the neighborhood into an emerging destination for healthy, fresh, and affordable food options. Under the supervision of professors Joassart-Marcelli and Bosco in San Diego State University Geography Department, we have conducted mixed methods community-based research in Mount Hope. Our goal was to examine the potential and challenges associated with integration of the community garden produce into existing food system on a local scale. We rely on qualitative data gathered through the interviews with business owners and professionals involved in local scale food supply, along with quantitative data based on census and site surveys.

**Dr. Catherine Garoupa White, various affiliations,  
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## Reframing Clean Air as a Public Health Problem and Environmental Injustice in California's San Joaquin Valley: A Coalition Based Approach

The San Joaquin Valley is one of the poorest and most polluted air basins in the United States, and while people's health markedly suffers, efforts to clean the air are hard fought in the polarized political climate. While the dominant discourse around air pollution has narrowed to members of the public "making one change" in their lives such as riding their bike instead of driving, clean air advocates from a broad range of backgrounds merged efforts to advance a movement around the public health crisis caused by outdoor air pollution. Multi-scalar, collaborative work is required to navigate the complex regulatory structures governing outdoor air quality. As this research shows, advocates' capacity is enhanced by tapping messengers from various backgrounds, from mothers with asthmatic children to the doctors who treat them to the lawyers familiar with the regulatory mandates. In addition to breadth of expertise, coordinating members with different organizing philosophies allowed for different groups to take on various roles while buffering negative backlash from authorities. This paper documents how, against stacked sociopolitical odds, clean air advocates have leveraged coalition organizing to advance a public health frame around air pollution in the San Joaquin Valley and to shed some light on the environmental injustices occurring. This paper demonstrates that, within existing organizational constraints and capacities, advocates provided an important catalyst for movement building and contributed to constructing a public health frame around air pollution in the San Joaquin Valley.

**Katherine Georges, [Katherine.Georges@student.csulb.edu](mailto:Katherine.Georges@student.csulb.edu), California State University Long Beach**

## Just a Little Rain: The Effects of Lifting Water Restrictions on Local Water Purveyors Conservation Policies

California had been in drought conditions for the past five years, prompting Governor Brown's 25% water reduction mandate in 2015. However, with the rains of El Nino in 2016, Governor Brown decided to lift some of these restrictions, shifting to a "stress test" for each district and a mandated three year water availability instead of the overall 25% restrictions (EOCWD, 2016). This report investigates how these lessened restrictions affected local water retailers' conservation policies and perceptions. Five water purveyors were researched and interviewed: East Orange County Water District, Long Beach Water Department, Irvine Ranch Water District, City of Newport Beach, and City of Lakewood. It was hypothesized that those water suppliers that relied on local groundwater and recycled sources had more long-term conservation programs than those water suppliers that were more reliant on imported

water from the Metropolitan Water District. This was proven false, as those with a variety of water sources were more flexible in reacting to water restrictions. Larger water suppliers had more money to fund state mandated conservation programs. Additionally there was a trend of shifting operational costs onto the service charge of water rates in all five water suppliers, and an avoidance of the term “drought” in long term conservation messaging.

**Lourdes Ginart | Lginart@uoregon.edu | University of Oregon**

Scientific Diplomacy as an Interdisciplinary Logic: A Case Study of the Inter-American Institute for Global Change Research

Global environmental change is a fundamentally human problem that is driven by and of impact to human activity. Efforts to find and implement solutions to our growing problems in the last half century have relied both on the scientific community and policymakers. However, sharing knowledge and information between the scientific community and has followed a linear approach where “good science” is provided to policymakers in order to bring about “good policy.” This linear model between scientists and policymakers is insufficient; addressing global environmental change requires a multi-directional, non-linear approach. In the Americas, the Inter-American Institute for Global Change Research (IAI) has committed to an interdisciplinary approach that involves the building and training of vast networks composed of member states, policymakers, scientists, organizations, community leaders, and the public. My research is concerned with the interactions between actors in this network, specifically interactions between states themselves, and between states and IAI. Using qualitative methods (e.g. interviews, coding, document analysis) I explore diplomacy as a logic that guides interdisciplinary research practices in relation to the work of IAI to determine how diplomacy, the renegotiation of power, can be achieved in informal and unconventional ways through a myriad of practices and persons.

**Russell Graves, russell.graves@snow.edu, Snow College**

Stateline Cities: the Economic, Political, and Cultural Dimensions of Border Communities in Nevada, Utah, and Arizona

This presentation will discuss the geographic dynamics found in stateline gambling communities, and in particular the economic conditions, political variances, and cultural realities that exist in two sets of neighboring towns: West Wendover, Nevada and Wendover, Utah, as well as Laughlin, Nevada and Bullhead City, Arizona. Vast differences exist between the gaming and gambling laws in Nevada and those found within its eastern neighbors; yet on the surface, both sets of border communities in this study exhibit similarities in terms of their relative size as well as their overall

appeal to non-Nevada residents. Further examination demonstrates, however, that the visitors to West Wendover and Laughlin differ markedly in terms of their geographic origins and frequency of casino trips. In addition, the adjacent cities of Wendover and Bullhead City play contrasting roles in connection to their Nevada gambling-town neighbors. An overriding goal of this presentation is to illuminate the ways that gambling attractions located just within the confines of Nevada influence the socioeconomic conditions in surrounding states like Utah and Arizona and stand in apparent opposition to each state's tradition of political and cultural conservatism.

**Katie Guetz, Northern Arizona University**

**A Regional Comparison of Conservation Policy: Assessing People's Perceptions of Wild and Scenic Rivers**

A Regional Comparison of Conservation Policy: Assessing People's Perceptions of Wild and Scenic Rivers K.M. Guetz ABSTRACT The National Wild and Scenic Rivers Act of 1968 protects nearly 13,000 miles of rivers in 40 states and Puerto Rico for their water quality and other outstanding values such as recreation, fish and wildlife habitat, scenery, and cultural heritage. Although the WSRA has a fifty-year history, still relatively few rivers in the United States are protected under this policy when considering that over 3.5 million miles of rivers exist in the U.S. In order to better protect and manage those rivers already protected under the Act, and to expand river protections, it is important to gain an understanding of the perceptions communities have of designated rivers. The objective of this study, funded by the National Park Service through the Colorado Plateau Cooperative Ecosystem Studies Unit, is to compare three different regions that have a protected WSR. To that end, the Flathead River System in Montana, the Missisquoi and Trout Rivers of Vermont, and California's Merced River California, are serving as case studies for this analysis. This study stands to inform decision makers by developing a framework used to examine perceptions of ecosystem services and will aid the NPS in addressing important water resource management concerns on a larger scale, based on the case studies from these three regions. This presentation discusses the study's preliminary findings, and a roadmap to the final stages.

**Grant L. Harley, gharley@uidaho.edu, University of Idaho, and Justin T. Maxwell, maxweljt@indiana.edu, Indiana University**

**Current declines of Pecos River (New Mexico) streamflow in a 700-year context**

The Pecos River provides an important source of water for New Mexico and Texas, USA, and Mexico. Severe and prolonged drought combined with increased temperatures during the early 21st century increased attention on water resources and

allocation management in the American West. We provide a tree-ring based streamflow reconstruction for the Pecos River for the period 1310–2013 CE for the overarching purpose of placing the current Pecos River streamflow declines in a multi-century context. Over the past ca. 700 years, dry events ( $n=93$ ) that lasted at least 2 years were more than twice as common as wet events ( $n=76$ ), wherein flow was below/above the instrumental mean ( $61.6 \text{ m}^3\text{s}^{-1}$ ). Although more prolonged droughts occurred during the 15th and 18th centuries, the gage record (1929–2013 CE) captures the full range and variability of flow extremes within the context of the past 700 years. The 11-year drought of 1772–1782 was the highest ranked based on magnitude + intensity below the instrumental mean, slightly edging out the 1415–1425 and 1950–1957 events. The driest events that have occurred from the 14th through the 20th centuries are challenged by flow conditions since the turn of the 21st century. The 2000–2006 and 2011–2013 dry periods ranked 6th and 13th, respectively, though the intensity ( $-40 \text{ m}^3\text{s}^{-1}/\text{year}$ ) of the 2011–2013 event exceeded all higher-ranked droughts. The lowest single water-year flow in the reconstruction was shared by years 1904 and 2002, during which the flow of the Pecos River was estimated at  $8.1 \text{ m}^3\text{s}^{-1}$ . Other extreme low-flow years were 1685 ( $9.5 \text{ m}^3\text{s}^{-1}$ ) and 1579 ( $9.8 \text{ m}^3\text{s}^{-1}$ ), but are eclipsed by 1904 and 2002 when considering the lower bounds of bootstrapped confidence limits of the reconstruction. Our reconstruction provides water managers with a more complete record of water resource variability for assessment of the risk of droughts and floods for the Pecos River.

**John Harner, [jharner@uccs.edu](mailto:jharner@uccs.edu), University of Colorado Colorado Springs**

Telling the Story of Colorado Springs to the Public

Innovations in digital mapping, animations, and virtual realities permit a new pedagogical framework for learning about place among the public. This paper highlights an interactive exhibit at the Colorado Springs Pioneers Museum to tell the historical geography of the city. Users interface with web-delivered, time-enabled animated maps on interactive tables in the museum or via a web browser, link to historical photos alongside contemporary street views on those maps, see geovisualizations and virtual realities that portray historical and geographical change, and access multiple types of digital media. The interface lacks a structured, linear navigation, allowing users to explore digital representations of their place by following their own curiosity. The public can then suggest edits or new contributions through a crowd sourcing interface so the project will grow in perpetuity with new content. Engaging the public with digital geo-humanities fosters a sense of place and shared connection with their community.

**John Harrington, Jr., johnaharringtonjr@gmail.com, Independent Scholar, and Lisa M.B. Harrington, lbutlerh@ksu.edu, Kansas State University**

### Essential Climate Constructs and Ideas About Seasons

Concerns about global climate change has the atmospheric science community assessing whether they are collecting the needed data to document change. The WMO development of Essential Climate Variables is a response to this concern. Climate is a concept that humans have constructed. Constructs (abstract ideas) are necessary for the compilation of meaningful observations for climatic thinking. As the global climate changes due to human induced forcing, it is important to identify major ideas/constructs that can be used to assess the degree of climate change. Given the prominent role of solar forcing for the Earth system, annual and diurnal cycles help the climatologist to identify several of these important climate constructs. In addition to climate itself being a construct, including climate types as identified by Köppen and others, what are the essential constructs that enable climatology? Examples of important climate constructs will be presented. In particular, the construct of seasons will be addressed, with examples of how the idea of seasons has been modified or adjusted in climatic studies and among the public.

**Katherine Heslop, kheslop@nevada.unr.edu, University of Nevada, Reno**

### Selling Technocracy: New Deal visual imagery promotes hydroelectric power to define a modern Pacific Northwest

Franklin Roosevelt's 1932 campaign speech in Portland, Oregon, presented an abstract idea for federal electric-power development as a progressive socio-economic transformer to the hard times of the Great Depression. Regional energy-based landscapes, or valley authorities, involved building government river-basin infrastructure, primarily big dam systems. As part of New Deal policy (c. 1933-1939), federal agencies worked to convince citizens of the Pacific Northwest in the United States to accept a new, tangible landscape and culture interrelated with technocratic regionalism to define a Columbia Valley Authority (CVA). Media created by the Bonneville Power Administration (BPA) and other agencies sought to convey ideological concepts to mark a federal "promised-land" of socio-economic utopianism centered on Columbia River development. My research surveyed this New Deal media, selected relevant material, and identified technocratic patterns of communication, symbology, and images deemed instruments for "an acquaintance to the knowledge" to a modern electric society. I identified a Populist Media Paradigm demonstrating government use of the era's realistic genres to conjoin the common individual's experience and emotions with progressive government solutions through New Deal cultural platforms. Even though BPA marketing programs began to shift

away from notions of valley authority regionalism in late 1939 to “power-load-building” and defense programs, hydro-power images became integrated symbology in the fabric of modern Pacific Northwest culture and its emergent energy socio-economic society. This study found State-sponsored public relations platforms fixed its message on the common citizen, but the challenge became for Americans to accept what a democracy wanted to do for its people.

**Alison Hotten, [alison.hotten@gmail.com](mailto:alison.hotten@gmail.com), University of Nevada, Reno**

Vulgar Ostentation: A History of Jewish Exclusion in the American Resort Industry

In 1877 a prominent Jewish businessman was turned away from staying at the Grand Union Hotel in Saratoga, New York, in an incident that became known as the Seligman-Hilton Affair. The hotel’s owner justified the decision by citing the distasteful traits and behaviors of Jews that would make his hotel less attractive to gentile guests. While this was not the first incidence of anti-Semitism in American resorts, it was the first to be widely publicized, sparking a debate surrounding the exclusion of Jews in the industry. A narrative rapidly formed that stereotyped Jewish tourists and fueled hoteliers’ fears that Jewish clientele would have a negative impact on business. In the late nineteenth and early twentieth centuries, it became common practice for American hoteliers to openly exclude Jews and advertise restrictive policies. This paper examines the larger social processes and class conflict that produced this narrative and made the resort industry a battleground for Jewish assimilation and inclusion in mainstream American Society. It additionally explores how exclusion shaped geographies of the Jewish vacation experience in the United States. As Jewish tourists became concentrated in a select number of vacation destinations, a constellation of socially interconnected resorts emerged—what Ann Armbuster referred to as “holiday ghettos”—including the Catskills, Atlantic City, Coney Island, and Miami Beach.

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As Above, So Below (part 1): New Robotic Regimes of Resource Extraction

A robotic revolution is currently underway in the mining and mineral extraction industry, refracting advances in technology and big data analytics that are increasing targeting the environment, producing new encounters with, logics for, and understandings of nature and natural resource control. Marketing campaigns for a new generation of mining robots highlight the increasing agility, dexterity, and applicability of robots in dangerous and difficult extraction environments, from deep

underground in mines across our planet to capabilities designed for extra-planetary exploration and development, which will “do the heavy lifting on Earth, Moon, asteroids, and Mars” (Offworld Inc). The speculative power assigned to these emerging technologies is leading tech industry start ups and mining giants to form new collaborations selling the promise of a new mining future. One that is safer for human workers and significantly more efficient for extractive industries. Yet, extractivist logics already pervade and deeply shape political economy, social relations, state (de)regulation, and environmental resource regimes across the planet. In this paper presentation, we examine emergent robotic technologies and their associated logics in the mining and natural resource extraction industry, and speculate on the possible contours of new regimes of extractivism enabled by new socio-technical relations. Training our attention on the co-constitution of mineral resource extraction, robots, and wider political, economic, and institutional arrangements that govern the soil, sub-soil, deep sea, and extra-planetary environs, we aim to advance theorization in Geography of our robot-human futures.

**Li Huang, huan7515@vandals.uidaho.edu, University of Idaho, Felix Haifeng Liao, hliao@uidaho.edu, University of Idaho, Kathleen A. Lohse, Idaho State University, Danelle M. Larson, Idaho State University, Michail Fragkias, Boise State University, Donna L. Lybecker, Idaho State University, and Colden V. Baxter, Idaho State University**

Land conservation can mitigate freshwater ecosystem services degradation due to climate change in a semiarid catchment: The case of the Portneuf River catchment, Idaho, USA

There is increasing evidence of environmental change impacts on freshwater ecosystem services especially through land use and climate change. However, little is known about how land conservation could help mitigate adverse water-sustainability impacts. In this paper, we utilized the InVEST tool and the Residual Trends method to assess the joint effects and relative contributions of climate change and land conservation on freshwater ecosystem services in the Portneuf River catchment in Idaho, USA. We developed five hypothesized scenarios regarding gain and loss in the enrollment of Conservation Reserve Program (CRP) plus riparian buffer and assessed their interactions with climate change. Results suggest that the realized water yield in the Portneuf River catchment would possibly be 56% less due to climate change and 24% less due to the decline of CRP enrollment. On the contrary, if CRP enrollment is promoted by ~30% and riparian buffer protection is implemented, the water supply reduction in the year 2050 could be changed to from 56% to 26%, the total phosphorus (TP) and total nitrogen (TN) export would be reduced by 10% and 11%, and the total suspended sediment (TSS) reduced by 17%. This study suggests that



increasing implementation of the CRP would likely preserve key freshwater ecosystem services and assist proactive mitigation, especially for semiarid regions vulnerable to changing climate conditions.

**Sara Salazar Hughes, shughes@usc.edu, University of Southern California.**

“Greenwashing” the Occupation: Sustainability and Environmental Racism in Israel/Palestine.

Debate about the Israeli occupation of Palestine tends to focus on settlement growth in the occupied West Bank at the expense of Israeli ecological activity, despite the far-reaching territorial implications, humanitarian repercussions, and risks posed to Palestinian state-building and civil society. In this paper I analyze the use of agricultural innovation, nature reserves, and “green” technology—ostensibly aimed at sustainable resource management—as tools of land appropriation and dispossession. Through the lens of geopolitical ecology, I examine how Israel is managing the environment in the occupied territories to strategic effect (maintaining the occupation while promoting a “green” image and positioning itself as a global leader in sustainable technology, afforestation, and natural resource management), thus reproducing state interests as much as, if not more than, advancing sustainability and climate change mitigation. Nature plays a seminal role in the production of any political space, but land is particularly significant in settler colonial contexts which are premised on the replacement of an indigenous population on the land and are justified through appeals to “proper use,” what constitutes “ownership,” and Indigenous “wastelands” versus productive capacity (Locke, 1993; Tully, 1994; Veracini, 2010). This paper is situated at the intersection of political geography, political ecology, and comparative settler colonial studies, asking how modern discourses around climate change mitigation and sustainable ecological management offer new opportunities for settler colonial state-making and consolidation of state power in contested territories.

**Nancee Hunter, Portland State University, nhunter@pdx.edu; Ken Carano, Western Oregon University, caranok@mail.wou.edu**

Teacher reflections on the impact of international teacher professional development experiences

In an era of globalization, U.S. teachers are faced with changing classroom environments and increasingly diverse student populations. In turn, many teacher professional development providers are recognizing the importance of international learning experiences as a way to prepare teachers – and, ultimately, their students -- to effectively participate in a world with increased ethnic and cultural diversity. Yet,

empirical data is lacking regarding long-term benefits and impacts of international professional development programs on K-12 teachers. Drawing from post-experience surveys and self-reflective interviews, the presenters will share findings from a study exploring the experiential learning of K-12 teachers who have participated in the Center for Geography Education in Oregon's (C-GEO) short-term (approx. 2-4 weeks) international professional development programs. These programs have been offered over the past two decades allowing for longitudinal datasets to document the impact of international education programs. Specifically, this research will examine three primary areas in which international education is considered to have an impact: 1) professional development, or in this case the role of participants as teachers; 2) global understanding or 'geo-literacy'; and 3) 'sense of place.' (Sources: Hunter 2016 Assessing Sense of Place and Geo-literacy Indicators as Learning Outcomes of an International Teacher Professional Development Program; Kauffman, N. L., Martin, J. N., and Weaver, H. D. 1992. Students abroad: Strangers at home. Yarmouth, ME: Intercultural Press; Sandell 2007 – internationalimpact.pdf).

**A. M. JIHAD First Educational Supervisor, Department of Education Fallujah, Ministry of Education, Iraq, (phone: 00964-7904 213892; e-mail: ahmed.jehad0@googlemail.com).**

The Dynamics of Sustainable Urban Development in The Organization of Future Cities

The dynamics of development in metropolitan areas now face challenges in their ability to influence positively in Neighboring areas, the idea of providing research to highlight the concept of development dynamics and its ability to organize cities and the role of geotechnical programmers' in designing digital maps for new future cities, to provide a geo-vision of the importance of organizing smart cities and their futures and giving a clear picture of what are these programs and their tools, explores the search for challenges facing the development process and the ways in which intelligent cities experience and designs Its digital maps, it also offers a search for programs, maps and designs of intelligent cities, and perhaps provides a broader scope for research in this area

**Christine K. Johnson, ckjohnson@nevada.unr.edu, University of Nevada Reno**

The Geography of Cook: The Impact of a Man on the Globe

The 18th century was alive with human movement and exploration. An expanding world, this era marked the beginning of globalization. British explorer Captain James Cook, arguably the finest navigator and cartographer of his time, sailed across the globe several times coming into contact with multitudes of indigenous people and

places, especially throughout the Pacific. Cook's ethnographic work present in his journals might qualify him as the first Pacific cultural anthropologist, yet it is Cook's impact on the global landscapes that remains his most significant and unequalled historical contribution. Cook's exploration of the Pacific resulted in the application of Western toponyms, indigenous names overlooked for cartographic efforts. His 18th century place names remain present on 21st century maps. Cook's murder at the hands of the Hawaiians notwithstanding, he was a highly respected individual and is remembered around the globe in multitudes of contemporary toponyms. These names commemorate Cook's achievements in exploration, his publications, his navigational and cartographic skills, and ultimately his death. Contemporary dialogue surrounding toponyms includes the removal of controversial or offensive place names from the world's maps, however, Captain Cook transcends these criticisms. This paper illustrates the lasting impact of Captain James Cook on the world's landscapes, with the application of toponyms for and by him over the course of three centuries.

**Jessica J. Johnson, [johns284@mail.chapman.edu](mailto:johns284@mail.chapman.edu), Chapman University**

“Clearly You’ve Never Been to Singapore:” Examining Diversity in Disney’s Pirates of the Caribbean Jessica J. Johnson

Walt Disney’s Pirates of the Caribbean theme park attraction has been a success since 1967 when it opened in Disneyland, and the subsequent films the ride inspired have been global phenomena since their release beginning in 2003 and culminating with the 2017 release of *Dead Men Tell No Tales*. After 1967, versions of the original Disneyland attraction were installed and are now present in five of the six Disney Parks around the world, and the five-part film series became one of the highest grossing franchises of all time, amassing over four billion dollars to date. Both entertainment forms were created with the intention to transport viewers into a variety of locations both within and outside the Caribbean, though at times the representation of the cultures associated with these regions are reduced to harmful stereotypes and inauthentic representation of both people and place. Therefore, the ride and the film series are representative of their respective audiences at the times they were created, and in a broader context, are representative of America as whole rather than being accurate to the historical narrative in which they are set (the Golden Age of Piracy). This paper examines the idea that entertainment has the power to influence the concept of place and ultimately the people in those places, and the reality that Disney is now forced to revisit past decisions in order to bridge past and present cohesively.

**James R. Keese, [jkeese@calpoly.edu](mailto:jkeese@calpoly.edu), Cal Poly San Luis Obispo**

LPG Cookstove Use and Fuel Subsidies in the Cuzco Region of Peru

Three billion people continue to cook and heat their homes using open fires and traditional biomass stoves, especially in less developed countries. The health problems associated with indoor air pollution, notably as they affect women and children, and the impacts on the environment have been well publicized. A solution involves promoting “clean fuels” such as lignified petroleum gas (LPG). The purpose of this research is to examine the use of LPG cookstoves in the Cuzco region of Peru. A specific focus is on the role that the Peruvian government’s FISE subsidy program plays in the use of gas stoves. Surveys were administered to 77 households in four indigenous agriculturalist communities. The results show the widespread use of gas stoves, but only as a supplement to wood and other biomass, and that the subsidy program is ineffective in promoting a complete fuel switch. The paper offers reasons why the use of multiple fuels, or fuel stacking, continues to be the norm.

**Eiko Kitao, ebkitao@sbcc.edu, California State University Northridge**

Determining the Relative Age and Correlation of Emergent Marine Terraces, Vandenberg Air Force Base, Santa Barbara County, California

Active tectonism along the California coast yields distinct and complex landforms, useful to understanding the geomorphic history of an area. Vandenberg Air Force Base (VAFB), located in northern Santa Barbara County, California, is located in the western section of the Santa Maria basin, structurally bounded by fault systems along the San Rafael Range to the northeast, the Santa Ynez fault along the Santa Ynez Range to the south, and the Hosgri fault, offshore to the west (Woodring and Bramlette, 1966). Five terrace platforms were identified and mapped using a combination of methods including, mapping the elevation and distribution of marine terraces, constructing a detailed stratigraphic column for overlying terrace deposits, interpretation of fossil evidence, and observation of the geomorphic surface expression. A flight of five terraces on Combar Road were used to correlate with other terraces in the study area. Relative age was determined by correlating the elevation and uplift rate of terraces to the global paleo-isotopic sea-level curve derived from oxygen isotope ratios  $\delta^{18}O$  (Lajoie, 1986), and paleo sea-level elevations (Shackleton and Opdyke, 1973). Terraces were assigned to MIS 3 (60 ka), MIS 5a (80 ka), MIS 5e (120 ka), MIS 7 (210 ka), and MIS 9 (330 ka), with no evidence of MIS 5c (105 ka). Detailed stratigraphic description of overlying terrace deposits, observation of geomorphic surface expression, and elevations of wave-cut platforms and hardpan surfaces were identified, and compared to other terraces in the study area. Fossils were collected and determined by faunal assemblage. The two lower terraces comprise the broad, coastal platform that extends from Point Sal to Burton Mesa. The third terrace, present as remnants on Combar Road is the most extensive terrace in the study area, correlating with the broad surfaces of South Casmalia, San Antonio

Terrace, and Burton Mesa. The upper terraces are found in the higher elevations of the study area, along the summit of North Mesa and the Purisima Hills.

**Eiko Kitao, ebkitao@sbcc.edu, California State University Northridge**

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**J. Lange, jenniferlange@nevada.unr.edu, Department of Geography, University of Nevada, Reno**

The Everyday Bombardment of Earth: A Look at Understanding the When, What, Where, and How Bad of Asteroids Impacting the Earth

Over 30,000 tonnes of rock is added to the Earth every year due to cosmic dust and meteors colliding with the planet. These objects have rarely posed a danger to the

planet relative to its four and a half billion-year age and can even allow for evenings of beautiful meteor showers. However, when meteors impact Earth in modern times, as on September 15, 2007 near Carancas, Peru, they can create chaos and destruction on varying scales that may affect global ecosystems or influence human activities now and in the future. Even when meteors do not reach the surface to create a crater, such as the superbolide known as the Chelyabinsk meteor that devastated parts of Russia in 2013, they can still wreak havoc on populaces. Understanding how many and what types of asteroids and meteoroids there are within our solar system, and how these objects can interfere with human populations, may lead to greater predictive capabilities of when and where destructive events might take place and to the extent of the damage these events might cause.

**Paul Laris, Chelsea Seymour, Chrys Rodrigue. Geography Department  
California State University, Long Beach**

Grasses versus forbs: What a long term, repeat study can tell us about California's native prairie landscapes

Much of the foothill and valley areas of southern California are covered by stands of non-native grasses. Researchers have long hypothesized as to the original vegetation cover of these landscapes. For decades the dominate view held that the original vegetation was native bunch grasses including *Stipa pulchra*. This so-called "bunchgrass hypothesis" put forth by Clements, has been gradually overthrown through careful examination of historical records and critiques of Clements methods. Today it is thought that forbs and not bunch grasses dominated some grasslands prior to European arrival. This study uses a long term, repeat study design to analyze and compare data from three surveys of 15 permanent quadrats in La Jolla Valley, California to determine changes in grassland cover over 35 years. A unique aspect of the study is that the original site was selected precisely because it contained excellent stands of *Stipa pulchra* and was conducted shortly after the area was released from grazing and placed under conservation management. We compared data on species frequency and percent cover collected using the same sampling routine for three time periods: 1979-81, 1993-95 and 2015 to document the shifts in vegetation. We found that native grass cover decreased dramatically, exotic grass cover fluctuated widely while both native and exotic forb cover increased greatly. The findings support the notion that forbs, and not bunch grasses, were historically the dominant vegetation cover in the area. The findings also suggest that grazing management practices caused the former stands of *Stipa pulchra*.

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and David Cordner, [Cordnerd@cwu.edu](mailto:Cordnerd@cwu.edu), Central Washington University**

## Value-laden lands: Participatory mapping of recreation use on public forested lands in Eastern Washington

Public forest lands of eastern Washington State are used by a multitude of user groups that include backcountry horse riders, motorized and non-motorized trail riders, mountain bikers, hikers, traditional plant collection, snowshoe and snowmobile users, and campers. This study attempted to access information from these stakeholders about trail-use, visitation sites, seasonal use, densities, and sites of importance. Through participatory mapping and hard copy maps coupled with a survey instrument informants were asked to identify areas that were of value and request information about their future management. Over 400 respondents were able to contribute to the survey to identify hotspots of use and recreational value. Maps were created of the highest frequency locations for a variety of indicators. The overall dataset will then be coupled with forest and stream restoration within the area.

**Yanjie LUO, [luoyanjie1992@keio.jp](mailto:luoyanjie1992@keio.jp), Keio University, Japan**

## Price Determinants of Neighborhood Characteristics in the Sharing Economy: Evidence from California

In recent years, urban tourism has encountered massive growth and has become an essential affair in many metropolises. Airbnb is a prominent peer-to-peer platform that accelerates the rapid expansion of the sharing economy. This article analyzes the relationships between Airbnb pricing and neighborhood characteristics in San Francisco and Los Angeles, known as two major metropolises in California, US. The relationships are examined with hedonic pricing models at the block group levels. We use hedonic pricing models to examine the effects of a group of related characteristics, especially neighborhood characteristics on Airbnb listing price in comparison with related studies. We look at which characteristics can elucidate Airbnb listings prices, and therefore investigate users' valuation for specific attributes. We collect spanning all Airbnb listings in San Francisco and Los Angeles and related neighborhood characteristics including transportation accessibility, restaurant sufficiency and demographic attributes from Yelp.com, Census Bureau and SFMTA/LAMTA as study datasets. We find that adding neighborhood characteristics into the analysis model is helpful to enhance the reliability of models while different categories of transportation, population and housing characteristics have different significance and effects in specific analysis models. By examining such comprehensive factors that influence prices of Airbnb listings, this research provides hosts with insights as to potential strategies they could implement to increase their revenues. The analysis results also empathize some aspects of Airbnb that are alarming from policy perspectives managed by government and public authorities, the cooperative

relationship across various regional industries and identified rental accommodation supervision strategies.

**Richard Lycan, Institute on Aging, Portland State University, Oregon**

**SuperTracts!**

I propose the creation of a new Census geography (for the Portland Metro Area) comprised of 4-6 contiguous census tracts which I referred to here as SuperTracts. Used with data from the American Community Survey (ACS) the SuperTract will reduce sampling variation making it simpler to use in analysis, mapping, and presentations. The approach is patterned after the creation of twenty minute neighborhoods by the City of Portland. Most of our current socioeconomic data about local areas in the U.S. comes from the Census Bureau's American Community Survey (ACS). However large sampling errors in the ACS can compromise its use. A number of researchers have proposed techniques for conveying the notion of sampling error in the ACS on maps, but at best they introduce confusion for a lay audience. A better approach may be to aggregate ACS data into a geography larger than the census tract. Census tracts generally have a population between 1,200 to 8,000 persons with a desired size of 4,000 persons. At the desired tract size 4-6 census tracts in a SuperTract would contain 16,000 to 24,000 persons. This is a large enough number to substantially reduce sampling variation. The groupings will be reviewed by local GIS staff. The SuperTracts are given a place name that has local familiarity to better link statistical data to the viewer's mental maps of Portland, better than with the census tract numeric identifier, e.g. 413.12. Sample maps will demonstrate the application.

**Benjamin J. Marcovitz, benjamin.marcovitz.906@my.csun.edu, California State University Northridge**

**City Slickers: Narratives of Urban Corruption and Rural Righteousness**

This study explores the moral dimension of narratives of the anti-urban bias expressed in film, journalism, and policy. Specifically, the study presents several narratives that portray urban places and people as corrupt and decadent, and their rural counterparts as righteous and innocent. Common conflicts in Western film, Noir film, political journalism create these value judgments, both in fiction and nonfiction. Thereafter, these values are reified in the form of development strategies that dramatically alter the built environment and the people that live in it. This study concludes with a discussion of the role of value judgments in the urban-rural divide.

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The effects of successive large mixed-severity wildfires on vegetation and fuels in the Sierra Nevada, CA

Increasing incidence of successive large high severity wildfires across the western U.S. has raised awareness of potential large-scale and long-term vegetation state changes. In the Sierra Nevada mountains, California, these shifts are manifested as large shrub patches replacing mixed conifer stands in large high severity patches with little conifer regeneration and large residual fuel loads. High severity fire effects in an initial fire can create conditions, such as standing and fallen snags and dense shrub vegetation, that promote high severity fire effects in subsequent reburns. This feedback trajectory with subsequent fires (i.e. extensive stand-replacing fire will promote more stand-replacing fire) has the potential for long-term state change. In this study, the following hypotheses are tested: 1) in mixed conifer forests affected by fire suppression, successive high severity fires create a positive feedback that promotes shrub dominance, and homogenization of vegetation structure across the landscape, and 2) multiple low to moderate intensity fires in mixed conifer forests result in a stabilizing negative feedback by reducing surface fuels and small tree density, while maintaining larger overstory trees and promoting landscape-scale forest heterogeneity and diversity. Our study area is located in the northern Sierra Nevada, California in Plumas and Lassen National Forests. We resampled field plots that were established after the 2000 Storrie and 2008 Rich fires, and reburned by the 2012 Chips Fire. Our intent is to provide managers with critical information for managing post-fire landscapes before long-term vegetation and fuels trajectories establish as a result of successive, high severity fires.

**Kevin McHugh, kmchugh@asu.edu, Arizona State University**

Heat--Becoming-Inhuman, Becoming-Imperceptible

My interest in pushing inhuman geographies revolves a question: how can we—ensconced in the ‘here’ and ‘now’—impress upon bodies human and nonhuman—elemental intensities and forces of the earth at play in the Anthropocene? In decentering the human, can we imagine the world without us, not as our world, our earth? My response, becoming-inhuman, is a thought experiment revolving around a thing. I ask: what’s it like to be a FLIR Systems i5 infrared camera? I draw on object-oriented ontology in arguing that the i5 is irreducible to its instrumental function as scientific device measuring temperature. IR images produced by the i5 enchant and unsettle, releasing the aesthetic imagination to roam beyond representational logics, beyond the phenomenological illusion of ‘world’ (object) folded around the

‘knowing’ human (subject). IR images are elemental acts of heat, sensuous-aesthetic events in themselves, anterior to awareness, perception and possession. All bodies and things are thermal sensations immersed in an anonymous plenum of heat, fluxing and flowing, radiating everywhere. Immersion in heat is, tout court, becoming-imperceptible, becoming-molecular in the generative force of heat, potentia of all matter and life on earth. The experiment in thermal stirs nonhuman temporalities at the limits of thought. Infrared images strike an uncanny cosmic ‘now’, an untimely, inhuman (solar) time, an alienating present. Seen in this shadowed light, IR images are inhuman solar tracings of the detour or deferment of cosmic annihilation of the earth, painted in vibrant living color.

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Educational Policy’s Impact on Geographic Education Reform: Unmasking Lore’s Placement

Under the guise of crisis, calls for reform echo through the halls of higher educational policy-making, but from sources outside the university or college. Is geographic education infected by these calls for reform? Evidence from sources like Geography for Life and efforts to merge geography with other departments represent one perspective. A gulf exists between geography education practitioners and education administrators, who regard education as a complex adaptive system or set of modules within institutions. However, the chasm demonstrates an alternative viewpoint – lore’s place. Originating in technology design, modular systems provide for adaptation of interconnecting systems and sub-systems. When education systems are viewed as infrastructures for transport and communication of knowledge, then multiple elements and relations within that modular system are open to modification, and may be redesigned, reformed, rejected, replaced, upgraded or downgraded. This modular adaptation within education systems, appearing as calls for change, presumes transference is a valid procedure and conducive to producing positive feedback. However, modular structure modification may also produce negative feedback such as stabilization, where structures are altered. Often neglected are behavioral effects on geographic education. One result of such an approach is a call for geographic education reform proposing micro-level modular changes. Relationships within and between modules within any education system remain unscathed. Proposing changes to teacher performance, without concomitant education system reform are probable lore places. Summarily explored is their visibility during the process of designing geographic educational games.

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## Tecolutla: Mexico's Gulf Coast Acapulco?

Tecolutla is a small beach resort along the Gulf of Mexico in Veracruz state, Mexico. At one time a small fishing outpost, it developed into a beach resort in the 1940s as a result of the popularization of sunbathing and infrastructural development facilitated by two Mexican presidents. As the closest beach to Mexico City, Tecolutla briefly rivaled Acapulco as most popular beach destination in the country. But Tecolutla slowly lost out to its Pacific Coast rival, which had better weather, better access (after 1956), political favoritism (mostly by Miguel Alemán Valdés, native Veracruzano and president of Mexico 1946-1952), and international cachet in the late 1950s and early 1960s. Although Tecolutla never became the envisioned "Gulf Coast Acapulco", it has steadily grown over the years thanks to better highway access, diversification of attractions, and lower prices. There are still obstacles that prevent it from evolving beyond its current status as a domestic destination resort.

**Lidia Mezei, lmezei@nevada.unr.edu, University of Nevada, Reno.**

Translation of Mathematical Documents from French to English.

In order to effectively collaborate in research, the significant schools of mathematical thought that exist in the United States and France are often required to communicate, necessitating bilingual communication in English and French. While French mathematicians are often proficient in English, the reciprocal is restricted to American mathematicians being able to read French mathematics, but not historically significant mathematical context and discussion written in French. As a result, context - important to proof-based mathematics - is often untranslated and therefore missed. The presenter applied research by translating a 1984 mathematical letter using the translation theories of Itamar Even-Zohar and Walter Benjamin and the mathematical linguistic translation theories of Sundar Sarukkai. The letter, written in 1984 by Canadian mathematician André Joyal to French mathematician Alexander Grothendieck, discusses further developments in Grothendieck's research within the field of algebraic geometry - which he developed to its modern baseline in the mid- to late 20th-century - and contains historical context that has heretofore only been available in French. Its translation into English has made the history of the field of algebraic geometry more accessible to Anglophone mathematicians. However, there exist many other such documents yet untranslated. Seeking to examine this paucity of French to English translation of mathematical documents, this study analyzes current translation theory in the context of mathematical translation and explores the question: What aspects of current translation theory impede or facilitate mathematical translation and how can current translation theory be expanded to better promote mathematical translation specifically from French to English?

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### Making the Kurdish Territorial Imagination in Iranian and Turkish Kurdistan

This research investigates the making of the Kurdish territorial imagination (KTI) in Iranian and Turkish Kurdistan during and after the struggle against the Islamic State (IS) from 2014 to 2017. The focus will be particularly on online and street activism that ensued in response to two decisive developments: Kobani's resistance against the IS's siege (2014), and the Iraqi Kurdistan's independence referendum (2017). In both cases, thousands in Iranian and Turkish Kurdistan took to social media platforms and streets to express solidarity and support for Kurds in Syria and Iraq. This research maintains that a specifically Kurdish territorial imagination underpinned the Kurds' online and offline emotive discourses and performances. The KTI, as such, has served as an imagined geographical construct, emotionally connecting the Kurds across international borders. This study uses semi-structured interviews and deploys discourse analysis to investigate the making of the KTI. The interrelated objectives of this research include investigating bottom-up, and emotive construction of territory in a non-state, minority context; explaining the often-neglected territoriality of the Kurdish movement, specifically, giving voice to Kurdish territoriality that has long been marginalized in official and academic discourses on the 'Kurdish issue;' and problematizing online-offline dichotomies. By exploring the Kurds' making of territory, this study aims to contribute to a burgeoning body of literature on discourses and practices of territoriality in minority movements in the age of social media. Keywords: territory, social media, demonstrations, Kurds, Kurdistan, Iran, Turkey

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### Why Championing Geography's Liberal Education Mission Matters

As U.S. colleges and universities increasingly prioritize pre-professional vocational training and STEM subjects, it is tempting to emphasize geography's technical and applied dimensions when making the case for the discipline's importance. Geography does indeed have much to contribute in these arenas, and they should not be ignored, but there is much to be lost if the discipline's liberal arts mission is sidelined in the process. Powerful arguments can be made in support of geography's role in promoting understanding of the wider world, broadening student horizons, challenging the stereotypes they may hold, fostering curiosity about other peoples and places, and advancing the kinds of understandings that are critical to meaningful participation in a democratic society. These arguments speak to critical challenges facing the world today, they resonate with many parents and colleagues, and they can be powerful recruiting tools for majors. We marginalize them at our collective peril.

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Smart City Projects and On-Demand Mobility: a Comparison of Neighborhood Characteristics and Proposed Locations for Emerging Transportation Technologies and Services

Recently, a number of projects in the United States have been proposed or developed that prominently include the integration of on-demand mobility and ride-hailing services as part of Smart City efforts. Initial research shows, though, that use of these services has mixed influences on travel demand, and on use of public and active transportation. The locations of such projects within cities and the characteristics of neighborhoods where projects are proposed, then, is important to consider when assessing potential benefits of Smart City projects that include on-demand mobility and ride-hailing services. To address this, we review the 78 proposals submitted to the United States to the Department of Transportation's Smart City Challenge. We identify the specific modes of transportation proposed for each project, the stated benefits and beneficiary populations, and specific areas of the city or region where the project is proposed to be implemented. We find that on-demand mobility is frequently proposed by cities to address transportation-related problems, and that many cities are looking to include connected and autonomous vehicles (CAVs) in their transportation systems. While most cities include their downtown area as a first location to introduce these technologies and services, we find variation in other type of neighborhoods included in such plans. We compare demographic and economic indicators of these neighborhoods, along with characteristics of the built environment, to those of the rest of the city, and compare findings across stated project benefits. The results of this study can help better align similar transportation projects with urban needs.

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Examining the Physical Habitat of Coastal Rainbow Trout Downstream of Big Tujunga Dam, California

In the spring of 2018, riffle-pool sequences within a 0.5-kilometer reach of Big Tujunga Creek, San Gabriel Mountains, California, was surveyed to test habitat suitability indexes (HSI) for coastal rainbow trout (*Oncorhynchus mykiss irideus*). This study's purpose was to see if the riffle-pool sequences within the studies reach, meet the species' habitat requirements despite altered flow conditions resulting from the controlled flow releases of Big Tujunga Dam. Field data were collected in order to test HSI's, taking into account thalweg depth, mean water column velocity, water temperature, and substrate type. The resulting data from the field measurements

within nine cross sections within the studied reach were calculated in to the IFIM HSI model, resulting in a sub-suitable overall HSI score of 0.0, based on a scale from 0.0 (unsuitable) to 1.0 (suitable), where scores  $\leq 0.4$  are considered limiting factors to the habitat. Despite the habitat being considered sub-suitable, the studied reach is capable of supporting adult and juvenile rainbow trout, but not capable of supporting spawning habitat, egg/embryo, or fry life stages during the time of this study. The hypothesis was supported by the results, where available habitat in the study area was sub-suitable for the species, and that mean water column velocity and substrate type were the two common limiting factors in the HSI. Future research might show a correlation between sediment aggradation patterns that are found in this section of the stream, and the amount of discharge and sediment released from the dam.

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The Politics of Platform Mobility in Jakarta, Indonesia

In the last decade, global ride-hailing companies (RHCs) like Uber and Didi Chuxing have sought to revolutionize how people move throughout cities. Leveraging massive amounts of geo-located data, RHCs match real-time passenger demand with the supply of contract drivers, providing a market-based platform for urban mobility. In Jakarta, Indonesia, the RHC Go-Jek has adapted this business strategy to accommodate the city's notorious traffic. Unlike other RHCs that mostly offer only automobile taxis, Go-Jek users can hail a motorbike taxi capable of circumventing what is, by some measures, the worst traffic congestion in the world. Within just three years, the company has grown to be an integral part of Indonesia's urban transportation system, completing eight orders per second, just under the number of daily rail passengers throughout the entire country. Drawing from recent literature on 'platform capitalism', I theorize Go-Jek and other RHCs in Indonesia as part of a political economic shift towards the centrality of data production, management, and consumption to capitalist accumulation, introducing the term 'platform mobility' to foreground the ways in which urban mobilities are increasingly reliant upon geospatial data, mediated through digital platforms, and funded by venture capital. Through the case of Jakarta, I show how this new entanglement of capital accumulation and urban transportation engenders its own politics of mobility around urban informality and governance. Ultimately, I argue that understanding the politics of platform mobility in Jakarta necessitates provincializing theorizations of the platform economy developed in Western contexts.

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Toward an understanding of habitat quality for desert tortoises, do predictions of suitable habitat translate to better habitat for desert tortoises?

Species distribution models provide an important basis to inform conservation planning efforts and to understand the potential effects of both anthropogenic and natural changes that have the potential to influence suitability of a given habitat area. While useful in delineating the boundaries, these models predict the “suitability” of habitat, but not necessarily the “quality” of habitat, which would be valuable information toward making more informed management decisions. There can be many measures of “quality”, and one important measure to consider is the relative density of individuals occupying habitat patches. For example, the decision to relocate or translocate of animals into “suitable” habitat, might be better informed if the ability to support higher numbers of animals was likely. In this study we use a habitat model produced for the Mojave desert (*Gopherus agassizii*) tortoise to assess whether predicted habitat suitability is related to encounter rates calculated from a range-wide, multi-year survey effort for this species. We found a positive correlation and a strong relationship between suitability and encounter rates on transects – suggesting that predicted suitability as modeled here may give insight into expected densities in a given area.

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The effects of low precipitation on almond prices in California from 2000 to 2017

Almonds are a crop that rely heavily on the use of water for sustainable growth, and need extensive amounts of water in order to be produced. The following paper will discuss how low precipitation rates have effected almond prices in the California region. Using spatial maps, California precipitation records, and almond price history, I will analyze the statistical relationship between precipitation levels and the corresponding price of almonds each year, starting in 2000, and ending in 2017. It is expected that the collected data will show that due to lack of precipitation, the price of almonds has increased. This could reflect an economic issue relating to the production of almonds, and whether or not almonds are a viable crop for the state of California.

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## Spatial trends of violent conflict and environmental productivity in Nigeria's Middle Belt region

This research project further investigates the climate-conflict link in modern conflict studies using GIS and remote sensing data. As global concerns over climate change intensify, many public officials and some scholars insist that unpredictable climatic conditions are likely to set off competition over space in an environment that has seen a decline in productivity over time. By analyzing Vegetation Control Indices (VCI) and conflict point data, I examine the correlation between vegetation productivity over time and conflict events in order to determine any patterns that might support the climate-conflict hypothesis in a quantitative framework. I plot aggregated VCI values against the number of fatalities in nearby conflict events using a linear regression model in order to show that there is no significant relationship between the use of violence and vegetative productivity in Nigeria's middle belt. I follow with some exploratory research that tests the relationship between local-level socio-spatial dynamics (nationalism, ethnic identification) and the use of violence at the subnational level. I conclude with some reflections on the use of spatial analysis in political geography and its potential for generating critical scholarship.

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## Stream channel adjustments on a tectonically active landscape: McGee Creek, eastern California

Efforts to limit stream channel bed and bank erosion following over a century of unregulated grazing in Long Valley, eastern California have enjoyed measureable success since being initiated in the early 1990s. Enclosures to prevent cattle access to streams and scheduled rotation of grazing near the downstream reaches of Mammoth, Convict, and McGee Creeks and the Upper Owens River allowed recovery of the channels as evidenced by stabilized banks and the return of riparian vegetation in three of the four streams. Following two re-surveys of McGee Creek in 2015 and 2018, it became clear that width-depth ratios and rates of vertical and lateral erosion have not adjusted as expected to restoration efforts. Initially, it was believed that continued erosion along this channel may have been the result of a steeper gradient than the channels that demonstrated more significant recovery. Unmanned Aerial Vehicle (UAV) imagery (2016-2018) revealed reaches of deep down cutting, channel bank instability, and patterns of pool-riffle sequences not previously documented. It was noted also that abandoned meanders along McGee Creek exhibited an expected radius of curvature similar to the other channels. However, the active channel



meanders along McGee Creek seemed less to reflect gradient and water and sediment discharge but rather appear to be more strongly linked to structural control along the margins of the Long Valley Caldera and the McGee and Hilton Creek faults. Further, the development of significant straight reaches of pool and riffle sequences appear to function as downstream adjustments to structurally controlled meander systems.

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Urban avoidance by Golden Eagles in the Great Basin

Golden Eagle conservation has become more complex as humans expand their footprint across the landscape. Most Golden Eagle mortalities involve human activities, such as; vehicle collisions, aircraft collisions, wind turbine collisions, and toxic lead levels. The greater Reno and Sparks area, is home to several Golden Eagles inhabiting the edge of urban development. Urban sprawl is infringing upon four documented Golden Eagle territories and reducing suitable habitat. As human populations rise, anthropogenic influences will likely continue to be the preeminent cause of direct and indirect reductions in this regional Eagle populace. We hypothesized that Eagles avoid urban areas. In the greater Reno and Sparks area of Nevada, we affixed 11 GPS-GSM transmitters to Golden Eagles of varying age from 2015-2017. The transmitters provide GPS coordinates in 15 minute intervals for each of the Eagles. Analysis of nearly 96,000 GPS points, highlights an aversion to human dominated landscapes and impervious surfaces. Our research demonstrates that urban sprawl can affect Golden Eagle habitat use.

**Hannah M Osborn, University of Nevada, Reno**

Discovering Climate Sensitivities for Umbrella Pine in Duna Feniglia Italy

This study encompasses not only the forestation history of the past but also explores the climate sensitivities of two populations of *Pinus Pinea* on Duna Feniglia. Both dendrochronological and dendroclimatological approaches were used to discover climate variability and responses in the populations with one population being diseased and one population being healthy. Analysis was done through CATRAS, Rstudio, and excel to produce meaningful and useful results that help us understand the populations more fully and discover possible reasons one population is more susceptible to disease. Both large scale and local climate change impacts have

affected and will continue to affect the growth of the two populations *Pinus Pinea* on Duna Feniglia.

**Kati Perry, [katip@uoregon.edu](mailto:katip@uoregon.edu), University of Oregon**

Voter migration & electoral trends in North Carolina

Of central importance to American electoral structures is the spatial distribution of voters, a reality that came sharply into focus after Donald Trump's 2016 popular loss and electoral win. Because American electoral procedures are inherently spatial in nature, the distribution of voters across space occupies a central role as electoral politics play out across various scales (Gimpel and Hui 2015). This study explores voter migration at the county- and state-levels as a force for shaping the evolution of party support (and political polarization) in North Carolina over the last 15 years. In order to untangle the complexity of migration as it relates to political polarization, this project draws on economic geography and labor economics in the United States, the effect of group psychology and the "neighborhood effect," and literature on the role of partisanship in voter migration. Taking a largely quantitative approach, I assess county-level migration trends in North Carolina and characterize electoral patterns at the county-level in order to shed light on how decisions about where to live shape electoral trends in North Carolina today.

**Michael W. Pesses, [mpesses@avc.edu](mailto:mpesses@avc.edu), Antelope Valley College**

Rethinking place, rethinking nature: Reproducing nature by driving over it in a Jeep

Place and nature, despite even our best of intentions, have been treated as distinct objects. This paper grounds itself firmly within the Anthropocene and also utilizes Doreen Massey's theory of space to question the distinction between place, nature, and humans. What happens when we think of nature as a product of social reproduction and mobilities? What happens if we view nature and place in tension rather than separate? Such questions were asked during fieldwork at the 2018 Jeep Jamboree at Rubicon Springs, California. Participants drove heavily modified four-wheel drive vehicles along the Rubicon Trail, claimed to be the toughest road in North America. Their journey took them through breathtaking scenery of the Sierra Nevada's granite slabs and dense forest. Upon reaching the remote and primitive Rubicon Springs campground, four-wheelers took part in camping, group activities, and the children were part of 'Camp Rubicon,' a program designed to foster a love and stewardship of nature. While it may appear that caring for nature and driving over it in inefficient fossil fuel-burning vehicles are at odds, I will argue such practices instead should force a rethinking of that which we assume about nature. Further, I will ground the event in the context of the 2012 mitigation efforts that almost forced the

Rubicon Trail to be closed to motor vehicles. Place, nature, mobility, and the Anthropocene are all political, as will be our efforts towards a truly sustainable future.

**Lauren T. Phillips – Doctoral student, Department of Geography, University of Nevada, Reno; Thomas P. Albright – Associate Profesor of Geography, University of Nevada, Reno; Marvin Torrez – Director de la Estación Biológica Juan Roberto Zarruk de la Universidad Centroamericana de Managua**

¿Dónde volará el zanate? Species distribution modeling for the Nicaraguan Grackle (*Quiscalus nicaraguensis*)

Until now, little scientific investigation has been devoted to the near-endemic Nicaraguan Grackle. The Nicaraguan Grackle is a narrowly-distributed bird endemic to portions of Nicaragua and Costa Rica. While it appears to have a stable population, its restricted geographical range may leave it vulnerable to both local disturbances, climatic oscillations, and environmental change. Unlike the common Great-tailed Grackle, Nicaraguan Grackles are thought to rely specifically on freshwater and emergent vegetation. However, it is possible that the range of the Nicaraguan Grackle may increase as forest and other habitats are rapidly converted to cattle pasture with seasonal flooding. Here, we 1) model and predict relative habitat suitability for Nicaraguan Grackles throughout Nicaragua and Costa Rica and 2) determine key variable relationships associated with grackle occurrence. We predict that percentage of pasture, distance to emergent vegetation and distance to freshwater will be the strongest predictors of habitat suitability. To characterize the region, we retrieved publicly available climatology, topography, forest cover, land cover, and water layers. We used these environmental layers together with occurrence data to model species distribution using the MAXENT software. Preliminary analysis indicated that Nicaraguan grackles were positively associated with proximity to water and emergent grasslands. As cattle pasture increases throughout the Nicaraguan landscape, more suitable habitat may become available for Nicaragua Grackles in the areas with seasonal flooding. Follow-up field research on pasture use, nesting and fledging success will be required to determine whether or not cattle pasture will serve as long-term suitable habitat or an ecological trap.

**Lorne Platt, [laplatt@cpp.edu](mailto:laplatt@cpp.edu), Cal Poly Pomona**

Urban Rhythms: Understanding Barriers and Opportunities for Skateboards and Scooters

Personal Mobility Devices (PMDs) such as skateboards and scooters contribute to emerging goals of sustainable transportation in dense urban environments. Providing users with immediate, fuel-free, and relatively inexpensive transport, this paper will

examine the current experiences PMD users encounter moving about urban settings. In particular, the focus is on their intimate understanding of and response to infrastructure, including streets, sidewalks, slopes, curbs and other potential barriers to mobility. This research will use Instagram as a tool through which riders may communicate with one another and the researcher in documenting their riding environment. The data, both written and photographic, collected by the riders will provide insight to scholars and policy makers about the potential that PMDs may hold in addressing the needs of transport in urban settings.

**Brian Pompeii, [brian.pompeii@cnu.edu](mailto:brian.pompeii@cnu.edu), Christopher Newport University, and Dawn Neill, Rebekah Oultan, Gregg Fiegel, Joseph Ragsdale, David Braun, Yiwen Chiu, Kylee Singh, California Polytechnic State University, San Luis Obispo**

### Identifying and Overcoming Barriers to Teaching Sustainability across the Curriculum

This research project collects and analyzes student and faculty knowledge and attitudes toward sustainability education, identifies potential barriers to implementing sustainability-based instruction and discusses strategies to overcome these barriers. Research utilized qualitative methods for data collection and analysis. Results required the development of metrics for student and faculty sustainability knowledge and attitudes across disciplines, the determination of discipline-specific gaps in sustainability knowledge and differences in attitudes, and relating implementation barriers to general or specific knowledge gaps and attitudes. Findings identify two levels, “low” or “high”, of sustainability knowledge within the student and faculty subject population and reveal barriers in pursuing interdisciplinary sustainability curriculum across disciplines and among both students and faculty. Overall, higher sustainability knowledge participants tend to identify barriers related to institutional accountability while lower sustainability knowledge participants tend to identify barriers related to personal responsibility. Distributing barriers and solutions along a continuum from personal responsibility to educational institution responsibility reveals more recognition of barriers at the personal level and more solutions proposed at the institutional level. This result may reflect a common tendency to shirk personal responsibility when addressing sustainability challenges. Combined with a preference to develop sustainability education programs at the institutional level, this research suggests a need to ensure institutional level programs address barriers at the personal level.

**Nicholas J. Priddy**

## California's Future is Dammed: A Tour of California's Extensive Dam System Explains Why.

It is well-documented that California would not be the state the world recognizes today without the storage and redirection of water that dams and reservoirs provide. These structures are in every county in the state, yet most people do not know their location, capacity or their role in California's water resources. The environmental impacts that dams have on the landscape are even less understood by the public who depend on them. This paper proposes a hypothetical dam tour including an itinerary and cost analysis of the expenses for the tourists involved. This tour would be meant for people who want to gain perspective on the roles that dams play in creating and supporting megacities that appear to be the future of the state. A combination of environmental impact data and onsite observation will give participants of the tour answers as to how landscapes are impacted. Upon completion, this tour will lead to a greater understanding of California's water systems and provide in-person perspectives on the magnitude of these structures.

**Sean J. Pries, [sjpries@ucdavis.edu](mailto:sjpries@ucdavis.edu), UC Davis**

### The North Fork Speaks

One means of understanding a place lies in examination of its representation through time. Representation affects our perceptions and understanding of, attitudes toward, and actions within places. Representations co-produced by humans through experience with the North Fork American River have, looking at their broad arc, helped to create a place that enjoys relatively robust protections. The earliest Anglo landowners in the North Fork made purchases explicitly intended to protect the area. The North Fork is protected as Wild & Scenic at both the state and federal levels. Land trusts have purchased 14,000+ acres for conservation in the drainage. Why? The alliance of human and more than human entities forms a narrative of a river needful and deserving of reverence and protection. Utilizing a blended methodology of visual interpretation I examine a collection of representations of the river stretching from prehistoric petroglyphs to present day conservation effort literature. I incorporate a political ecology lens that questions the power structures underlying, and effects on, biophysical reality and how those effects are encouraged by various forms of representation of the North Fork: indigenous petroglyphs, 19th century oil painting, maps, signs and photographs. Taken collectively these entities are illustrative of claims made by Larsen & Johnson (2016) regarding the affective capacities of place and the ability of place to speak, create and teach. In conjunction with human co-creators, the North Fork speaks.

**Barbara Quimby, bquimby@sdsu, San Diego State University- University of California, Santa Barbara**

A geographic history of Samoan coastal resource management

In 2009, the Saanapu-Sataoa Mangrove Reserve on the island of Upolu in Samoa was the site of the American TV show “Survivor”. The lush tropical backdrop was intended to evoke a sense of isolation and wilderness for viewers—the nearby villages were not featured. In reality, this space has been the site of colonial and global engagement with Samoan landscapes, seascapes, and people for centuries, and has contributed to Samoa’s unique geographic history of coastal resource management. The development of two independent programs for fisheries and coastal management in Samoa is one manifestation of these complex interrelations. In the 1990’s, the Community-Based Fisheries Management Programme, a village-based management scheme, and the district-based Marine Protected Areas, were created with international funding and technical support to address perceived threats of biodiversity loss and depleted fish stocks around the inshore coasts and lagoons. The two programs have operated in parallel for two decades, during which corruption, a catastrophic tsunami, and changes in community values and global environmental discourse and funding priorities have informed the dynamic process with which local actors must engage and negotiate. This paper takes a critical geographic approach to examine the unique “throwntogetherness” of Samoa’s colonial history, coastal environment, economic development, society and cultural traditions, and how together these elements have formed the context for current efforts at managing marine resources. Drawing on recent fieldwork, it will examine how the negotiation of these processes has informed the values and conceptualizations of equity and participation within each management context today.

**Birendra Rana, brana@nevada.unr.edu, University of Nevada Reno**

Framing of Hydropower Benefit Sharing Mechanism - A Critical Review

Since the 2000 report by the World Commission on Dams, concerns about the effects of hydropower development on surrounding local communities have emerged as significant topics, especially resettlement issues and initial compensation measures. However, another mechanism that is specifically designed to address the impacts to local communities of hydropower development, as well as the longer term hydropower operations, are benefit sharing mechanisms. Local hydropower benefit sharing mechanisms allocate monies, energy, or other benefits in ways that compensate locally affected communities. The design of such mechanisms is important to building public support, while connecting government policy makers with dam builders and operators with locally affected communities. This paper relies

on existing literature to examine benefit sharing mechanisms associated with hydropower development and operations in Nepal, India, China, Vietnam, Brazil, Ghana, and Norway. I will examine different approaches to benefit sharing to better understand how they can influence communications between policy makers, dam builders, and locally affected communities.

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Residential Location, Perceptions of Place, and Public Willingness to Drink Recycled Water in Northern Nevada

Urban water managers in the United States are increasingly interested in incorporating community collaboration within water planning and governance. An understanding of community values and preferences is essential as proposals emerge that recommend incorporation of controversial water resources like potable recycled water into public drinking water supplies. Northern Nevada is currently a rapidly growing and urbanizing area that is seeking solutions to supply and capacity issues surrounding potable water supplies and wastewater disposal -- two problems theoretically resolved through a water reuse scheme. In this study, community values and preferences towards water resources and water management strategies in northern Nevada were studied using a mail survey distributed to a generalizable population of Reno, Sparks and nearby areas of Washoe County in spring 2018 (n=474). Participants in this study completed a survey questionnaire that collected information from residents on water resource management attitudes and preferences. Respondents were also asked to indicate if they considered themselves to be “rural”, “suburban”, or “urban” residents. This paper discusses a number of significant differences observed between self-identified rural, urban and suburban users on questions surrounding water resource management attitudes and preferences. In particular, findings demonstrate differing levels of willingness to consume potable recycled water. As this region becomes more “urbanized” or “suburbanized”, it is essential to understand the nature of the interests and concerns of these groups regarding water resources and recycled water.

**Kathrine Richardson, Associate Professor, San Jose State University**

Knowledge Borders: Temporary Labor Mobility in the Canada-US Border Region

This paper involves understanding how the particular provisions of Chapter 16 of the North American Free Trade Agreement (NAFTA), now the U.S.-Mexico-Canada Agreement (USMCA), dealt with temporary labor mobility of North American professionals across the Canada-U.S. border, with emphasis in the Pacific Northwest

and Northern California region (namely Cascadia) of Canada and the United States. Ideally, NAFTA/USMCA status (visa) provisions should make the temporary movement of professionals easier across the border of all NAFTA/USMCA countries, being Canada, the United States, and Mexico, and facilitating cross-border trade and enterprise. However, in the case of software engineers and other new technology professionals, which are a very important category for the expanding high-tech service industries in North America, it is arguably not so. Within the context of recent literature on cross-border trade, city regions, regionalism, labor mobility, and post-September 11 security measures, this book aims to probe the dynamics of transitory immigration of 'knowledge-workers' between the North American west coast city regions of Vancouver (Canada), Seattle, and the greater San Francisco Bay area.

**Elizabeth Ridder, eridder@csusm.edu, California State University San Marcos**

Holocene climate reconstructions from modern vegetation

This study is a preliminary attempt to reconstruct the Holocene climate of Cyprus based on presence-only data of modern vegetation. CREST (Climate Reconstruction Software) is a quantitative, probability density function-based approach to extracting climate values, assuming that climate-plant relationships have remained stable during the time of interest, and offers an alternative approach to traditional paleobotanical analyses of climate. Cyprus serves as an initial study area, to test the CREST approach, and compare to published climate reconstructions for the Holocene, prior to extension across the Levant.

**Christine M. Rodrigue, rodrigue@csulb.edu, California State University, Long Beach,**

If You Blow off the Field Trip, You're Going to Be Watching a Lot of Pigeons!

Cornell's Ornithology Lab's long-gone citizen science project, PigeonWatch, serves as an alternative field project for students who miss my mandatory biogeography and ecosystem training field trips. The Cornell project was meant to test whether sexual selection maintains the morphic diversity of feral pigeons against natural selection pressures that would tend to homogenize them. The project enlisted thousands of interested laypeople worldwide to collect data using a simple template. While several publications detailed the process and assessed its meaning for participants, no scientific outcomes were published. Unable to contribute my students' data to this now defunct project, I decided to analyze them on my own. With data on over 6,500 pigeons and 600 courtships among them, collected by my students using the PigeonWatch protocol over nearly 20 years, I can address the effects of natural and sexual selection in feral pigeon populations, at least in Southern California. Sexual



selection favors the original wild blue-bar morph, against expectations of the project. The diversity of the feral flocks is associated with the spatially varying diversity of the human built environment (taken from Google Earth) and with the constant reintroduction of diverse morphs due to loss of pigeons from domesticated flocks. The project may appeal to other instructors trying to motivate students to attend their own field trips! The resulting student-collected data are amenable to geographic analysis, address important evolutionary ecology topics, and easily generate class labs for mapping or statistical processing.

**Kerry Rohrmeier, [kerry.rohrmeier@csueastbay.edu](mailto:kerry.rohrmeier@csueastbay.edu), Cal State East Bay**

The Burning Man Influence from Black Rock to Bay

Enjoy a decade long overview of cultural geography and participation at Burning Man, the world's largest intentional community. Research has shifted from an ethnography of the burn to an ongoing landscape analysis of the annual built world known as Black Rock City. It is an urban space defined by the harshness of the physical site, and one that touts inclusivity. This unplanned experiment has evolved into a countercultural pilgrimage among the Silicon Valley tech elite. The event as designed attempts to blend utopian visions with unregulated governance but paradoxically struggles with stratification and suburbanization pressures related to growth.

**Marcella A. Rose, [marcella.rose.909@my.csun.edu](mailto:marcella.rose.909@my.csun.edu), California State University, Northridge**

Fine-scale delineation of coppice dune fields and potential for topographic change on the Black Rock Playa, NV

The Black Rock Playa in Northwestern Nevada is renowned for being one of the flattest places on earth and for hosting the Burning Man festival, which boasts an attendance of 70,000 people annually. In recent decades, the community surrounding the Black Rock Playa have noticed micro-topographic changes, namely the formation of vegetated dune fields which are thought to be encroaching onto the playa surface. This in-process graduate thesis finely characterizes the Black Rock Playa dune fields in relation to their potential for encroachment. Also being examined is the relation to the Burning Man Festival, to investigate if anthropogenic activity on the playa influences the formation or movement of the dune field. Using small unmanned aerial vehicles (UAVs), high-resolution imagery of the dune fields were captured and input into a GIS to conduct measurements of the dunes. Field visits allowed for the collection of sediment and identification of vegetation anchoring the dunes. Historical and satellite imagery is used to track temporal changes of the dune field and annual

inundation extents. Local weather data is examined to detect climatic patterns of wind and drought. Research is expected to be completed in early 2019 with the possibility of doctoral work further investigating linkages between recreation and physical environmental changes.

**Aubrey B. Rose, [abrose@peralta.edu](mailto:abrose@peralta.edu), College of Alameda.**

Keeping it Real Local in Cyberspace: Teaching “Where” on the Web.

This presentation reflects on the transition to teaching Geography online versus in the classroom. With an online course in any discipline, it is critical that the instructor be more than just a website administrator. With Geography, this can be achieved by keeping the campus locale relevant to the human and environmental subject matter, and, promoting spatial research – all in a collaborative way. Examples of this “work in progress” through email blasts, assignments, and discussion of ongoing fieldwork are provided...and, advice gladly accepted!

**Katherine Sammler, [ksammler@sum.edu](mailto:ksammler@sum.edu), California State University Maritime and Lily House-Peters, [lily.housepeters@csulb.edu](mailto:lily.housepeters@csulb.edu), California State University Long Beach.**

As Above, So Below (Part 2): Frontier Robots.

The Cold War Era Space Race had at one point included a race to the ocean's depths as well. In the US, at the same time NASA was creating the infrastructure to put a man on the moon, the navy was constructing Sealabs (I-III), crewed underwater habitats to explore and dominate the sea. Outer space and ocean space--or as some have called ‘inner space’ --have long been imagined as analogs, mirroring each other as inscrutable frontiers. Regarded as empty spaces, astro nullius and aqua nullius, unmanned technology remotely fills them with the ideology of exploration and exploitation. As follows, with the more accessible and economically viable materials on land depleted, many extractive industries have moved into more remote and difficult spaces. This includes prospecting the depths of the ocean, and even laying the groundwork for offplanet mining. The hostility of these environments to human bodies has ushered in a new wave of robotics for extreme conditions. For instance, Nautilus Minerals Inc in developing its experimental seabed mining project in Papua New Guinea has commissioned specially designed autonomous vehicles for the job. These Seafloor Production Tools are meant to animate soporific seafloors into lively and productive capital in the cold, dark, depths where only they can go. The challenges faced by such robotic systems are paralleled by those expected to undertake asteroid survey and excavation. The environments encountered are both

mediated and reconfigured through robotics, generating knowledge of these worlds as they destroy them.

**Jeffrey P. Schaffer, [jeffreypschaffer@yahoo.com](mailto:jeffreypschaffer@yahoo.com), mountaineering geomorphologist since 1968.**

Will Geomorphology Finally Become a Legitimate Science?

This is the second abstract in my “Will” trilogy. The first (APCG 2017) was “Will the Sierra Nevada’s Major Uplift Myth Finally Die?” The third (APCG 2019) is “Will Physics Finally Produce a Grand Unified Theory?” (AKA: The Geography of the Universe and Reality. Take relativity and quantum mechanics at face value and then one might explain the intractable problem of where dark matter and dark energy exist). Geomorphology is akin to astrology, both pseudosciences. Physics, chemistry, biology, and geology all are based on empirical evidence assembled over two or more centuries, while geomorphology is based on pronouncements by experts in America and Europe from the 1860s through the early 1900s without verifiable empirical evidence whatsoever. No attempt was made to measure rates, say for 50 to 100 years, of weathering and erosion on slopes in myriad environments and climates around the world. Hence we often have Creation Science rates of erosion, 100 to 100,000 times faster than constrained field-measured rates, and absurd statements “proven” with numerical modeling. For example, in California’s central Coast Ranges all soil transport is caused by gophers, and in the Pacific Northwest spawning by salmon can profoundly influence the longitudinal profiles of stream beds and thereby affect the evolution of entire watersheds. And so on. Fieldwork is too difficult, dangerous, costly, and/or time-consuming. Numerical modeling is far easier, and just as accurate as astrology.

**William A. Selby, [wselby@smc.edu](mailto:wselby@smc.edu), Santa Monica College**

Tracking Physical and Human Geography Research Projects in California

An astounding diversity of physical and human landscapes in California demand our attention. Researchers from a wealth of geography and related programs throughout the state are responding by examining the cycles and systems that are changing these landscapes and their people. How unique are the processes shaping these landscapes and how do they connect to other locations around the world? How might we use some of the latest technologies to reflect on our past and track recent changes? Specific examples from the AAG, APCG, CGS and our [www.rediscoveringthegoldenstate.com](http://www.rediscoveringthegoldenstate.com) project will be used to encourage others to share their latest research as we expand and improve our project. Geographers William Selby, Robert O’Keefe, and Jing Liu welcome your input.

**Kate Shields, kfs@uoregon.edu, University of Oregon.**

The “imaginary line” crossed me: Changing understandings of science in Trump’s first year

What was it that made scientists and science supporters so upset after the first three months of Trump’s presidency that they poured into the streets in over 600 places on April 22, 2017 at the March for Science? And how did this evolve over the subsequent months of Trump’s first year in office? In this paper I explore changing understandings of environmental science in Trump’s first year through an analysis of a database containing all of the Trump administration’s federal level activities related to the environment from January 20, 2017 to January 19, 2018. I start from a position that science is not neutral, nor is it separated from politics and policy, rather the two are co-produced or inherently intertwined. However, since the “imaginary line” that divides science from policy is very real in the minds of many, I examine how this line between what is considered “good science” and what is considered “activism” has changed from the beginning to the end of Trump’s first year in office. The events analyzed indicate shifts in the administration’s positions on what is “good science”, who should do science, who should regulate science, and what is the “imaginary line” between science and policy. In particular, the “imaginary line” between “good” science and “bad” advocacy has shifted, so that mainstream climate scientists, for example, have found themselves on the “wrong” side of this line. Increasingly, scientists have started to fight back, more recently by embracing activism.

**Leann Silvia, lsilvia@nevada.unr.edu, University of Nevada, Reno.**

An Examination of Student Housing Instability on College Campuses in Reno, Nevada

Many cities in the American West are experiencing housing troubles due to a rapid increase of wealth within the region and a shortage of affordable housing. Specifically in Reno, the housing crisis is due to rapidly increasing home prices, large industries coming into the city, low vacancy rates, and pressure from UNR as the university looks to expand. Though this crisis is affecting the city at large, the effect it is having on college students particularly is overlooked. This paper presents preliminary data examining the nature, scope, and experience of student housing instability at UNR and TMCC and provides a discussion of the institutional dialogue addressing problems of student housing and food insecurity. Based off of this data, I propose research questions for further work. This study uses interviews with campus employees and residents of the Nevada Youth Empowerment Project (NYEP) home, a survey administered to UNR students, and participant observation with women residing in NYEP. NYEP is a transitional housing program for motivated women who are housing unstable between 17-24 years old. From this research, it was concluded that

housing instability is a growing problem on both campuses, yet is one largely unnoticed or unaddressed. By recognizing the lack of resources available for housing unstable students on the UNR and TMCC campuses, my audience will be made more aware of the severity of Reno's housing crisis and will have a better understanding of the types of solutions needed to improve the living and educational experiences of future Reno students.

**Terry Simmons, Center for Global Policy Studies, [terry@environment-lawyer.com](mailto:terry@environment-lawyer.com)**

### Tearing Names Off University Walls For Ideological Purposes

Naming is an essential cultural process. Place names create tangible, historical and cultural identities as well as practical, logical or spatial markers. San Francisco was named after St. Francis, by a future saint, St. Junipero Serra. Many Californians now are uncomfortable with their saintly historical heritage. Nearby Stanford University removed Junipero Serra's name from buildings and other campus landmarks recently. University buildings are usually named for historical personalities or to reward or encourage campus donors. Also, ideological and politically correct forces encourage historical revisionist efforts, often with narrow or shallow arguments, based upon limited knowledge of facts and historical context. Renaming debates at University of California, Berkeley involve the widow Boalt, the Le Conte brothers, Phoebe Hearst, and Carl Sauer's friend and neighbor, Albert Kroeber. Slogans replace genuine knowledge and debate. Names are subject to current competing institutions, symbols, values, motives and vested interests, for better or worse.

**Terry Simmons, Center for Global Policy Studies, [terry@environment-lawyer.com](mailto:terry@environment-lawyer.com)**

### SEMINAR: Assimilation or War? Migration, Commerce, Immigration, Borders Open or Closed

Human beings are territorial; generally, migration involves relatively small numbers over short, predictable distances. This is in contrast to mass migration over larger distances caused by war, conquest, natural disaster, the activities of the Four Horsemen, or straightforward personal or economic ambition. Modern legal immigration policies allow for political, economic, social and demographic adjustments. Uncontrolled immigration causes disorder and chaos in both the countries of origin and of destination. Well managed immigration populations must be willing and able to assimilate. Well managed borders, effective law enforcement and highly selective immigration policies are essential. The alternative is civil war, mass deportations, and vast refugee camps. N.B., this seminar is designed as a discussion

ninety minutes long after introductory remarks. The text above is not an abstract. The session is more flexible. There are no panellists per se, All persons present are welcome to speak.

**Betty Elaine Smith, [besmith@eiu.edu](mailto:besmith@eiu.edu), Eastern Illinois University**

Political Will and Geographic Rationale to Build Ponderosa Firebreak and Truck Trail in the Sierra Nevada Mountains of California

Located on the western slopes in and above the foothills of the Sierra Nevada Mountains of California, Ponderosa firebreak and truck trail was an 800 mile long firebreak planned and partially built during the late 1920's, 1930's and 1940's with the purpose of protecting valuable high elevation timber from brush fires originating in the foothills below. Originally constructed by unemployed men organized by the State of California Unemployment Program in the late 1920's and then during the 1930's by the federal Civilian Conservation Corps (CCC) during Depression years, Ponderosa firebreak and truck trail caught the attention of the U.S. Army during the 1940's as a possible alternate north-south transportation route in the event of a west coast invasion by Japanese. Original government memos and uncatalogued period photographs at the California State Archives provide insight about the political will and geographic rationale at this point in history. A monumental undertaking considering the logistics and available roadways in California at the time, the 800 mile long Ponderosa firebreak and truck trail was only partially completed. Some segments are now dirt, gravel or paved roads, both private and public, while other sections are trails or simply do not exist. This paper discusses the geopolitical and geographic rationale of the time and the many interactions among federal, state, and local government that provided the basis for planning and constructing Ponderosa firebreak and truck trail.

**Lauren A. Stachowiak, [lstachowiak@ewu.edu](mailto:lstachowiak@ewu.edu), Eastern Washington University**

Temporal Stability in Precipitation Response of Ponderosa pine (*Pinus ponderosa*) in Eastern Washington

The majority of people living in Spokane County, Washington (WA) receive most of their potable water from the Spokane aquifer. Increased demand on the aquifer follows increased population, thus an understanding of the natural, long-term (pre-1800s) precipitation regime of the area is vital to securing adequate drought safety measures in a changing climate. Such precipitation data can be found within the annual growth of trees. Trees are standing recorders of environmental information throughout their lifespan, and that information is stored in the variability of tree-ring widths. Ponderosa pine (*Pinus ponderosa*; PIPO) is native to drier areas throughout

the western US, and is a moisture-sensitive species commonly used to reconstruct spatiotemporal variations in drought. The location for this pilot study was part of a wetland complex that is part of the Turnbull National Wildlife Refuge. For this study, the stability of the precipitation response in PIPO was evaluated to ensure these samples would be appropriate for future hydrology reconstructions. A total of twenty trees were targeted based on old age and a lack of evidence of disturbance (e.g. windthrow, fire scar) as a way to increase sample depth back in time, and to limit contamination of the precipitation signal from outside noise. Ring widths were measured using a high-resolution scanner coupled with CooRecorder, and a site chronology was developed using ARSTAN. Temporal stability was assessed with the dplR package in RStudio. Temporal stability of PIPO precipitation response indicates promise for use in future hydrology reconstructions.

**Michael Strong, michael.strong@gccaz.edu, Glendale Community College**

Using Google's MyMaps to Encourage Student Interaction with and Understanding of Urban Landscapes

This talk showcases how to use Google's My Maps in an undergraduate level course on sustainable urban planning. The presentation will include an overview of the options available through the Google My Map's site, a sample map, and a curriculum to implement the project in the classroom. The curriculum will include potential learning outcomes and assignment instructions. The session will conclude with an open invitation to share ideas for other uses of the tool in the classroom as well as a discussion on similar tools available (e.g. ESRI's story maps using ArcGIS online).

**Ray Sumner, University of Melbourne, Visitor**

Encounters with Confluences

River confluences are frequently investigated by hydrologists, engineers, biologists and physical geographers, but many river confluences are also important as prehistoric settlement sites, or of political and economic significance. Frequently they are places of social, cultural and touristic significance. The term confluence has also been extended to refer to technology, music, and literature. This paper examines a few river confluences in the United States of America and in Europe which demonstrate how these physical places are rich with “human” layers of meaning.

**Jesse Edward Tenenbaum, jtenenbaum@sdsu.edu, San Diego State University**

A Paradox on Easter Island: Tourism as a Driver of Both Rapanuization and Chilenization

This study addresses the tensions produced by tourism on Easter Island, focusing specifically on the tensions between Chilean and Rapa Nui identities. Forces of globalization and a history of colonialism have brought Chilean people and culture to Polynesian Easter Island, and the indigenous Polynesian residents - known as the Rapa Nui - are working against these forces to revive and maintain their Polynesian language and cultural practices. Tourism is Easter Island's main economic activity, and is both a blessing and a burden on the island. The capital that the industry brings is needed and greatly appreciated by Rapa Nui residents, as it allows them to improve their material standard of living in addition to investing in education and programs to celebrate their culture and heritage. On the other hand, however, tourism strains the environmental resources of the island, and the large number of foreign tourists and Chilean mainland residents moving to the island are threatening to dilute the Rapa Nui language, traditions, and cultural practices. This qualitative study consisted of 3 months of fieldwork on Easter Island, where the author conducted semi-formal interviews and surveys with Chilean and Rapa Nui residents of the island, in addition to archival work, with the intention to fill the gap in Easter Island literature in geography and contribute a new case study in processes of tourism management, identity, and indigenous relations.

### **Ronnie Thibault, University of Washington**

#### U.S. Nationalism and the Threat of 'Improper Development': The Cultural Politics of Disability & Global Development

This study of the discourses of developmental and intellectual disabilities in the United States explores the relations between their cultural representation in early twentieth-century U.S. nationalist ideologies of race-purity, national prosperity and 'properly developed' citizens, and global development and humanitarian representational strategies that formed during the emergence of the Cold War Era. The prevalent use of images and texts that frame individuals and regions in the 'global south' as primitive and improperly developed are controversial tactics that have flourished throughout the past seven decades. NPOs, government agencies, media, and private industry in the United States today also rely heavily on familiar stereotypes of fear, pity, and the failure of inadequate progress to grab consumer attention and solicit financial backing for developmental and intellectual disability-related causes. I draw on cultural geography, cultural theories in discourse and representation, postcolonial disability studies, and critical digital historiography to analyze government, agency, media, and public archives and to explore how nationalist ideologies that framed developmental disabilities during the Progressive Era (1890-1930) informed American Globalism and humanitarian and global development discourses (1947-1977) of 'improperly developed' individuals, cultures,



and geographies. This interactive project includes a digital map of historical and contemporary artifacts and an interactive academic site developed in the Scalar II platform. Once complete, the final digital scholarship will seamlessly integrate these platforms into an experience that invites individuals to move between the theories, images, texts and historical artifacts on their own terms.

**Benjamin F. Timms, [btimms@calpoly.edu](mailto:btimms@calpoly.edu), Cal Poly-SLO, and James Hayes, [james.hayes@rcc.edu](mailto:james.hayes@rcc.edu), Riverside Community College**

### Comparing and Contrasting Stakeholder Valuations on Central California Oak Landscapes

Oak landscapes are an iconic symbol of central California but are under threat from competing land-use and land-cover interests. Here we evaluate how different stakeholder groups value oak landscapes and their management including wine producers, ranchers, environmentalists, and public employees. A Q-methodology was used to identify agreements and disagreements, and how strongly those perspectives were shared or not, based on cultural ecological services of central California oak landscapes. Undergraduate students in the Anthropology & Geography major at Cal Poly were engaged with faculty through developing the research project, carrying out in-depth interviews, analyzing the data, presenting work at conferences, and contributing to publication submissions as co-authors. The research conclusions found interesting agreements among the various stakeholders on the management of oak landscapes, with a few outliers. Focusing on the agreements can help form future oak management policies in central California.

**E. Jamie Trammell, Southern Oregon University and Alaska Center for Conservation Science**

### Taking a socio-ecological systems approach to defining ecological integrity: How intact is Alaska?

Alaska's ecosystems are 95% intact statewide, with even the most developed ecoregion still boasting 86% intactness. This invokes a perception that landscape conservation in Alaska is a lesser priority than areas where habitat loss and fragmentation are severe threats. Yet at least 70% of Alaska are likely to experience at least one climate-biome shift by the year 2100. Fundamental changes in ecosystem dynamics will, and already are, resulting from the extreme rates of changes in system drivers (e.g., 48% loss of permafrost at 1 m below ground level by 2070s). Integral to these changing systems are people who have subsisted on the landscape for over 10,000 years. Thus, landscape-scale threats to Alaska's ecosystems differ in kind, not magnitude, from those in lower latitude ecosystems. I explore here what it means to

define ecological integrity from a socioecological perspective, highlighting where traditional conservation approaches have failed in northern latitude systems.

**Dustin Y. Tsai, dytsai@ucdavis.edu, University of California Davis**

Playing the Victim: How Post-War Nationalists Utilize Victimhood Narratives in Bosnia, Serbia, and Croatia

History in the Balkans is a double-edged sword: when viewed holistically, the roles of attacker and defender have changed hands so frequently that notions of historical perpetrator and victim appear frivolous. However, history as taught and consumed in Serbia, Croatia, and Bosnia today, is highly skewed and propagandistic. Through my interviews with young Croat and Serb nationalists, I identify a distinct pattern in which nationalists selectively invoke narratives of victimhood for how they choose to frame their own histories. This is reinforced by state-led institutions that give weight to versions of history that are sympathetic to nationalists. These opposing selective histories propagandize Serb and Croat narratives across school and media apparatuses, characterizing out-groups as perpetrators and in-groups as victims. I argue that ideas of self-victimization act as highly effective political tools for nation-building projects and appeals to nationalism. I also argue that cultural notions of victimhood grant state actors greater agency in garnering public support for aggressive nationalist campaigns. These histories also utilize a gendered component that is integral to their dispersment.

**Al Urquhart, urquhart@uoregon.edu, University of Oregon.**

Stripping the Urban Landscape: Redux--40 Years of Change"

In my presidential address in Reno in 1980, I spoke about the development of an urban commercial strip in Eugene, Oregon, and of how it reflected cultural attitudes, values and our relationship to experiencing nature. In the 38 years since then, the urban strip has been developed further; and our attitudes towards nature have deteriorated. In this paper I review forty years of change in the urban strip of West 11th Avenue, Eugene, and how it reflects contemporary American society.

**Katie Wade, katie.wade@student.csulb.edu, California State University Long Beach**

The Traditional Ecological Knowledge of Indigenous Women in Yosemite Valley

Yosemite National Park continually embarks on ecological restoration projects with distinct goals. One of the main objectives is to ensure the park retains its wilderness

character, which refers to the idea of nature apart from human influence. The landscape aesthetic that was so pleasing to early explorers, eventually prompting the Wilderness Act, did not wholly occur without human influence. The landscape had been carefully engineered by the indigenous residents for many years prior to European arrival. The life philosophies of the indigenous peoples lead to their land stewardship methodologies, which produced their traditional ecological knowledge (TEK). TEK is an accumulating body of knowledge, practice, and belief, evolving by adaptive processes and handed down through generations, about the relationship between humans, nonhumans, and the environment. Indigenous women have a unique TEK as a result of their acting role as tribe ethnobotanists who carefully cared for the land, making sure that the plants needed, for their people, other people, and the animals, would be plentiful. This research offers an exploration of the TEK of indigenous women of Yosemite Valley and the projected sustainability applications of this knowledge with park management practices. Analysis of archival records reveals practices involving propagation of native plants, removal of non-native plants, and companion planting among other methods that contribute to sustainable land stewardship. These records will integrate with interview data focused on indigenous practices and perception of current/future management policy. The findings will be beneficial to Yosemite National Park's policy and decision making for future restoration projects.

**Megan K. Walsh, [megan.walsh@cwu.edu](mailto:megan.walsh@cwu.edu), Central Washington University**

Climatic and Human Influences on the Post-Glacial Fire History of the Eastern Washington Cascades: A Preliminary Regional Assessment

During the past several decades the dry forests and adjacent sagebrush steppe landscapes of eastern Washington State have experienced a dramatic increase in large, high-severity wildfires, resulting in significant damage to natural resources and property. However, little is known about the long-term history of these forests and landscapes, in particular, the factors that influenced past wildfire variability. While charcoal-based fire history reconstructions spanning the past 12,000-15,000 years are relatively abundant from west of the crest of the Cascades Mountains, few paleofire studies exist from the eastern Cascades. This research presents several new post-glacial fire and vegetation reconstructions from sites that form a north-south transect through the eastern Cascade Mountains of Washington, from Okanogan to Yakima counties, and cover a range of ecological settings. The results of this study indicate that fire activity has been the highest at many of the sites during the last several millennia, likely influenced by both climatic variability and human actions, but on different temporal and spatial scales. More importantly, these records provide important insight into how and where fire activity has changed since EuroAmerican

settlement, and how it is likely to change in the coming century. Additionally, the eastern Cascades reconstructions when compared with a regional assessment of fire activity in the Pacific Northwest during the past 12,000 years, comprising of sites mostly located in western Washington, Oregon, and British Columbia, show surprising similarities and differences between the fire trends.

### **Zhe Wang, Chao Fan**

Land cover impacts on urban warming: A longitudinal study in a desert city using geographically weighted regression

This study focuses on the spatiotemporal variations in the surface heat island (SUHI) intensity over Las Vegas. Utilizing the geographically weighted regression (GWR) models, this study examines the spatial non-stationarity in the magnitude of the notorious urban heat island effect in Las Vegas and evaluate the variations in relation to the land use land cover changes over the last decade. So far, I have completed all the data analysis and am working on the manuscript. Primary results from the study indicate that (1) High SUHI intensity is found in the southeastern part of Las Vegas in 2001. The SUHI in 2010 had become stronger in magnitude and larger in its affected area, expanding from the southeast to the northwest. (2) Compared with the ordinary least squares (OLS) model, the GWR achieved a better model fit for both years with a higher adjusted R square value (0.62 for 2001; 0.53 for 2011) and a lower AICc value (100035.32 for 2001 and 9985.90 in 2011). (3) GWR results confirm the cooling effects from green space and water bodies and the warming effect from buildings. From 2001 to 2011, despite the area increase in both green vegetation and water body, their cooling effect had been largely offset by the aggregated warming effect from the built-up areas with densely distributed buildings and pavements.

### **Jason M. Ward, jward31@ucla.edu, UCLA**

The circumpolar influence of large-scale atmospheric circulations on Antarctic coastal polynyas

Strong, persistent surface winds rushing from the Antarctic ice sheet are the primary contributor to the development and variability of relatively small-scale open water and thin sea ice coastal areas, known as coastal polynyas. Through their continued sea ice production, coastal polynyas are able to influence deep-ocean and regional atmosphere conditions. The intensity of the surface winds is enhanced by large-scale atmospheric systems such as the Southern Annular Mode, El Niño Southern Oscillation, and Amundsen Sea Low. The level of influence these three atmospheric patterns have on the polynyas is only minimally studied so far. The current study analyzes concurrent and lagged monthly relationships between atmospheric

circulations and polynya area from April to October, 1992-2017. This study also distinguishes the partial contribution from monthly, seasonal, and annual scales of variability to each relationship. 23 of the 25 circumpolar polynyas analyzed are significantly influenced by at least one of the atmospheric patterns. The significant relationships are primarily driven by co-variability at the seasonal and inter-annual levels. Monthly variability is generally not influential. The relationships have very strong regionality, with the Southern Annular Mode and El Niño Southern Oscillation influencing polynyas in East and West Antarctica, respectively. The strength and regionality of these relationships generally dissipate with monthly lags. Only the El Niño Southern Oscillation has sustained statistical significance, which is strongest with a one-month lag in the polynya response.

**Gregory Weisberg, gregoryweisberg@gmail.com, University of Nevada, Reno**

Environmental Change and Anthropological Response at Monitor Valley, Nevada

Drought is a pervasive aspect of climate in the western U.S. that has long influenced human behavior. Understanding how climate has affected both vegetation and human communities in the past is imperative if we are to understand how it will affect us in the future. This Study aims to examine the temporal changes of vegetation at Monitor Valley, Nevada and how these changes may have influenced human settlement patterns in the surrounding region. Our objective in doing so was to provide a detailed environmental record with a robust age model going back 7,000 years that could be used in tandem with archaeological records from nearby Gatecliff Shelter. Recent reexamination of the archaeological site Gatecliff Shelter using advanced AMS 14C dating techniques has revealed a period of abandonment from 3,300 and 2,100 cal yrs B.P. Evidence indicates this abandonment could have been caused by a period of persistent drought known as the Late Holocene Dry Period. In this paper, detailed pollen and sedimentary data for the past 7,000 years and their influence on vegetation and human communities is presented.

**Justin White, justin.white@uvu.edu, Utah Valley University, Jessi L. Brown, jessilbrown@uvu.edu, University of Nevada Reno, Zachary Ormsby, zormsby@parks.nv.gov, Nevada Division of State Parks, and Scott Bassett, sbassett@unr.edu, University of Nevada Reno**

Parental behavior and nestling diet of Red-tailed Hawks relative to urban density level and land cover type

The habitat fragmentation and human-subsidized resources in urban ecosystems can support denser raptor populations than natural ecosystems. Urbanized landscapes contain unique habitats that may require specific hunting and parenting behaviors. To

understand differences in raptor parenting ecology across the urban density gradient we observed nestling diet and parental roles of Red-tailed Hawks (*Buteo jamaicensis*) during the 2015-16 breeding seasons throughout the urban area of Reno-Sparks, Nevada, U.S.A. Eighty-nine nests were monitored four times during the nestling season by cameras, researchers, and citizen scientists for two-hour periods alternating between 0630–0830 h and 0900–1100 h. Urban density and land cover type were measured at four spatial scales around the nest. Diversity in nestling diet decreased when the dominant land cover type was built-impervious or riparian. The amount of avian prey fed to nestlings increased with urban density. The quadratic relationship of the proportion of mammalian to avian prey along the urban density gradient was negative, whereas that of the proportion of avian to mammalian prey was positive. Reptilian prey decreased with urban density. Female parents conducted most feeding events and males delivered most of the prey. The proportion of female to male feeding events decreased with urban density but the number of total feeding events was not related to urban density level. We identified how elements of breeding ecology change relative to habitat type in the urban landscape and shed light on how hawks impact their local trophic systems.

**Christina T. Uh, [uh4390@vandals.uidaho.edu](mailto:uh4390@vandals.uidaho.edu), University of Idaho and Ethan White Temple, [ethanw@uidaho.edu](mailto:ethanw@uidaho.edu), University of Idaho**

TEK and Tech: Building a Culturally Responsive Curriculum for Nimiipuu (Nez Perce) High School and Middle School Students

Although Indigenous epistemologies, ontologies, and axiologies have survived generations of colonization, their presence in current educational systems has remained peripheral. In an effort to support educational sovereignty, this project combines traditional knowledge and technology to promote a culturally relevant STEM identity in students. A growing body of research suggests that culture and identity play important roles in supporting students' successful navigation of STEM career pathways, particularly those that involve students' local environments and significant places. This project thus engages middle and high school students from the Nez Perce Reservation in Idaho in educational activities centered on the use of technology, such as remote sensing. Indigenous ways of knowing are central to this curriculum, not simply an 'alternative' to the approaches of western science, but through a Critical Indigenous pedagogy in which students decolonize Western research methods often incorrectly assumed as the 'correct way of doing science'. This curriculum is structured around 1) STEM technologies (UAVs and remote sensing), 2) science communication and leadership skills, and 3) community involvement and introduces students to culturally relevant STEM careers and prepare students for higher education.

**Hayden Wilkes, hwilkes@una.edu, University of North Alabama, and Michael Pretes, mjpretres@una.edu, University of North Alabama**

Social Media, Agenda Setting Theory, and the Geography of Tourism: "Breaking Bad" in Albuquerque, New Mexico

Television shows, films, and social media have an enormous impact on the choice of geographic places that tourists visit. Viewing TV shows or films can inspire potential tourists to visit the geographic site where a show or film was set and where it was filmed, while social media images can help tourists select the specific micro-locations to visit within that broader geographic site. The popular television series "Breaking Bad" (2008-2013) was filmed on location in Albuquerque, New Mexico, and has inspired numerous fans to visit filming sites in the city. Which sites are most popular and what factors determine the popularity of specific sites? Does social media play a role in shaping images of particular settings in the city of Albuquerque? We use Agenda Setting Theory, which argues that news and social media determine the relative importance of narratives, to understand the factors explaining how tourist fans navigate the city of Albuquerque. We used social media postings to identify the most popular sites and how they are portrayed. Our results will help understand the role that social media plays in creating a tourist base and in shaping perceptions of place, and can also help Albuquerque city planners in addressing tourism impacts as well as generating economic development through tourism.

**William Wyckoff, bwyckoff@montana.edu, Montana State University**

Rephotographing Arizona: Riding Shotgun with Norman Wallace

This presentation offers an update on a current book project that is a rephotographic survey of Arizona based on the work of Norman Wallace. Wallace was employed by the Arizona Highway Department between 1932 and 1955. As a surveyor and Chief Location Engineer, Wallace improved Arizona's highways during a critical era of the state's twentieth-century growth. He helped transform Arizona's landscape, refashioning it in ways that reflected the progressive, growth-oriented agenda of the New Deal and post-war eras. As an accomplished photographer, Wallace began making images of his adopted home state when he moved there from the Midwest in 1906. Later, working for the Highway Department, he created thousands of landscape images that included roadside scenes, small towns, Native American trading posts, urban Main Streets, mining areas, desert vistas, and much more. Wallace used the images in his technical work at the Highway Department, and also made them broadly available to public agencies promoting tourism and economic investment in the state. As engineer, booster, and image maker, Wallace participated in modernizing the state's infrastructure, promoting the state's amenity-based economy, and recording his

vision of these transformations with his own camera. This presentation reviews my own vicarious journeys with Wallace as I have rephotographed dozens of his Arizona landscapes between 2015 and 2018. I offer examples from recent field work that suggest what I have learned about Wallace as well as what larger-scale changes are shaping Arizona's landscape.