New England and St. Lawrence Valley Geographical Society (NESTVAL)

Fall 2024 Conference

October 25th & October 26th

Westfield State University

Planning a Sustainable Future

Welcome

Welcome to the 2024 New England – St. Lawrence Valley Geographical Society (NESTVAL) Fall Conference, proudly hosted by the Department of Geography, Planning & Sustainability (GPS) at Westfield State University! We are delighted to welcome you to our 256-acre campus, nestled in the picturesque Pioneer Valley of Massachusetts, just west of Springfield.

This year's theme, *Planning a Sustainable Future*, underscores the vital role that geography and urban and regional planning play in shaping a more just and sustainable world. We are excited to explore with you a wide range of ideas and strategies for addressing the pressing environmental, social, and economic challenges of our time. We hope you enjoy the conference, take advantage of the opportunities to connect with colleagues, and leave inspired by the innovative ideas and solutions shared throughout the event.

Geography, Planning & Sustainability NESTVAL Planning Committee

Timothy LeDoux
Carsten Braun
Alina Gross
Brian Conz
Samuel N'degeah
Dristi Neog
Jen Noess

NESTVAL 2024 Schedule

Friday, October 25th

Time	Event	Location
2:00 pm – 6:00 pm	Registration	Scanlon Hall Banquet Room
2:30 pm – 3:00 pm	GeoBowl Pizza Kick off	Wilson Hall 203
3:00 pm – 5:30 pm	GeoBowl	Wilson Hall 109 & 112
6:00 pm – 7:30 pm	Business Dinner	Scanlon Hall Loughman Living Room
7:00 pm – 8:00 pm	Mappy Hour	Great Awakening Brewing, 77 Mill Street, Westfield MA https://greatawakeningbrewing.com/

Saturday, October 26th

Time	Event	Location
7:00 am – 12:00 pm	Registration	Scanlon Hall Banquet Room
8:00 am – 9:00 am	Breakfast	Scanlon Hall Banquet Room
8:30 am – 9:00 am	Welcoming Remarks	Scanlon Hall Banquet Room
9:00 am – 9:15 am	Break	
9:15 am – 10:35 am	Concurrent Paper Sessions I, II & III	Parenzo Hall (Rms 226, 262 & 263)
9:15 am – 11:30 am	Dinosaur Field Trip	Meet outside the front door of Scanlon Hall
10:35 am – 10:50 am	Coffee Break	Parenzo Hall (Rm 225)
10:50 am – 12:05 pm	Poster Session I & Concurrent Paper Sessions IV & V	Parenzo Hall (Rms 226, 262 & 263)
12:15 pm – 12:45 pm	Lunch	Scanlon Banquet Hall
12:45 pm – 1:45 pm	Keynote: Dr. Ray Bradley The New Normal: climate that we'll have to get used to	Scanlon Banquet Hall
1:45 pm – 2:00 pm	Break	
2:00 pm – 3:20 pm	Concurrent Paper Sessions VI, VII & VII	Parenzo Hall (Rms 226, 262 & 263)
3:20 pm	Conference Ends	

Campus Map and Parking

https://www.westfield.ma.edu/documents/campusmap-4-24-240pdf

The NESTVAL 2024 conference will occur in Scanlon Hall (#15), Parenzo Hall (#14) and Wilson Hall (#8). There are a limited number of visitor parking spaces in front of Scanlon and Parenzo Hall. Participants are encouraged to park in the Commuter Lot (#4). Please note that there will be a Westfield State University Open House Event occurring on Saturday so parking near Scanlon and Parenzo Hall might be difficult. The good news is that many of the high school students and their parents also will be looking for Parenzo Hall so if you get totally lost you can follow the crowds.

Presentations & WiFi

Paper Presentation sessions are 80 minutes in length. All paper sessions will consist of four presentations with each presentation allotted 20 minutes (including questions and discussion). The Blue Economy paper session has been structured to be four 12-minute papers with the remaining time for discussion. The poster session is also 80 minutes. Materials to hang the posters will be provided.

Rooms for paper and panel sessions will be equipped with standard digital projectors/AV equipment and a podium PC laptop running the Windows operating system. Presenters also are welcome to bring their computers as well (please bring any special cords you might need). Presenters must be registered for the conference.

Guests can access either eduroam using their own campus credentials or Westfield State's guest network. If you connect to guests, you will be asked to check a box before being able to access the internet. Podium laptops are already connected to the internet.

Each room will have time cards to help keep presenters on track. Presenters can choose to time each other or ask an audience member to serve. For the sake of simplicity, the first presenter in each session is the Session Chair.

Conference Program

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8:30 am – 9:00 am	Welcoming Remarks Timothy LeDoux Firooza Pavri Rebecca Lave	Scanlon Hall Banquet Room

Conference Program

Saturday, October 26th

9:15 – 10:35 am

Paper Session 1: Graduate Paper Competition I

Parenzo Hall Rm 262

Time	Title	Presenters	Affiliation
09:15 – 09:35 am	Land scarcity in Indigenous territories of the Peruvian Amazon	Ana Araujo Raurau*	Clark University
09:35 – 09:55 am	The growth imperative of agribusiness social media campaigns in Brazil: digital labor, ideology, and materiality	Ricardo Barbosa, Jr.*	Clark University
09:55 – 10:15 am	Spatial and temporal variability of the forest change process in the Atlantic Forest of Brazil	Mikayla K Schappert*	Clark University
10:15 – 10:35 am	Health risk inequality assessment of mobility-based PM2.5 exposure: Case study of Beijing, China	ailing jin*	University of Connecticut

* Graduate Paper Competition

Paper Session 2: Undergraduate Student Paper Competition

Parenzo Hall Rm 263

Time	Title	Presenters	Affiliation
09:15 – 09:35 am	A Blue Economy Agenda for Fjarðabyggð, Iceland	Edith Vincze-Farago	Southern Connecticut State University
09:35 – 09:55 am	Organizing Resistance: Women, Labor, and Environmental Justice in 19th Century Industrial Holyoke, Massachusetts	Ellen Tang	*Mount Holyoke College*
09:55 – 10:15 am	Urban Expansion and Rural Contentions: The Politics of Suburbanization and Water Security in the American Southwest	Cameron Wehner	Mount Holyoke College
10:15 – 10:35 am	Fluid Heritage: Analyzing the Hitis of Nepal through the Lens of Urban Political Ecology	Asmi Shrestha	Mount Holyoke College

Paper Session 3: Climate & Sustainability 1

Parenzo Hall Rm 226

Time	Title	Presenters	Affiliation
09:15 – 09:35 am	Local Scale Variation in Decadal Climate Change in New England	Matthew D. Miller	Southern Connecticut State University
09:35 – 09:55 am	The demographics of disaster	Michael F. Gaffney*	*Western Connecticut State University*
09:55 – 10:15 am	Project 2025 and the Environment: Implications for U.S. Environmental Policy	John Hayes	Salem State University
10:15 – 10:35 am	Timeless Solutions: Leveraging Traditional Indian Built Forms for Sustainable Futures	Dristi Neog	Westfield State University

* Graduate Paper Competition

Saturday, October 26th
10:50 am – 12:05 pm

Paper Session 4: Navigating towards a Blue Economy in the Northeast US: Opportunities and Challenges
Parenzo Hall Rm 226

Time	Title	Presenters	Affiliation
10:50 – 11:10 am	You can't get there from here, or can you? Navigating towards a Blue Economy in the Northeast US	Syma Ebbin Nathaniel Trumbull	University of Connecticut
11:10 – 11:30 am	Blue Bonds as a Catalyst for Blue Economic Growth in the Northeastern USA	Hilda Amenyo	Montclair State University
11:30 – 11:50 am	Advancing the North Shore Blue Economy Initiative	Katherine Kahl	UMass Amherst Gloucester Marine Station
11:50 am – 12:10 pm	Diverse Blue Economies of Care: Enlarging possibilities beyond capitalism in marine and coastal resource access for marginalized communities in Rhode Island	Bryce B. DuBois Melva Treviño Peña	University of New Haven University of Rhode Island

Paper Session 5: Graduate Paper Competition II
Parenzo Hall Rm 263

Time	Title	Presenters	Affiliation
10:50 – 11:10 am	Public Acceptance and Energy Justice in Offshore Wind Development in Southern New England	Samuel H. Ayivi*	University of Connecticut
11:10 – 11:30 am	Green Equity in Transition: Navigating Job Access and Quality in the Sustainable Economy	Haijing Liu*	University of Texas at Austin
11:30 – 11:50 am	Agricultural Impacts of a Changing Climate in Zones Dfa, Cfa and Dfb in New York State	Katherine J. Johns-Galvin*	Central Connecticut State University
11:50 am – 12:10 pm	Estimation of High-resolution Emissions Using Pure Nighttime Lights in Monocentric and Polycentric Cities: Fusion of Remotely Sensed Human Activities and Social Media Data for Carbon Neutral Settlements	Siqi Lu*	University of Connecticut

* Graduate Paper Competition

Saturday, October 26th
10:55 am – 12:05 pm

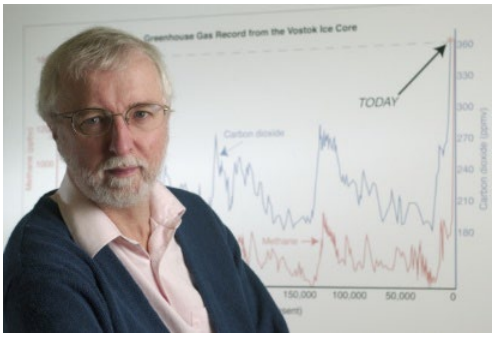
Poster Session 1:
Parenzo Hall Rm 262

Time	Title	Presenters	Affiliation
	Disparities in Park Access: Green Space Access in Relation to Race, Income, and Health	Delaney K. Gardner[!]	Mount Holyoke College
	Towards a Just and Sustainable Blue Economy in the Arctic	Noelle E. King[#]	Southern Connecticut State University
	Planning for Climate Change: Creating a Living Seed Bank at Bishop's University	Jennifer Downing[#]	Bishop's University
	Thriving Health: Our Salton Sea	Alejandra Lopez[#]	Brown University
	Equitable Transportation Planning with Tribal Nations	Ailish Ferrick[!]	Westfield State University
	The Untold Histories of Slavery: The Arab-Muslim Slave Trade and The Trans-Atlantic Slave Trade	Cassandra Lorom[!]	Westfield State University
	Environmental Justice and Public Park Access in Westfield, Massachusetts	Abbey Majka[!] (In Memoriam)	Westfield State University
	An Analysis of Kalibrate Technologies in Urban Planning	Carly Holdridge[!]	Westfield State University
	Juvenile Tree Survivorship and the Greening the Gateway Cities Program in Chelsea and Holyoke, Massachusetts	Mara Litten[!]	Clark University
	Perceptions of Tree Planting and Tree Stewardship in Holyoke and Chelsea, Massachusetts	Espi Garschina-Bobrow[!] Jack Keane Kalon Shepard	Clark University

Graduate Poster Competition
! Undergraduate Poster Competition

Saturday, October 26th
12:45 pm – 1:45 pm
Keynote
Scanlon Banquet Hall

The New Normal: climate that we'll have to get used to



Our global climate has changed, mainly as a result of burning fossil fuels. It is possible to reduce reliance on fossil fuels (and we must) but climate will not return to the way it used to be— there is a new normal that we will have to adapt to. The good news is that moving away from a fossil-fuel based economy creates many opportunities for innovation, job creation and improvements in environmental health. I will explore both sides of this topic.

Dr. Raymond Bradley is a University Distinguished Professor in the Department of Earth, Geographic, and Climate Sciences, and Director of the Climate System Research Center at the University of Massachusetts, Amherst. He received an M.A. and Ph.D. From the University of Colorado and a D.Sc. from Southampton University (U.K.).

He was awarded Honorary Doctorates by Lancaster University (U.K.), Queen's University (Canada), the University of Bern (Switzerland), and the Oeschger Medal of the European Geosciences Union. He is a Fellow of the Royal Society of Canada, the American Geophysical Union, the American Association for the Advancement of Science, and the Arctic Institute of North America, and was elected a Foreign Member of the Academia Europaea and the Finnish Academy of Science and Letters.

Bradley's research focuses on climate variability across a wide range of time scales, and understanding the causes of climatic change. He has written or edited thirteen books on climatic change (including Paleoclimate, Global Change and the Future, The Hadley Circulation: Present, Past and Future, Global Warming and Political Intimidation, and the award-winning text, Paleoclimatology) and he has co-authored over 200 peer-reviewed articles on the topic.

Saturday, October 26th
02:15 pm – 3:20 pm

Paper Session 6: Graduate Paper Competition III
Parenzo Hall Rm 262

Time	Title	Presenters	Affiliation
02:00 – 02:20 pm	Who Started The Fire? – The Discovery of the Podokesaurus holyokensis at MHC	Ava M. Healy*	University of Massachusetts
02:20 – 02:40 pm	Assessing network-based traffic crash risk using prospective space-time scan statistic method	Congcong Miao*	University of Connecticut
02:40 – 03:00 pm	Beyond Spatial Proximity: Conceptualizing the Perceived Food Activity Space	Weixuan Lyu*	University of Connecticut
03:00 – 03:20 pm	Game ecology and sustainable player strategies: an neo-environmental determinism perspective	Zihan Feng*	Rensselaer Polytechnic Institute

* Graduate Paper Competition

Paper Session 7: Climate & Sustainability II
Parenzo Hall Rm 263

Time	Title	Presenters	Affiliation
02:00 – 02:20 pm	Art & Science: Documenting Glacier Recession and Disappearance in Peru, Uganda, and the Wind River Range	Carsten Braun	Westfield State University
02:20 – 02:40 pm	Spatial regression of Northern lakes to determine landscape controls on carbon exchange	Ethan D. Kyzivat	Harvard University
02:40 – 03:00 pm	Remote sensing of reservoir levels can enhance global water security assessment	Sarah E. Esenther*	Brown University
03:00– 03:20 pm	Characterization of SWOT Ka-band backscatter and classification of North Saskatchewan surface waters	Sonam F. Sherpa	Brown University

* Graduate Paper Competition

Paper Session 8: Geography of Campus and Food Environments
Parenzo Hall Rm 226

Time	Title	Presenters	Affiliation
02:00 – 02:20 pm	Launching a new sustainable agriculture program at the undergraduate level: Innovations and challenges	Darren Bardati	Bishop's University
02:20 – 02:40 pm	Late for Class: How University Parking Policies Have Failed and What To Do About It	Timothy Garceau	Central Connecticut State University
02:40 – 03:00 pm	Using gen AI for program assessment: Aligning a geospatial internship program with career competencies	Matt McCourt	University of Maine at Farmington
03:00 – 03:20 pm	Using large-scale human mobility data to understand food behaviors	Peter Chen	University of Connecticut

Saturday, October 26th
Field Trip: Dinosaurs & Lava Flows
09:00 am – 11:30 am
(Limit 10 people)

This field trip showcases two of the geologic and geographic highlights of our area: the dinosaur footprints along the Connecticut River in Holyoke (MA) and the massive lava flows of the nearby Mount Tom Range. Please be prepared for two short hikes.

Check out the field guide:

https://drive.google.com/file/d/1qyDNilFbnbwkIwRXC7NbtiWj1OTZpIp_/view?usp=sharing

Conference Abstracts

Paper Session 1

Land scarcity in Indigenous territories of the Peruvian Amazon

Ana Araujo Raurau, Clark University

Emerging resource sustainability challenges increasingly impact Indigenous communities in Amazonia. Despite significant progress in securing land rights and the critical role Indigenous territories play in preserving forest cover, issues such as wildlife depletion, forest impoverishment, and land scarcity have been documented in specific settlements. The prospect of growing land scarcity is particularly concerning, as research suggests it may lead to problematic land system transitions, jeopardizing traditional Indigenous land management practices that have sustained anthropic forest landscapes in the Amazon.

This paper examines factors and processes associated with rising land scarcity among Indigenous territories in the Peruvian Amazon. Using a mixed-method approach, I conduct regression analysis at the regional level and ethnographic analysis of a Kichwa community in the Napo basin. Results reveal the critical role of territorial enclosure in producing land scarcity, framing it as an issue of Indigenous land rights rather than land management.

This study contributes to our understanding of resource sustainability challenges faced by Amazonian Indigenous communities and highlights the importance of addressing land rights to maintain effective forest conservation practices.

Keywords: Indigenous territories, land scarcity, Amazon, forest conservation

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The growth imperative of agribusiness social media campaigns in Brazil: digital labor, ideology, and materiality

Ricardo Barbosa, Jr., Clark University

Social media has become a critical tool for shaping consumer behavior, serving as strategic platforms for marketing across various industries, including agribusiness. In Brazil, agribusiness has leveraged digital platforms not only for marketing but also for advancing political narratives. Campaigns like *Agro é Pop* (essentially, agribusiness is cool), *Coma Mais Carne* (eat more meat), and *Beba Mais Leite* (drink more milk) promote increased meat and dairy consumption while reinforcing a pro-growth agenda. These campaigns actively seek to counter movements like veganism, plant-based diets, and environmental critiques, positioning agribusiness as central to Brazil's national identity and economic development. This paper examines how Brazilian agribusiness uses social media to propagate its growth imperative, focusing on the role of influencers who mediate these campaigns. Through digital ethnography, this study investigates both the material and ideological dimensions of agribusiness digital labor, illustrating how influencers transform pro-growth and political messaging into highly engaging content. As the second-largest influencer market globally, after the US, Brazil provides a unique context where agribusiness ideologies gain substantial traction, creating an ideological battleground over food, agriculture, and national identity. Rooted in Gramscian and Frankfurt School frameworks, this research first analyzes how agribusiness leverages social media campaigns to influence public opinion. It then delves into the material realities of digital labor in agribusiness, demonstrating how influencers' work in rural settings intersects with the economic and ideological imperatives of agribusiness. These findings provide insights into how agribusiness narratives are perpetuated online and extend our understanding of digital labor beyond the urban world.

Keywords: agribusiness, social media, digital labor, ideology, influencer marketing, food systems, growth imperative, political communication, Brazil

Spatial and temporal variability of the forest change process in the Atlantic Forest of Brazil

Mikayla K Schappert, Clark University
Florencia Sangermano, Clark University
Fatemeh Kordi, Clark University
Aiyin Zhang, Clark University

Habitat loss and degradation are the main drivers of biodiversity loss. Deforestation affects biodiversity by modifying the size and configuration of habitat patches, the amount of edge habitat, and decreasing forest connectivity. The Brazilian Atlantic Forest is one of the most threatened tropical ecosystems and is home to a high concentration of endemic species. Despite the high levels of forest loss, the ecoregion is undergoing restoration on private lands, which is considered an important alternative to meet national and international restoration commitments.

To quantify and understand these spatial patterns we adapted Bogaert (2004) method of typology of land transformation processes. Scaling the typology spatially and temporally, we could identify the changes in the land transformation process in Brazil's Atlantic Forest. The analysis combined morphological spatial pattern analysis with a moving window algorithm to detect landscape-level composition metrics. A trend analysis was then implemented to detect change and derive a map using Bogaert's typology of change process.

Preliminary results suggest substantial clusters of typologies within the landscape. We found that typologies increasing in core forest area accounted for 44% of total cover and typologies decreasing core forest area were 48% cover, with dissection/fragmentation accounting for most of the change. Additionally, total forest cover increased and total forest core area decreased from 1990 to 2021. Since typology is based on core habitat, this shows forest area is increasing but core habitat is being lost. Understanding these nuanced patterns of forest change is key to effective conservation methods and policy production.

Keywords: forest fragmentation, typology, landscape change, Atlantic Forest of Brazil, landscape metrics

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Health risk inequality assessment of mobility-based PM2.5 exposure: Case study of Beijing, China

ailing jin, University of Connecticut

The rapid urbanization and industrialization of China have led to significant PM2.5 pollution, posing serious health risks, especially for vulnerable and disadvantaged groups. While intake is a more accurate proxy for the health effects of air pollution than emissions or ambient concentrations, many existing studies on personal inhaled doses have not simultaneously accounted for individuals' daily mobility patterns, personalized air monitoring data, and various personal factors influencing inhalation rates due to difficulties in obtaining individual-level data. To enhance personal exposure assessment, this study employed real-time data on PM2.5 concentrations, metabolic equivalents of task (METs), and GPS tracking, as well as individual physiological characteristics such as age, sex, basal metabolic rate (BMR), and body weight. The aim is to improve understanding of PM2.5 exposure in Beijing, China, while highlighting sociodemographic inequalities in non-carcinogenic health risks. Findings reveal that sex and educational level significantly influence health risks associated with PM2.5 exposure, whereas income level did not demonstrate a significant effect. Specifically, men and individuals with only a high school education or below are more susceptible to health threats from PM2.5 exposure compared to women and those with post-graduate degrees or higher. Our results offer valuable insights into the health risks linked to PM2.5 exposure and underscore the need for targeted interventions to protect vulnerable populations.

Keywords: Inhaled dose; real-time data; sociodemographic inequalities; non-carcinogenic health risks

Paper Session 2

A Blue Economy Agenda for Fjarðabyggð, Iceland

Edith Vincze-Farago, Southern Connecticut State University

This paper studies the current ocean economy in Fjarðabyggð, Iceland, and explores the opportunities for transitioning towards a just and sustainable Blue Economy. A mixed-methods of quantitative GIS-based mapping of ocean-related businesses and a qualitative, thematic analysis of semi-structured interviews with local stakeholders are utilized for the study. With insights into the environmental, economic, regulatory, and social sectors, opportunities are identified in transitioning to a more sustainable environmental and socio-economic future. The study concludes with policy recommendations for mitigating barriers hindering progress toward a Blue Economy.

Keywords: Blue Economy, coastal communities, sustainability

Organizing Resistance: Women, Labor, and Environmental Justice in 19th Century Industrial Holyoke, Massachusetts

Ellen Tang, Mount Holyoke College

October of 1849 marked the successful construction of the Holyoke Dam, symbolizing the beginning of a period of rapid industrialization that has developed into the area now known as Holyoke, Massachusetts. The height of Holyoke's industrial era saw flourishing textile and paper mills that boosted the city's prominence, but these same industries were the cause of increasing environmental and health inequities that were of particular concern for their female laborers. Building on works of scholar-activism and on previous scholarship of the industrial history of Holyoke, this paper seeks to explore the lives of working class women in Holyoke and the various ways in which they worked to undermine capitalist industrialization throughout the nineteenth century. In focusing on the gendered landscape of industrial work in Holyoke, the disproportionate impacts of early industrial labor injustices is revealed. Female laborers, aware of the inequalities that they faced, worked to overcome these challenges in various ways. This feminist reexamination of Holyoke's industrial landscape illuminates the intersections between work, gender, and environmental justice that are becoming increasingly relevant today.

Keywords: Women labor history, 19th century textiles history, 19th century paper history, women and industrialization, environmental feminism, Massachusetts, Holyoke

Urban Expansion and Rural Contentions: The Politics of Suburbanization and Water Security in the American Southwest

Cameron Wehner, Mount Holyoke College

Water scarcity in the American Southwest is cause for urgent concern and disputation in the face of population growth and global climate change. Contentions over the Colorado River and interstate negotiations emphasize the necessity for water-conscious solutions going forward. However, critically missing in water scholarship in the Southwest is how ongoing urban expansion into rural fringes in Colorado brews contentions and distrust across the spatial divide. Using data from in-depth interviews, focus group discussions, and geoprocessing of Coloradoan water levels, this paper attends to the lived experience of water scarcity, changing identities, and politics on a local scale to deepen the understanding of the southwestern struggle over water. Grounded in a political ecology analytical framework, this paper challenges the dominant macrolevel apolitical characterization of the water crisis in the Colorado River by empirically assessing the multiple ways in which water is deeply tied to struggles of identity and rurality in a rapidly changing landscape. Ultimately, I argue that bringing the issue of water scarcity to the level of the local and the individual is crucial for reckoning with not only sustainability and conservation of natural resources but also the sustainability of identity and of the rural.

Keywords: Water insecurity, Colorado, American Southwest, Urbanization

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Fluid Heritage: Analyzing the Hitis of Nepal through the Lens of Urban Political Ecology

Asmi Shrestha, Department of International Relations, Mount Holyoke College

Water management systems have been integral to human settlements throughout history. This study investigates the hitis, the indigenous water infrastructure of Kathmandu Valley in Nepal, exploring the historical significance of these systems and their potential for addressing contemporary challenges in sustainable water resource management. Through a three-month period of intensive fieldwork, the study engaged local communities and experts to gain insights into the socio-cultural dimensions of water conservation. The interdisciplinary approach combined historical analysis with field observations to provide a comprehensive understanding of the indigenous water infrastructure's past, present, and future prospects. Key findings highlight the critical role these ancient systems have played in the valley's water management for centuries. The research suggests potential avenues for restoring and utilizing these structures to address modern sustainability challenges, while acknowledging the complexities involved in urban water governance. This paper contributes to the broader discourse on environmental sustainability and urban water management, offering insights that may influence future research and policy decisions in the field. Furthermore, it raises questions about effective adaptive management strategies that can be implemented to preserve the socio-ecological integrity of Kathmandu's hiti system in the face of rapid urbanization, climate change, and shifting cultural paradigms.

Keywords: Hitis; indigenous water systems; Urban Political Ecology; urban water governance; sustainable water resource management

Paper Session 3

Local Scale Variation in Decadal Climate Change in New England

Matthew D Miller, Southern Connecticut State University

Analyses of climate change are often done at the global and continental scale. This contrasts with how people experience climate change which is at the local and regional scale. Previous studies of climate change that describe the New England region have identified increasing temperatures, particularly daily low temperatures, and increasing precipitation as the dominant historical trends. This study used Empirical Bayesian Kriging Regression Prediction to analyze decadal climate change trends in New England from the 1940's to the 2010's at both the regional and local scales. Regional trends of increasing daily low temperatures and increasing precipitation were supported, however the local variation of trends across the region highlights the need for climate change to be understood using disaggregated descriptions. Statements that are true for the region as a whole are not true for multiple sub-regions or local areas within the region. The mismatch between the lived climate experiences at local scales and the dominant regional trends, which are the common descriptions of climate change in the region, can fuel distrust in climate change narratives.

Keywords: New England, climate change, EBKR Prediction, local, regional, scale

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The demographics of disaster

Michael F Gaffney, Western Connecticut State University

As climate change becomes more and more of a problem so will weather related disasters such as hurricanes. However, as everyone knows you don't want to wait until the storm is knocking on the door to see where your most vulnerable populations reside. Using data from the 2017 through 2021 American Community Survey this presentation will display the hot spots for age, race, household type and educational attainment in the thirty one census county subdivisions with a population greater than 65,000 in New England. It will then wrap up with a discussion of why these values are important and some suggestions on what can be done about it.

Keywords: geographic information systems, hurricane, census

Project 2025 and the Environment: Implications for U.S. Environmental Policy

John Hayes, Geography and Sustainability Department, Salem State University

Project 2025, the 922-page report from the Heritage Foundation, is a blueprint for conservatives in a potential second Trump administration. Conservatives consider it to be a "mandate for leadership" and to fulfill "the conservative promise" of a dismantled federal state. The report is one of four pillars to help accomplish this goal. The implications for U.S environmental policy at the federal level and in the international arena are profound and worrisome. This paper will review the instances of the actual language in the Project 2025 report with considerations for future federal climate science and policy, the use of scientific and policy experts as regards environmental laws, regulations and permitting, environmental justice and global health considerations by federal agencies, and the federal government's ability to respond to emergencies as a result of natural disasters, extreme weather events, and climate change.

Keywords: Project 2025, environmental policy, climate change, 2024 presidential election, U.S. environmental laws and regulations

Timeless Solutions: Leveraging Traditional Indian Built Forms for Sustainable Futures

Dristi Neog, Westfield State University

As we face complex challenges like climate change, resource depletion, and shifting demographics, it is essential to explore innovative solutions for a sustainable future. One promising avenue is to draw from our past for transferable wisdom. This research posits that traditional knowledge in architecture and planning can significantly shape sustainable and resilient futures and looks at traditional Indian building styles and forms. Vernacular or traditional building styles, honed over centuries of evolution, have developed in harmony with their local environments. These designs are not just aesthetic choices; they reflect sustainable practices tailored to their specific contexts.

This presentation highlights examples from India, showcasing traditional housing forms that illustrate a rich tapestry of sustainable architecture and inherent sustainability principles. By examining twelve traditional housing forms across four distinct climate regions, this research seeks to understand how these practices align with contemporary sustainability frameworks that measure sustainability. Preliminary findings indicate the potential of this traditional wisdom as an alternative approach to fostering more sustainable and adaptive built environments, and the insights gained underscore the value of integrating transferable traditional practices into modern planning efforts, paving the way for resilient futures that respect both heritage and ecological integrity.

Keywords: Traditional built forms, sustainability, vernacular architecture, Indian architecture, International built forms

Paper Session 4

You can't get there from here, or can you? Navigating towards a Blue Economy in the Northeast US

Syma Ebbin, University of Connecticut
Nathaniel Trumbull, University of Connecticut

Navigating towards a Blue Economy, characterized by the goals of utilizing ocean space and resources in a sustainable, economically productive, and just and equitable manner, presents society with a challenge. No charts exist to guide this transition within the dynamic, globalized, multisectoral ocean economy. Using a case study approach, this paper highlights opportunities and challenges encountered as sectors of the traditional maritime economy collide with the new against the backdrop of shifting societal values, a changing climate and altered ocean ecosystem. The passage is characterized by a pivot from focused extractive activities to protected areas, from industrial harvesting to regenerative farming, from fossil fuels to renewable energy, from single species regulations to ecosystem management, and from biomass accounting to genetic diversity. Successful navigation will require technological ingenuity and innovation, investments in coastal infrastructure, political leadership, the engagement and support of broad-based coalitions, education and training programs aimed at equitable and inclusive workforce recruitment, targeted efforts to generate and incorporate inter- and transdisciplinary knowledge, and the recalibration of integrated governance processes and institutions able to achieve outcomes that are just, collaborative, spatially and temporally defined, transparent, adaptive, and participatory.

Keywords: Blue Economy

Blue Bonds as a Catalyst for Blue Economic Growth in the Northeastern USA

Hilda Afeku-Amenyo, Montclair State University
Pankaj LaL PhD, Montclair State University

This research investigates the role of blue bonds as a transformative financial instrument in fostering Blue Economy growth in the Northeastern United States. As designed, blue bonds will fund ocean-related projects that can align financial returns with environmental sustainability. The study examines how these bonds can finance diverse marine and coastal activities, such as sustainable fisheries, marine conservation, and coastal resilience initiatives. This study will pursue the economic viability of blue bonds through various case studies in different parts of the world, analyzing against the relevant policy frameworks to determine how well they address regional environmental objectives.

The research objectives will study the prospects for blue bonds regarding their potential for sustainable economic growth, identify problems, including financial, regulatory, and environmental constraints, to the successful issue of blue bonds, and assess the compatibility of blue bonds under current policy frameworks.

Early evidence suggests that blue bonds can widen sources of financing for Blue Economy activities, contribute to job creation, and induce innovation in ocean technologies. However, a multiplicity of regulatory regimes, nascent market conditions, and perceived investment risks will all need to be tackled in order to increase investor confidence. Conclusively, this research allows the determination of how blue bonds can, in fact, support the financing of ocean-based sustainable development in the Northeastern USA and provide valuable input to policymakers, investors, and stakeholders. It advocates for development within a Blue Economy using innovative mechanisms for financing fiscal sustainability while protecting marine ecosystems.

Keywords: Blue bonds; Sustainable Finance; Innovative Financing; Blue Economy

Advancing the North Shore Blue Economy Initiative

Katherine Kahl, UMass Amherst Gloucester Marine Station

The history, economic base, and culture in northeast Massachusetts are built around the ocean and the quality of life it provides. Traditional maritime industries including fishing, tourism, and seafood processing are woven into the regional identity. Today, innovation across industry, science, and technology is expanding how we think about the maritime environment to also include new industries such as ocean sensing, offshore wind, and coastal resilience design. While the nation's marine economy has been studied for decades, exploring the North Shore Blue Economy (NSBE) is an approach to view our ocean as a resource that can generate economic growth, while also addressing and improving ecosystem health that supports long-term sustainability for the region. A NSBE Phase I study was released in 2021 and provided a comprehensive starting place – an assessment to quantify the regional economic base, identify leading and emerging industry clusters, provide a profile of the current regional population and workforce, and describe the composition, size and growth opportunities for regional blue economy businesses. However, since publication in 2021, the post-pandemic working landscape has changed. This presentation will explore ideas for updating and mapping climate threats by blue economy sector to inform economic development planning and decision making.

Keywords: Blue Economy, Essex County, Climate

Diverse Blue Economies of Care: Enlarging possibilities beyond capitalism in marine and coastal resource access for marginalized communities in Rhode Island

Bryce B DuBois, University of New Haven
Melva Treviño Peña, University of Rhode Island

The experiences and perspectives of marginalized ethnicized and racialized (MER) communities remain significantly underrepresented in coastal resource research and policy. This study engages with these gaps by examining how MER communities in coastal Rhode Island, the "Ocean State", navigate access to marine resources, particularly through self-provisioning fishing practices that support local food security. Framed through Gibson-Graham's (2008) concept of community economies, the research explores how MER groups engage in alternative food networks, emphasizing non-capitalist modes of resource sharing and co-existence.

The research team, in partnership with two community-based organizations, conducted eight focus group interviews with 51 participants across different MER communities. The results highlight distinct differences in coastal access, particularly between established Southeast Asian communities, whose self-provisioning practices are integral to their nutritional and cultural traditions, and more recently arrived refugee groups, who face substantial barriers such as transportation and lack of coastal knowledge.

This research underscores the importance of understanding coastal access through a geographic lens that attends to socio-cultural practices, spatial inequities, and the local geography of food systems. The findings offer insights into how the embodied geographies of fishing practices connect MER communities to coastal environments and reveal critical gaps in policy that fail to address the diverse, lived experiences of these populations. Finally, and more locally, we aim to contribute to more inclusive environmental management and coastal governance in Rhode Island.

Keywords: community economies, community-based research, MER communities

Paper Session 5

Public Acceptance and Energy Justice in Offshore Wind Development in Southern New England

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Robert Downes, University of Connecticut
Vanessa Heigel, University of Connecticut
Carol Atkinson-Palombo, University of Connecticut
Oksan Bayulgen, University of Connecticut
Syma Ebbin, University of Connecticut
Lyle Scruggs, University of Connecticut
Nathaniel Trumbull, University of Connecticut

The rapid growth of offshore wind (OSW) energy along the East Coast of the USA has raised questions about the onshore impacts of these large-scale renewable energy projects. In a review of literature on Atlantic offshore wind Transmission, the Department of Energy (DOE) noted “space, capacity, permitting complexities, and other constraints in existing POIs [points of interconnection] will necessitate careful planning of offshore wind within lease areas, transmission cable landfalls, onshore and offshore cable routes, and onshore POIs.” This study investigates community acceptance levels towards the landfall sites, cable routes, and substations referred to as CABLANS (CABle LANdfall, Substations) that are necessary in the development of these projects in communities in Southern New England. This presentation focuses on three projects in Barnstable, MA—New England Wind 1, New England Wind 2, and Vineyard Wind, which are at different stages of development. We employ a mix of surveys and semi-structured interviews to assess the community’s attitudes towards these projects. GIS analysis, statistical analysis and content analysis were employed to examine the complex factors that shape residents’ attitudes and perceptions toward these projects. Results from this study demonstrate significant opposition, even though there is a considerable level of support among other residents. Factors influencing attitudes include concern for recreational sites, biodiversity (whales), climate change, employment and livelihoods, and distrust in institutions among others. It is essential for the successful rollout of OSW in the USA to understand what factors shape community attitudes towards CABLANS and how and why those vary across geographic settings.

Keywords: Community acceptance, cable landfall, points of interconnection, energy justice

Green Equity in Transition: Navigating Job Access and Quality in the Sustainable Economy

Haijing Liu, University of Texas at Austin

This study navigates the 'job versus environment' debate within the "just transition" framework, which aims to balance environmental priorities with employment security and equity. The paper evaluates the accessibility and quality of green jobs, using data from the Integrated Public Use Microdata Series (IPUMS) USA spanning from 2005 to 2020. The definition of green jobs follows the green job program initiated by O*NET. The analysis reveals pronounced disparities in job access and quality, with underrepresentation of women and African Americans and overrepresentation of non-Hispanic whites in higher-paid green roles. Additionally, the study examines wage disparities in the green job sector, identifying significant variations in wage premiums and penalties among different demographic groups and job categories. The findings highlight the ongoing challenges of occupational segregation and structural barriers that hinder equitable access to quality green jobs. The study further investigates the green workforce development in Austin to gain insights into potential pathways to enhance training and educational prospects for marginalized communities.

Keywords: Just transition, Green jobs

Agricultural Impacts of a Changing Climate in Zones Dfa, Cfa and Dfb in New York State

Katherine J Johns-Galvin, Central Connecticut State University

Rising temperatures have caused a shift in weather patterns, including an increase in the intensity and frequency of severe weather events. Extreme weather events including intense heat and moisture have wreaked havoc on agricultural crops. The research that this paper endeavored to undertake addressed a gap in the published research as it relates to the links between changes in temperature and precipitation and the length of growing season and crop yields in New York State. Temperature and precipitation data were and analyzed for thirty counties representing varied climate zones in the state of New York over the period 1951 – 2020 to determine if temperatures, precipitation and the length of the growing season have increased. The criteria for country selection included those that had 10.01-75% of land being used to grow crops in 2000, and counties that represented different climate classifications on the Köppen-Geiger climate classification system of world climates: Dfa, Cfa and Dfb. Crop data was collected from historical agricultural census records.

The major findings of this research indicate that temperatures have steadily risen over the thirty-year period in Dfa counties by ~0.8°C, Cfa counties by ~1.5°C and Dfb counties by ~1.4°C. Similarly, increases in extreme precipitation events were seen in the period 1986-2020 compared to 1951-1985 for Dfa, Cfa and Dfb. The length of growing seasons also saw increases over the research period. The research was unable to prove a correlation between temperature, amount, frequency and intensity of precipitation and crop production over the last seventy years.

Keywords: Climate Change, Agriculture, Climate Zones, Extreme Precipitation, Growing Season

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Estimation of High-resolution Emissions Using Pure Nighttime Lights in Monocentric and Polycentric Cities: Fusion of Remotely Sensed Human Activities and Social Media Data for Carbon Neutral Settlements

Siqi Lu, University of Connecticut;
Chuanrong Zhang, University of Connecticut
Heli Lu, Henan University

Urban areas play a fundamental role in local and large-scale greenhouse gas emissions reduction efforts since they contribute to >70% of the global budget for anthropogenic carbon dioxide. With the current rapid urbanization showing a unique trend to the past few centuries globally, it is essential to estimate high-resolution emissions from settlements to recognize the consequences of landscape conversion in the built environment. Here, we develop and test a brand-new methodological framework to estimate the high-resolution emissions using pure nighttime lights (PNL) in monocentric and polycentric cities, via a fusion of remotely sensed human activities and social media data. Field survey verified that PNL are consistent well with the real spatial distribution of the settlements compared with original mixed nighttime lights (OMNL). The new emission mapping showed that the pattern in the monocentric city is more spatially concentrated, in comparison with geographically dispersed pattern in the polycentric city. Further analysis revealed that hotspots areas of the new emissions maps in the monocentric and polycentric city are only a sixth and eighth of those from OMNL, and the number of extreme value points drops from 48 to 12 and from 67 to 15, respectively. Therefore, high-resolution emissions using PNL in monocentric and polycentric cities improve the monitoring and understanding of the urban emissions dynamics and allow for careful examination and revision of urban mitigation policies and strategies aimed at offsetting the impacts of rapidly expanding urban environments beyond the single city.

Keywords: urban environment, emissions from settlements, pure nighttime lights, monocentric city, polycentric city, mitigation strategies

Poster Session 1

Disparities in Park Access: Green Space Access in Relation to Race, Income, and Health

Delaney K Gardner, Mount Holyoke College

Historically, urban parks and green spaces have been segregated and of limited access for marginalized communities. Additionally, urban parks are intentionally designed to be lacking in quality, size, investment, and quantity in lower-income and Non-White neighborhoods. Emerging from previous research that connected park access to better public health, this study aims to analyze park access and quality disparities based on socioeconomic demographics and compare disparities with public health statistics. In this case, access refers to the availability of a public park within a 10-minute walk from a resident's home. While studying the relationship in cities between green space access and community well-being, the improvement in public health suggests a connection to an increase in sustainability initiatives. To conduct observations, the Trust for Public Land's ParkScore® and the UN Sustainable Development Goals Report are researched concurrently with demographic and socioeconomic statistics on the 50 most populated cities in America. Quantitative data analysis compiles statistics on walkability, frequent mental and physical distress, air pollution, life expectancy, and more that play a role in urban sustainability and public health. Disparities were found in both Non-White and low-income neighborhoods. While acreage disparities are more common in Non-White neighborhoods and access disparities in low-income ones, both contain a drastic difference in investment into parks for both underserved communities. This study aims to emphasize the role of environmental justice and equity not only for community strength and placemaking, but for community health and overall well-being.

Keywords: social equity, green space, sustainability, public health, parks, urban design, walkability, environmental justice

Towards a Just and Sustainable Blue Economy in the Arctic

Noelle E King, Southern Connecticut State University

Stakeholder engagement is crucial for fostering inclusive and sustainable development, particularly in regions like the Arctic, where environmental, social, and economic interests converge. Meaningful collaboration with stakeholders in the Arctic Blue Economy is vital in shaping a resilient, equitable, and sustainable future for the region. A series of stakeholder engagement workshops held across the United States, Iceland, Greenland, and Norway utilize a design thinking approach, encouraging a transdisciplinary dialogue among Arctic stakeholders. Pre-engagement surveys are conducted before the workshops to gather input from participants and interested parties. These surveys are intended to capture a wide range of perspectives. The survey responses shape the content and enhance collaboration throughout the workshop. This series of workshops is led by Project Blue at Southern Connecticut State University, the High North Center for Business and Governance at Nord University Business School, and the UArctic Thematic Network for a Blue Economy.

Keywords: blue economy, sustainability, justice, transitions, arctic

Planning for Climate Change: Creating a Living Seed Bank at Bishop's University

Jennifer Downing, Bishop's University (Lecturer) & Nipissing University (Doctoral student)

Our current industrial agricultural system has been a major cause of climate change and is also greatly impacted by it. Even though there have been big promises from agricultural pharmaceutical companies that genetically engineered seeds (GMOs) are a panacea for addressing climate change, there are serious concerns remain. A handful of agri-pharmaceutical companies own a significant portion of the global crop seed market. This monopoly over seeds has concerned farmers across the globe. Farmers have become dependent on high-cost hybrid and GMO seeds, plus the accompanying fertilizers and pesticides, resulting in depleted soils. Additionally, there are concerns with the diminishing varieties of seeds, the need for locally adapted seeds in the face of climate change, and the impacts engineered seeds can have on ecological systems by introducing new viruses and pest problems. This poster will describe efforts made at Bishop's University's new Sustainable Agriculture and Food Systems (SAFS) program to start a living seed bank to address these needs and grow seed crops that are grown using regenerative agricultural practices to foster locally adapted seeds that can continue to adapt to our changing climate. Furthermore, this seed bank will be used as a tool for educating SAFS students and our local community.

Keywords: Climate change, seed banks, sustainable agriculture, higher education

Juvenile Tree Survivorship and the Greening the Gateway Cities Program in Chelsea and Holyoke, Massachusetts

Mara Litten, Clark University

Massachusetts is one of the only states in the country to offer a state government funded tree planting initiative. This is known as the Greening the Gateway Cities Program (GGCP). It started in 2014 with the goal of increasing canopy cover by 5% in priority neighborhoods in Gateway Cities throughout Massachusetts. Their pilot cities included Chelsea, Fall River, and Holyoke. "Gateway Cities" are defined as potential gateway to regional socioeconomic success when given support to foster post-industrial recovery. They categorically require populations of around 30,00-250,000 people, with median household income and education attainment lower than the Massachusetts average. There are 26 Gateway Cities in all of Massachusetts and the DCR conducts plantings in 23. The Human-Environment Regional Observatory (HERO) program at Clark University partnered with the GGCP starting in 2017 to assist in monitoring tree health and survivorship as well as the contributions of residents and stakeholders across Gateway Cities. This summer students collected data on the trees in this program in Holyoke and Chelsea using methods from the US Forest Service's Urban tree monitoring: a field guide (Roman et al., 2020). This study aims to understand the survivorship of the trees planted in these two cities between 2014 and 2024. As well as the factors that influenced the survivorship of these trees

Thriving Health: Our Salton Sea

Alejandra Lopez, Brown University
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Juliana Taboada, Alianza Coachella Valley
Diego Centeno, University of California, Los Angeles
Maritza Geronimo, University of California, Los Angeles
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The Salton Sea, the largest body of water in the State of California, has significantly shrunk due to climate change and water diversions, exposing toxic lakebed dust and increasing harmful hydrogen sulfide (H2S) emissions. These environmental changes disproportionately affect low income communities in the Eastern Coachella Valley and raise issues of environmental justice and social equity.
Our project aims to address these challenges by using a community science approach in partnership with Alianza Coachella Valley. Together, we are attempting to understand the relationship between air and water quality at the Salton Sea through continuous water and air quality monitoring. This collaborative approach ensures that the data reflects both the scientific rigor and the lived experiences of residents, empowering the community to advocate for actionable change.

Our initial findings reveal over 200 hours of elevated H2S emissions, exceeding state standards. Building on these results, our future research will focus on developing satellite-based prediction models to improve the forecasting of H2S emissions and explore the long-term health and economic impacts of chronic exposure.

Community engagement remains central to our work and we foster it through youth panels, public workshops and open-access data platforms. By aligning science, public policy and community participation, our project aims to support a sustainable future that prioritizes the environment and well-being of local residents.

Keywords: Environmental Justice, Salton Sea, Climate Change, Racial Equity

Equitable Transportation Planning with Tribal Nations

Ailish Ferrick, Westfield State University

There is existing literature on the negative consequences of past federal policies on Native American Tribes (Tribes), equity initiatives that are implemented through transportation planning by the Department of Transportation (DOT), and the government-to-government relationship between Tribes and the United States. However, there is far less research on how equity is defined by the DOT when conducting equity initiatives with Tribes during the transportation planning process. This project aims to evaluate the nature of the relationship between the United States government and Tribes in terms of equity as the DOT works with Tribes as they implement equity initiatives during the transportation planning process through reviewing and analyzing literature and policy concerning the Tribal transportation planning process, transportation equity, and Tribal relations with the federal government. Creating a robust definition of equity is particularly important to consider in this context as the federal government is supporting many programs, such as the Justice40 Initiative, that aim to advance equity in underserved communities. This project will create recommendations to make the transportation planning process more equitable so that the United States government will be better suited to help advance equity for Tribes while supporting their sovereignty.

Keywords: Transportation Planning, Equity, Native American Tribes

The Untold Histories of Slavery: The Arab-Muslim Slave Trade and The Trans-Atlantic Slave Trade

Cassandra Lorom, Westfield State University

Over the past several years, the history of slavery has been taught in various history classes. However, there have been huge, important chunks of history left out. As a student in an honors Cultural Geography Class, I was able to read about slavery, the untold histories, and how it has affected our world culturally. While reading different materials and watching Episode 1 from the Netflix series, Roots, I was shocked to learn that African leaders and traders assisted European colonizers in selling slaves to America during the Trans-Atlantic Slave Trade. One important part of the story that doesn't often get told is the Arab-Muslim Slave Trade. There are both similarities and differences amongst these two slave trades, and both are a crucial part of history. In this research poster, I argue that getting a more complete story is necessary for appreciating what W.E.B. Dubois called it--the most magnificent drama of the 20th century. In order to do this, I explored some of the literature on the Trans-Atlantic Slave Trade, slavery as practiced in Africa, and the Arab-Muslim Slave Trade. In comparing and contrasting these different contexts of slavery, I learned that regardless of what the differences were, the Africans enslaved were stripped of their human rights and experienced injustice. By educating ourselves on the economic disparities and the misconduct of power, we can learn the true legacies of slavery.

Keywords: Trans-Atlantic Slave Trade, Arab-Muslim Slave Trade, Cultural Geography

Environmental Justice and Public Park Access in Westfield, Massachusetts

Abbey Majka, Westfield State University

The purpose of this study was to map out the amenities of parks and which populations have access to their amenities. Five parks were selected for their varying geographical locations; Stanley Park, Sadie Knox, Arm Brook Reservoir, Highland Sanctuary, and Half Mile Falls Park Westfield were chosen for analysis of accessibility. The amenity categories included health, nature, and access specifically including benches, lighting, and signage. These amenities were then compared with the 2020 locations of environmental justice populations in Westfield from MassGIS. This data was then run through a Service Area Network Analysis using ArcGIS Pro to determine the walkability and barriers of each park. These amenities were chosen for a comprehensive analysis of parks, their amenities, accessibility, and distances from environmental populations.

Keywords: Environmental Justice, Accessibility, GIS, Westfield

An Analysis of Kalibrate Technologies in Urban Planning

Carly Holdridge, Westfield State University

This project examined Kalibrate Technologies software and explored how the software could be used in the planning field. Kalibrate's software is primarily used in the retail and fuel industries, but has many components that could be beneficial to sustainability, land use, and socioeconomic issues. Two interviews with city planners were conducted, providing them information on Kalibrate software and its components. The planners were asked how they believed the technology could be applied to their work area. A third interview was conducted with the CEO of Kalibrate Technologies to provide incite on how the technology could be applied in the planning field. The findings of this research highlight the different attributes of Kalibrate software and the potential applications planners may find in their areas such as data analytics, urban transportation pattern analysis, forecasting, and land optimization.

Keywords: Urban Planning, Economic Development, Data Analytics

Perceptions of Tree Planting and Tree Stewardship in Holyoke and Chelsea, Massachusetts

Espi Garschina-Bobrow, Jack Keane, Kalon Shepard
Clark University

This research assesses the relationships and perceptions manifested in a state government funded tree planting initiative in Massachusetts. Greening the Gateway Cities Program (GGCP) was established in 2014 with the goal of increasing canopy cover by 5% in priority neighborhoods in Gateway Cities throughout Massachusetts. “Gateway Cities” are defined as potential gateway to regional socioeconomic success when given support to foster post-industrial recovery. They categorically require populations of around 30,00-250,000 people, with median household income and education attainment lower than the Massachusetts average. There are 26 Gateway Cities in all of Massachusetts and the DCR conducts plantings in 23. Their pilot cities included Chelsea, Fall River, and Holyoke. The Human-Environment Regional Observatory (HERO) program at Clark University partnered with the GGCP starting in 2017 to assist in monitoring tree health and survivorship as well as the contributions of residents and stakeholders across Gateway Cities. This summer students collected data on the trees in this program in Holyoke and Chelsea using methods from the US Forest Service’s *Urban tree monitoring: a field guide* (Roman et al., 2020). This study aims to understand the survivorship of the trees planted in these two cities between 2014 and 2024. As well as the factors that influenced the survivorship of these trees, tree perceptions, and communications between the DCR and residents

Paper Session 6

Who Started The Fire? – The Discovery of the Podokesaurus holyokensis at MHC

Ava M Healy, UMass Amherst

Drawing from the history and anthropology of science, this paper explores how the form of natural history collections reflects an institutional politics of memory and forgetting. In 2021, the dinosaur, *Podokesaurus holyokensis* was selected, by popular vote, as the Massachusetts state dinosaur. *Podokesaurus holyokensis* was originally identified in 1910 by Mount Holyoke Geography and Geology Professor Mignon Talbot. However, the only specimen perished in the Williston Hall fire of 1917. In place of the original, the memory is kept alive by casts stored at Yale's Peabody Museum and the American Natural History Museum in New York– not in the collections where Mignon taught. This paper draws on the geological and political history of Talbot's lost specimen to ask how institutions such as Mount Holyoke should account for, care for, and represent their scientific and natural historical specimens. This paper has particular attention to the countless specimens in the basement of Williston Hall's successor: Clapp Laboratory.

Keywords: Paleontology, archeology, natural history collections, specimen collections, Clapp Laboratories, Geography, Anthropology, Mount Holyoke College, Williston Hall, feminism in STEM, women in STEM, gender-diverse women's colleges.

Assessing network-based traffic crash risk using prospective space-time scan statistic method

Congcong Miao, University of Connecticut
Xiang Chen, University of Connecticut
Chuanrong Zhang, University of Connecticut

As car ownership and urbanization continue to rise worldwide, traffic crashes have become growing concerns globally. Measuring crash risk provides insight into understanding crash patterns, which can eventually support proactive transport planning and improve road safety. However, traditional spatial analysis methods for crash risk assessment, such as the hotspot detection method, are mainly focused on identifying areas with higher crash frequency. These methods are subject to critical issues in risk analysis due to ignoring crash impacts and background traffic volume information. Aside from the two issues, current crash risk assessment methods, especially those aiming for cluster detection, are subject to the modified temporal unit problem, referring to the temporal effects (i.e., aggregation, segmentation, and boundary) in cluster detection. To alleviate these issues, this paper applies an emerging hot spot detection method, called the prospective space-time scan statistic (STSS) method, for assessing the crash risk at a refined network scale and over multiple years in a case study of Hartford, Connecticut. By identifying the spatial and temporal clusters of the crash risk, the study can provide evidence for tailoring road safety management strategies in neighborhoods characterized by high crash risk.

Keywords: Traffic crash, Risk modeling, Space-time, STSS, Prospective

Beyond Spatial Proximity: Conceptualizing the Perceived Food Activity Space

Weixuan Lyu, University of Connecticut

The community food environment has the potential to influence individuals' food behaviors and, consequently, their dietary health outcomes. However, food behaviors are not only driven by objectively defined food environment but are largely dictated by subjectively perceived food environment, and this perceptual dimension cannot be easily captured by traditional spatial models. In this paper, we develop a new geographic concept, the perceived food activity space, to illustrate the spatial scope of the food environmental perception and further explore how such perception can delimit individuals' food activities. To substantiate this concept, we employ a mixed-methods approach combining a structured survey, GIS modeling techniques, and follow-up interviews in the Greater Hartford region. Our findings reveal a strong correlation between the perceived food activity space and the actual food activity space, which holds across different sociodemographic groups. Our qualitative inquiries find that when this perception is linked to physical space, individuals do not consistently choose the nearest store when fulfilling food procurement needs, and this finding argues that the physical space is overemphasized in geographic modeling of food access. We further identify three tiers of barriers in food perception, including cognitive barriers, financial barriers, and structural barriers, which play a more significant role in shaping the food behaviors, especially among food-insecure, vulnerable populations. By operationalizing the perceptual dimension of food access, the paper holds the promise of elucidating the uncertain dynamics through which the community food environment influences people's everyday food procurement activities and, ultimately, the geography of health.

Keywords: Community food environment, perception, perceived food activity space, mixed methods, health geography

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Game ecology and sustainable player strategies: an neo-environmental determinism perspective

Zihan Feng, Rensselaer Polytechnic Institute

Recent years have witnessed increasing attention on the study of game ecology, that is, the ecological representations in video games. These studies often focus solely on player agency, suggesting that games allowing players to manipulate virtual environments may negatively affect their attitudes toward real-world ecology. However, the influence between game ecology and player strategy is not one-way but reciprocal, which implores us to examine video games and their social impact through a nuanced environmental lens.
To investigate how game ecology influences player strategies, this study includes a content analysis of the game mechanics related to ecological representation in two strategy games, Sid Meier's Civilization VI and Humankind. Specifically, the author collected data from immersive gameplay and online archives, and then thematically categorized the game mechanics to analyze their implications.

As a result, four major forms of game mechanics that use game ecology to influence player choices are identified: spatial constraints, movement modifiers, uncommon events, and dynamic indexes. When these game mechanics are combined together, they create an ecological representation that is unbalanced, conquerable, unpredictable, and everchanging. By identifying these forms of game mechanics and how they shape player strategies, the author reveals a neo-environmental determinism pattern in game design. Furthermore, the author also discovers the evolvement of this game design pattern and argues that it resonates with a broader social background in the contemporary era.

Keywords: ecology, video games, environmental determinism, digital media

Paper Session 7

Art & Science: Documenting Glacier Recession and Disappearance in Peru, Uganda, and the Wind River Range

Carsten Braun, Westfield State University;
Ian van Coller, Montana State University

Scientists are trained in quantifying glaciers as physical objects, but often find it difficult to communicate the sense of beauty, urgency, and loss associated with glacier recession and disappearance to the public as our world warms and shifts towards a New (and increasingly glacier-free) Normal. Artists, on the other hand, do not approach the natural world constrained by the lens of scientific objectivity, but rather embrace emotions and subjectivity that are inherently missing from our traditional scientific papers or presentations.

Here we present examples of an ongoing art-science collaboration that involves adding handwritten scientific text annotations and sketches onto large-format photographic prints from the Quelccaya Ice Cap (Peru), the Rwenzori Mountains (Uganda), and the Wind River Range in Wyoming. The resultant original visual art(ifacts) represent a unique way of sharing these glaciers with the public and complement the ongoing scientific 'autopsies' that seek to preserve these receding and disappearing glaciers as scientific bits and bytes.

Keywords: glacier, climate change, art

Spatial regression of Northern lakes to determine landscape controls on carbon exchange

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Thomas Howard, Brown University
Laurence C Smith, Brown University

Northern ecosystems are a net carbon sink, but projected warming could turn them into a source. Lake ecosystems and their emissions of greenhouse gases are particularly climate-sensitive. Yet, modeling their carbon balance is challenged by sparse measurements of emissions and environmental predictors. In some cases, the right remote sensing measurements can augment in-situ data, but it is unclear which measurements add the most information. Awareness of the spatial pattern of emissions can help determine when spatial predictor variables (e.g. climate, land cover, lake morphology) are sufficient. Here, we fit spatial regression models for dissolved carbon dioxide and fluxes of methane to a synthesis dataset of Northern lake carbon quality and quantity. We test whether the models suffer from insufficient environmental predictors by quantifying autocorrelation in its residuals. These results will provide guidance on the effectiveness of using remote sensing and climate models for predicting lake carbon fluxes across northern latitudes.

Keywords: statistics, variography, remote sensing, climate, water

Remote sensing of reservoir levels can enhance global water security assessment

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A growing body of research describes water security using quantitative indices combining physical and government-reported human factors. Few of these indices exist at a global scale given a variety of data availability challenges. Here, we show that the degree of correlation between remotely sensed ICESat-2 seasonal reservoir level changes and regional Precipitation - Evaporation (P - ET) offers a global measure of water security that is independent of a traditional report-based water security index. Anticorrelation between changes in reservoir water level and P - ET (negative Reservoir Water Balance Correlation or RWBC; Ryan et al., 2020) reflects water resource management that provides operational independence from climatic water input, while positive RWBC signifies operational dependence on climatic water inputs. We find that countries with negative RWBC have high water security as measured by the Global Water Security Index (GWSI; Gain et al., 2016). Countries with positive RWBC can have high or low water security as measured by the GWSI, with differences largely explainable by two easily obtainable metrics (remotely sensed P - ET and national GDP per capita). Our study affirms the utility of satellite remote sensing not only to tracking reservoir storage and water quality, but as a future means of basic insight into the water security of nations and regions with limited reported data available.

Keywords: water resource management, remote sensing, spatial analysis

Characterization of SWOT Ka-band backscatter and classification of North Saskatchewan surface waters

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The recently launched SWOT Ka-band radar interferometry satellite mission provides hydrological measurements of rivers and lakes globally. However, how SWOT backscatter and water classification vary for flowing and stationary water, snow, and ice requires further investigation. Here, we provide an early characterization of SWOT Ka-band backscatter behavior for water extent mapping and classification. We examine SWOT L2 HR PIXC backscatter and classification time series from the 2023 daily fast sampling and science orbit over the North Saskatchewan River and prairie potholes at the St. Denis National Wildlife area to characterize 1) SWOT backscatter and classifications, and 2) spatiotemporal variability of SWOT surface water observations. The North Saskatchewan River is a Tier-1 SWOT calibration and validation site being studied by the SWOT Cal/Val team and the Canadian National Hydrological Service. We find lower SWOT backscatter (~5 - 15 dB) during snow cover, which increases (~24– 28 dB) and becomes more temporally volatile after the snow melts. SWOT resolved small prairie pothole lakes which are considerably smaller in area than the SWOT mission requirement (6.25 ha). However, we found SWOT PIXC products require careful filtering and quality flag checks. After applying this process SWOT areas showed good agreement with the Planet Scope areas, with R values of 0.88 for the North Saskatchewan River and 0.91 for the St. Denis prairie potholes/small lakes. We conclude that SWOT backscatter is temporally and spatially noisy but effectively detects snow and water surfaces after careful attention to data filtering and quality flags.

Keywords: Surface Water, SWOT Satellite mission, Water Classification

Paper Session 8

Launching a new sustainable agriculture program at the undergraduate level: Innovations and challenges

Darren Bardati, Bishop's University

In 2018, in the wake of declining enrolments and financial exigencies, the Bishop's University Senate approved a new undergraduate program in "Sustainable Agriculture and Food Systems (SAFS)" to be housed in the newly-named Department of Environment, Agriculture and Geography. SAFS motto is "Cultivate Sustainability for Tomorrow's Food Systems", with the vision of educating students to lead society in finding creative solutions to agricultural and food systems unsustainability issues, from farm to table. Differing from traditional agricultural schools, BU SAFS integrates liberal education competency goals with its three transdisciplinary pillars: Agricultural Science, Agroecology & Food Systems, and Agricultural Commerce and Food Service. Following a lengthy review by the Quebec government's approval board, a suite of 45 AGR-coded course created, five SAFS faculty were hired, and the SAFS program welcomed its first cohort of majors in Fall 2022. Meanwhile, over $3 million was raised from philanthropic sources to create an 140-acre Educational Farm on Bishop's property, carved out of abandoned field and forests, and making use of an expropriation order to build the 410 Highway extension to create a 1.3 km pathway from the main campus to the farm. This paper presents the rationale for creating SAFS, and its evolution from "porch talk" idea to the current vibrant program it has now become. Innovations and challenges associated with SAFS development and plans are described. Lessons learned from this exercise will no doubt benefit anyone (college and university faculty, students and administrators) looking to expand their undergraduate offerings in these environmentally challenging financial times.

Keywords: Sustainability, Agriculture, Food Systems, Undergraduate Program Development

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Late for Class: How University Parking Policies Have Failed and What To Do About It

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Post-World War II, demographic and economic growth in the United States led to increased university enrollments nationwide. Campus population growth immediately caused parking shortages at universities that were not designed to handle increased enrollments or accommodate an increasingly automobile-dependent public. For decades, universities have tried to build their way out of campus parking problems but to no avail. In recent years, whether in still grappling with parking problems, in the pursuit of more sustainable approaches or simply trying to be more cost-effective, many universities have enacted Transportation Demand Management (TDM) strategies. This research surveys the evolving literature on campus parking problems and the opportunities for TDM activities to improve campus accessibility. Much of the research takes a university case study approach; modeling transport demand or studying the outcomes of parking and TDM policies. TDM approaches are diverse and there is no one-size-fits-all solution to a campus parking problem. Instead, universities need to survey their campus populations to understand what motivates current travel behaviors and identify what barriers or incentives might impact mode choice. Ultimately, success in managing parking demand and implementing TDM measures occurs on campuses where parking and non-car modes are coordinated with each other. Often siloed into different departments, it is essential for all transport modes to be planned for and managed comprehensively. Dedicated university staff, such as bicycle/pedestrian coordinators, can go a long way to successful planning, funding and implementation.

Keywords: Transportation Planning, Parking, Sustainable Transport, Travel Demand Management

Using gen AI for program assessment: Aligning a geospatial internship program with career competencies

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The Maine Geospatial Institute (MGI) is a collaboration between geospatial faculty, staff and students at UMaine System campuses seeking to expand and enhance pathways to geospatial careers. With funding from the Maine Jobs and Recovery Plan (MJRP) MGI launched a summer internship program in 2024 employing 15 geospatial interns from multiple campuses in state, nonprofit, business and utilities sectors across Maine. We share our program assessment that uses gen AI tools to analyze interns' formative and summative reflections in relation to established technical and professional career competencies, in order to highlight key components of effective mentoring, project management, geospatial learning and career development.

Keywords: Geospatial learning, gen AI, assessment, internships

Using large-scale human mobility data to understand food behaviors

Peter Chen, University of Connecticut

The food environment plays a crucial role in shaping how people live and maintain an active, healthy lifestyle. Over the past two decades, there has been a spatial evolution in the study of the food environment, with various spatial models employed to approximate the health effects induced by food retailers. One overlooked aspect in these models is food-related human mobility, including how people navigate and interact with the food environment to make food choices. This presentation will introduce the use of a broad-scale GPS tracking dataset that covers aggregated visit records to food retailers across the US over two years. Using this data, the project develops a novel activity-based food environment index (AFEI), which represents the healthiness of food behaviors at the census tract level. The study identifies that the AFEI has significant associations with the prevalence of multiple cardiometabolic diseases (e.g., obesity, Type-II diabetes, and cardiovascular diseases). This project is among the first to use large-scale human mobility data to study food behaviors nationwide and can offer insights into devising alternative intervention strategies, such as enhancing healthy food distribution and improving transportation infrastructure, in communities suffering from food injustice.

Keywords: human mobility, GIS, health, food activities, big data

In Memoriam

Abbey Majka

To live in hearts we leave behind is not to die

~ *Thomas Campbell*