

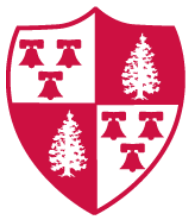
# **Middle States Division**

## **American Association of Geographers**

### **Annual Meeting**

**October 26 – 27, 2018**

**Montclair, New Jersey**



**MONTCLAIR STATE**

---

**UNIVERSITY**

## **2018 Middle State Division Annual Meeting**

### **Meeting Organization and Arrangements**

#### **Local Arrangements**

Pankaj Lal, Montclair State University  
Earth and Environmental Studies Faculty and Students

#### **Geography Bowl**

Michael Davis, Kutztown University

#### **Student Paper/Poster Competition**

Jase Bernhardt, Hofstra University

#### **Finances**

Jo Margaret Mano, SUNY New Paltz

#### **Elections**

Joan Welch, West Chester University and James Kernan, SUNY Geneseo

#### **Middle States Website**

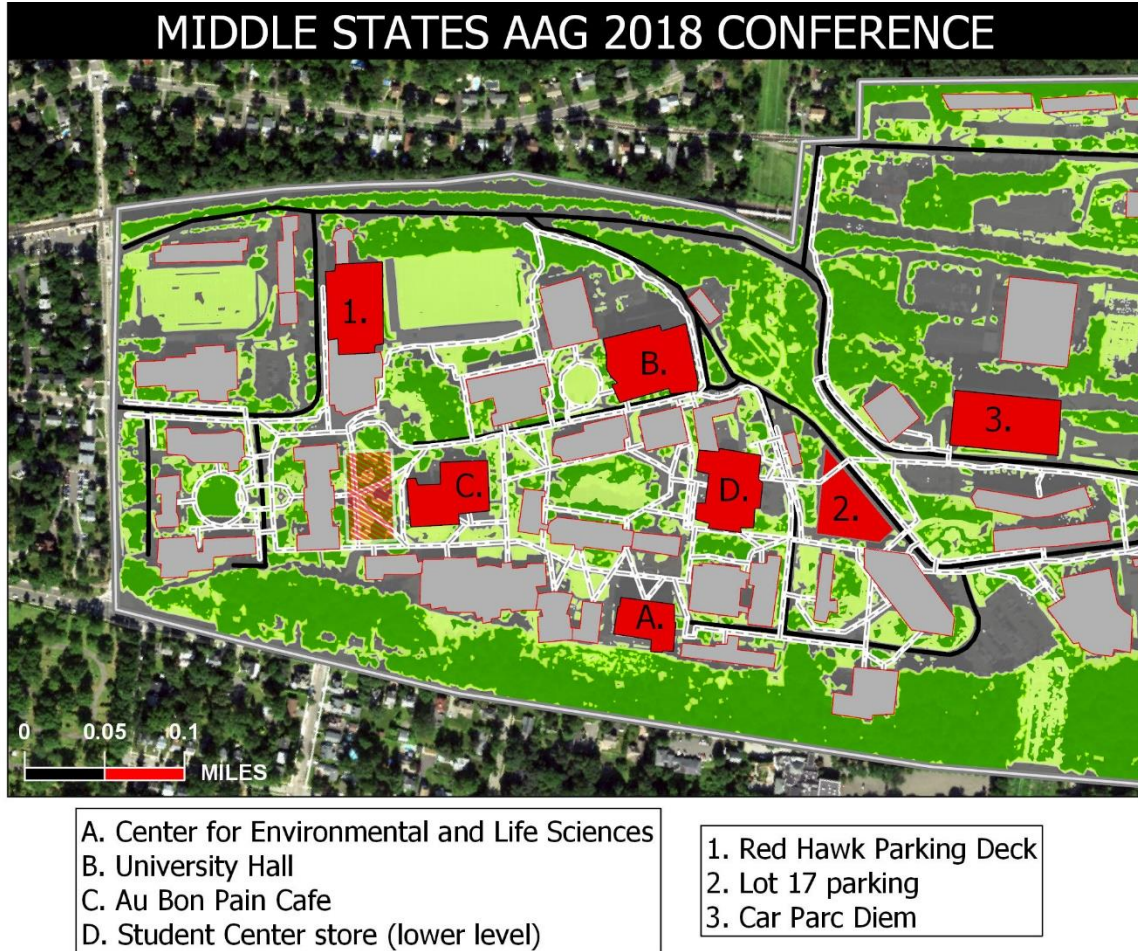
Paul Marr, Shippensburg University  
<http://msaag.org.aag>

#### **Middle States Division Officers**

President:	Pankaj Lal, Montclair State University
Vice President:	Michael Davis, Kutztown University
Secretary:	Jase Bernhardt, Hofstra University
Executive Director:	Jo Margaret Mano, SUNY New Paltz
Regional Council	Lindsay Naylor, University of Delaware
Past President:	James Kernan, SUNY Geneseo
Middle States Geographer Editors:	Adam Kalkstein, USMA West Point Paul Marr, Shippensburg University
SAGE Representative:	Renata Blumberg, Montclair State University

**Sponsored by the Montclair State University Department of Earth and Environmental Studies, Clean Energy and Sustainability Analytics Center and College of Science and Mathematics**

## Campus Map and Parking



### Parking Information:

- The Meeting will take place in Center for Environmental and Life Sciences Building (A).
- Parking is available at the Red Hawk Deck (1). Note it is a five-minute walk from here to Center for Environmental and Life Sciences Building. If you have pre-purchased your parking voucher when you registered for the conference, this is where you must park. You will be given your parking voucher along with validation instruction when checking-in at the conference.
- The hotel shuttle will be dropping off and picking up attendees at Lot 17 parking (2).
- Car Parc Diem (3) is for Montclair State University tag-holding students only.

## **The Meeting at a Glance**

### **Friday, October 26<sup>th</sup>**

10:00 am – 5:00 pm	Registration, CELS Atrium
1:00 pm – 1:15 pm	Inaugural Remarks & Welcome (Dean)
1:20 pm – 3:00 pm	Paper Session 1 Clean and Sustainable Energy Panel, CELS 120
3:00 pm – 3:20 pm	Coffee Break, Second floor
3:20 pm – 5:00 pm	NSF Interactive Outreach Session, CELS 120 Lightning Talks, CELS 110
5:00 pm – 6:00 pm	Poster Session & Coffee Break, Second floor
6:00 pm – 7:30 pm	Dinner, CELS Atrium Welcome: Dr. Pankaj Lal
7:30 pm – 10:00 pm	Geography Bowl, Room 120/110/209

### **Saturday, October 27<sup>th</sup>**

7:30 am	Light breakfast, CELS Atrium
8:00 am – 10:00 am	Registration, CELS Atrium
8:00 am – 9:40 am	Paper Session 3 Integrating Publics Panel, CELS 120 NSF Interactive Outreach Session, CELS 209 Lightning Talks, CELS 110
9:40 am – 10:40 am	Poster Session & Coffee Break, Second floor
10:40 am – 12:20 pm	Paper Session 4 Future of Food Panel, CELS 120
12:20 pm	Luncheon, CELS Atrium Business Meeting: Pankaj Lal Finance: Jo Margaret Mano Invitation to 2019 Meeting: Michael Davis Paper & Poster Awards: Jase Bernhardt Address by Secretary, AAG: Cathleen McAnneny Keynote Address: John A. Wertman
2:00 pm	Field Trip- Paterson Great Falls, Led by Josh Galster

**Friday October 26<sup>th</sup>**

**PAPER SESSION 1**

**1:20 pm – 3:00 pm**

**Session 1A: Storm Resilience and Climate Change**

**Room: CELS 207**

**Chair: Jorge Lorenzo-Trueba**

**1:20-1:40 Jesse Kolodin, Jorge Lorenzo-Trueba, Chris Tenebruso, Portland Hoagland, Di Jin, and Andrew Ashton, Montclair State University**

*Exploring the Effects of Artificial Dune Construction on Beachfront Property Values Along New Jersey's Coastline: Insights from A "Geo-Economic" Model*

**1:40-2:00 Odaine Pusey, Church Teachers' College**

*Resilience and Adaptation of Households to Climate Change in Coastal Jamaica*

**2:00-2:20 Sasha Garcia and Lawrence McGlinn, SUNY New Paltz**

*Remote Sensing of Long Island Coast: Coastal Erosion from Super Storm Sandy*

**2:20-2:40 Taylor Wiczerak, Montclair State University**

*Public Perception and Willingness to Pay for Green Infrastructure Improvements in Northern New Jersey*

**Session 1B: Political Geography**

**Room: CELS 225**

**Chair: Jessica Miller**

**1:20-1:40 Darrel Norris, SUNY Geneseo**

*Trump Battleground Races: Retrospect and Prospect*

**1:40-2:00 Lisa Jordan and Andrew Katapodis, Drew University**

*The Conflict-Population-Climate Nexus: Exploiting Famine for Political Gain*

**2:00-2:20 Michael Minn and Bethany Brooke Cutts, Farmingdale State College**

*Absolute, Abstract, and Differential Space: A Lefebvrian Framework for Evaluating Praxis*

**2:20-2:40 Rebecca Theobald, University of Colorado at Colorado Springs**

*Apportionment and Redistricting: Asking geographic questions to address political issues*

**2:40-3:00 Emily Holloway, CUNY Graduate Center**

*"Business as usual" or "just business"? A comparative case study of industrial land use*



## **Session 1C: GIS and Spatial Modeling**

**Room: CELS 110**

**Chair: Yang Deng**

**1:20-1:40 Sean McLaughlin**, West Chester University

*Estimating Historic Disasters with limited data, using GIS-modeling: a case study of the Mt. Morris Dam & Hurricane Agnes of 1972*

**1:40-2:00 Daniel Moore, Dana Vernon, Sara Rauscher**, University of Delaware

*Characterizing sea breeze circulations and associated precipitation utilizing multiple observational data sources*

**2:00-2:20 Asa Rennermalm, Regine Hock, Giovanni Corti, Federico Covi, Clement Miede,**

**Marco Tedesco, Jonathan Kingslake, Sasha Leidman, Xavier Fettweis**, Rutgers University  
*Meltwater Refreezing in Southwest Greenland Ice Sheet Firn 1989 and 2017*

**2:20-2:40 Henry Bulley, Brenda Vollman**, BMCC City University Of New York.

*Factors influencing NYC residents' choice of drinking water from tap/fountains compared to bottled water sources.*

## **CLEAN AND SUSTAINABLE ENERGY PANEL**

**1:20 pm – 3:00 pm**

**Room: CELS 120**

**Moderator: Michael Kruge**

Clean energy initiatives have been a divisive topic nation-wide. While technologies continue to become more efficient and effective in generating clean energy from renewable sources, historical use and investment in traditional energy methods challenge the sector's growth. For example, New Jersey legislation targets to increase renewable energy to 35% by 2025 and 50% to 2030 of the state's energy requirements, and several other regions throughout the world have made similar goals. This clean energy panel will discuss some of the challenges, opportunities and innovations currently being practiced and researched in the field. Representatives from Board of Public Utilities, New Jersey Department of Environmental Protection, and researchers with expertise in environmental economics, policy, sustainability, anthropology and human dimension will engage in discussion to answer the many challenges and developments within the clean energy field.

### **Panelists:**

**Jim Ferris**, New Jersey Board of Public Utilities

**Sheryl Tembe**, New Jersey Department of Environmental Protection

**Ariane Benrey**, New Jersey Board of Public Utilities

**Dileep Birur**, Clean Energy and Sustainability Analytics Center

**Neeraj Vedwan**, Montclair State University

**Anthony Bevacqua**, New Jersey Department of Environmental Protection

---

**COFFEE BREAK – SECOND FLOOR**

**3:00 pm – 3:20 pm**

---

**PAPER SESSION 2**

**3:20 pm – 5:00 pm**

**Session 2A: Tourism and Cultural Geography**

**Room: CELS 225**

**Chair: Neeraj Vedwan**

**3:20-3:40 Michael Ziolkowski, SUNY College at Brockport**

*Sport tourism as an economic development opportunity: analyzing the case of the World Juniors Hockey Championships*

**3:40-4:00 Shenika McFarlane-Morris, Church Teachers' College**

*The Flip Side of Enjoyment: Mass Tourism And 'Purification' Of Space in Jamaica*

**4:00-4:20 Meghann Smith, Montclair State University**

*Identifying the Characteristics of Tourists visiting Hard Apple Cideries in the Hudson Valley Region*

**4:20-4:40 Chelsea Leiper, University of Delaware**

*Going Paleo in the Anthropocene: Defining a Movement*

**4:40-5:00 Gita Bhushal Adhikary, Pankaj Lal, Bernabas Wolde and Pralhad Burli, Montclair State University**

*Incidence of human-wildlife conflict and likelihood of reporting losses: The case of Banke National Park, Nepal*

**Session 2B: Geography of Transportation**

**Room: CELS 207**

**Chair: Aditi Ranjan**

**3:20-3:40 Elenice Oliveira and Mangai Natarajan, Montclair State University**

*Robbery on buses: the nexus between geographical patterns, environmental factors, and hot products.*

**3:40-4:00 Moira Conway and Alison Conway, Kutztown University**

*Don't Forget about the Trucks, Examining Transportation Conflicts in Gentrifying Brooklyn*

**4:00-4:20 Kristen Armstrong, SUNY Geneseo**

*Predicting African Flight Volume*

**4:20-4:40 Matthew Zuccaro, Montclair State University**

*The High Line: Decay and Rebirth of a Public Space in Manhattan*

**INTERACTIVE OUTREACH SESSION: TIPS AND STRATEGIES IN WRITING  
EFFECTIVE PROPOSALS FOR THE NSF  
3:20 pm – 5:00 pm**

**Room: CELS 120**

**Presenter: Antoinette Winklerprins, National Science Foundation**

This outreach session is intended for faculty members, professional geographers, and graduate students who engage in geographic or spatial scientific research and who wish to learn how to prepare effective proposals for NSF. A Program Director from the Geography and Spatial Sciences (GSS) Program at the National Science Foundation (NSF) will discuss research grant opportunities at NSF, and will highlight ways to improve the quality and competitiveness of a proposal. The session will include details about the review process, including the intellectual merit and broader impacts review criteria. Time for Questions & Answers will be provided.

**5-MINUTE LIGHTNING TALKS  
3:20 pm – 5:00 pm**

**Room: CELS 110**

**Chair: Greg Pope**

**Michael Flood, Greg Pope, Jennifer Callanan, Montclair State University.**

*Chemical analysis of species specific forest fire ash: a factor on soil formation and ecological succession for a northern New Jersey mixed hardwood forest.,*

**Johnathan Miller, Karl F. Nordstrom, Rutgers University**

*Shore protection strategies for estuarine beaches: a case study of Cliffwood Beach, NJ*

**Ritapa Neogi, Temple University**

*The Effect of Dams on Columbia River Tribes in the Pacific Northwest*

**Dylan Ponticel, Temple University**

*Philadelphia's Gayborhood: Branding and Exclusion Among Minority Populations*

**Nagiarry Porcena-Menus, Temple University**

*Human geographical analysis of vacant buildings: Sense of abandonment*

**Gennifer Rollins, Temple University**

*What's a Geographer? A Look at Geographic Thought and its Influence*



**POSTER SESSION**

**5:00 pm – 6:00 pm**

**Room: CELS Second floor**

**William Anderson and Jorge Lorenzo-Trueba**, Montclair State University

*A geomorphic enthalpy method in 3D: Application to the evolution of delta under sea-level cycles.*

**Daniel Boyd**, SUNY Oneonta

*Estimating Chlorophyll a Concentration from Landsat 8 Imagery*

**Emily Cantor**, Kutztown University

*Precipitation Variation and Frequency of Naturally Induced Fires in California and Oregon from 1980 to 2015*

**Daniel Ciarletta, Christopher Tenebruso, Jorge Lorenzo-Trueba** Montclair State University

*Mapping Barrier Island Foredune Ridge Development and Shoreline Change in New Jersey*

**Ligia Clara**, Hofstra University

*Suicide, Culture, and Society: The Relationship in The Americas and Europe*

**Isamar Cortes, Jorge Lorenzo-Trueba, Robert Twilley, Andre Rovai, Mark Chopping**,  
Montclair State University

*Exploring the role of evaporation and precipitation on mangrove island morphology: Insights from islands in Belize and Florida*

**Jillian Eller**, Temple University

*Analyzing Park Accessibility and Publicness in Philadelphia, PA*

**Matthew Friedman, Haley McPartland, Luke Botta, and Russell Burke**

*Malaclemys terrapin Nest Predation: peak to post nesting season in varied locations*

**Maimouna Kante**, Drew University

*Coastal Change of the Largest City in Africa: Lagos, Nigeria*

**Arye Janoff, Jorge Lorenzo-Trueba, Portland Hoagland, Di Jin, Andrew Ashton**, Montclair  
State University

*A Coastal Geo-Economic Model for Coordinated Community Response to Local Erosion and Sea Level Rise*

**Jacob Knowles**, SUNY Geneseo

*A Cuisine Comes of Age: High-End Eating in Southern Cities*

**Nicole Hallahan**, Shippensburg University

*Georeferencing Historical Maps and Aerial Photos to tell the Story of Stockport, Pennsylvania*

**Lauren Kulik, Kayla Abella, and Renata Blumberg**, Montclair State University  
*Farmers Market Nutrition Program Participation Barriers: An Analysis of Survey-based Findings*

**Ali Merali**, General Douglas MacArthur High School  
*Effect of Building Age on the Level of Particulate Matter Between Two Sections of a High School*

**Gia Nguyen, Pankaj Lal, Pralhad Burli, and Taylor Wieczerek**, Montclair State University  
*Modeling uncertainty in the Levelized cost of Energy (LCOE) estimation for community solar in New Jersey*

**Archana Prasad**, Montclair State University  
*Verifying Downscaled, Bias-Corrected CMIP5 Data from Multiple Climate Models in the Passaic River Basin*

**Torian Pusey and Xavier Small**, Church Teachers' College  
*Implications of Climate Change for The Sustainability of Livelihoods in Alligator Pond, Jamaica*

**Alessandra Rossi, Kevin Zerbe, T. David Hsu, Meiyin Wu**, Montclair State University  
*Litter Quantification and Characterization on the Lower Passaic River and Tributaries*

**Jenna Smith**, Shippensburg University  
*The Rise and Fall of Stockport: A Historical Analysis of an Abandoned Settlement*

**Tao Tang, Lily Jang, Mary Perrelli**, SUNY Buffalo State  
*Low-altitude unmanned helicopter (UAV) remote sensing for spreading control of water chestnut invasive species in the Erie Canal System, New York*

**Robert Taylor and Lisa Johnson**, Montclair State University  
*Enhancing Value through Urban Sustainability Design*

**Christopher Tenebruso, Jorge Lorenzo-Trueba, Daniel J. Ciarletta**, Montclair State University  
*Modeling the Evolution of Coupled Barrier-Marsh-Lagoon Systems: Insights from the New Jersey Coastline*

**Komal Wasim**  
*Perceived Discrimination Against Muslims After The 2016-Election*

**Saturday October 27<sup>th</sup>**

**INTERACTIVE SESSION: CHAT WITH NSF PROGRAM DIRECTOR**

**8:00 am – 9:40 am**

**Room: CELS 209**

**Presenter: Antoinette Winklerprins, National Science Foundation**

This session is designed to provide individuals or groups with informal opportunities to engage in discussions of with a current or recent NSF program officer. The discussions provide participants with the opportunity to inquire about project ideas, proposal-writing strategies, funding opportunities, review processes, program fit, and other questions related to NSF programs and competitions. Participants are urged to bring a set of prepared questions. Program Director can discuss standing NSF programs like the Geography and Spatial Sciences (GSS) Program, the Dynamics of Coupled Natural and Human Systems (CNH) Program, Coupled Natural and Human Systems (CNH) as well as Faculty Early-Career Development (CAREER) proposals or Doctoral Dissertation Improvement (DDRI) proposals.

**PAPER SESSION 3**

**8:00 am – 9:40 am**

**Session 3A: Applying Spatial Techniques**

**Room: CELS 225**

**Chair: Mark Chopping**

**8:00-8:20 Nathan Thayer**, University of Delaware

*Reclaiming the Mountain: From Consumptive Production to The Productive Consumption Of West Virginia*

**8:20-8:40 Claire Jantz, Jacalyn Rosenberger and Jonathon Chester**, Shippensburg University

*Spatiotemporal analysis of long-term and short-term land cover trends along the Kittatinny Ridge corridor in Pennsylvania's Appalachian landscape*

**8:40-9:00 Paul Marr and John Wah**, Shippensburg University

*Prehistoric Sites on Pennsylvania's South Mountain*

**9:00-9:20 Jase Bernhardt**, Hofstra University

*Mining Weather and Climate Data from the Diary of a Forty-Niner*

**9:20-9:40 Alexander Hohl, Xun Shi, Wenwu Tang, Eric Delmelle**, Utica College

*Detecting Space-Time Patterns Under Non-Stationary Background Population*

**Session 3B: Analyzing Military Action**

**Room: CELS 123**

**Chair: Harbans Singh**

**8:00-8:20 Conner Hargrove and Lucas Smith, SUNY Geneseo**

*Warship Design, 1859-1945: Power, Propulsion, and Protection*

**8:20-8:40 John Dzwonczyk and Francis Whalen, US Military Academy**

*Leading the Army of the American Nations*

**8:40-9:00 Elizabeth Dzwonczyk, US Military Academy**

*Military and Cultural Geography in the Arctic: The 1944 Petsamo-Kirkenes Operation*

**9:00-9:20 Drew Arnum, SUNY Geneseo**

*The Fourth Reich? Global Dimensions of Neo-Nazism*

**Session 3C: Social Geography**

**Room: CELS 207**

**Chair: Sangeeta Parashar**

**8:00-8:20 Kari Jensen, Hofstra University**

*Colorism among Bangladeshi people, with a focus on dark-skinned women's experiences with discrimination*

**8:20-8:40 Alexander Findeis, SUNY Geneseo**

*False Concepts and Failing Approaches: An Analysis of Poverty in the Developing World*

**8:40-9:00 James Kernan, SUNY Geneseo**

*Immersing First-Year Students in Geography through Summer Programs*

**9:00-9:20 Rae Cade, Montclair State University**

*The Politicization of Climate Change: How Well Do William Paterson University Students Understand It Now?*

**9:20-9:40 Matthew Berg, Montclair State University**

*Transdisciplinary Green Teams and Sustainability Problem-Solving.*

**PANEL: INTEGRATING PUBLICS: NEW DIRECTIONS FOR  
HUMAN/ENVIRONMENTAL WORK  
8:00 am – 9:40 am**

**Room: CELS 120**

**Moderator: Jessica Miller**

This panel discussion will center on the potential for expanding the integration of public concerns into research at the intersection of human/environment interaction. What social challenges accompany environmental change, and how do we better integrate the concerns of residents, decision makers, and others into our place-based research? What are the challenges to doing so, and what methods have worked well? The researchers on this interdisciplinary panel will discuss their experiences and perceived challenges to integrating public concerns into their work. What are the roles of social inequity, geo-political concerns, and other local or global challenges to future integrative research?

**Panelists:**

**Tamara Leech**, Montclair State University

**Hildegaard Link**, City University of New York

**Timothy Gorman**, Montclair State University

**Julian Brash**, Montclair State University

**5-MINUTE LIGHTNING TALKS**

**8:00 am – 9:40 am**

**Room: CELS 110**

**Chair: Clement Alo**

**Connor Firor, Peter Soriano and Duke Ophori**, Montclair State University  
*Sodium Chloride Trends in the Upper Passaic River Basin, 1960 to 2010*

**Julianna Cirafesi**, Hofstra University  
*Globalization and Health: A Qualitative Study of Immigrant Women's Health and the Hispanic Paradox*

**Junkui Cui, Lei Zheng, and Yang Deng**, Montclair State University  
*Emergency water treatment with ferrate(VI) in response to natural disasters*

**Gregory Dole and Kristen Brennan**, Montclair State University  
*Future Center for Mapping and Geospatial Analysis*

**Brittany Dorta**, Montclair State University  
*Solving High-Level Sustainability Problems with Transdisciplinary Green Teams*

**Cheyenne Flores**, Temple University  
*Sustainable Pest Management: The Case of Pennsylvania*

**Julie Grinstead**, Binghamton University  
*The Spread of Lyme Disease as a Function of Biodiversity*

**Daniel Rynerson**, Montclair State University  
*PSE&G Green Team Survey Analysis*

**Peter Soriano, Connor Firor, Duke Ophori**, Montclair State University  
*Increases of Sodium Chloride in the Middle Passaic River Basin*

**Jullanar Suprunchik**, SUNY Geneseo  
*Dashcam-based Analysis of Road Accident Contexts in Contemporary Russia*

## **POSTER SESSION**

**9:40 am – 10:40 am**

**Room: CELS Second floor**

**Penelope Adler-Colvin, Huicheng Chien**  
*Spatial and Temporal Analysis of Changed Temperature and Precipitation from 1950-2017 in New York State*

**Renata Blumberg, Laren Kulik, and Kayla Abella**, Montclair State University  
*Farming for the Garden State: Differential Motivations in Direct-to-Consumer Marketing*

**Kristen Brennan**, Montclair State University.  
*PSEG Institute for Sustainability Studies Green Team Program*

**Dunia Fernandez and Eric Forgoston**, Montclair State University  
*Control of Secondary Extinctions in Food Webs*

**Nicolette Filippone, Pankaj Lal, Pralhad Burli, Taylor Wiczerak, Daniel Rynerson, and Elshama Santana**, Montclair State University  
*Levelized Cost of Energy for Community Solar Projects in New Jersey*

**Adriana Galarza**, Hofstra University  
*How Much Food is in Our Glyphosate?*

**Diane Hagmann, Michael A. Kruege, Matthew Cheung, Xiaona Li, Jay Singh, Jennifer Krumins, Maria Mastalerz, José Luis R. Gallego, Nina Goodey**, Montclair State University  
*Contaminated Soils from the Liberty State Park (NJ, USA) Brownfield Site*



**Patsy Herrera, Brittany Dorta, Rohan Padhye, Amy Tuininga, Dan Truitt, Dirk Vanderklein, Meiyin Wu, Montclair State University, Andrew Diaz, Kean University, Danielle Hurst, Rutgers University, Seneca Kinn-Gurzo, Swarthmore College.**

*PSEG ISS Green Teams: Suez North America Green Resolutions*

**Pamela Jackson, Temple University**

*The Impact of Agriculture and Development in the Micropolitan Community of Yankton*

**Woohee Kim, Danlin Yu and Ying Cui, Montclair State University**

*Spatial correlation of carbon isotopes of C3 land plants and mean annual precipitation*

**Sarah Klush and Julie R. Allison, Hofstra University**

*Effects of Increases in Sedimentation and Turbidity through Time on Fish Communities in the Upper Mississippi River Systems*

**Sasha Leidman, Asa Rennermalm, Rohi Muthyala, Michael Prihoda, Rutgers University**

*Does Sediment Impact the Hydraulic Properties of Supraglacial Streams?*

**Scott Loverich, New Jersey Institute of Technology, Karleny Estrella, Maria Sztan, Rahul Mehta, Harrison Weiss, Ariana Leyton, Michael Coleman, Dann Truitt, Ashwani Vasisht, Ramapo College of New Jersey Pankaj Lal, PhD, Amy R. Tuininga.**

*2018 Jersey City Green Team.*

**Josh Mau, Catherine Ferreri, Steve Parisio, Morton S. Adams, SUNY New Paltz**

*Vegetation favorable to Spodosol development in the Catskills High Peaks Region*

**Nicole Moyer, Kutztown University**

*Sands Bethlehem: A Problem or a Solution*

**Fatimah Mozawalla, Hofstra University**

*Separate but Equal? Analyzing School District Funding in Relation to Race on Long Island.*

**Rohi Muthyala, Asa K. Rennermalm, Sasha Leidman, Matthew G. Cooper, Sarah Cooley, Laurence C. Smith and, Dirk van As, Rutgers University**

*What drives the stream discharge over a supraglacial catchment in southwest Greenland?*

**Lois Paquette, Hofstra University**

*Mapping the pre-WWI Ottoman Empire*

**Angela Rienzo and Jase Bernhardt, Hofstra University**

*Communicating Hurricane Risk with Virtual Reality*

**Alishbah Saddiqui, Hofstra University**

*Redefining Terrorism: The Discrepancy Between Media Coverage and Reality*

**Rachel Scarpino, Hofstra University**

*Comparing Global Inequality: A Social and Economic Perspective*

**Meghann Smith, Pankaj Lal, Eric A. Stern, Jay Prakash Singh, Taylor Wieczerek,**  
Montclair State University  
*Sustainability Regulatory Integration and Reform for Superfund Sediment Remediation Projects*

**Bhagyashree Vaidya, Diane F. Hagmann, Jennifer R. Balacco, Jennifer A. Krumins, and Nina M. Goodey,** Montclair State University  
*Bioaugmentation Of Contaminated, Low Functioning Soil with High Functioning Soil Communities.*

**Ingrid Witty, Pankaj Lal, Pricila Iranah, Jay Singh, Michelle Zhu, Nicole Panorkou, Bharath Samanthula, Pralhad Burli, Bernabas Wolde, Chris Ragucci,** Montclair State University  
*Science, Technology, Engineering & Mathematics (STEM) Enrichment Education for K 6-8 School Children*

**Jing Xiao, Åsa K. Rennermalm, Sasha Leidman, Federico Covi, Kierin Rogers, Mike MacFerrin, Regine Hock, Marco Tedesco,** Rutgers University  
*Firn properties of 8 cores collected in the southwestern Greenland Ice Sheet 2018*

**PAPER SESSION 4**  
**10:40 am – 12:20 pm**

**Session 4A: Biological Modeling**

**Room: CELS 110**

**Chair: Stefanie Brachfeld**

**10:40-11:00 Mark Blumler,** SUNY Binghamton

*What Happened to the Hadley Cell during the Eocene? Implications for Latitudinal Vegetation Gradients under Global Warming*

**11:00-11:20 Zoe Alexander,** Rutgers University

*Cultivating Redemption: The Image of Agriculture in Carceral Settings*

**11:20-11:40 Erik Lyttek,** Pankaj Lal, Garrett Nieddu, Eric Forgoston and Taylor Wieczerek, Montclair State University

*Initial Results of Modeling Emerald Ash Borer (*Agrilus plannipensis*) Spread in New Jersey using a Novel Method*

**11:40-12:00 Atsushi Tomita,** Baruch College

*Detecting deforestation and conversion to oil palm plantations in tropical Asia with dense Landsat time series, ALOS-2/PALSAR-2 data and Google Earth images*

**12:00-12:20 Carlos A. Moralez-Ramirez and Pearlyn Y. Pang,** National University of Singapore

*Using Open-Source Data in Correlative Species Distribution Modeling of Marine Species*

**Session 4B: Examining Geography through Pop Culture and Entertainment**

**Room: CELS 225**

**Chair: Michael Davis**

**10:40-11:00 Craig Dalton, Clancy Wilmott, Emma Frasier, Jim Thatcher, Hofstra University**

*Pokémon Go: Augmented Spaces of Spectacular Consumption*

**11:00-11:20 Steven Schnell, Kutztown University**

*The City and the Country in the Graphic Novels of Lynd Ward*

**11:20-11:40 Samuel Gallivan, SUNY Geneseo**

*Bowling Alleys of the Industrial Midwest*

**11:40-12:00 Michael Davis, Kutztown University**

*Tabletop Gaming: An Aspect of Geographic Learning*

**12:00-12:20 Megan Heckert, West Chester University**

*GIS for the zombie apocalypse: Problem-based learning and gamification in the GIS classroom*

**Session 4C: Innovations in Clean Energy**

**Room: CELS 207**

**Chair: Amy Tuininga**

**10:40-11:00 Jay Prakash Singh, Pankal Lal, Pralhad Burli, Bernabas Wolde, Montclair State University**

*Factors impacting the switchgrass yield across the United States: A meta-analysis*

**11:00-11:20 Gia Nguyen, Pankaj Lal, Erik Lyttek, Pralhad Burli, and Taylor Wiczerak Montclair State University**

*Optimal siting and transportation costs using a geographic information system. Case study: switchgrass-based bioenergy in Missouri.*

**11:20-11:40 Sydney Oluoch, Pankaj Lal, Bernabas Wolde and Pralhad Burli Montclair State University**

*A Survey of Future Renewable Energy Options for Kenya*

**11:40-12:00 Anthony Bevacqua, Pankaj Lal, Sheryl Tembe Montclair State University**

*The Spatial Economics of Clean Energy in New Jersey: Leveraging spatial analysis and economic modeling to better understand renewable energy technology potential for solar photovoltaics.*

**12:00-12:20 Dileep K. Birur, Montclair State University**

*Modeling Global Land Use for Clean Energy Policy Analysis*

## **THE FUTURE OF FOOD PANEL**

**10:40 am – 12:20 pm**

**Room: CELS 120**

**Moderator: Renata Blumberg**

The severity of recent weather events has heightened speculation about the future of food systems in the age of climate disruption. Dominant media narratives, in particular, have focused in on one primary question: how will we feed a growing population without destroying the planet? The answer from the dominant powers in the global food system has been clear -- technological innovation and increased intensification offer the only logical pathway for feeding the world. However, this is not the first time that dire predictions have been made about the food supply, nor the first time that technological solutions have been offered as the only way forward. For example, in the past, forecasts of food scarcity have been used to legitimize the industrialization of food production, with the assumption that increasing production would improve food security. Unfortunately, despite the global industrialization of food, and despite reductions in the percentage of the global population that experiences hunger, upwards of 800 million people still experience hunger, while other diet-related diseases are on the rise in developed nations. This reality demonstrates that having an adequate supply of food, in and of itself, does not guarantee sufficient access to nourishing food for all. Similar problematic assumptions underpin many contemporary solutions that attempt to make the food system more sustainable. This panel will take a critical look at the future of food by addressing the following questions: What contemporary solutions to enhance the sustainability of the food system are being presented by dominant powers in the global food system? What social, economic, and technological considerations are missing from these proposals? How do we transform our current system to create a more equitable, sustainable and just future of food?

### **Panelists:**

**E. Melanie Dupuis**, Pace University

**Garrett Broad**, Fordham University

**Diana Mincyte**, City University of New York

**Ilona Moore**, Bucknell University

**Chelsea Leiper**, University of Delaware

**Lindsay Naylor**, University of Delaware

## Paper Abstracts

**ZOE ALEXANDER**, RUTGERS UNIVERSITY. *Cultivating Redemption: The Image of Agriculture in Carceral Settings*. The image of agrarian ideals is a subject that has been increasingly examined by scholars since the expansion of the alternative agriculture movement in the 1960s, culminating into “sustainable” and organic agriculture of the 1980s. Many scholars have documented cases of contradicting practices in the labor process as such (elitism and exploitation) that reinforce the same structural injustices the movement claims to address through a return to preindustrial agrarianism. This paper specifically explores the relationship between Jeffersonian agrarian ideals as manifest in carceral settings that attempt to foster rehabilitation and redemption. By examining articles, photography, and program guidelines for the Rikers Island GreenHouse, my preliminary findings build on the literature of critical food and development research, drawing into a concrete analysis both incarceration and the sustainable agriculture industry.

**KRISTEN ARMSTRONG**, SUNY GENESEO. *Predicting African Flight Volume*. The purpose of this research was to explain the trends in international flights into each African country. Global flight travel has shown accelerated growth since the invention of the aircraft. Though Africa has relatively fewer flights, their volume and dispersion reveal spatial information about the continent that makes the prediction of future flights possible. Eight security, historical, and economic variables of each African country were tested in an attempt to explain patterns in flight volume. The cross analysis of this data displayed a strong positive correlation between flight volume and two economic variables—GDP and imports. In this way, the level of national development can be used to predict individual African countries’ levels of contact with the rest of the world through international flights. Though they did not show significance in flight volume variation, the non-economic variables led to other insightful conclusions. The three “security” indices—Freedom House, Global Terrorism, and Fragile States—displayed a negative correlation with flight volume, as expected. However, a colonial index and fragile state index were both tested with flight volume which displayed significantly more flights per capita to former British colonies and fewer to “fragile states” and colonies with other former colonial powers. The results of this research indicate a cycle of global African interconnectedness and economic growth. The introduction of this cycle into more African countries would therefore bring more rapid development. The question now is how to begin this cycle in countries where it is not already occurring.

**DREW ARNUM**, SUNY GENESEO. *The Fourth Reich? Global Dimensions of Neo-Nazism*. Many in the United States argue that Donald Trump’s election has brought neo-Nazism into the mainstream, normalizing hateful and prejudiced rhetoric. This local rise in white supremacy, however, is indicative of a global trend. Over 40 countries currently have active neo-Nazi groups, with varying degrees of mainstream acceptance, from outright government support to strict illegality. Through an analysis of historical context and popularity, websites, blogs and online forums, speeches, and public events, this research categorizes hate groups based on their beliefs, methods, and national legitimacy. Neo-Nazi organizations often tailor their prejudice based on local issues and concerns in order to gain attention and cater to potential recruits’ resentments. Some prioritize visibility and recruitment, while others are more inward-facing.

Some function as political parties, some are fringe “community groups,” and others are violent gangs. While neo-Nazism is not the norm in any country, this kind of far-right extremism has gained a global platform in the recent decade. This survey highlights spatial patterns differentiating neo-Nazism around the world, and somberly considers the fate of those countries ranking highest in this study, including Ukraine, Greece, and the United States.

**MATTHEW BERG**, MONTCLAIR STATE UNIVERSITY, *Transdisciplinary Green Teams and Sustainability Problem-Solving*. Montclair State University (MSU), a Hispanic-Serving Institution, supports an undergraduate Green Teams internship program. In the Green Teams program, transdisciplinary teams of five students coming from a range of majors and a variety of universities address sustainability needs of hosting corporations and organizations over a 10-week summer program. In the first two years, the program partnered with 12 businesses (e.g., ADP, Bristol Myers Squibb, Honeywell, Prudential, PSEG), two municipalities (Newark, NJ, and Princeton, NJ), and one non-profit organization in the first two years to offer project-based learning, skills-based training, and professional development to students. In 2018, PSEG ISS continued growing its Green Teams Program. The Institute further expanded its host organization applications to include municipalities, not-for-profits, start-ups, and governmental agencies. As a result, in the summer of 2018 PSEG ISS was able to support twelve teams of five students each partnering with seven corporations (Stryker, Earth Friendly Products, NJ TRANSIT, SUEZ Water, NJ American Water, Prudential Global Investment Management – Real Estate, and PSEG), two municipalities (the City of Newark and the City of Jersey City), two not-for-profits (Hackensack Meridian Health and Hydrogen House Project), and one governmental agency (NJ Department of Environmental Protection). The existing Green Teams program shows proof of concept for multi-sector partnerships whereby students work in transdisciplinary teams on real world sustainability projects identified by host organizations (corporations, GO/NGOs) and ability to sustain the initiative beyond the first few years. We will use what we have learned from the Green Teams program, and apply the general model, the “Montclair Model” of intensive teamwork, professional development, broad inclusion, and deep Sustainability training, to the proposed design components. By utilizing corporate-academic-community partnerships which are already in development, the Green Teams can employ hands-on learning in real world situations to address sustainability challenges through design of sustainable technology solutions and build classroom-to-career opportunities.

**JASE BERNHARDT**, HOFSTRA UNIVERSITY. *Mining Weather and Climate Data from the Diary of a Forty-Niner*. Primary sources such as personal diaries can provide insight into weather and climate conditions in times and places where direct observations are unavailable. The diary of Gideon Nichols provides an especially compelling case study of how such an account can be used to determine spatiotemporal patterns in conditions. Nichols, a farmer in Long Island, New York, elected to venture across the United States in 1849 to partake in the California Gold Rush, remaining there for multiple years before returning home via both oceanic and overland routes. Using content analysis, an investigation of his detailed records of weather conditions throughout his travels is undertaken, as well as his firsthand account of major events such as the Sacramento flood of 1850. His daily recordings are supplemented by regular letters to relatives back home on Long Island, which contain ample details and emotional descriptions of his surroundings and how he experienced them. The result is a unique snapshot of the mid nineteenth century climate of numerous physical geographic regions across North America,



along with a novel record of weather conditions during the early stages of the California Gold Rush. Moreover, Gideon's meticulous attention to detail, especially geographic location, permits spatial analysis of these patterns, using both a physical geographical approach (e.g., his comparisons of different climate regions) and chronological approach (e.g., tracking extreme weather events over the course of a year). Thus, this ongoing research complements past work by introducing a spatiotemporal component into the human interpretation of weather conditions, and can be replicated using the diaries of other pioneers who regularly observed environmental conditions.

**GITA BHUSHAL ADHIKARY, PANKAJ LAL, BERNABAS WOLDE, PRALHAD BURLI, MONTCLAIR STATE UNIVERSITY.** *Incidence of human-wildlife conflict and likelihood of reporting losses: The case of Banke National Park, Nepal.* Conflicts arising from human and wildlife interactions occur in several parts of the world and can be damaging to both parties. People living in close proximity to conservation areas generally experience some level of wildlife conflict, ranging from crop loss to severe human injury. Various compensation schemes exist globally wherein victims can report the conflict and receive compensation for the loss incurred. However, in developing countries, many victims are not reporting the losses they suffer from these conflicts. Thus, to explore the incidences of these conflicts, and the factors influencing the inclination to report losses, we considered settlements in buffer zone of Banke National Park, Nepal as a study site. This national park was established in 2010 with an aim to conserve Bengal Tigers and is a part of Terai Arc Landscape, an area of global biodiversity significance that extends toward India. We surveyed 198 participants, of which, 197 reported suffering from crop raids by wild animals, and approximately 55% reported livestock death. Results revealed that socio-demographic factors such as age, gender and family size were statistically significant in influencing the likelihood of reporting the loss. In addition, the wild animal species listed in compensation relief guideline responsible for loss were also statistically significant. Since the majority of the population is not reporting their loss despite having conflicts, our findings suggest improvements to policy measures for compensation schemes by tailoring the program to affected populations. Data and implications of this study can benefit conservation stakeholders in Nepal as well as other areas in the world that experience similar conflicts.

**DILEEP K. BIRUR, MONTCLAIR STATE UNIVERSITY.** *Modeling Global Land Use for Clean Energy Policy Analysis.* Accounting for global land use and land cover change in economy-wide models for policy analyses is challenging. In this study we use GDyn-E-BIO model, a multi-region, multi-sector, recursive dynamic computable general equilibrium (CGE) model, to analyze the impact of U.S. biofuels policies. This model is developed based on the Global Trade Analysis Project (GTAP) model and the data base. Since biofuels have gained worldwide importance due to raising concerns on climate change, production of large scale biofuels could put tremendous pressure on land along with the demand from food, feed, and fiber sectors. The model includes 45 aggregated sectors including first and second generation biofuels, and aggregated global 25 regions. The dynamics comes from capital accumulation, labor productivity, and other exogenous macro variables such as GDP and population growth. We incorporate the disaggregated land endowments broken into 18 Agro-Ecological Zones so as to more accurately represent the heterogeneity of land. The land cover categories that we include in this model are cropland, forest, and pasture cover. The land supply structure is constructed such

that, first cropland is allocated across different crops, and pasture is allocated across two grazing types, and then substitution of pasture and cropland takes place within a composite arable land, and then net arable land substitutes with forest cover. The land use emissions due to U.S. biofuels policies are estimated based on widely used emission factors.

**ANTHONY BEVACQUA, PANKAJ LAL, SHERYL TEMBE, MONTCLAIR STATE UNIVERSITY.** *The Spatial Economics of Clean Energy in New Jersey: Leveraging spatial analysis and economic modeling to better understand renewable energy technology potential for solar photovoltaics.* This research presents spatial analysis methods and economic modeling approaches to investigate the potential and economic implications of renewable energy technology, particularly solar photovoltaics, in New Jersey. The success of clean energy planning depends heavily on project siting and financial mechanisms that drive renewable energy technology adoption. This research examines siting potential, levelized cost of energy, and influence of policy incentives for the solar markets of net metering, grid supply, and community solar. The goal of this work is to provide new insights into policy development that can be used to accomplish the clean energy and climate goals of the State of New Jersey.

**MARK BLUMLER, SUNY BINGHAMTON.** *What Happened to the Hadley Cell during the Eocene? Implications for Latitudinal Vegetation Gradients under Global Warming.* Plant communities are likely to change composition as well as location under the impact of global warming. Certainly this has happened in the past. Today, the latitudinal gradient from the tropics to the poles features strong banding of vegetation types, clearly related to the general circulation of the atmosphere. For example, subtropical deserts are prominent and known to be caused by subsidence in the Hadley Cell, producing the Subtropical High pressure system. On either side of these deserts vegetation grades into semi-arid types associated with seasonally dry climates. And so on. In contrast, under the greenhouse conditions of the Eocene, forests grew in the subtropics and indeed almost everywhere. The apparent absence of a Hadley Cell and its subsidence zone is a puzzle, never satisfactorily explained. In this paper I outline an explanation, and on that basis predict some future vegetation changes that might be expected if global warming continues unabated.

**HENRY BULLEY, BRENDA VOLLMAN, BMCC CITY UNIVERSITY OF NEW YORK.** *Factors influencing NYC residents' choice of drinking water from tap/fountains compared to bottled water sources.* The use of bottled water in cities across the United States, including New York City, have increased steadily in the last two decades. This growth has often been fueled by dominant positive perception of bottled water taste and quality, as compared to tap water and drinking water fountains. However, it is not clear the factors that influence these perceptions. This presentation will highlight some of the preliminary results of a study to examine the factors that influence NYC residents' choice of regarding drinking water. In situ sampling was conducted for drinking water fountains in three NYC boroughs (Brooklyn, Bronx, and Manhattan) to measure selected water quality parameters including nitrates (NO<sub>3</sub>), nitrites (NO<sub>2</sub>), pH, Alkalinity and Hardness. Additionally, water quality test was conducted for commercially available bottled water including Aquafina, Fiji, and Poland Springs. The study also combined a survey using online questionnaire, of perceptions and prevalence of bottled water use in NYC area. Finally, statistical analyzes and GIS-based visualization were used to examine online survey data and the water quality information. The survey respondents were

generally not influenced by brand name of bottled water they buy, even though majority did not know the actual source of their tap or bottled water. Also, some of the bottled water samples showed higher acidity and hardness levels than drinking water fountains. Overall, the results suggest that the decision to buy bottled water was influenced by a complex set of factors; and this requires further exploring.

**RAE CADE, MONTCLAIR STATE UNIVERSITY.** The Politicization of Climate Change: How Well Do William Paterson University Students Understand It Now? How well is climate change understood among non-environmental science majors? Are there different factors that attribute to one's understanding of climate change? The current research consisted of three individuals majoring in a branch of social science. The individuals were interviewed in order to explore the level of understanding they held in relation to climate science, as well as how the data may not be generally understood outside the environmental science community. Climate science has traditionally been framed in order to incorporate quantifiable data that takes into account past completed actions that has resulted in what can be currently viewed. Considering that climate change is a broad and complex science, I first asked my interviewees a series of questions two of which were: (1) What causes climate change and (2) What do you perceive "the earth is warming by two degrees Celsius" mean? Is there more to an individual's understanding of the data, or does it extend to reach beyond science? Similarly, are there methods that can be utilized in order to aid in the understanding of climate science for individuals who do not have an environmental background?

**MOIRA CONWAY, ALISON CONWAY, KUTZTOWN UNIVERSITY.** Don't Forget about the Trucks, Examining Transportation Conflicts in Gentrifying Brooklyn. In many cities throughout the United States former industrial areas are rapidly gentrifying. North Brooklyn, New York, which includes the neighborhood of Williamsburg, is an example of an area that has recently gone through a significant growth in residential population. Many parts of the neighborhood were rezoned and new land uses were introduced into the neighborhood. These new residents increasingly prefer to travel by non-motorized transportation methods, such as cycling and walking, and the neighborhood has also been changed to accommodate these. However, some industrial activity does remain and this leads to many new transportation conflicts in the region. Truck routes connecting North Brooklyn to Manhattan have been altered in order to introduce new bicycle lanes into the neighborhood. Using GIS analysis and readily available datasets, we analyze the changes in residential population that have occurred since 2000, the changing land uses, and examine transportation conflicts that have occurred. We seek to examine the relationship between these three variables, and make recommendations for how these conflicting land uses can co-exist while minimizing conflicts.

**CRAIG DALTON, CLANCY WILMOTT, EMMA FRASIER, JIM THATCHER,** HOFSTRA UNIVERSITY. Pokémon Go: Augmented Spaces of Spectacular Consumption. In *Society of the Spectacle*, Debord argues capitalist modernity annihilates concepts of space-time in favour of spectacular time, characterised by the parcelling of chronology and experience into an endless parade of new commodities, accessible to the privileged few. In this article, we turn spectacular time on its head, bringing it from Debord's wine-soaked Parisian streets of the 1960s to the augmented landscapes of current-day (digital) urban experience. We argue the socio-technical spaces of games like Pokémon GO and Ingress produce hybrid spaces where players

benefit from gathering together in physical proximity and simultaneity to capture and control digital objects. Neighbourhoods transform into sites of repetitive labour and leisure, as the game reorders space-time relations for the generation, extraction, and analysis of individuals' location data. In turn, the production, visualisation and consumption of time-space data alters the spectacle by forcing individuals to encounter and embody different attentional economies. The spectacle simultaneously produces and corkscrews into a hybrid body wherein spatial proximity, made legible through digital location information, becomes necessary for 'play'. While such shifts have long been argued to produce new social and political possibilities, by enabling encounters and spaces for collectives and resistance, we argue such games leverage urban space and imaginaries to produce hyper-real interfaces in which play is transformed into labour through the very real production of - and attention to - geospatial information. Thus, the production of this spectacle occurs in the heart of processes of capitalist accumulation.

**MICHAEL DAVIS, KUTZTOWN UNIVERSITY.** Tabletop Gaming: An Aspect of Geographic Learning. Tabletop role-playing games (RPGs), such as Dungeons and Dragons and Pathfinder, can provide an outlet into creativity, critical thinking, and problem solving. However, research delving into the educational properties of role-playing games is severely lacking. One such tabletop game is The Dresden Files RPG derived from the successful novel series The Dresden Files by Jim Butcher. Within the construct of the game environment, playable characters (PCs) are able to interact with their environment in modern day settings. This allows the PCs to potentially learn about physical, cultural, economic, and social aspects of the landscape within the context of a role-playing adventure. This study examines whether students can learn about the geography of the city of Philadelphia through their PCs exploring iconic landmarks such as Penn's Landing, Fairmount Park, Reading Terminal Market, and Center City while fighting off human and supernatural forces. It is the hope that this research study will allow students to learn more geographical information about the city of Philadelphia as well as increasing retention at the university by forging friendships with the other PCs.

**JOHN DZWONCZYK, FRANCIS WHALEN, US MILITARY ACADEMY.** *Leading the Army of the American Nations*. Two significant volumes (Garreau 1982; Woodard 2011) have been published on the idea that North America is not simply three countries (the United States, Canada, and Mexico), but a collection of culturally distinct nations. The precise number, naming, and borders of these nations varies, but they are generally geographically similar—a nation in each of Quebec, New England, the Great Lakes, the South, the sparsely populated (Mid)West, the Spanish/Mexican influenced southwest, and a coastal stretch from San Francisco north to Vancouver. The US Military Academy at West Point, the US Army's premier officer training institution, draws cadets from every state in the US, but that information tells us very little about the cultural composition of the Corps of Cadets. Furthermore, it tells us nothing about the proportion of cadets who come from traditionally military families, possibly a "nation" of its own. The (non)-existence of this proposed nation would be a measurable indicator of whether the Army is becoming a "warrior class," distinct from the country it defends, as anecdotal evidence indicates. Using anonymized, institutionally-collected data from cadets who graduated USMA in 2017, 2012, 2007, 2002, and 1997, this research aims to determine which "nations" cadets are drawn from, whether each nation contributes a (dis)proportionate share relative to its population, and whether those have changed over time. In doing so, we hope to

find indicators of the cultural characteristics that incentivize cadets to attend USMA as well as whether those characteristics predict a cadet's eventual success.

**ELIZABETH DZWONCZYK**, US MILITARY ACADEMY. *Military and Cultural Geography in the Arctic: The 1944 Petsamo-Kirkenes Operation*. Large-scale military operations in the arctic and subarctic parts of the world have historically been rare. This presentation examines the intersection of military and cultural geography in the Kirkenes-Pechenga area of northern Norway and Russia's Kola Peninsula over the course of the Red Army's October 1944 Petsamo-Kirkenes Operation. This operation, which occurred entirely above the Arctic Circle, has received scant attention from military historians and geographers outside of Russia, with James Gebhardt's (1989) article on the battle being the one notable exception. This sparsely populated, challenging, remote, environment has a rich cultural history that was severely impacted by the four-year Nazi occupation and subsequent Red Army liberation. The Nazi withdrawal in Northern Norway included a total scorched earth policy and civilian evacuation for every area except for the city of Kirkenes. As a result, the civilians of Kirkenes were uniquely affected by this major shift in power. Although seventy years removed from the battle, the Petsamo-Kirkenes Operation left lasting imprints on both the Russians and Norwegians that inhabit this region.

**ALEXANDER FINDEIS**, SUNY GENESEO. *False Concepts and Failing Approaches: An Analysis of Poverty in the Developing World*. The UN Millennium Development goals set out to reduce poverty at \$1.25 per day by 50% between 1990 and 2015 – a goal that was reached. However, is \$1.25 per day an accurate measurement of poverty? In order to fight poverty effectively, it is necessary to have a clear understanding of what it is and how it relates to other socio-economic factors. This research project examines 31 developing countries over the course of 2000-2010, using data from the World Bank. By comparing socio-economic factors such as GDP, exports, FDI, HDI, Freedom House Indexes, population, etc., the relationships between key variables can be identified. Through this analysis of key factors and differing measurements of poverty, this paper will show that current understandings of poverty, and proposed solutions for it, are lacking in accuracy and viability. Only by beginning to re-imagine the methods of measuring poverty can a constructive conversation be held on how to eradicate it.

**SAMUEL GALLIVAN**, SUNY GENESEO. *Bowling Alleys of the Industrial Midwest*. The bowling alley is among the most prominent social recreational establishments of the industrial Midwest. Supported by bowling leagues which derived much of their membership from blue-collar unionized laborers, the bowling alley remains a visible cultural institution of what became known as the Rust Belt. This paper examines spatial patterns in the distribution of bowling centers across the industrial Midwest, with a specific focus on three states: Ohio, Pennsylvania, and Chicago. Through the use of census records taken from the Economic Census of Selected Service Industries, regional spatial trends in the location of bowling alleys are discovered and examined over time. This paper also examines the extent by which the distribution of bowling alleys is affected by urban context, exploring differences between large urban centers, such as Cleveland and Columbus, and smaller cities. The broader goal of my work is to treat the decline of the bowling alley as a symptom of broader Midwestern economic and socio-demographic trends.

**SASHA GARCIA, SUNY NEW PALTZ.** *Remote Sensing of Long Island Coast: Coastal Erosion from Super Storm Sandy.* Long Island during hurricane Sandy received significant damages as well as erosion of the coast and reshaping of the island. This then affected the dunes and protective structures of the beach. Restoration after the storm was uneven which led to debates. The purpose of this project is to help predict wind and storm surge and determine different ways to protect the coast and barrier islands from future storms. I looked at the morphology of Long Island and learned how much damage wind and storm surge caused as well as researched different ways to protect and restore coasts. This was done by using fine scale remotely sensed data and photos to create different maps that compiled data from before and after the storm. This helped find the width of the coasts and the rate of erosion by using topographic and elevation data. I analyzed different types of protective and restorative ways of coastal erosion and saw which were successful and which were not. Using the maps, research and calculations I was able to determine the best way to prevent and restore damages from storms. Educating those who choose to live and build on the coast where to build and where not to build will help keep the dunes that are there to protect the coast as well as the barrier islands. Using the information that I gathered on preventative measures I will now be able to relay the information to those in hopes that they will use these measures to prevent future damage to the island and help keep it as one piece.

**CONNOR HARGROVE, LUCAS SMITH, SUNY GENESEO.** *Warship Design, 1859-1945: Power, Propulsion, and Protection.* All attempts to compare warship design historically have met a similar impasse - that the central problem in analyzing warships and their key traits is the absence of quantifiable comparative statistics. This project has set out to analyze the three essential aspects of warship design, power, protection, and propulsion, and to create comparable measures. We explore the development of major warship design in contexts of technical change and national differences in the necessary compromises involved in balancing power, propulsion, and protection. During the period 1859-1945, improvements in the design and capabilities of warships progressed at an unprecedented rate, compared to near-stasis across the entire age of sail. After 1859, and especially after 1873, protective armor and shell penetrative power embarked on a 70-year race. Attainable speed too became increasingly important. Meeting all three goals entailed a substantial increase in vessel size. Hindsight teaches that compromise offered the best chances of success and survival in combat conditions. But not all countries absorbed and applied this lesson.

**MEGAN HECKERT, MARCUS OWENS, GARRETT SARLOUIS, WEST CHESTER UNIVERSITY.** *GIS for the zombie apocalypse: Problem-based learning and gamification in the GIS classroom.* Zombies have been reported about a mile from campus and our university president has charged us with running the situation room. What is the current threat to university students? Where are most vulnerable populations? Where should we establish safe zones in the event of an evacuation? This was the scenario facing my students on the first day of Introduction to GIS. This presentation will describe an experiment in teaching “GIS for the Zombie Apocalypse” using problem-based learning and elements of gamification. The final verdict is not yet in, but students have expressed strong interest and engagement. And none has yet fallen victim to the zombie threat. Two students will also share their perspective on the experience.



**ALEXANDER HOHL, XUN SHI, WENWU TANG, ERIC DELMELLE, UTICA COLLEGE.** *Detecting Space-Time Patterns Under Non-Stationary Background Population.* The advancement of technology allows for collecting large quantities of high-resolution geospatial data through sensor systems, automated geocoding abilities and social media platforms. These data are characterized by an increasing volume, velocity and variety, which necessitates the use of high-performance computing for knowledge discovery. Exploratory spatial data analysis approaches, such as kernel density estimation, are popular methods to investigate the drivers of geospatial patterns. However, the underlying population is critical for studying social phenomena, such as human health. Current modelling efforts are producing population datasets at increasingly high spatial and temporal resolutions, which allows us to detect patterns under non-stationary backgrounds. This study challenges a key assumption of many prominent methods of disease risk estimation, which is that population remains static through time. We put forward ST-IB, a method of adaptive kernel density estimation that accounts for spatially and temporally inhomogeneous background populations. We apply ST-IB to individual-level data of dengue fever, as well as interpolated population data from the city of Cali, Colombia. We compute disease rates, delineate clusters of elevated risk, and finally, quantify cluster strength and significance. Comparing ST-IB with its purely spatial counterpart revealed a substantial benefit of adding the temporal dimension to analysis of disease risk. Further research is needed on how disease risk and its statistical significance are affected by the various ways population is depicted by different data models. Our results contribute to scalable applications for analyzing social geographic phenomena and elucidate the computational requirements of spatiotemporal analysis.

**EMILY HOLLOWAY, CUNY GRADUATE CENTER.** *"Business as usual" or "just business"? A comparative case study of industrial land use.* Municipal zoning policies, particularly those enacted in competitive land markets like New York City, can have the effect of accelerating and even initiating processes of gentrification in economically-disadvantaged neighborhoods. The recently approved rezoning of the Jerome Avenue area of the Bronx, despite several informal victories in tenant protections and incumbent resident participation, fails to reconceive neighborhood development strategies that have proven negative consequences. The forthcoming restructuring of the area is reminiscent of the 2006 North Brooklyn rezoning, which severely diminished access to manufacturing and industrial land for firms and workers and shifted the balance of employment and affordability for the community. This paper underlines the significant similarities between the Jerome Avenue and North Brooklyn rezonings to demonstrate both the continuity of political ideology vis-a-vis land use decisions between two mayoral administrations and the probability of gentrification on Jerome Avenue

**CLAIRE JANTZ, JACALYN ROSENBERGER, JONATHON CHESTER, SHIPPENSBURG UNIVERSITY.** *Spatiotemporal analysis of long-term and short-term land cover trends along the Kittatinny Ridge corridor in Pennsylvania's Appalachian landscape.* Stretching more than 185 miles from the Mason-Dixon Line to the Delaware River, the Kittatinny Ridge is "one of Pennsylvania's most treasured landscapes" (Kittatinny Ridge Coalition, 2017). Identified as a principal bird flyway zone of international importance, the Ridge contains a bounty of natural ecosystems and scenic beauty. Thousands utilize the Ridge for outdoor recreation each year. As a critical ecological landscape, it is crucial to understand human-environmental interactions at work across the Ridge. Such understanding can be used to

more effectively develop conservation and management strategies unique to the Ridge and its trends. Accordingly, this manuscript analyzes the Ridge's spatiotemporal trends of long-term (1940-1990) and short-term (2001-2011) forested, agricultural, and developed land cover changes. Municipal-level changes are assessed relative to the Ridge to further understand land cover dynamics. These data suggest a corridor-wide long-term (1940-1990) trend of afforestation and agricultural abandonment, while more recent (2001-2011) trends point to forest cover decline in favor of urbanization. Given the complex and heterogeneous local political structures that dominate the Ridge, short- and long-term land cover (and the overall rates of change) vary by municipality. Results presented here provide a baseline understanding of the dynamic spatiotemporal nature of the Kittatinny Ridge, and can support targeted management strategies specific to the spatially unique trends across the landscape.

**KARI JENSEN, HOFSTRA UNIVERSITY.** *Colorism among Bangladeshi people, with a focus on dark-skinned women's experiences with discrimination.* Among Bangladeshi people in Bangladesh and in the diaspora, light skin is considered more attractive and desirable, resulting in discrimination of dark-skinned people, and particularly girls and women. Advertisements for skin products such as "Fair and lovely" have a large presence in Bangladeshi society, from TV and social media to print media and huge billboards in cities and rural towns. The contrast in skin tone between the people in the ads and the people on the streets, represents an unattainable ideal of beauty that leave many people frustrated and with low self-esteem. In this intersectional study of colorism among Bangladeshi people, inspiration is drawn from feminism, cultural and feminist geography, and postcolonial theory. Women and men in Bangladesh and in the Bangladeshi diaspora in North America were interviewed in-depth about their own perceptions and experiences. They were also asked what they think are some causes of the colorism that is so entrenched in Bangladeshi culture and society, and possible ways out of such discriminatory perceptions and practices. Participants emphasized the role of education and educators, and of media and the beauty industry.

**LISA JORDAN, ANDREW KATAPODIS, DREW UNIVERSITY.** *The Conflict-Population-Climate Nexus: Exploiting Famine for Political Gain.* Cases of violent conflict, famine, and population displacement have been used opportunistically to elevate the immediacy of climate disruption, while disregarding the political history and regional factors contributing to present human rights violations. We present a textual analysis of public narrative on climate change and conflict to characterize the unidimensional approach used to explain instances of famine and population displacement. Informed by theories in political ecology, we argue that colonial and post-colonial structures of governance, regional actors, negligent leaders, the financial structures and incentives adopted by Western governments pursuing "war on terror" objectives, and international weapons producers deserve greater scrutiny in the responsibility for the "roll back" in advances toward the United Nations Sustainable Development Goal #2: Zero Hunger. We also explore the leading counter-narratives including Alex de Waal's recent work on famine as a crime, April Longley Alley's work on political legitimacy, and New York Times columnist Nicholas Kristof, who flagged the current situation in Yemen as the "world's largest humanitarian crisis," U.S. arms transfers to Saudi Arabia as "unconscionable," and the U.S. as "complicit in war crimes." Widespread work on the Anthropocene presents useful ways forward in acknowledging climate change impacts without simultaneously diminishing the accountability of national leaders and international actors engaging in war crimes.

**JAMES KERNAN, SUNY GENESEO.** *Immersing First-Year Students in Geography through Summer Programs.* The Geography Department at SUNY Geneseo manages an institutional learning partnership with nearby Letchworth State Park. As a part of that partnership, geography faculty collaborated with professional staff from Student Life to develop a course called the Letchworth First Year Experience. The one credit course is intended to help first year students transition from high school to college, develop meaningful relationships with peers and professors, engage in service-learning, and acclimate to their new home by exploring the geographic concepts of place and region. The course aligns with institutional goals to increase access to integrated learning opportunities and improve retention. It aligns with departmental goals for recruiting geography majors, increasing departmental diversity, and exposing non-majors to geographical knowledge. The course was given honorable mention in a SUNY-wide program that acknowledges residence life initiatives. The design, intended outcomes, logistics, and assessment of the course will be discussed.

**JESSE KOLODIN, JORGE LORENZO-TRUEBA, CHRIS TENEBRUSO, PORTLAND HOAGLAND, DI JIN, ANDREW ASHTON, MONTCLAIR STATE UNIVERSITY.**

*Exploring the Effects of Artificial Dune Construction on Beachfront Property Values Along New Jersey's Coastline: Insights from A "Geo-Economic" Model.* Following the devastating effects of Superstorm Sandy in 2012, New Jersey adopted and installed large-scale berm-dune structures with the goal of enhancing coastal resiliency to future storms. The management goal of constructing artificial dune systems was to mitigate storm-related damages, thereby ensuring the continuation and growth of beachfront tourism. While protection was the key objective, some local stakeholders stood outspoken about preferring the aesthetic benefits of unhindered ocean views, rather than flood protection by tall dunes. Because communities tend to perceive risks differently before and after storms, it is unclear whether some beachfront communities will continue to afford the costs of re-nourishment projects under the existing federal, state, and local cost-share program. Therefore, what is the economic feasibility for a beachfront community to maintain these structures in the long-term? Our study tackles this key management question using a "geo-economic" modeling framework. We use our model to derive optimal berm-width and dune-height as functions of geologic and economic parameters. Given changes in stakeholder risk-perceptions and nourishment costs, our model functions determine a beachfront community's long-term feasibility towards dune maintenance, including their potential shortfall. Preliminarily aggregated valuation data of beachfront properties within Long Beach Island, NJ, suggests community affluence might also drive risk-perception. In particular, after dunes were installed in 2016, less affluent communities experienced an increase in beachfront property values, whereas more affluent communities observed minimal deviations. Overall, our coupled model aims at identifying unexplored feedbacks between dune morphodynamics and human activities that could play important roles in future management decisions.

**CHELSEA LEIPER, UNIVERSITY OF DELEWARE.** *Going Paleo in the Anthropocene: Defining a Movement.* Environmental politics in the Anthropocene are concerned with what humans have done to nature and in turn what this adulterated nature will mean for the health, well-being, and future of humanity. In this paper, I examine the controversial Paleo Diet as a reaction to the environmental and health anxieties of life in the Anthropocene, complicating the idea of Paleo as merely the latest dietary trend. Instead, I argue that Paleo is a multifaceted

phenomenon: a diet, an environmental philosophy, a consumer culture, and a movement that occupies the liminal space between environmental, cultural, and “embodied health movement” (cf Brown et al. 2004) which I term an embodied ecological health movement. Despite the staying power and continued growth and interest in Paleo and Paleo-like diets such as the popular Ketogenic (“Keto”) diet, the diet has received little scholarly attention. Drawing upon in-depth, semi-structured interviews with Paleo Dieters and participant observation at the 2017 PALEOf(x)™ conference, I investigate what it means to “go Paleo,” elucidating the nuance of eating a Paleo-inspired diet and a reluctance among Paleo Dieters to apply the controversial term “Paleo” to describe their dietary habits. I conclude by arguing that Paleo’s evolutionary framing and temporal intervention offers anxious health consumers a way out of the messy ecological uncertainty of human-environment relations in the Anthropocene by looking backward as the way forward to health.

**ERIK LYTTEK, PANKAJ LAL, GARRETT NIEDDU, ERIC FORGOSTON, TAYLOR WIECZERAK, MONTCLAIR STATE UNIVERSITY.** *Initial Results of Modeling Emerald Ash Borer (*Agrilus plannipensis*) Spread in New Jersey using a Novel Method.* Pests and disease have become an increasingly common issue as globalized trade brings non-native species into unfamiliar systems. Emerald ash borer (*Agrilus plannipensis*), or EAB, is an Asiatic species of boring beetle currently devastating the native population of ash (*Fraxinus*) trees in the northern forests of the USA, with 85 million trees having already succumbed across much of the Midwest. We have developed a reaction-diffusion partial differential equation model to predict the spread of EAB over a heterogeneous 2-D landscape, with the initial ash tree distribution given by data from the Forest Inventory Analysis. As expected, the model predictions show that EAB consumes ash, which causes the local ash population to decline while EAB spreads outward to other areas. Once the local ash population begins to decline, EAB also declines due to the loss of available habitat. Our model’s strength lies with its focus on the county scale and its linkage between EAB population growth and ash density. This enables one to make accurate predictions regarding EAB spread which allows one to consider various methods of control as well as to accurately study the economic effects of EAB spread.

**PAUL MARR, JOHN WAH, SHIPPENSBURG UNIVERSITY.** *Prehistoric Sites on Pennsylvania’s South Mountain.* Metarhyolite from South Mountain in south-central Pennsylvania was important to prehistoric Native Americans as raw material for stone tool manufacturing. It was used from the earliest occupation of North America and peaked during the late Archaic to middle Woodland periods (6800 BP – 1000 BP). South Mountain metarhyolite artifacts have been found throughout the mid-Atlantic region, and by the Early Woodland period (c2800 BP) metarhyolite was used almost to the exclusion of other materials. The regional surface exposure of metarhyolite covers approximately 14,000ha; however, Native Americans focused their stone quarrying efforts at just 11 locations covering a mere 35ha, suggesting that usable material was not widely distributed. At these locations quarrying activity was intense, with individual quarry pits often overlapping. Limited food resources of the prehistoric South Mountain landscape would have made forays into the area brief, camps would have been made, but the amount of time spent in these camps was short. Once the stone was sufficiently reduced to make transport easier, early visitors would have retreated to the Piedmont where resources were more abundant. Yet the thousands of years that people returned to these sites a tremendous store of cultural debris accumulated. This paper will focus on prehistoric sites found in the

vicinity of the Carbaugh Run Natural Area (CRNA), provide an overview of the types of prehistoric activities that took place in this relatively small area, and highlight important questions regarding those activities.

**SHENIKA MCFARLANE-MORRIS**, CHURCH TEACHERS' COLLEGE. *The Flip Side of Enjoyment: Mass Tourism And 'Purification' Of Space in Jamaica*. Mass tourism development in the Global South is widely celebrated as a major source of jobs and foreign exchange. Enjoyment is at the heart of tourism, as it is the most basic thing that tourists expect. However, while these activities might seem innocuous these spaces tend to create stark physical and social barriers which exclude and restrict the movement and activities of local populations. Additionally, these spaces have also been widely critiqued for interrupting everyday life and creating tensions between 'guests' and 'hosts', leading to extensive dispossession and disempowerment. The broad objective of this study, which is influenced by the theory of 'space purification' by Sibley (1995), was to critically examine the exclusionary socio-cultural outcomes and uneven power relations of mass tourism development in Falmouth, Jamaica, which has the most recent and largest cruise pier in the entire island. My focus was largely on the implications of these kinds of exclusion on local people and how they have responded to such challenges. The empirical basis of this study centers on qualitative interviews with local residents, fisherfolk and enclave employees, which were focused on understanding their perceptions of new social opportunities and challenges. Qualitative research is complemented by data from surveys with residents. One of the principal findings of this research is that the Falmouth cruise pier is a zone of inclusion of tourists but exclusion of the local residents, establishing new forms of social segregation.

**SEAN MCLAUGHLIN**, WEST CHESTER UNIVERSITY. *Estimating Historic Disasters with limited data, using GIS-modeling: a case study of the Mt. Morris Dam & Hurricane Agnes of 1972*. In 1972, Hurricane Agnes caused widespread damage along the eastern seaboard. Flooding damage was most severe in New York and Pennsylvania (Roache et al. 1973). Despite many flooded waterways and inundated municipalities, some of the Genesee River Valley did not flood, most notably the city of Rochester, NY. Rochester and the surrounding areas were not inundated thanks to the Mount Morris Dam, located at the terminus of Letchworth State Park in western New York State. The Mount Morris Dam held back floodwaters until its entire, ephemeral reservoir was filled beyond its capacity. At this point, dam personnel did release some of the floodwaters to ensure debris (e.g. tree trunks) did not topple over the spillway and greatly damage infrastructure below. The dam was greatly praised after this event, as it saved billions of dollars in damage and countless lives. However, the amount of water that the dam retained is not well established. There is very limited photographic evidence and zero GIS data exists on the event. This project is an attempt to quantify the amount of water Mt. Morris retained during its most notorious flooding event using GIS modeling.

**MICHAEL MINN, BETHANY BROOKE CUTTS**, FARMINGDALE STATE COLLEGE. *Absolute, Abstract, and Differential Space: A Lefebvrian Framework for Evaluating Praxis*. In the Production of Space, French philosopher Henri Lefebvre asserted that, "A revolution that does not produce a new space has not realized its full potential; indeed, it has failed in that it has not changed life itself, but has merely changed ideological superstructures, institutions or

political apparatuses." Accordingly, any calls to "change life" or "change society" will "mean nothing without the production of an appropriate space." As an example, he associates the failure of 20th-century state socialism with a failure to innovate an architecture and space distinct from the spaces of globalized capitalism. An implication of this assertion is that proposals for praxis should be critically evaluated not only in terms of motivating ideology, but also in terms of the space(s) that praxis would produce and encode. This presentation uses Lefebvre's teleological triad of absolute, abstract, and differential space with a focus on ecological contradiction as a demonstration of such an evaluative framework.

**DANIEL MOORE, DANA VERNON, SARA RAUSCHER, UNIVERSITY OF DELAWARE.** *Characterizing sea breeze circulations and associated precipitation utilizing multiple observational data sources.* The Delmarva and Florida Peninsulas, located on the East Coast of the United States, both experience sea breeze circulations (SBC) regularly in the summer, with occasional convergence of multiple sea breeze fronts from the surrounding coastlines. In some cases, there is enough uplift and convection related to the SBC that precipitation will form. The wind shift and temperature change associated with sea breeze frontal passage can be captured by meteorological observations. Further, under certain conditions, the sea breeze front (SBF), which tends to be greater in vertical extent near the advancing edge of the SBC, is visible using radar reflectivity data. We introduce a method to process observational data from multiple sources to detect the presence of the SBC. Meteorological station data from the Delaware Environmental Observing System (DEOS) and the Florida Automated Weather Network (FAWN), in conjunction with reflectivity data from several NEXRAD stations, are used to capture the characteristics of diurnal SBCs and associated precipitation. This project is part of a larger study, Hyperion, that is researching how regional climate models and observations can provide pertinent information to decision makers about water resources. One focus area in the Hyperion project is the Kissimmee River Basin in southern Florida.

**CARLOS A. MORALES-RAMIREZ, PEARLYN Y. PANG, NATIONAL UNIVERSITY OF SINGAPORE.** *Using Open-Source Data in Correlative Species Distribution Modeling of Marine Species.* Open-source data are information provided free online. It is gaining popularity in science research, especially for modeling species distribution. MaxEnt is an open-source software that models using presence-only data and environmental variables. These variables can also be found online and are generally free. Using all of these open-source data and tools makes species distribution modeling (SDM) more accessible. With the rapid changes our planet is undergoing, SDM helps understand future habitat suitability for species. Due to increasing interest in biogeographic research, SDM has increased for marine species, which were previously not commonly found in this modeling. Here we provide examples of where to obtain the data and how the modeling can be performed and taught.

**GIA NGUYEN, PANKAJ LAL, ERIK LYTTEK, PRALHAD BURLI, TAYLOR WIECZERAK, MONTCLAIR STATE UNIVERSITY.** *Optimal siting and transportation costs using a geographic information system. Case study: switchgrass-based bioenergy in Missouri.* The U.S. government has set an aggressive mandate on cellulosic biofuels, yet production targets have been reduced annually owing to a wide range of factors. A primary reason is the lack of an assured supply of biomass feedstock for the bioenergy industry, which is often considered a prerequisite for greater investments in biomass conversion capacity. Hence, assessing the



potential for cellulosic-based bioenergy has been a growing field of research to identify opportunities and limitations. We use fuzzy overlay and network location analyses to examine the optimal setting for a locally applicable bioenergy crop and to estimate transportation costs for the resultant biomass. Our analysis identifies geospatially favorable locations using a combination of biophysical characteristics and potential constraints, including developed urban areas, biodiversity, ecosystem services, traditional food crop zones, and logistic attributes. In this case study, we highlight the limited availability of marginal lands in the study area, which are emphasized as priority growing areas for switchgrass and other bioenergy feedstocks and identify other land use types that could be used for successful cultivation in Missouri. Further, we assess least-cost transportation pathways for optimal movement of bioenergy feedstocks and estimate potential biomass supply for existing local biorefineries.

**DARRELL NORRIS, SUNY GENESEO.** *Trump Battleground Races: Retrospect and Prospect.* An appraisal of three dozen counties from West Virginia to Wisconsin where Donald Trump's 2016 electoral victory entailed an exceptionally large swing compared to Romney's performance in 2012. Factors such as geographic context, economic circumstance, and religious profile are assessed, with strong evidence that counties' educational profile was a pivotal factor in Trump support. As well, voter turnout was decisive and is likely to be an important determinant in 2018.

**ELENICE OLIVEIRA, MANGAI NATARAJAN, MONTCLAIR STATE UNIVERSITY.** *Robbery on buses: the nexus between geographical patterns, environmental factors, and hot products.* Based on a case study of robbery on buses, this exploratory research examines the nature, and temporal and geographical patterns of this type of public transport crime in Belo Horizonte, Brazil. The study hypothesizes that the increased number of robberies on buses is due to (1) the expansion of the bus system that has led to a high concentration of passengers at specific bus stations (2) the increased availability of cell phones carried by passengers in the city for the past few years, and finally (3) environmental and geographical factors on high risk routes. This study is based on a variety of sources: police data, focus group discussions with law enforcement agents, bus operators, and systematic field observation conducted on hot spots. Finally, recommendations on policies to prevent crime in buses are discussed.

**SYDNEY OLUOCH, PANKAJ LAL, BERNABAS WOLDE, PRALHAD BURLI, MONTCLAIR STATE UNIVERSITY.** *A Survey of Future Renewable Energy Options for Kenya.* Global studies attempting to identify public preferences for different forms of energy technologies have been previously conducted. In Kenya, such studies are lacking resulting in the need to conduct studies investigating social and environmental effects of renewable energy investments. To obtain relevant public perspective that is important for designing suitable policy that will guide renewable energy development. Kenya has been selected as a case study as it offers an excellent model for the Sub-Saharan African (SSA) context. This study estimates the magnitude of external costs and benefits of renewable energy technology in Kenya. We employed the choice experiment technique using the Conditional Logit Model. With the rapid growth of renewable energy investments in Kenya, there will be anticipated impacts on the environment, price of electricity and employment. We intend to measure preferences over the potential trade-offs related to renewable energy development, such as type of renewable energy, distance and visibility, ownership, impact on the environment,

community job creation and effect on the price of electricity. From the preliminary results using 60 respondents in a pretest survey, it was evident that both rural and urban households demonstrated various levels of welfare gains that depended on the type of renewable energy technology. The results indicated that consumers in Kenya are likely to accept solar powered energy plants which are privately owned, with a low impact on the environment, that are located between 10 to 20 miles from their homes and result in creating between 10 and 20 jobs.

**ODAINÉ PUSEY, CHURCH TEACHERS' COLLEGE.** *Resilience and Adaptation of Households to Climate Change in Coastal Jamaica.* The aim of the research was to investigate the aspects of climate change that are having the greatest effects on the households and wider community of Alligator Pond, Jamaica. The community's close proximity to the sea, which is gradually rising and covering areas that were once dry, has increased its incidence of property damage and loss. Longstanding residents cited an increase in the presence of powerful waves and more frequent hurricanes within the last 5-10 years as the primary reason for the physical weakening and erosion of their houses and shops. Complicating these challenges is the fact that households and the community on a whole, lack the economic capacity to cope with these hazards, however, various resilience and adaptive strategies have been employed. Amidst these efforts, some families- particularly those living closest to the seaside- have lost homes and small family businesses, causing them to migrate further inland where it is deemed as safer. Others remain reluctant to re-locate, citing their dependence on the sea for survival as the main factor. The study, which was conducted using a qualitative approach, provides insights that fit within the broader framework of climate change-induced displacement and migration, which has come to the renewed attention of researchers and policy-makers.

**ASA RENNERMALM, REGINE HOCK, GIOVANNI CORTI, FEDERICO COVI, CLÉMENT MIÈGE, MARCO TEDESCO, JONATHAN KINGSLAKE, SASHA LEIDMAN, XAVIER FETTWEIS, RUTGERS UNIVERSITY.** *Meltwater Refreezing in Southwest Greenland Ice Sheet Firn 1989 and 2017.* Each summer enormous amount of meltwater is generated on the Greenland ice sheet surface. Almost half of that water percolates into firn (old snow surviving at least one melting season) where it refreezes and forms ice lenses. Previous studies have shown that if these ice lenses become meter thick they may prevent percolation and instead route meltwater to runoff to the ocean where it may raise global sea levels. Here we examine the spatial variability of ice lens distributions in five 20-meter long cores collected in 2017 at elevations spanning from 1950 to 2350 m a.s.l. in Southwest Greenland. At two locations, we studied temporal change by comparing our 2017 firn cores with cores collected in 1989 and 1998, respectively. We complement our firn core observations with annual estimates of refreezing and other surface mass balance variables modeled with the Modèle Atmosphérique Régional (MAR). We found that the 2017 cores reveal a sharp increase in ice lens thickness as surface elevation drops, covarying tightly with modeled annual refreezing at each site. A dramatic increase in firn ice content since 1989 and 1998 are noted at both locations, which match a substantial increase in modeled refreezing since those years. While we don't find evidence of meter thick ice lenses, our findings agree with other studies that show how firn pore space is rapidly diminishing, and with that the percolation zone's capability to absorb future increases in ice sheet surface melting.

**STEVEN SCHNELL, KUTZTOWN UNIVERSITY.** *The City and the Country in the Graphic Novels of Lynd Ward.* Lynd Ward, an American illustrator best known for his children's book illustrations, was also a pioneering graphic novelist, before anybody had even thought to use such a term. In the 1920s and 1930s, Ward published six wordless "stories in woodcuts," including *Gods' Man*, *Wild Pilgrimage*, and *Vertigo*. In this presentation, I examine these works, focusing on Ward's use of landscape imagery, particularly his use of countryside and city to frame his critiques of social and economic injustice, critiques that remain all-too-timely today, nearly ninety years after they were first published.

**JAY PRAKASH SINGH, PANKAJ LAL, PRALHAD BURLI, BERNABAS WOLDE, MONTCLAIR STATE UNIVERSITY.** *Factors impacting the switchgrass yield across the United States: A meta-analysis.* The Energy Independence and Security Act (EISA) (2007) aimed to reduce the dependence on fossil fuels and led to an increased focus on bioenergy feedstocks such as switchgrass. As a candidate feedstock that can potentially replace fossil fuels, it is crucial to recognize factors that can affect the sustainable supply of switchgrass biomass. To identify factors that impact switchgrass yield, we carried out a meta-analysis of an ever-growing body of literature on switchgrass cultivation and harvest. We identified soil physicochemical properties, geographic regions, and switchgrass ecotypes as parameters that influence switchgrass' yield. Our analyses reveal that physico-chemical parameters such as nitrogen application, rainfall, and temperature are statistically significant predictors of switchgrass yield. The yield was positively related to nitrogen application, rainfall, and temperature. We also found that lowland switchgrass ecotypes show a positive relationship with switchgrass yield. Switchgrass yield was also higher in a two-harvest system compared to a single or triple harvest regime. Soil taxonomy was also a significant predictor of switchgrass yield. However, we observed that a wide range of soil types in addition to nitrogen inputs positively impacted switchgrass yield, indicating that switchgrass can grow on a variety of soil types within a specific geographic region. Our results indicate a relatively wide range of regions for switchgrass cultivation across the US, particularly in the Plains and the Midwest regions, providing credence to suitability as a high potential bioenergy crop.

**LUCAS SMITH, CONNOR HARGROVE, SUNY GENESEO.** *Warship Design, 1859-1945: Power, Propulsion, and Protection.* All attempts to compare warship design historically have met a similar impasse - that the central problem in analyzing warships and their key traits is the absence of quantifiable comparative statistics. This project has set out to analyze the three essential aspects of warship design, power, protection, and propulsion, and to create comparable measures. We explore the development of major warship design in contexts of technical change and national differences in the necessary compromises involved in balancing power, propulsion, and protection. During the period 1859-1945, improvements in the design and capabilities of warships progressed at an unprecedented rate, compared to near-stasis across the entire age of sail. After 1859, and especially after 1873, protective armor and shell penetrative power embarked on a 70-year race. Attainable speed too became increasingly important. Meeting all three goals entailed a substantial increase in vessel size. Hindsight teaches that compromise offered the best chances of success and survival in combat conditions. But not all countries absorbed and applied this lesson.

**MEGHANN SMITH, MONTCLAIR STATE UNIVERSITY.** *Identifying the Characteristics of Tourists visiting Hard Apple Cideries in the Hudson Valley Region.* This study sought to identify the key differences between product-centric and region-centric hard apple cider tourists in the Hudson Valley region and determine visitor characteristics that can influence the number of repeat visits to cideries. The hard apple cider industry is a rapidly growing niche sector of the culinary and agricultural tourism industry. This study identified two types of tourism (product-centric and region-centric) for hard apple cider business in New York state, and distinguished them into two distinct markets. By recognizing differences between tourist types, individual cider producers and potential collaborative local industries can benefit from personal growth and regional development. Predictors associated with increased repeat visits for the product-centric group included having less formal education, living relatively locally (within a 30-minute drive), having previously visited additional regional cideries, and an intention to visit additional cideries during the same trip. Predictors associated with increased repeat visits for the region-centric group included marital status and travel time to the destination. While both tourist groups have different predicative characteristics indicating likelihood to return to an establishment, it is important to develop outreach strategies to influence multiple tourist types' habits. Through expanded marketing attempts and policy support, the Hudson Valley region may hold the potential to earn recognition as an important region for the apple cider industry.

**NATHAN THAYER, UNIVERSITY OF DELAWARE.** *Reclaiming the Mountain: From Consumptive Production to The Productive Consumption Of West Virginia.* Appalachia has long been defined by the coal deposits contained in its soils. As the region transitions into a post-coal economy, national discourses and scholarly work continue to portray Appalachia in relation to coal (or, lack thereof). While such a view provides valuable insights into the impacts of the coal industry, it also narrows our view to only seeing coal and capitalism where a diversity of activities may exist. In this paper, I push back against the narrative of "coal country", which homogenizes Appalachian lives and economies. Applying Marx's dialectic of production-consumption and a diverse economies framework, I re-read Appalachia's post-coal economy as diverse through a recently established beekeeping collective in West Virginia. Focusing on the different ways West Virginia's land and labor have been, and are being, consumed, provides entry to seeing the diversity of economic activities, arrangements, and possibilities existing in a region long seen only through its relation to coal. Re-reading Appalachia not only brings to light the diversity of economic livelihoods already in place, but allows us to move away from asking "what's left" in Appalachia, to what's possible.

**REBECCA THEOBALD, UNIVERSITY OF COLORADO AT COLORADO SPRINGS.** *Apportionment and Redistricting: Asking geographic questions to address political issues.* The object of this study is engagement – providing students and community members with resources to discuss how fair representation in elected bodies at federal, state, and local levels is essential to hearing all voices in a community. Gerrymandering – dividing political entities into election districts to give one political party a majority in many districts while concentrating voting strength of another party into as few districts as possible – is a recurring headline. This hands-on session examines legislative districts and explores implications of drawing lines to support those in power. Participants will receive materials to use in classrooms or with community organizations. Over the past forty years, the percentage of moderate representatives in legislative bodies at state and federal levels has decreased, posing a problem for effective governance. This

presentation demonstrates a sequence of activities to support college instructors, secondary teachers, and community educators in explaining the geographic, mathematical, and civic implications of apportionment, redistricting, and gerrymandering. National Geographic's State Giant Maps provide historical context, examining the movement of population over time. Resources from lawyers, mathematicians, and politicians offer current insights. Online mapping tools use Census data to allow students and citizens to create congressional districts. Participants will undertake spatial analysis to understand the apportionment process, explore mapping methods to understand the history and development of Congressional districts, and learn geospatial tools to incorporate 2010 Census data in a redistricting exercise for any state. The process can then be applied to state or local legislative districts, albeit at a different scale.

**ATSUSHI TOMITA, BARUCH COLLEGE.** *Detecting deforestation and conversion to oil palm plantations in tropical Asia with dense Landsat time series, ALOS-2/PALSAR-2 data and Google Earth images.* The aim of this study is to reconstruct the history of deforestation and land conversion to oil palm plantations in tropical Asia using multitemporal satellite data. A new method was constructed with a newly developed computer model, the Land Change Detection and Land Definition model (LCD/LD model), to map out the spatiotemporal distributions of land changes. A comprehensive, cloud-free Landsat dataset was created from all available Landsat data from 1988 to 2017. BR45, the band ratio of the near-infrared (Band 4) to midinfrared (Band 5) bands was used to detect and track the transformation of land into oil palm plantations. In addition, the annual ALOS-2/ PALSAR-2 data acquired in 2015 and 2016 were used in the LDM to improve the separation between oil palm and natural vegetation. The combined two-tiered LCD/LD model could successfully detect land changes at a 30 m resolution. By the LCDM, approximately 98% of the changed land and 95% of the unchanged land were correctly detected. The average differences between the estimated and observed years of land change were 2.68, 0.67, 2.99 and 2.16 for oil palm, regrowth, water, and urban land types, respectively, and the overall average was 2.08 years. A land use model with 3 land categories (oil palm, forest, and others) was successfully constructed with Producer's and User's accuracies of 88% and 85% for oil palm, 100% and 86% for forest, 76% and 83% for others, respectively, after the most recent category (18.3% of the total samples) was excluded.

**TAYLOR WIECZERAK, MONTCLAIR STATE UNIVERSITY.** *Public Perception and Willingness to Pay for Green Infrastructure Improvements in Northern New Jersey.* Significant water pollution caused by flooding due to heavy precipitation and extreme weather events such as Hurricane Sandy and similar storms of the past have become a considerable problem. Urbanized areas of northern New Jersey experience heavy downpour-related contamination and water pollution when stormwater and untreated sewage are diverted through old drainage systems to adjacent water bodies. These contaminated discharge events are from combined sewer overflows (CSOs). Though the effects of contamination from CSOs have been studied, the socio-economic aspect of these issues has not received similar scientific attention. This study seeks to understand the socio-economic facets of the continued use of CSOs in Elizabeth, New Jersey. An econometric stated preference method was used to analyze the willingness of residents to pay for improvements to CSO infrastructure through the assimilation of green infrastructure such as bioretention gardens, rain barrels, and green roofs. The analysis also sought to understand how different factors such as age, economic status, and ethnicity, in addition to perceptions of environmental problems and governmental action, affect their

willingness to pay for green infrastructure improvements. We found that respondents were mostly willing to pay for green infrastructure annually and as a one-time payment, and had overall positive outlooks on green infrastructure while citing some concerns about current infrastructure. This is important in assessing the overall attitude towards these fixtures, and may be critical in crafting local policy and development, especially in terms of environmental equity.

**MICHAEL ZIOLKOWSKI**, SUNY COLLEGE AT BROCKPORT. *Sport tourism as an economic development opportunity: analyzing the case of the World Juniors Hockey Championships*. This paper reviews sport tourism as an economic development tactic, specifically in the context of the 2011 and 2018 International Ice Hockey Federation (IIHF) World Juniors Hockey Championships (World Juniors) in Buffalo, New York. The cross-border strategic responses by the principal organizers of the events from both the 2011 and 2018 tournaments are discussed. This research finds that the organizers were successful in drawing large numbers of tourists to the region, but that the market for this particular sports tourism product may be regionally saturated. The international nature of hosting the games means that cultural perceptions, destination image, and transaction costs may play a role in spectator demand. The analysis suggests that the economic impact has spread to a relatively small number of organizations, is of short-term duration, and has probably grown more concentrated over time. The long-term implementation lessons include improving the ambiance around the sports venues and cross endorsing non-hockey activities. The need to rotate the games around the world is balanced by the organizer's need to maximize revenues by hosting the tournament in large markets. Transportation to the games, particularly from Canadians crossing major international pieces of infrastructure, face relatively long and uncertain wait times due to weather and immigration procedures.

**MATTHEW ZUCCARO**, MONTCLAIR STATE UNIVERSITY. *The High Line: Decay and Rebirth of a Public Space in Manhattan*. On a balmy summer day, thousands of residents and tourists leisurely stroll along an elevated pathway, isolated from the hustle and bustle of Manhattan which is occurring 50 feet below them. All of this is happening in Manhattan's newest park, The High Line, which transformed an abandoned railroad viaduct into a vibrant and sustainable public space. The High Line has not only provided a unique public space to be enjoyed by all generations, but has also become a sustainable driver for economic development in the surrounding neighborhood. While the High Line is now heralded as a tremendous success, when it was first conceived, it received significant resistance and skepticism from city officials, residents, and developers. This paper explores the politics surrounding the creation of the High Line as well as the challenges faced in transforming an abandoned railroad line from a neighborhood eyesore into a landmark destination.

## Poster Abstracts

**PENELOPE ADLER-COLVIN, HUICHENG CHIEN.** *Spatial and Temporal Analysis of Changed Temperature and Precipitation from 1950-2017 in New York State.* The Earth's climate has exhibited significant changes during this century due to anthropogenic activities. The impacts of such temperatures and precipitation vary with differences in climate, geography, and land use. The primary objectives of this research are to determine whether climate change is occurring in New York State, and identify the locations of hot spots of changed climate. The objectives have been achieved through analysis of historical temperature and precipitation data from 1950 to 2017, downloaded from the NOAA website. According to the measured annual mean temperature and annual total precipitation, annual surface maps of temperature and precipitation were developed using ArcGIS spatial interpolation. Subsequently, the time series of annual temperature and precipitation for each New York County were developed for trend analysis using the Nonparametric Mann-Kendall Test. The results show an overall upward trend in temperature (30 of 62 counties had a statistically significant increasing trend) and precipitation (43 of 62 counties had a statistically significant increasing trend) from 1950-2017. The maps created from the data and ArcGIS spatial analysis methods show hot spots are concentrated on metropolitan areas, specifically New York City and Albany. This research elucidates the effects of human activity on regional climate. High temperature increases in a relatively short time period can negatively impact various facets of the environment, including water quality, ecosystem viability, and resource availability. Thus, these results encourage consideration of human activity that lead to environmental degradation.

**WILLIAM ANDERSON, JORGE LORENZO-TRUEBA, MONTCLAIR STATE UNIVERSITY.** *A geomorphic enthalpy method in 3D: Application to the evolution of delta under sea-level cycles.* Today, many deltas around the world (e.g., Mississippi river delta) are highly populated and vulnerable to sea-level rise. We need tools that can explain the interplay between sea-level rise and sediment supply to form baselines for coastal management and protection. In general, deltaic systems are composites of two sedimentary environments: a depositional fluvial region and an offshore region, both of which lie on a relatively flat, nonerodable bedrock basement. Assuming sediment transport depends on the fluvial slope, the growth of fluvial deltas can be modeled using heat transfer numerical techniques. In particular, we use an enthalpy method which considers the deltaic system as a Stefan problem with two moving geomorphic boundaries: the alluvial-bedrock transition, which separates the fluvial region from the basement, and the shoreline, which marks where the delta meets the ocean. Currently, many models applying heat transfer techniques look only at longitudinal delta profiles, which do not consider lateral flow of sediments. In order to explore a wider range of scenarios we have extended prior modeling efforts so that the deltaic prism is considered as a fully three-dimensional system. The model is verified through analytical solutions that exist under specific sea-level change scenarios. Additionally, model results under constant sea-level rise are consistent with flume experiments where the fluvial surface maintains a fixed geometry as it retreats landward. Moving forward, we believe this model can contribute to quantitative predictions of the growth of river diversions from major channels into adjoining drowned areas, where the sediment can build new land.

**RENATA BLUMBERG, LAUREN KULIK, KAYLA ABELLA, MONTCLAIR STATE UNIVERSITY.** *Farming for the Garden State: Differential Motivations in Direct-to-Consumer Marketing.* New Jersey has a long history of market gardening, but evidence suggests that the recent rise in popularity of Direct-to-Consumer marketing outlets like farmers markets is not reaching all consumers equitably. This research project is based on findings from in-depth interviews of farmers throughout the Garden State. Specifically, we analyze the degree to which competition is driving farmers to certain lucrative markets, while other markets remain underserved. Analysis of the interviews reveals that the social and environmental motivations of the farmers involved play an important role in determining which markets farmers utilize.

**DANIEL BOYD, SUNY ONEONTA.** *Estimating Chlorophyll, a Concentration from Landsat 8 Imagery.* The monitoring of algal blooms and eutrophication has become a priority, given their negative environmental, industrial, recreational, and health implications. Remotely sensed imagery offers a solution in using spectrally active chlorophyll a concentration as a proxy for algal biomass. Feasibility and effectiveness of existing chlorophyll a prediction algorithm for Landsat imagery were evaluated in Otsego County, New York. Water quality samples were taken on 3 differing bodies of water within close proximity to Landsat 8 passage. Processed Landsat 8 data were then downloaded and reflectance at differing bands were recorded for use in prediction algorithms. Predicted chlorophyll concentration from algorithm output and actual chlorophyll concentration from in situ sampling were compared across sample dates. Cloud cover presented a barrier to analysis, with more than half of the satellite passes being too cloudy to analyze. Images with high cloud cover that were analyzed failed to significantly correlate with and predict chlorophyll a concentration. The best chlorophyll an algorithm performance was from the image with lowest cloud cover ( $n = 15$ ,  $r^2 = 0.81$ ,  $p < 0.05$ ). Prediction models were made from the best performing algorithm, and were tested across numerous sample dates. Success varied, with the algorithm built from the image with the lowest cloud cover most successful. However, there were some issues in scale across some prediction models, and no model was able to significantly predict chlorophyll concentration when cloud cover was highest.

**KRISTEN BRENNAN, MONTCLAIR STATE UNIVERSITY.** *PSEG Institute for Sustainability Studies Green Team Program.* The Green Teams program consists of transdisciplinary teams of students coming from a range of majors and a variety of universities to address sustainability needs of hosting corporations and organizations. The program has partnered with businesses, municipalities, non-profit organizations, and governmental agencies to offer project-based learning, skills-based training, and professional development to students. In 2019, PSEG ISS plans to continue growing its Green Teams Program.

**EMILY CANTOR, KUTZTOWN UNIVERSITY.** *Precipitation Variation and Frequency of Naturally Induced Fires in California and Oregon from 1980 to 2015.* Throughout the western side of the United States, there are more events being recorded annually in regards to natural hazards. Wildfires create an environment that is not only detrimental to the human geography but also the physical geography of these affected areas. The purpose of this research is to observe the changing period average precipitation for the states of California and Oregon in conjunction with the wildfire frequencies, within each states' climate division. The wildfires were aggregated by human induced or naturally induced, whereas this research focuses on the naturally induced events. Over the span from 1980-2015, most results showed that when the period average



precipitation per climate division years were higher, there were less events of the phenomena. Whereas the years that the period average precipitation per climate division were lower, wildfires were more frequent. This was mostly evident in both California and Oregon. There were few exceptions within the state of Oregon that years with higher period average precipitation records also had a higher frequency of wildfires. Continuing this research would account for the human induced wildfires while observing the population growth within the counties of each state. Using this data to further event records could help further crisis management and land use planning when focusing in the western region of the United States.

**DIANIEL CIARLETTA, CHRISTOPHER TENEBRUSO, JORGE LORENZO-TRUEBA, MONTCLAIR STATE UNIVERSITY.** *Mapping Barrier Island Foredune Ridge Development and Shoreline Change in New Jersey.* Recent work has shown that long-term trends in the sediment budgets of coastal barrier islands are reflected not only in shoreline changes, but also in the surface morphology of relict and active foredune ridges. Using historic aerial images, nautical charts, and modern LiDAR data, we map subaerial morphologic changes along several New Jersey barrier coasts, including beaches at Corson's Inlet, southern Long Beach Island, and Sandy Hook. Specifically, we construct time series analyses of shoreline change and foredune ridge emplacement/abandonment, calculating fluxes of sand to the beach and the ridge system. We use these analyses to reconstruct cross-shore sediment budgets over the last century, attempting to infer the contributions of artificial beach nourishment to modern beaches—gaining insight into the baseline sediment budget regime of New Jersey's coast, prior to the onset of major coastal interventions. Eventually, we seek to use the record of shoreline and foredune ridge evolution over the last century to inform a model of barrier island geomorphic change that could be applied to locations in New Jersey that preserve pre-historic beach/foredune ridge systems. Understanding the sensitivity of New Jersey's barrier coasts to past changes in sediment budget will allow for greater understanding of future changes in response to increasing rate of sea-level rise and other anthropogenic forcing.

**LIGIA CLARA, HOFSTRA UNIVERSITY.** *Suicide, Culture, and Society: The Relationship in The Americas and Europe.* This research was conducted to determine if cultural values affect suicide rates throughout North, Central, and South America, as well as Europe. The data on suicide rates was obtained from the World Health Organization, which was then imported into ArcMap to create three separate maps displaying the statistics in these selected regions. The "Cultural Values" map was created using details from the Inglehart-Welzel cultural map, and edited on Adobe Illustrator. The results illustrated that the relationship between cultural values and suicide rates in The Americas, a region where people emphasize self-expression values, such as greater acceptance of immigration, gender equality, and traditional values, including the importance of family values, and religion, was not clear, although the United States does fall into the highest category of suicide rates. In Europe, however, there appeared to be increased suicide rates throughout Eastern Europe, where people stress survival values, like physical and economic security, ethnocentrism, and secular/ traditional beliefs, such as liberal ways of thinking associated with socialistic principles. This varied for Western European nations, in which their lower rates of suicides occurred among populations that prioritize self-expression and secular/ rational ideologies.

**ISAMAR CORTES, JORGE LORENZO-TRUEBA, ROBERT TWILLEY, ANDRE ROVAI, MARK CHOPPING, MONTCLAIR STATE UNIVERSITY.** *Exploring the role of evaporation and precipitation on mangrove island morphology: Insights from islands in Belize and Florida.* Mangroves provide ecosystem services to societies along tropical marine environments, including storm protection, coastal biodiversity, and blue carbon storage. As the importance of mangrove ecosystems has become clearer over recent years, their coverage continues to diminish through mismanagement and climate forcing. In order to study the effects of climate on mangrove ecosystems, we explore mangrove islands across the Caribbean, with a focus on Florida and Belize. We use available datasets (e.g., WHOI and TRMM) to extract evaporation and precipitation values across the Caribbean over the last twenty years (1997-2017). We find that mangrove islands in Belize have experienced low net evaporation (i.e., evaporation - precipitation) rates over time, and therefore exhibit abundant vegetation with no die off. In contrast, mangrove vegetation in Florida islands typically transitions from red mangroves at the ocean's edge to black mangroves and then salt flats, suggesting a salinity increase towards the interior of the island. In order to quantify this phenomenon, we have developed a mathematical model that relates the area of mangrove vegetation within the island as a function of the net evaporation rate, the hydraulic conductivity of the soil, ocean salinity, and a critical salinity level beyond which mangroves cannot survive. We also use the model to relate the hydraulic conductivity of the soil with the area of red mangroves, which we can estimate using remote sensing. Model results show agreement with field observations and suggest the importance of net evaporation rates as well as hydraulic conductivity on mangrove island morphology.

**ANDREW DIAZ, KEAN UNIVERSITY, DANIELLE HURST, RUTGERS UNIVERSITY, SENECA KINN-GURZO, SWARTHMORE COLLEGE.** *PSEG ISS Green Teams: Suez North America Green Resolutions.* Suez strives to identify cutting edge technology to benefit environmental and consumer health. The PSEG Institute for Sustainability Studies 2018 Green Team assisted Suez to address several challenges, including reducing algal blooms, controlling water chestnut populations, and reducing fish in intake pipes. We investigated technologies that address algal blooms by mediating contributing factors such as sunlight, temperature, nutrients, and stagnant water; these technologies included solarbee and floating wetlands. We examined water chestnut case studies to build and implement strategies to prevent its spread. Further, as fish are attracted to moving, oxygenated water, our team researched barriers/screens that could prevent fish entry. We focused on systems that were the most sustainable, low cost, and ethical. Lastly because many of our deliverables were related to waste, we developed a compost plan and suggested vendors to help Suez's Haworth site. Collectively this information will aid Suez in addressing their environmental sustainability challenges.

**JILLIAN ELLER, TEMPLE UNIVERSITY.** *Analyzing Park Accessibility and Publicness in Philadelphia, PA.* This study evaluates whether new parks and green spaces in Philadelphia are truly accessible to the public. Based on Nemeth and Schmidt (2007), Coen and Ross (2006), we developed and implemented a survey evaluating publicness based on management, ownership, uses, and users of the first eighteen parks created in support of Philadelphia, Pennsylvania's Green2015 plan. Our survey evaluated thirty features that affect the park's final public accessibility score, including security measures, technology encouraging or discouraging use, and quality of facilities and landscape. Our findings indicate parks with a mix of public

ownership and non-profit private partnerships have higher scores than entirely public or private spaces. Parks within this spectrum of ownership are well maintained and schedule events regularly, which encourage use, but they also have many security components, like constricted entry ways, which can discourage use. Further, civic involvement, coupled with city-governance affiliation, improves neighborhood engagement as observed in the structure of park management. Park space privatization limits publicness but overall meets use and accessibility for communities they serve. Locally privatized spaces benefit from neighborhood leaders that promote activism of needs and hold more authority over space. Based on observations, completely public or private green spaces are underutilized because there's less opportunity for community activism. Insight into park development processes informs communities of strategies to improve publicness and accessibility of new green spaces. This survey will be presented as a poster consisting of background knowledge, visual data results of the survey, analysis of the survey, and images supporting the findings.

**DUNIA FERNANDEZ, ERIK FORGOSTON, MONTCLAIR STATE UNIVERSITY.**

*Control of Secondary Extinctions in Food Webs.* Climate change, habitat destruction, disease, and many other factors often cause species extinctions within large ecosystems. The initial loss of one species in a food-web often triggers a cascade of secondary extinctions, thereby threatening the stability and survival of the ecosystem in question. Here, we demonstrate how the immediate, additional removal of a certain species in a food-web can reduce the number of secondary extinctions when compared with the initial cascade of extinctions. These possible controls are not always obvious given the dynamics of the predator-prey network. We also consider how stochasticity may affect the extinction cascade and analyze how the added risk of extinction introduced by the stochastic model may influence the controls.

**NICOLETTE FILIPPONE, PANKAJ LAL, PRALHAD BURLI, TAYLOR WIECZERAK, DANIEL RYNERSON, ELSHAMA SANTANA, MONTCLAIR STATE UNIVERSITY.**

*Levelized Cost of Energy for Community Solar Projects in New Jersey.* Renewable energy technologies are gaining momentum in New Jersey, in order to reach the state's sustainability and carbon footprint goals. The development of community solar is one alternative that can be integrated within the current energy mix to accelerate progress towards these goals. The objective of this research is to evaluate the Levelized Cost of Energy (LCOE), which is a present value calculation of the unit-cost of electricity over the lifespan of a generating asset. LCOE allows the comparison of various types of technology such as wind, solar, and natural gas of lifespans, project size, capital cost, return, and capacities. To achieve this, the LCOE is estimated using National Renewable Energy Laboratory's (NREL) modelling tool named Cost of Renewable Energy Spreadsheet Tool (CREST). The CREST model is an economic cash flow model designed to allow policymakers, regulators, and renewable energy community to determine project economics, design cost-based incentives, and to analyze the impact of various state and federal support structures. We estimated project LCOE for multiple project sizes by incorporating a range of policy assumptions, financing requirements, and development scenarios. Finally, we also developed customized project scenarios for the development of community solar projects in New Jersey. Our results highlight the wide range of LCOE estimates and identifies the key drivers based on LCOE sensitivity to model inputs. This research is timely and can be used to develop policy designs that help New Jersey transition to a clean energy future.

**MATTHEW FRIEDMAN, HALEY MCPARTLAND, LUKE BOTTA, RUSSELL BURKE.**

*Malaclemys terrapin Nest Predation: peak to post nesting season in varied locations.* As artificial nests have been proven effective in the past at mimicking true nests of the diamond-backed terrapin (*Malaclemys terrapin*), they were used in this study to further explore nest predation. Artificial nests were created by excavating a 13 cm deep hole and adding ocean water. Nests were then filled with soil or sand and marked with flags. Raccoons may use the scent of ocean water as a cue when predating nests. The nests were constructed in a variety of geographic areas, including sandy dunes, sandy grasslands, and gravel covered grasslands. Three locations (JFK airport, Jamaica Bay Wildlife Refuge, and a Town of Hempstead beach) where raccoons are the only known predator of terrapin nests, and nesting terrapins are present, were examined in this study. The JFK airport location has an increasing terrapin population, the Town of Hempstead beach has a stable population, and Jamaica Bay has a decreasing population. The study occurred during and after the peak of terrapin nesting season. It was determined that predation decreased after peak terrapin nesting season. Predation rate was significantly higher in locations with a decreasing terrapin population than in locations with an increasing terrapin population. Predation was also significantly higher in the sandy grasslands than in the sandy dunes.

**ADRIANA GALARZA, HOFSTRA UNIVERSITY.** *How Much Food is in Our Glyphosate?*

This study was conducted to determine whether the highest-producing states of corn and soybeans, the two largest agricultural outputs in the United States, also use the highest amounts of glyphosate, the most commonly used pesticide, in their crop production. Data was taken from the USGS, USDA, and U.S. Census. The desktop version of ArcMap was used to join the data together, and create three thematic maps showing which states use the highest amounts of glyphosate, which states produce the most corn, and which states produce the most soybeans. The results show that of the five highest producing states for each crop individually, four are top producers for both of the crops. These states are Minnesota, Iowa, Illinois, and Indiana. Of these four, Iowa, Illinois, and Indiana are among the states which use the highest quantities of glyphosate in country. The results show a correlation between high pesticide usage and high crop production.

**DIANE HAGMANN, MICHAEL A. KRUGE, MATTHEW CHEUNG, XIAONA LI, JAY SINGH, JENNIFER KRUMMINS, MARIA MASTALERZ, JOSE LUIS R. GALLEG0, NINA GOODEY, MONTCLAIR STATE UNIVERSITY.** *Contaminated Soils from the Liberty State Park (NJ, USA) Brownfield Site.*

Knowing the composition of soil contaminants present in the soils of an urban brownfield yields a better understanding of their potential to impact nearby aquatic systems, and plant, animal, and human communities. The overall goal of this study is to characterize the organic and inorganic contaminants within the 490 ha Liberty State Park (LSP) in Jersey City (NJ). LSP was a major railyard abandoned around 1969 and subsequently converted to parkland. A large portion (ca. 100 ha) of LSP remains closed and has undergone natural, passive revegetation. Prior studies showed high heavy metal contamination within this restricted zone. Fragments of coal are common in the soil, suggesting that organic contaminants could also be of concern, although not previously characterized. Most of the restricted zone is now densely forested, while one site (25R) supports no vegetation. Soil from a reference site Hutcheson Memorial Forest (HMF), a farmland of similar successional timeframe and likely uncontaminated, was also studied. Composited soil samples from HMF and from 4 plots within

the LSP restricted zone were analyzed by gas chromatography-mass spectrometry (GC-MS), loss-on-ignition, analytical pyrolysis-GC-MS, ICP-MS and optical microscopy using standard coal petrographic methods. Based on the GC-MS and pyrolysis-GC-MS results, we found that all forest soil samples (LSP and HMF) yielded organic molecular markers for higher plants and soil microbes. Unlike the HMF soil, however, the forested LSP soils also contained significant amounts of fossil fuel-derived hydrocarbons. Investigation of the organic compound-contaminating soils may contribute to a better understanding of this urban brownfield.

**NICOLE HALLAHAN, SHIPPENSBURG UNIVERSITY.** *Georeferencing Historical Maps and Aerial Photos to tell the Story of Stockport, Pennsylvania.* Stockport, PA is an old lumber town in northeastern Pennsylvania. The town only has ruins of building and there is very little known about the town outside of short, local histories. The purpose of this research is to use old aerial photos, handwritten mental maps, and historical survey maps to tell the history of Stockport, PA. The survey maps and photos will be georeferenced together for the identified time periods. The landmarks on the handwritten mental maps will be used to interpret landmarks on the georeferenced maps. These historical maps will then inform the interpretation of a LiDAR-based map that is being created in parallel. These steps will be used to help tell the history of the town. The final product once the semester is over will be georeferenced maps with landmarks from the handwritten maps to go along with the LiDAR map.

**PATSY HERRERA, BRITTANY DORTA, ROHAN PADHYE, AMY TUININGA, DAN TRUITT, DIRK VANDERKLEIN, MEIYIN WU, MONTCLAIR STATE UNIVERSITY, ANDREW DIAZ, KEAN UNIVERSITY, DANIELLE HURST, RUTGERS UNIVERSITY, SENECA KINN-GURZO, SWARTHMORE COLLEGE.** *PSEG ISS Green Teams: Suez North America Green Resolutions.* Suez strives to identify cutting edge technology to benefit environmental and consumer health. The PSEG Institute for Sustainability Studies 2018 Green Team assisted Suez to address several challenges, including reducing algal blooms, controlling water chestnut populations, and reducing fish in intake pipes. We investigated technologies that address algal blooms by mediating contributing factors such as sunlight, temperature, nutrients, and stagnant water; these technologies included solarbee and floating wetlands. We examined water chestnut case studies to build and implement strategies to prevent its spread. Further, as fish are attracted to moving, oxygenated water, our team researched barriers/screens that could prevent fish entry. We focused on systems that were the most sustainable, low cost, and ethical. Lastly because many of our deliverables were related to waste, we developed a compost plan and suggested vendors to help Suez's Haworth site. Collectively this information will aid Suez in addressing their environmental sustainability challenges.

**PAMELA JACKSON, TEMPLE UNIVERSITY.** *The Impact of Agriculture and Development in the Micropolitan Community of Yankton.* One of least populated regions, is The Upper Missouri River Basin (UMRB) land is used primarily for agriculture. Yankton, an area within the UMRB, is experiencing changes due to a potential conflict between two social values, agriculture, and urban development. Yankton is classified as a micropolitan because it is "an urban area with a population of at least 10,000 but less than 50,000." The purpose of my research is to determine how Yankton residents' views are shaped by the extent to which they value crops for animal food and development. To answer this question, I conducted surveys on values. I

conducted door-to-door surveys in the city of Yankton to determine which values were most important to residents. The survey included a portion that allowed for participants to rank values that were most important for them to see on the land and map where these values can be found in their communities. Of the residents surveyed 93% valued crops, and 80% valued development. How the community plans to provide services and opportunities will determine Yankton's future.

**ARYE JANOFF, JORGE LORENZO-TRUEBA, PORTLAND HOAGLAND, DI JIN, ANDREW ASHTON, MONTCLAIR STATE UNIVERSITY.** *A Coastal Geo-Economic Model for Coordinated Community Response to Local Erosion and Sea Level Rise.* Heavily developed coasts require mitigation to protect property and infrastructure from beach erosion. Soft engineering involves external sand placement to widen beaches artificially, termed nourishment or beach fill. Hard engineering involves the construction of immovable objects, such as shore-perpendicular groins, which slow alongshore currents to deposit sediments locally. While groins accrete sediments updrift, they also limit downdrift sediment supply, exacerbating erosion, often forcing downdrift communities to respond with new engineering measures: groin (e.g. Holgate, NJ), nourishment (West Hampton Dunes, NY), or abandonment (South Cape May, NJ). Our research focuses on these local risks associated with groins. We developed a coupled geo-economic model for a two-community system to explore how wealth and size, the costs of sand/rock, the discount rate, and erosion driven by sea-level rise might affect protection strategy choices using cost-benefit analysis. Benefits are a function of beach width and the number of property rows; costs are a function of groin length, groin maintenance, and nourishment volume. Results indicate large, wealthy communities have the funds to maintain beaches via groins or nourishment, while small, poorer communities abandon properties. Higher sand costs make groin construction more feasible, while the opposite is true for higher rock costs. A higher discount rate favors groins because they stabilize beaches better in the short term. Increased erosion rates force communities to nourish more frequently to maintain beach width. This simple model provides a tool to analyze coastal management efficiency along vulnerable coasts under local and global risks, incorporating feedbacks between natural and human processes.

**MAIMOUNA KANTE, DREW UNIVERSITY.** *Coastal Change of the Largest City in Africa: Lagos, Nigeria.* With a growing population of nearly 22 million, Lagos, Nigeria is the largest city on the continent of Africa. Lagos is made up of many islands in the Atlantic Ocean. The word "lagos" itself comes from the Portuguese word "lakes" (Onuoha 2017). As the city continues to grow, urban planners have developed new ways to address housing for different groups of peoples across the city. One of the solutions has been to create an artificial peninsula called Eko Atlantic (Onuoha 2017). This poster documents coastal changes in the construction of Eko Atlantic using archived satellite imagery from 2000-2017. Intensification of construction raises questions about the viability of future of coastal development amidst anticipated changes due to sea level rise.

**WOOHEE KIM, DANLIN YU, YING CUI, MONTCLAIR STATE UNIVERSITY.** *Spatial correlation of carbon isotopes of C3 land plants and mean annual precipitation.* Carbon isotopes of C3 land plants have been used as proxies for precipitation and atmospheric CO2 levels in the geologic past. However, the effect of precipitation and CO2 sometimes cancel each other, making it difficult to interpret the carbon isotope signals. Previous regression analysis has shown increased mean annual precipitation (MAP) corresponds to decreased carbon isotope values, but

this relationship becomes insensitive at high MAP. This led to the suggestion that the carbon isotopes of C3 land plants at wet sites reflect strong atmospheric CO2 signals. Here, we test this hypothesis by conducting a geospatial correlation analysis on carbon isotopes and mean annual precipitation at wet sites that are characterized by MAP greater than 1000 mm. We obtain climate data, including MAP, growing season precipitation, and mean annual temperature data from the 1-km2 resolution WorldClim database. Normalized maximum difference vegetation index (NDVI) from Moderate resolution imaging spectroradiometer (MODIS) are also used to perform the least square regression. We found no statistical significant correlation was found at the wet site between d13C and MAP (or growing season precipitation). This suggests that carbon isotopes of C3 land plant from similar climatic conditions can be used reliably as a pCO2 proxy. This research will help better understand the climatic controls of carbon isotope fractionation during C3 land plant photosynthesis and estimate CO2 levels in the past.

**SARAH KLUSH, JULIA R. ALLISON, HOFSTRA UNIVERSITY.** *Effects of Increases in Sedimentation and Turbidity through Time on Fish Communities in the Upper Mississippi River Systems.* Researchers suggest that human actions now have a greater influence on the environment than do natural processes. Among the negative anthropogenic impacts to rivers, increased sedimentation and turbidity produces habitats that are not ideal for submersed aquatic vegetation (SAV). This is especially true in the lower reaches of the Upper Mississippi River System (UMRS). Assuming that SAV was present throughout the UMRS in archaeological times, we expected the composition of fishes present in the upper reaches of the UMRS to more closely resemble archaeological times. This was not supported by our data. There was a significant difference between archaeological (Arch) and modern upper (MU) samples ( $R \geq 0.698$ ;  $P \leq 0.001$ ). The MU and modern lower (ML) samples were also significantly different ( $R \geq 0.787$ ;  $P \leq 0.001$ ). We expected eight taxa to have a greater frequency of occurrences in the Arch and MU samples compared to the ML samples, due to low silt and turbidity tolerance levels. Five of these taxa did display this pattern. After rerunning the analyses with only taxa from three silt/turbidity tolerance groupings (high/high, medium/medium, and low/low), we still observed differences between Arch and MU samples ( $R \geq 0.592$ ,  $P \leq 0.001$ ) and MU and ML samples ( $R \geq 0.681$ ,  $P \leq 0.001$ ). No differences were found in taxa patterns from the full community analysis. We encountered several difficulties when comparing archaeological and ecological datasets that limited our current interpretations.

**JACOB KNOWLES, SUNY GENESEO.** *A Cuisine Comes of Age: High-End Eating in Southern Cities.* This poster seeks to determine which areas of the South have embraced high-end Southern eating and what factors affect the culinary identity of those regions. This is done by examining the distribution and relative number of high-end Southern cuisine restaurants in the American South in contexts such as poverty and obesity, as well as local culinary specialties. Websites such as Tripadvisor.com presents comprehensive listings of a city's restaurants. Data on the type, the price point, and quality of restaurants were collected for 37 sample cities stratified by population and regional location. Results demonstrate a heterogeneous geography of the culinary South and it's growing prestige as a restaurant cuisine.

**LAUREN KULIK, KAYLA ABELLA, RENATA BLUMBERG, MONTCLAIR STATE UNIVERSITY.** *Farmers Market Nutrition Program Participation Barriers: An Analysis of Survey-based Findings.* As part of the Special Supplemental Nutrition Program for Women,

Infants, and Children (WIC), the Farmers Market Nutrition Program (FMNP) provides eligible WIC recipients with vouchers that can be used at farm stands or farmers markets. Currently, barriers hamper voucher redemption, but these barriers remain relatively unexamined. The goal of this survey-based research project is to analyze FMNP voucher redemption by WIC participants, a population that is nutritionally at-risk and low-income. In particular, we sought to identify any differences between FMNP voucher recipients who redeemed their vouchers and those who received FMNP vouchers, but did not redeem them. Specifically, we examined differences in demographic characteristics, and produce procurement and consumption practices. We also examined qualitative feedback received from survey respondents.

**SASAH LEIDMAN, ASA RENNERMALM, ROHI MUTHYALA, MICHAEL PRIHODA, RUTGERS UNIVERSITY.** *Does Sediment Impact the Hydraulic Properties of Supraglacial Streams?* Supraglacial streams are prevalent on the surface of the Greenland Ice Sheet. Water and dark sediment allow these streams to absorb a disproportionate amount of solar radiation compared to the surrounding ice. The flow variability of supraglacial streams has also shown to play a significant role in defining the efficiency of the subglacial drainage system. How long it takes meltwater to route through these systems therefore dictates how much they contribute to further melting. Routing times depend on the morphology and bed friction of supraglacial streams. Little is known about the processes that control the amount of friction applied by the bed and how it might be impacted by changes in sediment fluxes. Here we measure a single supraglacial stream in southwest Greenland using high resolution GPS mapping, velocity measurements, and UAV imagery. Analysis of these inputs produced a centimeter scale bathymetric map, a week-long stream discharge time series, and map of initial sediment distribution. Together, they give clues to how sediment changes bed friction through pitting and stream widening. Bed roughness values vary significantly within the study region as a result of transported sediments and channelization. This process may help us better understand how supraglacial streams will influence the energy balance of the Greenland Ice Sheet in response to climate change.

**SCOTT LOVERICH, NEW JERSEY INSTITUTE OF TECHNOLOGY, KARLEN ESTRELLA, MARIA SZTAN, RAHUL MEHTA, HARRISON WEISS, ARIANA LEYTON, MICHAEL COLEMAN, DANN TRUITT, ASHWANI VASISHTH, RAMAPO COLLEGE OF NEW JERSEY PANKAJ LAL, PHD, AMY R. TUININGA, MONTCLAIR STATE UNIVERSITY.** *2018 Jersey City Green Team.*

The 2018 Jersey City Green team was tasked with performing a Community GHG Inventory, and a Municipal Fleet Inventory. A Municipal Fleet Inventory is done to track the amount of fuel consumed by a fleet and quantify its greenhouse gas emissions. Not only can this inventory help make decisions regarding monetary investments in vehicles, but in reducing emissions as well. A Greenhouse Gas inventory is an assessment of processes and actions that contribute to the growing anthropogenic atmospheric Greenhouse Gas emissions. This is an important step in assessing which processes are contributing the most emissions and thus, which processes people should replace with better habits and practices. The Green Team calculated that Jersey City emitted a total of 2,007,265.21 metric tons of CO<sub>2</sub>e in 2016. The emissions came from electricity and natural gas use from the residential, industrial, commercial, and transportation sectors. Jersey City's fleet emitted 5,767 metric tons of CO<sub>2</sub>e in 2016. The team also found that



55% of the fleet is 10 years or older. Based on these findings, the Green Team was able to make recommendations to enhance the Jersey City's fleet, and reduce their GHG emissions.

**JOSH MAU, CATHERINE FERRERI, STEVE PARISIO, MORTON S. ADAMS, SUNY NEW PALTZ.** *Vegetation favorable to Spodosol development in the Catskills High Peaks Region.* This poster is an effort to prove the presence of a soil group known as Spodosols that may be present in the Catskills High Peaks region of New York, which is currently not recognized as being present by the New York Soil Survey.

**ALI MERALI, GENERAL DOUGLAS MACARTHUR HIGH SCHOOL.** *Effect of Building Age on the Level of Particulate Matter Between Two Sections of a High School.* Sick building syndrome (SBS) caused by Poor indoor air quality in school classrooms can effect student health and is caused by pollutants such as Particulate Matter 2.5  $\mu\text{g}$  (PM2.5). This study investigates PM2.5 levels in 4 classrooms of a high school located in a suburban area. The school consisted of an Old section and New section (43-year age difference), and had 2 classrooms each, that were sampled 4 times for 4 hours over 1 month to identify whether building age effected the PM2.5 levels within the classrooms. School was in session during the 1st, 2nd, and 4th week, but was not during the 3rd week. It was hypothesized that a classroom located in the older building would show higher levels of PM2.5, however, no difference (P-Value = 0.253) in PM2.5 levels of the classrooms were found between the two sections. Data analysis of a two sample T-test revealed occupants may have caused spikes in PM2.5 levels of classroom #4. The 3rd week showed the lowest levels of PM2.5 compared to the 1st, 2nd, and 4th week (1st week = 63.45177665  $\mu\text{g}/\text{m}^3$ , 2nd week = 34.84927688  $\mu\text{g}/\text{m}^3$ , 3rd week = 2.022653722  $\mu\text{g}/\text{m}^3$ , 4th week = 6.51041667  $\mu\text{g}/\text{m}^3$ ), classrooms #1, #2, and #3 did not share this same trend. Solutions to mediate this problem include implementing extensive cleaning procedures and limiting the use of a classroom through the day. Accuracy of this study's findings could be validated through expansion of the sample size and measuring for other common pollutants.

**NICOLE MOYER, KUTZTOWN UNIVERSITY.** *Sands Bethlehem: A Problem or Solution,* In May, 2009 Lehigh Valley residents from Bethlehem Pennsylvania welcomed the opening of the Sands Bethlehem Event Center. The large scale hotel and casino is one of five in Pennsylvania to be awarded a slots license, and is home to about 3,000 slot machines. The purpose of this research is to identify how the construction of a casino, such as the Sands Bethlehem, effects its surrounding environment. Socioeconomic factors such as population, employment, income, and criminal activity were evaluated, and choropleth maps were made with the available data of each variable. Environmental changes were also taken into account and displayed with the use of NDVI satellite images. The anticipated outcome of this research is to determine whether or not the casino has impacted the community that surrounds it in both a socioeconomic and environmental way. When examining data, it can be concluded that within the study area, growth was seen in population, income and employment from 2009 to 2016. Violent crime rates were found to have increased in the time since the casino was built, while property crimes have declined. When analyzing changing patterns of vegetation, the study area showed an overall decrease from 2000 to 2016, however a more stable environment was revealed from 2009 to 2016 data, where there was found to be greater amounts of vegetation then displayed in the previous years. Overall this study shows changes in the surrounding areas of Sands Bethlehem and is useful for urban planning and other casino impact studies.

**FATIMAH MOZAWALLA, HOFSTRA UNIVERSITY.** *Separate but Equal? Analyzing School District Funding in Relation to Race on Long Island.* There is a large disparity in the budgets for school districts on Long Island, NY. While many factors have been explored to determine the reason for the substantial gap in funding, even between neighboring school districts, the cause for the socioeconomic gap has yet to be discovered. This project looks at the correlation between race and the amount of money spent per student in the school districts on Long Island. Choropleth maps were used to symbolize the “percent non-white” and the amount of money spent per student in each school district for the 2014-2015 school year. After analyzing the data, a limited relationship appeared between race and school district funding, and although there is no strong correlation, some patterns do emerge. This project demonstrates the need to evaluate the issue further and provides a stepping stone for future research into demographic trends in relation to school district funding.

**ROHI MUTHYALA, ASA K. RENNERMALM, SASHA LEIDMAN, MATTHEW G. COOPER, SARAH COOLEY, LAWRENCE C. SMITH, DIRK VAN AS, RUTGERS UNIVERSITY.** *What drives the stream discharge over a supraglacial catchment in southwest Greenland?* On Greenland ice sheet, meltwater runoff from the surface has been responsible for majority of its contribution to the global sea level rise. Therefore, it is very important to understand the processes that promote the transport of meltwater over surface of the ice sheet. This meltwater is efficiently transported over the surface through supraglacial river networks. However, little is known about the transport of meltwater through these networks and most of the in-situ observations only capture a few days of streamflow. Here we report 2 months (22 June – 14 August 2016) of discharge observations collected from a ~0.7 km<sup>2</sup> supraglacial catchment in the ablation zone of southwest Greenland. The dominant driver of ice sheet discharge throughout the season is net shortwave radiation. However, during the peak flow events, especially when the shortwave radiation dropped considerably because of overcast conditions, net longwave radiation and turbulent heat fluxes were significant drivers of surface melting and thus meltwater discharge. Therefore, long term supraglacial stream observations such as these are useful in understanding the predominant drivers of surface melt throughout the season

**LOIS PAQUETTE, HOFSTRA UNIVERSITY.** *Mapping the pre-WWI Ottoman Empire.* World War I had a large impact on the Ottoman Empire because it partially brought about the fall of the Ottoman Empire, but also because of the massive ethnic changes that occurred during this period, such as the Armenian Genocide and the formation of nation states. As such I created a map that explored the diversity and ethnic distribution of the Ottoman Empire before World War I. In order to do this, I georeferenced raster map data of the different provinces, then I digitized the provinces so I could work with the data. After loading the Ottoman Census data from 1881-1893 into excel, I table-joined it to the digitized provinces. I then made three other data frames with the same data so I could normalize the rates of the Muslim, Greek, and Armenian populations by the total population of the Ottoman Empire. I also represented the total population as graduated symbols on the map. I found that the Ottoman Empire was a very diverse place pre-WWI and that there were regions with pockets of different ethnic groups. This diversity foreshadows the countries that would form after WWI and the breakup of the Ottoman Empire.

**ARCHANA PRASAD, MONTCLAIR STATE UNIVERSITY.** *Verifying Downscaled, Bias-Corrected CMIP5 Data from Multiple Climate Models in the Passaic River Basin.* Global Climate Models (GCMs) are increasingly becoming useful tools for predicting future changes in precipitation and temperature, among other climatic variables. These GCMs typically employ large spatial scales while municipalities may experience different impacts at the local level. By downscaling and bias-correcting GCM outputs, more accurate predictions concerning specific regions can be made. The Multivariate Adaptive Constructed Analogs (MACA) models provide daily precipitation and temperature information for point localities by modifying coarse resolution data from GCMs to a higher spatial resolution. In this study, trends in climate extremes over the Passaic River Basin (PRB) between 1981-2005 are estimated based on three MACA models (bcc-csm1-1m, CCSM4, and MRI-CGCM3). The historical trends obtained from the MACA models are validated using an observational dataset and then projected trends for 2051-2075 relative to 1981-2005 investigated. This analysis presents a unique opportunity to glimpse at the projected changes in the PRB with regards to the impacts of climate change.

**TORIAN PUSEY, XAVIER SMALL, CHURCH TEACHERS' COLLEGE.** *Implications of Climate Change for The Sustainability of Livelihoods in Alligator Pond, Jamaica.* The purpose of the research was to investigate the implications of sea level rise, coastal erosion and more frequent hurricanes for the sustainability of livelihood activities of the residents of Alligator Pond, located along the southern coast of Jamaica. The study, which is influenced by the Sustainable Livelihoods Approach, keyed into the defined dependence that the residents' economic activities have on the coastal environment, including fishing, marketing of fish, boat fixing and employment at two of the most popular seafood restaurants in Jamaica-Little Ochie and Oswalds. However, the exposure and sensitivity of their economic activities to the growing hazardous effects of climate change threatens the economic survival of individuals, households and the community as a whole. Business operators and employees expressed apprehension about their future, citing the rising sea level as the most serious source of concerns. Fishermen, too, who are the suppliers to fish vendors and the restaurants cited more frequent and intense hurricanes as major threats to their livelihoods. The study also found that the business community and residents lack the financial and social capacities needed to combat the forces of climate change and without urgent intervention, many will be without a source of income in the future. The study was conducted within a qualitative framework, with the use of Semi-Structured Interviews (SSIs), photography and observation as the primary methods of data collection.

**ANGELA RIENZO, JASE BERNHARDT, HOFSTRA UNIVERSITY.** *Communicating Hurricane Risk with Virtual Reality.* Hurricanes and tropical storms pose a serious threat to the United States. Even as science, technology, and forecasting improve, one of the biggest threats to the safety of the general population is the inability of meteorologists to effectively communicate forecasts and warnings to the public. This topic has been studied extensively, with a focus on how to better improve the communication between forecasters and viewers in order to prevent as much damage and loss of life as possible. However, very few studies have considered the unique sensory abilities of virtual reality, which could help the public develop a more accurate and comprehensive understanding of the dangers associated with hurricanes. In our work, we develop a virtual reality simulation in which participants are shown a hurricane striking a neighborhood with damaging winds, torrential rain, and coastal flooding. They are then asked behavioral intention questions to analyze how the simulation has influenced their response to the impending

hurricane. Analysis of the results of two separate surveys that we conducted-- one on Hofstra's campus and another in the beach front community of Long Beach, NY-- indicates that virtual reality does influence individuals to consider hurricane warnings more closely. However, the virtual reality simulation seems to resonate more strongly with the younger individuals surveyed on-campus than the older population of Long Beach, indicating that future work should continue to evaluate the demographic controls on warning interpretation.

**ALESSANDRA ROSSI, KEVIN ZERBE, T. DAVID HSU, MEIYIN WU, MONTCLAIR STATE UNIVERSITY.** *Litter Quantification and Characterization on the Lower Passaic River and Tributaries.* Plastic items are buoyant, and when not properly disposed they can travel over long distances and ultimately end their journey in the marine environment through surface runoff, rivers. Published studies estimated 80% of the world's marine litter has origins on land. This study aims to better understand the quality and quantity of litters on streets along the Lower Passaic River with an ultimate goal to reduce trash inputs into the Newark Bay. A non-land litter survey was conducted at 35 locations along the Lower Passaic River and two of its tributaries (the Second and Third rivers). Each site was surveyed twice; a total of 28,431 trash items (bulky and wet trash excluded) were collected with an estimated weight of 250 kg and an estimated volume of 5 m<sup>3</sup>. Floatable items accounted for 66% of the total number of items collected. Cigarette butts were the most numerous (28%) among all and accounted for 43% of the total floatable items. The remaining 57% of the floatable items were represented by plastic, rubber, and Styrofoam. Results of this study were utilized to develop a Trash Reduction Tool Kit for the public to use. Members from four community groups participated in the survey and the outreach program aiming to educate community members, local business, and municipalities on reducing trash from where it starts.

**ALISHBAH SADDIQUI, HOFSTRA UNIVERSITY.** *Redefining Terrorism: The Discrepancy Between Media Coverage and Reality.* If you ask Americans today, 'what is the greatest threat to national security', a majority of them will say, 'Islamic Terrorism'. Statistically speaking, this is not true. In fact, around 94% of terrorist attacks in the United States are committed by non-Muslims. Yet, media coverage for Muslim related terrorist attacks are nearly five times greater. Also, more than 80% of terrorist attacks occur in the Middle East and Africa, making Muslims the victims of terrorism, rather than the perpetrators. I am an undergraduate student at Hofstra University, and for my poster, I translated this data into a visual map to showcase how unfounded our stereotypes really are.

**RACHEL SCARPINO, HOFSTRA UNIVERSITY.** *Comparing Global Inequality: A Social and Economic Perspective.* Researchers often try to quantify the presence of equality within a country in order to make comparisons globally. This project measures the social and economic inequality in each country through the mediums of the legal status of marriage equality (social) and the Gini Coefficient (economic), and aims to find if a correlation exists between these two categories of equality. Using an overlapping choropleth map and a proportional symbols map to view the social aspect and economic aspect simultaneously, each country's color is indicative of the legality of marriage or civil unions for LGBTQ couples, and larger circles are proportional with higher percentages of inequality. All of information regarding the legal status of marriage equality per country was obtained from the International Lesbian, Gay, Bisexual, Trans, and Intersex Association's survey of sexual orientation laws. All information regarding Gini

Coefficients were obtained from the CI's World Fact Book, which listed each score on a 100% scale, where perfect equality would be 0%. Through this visual study, it can be inferred that countries with a high Gini Coefficient are less likely to have legalized marriage equality.

**JENNA SMITH, SHIPPENSBURG UNIVERSITY.** *The Rise and Fall of Stockport: A Historical Analysis of an Abandoned Settlement.* Officially founded in 1790, Stockport is an abandoned settlement located along the Delaware River in the states of Pennsylvania and New York. Very little currently remains of the once thriving settlement apart from a cemetery and several foundations of now deteriorated buildings. Only a small number of researchers in the past have attempted to collect and examine information concerning the history of this abandoned settlement. This research is intended to provide a new perspective on the history of Stockport. Historical and geographic research techniques will intertwine to allow conclusions to be drawn concerning factors such as population and industry trends that resulted in the rise and downfall of Stockport. Similar factors in other local areas will also be taken into account, which will allow for a determination of whether the abandonment of Stockport is part of a larger historical trend. This semester-long research project will produce an analysis of the history of the Stockport settlement through examination of primary source documents and historical United States Census population data utilizing geographic information systems software. Population data will be examined at the county level in order to analyze local population trends in 1900, 1930, and 1960. Significant population loss in the majority of counties over time will demonstrate that Stockport may not have been an outlier in its situation of abandonment. Primary source documents will assist in reinforcing information discovered during GIS analysis.

**MEGHANN SMITH, PANKAJ LAL, ERIC A. STERN, JAY PRAKASH SINGH, TAYLOR WIECZERAK, MONTCLAIR STATE UNIVERSITY.** *Sustainability Regulatory Integration and Reform for Superfund Sediment Remediation Projects.* Superfund sediment remediation projects have been challenged by long timelines that often lead to increased costs and a lack of enduring benefits to the affected communities. While the goal of these projects may be able to achieve a safer environment, many have not been successful in integrating with the impacted community's values and challenges. Incorporating societal goals, economic impacts, and net environmental effects (the three pillars of sustainability) into Superfund actions can provide a more balanced approach, as opposed to an approach that resides only in the remedial silo. Garnering community support and concurrence may also lessen future exposure to litigation and expedite revitalization plans. Layering in an eco-psychology perspective within the eco-industrial approach allows institutional conditions such as trust and commitment among all stakeholders that could positively advance the selection of remedy, with concomitant reduction in study costs. An Eco-industrial approach has the potential to expedite positive, meaningful and realistic revitalization of Superfund sediment sites particularly in urban landscapes. Sustainability criteria, when incorporated early in the feasibility stage, can be cost-effective vehicles for achieving multiple goals including a successful reinvestment in the built environment.

**TAO TANG, LILY JANG, MARY PERRELLI, SUNY BUFFALO STATE.** *Low-altitude unmanned helicopter (UAV) remote sensing for spreading control of water chestnut invasive species in the Erie Canal System, New York.* The objective of this research was to apply low-altitude drone or unmanned aerial vehicle (UAV) technology to perform rapid detection and

coverage estimation of water chestnut (*Trapa natans*) invasive species along the lower Erie Canal system. The US Fishery and Wildlife Services (US-FWS) has been conducting the physical removal of water chestnut in the study area every summer since 2010. Another goal of this research was to assess the effectiveness of the physical removal. The UAVs were launched from a research boat on the water of the lower Erie Canal system. Concurrently, the research team conducted field surveys and measurements of the riparian habitat conditions using the drone and attached HOBO temperature and relative humidity (RH) data logger. A total of seven cross-sections were surveyed along the study reach of the Erie Canal through. Detailed land use and land cover analysis along the study section of the Erie Canal was conducted using digital ortho-imageries published by New York State government in 2014. UAV survey in the summer of 2016 shows no sizable patch of water chestnut distribution along the study area of the Erie Canal system. The results indicate that the physical pulling method performed by field biologists from the US Fishery and Wildlife Services for six years is an effective method of removing water chestnut. While it appears that differences in land use /land cover, air temperature and relative humidity impact the growth of water chestnut, no statistical correlation was found in this research.

**ROBERT TAYLOR, LISA JOHNSON, MONTCLAIR STATE UNIVERSITY.** *Enhancing Value through Urban Sustainability Design.* This poster presentation discusses how sustainability design can enhance both economic and social value in downtown business districts. Sustainability design refers to the ways that architects and urban planners can improve local physical environments through the use of three basic sustainability design principles: complete streets; green infrastructure; and mixed use development. Complete streets are design constructs that lead to greater walkability and the use of alternative transportation modes; green infrastructure refers to the use of green space as a biophilic design feature that correspondingly addresses flooding and stormwater emissions that protect water quality; and mixed-use development as a land use and zoning tool that integrates residential and commercial design in downtown locations, enhancing greater livability. This poster discusses community case studies of Business Improvement Districts (BID's) in New Jersey, USA, to demonstrate how the use of sustainability design has increased tax revenue for local governments; added to the amount of green space in these downtown locations; and increased sales volume for local business. Business Improvement Districts (BID's) are legal, not-for-profit associations that are created to enhance and develop downtown commercial districts. The Presentation discusses how BID's that incorporate sustainability design into their built environment enhances value along three dimensions: local property taxation revenue for local government sustainability; amount of green space that fosters personal health sustainability; and increased retail volume which enhances business sustainability.

**CHRISTOPHER TENEBRUSO, JORGE LORENZO-TRUEBA, DANIEL J. CIARLETTA, MONTCLAIR STATE UNIVERSITY.** *Modeling the Evolution of Coupled Barrier-Marsh-Lagoon Systems: Insights from the New Jersey Coastline.* New Jersey coastline is comprised of barrier islands connected along-shore with different levels of human development and coastal protection. Although barrier islands provide both socio-economic and ecologic value to coastal communities, it is unclear how they will respond to future sea-level rise and storms. To tackle this knowledge gap, we modify an existing cross-shore numerical model to assess coastal stability on a range of New Jersey Barriers from natural to densely populated, including Long

Beach Island (LBI), Island Beach State Park, Brigantine, and Barnegat Light. The model accounts for overwash fluxes, which drive barrier migration, marsh accretion via plant growth, and marsh erosion, primarily controlled by the wave regime associated with lagoon geometry. In addition to natural processes, the model accounts for beach nourishment activities. Within the context of this modeling framework, we find that Island Beach State Park and Brigantine experience barrier rollover, frequent overwash events, and small changes in the total area of the marsh platform. In contrast, LBI and Barnegat Light have experienced shoreline progradation, largely due to nourishment activities, plus significant erosion of their bay marsh platforms. Preliminary model testing suggests that, despite its simplicity, the model can describe the average dynamics of these marsh-barrier-lagoon systems over the past few decades, which we obtain from historical and modern LIDAR imagery. Moreover, it supports prior work, which places the importance on overwash flux and initial lagoon geometry, this then helps in determining the effects of human management practices to date.

**BHAGYASHREE VAIDYA, DIANE F. HAGMANN, JENNIFER R. BALACCO, JENNIFER A. KRUMINS, NINA M. GOODEY, MONTCLAIR STATE UNIVERSITY.**

*Bioaugmentation Of Contaminated, Low Functioning Soil with High Functioning Soil Communities.* Generation of waste from anthropogenic activities over the past century have resulted in dumping sites and landfills all over the world. Accumulated waste impacts the soil environment and its inhabitants. Interestingly, some contaminated sites display robust plant growth and soil organism communities despite high loads of organic and inorganic contaminants. One such site was identified at Liberty State Park, Jersey City, New Jersey. Previous studies at the same location have indicated high contamination, high plant cover, and high enzymatic activities at site 146. In contrast, a closely located barren section of the park identified as site 25R exhibits negligible plant cover and poor soil microbial activity. The goal of our study was to investigate whether a high functioning soil from site 146, with its microbial community intact, remediates the soil from site 25R. We mixed together the soils from both sites in various ratios, potted the soil, added seeds, and watered the soils in a growth chamber over a period of 65 days. We monitored the phosphatase activity and plant growth. An interesting trend was observed in the soil mixture containing an equal amount of soil mix from both sites. Phosphatase activity increased significantly over time,  $F(1,15) = 75.24$ ,  $p < 0.0005$ ,  $\eta^2 = 0.834$  in all soil mixtures with plant growth but not in those where seeds were not added and plants did not grow. These data imply that plants can play a critical role in improving soil function by bioaugmentation in highly contaminated, low functioning soils.

**KOMAL WASIM.** *Perceived Discrimination Against Muslims After The 2016-Election.* The purpose of this study was to measure if Muslim women have experienced an increased amount of discrimination in the past two years since the 2016 Presidential Election. Recently, President Trump has made many anti-immigrant comments, anti-Muslim comments on his social media and publicly to the press. To test if these comments have influenced the rest of America to discriminate against Muslims, a survey was conducted. The survey was administered to Muslim women because their use of the hijab may have led to increased discrimination where as men can dress like other Americans and still be following their religion correctly without discrimination. Also, even non-Muslim women have reported discrimination because of their gender in the workplace which caused them psychological stress. Using Muslim women as the subjects would be interesting for that matter. The survey tested if discrimination against female Muslims has

increased in the last two years compared to the rest of their lifetimes. It consisted of 16 statements. Every 2 statements correlated in the sense that they had the same content but were labeled with different time period such as “in your lifetime” or “in the past two years”. These statements were compared to measure an increase, decrease, or no change in discrimination. It was found that discrimination has mostly decreased or remained steady. What may have caused this is the location of all the participants. Most of the participants lived in a suburban area. On top of that, the participants came from an area where people don’t support Trump.

**INGRID WITTY, PANKAJ LAL, PRICILA IRANAH, PRALHAD BURLI, TAYLOR WIECZERAK, MEGHANN SMITH, MONTCLAIR STATE UNIVERSITY.** *Stem Enrichment Education for Elementary School Age Children Creates Interest Towards Stem Career Choices: Assimilating Computational and Mathematical Thinking into Earth and Environmental Science.* Science, Technology, Engineering and Mathematics (STEM) education has become an essential and important enrichment program for elementary school age children. Early STEM exposure through grades k-8 has been found to increase interest towards pursuing career choices in its discipline fields. The need for future STEM career professionals in the USA is critical now, more than ever, as studies have indicated that the United States is ranking below other nations globally in producing trained employees capable of addressing the continued demand for technological advancements. The US Federal Government has put out a call for more STEM educational programs. The National Science Foundation (NSF) supported 3-week long summer camp held at Montclair State University welcomed economically diverse students from the Kerney New Jersey School District and invited them to participate in a free of charge hands-on STEM education. The students attended lectures conducted by scientists working at Montclair State University across subjects including Science, Technology, Engineering and Math, as well as field trips to NJ Stokes Forest. We conducted pre and post surveys to identify the level of knowledge before and after the camp. Data captures the attitudinal changes to pursuing a career in a STEM field and what impacts if any the MSU STEM Summer Camp had on the participating students. This study reinforces the need to develop and improve STEM programs in the US, and the pilot summer camp program developed by MSU could provide a framework for other universities to become actively engaged in this greater community concern.

**JING XIAO, ÅSA K. RENNERMALM, SASHA LEIDMAN, FEDERICO COVI, KIERIN ROGERS, MIKE MACFERRIN, REGINE HOCK, MARCO TEDESCO, RUTGERS UNIVERSITY.** *Firn properties of 8 cores collected in the southwestern Greenland Ice Sheet 2018.* Increasing mass loss of Greenland Ice Sheet is the main cause of 21st century global sea level rise. The majority of ice sheet mass loss comes from surface melting. While not all meltwater escapes to the ocean in the form of runoff, a substantial fraction infiltrates into firn and freezes. However, ice lenses formed in the firn can prevent meltwater from entering deeper layers. In that case, water may keep flowing to the ocean as surface runoff instead. To better understand the spatial variability of firn properties and potential impermeable layers, eight firn cores were drilled at three sites in the southwestern Greenland in the spring of 2018. Here, we report on their lengths, weights, ice lens features and the distribution of these properties. Through this work, we are trying to explore the spatial variability of firn properties, and in what way does it relate to the surface meltwater runoff.



## 5-Minute Lightning Talk Abstracts

**JULIANNA CIRAFESI, HOFSTRA UNIVERSITY.** *Globalization and Health: A Qualitative Study of Immigrant Women's Health and the Hispanic Paradox.* Globalization has an impact at the local level through the migration of people, which is having a complex and unprecedented effect on public health. The “healthy immigrant effect” refers to the phenomenon by which the immigrant population in the US is healthier than the native-born population despite typically having a lower socioeconomic status. This benefit decreases the longer the immigrant stays in the US and with each subsequent generation that is born in the US. This is a clear example of how inextricable health and place are. This phenomenon has been shown to be especially true for the Hispanic population, which has been labeled the “Hispanic paradox.” Women are a crucial dimension to this because women’s health impacts the health of the next generation. The purpose of my research is to understand how globalization and the Hispanic paradox are impacting people’s health on Long Island and what their perceptions of it are. I seek to hear women’s personal stories and discover what their health behaviors are. I use feminist methodology and exploratory case study methodology to conduct in depth, semi-structured interviews of women between the ages of 18 and 35 who were born in the US or immigrated to the US no later than the age of five. Their parents must have been born in a Hispanic country and immigrated to the US no earlier than the age of 18.

**JUNKUI CUI, LEI ZHENG, YANG DENG, MONTCLAIR STATE UNIVERSITY.** *Emergency water treatment with ferrate(VI) in response to natural disasters.* Frequency and magnitude of natural disasters, such as hurricanes, have been increased over the past few countries. Just in 2017, three major hurricanes, i.e. Hurricanes Harvey, Irma, and Maria, sequentially made landfalls in the U.S. and its territories within one month. Half of people in Puerto Rico did not have any clean running water for two weeks after the landfall of Hurricane Maria, of whom many had to drink stream water or roof runoff. Safe and sufficient water is a top priority after a catastrophic disaster. However, the emergency water treatment methods that FEMA recommends mostly focus on the inactivation of pathogens, and hazardous pollutants present in polluted water sources (e.g. heavy metals) greatly challenge these existing options in the aftermath of natural disasters. Bench-scale tests were performed with real stormwater runoff spiked with raw sewage and various toxic metals and metalloids. Ferrate(VI) was capable of effectively removing multiple contaminants through chemical oxidation, disinfection, coagulation, precipitation and adsorption. Fe(VI) at 3.0 mg/L achieved 3.50 and 3.04 log reductions of total coliform and E. Coli., respectively. Fe(VI) In-situ produced Fe(III) could capture toxic metals and metalloids via co-precipitation and adsorption. For example, Fe (VI) at 9.0 mg/L could remove As and Pb from 21.7 to 2.0 µg/L and from 28.7 to 0.7 µg/L, respectively. Moreover, disinfection byproducts from ferrate(VI) addition were undetectable, advantages over chlorination that produced THMs and HAA5. The encouraging results demonstrate that ferrate(VI) provides a new approach to address emergency water supply demand in the aftermath of natural disasters.

**GREGORY DOELE, KRISTEN BRENNAN, MONTCLAIR STATE UNIVERSITY.** *Future Center for Mapping and Geospatial Analysis.* A group of students and faculty in the College of

Science and Mathematics at Montclair State University, are in the process of finalizing the creation of a campus wide Center for Mapping and Geospatial Analysis that employs GIS (Geographic Information Systems) Arc Pro 2.2 software. On campus the software is primarily used for scientific research projects. We will identify and illustrate the power of the software's mapping and analytical tools for students studying many other disciplines on campus. We will demonstrate the value of adding the power of Arc Pro software at an on-campus GIS center by showing examples of how GIS can be integrated throughout any college at MSU, and examples of how the center can impact external organizations as well. We can show how GIS incorporates unique visual elements that can enhance student's projects and presentations. For this project we are intending to solicit guidance from outside sources that have had experience either creating their own GIS service center, or have utilized the services of a similar type of service center.

**BRITTANY DORTA, MONTCLAIR STATE UNIVERSITY, *Solving High-Level Sustainability Problems with Transdisciplinary Green Teams.*** A sustainable environment is important, if not vital to restore our planet to it's most efficient state. Through the help of the PSEG Institute of Sustainability's Green Teams, we have the potential of creating a sustainable pathway in all areas of the work force. Through analyzing carbon emissions in nearby communities, mapping invasive species with GIS, reducing the use of harmful chemicals in water sources or cleaning products, and so much more, the Green Teams have the capability of making a tremendous impact within our society. While working in transdisciplinary teams, PSEG ISS Green Teams are working with organizations to solve high-level sustainability problems.

**CONNOR FIROR, PETER SORIANO, DUKE OPHORI, MONTCLAIR STATE UNIVERSITY. *Sodium Chloride Trends in the Upper Passaic River Basin, 1960 to 2010.*** Road deicing salts, primarily sodium chloride, has been used widely to remove snow and ice from roadways in New Jersey and the northern United States since the 1950s. Currently, New Jersey stores up to 141,000 tons of rock salt, and 632,000 gallons of liquid calcium chloride in the winter season for road deicing. Road deicing helps to reduce accident rates, road delays, and improve road accessibility. While it is known that the use of road deicers is beneficial, road salts have also been shown to affect surface water and groundwater quality. In this study, an analysis of major ion concentration of groundwater collected by the United States Geological Survey (USGS) for the Upper Passaic River Basin (UPRB) is done. The UPRB has urban land use cover and a good length of secondary intrastate roads that often receive road deicing salts during the winter seasons. Results show that the contribution of Cl<sup>-</sup> to TDS increased significantly by the 2000s. Trend plots show strong correlation of increases in Na<sup>+</sup> and Cl<sup>-</sup> with time that are not observed with Ca<sup>2+</sup>. Decadal bivariate plots of Na<sup>+</sup> vs Cl<sup>-</sup> show strong increases in correlation from the 1960s to the 2000s. A bivariate plot of Na<sup>+</sup> vs Cl<sup>-</sup> displays a strong correlation, while those of Ca<sup>2+</sup> vs Cl<sup>-</sup> and Ca<sup>2+</sup> vs Na<sup>+</sup> display poor correlation. These results provide some evidence of a link between groundwater chlorides and road deicing salts in the UPRB.

**MICHAEL FLOOD, GREG POPE, JENNIFER CALLANAN, MONTCLAIR STATE UNIVERSITY. *Chemical analysis of species specific forest fire ash: a factor on soil formation and ecological succession for a northern New Jersey mixed hardwood forest.*** Forest fires are a significant perturbation to forest environments where vegetation is transformed from biomass to

ash material, releasing stored chemical elements to soils. While much research focuses on semi-arid areas with frequent forests fires (e.g. the western United States), less focus is placed on fires in temperate deciduous forests. Decades of fire suppression policy and tree mortality due to storm damage and invasive biologic agents (insects, fungi, bacteria, etc.) have contributed to high fuel loads within these forests. Likewise, with increased drought frequency predicted for the northeast, great quantities of combustible fuel are likely to dry and potentially burn. Coupled with high population density in this region, forest fires are likely to have environmental, ecological, and economic significance. Therefore, fire is an abrupt soil forming factor and this research sets out to determine differences in ash composition of different tree species and the immediate changes to soil chemistry as a result of the influx of this ash material into the critical zone. This research is applicable to forestry management as fire is an instrument of environmental change and a tool for forest managers in propagating desired timber species through controlled burns. It will also provide important information on understanding fire's impact on biogeochemical cycling in soils, all contributing to post fire forest succession.

**CHEYENNE FLORES, TEMPLE UNIVERSITY.** *Sustainable Pest Management: The Case of Pennsylvania.* The state of Pennsylvania is under an invasion, and it comes with a price. According to Pennsylvania's Department of Agriculture, \$18 to \$20 billion in industry is on the line up against the Spotted Lanternfly. Invasive species pose significant environmental and socio-economic threats to PA, but the Spotted Lanternfly is gaining recognition as perhaps the worst invasion in the last 150 years. Devouring Pennsylvania agriculture such as the lucrative fruit tree market, the Spotted Lanternfly must be controlled, but how? Traditional practices such as chemical control using harsh insecticides are just one option for pest management. In fact, such reactionary methods have proven to be unreliable, dangerous to human and environmental health, and responsible for creating insecticide resistance in some cases, further worsening the problem. Fortunately, methods new and old exist as invasive species controls that are less harmful and long-term, thus deemed sustainable methods. As Pennsylvania bears down on the insect, pest management must meet the challenge cost-effectively and sustainably. By aiming to answer, "Is Pennsylvania's pest management sustainable?" this contribution compares pest management in the case of the Spotted Lanternfly in Pennsylvania across different scales- Federal government, state government, local government, farm, and household. Furthermore, I will discuss initiatives elsewhere around the country to adopt into Pennsylvania's pest management plan. I will use archival research to answer my question. Specifically, I will analyze invasive species removal efforts that have the least harmful impact on surrounding ecosystems, and human health. My research sources include newspapers, academic journals, government reports, and websites.

**JULIE GRINSTEAD, BINGHAMTON UNIVERSITY.** *The Spread of Lyme Disease as a Function of Biodiversity.* Although Lyme disease has been heavily researched, the bacteria continues to spread. Given the risk of Lyme disease to human health, the less than optimal treatments, and the escalating virulence, this health concern is growing into a crisis. Lyme disease still remains elusive in Appalachia where wildfire suppression did not occur (Blumler, 2003). Higher biodiversity correlated with a decreased incidence of Lyme disease is a result of community composition and the dilution effect (Werden, 2014). Natural processes, such as fire, can improve ecosystem function and structure (Swan, 2018). Prescribed burns provide a means to study vertebrate species' occurrence and establish the best combination of fire severity and

growth stages to uphold the diversity of the time-period groups. Control and treatment plots will be sampled to measure the effect prescribed burns have on biodiversity. Variables include small mammals, deer, leaf litter, vegetation, and infected versus non-infected ticks. Study areas are located in New York State where prescribed burns are applied regularly. The primary data will be collected in the field and ticks analyzed in the lab. Maps, graphs and charts will be used to portray the data and statistics used to analyze it in order to make a hypothesis decision. The front lines of Lyme disease dispersal are targets for prescribed burns as a way to halt the spread of the disease but also to return species diversity to areas which may have suffered development, fragmentation, or habitat loss.

**JONATHAN MILLER, KARL F. NORDSTROM, RUTGERS UNIVERSITY.** *Shore protection strategies for estuarine beaches: a case study of Cliffwood Beach, NJ.* Estuarine beaches often erode at higher rates than ocean beaches but are given less attention by scientists and managers. Damaging coastal storms and sea level rise have placed many homes and recreational areas on estuarine shores at risk. The developed shore of Raritan Bay, NJ is particularly vulnerable. The US Army Corps of Engineers implemented coastal risk-management projects throughout many communities on Raritan Bay, but there are many sections of shoreline that are not included in these plans. Local differences in shoreline orientation and sediment supply caused by headlands and human structures have resulted in variations in beach processes and landscape changes over small spatial scales. Municipalities have some freedom in managing beaches and dunes at these spatial scales using earth-moving equipment, sand fences, and vegetation, but scientific expertise is often missing at the local level. This study seeks to address ways coastal erosion and vulnerability of infrastructure can be addressed in an efficient and cost-constrained way using Cliffwood Beach, in Aberdeen Township, as a study site. Topographic data, vegetation species and cover, and sediment grain size characteristics were collected along six cross-shore lines. Erosion at this site reaches annual rates of up to 6.7 cubic meters per linear meter. Beach and dune volume calculations indicate that 17,500 cubic meters of sediment would be required to reestablish the beach width and dune volume at the critically eroding area. Municipal management actions evaluated include soft solutions (beach nourishment, dune building and sand backpassing) and hard solutions (construction of bulkheads and geotubes).

**RITAPA NEOGI, TEMPLE UNIVERSITY.** *The Effect of Dams on Columbia River Tribes in the Pacific Northwest.* Since 1909, the Columbia River Basin has been utilized as a primary power source by the Pacific Northwest, providing more than 40% of the country's hydroelectric generation. 29 dams now exist on the river and its tributaries, benefiting the region not only by producing energy but also providing irrigation and flood control. However, despite these positive effects, the dams also symbolize a long history of colonialism and removal of indigenous peoples from the basin. The native tribes in the area, including the Nez Perce, Umatilla, Warm Springs, and the Yakama, have been overwhelmingly left out of the dams' benefits. For nearly half a century, Columbia River tribes have been waiting for governmental aid to fix ongoing issues caused by local dams. These problems are often caused by construction, such as destructive flooding from the construction of The Dalles Dam, the Bonneville Dam, and the John Day Dams. Although fishing sites replaced the villages, the majority of them do not possess housing and safe drinking water. While legal issues continue to be the focal point of this topic in the media, the tribal communities themselves are not often discussed. More than 80 years after the initial

damage caused by newly-constructed dams, the Columbia River tribes continue to live deeply affected by poor living conditions, high unemployment, and eliminated water forms once trusted locations for salmon fishing, such as waterfalls and rapids. My goal is to talk about the effect of the landscapes that have been altered and built upon, how indigenous peoples have been excluded from the dams' benefits, and the obligations of local government to support these tribes in obtaining proper living conditions. I collected my sources using a combination of recent news articles, anthropological texts about Columbia River tribes, and theoretical frameworks in political ecology.

**DYLAN PONTICEL**, TEMPLE UNIVERSITY. *Philadelphia's Gayborhood: Branding and Exclusion Among Minority Populations*. Philadelphia's Gayborhood has undergone a transformation from a mecca of fashion and entertainment into a gendered and sexualized space. Many authors have grasped the creation of gay enclaves, but many tend to leave out the exploitation and exclusion among minority populations. Through this research I seek to answer how business owners and property managers in Philadelphia's Gayborhood under-represent people of color and other gender or sexual identities by means of specific marketing strategies (i.e. symbolically or directly excluding these groups, marketing the space in a manner that appears to advocate for equality while maintaining a specific demographic). To answer this question, I have performed a series of transect walks and landscape readings to capture the feelings and effects of the Gayborhoods exclusionary practices. In conclusion, it is found that the endless accounts of racism, classism, and exclusion undermine the neighborhood's iconic nomenclature.

**NAGIARRY PORCENA-MENEUS**, TEMPLE UNIVERSITY. *Human geographical analysis of vacant buildings: Sense of abandonment*. The foreclosure crisis has been dominated by racial segregation. It is about keeping black residents from becoming homeowners and fulfilling goals beyond their immediate needs. The vacant buildings represent the decay and deterioration of resources that they must encounter each day. My research paper found that the residents of 19121 zip-code in North Philadelphia feel a sense of abandonment in relation to the vacant buildings. Generally, they do not believe that the system has ever been working for them. But when white settlers started taking over their properties, the feeling that their needs and desires are rejected has heightened. My results highlight the local perception that banks are keeping the houses in a state of abandonment until white buyers purchase the property. The methods used to conduct this research are transect walk, in-person interviews and phone interviews. I have been informed that many of the black residents are accepting life as it is especially since they are preoccupied with ensuring that their immediate needs are met first. They have internalized the action of silence in relation to the vacant buildings even though they find it unfair. I am proposing that the residents and community leaders do not keep quiet through various initiatives. Moving forward, doing further research with the community, meticulous attention to the quality of urban design, fighting for funding and policy changes in financial institutions are all part of the solutions.

**GENNIFER ROLLINS**, TEMPLE UNIVERSITY. *What's a Geographer? A Look at Geographic Thought and its Influence*. In this presentation, Black, Brown, and Indigenous groups throughout the academically discussed world will be considered as creators of environmental knowledge, beyond the context of Environmental Justice. My piece is intended to

situate the formation of identity as it relates to research, the job sector, and higher education. Even more fully, I hope to invite dialogue on how information is perpetuated into the larger society, from fields of social science, and what impact that creates for national and international sociopolitical, cultural and economic relationships. Much of my information will be derived from online communities who gather in person to form dialogue, space, and representation around their land-people experiences. Some of those communities will include Melanin Basecamp, Outdoor Afro, Latino Outdoors, The People of Color Environmental Coalition, Being Green While Black, Loam Magazine, and others. I will also be drawing upon academically accepted works, such as Dr. Finney's book, *Black Faces, White Spaces: Reimagining the Relationships of African Americans to the Great Outdoors*, and peer-reviewed journals written by members of the Indigenous Peoples Knowledge Community. In addition, I will invoke some personal experiences and analysis of working with the land and being involved in academia. My hope is to make the presentation conversational and invite the audience to be a presence in knowledge creation.

**DANIEL RYNERSON, MONTCLAIR STATE UNIVERSITY.** *PSEG Green Team Survey Analysis.* In the summer of 2018, PSEG Institute for Sustainability Sciences at Montclair State University developed the "Green Team" internship program to engage participating students from local universities to address sustainability problems posed by not-for profit agencies. Throughout the internship program, students learn to grow in an applied science field, build on their skill set in a practical manner, and gain insight to operations within their future careers. During this initiative, surveys were administered to participating student interns before and after their enrollment in the pilot program to assess their experience. The survey had students report on variables such as their technical acclimation to the field, current knowledge of sustainable practices, and applicability with their current studies that were crossed with demographic variables such as intended academic major and year of schooling. The objective of this study was to assess the overall success of the Green Team Project through indicating changes in technical skill, level of knowledge, and enjoyment of the program itself. With this data, we are able to gauge students' responses to further improve on the nature of their involvement in coming years, ensuring both students and participating companies gain from the partnership between academic minds and the future of power in sustainable sciences.

**PETER SORIANO, CONNOR FIROR, DUKE OPHORI, MONTCLAIR STATE UNIVERSITY.** *Increases of Sodium Chloride in the Middle Passaic River Basin.* This project is a statistical analysis aimed at identifying deicer road salts as a source of groundwater contamination, using water quality historical data collected over the years by the United States Geological Surveys (USGS). Sodium chloride, a road deicing salt, has been used primarily to remove snow and ice from roadways in New Jersey since the 1960s. It has been reported from studies of vehicle accident rates in four states in the United States that deicing salts reduced accident rates on highways by 88%. Though beneficial, the use of road salts has also been shown to affect surface water and groundwater quality, and been correlated with loss of plant and macro-invertebrate life, loss of biodiversity, nutrient depletion of soils, release of toxins, infrastructure damage, and aquifer stratification and stagnation. Major ion concentration in groundwater samples collected by the United States Geological Survey (USGS) for the Middle Passaic River Basin (MPRB) is analyzed. The MPRB has rural land use cover and a short length of secondary intrastate and local roads. It receives little or no road deicing salts during the winter

seasons. Decadal piper diagrams show predominantly fresh  $\text{Ca}(\text{HCO}_3)_2$  water from the 1960s to the 2000s. Trend plots show strong correlation of increases in  $\text{Ca}^{2+}$  and  $\text{Cl}^-$  with time that are not observed with  $\text{Na}^+$ . A bivariate plot of  $\text{Cl}^-$  vs TDS shows little or no correlation. A bivariate plot of  $\text{Na}^+$  vs  $\text{Cl}^-$  displays no correlation, while those of  $\text{Ca}^{2+}$  vs  $\text{Cl}^-$  and  $\text{Ca}^{2+}$  vs  $\text{Na}^+$  display poor correlation. These results provide no evidence of a link between groundwater chlorides and road deicing salts in the MPRB.

**JULLANAR SUPRUNCHIK**, SUNY GENESEO. *Dashcam-based Analysis of Road Accident Contexts in Contemporary Russia*. Russia is known for foolhardy pedestrians, and aggressive drivers. Although the government strives to impose traffic regulations, chaos rules. YouTube and other popular sites provide countless compilation videos featuring traffic accidents captured on dashcams. What is it about Russia that makes it an epicenter of car and pedestrian accidents? For the longest time, drivers have been using dashcams to protect themselves from theft and false accusations. These videos provide data that can be extracted and categorized for analysis purposes. With a sample size of over 500 incidents, significant patterns are apparent. Circumstance, season, and geographical context are mediating factors in a commonplace milieu of excessive speed and high-risk behavior.