Program Guide for the
2019 ANNUAL MEETING
of the
PENNSYLVANIA GEOGRAPHICAL SOCIETY
November 8th
Hotel Indigo
East Liberty, Pennsylvania
The Pennsylvania Geographical Society would like to recognize this year's award recipients:

K-12 Distinguished Teacher Awardees:
Karen M. Babyak, Frazier School District
Robert C. Saveikis, Greater Latrobe School District

PGS Distinguished Mentor Awardee:
William B. Kory, Professor, University of Pittsburgh at Johnstown

Ruby S. and E. Willard Miller Lifetime Achievement Awardee:
John Katana, Indiana Area School District (retired)

Distinguished Geographer Awardee:
Dr. Brent McCusker, Professor, West Virginia University

PGS is now accepting nominations for 2020 awards. See page 9 for more info.
# 2019 Annual Meeting of the Pennsylvania Geographical Society

The Indigo Hotel, East Liberty, Pennsylvania  
Hosted by the  
Department of Earth Sciences, California University of Pennsylvania

## 2019 Meeting Arrangements Committee
Chad Kauffman, California University of Pennsylvania  
Thomas Wickham, California University of Pennsylvania  
Thomas Mueller, California University of Pennsylvania  
Brent Zaprowski, Salisbury University  
Ola Johansson, University of Pittsburgh at Johnstown

## SCHEDULE OF EVENTS

### Friday, November 8th

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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</thead>
<tbody>
<tr>
<td>8:00 am-3:00 pm</td>
<td>Registration table</td>
<td>Lobby</td>
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<tr>
<td>9:00 am-4:00 pm</td>
<td>Posters on Display</td>
<td>&quot;Pre-hall&quot;</td>
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<tr>
<td>9:00-10:30 am</td>
<td>Paper Session 1 - Environmental Geography</td>
<td>East Ballroom</td>
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<tr>
<td>9:00-10:30 am</td>
<td>Paper Session 2 - Geography Education</td>
<td>West Ballroom</td>
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<tr>
<td>10:30-11:55 am</td>
<td>Paper Session 3 - Hazards Geography</td>
<td>East Ballroom</td>
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<tr>
<td>10:30-11:55 am</td>
<td>Paper Session 4 - International Geography</td>
<td>West Ballroom</td>
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<tr>
<td>12:00-1:15 pm</td>
<td>PGS Luncheon</td>
<td>Wallace's Whiskey Room</td>
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<tr>
<td>12:30-1:15 pm</td>
<td>PGS Awards and Guest Presentation</td>
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<tr>
<td>1:15-1:30 pm</td>
<td>PGS Business Meeting</td>
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<tr>
<td>2:00-3:00 pm</td>
<td>Map/poster presenters available for questions</td>
<td>&quot;Pre-hall&quot;</td>
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<tr>
<td>1:30-2:40 pm</td>
<td>Paper Session 5 - Historical Geography</td>
<td>East Ballroom</td>
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<tr>
<td>1:30-3:00 pm</td>
<td>Paper Session 6 - Urban Geography of Pittsburgh (and elsewhere)</td>
<td>West Ballroom</td>
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<tr>
<td>3:00-4:30 pm</td>
<td>Workshop - Research Data Management for Geographers: Tips and Tricks to Enhance your Scholarly Impact</td>
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<tr>
<td>3:15-4:30 pm</td>
<td>Panel Discussion - Careers and Opportunities for Geographers</td>
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<tr>
<td>4:45-5:00 pm</td>
<td>Student Awards Presentation</td>
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### Morning Sessions - East Ballroom

**Session 1 - Environmental Geography**

**Chair:** Jennifer Smith

- **9:00 - Kristina Thomas**: Old vs New: Using an Urban Heat Island Index to Assess Urban and Environmental Planning Principals in Jaipur, India
- **9:20 - Kyle Parr**: Tasseled cap transformation for watershed land use analysis: A case study of the western basin of Lake Erie
- **9:40 - Devin McClain**: Influence of nonpoint source pollution of Escherichia coli levels in Walnut Creek Lake Erie, Pennsylvania
- **10:00 - Jennifer Smith**: Remote Sensing Techniques for Coastal Change: A SC Case Study

**10:20-10:30 am - Follow-up questions**

**Coffee Break - Lobby**

**Session 3 - Hazards Geography**

**Chair:** Thomas Wickham

- **10:45 - Bradley Cullen**: Defining Shorebreak along Coastal Beaches
- **11:05 - Amanda Barclay**: Geospatial Intelligence Analysis of the Impact of a Category 5 Hurricane on the Miami, Florida Metropolitan Area
- **11:25 - Michael Ziolkowski**: Hazardous Materials Transportation and Citizen Science

**11:45-11:55 am - Follow-up questions**

**12:00-1:30 pm**

**PGS Annual Luncheon - Wallace's Whiskey Room**
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<tr>
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<td>9:20 - Chad Kauffman: Incorporating Geospatial Technologies and Service Learning into a Human Geography Course: An Example</td>
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<td>9:40 - Lisa Stanich: Incorporating Geospatial Technologies and Service Learning into a Human Geography Course: An Example</td>
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<td>10:00 - Thomas R. Mueller: The Changing Map of Ukraine and Geography Education</td>
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### 2019 ANNUAL MEETING OF THE PGS

#### SUMMARY OF PAPERS AND PRESENTATIONS

<table>
<thead>
<tr>
<th>Time (1:30-2:40 pm)</th>
<th>Session 5 - Historical Geography</th>
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<tbody>
<tr>
<td>Chair: Brent Zaprowski</td>
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<tr>
<td>1:30 - Adam Wells*: Digitizing the 36FA26 Archeological Site</td>
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<tr>
<td>1:50 - Brent Zaprowski: Using Drone Imagery to Map Veteran Graves</td>
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<tr>
<td>2:10 - Hannah Gunderman: Promoting Innovative Opportunities in Map and Geography Libraries through Research Data Management: A Case Study on Historical Landscape Images in Physical Geography Research</td>
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Geographers from all focus areas can benefit from research data management, a term describing the organization, storage, preservation, and sharing of data collected and used in a research project. This workshop will introduce good practices for data management for human, physical, and applied/GIS geographers, helping keep all the materials of your research projects organized, secure, backed-up, and well documented. These tips and tricks can be applied to single research projects or whole labs and encourage collaboration, efficiency, transparency, and reproducibility. I will cover a number of digital tools that you might wish to add to your research workflows. Bring a laptop if you would like to follow along!
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<th>Time</th>
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<tr>
<td>1:30-3:00 pm</td>
<td>Chair: Donald W. Buckwalter</td>
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<td>1:30 - Plaxedes Chitiyo: Classification of urban community gardens in Allegheny County</td>
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<td>1:50 - Susan Lucas: Brownfields of the Steel City – A Comparison of the Past and Future Redevelopment Trends</td>
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<td>2:10 - Donald W. Backwalter: Growth Poles and Transit Oriented Development in the Pittsburgh MSA</td>
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<td>2:30 - Joan Welch: West Chester Borough Street Trees: A Worthwhile Infrastructure Investment?</td>
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<tr>
<td></td>
<td>William B. Kory and Ola Johansson, moderators</td>
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<td></td>
<td>Refreshments sponsored by Department of Geography and Regional Planning, Indiana University of Pennsylvania</td>
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<td></td>
<td>The panel will address the topic of job opportunities for geography graduates and focus on the current status of the field of geography in the country. The panel will briefly discuss their experiences in school and on the job and welcomes the members of the audience to share their school and work experiences as well. Everybody attending the session is encouraged to participate.</td>
</tr>
<tr>
<td>4:45-5:00 pm</td>
<td>Student Awards Presentation</td>
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<td>Please join us to congratulate this year's student contest award winners!</td>
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Thank you for attending the meeting!
Restaurants within Walking Distance of PGS Annual Meeting - 2019

Noodlehead (4.6★) - Cash only
https://goo.gl/maps/uxKNJG78q6Aje8vP6

Two Sisters Vietnamese Restaurant (4.7★)
https://goo.gl/maps/JwrMJMSoV2QBDh7R9

Honeygrow (4.4★)
https://goo.gl/maps/m3ipwbVZt4yAgigbA

Choolaah Indian BBQ (4.6★)
https://g.page/ChoolaahEastLiberty?share

Muddy Waters Oyster Bar (4.5★)
https://goo.gl/maps/yCmjUwHpHD4w58rV7

Tana | Ethiopian Cuisine (4.3★)
https://goo.gl/maps/GCuAifnWBaKGFwDGA

UPSCALE

Lorelei (4.6★)
https://goo.gl/maps/CLSGVHRxVXRz9MNA7

Spoon (4.5★)
https://goo.gl/maps/yZUEjKznyn4DGkxf7

Casbah (4.5★)
https://goo.gl/maps/w3FLfzoiiWPoskpTt6

Paris 66 Bistro (4.5★)
https://goo.gl/maps/8q52Sn3TqTeTDffd6

The Twisted Frenchman (4.6★)
https://goo.gl/maps/cXoRokZwtxA4TDyS7

HIPSTER FRIENDLY

Kelly’s Bar & Lounge (4.3★)
https://goo.gl/maps/RGiA6DUehqZR34xMA

Mad Mex (4.4★)
https://goo.gl/maps/41N2Nt62LyLwzTGG6

COFFEE

Adda Coffee & Tea House (4.5★)
https://goo.gl/maps/ffdcz364jtK2tupt6

Zeke’s Coffee
https://goo.gl/maps/KHbCxQzvgpL5vZsP9
(4.5★)

DESSERT

The Milk Shake Factory (4.6★)
https://goo.gl/maps/SoBqNP5GKS656tAs8

Millie’s Homemade Ice Cream (4.6★)
https://goo.gl/maps/9gtLkhMNwiSClzN9
Call for 2020 PGS Awards

The Pennsylvania Geographical Society Awards Committee is soliciting nominations and self-nominations for the 2020 awards. Persons who are not PGS members may be nominated for a PGS College/University Distinguished Teacher, Scholar or Mentor Award if they have recently presented research at a PGS annual meeting or have published an article in The Pennsylvania Geographer.

Distinguished Teacher Award. Given at both the K-12 and college/university levels. The recipient must have documented evidence of long-term excellence in teaching as well as innovative and effective classroom methods in Geography, Earth Science, Environmental Science or any other course (s) with a consistent and substantive geographic base. There may be more than one recipient each year. College/university nominees must be members of PGS, but an exception can be made if a nominee has recently presented research at a PGS annual meeting or has published an article in The Pennsylvania Geographer.

Distinguished Scholar Award. Given to an individual with substantive research, publications and professional development in Geography. There is usually only one award per year, and the nominee must be a member of PGS, but an exception can be made if a nominee has recently presented research at a PGS annual meeting or has published an article in The Pennsylvania Geographer. This award may not be bestowed each year, but is dependent on the quality of the nominees or self-nominees.

Distinguished Service Award. Given to any individual who has given substantive and long-term service to both the discipline of Geography and to the PGS. There is usually only one award per year. The recipient must be a member of PGS. This award may not be awarded each year, but is dependent on the quality of the nominees and self-nominees.

Distinguished Mentor Award. This award honors Geography or Earth Science faculty who have demonstrated exceptional commitment and accomplishments in the mentoring of undergraduate or graduate students as well as fellow faculty members. Nominators should consider that there are many forms of mentoring such as serving on many theses or dissertation committees, creating a supportive environment for scholarship and research, or assisting students in their pursuit of graduate degrees or career opportunities. There may be more than one award per year, and the nominee must be a member of PGS, but an exception can be made if a nominee has recently presented research at a PGS annual meeting or has published an article in The Pennsylvania Geographer. The nominee must provide a curriculum vitae, and a minimum of three (3) letters of support from colleagues and/or students.

Ruby S. and E. Willard Miller Lifetime Achievement Award. This award is given occasionally to an individual of exemplary, long-term dedication to the discipline of Geography and to the PGS. The award may be given posthumously. The recipient must have been a member of the PGS (or its predecessor, the PCGS).

Nominations or self-nominations should be sent to: Dr. Joseph W. Bencloski, 315 Mark Road, Herminie, PA 15637. Phone: (724) 446-5798; e-mail: joeben@auxmail.iup.edu. All nominations must be accompanied by a letter stating why the nominee is qualified for a given award. Please include the nominee’s full name, address, phone number, and e-mail address. The deadline for 2020 nominations is July 31, 2020.
Barclay, Amanda (Indiana University of Pennsylvania), Geospatial Intelligence Analysis of the Impact of a Category 5 Hurricane on the Miami, Florida Metropolitan Area

This research sets out to conduct a “what-if?,” high-impact/low-probability geospatial intelligence analysis of the effects of a Category 5 hurricane striking the Miami, Florida metropolitan area. Based on its location and climate, the Miami metropolitan area is highly susceptible to hurricane occurrence. While the probability of Miami-Dade County experiencing a Category 5 hurricane is statistically low, approximately two million residents could be highly impacted by such an occurrence. This analysis identifies three research objectives: (1) identify the physical effects of the hurricane hazard event, (2) identify geographically and demographically vulnerable populations, and (3) identify gaps in hazard mitigation planning regimes and the locations in which they may occur. Geographic Information Systems are utilized to analyze spatial data to support or disprove hypotheses relating to the research objectives. The expected results are geographic areas most susceptible to damage from a Category 5 hurricane based on hurricane effects, population qualities, and planning gaps, which will provide actionable intelligence for policy makers, hazard mitigation professionals, and first responders in developing plans for hurricane preparation and response. By understanding the effects of this high-impact event, preventative measures can be taken to mitigate the impact of a Category 5 hurricane on the Miami metropolitan area.

Benhart, John Jr. and Christopher Schaney (Indiana University of Pennsylvania), Small Unmanned Aerial Systems (sUAS)-based Geographic Information Science Service Learning Projects: Case Study of the Indiana Multi-Modal Corridor Project

This presentation examines the development of a Small Unmanned Aerial Systems (sUAS) certificate program by the Department of Geography & Regional Planning at Indiana University of Pennsylvania, and its integration into the Department’s existing Geographic Information Science and Community Planning degree program curricula. The planning, technical and logistical aspects of a service learning project undertaken by IUP students and faculty during the Spring 2019 semester—the Indiana Multi-Modal Corridor—will be discussed to illustrate the pedagogy, issues and benefits of incorporating sUAS into geospatial and planning curricula.

Buckwalter, Donald W. (Indiana University of Pennsylvania), Growth Poles and Transit Oriented Development in the Pittsburgh MSA

The growth pole concept is seminal to economic geography and regional development. Transit Oriented Development (TOD) is a concept that has been devised to promote development associated with mass transit and urban intensification. This study examines employment subcenter development, and it hypothesizes that the growth pole aspects of that development create potential for TOD. The results indicate a typology of urban sub-centers based on the context of location and history. Density thresholds must be augmented with worker-to-population ratios, sectoral composition of the labor force, and other metrics if we wish to understand sequential development of urban sub-centers. Previous studies indicate that transit use depends on density. Unresolved are concepts of minimum densities and totals of jobs to
support TOD. The Pittsburgh subcenters frame this issue. Three subcenters have critical mass: the CBD and Oakland have very high densities and intense use of transit. The Airport subcenter has very low density and little transit usage. Somewhere in between is a tipping point, and growing subcenters such as Cranberry and O’Hara should be studied carefully to learn more about critical values of both density and employment totals.

Cardozo, Mario (Kutztown University), “Abort the Church, Abort the State:” Asunción’s Radical Graffiti and the Gendering of the Right to the State in Paraguay

Paraguay owes a large debt to women. The country’s adult male population was nearly decimated during a war against Brazil, Argentina, and Uruguay, from 1864 to 1870. Women were essential in raising Paraguay from this destruction. More fundamentally, it was the forceful miscegenation between Spaniard colonizers and the native that forged the Paraguayan mestizo race. More recently, Paraguayan women’s rights have been restricted by a conservative state. Only since 1991—after a 35-year dictatorship ended in 1989—were women allowed to file for divorce in Paraguay. Abortion is forbidden in almost all cases. Women’s sexual abuse has been consistently high, particularly within Paraguayan subaltern social classes. As dissent against the state increasingly grows in Paraguay, women’s rights have emerged as one of the central themes of political protest. I review feminist protest through the lens of graffiti in Asunción, Paraguay’s capital. I describe the controversies that feminist graffiti have enticed, particularly when protesting the state and Catholic institutions. I examine how graffiti attempts to increase women’s “right to the state.” As protesters vandalize public space near churches and government buildings, they effectively “occupy” Paraguay’s capital to bring attention to the need to expand women’s political participation.

Chitiyo, Plaxedes, Josephine Harsh, Kelsey Coates and Alanna Bachtlin (Duquesne University), Classification of Urban Community Gardens in Allegheny County

Urban community gardens provide a myriad of benefits to communities that range from food security, increased access to fresh produce, improved health, environmental protection, social cohesion, and a reduction in crime rates. Community gardens are being used to transform cities such as Pittsburgh, which are reinventing themselves as sustainable cities moving away from an environmental history characterized by a dirty industrial past that still has remnants in the form of distressed vacant lots, polluted soils, and water. A descriptive study was conducted to classify community gardens in Allegheny County. Gardens were classified according to year established, goals, land history and ownership, membership, and garden size. Active gardens were identified and their extent and distribution assessed. The data was collected through online searches of municipal websites, organizations active in community garden projects, and from stakeholders within the researchers’ urban agriculture network. Ground truthing was conducted by visiting selected community gardens within the county. Geographic Information Systems (GIS) was used to generate maps showing the distribution of community gardens within the county. Because community gardens are a useful tool to evaluate a community’s food system, this study is valuable input to the city of Pittsburgh Food Action Plan which is in progress.
Cullen, Bradley (Salisbury University), *Defining Shorebreak along Coastal Beaches*

The term “shorebreak” has been widely used by beachgoers to describe a dangerous condition in which a wave breaks directly onto the beach face; however, the term is not well-defined. Many beaches along the East Coast, especially between Ocean City, Maryland and Cape Henlopen, Delaware, have developed coastal conditions which support shorebreak throughout the majority of the year. The waves that form under these conditions often take the shape of plunging waves or surging waves, both of which disperse a considerable amount of energy in a relatively focused area. This study aims to establish a scientific definition for “shorebreak” and find the critical slope of a beach profile which contributes to the development of shorebreak conditions; however, the data gathered through this study has the potential to test existing wave theory and the way beach replenishment is designed.

Galgano, Francis A. (Villanova University), *A Climate of Conflict*

Environmental security encompasses acute political instability and violent conflict triggered by climate change or other adverse environmental effects and it has emerged as one basis for understanding international conflicts. The conflict in the Darfur region of Sudan is one such example of this environment-conflict nexus and it has been called the first climate war. Linkages between the environment and violent conflict are, however, a matter of some polemic and two schools of thought have emerged. Traditionalists desire to restrict the subject of conflict to a political-military discourse; while others desire to extend the field to include environmental factors. This case study does not claim that the nature of conflict is new; however, it does assert that we can expect an increase in the frequency of conflicts with an environmental component. Although Darfur is a helpful example of the environment-conflict nexus, we have to remember that not all environmental scenarios bring about violent conflict and not all wars have environmental origins. This case study is instructive because it demonstrates the common and persistent variables that should be integrated into an analysis of environmental security: 1) exposure to climate and environmental effects; 2) vulnerability of the society; and 3) adaptive capacity.

Gunderman, Hannah (Carnegie Mellon University), *Promoting Innovative Opportunities in Map and Geography Libraries through Research Data Management: A Case Study on Historical Landscape Images in Physical Geography Research*

Research data management (RDM) offers map and geography libraries an opportunity to further market the potential for their collections to serve as research data. The American Geographical Society Library (AGSL) and the United States Geological Survey (USGS) Library offer digitized and undigitized historical photograph collections. Historical images, particularly those highlighting environmental landscapes of current geographic interest, offer the potential to more deeply engage with a pressing trend, concern, or concept. Using the DataONE Data Catalog, a platform providing access to open data from several research institutions, I contextualize a sampling of these historic photographs alongside present-day data sources from fieldwork in similar landscapes, focusing on the topics of glaciers and glacial landscapes, natural disasters and hazards, and deforestation. This research technique is made possible through RDM techniques of metadata, open data, and open access. Historic images as research data alongside fieldwork
methods are used by physical geographers (as well as geographers in a variety of sub-specialty areas) in “repeat photography” projects which seek to compare temporal trends across landscapes. I aim to both empower further engagement with map and geography libraries, as well as demonstrate how the marketing power of RDM may highlight these innovative scholarly opportunities within these establishments.

Kauffman, Chad, Elizabeth Baugher, and Wendy Abshire (California University of Pennsylvania), *New Approaches to Engagement at a Distance for Project Atmosphere*

California University of Pennsylvania (Cal U) and the American Meteorological Society (AMS) education program partnered with the National Oceanic and Atmospheric Administration (NOAA) and the National Aeronautics and Space Administration (NASA) in 2019 to offer the 26th Project Atmosphere summer K-12 professional development opportunity. Student-participants are required to complete a series of online assignments utilizing Cal U’s course management system, Desire2Learn (D2L), before arriving on site at the National Weather Service Training Center (NWSTC). D2L offered a blogging platform through its Campus Pack extension, called Collaboration Space, creating interactive opportunities amongst participants. Blogs can serve as an effective virtual space for a mix of voices and perspectives. For most, blogging is a solo journey, but for some, blogging is a collaborative effort as many blogs have multiple contributors. During Project Atmosphere 2019, Cal U and AMS course leaders tasked participants with two assignments consisting of a weather observation blog and, in parallel, a cloud capture blog. Students generated their own analysis from suggested digital weather resources, relying on weather forecasts from where they live across the United States. Students engaged one another by reading and reviewing others classmates’ posts, used the comment feature to provide feedback, and create a sharing-cohort amongst the group before engaging each other face-to-face in the NWSTC classroom. These online “micro-community” interactions between students created a feeling of achievement, while further becoming cognizant of various weather patterns, and connecting visual observations (e.g., cloud types) with analysis maps. Ultimately, it prepared students with a peer-learning opportunity before meeting some of NOAA-weather experts at the NWSTC. By creating a community blog in an online learning environment, teachers were able to: (1) Demonstrate usage of the tools and features, such as a blog, within a learning management system as they pertain to weather forecasting and cloud conditions. (2) Familiarize themselves with the online environment of the D2L course management system used to facilitate nearly all aspects of Project Atmosphere. (3) Begin to develop relationships with fellow course participants prior to convening at the residence portion of the course. (4) Review organizational models, teaching methods, and communication techniques that are effective in the online environment. This presentation will convey some of the “lessons learned” from engaging students at a distance using this new platform of interaction. Moreover, example weather blogs and digital media will be shared related to this novel assignment for Project Atmosphere. Suggested paths for improvement and feedback from student engagement will be identified.
Lucas, Susan (University of Pittsburgh), Brownfields of the Steel City—A Comparison of the Past and Future Redevelopment Trends

Like many legacy cities Pittsburgh has a large number of brownfields. Officially defined by the EPA as ‘a property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant’, through the enactment of the Land Recycling Program both Pennsylvania and Pittsburgh have become national leaders in brownfield redevelopment. However, brownfield redevelopment is a contested process with numerous stakeholders involved and various definitions of ‘successful’. This paper examines past trends in the redevelopment of Pittsburgh’s brownfields and uses the results of that analysis to evaluate the current redevelopment of the Hazelwood Green site on the Monongahela River. Using various criteria including diversity of redeveloped landscapes, incorporation of legacy architecture, creation of green space, number of non-local and local jobs created, accessibility and integration with the surrounding urban landscape, the results of this research show considerable variation in the quality of brownfield redevelopment projects in Pittsburgh particularly in terms of accessibility and integration with nearby neighborhoods. The comparison of past brownfield redevelopment projects with Hazelwood Green indicate learned and unlearned lessons. The Hazelwood Green site is physically disconnected from the surrounding street grid with only two connecting streets. Few of the projects individual components are in-keeping with the economic and social character of Hazelwood. The construction of new buildings on the site however incorporates a significant amount of the site’s original structures and therefore scores highly on legacy architecture and the entire project has been planned using the LEED-ND framework

McClain, Devin (Indiana University of Pennsylvania), Influence of Nonpoint Source Pollution of Escherichia Coli Levels in Walnut Creek Lake Erie, Pennsylvania

Erie County Pennsylvania Department of Health monitors various recreational areas near Lake Erie for harmful levels of Escherichia coli (E. coli). E. coli is often found in proximity to areas that are highly populated for recreational use due to various bacteria introduction, water currents, and wastewater. Recent research in the streams feeding into Lake Erie have been discovered to contain high levels of E. coli in the headwater region, where these bacteria should not be found. This suggests that there is significant run-off pollution contaminating the headwaters of the tributaries feeding into Lake Erie. Certain vegetation land-cover can lead to surface-water runoff that can have an influence on E. coli levels using normalized vegetation index (NDVI) to determine how much vegetation there is in this area it is clear to say that around our area of interest, Walnut Creek, there is high level of runoff happening to due to the amount and type of vegetation. With the increase of people visiting Lake Erie in the summer months (May-September) it is vital to ensure that no health problem will arise with persons engaging activities in these recreational areas.

Mueller, Thomas R. (California University of Pennsylvania), The Changing Map of Ukraine in Geography Education

Harvard University’s Ukraine Research Institute has created a Digital Atlas of Ukraine (MAPA). This spatial data portal includes a historical atlas and contemporary atlas. The historical atlas is
divided into 3 sections: Historic Podillya, Rus’ Genealogy, and Great Famine. Podillya was a region of Ukraine and this section examines place names during that time. A researcher examined the marriage relationships in royal families within Europe in the Rus’ Genealogy section. Finally, the Great Famine examines the spatial relationships to assist the public in understanding the Holodomor, a genocide in Ukraine during 1934-36. The contemporary atlas allows user to examine the language, religion and political changes occurring in Ukraine. The presenter will illustrate the integration of this resource into his Introduction to Geography. In Introduction to Geography, students are able use the contemporary atlas to visualize the spatiality of the cultural elements in Ukraine. Students examine maps aggregated by oblasts (regions) on language specifically Ukrainian Only, Ukrainian and Russian, Russian Only and Surzhyk. The maps they examine are: A) Language at Home 2013 MAPA map, B) Language at Home 2015 MAPA map, C) Language Outside Home 2013 MAPA map, D) Language Outside Home 2015 MAPA map, E) Additional Attribute Map from MAPA. Students then draw polygons around the oblasts they believe would be part of the dominant Ukrainian cultural areas and then their reasoning. Then students will examine Holodomor, the Great Famine in Ukraine. The presenter will discuss the great famine generally. Then students are divided into groups by possible explanations of the Holodomor: A) It was the Environment, B) It was Collectivization and C) It was Nationalism. Each group of students will be given access to interactive maps on data on their particular explanation and maps that show the deaths during Holodomor. After students examine all these maps they will then complete research answering if their topic was a cause of the Holodomor. Students present their findings to the class. After explaining the two projects, the presenter will discuss the successes and the challenges. Finally, the presenter will also discuss future educational plans.

**Parr, Kyle** (Indiana University of Pennsylvania), *Tasseled Cap Transformation for Watershed Land Use Analysis: A Case Study of the Western Basin of Lake Erie*

Lake Erie watershed has experienced alterations over the last decade including runoff from agriculture and rising water temperatures. This has brought about serious issues for the lake, such as a drop in aquatic life and the destruction of coastal shores. Particularly problematic in recent years, large algae blooms in Lake Erie have been detrimental to bacteria in the lake that keep the aquatic system stable. Due to an increase in urbanization and agricultural production in the region we hypotheses that increased runoff is contributing to the increased frequency of the blooms. The western basin of the lake is more susceptible to these changes. Therefore, an improved understanding of how land use has changed in the region can help signal future blooms. This research uses remote sensing techniques of Transformations, Radiometric as well as Support Vector Machine classification of Landsat 4-5 and Landsat 8 data to identify key areas that are leading to algae blooms. In the western basin of Lake Erie around Toledo and Detroit, the preliminary results from the tasseled cap transformation has shown an increase of both agriculture and urban development.

**Saku, James** (Frostburg State University), *Information and Communication Technologies: Opportunities and Limitations Among Students of a Tertiary Institution in Ghana*

Within the past two decades, the world has experienced substantial transformation in Information and Communication Technologies (ICT). The quality and capability of smartphones has
improved tremendously, and applications such as Facebook, Instagram, WhatsApp and Twitter have made interacting and communicating with others the easiest it has ever been. There are few places in the world today that are not affected directly or indirectly by ICT. A remarkable problem about ICT however is that there is spatial disparity in the availability and utilization of ICT between first and third world countries. While cellphone, internet and social media are readily available in the first world, third world countries are still far behind. Similarly, there is a spatial difference in the availability of ICT within developing countries. ICT infrastructure is typically more available in urban areas in developing countries than the rural areas. With most tertiary institutions located in urban areas, the expectation is that students of these institutions have extensive access to ICT. This paper examines the use of ICT by University of Ghana students. Employing a random sampling technique and structured questionnaire, a cross section of the University of Ghana students was interviewed. Although most were undergraduates, 20% of participants in the survey were graduate students. Data were analyzed using simple descriptive statistics. The results indicate that most students have access to smart phones and use them primarily to make personal phone calls and educational purpose. About 96% of respondents indicated that they use ICT devices mostly for educational purposes.

Smith, Jennifer (Indiana University of Pennsylvania), *Remote Sensing Techniques for Coastal Change: A SC Case Study*

Recent extreme weather events have elevated the social consciousness around landscape and land cover change in coastal, urban environments. This analysis explores remote sensing techniques which can be used to highlight subtle changes in coastal areas from increased urbanization combined with extreme weather events, which often lead to flooding and property destruction. Similarly, these techniques also highlight changes in coastal morphology as a result of coupled human-natural systems dynamics. While land cover change analysis is the most common remote sensing tool, band ratios and machine learning algorithms are vital additions to illustrating regional change and landscape analysis. A case study of coastal South Carolina between 2008 and 2018 is applied to demonstrate these techniques.

Stanich, Lisa (Lakeland Community College), *Incorporating Geospatial Technologies and Service Learning into a Human Geography Course: An Example.*

This presentation will examine a location analysis completed for some churches near Lakeland Community College that need to merge and potentially build a new complex. Creating data, acquiring data, researching the situation of both churches, choosing variables to consider, making maps and creating presentations of various methods were all utilized in this project. Creating a database of parishioners and geocoding their addresses was an informative first step. Data was downloaded for parcels, zoning, population projections and jurisdiction boundaries from various sources further refined the analysis. GIS tools used for this analysis include the intersect tool, geographic mean center, buffering, and select by location and attribute. This analysis gave the steering committee powerful information to use when selecting a site. A location analysis or any project solving a problem for a local group is a valuable way to incorporate service learning and geospatial technologies in any geography course.
**Thomas, Kristina** (Indiana University of Pennsylvania), *Old vs New: Using an Urban Heat Island Index to Assess Urban and Environmental Planning Principals in Jaipur, India*

Recent urbanization and globalization trends in India are impacting and altering the urban landscapes of large cities. With the influx of global capital, multinational corporations (MNC), and transnational corporations (TNC), large cities are experiencing rapid economic and population growth accompanied by urban expansion. As a result, cities, especially in the developing world are becoming overcrowded with heightened levels of pollution. Jaipur is currently facing this plight. However, Jaipur’s prominent history, architecture, and cultural economy provides a unique scenario for this study; are urban and environmental planning principals in historic neighborhoods more sustainable than contemporary neighborhoods? In order to understand the full impact of architectural design and planning standards, an urban heat island index, created using ENVI and ArcGIS software, will be used to understand the impacts between neighborhoods and their relative levels of pollution.

**Welch, Joan, Kimberly Kutzler, and Eric Chapman** (West Chester University), *West Chester Borough Street Trees: A Worthwhile Infrastructure Investment?*

Facing ecological crises on many fronts, it is important to consider mitigation strategies for urban areas to address these issues. This research investigates the ecosystem benefits provided by the urban forest and associated costs to determine the effectiveness of the infrastructure investment. In 2018, researchers used ArcGIS to collect street tree data for the Borough of West Chester, Pennsylvania and then utilized the U.S. Forest Service’s i-Trees software to calculate the ecosystems’ benefits. Annually, the West Chester Borough street trees provide $142,172 in energy savings and $3,800 in carbon dioxide capture. Trees provide cooling in the summer which decreases the use of air conditioning, thus avoiding energy use. Primarily, the urban forest sequesters atmospheric carbon dioxide through photosynthesis. Borough street trees provided $26,265 in air pollution uptake, and $37,072 in storm water management. Finally, the aesthetic and other public benefits of the urban street tree forest are valued at $132,865 for total annual benefits of $342,174. One critical public benefit is the habitat provided for insect and bird populations with native trees. Given that the Shade Tree budget for 2018 is $27,010, for every dollar invested, the Borough of West Chester received $4.91 of benefits.

**Wells, Adam and Cearra Mihal** (California University of Pennsylvania), *Digitizing the 36FA26 Archeological Site*

This ongoing project uses GIS to create a geodatabase that precisely stores the hand drawn archaeological site records from a Monongahela Native American Village in Southwestern Pennsylvania. This geodatabase catalogs postholes, artifacts, and features as their relative real world locations. Along with the creation of this database, higher level geoprocessing was attempted and discussed using the site’s location and environmental datasets.
Zaprowski, Brent and Lindsey Pinder (Salisbury University), Using Drone Imagery to Map Veteran Graves

The goal of this project is to map each of the veterans in Parsons Cemetery for the Wreaths Across America (WAA) program. This initiative aims to place wreaths on every grave of a veteran during the holiday season. To date a total of 922 veterans have cataloged and mapped. The drone imagery and headstone photographs are being used to create a catalog which organizes the veterans’ information by section. Volunteers will use these catalogs to systematically place the wreaths in the cemetery each year.

Ziolkowski, Michael (The College at Brockport, SUNY), Hazardous Materials Transportation and Citizen Science

WNY Drilling Defense is an environmental group from Western New York (WNY) who are concerned about the impact fossil fuels are having on the environment. One focus of the group is the transportation of crude oil in railroad tank cars through urban areas. This issue was especially heightened after a train carrying Bakken formation crude oil was involved in an accident in the town of Lac-Mégantic, Quebec, Canada in which 47 people died, 40 buildings were destroyed, and an adjacent river and lake were contaminated. Given concerns about the quality of health, the environment, and hazardous materials information in the media, from the government, and in academic research, WNY Drilling Defense began collecting data on the contents of railroad shipments in the vicinity of Buffalo, New York. This research presents their findings and discusses issues surrounding this type of citizen science.

POSTER ABSTRACTS

Bowie, Mariah (Salisbury University), Vanessa Smullen (Salisbury University), and Lance Yonkos (University of Maryland), Analysis for Estrogen in Surface Waters of Wicomico and Worcester Counties

This study was conducted to determine the estrogenic concentrations in select waterways located in Wicomico and Worcester counties. The concentration begins to negatively affect fish at 5 nanograms per liter which induces vitellogenesis in fish species. In order to determine this, water samples were taken, solid-phase extracted and eluted to 1 mL. After this process, BLYES yeast was cultivated and used to set a standard curve and test the eluted samples. Results show that runoff from fields fertilized with poultry litter has a higher concentration of estrogen. These estrogens are high enough to cause vitellogenesis in the fish population with the waterways sampled.

Lynn, Joece (University of Pittsburgh at Johnstown), Analyzing the Suspended Sediment: Eureka Mine No. 37

The purpose of this poster is to map and analyze the drainage patterns of the Eureka mine and to analyze the sediment deposited in Paint Creek. Berwind White Coal Company’s Eureka (mine
37) is a historical mine located in Windber, Pennsylvania. This mine was one of the most productive mines in the Windber Coalfield from 1899 until 1962. Through applied drone technology, aerial photos were collected, mosaiced, and georeferenced to create a map of the mine today. After collecting DEM LiDAR data from PASDA, a watershed delineation was created to analyze the drainage patterns flowing into Paint Creek. This data was then used to find several points to collect suspended sediment samples in Paint Creek, which is adjacent to this historical mine. This suspended sediment data was collected by using US DH-81 isokinetic handheld samplers using the mid-section method for discharge measurement. This data was then analyzed to determine the approximate sediment deposited from Eureka mine. Ebensburg Power Co. has claimed the property and has had interest (in 2013) in removing 1.7 million tons of waste coal from the site but has had issues gaining permits.

Manges, Michael (University of Pittsburgh at Johnstown), *Applied Drone Technology to Aerial Mapping: Quemahoning Dam, PA*

The purpose of this poster is to map and analyze the Quemahoning Dam using applied drone technology. The Quemahoning Reservoir is located in Somerset County off PA Route 219, just south of Hollsopple, PA and a few miles east of Boswell, PA. Drone technology was used to capture 373 aerial images of the dam structure at the height of 100 meters in order to capture more detailed image data. The captured images were mosaiced to a 1 inch surveying accuracy. Also, Digital Surface Model (DSM) and Digital Terrain Model (DTM) hill-shades data is provided that can allow for elevation measurements. Elements of the dam structure such as the spillway, emergency spillway, gate tower can be located and recognized. The difference in water levels between the Quemahoning Reservoir and Rhoads Creek can be measured and analyzed. Submerged aquatic vegetation can be seen along the dam especially along the emergency spillway. This project will serve as a baseline for future studies on the Quemahoning Dam as more imagery is captured during different times of the year and over longer periods of time.

Ponczek, Megan (University of Pittsburgh at Johnstown), *Highland Sewer and Water Authority: An Overview*

The presentation will focus on the evolution and growth of the authority from its beginning to the present.

Roth, Kristen and Plaxedes Chitiyo (Duquesne University), *Urban Gardening Techniques Employed by Phipps Conservatory’s Homegrown Program to Maximize Food Access and Biodiversity*

Phipps Conservatory’s Homegrown Program has alleviated the damage of food-apartheid through successfully giving 295 cost-free urban gardens and a lasting supply of fresh crops to residents of various eastern Pittsburgh neighborhoods. Food-apartheid is defined by underserved communities lacking healthy produce within a close proximity, and Homegrown has supported individuals who are vulnerable to this problem since 2013, starting in Homewood, and later expanding to: Larimer, Lincoln-Lemington-Belmar, and East Hills. In the process, fertile land has been introduced, which remedies the decline in biodiversity that occurred as Pittsburgh developed industrially, by establishing additional plants and attracting pollinators. This study
examines the methods implemented by Homegrown that enhance the productivity of urban agriculture plots, such as: square-foot organization, intercropping, and species richness and composition, using data from installations completed in 2019. The gardens have provided people with organic fruits, vegetables, herbs, and flowers in food-apartheid areas, while increasing biodiversity and generating a healthier city.

Wolff, Olivia (Ohio University), *Soil Erosion from Off-Road Vehicle and Hiking Trails in the Ironton Ranger District of Wayne National Forest, Ohio*

The federally managed Ironton Unit of Wayne National Forest (WNF) in Ironton, Ohio, supports 102 kilometers of off-road vehicle trails. Wayne National Forest is located in southeastern Ohio within the Appalachian Plateau physiographic province. Managing off-road vehicle trails appropriately is imperative because trails that have been compacted by off-road vehicles are known to increase water runoff, leading to excessive gully formation and eventual erosion. Moisture loss is an important variable to consider when monitoring erosion and compaction. This research aims to measure soil moisture variations along off-road vehicle trail profiles within the Ironton Unit of WNF. Several trail-related studies have been conducted in the Athens Unit of WNF, but impact data have not been collected and analyzed for the Ironton Unit of the forest. Soil moisture, grain size, and cross-sectional depths will be collected from four distinct trail sections, each consisting of five profiles ten meters apart. Cross sections will be plotted, and moisture content will be statistically analyzed to determine if there is a correlation between moisture content and trail location. It is hypothesized that deeper ruts will experience more moisture loss and greater compaction and erosion rates. Results will be published in a master’s thesis in April 2020.