

2013 Middle States Division Annual Meeting
Campbell Student Union
SUNY Buffalo State

Organization and Arrangements

Local Arrangements

Kelly Frothingham, SUNY Buffalo State

Geography Bowl

David Fyfe, York College

Student Paper Competition

Mark Blumler, SUNY Binghamton

Budget and Planning

Jo Margaret Mano, SUNY New Paltz

MSDAAG Website

Grant Saff, Hofstra University

Middle States Division Website

<http://www.msaag.org/>

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**Sponsored by SUNY Buffalo State Geography and Planning Department and the
School of Natural and Social Sciences**

The Meeting at a Glance

Friday, October 18, 2013

11:30 am – 1:00 pm	Executive Board Meeting
12:00 pm – 5:00 pm	Registration, 3 rd floor lobby, Campbell Student Union
2:00 pm – 3:20 pm	Session 1 A, B, and C
3:20 pm – 4:00 pm	Break, Fireside Lounge, Campbell Student Union
4:00 pm – 5:20 pm	Session 2 A, B, and C
6:00 pm – 7:30 pm	Dinner, Social Hall, Campbell Student Union
8:00 pm – 10:00 pm	Geography Bowl, Social Hall and Assembly 1/2, Campbell Student Union

Saturday, October 19, 2013

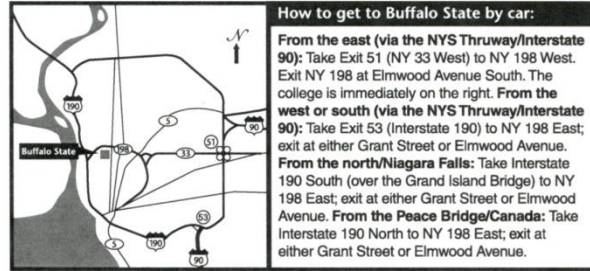
8:00 am – 10:30 am	Registration, 3 rd floor lobby, Campbell Student Union
8:30 am – 9:50 am	Session 3 A, B, and C
9:30 am – 10:40 am	Poster Session and Break, Fireside Lounge, Campbell Student Union
10:40 am – 12:00 pm	Session 4 A, B, and C
12:15 pm	Luncheon and Keynote Speaker: Dr. Julie Winkler, AAG President, Social Hall, Campbell Student Union
	Luncheon to include: Middle States Division Business meeting and Student Paper Competition and Geography Bowl winners



BUFFALO STATE

The State University of New York

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How to get to Buffalo State by car:

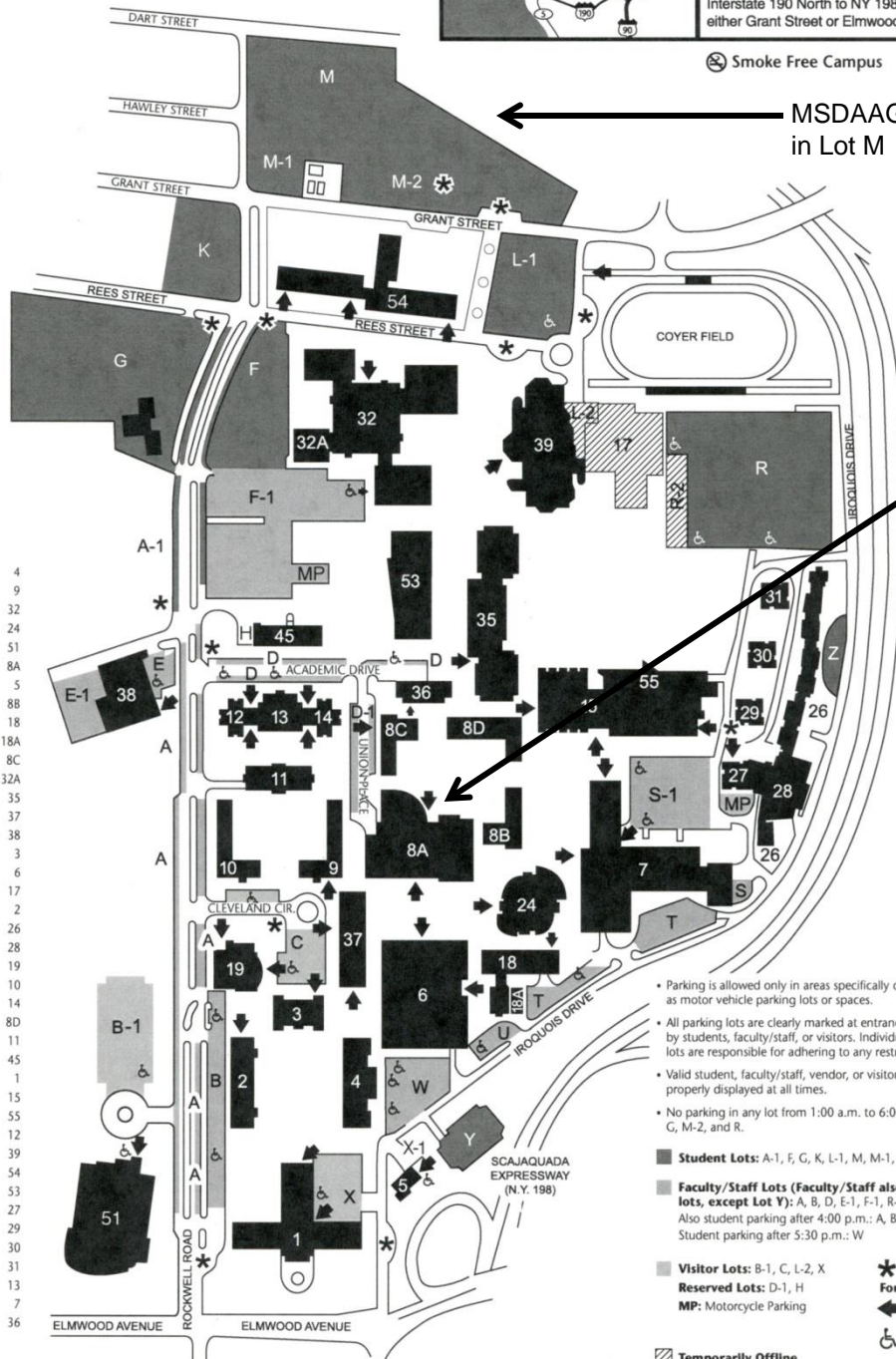
From the east (via the NYS Thruway/Interstate 90): Take Exit 51 (NY 33 West) to NY 198 West. Exit NY 198 at Elmwood Avenue South. The college is immediately on the right. **From the west or south (via the NYS Thruway/Interstate 90):** Take Exit 53 (Interstate 190) to NY 198 East; exit at either Grant Street or Elmwood Avenue. **From the north/Niagara Falls:** Take Interstate 190 South (over the Grand Island Bridge) to NY 198 East; exit at either Grant Street or Elmwood Avenue. **From the Peace Bridge/Canada:** Take Interstate 190 North to NY 198 East; exit at either Grant Street or Elmwood Avenue.

Smoke Free Campus



Map Legend

Bacon Hall	4
Bishop Hall	9
Buckham Hall	32
Bulger Communication Center	24
Burchfield Penney Art Center	51
Campbell Student Union	8A
Campus House	5
Cassidy Hall	88
Caudell Hall	18
Caudell Hall Annex	18A
Chase Hall	8C
Child Care Center	32A
Classroom Building	35
Cleveland Hall	37
Clinton Center	38
Donald Savage Building	3
E. H. Butler Library	6
Houston Gym	17
Ketchum Hall	2
Moore Complex	26
Moore Hall	28
Moot Hall	19
Neumann Hall	10
North Wing	14
Perry Hall	8D
Porter Hall	11
Power Plant	45
Rockwell Hall	1
Science Building	15
Science and Mathematics Complex	55
South Wing	12
Sports Arena	39
Student Apartment Complex	54
Technology Building	53
Tower 1	27
Tower 2	29
Tower 3	30
Tower 4	31
Twin Rise	13
Upton Hall	7
Weigel Health Center	36



MSDAAG Conference Parking
in Lot M

MSDAAG Conference
Venue
Campbell Student Union

- Parking is allowed only in areas specifically designated as motor vehicle parking lots or spaces.
- All parking lots are clearly marked at entrances for proper use by students, faculty/staff, or visitors. Individuals using parking lots are responsible for adhering to any restrictions.
- Valid student, faculty/staff, vendor, or visitor permits must be properly displayed at all times.
- No parking in any lot from 1:00 a.m. to 6:00 a.m. except in lots G, M-2, and R.

Student Lots: A-1, F, G, K, L-1, M, M-1, M-2, R, Y, Z

Faculty/Staff Lots (Faculty/Staff also can park in student lots, except Lot Y): A, B, D, E-1, F-1, R-2, S, S-1, T, U, W
Also student parking after 4:00 p.m.: A, B, D, F-1, R-2, S-1, T, U
Student parking after 5:30 p.m.: W

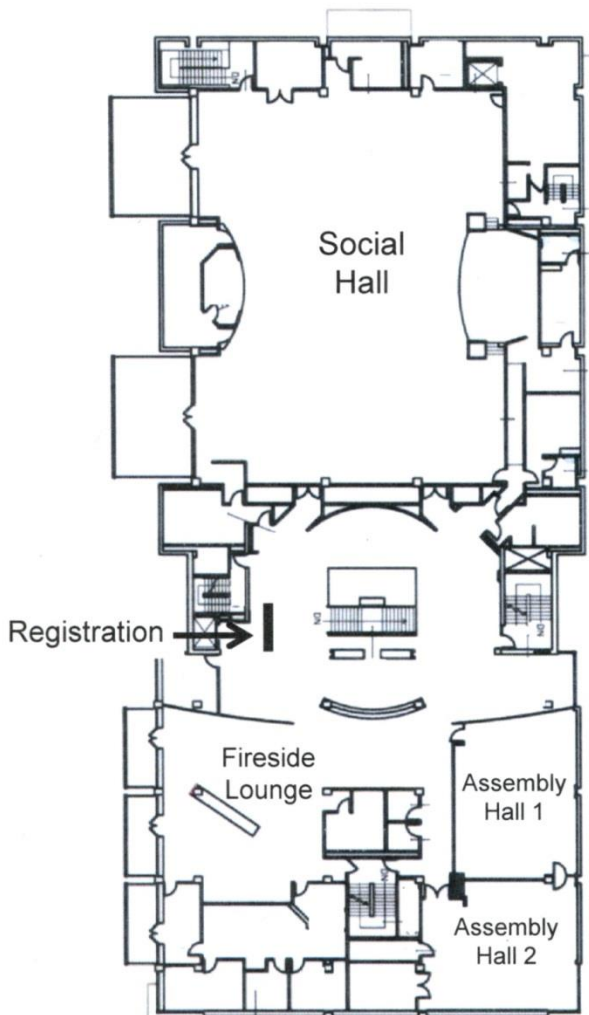
Visitor Lots: B-1, C, L-2, X

Reserved Lots: D-1, H
MP: Motorcycle Parking

Temporarily Offline

- Bus Services**
- For Special Needs:**
- Accessible Entrances
- Accessible Entrances
- Parking Spaces

To Student Union Quad and Elmwood Avenue

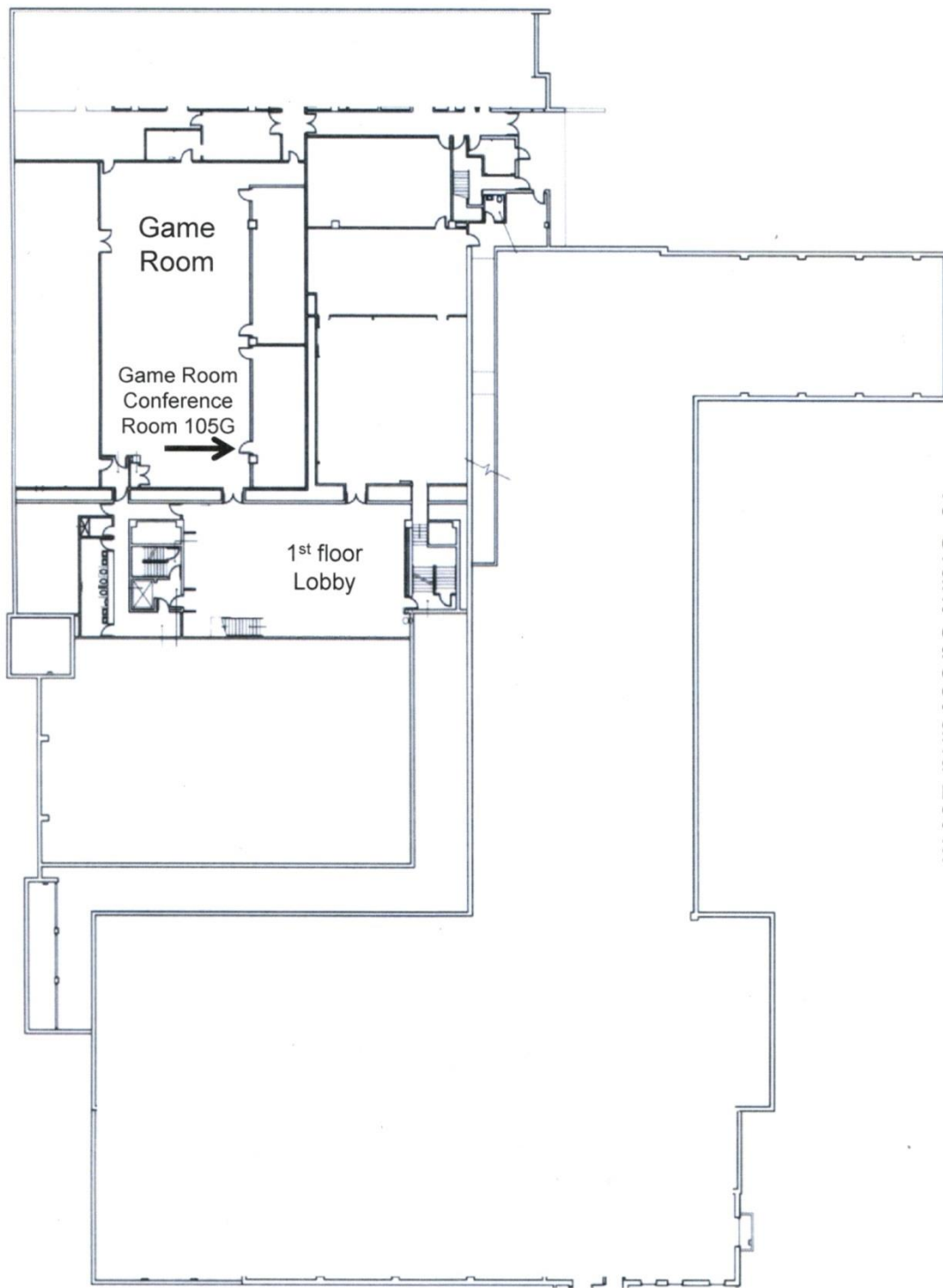


To Grant Street and Lot M



Campbell Student Union Third Floor

↑
To Student Union Quad and Elmwood Avenue



↓
To Grant Street and Lot M

Campbell Student Union First Floor

Friday, October 18th

Session 1
2:00 pm – 3:20 pm

Session 1A: Human Impact on the Environment

Room: Assembly Hall 1

Chair: Mark A. Blumler, SUNY Binghamton

Joshua Randall, Rutgers University

Comparison of Political Drivers of Water Demand Using Spatial Statistical Analysis in the Phoenix Metro Area

Stephen J. Tulowiecki and **Chris P.S. Larsen**, University of Buffalo

Assessing Native American Influence upon Presettlement Forests of Chautauqua County, New York: A Species Distribution Modeling Approach

Mark A. Blumler, SUNY Binghamton

Binghamton Plant Biodiversity Patterns and Government Policy

Session 1B: Immigration and Migration

Room: Assembly Hall 2

Chair: William Kory, University of Pittsburgh Johnstown

Crista M. Livecchi, Penn State University

No Place Like Home: Home, Mobility, and US Military Youth

Matthew McClure, SUNY Geneseo

Human Rural Micro-Geography in a Haitian Roadside Setting

Clovis Bergere, Rutgers University

West African Migrations: Everyday Movements and the Myth of Mass Invasion

Jay Ireland, United States Military Academy at West Point

Events and Immigration

Session 1C: Weather and Climate

Room: Game Room Conference Room

Chair: Stephen Vermette, SUNY Buffalo State

Fredrick Bloom, SUNY Buffalo State

Climate Normals: A Study of Buffalo, NY's Trending Climate

Jase Bernhardt, Penn State University

Jet Contrails and Society—Not Just a "Cloudy" Outlook

Heike Hartmann, **Lisa M. Andresky**, and **Robert W. Kellar**, Slippery Rock University

Observed Annual and Monsoonal Precipitation Trends in the Indus River Basin

Friday, October 18th

Michael Davis, Kutztown University; **Jia-lin Lin**, The Ohio State University; **Taotao Qian**, The Ohio State University; and **Meng-Pai Hung**, Climate Prediction Center
Ocean-Atmosphere Feedback and Cloud-Radiation Feedback in Southeastern Pacific Simulated by 24 IPCC AR4 Coupled GCMs

3:20 pm – 4:00 pm

Break

Campbell Student Union Fireside Lounge

Session 2

4:00 pm – 5:20 pm

Session 2A: Vegetation and Biodiversity

Room: Assembly Hall 1

Chair: David Fyfe, York College of Pennsylvania

Danielle Lamphere, SUNY Binghamton

Patterns of Plant Species Biodiversity on River Islands in the Upper Susquehanna River and Its Tributaries

Stacy Nowicki, Penn State University

Radial Growth Variation in Tree Rings

James Kernan, SUNY Geneseo

Evaluating the Efficacy of Prescribed Fire at the Quinn Oak Openings in Rush, NY

Erin Girard, SUNY Geneseo

Evaluating Understory Invasive Species at the Indian Fort Nature Preserve in Geneseo, NY

Session 2B: Water Resources

Room: Assembly Hall 2

Chair: Richard Shaker, SUNY Binghamton

Jerome Krajna and **Kelly M. Frothingham**, SUNY Buffalo State

An Assessment of Niagara River Greenway Streams

Jundong Qiao and **S. K. Delavan**, University at Buffalo

Flow Structure and Turbulence Characteristics around a Spanwise Suspended Porous Obstacle through Laboratory Experiments

Richard R. Shaker, **Charles J. Rapp**, and **Artur D. Yakubov**, SUNY Binghamton

Examining Patterns of Aquatic Invasion within the Adirondacks: A Lake and Landscape Approach

Friday, October 18th

Session 2C: Economic Geography

Room: Game Room Conference Room

Chair: Paul Marr, Shippensburg University

Eugenie Ma, SUNY Geneseo

Geneseo Student Personal Effects Origins, 2011

Darrell A. Norris, SUNY Geneseo

India's Prospects: A Megacity Perspective

Alison Horton, Rutgers University

Talking About Poverty: Redefining our Understanding through the Case of Human Development in Bangladesh

Paul Marr, Shippensburg University

Technology, Labor, and the Collapse of Chile's Nitrate Industry

6:00 – 7:30 pm

Dinner

Campbell Student Union Social Hall

Introduction: Kelly Frothingham, President MSDAAG, SUNY Buffalo State

Welcoming Remarks: Mark Severson, Dean, School of Natural & Social Science, SUNY Buffalo State

8:00 – 10:00 pm

Geography Bowl

Campbell Student Union Social Hall and Assembly Hall 1/2

Saturday, October 19th

Session 3
8:30 am – 9:50 am

Session 3A: Topics in Human Geography

Room: Assembly Hall 1

Chair: Stephen Vermette, SUNY Buffalo State

Alicia Cerquone, SUNY Geneseo

White Supremacist Ecology in the United States

Maddalena Romano, Penn State University

Revisiting Redistricting in Texas: A Method for Predicting Election Results

Shannon Gallagher, SUNY Geneseo

Artists' Perspectives on Mid-Century America: The Case of Hopper and Rockwell

Stephen Vermette and **Tullis Johnson**, SUNY Buffalo State

Weather Event: Exploring Charles E. Burchfield's Water Colors from the Perspective of a Meteorologist

Session 3B: Ecosystem Restoration I

Room: Assembly Hall 2

Chair: Sean Bennett, University at Buffalo

David Spiering, University at Buffalo

Using Geographic Data in a GIS to Manage Invasive Species at Tifft Nature Preserve

Paul B. Reed and **Berat Z. Haznedaroglu**, University at Buffalo

*Testing Cyanophage N-1 as a Biological Control against Harmful Algal Bloom (HAB) Forming Species *Microcystis aeruginosa**

Beynan Ransom, **Jingqi Sui**, **Colleen Bronner**, and **Alan Rabideau**, University at Buffalo

Quantifying Hydrologic Balance Impacts of a Western New York Phytoremediation Barrier

J. Pleban, University at Buffalo; **D.S. Mackay**, University at Buffalo; **T. Aston**, University of Wyoming; **B.E. Ewers**, University of Wyoming; and **C. Wienig**, University of Wyoming

Using an Ecosystem Process Model to Assess Drought Response of Brassica Species

Session 3C: Trends in Cities

Room: Game Room Conference Room

Chair: Jason Knight, SUNY Buffalo State

Ari Kaputkin, SUNY New Paltz

Bicycle Rising: Shifting Gears in City Cycling

Craig Benson, SUNY Geneseo

The Midwestern Enclosed Mall: Death, Rebirth, Functional Adaptations

Saturday, October 19th

Richard A. Russo, Frostburg State University
Urban Renaissance or Decline? The Fate of the Mid-Atlantic's Small Cities

Jason Knight, SUNY Buffalo State and **Russell Weaver**, University of Redlands
Demolishing Vacancy Problems? An Empirical Study of Demolition Policy and Right-sizing Efforts in a Shrinking City

9:30 am – 10:40 am
Poster Session and Break
Campbell Student Union Fireside Lounge

Poster Presentations

Melissa Bender and **Stephen Vermette**, SUNY Buffalo State
Western New York (WNY) Climate Map

Anthony O. Brais and **Sarah K. Delavan**, University of Buffalo
Fish Passage Implications of Laboratory Experiments in a Rectangular Channel with Slotted-Weir Baffles

Colleen E. Bronner, **Amy M. Bartlett**, **Sarah L. Whiteway**, **Douglas C. Lambert**, **Sean J. Bennett**, and **Alan J. Rabideau**, University at Buffalo
Compensatory Mitigation Policy under the Clean Water Act: Necessary Changes to Protect Stream Ecosystem Functions and Services

Cameron Irvine and **J.M. Waddington**, McMaster University
Hydrophobicity of a Mined and Burned Peatland

Lillian Mayer, SUNY Geneseo
The Intentional Communities Niche

Connor Powell and **Stephen Vermette**, SUNY Buffalo State
Calculating U.S. Cave Temperatures

Chelsea Tavormina, SUNY Buffalo State and **Jorge V. Bajo Sanchez**, University at Buffalo and SUNY Buffalo State
Generating a Calculated Accessibility Map for Ash Sampling for the Santa Ana Volcano, El Salvador using Model builder in ArcGIS

Victoria Trucksess and **Michael Davis**, Kutztown University
Analysis of Summer Climate variability on Midwest Corn

Stephen Vermette and **Fredrick Bloom**, SUNY Buffalo State
Searching for Western New York's (WNY) Climate Change Signal

Saturday, October 19th

Session 4
10:40 am – 12:00 pm

Session 4A: Community Development

Room: Assembly Hall 1

Chair: Jorge V. Bajo Sanchez, University at Buffalo and SUNY Buffalo State

K.N. Irvine, SUNY Buffalo State and Nanyang Technological University; **N. Mische**, United Educational Consultants Co. Ltd.; **J. Bowles**, Asian Institute of Technology; **P. Pichadul**, United Educational Consultants Co. Ltd.; and **T. Koottatep**, Asian Institute of Technology
Water, Sanitation and Community Development: A Preliminary Assessment in a Karen Hilltribe Village on the Thai-Myanmar Border

Enid Lotstein, Bronx Community College/CUNY & Westchester Community College/SUNY
The Role of Environmental and Social Factors in the Recreational Use of a Natural Coastal Setting: Some Preliminary Results

Jeff Brunskill and **Nathaniel Greene**, Bloomsburg University
Bloomsburg University Solar Energy Kiosk

Jorge V. Bajo Sanchez, University at Buffalo and SUNY Buffalo State
Learning about Natural Hazards through Community Mapping, Buenos Aires Case Study, at the Santa Ana (Ilamatepec) Volcano, El Salvador

Session 4B: Ecosystem Restoration II

Room: Assembly Hall 2

Chair: Sean Bennett, University at Buffalo

Michael Habberfield, University at Buffalo
Synthesizing Research Paradigms through Scaling Concepts to Better Enable Successful Stream Function Restoration

Sarah L. Whiteway, University at Buffalo; **Paul Villard**, University of Guelph; and **Sean J. Bennett**, University at Buffalo
The Success and Stability of Urban Channel Design Projects in the Greater Toronto Area

Michael S. Gallisdorfer, **Sean J. Bennett**, **Joseph F. Atkinson**, **S. Mohammad Ghaneeizad**, **Donghua Cai**, University at Buffalo
Physical-Scale River Models for Evaluating Engineered Log Jam Designs

Jonathan M. Malzone and **Christopher S. Lowry**, University at Buffalo
Focused Groundwater Control of the Hyporheic Zone: A Result of Stratified Glacial Drift Aquifers Interacting with Western New York Streams

Saturday, October 19th

Session 4C: Mapping, GIS, and Remote Sensing

Room: Game Room Conference Room

Chair: Lawrence McGlinn, SUNY New Paltz

Craig Dalton, Bloomsburg University

Zooming In: Rethinking Scale for Online Maps

Ahmed Barrasali and **Mark A. Blumler**, SUNY Binghamton

Using GIS to Test for Introgression in Wild Emmer Wheat

Philip Savoy, University at Buffalo

Monitoring Interspecific Patterns of Phenology with Near-surface Remote Sensing

Lawrence McGlinn, SUNY New Paltz

Showing Time Geography in 3D

12:15 pm

Awards Luncheon

Campbell Student Union Social Hall

Keynote Speaker: Julie Winkler, President, Association of American Geographers

Local to Global Assessments of Climate Change Impacts

Middle States Division Business Meeting

Student Paper Competition: Mark Blumler

Geography Bowl Winners: David Fyfe



Association of American Geographers
Middle States Division
BUSINESS MEETING

October 19, 2013

Agenda

1. Meeting called to order
2. Reading of minutes of previous meeting
3. Treasurer's report
4. Communications
5. Reports
6. Old business
7. New business
8. Adjournment

Abstracts

Jorge V. Bajo Sanchez, University at Buffalo and SUNY Buffalo State

Learning about Natural Hazards through Community Mapping, Buenos Aires Case Study, at the Santa Ana (Iamatepec) Volcano, El Salvador

Iamatepec Volcano is the tallest composite volcano of El Salvador, Central America. It is one of six active volcanoes monitored by the Direccion General del Observatorio Ambiental in El Salvador. Rural communities and the second (Santa Ana, 13 km) and fourth (Sonsosante, 15 km) largest cities of the country are within reach of volcanic processes. The latest eruption occurred on October 1st, 2005, which produced an estimated 10 km ash plume, small pyroclastic density currents and major lahars. Some mitigation projects were conducted afterwards in the region for volcanic mitigation. However, community input on the type of projects was very limited. This project approached the community (Buenos Aires) in order to gain a better understanding of the community knowledge about volcanic hazards and how they view their surrounding areas. This was done through several meetings and a two weeks period where the community was asked to map hazards. Some of the hazards mentioned and/or map where the 2001 earthquake of magnitude 7.7, the 2005 eruption, and several debris flows and lahars which have destroyed the roads, leaving them uncommunicated for several days during past years. The community chose to use a blank poster size paper to map their knowledge, while using the official topographic map to "correct" the topology. These maps have been used to identify hazard areas, the formation of new Barrancas and Quebradas, and they will be used for model validation.

Keywords: PGIS, GIS, hazards, mapping

Ahmed Barrasali and Mark A. Blumler, SUNY Binghamton

Using GIS to Test for Introgression in Wild Emmer Wheat

Geographical analysis is increasingly recognized as useful in understanding the genetics and evolution of wild plant species. However, spatial analysis is not applied as fully as it could be. An interesting and important case is that of wild emmer wheat, *Triticum dicoccoides*, the ancestor of most domesticated wheats. There is debate about whether the Upper Jordan Valley "race" of wild emmer is introgressed from durum wheat, or not. In a GIS, we are carrying out a spatial analysis of the data from 243 wild emmer plants gathered by scientists from a site on the edge of the Upper Jordan Valley. Specifically, we are mapping the locations of alleles from 20 polymorphic loci in these plants, to test the hypothesis that they are introgressed from durum. Preliminary findings will be presented.

Keywords: Introgression, spatial analysis, geogenetics

Melissa Bender and Stephen Vermette, SUNY Buffalo State

Western New York (WNY) Climate Map

This map explores the climatology of Western New York (defined as the States eight most western counties) through the use of National Weather Service (NWS) records and severe weather events of the region. It denotes monthly averages as well as extremes, such as the most notorious storms, for their sheer size and impact on Western New Yorkers. Weather data is presented spatially, as with snowfall, but also by location, as with storm damage. In a region typically not noted for severe weather it may be interesting to even the local observer that Western New York has endured 82 documented tornados, the strongest of which was an F4 in Chautauqua County in 1985. Hurricane paths have also crossed through Western New York. The main objective of this map is to provide a quick, easy to read and aesthetically pleasing summary of Western New York climatology in a spatial format. It benefits both the locals who remember and reminisce about these storms and the geographers who can use this data for their own interest and future research.

Keywords: WNY, climate, map

Craig Benson, SUNY Geneseo

The Midwestern Enclosed Mall: Death, Rebirth, Functional Adaptations

By many indicators the American shopping mall is in decline. The last new enclosed mall opened in 2006, while at one point in the 1980's it was normal for more than 140 to open in any given year. National mall stagnation is especially apparent in the Midwest, a region that experienced sharp effects of deindustrialization and even depopulation. I explore the development of the enclosed mall and isolate key

factors in its decline. My research findings are based on a survey of 50 Midwestern malls. Whereas some Midwestern malls are moribund, others are entirely vacant, close to 40 percent have redeveloped. Such redevelopment has assumed several forms. Some malls have been retrofitted into business campuses, medical centers and government offices. Others have been re-visited as new retail entities notably as lifestyle centers. I attempt to determine what factors are at work in shaping a mall's fate. Despite the apparently central role of the large enclosed regional mall in American consumer culture, it seems likely that the Midwestern experience will soon be replicated in other regional settings.

Keywords: Midwest, population change, retail, redevelopment

Clovis Bergere, Rutgers University

West African Migrations: Everyday Movements and the Myth of Mass Invasion

Dominant public understandings of West African migrations tend to be shaped by the tropes of desperation and victimhood, and by perceptions of Africa as a "continent on the move" (Castles & Miller, 2009: 148). Widely circulated media stories such as the now ubiquitous images of dehydrated and exhausted young migrants braving the Southern European seas in order to reach Italy or Spain have contributed to the creation of a myth that we are currently experiencing a "mass invasion" coming from the African sub-continent into the fortress of Europe (De Haas, 2007: 3). Drawing on secondary evidence from recent academic literature as well as primary evidence from a recent visual research project conducted with Guinean youth, this paper seeks to contribute to current debates about migration in West Africa by: 1) highlighting some of the most recent patterns of migratory flows in and from the West African region; 2) using case study examples in order to reflect on the specific and changing ways in which migration is experienced by West African youth in their everyday lives; 3) and finally, reflecting on the theoretical and policy implications of the patterns and textures of the flows. This specifically includes exploring the changing "cultures of migration" and briefly looking at practical ways in which the migratory movements of West African youth could be harnessed as a strength for innovative policy rather than simply "curbed" or "combated."

Keywords: Africa, migration, youth

Jase Bernhardt, Penn State University

Jet Contrails and Society—Not Just a "Cloudy" Outlook

In addition to the widespread emission of greenhouse gases, society has generated more subtle- but still detectable- effects on Earth's climate system; notably, jet aviation contrails. Aviation wields a dual influence on climate: planes emit greenhouse gases such as carbon dioxide and nitrous oxides, and also initiate artificial cirrus-like clouds known as contrails. Although the impacts of contrails are not as well understood or studied as greenhouse gases, it is generally accepted that they contribute to regional-scale and global warming. Moreover, contrails also reduce the diurnal temperature range (DTR), or difference between daily maximum and minimum temperatures, which could have both beneficial and detrimental influences on society. This presentation will explore the impacts and opportunities jet contrails outbreaks hold for society. First, their role in surface temperature and DTR changes is analyzed, as well as a method for forecasting contrails' short-term climatic effects. Then, a discussion of contrails' potential role in geo-engineering, based on their aforementioned properties, is presented.

Keywords: Human impacts on climate, climatology, meteorology

Fredrick Bloom, SUNY Buffalo State

Climate Normals: A Study of Buffalo, NY's Trending Climate

A climate 'Normal' is defined as average climate over a defined 30 year period. Normals are useful in climatic research because they are of sufficient duration to filter out many short-term anomalies between years, but short enough to reflect longer term climate trends. This study used data from five Normal periods, beginning with the 1941-1970 period and ending with the 1981-2010 period, to assess possible changes in the Buffalo area climate. Weather data was obtained from the National Weather Service site in Buffalo, NY. Aside from annual values, the data was broken down by month and season. The Normals studied included average, maximum and minimum temperatures, as well as precipitation, snowfall, and heating and cooling degree days. Findings indicate that over the five normal periods studied, Buffalo, NY has seen an overall increase in both temperature and precipitation. This data indicates a trend toward increasing temperature of 0.8 degrees Fahrenheit (+3.3%) throughout this time period, with an even greater increase of 1.7 degrees Fahrenheit (+6.9%) during the winter months. This data also indicates a trend toward more precipitation and snowfall; 4.37 inches (+12.1%) and 3.3 inches (+3.6%), respectively.

Mark A. Blumler, SUNY Binghamton

Binghamton Plant Biodiversity Patterns and Government Policy

There is considerable interest today in studying how urbanization affects biodiversity, with some ecologists suggesting that conservation can only be successful if we are able to protect species within the human-dominated environment. The Binghamton Urban Ecosystem Institute is gathering data on local plant biodiversity with these issues in mind; here, I describe and discuss some of the biodiversity patterns that we are finding, and relate them to planning and policy.

Flood management, weed control, and landscaping planning/regulations all are harming native diversity. Studies demonstrate that planners are generally supportive of biodiversity conservation, but lack the training that would enable them to incorporate conservation into their plans. Input from ecologists and biogeographers could assist them in developing more biodiversity-friendly plans.

Keywords: Biodiversity, conservation, urban planning

Anthony O. Brais and **Sarah K. Delavan**, University of Buffalo

Fish Passage Implications of Laboratory Experiments in a Rectangular Channel with Slotted-Weir Baffles

Baffles reduce water velocity and increase flow depth in culverts promoting fish passage. Smooth walled rectangular concrete box culverts are often barriers for fish but baffle addition may cause the hydraulic conditions to be more suited for fish passage. This study compares the hydrodynamics of flow around three slotted weir baffles in a rectangular flume which represents a box culvert, to a similarly baffled reference circular culvert of Morrison et al., 2009. Dimensional analysis determined experimental testing conditions to match the flow characteristics of the circular culvert to the rectangular flume. Velocity profiles were collected with an Acoustic Doppler Velociometer (ADV) at five cross-sections between the second and third of three baffles. MATLAB data processing determined turbulence intensity metrics. A high velocity jet formed downstream of the slot in the second baffle in both rectangular and circular culverts, but the jet dissipated faster downstream in the rectangular culvert despite a wider lateral jet influence adjacent to the baffle. Stream-wise vertically averaged turbulent intensities (T_{ix}) remained constant laterally across the circular culvert profile at R.94, (relative distance farthest downstream from second baffle) and at R.066 (closest downstream to the second baffle). The rectangular channel at R.066 had higher T_{ix} closer to the walls of the flume than in the jet slot region, but T_{ix} remained uniform at the R.944 cross-section. The jet intensity reduction downstream in the rectangular setup could promote greater resting opportunities and elevated fish passage, but a wider jet zone and elevated turbulence near the baffles may inhibit movement.

Keywords: Fish passage, culverts, turbulence, baffles

Colleen E. Bronner, **Amy M. Bartlett**, **Sarah L. Whiteway**, **Douglas C. Lambert**, **Sean J. Bennett**, and **Alan J. Rabideau**, University at Buffalo

Compensatory Mitigation Policy under the Clean Water Act: Necessary Changes to Protect Stream Ecosystem Functions and Services

Compensatory mitigation of impacted streams and wetlands has increased over the past two decades, with the associated industry spending over US \$2.9 billion in aquatic restoration annually. Despite these expenditures, evaluations by the National Research Council and U.S. Government Accountability Office have provided evidence that compensatory mitigation practices are failing to protect aquatic resource functions and services, and vague federal policy and inadequate evaluation of compensatory mitigation projects are to blame. To address these weaknesses, an update to federal regulations on compensatory mitigation was released in 2008. Additionally, the 2012 Reissuance of Nationwide Permits, some of which affects compensatory stream mitigation, was recently published. Current policy, as reflected in these documents, still uses nonspecific language to direct compensatory stream mitigation leaving most implementation decisions to the local U.S. Army Corps of Engineers district. The majority of federal mitigation policy has focused on wetland compensation, with other aquatic resources receiving less attention (e.g., streams). In this presentation, weaknesses of current policy are discussed, as are suggested policy changes to minimize the loss of stream ecosystem functions and services. Compensatory mitigation policy should clearly define key terms, incorporate adaptive management procedures, and provide guidelines for determining mitigation costs and compensation ratio requirements.

Keywords: Restoration, streams/rivers, water policy

Jeff Brunskill and Nathaniel Greene, Bloomsburg University

Bloomsburg University Solar Energy Kiosk

In the fall of 2011 faculty from the geography and physics departments at Bloomsburg University (BU) designed and installed a 3.2-kilowatt photovoltaic solar array on the BU campus. The following spring, a broader collaboration of five faculty and 33 students from the BU geography, physics, computer science and instructional technology departments was initiated to design and develop a solar energy kiosk. The kiosk, completed in the fall of 2013, is a unique educational resource that explores how solar panels work, the factors that influence solar energy production (e.g., the path of the sun in the sky, seasons, and the weather), and the benefits and limitations of solar energy production. This paper provides an overview of the design and development of the solar array and kiosk, the educational applications of the kiosk content in physical geography, meteorology and physics classrooms, and our long-range goals for making the kiosk resources available to the broader educational community.

Keywords: Education, solar energy, physical geography

Alicia Cerquone, SUNY Geneseo

White Supremacist Ecology in the United States

Focusing on white supremacist groups, I examined aspects of the geography of hate groups in the United States. A white supremacist group is an organization of individuals that considers white people of European descent to be superior to all other races and ethnicities. This core belief is made apparent either through the statement of their beliefs or their ultimate goals, or both. Close to 700 hate groups operate in the United States that go by different names but share this belief. Every hate group identified by the Southern Poverty Law Center has a strong web presence for a national audience. From large national groups, smaller regional groups are organized. Data collected by the Southern Poverty Law Center were used to determine State level concentrations of white supremacist groups. The relative incidence of such groups ranges from a high of over 12 per million population in Montana to less than one in New York, Kansas, and Massachusetts. I also explore the large urban areas in the States with the highest concentrations of white supremacist groups to attempt to locate physical spaces used by these groups. Some extremist regional groups have a promotional website, but trying to discover a bricks and mortar location for these groups is almost impossible. Other groups want to be conspicuous because they are advertising their community of white supremacists so others can join them.

Keywords: White supremacist, racism, hate groups, United States

Craig Dalton, Bloomsburg University

Zooming In: Rethinking Scale for Online Maps

Scale, a core concept in geography, is changing in both theory and practice. GIScientists point out that a representative fraction is inappropriate for maps on screens. Theorists in human geography outline scale's social construction in human geography through political and economic processes. Some even call for abolishing the concept. In practice, consumer web map services, such as Google Maps, shift scale and emphasize a local focus. Moreover, they have no "scale" controls, instead using tiling, buttons, and slider bars to establish a "zoom level". This exploratory paper contextualizes these changes in the concept of scale and proposes that recent theorizations of scale as socially constructed in human geography are useful to understanding the cartographic scale in maps on the web and mobile devices. A particular kind of scale is constructed through design of web map services, the service's underlying purpose for parent companies such as Google, and the interaction of users. Through this construction, the concept of scale in web mapping services is designed to be simple, fast and hyperlocal: locally focused within a global extent. I conclude by proposing a research framework that investigates not only design, but also how people use map services in practice, particularly on mobile devices.

Keywords: Scale, geoweb, critical cartography

Michael Davis, Kutztown University; **Jia-lin Lin**, The Ohio State University; **Taotao Qian**, The Ohio State University; and **Meng-Pai Hung**, Climate Prediction Center

Ocean-Atmosphere Feedback and Cloud-Radiation Feedback in Southeastern Pacific Simulated by 24 IPCC AR4 Coupled GCMs

This study examines the ocean-atmosphere feedback and cloud-radiation feedback under the stratocumulus cloud deck in the southeastern Pacific simulated by 24 coupled general circulation models (GCMs) participating in the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment

Report (AR4). Three key feedback mechanisms are studied: the sea surface temperature (SST)-coastal upwelling feedback, the SST-latent heat flux feedback, and the SST-stratocumulus cloud feedback. It is discovered that many IPCC AR4 models have difficulties in simulating the above feedbacks, which is associated with the models cloud and convection parameterizations. Detailed results will be presented at the conference.

Keywords: Climate change, clouds, air-sea interactions

Shannon Gallagher, SUNY Geneseo

Artists' Perspectives on Mid-Century America: The Case of Hopper and Rockwell

Edward Hopper and Norman Rockwell were contemporary artists with decidedly different views of 1950s America. This can easily be seen in Hopper's anxious and desolate style juxtaposed against Rockwell's celebration of American life. Understanding the effect of these paintings and why the artists chose their local context help to explain why people are still drawn to the messages they convey today. Their concentration on Northeastern settings has to some extent molded even current images of regional identity.

A sample of 150 artworks exemplifying the works of these artists are analyzed and compared in order to better understand the viewpoints of these artists. The analysis is based on a vocabulary pool of two dozen emotive key words and the degree to which they can be applied to each artist's work. These two artists represent their time period honestly, but in reality this era was a combination of both of their perspectives.

Keywords: Landscape, art, 20th Mid-Century

Michael S. Gallisdorfer, Sean J. Bennett, Joseph F. Atkinson, S. Mohammad Ghaneeizad, Donghua Cai, University at Buffalo

Physical-Scale River Models for Evaluating Engineered Log Jam Designs

Engineered log jams (ELJs) are naturalistic large wood structures increasingly employed in stream restoration and river engineering projects for stabilization and in-stream improvements. To advance the design of these structures and their morphodynamic effects on stream corridors, fixed- and movable-bed physical-scale river models were created. The Big Sioux River, SD, was selected as the prototype for these models because engineered log jams will be deployed there to mitigate excessive bank erosion. All fixed-bed model hydraulic parameters are scaled to represent approximately the 1.5-year return interval flow. Scaling of movable-bed model hydraulic parameters is relaxed to accommodate achievable experimental flows, and thereby reflect a 1.8-year return interval flow. Sediment scaling parameters are also relaxed in the movable-bed case to accommodate locally-available natural silica sediments displaying a D50 of 0.35 mm. Proposed engineered log jam designs to be evaluated are based upon proven field installations and are scaled to natural timber dimensions used in the prototype. Drag forces acting upon and scour patterns resulting from single- and multi-structure configurations were evaluated in the fixed- and movable-bed models, respectively. Flow forces acting on a single, instrumented ELJ were measured directly, and were in all cases less than 1 N. Scour patterns resulting from ELJs deployed in the movable-bed model were quantified using close range photogrammetry, and varied with respect to the position, number, and type of structure deployed. It is envisioned that the procedures outlined here would be more widely used to advance experimental river research and river restoration design.

Keywords: Stream restoration, engineered log jam

Erin Girard, SUNY Geneseo

Evaluating Understory Invasive Species at the Indian Fort Nature Preserve in Geneseo, NY

Invasive species can significantly transform ecosystems by altering biological and physical processes. Invaders can displace native species by competing more efficiently for resources, resulting in a decline of native species population, and a decrease of biodiversity in the forest community. The Indian Fort Nature Preserve is a 60-acre parcel of forested land located in Livingston County, NY. The landscape is dominated by agriculture; therefore forested lands such as Indian Fort are important for maintaining biodiversity in the area. The parcel of land contains native hardwoods and softwoods but it has been interrupted by invasive understory species including garlic mustard (*Alliaria petiolata*), and multiflora rose (*Rosa multiflora*), as well as established stands of invasive buckthorn (*Rhamnus cathartica*). In the summer of 2013, research was conducted at the Indian Fort Nature Preserve to study the effects of stand age and canopy closure on understory invasive species growth. This information will help focus management efforts to those areas most prone to invasion in support of the early detection and rapid

response (ED/RR) strategy. A network of 20 primary plots and 40 microplots were established in order to collect forest canopy and understory data. The resulting data was analyzed in a GIS to evaluate the relationship between forest composition, and invasive species presence. This research project was supported by a SUNY Research Foundation STEM grant.

Keywords: Invasive species, understory, biogeography

Michael Habberfield, University at Buffalo

Synthesizing Research Paradigms through Scaling Concepts to Better Enable Successful Stream Function Restoration

Stream restoration remains a growing field for researchers and practitioners alike. There remains a gap, however, between the academic ideal of restoring stream functions and the current practice of restoring stream ecosystem structure, which often does not produce the desired functional outcomes. Several reasons for this exist, including the need to better quantify underlying ecological processes affected by stream restoration in order to properly link them to structure, and the difficulties presented by multi-scale relationships of system variables. This paper explores these issues by synthesizing a number of frameworks for advancing the field past these hurdles. The tenuous relationship between stream structure and function is presented as a result of interrelating, trans-scale system dynamics. Measuring functions is enhanced through proper definition of scales of interest and by recognizing system-wide ecological scaling relationships. Recent research on landscape ecology connectivity paradigms, hierarchical characterization of a stream 'functional lift pyramid,' and the concept of dynamic equilibrium are combined to obtain new insights for dealing with the moving target of functional stream restoration. Restoration can capitalize on these concepts by better defining the spatiotemporal scales on which they operate, through the lens of ideas such as dominant discharge, sediment yield, and autogenic habitat generation. Overall, this paper serves to offer insights for overcoming some of the vexing problems of stream restoration by synthesizing emerging theoretical research on stream ecosystem dynamics.

Keywords: Stream restoration, functions, scaling, dynamic equilibrium

Heike Hartmann, Lisa M. Andresky, and Robert W. Kellar, Slippery Rock University

Observed Annual and Monsoonal Precipitation Trends in the Indus River Basin

Four undergraduate students investigated precipitation variability in the Indus River basin as part of a faculty/student research project. The research area was chosen due to the catastrophic impact of the 2010 Indus River flood on the population and economy in the river basin. One of the research questions posed was: Can significant positive (upward) precipitation trends be detected, and if so, where? Station precipitation data from the Global Historical Climatology Network (GHCN) version 2 for the time period 1951 to 2010 and gridded precipitation data from the Global Precipitation Climatology Centre's (GPCC) Monitoring Product for the time period 1986 to 2010 were downloaded for the Indus River basin area. The non-parametric Mann-Kendall trend test was applied to find out whether statistically significant changes in annual and monsoonal precipitation occurred over time. Additionally, linear regression trend lines were fitted to the precipitation series by the method of least squares. Using the gridded precipitation data unveiled a spatial pattern of precipitation trends in the Indus River basin. Significant positive precipitation trends were mainly detected in the mountains: in the northwest (Hindu Kush and Sulaiman Mountains) and in the east (Himalayas) of the Upper Reaches of the Indus River. Negative precipitation trends, most of which are not significant, were identified in the northeast of the Upper Reaches (Karakorum and Transhimalaya) and in the lowlands.

Keywords: Precipitation trends, undergraduate research, Indus River, flood

Alison Horton, Rutgers University

Talking About Poverty: Redefining our Understanding through the Case of Human Development in Bangladesh

Bangladesh is uniquely situated country with a distressing past, inspiring present, and precarious future. Poverty, exploitation, tragedy, natural disasters, corruption, and human suffering have dominated discourses surrounding Bangladesh since independence. However, despite all odds, Bangladesh has made incredible strides in human development. Indeed, though lagging significantly behind in per capita income, Bangladesh is years ahead of other South Asian countries in terms of human development, based on indices including infant and child mortality rate, nutrition, female education, and fertility rate. This clearly demonstrates that GDP alone does not dictate a nation's ability to meet its population's basic needs, and that measures of poverty based on income do not suffice. With this in mind,

development theorists are arguing for alternative approaches to understanding and measuring poverty, such as the Human Development Index (HDI), and Multidimensional Poverty Index (MPI). I highlight Bangladesh as a case in which these so-called alternative understandings not only prove accurate in representing real human conditions, but also extremely useful in setting policy agendas on multiple scales. After outlining a genealogy of various poverty measurements, I argue that contemporary “alternative” approaches most accurately represent the majority of the earth’s population. I supplement these approaches with empirical findings from my own work in the education sector in Bangladesh, and argue the need to shift alternative approaches to the forefront of development economics, and actively reevaluate the discourse surrounding global poverty.

Keywords: Bangladesh, poverty, development economics, human development

Jay Ireland, United States Military Academy at West Point

Events and Immigration

On April 23, 2010, Arizona’s Governor Jan Brewer signed the Support Our Law Enforcement and Safe Neighborhood’s Act (SB1070) into law. The law required police officers to verify the citizenship status of all people that appeared to be within the country without authorization. The controversial bill spurred a debate both nationally and at the state level as to whether or not this type of legislation was worth the potential harassment of people of color that legally resided in the state. This inquiry elucidates the tactics employed by the bill’s primary supporters, Russell Pearce and Jan Brewer, and shows why both politicians utilized violent images in an attempt to garner support for the legislation. Once the paper establishes the practice of division through the use of fear at the US-Mexico border, it delves further into the cost of enacting policies that seek to separate the populace into rigid, and often times, unusable groups. The political manipulation of representation through the use of violent events conflates the outcomes of those violent events and the espoused true nature of a particular categorization. In the case of SB1070, the representation of the miscreant Mexican immigrant was reified by the invocation of the terrorist attacks of 9/11, the economic recession of 2008, and a series of brutal murders at the US-Mexico border in 2010.

Keywords: SB1070, representation, event

Cameron Irvine and **J.M. Waddington**, McMaster University

Hydrophobicity of a Mined and Burned Peatland

Wildfires can greatly increase soil water repellency, or hydrophobicity, and this is particularly true for organic soils. Peatlands, which have organic soils exceeding 40cm, are believed to be resilient ecosystems to land-use (mining, drainage) and climate mediated (drought, wildfire) disturbances. However, recent research suggests that post-fire hydrophobicity may play a role in the vegetation recovery of a peatland and that these impacts may be even greater in “double disturbance” peatlands. We took advantage of a 2012 wildfire in the mined Wainfleet Bog (near Welland, Ontario) wildfire to examine the hydrophobicity of a mined and burned peatland. Wainfleet Bog is a domed system and was drained, and mined for peat for approximately 200 years causing a lowering of the water table, drier conditions, and upland plant species to colonize. Organic soil depth of burn ranged from light (5-25cm) to severe (50-100+ cm) for the 2012 wildfire. We compared hydrophobicity using water drop penetration time (WDPT) tests of the burned peat, and adjacent unburned peat in each of the severe and light burn areas. Hydrophobicity was measured at the surface, 2cm depth and 5cm depth. A lab study to examine the hydrophobicity of the samples under differing soil moistures to attempt to find a threshold value at which hydrophobicity breaks down is ongoing. This poster focuses on the experimental design and elucidates the methodology of the study as well as providing some preliminary results.

K.N. Irvine, SUNY Buffalo State and Nanyang Technological University; **N. Mische**, United Educational Consultants Co. Ltd.; **J. Bowles**, Asian Institute of Technology; **P. Pichadul**, United Educational Consultants Co. Ltd.; and **T. Koottatep**, Asian Institute of Technology

Water, Sanitation and Community Development: A Preliminary Assessment in a Karen Hilltribe Village on the Thai-Myanmar Border

Our preliminary survey results and development activities in Huai Pla Kong, a remote Karen Hilltribe village 430 km northwest of Bangkok near the Burmese border are presented. The majority of families surveyed had a main and secondary water source, with well-water predominating, followed by a local stream, water piped from a mountain spring, and rainwater harvesting. The wells (0-7,900 cfu/100 mL) and stream (2,200-8,300 cfu/100 mL) were contaminated with E. coli. Most households had access to a

pour-flush toilet (64%) or a pit latrine (9%), although 27% only had access to the bushes or a stream. Although latrines were a safe distance from wells, based on WHO guidelines, steep slopes and (possibly) runoff from pigs kept under the houses, may produce the bacterial contamination. A ceramic water filter was introduced to one family with twin 6 month-old girls suffering from severe diarrhea. After the twins were treated at a hospital and provided the filtered water (water tests showed 0 E. coli/100 mL), the mother reported no incidence of diarrhea for a 3 month follow-up period; they were visibly healthier, and neighbors were now “borrowing” the filtered water. The majority of farming families reported using pesticides, with 30% feeling sick after spraying. Half of the farmers observed “mud” in the river and correctly believed it “came from the soil”, but 75% did not believe high levels of mud indicated a potential problem for their crops. Deforestation related to swidden agriculture and clear-cutting is a problem. The next steps in our development support, along with the challenges encountered, are discussed.

Keywords: Southeast Asia, environment, water resources, community development

Ari Kaputkin, SUNY New Paltz

Bicycle Rising: Shifting Gears in City Cycling

American streets are increasingly being used by cyclists, both commuters and recreational riders, and cities are starting to respond. The increase in bicycling is a reaction to cultural shifts, traffic congestion, and automobile expenses. To encourage new and maintain old ridership, selected US cities have created new bicycle networks and facilities, acknowledging bikeways as an integral part of the future of urban transportation planning. Bike lanes, parking facilities, signage, traffic calming infrastructure, and bike shares are rapidly appearing in our cities, as cyclist-minded policy is signed into law, garnering newfound consideration.

This presentation compares and contrasts the varied approaches and methods in bicycle network and infrastructure planning and their issues in practice in Portland, Oregon, considered a leader in bicycle planning, Chicago, and New York City. Each of these cities has experienced exponential increases in ridership over the past decade. These cities have undertaken ambitious master plans aimed for completion over the next several decades, adding hundreds of miles of bike lanes, altering traffic plans, and changing minds when it comes to thinking about how Americans move around their cities. However, as American cities try to shift the transportation paradigm after decades of car-centric planning, problems and opposition arise in the face of these new systems.

Keywords: Bicycle infrastructure, transportation planning

James Kernan, SUNY Geneseo

Evaluating the Efficacy of Prescribed Fire at the Quinn Oak Openings in Rush, NY

Prescribed fire can be a useful tool to restore and maintain ecosystems. The New York State Department of Environmental Conservation (NY DEC) has used prescribed fire in a rare oak opening ecosystem near Rush, NY since 2000. Oak openings are characterized by limestone bedrock, shallow soils, and poor drainage, with open grassland communities bordered by hardwood woodlands. Prior to Euro-American settlement, oak openings were maintained by grazing (bison and elk) and natural and Native American fire. However, grazers have been eradicated and fire has been aggressively suppressed, facilitating woody encroachment which altered species composition and community structure. The NY DEC uses prescribed fire to reverse this trend and maintain the grassland community. The effectiveness of the strategy has never been evaluated quantitatively, despite a directive in the site management plan to monitor vegetation dynamics.

Faculty and students from the Geography and Biology departments at SUNY Geneseo established a research agreement with the NY DEC to study the plant communities at the Quinn Oak Opening in the context of the recent prescribed fire regime. A series of transects (70-150 meters in length) were established to span a range of plant communities and portions of the site with different management histories. Vegetation was inventoried in 3 meter increments along each transect. The resulting data was analyzed in a GIS to evaluate relationships between burn frequency, time since last burn, and species composition. The pedagogical merits of the project and preliminary research results will be presented.

Keywords: Oak opening, fire, GIS

Jason Knight, SUNY Buffalo State and **Russell Weaver**, University of Redlands

Demolishing Vacancy Problems? An Empirical Study of Demolition Policy and Right-sizing Efforts in a Shrinking City

The use of publically funded property demolitions for reducing vacancy rates in shrinking cities is recognized as an essential component of local government “right-sizing” strategies. However, in the event that large-scale demolition programs are implemented independently of other, complementary right-sizing efforts, it is reasonable to expect that their impacts on vacancy problems will be negligible. In this context, the current paper evaluates the efficacy of an ambitious, signature demolition program in an exemplar U.S. shrinking city—Buffalo, NY—with respect to altering local and global vacancy rates in the municipality. We find no evidence to suggest that the demolition strategy significantly affected vacancy rates at either neighborhood or citywide scales. While this is potentially because the city did not reach its targeted number of property demolitions, we argue that the more likely explanation for the observed outcome is that the program was ostensibly implemented as a standalone policy rather than as one component of a holistic right-sizing strategy. These results and conclusions offer general implications for the use of large-scale demolition programs as policy tools in [shrinking] U.S. cities.

Keywords: Demolitions, shrinking cities, urban decline, housing

Jerome Krajna and **Kelly M. Frothingham**, SUNY Buffalo State

An Assessment of Niagara River Greenway Streams

The Niagara River Greenway is a corridor of places, parks, and landscapes which seek to celebrate and interpret the unique natural, cultural, recreational, and scenic and heritage resources. The purpose of this project is to collect baseline data on a number of physical, chemical, and biological conditions in streams in the Niagara River Greenway. Using a hybrid of the Stream Visual Assessment Protocol (SVAP) and Stream Visual Assessment Protocol 2 (SVAP2) developed by the USDA National Resource Conservation Service 348 reaches were assessed in 12 streams that flow into the Niagara River through greenway communities. Cumulative results of the surveys indicate that ten of the twelve surveyed streams are in fair condition and two streams are in poor condition. However, analysis of the data on a reach by reach basis has provided us with information on localized problems and opportunities that can be addressed in future habitat conservation and restoration projects with the goal of improving overall stream conditions.

Keywords: Stream Visual Assessment Protocol, stream restoration, Niagara River

Danielle Lamphere, SUNY Binghamton

Patterns of Plant Species Biodiversity on River Islands in the Upper Susquehanna River and Its Tributaries

Riparian zones provide a unique habitat for many plant species, hosting a great deal of biodiversity. As ecotones, these areas are dynamic communities, sensitive to any changes along the river continuum. Urbanization often disrupts this continuum through actions such as the fragmentation of riparian habitats. Such disruptions to these habitats can negatively impact their biodiversity. Most of the research on riparian biodiversity focuses on those areas directly on the riverbank. Few studies have considered river islands in the context of riparian zones. Moreover, river islands represent one of the few natural areas that can still be found in an urban setting. Yet, no research has examined the effects of urbanization on river island biodiversity. Data were collected from river islands along the Susquehanna, Chenango, and Tioughnioga Rivers in Broome County (NY), Tioga County (NY), and Bradford County (PA) from May to September 2013 to help create a baseline of plant species that can be found on river islands. The data will be used to help quantify plant species biodiversity on river islands in this region. Island biodiversity will then be assessed by island age, compared with riverbank riparian plant data collected in the same region, and evaluated along an urban-rural gradient. It is expected that younger islands will be more susceptible to invasion by introduced species than older islands, that the riverbank will have a higher proportion of introduced species, and that urbanization will have a negative effect on island biodiversity overall.

Keywords: Susquehanna River, river islands, biodiversity, riparian zones

Crista M. Livecchi, Penn State University

No Place Like Home: Home, Mobility, and US Military Youth

Over the last decade, the United States military has figured prominently in the American conscious. Continued media reports detailing deployments, reunions, and the horrors of wartime obscure a more fundamental and constant force in the lives of military families: residential mobility. Military families

experience long-distance moves an average of once every three years – a much higher rate than for civilian families. This is especially problematic for military youth, whose mobility sets them apart from peers with rooted childhoods. Their experiences call into question traditional American cultural imaginaries of home as a stable, permanent, owned site of residence, family, and childhood. In this paper I present the results of fieldwork with military youth, which I use to critique American cultural discourses of home. My findings have implications not only for military youth, but also for Americans generally in the wake of the foreclosure crisis.

Keywords: Home, mobility, cultural geography, military youth

Enid Lotstein, Bronx Community College/CUNY & Westchester Community College/SUNY

The Role of Environmental and Social Factors in the Recreational Use of a Natural Coastal Setting: Some Preliminary Results

This paper explores the role of social and environmental factors in influencing recreational activity in a natural coastal setting. Specifically, I investigate the role of attitudes towards recreational behavior in the Fire Island National Seashore Wilderness Area, an undeveloped barrier island area on Long Island, New York. I trace changes in the environmental and social setting over time. In the past, negative attitudes towards mosquitoes, deer ticks and poison ivy significantly influenced the location and timing of recreational activities. Since Hurricane Sandy, there have been critical geomorphologic changes to the barrier island. I explore to what extent these changes are meaningful to the recreational experiences of visitors. I also investigate how changes in federal enforcement of local nude sunbathing laws influence recreational behavior and the recreational setting. These results have significance to social science research in barrier island settings. Furthermore, there are important implications from the results for urban park and coastal zone management.

Keywords: Recreation, coastal, behavior, attitudes

Eugenie Ma, SUNY Geneseo

Geneseo Student Personal Effects Origins, 2011

This presentation reports the origins of Geneseo students' personal effects. The data, collected in 2011, were organized and broken down in categories based on type of good, country of origin, price, quality and retailer. The results reflect the success and impact of a growing number of countries as exporters of consumer goods, focused in my work on the purchasing profile of college students.

This sample is comparable to surveys undertaken in 2000 and 1989. The analysis encompasses not only changes in the patterns of production, but also measures previously unexplored themes such as the relationship between origin, quality and price. Because in 2011, clothing items were arranged in sub-categories (shirts, t-shirts, skirts, etcetera) we can determine levels of national specialization and associated retailer sourcing.

The results demonstrate the evolving settings and progress of globalization through the narrow lens of college students' possessions.

Jonathan M. Malzone and Christopher S. Lowry, University at Buffalo

Focused Groundwater Control of the Hyporheic Zone: A Result of Stratified Glacial Drift Aquifers Interacting with Western New York Streams

Stratified glacial sediments from the Late Pleistocene glacial pulse are the most common surficial deposits that form modern aquifers in the Cattaraugus Creek watershed of Western New York. The stratified deposits consisting of clay, sand, gravel, and till are variable in vertical and horizontal extent. Due to this high physical heterogeneity groundwater entering streams becomes spatially variable. Study of three stream reaches of contrasting glacial geology in the Cattaraugus Creek watershed provided evidence that physical heterogeneity and focused groundwater discharge control the size and function of the hyporheic zone. Mechanisms studied at each reach resulting in focused groundwater include physical barriers, artesian conditions, and preferential pathways. Physical barriers and artesian conditions tend to be associated with clay layers that restrict groundwater input. In such locations hyporheic exchange and water quality transformation proceed independently of groundwater influence. These subsurface pathways are cut short, however, where a discontinuity in the clay layer allows focused groundwater to reach the surface. Gravel deposits without physical barriers also have focused groundwater discharge. Preferential groundwater pathways within the aquifer provide focused flow that also causes hyporheic exchange pathways to shorten. In the case of a gravel aquifer however the stream and aquifer are in continuous contact. The result of this contact is large temporal fluctuations in the depth and length of

hyporheic flow paths as the hydrographs of the stream and aquifer change relative to one another. These relationships indicate that hyporheic zones in streams that crosscut heterogeneous stratified glacial drift sediments are discontinuous and shortened.

Keywords: Groundwater, hyporheic zone, groundwater surface water interaction, stream

Paul Marr, Shippensburg University

Technology, Labor, and the Collapse of Chile's Nitrate Industry

The collapse of Chile's nitrate industry during the 1930s is examined relative to the nitrate extraction technology used and the available labor force. Results suggest that the nature of the extraction technology used (the Shanks system), the distribution and quality of the nitrate ore (caliche), and the makeup of the labor force limited producers ability increasing profits and/or lowering production costs. Specifically, the Shanks system of nitrate production required intensive use of labor, such that increases in technological capacity (e.g. production machinery) necessarily had to be accompanied by proportional increases in labor. Under such a system the ability to remain competitive by lowering production costs was severely constrained. Producers opted to lower wages while maintaining the size of the labor force. Ultimately this led to worker rebellion, hastening the demise of the industry.

Keywords: Chile, nitrate, labor, wages

Lillian Mayer, SUNY Geneseo

The Intentional Communities Niche

In this inquiry we studied how the variables of place and space effected the creation and sustainability of cooperative organizations, mainly focusing on organizations that try to bring in a communal living and/or eating environment to university students. We looked at how population, economics, and proximity to college campuses affected the creation of sustainable cooperatives in rural areas and in urban areas. We created a typology of cooperatives based on the number of university students included in the cooperative, goods and services obtained through the cooperative, and cost. Looking at several online databases including "Fellowship for Intentional Communities", North American Students of Cooperation (NASCO), Organic Ag Info, Local Harvest, and Cooperatives UK we mapped existing and forming cooperatives. All cooperatives that included a shared food component and served university students were put into a spatial database and overlaid with maps of land-use and economics. The map and an interpretive analysis will be presented.

Keywords: Cooperative, co-op, university, college

Matthew McClure, SUNY Geneseo

Human Rural Micro-Geography in a Haitian Roadside Setting

Western perspectives on the Developing World often overlook the details of human activity space at a micro level. In Developing World settings, including rural Haiti, the road is primarily a pedestrian space and is apt to supplement the traditional role of the city center. My study focused on the activity on along a 4km portion of a pedestrian road in Northern Haiti, a transect from a coastal setting to a zone of hill farming. The transect exhibits two obvious segments, a coastal stretch and its interior counterpart. Two volunteers and I walked this 4 km portion twice in one day. We recorded several characteristics of all people on the road including group size, gender make-up, age, and activity, including photographic documentation. The results show significant differences between the human activity in the coastal region and the mountain region. Specifically, the coastal region had more people in smaller groups while the mountain region had fewer people in larger groups. In terms of gender and age, there were more men and children in the coastal settlement and more women in the mountains. For activity, there were many vendors in the settlement, but only one in the mountains. On our second walk of the road, the amount of people, activity, and make-up of groups were noticeably different. It is striking that these socio-demographic and other differences are manifest over a distance of no more than 4 km. The human geography of the Developing World often can only be understood through its micro-geography.

Keywords: Micro-geography, Haiti, human geography, developing world

Lawrence McGlinn, SUNY New Paltz

Showing Time Geography in 3D

A great deal of research has been conducted on environmental hazards and health that makes a fundamental assumption about exposure. The assumption is that living in the same area (census tract,

zip code, municipality, etc.) as a hazard or in its proximity means exposure to that hazard for some part of the population. This may be true, but meaningful exposure to hazards such as contaminated drinking water or contaminated air is much more personal. The scale of exposure is much finer than the census block or in some cases even finer than the parcel. Kwan called this mismatch of scale and location the uncertain geographic context problem. The most notable method for recording and displaying personal geographic data is time-geography, developed first by Hagerstrand in the 1960s and 1970s. Time brings a third dimension to the data, the display of which is challenging. New technology allows for the display of dynamic, 3-dimensional maps, but do these displays lend insight to users of the information, or do they simply confuse? Can users learn to use and gain knowledge from such displays, or would we be better using 2-dimensional displays?

Keywords: Time geography, 3D, dynamic mapping

Darrell A. Norris, SUNY Geneseo

India's Prospects: A Megacity Perspective

Until recently there was hope, even confidence, that post-1998 economic growth in India would duplicate the successful record of China since 1979. And, as portals of globalization, megacities are commonly seen as lubricants of national growth. My comments assess this optimism in the light of Mumbai's current urban landscape. India's strikingly low level of urbanization challenges the proposition that its large cities can successfully spearhead development, a handicap reinforced by want of sufficient export-based growth or properly targeted investment. Instead, the record of personal consumption-based growth and new construction may not be sustainable. In general, the fruits of growth have been plucked with little or no attention to its roots. Mumbai provides graphic evidence of this dichotomy. Vehicles multiply daily with scant or misplaced attention to roads. Ill-maintained drainage is thwarted annually by the monsoon. Substandard construction abounds. Media augment coverage of Bollywood and cricket with a litany of official corruption and ineffectiveness. Ironically Mumbai's slums, notably Dharavi, are islands of productive endeavor despite persistent neglect of basic service provision. Preserving and defending the many trappings of elite privilege in Mumbai while remaining nearly oblivious to the face of poverty seems an unsustainable strategy as the 21st century unfolds.

Keywords: India, megacity, Mumbai

Stacy Nowicki, Penn State University

Radial Growth Variation in Tree Rings

This presentation will explain how radial growth variation in several important trees in the eastern deciduous forest (hemlock, red oak, spruce, and white pine) vary with flux tower estimates of gross primary productivity (GPP) and net ecosystem exchange (NEE) at Harvard Forest in Massachusetts and Howland Experimental Forest in Maine. Attempts to associate tree ring width measurements with GPP and NEE measurements from flux towers have proven inconclusive and have been limited to one or two tree species. We hypothesize that there are significant interspecific differences in the relationship between radial growth, and flux tower estimates of GPP and NEE that are related to differences in species life history and physiology. This presentation will show the results of testing this hypothesis and also how tree growth is influenced by climate and advance our understanding of the potential use of tree ring width as a proxy for ecosystem productivity.

J. Pleban, University at Buffalo; **D.S. Mackay**, University at Buffalo; **T. Aston**, University of Wyoming; **B.E. Ewers**, University of Wyoming; and **C. Wienig**, University of Wyoming

Using an Ecosystem Process Model to Assess Drought Response of Brassica Species

The use of experimental data in plant ecophysiological models is a promising means to assess plant drought response as the variation often exceeds what is found in natural settings. The Terrestrial Regional Ecosystem Exchange Simulator (TREES) is a multi-scale model, which represents the collective knowledge of both the biochemical and environmental coupling of plant hydraulics and carbon uptake/utilization. The goal of this investigation was to see if TREES could characterize the drought response of a non-tree species. *Brassica* species are important agriculture crops as well as model species in plant science. Advantages of using *Brassica* include their fast growth rate and the high level of variation within species. Four *Brassica* species and two recombinant inbred lines (RILs) of *Brassica rapa* were subject to controlled and drought conditions. Concurrent leaf gas exchange and xylem pressure measurements were made. The resulting data was used to simulate species and RIL level response to drought. Results demonstrate that TREES can identify species-specific physiological parameters as well

as replicate gas exchange measurements. Experimental design did not explicitly have TREES modeling in mind and thus assumptions had to be made to allow for data integration into the model. The lack of coupling between experimentation and modeling has been identified as a gap in our current approaches in characterizing plant drought response. Tighter coordination between experimental design and modeling should allow for further validation of these results as well as provide a more rigorous test of model structure.

Keywords: Process model, *Brassica*, drought

Connor Powell and **Stephen Vermette**, SUNY Buffalo State

Calculating U.S. Cave Temperatures

If one divides a cave into three zones: entrance (light), twilight (less light), and the dark zone (no light); it has long been recognized that the dark zone of most caves maintains a stable temperature. A number of formulas exist to calculate a cave's dark zone temperature based on a cave's latitude and altitude above sea level. A survey of over 100 U.S. caves was completed to determine actual cave temperatures (self-reported). Based on the survey results, existing formulas developed for U.S. caves – Choppy, and Moore & Sullivan – were shown to poorly predict reported cave temperatures ($R^2 = 0.23$ to 0.44 , respectively). A new algorithm was developed (Powell & Vermette) that improved cave temperature predictability for U.S. caves ($R^2 = 0.72$). The Powell equation provides a good first approximation of cave temperature based on the caves latitude and altitude. For any particular cave, a variation (residuals) from the calculated temperature provides an opportunity to explore and quantify other influences on temperatures within the cave, such as geothermal hot spots, and snowmelt waters, among others.

Keywords: Cave, temperature, U.S.

Jundong Qiao and **S. K. Delavan**, University at Buffalo

Flow Structure and Turbulence Characteristics around a Spanwise Suspended Porous Obstacle through Laboratory Experiments

Laboratory experiments were conducted to explore the flow structure and turbulence properties immediately downstream of a spanwise porous suspended obstacle (referred to here as fence) in a two-dimensional open channel flow using Particle Tracking Velocimetry (PTV). Four experimental scenarios were under investigation in the current study with the following approach velocities: 0.05 m/s, 0.08 m/s, 0.11 m/s and 0.14 m/s. The experimental scenarios had the same depth ratio, 0.36, the depth of the fence over the total water depth, and fence porosity, 0.75. Streamwise transects of the flow show that the flow passing through the fence region can be divided into two general sub-layers: 1) an acceleration layer, which is the region beneath and downstream of the fence and 2) the deceleration layer (aka wake zone) which is characterized by enhanced turbulence intensity and is directly downstream of the fence. In the acceleration layer, the updraft of the momentum flux is dominant, which could contribute to the re-suspension of sediment or vertical transport of other biologically important quantities such as oxygen or nutrients. In the deceleration layer, the bleed flow's (flow passing through the openings of the fence) velocity profiles contain multiple inflection points that correspond to occurrences of the Kelvin-Helmholtz instabilities. This could account for the stronger turbulence intensity in this layer. The strongest turbulence intensities are located directly downstream of the fence, and attenuates with increasing distance downstream.

Keywords: Flow structure, turbulence, suspended porous obstacle, experiments

Joshua Randall, Rutgers University

Comparison of Political Drivers of Water Demand Using Spatial Statistical Analysis in the Phoenix Metro Area

In Arizona, water use is increasing as human populations are drastically increasing. Water managers have begun to realize the difficulties of managing water in areas where drastic population and infrastructure growth has occurred. Water managers in the Phoenix area, whether they are ad-hoc, local, state or federal entities, all have some say in how this water is used. These management areas are disorganized and overlap in many ways, both in purpose and in boundary. This creates a system that often cannot focus on a particular problem due to the variety of interests and needs. This project is intended to address these issues by statistically analyzing the underlying differences in the population and their water use. Its intention is to inform water managers on water use and to locate spatially these trends in water use associated variables. This study will approach two main questions: what are the socio-economic variables that are related to water use in Phoenix and surrounding cities, and how do

these analyses illuminate ways to approach water policy and politics in the Phoenix metropolitan area? Water use data will be used in conjunction with 2010 Census Data to create spatial and compositional profiles of the population of water users. These include geographically weighted regression for individual socioeconomic variable analysis, PCA analysis for a broad profile of water users and auto-correlation analysis to visualize spatial structures of these variables. Together these analyses of water use will be able to provide information on inter and intra-city water management.

Keywords: Water, demand, GIS, statistical

Beynan Ransom, Jingqi Sui, Colleen Bronner, and Alan Rabideau, University at Buffalo
Quantifying Hydrologic Balance Impacts of a Western New York Phytoremediation Barrier

A phytoremediation system (phytobarrier) installed at the former gravel pit in Machias, New York, has been continuously monitored for effects on groundwater storage and recharge to prove its effectiveness in trichloroethene (TCE) concentration reduction. It is hypothesized that the phytobarrier composed of 345 DN-34 hybrid poplar and 314 willow trees is arresting the low concentration TCE plume by intercepting the rainfall recharge and withdrawing from the water table. The performance of the phytobarrier is provided as a polishing step to ensure the prevention of “rebounded” dissolved TCE from migrating to a headwater stream that eventually discharges to the Allegheny River. The site hydrologic and geochemical parameters being measured to prove phytobarrier performance includes stream discharge, groundwater/stream temperatures, water table elevations, groundwater TCE concentrations, and evapotranspiration estimates. Preliminary observations of groundwater and stream temperatures indicate that the local stream flow is not strongly influenced by groundwater fluxes from the site, which is supported by calculations of Darcy flux to the stream. Future studies of the phytobarrier performance will include scaling up evapotranspiration estimates to narrow the confidence interval on the site hydrologic balance, determine the presence of TCE uptake into the trees, and to complete a life cycle assessment (LCA) of the phytobarrier operation and monitoring.

Keywords: Plume delineation, habitat enhancement, water balance, temperature survey

Paul B. Reed and Berat Z. Haznedaroglu, University at Buffalo
Testing Cyanophage N-1 as a Biological Control against Harmful Algal Bloom (HAB) Forming Species *Microcystis aeruginosa*

Microcystis aeruginosa, a freshwater cyanobacterium, is known to form dense harmful algal blooms (HABs) in many bodies of water across the globe, including Lake Erie. High levels of nitrogen and phosphorus are known to increase growth of the species, yet current control methods focused on limiting the excess runoff of agricultural and waste water discharge of such elements have not been sufficient. Here, the possibility of using a biological control agent, cyanophage N-1, was tested against *Microcystis* as well as two eukaryotic HAB forming species *Rhodomonas salina* and *Aureoumbra lagunensis* to determine host specificity. Another cyanobacterium, *Nostoc sp.*, was chosen as the host species to propagate N-1. The cellular optical densities and chlorophyll-a fluorescence were measured to determine cellular viability for all experiments and plaque assays were also performed with *Microcystis aeruginosa* and N-1 to enhance the evidence of viral infectivity. Preliminary results for N-1 infection in *Microcystis* show an increasing optical density along with decreasing chlorophyll-a fluorescence. Additionally, the presence of plaques began to appear during the plaque assays. No signs of infectivity were reported between N-1 and the two eukaryotic algal species, suggesting the virus is cyanobacteria-specific. Results of this study indicate cyanophage N-1 may act as an adequate biological control agent for the harmful algal bloom forming species *Microcystis aeruginosa*.

Keywords: Harmful algal blooms, cyanophage

Maddalena Romano, Penn State University
Revisiting Redistricting in Texas: A Method for Predicting Election Results

This study explores the Modifiable Area Unit Problem as it pertains to the 2012 redistricting plans in Texas. It aims to predict the number of Congressional districts in Texas will have Republican representation now that the state has been apportioned four additional seats in the US House of Representatives, bringing its total representatives to 36. Using a methodology established by O’Sullivan (2012), this study creates raster layers that estimate likely voting behavior for 2012 based on data from 2010 elections. This prediction is then compared to actual results for 2012. The results of the prediction, 27-9 in favor of Republicans, do not meet with reality. While the Republicans still claim the majority of

seats, 24-12, there is a loss of three districts to the Democrats. Possible reasons for this discrepancy are presented.

Richard A. Russo, Frostburg State University

Urban Renaissance or Decline? The Fate of the Mid-Atlantic's Small Cities

This paper investigates whether the Mid-Atlantic's small cities (populations between 50,000 and 250,000) are experiencing an "urban renaissance" or a "great inversion", terms that have been used to characterize the positive change and development in many large cities in the U.S. during the period 1990-2010. Using indicators such as population change, educational attainment, poverty, income, and economic sector employment, this paper will discuss whether post-industrial, small cities are a distinct urban sub-set needing a separate set of development strategies from those being employed with increasing success by large cities. The paper ends with a discussion of the utility of "smart shrinkage" and "creative economy" discourse and policy with respect to development in post-industrial, small cities.

Keywords: Urban, small cities

Philip Savoy, University at Buffalo

Monitoring Interspecific Patterns of Phenology with Near-surface Remote Sensing

Vegetation phenology is related to environmental factors and studying these patterns can provide information regarding plants and their environment. Varied responses to environmental drivers of phenology exist among species and thus observed patterns of phenology across a landscape will be a result of both the patterns of environmental conditions themselves as well as species responses to those conditions. Satellite remote sensing offers a way to study phenology at larger spatial extents than possible with other methods and has been able to detect phenological variability in relation to environmental gradients as well as species composition. However, because satellite remote sensing pixels contain a mixture of cover types it is still difficult to study interspecific responses of phenology. Near surface remote sensing provides nearly continuous measurements of canopy dynamics and allows for the monitoring of individual species responses within a community. The goal of this study is to use near surface remote sensing to study interspecific patterns of phenology in a mixed forest in order to understand how these patterns interact in mixed pixels. Phenology will be observed in two ways; (1) for individual species within an image and (2) for synthetically created mixed pixels of known species proportions. In doing so it will be possible to test the feasibility of disaggregating phenological signals observed in mixed pixels based upon their species composition. Implications of this study include the ability to monitor interspecific patterns of vegetation phenology at greater spatial extents than are currently possible.

Keywords: Phenology, remote sensing, mixed pixels

Richard R. Shaker, Charles J. Rapp, and Artur D. Yakubov, SUNY Binghamton

Examining Patterns of Aquatic Invasion within the Adirondacks: A Lake and Landscape Approach

Non-indigenous species continue to pose major challenges to aquatic environments. Since the 1950s, the impacts of invasive species on native individuals, communities, and ecosystems have been investigated and acknowledged. In regions of abundant freshwater resources, it remains problematic to survey all lakes at the level required to detect aquatic invaders. Effective prioritization of conservation resources requires tools that identify where exotic species will most likely invade. Studies have found that anthropogenic causes can account for much of the dispersal, establishment, and spread of invasive species. While several analyses have focused on the establishment phase of aquatic invasion, there remain few investigations on the initial dispersal or subsequent spread. Small-craft boats and trailers have been found to be the primary vectors for propagating aquatic invaders. That said, there remain few empirical studies on the impacts lake access type (e.g., private vs. public launch), or landscape patterns (e.g., relative patch richness) are having on aquatic invasion. Assessing 26 lakes within the Adirondack region of New York, we test models that predict conditions in which aquatic invaders are most likely to survive and successfully colonize. Using logistic regression (generalized linear model; GLM), we also test models of association between presence of public boat ramps, and presence of private boat ramps, with lake and landscape characteristics. Our results reveal that land cover diversity and lake elevation are more important factors for understanding and managing aquatic invasion than boat ramp type. Findings from this study could be used to predict and prevent future aquatic invasion.

Keywords: Invasive species richness, landscape patterns, monitoring invasive species in lakes, public vs. private lake access

David Spiering, University at Buffalo

Using Geographic Data in a GIS to Manage Invasive Species at Tifft Nature Preserve

Tifft Nature Preserve is located in south Buffalo and has a history of industrial activity and dumping. Due to past disturbances many invasive plant species are present on the preserve. Despite the industrial history of the site, a thirty hectare remnant cattail marsh remains. However, this wetland is threatened by the invasive plant *Phragmites australis*. Management of *Phragmites* in the wetland began on the preserve in 2008 through a Habitat Improvement Project (HIP) funded by the New York State Power Authority (NYPA) which involved extensive mapping of invasive species and the collection of elevation data to determine suitable control techniques. Using these data, a management plan was developed and on the ground control has occurred for the past four years. The data collected for the HIP project has since been used for several local university student projects that have provided additional insight into invasive species control on the preserve. Currently, planning is under way for native wetland species plantings in areas where *Phragmites* has been successfully controlled and to expand invasive species management in the wetland for the control of Japanese knotweed (*Fallopia japonica*). Additional data on water level depth is being collected to determine a water budget for the wetland and the planning of native plantings and to determine suitable control techniques for Japanese knotweed.

Keywords: GIS, invasive species

Chelsea Tavormina, SUNY Buffalo State and **Jorge V. Bajo Sanchez**, University at Buffalo and SUNY Buffalo State

Generating a Calculated Accessibility Map for Ash Sampling for the Santa Ana Volcano, El Salvador using Model builder in ArcGIS

A Calculated Accessibility Map (CAM) was created using ArcGIS to determine the best areas for ash deposit sampling. Digital topographic maps of the Santa Ana Volcano (SAV) region were obtained and uploaded. This allowed several things: becoming familiar with the area without being present in the country; to learn about what type of data was displayed on the topographic maps; and figure out what type of data was needed to extract in order to create the accessibility map.

This Accessibility Map uses ArcGIS tools to represent the different features such as roads, streams, coffee fields and vegetation as vector data. The vector data was also used to create an area of interest of 5km around the volcano. This was determined to be the most appropriate for this research. The slope was determined using a Digital Elevation Model of the SAV and classifying the slope steepness within 7 ranges.

The vector data was converted into raster data and the Raster Calculator was used to create the equation. These features were given a specific rank and weighted value according to their importance, where the slope layer was the most important and the vegetation was the least important. To create the final accessibility map, an equation was created and implemented in a model that calculated the accessibility map. The resulting CAM represents the best areas of accessibility.

Keywords: ArcGIS, mapping, Santa Ana Volcano

Victoria Trucksess and **Michael Davis**, Kutztown University

Analysis of Summer Climate variability on Midwest Corn

This study aims to assess the impacts of climate change on corn production in central United States. Focus of this research is primarily given to three individual states: Iowa, Illinois, and Nebraska as these states are the leading producers of corn in The United States of America. Using NOAA Climate Division Data for temperature and precipitation, along with PDSI values, and choosing summer (June-July-August) seasons can potentially provide greater insight on corn yield. Seasonal assessment of the climate data is performed on both a long term (1900-2010) and a short-term (1970-2010) periods in order to foster greater understanding to determine which phase of the growing season is most susceptible to climate change. The goals of this research are to identify if there is any correlation between corn yield and large-scale oscillations. These oscillations include the North Atlantic Oscillation as well as El Nino Southern Oscillation. Also to determine when regime shifts occurred within the data, and which climate divisions within each state are most vulnerable to climate change over these two time periods.

Keywords: Climatology, regional, climate change, agriculture

Stephen J. Tulowiecki and Chris P.S. Larsen, University of Buffalo

Assessing Native American Influence upon Presettlement Forests of Chautauqua County, New York: A Species Distribution Modeling Approach

Prior to the Euro-American settlement of Eastern North America ('presettlement'), Native American groups modified forested landscapes, through land-use practices such as burning, clearing, and resource extraction. These practices potentially influenced the composition of forests, by promoting species that were fire-tolerant, shade-intolerant, or mast-producing. However, it remains questionable whether Native American land-use practices were recent and intense enough, to have produced patterning in presettlement vegetation at regional scales. Though research has found that Native American settlements were associated with fire-tolerant, mast-producing species, studies have not rigorously assessed whether these indigenous groups had settled on environments that favored certain species, or whether land-use practices surrounding settlements increased the abundance of those species. We explore the influence of Iroquoian settlement upon presettlement tree species distributions in Chautauqua County, New York, circa 1805 C.E. We first map the distribution of approximately 20 forest taxa using vegetation descriptions recorded within presettlement land survey records. Through the synthesis of archaeological data and species distribution models (SDMs), we then assess the role of Iroquoian settlement upon the distribution of forest taxa. SDMs employ statistical and machine-learning techniques to explain the geographic distribution of a taxon resulting from environmental variables. Preliminary results indicate that Iroquoian settlement during the Historic Period (ca. 1650-1800 C.E.) promoted taxa such as American chestnut (*Castanea dentata*), oak, (*Quercus* spp.) and hickory (*Carya* spp.). This study indicates that Native American land-use practices exerted an influence upon presettlement forests, and that an understanding of those practices is essential towards understanding vegetation patterns prior to Euro-American settlement.

Keywords: Iroquoian, presettlement vegetation, species distribution modeling

Stephen Vermette and Fredrick Bloom, SUNY Buffalo State

Searching for Western New York's (WNY) Climate Change Signal

A long-term effort is underway to identify the climate change signal, if any, within Western New York (WNY). In this effort past trends are examined to reveal potential future scenarios. The data used are from National Weather Service (NWS) with sites located in Buffalo, NY and Rochester, NY. The data stretches back to the 1940's, and includes raw data, 30-year Normals and weather records. Annual trends since 1940 show temperature increases over time, for both minimum and maximum temperatures, with the rate of increase steepening more recently. Winter and early spring (March) show the greatest warming trend. In addition, significantly more modern day daily heat records are broken (versus cold records) in the spring season. The summer season shows little change in temperatures and the fall season, notably October, is trending toward cooler temperatures. WNY's precipitation has increased since 1940, increasing at a greater rate in the summer and fall. The number of precipitation days has also increased with days of lighter precipitation shifting from winter and spring to summer and fall, and days of heavier precipitation increasing at a greater rate in summer and fall. Snowfall shows an increasing trend since 1940, with most of the increase trending toward the winter. The increasing snowfall coupled with a warming winter suggests an increase in Lake Effect snow for WNY.

Keywords: Climate, trend, WNY, global warming

Stephen Vermette and Tullis Johnson, SUNY Buffalo State

Weather Event: Exploring Charles E. Burchfield's Water Colors from the Perspective of a Meteorologist

Charles Ephraim Burchfield (1893 - 1967) was born in Ashtabula Harbor, Ohio, and moved to the Buffalo, New York area in 1921, where he lived until his death. Burchfield has been described as one of the most inventive American artists of the twentieth century. His watercolors exhibit an uncanny grasp of nature. The significance of his work is evidenced in that his watercolors are part of many major museum collections across the United States, including the Burchfield Penney Art Center in Buffalo, NY. President Lyndon B. Johnson eulogized the artist, writing "*He [Burchfield] was artist to America.*"

Having spent his life in the shadow of Lake Erie, it is our contention that a study of Burchfield's water colors is really a study of our weather, and collectively, of our climate. He wrote in his diary: "*I find no sympathetic beauty in the sky I have not lived under*". It is his sky that draws the meteorologist to attempt the mingling of Burchfield's art with the science of weather. Burchfield's 'All-day' sketches are a weather record as valid as any entry of word-and-number combinations in a weatherperson's log book. The objective of this presentation is to bring out the many aspects of meteorology within the watercolors of

Charles Burchfield, specifically, his ability to express weather by drawing on multiple human senses and his use of a fantastical symbolism to convey to the viewer a true appreciation of a hot summer's day or of a cold November wind.

Keywords: Weather, climate, art, Burchfield

Sarah L. Whiteway, University at Buffalo; **Paul Villard**, University of Guelph; and **Sean J. Bennett**, University at Buffalo

The Success and Stability of Urban Channel Design Projects in the Greater Toronto Area

As the business of stream restoration grows, urban channel design projects are becoming more frequent. Generally the goal of urban channel design projects is to improve ecological conditions in the stream while maintaining flood protection and minimizing impacts to infrastructure, though assessment of these projects is often lacking. In order to determine the geomorphic and ecological impact of stream channel design, rapid assessment techniques were used to compare eight designed channel reaches, two non-restored control reaches and to two un-impacted reference reaches in the greater Toronto area. Results of the stream visual assessment protocol (SVAP) show higher average scores for designed reaches (8.2) than for control reaches (4.5), however the average scores for designed reaches are not as high as average reference reach scores (8.9). Results from the rapid geomorphic assessment (RGA) show that all of the reaches assessed were classified as moderately unstable. The designed reaches had an average score of 12.1, better than both the control reaches (17.8) and the reference reaches (14.8). In order to determine the evolution and stability of these streams the current planform of six designed reaches was determined through topographic surveys. The current planform was compared to the planform from their as-built surveys, taken between two and ten years ago. There was no significant change to the streams planform since construction though there have been high flow events in the intervening years. These results suggest that these designed urban channels are highly stable and provide some geomorphic and habitat improvement over un-restored reaches.

Keywords: Stream restoration, channel design, post-restoration assessment