MEGUG Fall Conference – November 16, 2023
Wolfe's Neck Center, Freeport ME

SCHEDULE

8:30 - 9:15	Registration and Breakfast	
9:15 - 9:45	Welcome and Intro to Wolfe's Neck Center-Sienna Zuco and Alex Gulachenski	
	Track A	**Track B**
9:50 - 10:20	Will Kochtitzky, University of New England *GIS at UNE - From Maine to the Poles*	Jenna Nelson, Blue Marble Geographics *Improving Vertical and Horizontal Accuracy Between Point Clouds*
10:25 - 10:55	Paul Morris, Terracon Consultants, Inc. *What Location Data Does Google Have on You?*	Brendan Hall, University of Maine, Orono *Bridging the Gap: Extending Vector Tools to Raster Spatial Analysis*
11:00 - 11:30	Tora Johnson, University of Maine at Machias *Introduction to GIS Mapping Course through the Maine Geospatial Institute*	Mark Scott, Esri *ArcGIS Solutions for Public Works*
11:30 - 12:00	Poster Session	
12:00 - 1:00	Lunch	
1:00 -1:30	Rosemary Mosher, NEURISA: *Overview of NEURISA* Jay Clark, Maine Geolibrary: *Geolibrary Update*	
	Track A	**Track B**
1:35 - 2:35 (1 hour)	Meadow Dibble and Erika Arthur, Atlantic Black Box *Researching Maine's Problematic Place Names*	Robert Rogers, Cadastral Mapping *Tax Map Quandaries and Curiosities*
2:40 - 3:10	Philip Englund Mathieu, The Roux Institute, Northeastern University *Modelling Access to Conservation Land Through an Equity Lens*	Jonah Waterman, City of Lewiston *Building an Asset Management Program from your GIS*
3:10 - 3:30	Break	
3:30 - 4:00	Jamie Carter, NOAA Office for Coastal Management *NOAA Digital Coast Updates*	Paul Morris, Terracon Consultants, Inc. *Automating Corporate Products: Marketing Maps, Office Location Data, and More*
4:00 – 5:00	MEGUG Annual Meeting Door Prizes	

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ABSTRACTS

Track A-Morning

Will Kochtitzky, University of New England
GIS at UNE - From Maine to the Poles
Climate change is impacting our entire planet and changing the way we interact with Earth systems. UNE students are engaged in research to understand these impacts in coastal Maine, including on our campus in Biddeford and why these impacts are occurring, especially from sea level rise. We are also focused on understanding the retreat and mass loss of glaciers at both poles, which has been rapid in the last two decades leading to sea level rise in our communities. This talk will focus on the connections between the polar regions and coastal Maine and how UNE students are working to quantify the impacts of climate change in both places. It will include specific examples about the widespread retreat of marine-terminating glaciers since 2000 and the expansion of standing water (pools) in coastal Maine marshes.

Paul Morris, Terracon Consultants, Inc.
What Location Data Does Google Have on You?
What does the location data that Google collects on you look like? Is it a good or bad thing that this data is being collected?

Tora Johnson, University of Maine at Machias
Introduction to GIS Mapping Course through the Maine Geospatial Institute
This session will provide information about the new "Introduction to GIS Mapping" course available from the Maine Geospatial Institute. The course is designed for people with little or no prior exposure to GIS. In this self-paced online course, students explore basic and foundational learning and develop basic skills in online GIS mapping. They will develop an understanding of basic GIS concepts, cartographic principles and fundamentals of map design, including the discovery of existing map data sources; understanding of map types and conventions; designing map layouts; and sharing online maps. A student ArcGIS Online account will be provided. The course is available through the University of Maine System to the general public. For a limited time to students willing to provide feedback can access the course for free. A fee will be charged for the course after feedback has been incorporated. Participants in this session will get a peek at the course, receive a brief overview, and learn how to access the course.

Track B-Morning

Jenna Nelson, Blue Marble Geographics
Improving Vertical and Horizontal Accuracy Between Point Clouds
Confidence in positional accuracy is a vital component of point clouds as they are often the basis for analysis and derived data products. In this context, accuracy refers to how close the measurements are to real-world values. Adjusting a point cloud to match the position of ground control points (GCPs) collected with a high-accuracy GPS unit or fitting it against another overlapping point cloud with an established position can help mitigate positional accuracy issues. These tools, alongside many others in Global Mapper Pro, can be used seamlessly with aerial lidar, terrestrial, or photogrammetrically derived point cloud data. In this presentation, we will discuss how we used Global Mapper Pro to adjust a point cloud against GCPs and fit it to another overlapping point cloud to improve its accuracy.
Learning Objectives:
-Understand how point cloud accuracy can be measured against other datasets with known accuracy.
-Understand best practices for placing ground control points in the field.
-Understand methods for aligning overlapping point clouds.
-Understand how vertical and horizontal adjustments are made in a point cloud.

Brendan Hall, University of Maine, Orono
Bridging the Gap: Extending Vector Tools to Raster Spatial Analysis
Topological relations are an essential element of spatial queries and reasoning about spatial information. The predominant model for topological relations in GIS—the 9-intersection—identifies sixteen different relations between groups of pixels (called raster regions) in a raster space. These sixteen relationships, in 2-dimensional discrete space, form neighborhoods of relations based on deformations or movements of the regions in relationship to one another. By modeling neighborhood organizational structures for GIS, we can identify 'nearest' relations or links between non-adjacent relations. This will enhance the decision-support capabilities of information support systems. While GIS can identify the 'Contains' relationship in vector space, GIS are not able to identify relationships which are similar to 'Contains' (neighbors) if the user queries for additional meaningful results. When considering discrete space and raster data, no dedicated toolset exists for conducting specific spatial queries. My research addresses this gap which will lead to the application of existing vector specific toolsets to raster datasets enhancing the versatility and depth of spatial analysis.

Mark Scott, Esri
ArcGIS Solutions for Public Works
Public Works departments maintain the infrastructure that we all rely on, but increasing capital costs, aging infrastructure, a reduced workforce, and a more demanding public make work more challenging. See how focused solutions can help to solve Public Works challenges with GIS technology that leverages location aware data, prioritizing projects with maximum impact.

Track A-Afternoon

Meadow Dibble and Erika Arthur, Atlantic Black Box
Researching Maine's Problematic Place Names
Place names have a lot to teach us about our history, values, and present-day relationships with one another. Even when these names fade into the backdrop of our lives, they continue to inform our sense of place in subtle but important ways, communicating ideas about who belongs and what matters. Here in Maine, racist and problematic place names have long marred the landscape and continue to impact our communities. By examining trends in toponymy, we can gain insight into whose perspectives have been privileged and, by contrast, whose experiences have been dismissed and forgotten.

In this workshop, the Place Justice team will provide participants with foundational information about Maine's place names profile in relation to those of other states in New England and across the U.S. Sharing resources and techniques, we will help you to identify problematic place names in your area as well as develop approaches to understanding the historical context behind them. Together we will explore ways to make the commemorative landscape more welcoming, inclusive, and reflective of the breadth of experiences of the people who have made these places what they are today.

Place Justice is a statewide truth-seeking and historical recovery project of the Permanent Commission on the Status of Racial, Indigenous, and Tribal Populations in partnership with Atlantic Black Box.

Philip Englund Mathieu, The Roux Institute, Northeastern University
Modelling Access to Conservation Land Through an Equity Lens
In this presentation, I will share my graduate research developing a statewide map of conservation access at Census block resolution. I will discuss the underlying tools used, including GeoPandas, NetworkX, and OSMNx, and the process I developed for using Biden Administration's Climate Equity and Justice Screening Tool (CEJST) to quantify inequities in access to the outdoors. My presentation will close with an open conversation around the potential for applications of CEJST and similar geospatial equity tools in the greater GIS community.

Jamie Carter, NOAA Office for Coastal Management
NOAA Digital Coast Updates
NOAA's Digital Coast is an online repository of geospatial data, tools, and trainings that are carefully curated to support decision making in the coastal zone. Several recent mapping and tool development initiatives are noteworthy including new statewide high resolution land cover data and coastwide topobathy lidar data. This presentation will introduce the audience to the Digital Coast and a few key initiatives that are intended to enhance coastal community resilience and improve natural resource management.

Track B-Afternoon

Robert Rogers, Cadastral Mapping
Tax Map Quandaries and Curiosities
Anyone who has worked on tax maps knows that irregularities crop up from time to time and these can raise questions for the tax assessor and municipal officials. Conflicted legal descriptions, strange geometry, slivers along the shore, paper streets, and town line issues all can lead to some interesting situations. A general background on maps, the technologies that have changed tax mapping, and anecdotes from the drawing board will be featured in a casual presentation and slide show.

Jonah Waterman, City of Lewiston
Building an Asset Management Program from your GIS
How do you leverage your GIS System to build an asset a management system. Are you leveraging tools such as Data Reviewer, Attribute Assistant, Document Management, Standardization, Dashboards etc. to better serve your organization. Come see what Lewiston has developed to help bring your 2D interface into a wealth of knowledge.

Paul Morris, Terracon Consultants, Inc.
Automating Corporate Products: Marketing Maps, Office Location Data, and More
This presentation discusses how Terracon moved from a manual process of updating 30+ marketing maps, an office directory, an organizational chart, and more to automated processes. ArcGIS Pro, FME, the Terracon API, Python scripting, and a lot of communication helped accomplish this achievement. Methods used for these projects were extended into everyday projects to save money and reduce repetitive work!

Posters

Katelyn DeWater, University of New England
The Growth of Mega Pool Systems in 12 Maine Salt Marshes From 2009 to 2021
Salt marshes are important ecosystems because they provide critical habitat for endangered species, and their soils sequester carbon from the atmosphere. Our study uses GIS to quantify the area change of salt marsh pools between 2009 and 2021 on twelve salt marshes in southern Maine. While pools can occur naturally, our results indicate that pools are expanding and eroding at least partially due to sea level rise, decreasing salt marsh resilience to climate change.

Lauren Murphy, University of Maine Machias
Henry Point: Flood Inundation Mapping to Prepare for New Development
This project was conducted in service to the town of Jonesport, Maine. We prepared two maps to support planning for a future working waterfront development at Henry Point in Jonesport. One map is a classified and colorized lidar point cloud, and the second depicts a digital elevation model. To create these maps, I used Global Mapper software. Using the 3D mapper option, I created and exported maps showing the mean high water level and then increased water levels to show 1.6 feet, 3.9 feet, and 6.1 feet of sea level rise. The maps display locations on Henry Point that would become flooded with an increase in water level above the mean high water.

Emma Nickerson, University of Maine Machias
Mosquito Abundance in the Dwight B. Demeritt Forest, Orono, ME
This project was in conjunction with Alyssa Marini, a master's student in the entomology program at the University of Maine, Orono. During the summer of 2022, my client conducted a study of mosquitoes and their abundance in the Dwight B. Demeritt Forest , a University of Maine research and education forest stewarded by the UMaine School of Forest and is managed using different harvest techniques. My client wanted a hotspot analysis map depicting mosquito abundance in different stand types based on harvest methods. Insights about mosquito forest habitat usage can inform management practices to control vector-borne illnesses. Results show that mosquitoes are most abundant in the hardwood stands that have had no recent harvest.

Robin Hadlock Seeley
Deploying Drones to Detect Ledges Denuded by Seaweed Harvest
Unmanned Aircraft System surveys of the rocky intertidal zone in Cobscook Bay, Maine, were conducted in 2023 to develop high-resolution, multispectral drone imagery for measuring and monitoring changes in the biomass of rockweed (Ascophyllum nodosum). We asked the following questions: "can a multispectral drone detect areas where rockweed has been commercially harvested?" Drone surveys were conducted by NearView, LLC in a 25-acre area of Pembroke ME. UAS imagery was processed in Pix4D Mapper Pro (V 4.8.4). Initial data outputs included high-density point clouds, Digital Surface Models (DSMs), and geo-referenced orthomosaics for each of the 10 bands. Subsequently, the 10 orthomosaics from each survey

area were band stacked in NV5's ENVI image processing software (V 6.5) into a single 10-band GeoTIFF image. These orthomosaics were used further to derive vegetation indices such as NDVI (Normalized Difference Vegetation Index) and LCI (Leaf Chlorophyll Index). The orthomosaics were processed using Nearview's proprietary algorithms and predictive models to 1) map the distribution of Ascophyllum nodosum (Rockweed) and Fucus spp. (Bladderwrack). We learned that the drone imagery detected harvested areas of Ascophyllum but classified those areas incorrectly. Further work is planned in 2024 to correct the classification model and provide estimates of biomass lost in the harvested areas.

Patricia Tilton, University of Maine Machias
Discovering the Dennys: A River Through Time

The Dennys River Historical Society (DRHS), located in coastal Washington County, Maine, was awarded a grant by American Historical Association to create a website to host their historical content and provide public access to their collection. DRHS formed an alliance with the University of Maine at Machias (UMM) GIS Lab, as well as local historians and other technical developers to complete the project. The plan was to discover, preserve and share historically relevant sites in the Dennys River Watershed from 9000 BD to the present. The overall time span has been broken into six separate eras: Geologic, Wabanaki, Imperial, Early Republic, Lumbering and Conservation. The project started with field data collection by UMM GIS students, and data was then paired with a spreadsheet provided by the Dennys River Historical Society. After data cleaning, web maps were built for each era. These were gathered in a story map entitled "Discovering the Dennys: A River Through Time" and embedded in the new DRHS website at https://dennysriverhistory.org/. The story map includes interactive maps with popups that connect to their online repository of information and images from their collection. The result is a story map to guide users through time on the Dennys River Watershed using interactive maps to learn about land, people, commerce, and industry as well as conservation.

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Presenters

Erika Arthur

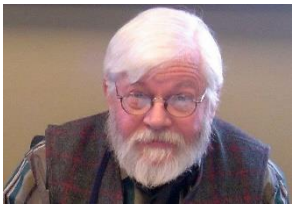
Erika Arthur is Program Associate at Atlantic Black Box, where she co-leads the Place Justice initiative. Erika served for many years as a Policy Analyst at the Catherine Cutler Institute at the University of Southern Maine, working in the Justice Policy and Child Welfare program areas. She holds an MA in U.S. History and a Graduate Certificate in Advanced Feminist Studies from the University of Massachusetts-Amherst. Her graduate research was located at the intersection of race, gender, rural political economy, and mass incarceration and utilized oral history, archival, and secondary sources. For more than two decades, Erika has engaged in community organizing and education on social and racial justice issues. Her current focus is embodied practice as a capacity-building tool for anti-racism and decolonization.

Jamie Carter

Jamie Carter is a physical scientist with the NOAA Office for Coastal Management where he develops and delivers geospatial products and services to support coastal management and decision making throughout New England. Much of his effort is focused on increasing community resilience to coastal hazards through the effective use of scientific data and tools. Jamie provides technical assistance to coastal communities and coordinates geospatial activities with Federal and State agencies and other organizations. He also helps maintain NOAA's Digital Coast, a website that provides not only coastal data, but also the tools, training, and information needed to make these data truly useful. Jamie received a M.S. in Physical Geography from Oregon State University. Prior to starting with NOAA in 2003, he worked with the USGS studying instream fish habitat, watershed hydrology, and land use. Jamie is based in Falmouth, Maine.

Jay Clark

I've been active in the GIS community since 1994. A veteran of GDT/TeleAtlasTomTom for 20 years I transitioned to consulting in 2010. Since 2010 I have prepared spatial databases and service environments for State Governments. I joined the Geolibrary in June of 2023.



Katelyn DeWater

Katelyn DeWater is a junior undergraduate student at the University of New England. She is a marine sciences major with a GIS minor. Over the summer, she received a UNE SURE award and a MSGC grant to study the impact of sea level rise on Maine's southern salt marshes using GIS. In addition to GIS research on campus, she is a part of the Coral Fluorescence Lab, the Aquarium Science and Conservation Lab, and the honeybee conservation club. Her main interests in terms of research are to use GIS to study the effects of climate change on marine ecosystems.

Meadow Dibble

Meadow Dibble, Ph.D. is a researcher and antiracist historical recovery advocate organizing to surface New England's suppressed narratives. In 2018 she founded Atlantic Black Box, a grassroots public history project that empowers communities throughout the Northeast to take up the critical work of researching and reckoning with the region's complicity in the slave trade and the global economy of enslavement. Meadow holds a Ph.D. in Francophone Studies from Brown University. She serves as Project Lead on the Place Justice project for the Permanent Commission on the Status of Racial, Indigenous, and Tribal Populations.

Brendan Hall

I have 16 years of experience in land use analysis and economic modeling, and a formal education in computer science and geographic information systems.

Tora Johnson

Dr. Tora Johnson is a social scientist and professor of geographic information systems (GIS) at the University of Maine at Machias where she serves as the director of the GIS Laboratory and Service Center. She holds a PhD in Natural Resource Policy from the University of Maine. Dr. Johnson's current social and spatial science research focuses on supporting sustainable, healthy and prosperous rural communities in a changing world using digital mapping tools and technical assistance.

Will Kochtitzky

I have 16-years of experience in land use analysis and economic modeling, and a formal education in computer science and geographic information systems.

Philip Englund Mathieu

Philip Englund Mathieu (he/him) is a student in the MS Data Science program at The Roux Institute, Northeastern University's campus in Portland. His background is in geospatial analysis, particularly as applied to conservation. He has worked on projects for the Cape Elizabeth Land Trust, Sierra Club Maine, and the Portland Rent Board. He is currently working full-time as an intern with Kelson Marine Co., an ocean engineering firm based on the Portland waterfront.

Paul Morris

Paul Morris has been working at Terracon for over five years as a Data Solutions Engineer. There, Paul creates data, automation, and mapping products to support thousands of people across over 170 offices. Before Terracon, he worked with underground utility locating data for three years. Paul holds a Bachelor's degree in Geography-Anthropology from USM and an Master's degree in GIS from Johns Hopkins.

Rosemary Mosher

I have been working in GIS here in Maine for several decades and have been a member of MEGUG for much of that time. I currently work as a GIS Specialist for Viewshed, in Yarmouth. For this presentation, I represent the New England chapter of URISA, where I am a board member.

Lauren Murphy

I am a Senior at the University of Maine at Machias. I am working toward my B.S. in Environmental GIS with a concentration in Spatial Data. I have a background in healthcare working as a CNA/CRMA for almost 5 years and pursued a nursing degree. My interest is integrating GIS and healthcare. At home I am a mom of two kids, a 19-month-old and a newborn. I enjoy spending time with my fiancé and kids, being outdoors, and reading.

Jenna Nelson

Jenna Nelson is an Application Specialist at Blue Marble Geographics, a GIS and geodetic software company based in Maine, USA. She holds a Graduate Certificate in Environmental Geographic Information Science from Unity College. In her current role, Jenna's advanced GIS skill set has been invaluable in assisting users worldwide in solving real-world challenges.

Emma Nickerson

I am a wildlife ecology major at the University of Maine Orono and obtaining my GIS certificate at University of Maine Machias. I am interested in geographic information systems to monitor wildlife populations and their habitat, as well as use it to track diseases within the wildlife and human populations. In the future, I hope to use both my degree and certificate to benefit the scientific community.

Robert Rogers

Robert Rogers has twenty-six years of experience reading deeds and working on both traditional tax maps and GIS-format parcel data sets. He holds Certified Maine Assessor certification and lives in Chesterville.

Robin Hadlock Seeley

I am the Executive Director and Senior Scientist of the Maine Rockweed Coalition. My hometown is Freeport ME. Marine ecologist/conservation biologist. I have been taking GIS courses at UMM for three years. GIS is now part of every project I undertake.

Mark Scott

Mark Scott is a Senior Solutions Engineer at Esri. Working out of the Northeast office in Middleton, MA for over 26 years, Mark supports the Esri Local Government team and users. He helps ArcGIS users to understand how GeoSpatial Science and tools can help them address the problems they face every day. Mark was born in Bangor, grew up in Belgrade, and is a graduate of the University of Maine 1984 with a degree in Surveying Engineering.

Patricia Tilton

Patricia Tilton is a senior, graduating in December from the University of Maine at Machias earning a Bachelor of Science degree in EGIS with a concentration in spatial data science. She is delighted to be contributing to the student poster session at MEGUG for a second time in her academic career. She intends to continue her education through her career by pursuing relevant and rewarding work in these fields.

Jonah Waterman

Jonah, a native of Newfoundland Canada, migrated to the United States in the early 2000's. He went on to attend Appalachian State University for his BS in Geography with a concentration in GIS Science. Post graduation Jonah worked for Greenville Utilities in Greenville NC working as a GIS Technician within the utility sector for Electric, Water, Sewer, and Gas. Jonah continued to excel his GIS knowledge and enrolled in the MGIST Program at NC State as a graduate student. He then moved north to Maine to work for the City of Lewiston to develop the Asset Management for the city continuing to focus on utilities. Over the past 6 years Jonah has deployed Water Treatment, Facilities, Water, Sewer, MS4, Sidewalks, Roads and various other modules that are being consumed by staff.

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