



MEGUG Spring Conference - May 24, 2023
Randall Student Center, University of Maine at Augusta

Schedule at a Glance

Time	Agenda Item
11:15 - 12:30	Exhibitor Setup
12:00 - 12:30	Registration
12:30 - 12:40	Welcome
12:40 - 1:10	Claire Kiedrowski, Maine GeoLibrary <i>State of the GeoLibrary</i>
1:10 - 1:40	Gus Cooke, Blue Marble <i>Creating a Digital Twin with UAV-collected Data</i>
1:40 - 1:55	Break
1:55 - 2:25	Eileen Johnson, Bowdoin College <i>Exploring the history of landscapes using GIS</i>
2:25 - 2:55	Alyssa Soucy, University of Maine <i>Investigating the impacts of a place-based approach on students and community members within a college-level GIS course</i>
2:55 - 3:10	Break
3:10 - 3:40	Tito Sanchez, BETA Group, Inc. <i>Municipal Winter Maintenance Route Optimization</i>
3:40 - 4:10	R. Michael White, Global Information Systems <i>Use of FME and ArcGIS to Prepare Data for Train Simulators</i>
4:10 - 4:40	Maja Kruse, University of Maine <i>Using Distance Accumulation for Exploring Movement through the Landscapes of the Holocaust</i>
4:40 - 6:30	Mappy Hour Light refreshments and beverages

Randall Center Wi-fi:
Username: umasodexo.guest
Password: UMASpring23



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Abstracts:

State of the GeoLibrary

Claire Kiedrowski, Executive Director, Maine GeoLibrary

The GeoLibrary is responsible for maintaining the necessary state-wide base map layers and is the “one-stop shop” for all state and federal authoritative datasets. Today’s presentation will provide a comprehensive review of the recent geospatial acquisitions available through the data catalog, strategic plan updates, executive director transition, and future plans.

Creating a Digital Twin with UAV-collected Data

Gus Cooke, Application Specialist at Blue Marble Geographics

A digital twin, or detailed 3D rendering of a real-world study area, is often the goal when collecting and processing geospatial data. The rapid emergence and proliferation of Unmanned Aerial Vehicles (UAVs) or drones for lidar or image collection continues to make the creation of digital twin models consisting of 3D data more accessible. Beginning with a camera-equipped UAV for data collection and a GIS software for photogrammetric processing, GIS analysts can collect data and carry through the process to create a digital twin with image, point cloud, and mesh layers. From these derivatives of the geotagged UAV-captured images, further analysis can be executed with steps to generate terrain and surface models, extract key features, and overlay additional data for a more detailed 3D rendering of the intended area.

Learning Objectives:

- Understand the data requirements for UAV-collected that will be used in a photogrammetric reconstruction.
- Understand the value of photogrammetrically derived 3D data and how it can be used for further modeling and analysis.

Exploring the history of landscapes using GIS

Eileen Johnson, Senior lecturer in the Environmental Studies Program, Bowdoin College

Historical GIS can help us uncover hidden histories of our landscapes. Caesar Pond Wildlife Refuge was once the home to a three generation Black family who lived and farmed from the late 1700s until 1900 on the site of the refuge. Using the site as a case study, this talk discusses how GIS enables us to combine historical maps and deeds, with current data including field collected data, parcel, and LIDAR data to locate where the family lived and to learn more about the lives of family members. In particular, the talk focuses on how GIS can help uncover more about the lives of women in the family, whose histories are particularly challenging to reconstruct.



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Investigating the impacts of a place-based approach on students and community members within a college-level GIS course

Alyssa Soucy, Graduate Student, University of Maine

There are increasing calls for more interdisciplinary approaches to GIS education that incorporate problem-based, student-centered learning. In particular, a place-based approach is a valuable way to teach GIS. Education that is rooted in place creates opportunities to bring classrooms and communities together to allow students an opportunity to address problems of local interest. The purpose of our study was to investigate the outcomes of a place-based activity integrated within a college-level GIS course on student self-efficacy, sense of place, and learning outcomes. Using a quasi-experimental design we explored the differences in student outcomes between an in-person place-based approach, a technologically-mediated, or virtual, place-based approach, and a control, or placeless, group. At the same time, we also explored community member perceptions of the process as partners in the place-based approach that was rooted in bringing students and community members together. Our results demonstrate the effectiveness of all approaches in increasing student's perceptions of their own skills, or self-efficacy. While students who interacted with a local community partner and engaged in a place-based activity experienced increases in community-oriented skills and developed more complex understandings of place. Our results offer a case study in understanding opportunities for collaborations between classrooms and conservation organizations who are in need of GIS skills and capacities. While developing collaborations and organizing field trips for large GIS classrooms can present challenges, we highlight the benefits of a place-based approach to learning.

Municipal Winter Maintenance Route Optimization

Tito Sanchez, Geospatial Project Manager, BETA Group Inc.

Each fiscal year, municipalities throughout the country allocate a significant amount of time and money on winter maintenance operations. With mounting pressures to operate on tight budgets, many municipalities struggle to keep which is especially true when issues like vehicle breakdowns/repairs and limited staff are added to the mix. Additionally, many municipalities throughout New England are utilizing legacy routes that are inefficient, require too many vehicles, and are not appropriately planned.

This presentation takes a deep dive into utilizing GIS based tools to help optimize plow/sand route operations. It also focuses on finding the most efficient ways to clear sidewalks, Town maintained parking lots, cemeteries, and park walkways. By implementing "smart routes", municipalities can improve efficiency, reduce time, reduce emissions, and improve driver safety.



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Use of FME and ArcGIS to Prepare Data for Train Simulators

R. Michael White, Regulatory Compliance Specialist, Global Information Systems, LLC

Preparing data for train simulators involves data collection using a variety of sources including GPS, LiDAR, aerial orthophotography and video. These simulators are used by railroads for training and qualification of locomotive engineers. To create accurate and realistic CGI for the train simulators, novel techniques and complex data processing are required. We found that FME together with ArcGIS are perfect for these tasks.

Using Distance Accumulation for Exploring Movement through the Landscapes of the Holocaust

Maja Kruse, Graduate Student, University of Maine

This work in progress explores how Distance Accumulation, Cost Surface, and Viewshed analyses can be used to simulate the ways in which the landscape was encountered by victims and perpetrators during the Holocaust. The Nazis both reworked the existing landscape and created new places to fit their purposes, gradually creating a genocidal landscape. For the human targets of Nazi ideology, being here rather than there could mean the difference between life and death. Victims moved “voluntarily” in the landscape, as part of flight, escape, and hiding, and involuntarily through mass deportations, murders, or forced labor. According to ESRI, cost surface “captures what the traveler encounters as they move through the landscape,” assuming that travel across a field is easier than moving through a forest. I will explore how the criteria for “an easy journey through the landscape” differed for victims and perpetrators over time, including how victims’ vulnerability and perpetrators’ control were affected by the landscape. I will also explore how areas of danger and relative safety can be approximated with viewshed analysis by identifying areas easily and hardly seen by the Nazis at their main posts.



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Speaker Bio Sketches

Gus Cooke

Gus Cooke is an Application Support Specialist at Blue Marble Geographics, a GIS and geodetic software company based in Hallowell, Maine. Cooke attended the University of Maine Farmington and studied Geography, focusing on GIS, surficial geology, and computer science. In his previous role with the 30 Mile River Watershed Association, Gus's work focused on mitigating the spread of invasive aquatic plant species in Maine. In his current role at Blue Marble Geographics, his advanced GIS skill set has been invaluable in assisting users worldwide in solving real-world challenges.



Eileen Johnson

Eileen Johnson is senior lecturer in the Environmental Studies Program at Bowdoin College. She teaches environmental social science courses that integrate digital and computational technologies with a particular emphasis on spatial analysis, GIS, and remote sensing.



Claire Kiedrowski

Claire Kiedrowski has been the Executive Director of the Maine Library of Geographic Information (GeoLibrary) since 2019. The GeoLibrary is responsible for maintaining the necessary state-wide base map layers and is the "one-stop shop" for all state and federal authoritative datasets.



Maja Kruse

Maja Kruse is an interdisciplinary PhD candidate at the University of Maine and a research assistant on the research project "Placing the Holocaust" led by Anne Kelly Knowles. Kruse's dissertation and work on the research project employ GIS to explore aspects of the Holocaust, such as the spatial characteristics and distribution of camps and ghettos, and the influence of the landscape on human agency.

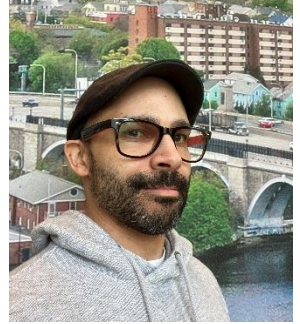




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Tito Sanchez

Tito is a Geospatial Project Manager at BETA Group Inc. He has over 17 years of experience in the utilities, engineering, and GIS consulting fields. His goal is to help municipalities solve real-world problems by applying innovative geospatial technologies. Tito empowers clients to determine unique solutions for their specific projects by looking at the 'Big Picture' and connecting all the pieces.



Alyssa Soucy

Alyssa Soucy is a graduate student at the University of Maine. She uses a variety of methods to understand human dimensions of climate change and conservation, including GIS. Her dissertation is titled, "Exploring the importance of values, place, and perceptions in conservation decision-making in Maine: A mixed methods approach." Her current research evaluates the impacts of place-based education on student learning outcomes and community conservation.



R. Michael White

In the mid 1980's I attended University of Maine's Surveying Engineering program and received a BS and MS. During that time I became interested in GIS and worked on Surveying and GIS topics while working at the Swiss Federal Institute of Technology in Zurich, Switzerland. Subsequently I worked at several photogrammetry and mapping firms on pipeline and railroad projects, specializing in regulatory compliance and risk assessment.

