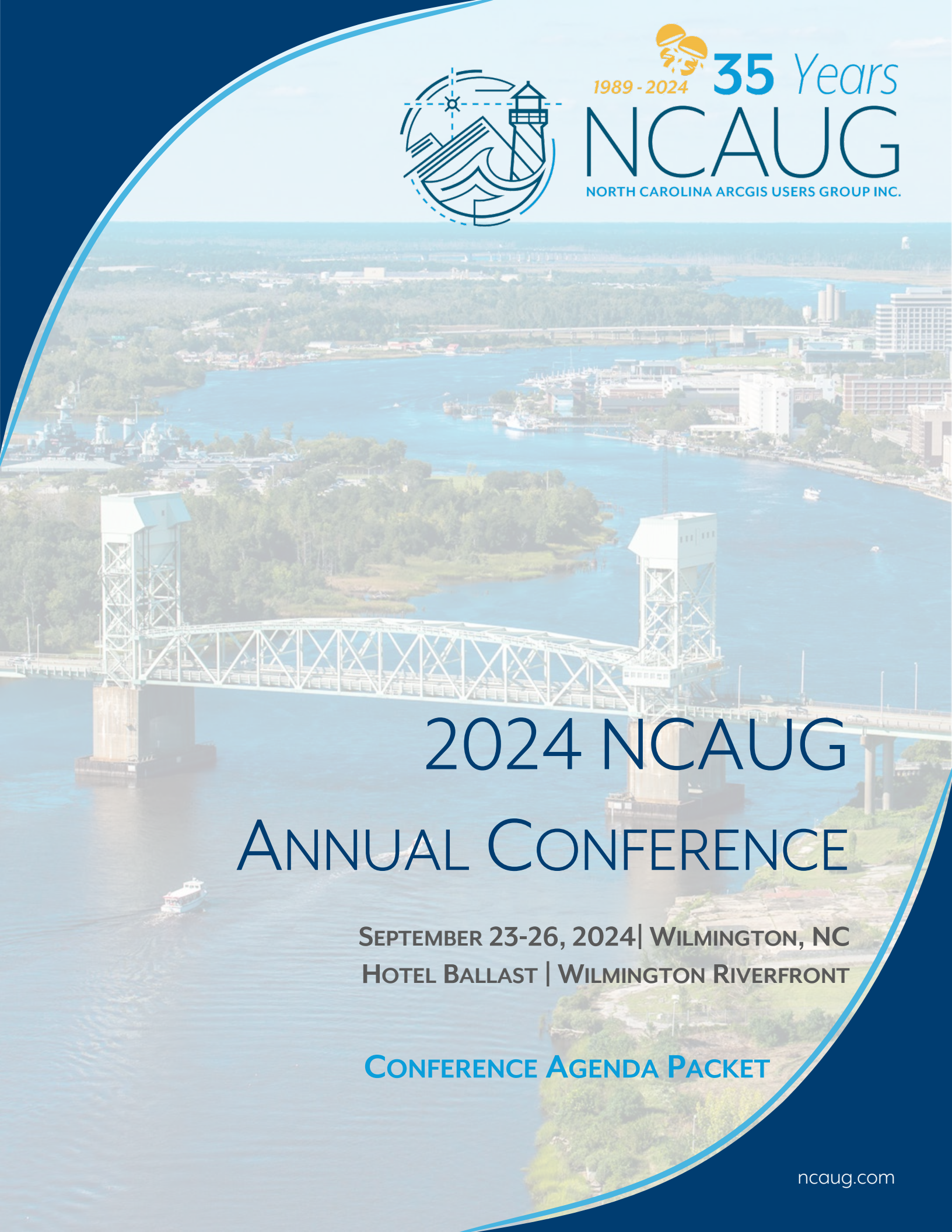

1989 - 2024 35 Years

NCAUG

NORTH CAROLINA ARCGIS USERS GROUP INC.

2024 NCAUG Annual Conference

September 23-26, 2024| Wilmington, NC

Hotel Ballast | Wilmington Riverfront

Conference Agenda Packet

ncaug.com

1989 - 2024 35 Years

NCAUG

NORTH CAROLINA ARCGIS USERS GROUP INC.

Welcome to the 2024 NCAUG Annual Conference
Celebrating 35 years!

From the President's Desk...

Welcome to the fall conference and the North Carolina ArcGIS Users Group's (NCAUG) celebration of **THIRTY-FIVE** incredible years! This year's theme, **"Mind Maps - Exploring the Intersection of GIS & AI"**, highlights how artificial intelligence has the potential to revolutionize our field and transform our work and lives. AI is not just a buzzword; it's a powerful tool that's enhancing the capabilities of GIS in unprecedented ways. From predictive analytics and advanced spatial modeling to real-time data processing and automated mapping, AI is enabling us to unlock new insights and efficiencies.

The integration of AI with GIS allows us to tackle complex challenges with greater precision and speed. For instance, AI-driven algorithms can analyze vast amounts of geospatial data to predict natural disasters, optimize urban planning, and improve resource management. This not only improves our work processes but also has a profound impact on society, helping us create safer, more sustainable communities.

Over the years, we as GIS colleagues have come together at this conference to share data, technologies, and ideas as a vibrant community. The NCAUG board is deeply grateful that you have chosen to invest in yourself and your career by networking and absorbing the wealth of knowledge that will be presented here.

Conference Highlights:

- **Keynote Speaker:** The inspiring Ismael Chivite, ESRI
- **Fantastic Pre-Conference Workshops:** Dive into topics like Data Governance, Certification Exam Prep, and UAS Mission Planning
- **2nd Inaugural NCAUG Golf Tournament:** Join the fun on the greens!
- **NCAUG Awards Ceremony:** Don't miss the excitement!
- **ESRI Hands-On Learning Lab:** Drop in, learn something new, and enhance your skills!
- **Scholarship Winners:** See our FOUR 2024 Scholarship Winners present their incredible work!
- **Tuesday Night Social:** Join us at Eagle Dare starting at 6 PM for an evening of fun
- **First-Time Attendees Session:** Come say hi and meet fellow NCAUG newbies
- **Door Prizes:** Be here throughout the conference for your chance to win fantastic prizes - must be present to win!
- **Wednesday Night Social:** Meet our vendors, enjoy live music, savor a beverage of your choice and have a nibble on some hors d'oeuvres - so fancy
- **Join the NCAUG Board:** Interested in joining? Visit the registration desk to leave your name and contact information. The board meets twice a year in person, with additional conference calls on Wednesday afternoons, typically monthly, and more frequently as the conference approaches.
- **Thank You for Attending:** I challenge you to meet ten new people and bring back at least three valuable insights to your office.

If you're still with me, come see me for a special treat—I'm genuinely impressed! Personally, this network of colleagues has been instrumental in my career, offering both valuable technical insights and friendships that I deeply cherish. The networking and knowledge you will gain from these conference sessions and presentations are truly invaluable. Please enjoy the 2024 NCAUG Annual Conference!

Sincerely,

Lucy Brady

NCAUG President - 2024

GIS Products & Services Manager - NCDIT-T/NCDOT

NCAUG Executive Board

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Lucy Brady

NCDIT-T/NCDOT

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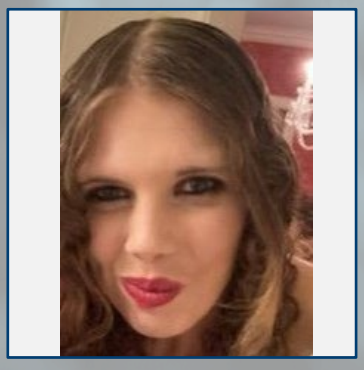
NCDOT



Shaylee Bowen
MapForsyth

Conference Highlights

Special Keynote Speaker – Ismael Chivite, Esri

Ismael Chivite works as a senior product manager at Esri. With over 20 years of GIS experience, Chivite is passionate about building ArcGIS products that help organizations use geography to improve the way they work. Ismael joined Esri in 2002. A geographer by training, he loves helping people leverage GIS to improve the way they work. As a Senior Product Manager, Ismael is always looking for ideas to create new and improve existing Esri products. Outside working hours, he enjoys Legos, rock climbing, Romanesque architecture and Jamón Ibérico. On occasion, he enjoys jamón during working hours too.

Esri Hands-On Learning Lab (Latimer Room – 3rd Floor)

We're excited to once again feature the Esri Hands-On Learning Lab at the conference this year! This gives our attendees an excellent opportunity for learning, asking questions and exploring Esri software.
The Esri Hands-On Learning Lab will be open during the following hours:

- Tuesday 9:00am – 12:00pm
- Wednesday 9:00am – 5:00pm

NCAUG Inaugural Awards Ceremony

NCAUG is celebrating our 35th year by starting a new annual tradition of awarding excellence in the GIS community. During the conference plenary session, please join the NCAUG Board in recognizing the 1st of many talented and dedicated GIS professionals making a difference everyday in North Carolina!

More Conference Events!

2nd Annual NCAUG Golf Tournament – Join the fun on the greens and participate in our annual golf outing on Monday Sept. 23rd from Noon to 5:00pm at the Beau Rivage Golf & Resort.

Opening Night Party – Join us at The Eagle's Dare on Tuesday night from 6:00 – 9:00pm for an evening of food, fun and networking with your fellow GIS peers! Full meal and beverages will be provided.

1st Time Attendee Session – Is this your 1st time at the NCAUG Conference? Join us Wed. morning at 11:30am for a special welcome session for new attendees.

Wednesday Night Sponsor Social – Spend the evening mingling with our awesome sponsors and your peers! From 5:30-7:30pm, we'll have music, drinks and light hors d'oeuvres...so fancy!

DOOR PRIZES THROUGHOUT THE CONFERENCE!

2024 NCAUG Scholarship Winners

Congratulations to our 2024 NCAUG Scholarship recipients!

Sarah E. Ulrich (Graduate) Presenting Wednesday at 4:00pm!

Sarah Ulrich graduated with her M.A. in Geography from App State in 2024, and B.A. in Geography from UNC-Chapel Hill in 2022. In the fall, she will return to UNC to start Her Ph.D. in Geography. She plans to pursue a career as a researcher and professor of geography, focusing on quantitative spatial methods through GIS. Her research primarily focuses on climate and health, with a recent emphasis on maternal mental health in North Carolina. Sarah's submission is titled, ***"Disparities in the Spatial Clustering of Perinatal Mental Health Conditions Before and During the COVID-19 Pandemic in North Carolina."***

Presenting Wednesday at 2:00pm! Morgan Jackson (Undergraduate)

Morgan Jackson is a senior Geospatial Science Student at Fayetteville State University (BRONCO PRIDE!). At FSU, she is an undergraduate research assistant and contributes to the NASA funded project DEAP Institute: Harnessing Data Science for Flood Monitoring and Management. Her area of focus within this project will be assessing urban flood vulnerability, emphasizing Fayetteville, NC. Other academic achievements include being a Chancellor's Fellow and McNair Scholar at FSU. Morgan's submission is titled ***"Assessing Urban Flood Vulnerability Using Google Street View Imagery: A Case Study of City of Fayetteville, North Carolina***

Ryan Carter (Undergraduate) Presenting Thursday at 11:00am!

Ryan Carter is a rising Senior at UNC Charlotte majoring in Geography and minoring in Data Science. Originally from Wilmington, NC, he has been an active member of NCAUG for the past year. He has interned at 511 Architects in Greenville, SC, Mark Loudermilk Architecture in Wilmington, NC, and is currently the Asset Management and Strategic Planning Intern for the City of Charlotte's Storm Water Services. His goal is to utilize GIS to research the effects of the worsening climate crisis, particularly sea level rise and flooding. Ryan Carter's submission is titled, ***"Flood Impact Analysis on Masonboro Island."***

Presenting Wednesday at 3:30pm! Gazali Agboola (Graduate)

Gazali Agboola is a PhD student specializing in geospatial and data science at North Carolina A&T State University, where he also serves as a research assistant. He is working with Dr. Leila Hashemi Beni on a NCDOT funded project aimed at predicting, mapping, and detecting landslides through geospatial analysis, statistical analysis, AI, and leveraging remote sensing data. He holds a master's degree in mathematics and is dedicated to using machine learning and geospatial analysis for disaster management. He has also work on optimizing landslide susceptibility analysis using GIS and machine learning approaches. Gazali Agboola's submission is titled ***"Optimizing Landslide Susceptibility Mapping Using Machine Learning and Geospatial Techniques."***

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Pre-Conference Workshops

All workshops will be held in the DeRossett Room (3rd Floor)

Data Governance

Presented By: Kent Rothrock (Avineon)

Monday September 23rd , 8:00am - 12:00pm

Data Governance means implementing a process of control over your GIS, including applications and infrastructure, data, personnel, and capital. Without effective governance, an enterprise-level GIS can spiral out of control, resulting in unorganized applications, duplication of data and efforts, and a lack of direction for the organization.
There are many details surrounding a GIS and an effective Governance Plan will address these concerns at multiple levels, from broad to granular. The goal of this workshop is to build and maintain a structure for the advancement of the GIS that is broad enough to respond to emerging technological trends while being specific enough to address relevant details in the data, applications, staff, and underlying business processes driving the evolution of the GIS at your organization.
At present, many organizations are tasked with maintaining mature Geographic Information Systems as well as supporting expanding requests for future growth. This half-day workshop will discuss proven approaches that can be taken to implement an effective GIS Governance Plan for organizations of all sizes

Topics to be Included:

- Why is GIS Governance Needed? Learn how to curb the chaos and scale GIS into the future.
- Enterprise Geodatabase Governance: Apply best GIS data management practices to support disparate editors, manage versions, and business needs.
- Stick to Standards: Apply standard naming conventions from the database to Portal and AGO content management.
- How to implement successful Data and Application Change Management processes: Learn a simple approach for managing ongoing growth.

UAS Mission Planning

Presented By: Patrick Connell (GeoOwl)

Monday September 23rd , 1:00 - 4:00pm

CANCELLED

During this workshop you will gain in-depth knowledge of the key aspects of successful UAS mission planning such as weather considerations, site assessments, regulatory compliance, and equipment parameters. Leading industry professionals will provide detailed insights and best practices to ensure safe and effective UAS-based mission operations

Certification Exams: Tips to Pass

Presented By: Tripp Corbin (SAM)

Tuesday September 24th , 8:00am - 12:00pm

There are more and more certifications we can get in GIS from GISP to Esri Technical and many in between that can help us as we build a career. This workshop will provide some helpful tips you can use to increase your chance of passing a certification exam as well as help you better understand what to expect when taking an exam. Tips will include suggestions on how to prepare, how to handle different types of questions, how to work through the exam and more. You will also get to try your hand at a few short sample exams so you can get a feel for how these work.

General Agenda of topics:

- Types of available certifications
- Exam Methods and Question Types
- Preparing and Studying
- The Exam: Before and During

Conference Agenda

Monday, September 23rd

7:30am – 5:00pm	Registration & Info Desk Open	
8:00am – 12:00pm	DeRossett Room (3rd Floor)	Pre-Conference Workshop: Data Governance Kent Rothrock (Avineon)
12:00 – 1:00pm	Lunch on your own	
12:00 – 5:00pm	NCAUG Golf Social – Beau Rivage Golf & Resort NCAUG Board Reps: Rick Wallace, Josh Norwood & Peter Erlenbach	
1:00 – 5:00pm	DeRossett Room (3rd Floor)	~~Pre-Conference Workshop: UAS Mission Planning~~ ~~Partick Connell (Geo Owl)~~ **CANCELLED**

Tuesday, September 24th

7:30am – 1:00pm	Registration & Info Desk Open		
8:00am – 12:00pm	Exhibitor Setup – Grand Concourse & Merrick Room		Esri Hands-On Learning Lab Open Latimer Room (3rd Floor) 9:00am - 12:00pm
8:00am – 12:00pm	DeRossett Room (3rd Floor)	Pre-Conference Workshop: Certification Exams: Tips to Pass Tripp Corbin (SAM Companies)	
12:00 – 1:00pm	Lunch on your own		
Plenary Session – Grand Ballroom (Lillington, Caswell, Harnett)			
1:00 – 1:30pm	Welcome, NCAUG Business Meeting & 2025-2026 NCAUG Officer Elections Lucy Brady - NCAUG President		Exhibit Hall Open Grand Concourse & Merrick Room 1:00pm – 5:00pm
1:30 - 1:45pm	NCAUG Awards Presentation NCAUG Board		
1:45 - 2:30pm	Sponsor Lightning Talks *Thanks to our many sponsors!*		
2:30 - 3:00pm	2024 NCAUG President's Award Recipient Presentation Community Health and Disaster Mitigation Explorer (CHADME) Dallas Goodnight (WPCOG)		
3:00 – 3:45pm	Break : Merrick Room		
3:45 – 4:45pm	Special Keynote Address Exploring the Intersection of GIS & AI Mr. Ismael Chivite (Esri)		
4:45 – 5:00pm	Plenary Closing & Conference Info NCAUG Board		
6:00 – 9:00pm	Opening Night Party (The Eagle's Dare – 420 N 3rd St., Wilmington) 34.24093 N, -77.94624W Catering provided by: Middle of the Island		

Conference Agenda

Wednesday, September 25th

Morning Sessions

7:30am – 5:00pm	Registration & Info Desk Open	
7:00 – 8:00am	**Breakfast Buffet:** Merrick Room	
Breakout Sessions	**Track 1** Grand Ballroom: Lillington/Caswell Moderator: Brett Spivey	**Track 2** Grand Ballroom: Harnett Moderator: Jessica Nester
8:00 – 8:30am	**Leveraging ESRI Portals for Enhanced Data Integration, Geospatial Collaboration, and Problem-Solving Potential** Timothy Vega (GPI Geospatial)	**Exploring the Use of Modern AI Tools for Utility Easement Mapping in GIS** Jim Sahlie (SolisGIS)
8:30 – 9:00am	**Experience Builder: An Overview** Peter Erlenbach (Esri)	**GIS Asset Management: Using AGOL to Deliver More Than Just Assets** Andrew Clark (Colliers Engineering & Design)
9:00 – 9:30am		**NC Statewide Lidar and AI (Leveraging AI/ML to Classify Current Lidar Datasets and Future Collects)** Michael Baranowski (Dewberry)
9:30 – 10:00am	**Using AI to Facilitate the ArcGIS Pro Migration** Justin Castrati (LJB Engineering)	**Critical Incident Mapping & Emergency Management for Schools** John Young (Langan Engineering)
10:00 – 10:30am	**Break**: Merrick Room	
Breakout Sessions	**Track 1** Grand Ballroom: Lillington/Caswell Moderator: Laura Coppola	**Track 2** Grand Ballroom: Harnett Moderator: Matt Helms
10:30 – 11:00am	**Using Machine learning workflows to process Big (Geospatial) Data** Colin Flynn (Dewberry)	**ArcGIS Quick Capture** Ismael Chivite (Esri)
11:00 – 11:30am	**Wetland Mapping Using Multi-Spectral Satellite Imagery and Deep Convolutional Neural Networks: A Case Study in Wilmington, North Carolina** Matilda Anokye (NC A&T State University)	
11:30 – 12:00pm	**Automation, Machine Learning, and Statewide GIS data in the Cloud Creating Broadband Solutions** Ben Shelton, Daniel Turner (NC CGIA)	**First Time Attendees Meetup** NCAUG Board
12:00 – 1:00pm	**Lunch Buffet:** Merrick Room	

Esri Hands-On Learning Lab Open Latimer Room (3rd Floor)	**Exhibit Hall Open** Grand Concourse & Merrick Room
9:00am – 5:00pm	8:00am – 7:30pm

Conference Agenda

Wednesday, September 25th

Afternoon Sessions

7:30am – 5:00pm	Registration & Info Desk Open	
Breakout Sessions	Track 1 Grand Ballroom: Lillington/Caswell Moderator: Michelle Lopez	Track 2 Grand Ballroom: Harnett Moderator: Alana Sweatt
1:00 – 1:30pm	Enhance Data Editing Workflows and Integrity with Arcade Jessy Beasley (Esri)	NC RAFT: NCDOT's Digital Resilience Lifeboat Garrett Shields (WSP)
1:30 – 2:00pm		Coastal Flooding in the Digital Era: When Too Many Websites and Volumes of Disparate Data Creates Confusion Joanne Halls (UNC Wilmington)
2:00 – 2:30pm	Proven Patterns for Developing Custom Web Mapping Applications Caleb Mackey (Bolton & Menk, Inc.)	Assessing Urban Flood Vulnerability Using Google Street View Imagery: A Case Study of City of Fayetteville, North Carolina Morgan Jackson (Fayetteville State University) 2024 NCAUG Scholarship Winner
2:30 – 3:00pm	When Python Isn't Enough: Automating GIS Workflows With RPA Hank Pelfrey (Cabarrus County)	Texas Water Development Board HWM Project Hope Morgan (AECOM)
3:00 – 3:30pm	Break: Merrick Room	
Breakout Sessions	Track 1 Grand Ballroom: Lillington/Caswell Moderator: Sean Farrell	Track 2 Grand Ballroom: Harnett Moderator: Greer Shivers
3:30 – 4:00pm	Exploring Landslide Detection with Deep Learning and Geographic Information Systems Gazali Agboola (NC A&T State University) 2024 NCAUG Scholarship Winner	GIS Community Engagement Through Social Media Nancy Ross (Mecklenburg County)
4:00 – 4:30pm	The Why and How of Moving to UN: The Municipal Approach Wendy Peloquin (Avineon)	Disparities in the Spatial Clustering of Perinatal Mental Health Conditions Before and During the COVID-19 Pandemic Sarah Ulrich (UNC Chapel Hill) 2024 NCAUG Scholarship Winner
4:30 – 5:00pm	Integrating UAS Technology into GIS: Hardware, Software, Training, and FAA Compliance Paul Rossi (Nine Ten Drones)	Unseen Patterns: How Employing Storymaps and GIS Analysis Has Revealed an Untold Narrative of Overdoses in Forsyth County Shaylee Bowen, Karen Kessler (Forsyth County, NC)
5:30 – 7:30pm	Wednesday Night Sponsor Party – Hors D'oeuvres, Drinks, Music, Prizes Merrick Room & Riverview Terrace	

Esri Hands-On Learning Lab Open Latimer Room (3rd Floor)	Exhibit Hall Open Grand Concourse & Merrick Room
9:00am – 5:00pm	8:00am – 7:30pm

Conference Agenda

Thursday, September 26th

7:30 – 9:00am	**Registration & Info Desk Open**	
8:00 – 9:00am	**Breakfast Buffet:** Merrick Room	
Breakout Sessions	**Track 1** Grand Ballroom: Lillington/Caswell Moderator: Jeff Webb	**Track 2** Grand Ballroom: Harnett Moderator: Kristin Johnston
8:30 – 9:00am	**AddressNC Program Experience** Darrin Smith (NC CGIA)	**Leveraging Advanced Analytics and AI in Telecom Infrastructure Planning, Strategy, and Design** Dustin Lillie (Olsson)
9:00 – 9:30am	**Indoor Data Collection: Methods and Considerations** Tripp Corbin (SAM)	**Utilizing GeoAI for Flood Mitigation Planning** Michael Blair (Innovate)
9:30 – 10:00am	**Social Explorer: A New Source for Census Data** Jeff Essic (NC State University)	**Leveraging AI and Big Geo-Data for 3D Flood Depth Simulation to Safeguard Built Assets** Jeffrey Blay (NC A&T State University)
10:00 – 10:30am	**Break**: Merrick Room	
Breakout Sessions	**Track 1** Grand Ballroom: Lillington/Caswell Moderator: Sheila Curry	**Track 2** Grand Ballroom: Harnett Moderator: Harold Rempel
10:30 – 11:00am	**Building Resilient Communities with EDA Funding and GIS Tools** Jaimee Pyron, Christina Danis & Jessica Nester (IEM)	**Pull and Post: Streamlining the Levy Process** Reggie Sanders (Florence County)
11:00 – 11:30am	**Flood Impact Analysis on Masonboro Island** Ryan Carter (UNC Charlotte) 2024 NCAUG Scholarship Winner	**Using GIS for the City of Raleigh Flood Risk Prioritization Tool** David Key & Nathan Slaughter (ESP)
11:30 – 12:00pm	**ArcGIS Community: a Platform to Foster Community Engagement and Serve Residents Through GIS** Robert Cerrato (City of Charlotte)	**Assessing the Influence of Remote Sensing Data Spatial Resolution on Small Inland Water Quality Prediction: A Comparative Analysis of Machine Learning Models** Eden Wasehun (NC A&T University)
12:00 – 12:15pm	**Break**: Merrick Room	
12:15 – 1:00pm	**Conference Closing Session – Grand Ballroom** NCAUG Board	

Latimer Room (3rd Floor)

Hours of Operation

Tuesday Sept. 23rd:	9:00am – 12:00pm
Wednesday Sept. 24th:	9:00am – 5:00pm

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HANDS-ON LEARNING LAB

Interested in learning more about GIS and ArcGIS software?

Take a self-paced lesson at the Hands-On Learning Lab. The Hands-On Learning Lab is a dedicated space to take free lessons on a variety of GIS and ArcGIS topics. Each self-paced lesson takes about one hour to complete and includes conceptual information and step-by-step software exercises. We provide laptops and the ArcGIS software needed to complete each lesson. Esri instructors are available to assist with lesson selection and answer any questions you may have.

LESSON LIST

Getting Started with ArcGIS

- Exploring ArcGIS
- Getting Started with ArcGIS Online
- Getting Started with ArcGIS Pro
- Getting Started with GIS

Explore a Focused Topic

- Adding Location-Based Data to a Map
- Analysis in ArcGIS Online
- Automating Workflows Using Python
- Creating Web Apps Using ArcGIS Experience Builder
- Data Exploration and Visualization in ArcGIS Online
- Data Pipelines in ArcGIS Online
- Exploratory Image Analysis in ArcGIS Pro
- Discovering Patterns Using ArcGIS Insights
- Exploring ArcGIS Field Maps
- Getting Started with Arcade
- Getting Started with ArcGIS Business Analyst
- Getting Started with ArcGIS Notebooks
- Getting Started with ArcGIS Survey123
- Getting Started with ModelBuilder
- Integrating CAD and BIM Data with ArcGIS
- Managing Parcels and Land Records Using the Parcel Fabric
- Mapping Clusters with ArcGIS Pro
- Mapping in ArcGIS Online
- Monitoring Activity Using ArcGIS Dashboards
- Performing Deep Learning in ArcGIS Online
- Telling Stories with ArcGIS StoryMaps

Presentation Abstracts

Presentation Title	Abstract
GIS Asset Management: Using AGOL to Deliver More Than Just Assets	GIS Asset Management can be more than just locating, measuring, and uploading data collected in the field. By combining historical records, performing custom spatial analysis, and adding visual media, you can deliver a true system of record. Problem Small municipalities and private developments do not always have assets digitized. For this example, we will look at a 30+ year old private subdivision and golf course that has never digitized its stormwater assets.
Automation, Machine Learning, and Statewide GIS data in the Cloud Creating Broadband Solutions	The NC Department of Information Technology's Division of Broadband and Digital Equity, with the help of the Center for Geographic Information and Analysis, is striving to improve broadband access in the state. This presentation will highlight how python scripting and automation works to improve the broadband maps in the state. See how the outstanding spatial data we have in our state is leveraged to create solutions for closing the digital divide in North Carolina.
Proven Patterns for Developing Custom Web Mapping Applications	In this presentation we will dive into effective strategies for building dynamic and robust web mapping solutions. We'll focus on leveraging TypeScript and the ArcGIS Maps SDK for JavaScript to create maintainable and powerful applications. Topics will include developing reusable code libraries for common tasks to promote consistency across different applications. We'll explore the creation of generic, reusable components that simplify the development process and reduce redundancy. Additionally, we will highlight the benefits of using configuration files to enable multiple deployments from a single code base, making it easy to customize properties such as the look and feel, and map data, and much more. By the end of this session, participants will have a solid understanding of practical techniques and patterns for building scalable web mapping applications.
AddressNC Program Experience	The AddressNC application, designed in Experience Builder and hosted by NC OneMap will serve as the single source for visualizing quality control results, completeness, location precision, duplication, sub-address densities, etc. The dashboard experience will serve to quantify the magnitude of change and where change occurs. It will support statewide assessment to filter down to the county level to determine net additions and subtractions. Finally, it will track the frequencies and last submitted timestamps at the county level that is essential for reliability and confidence.
NC RAFT: NCDOT's Digital Resilience Lifeboat	NCDOT has partnered with the NC Division of Emergency Management (NCEM) and WSP to produce the Resilience Analysis Framework for Transportation (RAFT) platform. Hosting innovative, digital flood resiliency products that will aid transportation stakeholders in preparing for and implementing a resilience-focused strategy that will ensure that traffic and commerce continue to flow in spite of flood waters rather than be overtaken by them.
Exploring Landslide Detection with Deep Learning and Geographic Information Systems	This research investigates the potential of integrating deep learning algorithms with Geographic Information Systems (GIS) for enhanced landslide detection. We conduct a comprehensive review of current deep learning-based landslide detection methods, critically assessing their efficacy, constraints, and recent developments. To complement this theoretical analysis, we will perform an experimental study focused on Polk County, Western North Carolina, utilizing local high-resolution Digital Elevation Models (DEMs) and other geospatial data. Our experimental phase involves utilizing GIS for preparation of landslide training dataset and deploying and evaluating diverse deep learning architectures to identify landslides in this area, with emphasis on model accuracy and robustness. By combining broad literature synthesis with localized testing, we aim to not only consolidate existing knowledge but also generate novel insights and pragmatic techniques for landslide detection within a particular geographic setting. The study's outcomes are expected to have significant implications for both scholarly discourse and applied contexts, notably in disaster risk reduction and environmental surveillance. This work seeks to advance predictive capabilities and inform more effective strategies for landslide hazard mitigation. Acknowledgment: This material is based on work supported by the North Carolina Department of Transportation. Project # RP 2023-04
When Python Isn't Enough: Automating GIS Workflows With RPA	This presentation will cover automating GIS-adjacent workflows with robotic process automation (RPA). RPA can act as a useful addition or replacement to the typical Python-based GIS automation. Two examples will be covered: - NG911: data preparation, packaging, and submission. While data preparation and packaging can be easily handled with Python, actually submitting the data to the GeoComm hub can be tricky without the help of RPA. - Map Request and Purchase Portal: The majority of our large format map and print requests these days are elections-related maps (precincts, polling locations, Federal and State congressional maps, etc). To make life easier for the GIS team and the Board of Elections staff, we created a website for requesters to select and pay for printed maps. RPA is used for purchase validation, ticket creation and assignment, initiating prints, and notifying the requester that their map is ready for pickup.

Presentation Abstracts

Presentation Title	Abstract
Social Explorer: A New Source for Census Data	North Carolina citizens now have access to a new online tool for mapping and downloading Census data. Social Explorer has been licensed by NCLive for access by anyone with a public or school library account. For downloading data, it offers a very easy interface, complete historic data back to the first Census in 1790 at all geographic levels, multiple tabular formats, and shapefiles. There are many other tools and datasets offered as well that are worth becoming familiar with.
Leveraging AI and Big Geo-Data for 3D Flood Depth Simulation to Safeguard Built Assets	In recent years, the increasing frequency and intensity of flood events have necessitated advanced techniques to safeguard built assets and mitigate potential damage in settlement areas. The advancements in artificial intelligence (AI) and geospatial technology have significantly improved the rapid assessment of flood impacts, enabling accurate estimation of flood extents and flood water depths. This study demonstrates the application of AI techniques and Big-Geo data to advance 3D flood depth simulation capabilities. By harnessing deep learning algorithms and comprehensive geographical datasets, our approach enables detailed modeling and visualization of flood extents and depths at high spatial resolutions. A case study of Hurricane Matthew in North Carolina, demonstrates the effectiveness of our methodology in supporting proactive flood risk management and infrastructure planning. This study highlights the potential of AI-driven simulation tools in fortifying built assets and enhancing community resilience amidst growing climate-related challenges.
Enhance Data Editing Workflows and Integrity with Arcade	Are you leveraging Arcade and Attribute Rules to simplify editing and data management? In this session, we will introduce how to use Arcade within Attribute Rules to calculate and control values during editing, populate related tables, and perform validation checks. We will cover tips such as accessing configurable checks and ensuring the rules are running efficiently. We will provide a brief introduction to the Arcade scripting language.
Coastal Flooding in the Digital Era: When Too Many Websites and Volumes of Disparate Data Creates Confusion	If you live along the NC coast, or within the coastal plain, flooding is a real and present danger. GIS has addressed flooding issues for many decades through the use of hydrologic models, decision support tools, and more recently, with many new types of high spatial resolution remotely sensed data. However, with this enormous and constantly evolving data we have lost focus on the decision support side of the problem which means users are left wondering how to manage the many data sources, website tools, and inability to collectively compare approaches to assessing flood risk. The purpose for this presentation is to outline some of the most popular websites, data sources, and provide guidance on next steps for the flood manager, policy maker, and residents of places at risk.
Critical Incident Mapping & Emergency Management for Schools	State governments are increasingly passing legislation requiring schools to provide critical incident mapping (CIM) to aid first responders and computer-aided dispatch professionals. In some cases, the state legislation applies only to K-12 school districts and others include higher education institutions. Regardless, GIS technology is being underutilized to support school risk and emergency managers with these tools. This presentation will show how Langan is working with schools to provide campus, facility, and indoor GIS mapping capabilities in support of CIM as well as related planning, mitigation, and response tools.
Using AI to Facilitate the ArcGIS Pro Migration	We will be talking about multiple conversion processes that local municipalities have struggled with while transitioning from ArcMap to ArcGIS Pro and how we can use AI to make these transitions easier. Some of the processes we plan to talk about are geometric network conversions to trace and utility networks, converting attribute assistant functionality to new attribute rules, and the transition from python 2 to python 3. The goal will be to provide ideas and concepts that could help others while also inspiring groups to use AI to solve other GIS infrastructure problems or improve existing GIS capabilities by expanding on the examples we provide.
Building Resilient Communities with EDA Funding and GIS Tools	The Centralina Regional Council has worked for nearly five years to enhance the Centralina Region's resiliency using funding sources from the EDA Disaster Coordinator Grant to develop and provide tools such as technical assistance and GIS platforms. This presentation will provide an overview of the project history and regional partnerships, technical assistance, and outcomes to encourage innovative funding uses.

Presentation Abstracts

Presentation Title	Abstract
Wetland Mapping Using Multi-Spectral Satellite Imagery and Deep Convolutional Neural Networks: A Case Study in Wilmington, North Carolina.	Accurate, current wetland maps are necessary for landscape-scale wetland conservation. The most practical methods for producing these maps are those that are automated, applicable at large spatial scales, repeatable over time, and spatially generalizable. However, because wetlands vary so much in landscape and time-periods, it is difficult to map wetlands using predictive models. At the moment, the majority of methods are constrained by geographic specificity, commercial data, and coarse resolution. In this instance, our goal is to build a deep learning model and assess its capacity to map wetlands at the landscape in Wilmington, North Carolina. Using the following remotely sensed variables, we aim to train a U-Net architecture with the following remotely sensed covariates: UAV imagery, multispectral data from the National Agriculture Imagery Program Sentinel-2 imagery, and LiDAR-derived datasets, to map wetlands at 5-meter spatial resolution. The study's findings will show how free data and effective deep-learning algorithms may be used to map wetlands at a high resolution of five meters without the need for human feature engineering. Because wetlands are dynamic ecosystems that offer significant ecosystem services, high-resolution mapping can revolutionize the way that decisions about development and restoration are made.
Using Machine learning workflows to process Big (Geospatial) Data	With over 64 zettabytes of data, of which an estimated 80% is of spatial nature, we are met with the challenge of processing and analyzing Big Geospatial Data. Improvements in computer hardware and open-source programming packages has allowed for an AI revolution that is impacting geospatial frameworks and procedures. These factors in conjunction with integrated machine learning tools in ESRI offer the possibility for wide ranged implementations of new solutions to complex problems. This presentation will highlight two examples of how AI can be utilized in geospatial workflows to improve efficiency: automation of damage assessments imagery, and the automation of hydrographic breakline extraction.
Assessing Urban Flood Vulnerability Using Google Street View Imagery: A Case Study of City of Fayetteville, North Carolina	Climate change has the potential to heighten the frequency, intensity, and variability of flooding, particularly in densely inhabited urban zones. As urbanization expands and more people live in cities, there is an urgent need to assess their vulnerability to disasters like floods. In this research we utilized Google Street View imagery to assess flood vulnerability along the Murchison Road in Fayetteville, North Carolina.
GIS Community Engagement Through Social Media	Social media is a huge part of today's culture. Most GIS Departments are too busy to think about using social media, but there are definite benefits to using one to increase community engagement. People are on social media - so how can we use it to share about GIS and what your agency is doing? I'll explore our @MeckGIS X account success, what works and doesn't, and discuss which platform might be best for GIS posts.
Experience Builder: An Overview	ArcGIS Experience Builder is built on the latest web technologies. As more capabilities are added to Experience Builder, it's time to consider modernizing your ArcGIS Web AppBuilder apps. In this session, you will learn how to improve your app with the most modern technology Experience Builder offers while keeping a consistent user interface and workflow to minimize the impact on your existing audience. We will talk about Experience Builder templates, building complete experiences, mobile optimization, and style selections.
Pull and Post: Streamlining the Levy Process	Every year the Delinquent Tax office has the duty to post levies on delinquent properties. How can we better manage and maintain this process? Using enterprise and survey 123 and a few webapps. Not only can you help streamline the process but export and save reports and help field workers easily get to each property.
ArcGIS Community: a Platform to Foster Community Engagement and Serve Residents Through GIS	The City of Charlotte has leveraged the ArcGIS Community to actively engage with residents in the community. The GIS Team in partnership with Housing and Neighborhood and Housing Services, Planning, Development, and Design, and General Services Departments has created a robust Community Initiative to serve our residents. This platform is a place where users can interact with programs as a signed in user or an anonymous user to engage with or become informed about community engagement programs. Additionally, this platform allows residents to learn about development within the City of Charlotte which reduce the need to contact city staff. In this presentation I will demonstrate our platform, and I will discuss lessons learned and success stories.

Presentation Abstracts

Presentation Title	Abstract
Unseen Patterns: How Employing Storymaps and GIS Analysis Has Revealed an Untold Narrative of Overdoses in Forsyth County	The opioid crisis has garnered national attention with the number of overdose, fatalities, and other negative impacts increasing rapidly in the years following the COVID pandemic. While no location has been untouched by this epidemic, recent data has suggested that Forsyth County may be disproportionately affected by opioid use and related deaths. Validating this concern, the North Carolina Department of Health and Human Services revealed that Forsyth County's overdose death rate was 47.6 per 100,000 residents, which surpassed the state's rate of 38.5 per 100,000 residents (2022). Following an initial assessment, County staff identified an immediate need to open community dialogue as well as improve the accessibility of opioid data, information, and resources to both citizens and staff. As a product of these discussions, the first iteration of "Unseen Patterns" was made publicly available as an online ESRI Storymap that highlighted overdose data collected by Forsyth County first responders through maps, dashboards, and textual analyses with the primary goal of educating citizens regarding the causes of overdoses as well as how to recognize and avoid them. With links throughout, "Unseen Patterns" prioritized accessibility to various support services and educational materials related to overdose, proper medication storage/usage, online and in-person crisis support, and an interactive map displaying where free naloxone (Narcan) is available. This proposed session would not simply present "Unseen Patterns" to the NCAUG user group, but it would also open a discussion on next steps including how to introduce spatial analysis to social variables as a method for decision making.
Indoor Data Collection: Methods and Considerations	Increasingly we are seeing the need to collect and use 3D data both outdoors and indoors. As we start taking GIS indoors, how can you collect or create that data? What do you need to consider as you create this data? This presentation will help you understand different ways you can create indoor GIS data and different considerations you need to ensure you account for as you begin building your datasets.
The Why and How of Moving to UN: The Municipal Approach	Many organizations are asking themselves how or if they should be moving towards the Utility Network. Avineon will highlight a few of the more prominent factors for municipalities and others to be considering the Utility Network, as well as share tactics and methodology that has been working in recent projects.
Disparities in the Spatial Clustering of Perinatal Mental Health Conditions Before and During the COVID-19 Pandemic	Our study investigates the worsening of maternal mental health conditions during the COVID-19 pandemic, a leading cause of preventable death during the perinatal and postpartum periods. We analyzed the distribution of these conditions among pregnant women in North Carolina, USA, before (2016-2019) and during (2020-2021) the pandemic using SaTScan's space-time Poisson model. We conducted univariate and multivariate cluster analyses of emergency department visits for perinatal mood and anxiety disorders (PMAD), severe mental illness (SMI), maternal mental disorders of pregnancy (MDP), suicidal thoughts, and suicide attempts, adjusting for age, race, and insurance type. Significant clustering for PMAD, SMI, and MDP persisted across both periods, while clustering for suicide outcomes decreased during the pandemic. Local relative risk (RR) for all conditions increased in specific locations. The number of zip code tabulation areas (ZCTAs) in clusters decreased, with an increased proportion of urban locations for non-suicide
Flood Impact Analysis on Masonboro Island	This report examines coastal erosion and flooding on Masonboro Island, an uninhabited barrier island in North Carolina, during Hurricanes Florence, Dorian, and Isaias. As the island provides critical wildlife habitat and protection from storm surges, the study assesses shoreline alterations induced by these storms using data from NOAA satellite imagery. The research employs remote sensing techniques with ENVI 5.6 software for statistical analysis and eCognition software for vegetation classification to offer insights into the severity of shoreline change and vegetation loss.

Presentation Abstracts

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Texas Water Development Board HWM Project	High water marks (HWM/s) are an immensely valuable set of data that is created event based and is used to validate models showing flooding for the event, used to create DEMS for said event, and is then sometimes only used for that event. The USGS has mechanisms to collect and store data if there is a declared event. Data is often collected at a much smaller scale for specific rivers and streams or is collected for State emergences that are not pushed to the national level. TWDB has put together a strategy for collecting, analyzing, storing and sharing HWM information past the time of an event and coordinating the collection with interested partners. Through a process of interviews with state, local, federal, academic, and nonprofit partners TWDB has put together a strategy for maintaining and storing HWM data at a state level leveraging work from many entities and providing a win/win option for data collectors, data users, and data viewers. Through data coordination the TWDB has reviewed existing HWM data currently available to coordinate with others that have a vested interest in the process and put together options for how and where data could be shared with all interested parties. That information has the potential to be used for a multitude of other projects such as vetting existing models, building out potential areas of concern, and comparing to upcoming buildouts to ensure water will not be a concern in the future. TWDB would like to share what they have learned in the interviews from partners and data review. NC was interviewed as apart of this process and has processes in place to assist with HWM collection.
Using GIS for the City of Raleigh Flood Risk Prioritization Tool	Riverine and urban flash flooding are hazards of concern for the City of Raleigh. Rapid development in and around the City contributes to increased runoff that can exacerbate the flooding. To better assess flood risk in the City of Raleigh, support flood mitigation efforts and preparedness for flood events, the City of Raleigh has developed a Flood Risk Prioritization System. The system quantifies the relative flood risk of buildings and parcels within the City limits based on their spatial and attribute relationship with multi-return floodplains and other risk variables and datasets. This GIS-based tool has been created to automatically assign an overall flood risk value (or score) for buildings and parcels. This presentation includes a background of the project, provides an overview of the required data and scoring as well as a general overview of the GIS-based tools used within the tool. The City has invested significant funding to mitigate flooding to roads, businesses, and residential properties, with plans to continue these mitigation efforts. In order to continue mitigation efforts, the City intends to utilize Stormwater Utility fees generated and State and Federal grant funding available through programs such as the Federal Emergency Management Agency's Hazard Mitigation Grant Program (HMGP), Building Resilient Infrastructure and Communities (BRIC) program, and the Flood Mitigation Assistance (FMA) program.
Exploring the Use of Modern AI Tools for Utility Easement Mapping in GIS	Mapping easements in GIS from metes and bounds legal descriptions can be extremely time consuming due to a number of challenges ranging from source document quality/availability and the effort required to transcribe the descriptions into the format required by GIS. Fortunately, modern AI tools are providing ways to significantly streamline this process. This presentation will demonstrate the easement mapping process in ArcGIS Pro using traditional and modern tools.
Utilizing GeoAI for Flood Mitigation Planning	Innovate enhanced our geospatial products by incorporating technologies such as GeoAI and 3D modeling. We used geoprocessing methodologies and web-based applications to create planning decision support frameworks from a neighborhood level to national scale. We employed server-side geoprocessing tools to further generate analytical derivatives that we then use within cartographic products, dynamic web-based and mobile applications. Innovate used Esri's ArcHydro and ArcGIS Pro's AI tools to process overland stormwater flow data from DEMs and DSMs to model how water travels, accumulates, and gains velocity over topography. The by-product of this analysis provides a municipality with the ability to identify how changing its infrastructure from impervious to more green spaces can impact the potential for flooding.
Integrating UAS Technology into GIS: Hardware, Software, Training, and FAA Compliance	As GIS professionals increasingly turn to unmanned aerial systems (UAS) to enhance data collection and spatial analysis, understanding the technological integration, regulatory landscape, and necessary training becomes crucial. This presentation by Nine Ten Drones will delve into the essential aspects of UAS technology—highlighting the latest hardware advancements, innovative software integrations, comprehensive training programs, and strict adherence to FAA compliance. As the GIS field continues to evolve, integrating UAS technology offers unprecedented opportunities for spatial data enhancement. This presentation will equip attendees with the knowledge and tools necessary to effectively integrate drone technology into their GIS operations, fostering innovation and compliance.

Presentation Abstracts

Presentation Title	Abstract
Leveraging Advanced Analytics and AI in Telecom Infrastructure Planning, Strategy, and Design	This presentation will quickly go over some of the technical aspects and the key components of an AI model, such as: Client, Server, Training a Model, then leaning into more of the practical use cases and examples of how we at Olsson use AI to simplify our workflow. More specifically how we detect utility poles, houses, other utilities, and how we automate the design process. I am also planning a live demonstration of our automation tools to showcase a full fiber design build.
Leveraging ESRI Portals for Enhanced Data Integration, Geospatial Collaboration, and Problem-Solving Potential	In this presentation, we will explore the transformative potential of ESRI Portals in fostering collaboration, decision-making, and problem-solving in a geospatial organization. ESRI Portals, a component of the ArcGIS Enterprise suite, offers a centralized platform for managing, sharing, and accessing GIS assets within an organization. Despite its powerful capabilities, many organizations are yet to fully leverage this tool for their geospatial needs. We will share our journey of implementing ESRI Portals, transforming our abundant but underutilized data into a dynamic information hub. This transformation has significantly enhanced awareness, communication, productivity, and collaboration across all levels of our organization. Now, with just one ESRI portal link, all project data is on display and accessible to everyone in our organization. We have transitioned from relying on cumbersome excel spreadsheets and endless email chains for project information. Now, a single link provides comprehensive access to all our project data, making it readily available to everyone in our organization. By the end of this presentation, attendees will gain a deeper interest of how they can potentially harness the power of ESRI Portals to improve collaboration, streamline workflows, and make more informed decisions in their geospatial organization.
Assessing the Influence of Remote Sensing Data Spatial Resolution on Small Inland Water Quality Prediction: A Comparative Analysis of Machine Learning Models	The application of high spatial resolution remote sensing technology enables the detailed capture of information from water bodies for effective water quality assessment. In this study, we developed three scenarios to select important features, aiming to optimize the retrieval of water quality parameters. Utilizing five machine learning models, namely LR, LASSO, XGBoost, RF, and SVR, we constructed inversion models. The results revealed that the XGBoost model exhibited the highest prediction capacity for chlorophyll-a (chl-a) concentration retrieval using Sentinel-2 data (R2 = 0.64, RMSE = 8.58 μg/l, bias = -0.09). On the other hand, the Support Vector Regression (SVR) model demonstrated better predictive performance for chl-a concentration retrieval using PlanetScope data (R2 = 0.71, RMSE = 8.15 μg/l, bias = 0.46). Consequently, spatiotemporal maps of chl-a concentration across the reservoir were generated to visualize the distribution. This study contributes valuable insights into the impact of spatial resolution differences on small inland water quality assessment and offers a comparative analysis of multiple inversion methods. The outcomes of our research provide guidance for enhancing small inland water quality monitoring practices, emphasizing the importance of selecting optimal inversion models based on satellite remote sensing data sources. The findings contribute to advancing our understanding of the complexities associated with remote sensing technologies and their applications in water quality assessments, ultimately facilitating improved monitoring and management strategies for small inland water bodies.
NC Statewide Lidar and AI (Leveraging AI/ML to classify current Lidar datasets and future collects).	North Carolina is blessed to have one of the nation's best statewide lidar programs. With the recent explosion of Artificial Intelligence/Machine Learning processes and algorithms our current datasets and future datasets can be exploited to take advantage of these new tools. Using machine learning algorithms for lidar classification can provide a fortitude of additional detailed layers and derivative products that state agencies and local governments can use for planning and inventory purposes. This presentation will delve into the current software using AI for lidar classification and look at the open-source AI classification repositories.

Speaker Bios

Presenters listed Alphabetically by First Name
Co-Presenters are listed with Primary Presenters and may be out of alphabetical order

Speaker Name	Organization	Biography
Andrew Clark	Colliers Engineering & Design	Mr. Clark has extensive GIS/GPS project management, data modeling and mapping experience in the Energy and Government sector. Mr. Clark provides workflow management, data analysis, and application development support to the Mid-Atlantic region of the U.S. Working with agency level datasets, Mr. Clark understands the workflow and implementation processes of deploying large scale GIS program deployment. Experience includes energy, engineering, and telecommunications firms.
Ben Shelton	NC CGIA	Ben is a GIS Project Manager for the NC Center for Geographic Information and Analysis (CGIA). Ben has over 18 years of experience in the GIS industry. Currently, he is the Project Manager for the NC 911 Board Statewide Orthoimagery Program and collaborates on the NC broadband mapping efforts with the NC DIT Division of Broadband & Digital Equity.
Caleb Mackey	Bolton & Menk, Inc.	Caleb is a GIS programmer who began his Bolton & Menk career working with geographic information systems in 2013. He enjoys working behind the scenes, focusing on ArcGIS customization, database development, and application development. He also helps administer the SQL Server and ArcGIS Server. Caleb specializes in identifying workflows and processes in the ArcGIS Platform that can be automated and developing custom tools and scripts to perform those tasks. Caleb enjoys the opportunity to work on a variety of projects with his GIS team and uses the skills he's learned to increase internal productivity and overall efficiency.
Darrin Smith	NC CGIA	Darrin Smith is the GIS Project Manager for the AddressNC Program administered by the Center for Geographic Information and Analysis (CGIA) within the N.C. Department of Information Technology. He has over 30 years of experience that includes 14 years as an information technology project manager in the private and public sector including eight years as the Manager for the NC Orthoimagery Program Manager.
Garrett Shields	WSP	Mr. Shields is an Assistant Vice President at WSP USA serving as the NC Geospatial Technologies Manager. He manages a team of GIS Analysts, Application Programmers and Database administrators and has over 16 years' experience with floodplain mapping, database development, natural hazard risk assessment and automated tool development. Garrett is also a Certified GIS Professional and Certified Floodplain Manager.
Gazali Agboola	NC A&T State University	Gazali Agboola is a PhD student in the applied science and technology program at North Carolina A&T State University, where he also serves as a research assistant at the Remote Sensing and Geospatial Analysis Lab. He holds a master's degree in mathematics, and his research interests lie in leveraging machine learning and statistical analysis of geospatial data for disaster management and data-driven decision-making. Currently, he is working with Dr. Leila Hashemi Beni on a research project titled "Howard Gap Landslide: Spatiotemporal Mapping, Monitoring, and Change Detection" supported by the North Carolina Department of Transportation.
Hank Pelfrey	Cabarrus County	Hank Pelfrey is the GIS Analyst for Cabarrus County. He has six years of experience in the public natural resource management and local government GIS fields with a strong focus on automation, data management, and statistical analysis.
Jeff Essic	NC State University	Jeff Essic has been a GIS and data librarian at NC State for over 20 years. Prior to that, he worked with GIS and IT at Triangle J Council of Governments.

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Jeffrey Blay	NC A&T State University	Jeffrey Blay, is a first year Ph.D. student at the department of built environment, North Carolina A&T State University. His study focus seeks to identify efficient techniques for estimating flood water depth in settlement areas in near real time. He is a member of the Remote Sensing and GIS lab, and an advisee of Dr. Leila Hashemi-Beni. He is chartering a career as a Geospatial Data Scientist and a Consultant after school. He is originally from Ghana and loves to play soccer and be close to nature.
Jessy Beasley	ESRI	Jessy Beasley works at Esri as a Solution Engineer for state and local governments and is based out of Charlotte, NC. She has over eight years of experience in the world of GIS and has a particular interest in automating and integrating workflows. She enjoys simplifying and modernizing processes and connecting folks to the world of GIS and geography.
Joanne Halls	UNCW	Joanne Halls is a professor of Geography who teaches GIS for undergraduate and graduate students. Her research focus is modeling coastal environments, integrating social and environmental characteristics, and investigating changes through time. She has been teaching at UNCW since 1999, has mentored 13 honors, 32 masters, 5 PhD, and 84 certificate students. In 2024 she received UNCW's Graduate Mentor Award.
John Young	Langan Engineering & Environmental Services	John Young is a geospatial technology professional with over 25 years' experience applying Esri GIS technologies and related asset and facility management technologies to solve business challenges in property, facility, and utility asset management.
Justin Castrati	LJB Engineering	Justin, a seasoned GIS Project Manager at LJB Engineering, brings over 11 years of extensive experience in the field. Graduating from NC State University with a Masters of Geospatial Information Science and Technology, he has adeptly merged academic knowledge with practical expertise. With a career spanning public and private sectors, Justin has honed his skills in delivering tailored GIS solutions for municipalities, counties, and governmental organizations throughout North Carolina. His commitment to optimizing spatial technologies to meet diverse needs underscores his pivotal role in advancing geographical information systems within both local and regional contexts.
Jaimee Pyron	IEM	Jaimee Pyron is a GIS Specialist who has been with IEM for 2 years. Her work primarily includes automation, mapping, and reporting of emergency management related data through a geospatial lens.
Chritina Danis	IEM	Christina Danis, Director of the Centralina Community Economic Development Department, oversees work related to regional and community economic growth, focusing on urban-rural prosperity, economic resilience, and equitable housing and communities.
Jessica Nester	IEM	Jessica Nester is a geospatial and data analysis profession with a focus on public safety and emergency management. Her experience includes data collection and analysis, geospatial modeling, mobile field application development, as well as teaching and leading others. She is detailed oriented and highly proficient in data and geospatial analysis.

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Speaker Name	Organization	Biography
Matilda Anokye	NC A&T State University	Matilda is a geospatial analyst currently pursuing a PhD in Applied Science and Technology with a specialization in Data Science at North Carolina A&T State University, Greensboro. She is deeply enthusiastic about leveraging geospatial tools to effectively manage climate-induced urban flood risk assessments and natural resources. Her particular areas of interest include spatial data analytics, urban flood risk assessments, estimation of ecosystem services and land use and land cover analysis
Colin Flynn	Dewberry	Colin is an accomplished geospatial professional with a strong academic foundation. He has a Bachelor's degree in Geography from George Mason University where he furthered his education with a Master's degree in Geoinformatics and Geospatial Intelligence, accompanied by graduate certificates in GIS and Geospatial Intelligence. Colin has made scholarly contributions to the field with 3 publications. He is a proficient in programming in Python and R and geospatial software, including the ESRI suite, QGIS, LAStools, and WhiteboxTools.
Morgan Jackson	Fayetteville State University	Morgan is a senior Geospatial Science major at Fayetteville State University (BRONCO PRIDE!) At FSU, she is an undergraduate research assistant for her school's contribution to the NASA-funded project DEAP Institute: Harnessing Data Science for Flood Monitoring and Management. Her area of focus in this project will be assessing urban flood vulnerability, with the current focus being Fayetteville, NC. Her other academic achievements include being a Chancellor's Fellow and McNair Scholar at FSU.
Nancy Ross	Mecklenburg County	Nancy has been a GIS professional for 37 years, all in local government. She's a Senior GIS Analyst with Mecklenburg County working in Mapping & Project Services. She's also a former NCAUG board member. When not working, she enjoys family time, camping, exercising, reading or taking care of her animals.
Peter Erlenbach	Esri	Peter Erlenbach is a State and Local Government Solution Engineer at Esri. Peter holds a Master's in Geographic Information Science from North Carolina State University. Prior to his graduate career, Peter graduated from Virginia Tech with a focus in Geography and dual minors in GIS and Geology. Peter has roughly a decade of professional experience where he primarily focuses on helping State and Local Governments address key business challenges with GIS software. Within the realm of GIS, Peter enjoys python scripting, web & mobile GIS, and field mobility workflows. When he is not at his desk, Peter enjoys jogging, trying to keep golf balls on the fairway, and exploring the outdoors.
Reggie Sanders	Florence County	Reggie has been with Florence County since 2003 starting off in the Tax Assessor office as a cadastral mapper once GIS mapping was implemented was promoted to GIS technician. Moved into the GIS Department as a GIS Analyst in 2015 then later promoted to Senior Analyst, GIS Data Administrator and finally director after multiple years in the department. Full time nerd and UGA fan!
Robert Cerrato	City of Charlotte	Robert Cerrato is the Data Program Manager at the City of Charlotte. He has been with the city for 11 years working in data, and business/location intelligence in the Innovation and Technology department for the last five years. He has the pleasure of leading the GIS Administration Team as well as the Business Intelligence Team at the City of Charlotte. His team offers data solutions and both spatial and nonspatial solutions to the employees and the residents of the City of Charlotte. He is a Geospatial Engineer in the North Carolina National Guard and have 22 years of total military service. He lives and raises his family in Charlotte, North Carolina. He is passionate about public service, the community, and how his work positively impacts the residents of Charlotte and beyond.

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Shaylee Bowen	MapForsyth/Forsyth County	Shaylee Bowen is the Geographic Information Officer for MapForsyth in Forsyth County. Prior to her leadership role in MapForsyth, she worked as both a GIS Administrator and Geographical Services Manager for the City of Winston-Salem. She received her Bachelors degree in Geographic Information Sciences and a Masters in Applied Geography from the University of North Carolina at Greensboro. Mrs. Bowen currently serves as a board member for the North Carolina Arc User Group. She is passionate about sharing the capability of GIS and views GIS as one of the most powerful tools to analyze and address our society's problems.
Karen Kesler	City of Winston-Salem, NC	Karen Kesler is entering her third year as the GIS Principal Planner for the City of Winston-Salem's Planning and Development Services Department. She holds a PhD in Geography and GIS from UNC-Greensboro, a Master's and Bachelor's in Applied Geography/GIS from UNC-Greensboro, and a Bachelor's in Business Management and Finance from NC State University. Her portfolio consists of multiple academic and commercial publications including major research regarding site suitability modeling, social data analysis, remote sensing, data forecasting models, and cartographic analysis and visualization. She was previously employed with Guilford County Schools as a member of a team that received the 2021 Harvard Strategic Data Excellence Award for their work in providing resources to students and families at the onset of the COVID pandemic and has served as a GIS specialist on multiple grant projects including broadband accessibility in Guilford County and youth gang violence in Randolph County. Her work modeling North American monarch butterfly migrations was noted by the US Fisheries and Wildlife Service which administers resources and protection for species listed under the Endangered Species Act.
Tripp Corbin	SAM	Tripp Corbin is a Business Development Manager for GIS and Aerial services at SAM. With over 25 years of experience in the geospatial field and 4 authored books to his name, he is considered a industry leader and subject matter expert on many geospatial platforms and technologies. Tripp's knowledge and expertise is backed by mulitple certifications including GISP, MCP, CTT+ and several Esri technical certifications. Tripp is also a URISA Past President, Vice President of the Georgia Geospatial Association as well as a member of many GIS user groups across the United States.
Wendy Peloquin	Avineon	Wendy Peloquin, GISP is a Business Development Manager at Avineon with over 15 years of industry experience. She earned a B.S. in Geography and a Certificate in GIS from UGA and a Masters degree in GIS Administration from the UWF. Wendy is an active member of URISA International and is currently serving as a Chair and Instructor URISA's GIS Leadership Academy (GLA).
Sarah Ulrich	UNC Chapel Hill	Sarah graduated with her M.A. in Geography from App State in 2024, and her B.A. in Geography from UNC-Chapel Hill in 2022. In the fall, she will return to UNC to start her Ph.D. in Geography. She plans to pursue a career as a researcher and professor of geography focusing on quantitative spatial methods with the use of GIS. Her research is focused on climate and health, with a recent emphasis on maternal mental health in North Carolina.
Ryan Carter	UNC Charlotte	Ryan Carter is a rising Senior at UNC Charlotte majoring in Geography with a minor in Data Science. Originally from Wilmington, North Carolina, he has been an active member of NCAUG for the past year. Ryan has interned at 511 Architects in Greenville, South Carolina, Mark Loudermilk Architecture in Wilmington, NC, and is currently an Asset Management and Strategic Planning Intern at the City of Charlotte's Storm Water Services. His goal is to utilize GIS to research the effects of the worsening climate crisis, particularly sea level rise and flooding.

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Hope Morgan	AECOM	Hope has been working in the geospatial field for 27 years with a focus on remote sensing data usage and floodplain mapping. Her current role is the Geospatial technical lead for AECOM Flood Risk Solutions team. Hope has a North Carolina focus and passion to help the state as a GIS leader in the nation as the current Chair for the North Carolina Geographic Information Coordinating Council (GICC) and the current stakeholder engagement lead with NCDEQ Flood Resiliency Blueprint . As a NCPLS, GISP, and CFM her projects have included FFRMS terrain and delivery lead for Zone 2, Survey lead, Terrain lead, and building footprint innovations with Compass Projects for FEMA.
Lucy Brady	NCAUG / NCDIT	Lucy is the current NCAUG President. She's also the GIS Products & Services Manager for the North Carlina Department of Information Technology - Transportation.
Ismael Chivate	ESRI	Ismael Chivite works as a senior product manager at Esri. With over 20 years of GIS experience, Chivite is passionate about building ArcGIS products that help organizations use geography to improve the way they work. Ismael joined Esri in 2002. A geographer by training, he loves helping people leverage GIS to improve the way they work. As a Senior Product Manager, Ismael is always looking for ideas to create new and improve existing Esri products. Outside working hours, he enjoys Legos, rock climbing, Romanesque architecture and Jamón Ibérico. On occasion, he enjoys jamón during working hours too.
David Key	ESP	David Key has dedicated more than 33 years to updating and improving the modeling, mapping, and analysis of hazards to assist communities in the identification and mitigation of flood risk. Throughout his career he has led hundreds of water resources and GIS projects in fifteen states, covering all types of flooding scenarios. David is a licensed professional engineer in 13 states and a certified floodplain manager. He graduated with a B.S. in Civil Engineering from NC A&T State University and a B.A. in Math from UNC Greensboro. He is married, has three grown children and two boykin spaniels.
Nathan Slaughter	ESP	Nathan Slaughter has more than 25 years of experience in hazard mitigation planning, disaster recovery planning, business development, and project management. He specializes in planning, risk assessment, and risk communication, and has assisted in the development of hazard mitigation plans and disaster recovery plans for more than 1,000 municipalities, county, state, and tribal government clients across the country. He currently serves as the Hazard Mitigation and Resilience Department Manager for ESP and is located just outside of Raleigh, North Carolina.
Jim Sahlie	SolisGIS	Jim Sahlie (pronounced SAY-LEE) is principal of SolisGIS, a GIS service company based in Wilmington, NC. His education and early professional background is in Civil Engineering but has been practicing GIS for over 30 years. Most of his career has been spent as a GIS Manager in local government but he has been providing Esri training and GIS consulting services for over 20 years.
Michael Blair	Innovate	Innovate Senior Geospatial Data & Digital Strategist. Michael has over 30 years managing and supporting IT and geospatial application development projects to implement complex and advanced geospatial tools and analyses. Michael provides subject matter expertise in application development, data visualization, Enterprise system architecture design and deployment, and training material development. Michael holds certifications as an AWS Solutions Architect as well as a Certified Scrum Master, where he has led application modernization projects and migrations to the cloud.

Speaker Bios

Presenters listed Alphabetically by First Name
Co-Presenters are listed with Primary Presenters and may be out of alphabetical order

Speaker Name	Organization	Biography
Paul Rossi	Nine Ten Drones	Paul Rossi has over 16 years of experience within the Aviation and Unmanned Aerial Systems Industries, a Bachelor's of Science in Aeronautics from Embry-Riddle Aeronautical University where he also acquired his FAA Private Pilot Certificate with Instrument Rating, is a United States Army Service Disabled Veteran who served as an Avionics Technician deploying once overseas to Afghanistan in support of Operation Enduring Freedom and most recently serves as President of Nine Ten Drones. In 2018 Paul co-founded Nine Ten Drones which quickly grew it into the most recognized UAS training and sales centers operating out of Central, North Carolina. Today Nine Ten Drones is helping businesses and organizations across the North Carolina leverage the advanced capabilities of Unmanned Aerial Systems. Paul currently attends ERAU Worldwide studying for his Masters of Space Operations, co-hosts the Weekly Wings podcast, is Board Member on the NC High School Drone Advisory Council, Industry Expert on Clancy & Theys UAS Advisory Council and Director of the NC Educator UAS Cohort.
Dustin Lillie	Olsson	My name is Dustin Lillie. Born and raised in Iowa and have been in Telecom for about 6 years currently working as a Senior Technician and GIS Automation Team Lead at Olsson. I have a heavy focus on fiber to the home design and automation utilizing ArcGIS Pro with a specialization in Python coding. I enjoy interacting with code to automate mundane tasks with the help of AI.
Timothy Vega	GPI Geospatial	Timothy Vega, a seasoned GIS Specialist at GPI Geospatial, brings to the table seven years of rich experience in spatial analysis, cartographic design, imagery analysis, and remote sensing. His journey into the realm of GIS began with his military intelligence training, serving as a Geospatial Intelligence Analyst in the US Army for four years. His military training paved the way for numerous opportunities, enabling him to secure positions as a Geospatial Analyst at several prestigious agencies. These include the National Geospatial Intelligence Agency (NGA), the Central Intelligence Agency (CIA), and the United States Special Operations Command. With a unique blend of military discipline and technical expertise, Timothy has carved a niche for himself in the geospatial industry.
Eden Wasehun	North Carolina A&T State University	Eden T. Wasehun is a second year PhD. student at North Carolina A&T State University. By training, she is an urban and regional planner, specialized on geo-information science and earth observation. Her research interest focuses on the application of artificial intelligence and machine learning for environmental monitoring and geospatial data-driven analysis. At NCAT, Eden's current research focuses on assessing water quality through multi-resolution remote sensing data and machine learning models.
Michael Baranowski	Dewberry	Mike Baranowski, GISP, CMT-Lidar, is a Geospatial Technology Manager located in Charlotte, NC with over 17 years of experience in the Geospatial/Survey industry. Mike leads the Data Automation Team at Dewberry along with other R&D pursuits.

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