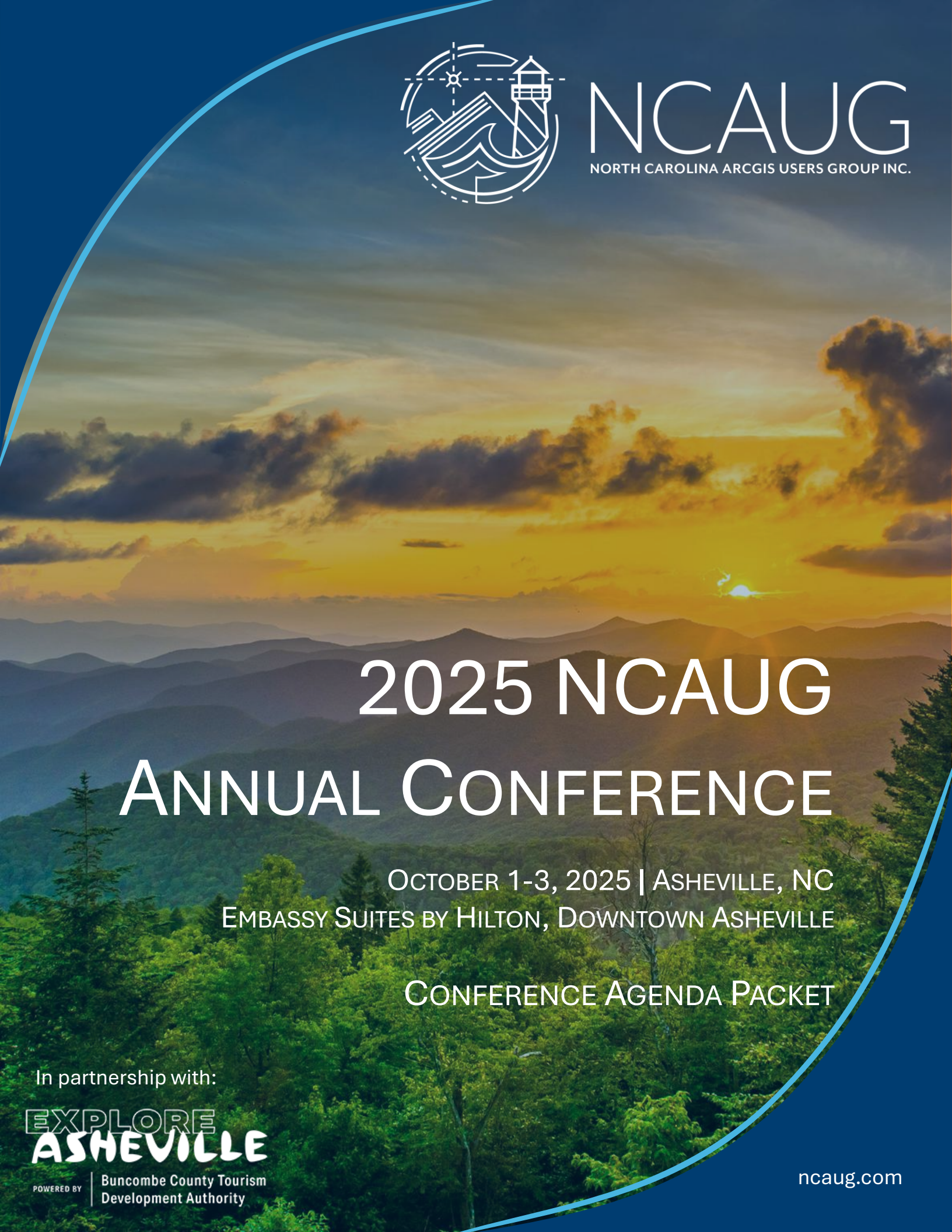


NCAUG

NORTH CAROLINA ARCGIS USERS GROUP INC.

2025 NCAUG Annual Conference

October 1-3, 2025 | Asheville, NC

Embassy Suites by Hilton, Downtown Asheville

Conference Agenda Packet

In partnership with:

EXPLORE ASHEVILLE

POWERED BY Buncombe County Tourism Development Authority

ncaug.com

NCAUG
NORTH CAROLINA ARCGIS USERS GROUP INC.

Welcome to the 2025 NCAUG Annual Conference

From the President's Desk...

Welcome to the 2025 Annual North Carolina ArcGIS Users Group (NCAUG) Conference in Asheville, North Carolina. I want to give a special thank you to our host city this year, our hearts and minds have been with you during the tragic events and the recovery from Helene. Our theme this year is **"From Storms to Solutions"** and you North Carolina have become the epidemy of this! From attaining an "A" for GIS data in 2023 from NSGIC to using this GIS to assist in such a disaster and the recovery.

This year's Presidents Award highlights a prime example of this mantra and shows how GIS was used for communication, coordination, and restoring a community. Making sure that through resilience and innovation there are sunny skies ahead. Our Keynote speaker is Sunny Flemming who is a resident of Asheville and Director of Environment, Conservation & Natural Resources Solutions within ESRI. She experienced Helene firsthand and has a fresh insight into how GIS is a key "uniter" in our community.

Throughout 2025 the NCAUG board has diligently meet and planned several symposiums to continue our growth as an organization. Our Board is made up of 15 dedicated professionals that volunteer their time and energy to making sure that our membership is provided with great opportunities. These Board members pay the same annual fees, conference fees, and pay for their hotel here at conference. All that to say that I want to personally thank them for all that they do continually to keep NCAUG going. Additionally, those of you that have stepped up and served on a committee, you have also kept NCAUG thriving. With a membership of 450 of which 50 are students we would not be able to maintain the events that we do. If you are interested in becoming a board or committee member, I would suggest that you find a current one and discuss with them your thoughts and ask questions.

Year after year we are fortunate to have the support of a growing list of sponsors. Some of this years Sponsors are new to us, but most have continuously been a part of our organization. Please be available to stop by and say Hi. This is also a great way to network with the professionals within our geospatial world and see what is the best and most used technology and processes out there today.

This year at the NCAUG conference you can look forward to some of the most intriguing and thought-provoking presentations. We have our First-Time attendee presentation at the start of the conference for all our new attendees, please come and meet us! This is a great way to start the conference out with a familiar face and a new friend! Take a look at our workshops that are offered before the conference. The registration fee for these workshops goes directly to fund our Scholarship's. The instructors have graciously volunteered their time for the workshops and are at the top of their field. The Hands-on Learning Lab is a great way to have some self-paced learning with an ESRI instructor. You won't want to miss out on our after-hours socials as this is a great way to network and our Annual Golf outing which kicks off our conference week! Stay up to date by checking our conference page on the website diligently.

As always, we look forward to meeting up with our friends at the 2025 Annual NCAUG conference and we hope that you do as well! See ya in Asheville!

Sincerely,

Jackie Dillon, GISP

NCAUG President, 2025
Utilities Specialist – Town of Apex, NC

2025 NCAUG Executive Board

President

Jackie Dillon, GISP
Town of Apex, NC

Vice-President

Rick Wallace
NV5 Geospatial

Treasurer

Richard Fogleman, GISP, CFM
AECOM

Secretary

Peter Erlenbach, MGIST
Esri

NCAUG Board Members

Matt Helms
City of Charlotte, NC

Michelle Lopez, GISP, AICP
STV Inc.

Garrett Shields, GISP, CFM
WSP USA

Meredith Stull, GISP
Durham County, NC

Khalil McGruder
Stewart

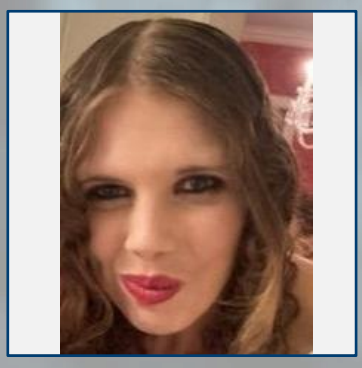
Brian Ross
Brunswick County, NC

Greer Templar
Wilmington Urban Area MPO

Lucy Tundel
Maternal Engineering
i.e. "Super Mom"

Josh Norwood, CGCIO
Pender County, NC

Sangwoo "Marty" Sung, Ph.D.
NCDOT



Shaylee Bowen, GISP
MapForsyth

Conference Highlights

Special Keynote Speaker – Sunny Fleming, Esri

Sunny Fleming is the Director of Environment, Conservation, and Natural Resources Solutions at Esri. With a background in plant ecology and botany, she has applied location intelligence throughout her career; from monitoring rare species in the field to helping state parks manage recreational assets across their systems. Through collaboration with users, partners, and colleagues, she fosters a community of environmental professionals who use GIS to solve some of our world's most pressing challenges. She lives in Asheville, NC with her husband and two dogs, and numerous bicycles.

Esri Hands-On Learning Lab (French Broad Room #3)

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:

- **Wednesday 9:00am – 12:00pm**
- **Thursday 9:00am – 5:00pm**

NCAUG Awards Ceremony

NCAUG continues our annual tradition of awarding excellence in the GIS community. During the conference plenary session, please join the NCAUG Board in recognizing the talented and dedicated GIS professionals making a difference everyday in North Carolina!

More Conference Events!

3rd Annual NCAUG Golf Tournament – Join the fun on the greens and participate in our annual golf outing on Tuesday Sept. 30th from Noon to 5:00pm at the Mimosa Hills Golf Course.

Opening Night Party – Join us at One STOP at the Asheville Music Hall on Wednesday night from 6:00 – 8:00pm 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 Thurs. morning at 8:00am for a special welcome session for new attendees.

Thursday 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!

2025 NCAUG Scholarship Winners

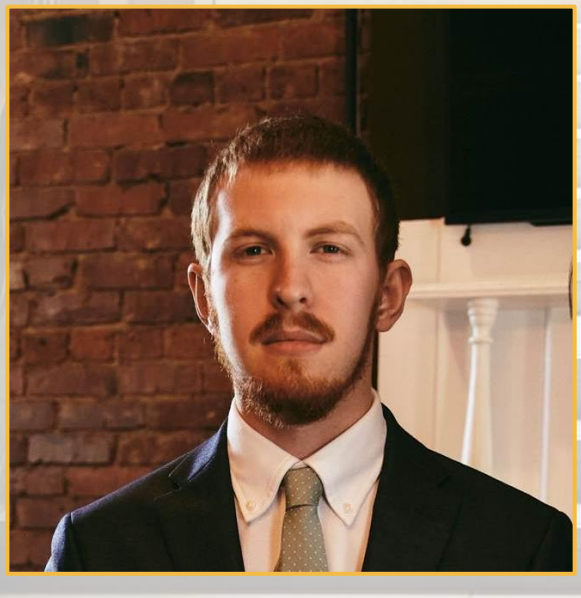
Congratulations to our 2025 NCAUG Scholarship recipients!

Presenting Thursday at 9:30am!

Natasha Kroll – UNC Charlotte (Undergraduate)

Natasha is currently a Senior at UNC-Charlotte, double majoring in Earth and Environmental Science and Data Science with a minor in Statistics. UNC-Charlotte is where she took her first GIS course, and found it was a perfect combination of her passion for environmental science with the technology of data science. She plans to continue her use of GIS while completing her Master's and hopes to apply it to emissions and carbon capture. Her favorite activities aside from research are cooking with friends and hiking.

Natasha Kroll's submission is titled ***"High Resolution Mapping of Human Activity."***



Presenting Thursday at 2:30pm!

Caleb Blackburn – Appalachian State (Graduate)

Caleb is a master's student in the Geography and Planning department at Appalachian State University, where he also earned my bachelor's degree. His research explores how climate impacts human health, with a focus on extreme climate events. He uses Geographic Information Systems to study spatial patterns and identify vulnerable communities. He is especially interested in how mapping and data can support public health and emergency planning. His goal is to work in disaster response or resource allocation, helping agencies and communities prepare for and respond to the growing challenges of climate-related events.

Caleb Blackburn's submission is titled ***"Spatial Disparities in Disaster Recovery: Assessing Flood Risk, Resilience, and Federal Aid Distribution in Western North Carolina After Hurricane Helene."***

Diamond Sponsors

AECOM

AVINEON
Visualize IT. See IT Through.

BOLTON & MENK
Real People. Real Solutions.

Duncan Parnell
Successful Projects Start Here

GEOGRAPHIC TECHNOLOGIESGROUP®
Beyond Location Intelligence

LANGAN

NV5 GEOSPATIAL

SAM™

stv

SURDEX
a Bowman company

Platinum Sponsors

ARORA

BLUE RASTER

Colliers Engineering & Design

Dewberry

EAGLEVIEW

ESP

esri THE SCIENCE OF WHERE

GPI GEOSPATIAL

KCI TECHNOLOGIES

Gold Sponsors

NINE TEN DRONES

RazorTek
SHARPEN YOUR TECHNOLOGY

Education Sponsors

APPALACHIAN STATE UNIVERSITY
GEOGRAPHY AND PLANNING

GIS CERTIFICATION INSTITUTE

**Pre-Conference Workshops require separate registration from main conference.*
$175 – Half Day Workshop $350 - Full Day Workshop

PRE-CONFERENCE WORKSHOPS

North Carolina: Decisions, Data, Standards, and Coordination.

Presented By:

Hope Morgan, PLS, GISP, CFM (AECOM)

Colleen Kiley, GISP, CFM (NC CGIA)

Natalie Walton Corbett (City of Greenville, NC)

Sallie Vaughn, GISP (Person County, NC)

Tuesday September 30th, 8:00am - 12:00pm (Half Day) – French Broad Conference Center Room #1

Workshop Description

We all have a job, and we make decisions based on the needs of that job. We all have data which is created based on the decisions regarding the needs of our job. From GIS tech to surveyor to tax assessor to legislator we are often trying to make round data fit in a square hole. This workshop will take the time to discuss how we gather data, how decisions are made to create that data, how data is shared, how it is all correct, and all wrong, all at the same time. We will discuss how to coordinate data creation, plans for data use in the future, partnering to determine standards and requirements and where we need to think through what our data will mean to others.

This workshop will include an overview of working through Local, state and federal datasets and partners

- Where to find data in NC and throughout the nation
- How to create data standards and the partners in the process and
- Where to find all the people we need to make all this work happen.

Speaker Bios

Hope Morgan has been working in the remote sensing and GIS field for 28 years. As the Technical Excellence Lead for Compass federal contracting withing AECOM as well as the Geospatial Delivery Service Manager for the eastern region her responsibilities include Survey, Floodplain mapping production, Terrain creation, GIS and CNMS. NC work includes the Flood Resiliency Blueprint with NCDEQ, Hazard mitigation work and response to Hurricane Helene for NCEM. She has worked with several organizations including NCAUG, the NC Chapter of ASPRS, National ASPRS, and is the current Chair of the NCGICC.

Colleen Kiley has served the State of North Carolina for over 20 years through roles in natural resources, emergency management, and information technology. Her current position, as the GIS Coordination Program Manager for the N.C. Center for Geographic Information and Analysis, provides the opportunity to bring together GIS professionals across the state to tackle big issues. She holds a GISP and earned her Bachelor's degree in Geology and a Master's degree in Coastal Zone Management.

Natalie Walton Corbett has been involved in North Carolina's GIS local government sector for 17 years after earning a Bachelor of Science in Geography from Appalachian State University. She currently holds the position of GIS Coordinator for Greenville, North Carolina, and serves as a Board Member of the Geographic Information Coordinating Council (GICC) and Chair of the Local Government Committee. In these roles, she facilitates collaboration between the State of North Carolina and its local government GIS community statewide. Natalie continues to work on North Carolina's disaster response GIS solutions and co-founded HurriUp in 2019 to provide local governments with collaboration, mutual support, and training.

Sallie Vaughn joined Person County Government in 2014 with experience in both the public and private sectors. She has held positions at all levels of GIS and leans on that experience to lead as Person County's first GIS Director. Her team received the 2023 G. Herb Stout award for innovative use of GIS by small local governments in North Carolina presented by NCDIT's Center for Geographic Information & Analysis (CGIA). Sallie enjoys using GIS to streamline government operations, enhance transparency, and encourage enterprise-wide data sharing. She holds a GISP and earned her Bachelor's degree in Anthropology and a Master's degree in Geography, both from East Carolina University.

**Pre-Conference Workshops require separate registration from main conference.*
$175 – Half Day Workshop $350 - Full Day Workshop

PRE-CONFERENCE WORKSHOPS

Making the move to ArcGIS Pro

Presented By:

Tripp Corbin, MCP, GISP
(Cultivate Geospatial Solutions)

Tuesday September 30th, 8:00am - 5:00pm (Full Day) – French Broad Conference Center Room #2

Workshop Description
This hands-on workshop is designed specifically for ArcMap users who are ready to transition to ArcGIS Pro. Through a combination of lectures, live demonstrations, and guided exercises, participants will gain the skills and confidence needed to navigate and utilize ArcGIS Pro effectively.

Key Topics Covered:
- **Understanding the Ribbon Interface:**
  - Learn how ArcGIS Pro's modern ribbon-based interface differs from ArcMap's traditional layout. Discover how to access tools, customize views, and streamline your workflow.
- **Editing Spatial and Tabular Data:**
  - Explore the enhanced editing environment in ArcGIS Pro. Participants will practice editing both spatial features and attribute tables, with a focus on best practices and new capabilities.
- **Introduction to Arcade:**
  - Get started with Arcade, Esri's expression language used across the ArcGIS platform. Learn how to write simple expressions for labeling, symbology, and field calculations.

Format:
- Lectures to introduce concepts and workflows
- Live demonstrations to show real-time application
- Hands-on exercises to reinforce learning and build proficiency

Whether you're migrating a single project or transitioning your entire workflow, this workshop will equip you with the foundational knowledge to make the move to ArcGIS Pro with confidence.

Speaker Bio
Tripp Corbin is a seasoned GIS professional with over 28 years of experience in the geospatial industry. He holds numerous GIS and IT certifications, including several from Esri, and is widely recognized for his expertise in ArcGIS technologies. Tripp is the author of four books on ArcGIS Pro and has taught GIS courses and workshops across the United States, Canada, and Australia. He currently serves as President of the Georgia Geospatial Association, is a member of the GISCI Board, and is a Past President of the GIS Professional Network (GPN). Tripp's teaching style blends deep technical knowledge with practical, real-world application, making him a sought-after instructor for professionals transitioning to modern GIS platforms.

**Pre-Conference Workshops require separate registration from main conference.*
$175 – Half Day Workshop $350 - Full Day Workshop

PRE-CONFERENCE WORKSHOPS

A Knowledge Workers Guide to Visual Management

Presented By:

Wendy Peloquin, GISP (Avineon)

Wednesday Oct. 1st, 8:00am - 12:00pm (Half Day) – French Broad Conference Center Room #2

Workshop Description

Visual Management is the application of Lean and Agile practices to build new ways of working for individuals and teams on-the-fly (Modus Institute).

We take a system thinking approach to the complexities of new/unexplored work, (mis)understanding, decision-less meetings, interruptions, prioritization, communicating decisions and difficulty of collaboration. Through this highly interactive workshop, we will introduce the system of communications, system of meetings and the system of doing the right work at the right time. We will conduct practical exercises that focus on visualizing our work and limiting our work in progress. We will look at value stream mapping as an effective visualization and how to put those visualizations into action. There will be exercises to harvest ideas and tackle sticky problems. Ultimately, we will turn learning into action items.

Learning Outcomes:

- Visualize your work
- Limit your work in progress
- Understand your work
- Filter complexity
- Turn your visualization into action

Speaker Bio

Wendy Peloquin, GISP is the Director of Commercial Sales Operations at Avineon with over 17 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 tUWF. Wendy is an active member of the Geospatial Professional Network (GPN), formerly known as URISA. She serves as a facilitator for the GIS Leadership Academy (GLA) and Advanced GLA. She is also currently serving as President-Elect.

Conference Agenda

Tuesday, September 30th

7:30am – 5:00pm	Registration & Info Desk Open	
8:00am – 12:00pm	French Broad 1	**Pre-Conference Workshop** **North Carolina: Decisions, Data, Standards, and Coordination.** **Instructors:** Hope Morgan, PLS, GISP, CFM (AECOM) Colleen Kiley, GISP, CFM (NC CGIA) Natalie Walton Corbett (City of Greenville, NC) Sallie Vaughn, GISP (Person County, NC)
	French Broad 2	**Pre-Conference Workshop** **Making the move to ArcGIS Pro (Part 1 – Full Day Workshop)** **Instructor:** Tripp Corbin, MCP, GISP (Cultivate Geospatial Solutions)
12:00 – 1:00pm	Lunch on your own	
12:00 – 5:00pm	**3rd Annual NCAUG Golf Social** NCAUG Board Reps: Rick Wallace, Josh Norwood & Peter Erlenbach	
1:00pm – 5:00pm	French Broad 2	**Pre-Conference Workshop** **Making the move to ArcGIS Pro (Part 2 – Full Day Workshop)** **Instructor:** Tripp Corbin, MCP, GISP (Cultivate Geospatial Solutions)

Conference Agenda

Wednesday, October 1st

7:30am – 1:00pm	**Registration & Info Desk Open**		
8:00am – 12:00pm	**Exhibitor Setup –** Conference Hallway & Blue Ridge Ballroom 4		**Esri Hands-On Learning Lab Open** French Broad 3 **9:00am - 12:00pm**
8:00am – 12:00pm	French Broad 2	**Pre-Conference Workshop** **A Knowledge Workers Guide to Visual Management** **Instructor:** **Wendy Peloquin, GISP (Avineon)**	
12:00 – 1:00pm	**Lunch on your own**		

Conference Plenary Session – Blue Ridge Ballroom 1 - 3

1:00 – 1:30pm	**Welcome Session & NCAUG Business Meeting** Jackie Dillon- NCAUG President	**Exhibit Hall Open** Ballroom Hallway & Blue Ridge Ballroom 4 **1:00pm – 5:00pm**
1:30 - 1:45pm	**NCAUG Awards Presentation (Scholarships & President's Award)** Jackie Dillon & Dr. Marty Sung (NCAUG Awards & Scholarship Committee Chairs)	
1:45 - 2:30pm	**Sponsor Lightning Talks** *Thanks to our many sponsors!*	
2:30 - 3:00pm	**2025 NCAUG President's Award Recipient Presentation** **A Storm of GIS Needs: The Use of GIS for Hendersonville Water Restoration After Hurricane Helene** Ben Allamong (City of Hendersonville, NC)	
3:00 – 3:45pm	**Break** : Blue Ridge Ballroom 4	
3:45 – 4:45pm	**Special Keynote Address** Sunny Flemming (Esri)	
4:45 – 5:00pm	**Plenary Closing & Conference Info** NCAUG Board	
6:00 – 8:00pm	**Opening Night Party – One STOP at the Asheville Music Hall** (55 College St.)	

Conference Agenda

Thursday, October 2nd

Morning Sessions

7:30am – 1:30pm	**Registration & Info Desk Open**	
7:00 – 8:00am	**Breakfast Buffet:** Blue Ridge Ballroom 4	
Breakout Sessions	**Track 1** Blue Ridge Ballroom 1 Moderator: Laura Coppola	**Track 2** Blue Ridge Ballroom 2 & 3 Moderator: Hope Morgan
8:00 – 8:30am	**Performing ArcGIS Experience Builder Deployments & Public Notification Instant Apps For Stormwater Inventory** Daisy Ryan (Bolton & Menk, Inc.) *Diamond Sponsor*	**First Time Conference Attendees Meetup** NCAUG Board
8:30 – 9:00am	**GeoAI / AI Assistants** Carl Flint (Esri)	**Panel Discussion: GIS Careers, Resumes & Challenges** Kristin Johnson, Tony Spicci, Jackie Dillon & Garrett Shields
9:00 – 9:30am		**The Pre-GISP Program** Tony Spicci (GIS Certification Institute)
9:30 – 10:00am	**2025 NCAUG Scholarship Recipient** Natasha Kroll (NC State University)	**From Coursework to Clients: A Year of Growth in GIS Consulting** Miranda Darwin (STV Inc.)
10:00 – 10:30am	**Break** : Blue Ridge Ballroom 4	
Breakout Sessions	**Track 1** Blue Ridge Ballroom 1 Moderator: Will Rumley	**Track 2** Blue Ridge Ballroom 2 & 3 Moderator: Amy Barron
10:30 – 11:00am	**Riparian Tree Cover Loss from Hurricane Helene Along an Urban to Rural Gradient in Asheville, NC** Diane Styers (Western Carolina University)	**Who Is a GISP? A Guide to Becoming a Certified Geospatial Professional** Tony Spicci (GIS Certification Institute)
11:00 – 11:30am	**GIS-based Damage Assessments following Helene: A Unique Collaboration** Greg Dobson (UNC Asheville's NEMAC)	**GIS Management for Newbies: Sparking Innovation and Success within a GIS Team** Garrett Shields (WSP)
11:30 – 12:00pm	**Drone Mapping After Hurricane Helene** Douglas Oeser (Asheville Police Dept.)	**A Professional Network: Your most critical resource for career growth and technical support** Tripp Corbin (Cultivate Geospatial Solutions)
12:00 – 1:00pm	**Lunch Buffet:** Blue Ridge Ballroom 4	

Esri Hands-On Learning Lab Open French Broad 3	**Exhibit Hall Open** Ballroom Hallway & Blue Ridge Ballroom 4
9:00am – 5:00pm	**8:00am – 7:30pm**

Conference Agenda

Thursday, October 2nd

Afternoon Sessions

7:30am – 1:30pm	**Registration & Info Desk Open**	
Breakout Sessions	**Track 1** Blue Ridge Ballroom 1 Moderator: Natasha Jacob	**Track 2** Blue Ridge Ballroom 2 & 3 Moderator: Harold Rempel
1:00 – 1:30pm	**ArcGIS Pro – Beyond the Basics** Peter Erlenbach (Esri)	**Drones – (Thinking) Out of the Box** Hunter Ardrey (Duncan Parnell) *Diamond Sponsor*
1:30 – 2:00pm		**Answering the Call…** Rick Wallace (NV5 Geospatial) *Diamond Sponsor*
2:00 – 2:30pm	**Living with Water: Applying Geospatial Data for Community Flood Resilience** Devon Eulie (UNC Wilmington)	**Data Governance** Kent Rothrock (Avineon) *Diamond Sponsor*
2:30 – 3:00pm	**2025 NCAUG Scholarship Recipient** Caleb Blackburn (Appalachian State University)	**Guarantee the Success of Your GIS Program and Career** Jonathan Welker (Geographic Technologies Group) *Diamond Sponsor*
3:00 –3:30pm	**Break** : Blue Ridge Ballroom 4	
Breakout Sessions	**Track 1** Blue Ridge Ballroom 1 Moderator: Ike Canady	**Track 2** Blue Ridge Ballroom 2 & 3 Moderator: Kimberly Sparks
3:30 – 4:00pm	**Everyday Emergencies: GIS and NowGen911** Brian Ross (Brunswick County, NC Sheriff's Office)	**Pedals & Platforms: A Spatial Look at Bike and Subway Access in Brooklyn** Johnny McGlone (STV Inc.) *Diamond Sponsor*
4:00 – 4:30pm	**Certificate of Occupancy Dashboard and Population Estimates – Tracking Development Progress and Population Growth** Jenny Jessen (Town of Apex, NC)	**Modernizing Moore County Tax Tools: Migrating ArcMap Toolbars to ArcGIS Pro Add-Ins & Attribute Rules** Ben Masters (Blue Raster)
4:30 – 5:00pm	**Modernization of Guilford's Foreclosure Application** Marlena Isley & Mitchell Byers (Guilford County, NC)	**Maximizing NC Statewide LiDAR: Machine Learning, Change Detection and GIS Derivatives** Mike Baranowski (SAM) *Diamond Sponsor*
5:30 – 7:30pm	**Sponsor Party – Hors D'oeuvres, Drinks, Music, Prizes** Ballroom Hallway & Blue Ridge Ballroom 4	

Esri Hands-On Learning Lab Open French Broad 3	**Exhibit Hall Open** Ballroom Hallway & Blue Ridge Ballroom 4
9:00am – 5:00pm	**8:00am – 7:30pm**

Conference Agenda

Friday, October 3rd

8:00 – 9:00am	**Breakfast Buffet:** Blue Ridge Ballroom 4	
Breakout Sessions	**Track 1** Blue Ridge Ballroom 1 Moderator: Gwen Ford	**Track 2** Blue Ridge Ballroom 2 & 3 Moderator: Tom Tiner
8:30 – 9:00am	**The Community Partnership Mapping Initiative: Using GIS to connect families with resources** Ryan Cooper (Wake County Public School System)	**Tips for Success in Developing Geospatial Deep Learning Models** Colin Flynn (Dewberry)
9:00 – 9:30am	**Using ArcGIS Indoors for Asset Management** Savannah Thomson & Nick Haffele (Chatham County, NC)	**Stormwater BMP Inspection Utilizing Drone Technology** Morgan Jones (KCI)
9:30 – 10:00am	**The Why and How of Moving to UN: The Municipal Approach** Joey Wilson (Avineon)	**Exploring Climate - Risk Analysis** Michael Blair (Innovate Inc.)
10:00 – 10:30am	**Break** : Blue Ridge Ballroom 4	
Breakout Sessions	**Track 1** Blue Ridge Ballroom 1 Moderator: Will Corbett	**Track 2** Blue Ridge Ballroom 2 & 3 Moderator: Mark Bratcher
10:30 – 11:00am	**From Paper to Priorities: Using GIS to Guide Neighborhood Revitalization** Andrew Clark (Colliers Engineering)	**Leveraging Aerial LiDAR and Photogrammetry for Slope Management and Disaster Response** Paul Rossi (Nine Ten Drones)
11:00 – 11:30am	**Streamlining NC Department of Transportation's (NCDOT) Preconstruction Requirements with Digital Tools** Danielle Mir (NCDOT - Environmental Analysis Unit)	**Landslide Detection Using Deep Learning and Geographic Information Systems: A case Study of Western North Carolina** Gazali Agboola & Dr. Leila Hashemi Beni (NC A&T University)
11:30 – 12:00pm	**Spatial Analysis of Traffic Volume and Air Quality in North Carolina between 2019 and 2020** Daniel Nduka (NC Central University)	**Mapping Yesterday's History with Tomorrow's Technologies** Timothy Mulrooney (NC Central University)
12:00 – 12:15pm	**Break** : Blue Ridge Ballroom 4	
12:15 – 1:00pm	**Conference Closing Session – Blue Ridge Ballroom 1 - 3** NCAUG Board	

hands-on learning lab

French Broad Conference Center, Room #3

Hours of Operation

Wednesday Oct. 1st:	9:00am – 12:00pm
Thursday Oct. 2nd:	9:00am – 5:00pm

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

esri
THE SCIENCE OF WHERE

Presentation Abstracts

Presentation Title	Abstract
From Paper to Priorities: Using GIS to Guide Neighborhood Revitalization	Colliers Engineering & Design (CED) partnered with the City of Rocky Mount to support neighborhood revitalization efforts by transforming previous housing and infrastructure data into a GIS-based planning tool. The city had years of housing study results, field notes, and infrastructure records that were fragmented and difficult to use for prioritizing reinvestment. CED developed a GIS methodology to analyze conditions, vacant lots, and public infrastructure, combining that data into heat maps and neighborhood scoring models. Rather than assessing individual parcels by foot, the approach emphasized scalable, area-wide analysis to identify and rank neighborhoods based on need and opportunity. Esri tools such as ArcGIS Pro, Field Maps, and Dashboards were used to visualize data, support field validation, and help decision-makers target demolition, preservation, or reinvestment strategies. The result was a planning-ready GIS infrastructure that provide a clear, data-driven framework for Rocky Mount's revitalization strategies. This GIS-based approach can be adapted for other communities facing similar challenges with urban blight and aging infrastructure.
A Storm of GIS Needs: The Use of GIS for Hendersonville Water Restoration After Hurricane Helene	The City of Hendersonville's GIS Division was crucial in all aspects of Hurricane Helene response, most notably in the creation of a public water status application. This presentation outlines the GIS's role within the Emergency Operation Center, restraints of technology, the need and building of this public notification app, and lessons learned during the immediate days of emergency response. This application was awarded the Herbert Stout Innovation in GIS award at the 2025 NC GIS Conference.
Modernizing Moore County Tax Tools: Migrating ArcMap Toolbars to ArcGIS Pro Add-Ins & Attribute Rules	With ArcMap's retirement, Moore County partnered with Blue Raster to convert legacy ArcMap toolbars for tax mapping and appraisal into ArcGIS Pro add-ins and attribute rules. Collaborating with stakeholders to define requirements, we used iterative development and user testing to ensure accuracy and adoption. This session outlines our approach to modernizing essential workflows—offering a blueprint for other counties facing similar transitions.
Stormwater BMP Inspection Utilizing Drone Technology	Municipal Separate Storm Sewer System (MS4) NPDES discharge permits require the permittee to perform stormwater Best Management Practice (BMP) inspections to ensure that BMPs are functioning as designed and are providing the designed stormwater treatment. On a routine basis, BMPs are inspected to identify blockage, structural damage, and excessive ponding where maintenance needs to be performed to allow for proper functionality and treatment of stormwater runoff. Often is the case where BMPs are in remote and difficult to get to locations, including behind noise walls or within high-traffic roadway shoulders and medians. These locations can present a traffic hazard to field inspection teams and require additional costs for maintenance of traffic operations and poor accessibility. It has been identified that small Unmanned Aircraft Systems (UAS) or drones can be utilized to perform BMP inspections in difficult locations, which is advantageous for providing staff safety and efficiency of inspection performance. Drones allow field teams to stage in safe locations and capture clear aerial imagery that is used to analyze BMP functionality and conditions. This presentation will review the advantages and disadvantages of how drone technology is used by large Phase I MS4 NPDES jurisdictions to perform inspection of swale BMP facilities along high-traffic roadway shoulders and medians.
Every Day Emergencies: GIS and NowGen911	In 2019, GIS was formally hijacked by the Statewide NextGen911 project. This session will explore emerging topics in "NowGen911", as the GIS sector's role has evolved into the backbone 911. Topics will include the time saving GeoMSAG update, understanding the NextGen concept of "neighbors", and the ever-growing complexity of mapping & connected devices. You'll learn how an address is both vital and doesn't matter at all. Oh and there will be acronyms - TDMS, PACE Plans, and KISS - oh my!
Tips for success in developing geospatial deep learning models	The rapid advancements in deep learning in recent years have impacted the geospatial community by allowing for the development of new tools, novel approaches to solving difficult problems, and new avenues for automation. Deep learning tools have become increasingly accessible without specialized deep learning knowledge or programming capabilities. Despite the low barrier to entry, training a successful deep learning model is still a challenge. This presentation will offer tips for success and lessons learned from 5 years of developing geospatial deep learning models.
Performing ArcGIS Experience Builder Deployments & Public Notification Instant Apps For Stormwater Inventory	This presentation will focus on the applied use of Experience Builder for ArcGIS to maintain stormwater assets and how to incorporate a public notification instant application. Participants will learn through deployment examples how to configure Experience Builder applications for use in cataloging, editing, and maintaining hosted stormwater data. Various functionality tools will be explored, including a workflow for how to incorporate a public notification application for efficient mailing label production. By using Experience Builder, communities have a deliverable that provides opportunities to explore and highlight their asset conditions and encourages participants to use GIS to efficiently maintain relevant data for their stormwater systems.

Presentation Abstracts

Presentation Title	Abstract
Spatial Analysis of Traffic Volume and Air Quality in North Carolina between 2019 and 2020	The COVID-19 pandemic undoubtedly played a crucial role in shaping many of the social, economic, and more importantly health practices that are obtainable in the country and the world today. With the pandemic hitting its peak early in 2020, many governments worldwide were strong-armed into deciding to quarantine – first in zones and eventually nationwide. This paper hypothesizes that in the state of North Carolina specifically 1) There was a general decrease in traffic volume and particulate matter (PM) 2.5 concentrations during the 2020 quarantine period and 2) The decrease in PM 2.5 emissions is largely a direct result of the halt in most day-day human activities that required movement during this period. Traffic volume and atmospheric data were downloaded from the North Carolina Department of Transportation (NCDOT) and the Nation Oceanic and Atmospheric Administration (NOAA) respectively. These data sets were then run through mathematical change detection in ArcGIS Pro to visualize changes in traffic volume and PM 2.5 during the quarantine. A two-tailed T-Test and Regression analysis was conducted through Excel to see if there is any statistical significance in the change in traffic volume and change in PM 2.5. The research findings expose a visual and statistical decrease in traffic volume and PM 2.5 in most counties in North Carolina between 2019 and 2020. However, further statistical analysis to establish correlations between the observed factors proved futile, as results show that there is no statistically significant relationship.
Streamlining NC Department of Transportation's (NCDOT) Preconstruction Requirements with Digital Tools	The NCDOT is committed to optimizing program performance through streamlining and expediting project development and delivery. As a result of the continued enhancement of ATLAS (Advancing Transportation through Linkages, Automation & Screening) tool, ATLAS Map is a tool that provides both Search and Screening capabilities with enhancements in performance, mapping, and screening capabilities. NCDOT manages roadway projects that have unavoidable impacts on streams and wetlands that require compensatory mitigation to obtain permits. The collection of impact data has been modernized allowing project managers and engineering firms to enter updates at predetermined project milestones. This collection tool feeds the automated system to produce mitigation request forms at the time of permit application. The addition of the comprehensive analysis tool to create the 10-year STIP (State Transportation Improvement Plan) Impact Projections minimizes the required steps and time.
Living with Water: Applying Geospatial Data for Community Flood Resilience	The USS NORTH CAROLINA Battleship Memorial, located along the lower Cape Fear River, North Carolina, has experienced a 7000% increase in flooding since 1961, creating a significant challenge for site managers. The Living with Water project will restore more than 800 feet of hardened shoreline to an intertidal estuarine living shoreline and create wetland habitat by removing two acres of flood-prone parking lot. We are utilizing sUAS, geospatial modeling, and ArcGIS Story Maps to develop the project site into a Living Laboratory for collaborative research and community outreach.
Riparian Tree Cover Loss from Hurricane Helene Along an Urban to Rural Gradient in Asheville, NC	Riparian tree cover is critical in urban and rural contexts yet increased impervious cover in urban areas suggests urban riparian tree cover may be more vulnerable in extreme precipitation events. We analyzed high resolution aerial imagery and point-classified lidar data from before and after Hurricane Helene (2024), along the Swannanoa and French Broad rivers in the Asheville, NC area. The resulting land cover classifications allowed us to quantify urban and rural riparian tree cover outcomes.
Landslide Detection Using Deep Learning and Geographic Information Systems: A case Study of Western North Carolina	Landslides are a significant natural disaster with the potential to cause substantial loss of life, infrastructure, and property. Effective detection and prediction of landslides are crucial for mitigating these impacts. Recent advancements in deep learning have shown promise in landslide detection systems; however, the approach faces several challenges that hinder its widespread application. One of the primary obstacles is the need for large, annotated datasets and data that can be generalized across different regions and conditions
GIS-based Damage Assessments following Helene: A Unique Collaboration	On September 26-27, 2024, Hurricane Helene impacted western North Carolina with record rainfall and wind, resulting in region-wide catastrophic flooding, over 1,500 reported landslides, and devastating wind damage. In the days and weeks following the event, a unique collaboration evolved between UNC Asheville's NEMAC, Buncombe County, NOAA and several other organizations to facilitate a comprehensive damage assessment. The result was the "Buncombe County Helene Visual Damage Assessment Tool", powered by ArcGIS Experience Builder for data collection. This web-based tool allowed users with very little GIS-experience to heads-up digitize damage points using post-event high-resolution aerial imagery. Collected damage point data were fed into a dynamic ArcGIS Dashboard that summarized the information and provided metrics based on multiple collected attributes, which was then easily digestible to a range of high-level decision-makers and other stakeholders. This presentation will cover details about how this collaboration came together and review the GIS technology utilized to support a scalable approach to comprehensive and remotely sensed damage assessments following a historic flood, landslide, and wind event.
Certificate of Occupancy Dashboard and Population Estimates – Tracking Development Progress and Population Growth	The Town of Apex's Planning Department publishes a monthly report called the Apex Development Report, which details the size and population density of the Town, the status of development projects (by use), and the status of rezonings. Initially, the Town only published a population estimate monthly. However, in working with Building Permits & Inspections, Planning determined that the Certificate of Occupancy (CO) data could be utilized to provide weekly population estimates. As Planning developed the GIS aspect of this dataset, staff realized that this data could also be used to better track the progress of any residential development, project completion dates, and aid in several other typical data requests. To provide this data to residents and reduce the number of individual data requests, Planning also created a dashboard that provides this information up-to-date and shows CO completions by month and fiscal year.

Presentation Abstracts

Presentation Title	Abstract
Preparing for Esri Upgrades and Migrations	Many organizations are becoming overwhelmed when starting to plan for Esri upgrades and migrations. Avineon will highlight a few of the more prominent factors for what should be considered when planning for these migrations and upgrades to ensure success and limited downtime, as well as share tactics and methodology that has been working in recent projects.
NC Statewide Lidar – AI/ML Derivative GIS Products for Cities, Towns and Counties	The state of North Carolina has now collected USGS Quality Level 1 Lidar at 8 points per square meter or greater density resolution in all 100 counties. We are all familiar with the normal derivative products (DEM, DSM, Contours, Breaklines, Intensity Image, etc.) but what are some other potential GIS layers that can be derived from Machine Learning processes. This presentation will delve into machine learning classification and all the potentially helpful GIS layers that can be made from high density aerial lidar datasets. In addition, the presentation will cover all the potential change detection derivatives from flying new aerial lidar. Example datasets range from 3D buildings, walls, bridges, tree trunk centroids, tree canopies/canopy height models, treetops, 3D vegetation cover polygons, forest damage assessment, powerlines/power poles, ML hydro breaklines, Rooftop Solar Potential, etc.
Exploring Climate - Risk Analysis	Addressing climate risks requires a multidisciplinary approach that integrates climate data, demographic trends, and insights from built and natural environments. Innovate! Inc. has applied GIS and Esri technology to visualize and analyze these interconnected datasets, delivering actionable insights for climate risk assessment and community resilience planning. For example, Innovate developed the Flood Accumulation Simulation Tool (FAST) in collaboration with Texas A&M, using Esri's ArcHydro software to model stormwater flow and accumulation. This tool empowered communities to assess the impacts of extreme weather events on infrastructure and identify effective mitigation strategies, such as incorporating green infrastructure to reduce flood risks. Innovate has also utilized Esri's ArcGIS capabilities to enhance public engagement and communication around climate risks. By mapping oceanic changes, extreme weather patterns, and integrating demographic data to identify vulnerable populations, Innovate provided stakeholders with powerful tools to visualize complex relationships and develop proactive strategies for resilience. This work demonstrates how Innovate has leveraged GIS technology to address climate risks, foster resilience, and support sustainable decision-making. These efforts showcase the transformative potential of geospatial technology in understanding and mitigating the impacts of a changing climate on oceans, weather, and communities.
From Coursework to Clients: A Year of Growth in GIS Consulting	This talk is for current students, recent grads, and early-career pros navigating the shift from academic GIS to full-time work. I'll share what it's really like to move from graded labs to client projects, adapt to new tools, and develop key professional and interpersonal skills. Expect honest reflections on challenges, lessons learned, and tips for making a confident leap into the GIS workforce.
Leveraging Aerial LiDAR and Photogrammetry for Slope Management and Disaster Response	North Carolina's mountainous terrain is highly susceptible to landslides, especially following extreme weather events such as Hurricane Helene, which recently caused significant slope failures in Western NC. This presentation will explore the use of LiDAR technology and low-cost aerial photogrammetry to enhance slope monitoring, risk assessment, and mitigation efforts. Paul Rossi of Nine Ten Drones and Ben Poulin of Beaufort County Community College will discuss practical methodologies for deploying unmanned aerial systems (UAS) equipped with LiDAR sensors and high-resolution cameras to collect geospatial data in challenging environments. The session will highlight how LiDAR's precision in topographic mapping enables proactive slope stability analysis, while cost-effective photogrammetric techniques provide rapid post-disaster assessments. Case studies will showcase real-world applications of these technologies in Western NC, including data acquisition strategies, processing workflows, and actionable insights for local governments, emergency responders, and environmental agencies. Attendees will gain a deeper understanding of how GIS professionals can integrate these tools to improve disaster resilience and response efforts across North Carolina.
The Community Partnership Mapping Initiative: Using GIS to connect families with resources	Community organizations provide invaluable services beyond those offered by public institutions in Wake County. A loose network of Wake County Public School System (WCPSS) staff often serve as conduits to connect families to these services. This presentation explores how the Office of Geospatial Analytics uses GIS and ETL processes to support the Community Partnership Mapping Initiative's efforts to build and provide WCPSS staff access to a resilient, centralized record of community partners.
Using ArcGIS Indoors for Asset Management	Chatham County has recently implemented ArcGIS Indoors for IT and space management. Some facilities are being paired with drone oblique imagery to create digital twins. We went through the process of editing DWGs in AutoCAD, creating an ArcGIS Indoors dataset, and bringing data into Portal to use for applications. It has been a journey of trial and tribulation. By the time of the conference, we will have a subscription to Indoors Spaces that allows reservations and better space management.
Mapping Yesterday's History with Tomorrow's Technologies	In this work, the Department of Environmental, Earth and Geospatial Science (DEEGS) is developing comprehensive maps and spatial data of a small cemetery in Chapel Hill, North Carolina. The integration of geospatial technologies such as GIS (Geographic Information Systems), GPS (Global Position System), GPR (Ground Penetrating Radar) and UAV (Uncrewed Aerial Systems) in the high-scale mapping of cemeteries is still being realized through drones and ground penetrating radar.

Presentation Abstracts

Presentation Title	Abstract
The Pre-GISP Program	The GIS Certification Institute (GISCI) uses a rigorous exam, a portfolio covering at least four years of work experience, and signing of a Code of Ethics declaration to certify candidates as GIS Professionals (GISP). It is the only such certification for GIS professionals besides the state licensure procedure for surveying engineers. There is, at this point, no standardized exam for graduates of GIS (Geographic Information Science) programs in the United States. The American Association of Geographers (AAG), the University Consortium for Geographic Information Science (UCGIS), and the GISCI got together to develop a pre-GISP exam that puts students graduating from GIS programs onto the path towards GISP certification as an important step towards career readiness. This initiative is of interest to academic GIS programs because it provides a nationally accepted form of external assessment. It serves students as a stepping stone towards professional acknowledgment and it helps GISCI to create a pipeline to increase the pool of GISPs. This session will acquaint audience members with the development of an exam blueprint, a body of knowledge that educators can teach to regardless of their disciplinary background, being assured of the relevance of the material to future employers. During this session, we will discuss the respective knowledge areas and the administration of the exam that GISCI will roll out in Spring of 2025.
Who Is a GISP: A Guide to Becoming a Certified Geospatial Professional	This session is designed to provide an overview of the GISP certification process from start up to submission. We will discuss the exam, portfolio, preparation materials and costs associated with becoming a GISP. We will also discuss recertification. The GIS Certification Institute (GISCI) is a non-profit organization that promotes the advancement of proficient GIS professionals through its international GISP® (Certified GIS Professional) certification program. The Institute fosters rigorous professional and ethical standards, community engagement, and professional mentoring within the GIS industry.
Drone mapping after Hurricane Helene	Drones have revolutionized data collection for Geographic Information Systems (GIS), particularly in disaster response scenarios like hurricanes. These unmanned aerial vehicles (UAVs) provide an efficient, cost-effective, and versatile solution for gathering high-resolution data in environments that may be dangerous or inaccessible to ground teams. After a hurricane, drones are deployed to assess damage, monitor affected areas, and aid in recovery planning. Equipped with various sensors, including high-resolution cameras, LiDAR, and thermal imaging, drones capture detailed aerial imagery and geospatial data. This data can be rapidly processed and integrated into GIS platforms to generate maps, 3D models, and analytics for decision-making. Key applications include infrastructure assessment, flood mapping, and vegetation analysis. Drones can identify damaged buildings, blocked roads, and power line disruptions, providing emergency responders with real-time information to prioritize efforts. Flood mapping with drones is particularly critical, as UAVs can track water levels, monitor breaches in levees, and model flood extents. Vegetation analysis helps assess environmental impacts, such as deforestation or erosion, and guides reforestation and restoration efforts. Additionally, drones are used to evaluate accessibility and resource distribution. They map areas requiring humanitarian aid, ensuring resources like food, water, and medical supplies reach affected populations promptly. This is especially vital in remote or isolated communities. One of the greatest advantages of drones is their ability to collect data quickly and safely. Unlike traditional methods, which may take days or weeks, drones can cover large areas in a matter of hours. Furthermore, drones reduce the risks to human personnel by operating in hazardous environments, such as flooded regions or areas with downed power lines. The integration of drone-collected data into GIS systems enhances situational awareness and facilitates informed decision-making for emergency management agencies. By overlaying drone imagery with pre-existing GIS data, responders can better understand the scope of the disaster, compare conditions before and after the hurricane, and simulate potential future impacts. In summary, drones play a critical role in post-hurricane data collection for GIS applications. Their ability to provide accurate, real-time geospatial data significantly enhances disaster response, recovery, and resilience efforts.
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.
GIS Management for Newbies: Sparking Innovation and Success within a GIS Team	Whether you're a new team lead or and experienced manager or possibly someone seeking to lead a team one day, nothing is more rewarding than watching your team innovate, succeed and grow. How you chose to lead your staff can light up paths to either major successes or daily struggles. This presentation will highlight ways in which leaders to try to ensure that your team is meeting its greatest potential and how best to deal with the daily challenges that come with choosing a management path.

NCAUG

NORTH CAROLINA ARCGIS USERS GROUP INC.

THANK YOU FOR ATTENDING!

ncaug.com