



**JOHNSON
CITY**



2024 EAST FALL FORUM



**14-15 OCT
2024**



THE CULP @ ETSU

www.tngic.org

E-TNGIC FORUM



ETSU

14-15 October 2024



Workshops on Monday, October 14th will start in Room 323 (GIS Lab) at Ross Hall (247 S Dossett Dr; Location labeled and circled in Green above), where the ETSU Department of Geosciences is located. Parking in Lot 16 is recommended for Workshops.

The E-TNGIC **Forum** on Tuesday, October 15th will be in the Ballroom at The Culp Student Center (412 J.L. Seehorn Rd; Location labeled and circled in Red above). Parking in Lots 15a/b is recommended for the Forum.

Visitors to the ETSU campus will select ETSU-Guest through **Wi-Fi** settings on their mobile device and be connected automatically.



E-TNGIC FORUM



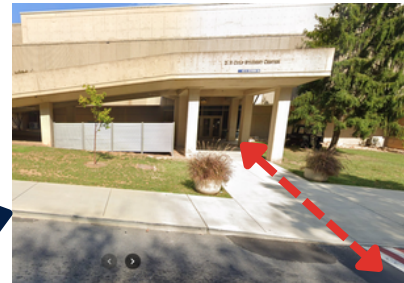
THE CULP

14-15 October 2024

D.P. CULP STUDENT CENTER



The Forum will take place in the Culp Ballroom, located on the 3rd floor. If you park in Lots 15a/b and walk in from the JL Seehorn Rd side, you will be on the 2nd floor (picture of entrance below).



Walk down the hallway (red dashed line on left) to take the stairs or elevator to the 3rd floor. Once on the 3rd floor, the Ballroom & Registration area will be directly in front of you.



EAST TENNESSEE STATE UNIVERSITY

etsu.edu/studentcenter



www.tngic.org

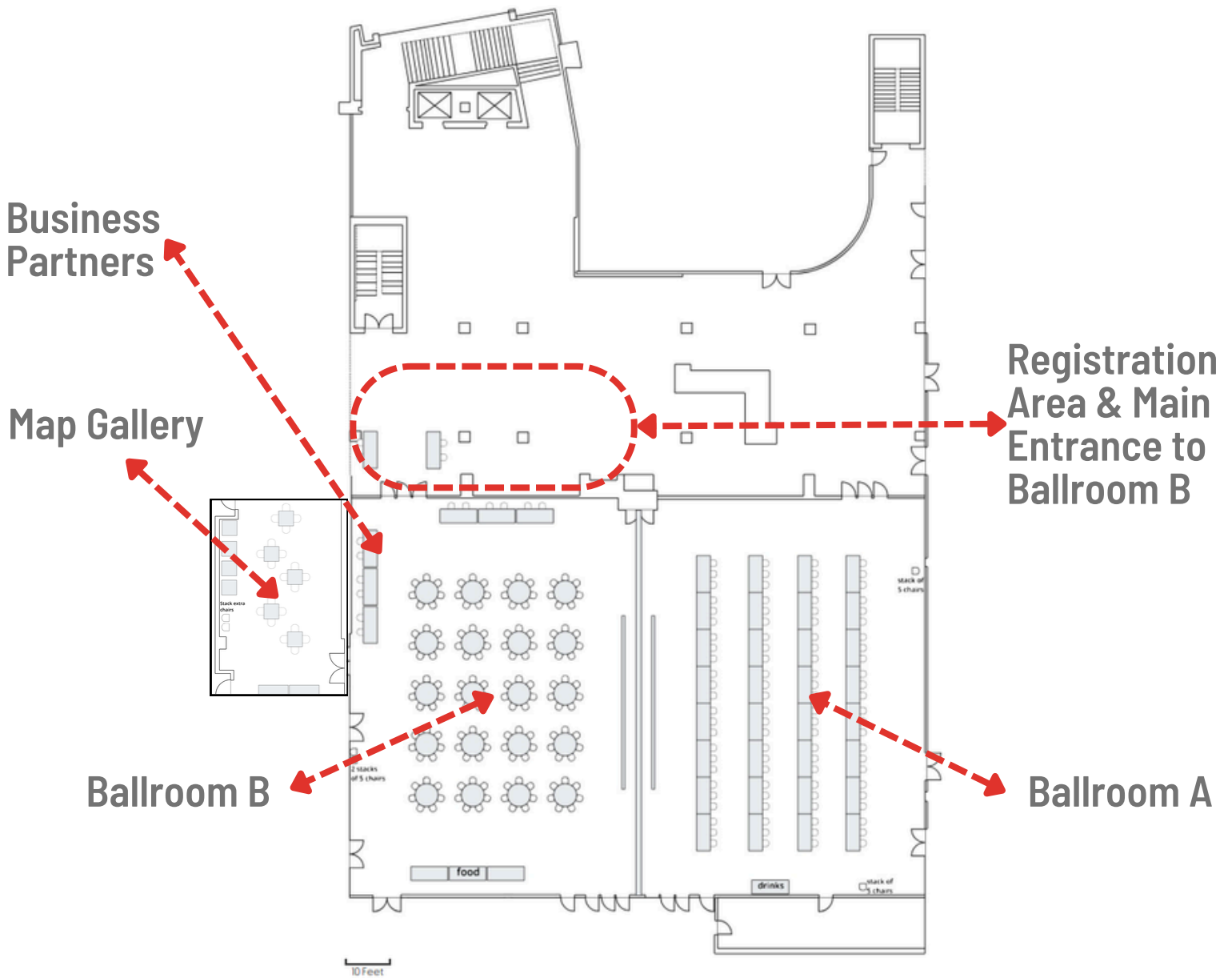
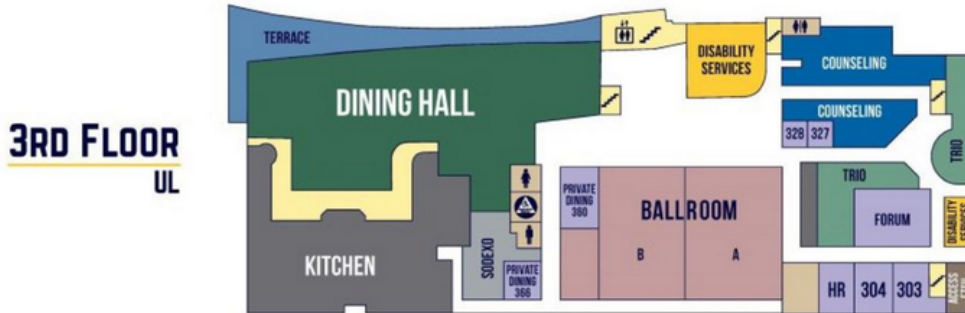


E-TNGIC FORUM



THE CULP

14-15 October 2024



FORUM SPONSORS



ETSU

14-15 October 2024



ALL REGIONS - Esri is the global market leader in geographic information systems (GIS) and since 1969 has supported organizations with the most powerful mapping and spatial analytics technology available. Governments at all levels have trusted Esri to make their communities smarter, safer, healthier, sustainable, livable and more prosperous. Visit us at esri.com/government



ALL REGIONS - Nearmap provides easy, instant access to high resolution aerial imagery, city-scale 3D content, AI data sets, and geospatial tools. Using its own patented camera systems and processing software, Nearmap captures wide-scale urban areas in the United States and Canada, several times each year, making current content instantly available in the cloud via web app or API integration. Every day, Nearmap helps thousands of users conduct virtual site visits for deep, data-driven insights—enabling informed decisions, streamlined operations and better financial performance.



ALL REGIONS - Driven to create a more interconnected, livable world, KCI Technologies, Inc.'s team of technologists and consultants apply knowledge, determination, skill and innovation for the resilience, growth and success of our clients and communities. Our staff of professionals provide a broad spectrum of technical services including business advisory, data & analytics, solutions engineering, and asset management and land management consulting and solutions. Supporting clients across all industries, we drive innovation each day, optimize operations, and incubate new ideas for a better tomorrow.



ALL REGIONS - True North Geographic Technologies is an award-winning GIS services firm in Murfreesboro, Tennessee, serving federal, state and local governments, utilities, and private sector organizations. True North is focused on creating solutions that help our customers leverage the Esri platform to meet their current and future business needs. True North delivers successful projects by utilizing our highly skilled staff and over 100 years of collective technical experience with the Esri platform. We excel in working with local GIS staff to maximize the existing hardware, software, and financial resources that are available while providing guidance and strategies to grow the local GIS programs through budget and new technology planning. We also provide the skills and expertise to integrate other enterprise data systems with GIS.



MIDDLE & EAST - Woolpert is the premier geospatial firm in the U.S. with an unmatched reputation for performance, quality, and service. We offer an integrated suite of geospatial services including photogrammetry, remote sensing, mobile mapping, digital and oblique aerial imagery, aerial and ground-based lidar, UAS, surveying, payload integration and testing, and GIS consulting/application development.



EAST - Geographers study people and our environments across the globe and throughout time. Geographers bring together global and local perspectives to address today's challenges. Our faculty study everything from climate change over the past ten thousand years, to poverty and urban development, to how the internet is changing how we understand the places where we live. This big picture view of the world makes geography and sustainability degrees highly marketable: our graduates are helping with security management of the Boston Marathon, mapping global population for disaster readiness, and working as data scientists at the largest technology companies in the world. The UTK Department of Geography and Sustainability offers BA degrees in Geography and in Sustainability, BS in GIST, and an MS and PhD in Geography. Our students work alongside faculty, study abroad, and develop marketable skills while helping community organizations and working in local governments, the private sector, and Oak Ridge National Laboratory. Details at <https://geography.utk.edu/>.



HOST & WORKSHOPS



ETSU

14-15 October 2024

HOST



DEPARTMENT *of* GEOSCIENCES

College of Arts & Sciences

EAST TENNESSEE STATE UNIVERSITY

The Department of Geosciences at East Tennessee State University offers an undergraduate Geosciences (BS) degree with concentrations in Geospatial Science, Geology & Environment, Paleontology, and Geography & Sustainability. The Department also offers a graduate Geosciences (MS) degree with concentrations in Geospatial Analysis and Paleontology and a graduate GIS Certificate (online and/or in-person). Find out more here: www.etsu.edu/cas/geosciences/

Extensive research and service opportunities are offered by faculty and staff, in addition to opportunities provided by the Gray Fossil Site & Museum (www.etsu.edu/gray-fossil-site-museum/), Center of Excellence in Paleontology, and the Tennessee Climate Office (www.etsu.edu/tn-climate).

WORKSHOPS

Introduction to Ground Penetrating Radar (9:00 – noon) - Dr. Eileen G Ernenwein

In this 3-hour workshop, participants will gain hands-on experience with ground penetrating radar subsurface imaging technology. The workshop covers the fundamentals of GPR, including data collection strategies, instruments and configurations, data processing, and interpretation of results. Through practical exercises and real-world case studies, you'll learn how to identify and analyze underground features such as pipes, archaeological features, and graves. Computers are provided in our GIS lab, but you are also free to bring your own and can install a demo version of the GPR software.

Where: ETSU Geosciences Department (Ross Panhellenic Hall, 247 S Dossett Dr, Johnson City, TN 37614), Room 323 (GIS Lab)

Parking: Self-parking nearby (print your free parking pass!)

Exploring Uncrewed Aerial Systems (1:00 - 3:30pm) - Dr. Matthew Beer & Mr. Steven Jones

Check out live demos of multiple UASs, including the Matrice 300RTK+Zenmuse L1 LiDAR system, the Mavic 3T Thermal system, and the Phantom 4+Multi-Spec system. Learn how these systems work and the data that can be collected from them. A short lab session will also provide you with basic imagery processing steps using Metashape and other software.



MEETING

PROGRAM



14-15 October 2024

Registration 8:30 - 9:00 AM

**Welcome &
Keynote
Ballroom B** 9:00 - 10:00 AM

TNGIC Welcome

Andrew Joyner & Eileen Ernenwein, Conference Chairs

Welcome from the Mayor

Mayor Joe Grandy, Washington County TN

TNGIC Update & Business Partner Spotlights

Chris Pape, TNGIC President

Mapping my path: My GIS journey across America

David Carney, Bristol TN GIS Coordinator

David Carney is an ETSU Geosciences graduate student alum with a diverse background working with GIS with federal entities, academia, environmental consultants, and city municipalities. David's graduate thesis used GIS to pursue his interests in paleontology with spatial data collected by museum staff over the last couple of decades at the Gray Fossil Site in Gray, TN. His thesis explored spatial trends within the dig pits at the site and led to the generation of a 3D model of one of the site's largest mastodon specimen's remains as it was deposited within the site. An ArcGIS Storymap detailing his thesis was awarded the "viewer's choice award" at the 2021 annual TNGIC conference. David is currently teaching a few geosciences classes at ETSU and working as the GIS Coordinator for the City of Bristol, providing GIS data/maps/products to all city departments, city of Bristol citizens, and consultants alike.



Break 10:00 - 10:15 AM



MEETING



PROGRAM

14-15 October 2024

Panel

10:15 - 11:15 AM

Discussion

Ballroom B

Local and State Disaster Response to Hurricane Helene in Northeast Tennessee & the Role of Higher Education

Participants: Chris Pape, Andrew Joyner, & Others

Moderator: Eileen Ernenwein

Vendor

11:15 - Noon

Networking

& Map

Gallery

Vendor/Business Partner Networking

Map Gallery Viewing & Voting

Hurricane Helene Impacts to Northeast Tennessee (Elijah Worley)

A History of Morristown-Hamblen County (Ben Wilkerson)

Ballroom B

Lake Burton in 3D (Ben Wilkerson)

&

Helene Rainfall (William Tollefson)

Room 360

Extreme Rainfall from Hurricane Helene (William Tollefson)

The Warmest Years in Appalachia, 1895-2023 (Antonio Smith)

Helene's Damage to Bridges Along the Nolichucky River (Jake Jones)

City of Bristol TN Parks and Recreation Experience (John Smith)

City of Bristol, TN Zoning and Flood Experience (John Smith)

Voting Link: bit.ly/etngic24maps



Lunch

Noon - 1:00 PM



www.tngic.org



MEETING

PROGRAM



14-15 October 2024

Presentations 1:00 - 2:00 PM

Ballroom B

DIY and Low-Cost Bathymetry: Collection, Processing, and Visualization

*Michael Camponovo, UT-K GIS Outreach Coordinator
Tim Kane, UT-K GIS Lab Manager*

Mapping History: Detecting Unmarked Graves at Sinking Spring Cemetery with Ground-based Geophysics and UAV Remote Sensing

Noah Hall, ETSU Graduate Student

Ballroom A

Drought Monitoring Process of the Tennessee Climate Office

Elijah Worley, ETSU Graduate Student & TCO Chief Drought Officer

The 2023 Tennessee Hazard Mitigation Plan Update: GIS Applications for Risk and Vulnerability Assessments

Andrew Joyner, ETSU Associate Professor, Tennessee State Climatologist

Break

2:00 - 2:10 PM



MEETING

PROGRAM



14-15 October 2024

Presentations 2:10 - 2:40 PM

Ballroom B

Esri What's New

*Eva Kennedy, Esri Account Manager
Julie Kutz, Esri Solution Engineer*

Analog Maps in the Digital Era: Opportunities, Limits, and Challenges

Jack Swab, UT-K Assistant Professor

Closing

2:40 - 3:00 PM

**Remarks &
Map Gallery
Awards**



Want to Explore Johnson City? Check out some options here:
visitjohnsoncitytn.com

Or head to YeeHaw downtown for some post-forum beverages!
Location: 126 Buffalo St, Johnson City, TN (or if you prefer:
36.3145722,-82.3535498)

bit.ly/etngic24

**View the digital version of the agenda
here, including presentation abstracts**



www.tngic.org



ABSTRACTS

PROGRAM



14-15 October 2024

Esri What's New (Eva Kennedy / Julie Kutz)

The presentation will highlight recently added tools and capabilities to the ArcGIS System, including flood simulation in ArcGIS Pro, enhancements to mobile applications and workflows, and added features in ArcGIS Online. We also plan to discuss some of where the technology is going, including generative AI tools for ArcGIS.

Analog Maps in the Digital Era: Opportunities, Limits, and Challenges (Jack Swab)

In an era where mapping has largely gone digital, thinking about, working with, and creating analog maps may seem like a lost art. This panel explores the opportunities that analog maps present not only as tools for creative expression but also as tools for reaching new audiences and supporting geospatial information needs in specific contexts. This panel defined analog maps not only as traditional paper maps but includes other forms of map-like media such as 3D terrain models, interactive simulation tables, tactile maps, cartoon maps, and the like. We explore the importance of these maps to our creative practice as cartographers and highlight how analog mediums are important aspects of cartographic communication.



ABSTRACTS



P R O G R A M

14-15 October 2024

DIY and Low-Cost Bathymetry: Collection, Processing, and Visualization (Michael Camponovo / Tim Kane)

Bathymetry is the study of the bottoms of oceans, lakes, and rivers using depth measurements. Think of it like lidar, but for underwater. This data is useful for anyone working in fields related to water like maintaining navigable waterways, dam inspections, monitoring sediment loads in retention ponds, building stream cross sections, and more. During this session we will discuss hardware and software options for collecting your own low-cost bathymetric data along with tools for processing and visualizing the data. In addition, we will share lessons learned on the protocols and procedures we have developed through trial and error. The focus of the presentation is reducing costs so anyone working in environmental, aquatic, or related fields can work with bathymetry.

Mapping History: Detecting Unmarked Graves at Sinking Spring Cemetery with Ground-based Geophysics and UAV Remote Sensing (Noah Hall)

The Sinking Spring Cemetery in Abingdon, VA, founded in 1773 by the Sinking Spring Presbyterian Church, is divided into two racially distinct sections by a road. The northern part of the cemetery is thought to contain many unmarked burials. This study aims to map both marked and unmarked graves using a combination of ground-based and aerial techniques. Ground-based methods included ground-penetrating radar (GPR), magnetometry, and electromagnetic induction, while aerial surveys utilized LiDAR, thermal imaging, and multispectral analysis. Results suggest that unmarked graves may number in the hundreds, with aerial methods, particularly thermal imaging, proving more effective at identifying burials than previously indicated in the literature.



ABSTRACTS



P R O G R A M

14-15 October 2024

Drought Monitoring Process of the Tennessee Climate Office (Elijah Worley)

The Tennessee Climate Office (TCO) located within East Tennessee State University provides input to the extent and severity of drought conditions across the state to the United States Drought Monitor on a weekly basis as part of their drought monitoring initiative. This monitoring effort requires the TCO to continuously assess an array of drought indication metrics such as precipitation indices, average temperatures, soil moisture levels, streamflow gauges and more. In addition to remote sensing/physical data, the TCO also reviews drought impact reports to get a clearer picture of ground conditions across the state. These reports are typically sourced from the National Drought Mitigation Center's (NDMC) Condition Monitoring Observer Reports (CMOR) database.

Wetlands at Risk: Scaling a Regulatory Impact Analysis for Tennessee with Deep Learning, High-Quality Training Data, Cloud Computing, and GIS (Andy Carroll)

A 2023 Supreme Court ruling narrowed the EPA's definition of Waters of the United States (WOTUS), but the impact remains unclear due to outdated wetlands data. The National Wetlands Inventory (NWI) is the most reliable dataset, but much of Tennessee's data is from the 1980s. Advances in geospatial tools now allow for more accurate mapping of wetlands. Esri's Wetland Identification Model (WIM) was applied across six ecoregions in Tennessee, using a training dataset of 78,000 acres from regulatory reports, heritage data, and expert input. High-resolution land cover data refined the model's output, and wetland scientists are reviewing the results. Initial findings show the NWI underestimates wetlands across the state. Using the National Hydrography Dataset and geologic data, it appears that more than half of the wetlands identified by the model may now lack federal protection due to being classified as isolated. The dataset will be public, with plans to scale the model to other states.

