2019 TNGIC Presentations

Day Wednesday **Time** 11:00 AM **Room** 12

Title 2019 State GIS Coordination Update

Author 1 Dennis Pedersen **Author 2**

Organization State of TN, F&A, Strategic Technology Solutions, GIS Services

Presentation Abstract

Working with USGS and other federal and state agencies, STS-GIS Services continues to develop framework GIS data in the form of enhanced elevation (lidar). This presentation will examine the current 3DEP program and also review other GIS coordination efforts in State and federal agencies relevant to the GIS community in Tennessee.

Presenter Biography

Dennis has served in State government for 26 years, the last 14 in the role of State GIS Coordinator. Dennis has seen significant development and widespread usage of GIS during his tenure in State government. Starting with the original TN Base Mapping Program from 1999-2007, the State has developed many framework GIS datasets that support State and local government operations. In addition to enjoying his professional role, Dennis finds time to coach his boys sports teams and traveling with his family. Dennis currently resides in Brentwood, TN.

Day Wednesday **Time** 11:30 AM **Room** 12

Title Review of Esri Platform Updates

Author 1 Rob Rike **Author 2**

Organization Esri

Presentation Abstract

We will review the current state of the ArcGIS Platform, relevant changes for Users and new products and capabilities.

Presenter Biography

Robert (Bob) Rike is an Account Executive on the Esri State Government Team and has worked with Esri for 14 years. He currently supports State Agencies in Alabama, Georgia, Tennessee and Virginia to implement GIS systems and geospatial solutions. Prior to joining Esri Bob worked with the State of Virginia as the Assistant VGIN Coordinator. He has also worked in the electric utility industry and in local government as the GIS coordinator for Spotsylvania County. Bob earned a Bachelor of Landscape Architecture from Virginia Tech.

Day Wednesday **Time** 1:00 PM **Room** 3

Title Census 2020: Data tools, programs and updates for communities

Author 1 Tim Kuhn **Author 2** Noelle Vought

Organization Tennessee State Data Center and US Census Bureau

Presentation Abstract

The 2020 Census is less than a year away and its importance to cities and counties in Tennessee can't be overstated - ranging from new political districts to significant funding implications. These counts are used for a decade. GIS is one the most significant tools for managing, updating and disseminating information about the Census. This presentation will provide updates on several 2020 partnership programs that many local governments in Tennessee participated in, including LUCA (Local Update of Census Addresses). It will discuss mapping tools that be used to plan for the Census in your community. Finally, there will be a briefly discussion of some of the key underlying population trends in the state that make the 2020 Census so significant.

Presenter Biography

Tim Kuhn is Director of the Tennessee State Data Center, housed in the Boyd Center for Business & Economic Research at The University of Tennessee, Knoxville. He oversees the Data Center's operations including outreach and dissemination of Census related materials, analysis and serves as Tennessee's representative to the Federal-State Cooperative for Population Estimates. He has over 20 years of experience in local government and planning, much of it based in the Knoxville-Knox County area. His worked has focused on the geographic information systems, web-technology, census programs and enrollments projections. Kuhn has a bachelor's degree in Political Science from the University of Iowa. Noelle Vought is a Geographer for the Philadelphia Regional Census Office. She has been with the Census Bureau since 2017 to work on the 2020 Decennial Census. Her position entails providing support for all 2020 Census Operations, conducting spatial analysis and providing map aids. She graduated from Temple University in Philadelphia with a B.A. in Environmental Studies and a certificate in Geographic Information Systems.

Day Wednesday **Time** 1:00 PM **Room** 12

Title We got the Lidar…..Now What?

Author 1 Sam Moffat **Author 2**

Organization Woolpert

Presentation Abstract

In this session, Woolpert will discuss the various uses of Lidar along with other geospatial data and the benefits obtained from recent Lidar captured across Tennessee for local governments and municipalities. You will hear information about how you can get your hands on the data? What type of software you will need. What are the deliverables exactly? Cloud based hosting of the lidar data and highlighting the exciting future of resiliency through remote sensing.

Presenter Biography

Sam Moffat graduated from Samford University in Birmingham, Alabama in 1994 with a BA in History and a minor in Applied Geography. Sam's current position as Geospatial Program Director for Woolpert allows him to work in all aspects of the industry specializing in multidisciplinary local government, state and federal mapping efforts. With over 24 years of experience working as a GIS technician, analyst, and project manager for both the private sector as well as State government, Sam now enjoys facilitating and fostering relationships and assisting organizations in leveraging geographic information to drive business value and operational efficiencies. Sam has been a member of TNGIC since 2002 and has served as a past president (2006) and Treasurer (2010-2015), and is currently serving on the Board of Director.

Day Wednesday **Time** 1:00 PM **Room** 13

Title Migrating from ArcMap to ArcGIS Pro

Author 1 Dwayne Coley **Author 2**

Organization Tipton County Public Works

Presentation Abstract

This presentation starts from creating a new map project in
ArcGIS Pro, adding Data, using Symbology, Labeling, working with Attribute Table, Layout View, Importing and Exporting Maps and talking about some of the advantages of ArcGIS Pro.

Presenter Biography

Dwayne has been with TCPW for 15 years and is the Chairman of the Board for TCGIS.

Day Wednesday **Time** 1:30 PM **Room** 3

Title Applying Geospatial Solutions to Map the University of Tennessee Chattanooga Campus Buildings and Safety Assets

Author 1 Richard Blanton "Rick" **Author 2** Charlie Mix

Organization University of Tennessee at Chattanooga

Presentation Abstract

A new application of geospatial software is mapping indoor facilities, along with the features and assets they house. The uses of a geodatabase for mapping campus has the potential to benefit many of the employees and students of UT Chattanooga, from wayfinding and navigation, to facility management of technicians and work orders. In this case, Safety and Risk management initiated assessing the use of GIS to map campus.

To development a workflow for mapping a building and the contained features, the SimCenter, was chosen as the initial building. Mapping of the facility was done using ArcGIS scripting to convert CAD building data to structural and asset features. This, in combination with the Collector app, was used to map utility, fire and safety features, then develop corresponding web applications. Once refined, this workflow will be used to map the remainder of campus, and develop web applications for staff and student use.

Presenter Biography

Rick is an Environmental Science Master's student, focusing on applications of remote sensing on water quality. He is also a GIS intern for the UTC office of Safety and Risk Management, working in the IGT lab to develop an indoor GIS map of the UTC campus.

Day Wednesday **Time** 1:30 PM **Room** 12

Title Analysis of Rainfall Data in Tennessee – where are the spatial gaps?

Author 1 Joanne Logan **Author 2**

Organization University of Tennessee

Presentation Abstract

With the predicted ongoing trend in more frequent and heavier rainfall events throughout Tennessee, having a representative spatial distribution of weather stations that record daily rainfall is essential. There are many different entities that collect ground-based rainfall data, including the National Weather Service, the Tennessee Valley Authority, the Corps of Engineers, the Community Rain, Snow and Hail Network (CoCoRAHS), and various universities. For the most part, the only potential for additional rain gauges lies with the CoCoRAHS network of citizen scientists. This study will examine the current gaps in the rainfall data network, and options for improving this coverage.

Presenter Biography

Joanne Logan (GISP) is an associate professor in the Department of Biosystems Engineering and Soil Science at the University of Tennessee, where she also directs the undergraduate program in Environmental and Soil Sciences. In addition to teaching classes in Environmental Science and GIS, she conducts research in applied climatology, and has a special interest in the application of GIS in climatological research. She has been a member of TNGIC since its inception, and is a frequent attendee at the ESRI International Users Conference each summer. She is also an ESRI Geomentor, and a graduate of ESRI's Teachers Teaching Teachers GIS (T3G) program.

Day Wednesday **Time** 1:30 PM **Room** 13

Title Geologic Substrate Classification of the Calfkiller River

Author 1 Daniel Adams **Author 2**

Organization TTU / USFWS

Presentation Abstract

Using machine learning to classify remotely sensed data and identify key geologic substrate suitable for species reintroduction.

Presenter Biography

A graduate student at Tennessee Tech University and a civil servant with the USFWS. Enjoys longs hikes and getting lost in complex analyses.

Day Wednesday **Time** 2:00 PM **Room** 3

Title Deploying GIS Mobile Technologies at TVA

Author 1 Christopher Carr **Author 2**

Organization Tennessee Valley Authority

Presentation Abstract

Mobile technologies can be applied to a variety of business uses for field data collection and can bring a high value from the analytics and visualization that that these products provide. The Tennessee Valley Authority, through collaborations with GIS & Mapping and other business units within the organization, have created various solutions that allow the end-user to collect data in a safer and more efficient way. This presentation will demonstrate several different use cases at the TVA with which GIS mobile applications are used to collect, analyze, and communicate spatial strategies across the business and organization. The presentation will also include tips and tricks that have been learned along the way by team that make the planning, setup, and deployment of these applications the most streamlined for both the GIS team and the end user.

Presenter Biography

Christopher Carr works on the GIS & Mapping team for Tennessee Valley Authority where he designs, develops, and deploys spatial data solutions for end-user's business needs. In addition to GIS solution design and configuration, Christopher's responsibilities include serving as a technical consultant to TVA's customer base for GIS solutions, and analyzing data and presenting visualization to support decision making. Since Christopher has been at TVA, he has worked on several notable projects that have garnered company-wide attention, including the development of a 3D GIS model of the Knoxville Office Complex for TVA Police and Emergency Management and the development of a GIS situational awareness interface for Boone Dam in response to ongoing seepage problems at the facility. Christopher previously served as the Lead GIS Specialist for the City of Hattiesburg, Mississippi where he balanced both technical and management responsibilities. His previous experience allowed him to lead multiple GIS, transportation, and urban planning related projects while supporting city departments and collaborating with external agencies.

Day Wednesday **Time** 2:00 PM **Room** 12

Title A Model for Establishing a Successful High School GIS Program

Author 1 Clay Burns **Author 2** David Speight

Organization Central Magnet Academy, True North Geographic Technologies, TN Geographic

Presentation Abstract

Clay Burns has taught the high school Introduction to GIS course for the past two years at Central Magnet School in Murfreesboro. He was one of the first to do so and has developed the most successful program in the state. Clay was trained by the Tennessee Geographic and its partners, is receiving on-going technical support from Mike Camponovo at the University of Tennessee, and has developed a mentor relationship with David Speight of True North Geographic Technologies. Come learn how it sometimes takes a village to make the implementation of geospatial technologies in local high schools a reality.

Presenter Biography

Clay Burns teaches AP Human Geography and Introduction to GIS at Central Magnet School in Murfreesboro, TN. Clay is a pioneer in getting the Introduction to GIS class up and running at the high school level in Tennessee.

David Speight owns True North Geographic Technologies, based in Murfreesboro. The company is focused on creating solutions that help small and medium-sized organizations make the transition from desktop GIS into enterprise solutions.

Kurt Butefish is Executive Director of the Tennessee Geographic Alliance. The organization has the mission of advancing geographic literacy in the state. One of the ways it does that is by training teachers like Clay innovative methods for incorporating geography into their classes.

Day Wednesday **Time** 2:00 PM **Room** 13

Title Relationship between Political Signs and Election Outcomes

Author 1 Samuel McCloud **Author 2**

Organization University of Tennessee, Knoxville

Presentation Abstract

Elections are an essential part to a democratic system of government, and since there have been elections, there have been people attempting to accurately predict them before they happen. Numerous models are used to find relationships between actual election results and other factors, and this study concentrates on the potential correlation between a candidate's political signs and their success in the election.

To accomplish this, staff members in the University of Tennessee Geography Department, Michael Camponovo and Nathan McKinney, drove 4 voting precincts in Knoxville with a 360 camera that allowed them to capture street view imagery in the month before last year's midterm elections. This imagery was loaded into Mapillary, who partnered with us in an effort obtain significant results while using their tools to do so.

Our methodology consisted of obtaining this data, then using Mapillary computer training to process the data. By using one of the precincts as a "Test Site", I would go through the street imagery and identify political signs. By identifying what each of the signs were, this would train the computer to be able to identify similar signs on its own. This is similar technology to how self-driving cars can identify street signs and comprehend what they mean. This process will create a file with point data representing each political sign of interest. I will then display the data as efficient and simple visuals so that the relationship is easily distinguishable.

Presenter Biography

My name is Samuel McCloud and I am currently a senior undergraduate student at the University of Tennessee, Knoxville. I have been a student in the Geography Department for four years, and my major is Geography with a concentration in GIS. I also have a minor in Mathematics with a significant interest in that field. My goal is to attain my bachelor's degree in Geography and acquire a long-term GIS job so that I may further my professional qualifications and expand my skill level. In my time in the Geography Department I have been apart of teams that have accomplished projects for the FIA and am currently working with a class on a GIS web application for Old Gray Cemetery. I have been working at Tennessee Valley Authority (TVA) in downtown Knoxville for almost two years in their GIS and Mapping Department. I have been a photo interpreter, which is counted on for work similar to that of a GIS Technician with responsibilities of completing smaller GIS projects, which has been an essential opportunity for me to gain indispensable professional GIS experience. This will be my first time attending TNGIC, and I am excited to be able to share this project to people who may have an interest in different types of machine learning or election variables.

Day Wednesday **Time** 3:00 PM **Room** 3

Title An Introduction to and evaluation of Open Street Maps for use on the Tennessee RiverLine.

Author 1 Nathan Hilbert **Author 2**

Organization Tenessee RiverLine

Presentation Abstract

Open Street Maps (OSM) appears to be a great, free data source for geospatial data. But, what exactly is happening when someone edits a map? What happens if they are wrong? Just how comprehensive is this crowdsourced map? These are the questions presented in taking a look at a recreation gap analysis for the Tennessee RiverLine, an organization focused on a multimodal continuous trail along the complete Tennessee River. This presentation will focus on an introduction to the inner workings of OSM, how to make your first edit to the map, and an evaluation of data coverage and accuracy compared to commonly trusted sources of data. A laptop will be very useful for making your first contribution to OSM during the presentation.

Presenter Biography

Nathan Hilbert is excited to put his community development master's degree from the University of Nebraska to work as he joins the National Park Service - Rivers, Trails and Conservation Assistance Program in a 10-month Conservancy Legacy Fellowship in Knoxville, Tennessee. Nathan comes to this fellowship with a wide range of experience from service in Morocco with the Peace Corps, business value chain development in Ohio, and community engagement activities in Knoxville. During his fellowship, Nathan will be working to support the University of Tennessee, Knoxville, on a partnership called the Tennessee RiverLine, a multi-modal trail experience along the 652 miles of the Tennessee River in Tennessee, Alabama and Kentucky. His focus will be providing organizational and partnership development to the Tennessee RiverLine Partnership, developing communication platforms for the project, and assisting Pilot communities along the river with visioning and community engagement. As a self-taught computer programmer with a heavy emphasis on large geospatial datasets, Nathan will also be putting those skills to good use in a gap analysis throughout the Tennessee River Valley. For further information on the Tennessee RiverLine or to chat about the intersections of community development and data, feel free to contact

Day Wednesday **Time** 3:00 PM **Room** 12

Title Creating a Business License Tracking System Utilizing ESRI Platforms for Codes Enforcement and Administration
Working Title of Paper: Creating

Author 1 Ben Baker **Author 2**

Organization Morristown-Hamblen GIS Group

Presentation Abstract
Various sources and tracking methods of business licenses poses a challenge when it comes to enforcing local regulations. This presentation will review a project in which the Morristown-Hamblen GIS staff worked with multiple sources to compile a baseline list of businesses operating in the City of Morristown. Once the list was compiled, that information was used in a Collector map for field use by City Codes Enforcement. As licenses are checked, the records are updated through the app. The data was also used in an Operations Dashboard for use by Economic Development, City Administration, and other interested parties. Lastly, the presentation will discuss future improvements or areas for expanding the project to be more useful to a larger audience.

Presenter Biography
Ben was first introduced to GIS as an Environmental Studies major at Slippery Rock University in Pennsylvania. He graduated with a minor in Geographic Information Technology and decided to further explore that field of study via a Master's program at West Virginia University. He graduated from WVU in 2012 with an M.A. in Geography, concentrating in GIS and Remote Sensing. Ben's research focused on comparing object-based and pixel-based classification methods of land cover change detection related to natural gas development in southwestern Pennsylvania, leading to a publication in the International Journal of Remote Sensing.
While in school, Ben worked as a GTA, teaching Introduction to GIS labs and as a summer intern at the West Virginia GIS Technical Center. After graduating, Ben worked for 5 years at Dieffenbauch & Hritz LLC, a private civil engineering firm in Morgantown, WV. While there, he started a GIS Department and worked with the Survey Department to develop a pipeline as-built service. Ben received his GISP certification in 2014.
Needing a change of pace and scenery, the Bakers moved to Tennessee where has Ben worked for Hamblen County from 2017-2018 focusing on cadastral mapping and 9-1-1 addressing. In March of 2018, Ben assumed his current role as the GIS Manager of the Morristown-Hamblen GIS Partnership. In this capacity, Ben is working to establish strong relationships between stakeholders and departments, and to encourage the adoption of GIS technology into daily workflows

Day Wednesday **Time** 3:00 PM **Room** 13

Title Leveraging LiDAR to Assess Solar Suitability in Energy Poverty Alleviation

Author 1 Kelly Baar **Author 2** Adriana Ford

Organization University of Tennessee Knoxville

Presentation Abstract

Energy poverty, in the United States, is the strain and burden electricity prices place on low-income households. The installation of solar panels in these neighborhoods could play a significant role in alleviating economic stresses felt by families living in poverty.

This project uses LiDAR data to determine the slope, aspect, and size of single-family residential rooftops and creates a model that can be adjusted for other uses or applied to other locations. The analysis will also identify which low-income block groups have the most potential overall for energy poverty alleviation through solar panel installation. In addition, a sample of six houses that meet the ideal criteria are used with solar radiation calculations to quantify the amount of the alleviation these solar panels would provide. This implementation could increase the quality of life for a large portion of Knox County, while also promoting the use of renewable energy.

Presenter Biography

Adriana Ford is a senior at the University of Tennessee, Knoxville, with a major in geography and concentrations in geospatial science and technologies and space, society and culture. One particular area of interest is the relationship between socio economics and geography, specifically, exploring the ways in which GIS can be utilized in the analysis and improvement of social conditions. After graduation in December 2019, Adriana is planning to pursue a master's in GIS and then begin a career that combines the use of GIS with research that is focused on the betterment of society.

Kelly Baar is a senior at the University of Tennessee, Knoxville, with a major in geography and a concentration in climate and climate change. After graduation in May, Kelly hopes to assist a company utilizing her GIS skills and experience as well as her leadership and interpersonal skills. Two of her interests are GIS and helping others, so she hopes to combine both of these passions in a career where she can expand the knowledge she has gained in the classroom while making a difference for society. Whether that be by conducting climate modeling, crime analysis, or hands on research, her dream job involves working to change the world for future generations.

Day Wednesday **Time** 3:30 PM **Room** 3

Title A Beginners Guide to Geographic Information Systems

Author 1 Mark Crow **Author 2**

Organization S&ME

Presentation Abstract

Geographic Information Systems include a dizzying array of technologies which can seem intimidating to those who are learning about it for the first time. This presentation will help explain what GIS means, how it is used, and why it is so important to today's connected world.

Presenter Biography

Mark has over 18 years of professional land surveying and GIS experience. He works on a wide range of GIS, surveying, and engineering related projects including water, wastewater, and stormwater.

Day Wednesday **Time** 3:30 PM **Room** 12

Title ESRI's New Collector, Configuring for high accuracy data collection and converting captured elevations to Mean Sea Level

Author 1 Cliff Hoeffner **Author 2**

Organization Duncan-Parnell, Inc

Presentation Abstract

With the latest release of Collector, the way you configure your Trimble R-series receivers with your mobile device has changed and it's now easier than ever with the direct integration with Collector. In this presentation we will cover these settings and also how to convert the Collector captured elevations values from Height Above Sea Level (HAE) to Mean Sea Level (MSL).

Presenter Biography

Cliff Hoeffner is the Trimble Mapping & GIS representative for the state of Tennessee. He is a Tennessee Tech graduate and has 12 years of experience capturing GIS data using high accuracy Trimble GNSS equipment.

Day Wednesday **Time** 3:30 PM **Room** 13

Title Green Stormwater Mitigation Planning Utilizing LiDAR at the University of Tennessee's Agricultural Campus
Tennessee's Agricultural Campus

Author 1 Emily Craig **Author 2**

Organization The University of Tennessee, Knoxville

Presentation Abstract

Description of Paper or Abstract (150-word limit): The University of Tennessee, like many urbanized entities, is required to maintain a permitted municipal separate storm sewer system (MS4) as a part of the US EPA's National Pollutant Discharge Elimination System stormwater program. The NPDES Program was put in place by the US EPA in 1990 to regulate stormwater discharges to the country's surface waters so as to prevent the transport of pollutants and to decrease stormwater volumes. In Tennessee, the TN Department of Environment and Conservation implements these regulations; however, actual achievement of compliance with MS4 pollution and runoff volume reduction requirements is a difficult task for permitted entities to accomplish. The purpose of this project is to combine ESRI's ArcMap LiDAR processing and terrain analysis capabilities with the Tennessee Runoff Reduction Assessment Tool to develop a robust stormwater mitigation plan for the UT's Agricultural Campus using green infrastructure stormwater control measures that would ensure required MS4 performance.

Presenter Biography

Emily Craig is a senior undergraduate student at the University of Tennessee majoring in Sustainability and minoring in Geographic Information Science. During her undergraduate career, she has focused on developing methods to help planners, engineers, and designers take advantage of the synergistic nature of the combination of these two fields as they relate to hydrology -- the former providing a motivating conceptual framework for her projects, the latter filling in the analytical and communicative gaps so often left unbridged in Sustainability applications. Through the lenses of urban hydrologic management and green infrastructure suitability, she has lead GIS driven research projects on using terrestrial LiDAR to assess streambank stability, ESRI's ArcMap Model Builder to quantify stormwater impacts of suburban development, and airborne LiDAR to assess the basic green roof potential of the University of Tennessee's main campus. In the Fall of 2019, Emily will begin her graduate studies in the Master of Landscape Architecture program at UT where she plans to use her Sustainability and GIS skills to produce stormwater-focused designs that are both low impact and high performance due to a strong spatial understanding of and emphasis on the larger system in which all infrastructure ultimately exists. Once she has completed her MLA, Emily hopes to join or someday start a firm that leverages its unique position as sculptor of the built environment to create spaces that emphasize environmental appreciation, understanding, and stewardship, while nurturing the growth of social, cultural, and economic capital -- spaces that she believes harness their full power.

Day Wednesday **Time** 4:00 PM **Room** 3

Title Exploring the Offerings on TNMap.tn.gov: LiDAR, Imagery and More

Author 1 Chris Meeks **Author 2**

Organization State of TN, F&A, Strategic Technology Solutions, GIS Services

Presentation Abstract

The Tennessee Department of Finance and Administration, GIS Services group is continuing its efforts to bring statewide data layers to the user community. In this session we will explore how users can access the products available on the TNMap site. In addition to looking at how users can access the USGS 3DEP LiDAR products via the TNMap site, we will explore the new Google Imagery service available to State & Local government users. We look at how to request access to the imagery and the details of being a consumer of the service.

Presenter Biography

Chris has served as a GIS Analyst in the Department of Finance and Administration, Strategic Technology Solutions for 15 years. In addition to service in state government, he has held GIS developer and analyst positions in the private sector as well as in local & federal government agencies. He has been an active part of the Tennessee GIS community since 1989.

Day Wednesday **Time** 4:00 PM **Room** 12

Title Data Collection Alternatives into Open Source Products

Author 1 Chad Howard **Author 2** Randal Hale

Organization Henry County 911 ECD -- North River Geographic Systems

Presentation Abstract

Utilization of Non ESRI products for data collection and migration into Open Spource GIS products as a cost effective alternative.

Presenter Biography

Chad Howard is the IT Manager for Henry County 911 and has been involved in GIS for Henry County since 2015. Chad has been a computer programmer since 1982 starting in Basic Programming moving into high level programming on IBM mainframes. Has also worked as a 911 dispatcher from 1997 to 2008 and a reserve sheriff’s deputy with the Henry County Sheriff's Office since 2008.

Day Wednesday **Time** 4:00 PM **Room** 13

Title Exploration of Great Smoky Mountain Peaks Visible from Walters State Community College Sevier Campus

Author 1 Jillian Wester **Author 2**

Organization Walters State Community College

Presentation Abstract

Walking along Walters State Community College's Sevier Campus, your view is either the tree-lined Little Pigeon River or the Great Smoky Mountains. Identifying the mountain peaks is a difficult, near impossible task. Even with modern digital maps, topographic maps, 3D imagery, and mountain identification phone apps, discerning well- known mountain peaks and areas is a challenge. Data has been gathered and analyzed to make information more accessible to campus visitors. The purpose of this project is to identify all mountain peaks and ranges that are visible from the Northernmost corner of Walter State Community College Sevier Campus (approximately 35.864969, -83.501275). The resulting information will be displayed in a presentation on the Walters State Community College website, a three-dimensional printed model, and an interpretive kiosk at the point of observation on campus.

Presenter Biography

Jillian is the Biology Lab Specialist at Walters State Community College. In an effort to increase accessibility to the natural resources available, she has led the charge on establishing the Great Smoky Mountain Arboretum on the Sevier Campus. The tree-line Little Pigeon River provides a beautiful forested area, perfect for educational enhancement and community enjoyment. Summer 2018, she graduated from the University of Tennessee, Knoxville with a Master of Science degree in Agricultural Leadership, Education, and Communications. She is currently in the first semester in Tennessee State University's Master of Professional Science in Applied Geospatial Sciences program. She is using the skills learned in the program to create a digital catalog of the trees on WSCC's Sevier Campus, enhance student community experiences with geocaching fun, and embracing the beauty of the Great Smoky Mountains with an exploration of the peaks visible from the Sevier Campus. Jillian enjoys hiking, fishing, live music, yoga, and sharing her love of science with others. Her favorite secondhand effect of GIS studies is watching her 3-year-old son's fascination with maps grow.

Day Thursday **Time** 8:00 AM **Room** 3

Title "Where is the Golden Hour for Trauma Care"

Author 1 Tim Prather **Author 2**

Organization University of Tennessee Extension

Presentation Abstract

The Golden Hour refers to the hour following traumatic injury during which patients receiving appropriate medical care experience improved odds of recovery. But, what locations afford victims the opportunity to receive that care within the Golden Hour? This exercise was undertaken as a GIS project to explore healthcare access in conjunction with National 4-H GIS/GPS Leadership Team activities. Using ArcGIS Pro and ArcGIS Online, service areas were produced for emergency medical services, air ambulance services and Level 1 Trauma Centers and combined to generate total elapsed times from injury until arrival. Covered areas will be enriched with population data to determine percent of populations covered in each county.

Presenter Biography

Tim Prather received his BS and MS degrees in Agricultural Engineering at University of Georgia, and then joined the University of Tennessee Agricultural Engineering Department as Extension Farm Safety Specialist in 1983. His job has transformed over the years to a variety of roles, and began his GIS work in precision agriculture. His current GIS work includes advising the National 4-H GIS/GPS Leadership Team and assisting UT faculty, staff and students with their projects.

Tim and his wife Lynn live in Maryville and have two grown children. After 36 years with Extension, Tim is planning to hand in the office keys at the end of 2019, and the only firm plans are to fly to Hawaii on his wife's orders on January 4.

Day Thursday **Time** 8:00 AM **Room** 12

Title Streamlining the Sanitary Sewer Design Process with Web GIS

Author 1 David Marcum **Author 2** Chase Givens

Organization S&ME

Presentation Abstract

Engineers can implement powerful GIS tools for sanitary sewer analysis, but typically only think of using CAD for design. While CAD is an important for some utility design, we have developed workflows that allow for construction bid documents to be prepared with GIS.

Sanitary sewer rehab design can be accomplished on the web using Web App Builder, which is a user-friendly, interactive web map which can be customized to fit a myriad of tasks. Field data is loaded to the map using Survey123 and ArcGIS Collector. All datasets, videos, and reports are stored in the cloud and accessed by clicking on the corresponding sewer feature.

ArcGIS Dashboard is a management tool used to view quantities during the design phase and construction progress throughout the construction phase.

We will demonstrate the ability to combine these software packages and leverage the unique tools each bring to develop a cost-effective rehabilitation project.

Presenter Biography

David Marcum has been a civil engineer for nearly thirteen years, initially working in land development and design, and since 2008, he has been involved in a number of projects related to water and wastewater, with particular emphasis on sanitary sewer rehabilitation. He has a Bachelor of Arts Degree from Maryville College in Management, and a Bachelor of Science Degree in Civil Engineering from the University of Tennessee in Knoxville.

Chase Givens has over 4 years of experience serving as an Engineer-in-Training for S&ME. He works on a wide range of water and wastewater projects involving engineering design utilizing GIS. He received a Bachelor of Science in Civil Engineering and a Master of Science in Environmental Engineering with a focus in Water Resources from the University of Tennessee-Knoxville.

Day Thursday **Time** 8:00 AM **Room** 13

Title Your Lidar Data in the Cloud

Author 1 Jeff Lovin, CP, PS **Author 2**

Organization Woolpert

Presentation Abstract

Robust lidar data is exceptionally useful for government agencies, but it doesn't come without its share of headaches. The high cost of storing, maintaining and manipulating lidar data can diminish its efficacy—and in some cases, render it virtually useless.

What if there was an easy-to-use, low-cost alternative to traditional lidar data storage and dissemination methods? A solution that makes maintaining and accessing data simple and effective would broaden the usage of lidar data, leveraging it for the benefit of communities across the country—and the world.

This presentation will discuss different methods for hosting data, managing maintenance/hardware upgrades and creating specialized, on-demand derivative products. Attendees will learn about the various models for managing lidar data, including a new, web-based tool that uses cloud technology to slash data storage and hardware costs. They will also discover new ways to provide their constituents with access to this valuable data.

Presenter Biography

Jeff Lovin is Senior Vice President and Managing Principal of the Government Solutions Market at Woolpert, a national geospatial, design, and engineering firm headquartered in Dayton, Ohio. Mr. Lovin has spent his entire 30-year career in the geospatial profession at Woolpert, where he has developed a diverse technical background as well as project management skills, senior leadership expertise and advocacy experience. Mr. Lovin has been integral to Woolpert's integration of leading-edge technology while also playing a critical role in the development of proprietary software and technology that also positions the firm as a leader in geospatial solutions.

Over nearly three decades, he has been involved with and oftentimes served in leadership roles for professional organizations including; MAPPS, ASPRS, COGO, and NGAC. Mr. Lovin has worked closely with federal clients not only related to contracts and programs but also to develop strategies and identify funding sources. He has also supported a number of universities in the development of their geospatial programs to advance the geospatial profession

Day Thursday **Time** 8:30 AM **Room** 3

Title Building an Automated Hazard Index Webapp

Author 1 Michael Shoop **Author 2**

Organization ETSU

Presentation Abstract

State Climate Offices (SCO's) in the United States are critical conduits for improving data on weather and climate in local communities. Two states do not have a state-recognized SCO: Tennessee and Massachusetts. Efforts are underway at East Tennessee State University to develop the Tennessee Climate Office (TCO). Currently, climate services and products are severely lacking across Tennessee. This presentation will show a product in development for the TCO called the Automated Hazard Index Webapp. The majority of this presentation will then focus on the general methodology of building the Automated Hazard Index Webapp using the Python scripting language. The presentation will conclude by discussing planned future additions to the product and the limitations encountered during construction.

Presenter Biography

Michael Shoop is a Graduate Student at ETSU in Johnson City TN. He is currently completing his thesis on automation of state climate office processes and products.

Day Thursday **Time** 8:30 AM **Room** 12

Title Resolving Small-Scale Features on Mars: Lessons from Coordinated, High-Resolution Mapping in Xanthe Terra

Author 1 Natalie Robbins **Author 2**

Organization TN Tech

Presentation Abstract

Contributing authors:
Natalie N. Robbins, Allison M. Bohanon, Jeannette M. Wolak
Terraced or stepped fans are relatively small Martian surface features characterized by incredible radial symmetry compared to Earth analogs. In order to understand the formational processes behind these features, our research group undertook a coordinated, high-resolution mapping effort of several terraced fans in the Xanthe Terra region of Mars. Each researcher created a 1:18,000 scale geologic map of a terraced fan in ArcGIS Pro. Mapping was primarily conducted on High Resolution Imaging Science Experiment (HiRISE) imagery (0.3 to 0.6m/pixel) and Context Camera (CTX) imagery (6m/pixel). As one of the first planetary mapping projects in ArcGIS Pro, a secondary objective was generating mapping tutorials for other users. After mapping, remote sensing mineralogical analysis was performed on a terraced fan in Camichel Crater (2.69 N, 308.33 E) using data from the Compact Reconnaissance Imaging Spectrometer (CRISM), with plans to expand mineralogical analysis to other terraced fans as the GIS-ready data becomes available.

Presenter Biography

Natalie Robbins is an environmental enthusiast who is graduating from Tennessee Tech with her Professional Science Master's in Environmental Informatics in May 2019. During her time at Tech, her research has focused on integrating remote sensing and GIS to analyze environmental changes on the Earth and other planets. She is particularly interested in the development of novel informatics techniques to analyze spatial data and interpret environmental phenomena. When she is not at school, Natalie enjoys hiking, reading and practicing yoga.

Day Thursday **Time** 8:30 AM **Room** 13

Title Creating 3D Facility Assets in ArcGIS using Matterport scan data

Author 1 Ian Feathers **Author 2**

Organization Patrick Engineering, Geospatial Services

Presentation Abstract

Virtualized 3D environments have become the new standard for previewing, measuring, and maintaining real property assets. 3D data derived from Matterport camera scans can be utilized in ArcGIS to create representative 3D features. Review a unique and immersive GIS solution that utilizes this 3D data to improve and streamline facility asset inventory.

Presenter Biography

Ian Feathers is a 3D Enterprise GIS Specialist with 10+ years of experience in geospatial solutions and technologies. Ian serves as a Geospatial Consultant for Patrick Engineering Geospatial Services, focusing on a variety of markets including regional and urban planning, facilities, commercial real estate, higher education, government, and defense. Ian received his MS and BA degrees in Geography from the University of Tennessee – Knoxville. Prior to his position at Patrick he served as a Solution Engineer for the Geodesign/Facilities division at Esri. Outside of work, you can find Ian in Northeast Tennessee fly-fishing the South Holston River, hunting in the Cherokee National Forest, and playing music throughout the region.

Day Thursday **Time** 9:00 AM **Room** 3

Title QGIS 3.x For Beginners

Author 1 Randal Hale **Author 2**

Organization North River Geographic Systems, Inc

Presentation Abstract

QGIS is an open source desktop with a huge community and is compatible with your commercial GIS system. This year saw a new Long Term Release and s ability to be a contender with many commercial offerings. In this talk I will attempt to run very quickly through a lot of new features and why you should install this FREE piece of software to help your GIS.

Presenter Biography

Randal Hale is the owner of NRGS. NRGS works primarily with Free and open source tools for Geoinformatics (aka FOSS4G). He helps out with the QGIS community and luckily that's the only committee like thing he works on. He also enjoys long walks on the beach, tacos, and normalized spatial databases. Life is too short for proprietary data formats.

Day Thursday **Time** 9:00 AM **Room** 12

Title Using a Database with QGIS

Author 1 Julian Burke **Author 2**

Organization Chatsworth Water Works Commission

Presentation Abstract

This presentation will demonstrate how Chatsworth Water Works Commission integrated their Customer Service and Work Order systems with QGIS by using PostgreSQL.

Presenter Biography

Julian is the IT/GIS Manager for Chatsworth Water Works Commission. He is responsible for all IT and GIS operations. Julian and his wife Kristi reside in Cleveland, TN and they have two grown children, Zeke and Ema.

Day Thursday **Time** 9:00 AM **Room** 13

Title Do you really know your data? How to detect changes in your data using Python

Author 1 Jeff Kirchberg **Author 2**

Organization City of Johnson City

Presentation Abstract

Would you like to know how your data is being edited by your users? With the assistance of Python you can capture and view the changes to your gis data on a daily basis. Get all adds, deletes, and changes saved in a .gdb and a summary of the data emailed to a list of emails. With this information you can find data editing patterns, edits where you may not have expected them, and recover lost data without rolling back your entire database. Hear how Johnson City has already used this system to find unexpected data editing.

Presenter Biography

Jeff Kirchberg is the GIS Database Specialist for the Public Works Department for the City of Johnson where he performs database development, new software implementation such as Cartegraph and Survey123, and Collector, and education and training of end users. He is passionate about the further education of both office and field workers and developing systems to allow better data driven decisions. Jeff is especially interested in developing new ways for data managers to design systems, educate users, and manage data in an effort to fully realize the goals of an organization.

Day Thursday **Time** 9:30 AM **Room** 3

Title #FightFluTN: Utilization of Web AppBuilder for ArcGIS to Enhance Public Communication of a Mass Vaccination Event

Author 1 Kelly Squires **Author 2**

Organization Tennessee Department of Health

Presentation Abstract

On December 5th, 2018 the Tennessee Department of Health organized a statewide event in which all 95 county health departments operated free flu vaccination Point of Dispensing (POD) clinics for the public. FightFluTN was a coordinated mass vaccination operation requiring extensive preparation and a targeted information campaign. Each county determined the hours and locations of their POD based on community need. To widely communicate POD location information to the public and increase ease of access, ArcGIS Pro, ArcGIS Online, and Web AppBuilder for ArcGIS were utilized to create a publically-available web mapping application. The web app provided information on all POD locations, hours of operation, and a contact number. A "near me" widget was utilized to allow the public to find their closest POD. The web app was viewed nearly 4,000 times in two weeks, and the event resulted in over 4,400 flu shots given.

Presenter Biography

Kelly Squires is an epidemiologist in the Emergency Preparedness program at the Tennessee Department of Health (TDH). She regularly provides GIS expertise to a variety of health programs including tuberculosis elimination, healthcare-associated infections, and immunizations. She also provides GIS support and content development during planned events, such as flu vaccination campaigns, and public health emergencies, such as a hurricane response. She serves as a liaison with the Environmental Epidemiology program, leading carbon monoxide poisoning surveillance for the state of Tennessee. Kelly also fosters the development of GIS skills in TDH's Division of Communicable Diseases and Emergency Preparedness (CEDEP) by organizing and providing training opportunities to build and maintain capacity for GIS in the state, metropolitan, and regional health departments.

Day Thursday **Time** 9:30 AM **Room** 12

Title 911 in TN and how STS Serves our Emergency Communication Districts

Author 1 Andrew Griswold **Author 2** Ryan Pittenger

Organization State of TN Dept. of Finance & Administration, GIS Services

Presentation Abstract

The TN Dept. of F&A, GIS Services has been involved with the Next Generation 911 project for over a decade. In this session we will delve into what Next Gen 911 is, how GIS fits into the system, and where TN stands in the national picture. We will then explore what STS-GIS Services is currently offering to our Emergency Communications Districts (ECDs) by looking at how Google Imagery is being utilized at the ECD level. We will also look at the customer-driven evolution of our mapping products, such as wall maps, map books, and other analysis, and how we deal with data obstacles encountered along the way.

Presenter Biography

Andrew Griswold has served with STS GIS Services for 7 years, and has been a part of the Tennessee GIS community since 2006, in both the public and private sector. Andrew graduated from Tennessee Tech. Ryan Pittenger has served with STS GIS Services for 6 years, and has been a part of the Tennessee GIS community since 2011, in the public sector and in academia at APSU. Ryan Graduated from Southern IL of Carbondale.

Day Thursday **Time** 9:30 AM **Room** 13

Title Leveraging GIS/IT Resources in Local Government for Improved Construction Coordination and Transparent Capital Funds Management

Author 1 Jeff Deason, GISP **Author 2**

Organization NuOrigin Systems, Inc.

Presentation Abstract

Metro Nashville needs to manage a lot of information between multiple stakeholders for every planned construction or infrastructural remediation project across their service area. NuOrigin Systems helped them by replacing a very expensive subscription-based COTS cloud application with a custom web application hosted on Metro's existing IT resources and consuming GIS data and services through Metro's ArcGIS Server.

Metro Nashville project managers also need real-time access to current capital funds data for past, current, and planned projects. Departments need to ensure funds allocated to planned projects are accounted for –all the way down to the ticket for that last truckload of crushed rock and the invoice for the final inspection. Stakeholders need to know the final costs as well as the over/under vs the original estimates, and the reason for any variances. NuOrigin solved the problem with a highly advanced GIS-based project accounting / fund management web application. Watch us create and manage GIS assets over the web.

Presenter Biography

NuOrigin Systems, Inc., has provided innovative custom software and intuitive web applications that blend GIS toolsets with asset management workflows since 2005. Jeff Deason is a GISP and Project Manager for NuOrigin Systems in Franklin, TN. For most of the past 20 years he has worked with GIS data and related systems to help local governments and small businesses manage the data and spatial aspects of their infrastructure asset management programs. Visit our booth to discuss the types of solutions we can provide for you.

Day Thursday **Time** 2:30 PM **Room** 3

Title How to Survey123 / Survey123 like you've never seen it before

Author 1 Jeff Kirchberg **Author 2**

Organization City of Johnson City

Presentation Abstract

Come learn the ins and out of creating related tables, publishing feature services, and setting up your XLSForms for success to use with Survey123. We'll walkthrough of how to create a Survey123 survey based on an existing feature service. You'll learn the tools you need to setup a Survey123 survey on your existing feature service to collect data using dynamic XLSForms.

Presenter Biography

Jeff Kirchberg is the GIS Database Specialist for the Public Works Department for the City of Johnson where he performs database development, new software implementation such as Cartegraph and Survey123, and Collector, and education and training of end users. He is passionate about the further education of both office and field workers and developing systems to allow better data driven decisions. Jeff is especially interested in developing new ways for data managers to design systems, educate users, and manage data in an effort to fully realize the goals of an organization.

Day Thursday **Time** 2:30 PM **Room** 12

Title Using US Census population data in hazard assessments: Lessons Learned

Author 1 Micah-John Beierle, GISP **Author 2**

Organization Tennessee Valley Authority, RRM, GIS and Mapping

Presentation Abstract

A review of population data, its restrictions, assumptions and use best practices based on problems encountered. The paper briefly describes the data structure, sampling restrictions and how those assumptions should shape the data use and analysis assumptions when res-sampling for parcel scale data structures used in hazard modeling.

Presenter Biography

Micah-John Beierle is a Geographic Information Systems (GIS) Analyst staff augmented contractor with the Tennessee Valley Authority, RRM, GIS and Mapping department. Micah-John is a Geographic Information System Professional who holds two graduate degrees in Natural Resource Management fields with focuses on the use of geo-spatial technologies to understand our changing world.

Day Thursday **Time** 2:30 PM **Room** 13

Title Making Digital As-Built Submissions Work Hard So You Don't Need To

Author 1 Jeff McCann **Author 2**

Organization S&ME, Inc. Water Business Group

Presentation Abstract

With the widespread use of CAD and GIS in the Utility Sector; streamlining as-built data input into GIS should be an efficient process. Maintaining an active and up to date GIS dataset is critical for daily operations, record keeping, and reporting. Unfortunately, many utilities struggle with this due to varied software platforms, time consuming manual data input, and a lack of understanding on behalf of the engineer/contractor. To reduce efforts for both the Utility and Engineer/Developer which in turn lowers cost of as-builts and contracts; this topic will look at documentation, processes, workflows, and support files a Utility can use to define an as-built deliverable which allows seamless entry into their existing GIS data.

Defining processes on both sides also develops a foundation to assist in ensuring all parties understand what is required for submissions. This standardizes the incoming data for improved quality control and implementation. Standards can be built to match existing data schema. Items to consider are software compatibility, ease of use, and workflows for all involved.

Presenter Biography

28 years serving utility sector in Design with AutoCAD and GIS for Water, Sewer, Storm, and Treatment Plants from field to final deliverables. Design projects have included simple utility extensions, large water and wastewater plants, to urban forestry inventories. Variations of tasks have been from field layout/survey, GPS procedures/training, CAD/GIS standards/training for internal staff and clients, including project management of numerous municipal/utility GIS projects. Has been working within CAD environment beginning in early 1990's for electrical and municipal clients; with also implementing AutoCAD Plant 3D to design and model treatment plants in a full 3D environment. In 2002 GIS was introduced as another tool in the shed. With multiple years of handling designs and data from both software platforms have been able to develop workflows to assist users in both software platforms to streamline efforts. Development of Digital Submission Standards was first requested from clients for various municipal, regional, and private utilities. During his career has been embedded within municipalities to streamline field, CAD, and GIS workflows. Also provided GIS on-site and remote support, editing, and training for many municipalities, utilities, and their staff.

Day Thursday **Time** 3:00 PM **Room** 3

Title Replacing a Commercial GIS with a FOSS4G Server

Author 1 Randal Hale **Author 2**

Organization North River Geographic Systems, Inc

Presentation Abstract

Free and Open Source Software for Geoinformatics (FOSS4G) has come a long way in the last 5 years. Server applications, lidar, and web services are all possible with FOSS Software. This talk is going to cover some open source applications and an example of how this was implemented in a 911 environment for Henry County TN. We will also cover a bit of budget and some surprises that came up during the implementation.

Presenter Biography

Randal Hale is the owner of NRGS. NRGS works primarily with Free and open source tools for Geoinformatics (aka FOSS4G). He helps out with the QGIS community and luckily that's the only committee like thing he works on. He also enjoys long walks on the beach, tacos, and normalized spatial databases. Life is too short for proprietary data formats.

Day Thursday **Time** 3:00 PM **Room** 13

Title Utilizing Lidar and Imagery for Railyard Mapping

Author 1 Jonathan Byham **Author 2**

Organization Atlantic

Presentation Abstract

Atlantic was contracted by an engineering firm to provide topographic mapping products for a railyard, which also included the top of rail elevations for the rail tracks, something that is usually provided by conventional land surveying techniques. Atlantic was able to collect these data without the need of clearing the rail cars on the tracks by combining high-density lidar and digital orthophotography with photogrammetric mapping techniques and automated lidar processing. By not having to clear the rail cars from the tracks for this survey, Atlantic's aerial survey proved to be safer and more cost-effective to its client than having survey crews collect topo data in the field.

Presenter Biography

Jonathan Byham is an Associate Vice President of Business Development at Atlantic, and has been with the company for four years. He is a Huntsville, AL native, and a geography graduate from The University of Alabama and The University of North Alabama. He is an experienced geospatial professional with working experience in GIS, land surveying, and photogrammetry. When he's away from the office, Jonathan enjoys spending time with his wife and newborn daughter, as well as enjoying music and being outdoors.