Name	Organization	Email	Title of Presentation	Abstract of Presentation	Presenter Short Bio
Adam Carnow	ESRI		Communicationg the Value of GIS in Your Organization: How to Measure Return on Investment	Understanding, documenting, and communicating the value GIS brings to your organization can be critical to your success. First, presenting the return on investment (ROI) from your programs' and projects helps celebrate the success of the departments using GIS. This process oftentimes stimulates ideas across an organization as to the uses of spatial thinking and GIS technology. Secondly, it reinforces the investment in technology, people, and equipment to improve government services. Quantified ROI is good to have on hand during budgeting periods, too. Finally, measuring the real benefits of GIS can act as an accountability tool for yourself. It provides a self-check as to whether your program is in sync with or meeting organizational goals. This session will seek to provide guidance on documenting and reporting the business value of GIS. Topics will include • Measuring the Benefits of GIS • Calculation methods • Examples of success • Techniques for communicating success	Adam Carnow is a Community Evangelist. He is a keynote speaker, thought leader & technology evangelist. He inspires customers to maximize their ROI in ArcGIS. Adam has 25+ years of experience. He holds a BA in Geography, & a MA in Urban & Regional Planning from the University of Florida.
Alexa Ramirez	Quantum Spatial, Inc.	aramirez@quantumspatial.com	New GIS Tool to Identify the Potential Impact of Offshore Dredging on Essential Fish Habitats	With support from NOAA's National Centers for Coastal Ocean Science and funding from the Bureau of Ocean and Energy Management (BOEM), Quantum Spatial developed the Shoal Map Assessment Tool for EFH (shoalMATE). The tool produces a standardized report to support consultations on Essential Fish Habitat between BOEM and NOAA's National Marine Fisheries Service to mitigate impacts of offshore dredging on the habitats of managed marine species.	Alexa is a GISP and PMP with over 12 years of experience in the geospatial industry from collecting field survey data to application development. In her role as eGIS Project Manager with QSI, she helps her clients answer questions using their data.
Andrew Jacobson	Catawba College	ajacobso19@catawba.edu	Searching for consensus on Earth's remaining wild areas	Leading up to the 2020 Convention on Biological Diversity (now delayed for 2021), there is momentum around setting bold global conservation targets such as the Half-Earth Movement. Yet, it remains unclear how much of Earth's land area remains without significant human influence and how this land is distributed across the planet. In this work, we compared four recent, authoritative global maps of human influences across Earth's land, Anthromes, Global Human Modification, Human Footprint, and Low Impact Areas, to answer these questions. Despite using various methodologies and data, these different assessments independently estimate similar percentages of the Earth's terrestrial surface as having very low (20-34%) and low (48-56%) human influence. From a spatial standpoint, three out of four maps agree on 46% of the non-permanent ice- or snow-covered land as having low human influence. However, much of the very low and low influence portions of the planet are comprised of cold (e.g., boreal forests and tundra), high (montane grasslands) or dry (e.g., deserts) landscapes. More concerning is the lack of low human influence areas in several biomes. Three biomes, temperate grasslands, tropical coniferous forests and tropical dry forests, have <1% of land identified as very low human influence across most datasets, and three more biomes, tropical grasslands, mangroves and montane grasslands, have <1% land identified as very low influence across all datasets. These findings suggest that about half of Earth's terrestrial surface has relatively low human influence, and hence bold conservation targets, such as protecting 30% of the planet by 2030 and 50% by 2050 (e.g. Half Earth) can still be achieved on land with limited human impact. Yet, the amount of land with low human influence varies widely by biome and several ecosystems will need substantial restoration.	Dr. Andrew Jacobson is a conservation biologist who uses geographic information systems (GIS) and remote sensing to research the location and distribution of special species and places on planet Earth. He is an Assistant Professor of GIS and Conservation in the Department of Environment and Sustainability at Catawba College in Salisbury, North Carolina. Dr. Jacobson attended the Nicholas School of the Environment at Duke University where he earned his Master's degree and began a specialization in GIS. Dr. Jacobson obtained his PhD from the Geography Department at University College London. His doctoral research focused on the distribution of large carnivores in human-dominated landscapes of East Africa. Dr. Jacobson worked as a Science and Geospatial Advisor to the National Geographic Society, helping to identify and prioritize protection of wild places throughout the world. At Catawba College, Dr. Jacobson coordinates the Geographic Information Systems & Technology (GIST) Minor, teaching classes on GIS, GPS and UAVs (drones).
Angelia Hagopian	Onslow County	angelia_hagopian@onslowcountync.gov	Can I Borrow That? Using Other's Data in Your Mapping Applications	Ever heard the term Geospatial API? Have you been told that a federal or public agency has data in an API for you to access in a map and no clue what it is or how to do it, let alone how to get it into a mapping application? In this webinar, users will be shown how to add API map services from other agencies to their ESRI Web Maps, ArcMap and ArcPro. Various use cases will be shown including Story Map, Web Mapping Applications and will include adding NOAA Hurricane data, Johns Hopkins University COVID-19 data and demographic data.	Every map tells a story. Angelia Hagopian loves creating maps that conveys that story. Angelia is a GIS Specialist for Onslow County, working with departments & municipalities to share their data with the public by creating & maintaining interactive web mapping applications, surveys, story maps & dashboards utilizing ESRI's ArcGIS Server & ArcGIS Online with a focus on easy to use applications. Angelia earned her Master's Degree in Geographic Information Systems from Johns Hopkins University. In addition to her GIS job duties, Angelia also serves on the Disaster Ready Team & Damage Assessment Team for Onslow County.
Anna Verrill, GISP	NC DIT Center for Geographic Information and Analysis	anna.verrill@nc.gov	North Carolina Geographic Information Coordinating Council's Local Government Committee Panel Discussion	Join us while we host a panel discussion with North Carolina's Geographic Information Coordinating Council's (GICC) Local Government Committee (LGC) members. Background on the GICC and LGC will be provided. The LGC members will share their experience of serving on the LGC as well as other GICC committees and working groups. They will also share some background on the organizations they represent on the LGC as well as sharing some of their uses of ArcGIS in their day-to-day work.	The LGC members represented here work for municipal and county governments in North Carolina. The organizations they represent are NC Local Government Information Systems Association, NC League of Municipalities, NC Property Mappers Association, and the NC Chapter of the American Planning Association.
Bill Majercsik	City of Charlotte	william.majercsik@charlottenc.gov	Open For Business- Response to COVID-19 in Charlotte	In the spring of 2020, the City of Charlotte launched the Open for Business Dashboard. This application is used to communicate to residents that small businesses in Charlotte are still open and providing goods and services to residents during the COVID-19 pandemic. We were able to do this by making use of existing services and infrastructure such as Survey123, ArcGIS Hub, ArcGIS Online and SQL Server Integration Services. The City of Charlotte Team, with help from ESRI, was able to assemble these components into a functioning product in 14 days to allow small businesses to register with the program and for staff to quickly check those registrations and share them to the online components available to the public. In this presentation we will show how we leveraged the available tools to create the information intake, processing and publishing processes and demo the application.	Joint presentation with Jay Fowler (ESRI) and Bill Majercsik and Glenn Burton from City of Charlotte
Brett Spivey and David Giordano	CGIA	brett.spivey@nc.gov	NC OneMap: When you need to resuscitate, you might as well innovate.	The NC Center for Geographic Information and Analysis developed the next generation NC OneMap geospatial portal to replace its legacy system. It provides a secure and easy-to-use collaboration space for the program's numerous partners to share and find open data. We'll focus on new capabilities, the rationale for development, and how establishing best practices is beneficial. We'll also describe how our implementation could be used in other organizations to improve data dissemination efforts.	David Giordano is the database administrator and is a graduate of Appalachian State. Brett Spivey serves as the application developer and a graduate of UNCW and Charlotte. Both are instrumental in the development and maintenance of NC OneMap and are also involved with other GIS-related initiatives.
Chad Foley and Peter Sherman	City of Raleigh	peter.sherman@raleighnc.gov	Knowing the unknowable: using unsupervised machine learning to find patterns in your data	We're all limited in our day to day life by time and resources. There are only so many analyses we can conduct, and we can't search for something that we don't know exists. Unsupervised Machine Learning applications can help with this by showing us the patterns in our data that we would not otherwise see. Join the City of Raleigh as we explore options in the new ArcGIS Pro Python Notebooks for finding value in the overwhelming amounts of data available today.	Chad Foley is an Enterprise Senior Application Developer at the City of Raleigh and has worked there for 14 years. He recently took up kayaking. Peter Sherman is a Technology Analyst at the City of Raleigh and has worked there for 3 years. He recently took up the violin.

David Key	ESP Associates	dkey@espassociates.com	Real Time Flood Inundation Mapping System for the City of Roanoke	This presentation will provide an overview of the development of the GIS data & web application supporting real-time flood inundation / warning system for Roanoke. The system provides inundation mapping for current and forecasted levels along the entire river reach through the City. A GIS web application was developed to serve the data which is updated every 15 minutes. The presentation will also review the field verification testing during recent flood events from this Spring in Roanoke.	David Key serves as Director of Water Resources and GIS at ESP Associates and has 29 years of experience. Mr. Key has bachelor degrees in Mathematics and Civil Engineering from UNC-Greensboro and NC A&T State University, respectively. He has served as PM for the NC Floodplain Mapping Program for 20 year. His recent focus has been the development of advanced real time flood inundation mapping applications such as FIMAN, FIMAN-T and the State Emergency Response Application (SERA). David is married and has three children and lives in Holly Springs.
David McKittrick	Blue Marble Geographics	marketing@bluemarblegeo.com	Got a Drone - Now What? Mapping with your UAV	The rapid emergence and proliferation of Unmanned Aerial Vehicles (UAVs) or drones promises to have a profound impact on our lives and, for those of us in the mapping industry, this eye-in-the-sky technology is heralding a seminal shift in how we conduct our business. No longer constrained by the limited availability or expense of up-to-date geospatial datasets, our GIS projects stand to benefit from the on-demand data collection capabilities of this versatile new technology. In this presentation, we will explore several GIS-based workflows that take advantage of UAV-collected data for visualization and analysis. Beginning with the simple process of rendering geotagged drone-collected images in a map view and recreating the flight path of the aircraft as a 3D fly-through visualization, we will subsequently follow the steps for generating a three-dimensional reconstruction of the target area using the principles of photogrammetric analysis. The resulting 3D point cloud is the raw material upon which countless geospatial procedures are based and as an illustration of the inherent potential of this data format, we will follow a series of workflows that utilize this data. After classifying and filtering the points to isolate those representing ground, we will create Digital Terrain Model (DTM) from which we will generate vector contour lines. We will calculate the volume of material in surface anomalies, such as those representing piles of extracted material, and we will compare the surface model to data collected during a previous timeframe for the purpose of detecting and measuring change. UAV hardware is rapidly improving even as the costs continue to drop. For those of us in the geospatial industry, this technology is quickly becoming a valuable and accessible addition to our geospatial toolbox.	David McKittrick is Training and Outreach Manager at Blue Marble Geographics in Hallowell, Maine. A graduate of the University of Ulster in Northern Ireland, McKittrick has spent over 30 years in the field of GIS and mapping, focusing on the application and implementation of spatial technology within a wide variety of industries and vertical markets. McKittrick has designed and delivered hundreds of GIS training classes, seminars, and presentations and has authored dozens of articles and papers for numerous business and trade publications.
Ethan Credle	Geographic Technologies Group	ecredle@geotg.com	The Importance of a GIS Strategic Plan	Many organizations GIS grows in response to business needs and ad hoc requests without predefined vision, goals, and objectives. Growth in this manner makes for a difficult system to maintain and grow into a mature Enterprise GIS. Throughout this presentation, I will discuss the 6 Pillars of Sustainability that should be used to evaluate an organization. The 6 pillars are assessed based on a series of Key Performance Indicators (KPI) within each pillar. GIS Benchmarking and KPI's create transparency into an organization's GIS and identifies areas for which there is room for improvement. Levering data from these assessments is a critical step to developing a GIS Strategic plan containing clearly defined action items an organization can implement to build a sustainable, mature, enterprise GIS. "A failure to plan is a plan to fail" – Benjamin Franklin.	Geographic Information Systems Professional working as a Senior Project Manager for Geographic Technologies Group (GTG). I have a demonstrated history of working in the public and private sector.
Gary Thompson	NCGS		Replacement of NAD83 and NAVD88 in 2022 / Retirement of the US Survey Foot		Mr. Gary W. Thompson is the Chief of the North Carolina Geodetic Survey/Risk Management/NC Emergency Management. He has held a professional license as a Professional Land Surveyor (PLS) in North Carolina since 1980. He has served as president of both the North Carolina Society of Surveyors (NCSS) and the National Society of Professional Surveyors (NSPS). He is currently serving as treasurer of the National Council of Examiners for Engineering and Surveying (NCEES), chair of the North Carolina Boundary Commission, an emeritus member of the North Carolina Board of Examiners for Engineers and Surveyors (NCBELS), and a commission member of the ABET Applied Science Accreditation Commission.
Gwen Ford	High Point Metropolitan Planning Organization	gwen.ford@highpointnc.gov	Using ESRI Storymap to Present your Metropolitan Transportation Plan	The Metropolitan Transportation Plan (MTP) is a multi-modal transportation plan that covers a 25-year period. The lengthy document is difficult to present to the citizens in an engaging manner. Although paper maps are helpful, COVID-19 restrictions have prevented public meetings for staff to explain the maps to citizens. Using ESRI's Storymap presents the maps in an interactive environment that makes project locations and details easy to identify.	Gwen Ford is the Transportation GIS Analyst for the High Point Metropolitan Planning Organization. She holds a Master's degree in Geography/GIS from the University of South Carolina and has over a dozen years of experience working with ESRI's GIS technology in state, local, and regional governments. She has been with the High Point MPO for 14 years.
Hope Morgan	AECOM	jopsey@gmail.com	NC Working Group For Enhanced Emergency Response. Get in GEER	The Working Group for Enhanced Emergency Response through the NCGICC has been working with Local, State, and participating response organization to share roles and data during an emergency. Key stakeholders take responsibility to provide specific needed information pertaining to flooding, roads, facilities, etc..during an event and registered GIS responders have access to that information. the WGEER would like to share where we are in the process and how we intend to move forward to make the state a safer place while being efficient	Hope Morgan- Chair of WGEER- 20 years in GIS, 12 years in EM. Colleen Kiley- CGIA liaison for WGEER- 20 years in GIS, 10 years in EM
Jamey Gray	Stewart	jgray@stewartinc.com	Key Considerations When Requesting UAS Mapping Services	Unmanned Aerial Systems (UAS), aka Drones, have been a disruptive technology throughout the world over the last few years that have sparked countless applications. The engineering and surveying professions are no exception and the use of UAS for surveying and mapping continues to grow. This presentation will include recommendations for those to use when considering working with a surveyor to procure mapping services using UAS. Discussion will include key requirements, adherence to industry accuracy standards, and required deliverables and documentation.	As Director of Geospatial Services within Stewart's Geomatics practice, Jamey oversees GIS, aerial mapping, UAS, laser scanning and BIM modeling services. He currently has over 15 years of progressive survey experience and is currently licensed as a professional land surveyor in North Carolina, South Carolina, and Tennessee. He is also certified as a Geographic Information Systems Professional (GISP). Licensed as a Remote Pilot through the FAA. Jamey specializes in survey applications to support water resources (stormwater, hydraulic & hydrologic studies, high-water marks, and disaster response), large-scale geodetic (static networks, real-time GNSS), geospatial (aerial, terrestrial, mobile LiDAR, orthophoto, and sUAS), and GIS (inventory, web mapping & applications). Qualifications based selection contracts for Federal, State, and local government clients makes up 95% of his experience and expertise over the last 8+ years. Prior to that, Jamey's focus was on conventional surveys for land development, commercial real-estate, and energy clients. Finally, Jamey has designed and implemented several workflows and tools aimed at standardizing deliverables and automating many common tasks to increase efficiency and quality assurance. In addition to having advanced expertise in all types of mapping and design software, he is versed in Visual Basic, Python, and SQL programming languages.
Jay Fowler	Esri	jfowler@esri.com	Parcel Management with ArcGIS Pro and the new Parcel Fabric	The ArcGIS Pro parcel fabric provides a comprehensive framework for managing, editing, and sharing parcel data in ArcGIS Enterprise. In a multiuser environment, the parcel fabric can be edited and maintained using a services-based architecture. Learn about real-world application of the parcel fabric and the benefits it can bring to your organization.	Jay Fowler is a Solution Engineer specializing in local government. He is located in Charlotte, North Carolina and connects with GIS users across the Southeast. Jay attended the University of South Carolina receiving a Bachelors in Media Arts and a Master of Science in Geography.

Jay Fowler	Esri	jfowler@esri.com	Use of Machine Learning and Artificial Intelligence with ArcGIS	This session will discus how user can leverage machine learning and artificial intelligence (AI) to train and inference using tools designed to solve the complex spatial problems you face. Use location data as the connective thread to reveal hidden patterns, improve predictive modeling, and give your organization a new edge.	Jay Fowler is a Solution Engineer specializing in local government. He is located in Charlotte, North Carolina and connects with GIS users across the Southeast. Jay attended the University of South Carolina receiving a Bachelors in Media Arts and a Master of Science in Geography.
Jon Downey	Woolpert	jon.downey@woolpert.com	Shift Your GIS Enterprise to the Geospatial Cloud	The "public cloud" is radically transforming how we view IT system infrastructure, and the strong tie between IT and GIS means that GIS is along for the ride. Customers are migrating their existing, on-premise data and GIS infrastructure to the geospatial cloud using methods including "lift-and-shift." This session will showcase recent clients lift-and-shift project that featured Esri ArcGIS Enterprise software, the STREAM:RASTER solution for serving raster data in the cloud, and machine learning. Learn how shifting GIS operations to the geospatial cloud can occur at the best pace for every organization—including yours.	Jon Downey, is the vice president and Chief Innovation Officer at Woolpert. He has a rich background in computer science, IT and application development. He is a trailblazer in innovative cloud solutions, specifically in location-based services, and has a vast background on shifting enterprises to the geospatial cloud.
Jon Shaben	City of Charlotte	jshaben@charlottenc.gov	Vision Zero: Safer Streets for Charlotte	Describe how Charlotte's plan to implement their Vision Zero strategy used ArcGIS Pro to determine the High Injury Network. Present how different city departments are using the HIN with their data. Show how the HIN is shared to the public using ArcGIS online.	Jon Shaben has worked for the Charlotte Department of Transportation for 19 years. He worked on the long range travel demand model before his current position where he now maintains the crash data for the City of Charlotte. He has a Bachelors of Science from Oregon State University and a Masters in Planning from The University of Tennessee.
Justin Richardson	WithersRavenel	jrichardson@withersravenel.com	Using Survey123 in Conjunction with Collector for an Improved Data Collection Experience	Demonstration of how to set up data (feature and related) to be accessed & edited in Survey123 by way of a submission url hyperlink in Collector	I have worked in the GIS industry for over a decade & have been employed by several municipalities over the years. I worked for FEMA in response to Hurricane Matthew in 2016 and finally ended up at WithersRavenel in Cary, North Carolina, where I enjoy a wide variety of GIS projects.
Kenton Yearick	Maser Consulting	KYearick@maserconsulting.com	Managing Data between CADD and GIS	Learn best data management practices for data that is stored in CADD and GIS environments. Explore techniques for performing spatial updates through georeferencing, import/export options in order to meet client deliverables. Discuss the challenges of maintaining such data and how to manage the processes while keeping data accurate and accessible to various end-users. Focus on the engineering aspect of data, the tools that are used in the engineering industry for road design and utility design	Kenton Yearick - Kenton is a GIS Technician at Maser Consulting, specializes in Oil and Gas/Utility GIS applications and land based data using Esri products.
Kevin Jamison	Highland Mapping, Inc	kevin@highlandmapping.com	Demystifying NextGen 911	Next Generation 911 is one of the most important GIS topics to surface in decades. What exactly is NextGen 911 in North Carolina and how do you become compliant? This presentation will explain NextGen 911 in everyday terms and also dive into what is required of jurisdictional data to become compliant. Questions addressed in this presentation are as follows: - What is NextGen 911 and why does it matter to local government? - What GIS data is required for NextGen 911 compliance? - What standards do geometry and attributes have to meet to become i3 compliant? - How will current data models have to change to meet the new requirements? - What is an ALI and how does it play into NextGen 911 compliance? - How will the quality control process look as datasets are uploaded to DataHub for approval? By the end of this presentation, attendees will have a better grasp of NextGen 911. They will have a better idea of how to get data ready in its current format and what will occur during the approval process with GeoComm and AT&T. This presentation will serve to lift the veil on a stressful topic while presenting a strategy that will hopefully alleviate the apprehension felt by many as North Carolina's PSAPs are asked to very quickly meet new data standards for 911 GIS data.	Formerly GIS Director for Jackson County, NC, Kevin Jamison has been working for Highland Mapping since 2019. He has two decades of experience designing GIS workflows, databases, and GPS collection strategies. In 2015, his team won the prestigious G. Herbert Stout Award for visionary use of GIS for his work in Environmental Health onsite GIS data collection. He also served as President of the North Carolina Property Mappers Association. His current specialties include Next Generation 911 data conversion and cloud-based GPS collection solutions.
Marc Worth	Dominion Energy	marc.worth@dominionenergy.com	Natural Gas System, Safety, and the use of GIS	This presentation will cover the components and basic piping layout of a natural gas system, natural gas safety, and how over the years the industry has used GIS and how this will grow moving forward.	I've spent 40 years in the natural gas industry in various departments. Currently I work in Distribution System Integrity and Damage Prevention. I graduated from the University of Illinois and I'm currently a registered engineer in Oklahoma and North Carolina.
Mark Whitby	DATAMARK	mark.whitby@mbakerintl.com	Understanding the NENA NG9-1-1 GIS Data Model Location Parsing Requirements	With NG9-1-1 coming quickly, it is important to understand the NENA document on how streets are broken down, as well as addresses, and sub-addresses. We will go through the Civic Location Data Exchange Format (CLDXF) Standard for Road Centerline and Address Point parsing from NENA-STA-004.1.1-2014	Mark Whitby, ENP has worked with PSAP's for 21 years and spent almost 10 years working with 911 Authorities with MSAG/ALI and GIS. Mark has been involved with FL NENA and has worked on numerous NENA working groups. Mark has been with DATAMARK for over 1 year and resides in South Carolina.

Matthew McLamb	State of NC - CGIA	matthew.mclamb@nc.gov	NC NextGen 911 Overview and Update	It has been over 12 months since the regional NextGen 911 workshops occurred throughout the State of North Carolina, educating PSAPs and the GIS community on the GIS data requirements related to i3 readiness. Much progress has been made across the State and continues today. This session will serve as an update to the GIS community as to the status of the NextGen 911 project regarding GIS data preparation. Representatives from the State will be available to answer both general and specific questions regarding current progress, timelines, and next steps. This session is perfect for the entire NC GIS community, whether you are early in your NextGen 911 GIS data preparation, in the midst of updates, or are live on the ESInet i3 and are wondering what's next.	Matthew McLamb is the Assistant CGIA Director for the State of North Carolina and serves as the GIS Project Manager for the NextGen 911 project. Mr. McLamb has been a part of the NC GIS community for more than 12 years and has experience at both the local and state level.
Peter Erlenbach	Maser Consulting	PErlenbach@maserconsulting.com	Mobile & Web GIS Communicating with the General Public	Attendees of this presentation will learn about different options for using GIS to communicate with the general public. The presentation is geared toward State, County and local governments, but the concepts can be applied to many different organization types as well. Attendees will learn about web maps, web mapping applications, WebApp Builder, and StoryMaps. We will also review a few focused applications that are based on Esri's Solutions for local government.	Peter Erlenbach – Peter is a GIS Technician at Maser Consulting, specializes Survey, Utility, and GIS applications using Esri products and Python/RStudio Scripting.
Richard Wohler	GPI Geospatial, Inc.	rwohler@gpinet.com	Laser Scanning & 3D Building Information Modeling (BIM) for Airport Design & Facilities Management	This presentation will demonstrate the use of HD laser scanning to capture facilities detail for 3D building information modeling (BIM). A sample project for Hartsfield Jackson Airport in Atlanta, Georgia will illustrate the procedures for collecting/processing terrestrial LiDAR and high-resolution imagery within the small confines of existing airport infrastructure. We will conclude with how the LiDAR data was used to create an accurate BIM.	Richard Wohler works for GPI Geospatial, Inc. in the Sheboygan, WI office conducting Business Development. He has 37+ years in the geospatial industry contracting with federal, state/local and private industry for imagery and LiDAR acquisition, field survey, and photogrammetric services.
Roscoe E Reeve	Retired - Orange County	reeveroscoe@gmail.com	Origins of Property Mapping and Property Mapping Standards in North Carolina	The MOLDS Movement and its Origins NC Interest in mapping: 1978 Legislation Political Meets Professionals: Land Title Records and State, Local Governments Meet Surveyors Why we needed the NCPMA: The IOG Same Old Issues: Costs, Political Support, the constituency for Mapping.	Retired Land Records/GIS Director, Orange County (1978-2005); Past President, NCPMA (co-founder); Designed and Programmed Computerized "Orange County Land Records System" - PIN Land Title Document Index, Integrated Land Data from all land offices and GIS database; (previous career of teaching at high schools and NCSU)
Stephen Thayer	ESP Associates, Inc.	sthayer@espassociates.com	A New Approach to Working with High Density Spatial Data	The LAS file format has been in use for nearly 20 years. The basic format has been updated through the years to accommodate new hardware collection systems as they have been developed. Over time, implementation has become more cumbersome as the format has grown to support data generated by the large variety new hardware platforms. LiDAR collection densities have increased dramatically in recent years as well. LAS 1.4 introduced 64-bit capabilities to allow for extremely large file sizes. While this addition has helped in the management of large high-density projects to a certain extent, it has complicated the software developers' task of quickly extracting regions of data for analysis and display. The first portion of this work describes a new approach to storing large volumes of spatial data using a priori knowledge of the underlying spatial data. The proposed solution, built on the industry standard HDF5 file format, seeks to address the needs of both software developers and large data aggregators. This is accomplished by providing high levels of data compression while maintaining the ability to quickly extract arbitrary regions of data with on the fly decompression. The rapid growth in LiDAR collection densities has also exacerbated the challenges of data management encountered while working through large projects. The sheer volume of data can place significant loads on internal networks and local storage devices. This problem has only grown more acute during the current pandemic as analysts work from home and need access large amount of LiDAR and image data. The second portion of this work describes a newly developed software package designed to coordinate the work of many remote analysts performing multiple processing tasks on a single large project. Loosely based on a software code repository model, the package manages user task lists and allows users to check tiles out and back in. The software transparently manages a local data cache on each user's computer. The system ensures that files in cache are the most up to date while minimizing the number of file transfers between the remote computer and the sever. All transfers are performed as background tasks which significantly reduces the time wasted waiting for transfers to complete. The software is currently configured to store files on the server in LASzip format but work is underway to allow for the previously described HDF5 format to be used as well. This system can be easily installed on local IT infrastructure or used in a cloud environment. There is no custom software required on the server.	Stephen Thayer is a software engineer with nearly 40 years' experience in the field of data collection and analysis. He has extensive experience in numerical modeling for scientific and engineering applications. For nearly 20 years he's been involved in the development of software for LiDAR data display, analysis and storage. He is currently a project manager at ESP Associate, Inc.
Tiffany Puett	Duncan-Parnell		The Importance of Using Differencial Correction with Field Collection Data	More receivers and apps are available than ever before to pair with your own mobile device for collecting GIS data in the field and in real-time. It is important to get the most from your investment with the best positional accuracy possible. This session will discuss a number of options available for leveraging differential correction with third-party receivers and apps. There will be a preview of how differential correction can be used inside of Esri's Collector app as well as the Trimble Positions Desktop add-in for ArcMap.	Tiffany Puett is a GIS Services Coordinator & Trainer with more than 17 years of experience with Esri products. She focuses on data management, GIS support & Trimble's mapping solutions. Certified GISP, Esri Desktop Associate & Trimble Trainer, Ms Puett is an alumnus of Appalachian State University.
Wendy Peloquin	GISinc	wendy.peloquin@gisinc.com	Cloud 101: Taking ArcGIS to the Cloud	Why consider the cloud for your GIS? We will introduce the basic considerations and capabilities to be aware of when considering how the cloud can serve your program. Popular use cases and patterns as well as innovative and cutting-edge examples will be highlighted.	Wendy Peloquin, GISP is an Account Executive at GISinc supporting State and Local Governments and is based out of Jacksonville, FL. She earned her B.S. in Geography and a Certificate in Geographic Information Science (GIS) from the University of Georgia and her Geographic Information Science Administration, M.S. from the University of West Florida. Wendy is an active member of URISA International's Board of Directors.