

2024 NCAUG Spring Symposium AGENDA

Title:	Mapping the Flow: A UAVs, GIS, and Water Resources Symposium A Symposium on Unmanned Aerial Vehicles (UAV) in Geospatial Technology	Date & Time:	5/2/2024 10:00 AM to 4:00 PM
Location:	Chatham County Agriculture & Conference Center 1192 US Hwy 64 West Business, Pittsboro, North Carolina 27312	More Information: https://www.ncaug.com/	
Purpose:	The purpose of this GIS symposium is to explore the latest advances and applications of Unmanned Aerial Vehicle (UAV) technology in geographic information systems (GIS), including data collection, processing, and analysis, with an emphasis on water resources to provide a forum for sharing knowledge and best practices among researchers, practitioners, and industry professionals.		

THURSDAY 5/2/2024

Description	Lead(s)	Times
Welcome & Introductions	NCAUG	10:00 – 10:05 am
<p>Innovative Integration: Novel Drone Data Collection Techniques & Surface Water Sampling</p> <p>Advancements in drone technology has provided the ability to enhance the efficiencies of surface water sampling and reduce the overall risk to field engineers. This presentation will explore the synergy between drone technology, advanced flight planning, and efficient data processing for surface water sampling. It will also cover the details of drone flight planning and will demonstrate how careful planning plays a pivotal role in optimizing data acquisition as well as repeatability of sampling locations. We will showcase the seamless integration of Esri’s ArcGIS SiteScan, and how this has allowed our team to achieve unprecedented efficiency in our workflows from pre-planning through data reduction. The focus of this presentation will be on the innovative application of drone technology for surface water Sampling, which is a crucial aspect of environmental assessments. We will discuss the advantages of using drones in this context, including cost-effectiveness, rapid data acquisition, and increased safety compared to traditional methods.</p> <p>Attendees of this presentation will gain valuable knowledge on harnessing the power of drones, advanced flight planning, and SiteScan to elevate your AEC projects. Join us in pushing the boundaries of innovation and efficiency in the evolving landscape of geospatial data collection and technology. Please also join us for a live drone presentation in the afternoon where we will demonstrate drone use and how to use ArcGIS SiteScan for mission planning and data processing.</p>	<p>Bryan Merritt, PSM (Associate), Langan Engineering & Environmental Services</p> <p>Justin Fraser, GISP (Senior GIS Analyst), Langan Engineering & Environmental Services</p> <p>Charlie Charping (GIS Consultant), Langan Engineering & Environmental Services</p>	10:05 – 10:30 am

Description	Lead(s)	Times
<p>USS Battleship North Carolina Living with Water</p> <p>The emerging application of advanced technology such as small unmanned aerial systems (sUAS) is both an opportunity and challenge for coastal researchers. The rapidly advancing field includes a huge range of instruments that require varying degrees of technical skill, costs, and resources (both in terms of personnel and equipment). However, the ability to rapidly collect high resolution data (both temporal and spatial), especially in response to episodic events such as tropical storms, is unparalleled. These data can also be rapidly analyzed and incorporated into geospatial models to facilitate adaptive coastal management on varying temporal scales. Here we present an example of sUAS application for managing coastal erosion and sea level rise impacts in coastal North Carolina.</p>	<p>Devon Eulie, PhD – UNC Wilmington</p>	<p>10:35am – 11:00 am</p>
<p>Oyster Reef Management: Embracing the Drone-GIS Revolution</p> <p>Oysters and the reefs they form present some unique management challenges as one of very few habitat-forming species that are also the subject of commercial and recreational fisheries. The quantity and quality of reef habitat, as well as the many additional ecosystem services oysters provide, are often incompatible with destructive harvest. Indeed, following more than a century of harvest in concert with additional stressors (e.g., disease), oyster reefs are considered one of the most imperiled marine habitats on earth. To better manage and restore oyster reefs, resource managers and restoration practitioners have expressed a need for novel approaches to better monitor and assess the resource. Conventional in-situ techniques for measuring these parameters are often labor-intensive, destructive, and limited in spatial coverage. Here, we partnered with resource managers from North Carolina to Florida to assess the utility of drone-derived products for providing quantitative indicators of the condition of <i>Crassostrea virginica</i> intertidal reefs. Our assessment included different reef types (e.g., fringe vs patch reefs) and management regimes (e.g., open vs closed to harvest). Using stock red, green, blue scale sensors mounted on drones, structure from motion photogrammetry, and GIS tools, we developed drone-based indicators of oyster abundance, reef habitat complexity, and amount of reef substrate that were correlated with paired in-situ measurements of the same indicators, albeit to varying degrees. There likely exists a tradeoff such that large, landscape scale drone-based assessments to quantify reef extent come at the expense of the resolution needed to derive indicators of condition at reef scales. Nevertheless, we contend that drone-based indicators of reef condition represent the future of monitoring and assessment of oyster reefs, ultimately informing resource management and guiding precision restoration.</p>	<p>Brandon Puckett, PhD NOAA National Ocean Service</p>	<p>11:05am – 11:30am</p>
<p>Lightning Talk/Panel Discussion</p> <p>This panel discussion will focus on the topic of UAV's, GIS, and how they are applied in Utilities and Water Resources related disciplines. The discussion will include the exchange of ideas and experiences among experts in the field. It will cover a wide range of topics, including the latest advances in UAV technology, the challenges of integrating UAV data with traditional GIS data sources for Utilities and Water Resources, and the potential for UAV's to revolutionize those disciplines. Overall, the discussion will highlight the immense potential of UAV's when integrated with GIS and applied to the Utilities and Water Resources disciplines, while also acknowledging the need for careful planning and responsible use of these technologies.</p>	<p>NCAUG Presenters & Diamond Sponsors</p>	<p>11:35am – 12:00pm</p>

NORTH CAROLINA ARCGIS USERS GROUP (NCAUG) – 2024

Description	Lead(s)	Times
<p>Sponsor Parade</p> <p>The sponsor parade will showcase and acknowledge the contributions of the event sponsors, who have provided support and resources for the symposium. This parade is a way for the symposium organizers to publicly thank and recognize the sponsors, and to give them an opportunity to showcase their products or services to the attendees. The sponsor parade serves as a valuable networking opportunity for sponsors and attendees alike.</p>	<p>NCAUG – Diamond and Platinum Sponsors</p>	<p>12:00pm – 12:10pm</p>
<p><i>Door Prizes</i></p>	<p><i>NCAUG</i></p>	<p><i>12:10pm – 12:15pm</i></p>
<p><i>Lunch</i></p>	<p><i>All Participants</i></p>	<p><i>12:15 – 1:15 pm</i></p>
<p>Outdoor UAV Demonstrations</p> <p>The afternoon UAV flight demonstrations will be concurrent in separate areas around the conference center. Attendees may migrate between the demonstration areas.</p>	<p>Charlie Charping - Langan Engineering & Environmental Services</p> <p>Matt Nanney - AECOM</p>	<p>1:30pm – 4:00 pm</p>
<p><i>End of Conference</i></p>	<p><i>All Participants</i></p>	<p><i>4:00 pm</i></p>