



# GIS



IN THE ROCKIES

Premier Geospatial Conference  
of the Rocky Mountain West

# 2024



# 37<sup>th</sup> Annual GIS in the Rockies Conference

September 26th, 2024

The Cable Center  
Denver, Colorado

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**About the cover:** Fall Colors at Rocky Mountain National Park, Colorado - Photograph by Anne Dirkse, [www.annedirkse.com](http://www.annedirkse.com)

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# WELCOME

**Welcome and thank you for attending the 37th annual GIS in the Rockies Conference! The 2024 GISITR Board of Directors and Planning Committee are excited to be celebrating thirty-seven amazing years of geospatial sciences with you, and we have another great conference planned for you this year!**

**We have an outstanding keynote speaker this year. Join us in the Malone Theater for Jamie Jacobs' keynote as she speaks on the *Geospatial Journey of Discovery*.**

**We would like to extend a HUGE "THANK YOU" to all our sponsors! Please visit our exhibitors as they highlight their latest and greatest products in the geospatial world in the Daniels Great Hall.**

**We have great presentations scheduled throughout the conference and make time visit the Poster Session located on the Daniels Great Hall Mezzanine.**

**We would like to thank each of you for attending GIS in the Rockies. Your attendance makes GIS in the Rockies a continued success every year!**

**Sincerely,**

**Kathleen Martin  
2024 GIS in the Rockies President**



# ABOUT GIS IN THE ROCKIES



**GIS in the Rockies is the Rocky Mountain West’s premier geospatial information and technology conference. The conference offers opportunities for industry professionals to learn more about geospatial technology issues and business-centric strategies supporting every vertical market touched by the geospatial industry. Historically, attendees have included representatives from local, state, and federal government, the utilities industry, environmental services, land surveying professionals, the oil and gas industry, students, educational practitioners, and retail and business marketing professionals. Whether you are a seasoned GIS professional or are new to the industry, GIS in the Rockies Conference will offer industry insights and opportunities for everyone.**

**The GIS in the Rockies Planning Committee organizes the conference. The planning committee consists of volunteer GIS professionals who currently work in the industry; although, the committee is not limited to GIS professionals. If you are interested in joining the planning committee or have questions about the committee, please contact us at [info@gisintherockies.org](mailto:info@gisintherockies.org).**

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# KEYNOTE SPEAKER



## **JAMIE JACOBS, MS, NRP**

Jamie has spent over 20 years in emergency services and disaster response with a passion for ensuring people are seen, heard, and cared for on their worst days. She began her emergency services career volunteering with her local Fire/EMS Department in the mountains of Colorado. The primary mission of her high-altitude emergency response agency included: medical rescue, fire suppression, search and rescue, high and low-angle rescue, extrication, wildland firefighting, and wildland fire mitigation. In 2009, Jamie obtained her Bachelor of Science in Forest Fire Science from Colorado State University and a Master of Science in Geospatial Intelligence from The Johns Hopkins University in 2021. Her primary focus throughout her career is the fusion of remote medicine, situational awareness, and geospatial intelligence.

Jamie left the international executive protective medical field and transitioned her career to Esri in 2019, where her focus is bringing people, processes, and technology together to form a greater geospatial vision. Esri Consulting has taken Jamie from the microscope to the telescope, where she describes going from assisting a single person to improving entire systems. Her time is spent working as a Geospatial Strategy Consultant and subject matter expert within medicine, fire, and security operations.

# PRESENTATION ABSTRACTS

## **ArcGIS Solutions: Emergency Management**

*Kendell Ryan*

Come learn about updated emergency management solutions for government agencies. Explore capabilities for responding to natural disasters and other crises; conducting damage assessments; and informing the public. See the solutions in action, learn how to configure the content and be inspired.

## **ArcGIS Solutions: GIS Request Management**

*Brandi Rank*

In June 2024, Esri released a new ArcGIS Solution called GIS Program Management. This solution helps geospatial service providers in SLG solicit requests for service, manage the delivery of GIS services, and promote the value of GIS to internal stakeholders. It complements geospatial roadmaps and strategies we use to drive account maturity and helps GIS professionals demonstrate value in their organization.

## **Breathing New Life into Old Maps and Data**

*Kevin Worthington*

There is a treasure trove of old maps and location-based data created before the digital revolution. These records contain glimpses of the past which could be useful in present day research. In this presentation you will learn how we implemented modern solutions to transform 37 physical maps and over 3,000 groundwater field data sheets from the Colorado State University's Libraries Water Archives to increase findability and improve interactivity of this unique collection. The tools and techniques used to develop this project are open source and have been bundled into a data-sharing web application which can be freely hosted using GitHub pages. The hope is to scale-up the system for use across other archival data collections and make it available to institutions as open-source software.

## **Building MHFD Confluence: A Next-Gen Mapping Tool**


*Teddy Larkin & Katie Evers*

As the Mile High Flood District embarked on its digital transformation journey five years ago, it recognized a pressing need for a suite of cutting-edge tools to enhance its work in managing urban stormwater, streams, and floodplains. Enter MHFD Confluence – a custom-built, map-centric project management platform designed for use by MHFD staff, local governments, consultants, and the public alike. This presentation details how MHFD undertook the challenge of developing this all-in-one platform from scratch. Discover the GIS components powering MHFD Confluence, including 3D Mapbox visualizations, Nearmap and EarthViews imagery, cartographic design principles, and database management techniques across ArcGIS, CARTO, and SQL.

## **Colorado Water Plan: Within and Beyond Our Borders**

*Phyllis Thomas*

The Colorado legislature enacted the Colorado Water for the 21st Century Act in 2005 for the purpose of facilitating negotiations between basins within Colorado. In 2024, the states, including Colorado, that are parties to the Colorado River Compact, must articulate their position on the "Post-2026 Operational Guidelines and Strategies for Lake Powell and Lake Mead", that govern the management and operation of the reservoirs. Because of the change in focus, Colorado must look beyond its borders and reach consensus with other upper basin states-- Utah, New Mexico, and Wyoming. Lower basin states consist of Arizona, Nevada, and



California. This presentation will explain the causes of the change of focus and its consequences to the State of Colorado.

### **Combining UAS Imagery, Terrestrial Videography, and GIS To Streamline Oil & Gas Regulatory Compliance in Various EHS Aspects**

*Pete Parker & Isabella Klajbor*

Oil and gas operators face a multitude of Environmental, Health, and Safety regulatory hurdles, especially in Colorado. Large operators also often work within departmental silos that redundantly collect field data spread across large distances via multiple contracting companies, wasting vast amounts of time and money. Regulatory compliance should not just be static burden, but rather an active source of data that provides a multitude of solutions. We combined UAS imagery, terrestrial videography, and a proprietary GIS database to streamline these efforts in a way that makes the data accessible and easily usable across all departments to not only fulfill existing requirements, but also improve operational efficiencies in the future while simultaneously managing structural change over time. Results are now a single source of truth for state and federal regulators, operational engineers, mechanical integrity, insurance, and during mergers and acquisitions.

### **Critical Incident Mapping & Emergency Management for Schools**

*John Young & Brock Saylor*

State governments are increasingly passing legislation requiring schools to provide critical incident mapping (CIM) to aid first responders and computer-aided dispatch professionals. In some cases, the state legislation applies only to K-12 school districts and others include higher education institutions. Regardless, GIS technology is being underutilized to support school risk and emergency managers with these tools. This presentation will show how Langan is working with schools to provide campus, facility, and indoor GIS mapping capabilities in support of CIM as well as related planning, mitigation, and response tools.

### **DC Water Emergency Event Management System**

*Durmus Cesur*

Emergency Event Management System (EMS) provides automated, coordinated, rapid and information-driven response capabilities for emergency events in the DC Water jurisdiction. EMS builds upon Enterprise GIS and Enterprise Asset Management Systems and pulls data from variety of other integrated systems as well. EMS provides a real-time integrated platform to monitor emergencies impacting the water/sewer/stormwater distribution and collection systems/services and acts as an early warning system for non-routine or critical events allowing DC Water to provide a faster response and reduce the overall impact of events.

### **Developing a Regional Traffic Crash Data Dashboard for the Pikes Peak Region**

*William Mast & Philip Roy*

The Pikes Peak Area Council of Governments, an organization of 16 counties and municipalities around the Pikes Peak region, provides a forum for local governments to discuss issues that cross their political boundaries, identify shared opportunities and challenges, and develop collaborative strategies for action. One such issue was the need for a comprehensive, regional data set of traffic crashes for the entire region, regardless of reporting agency or jurisdiction, providing a common operational picture of traffic incident and safety awareness for both the public and government officials. PPACG staff worked with CDOT and local agencies to collect, clean, geocode, and map crash data for the entire region, and then built a functional dashboard that allows the data to be quickly explored for specific information. The dashboard is widely



used by the public and local officials, including police agencies, and has enabled regional planners from all member jurisdictions to use the data when compiling traffic safety plans and strategies for project funding. The presenters will discuss the data collection and geocoding process, issues encountered, obstacles overcome, public feedback, how the data and dashboard is currently being used across different agencies, and future plans for the regional crash data dashboard.

### **DRCOG's Denver Region Crash Data Dashboard**

*Greg Conant*

The Denver Regional Council of Governments (DRCOG) has been processing and compiling vehicle crash data in the Denver region for some time now, however this year we are excited to release our Denver Regional Crash Data Dashboard. This interactive browser-based dashboard, built using Esri software, helps provide context around crash data, while enabling a broader audience access to meaningful, often-hidden, crash data and metrics. The Dashboard development project came with its share of trials and tribulations, but in the end made for a more robust data product that DRCOG is proud to show-off and share with GIS in the Rockies and the wider public. This will be a quick session exploring the new dashboard and covering some of the development process.

### **EnviroScreen 2.0: Updating Colorado's Environmental Justice Mapping Tool**

*Dan Carver*

The advent of consumer based large language models (LLMs) over the past couple of years has popularized interest in related technologies of AI, Deep Learning and Machine Learning. Application of these technologies is also gaining traction and interest within the geospatial community. Building on initial successes in 2023 with customized deep learning YOLO (You Only Look Once) object detection and image segmentation models, Bohannon Huston, Inc. has been keenly interested in pursuing additional purpose-built models for both geospatial and engineering. Early experimentation, however, revealed a clear need for robust computing hardware including multi-core CPUs and GPUs to accelerate training and development of such models. To quantify and understand hardware performance and investment, a large geospatial dataset was designed to evaluate performance on eight existing off-the-shelf company hardware platforms. Benchmark design included two separate CPU-based workloads that run derivative Sky View Factor image processing and GDAL image splitting tasks followed by a GPU-based YOLOv8 inference task for object recognition of buildings left in a DEM. Tests were run at scale for 11,269 public domain DEMs from NOAA, spanning a geographic footprint of 10,105 square miles. Experimental results are reported for Linux, Windows, and MacOS systems with a broad mix of CPU and GPU capability. Although the tests confirmed an initial understanding that multi-GPU systems are the preferred choice for effective inference with deep learning models, the results were more nuanced among the CPU data preparation tasks, demonstrating that CPU performance may be subject to a more complex set of factors.

### **Geospatial Benchmarking of Inference Modeling at Scale for CPU and GPU Hardware Performance Assessment**

*Robert Dzur*

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### **GIS Colorado Town Hall**

*GIS Colorado: Lucas Kaim Thelen*

This interactive session will serve as a forum for networking, knowledge sharing, and collaborative problem-solving, focusing on the unique needs and goals of GIS practitioners in Colorado.

### **GIS Glow Up: From Drab to Fab**

*Katie Evers & Keiko Flynn*

GIS at the Mile High Flood District has evolved from a humble one-man shop to a dynamic team of five in the last three years. This presentation will delve into the innovative strategies and tools used to increase GIS adoption and engagement across our organization. We started our efforts by analyzing the current state of GIS engagement at MHFD. To do this, we collected metrics on each staff member's level of GIS experience, pinpointed their frustrations, and identified their potential areas of interest. Armed with these insights, we realigned our practices to better support and engage our organization. We launched several new initiatives to drive this change: a GIS Newsletter to share pertinent internal updates and guidance; a Hub site to centralize all authoritative public data; a Request Form to streamline requests and aid in timely fulfillment; and Office Hours to present on new technologies, provide GIS training, and address questions. Our journey does not end there. We are continuing to build on these initiatives, receive feedback, and use our lessons learned to build and implement a comprehensive GIS Strategic Plan. As we move forward, we remain committed to refining our approach and ensuring that GIS remains a pivotal asset in advancing the mission of the Mile High Flood District.

### **Hydrographic Addressing to 3DHP Data with HydroAdd3d**

*Michael Tinker*

The USGS 3D Hydrography Program (3DHP) is building the next generation hydrography dataset as the hydro component of the 3D National Topography Model (3DNTM). The 3DHP hydrography data will provide users with a framework to spatially join and align their data to the 3DHP data features. This process is known as hydrographic addressing. Any kind of hydro-related observation can be addressed to 3DHP data, such as observations relating to hydrology, water quality, biology, regulations, or recreation. Hydrographically addressed data allows users to exploit the attributes of 3DHP data to perform analysis or tracking of their data. HydroAdd is a web-based tool that allows users to address their data to the current National Hydrography



Dataset (NHD), and soon to 3DHP data. Differences between 3DHP and NHD hydrography data with respect to hydrographic addressing will be discussed. Updates to the HydroAdd tool for 3DHP data will also be discussed.

### **If You Build It, Will They Come? Upgrading Our GIS Platform for Improving Collaboration**

*Jackie Phipps Montes & Grant Smith*

As spatial data becomes increasingly vital for strategic decision-making, organizations must ensure their geographic information systems (GIS) are not only robust, but also conducive to collaboration. This presentation will delve into our organization's journey of upgrading our GIS platform to transform it into a central hub for collaboration and data sharing. Attendees will gain insights from our case studies on how we overcame technical and organizational hurdles, as well as the strategic decisions that led to the implementation of the GIS platform and our plan for adoption. Hopefully showing that if you build it with the right approach, they will indeed come. In addition we will share more traditional State of Colorado OIT GIS updates. Many of them are enabled through our new platform, tools, and strategies.

### **Mapping the Upper Colorado River: A Story of the Monitoring Effort Using sUAS**

*Seth Legan*

The Matrix Design Group Drone Services team partnered with the Wild and Scenic Upper Colorado River Stakeholder Group to complete a light detection and ranging (LiDAR) and photogrammetric drone survey at 10 project areas comprising over 200 acres along a 45 mile stretch of the Colorado River. The project areas hold great recreational significance for rafters, fishermen, and campers, so continued monitoring is vital for protecting and enhancing these spaces for future use. The drone survey involved 75 flight takeoffs using two drones and two high-accuracy drone-mounted sensors over a 4-day period in October 2023. The GIS team developed several high-quality data deliverables including geomorphologic features, landcover, bank angle, and river channel features that can be used to show changes in the project areas in future years. In addition, a set of LiDAR-derived products including a digital elevation model (DEM), contours, and a slope raster were created. We were able to provide absolute accuracies of less than 5 cm despite each flight area being in remote locations where cellular service was nonexistent. This work gives the Stakeholder Group a data-driven method to track changes at each of these project areas as the river and the banks surrounding it move over time, and it also informs future decision-making around these areas with rich recreational significance. Come join this talk to learn what went into the planning and execution and to hear more about the innovative solutions employed to tackle the unique challenges the areas presented.

### **Maps, Data, and Templates: A Workshop on USGS Topographic Mapping**

*Brendan Berve, Alex Kaufman, Tatyana Dismascio, Ella Ramage, & Marcelle Caturia*

The U.S. Geological Survey (USGS) provides a variety of public-domain maps and geospatial data for the United States and territories. The National Map (TNM), topoBuilder, and Trail Data Portal are three applications that bring together data and maps that users can download for a variety of purposes. Product offerings include US Topo, OnDemand Topo (1:24,000 and 1:100,000 scales), Topo Map data, including nationwide trail data and other supporting data themes such as the National Hydrographic Dataset (NHD) and 3D Elevation Program (3DEP) datasets. This interactive session will focus on topographic map services, how we collaborate with partners to build our datasets, and our National Map applications. A demonstration of The National Map, topoBuilder, and Trail Data Portal applications will be provided. USGS staff will



facilitate a hands-on demonstration and be available to answer any questions users may have. Please bring laptops to participate.

### **Migrating Web Apps to ArcGIS Instant Apps**

*Beth Romero*

With the retirement of the ArcGIS Maps SDK for JavaScript 3.0 and certain app builders like ArcGIS Configurable Apps and ArcGIS Web AppBuilder, there is a growing need for a simple and efficient way to migrate existing apps. This is where ArcGIS Instant Apps comes in. ArcGIS Instant Apps is a powerful solution that quickly transforms your maps into focused, interactive web apps using purpose-driven templates. It leverages easy-to-use, built-in tools to showcase both 2D and 3D data, display a gallery of content, and deliver local public information. Built on Esri's latest web mapping technology, the ArcGIS Maps SDK for JavaScript 4.0, ArcGIS Instant Apps offers optimized performance and an extensive suite of capabilities. These include mobile responsiveness, accessibility improvements, smart mapping styles, and a wide variety of focus-driven templates that can be quickly deployed. In this presentation, we will explore how ArcGIS Instant Apps can be a viable option for updating apps set to retire at the end of 2025. We will discuss the benefits of using Instant Apps, demonstrate its capabilities, and provide step-by-step guidance on migrating and replacing existing apps. By adopting ArcGIS Instant Apps, organizations can ensure a smooth transition for their apps while taking advantage of the latest web mapping technology and a rich set of features and capabilities.

### **Monitoring Vegetation Impacts of Night Penning in Idaho and Oregon Grazing Allotments Using Remote Sensing**

*Truman Anarella & Jack Hagenbuch*

The practice of night penning, which involves corralling livestock into a fenced, secure area overnight, aims to safeguard animals from predators. Although this method has proven successful in minimizing interactions between livestock and wildlife, the extent of its impact on vegetation communities is still being explored. In this study, we collaborated with ranchers in Idaho and Oregon to quantify the effects of night penning on vegetation using the Rangeland Analysis Platform (RAP), which maps values of vegetation productivity from 1985 to 2023 from the Landsat missions. We identified control sites that had similar topographic characteristics to night pen sites used by ranchers in Idaho and Oregon. We then quantified and compared changes in annual net primary productivity (NPP) between night pen and control sites. Our study found that RAP NPP data did not show a detectable difference between control sites and night penning sites. When analyzed quantitatively, night pen sites showed inter-annual variability in NPP before and after night penning; however, there were few discernible differences between night pen sites and control sites, suggesting that climate conditions can have more of an effect on NPP measurements than night penning effects. We encountered several challenges in this project including the resolution and accuracy of the remote sensing products. In the summer of 2024, we collected soil nutrient and vegetation field data from a subset of night penning sites to further investigate the effects of night penning on soils and vegetation communities.

### **NPS GIS Internship Program**

*Douglas Wilder*

The GIS Internship program was established in 2020 as a partnership between the National Park Service and the Southern Utah University Intergovernmental Internship Cooperative (SUU IIC). The program is available to any NPS park unit, region or program and targets current students and recent graduates from GIS programs nationwide by providing an interdisciplinary



professional development experience in a unique National Park Service setting. Interns develop the critical GIS skills needed to succeed in a federal land management agency while using geospatial technology to support a variety of park management operations including natural and cultural resource preservation, planning and environmental compliance, facility asset and transportation management, visitor and resource protection, resource interpretation and visitor engagement. The program is designed to improve geospatial data collection and management while encouraging park units to broaden their use of geospatial services to support data-driven and science-based park management and decision-making. Interns will also be exposed to one or more of the following GIS discipline areas: GIS data management, field data collection, geospatial analysis, remote sensing, and web mapping and cartography.

### **On iPads and Atolls: Effective Community Engagement Strategy Leads to Digital Literacy and Use of Advanced Offline Technology**

*Sarah Godfrey*

The use of technology is a controversial issue in many communities, and there is a growing disparity between those who want to share and those who want to maintain privacy in this fast-moving world of information. This is true globally, as we see places that we enjoy being “overloved” with activity once they are posted publicly, and conversely that communities are being underrepresented because they fear putting their “place” on a map. Using examples from mapping and engagement methods used with the indigenous Micronesian communities of the Ulithi atoll, in the Yap Outer Islands of the Federated States of Micronesia, this talk will discuss the benefits of starting an early community engagement strategy, considerations of information gathering, and the steps used to train non-users in science and technology from a modern western perspective. There are many sub-categories of learning associated with this topic, including ethics in GIS, where paper maps still have a role, how to capture data using offline FieldMaps technology, increasing buy-in to the planning process with enhanced transparency, and improving the results of the information-gathering process to create a more comprehensive, thorough and thoughtful GIS. Long-term community engagement strategies lead to more comprehensive GIS and feel-good results!

### **Outsmarting Obsolescence: Extending an ArcGIS Solution Transforms 9-1-1 Address Data Management**

*Brady Hustad & Sam Como*

Deprecating software can be a hassle, but it's also an opportunity. Learn how a Texas council of government ditched its outdated third-party 9-1-1 address data management software. Its modernized, tailored solution can adapt to change and local regulatory requirements, making it a true next generation approach for local government GIS.

### **Planned User Suggested Editing of Published U.S Geological Survey 3D Hydrography Program Datasets**

*Greg Cocks*

The 3D Hydrography Program (3DHP) (<https://www.usgs.gov/3DHP>) is the start of a new era of surface water data - the first systematic remapping of the Nation's hydrology since the original USGS 1:24,000-scale topographic mapping. Elevation-derived hydrology (EDH) uses hydrologic-science-based rule sets and validation to create 3D-enabled vector data; this is what is ingested into 3DHP's systems.

3DHP user-suggested editing (USE) will be a formal process for users to submit USEs to the U.S. Geological Survey (USGS) for possible action on data that has already been published. Every submitted USE will be reviewed by USGS staff and local states / land management





agencies for validity based on established and published business rules (with those rules necessarily evolving as use cases arise.) If approved, the edit will be made by the USGS and pushed to the 3DHP systems. Associated data products (e.g., catchment(s), hydrologic network mainstems) will be updated as needed to accommodate the USE's changes. Feature-level metadata will be added/adjusted to also record USE changes. The updated 3DHP data will then be delivered back to the various users via the standard data delivery methods and timetables. The user will be kept updated on the status of their USE and a detailed record of all USEs will be retained. Implementation will be an evolving, modular process, with features and capabilities added as deemed useful; for instance, initial, editing will focus on 3DHP attributes, with geometries later. Details of this staged implementation will be communicated fully to users, ensuring that their expectations are realistic.

### **Reforging a Custom Map Viewer in AGOL: The Bureau of Ocean Energy Management's New Marine Minerals Information System**

*Michael Forlenza*

In 2018, with support from NOAA's National Centers for Coastal Ocean Science and funding from the Bureau of Ocean and Energy Management (BOEM), One NV5 developed a custom application called the Marine Minerals Information System. The tool provides an avenue for public consumption of Marine Minerals Program (MMP) data and helps guide MMP decision-making by hosting data through an Enterprise Geospatial Information System (GIS) environment to support BOEM's marine minerals leasing and environmental reviews. MMIS is a collection of over 30 years of geophysical (e.g., shallow seismic, bathymetry, and sidescan sonar) and geotechnical (e.g., vibrocore and sediment grab locations and associated laboratory analyses) derived data and information products. These datasets are critical to supporting Outer Continental Shelf (OCS) beach nourishment and coastal storm risk management projects and helping to mitigate OCS space-use conflicts. Recently, as the result of an agency effort to move away from the maintenance associated with custom code, One NV5 has been tasked with creating a configurable AGOL version of the tool. In this presentation we will compare the functionality of the original tool and the new tool, developed in Experience Builder. We will discuss the constraints imposed by the new medium and the challenges those constraints effected as well as their solutions. We will also discuss our approach to the UI design process and the ways AGOL provided opportunities to meet the project's requirements and even supply enhanced functionality.

### **Reviewing the Status of Conservation Geo, A New Team Within the Natural Resources Conservation Service**

*Jerry Mohnhaupt*

The USDA Natural Resources Conservation Service (NRCS) provides technical and financial assistance to support the implementation of conservation activities on private lands. Conservation Geo, a new team within NRCS, leverages a Postgres/PostGIS based geospatial data science environment that builds new data products and workflows from a wide variety of existing data sources within NRCS. Initiatives include establishing data standards to support scientific analysis, statistics, data stewardship, and model integration; provide high-quality, defensible (i.e. authoritative) data approved for use by the data stewards; develop key performance indicators (KPIs), including conservation practices applied to mitigate climate change, conservation practices applied to conserve water, and conservation practices applied to improve soil health. This presentation will review the status of Conservation Geo, geospatial integration initiatives, and primary data products and models being developed.



## **Sustainability Hub - A Community Data Hub for Sustainable Regional Systems Research in Colorado**

*Ella Taylor, Elsa Gerster, & Dr. Jessica Salo*

The Colorado Sustainability Hub aims to address the vital need for an accessible and inclusive platform where users can access a wide variety of sustainability data. Funded by the National Science Foundation, this project seeks to transform how sustainability challenges are addressed in Colorado by fostering a more resilient and inclusive approach to regional systems research, education, and policy development. This hub will act as a central platform for members of the community, policymakers, and researchers to approach sustainability data at any scale. To promote accessibility, the Sustainability Hub will implement an AI chatbot feature using a RAG (Retrieval Augmented Generation) System alongside LLMs (Large Language Models) to allow users to search for data using conversational language. This chatbot feature aims to bridge the gaps in data access and collaboration by connecting users to each other and their desired information. The Sustainability Hub is a collaborative effort between Metropolitan State University Denver and University of Denver for user interface and chatbot creation; Colorado State University (Fort Collins and Pueblo) for stakeholder engagement and asset mapping; and University of Northern Colorado for collection of sustainability data. Our role as the data team at UNC is to collect, organize, and index both spatial and non-spatial sustainability data from the three pillars of sustainability (environmental, social, and economic), where it is then ingested into the chatbot. Once the Sustainability Hub is operational, our team will test the platform, develop use cases, and provide instructions on accessing commonly used data sources.

## **The Right Way to Right-of-Way: Data Lifecycle Management Practices**

*Matt Hiland*

Right-of-Way (ROW) is a physical asset of many public agencies. Digital representations (GIS, as-builts, CAD, and deeds) of ROW can be high value information assets if they are organized and published across the agency. However, in many cases, the digital assets are siloed by departments, making the full picture inaccessible to all. Disconnected information systems arise naturally when data, workflows, storage, and data standards are created for specific purposes without understanding the benefit of that information to the enterprise. Unfortunately, this is a normal occurrence, and when not addressed can lead to lost information, inefficient work, and even safety hazards. Processing CAD files and as-builts, Colorado DOT publishes and maintains an authoritative statewide GIS database of 8,500 miles of ROW and 24,000 parcels. Using CAD/GIS integration processes, data lifecycles, and digital delivery practices, multiple departments have collaborated to remove data silos and maintain a published statewide ROW database for the agency's benefit.

## **USGS Hydrography Specifications 2024**

*Ryan Teter*

The U.S. Geological Survey (USGS) National Geospatial Program (NGP) and National Geospatial Technical Operations Center (NGTOC) maintain and deliver multiple hydrography datasets: the new 3D Hydrography Program (3DHP) webservices and dataset, and three legacy datasets – the National Hydrography Dataset (NHD), Watershed Boundary Dataset (WBD), and NHDPlus High Resolution (NHDPlus HR). All these datasets have different standards and specifications. In addition, USGS has developed specifications for the acquisition of Elevation-Derived Hydrography data intended for ingestion into 3DHP. This presentation will cover existing hydrography dataset standards and specifications, as well as NGP and NGTOC's approach to creating and updating hydrography specifications.



## **Using Geospatial Techniques for Measuring, Reporting, and Verification (MRV) in the Agriculture Carbon Market**

*Thomas Pudil*

In voluntary Carbon Markets, much importance is placed on having a robust measuring, reporting, and verification (MRV) process to ensure the highest quality of credits being generated by growers for carbon credit buyers. GIS provides a commercially available platform for MRV in processing and managing spatial data for carbon credits. At Agoro Carbon we use GIS to meet all our needs throughout the entire business process, from onboarding clients and sampling design, all the way to reporting soil carbon stock and credit to each grower and third-party credit verifiers. In this session, you will hear about how we use geospatial techniques alongside ESRI and Trimble products to customize our workflow and manage our MRV procedures, in particular, in sampling design and quality land cover classification.

## **What Are the Differences Between Utility GIS, Other GIS's, and CAD Maps?**

*James E. Hargis*

Facing climate change and an unpredictable water future, the Colorado Water Plan addresses known knowns, the things we know about water in Colorado. This presentation will explore its ability to confront Donald Rumsfeld's view of uncertainty: "the 'known unknowns'---the things we know we don't know. Additionally, it will explore the unknown unknowns--the things we don't know we don't know, and the unknown knowns--things we think we know, but we don't." (Donald Rumsfeld, February 12, 2002, news briefing)

## **Where Do People Go in Arches National Park?**

*Jeff Orłowski*

Arches National Park was curious about where people travel within the park. Visitors were handed GPS devices to track their journeys, and their trips were analyzed with Esri's Movement toolset. Learn how millions of points were distilled into an Origin/Destination matrix to determine the park's most popular areas.

# POSTER ABSTRACTS

## **3D Hydrography Program 3DHP\_all 2023 Service**

*Ryan Teter*

The National Geospatial Program (NGP) and National Geospatial Technical Operations Center (NGTOC) maintain the 3D Hydrography Program\_all (3DHP\_all) webservice. The 3DHP\_all comprises a national network of flowlines, hydrolocations, and water bodies, and will include catchments, drainage areas, and flow network derivatives as they are populated in the future. The 3DHP\_all service will provide access to a 3D-enabled geospatial hydrography vector dataset built from 3DHP data and intended to provide the most comprehensive rendering of 3DHP data. 3DHP data is derived from hydrography derived from 3D Elevation Program elevation data where available. Where elevation-derived hydrography has not been collected, 3DHP data will be supplemented by data from the National Hydrography Dataset (NHD) National Hydrography Dataset. As further elevation-derived hydrography data is collected, it will replace the NHD data in that data collection area. 3DHP data ingested from elevation-derived hydrography sources will include catchments, drainage areas derived from catchments, and flowline network attribute derivatives. This poster displays the data structure of the 3DHP\_all webservice.

## **A 10-Minute Walk - Determining Residential Access to Parks, Open Space, and Trails**

*Eric Delynko*

The Jeffco Trails Plan (JTP) aims to improve connections and provide convenient and equitable access to the outdoors and community destinations for every resident. The analysis represented in this poster shows the initial understanding of residential access, providing a starting point for agencies to prioritize projects based on safety, increased access, and connectivity to existing infrastructure.

## **A Decade Later: The Fate of Sediment Mobilized During the 2013 Flood**

*Alexander Shinn*

In September 2013, a severe storm hit the Front Range of Colorado, causing significant flooding, debris flows, and landslides, particularly affecting the area between Estes Park and Boulder. Despite extensive research on the immediate effects of the flooding and the causes of the slides, there has been little attention paid to the fate of the landslide- and debris flow-derived sediment. This information is crucial for assessing the long-term risk of landslides and heavy rain events in the area. Lidar data were analyzed to understand changes in the area from 2010, 2013, and 2021, with debris flow initiation locations obtained from Baum et al. (2016). For the data before the flood, we used the Boulder Creek Critical Zone Observatory August 2010 LiDAR Survey. Then, we used the 2013 South Platte River and Denver Post Flood Survey for data immediately after the flood. Finally, we used both the 2021 USGS 3D Elevation Programs' Cameron Peak and the Denver Regional Center of Governments 2020 elevation data. Within QGIS, we resampled the data using nearest-neighbor techniques and then used the raster calculator to differentiate the maps pixel by pixel for the years 2013-2010 and 2021-2013. We specifically looked at the head scarp locations within Four Mile Canyon and found that most of the changes that have occurred since 2013 are in the areas not near the debris flows. This means that most of the debris flow sediment remains within the original deposits and these debris flow deposits do not represent a modern risk.



## **Demographics and Healthcare: Lack of Health Centers and Healthy Options in Southern Colorado Springs**

*Logan Smith*

This poster dives into the lack of healthcare centers in Southern Colorado Springs and aims to analyze data over the last 25 years to attempt to find a correlation between disenfranchised demographics historically living in the Southern part of the city, and lack of healthcare, food deserts, and potentially historically redlined areas.

## **Determining Chaco Culture NHP Survey Zoning with Physical Geography**

*Joel Gutierrez & Meg Charnley*

Situated in a remote section of northwestern New Mexico, the U.S. National Park Service (NPS) is tasked with managing and preserving the prehistoric Chacoan archaeological resources at Chaco Culture National Historical Park. The most recent survey and mapping of these important archaeological sites were completed between the 1970s and 1980s by the Chaco Project unit of the NPS. In those days, the mapping was done by hand on paper topographic maps. It has been noted in the last several years, that the archaeological site datums are marked incorrectly on the old maps – During ground truthing it has been determined that the sites are located hundreds of meters away from where they are marked on the old maps. In designing new surveys at Chaco Culture NHP, it was determined that due to the rough terrain, the most logistically efficient and cost-effective method is to create new survey zones based upon the physical geography of the park unit. This zoning project was completed using ArcGIS Pro and satellite imagery.

## **Enhanced Site Location Selection: A Hybrid Framework Integrating GIS, SWOT, MCDM, and Game Theory**

*Rahul & Bharat*

The choice of a suitable site location for business establishments is a critical decision that significantly impacts their success. This research proposes a novel, hybrid approach that integrates Geographic Information Systems (GIS), SWOT Analysis, Multi-Criteria Decision Modeling (MCDM), and Game Theory to provide an advanced, data-driven methodology for site selection. This study commences by leveraging GIS to create geospatial models that incorporate essential factors, such as accessibility, infrastructure, and demographic factors. This approach facilitates the identification of potential business sites with optimal characteristics. Next, the SWOT Analysis is introduced to evaluate the strengths, weaknesses, opportunities, and threats in the proposed sites. This step provides crucial insights into the competitive landscape, ensuring that the selection process accounts for the business's unique requirements and external factors. To further refine the site selection process, the study employs MCDM techniques, such as AHP and TOPSIS. These methods systematically rate the potential locations based on multiple criteria, allowing businesses to holistically assess alternatives and weigh the importance of each criterion. Finally, Game Theory is applied to model the complex interdependencies among key stakeholders, such as competitors, suppliers, and government entities. By anticipating market shifts and understanding strategic interactions, businesses can make more informed decisions about their site location.

The proposed hybrid approach provides an industry-standard, scientific framework for businesses to select the most suitable site location. This comprehensive methodology accounts for a plethora of factors, ensuring businesses make well-informed decisions that set the foundation for their success.



## **Enhancing Engineering Education with Environmental Justice StoryMaps**

*Jennifer Taylor*

Spatial data is a valuable resource in engineering as it helps engineers view and communicate projects from the stakeholder and community perspectives that engineers serve. However, the application of GIS-related data is limited in K-12 engineering education. The ArcGIS Environmental Justice (EJ) StoryMap collection incorporates the ArcGIS Living Atlas Air Quality Aware and EPA EJscreen tools plus trusted multimedia resources to authentically engage students in exploring the relationships between transportation, air quality, health impacts, and equity toward designing a sustainable transportation future. The EJ StoryMaps are a core component of the "Creative Engineering Design" high school course, which supports building a diverse engineering workforce, as part of the NSF ASPIRE Engineering Research Center. ASPIRE's goal is widespread and accessible EV roadway electrification and power grid integration to help solve transportation-related air quality and climate change concerns. View the Environmental Justice StoryMaps Collection at <https://bit.ly/EJstorymaps>.

## **Enhancing NPS Operations Through the Park Atlas Program**

*Alyssa Mayhew & Catlin Corrales*

The Park Atlas puts the power of Geographic Information Systems (GIS) data and maps in the hands of park staff to improve park operations that protect and preserve our nations parks. The Park Atlas is a set of interactive web maps—one for each of the 400 plus national park units – wrapped in a common application that allows staff to better understand and work with park resources, facilities and visitors. Utilizing advanced architecture through the Esri Experience Builder, Park Atlas presents each park's unique features and resources with a common set of tools that enhance staff ability to accomplish the mission of the NPS. Specific applications of Park Atlas include visualizing proposed projects in park planning meetings, engaging visitors through educational programs, and supporting conservation initiatives with spatial data analysis. The platform empowers non-GIS park staff to efficiently navigate and analyze spatial information, streamlining data visualization and fostering informed decision-making. Ultimately, the Park Atlas Program not only enhances the capabilities of park staff but also serves as a vital tool in promoting sustainable practices and informed decision-making for the preservation of our treasured natural spaces. While the Park Atlas is a tool for NPS staff, long-term plans include public-facing versions that will allow visitors to more fully explore and understand the beauty and significance of our national parks through data-rich, interactive maps.

## **Exploring the Power of Web-Based Experiences for Advanced Utility Network Analysis**

*Brock Saylor & Zach Lawlor*

Utilization and adoption of the ArcGIS Utility Network is at an all-time high and will only increase from here. Being able to provide access to Utility Network data for stakeholders across an organization is of utmost importance. This access is possible due to enhancements of the data models, advanced integrations, and ease of access – courtesy of the services-based architecture. Organizations are directing their attention to ArcGIS Experience Builder to consume and interactively visualize Utility Network Trace Configurations. Utilizing the Utility Network Trace widget within ArcGIS Experience Builder, customized trace configurations can be used to permit end users to return the trace results that best align to their needs.



## **GIS in Support of Wargaming and Professional Military Education**

*Mac Kramer*

The Littoral Commander board game series is an educational wargame focused on near-peer, future conflict in littoral environments. Maps for the wargame are developed in Esri ArcGIS Pro, using open-source spatial data to simulate the effects of terrain, infrastructure, and climate on military formations. These maps support the professional military education of Army, Marine, and Naval officers, helping prepare them for the next generation of warfare in contested littoral regions.

## **Harnessing GeoAI: Vehicle Detection Using Esri's Machine Learning Solutions**

*Brock Saylor & Brice Allen*

Harnessing the power of machine learning, Esri's vehicle detection deep learning model provides an innovative approach to analyze geospatial data. This model is trained to efficiently identify and trace vehicles from aerial photography. Our application of this model is its use in parking lot studies. Traditionally, these studies can be time-consuming and prone to errors, but with the assistance of Esri's machine learning model, the process is remarkably expedited, and the accuracy improved. The model offers visual results that can be edited and customized, thereby facilitating the creation of engaging and informative visuals with Experience Builder.

## **Health and Safety Safe Work Certificates**

*Michelle Wong*

The Safe Work Certificate (SWC) is a critical document that ensures the safety of workers in various industries. However, the traditional paper-based approach to collecting, visualizing, and reporting SWCs can be time-consuming and error prone. Langan's Digital Solutions team collaborated with Corporate Health and Safety to develop the Langan SWC program, which includes the creation of a Survey123 application for easier data collection, an integrated project management ArcGIS Dashboard, and automatic report generation using Power Automate with correct placement of SWC reports on the internal file network. The data collection process begins with the Langan Project Manager setting up a SWC using the desktop version of the Survey123 app. The field staff then accesses the SWC using the Survey123 inbox on their mobile device, edits the form, and conducts tailgate safety and closeout meetings before submitting the updated SWC in the system. Upon submission, a Power Automate flow generates a report and saves it in the appropriate project folder. An automated email is sent to both the project manager and field worker, notifying them that the field work has been completed. The use of both desktop and mobile versions of Survey123 has streamlined the data collection process for the SWC program. The automated report generation and email notifications have improved efficiency and communication between team members. Overall, the SWC program has been successful in promoting safety and organization in Langan's field work.

## **Mapping State-Wide Forest Management Activities with the Colorado Forest Tracker**

*Nicholas Kotlinski & Rebecca Dannels*

Across the state, the lack of cross-boundary information on forest management and fuels treatment implementation has created a significant data gap, impeding stakeholders' ability to manage wildfire risk, respond to climate change, and plan for the rising associated costs. Additionally, this lack of consistent data hampers research efforts to assess the effectiveness of treatments on wildfire severity and forest health. To address this critical need, the Colorado State Forest Service (CSFS) and Colorado Forest Restoration Institute (CFRI) at Colorado State University created the Colorado Forest Tracker, an open-access, comprehensive geodatabase that documents completed forest management activities on natural and working



lands. This dataset will be updated annually, collecting activity details such as location, acres managed, year completed, reporting agency, and funding source for activities dating back to 2000. Colorado Forest Tracker data will be publicly accessible through the Colorado Forest Atlas and ArcGIS Online, and visible through other interactive web applications, including ESRI Dashboards. By providing this integral, standardized information to the public, the Colorado Forest Tracker will equip stakeholders with a powerful tool for effective communication, informed land management, and improved wildfire prevention.

### **Queering Denver: Queer Womxn Spaces in the 1970s and Today**

*Jennifer Hathaway*

Placemaking and community building are critical to inclusive urban spaces. Yet LGBTQ communities have and continue to experience, challenges creating a sense of place. While Denver has become a relatively more diverse and open city, discriminatory practices and policies such as zoning restrictions have continued to exert pressure on LGBTQ communities by creating unsafe spaces for queer people. To illustrate this point, this project compares the concentration and distribution of queer communities in Denver from the 1970s to present. Zoning maps will highlight why a gayborhood was created in Capitol Hill and how specific policies kept queer people from additional mobility, with particular attention paid to lesbians and queer women. Queer women-related businesses as well as prominent events in the lesbian and feminist circles during this period will also be mapped. Representing and analyzing data in these ways will help us understand the spatiality (distribution, visibility, and variety) of queer-women businesses and queer communities in Denver. This project seeks to address the following questions: How do queer people create safe spaces in Denver, and how has this changed over time? What impact do queer people have on urban environments, and what challenges continue exist in the establishment of queer communities?

### **Questing Dermacentor Tick Population Dynamics in Relation to the 2020 Cameron Peak Fire in Northern Colorado**

*Sabrina Gobran*

Dermacentor ticks are non-host dwelling arthropods that actively seek a bloodmeal at each life stage via questing, a host-seeking behavior in which the tick ascends grass or other plants and waits with their legs extended for a host to pass. Dermacentor ticks in Colorado can transmit the pathogens that cause Rocky Mountain spotted fever and Colorado tick fever. Despite their public and animal health importance, our understanding of tick distribution in Colorado is limited and largely based on historical data. At the same time, the climate is rapidly changing, and we are experiencing ecological disturbances at an unprecedented rate. In 2020, the Cameron Peak Fire, the largest wildfire in Colorado history, burned over 200,000 acres. Wildfires alter the landscape by clearing old growth forests and changing soil composition; leafy plants and grasses are among the first to return. After four years of secondary succession following the Cameron Peak fire, grasses and perennial plants (the primary habitat for questing ticks) have returned to the burned extent. Given the predicted increase in extreme weather events and milder winters due to climate change, it is critical to understand how ecosystem disturbances impact tick population dynamics. This study uses remotely sensed data and active tick surveillance to explore how wildfire disturbance impacts tick populations. By integrating field data with remotely sensed data, trends in tick abundance in relation to wildfire can be visualized, helping researchers, health officials, and land managers understand the distribution of ticks and potential risk areas for tick-borne disease transmission.





## **The Colorado Wildfire Risk Assessment and File Explorer in the Colorado Forest Atlas**

*Hannah Tampier & Sarah Osborne*

The Colorado State Forest Service (CSFS) developed the Colorado Forest Atlas (found at <http://coloradoforestatlas.org/>) as a central web portal to provide a suite of interactive mapping applications about Colorado's forests. These applications provide Colorado citizens with easy access to the best data and information on forest health and wildfire risk in the state. First released in 2012, the Colorado Wildfire Risk Assessment (CO-WRA) has been updated every five years to help decision-makers, landowners, and communities assess wildfire risk. CO-WRA data is presented and available as open-source public and registered professional user applications on the Colorado Forest Atlas. Over the past year, CSFS has developed several new options to help simplify data distribution. This includes a new "File Explorer" application that allows individuals with professional user accounts to download statewide data layers from the 2022 CO-WRA and the 2020 Forest Action Plan. We have also released an "Open Data Portal" to help users search for and stream authoritative CSFS data. The CSFS open data portal will catalog all public data layers, story maps, web maps, and experience builder applications available from the CSFS. The data and information within these applications can be used to: (1) create public awareness about wildfire risk; (2) provide state and local planners with information to support mitigation and prevention efforts; (3) identify areas that may require additional planning related to wildfire mitigation projects; (4) assist in the development of Community Wildfire Protection Plans (CWPPs) and other hazard mitigation plans; (5) complement forest stewardship and forest management plans; and (6) inform decision-making and research at local and state levels.

## **The Development of a Regional Paleontology Geodatabase for National Parks**

*Meghan Thompson*

The National Park Service encompasses 286 areas with documented paleontological resources; however, each park employs distinct data collection and management methods, which diminishes the interoperability of information on a broader scale. Furthermore, discrepancies in data availability often arise due to variations in funding, staffing, and resources, complicating efforts to analyze and share paleontological data across parks. This project aims to develop a comprehensive paleontology geodatabase that consolidates paleontological information from parks in the Intermountain region. By creating an enterprise geodatabase, we can cater to the specific data priorities and analytical needs of each unit while safeguarding sensitive information associated with paleontological sites. The initiative will also involve the design of corresponding web applications, securely hosted within ArcGIS Portal. This infrastructure will enable parks to update their data using branch versioning and interact with dynamic visualizations through associated web applications, including Esri Dashboards and Web Experiences. The expected outcomes of this project include enhanced interoperability among parks, the establishment of standardized data collection and management practices, and increased funding for data collection, particularly in parks currently lacking comprehensive paleontological locality data. Additionally, improved analytical capabilities will allow for more effective research and decision-making. Ultimately, this project strives to create a unified and robust framework for managing and analyzing paleontological resources across the National Park Service, benefiting both researchers and park managers.



### **USFS At-Risk Campgrounds for Flooding**

*Joel G. Murray*

Use of a Modified Weighted Overlay Model to identify USFS at-risk campgrounds for flooding and request the installation of new or restoration of discontinued Federal Priority Streamgages (FPS) to serve as a flood-warning system for these recreational areas.

### **USGS OnDemand Topos: Overview of New 1:100,000-Scale User-Generated Maps**

*Marcelle Caturia*

The U.S. Geological Survey (USGS) topoBuilder application enables users to build their own custom topographic maps, called OnDemand Topos, using the best available data from The National Map (TNM). USGS OnDemand Topo map users now have multiple map scale options available to them with the debut of the 100K Topo or 1:100,000-scale mapping capability within the free topoBuilder application. OnDemand Topos were initially available only as 7.5-Minute (approximately 1:24,000) scale maps, which closely resemble historical USGS 7.5-Minute printed maps and US Topo products. OnDemand 100K Topos, released in October 2023, are the first all-purpose, medium scale topographic maps produced by the U.S. Geological Survey in over 30 years. The 100K map scale supports a broad topographic overview of landscapes across larger areas and is useful for activities like recreational trip planning, land management, and more. This poster details the key differences between the 7.5-Minute and 100K Topo maps.

### **Walkability in Colorado Springs: A Network Analysis of Access to Parks**

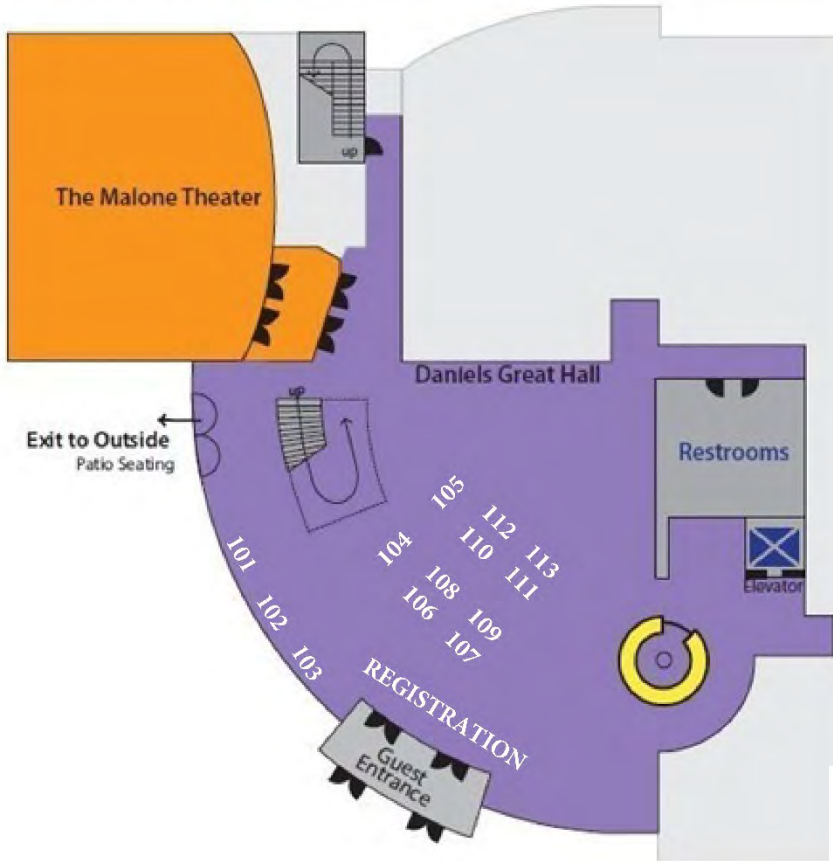
*Jessica Jennings*

This study analyzes walk times to parks within the city of Colorado Springs and aims to answer the following research questions: What is the average walk time to a city park in Colorado Springs? Is there any spatial correlation between the areas with longer walk times/less pedestrian friendly access to parks and the underlying demographic characteristics of those neighborhoods? A network analysis was conducted to determine walking times to each park. The distribution of total walk times was then used to identify areas of above-average walking times to determine if areas with typically underserved demographics have longer walk times to city parks.

**Please cast your votes**  
**[HERE!](#)**

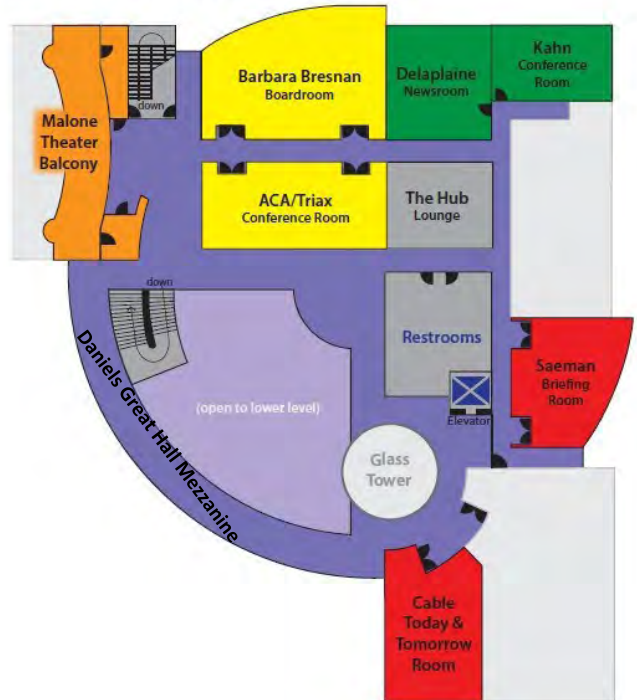
# CONFERENCE MAP

## THE CABLE CENTER - 1<sup>ST</sup> FLOOR



EXHIBITOR	BOOTH
Argis	108
Ayres Associates	109
Eos Positioning - DMG	107
Esri	103
Frontier Precision	106
GISCO	111
Langan	101
NV5 Geospatial	104
RM URISA	110
ROK Technologies	102
Sanborn	105
University of Denver	113
University of Wyoming	112

## THE CABLE CENTER - 2<sup>ND</sup> FLOOR



# CONFERENCE SCHEDULE

GIS in the Rockies 2024

## MORNING

Thursday, September 26

7:30 - 9:00 AM	Breakfast - Daniels Great Hall			
8:45 AM	Welcoming Remarks - Malone Theater			
9:00 - 10:00 AM	Keynote: <b>Jamie Jacobs, MS, NRP</b> - Geospatial Journey of Discovery - Malone Theater			
9:00 AM - 5:00 PM	Poster Session Daniels Great Hall Mezzanine Vote for Your Favorites!			
10:00 - 11:00 AM	Sponsor & Exhibitor Showcase Daniels Great Hall			
PRESENTATION SESSIONS 11:00 AM - 12:30 PM	Hydrography <i>Malone Theater</i>	Modern Mapping; Exploring National Parks <i>Bresnan Boardroom</i>	Remote Sensing <i>Saeman Briefing Room</i>	Energy and Utilities <i>Delapaine Newsroom</i>
11:00 AM	USGS Hydrography Specifications 2024 <i>Ryan Teter</i>	Breathing New Life into Old Maps and Data <i>Kevin Worthington</i>	Using Geospatial Techniques for Measuring, Reporting, and Verification (MRV) in the Agriculture Carbon Market <i>Thomas Pujil</i>	What are the differences between Utility GIS, other GIS's and CAD maps? <i>James E Hargis</i>
11:15 AM		Reforging a Custom Map Viewer in AGOL: the Bureau of Ocean Energy Management's New Marine Minerals Information System <i>Michael Farlenzo</i>		
11:30 AM	Planned User Suggested Editing of Published U.S Geological Survey 3D Hydrography Program Datasets <i>Greg Cocks</i>	- Open Discussion and Q&A -	Geospatial Benchmarking of Inference Modeling at Scale for CPU and GPU Hardware Performance Assessment <i>Robert Dzur</i>	Combining UAS Imagery, Terrestrial Videography, and GIS to Streamline Oil & Gas Regulatory Compliance in Various EHS Aspects <i>Pete Parker, Isabella Klajbor</i>
11:45 AM		Where do people go in Arches National Park? <i>Jeff Orłowski</i>		
12:00 PM	Hydrographic Addressing to 3DHP Data with HydroAdd3d <i>Michael Tinker</i>	NPS GIS Internship Program <i>Douglas Wilder</i>	Monitoring Vegetation Impacts of Night Penning in Idaho and Oregon Grazing Allotments Using Remote Sensing <i>Truman Anarella, Jack Hagenbuch</i>	
12:15 PM	- Open Discussion and Q&A -	- Open Discussion and Q&A -	- Open Discussion and Q&A -	
12:30 - 1:30 PM	Lunch - Daniels Great Hall			
12:30 - 1:30 PM	Women in GIS Meetup <i>Rogers Amphitheater</i>			



# CONFERENCE SCHEDULE

## AFTERNOON

GIS in the Rockies 2024

Thursday, September 26

PRESENTATION SESSIONS 1:30 PM - 3:00 PM	Collaboration and Community Engagement <i>Malone Theater</i>	Local GIS Solutions <i>Bresnan Boardroom</i>	Natural Resources and Conservation <i>Saeman Briefing Room</i>	USGS Workshop <i>ACA/Triax Room</i>
1:30 PM	If you build it, will they come? Upgrading Our GIS Platform for Improving Collaboration <i>Jackie Phipps Montes, Grant Smith</i>	GIS Glow Up: From Drab to Fab <i>Katie Evers, Keiko Flynn</i>	Reviewing the Status of Conservation Geo, a New Team Within the Natural Resources Conservation Service <i>Jerry Mohnhaupt</i>	Maps, Data, and Templates: A Workshop on USGS Topographic Mapping <i>Alex Kaufman, Tatyana Dismascio, Ella Ramage, Marcelle Caturia, Brendan Berve</i>
2:00 PM	On iPads and Atolls: Effective Community Engagement Strategy Leads to Digital Literacy and Use of Advanced Offline Technology <i>Sarah Godfrey</i>	Building MHFD Confluence: A Next-Gen Mapping Tool <i>Teddy Larkin, Katie Evers</i>	Colorado Water Plan: Within and Beyond Our Borders <i>Phyllis Thomas</i>	
2:15 PM	EnviroScreen 2.0: Updating Colorado's Environmental Justice Mapping Tool <i>Dan Carver</i>			
2:30 PM	Sustainability Hub - A Community Data Hub for Sustainable Regional Systems Research in Colorado <i>Ella Taylor, Elsa Gerster, Jessica Salo</i>	DRCOG's Denver Region Crash Data Dashboard <i>Greg Conant</i>	Mapping the Upper Colorado River: A Story of the Monitoring Effort using sUAS <i>Seth Legan</i>	
2:45 PM	- Open Discussion and Q&A -	Developing a Regional Traffic Crash Data Dashboard for the Pikes Peak Region <i>William Mast, Philip Roy</i>	- Open Discussion and Q&A -	
3:00 - 3:30 PM	Poster Showcase <i>Daniels Great Hall Mezzanine</i> Meet the Presenters and Cast Your Vote!			
3:00 - 3:30 PM	Afternoon Break - <i>Daniels Great Hall</i>			
PRESENTATION SESSIONS 3:30 PM - 5:15 PM	Emergency Management <i>Malone Theater</i>	Vendor Showcase <i>Bresnan Boardroom</i>	GIS Colorado Town Hall <i>Saeman Briefing Room</i>	
3:30 PM	DC Water Emergency Event Management System <i>Durmus Cesur</i>	The Right Way to Right-of-Way: Data Lifecycle Management Practices <i>Matt Hiland</i>	Interactive session for networking, knowledge sharing, and collaborative problem-solving focusing on the unique needs and goals of GIS practitioners in Colorado <i>GIS Colorado</i>	
4:00 PM	Critical Incident Mapping & Emergency Management for Schools <i>John Young, Brock Saylor</i>	ArcGIS Solutions: GIS Request Management <i>Brandi Rank</i>		
4:30 PM	Outsmarting Obsolescence: Extending an ArcGIS Solution Transforms 9-1-1 Address Data Management <i>Brady Hustad, Sam Como</i>	Migrating Web Apps to ArcGIS Instant Apps <i>Beth Romero</i>		
5:00 PM	ArcGIS Solutions: Emergency Management <i>Kendell Ryan</i>	- Open Discussion and Q&A -		
5:15 - 7:00 PM	GIS in the Rockies Social Event <i>Daniels Great Hall</i>			





# GIS-Pro in the Rockies 2025

October 6-9, 2025  
Denver, Colorado



Join us next year for the  
**GIS-Pro in the Rockies 2025**  
Conference on October 6-9, 2025  
in Denver, Colorado