

NGIS 2023 Mapping Together: Abstracts and Presenters

AARON MORRIS AND ANDREW SMART (MICHAEL BAKER INTERNATIONAL)

Innovative Solutions for Indoor Mapping & Facility Management

Enhance your GIS by embracing the latest technological step-change and push through the front door to the inside. New advancements in hardware design provides full 3D capture of an entire facility 10-times faster than conventional techniques. Learn how to capitalize on highly accurate floorplans and georeferenced data to enable informed decision making and create a common operating picture for your entire facility/campus. Comprehensive indoor mapping solutions enable floor-aware data that foster enhanced security/public safety, seamless BIM/Revit modeling, and total operational control through a Digital Twin.

Andrew Smart is Michael Baker International's Geospatial Technology Director. He supports Michael Baker International's Consulting and Technology Services as a subject matter expert on the ArcGIS Enterprise System, cloud services and works with a broad range of industry sectors including public safety, emergency management, utilities, local government, and transportation. Andrew specializes in designing high performance GIS system architectures for critical systems deployed both on premise and cloud environments that require 24/7 uptime. Andrew assists clients with leveraging the full scale of the ArcGIS System from designing custom solutions, system integrations, real-time processing platforms or autonomous systems utilizing ArcGIS Online and ArcGIS Enterprise.

JORGE MORTEO (CITY OF LAS VEGAS) & MAURICIO MORTEO (COLLEGE OF SO.NEVADA)

Building 3D GIS Models From Construction Plans in ArcGIS Pro 3D

The session is about how to use construction plans to create 3D GIS models for a site development projects, What is the purposed of creating 3D GIS models, GIS and software for 3D GIS models, the process to create a 3D GIS model, a short demo creating a 3D GIS model with ArcGIS Pro, Publishing 3D GIS Models, ArcGIS PRO 3D model issues and using 3D Mesh. Software: ArcGIS PRO, ArcGIS Online, ArcGIS Urban and Adobe Photoshop

Jorge Morteo, GISP, is a Senior GIS Analyst in the Department of Community Development and Department of Public Works Traffic Engineering, City of Las Vegas. Mauricio Morteo is a GIS Intern who is attending the College of Southern Nevada in the Environmental science program.

JAMES WINGATE (UNDERGROUND SERVICE ALERT OF NORTHERN CALIFORNIA AND NEVADA; USA NORTH 811) AND STEPHEN BAKER (USA NORTH 811)

Call 811 Before You Dig" in Nevada - How You Can Help Improve the System

Underground Service Alert of Northern California and Nevada, commonly known as USA North 811, is the organization to "call 811 before you dig" to arrange to have underground utility lines located and marked before digging so subsurface pipes and cables can be protected from damage and avoided during excavation. GIS is the core technology that powers the entire process as USA North 811 acts like "dispatch" for 1,500+ utility operators in northern California and Nevada so excavator needs simply to call 811 or visit our website to create a locate request "ticket" instead of contacting each utility operator directly. See your GIS data in action and learn how you can help improve the process by sharing additional data. And learn how you can receive data from USA North 811 (e.g., a shapefile of dig site polygons) to conduct analysis about excavation activity within your area of interest.

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James Wingate is the Executive Director at Underground Service Alert of Northern California and Nevada (USA North 811). He has worked in the 811 industry for over 23 years. He is passionate about GIS data sharing, tracking abandoned facilities, two-way electronic positive response, and many other damage prevention-related advancements. His educational background includes a bachelor's degree in geography from the University of Utah and a master's degree in public administration from Brigham Young University. James enjoys spending time with family, serving in his church and community, exploring rural areas, hiking, and rockhounding.

BRUCE CHENEY (GATEWAY MAPPING, INC.)

Intelligent Data Systems for 811

South Valley Sewer District bills all of its customers based on utility accounts maintained in a tabular data management system. Although considerable efforts are employed to maintain an accurate list of billed accounts, the processes are not perfect, and the account list has developed inaccuracies over time. The good news is the account records have a highly geographic component, so we combined GIS and data analytics to help identify corrections needed. The result is a far more accurate billing account list and a significant revenue improvement for the District.

Bruce is currently the Director of Geospatial Technology for Gateway Mapping, Inc and a part of the leadership team. I started my career developing GIS training materials for the Navy through a partnership with BYU. Since then I have worked at Gateway Mapping where I have spent many years directing product development, leading business strategy efforts and helping clients develop great GIS solutions. Bruce works on a large variety of projects helping organizations with enterprise technology, processes, and business challenges. Bruce is married to the greatest woman in the world and has 6 children. On a great day you may run into Bruce on a mountain or beach somewhere.

KENDAL PRICE, KEVIN JOHNSON, MATT LAWTON, JESS KOHLER (TRUCKEE MEADOWS WATER AUTHORITY)

Enterprise Field Data Collection Improvements for Water Utility Assets

Truckee Meadows Water Authority (TMWA) in Reno has utilized survey-grade GPS field data collection for nearly 20 years, primarily using Trimble hardware and software, to accurately locate and inventory water utility assets. Integrating this data with TMWA's enterprise GIS has required several manual steps performed by GIS staff utilizing middleware solutions. Recent advancements with Esri's ArcGIS Enterprise platform have opened the door for a more dynamic integration between field collected GPS data and the organization's enterprise GIS. Utilizing Esri Field Maps, TMWA will soon be deploying an ArcGIS Enterprise solution to allow field inspectors to collect and transmit GPS survey locations in real-time. This presentation will discuss the steps required to test, configure, and implement this solution.

Kendal Price, GIS Analyst; Kevin Johnson, GIS Analyst; Matt Lawton, GIS Analyst; Jess Kohler, GIS Technician; TMWA is a not-for-profit, community-owned water utility. Our skilled workforce ensures the treatment, delivery and availability of high-quality drinking water for more than 440,000 residents. The TMWA GIS team has over 70 years of combined professional experience and supports a variety of business functions within the organization.

JUSTICE BATISTE (ESRI)

Playing the Field: Understanding and Using Esri Field Collection Tools

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Esri has many field data collection tools that integrate with data systems and Esri technologies in different ways. This talk discusses the choices you have in Esri field tools and how to use them most effectively in different GIS implementations.

Justice Batiste is an Esri Solutions Engineer. Justice brings a rich work experience to solution engineering, having been with the United States Courts and the U.S. Coast Guard prior to joining the thousands of GIS professionals at Esri who are making GIS better for all.

ALYSSA RENTERIA (UNLV)

Wranglin' GIS Needs at UNLV

Saddle up and join this talk about UNLV's distinct community needs, the resources available, and glimpse into the future of geospatial education in this desert oasis. UNLV's Library GIS services are primed to assist the trailblazing researchers of Southern Nevada. These services are in a new phase of growth and change to meet the unique needs of the UNLV community. UNLV Libraries attract a diverse posse of students, faculty, and staff from various academic trails including: engineering, business, public health, criminal justice, and history. Recently, the library is working with a new information literacy fellow to craft new GIS digital learning objects that are based on the library's mission, community input, internal observations, and results from a data needs assessment.

Alyssa Renteria is a Data Visualization and GIS Specialist at the University of Nevada Las Vegas Libraries

CHRISSEY KLENE & CAROLS RAMIREZ-REYES (UNR)

Enhancing GIS Research and Education From Campus Core: The Central Role of UNR Libraries

University of Nevada, Reno Libraries play a pivotal role in boosting GIS research and pedagogy. In this presentation, we show our technical capabilities and expertise that facilitates GIS projects throughout campus and beyond. We also include technology resources housed at UNR, tailored to support the evolving needs of GIS enthusiasts, researchers, and learners. Our commitment to GIS extends beyond mere support; we actively enhance and refine our offerings to meet the growing demands of this dynamic field. Join us as we spotlight our growing GIS support and resources for students and researchers seeking an encouraging and welcoming environment for GIS exploration and project development.

Chirissy Klenke and Carlos Ramirez-Reyes are the Earth Sciences, GIS, and Maps Librarian, Data Services Coordinator, respectively, at the DeLaMare Library, University of Nevada Reno.

MATT BROMLEY (DESERT RESEARCH INSTITUTE)

Development of an Agricultural Field Boundary GIS Dataset for Consumptive Use Mapping in Nevada

In Nevada, approximately 70% of permitted groundwater is dedicated to irrigated agriculture and the overall volume of that water consumptively used by crops via the process of evapotranspiration (ET) is largely unknown. While meters could provide information on groundwater pumping, these readings do not equate to the amount of applied water lost to the atmosphere, which is needed for groundwater modeling and management. Satellite-based models can produce rates of ET, however, to estimate

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volumes, the area of irrigation must be defined and multiplied by the rate of ET. This project aimed to develop a state-wide agricultural field boundary dataset within a Geographic Information System (GIS) that can be used to develop historical field-scale summaries of ET. Datasets used to define historical agricultural extents included Landsat imagery dating back to 1985, aerial imagery, and previously developed data pertaining to water and land use. The developed boundaries were attributed with irrigation status, soil properties, crop type, and ET for respective years of analysis. This presentation will give an overview of the development of agricultural field boundaries for the state of Nevada and highlight how this data will be used for mapping ET and support other research.

Matt Bromley is an Associate Research Scientist at the Desert Research Institute (DRI) in Reno, Nevada. Matt has been at DRI since 2009 where his work has focused on using remote sensing and GIS to quantify evapotranspiration from both natural and agricultural settings. These efforts have been used to refine basin water budgets, examine the role of invasive species in hydrologic systems, and guide resource management decisions. For the past 5 years Matt has been involved in OpenET, a collaboration between NASA, EDF, Google, and numerous academic and private institutions. Matt holds a B.S. in Environmental Science and a M.S. in Geography from the University of Nevada, Reno.

ROBERT WASHINGTON-ALLEN (UNR)

Towards an Agricultural Atlas of the State of Nevada

NevadaView is an affiliate of AmericaView, an organization that promotes a nationally coordinated, community-implemented through StateViews agreement with the US Geological Survey's Land Remote Sensing Program to advance the use of remote sensing through education, outreach, workforce development, applied research, and information transfer. NevadaView focuses on applied research, outreach, and information transfer through the development of a "Dynamic Interactive Online Agricultural Atlas of the State of Nevada" and the development of an associated spatial database that will be accessible to K-12, ranchers, farmers, and agricultural stakeholders across the State of Nevada. The primary goals of this activity are 1) the development of spatial layers in support of a spatial database for the online Atlas. For example, through support to a doctoral graduate student, we are mapping groundwater across the state using downscaled Gravity Recovery and Climate Experiment (GRACE) satellite data with the goal of supporting a Nevada Water Atlas. Additionally, we have been mapping the changes in the productive capacity of 176 BLM/USFS managed Herd Management Areas (HMA) in the western United States.

Associate Professor of Agriculture, Department of Agriculture, Veterinary & Rangeland Sciences, Environmental Tomography & Emerging Technologies Laboratory, University of Nevada Reno

JAMES FAULDS (NEVADA STATE GEOLOGIST, NEVADA BUREAU OF MINES AND GEOLOGY)

Geologic Mapping Progress of the State Geological Survey

SARAH FICHTNER (NEVADA DIVISION OF WATER RESOURCES)

Alluvial Fan Flooding Project

SCOTT CAREY (NEVADA DIVISION OF STATE LANDS)

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The NDSL Planning Map

ERIC INGBAR (GNOMON/APPGEO)

USGS Lidar Update

ALLISON BRUNER (USDA USFS)

US Forest Service GIS Transitions and Public Data

An overview of the ongoing technology challenges as the Forest Service is migrating from ArcMap to ArcGIS Pro including a new Citrix environment and transitioning from Oracle SDE into PostgreSQL. Additionally, information on public sources of agency data and current NV FS GIS contacts will be provided.

Allison has been a GIS professional since 2002 and has lived in NV since 2016. Previously the GIS Coordinator for the Humboldt-Toiyabe National Forest based out of Sparks, NV, she has recently been promoted to a Regional GIS Coordinator for Forest Service Region 2 based out of Lakewood, CO but working remotely from Sparks while serving forests and national grasslands in CO, WY, SD, NE, and KS. Prior to being employed with the USFS, she worked for DOD for 12 years in a variety of GIS and project management roles across the US and 10 other countries.

DON HARPER (USDI BLM)

What's New With BLM GIS

An overview of what's new in BLM GIS and public data, including new applications supported by an entirely new GIS architecture

Don Harper is the Nevada BLM's State GIS Manager. His experience in GIS extends through many agencies, even back to the time before the letter "G" was invented so it was just "IS".

CHELSEA KINCHELOE (MUSCLE POWERED)

Non-Profit Outreach Using GIS

Muscle Powered is a 501 C (3) advocacy group based out of Carson City, NV. As a volunteer non-profit, we face challenges in engaging the public outside of our network. Since 1998, Muscle Powered has been advocating for non-motorized users on roadways and providing connectivity to northern Nevada through trails. We have been successful in ensuring commuters and the recreation community have access to quality trails, bike lanes, multi-use pathways and ensure our voices are heard on advisory committees, public meetings and in the business community. In order to support and broaden support for our services to the community, we are using a StoryMap tool. With the StoryMap tool, we will be able to reach wider audiences through the power of maps and photos that tell our story.

Chelsea Kincheloe is the President of Muscle Powered, a 501(c)3 non-profit devoted to advocating, building, and promoting active transportation, non-motorized, mobility options in and around Carson City.

GREGG BERGGREN (CARSON CITY PARKS, RECREATION AND OPEN SPACE)

Carson City Trails

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Carson City has created a unique approach to connectivity and recreational opportunities through the development of trails, initially made possible through the 1996 Quality of Life Initiative. Following the formalization of the Carson City Parks, Recreation, and Open Space department, forming critical partnerships (e.g., Muscle Powered, Carson City Tourism Authority, federal agencies), hiring a full time Trails Coordinator, and completing the Unified Pathways Master Plan, the momentum for trails is profound. Over the years, trails geospatial data (mostly KMZ files), and the management of that data (mostly by Muscle Powered) has been ad hoc and opportunistic. KMZs are a highly portable and user-friendly solution; however, duplication, versioning, and consistent attribution are key data management issues identified. NCE was retained by Carson City to design a geodatabase with consistent layer attribution and domain control, import existing trails data, conduct limited spatial editing, and ultimately develop a map of Carson's west side trails to be used for marketing and tourism. Although loftier goals are on the horizon, the solution for user quick access and navigation, was to provide an Avenza QR code.

Gregg Berggren is the Trails Coordinator for the City of Carson City

DAVE RIOS (NCE)

West Shore Tahoe Trail

The Cascade to Meeks Trail Feasibility Study came as a direct result of the Highway 89 Corridor Management Plan. The Corridor Management Plan was completed in 2020 after a 2-year public process that outlined a vision and goals to address everything from traffic congestion to public access along the State Route 89 corridor. One of the priorities identified in the Corridor Management Plan was the desire for a public trail that connected the existing West Shore Tahoe Trail through the State Route 89 corridor to the South Shore Tahoe Trail at Spring Creek. The Cascade to Meeks Trail Feasibility Study is the first step in the process that analyzes the potential alignments, taking into consideration the needs of the trail users, private landowners, constructability, environmental concerns, cost, traffic, and safety. Ultimately, the purpose of the project was to determine if one or more of the trail alignments is feasible to move into the design and environmental phase. Various geospatial tools were used to communicate with project stakeholders and the public during the project. Static maps, web maps, web applications, and a StoryMap were some of the geospatial tools used on this project to present conceptual alignments, screening, feasibility analysis results, preferred alignment, and the overall findings and recommendations from the Trail Study.

Dave Rios is a senior GIS and field researchers at NCE

DONNA INVERSIN (HISTORIC VIRGINIA & TRUCKEE TRAIL), ERIC INGBAR (GNOMON/APPGEO)

Historic Virginia & Truckee Trails

The Historic Virginia & Truckee Trails vision has been to find those remaining sections of old rail bed routes and stitch them together to build a rail-trail to echo the Virginia & Truckee Railroad for the benefit and enjoyment of the citizens and visitors of Northern Nevada. The trail will highlight the history and natural beauty of northern Nevada and help preserve the remaining sections of railway. The rail-trail will also link regionally and nationally significant trails such as the Pony Express Trail, the American Discovery Trail, and the Tahoe Pyramid Trail. Through these connections and others in Carson City, Douglas County, and Washoe County, travelers can also reach the Tahoe Rim Trail and the Pacific Crest Trail. The V&T will

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also attract bicycle tourism dollars by connecting Reno, Carson City, Virginia City, Minden and all of their museums and various attractions. With the development of a central geodatabase to manage regional trails data, it only makes sense to include existing and proposed trails slated for the V&T trail network. Working with non-GIS volunteers to develop proposed alignments has its challenges, but two user-friendly solutions were identified – mapping segments on the ground using the Gaia mobile application and digitizing segments from an aerial basemap using Google Earth. Volunteer outputs were converted to GIS and integrated into the geodatabase. For purposes of outreach and marketing, only those trail segments (existing or planned) for the V&T Trail are displayed in subsequent web GIS content developed.

Donna Inversin is the President and founder of the Virginia and Truckee Trail Foundation, a non-profit devoted to creating a walkable/bikeable/rideable route along the routes of the V&T Railway, from Minden to Reno, Virginia City, and beyond.

JUSTIN HUNTINGTON (DESERT RESEARCH INSTITUTE)

Applications of ClimateEngine.org for Advanced Drought and Natural Resource Monitoring in Nevada

ClimateEngine.org is web application that programmers and non-programmers alike can use to easily process satellite, climate, and GIS data in combination, and create maps and time series viewable in a web browser and available for download using Google Earth Engine. This presentation will highlight how ClimateEngine.org it is currently being used in Nevada and other regions by both public and private sectors for drought monitoring, early warning, and natural resource management.

Justin Huntington is a Research Professor of Hydrology at the Desert Research Institute, Reno, Nevada. His research interests are focused on remote sensing, evapotranspiration, irrigation, drought, hydrologic modeling, and groundwater dependent ecosystems. Justin received his PhD from the University of Nevada, Reno in Hydrologic Sciences. His research involves a blend of basic and applied science, with projects primarily funded by the U.S. Bureau of Reclamation, U.S. Geological Survey, NASA, western State water agencies. A key focus area of his applied work is stakeholder engagement and outreach to better understand and communicate science needs, and support research to operations using new earth observations and products, computing capabilities, and modeling approaches. He is one of 21 members of the 2018-2023 Landsat Science Team.

MURPHY GARDNER (DESERT RESEARCH INSTITUTE)

Development of a Phreatophyte Groundwater Discharge Boundary and Flux Dataset for Nevada

Quantifying groundwater use from phreatophytic vegetation within groundwater discharge areas is fundamental for determining groundwater budgets and potential groundwater resources in Nevada. This presentation will review and highlight ongoing work conducted in partnership with U.S. Geological Survey and Nevada Division of Water Resources as part of the Nevada Water Initiative to define and refine groundwater discharge boundaries and groundwater fluxes using a combination of satellite and aerial imagery, gridded climate data, and extensive field work. Estimates of rates, areas, and volumes of groundwater discharge from previously published reports will be compared and discussed. Initial design of an open GIS geodatabase of phreatophyte groundwater discharge areas, rates, and volumes will be presented and discussed.

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Murphy Gardner is a Hydrologist for the Desert Research Institute. He received his BS in Geological Engineering, MS in Hydrogeology from University of Nevada, Reno. Before joining DRI in 2022, Murphy worked as a Hydrologist for the USGS and Exploration Geologist for Goldcorp, Inc. Murphy's work focuses on hydrologic modeling, remote sensing, and GIS and is currently working on updating groundwater budgets across the state as part of the Nevada Water Initiative - a collaborative program between the State of Nevada, USGS, and DRI.

THEO HARTSOOK (UNR)

Getting Started With Open Source Point Cloud Processing

This talk will introduce some popular and useful open source software for working with point clouds. We will develop a sample workflow covering common processing tasks such as classification and noise removal. We will also discuss how to choose parameters and adapt them for different scenarios. The primary software used will be PDAL and CloudCompare.

PhD Student, Global Environmental Analysis and Remote Sensing Laboratory, University of Nevada Reno

NIKKI C. INGLIS (UNR)

The Gigafire Project: Mapping and modeling California's wildfire fuels and carbon stores with open source, cloud-based GIS technology

Balancing tradeoffs in forest health, carbon sequestration and wildfire risk is a critical concern when planning for a climate resilient future in California. As droughts deepen and extreme fire weather becomes more frequent, spatially explicit models of past, present and future wildfire fuels are crucial to understanding the where and when of catastrophic wildfire threats and determining strategies that optimally balance public safety and sustainable forest futures. However, computational challenges and disparate modeling and carbon accounting efforts have limited the availability of large extent, spatially contiguous fuel and carbon forecasts. Additionally, few fuel and carbon models incorporate spatially explicit model uncertainty, which is critical for efficiently and effectively making decisions with limited resources and time. We introduce the GigaFire Project; a collaborative, open source, scalable software platform to produce California-wide spatially explicit wildfire fuels and carbon forecasting system by integrating detailed spatial tree inventory data, remote sensing, topoclimatic history, and process-based vegetation growth models. GigaFire leverages cloud technology and high performance computing to parallelize the modeling processes and seamlessly scale to large study areas. We apply monte carlo approaches to propagate uncertainty throughout the modeling processes, supporting climate-resilient decision making that balances effective wildfire risk management with carbon storage needs.

Dr. Nikki C. Inglis is a geospatial data scientist based in Truckee, CA. She earned an M.S. in Applied Marine and Watershed Science from California State University, Monterey Bay in 2018 and a Ph.D. in Geospatial Analytics at North Carolina State University in 2021, where she built data visualization apps and studied the relationship between visual amenities and land change in social-ecological mountain systems. Her research interests include spatially explicit land change models (from fire behavior to urban growth), data visualization and storytelling, LiDAR-based wildfire fuels analysis, and remote sensing. She is currently a postdoctoral scholar at the University of Nevada, Reno where she works on The Gigafire Project, a California-wide fuels mapping and modeling framework.

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JASMINA SEKANOVICH (GREAT BASIN INSTITUTE) AND KATELYN PALO (FORMERLY GREAT BASIN INSTITUTE)

Mapping invasive Russian Olive plant locations, utilizing unmanned Aerial Systems (UAS) and imagery classification tools.

In order to assist the removal efforts for Russian Olive along the Pitchfork River corridor, the use of Unmanned Aerial Vehicles (UAV) is to be deployed to aid in mapping the location of the invasive species. Through the use of UAV imagery, the location and number of Russian Olive clusters can be extracted to help direct removal efforts. Doing on-the-ground field surveys can take time, whereas aerial surveys can both speed up the survey process, as well as create detailed and up-to-date aerial imagery.

Jasmina Sekanovich is the State Recreation Mapping Coordinator, under a contract with the Great Basin Institute. Jasmina is a graduate of Anthropology from California State University San Marcos and has an Associates of GIS. Currently, Jasmina works for The Great Basin Institute, contracting with the Nevada Division of Outdoor Recreation, as the State Recreation Mapping Coordinator. This role continues to build and maintain a robust database of statewide trails, both motorized and non-motorized, for the Nevada Trailfinder website. Aside from mapping trails, Jasmina also assists other non-profits and government partners with building and maintaining web applications, doing UAV surveys of Nevada State Park properties and creating kiosk maps for public display.

Katelyn Palo is a GIS Technician with a Master of Science in Applied Ecology from Michigan Technological University and a Bachelor of Arts in Biology from the College of Saint Benedict and Saint John's University in Minnesota. She has a passion for GIS and its implementations within natural resource management and was able to utilize these skills working as a GIS Technician with The Great Basin Institute from October 2021 through October 2022. During this time she aided in mapping OHV trails for the Department of Outdoor Recreation's Off-road Nevada and Nevada TrailFinder trail databases. She also participated in Nevada's Department of Conservation and Natural Resources collaborative Unmanned Aerial Systems (UAS) surveys and data processing. Through these UAS projects, Katelyn was able to aid in multiple UAS mapping projects with Nevada State Parks and is here today to present some of these findings. Currently, Katelyn is working with the State of Colorado's Department of Natural Resources, updating water well databases and legacy geospatial information.

KEVIN BROWN (NV5 GEOSPATIAL)

Lidar Derived Mapping Products

There are many considerations that need to be taken into account when collecting lidar data. What insights are you trying to gain? How many points per square meter? Vegetation cover, weather, terrain, timing? The list goes on. Maybe you've collected lidar, or perhaps downloaded some publicly available lidar datasets. Now what? From this lidar, raw point cloud data there are a plethora of useful GIS datasets that can be derived. Data is expensive- no one buys lidar to have lidar- they buy Lidar data collection to answer some question. No reason to have everyone who receives lidar load it up and generate derivatives when the experts have it all loaded already and can use high-capacity computing power to minimize the time to results and answers. The primary drivers here: Efficiency and standardization. The standardization of the derivatives allow geographic and temporal comparisons to see change or variation over space and time through that standardization. In this presentation I will discuss the considerations to be taken when collecting lidar data, the valuable datasets that can be derived from lidar, and the innumerable, valuable applications that this data can serve.

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Kevin has a strong geospatial background with more than 13 years of experience in the geospatial industry. He received his bachelor's in GIS from The Ohio State University. Kevin currently serves as Account Manager for NV5G helping clients plan for imagery, lidar, and other GIS projects.

JUSTICE BATISTE (ESRI)

So, An App Walks Into a Bar: Picking the Right Esri Applications for Your Needs

Esri has many different kinds of applications for a wide variety of GIS use cases. This talk discusses how you can assess your needs and choose the right Esri technologies to meet those needs.

Justice Batiste is an Esri Solutions Engineer. Justice brings a rich work experience to solution engineering, having been with the United States Courts and the U.S. Coast Guard prior to joining the thousands of GIS professionals at Esri who are making GIS better for all.

MARK MORRISON (MICHAEL BAKER INTL.)

Using Python Notebooks for data QC

Python Notebooks have become an important part of GIS visualization and analysis with their integration into later versions of ArcMap and ArcGIS Pro. They offer a streamlined format for custom coding solutions to be deployed with the full suite of python libraries available for use. I leveraged the power of Python Notebooks in order to create standardized and repeatable QC queries. This unconventional use of the platform was easier to customize, update, and test my code compared to other more obvious tools such as Data Reviewer and Attribute Assistant. It did not come without its own pitfalls and challenges though. This presentation will cover the reasons I use Python Notebooks for QC and how this solution differs from other approaches, real life example use cases, and some lessons learned while developing this QC method.

Mark Morrison has 20 years of experience in GIS at Michael Baker Intl. His professional interests include QA/QC, Parcel Fabric, Python, and methods development. He is a member of URISA and NGIS and enjoys providing his GIS expertise to non profit organizations.

CHRISTOPHER (CHRIS) JONES (CITY OF LAS VEGAS)

Leveraging ArcGIS API for Python to publish to AGOL

In this presentation, we will discuss leveraging ArcGIS API for Python to publish layers to the ArcGIS Online environment. ArcGIS API for Python is a powerful tool that can be used to publish layers to the ArcGIS Online environment. This can be done using a variety of methods, including ArcGIS Pro, Jupyter Notebooks, and the Python module arcpy. Arcpy is a Python module that can be used to perform geospatial analysis and operations. We will see how arcpy can be used to automate the process of publishing layers to ArcGIS Online.

Christopher Jones. BS, Geography, University of Wyoming 2002, is a Senior GIS Analyst for the City of Las Vegas. Chris has accumulated 25 years of experience and progressive responsibilities in Geographic Information Systems (GIS) in both the private and public sectors.

PAULO VANDENBERG (WASHOE COUNTY)

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Automating Reporting for Out of Jurisdiction Emergency Response Calls

Truckee Meadows Fire Protection District and the City of Sparks Fire Department has an interagency agreement in place to provide emergency assistance for certain types of out of jurisdiction response calls. The agreement allows for cost sharing and reimbursement for services. In order to calculate the financial totals, it is required to produce a monthly report which details the number and type of calls each agency responded to in the identified geographic areas. The report requires a number of analysis steps and is a time consuming exercise. By leveraging the capabilities of Arcgis Pro, a routine was built to automate the task thereby saving time and reducing the possibility of miscalculations.

Paulo is a Senior Business Systems Analyst for Washoe County GIS. Paulo has almost 10 years of experience working professionally in GIS. He graduated with a master's degree in GIS from Arizona State University.

RYAN MALHOSKI (CITY OF SOUTH LAKE TAHOE)

Defensible Space Inspections with Low Code Automated Reporting

Wildfire has always been a concern in the west, especially in the Lake Tahoe area. Recently the city of South Lake Tahoe started a defensible space program and with grant funding has been able to hire 3 seasonal defensible space inspectors. Since their positions are seasonal, they have limited time to inspect the over 12,000 developed parcels within the city. Using ArcGIS Field Maps, Survey123, Reporting, and Web Hooks a low code solution was developed to inspect, create owner reports and mailing labels, while also reporting all inspections upward to CAL FIRE automatically.

Ryan Malhoski, GISP, is the GIS Manager for the City of South Lake Tahoe, CA, bringing with him more than 16 years of GIS expertise in the government domain. His primary mission revolves around harnessing the power of GIS to streamline operations by minimizing redundancy, workload, and errors, all while bolstering productivity, speed, and precision. Ryan's approach centers on the preference for readily deployable, commercial off-the-shelf configurable solutions, which excel in agility compared to protracted, customized alternatives.

JUSTIN HUNTINGTON (DESERT RESEARCH INSTITUTE)

Development of a Field Scale Agricultural Evapotranspiration and Consumptive Use GIS Database for Nevada

The lack of consistent, accurate information on evapotranspiration (ET) and consumptive use of water by irrigated agriculture is one of the most important data gaps for water managers in the western United States and other arid agricultural regions globally. The ability to easily access information on ET is central to improving water budgets across the West, advancing the use of data-driven irrigation management strategies, expanding incentive-driven conservation programs, providing proper credit for investments in agricultural water conservation, and reducing transaction costs for potential water markets. This presentation will review recent advances in remote sensing of ET, and development of a field scale agricultural ET and consumptive database for Nevada. Applications of the Nevada database as part of the Nevada Water Initiative will be discussed and highlighted.

Justin Huntington is a Research Professor of Hydrology at the Desert Research Institute, Reno, Nevada. His research interests are focused on remote sensing, evapotranspiration, irrigation, drought, hydrologic modeling, and groundwater dependent ecosystems. Justin received his PhD from the University of Nevada, Reno in Hydrologic Sciences. His research involves a blend of basic and applied science, with projects primarily funded by the U.S.

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Bureau of Reclamation, U.S. Geological Survey, NASA, western State water agencies. A key focus area of his applied work is stakeholder engagement and outreach to better understand and communicate science needs, and support research to operations using new earth observations and products, computing capabilities, and modeling approaches. He is one of 21 members of the 2018-2023 Landsat Science Team.

WEYLIN GILBERT (UNR)

Statistical Downscaling of GRACE Groundwater Time-Series in Nevada

Water scarcity is an emergent, critical issue of the 21st Century. Precipitation patterns are shifting due to climate change, increasing risk from drought, famine, and fire. At the same time, many groundwater aquifer systems have been severely overdrawn, depleting water reserves which would otherwise be a crucial hedge against the loss of precipitation. To adapt, scientists and managers must be able to inventory available water resources, monitor trends in water storage and recharge over time, and examine how aboveground ecosystems respond to changes in water availability at a landscape scale. NASA's GRACE and GRACE-FO gravimetric satellite missions provide a monthly product of terrestrial water storage derived from anomalies in the Earth's gravitational field at an approximately ~400 km spatial resolution. Regional groundwater managers can make better use of these data if they can be viably downscaled to finer resolutions. For this presentation, I have employed several machine-learning approaches to downscale GRACE imagery of Nevada to finer spatial resolutions (4 km, 16 km, 64 km) and evaluated the viability of each approach in spatially quantifying interannual trends in groundwater storage.

Weylin Gilbert, Environmental Tomography & Emerging Technologies Laboratory, University of Nevada Reno

MITCHELL GRITTS (VIBRANT PLANET)

Navigating the Cloud: data formats, OGC APIs, and computing

Cloud native technologies are revolutionizing the way we process and analyze spatial data. This revolution has ushered in a new era of data formats optimized for the cloud, including cloud-optimized GeoTIFFs, GeoParque, and FlatGeobuf. To facilitate this transition, the Open Geospatial Consortium (OGC) has taken significant steps by introducing a range of APIs such as tiles, features, coverages, and the SpatioTemporal Asset Catalog (STAC), designed to replace older web services standards like WMS, WFS, and WCS. These cloud-native technologies are not merely incremental improvements; they are fundamental to advancing geospatial computing and processing capabilities to a global scale.

Mitchell Gritts is a wildlife ecologist, data analyst, and web developer based in Reno, Nevada.

ERIC FRIEDLANDER (CITY OF RENO)

Geospatial Hub: Using Experience Builder For a Public Interface

The City of Reno created a public facing Geospatial Hub using Experience Builder for ArcGIS, incorporating several pages to include public maps and apps, open data, and Story Maps to help locals and visitors learn about the City, find places to go and things to do, interact with local government, and enhance the experience for locals and visitor alike.

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Eric Friedlander is a Senior GIS Analyst for the City of Reno. Prior to working with the City, Eric worked in GIS within several agencies in the Tahoe and Sierra Front region.

JUSTICE BATISTE (ESRI)

Having the Best ExperienceBuilder... Ever - Getting Going with New Tools

ExperienceBuilder is Esri's latest low-code/no-code toolset. With ExperienceBuilder you can create web apps and pages visually with drag-and-drop. Choose the tools you need to interact with your 2D and 3D data. Build interactive, mobile adaptive experiences for your audiences. In this talk, Justice Batiste (Esri) will explain how to get started using this exciting new tool, including tips for migrating from older application platforms.

Justice Batiste is an Esri Solutions Engineer. Justice brings a rich work experience to solution engineering, having been with the United States Courts and the U.S. Coast Guard prior to joining the thousands of GIS professionals at Esri who are making GIS better for all.

ANDREW SMART (MICHAEL BAKER INTL.)

Is my Cloud GIS Secure?

Ransomware, Man-in-the-middle, Denial of service, SQL injection, zero-day exploits – the internet can be a scary place with an ever-changing security landscape. With geospatial platforms transitioning to primarily web-based systems and cloud computing platforms as a cost-effective deployment model, how can you be confident your geospatial system is secure when it is not under lock and key in a server room next door? We will spend this session discussing how your geospatial system deployed in cloud platforms such as Amazon Web Services and Microsoft Azure can be secured to protect against a dynamic portfolio of security vulnerabilities. We will look at the security considerations that need to be accounted for in a geospatial platform, as well as native cloud tools that can support a highly secured platform. We'll demonstrate how cloud environments can actually help insulate the organization from security vulnerabilities in the first place. We look forward to you joining us for this discussion.

Andrew Smart, is Michael Baker International's Geospatial Technology Director. He supports Michael Baker International's Consulting and Technology Services as a subject matter expert on the ArcGIS Enterprise System, cloud services and works with a broad range of industry sectors including public safety, emergency management, utilities, local government, and transportation. Andrew specializes in designing high performance GIS system architectures for critical systems deployed both on premise and cloud environments that require 24/7 uptime. Andrew assists clients with leveraging the full scale of the ArcGIS System from designing custom solutions, system integrations, real-time processing platforms or autonomous systems utilizing ArcGIS Online and ArcGIS Enterprise.

CHARLES BURGER (ASSUREON CYBERSECURITY SOLUTIONS) **UNABLE TO ATTEND**

Data Security Posture Management

With IT security landscape, constantly changing traditional backup and data storage methodologies are not enough to protect end-users data, especially critical or regulated data from Ransomware attacks. We'll discuss these challenges including Data Security Posture Management and how IT department's around the globe are now taking data integrity as a serious need. Please join us for a very informative

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discussion meant to raise everyone's level of awareness, as well as learn new technologies to help prevent critical data loss and downtime.

Charles Burger is with NexSan, a storage and IT solutions powerhouse.

KYEL SHIPPEY AND DEVON CALLAWAY (GEO-LAB.NET)

One Map, All of Nevada - Exploring Geo-Lab.NET's new comprehensive statewide GIS web map system

Geo-Lab.NET was launched in July 2023. Accessible from any web browser, our one-stop GIS map features over 1,000 layers across Nevada from federal, state, county and local agencies. Our goal is to provide easy access to parcels, surveys, zoning, permits, water systems, hazards, transit, census statistics, and numerous other data across the entire state of Nevada on a single interface. Geo-Lab.NET is self-funded to build a consolidated GIS platform where governments, businesses, scientists and citizens can freely examine Nevada's civic infrastructure and historical records. Our system offers both free access for general public use as well as paid access levels for professional needs. We are seeking to present ourselves and our software to the GIS community, invite users to try our GIS map, and solicit industry feedback about Geo-Lab.NET as a statewide solution now servicing all of Nevada. Our presentation will demonstrate the ease of exploring Nevada's diverse statewide data, which ranges from major cities like Reno and Las Vegas to the open territory of Esmeralda County and everything in between.

I and my colleague Devon Callaway are longtime friends who have worked in GIS and software development for many years. Perceiving a lack of software capable of displaying a large volume of data layers for anyone other than professional GIS experts, we created a database system that makes it easy for anyone to access their region's detailed GIS assets in one online map.

KEVIN WICHMAN (NEVADA DIV. OF STATE LANDS)

Nevada Division of State Lands, State Property is our Business

The Nevada Division of State Lands is responsible for managing all real property owned by the State. In this synopsis, I will discuss recent partnerships, acquisitions, and public access work in which NDSL has been involved. I will also talk about how NDSL is working with other stakeholders in projects as diverse as rebuilding the Stewart Campus and collaborating with the Nevada Tahoe Resource Team.

Kevin Wichman is a GIS Analyst for the Nevada Division of State Lands.

GRAHAME ROSS (NEVADA DIV. OF STATE LANDS)

An Interpretation of Nevada Issued Land Patents

Land patents? Sounds boring. It's not! Land patents issued in Nevada have a fascinating history that entangles interests, politics, and administration from Nevada Territory times to today. For example, in the 1800's the Surveyor General was here but the Land Agent (yes, just one) was in Washington, D.C. Issuing a patent (a deed) for federal lands involved paper moving back and forth, and forth, and back and... Come here about it and you will leave with a greater appreciation for the women and men who "put Nevada property on a map".

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Grahame Ross is an IT/GIS Supervisor for the Nevada Division of State Lands in Carson City.

LUCAS BEAUCHAMP (USDI BUREAU OF LAND MANAGEMENT)

CAD-NSDI Public Land Survey System Update

One important function of the Bureau of Land Management is the update and maintenance of the Public Land Survey System -- the system of Township, Range, Section and aliquot part devised by Thomas Jefferson as a means to map and manage public lands. The BLM is responsible for establishing and maintaining these land divisions and publishing data about them. The CAD-NSDI (Cadastral - National Spatial Data Infrastructure) is always being improved both in the quality of the data it contains and in how it is accessible to the public and geospatial professionals. This talk provides both content about the CAD-NSDI and an update on its current status and ways you can use it.

Lucas Beauchamp is a GIS specialist with the Bureau of Land Management, Nevada State Office

DAVID ALEXANDER (DOUGLAS COUNTY)

Flood Damage Assessment from a Wet Winter

The winter of 2022-2023 released unprecedented amounts of moisture in the greater Sierra Nevada region. Located on the eastern flank of the mountain range, Douglas County received an extreme amount of water runoff throughout spring and into summer. This put the County's storm-water infrastructure to the test. GIS proved a crucial role in providing emergency services real-time mapping support, and post-runoff damage analysis. This presentation will illustrate what maps and services we provided to county officials and residents.

David Alexander has been the GIS supervisor for Douglas County since January 2022. He has over 8 years experience in the GIS field and enjoys spending as much time as possible adventuring and exploring in the outdoors.

ALEX HACKER (EAGLEVIEW)

Listen to the Data: Interdepartmental Review to Guide Path Forward

Too often we put the burden of decision on ourselves. Whether this is due to an unfamiliarity around resources available or other sensed impediments the goal of this time is to express the benefits found when working together throughout a project's lifecycle.

Alex Hacker is a Regional Manager for Eagleview, one of the largest aerial imagery companies in the nation. Alex is a graduate of the University of Nevada, Reno with professional experience in the aerial imagery, environmental remediation, and MEC field.

BRUCE CHENEY (GATEWAY MAPPING, INC.)

Using GIS and Data Analytics to Improve Utility Account Billing Accuracy

We discuss the process of managing a large data repository that hosts live GIS services where data is collected daily from a variety of organizations and automated to deliver a standardized output. We will review the process of data automation, risk analysis, continuous data flow, alternate delivery and Service production.

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Bruce is currently the Director of Geospatial Technology for Gateway Mapping, Inc and a part of the leadership team. I started my career developing GIS training materials for the Navy through a partnership with BYU. Since then I have worked at Gateway Mapping where I have spent many years directing product development, leading business strategy efforts and working with clients to deliver great GIS solutions. Bruce works on a large variety of projects helping organizations with enterprise technology, processes, and business challenges. Bruce is married to the greatest woman on the planet and has 6 children. On a great day you may run into Bruce on a mountain or on a beach somewhere.
