

**ASSOCIATION OF CANADIAN MAP LIBRARIES AND ARCHIVES  
BULLETIN**

**ACMLA News**

The CARTO-ACMLA/ACACC executive recently met to discuss matters of the organization, including the 55th annual conference, for 2022. After some discussion of the likelihood of institutional support and capability, we decided that 2022, like 2021, will be a virtual conference. As such, we would now like to invite anyone interested in helping to organize the conference to send an email to me at [martin\\_chandler@cbu.ca](mailto:martin_chandler@cbu.ca), and we can get the process started.

As another matter for consideration, those who attended the AGM may remember my raising the potential for a small change in the pricing for membership - namely that we would have costs for membership of \$65 for those with institutional funding support, and a lower cost for those paying out of pocket. As discussion at the time led to a desire for more study, I would like to invite everyone to fill out [this anonymous survey](#) on your thoughts - this will also be sent to former members, in order to gauge the potential for attracting these members to return. Please fill out the survey by November 30th, 2021.

L'exécutif de CARTO-ACMLA/ACACC s'est récemment réuni pour discuter des affaires de l'association, notamment de la 55e conférence annuelle, pour 2022. Après avoir discuté de la probabilité du soutien et capacité institutionnelle, nous avons décidé que 2022, comme 2021, sera une conférence virtuelle. À ce titre, nous aimerions maintenant inviter toute personne intéressée à aider à organiser la conférence à m'envoyer un courriel à l'adresse [martin\\_chandler@cbu.ca](mailto:martin_chandler@cbu.ca), et nous pourrions lancer le processus.

Par ailleurs, ceux qui ont participé à l'AGA se souviendront que j'ai évoqué la possibilité d'un petit changement dans la tarification des membres, à savoir que le coût de l'adhésion s'élèverait à 65 dollars pour les personnes bénéficiant d'un soutien financier institutionnel, et à un coût inférieur pour celles qui paient de leur poche. Comme la conversation a conduit à un désir d'étude plus approfondie, je voudrais inviter tout le monde à remplir [ce formulaire anonyme](#) sur vos pensées - il sera également envoyé aux anciens membres, afin d'évaluer la possibilité d'attirer ces membres à revenir. Veuillez remplir le questionnaire avant le 30 novembre 2021.

*Martin Chandler*

## GIS Days 2021

GIS Days 2021 was held November 15-19, an [online](#) event that was planned by Western University, in collaboration with many Ontario institutions and organizations, and with presenters and participants from all over the world.



*Attendees' locations*

The week was comprised of 42 lightning talks, 11 demos, and 4 tutorials. There were 487 unique registrants and 398 unique attendees across all five days.

### DEMONSTRATIONS (20 min)

#### **ArcGIS Dashboard for Covid-19: Kathy Tang**

An ArcGIS Dashboard is a powerful tool for displaying multiple visualizations of your data on a single screen without writing any code. With COVID 19 pandemic, ArcGIS dashboards have become extremely popular to display information about the pandemic. In this demo, I will begin with an overview of ArcGIS Dashboards and then show you how to create a simple dashboard using real-time COVID 19 data provided by the Centre for Systems Science and Engineering at Johns Hopkins University.

**Finding Historical Topographic Maps in the Scholars GeoPortal: Amber Leahey**

There are thousands of historical scanned maps in the Scholars GeoPortal available for open reuse. The 1:63,360 and 1:25,000 scale topographic maps were the first historical series to be inventoried and georeferenced by the Ontario academic library community for open access in 2017. Now we've added maps covering all of Ontario at the 1:50,000 scale, representing a rich set of historical topographic data to be used for all sorts of historical and longitudinal research. Join me for a demonstration of how to find, access, preview, and reuse these amazing historical maps in the GeoPortal!

**GIS Working Group Open Meeting: Liz Sutherland**

I founded the London GIS Working Group in 2017 after a GIS Open House event that had us GIS professionals chatting about wanting more time to nerd out over maps/GIS. The group meets about once every quarter, with an open virtual networking event during GIS Days. This session will be run as a Zoom Meeting as opposed to a Webinar. This is an open meeting, meaning anyone who is interested in learning about GIS jobs and listening to GIS professionals is welcome to attend. The session will run as a show-and-tell round table.

**HGIS and Local Museums - Why the Future of Collections Management Systems is Spatial: Ben Woodward and Julia Armstrong**

Our presentation will begin with a demonstration of the Bayfield Historical Web Map (<https://www.bayfieldhistoricalwebmap.ca/>), an innovative HGIS that can be used to explore the Bayfield Historical Society's georeferenced collection of historical maps, photographs, and postcards. We will then provide a high-level overview on how we created the map, something we achieved using exclusively open-source tools, including OpenLayers, Django, and PostgreSQL/PostGIS. Lastly, we will compare the Bayfield Historical Web Map to other collections management solutions (e.g. PastPerfect and Atom) and outline the pros and cons of this approach for local museums and archives, researchers, and the general public.

**Open-source software for Geospatial Data Discovery, Exploration and Reuse: Kevin Worthington**

As the open data movement continues to gain traction, research communities need systems that allow not only online data discovery, but also their exploration and reuse. The ability to view, combine, and interact with data online prior to download helps to assess data suitability, subset data as needed, and pipe data into existing analyses systems; to streamline data gathering and research efforts. With a focus on geospatial data, the developed open-source software makes this possible. It is designed for academic libraries to harmonize research data across platforms and provide researchers with a consistent interface to access data. This open-source software leverages existing technologies to facilitate harvesting, curation, and ingestion of these data.

**Discussing “Geo” Job Opportunities & Skills: Jonathan Murphy**

This special 1-hr presentation will focus on the geospatial job market in Canada and

internationally. This talk will be of interest to those wishing to understand current and future trends relating to their careers. Jon will be joined by Prashant Shukle and Bilyana Anicic to discuss the following topics: • What is the geospatial job market like right now? What has the pandemic done to change the way we work? What if any impact on the geomatics community? What are the new skills and new opportunities opening up in the job market? Are there opportunities for young entrepreneurs? If so what?

**Processing big geospatial data using FME Workbench and other cool tricks to get your desired output: Meaghan Kenny**

This presentation will highlight the benefits and barriers to using FME to process large (3TB) datasets. Processes include reading in the data and clipping to an area of interest (Ottawa, ON), using Ward boundaries as fanout folders. I will offer a brief demo of how quickly you can get to your desired output.

**The Geography of Pokémon GO: Vivian Kong**

This presentation will talk about the history of Pokémon GO and the different GIS processes that are used to create the widely successful augmented reality mobile game, as well as a brief discussion on the use of GIS in other games. A live demonstration of Pokémon GO will also be presented (technology permitting).

**Tracking COVID-19 in Low- and middle-income (LMIC) countries using open source GIS tools: Crystal Wai**

We present an interactive R Shiny app called “COVIDepisim” to capture the spatiotemporal transmission dynamics of the spread of COVID-19 in Low- and middle-income (LMIC) countries. Our app uses open-source GIS tools and freely available population count data downloaded as a gridded raster map at the 30-arc second resolution from WorldPop ([www.worldpop.org](http://www.worldpop.org)) to assess the geographical spread of COVID-19. We consider Nigeria as a test case and use the daily COVID-19 incidence, prevalence, vaccination and death data retrieved from the Nigerian Centers for Disease Control (NCDC) webpage. We implement a SVEIRD (which stands for Susceptible, Vaccinated, Exposed, Infectious, Recovered and Dead compartments) epidemic model. Our simulation provides insight that would support the Public Health officials towards informed, data-driven decision making and more broadly on how COVID-19 spreads in a large geographical area with places where no empirical data is recorded or observed.

**Using Google Earth and Census Data to Explore your City's Spatial Structure: David Gordon**

The Canadian Suburbs research project used census data and ArcMap to classify every metropolitan neighbourhood to answer the research question, ‘Is Canada a Suburban Nation?’ [Answer: Yes]. This research demonstrated that 67% of the Canadian population resides in suburbs and maps the spatial structure of metropolitan areas. The research method and an atlas can be found in the report Still Suburban? [www.canu.ca/resources](http://www.canu.ca/resources) The maps and data are also available at our research website [CanadianSuburbs.ca](http://CanadianSuburbs.ca) and can be downloaded to explore in Google Earth.

We will demonstrate the research method, give a lightning tour of all 33 metropolitan areas and give a live demonstration on the use of the Google Earth version.

### **What to Expect When You're Mapping: John Nelson**

Let's make a map together! Why not, it's a blast and we all know it. But our bosses have to think it's all serious work. We will build a map in ArcGIS Pro and chat about why each step is taken.

## **LIGHTNING TALKS (7 min)**

### **A Snapshot of COFI's Forest Education Program: Jim Costley**

A snapshot of COFI's Forest Education Program. Attendees will be introduced to the many forestry career awareness programs that COFI hosts throughout the province and learn how COFI's forest education program connects students, teachers, and parents to Forestry and the Forest Industry.

### **Additional Dwelling Area (ADU) Estimation in GIS: Application to the City of Windsor, Ontario, Canada: Terence Dimatulac**

Acquiring a home in Canada, whether through buying or renting, has been financially challenging in recent years. Therefore, introducing a second residential unit, also known as additional dwelling unit (ADU), could be seen as a potential solution to this dilemma by providing more affordable housing for many. In this project, a model was developed using the ModelBuilder in ArcGIS to estimate the available area for an ADU on each land parcel in the City of Windsor in Ontario, Canada. Then, a categorical model was used to determine if a specific ADU complies with the constraints put on by the city. In general, more than 94% of the residential parcel in the City of Windsor have enough area to house an ADU. Among them, about 44% are eligible to have a detached ADU, while more than 40% are eligible to have an attached or interior ADUs.

### **Combining Measurements of Built-up Area, Nighttime Light, and Travel Time Distance for Detecting Changes in Urban Boundaries: Introducing the BUNTUS Algorithm: Muhammad Luqman**

This presentation introduces a new algorithm (BUNTUS—Built-up, Nighttime Light, and Travel time for Urban Size) using GIS and remote sensing techniques to delineate urban boundaries. The method combines estimates of land cover, nighttime lights, and travel times to classify contiguous urban areas. The method is automatic, global and uses data sets with enough duration to establish trends. Validation using ground truth from Landsat-8 OLI images revealed an overall accuracy ranging from 60% to 95%. Thus, this approach is capable of describing spatial distributions and giving detailed information of urban extents. We demonstrate the method with examples from Brisbane, Australia, Melbourne, Australia, and Beijing, China and now BUNTUS has generated urban boundaries of great 100 cities.

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**Development of a GIS tool for integrating road infrastructure risk analysis associated with the geomorphological dynamics of watercourses: William Massey**

The research project aims to develop a GIS analysis tool to identify the sectors or infrastructures of road networks that are or may become vulnerable in relation to the geomorphological dynamics of rivers. The three-year project funded by the Quebec Ministry of Transport, is composed of two main phases, the first of which consists of tool development and testing on the project to extend Route 138 (addition of roughly 375 km) in the Basse-Côte-Nord region of Quebec, while in the second phase the application of the tool will be extended to several other watersheds representing the range of physiographic regions and fluvial styles found in the province. The presentation highlights the use of GIS for identifying geomorphological hazards in remote locations and assessing risk for road infrastructures through tool development and interpretation of indices evaluated from LiDAR, historical aerial photos and satellite imagery.

**Ecological Connectivity/Restoration Project outside of Point Pelee National Park: Tom Dufour**

In support of this collaborative project with Parks Canada, GIS staff at ERCA will show how GIS proximity and allocation tools were used to identify and prioritize areas for potential restoration and conservation in the watersheds immediately north of Point Pelee National Park in Essex County, Ontario. The ultimate goal was to focus on high priority opportunities to restore features and ecological functions that have been lost or degraded while maximizing ecological benefits. Highlighted inputs include natural heritage mapping and species of interest records which were used to produce the areas of targeted restoration opportunities.

**Empowering the Human-Nature Bond: Valeria Widjaja**

What is land? Is it dirt, the Earth, property, a resource? But rarely we ask who is land? When we change the question, it changes the way we think about land. It transforms the way we make decisions about how we might protect land. Through the Deshkan Ziibi Conservation Impact Bond, this story map explores how Carolinian Canada, Chippewas of the Thames First Nations, VERGE Capital, Ivey Business School, Thames Talbot Land Trust, and 3M are striving to heal the



landscape. Overall, this story map visualizes both the human-nature and human-human relationships being facilitated by the bond. Learn the about stories of the Carolinian Zone, who we are trying to save, the tools used, the work being done, and how diverse groups came together to achieve one common goal: to preserve our ecosystems and unite various sectors and challenge the assumptions society holds about nature and its role in human life.

### **Estimating Ecosystem Processes from Autonomous Underwater Gliders in the Great Lakes: Nolan Pearce**

This presentation will provide an overview of the use of autonomous underwater gliders for data collection in the Great Lakes by the Real-Time Aquatic Ecosystem Observation Network (RAEON). Second, this presentation will provide an introduction to using autonomous time-series measurements to estimate ecosystem processes across large spatial extents.

### **Evaluating Effect of Tree Canopy Cover on Human Thermal Comfort: Arthur Dolinar**

The project is about evaluating the effect of tree canopy coverage on human thermal comfort done by using comfort indices and the software ENVI-met to complete the analysis.

### **Galaxy Mapping by Machine Learning Classification: Robin Kwik**

My presentation highlights the compatibility of remote sensing and astronomy methods. Here I discuss the classification of galaxy components in UGC 2885, a massive spiral galaxy, by machine learning; in particular, I compare the traditional method of maximum likelihood with the more powerful models random forest and support vector machine.

### **Getting a Ley of the Land: Fostering Urban Legibility Through Ley Line Mapping: Colton Sherman**

Cities are challenging texts to decipher, but the task is not impossible. In adapting Alfred Watkins's (1925) widely criticized theory of Ley Lines (or 'routes of power'), I posit that we can establish a methodology for deciphering these urban enigmas in a wholly unique way, facilitating orientation within these spaces which goes beyond the mere use of street signs and other textual signifiers. How a city allows or denies access goes virtually unnoticed by the wanderer, but adapting Watkins's ideas and charting numerous urban elements (coffeeshops, graffitied walls, traffic hotspots, etc.) exposes narratives of facilitation and interruption, and literally gives shape to a city's multiplicity. This method also highlights sites of psychical overlap hitherto unnoticed by wanderers, exposing intersections and parallels between disparate elements. Despite the pseudo-scientific reputation of Watkins's theory, it nonetheless facilitates a new way of reading a space resistant to legibility.

### **GIS in Telecommunications: Usage of spatial databases: Justin Sungsoon Chang**

My presentation will be about using GIS in the world of telecommunications. I would like to highlight how multi-user environment in GIS powered by spatial databases enables users to work from different locations and in a synchronous way.

**GIS and the United Nations Sustainable Development Goals: Amit Arora**

My talk will touch upon the United Nations Sustainable Development Goals. I will provide an overview of GIS applications in accomplishing one or more of these goals.

**Google Earth Engine: A Case Study in Forest Cover and Landscape Metric Calculation: Miranda Postma**

A brief case-study in how Google Earth Engine can be useful for studying changes in forest cover over time. This presentation will be looking specifically at the JavaScript (browser-based) version of Google Earth Engine, and will be examining its strengths and weaknesses when it comes to generating forest cover layers and calculating landscape metrics.

**Herzberg50: Benjamin Harris**

The Herzberg50 project, done by Defining Moments Canada, commemorates the life of Gerhard Herzberg, the 1971 Nobel Laureate in Chemistry. This map was created to be a resource for teachers and students to visualize Herzberg's life, and to make connections with events that were occurring at the time. The project is also significant as a biographical resource, as it shows how different mediums can be used to write in-depth biographies.

**How GIS Applications Help us to Rethink our Relationship with the Nature: Leo Poon**

I am one of the volunteers from GoGeomatics. Our team publishes weekly digest to cover local (Canadian) and international geospatial news. I am going to summarize what we have covered so far for the Canadian geomatics industry from January to September, particularly focusing on mapping applications related to environmental monitoring. I am still finalizing which stories to be discussed for the presentation, but most likely will focus on how the general public can be benefited from recently developed GIS applications and technological advancements, and how the Canadian government sectors and private corporations contribute to these developments.

**Impact of Urban Development on the Long-term Viability of a Blanding's Turtle Population: Anne-Christine Auge**

Habitat change due to urbanization have had negative impacts on turtle populations worldwide. I studied an urban Blanding's turtle population to assess whether development was compatible with population viability. I investigated turtle habitat suitability using habitat suitability modelling in ArcGIS, and monitored locations and survival 2017-2020 (ongoing development) using telemetry and mark-recapture. I made comparisons to data collected 2010-2013 (prior to development) to assess whether population viability declined through increased habitat loss and lower population size. I found that turtle habitat suitability declined by 10% over the last decade, and population size decreased by 70%. Population modelling suggests that 2 road mortalities per year could explain the decline in the population size, which is likely related to habitat loss forcing turtles onto roads. Moreover, this estimated road mortality rate is not sustainable over the next 50 years.



**Investigating Climate Change Basics Using Storymaps; Beth Hundey and Katrina Moser**

I'm part of an interdisciplinary team that's creating a new online course, Connecting for Climate Change Action. As part of this project, I've used storymaps and survey 123 to support students in learning some climate change basics. The learning objects are intended to give students more time working and interacting with key figures, rather than listen to the instructor explain them. Aside from interactive images and graphs, students can also check their understanding with immediate feedback. Students also have a new way to share their photography and reflections with each other using survey123.

**MCE Geo Hub: Ryan Fortier**

The Mapping and Charting Establishment of the Canadian Armed Forces Web Services Section developed a Geo Hub providing members of the CAF and DND community a variety of web mapping services in support on domestic operations (fires, floods, etc). This was created using the AGOL platform.

**Mapping as Problem-Solving: Adopting a Geospatial Approach to the Study of Inclusive Education: Alexandra Minuk**

To understand the regional variables associated with inclusive classroom placement for students with autism spectrum disorder in Ontario, it was first necessary to identify the best measure of region. Since publicly available data on the 72 school boards is limited, we needed a way to create our own. This presentation is about mapping as problem-solving and how inter-disciplinary collaboration can be illuminating. In our lightning talk, we will highlight how we used ArcMap to visualize inclusive classroom placement for students with autism spectrum disorder, as well as our use of CHASS to summarize census variables of interest as they fit within the school board boundaries. Not only did the maps allow us to identify areas that might require additional support in implementing inclusive placements, but also, the resultant summary statistics allowed us to calculate more precise correlations between classroom placement and the variables of interest.

**Mapping Coastal Erosion Disadvantage in Scotland: Craig MacDonell**

Despite accelerated rates of coastal erosion and growing coastal populations, global understanding of the relative resilience of communities to coastal erosion is limited yet social justice and climate justice are key emerging issues of concern for governments. For the first time in the UK, using Scotland as an exemplar, this work aims to couple GIS analysis of anticipated erosion risk with consideration of the social vulnerability of Scotland's communities, to produce Coastal Erosion Disadvantage maps. A Social Vulnerability Classification Index was derived using a series of deprivation and context-specific indicators. The analysis also compared coastal communities with the Scottish average in terms of vulnerability, as well as a worst-case scenario of a "High Emissions Scenario", and no future maintenance of current coastal defences. This yielded impactful results which will hopefully be a catalyst for further assessments of social vulnerability to erosion for at risk communities.

**Mapping Farmstead-Sanctuary Connectivity using Least Cost Path:Christine Davidson**

Topographic anomalies identified in 1950's aerial photography along the Ionian Coast of southern Italy suggest systematic separation of space surrounding the ancient Greek settlement of Metaponto. Are these proof of property delineation in the countryside, systems of travel, or entirely natural? Using least cost path, we connect ancient farmsteads with local sanctuaries, revealing overlap with the anomalous "division lines," suggesting that they functioned (at least in part) as communication throughout the countryside.

**Mapping Library Fellowships with ArcGIS StoryMaps: Jason Dyck**

Several research libraries offer fellowships to faculty members and graduate students, but they are not always easy to find. Since these collections are scattered across various countries, there is not one central way of searching for them. To assist graduate students in the Arts and Humanities at Western University, I created a brief introduction to library fellowships using ArcGIS Story Maps. "Library Fellowships: A Brief Introduction" offers an overview of the types of fellowships available, a list of some of their benefits for researchers, and some advice on how to write a strong proposal. It also features an interactive map pinpointing applicants to private and university libraries across the United States and other parts of the world that offer library fellowships. In this lightning talk, I offer a brief explanation of why StoryMaps are useful tools for educating graduate students on library research beyond their own institution.

**Mapping Like a 6th grader: Lauren Sinclair**

Whether you want to teach GIS to middle schoolers or have fun learning GIS in Mrs. Sinclair's classroom, join us for a mix of hands-on activities, resource sharing, and multimedia showing what kids as young as 10 are doing with GIS. If they can do it, so can you! GeoInquiries, ArcGIS Online school accounts, data collection apps, and StoryMaps will be explored alongside GIS tools like cardboard and playdoh.

**Mapping Medieval Flood Mitigation Strategies for AR Educational Gaming by Zack MacDonald**

This talk provides a brief overview of our efforts to reconstruct virtually the late-medieval village of Northeye in the coastal salt marshes of the Pevensey Levels in East Sussex, England. I'll demonstrate how we used ArcGIS Pro and ArcGIS online to synthesize documentary evidence, hidden maps, historic maps, and remote sensing data to model the thirteenth- and fourteenth-century flood mitigation efforts around Northeye, and how the resulting HGIS is being used to generate a pedagogical video game styled after classic Tower Defense games.

**Mapping the sporting wealth of a community: Abby Perfetti**

This presentation looks at the community sport landscape in London, Ontario using a geospatial map created on the ArcGIS Online platform.

**Mapping Works in German Literature for a Digital Humanities Course: Rene Duplain**

This presentation will provide an overview of an ongoing collaboration between a professor in German translation and the University of Ottawa Library. Along with a few library colleagues, I am helping show undergrad students in ALG2300: Masterpieces in German Literature in Translation the power of mapping using ArcGIS Online to explore selected works in German literature and illustrate meaningful events occurring in works across historical Berlin and Venice.

**M & M - MuskoX and Movement: Hayleigh Conway and Paden Lennie**

Using collar data to track species of interest to better understand their movements and use of habitat. Managing and visualizing collar data using ArcGIS Pro, doing aerial surveys using Avenza Maps and Fulcrum.

**Municipal Elections in Quebec: How Political Parties Can Strengthen the Democratic Process: Amanda Gutzke**

This storyboard examines the 2017 Quebec mayoral elections. Specifically, this storyboard explores rates of incumbent re-election, elections won by acclamation and the impact of political parties on the democratic process. I also use ArcGIS software to provide a visualization of the 2017 mayoral elections in Quebec. Over the course of my analysis, I found that the rates of incumbent re-election and elections won by acclamation were extremely high. However, I also found that these rates are lower in urban centres that have political parties. After examining the role of political parties within municipal elections, I conclude that political parties benefit the democratic process. Political parties help individuals challenge incumbents by providing an organizational structure to engage volunteers, receive donations, and mobilize supporters. Finally, I support this argument by referencing other work done in the field of urban and local governance.

**Munsee-Delaware Map: Claudia Jones**

Mapping sites of historical significance for the Munsee-Delaware community. This map uses the survey123 app to create data points of significance. This database consists of maps highlighting common themes such as Ceremonial Grounds. Additionally, the map highlights location types and categorizes events relating to the history of the Munsee-Delaware people.

**Open Educational Resources and GIS: Emily Carlisle-Johnston**

It's no secret that textbooks can be expensive. The good news is, Open Educational Resources (OER) offer an accessible and engaging alternative to commercial textbooks and course materials. In my lightning talk, I'll provide an overview of Open Educational Resources (OER) and the benefit that they have to students, faculty, and instructors. I'll link OER to GIS by doing a Show and Tell of GIS-focused OER, before concluding with a message about how you can get started with using or creating them.

**Quantifying Aquatic Macrophytes with Satellite, Drone, and Rake Data: Robert Bailey**

I want to use multi-spectral Landsat satellite images to quantify macrophyte growth in the Kawartha Lakes. But first I have to ground-truth the satellite data with drone images and ground-truth the drone data with rake sampling. I'll show how we do this with GloVis, QGIS, DJI GS Pro, Metashape Pro, and Navionics, along with my post doc (Dr. One), my honours student (Andy Mo), and a rake!

**Researching Military Service using Geovisualization in Eleventh to Twelfth Century Normandy: Christopher Hewitt**

In the eleventh and twelfth centuries, the Duchy of Normandy was an important source for military adventurers at the time. While much has been written about those soldiers who fought on these campaigns, surprisingly little has been written about where they had originated. To address this anomaly, this study demonstrates the value of geographic-based analysis through the use of historical geographic information systems (HGIS) techniques including mapping locations as well as performing nearest neighbour analysis and kernel density mapping. The analysis focuses on participation in the Norman Conquest of England in 1066. The results indicate that participation varied spatially which was the result of patronage in certain parts of the duchy. The presentation concludes with a discussion of the implications of these findings for the veracity of existing historical accounts on the battle, as well as options for and benefits of applying HGIS analysis to other historical events.

**Sites of the 'Second Wave': Mapping London Women's History: Sophie Thompson and Sydney Cabral-Poleck**

Starting with a static map of second-wave women's history sites, students are creating a vivid Storymap that documents the history of women's activist organizations in London, Ontario, in the 1960s and 1970s. The presentation offers an update on the work-in-progress, and reflects on the significance of the work in contemporary context.

**StoryMapping Queer Dallas: Isaac Williams**

This presentation discusses the Queer Dallas StoryMap, a project highlighting queer history in Dallas, Texas. The American South is home to a rich history (and present) of queer life, organizing, survival, and joy. The project's goal was to make this history more visible, both to Southerners and people who live elsewhere. The presentation will discuss resources used in the creation of the project (including community archives and articles by feminist scholars, including Alexandra Ketchum), decisions made in the visualization process, and ways that the project was shared.

**The Interaction of Deer and Hunters in Oklahoma, USA: Caitlyn North**

Over the past summer I completed a research project that looked at the spatial distributions of deer and hunters in Oklahoma and how they interacted. Using ArcGIS pro I was able to analyse and draw conclusions on the data. I leveraged the python notebooks within ArcGIS pro to clean the data as well as perform analysis.

**The Loyalist Migration Project: Jacob Vanderhoeven**

My presentation will focus on an GIS map I prepared with Professor Compeau over the last two summers. The Map presents the genealogical information for hundreds of Loyalist refugees as they emigrated from their homelands in the newly founded United States.

**The Northern Tornadoes Project - Mapping Canada's Tornadoes: Aaron Jaffe**

The Northern Tornadoes Project is a collaboration between Western University, ImpactWX, and several other parties that aims to improve the detection, prediction, and mitigation of tornadoes across Canada. Many of the captured tornadoes are documented via interactive online maps in ArcGIS Online. These maps combine data captured from various sources, including Survey123 on the ground and drones in the air.

**Understanding electrification solutions: Benjamin Stewart**

The Global Electrification Platform (GEP) is an open access, interactive, online platform that allows for overview of electrification investment scenarios for a selection of countries. The scenarios present pathways for achieving universal electricity access, split into an intermediate strategy for 2025 and full electrification by 2030. Users can explore 96 different scenarios to meet the access goals. These different combinations and parameters are presented in the form of "levers". Users can overlay additional layers as well (e.g. wind potential, electricity networks, location of health facilities) to help illustrate useful contextual information about a selected country.

**Urban Tree Canopy Assessment Using Geospatial Technologies: A Case Study of the Town of Lincoln, Ontario: Baharak Razaghirad**

Urban trees provide important benefits to communities yet municipalities across Ontario are encountering a decline in their urban tree canopy (UTC). UTC assessment is critical for the management of urban trees, especially in the context of climate change. Geospatial technologies provide a timely and accurate alternative to costly, ground-based assessments. However, they typically require a significant investment in resources, including technical expertise and equipment. For many small-sized municipalities facing the realities of climate change, these investments are cost-prohibitive. The purpose of this study is to assess the UTC within the Town of Lincoln, Ontario, using two different approaches to quantifying the UTC (i.e., remote sensing and a random sampling method). Results indicate that the two approaches are similar in their estimates of the UTC such that the lower-cost option (i.e., random sampling using i-Tree Canopy) may be more appropriate for resource-limited communities.

**Using GIS to Re-imagine Historical Niagara: Jessica Linzel**

In this presentation I will explain how I incorporated historical GIS into my History Master's thesis last year. For this project I used ArcGIS Pro to create a Web Map, which I then used to investigate Niagara's economic development in the post-Revolutionary "Loyalist" era. Mapping historical data from account books and ledgers, and analyzing it alongside geographical features in the Niagara region, GIS technologies allowed me to bring a fresh perspective to a familiar topic.

**Watershed Creation and Where does water flow?: Terry Chapman**

Presentation will briefly review the process followed to generate small to midsized watershed boundaries for the Upper Thames River Conservation Authority Watershed, using LiDAR data and ArcHydro tools. Though not proven, some unique conditions were found when new boundaries were created. Some examples of flow patterns and watershed outlets will be shared.

**Weather Extremes in England's Little Ice Age, 1500-1700: Madeline Bassnett and Daryl Wakunick**

We will provide an overview of the project, data collection and demonstrate the GIS database.

**TUTORIALS****Embedding Spatial Technology and Geographic Literacy into the Ontario Geography Curriculum: Ewan Geddes**

Slide presentation to lead discussion on how GIS can be embedded into the Ontario Geography curriculum. There will be opportunity for participants to take part in the demonstration through Survey123. Evaluation examples for grade 9 geography and World Issues will be shared as well as student exemplars of the evaluation. Resources to help teachers embed GIS will also be shared as links in the presentation.

**Introduction to ArcGIS Online: Sharon Janzen**

During this hands-on experience we will explore the popular web GIS - ArcGIS Online. Attendees will gain an introductory level experience to this dynamic mapping environment that is accessible on Windows or Mac platforms. No experience necessary but a curiosity for all things 'mappy' would be an asset. Be sure to have a valid login for the website (public or organizational accounts welcome). Visit <https://www.arcgis.com/index.html> to sign up for a public account.

**Spatial Data Science Workflows with ArcGIS: Michael Leahy**

Join this workshop to learn how to work with ArcGIS in a workflow that takes you right from the start of planning and preparing your data, exploring your data and performing analysis, publishing maps and applications, and sharing your results. The workshop will initially focus on the use of ArcGIS Pro for data preparation, exploration, and analysis. Following this, you will learn to publish your data and analysis results to layers hosted in ArcGIS Online, where you can use them to build maps, apps, storymaps, and dashboards that you can use to share your work. Workshop participants will need an ArcGIS Online subscription user account and a copy of ArcGIS Pro installed and licensed on a compatible Windows PC.

**Starting From Scratch using QGIS: Martin Healy**

In this tutorial, we will download data from the City of London Ontario's Open Data Portal, import it to QGIS and analyze the General Landuse Zoning Types within 500 Metres of The Ceeps. We will then create a Map of our work. All in 30 minutes! All live! Things to have ready: Install the newest version of QGIS



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## **Geospatial Data and Software Reviews**

Meg Miller  
University of Manitoba

### **ArcGIS Online Office Add-in: An Effective Entry-level Tool**

#### ***Author***

Grace Romund, Science Librarian, University of Manitoba

#### **Abstract**

*The ArcGIS Online Office desktop software add-in is a tool that can be easily used by those who have limited, to no experience with GIS software. Although installation and initial setup of the software can be convoluted, once installed it can be a quick and easy way to create simple visualizations from data stored in Excel spreadsheets.*

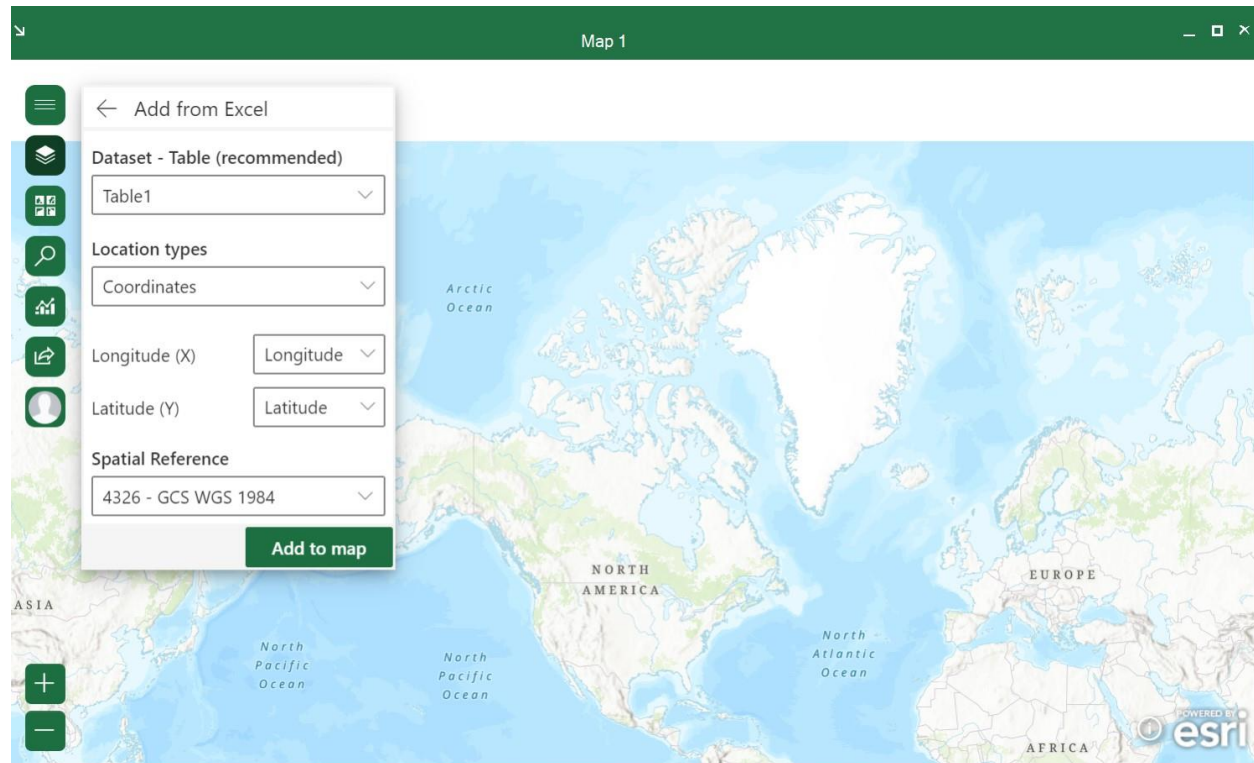
#### **Introduction**

ArcGIS for Office is a desktop software add-in that can be grouped with a suite of easy-to-use tools designed for end users with limited GIS knowledge or experience (included in this group I would add StoryMaps). It integrates into the Office interface allows users to visualize their Excel data, perform basic analysis, and make use of various base data. Maps can then be exported or embedded into other Office applications.

#### **Audience:**

As science librarian, I have used the ArcGIS Online Office add-in as a tool for teaching basic geographic visualization in workshops in an academic library with success. The workshops offered were open to faculty and students and were typically attended by graduate students and faculty members working in disciplines that would not typically be known for representing their data or research findings geographically. These individuals, who were often completely new to creating geographic visualizations, might have found the steep learning curve of other GIS software programs overwhelming and beyond their needs. Not being required to understand jargon terms like shape files and polygons, ArcGIS Online's Office add-in can take data from a table in Excel and express it geographically. Excel is much more widely known and therefore potentially less intimidating to novice users. To demonstrate the abilities of the add-in in my workshops, I provide the participants with a spreadsheet containing data points with longitude and latitude columns. From that Excel spreadsheet, I can walk participants through the process of using the add-in to plot those points on a map in ArcGIS Online. It can also plot ESRI JSON Geometry from an Excel spreadsheet. As previously mentioned, just as Excel is more familiar to novice users, I believe that

coordinates are a more widely recognized than other types of data which makes them a good starting point. The fact that any data containing those two reference points can just be so easily plotted after two clicks illustrates the strength of this add-in for beginners and those who seek only to simply visualize their data and do not intend to spend any time conducting geographic analysis of their data.



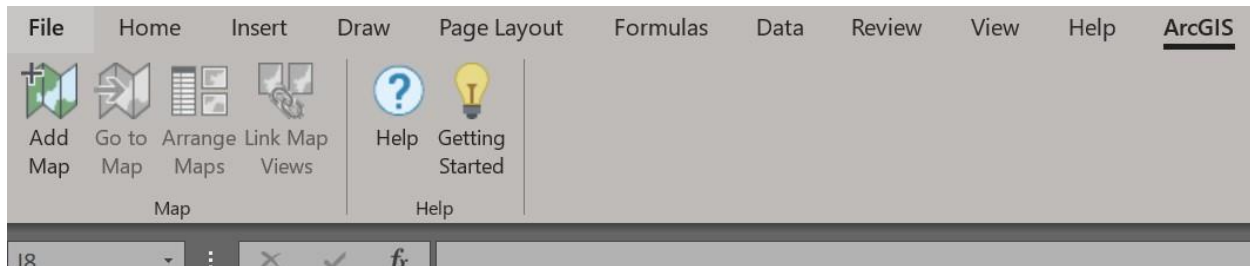
*Figure 1: Adding data to map from Excel*

Like with all geographic software, the “wow” factor of the way that the software can depict data is what I attempt to show in my training sessions to promote its use. I demonstrate how ArcGIS Online Office add-in can aesthetically depict changing data points over time. Again, this functionality does not take much in the way of professional expertise or background in GIS software to be able to demonstrate data changes over using animations as long as there is date and time data in the Excel spreadsheet. All these Excel spreadsheet data points need to be uniform and readable by the add-in. Clean and functional data is something that beleaguers researchers no matter what type of software they use and will most likely not be foreign to those trying to display their data geographically for the first time. Other ways to create more interest in the visualizations easily can be to add the wealth of maps available openly through ArcGIS Online as additional layers to a visualization. Adding maps from ArcGIS online is as easy if not easier than adding a layer from data points in an Excel spreadsheet. In addition, there are four base map options to choose from. Only four base map options may seem limiting to those with greater GIS experience, but for those who are new to creating visualizations this will provide some choice without the chance of overwhelming the user with options.

The add-in's options for sharing your visualization hinge on the use of ArcGIS Online. This requirement is potentially advantageous in most cases but could be a major issue for those who might consider using the ArcGIS Online Office add-in to visualize sensitive data. If the data you would like to visualize has privacy considerations of any sort that need to be accommodated, this add-in is probably not a viable software solution to recommend to those new to GIS visualization. However, if privacy is not an issue, uploading your visualization to your ArcGIS Online account can be a useful way to share the data. Using the ArcGIS Online Office add-in functionality in PowerPoint, you can add any visualization you have uploaded to your ArcGIS online account directly into a PowerPoint presentation. The visualization will maintain basic interactive elements such as Zoom in and out for greater functionality and versatility.

### **Tool:**

As someone who provides support or training to novice users developing their GIS technology skills, you may have access to a computer lab where you conduct your training. If this is the case, ensure that all the required software you need to run your training sessions are available and activated on the devices in the lab. Assistance from IT might be required for this step. If users are using their own machines they will need to download the required add-in and (or) create accounts for the products on their own devices.



*Figure 2: ArcGIS for Office ribbon*

Despite being known for robust support documentation for their products, the information related to how to download the ArcGIS for Office Add-in is not clear. If you search for ArcGIS for Office in an online search engine you will most likely find your way to a page that describes how you need to purchase an ArcGIS online account (and directs you to a page about pricing of the product). It is not imminently evident that this is also where those who may have access to ArcGIS online products through institutional or site licenses also can download the add-in by filling out a fillable online contact form. Immediately upon filling out the form, you are redirected to a webpage with a download link of the most recent version of the add-in. A direct download link for this tool can also be activated within your ArcGIS Online organization so users can download directly from their profile.

Once the software is downloaded onto your computer you are be ready to begin exploring the tool. The ArcGIS Online Office add-in will appear along the ribbon in your Microsoft Office application (PowerPoint or Excel) after the download is complete, but you will not be able to use any of the functions of the add-in until you sign into your ArcGIS online account. If you do not have an ArcGIS Online account, you would need to create one first before proceeding. All of this to say

that the setup process for using ArcGIS Online's Office add-in is arguably the most tedious and complicated part of its use.

After installing the add-in and creating an ArcGIS Online account, the add-in can be used with relative ease by even those who would struggle to learn other GIS software programs to create visualizations to support the communication of their research or topic they would like to visually depict geographically in some way. Other desktop applications would potentially hold greater possibilities for the sophistication of the visualizations created and could equally be employed to conduct geographic data analysis in a way that I believe is not feasible with the ArcGIS Online add-in for Office.

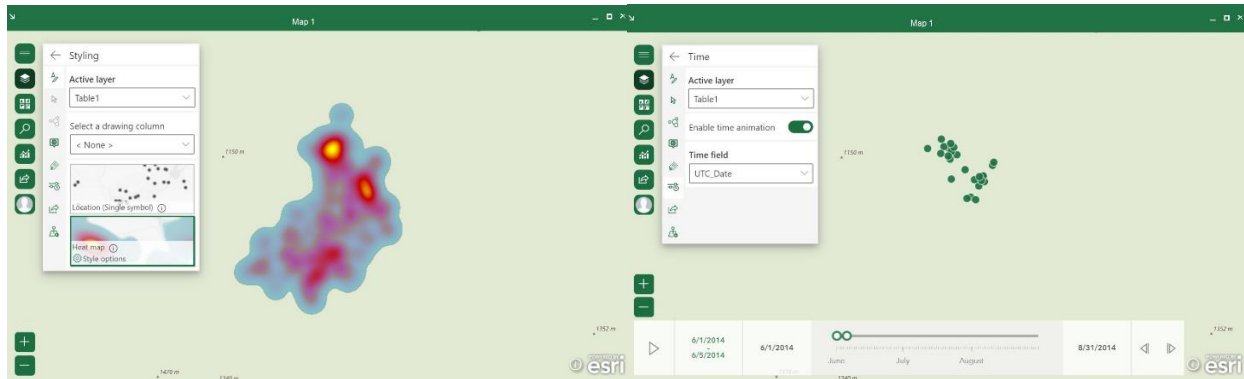


Figure 3: Simple visualization of heat map (left) and time series (right) from Excel data

## Conclusion:

Ultimately, compared to GIS desktop software programs the ArcGIS Online Office add-in cannot even begin to measure up to its competition; however, for those that will most likely never venture into the use of those other programs the add-in can be a perfectly sufficient entry-level tool for creating data-driven geographic visualizations to enhance knowledge sharing activities. Insofar as teaching its use, the most challenging part will be the setup: getting the add-in installed and an ArcGIS Online account created for the user. After that, the use of the add-in is intuitive and straightforward requiring little instruction before a user can feel that they will be able to produce a visualization that is professional and appealing in appearance. While it will not be the GIS solution for all, it is a user-friendly ESRI product that serves a particular demographic.

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**GIS Trends**

*Barbara Znamirovski*

**GETTING A GRIP ON RESEARCH DATA MANAGEMENT**

**Abstract**

In March 2021 the Tri-Agency released its Research Data Management Policy, including its three pillar requirements. This article reviews some key points from the Alliance RDM (Portage Network) workshop *"Putting the Tri-Agency Policy into Practice: Workshopping Your Institutional Research Data Management Strategy."*

**Getting a Grip on Research Data Management**

In March 2021 the Tri-Agency released its [Research Data Management Policy](#). The objective of this policy is “to support Canadian research excellence by promoting sound research data management and data stewardship practices.”<sup>i</sup> It requires postsecondary institutions and research hospitals eligible to administer CIHR, NSERC or SSHRC funds to meet requirements associated with its three pillars:

1. Institutional RDM Strategy – To be completed by March 1, 2023
2. Research Data Management Plans – Implementation begins Spring 2022
3. Data deposit – Implementation anticipated to begin Spring 2023 (Recipients of CIHR funding must continue to comply with 2008 guidelines where appropriate)<sup>ii</sup>

In October 2021 the Digital Research Alliance of Canada (or the Alliance for short) Portage Network<sup>iii</sup> [National Training Expert Group](#) (NTEG) organized a 4-day workshop *"Putting the Tri-Agency Policy into Practice: Workshopping Your Institutional Research Data Management Strategy."* The aim was to enable post-secondary institutions to form RDM strategies. Attendees heard from a range of speakers from the Alliance, the Tri-Agency and other post-secondary

<sup>i</sup> Government of Canada (2021). [Tri-Agency Research Data Management Policy](#).  
[https://science.gc.ca/eic/site/063.nsf/eng/h\\_97610.html](https://science.gc.ca/eic/site/063.nsf/eng/h_97610.html)

<sup>ii</sup> Government of Canada (2021). [Tri-Agency Research Data Management Policy](#).  
[https://science.gc.ca/eic/site/063.nsf/eng/h\\_97610.html](https://science.gc.ca/eic/site/063.nsf/eng/h_97610.html) and Mathew Lucas, SSHRC “[Tri-Agency Research Data Management Policy; Putting the Tri-Agency Policy Into Practice: Workshopping Your Institutional Research Data Management Strategy Introduction to the Tri-Agency Policy and Pillar 2: Data Management Plans](#) (slide presentation), Monday 25 October 2021, Available at: <https://portagenetwork.ca/event/putting-the-tri-agency-policy-into-practice-workshops/>

<sup>iii</sup> NDRIO and Portage now rebranded to the Digital Research Alliance of Canada and Alliance RDM. Further information: <https://portagenetwork.ca/news/update-on-portage-and-the-digital-research-alliance-of-canada/>



institutions and research agencies. Each day focused on a different pillar of the policy. The third day included a workshop on strategy development, with enrollment limited to allow for collaborative breakout sessions. VPs Research (or equivalent) were asked to designate three persons within their institution to attend on this day, with the suggestion that they be chosen to represent the different stakeholders involved with RDM. The final day included a panel discussion with colleagues at several universities that are at different stages of building their RDM strategies.

Links to [slides and recordings](#) from each day have been made available.

I was fortunate to attend this excellent virtual event with two colleagues from IT and our Research Office. Here are some key points I learned:

- Establishing Institutional RDM strategies calls for a collaborative effort. The success of this effort depends on being able to draw on expertise from across the institution, including the research office, library departments, information technology/computing, ethics boards, graduate students, faculty, research staff, administrators, legal counsel and indigenous communities.
- RDM strategies are by nature unique and living documents that reflect local conditions such as institution size, research intensity and existing RDM capacity.<sup>iv</sup>
- These strategies must recognize the importance of Indigenous data sovereignty and RDM Principles that recognize and respect self-determination for First Nations, Inuit, and Métis People through a distinctions-based approach.<sup>v</sup>
- Post-secondary institutions qualifying for Tri-Agency grants must notify the Tri-Agency when their RDM strategy is complete, and by March 1, 2023 make it publicly available by posting it on their web site. The Agencies will review but not formally evaluate institutional RDM policies.<sup>vi</sup>
- When they begin developing their RDM strategy institutions may wish to make use of an assessment tool to evaluate existing RDM practices and capacity. A Canadian Assessment tool called the “MAMIC” (RDM Maturity Assessment Model in Canada) is newly available; it is based on [RISE](#) and [SPARK](#) assessment models. Categories of assessment within the MAMIC include Institutional Policies and Processes, IT Infrastructure, Support Services, and Financial Support.<sup>vii</sup>

<sup>iv</sup> Digital Research Alliance of Canada (2021), Institutional RDM Strategy Template Revision Working Group, [Institutional Research Data Management Strategy Development Template](#) v. 3.0, p.3. <https://zenodo.org/record/5745906>

<sup>v</sup> Government of Canada (2021) *Frequently Asked Questions: Tri-Agency Research Data Management Policy*. Section 2. Indigenous Research, [https://www.science.gc.ca/eic/site/063.nsf/eng/h\\_97609.html](https://www.science.gc.ca/eic/site/063.nsf/eng/h_97609.html)

<sup>vi</sup> Matthew Lucas, SSHRCC, *Tri-Agency Research Data Management Policy; Putting the Tri-Agency Policy Into Practice: Workshopping Your Institutional Research Data Management Strategy, Pillar 1: Institutional RDM Strategies*, Wednesday 27 October 2021, Slide presentation. Available at: <https://portagenetwork.ca/event/putting-the-tri-agency-policy-into-practice-workshops/>

<sup>vii</sup> Digital Research Alliance of Canada (2021), Institutional RDM Strategy Template Revision Working Group, [RDM Maturity Assessment Model in Canada \(MAMIC\)](#), <https://doi.org/10.5281/zenodo.5745492>



- The [Institutional Research Data Management Strategy Development Template](#) is useful for assisting with the development of an Institutional RDM Strategy. It is intended to serve as a template for the process, not the product.<sup>viii</sup> It includes activities for five distinct stages:
  - Assemble Your strategy Development Team;
  - Assess the Current State of RDM;
  - Envision the Future State of RDM;
  - Articulate Your Institution’s Path Forward;
  - Assemble and Launch Your Strategy.
- In 2022 the Tri-Agency will announce phased Data Management Plan (DMP) requirements, identifying funding opportunities that will require submission of DMP Plans at the time of application as outlined in the call for proposals.
- A range of tools are available to researchers to help with developing RDM plans, including Portage’s [DMP Assistant](#).
- In consultation with stakeholders, the Tri-Agency will issue requirements for data deposit for grant recipients, with implementation anticipated to begin in Spring 2023.
- Data deposit should be guided by [FAIR Principles](#)<sup>ix</sup> to make research data **F**Indable, **A**ccessible, **I**nteroperable and **R**eusable, and [CARE Principles](#)<sup>x</sup> for Indigenous Data Governance with considerations for **C**ollective benefit, **A**uthority to control, **R**esponsibility, and **E**thics.
- Researcher requirements for data repositories will vary and may include using Dataverse, FRDR or a range of other discipline-specific repositories. An appropriate data repository should facilitate safe storage, curation, discoverability, accessibility, interoperability, and reuse of data.
- A listserv has been announced for institutional designates who attended the workshop.
- We’re not alone! There is an abundance of support available through the Alliance’s Portage Network and colleagues at other universities.

In the coming months I look forward to working on RDM strategy with colleagues both within and outside my institution. Many ACMLA readers work with spatial data, and so RDM is clearly relevant to our community. It is not yet clear the extent to which there are unique considerations surrounding spatial data and technologies that need to be considered in relation to RDM. But I do know that it will be important for the ACMLA community to be part of the institutional RDM strategy development process. This presents a great opportunity to evaluate our services, increase levels of RDM support, and interact with researchers and other stakeholders within our university communities.

<sup>viii</sup> Digital Research Alliance of Canada (2021), Institutional RDM Strategy Template Revision Working Group, [Institutional Research Data Management Strategy Development Template](#) v. 3.0, p.3. <https://doi.org/10.5281/zenodo.5745906>

<sup>ix</sup> GO Fair, *Fair Principles*, <https://www.go-fair.org/fair-principles/> (retrieved December 2021)

<sup>x</sup> The Global Indigenous Alliance (GIDA), *CARE Principles for Indigenous Data Governance*, <https://www.gida-global.org/care> (retrieved December 2021)

**Disclaimer:** All errors or omissions within this article are the responsibility of the author. Opinions are my own.

### **GIS Trends: Note from the Editor**

#### **Submissions and Feedback**

GIS Trends is a place to share ideas, observations and discoveries in the area of GIS and other spatial technologies. If you have something you would like to share please write to me. We also welcome feedback on GIS Trends articles. Proposals for articles and feedback should be sent to: [bznamirowski@trentu.ca](mailto:bznamirowski@trentu.ca) Thanks for reading and contributing! Barbara Znamirovski, Editor, GIS Trends