

An aerial photograph of a city grid, likely New York City, with a semi-transparent purple overlay. The buildings and streets are visible in a lighter color against the purple background.

# Finding, Accessing, and Adding GIS Data to Your Project

 **Sherman  
Centre**  
for Digital Scholarship

Tuesday, February 10, 2026

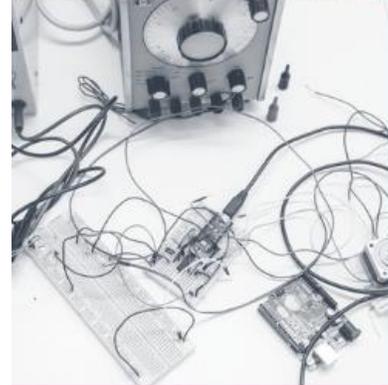
10:30am – 11:30am **(Online)**

# Finding, Accessing, and Adding Data to your GIS Project

Christine Homuth

Spatial Information (GIS) Specialist

February 10, 2026





 **Land  
Acknowledgement**

McMaster University is located on the traditional Territories of the Mississauga and Haudenosaunee Nations, and within the lands protected by the “Dish With One Spoon” wampum agreement.

[CARE Principles for Indigenous Data Governance](#)

[First Nations Principles of OCAP](#)

## Code of Conduct

The Sherman Centre and the McMaster University Libraries are committed to fostering a supportive and inclusive environment for its presenters and participants.

As a participant in this session, you agree to support and help cultivate an experience that is collaborative, respectful, and inclusive, as well as free of harassment, discrimination, and oppression. We reserve the right to remove participants who exhibit harassing, malicious, or persistently disruptive behaviour.

Please refer to our code of conduct webpage for more information: [scds.ca/code-of-conduct/](https://scds.ca/code-of-conduct/)



## Certificate Programs

### The Sherman Centre for Digital Scholarship Certificate of Attendance

The Sherman Centre's certificate program recognizes attendance at our workshops. It complements degree training, supports the development of critical competencies in data analysis, research data management, and digital scholarship, and formalizes core skills fostered by our workshops.

Participants are invited to attend seven workshops and receive a certificate of attendance. To verify your participation in today's workshop, we will provide a code and additional instructions at the end of the session.

You can learn more about the certificate program at [scds.ca/certificate-program](https://scds.ca/certificate-program)

### Credit Eligibility

This workshop counts toward credit for students in the Faculty of Science who are enrolled in **SCIENCE 2SF1: Digital Skills Workshop**.

## Winter 2026: Upcoming Workshops

### Data Analysis Support Hub

**February 12:** Introduction to Python Programming

**March 10:** Create an Interactive Dashboard using ArcGIS

### Digital Research

**February 11:** Visualizing Bibliometric Networks with VOSviewer

### Research Data Management

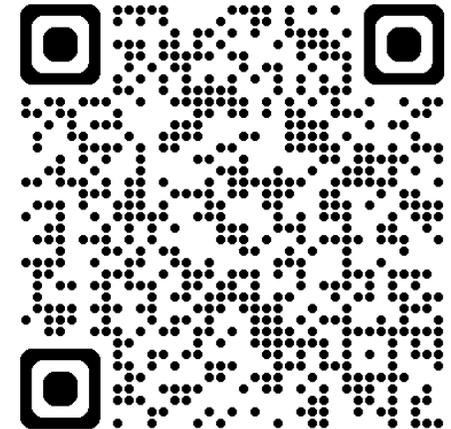
**February 19:** Communities Empowered by Data 101: Tools and Best Practices

**May 5:** Students deserve Research Data Management! Teaching with the RDM Educators Kit

### Do More with Digital Scholarship

**March 19** Social Media Data! Practical and Ethical Collection, Visualization, and Management

Register for Upcoming Workshops: <https://u.mcmaster.ca/scds-workshops>



# Learning Objectives

## By the end of this workshop, you will:

- Differentiate between geospatial data models
- Locate datasets using common sources for geospatial data
- Evaluate a dataset for use

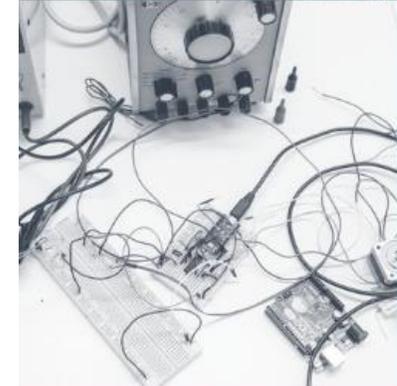
## Help with GIS

Send GIS Services an Email:

[libgis@mcmaster.ca](mailto:libgis@mcmaster.ca)

Schedule a Consultation:

<https://libcal.mcmaster.ca/appointments/gis>



# Geospatial Data

scds.ca  
scds@mcmaster.ca

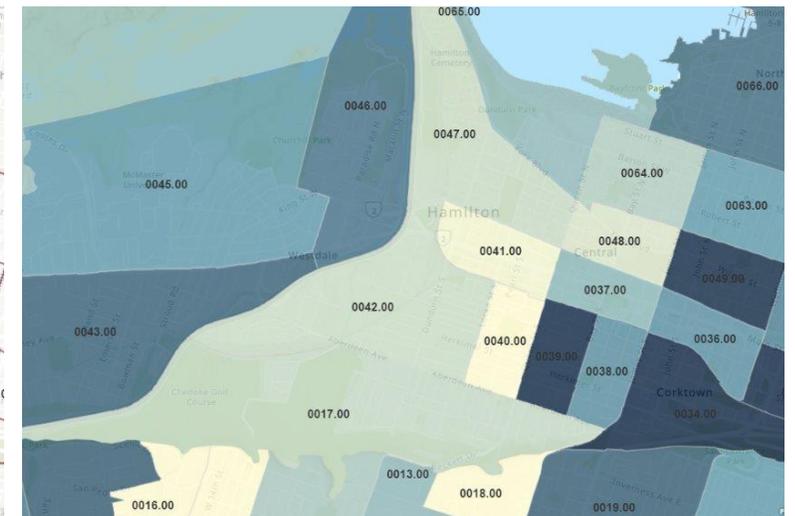
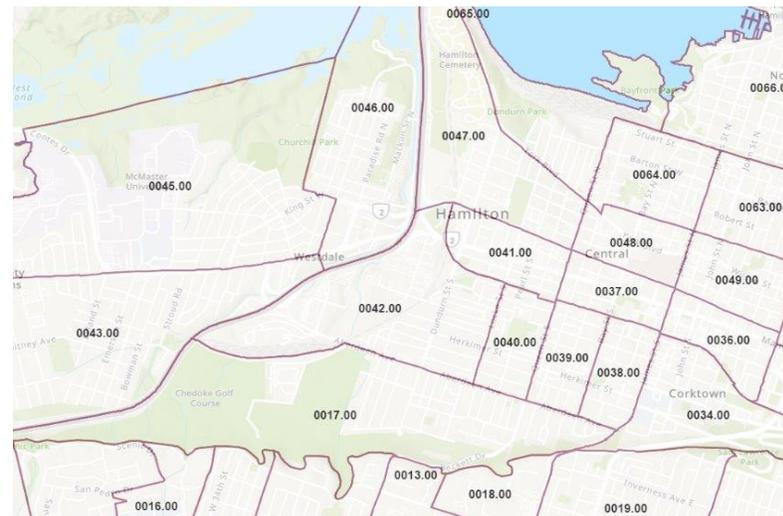
Library



## GIS

- Geographic Information Systems
- “Computer-based tools used to store, visualize, analyze, and interpret geographic data” (CDC)
- “Connects data to a map, integrating location data (where things are) with all types of descriptive information” (Esri)

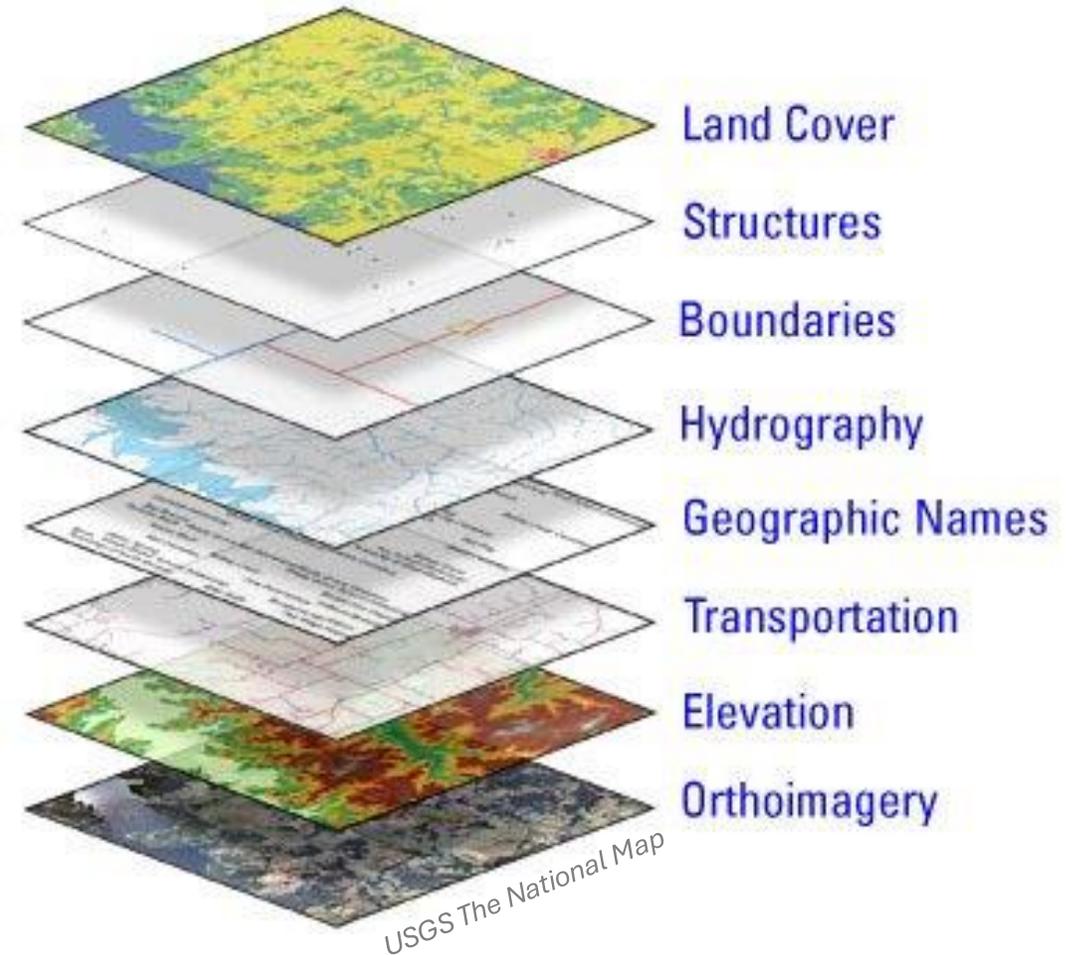
0051.00	409	4,225
0052.00	334	3,881
0053.00	220	3,070
0054.00	211	2,670
0055.00	287	2,989
0056.00	312	3,260
0057.00	276	3,022
0058.00	201	2,545
0059.00	260	3,062
0060.00	195	2,691
0044.00	305	3,917



[COVID19 Case counts by census tract, Open Hamilton](#)

## Geospatial Data

- Vector and raster data models used to represent the real world
- Spatial or geographic component
- Multiple datasets are stacked or layered
- Tabular data can also be "joined" to spatial data and displayed on a map
- Not restricted to the outdoors or the Earth's surface

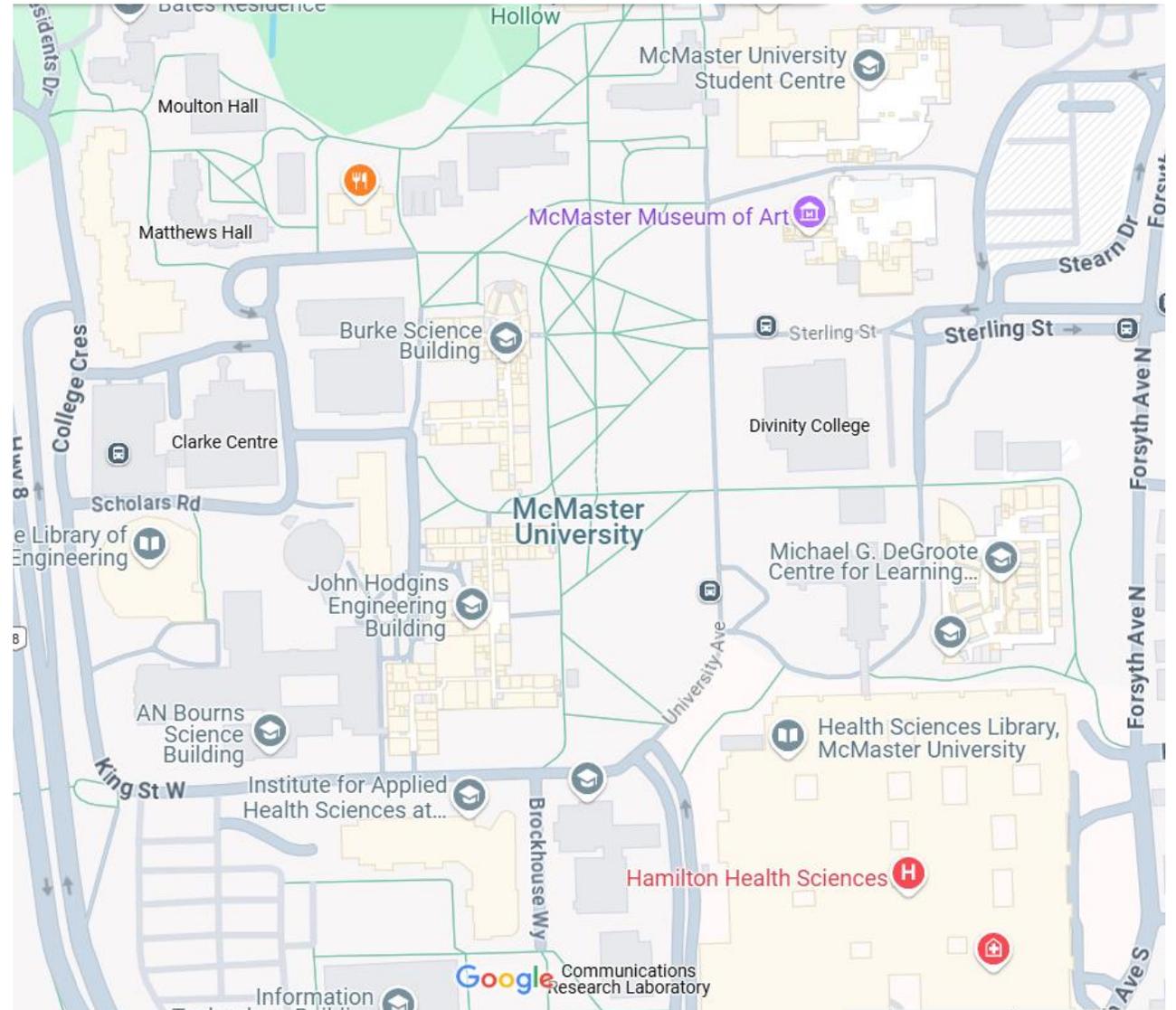


## Vector Data

### Points, lines, and polygons

- **Points** – x,y locations
- **Lines** – linear features (connected x,y locations)
- **Polygons** – closed figures or areas (multiple connected x,y locations forming a closed figure)
- Good for representing *clearly defined objects*

Example – Google Maps ([google.ca/maps](http://google.ca/maps)) view of McMaster campus.



## Vector Data – File Structure

### Format – shapefile (.shp)

 PED_LANDUSE.shx	5/4/2018 12:14 PM	SHX File	1,218 KB
 PED_LANDUSE.shp	5/4/2018 12:14 PM	SHP File	27,278 KB
 PED_LANDUSE	5/4/2018 12:14 PM	PRJ File	1 KB
 PED_LANDUSE.dbf	5/4/2018 12:14 PM	DBF File	75,651 KB
 Land_Use_Codes_2009	5/4/2018 12:14 PM	Adobe Acrobat D...	33 KB

## Raster Data

### Grid of cells

- Number assigned to each cell or pixel that represents the data
- **Categorical** – land use, e.g.
- **Continuous** – temperature, e.g.
- Good for representing *continuously changing* attributes

Example – satellite image of McMaster campus (Google Earth)



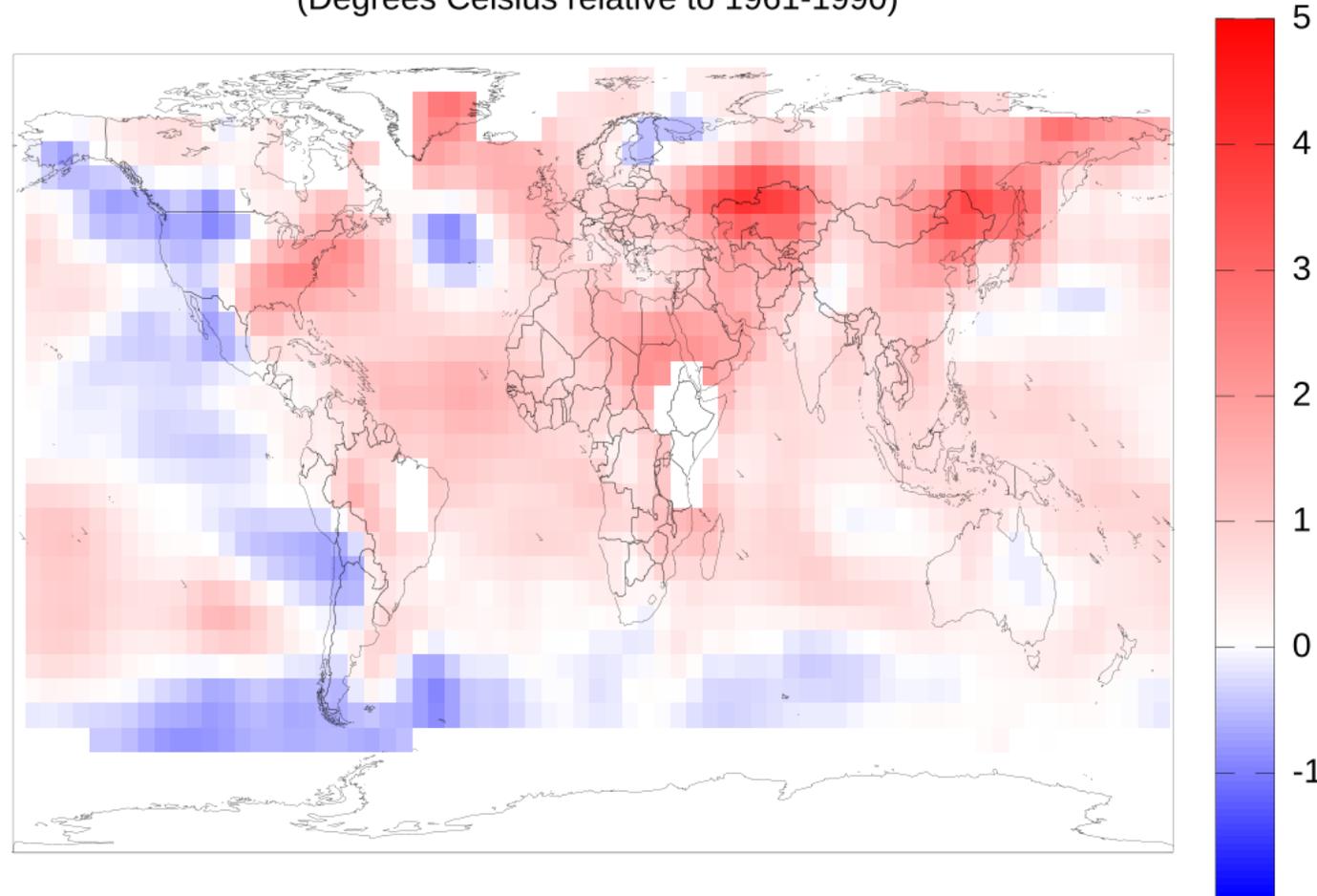
## Raster Data

### Grid of cells

- Number assigned to each cell or pixel that represents the data
- **Categorical** – land use, e.g.
- **Continuous** – temperature, e.g.
- Good for representing *continuously changing* attributes

Example – map of temperature anomalies (NOAA)

Temperature Anomalies 2010-06  
(Degrees Celsius relative to 1961-1990)



## Raster Data – File Structure

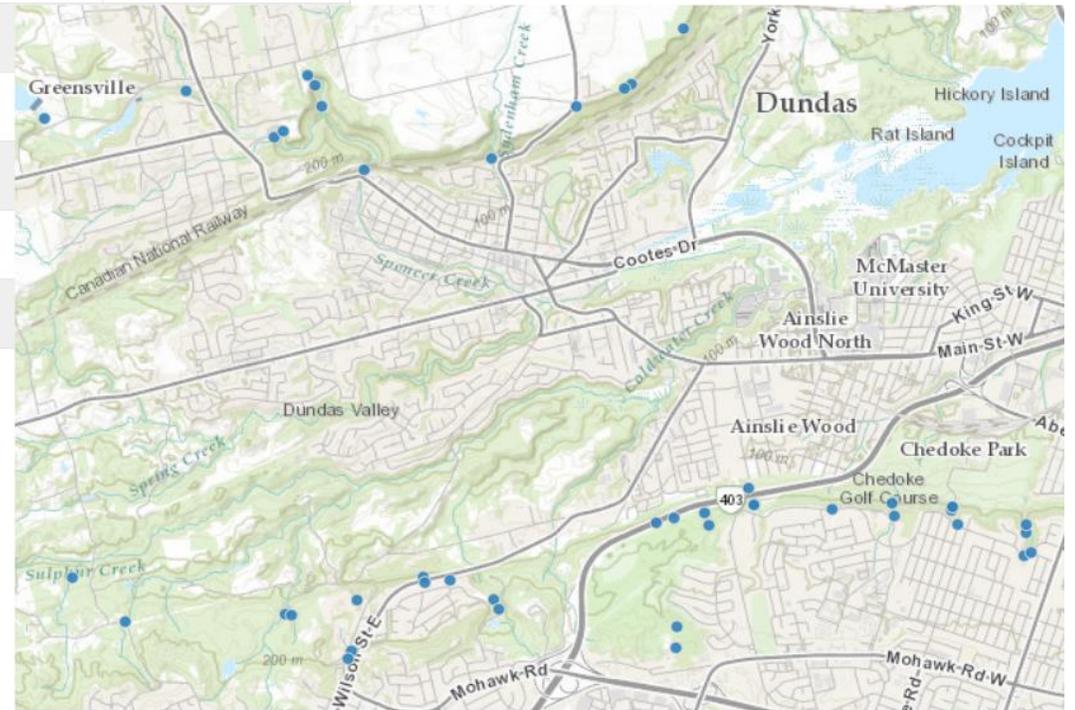
Format – image file formats (e.g. tif, jpg)

PDEM_South	2,017,400 KB
PDEM_South.tif.aux	3 KB
PDEM_South.tif.ovr	552,684 KB

# Attributes

NAME	COMMUNITY	TYPE	RANKING	HEIGHT_IN_M	WIDTH_IN_M	OWNERSHIP
Wesley Cascade	Dundas	Cascade	C	4	1	public inaccessible
West Iroquoia Falls	Hamilton	Waterfall	B	19.8	1	public
West Moss Cascade	Flamborough	Cascade	C	3	1	public inaccessible
West of Fifty Upper Cascade	Stoney Creek	Cascade	C	8	1.5	
Westcliffe Falls	Hamilton	Cascade	A	15	2	
Albion Falls	Hamilton	Cascade	A	19	18	
Ancaster Heights Falls	Ancaster	Cascade	B	13.4	1.8	
Auchmar Falls	Hamilton	Waterfall	C	12	1.5	

[City Waterfalls, Open Hamilton](#)



# Summary – Data Models

## Vector Data

- Points
- Lines
- Polygons
- Clearly defined objects

## Raster Data

- Grid of cells
- Each cell / pixel represents a data value
- Categorical or continuous
- Continuously changing data

# Data Sources

scds.ca  
scds@mcmaster.ca

Library



## Geospatial Data Sources

- Surveys, statistics, data tables
- Fieldwork
- Remote sensing/imagery
- Shapefiles
- Scanned and georeferenced maps
- Digitizing

## McMaster University

- Licensed data
  - [Scholars GeoPortal](#)
  - [McMaster University Libraries](#)
- Contact us!

## Online Data Portals

- Open data portals
  - [Open Hamilton](#)
  - [Ontario GeoHub](#)
  - [Open Canada](#)
- ArcGIS Online and Living Atlas
- Online data providers
  - Thematic
  - Imagery
- ...

# McMaster University Libraries

<https://library.mcmaster.ca/maps/geospatial>

- Restricted data that can't be made available online
- Links to other data portals and open data
- Example datasets
  - City of Hamilton parcel/land use data, tree inventory, licensed data not available through open data portal
  - Teranet Ontario parcel boundaries
  - Ontario imagery (SWOOP, SCOOP, etc.)
  - Large imagery datasets
- Data Request Form

## Geospatial Data

Search geospatial data 

All Subjects 

All Locations 

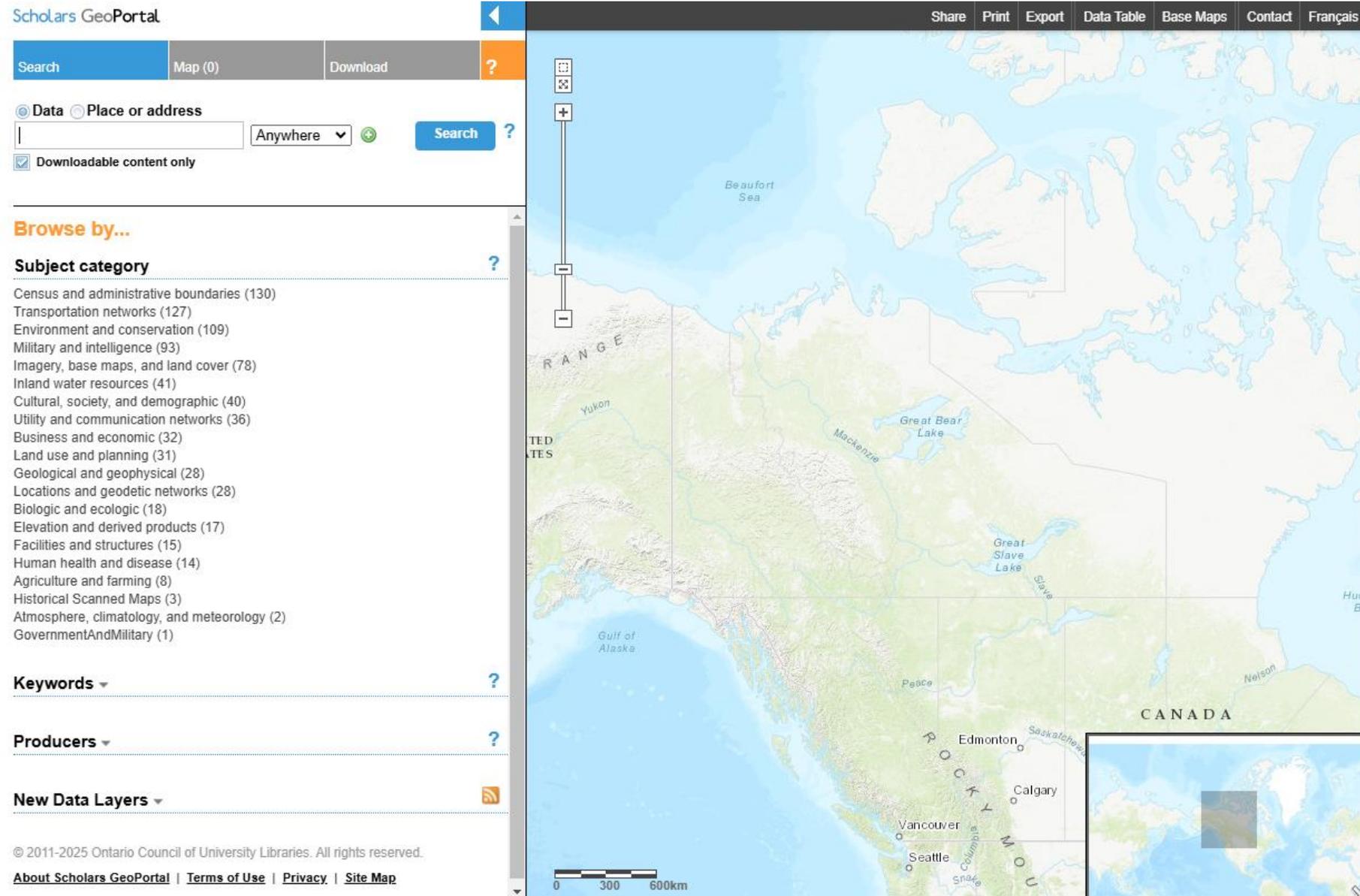
Title ^	Author	Year	Sample
"Make a Topographic Map" Utility	Ontario Ministry of Natural Resources and Forestry	2014	
1934 Air Photos of Niagara Region	Canada Department of Energy, Mines, and Resources	1934 - 2017	

# Scholars GeoPortal

geo.scholarsportal.info

- Access to open and restricted\* geospatial data for Ontario and Canada
- Search, view, download, share, and export (PDF, JPG, e.g.) capabilities
- Login for off-campus access

\* *Restricted* = McMaster community for teaching and research purposes



Scholars GeoPortal

Share Print Export Data Table Base Maps Contact Français

Search Map (0) Download ?

Data  Place or address

Anywhere  ?

Downloadable content only

**Browse by...**

**Subject category** ?

- Census and administrative boundaries (130)
- Transportation networks (127)
- Environment and conservation (109)
- Military and intelligence (93)
- Imagery, base maps, and land cover (78)
- Inland water resources (41)
- Cultural, society, and demographic (40)
- Utility and communication networks (36)
- Business and economic (32)
- Land use and planning (31)
- Geological and geophysical (28)
- Locations and geodetic networks (28)
- Biologic and ecologic (18)
- Elevation and derived products (17)
- Facilities and structures (15)
- Human health and disease (14)
- Agriculture and farming (8)
- Historical Scanned Maps (3)
- Atmosphere, climatology, and meteorology (2)
- GovernmentAndMilitary (1)

**Keywords** ?

**Producers** ?

**New Data Layers** ?

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[About Scholars GeoPortal](#) | [Terms of Use](#) | [Privacy](#) | [Site Map](#)

The screenshot displays a web interface for a geospatial data portal. On the left, there is a search bar with options for 'Data' or 'Place or address', a location dropdown set to 'Anywhere', and a 'Search' button. Below the search bar is a 'Downloadable content only' checkbox. A 'Browse by...' section lists various subject categories with their respective item counts. Further down are sections for 'Keywords', 'Producers', and 'New Data Layers', each with a question mark icon. The right side of the interface features a map of Canada with a scale bar at the bottom (0, 300, 600 km) and a navigation panel on the left side of the map area. The map shows geographical features like the Yukon, Mackenzie, and Rocky Mountains, and cities like Vancouver, Seattle, and Edmonton. An inset map in the bottom right corner shows the location of the main map area within North America.

## Open Data Portals

<https://open.hamilton.ca/>

- [Open Hamilton](#)
- [Ontario GeoHub](#)
- [Open Canada](#)

The screenshot shows the homepage of the Open Hamilton website. At the top, there is a navigation bar with the following links: Home, Data, Interactive Mapping, Data Stories & Visualizations, and Additional Resources. The main header features the text "Open Hamilton" in large white font against a blue background with a cityscape at night. Below the header, a paragraph states: "The City of Hamilton is committed to being an open, transparent and accessible government. Open Hamilton enables our community the opportunity to better explore, visualize and download City data. **Can't find data that you are looking for?** Email us at [opendata@hamilton.ca](mailto:opendata@hamilton.ca)". To the left of this text are two small icons: a circular arrow and a document with a checkmark. Below the text is a search bar with a magnifying glass icon and the placeholder text "Search for data, maps, dashboards....".

### Explore Open Data by Category



[All data](#)



[Business & Economy](#)



[City Services](#)



[Census & Demographics](#)



[Culture & Tourism](#)



[Environment](#)

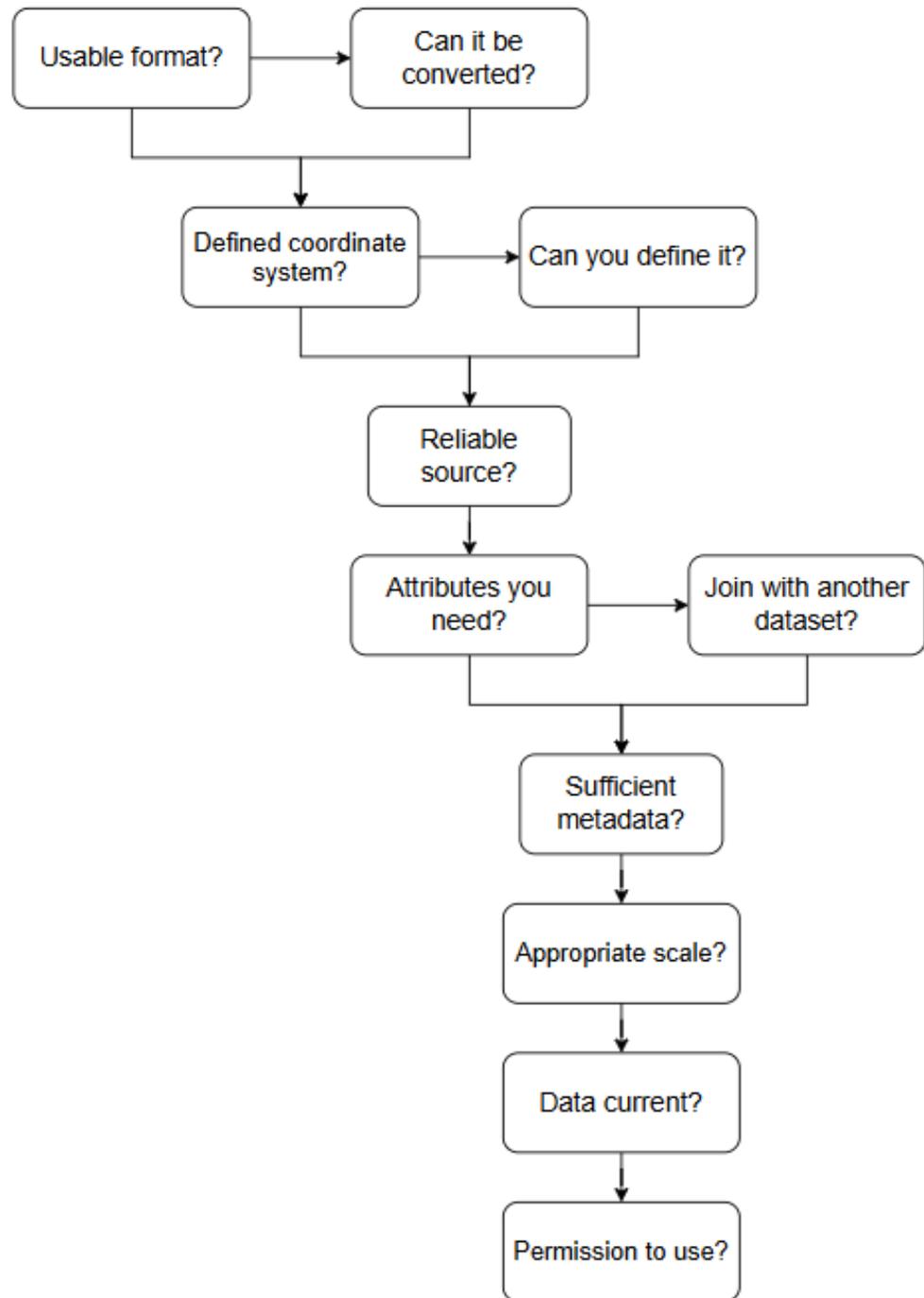
# Evaluate a Dataset

scds.ca  
scds@mcmaster.ca

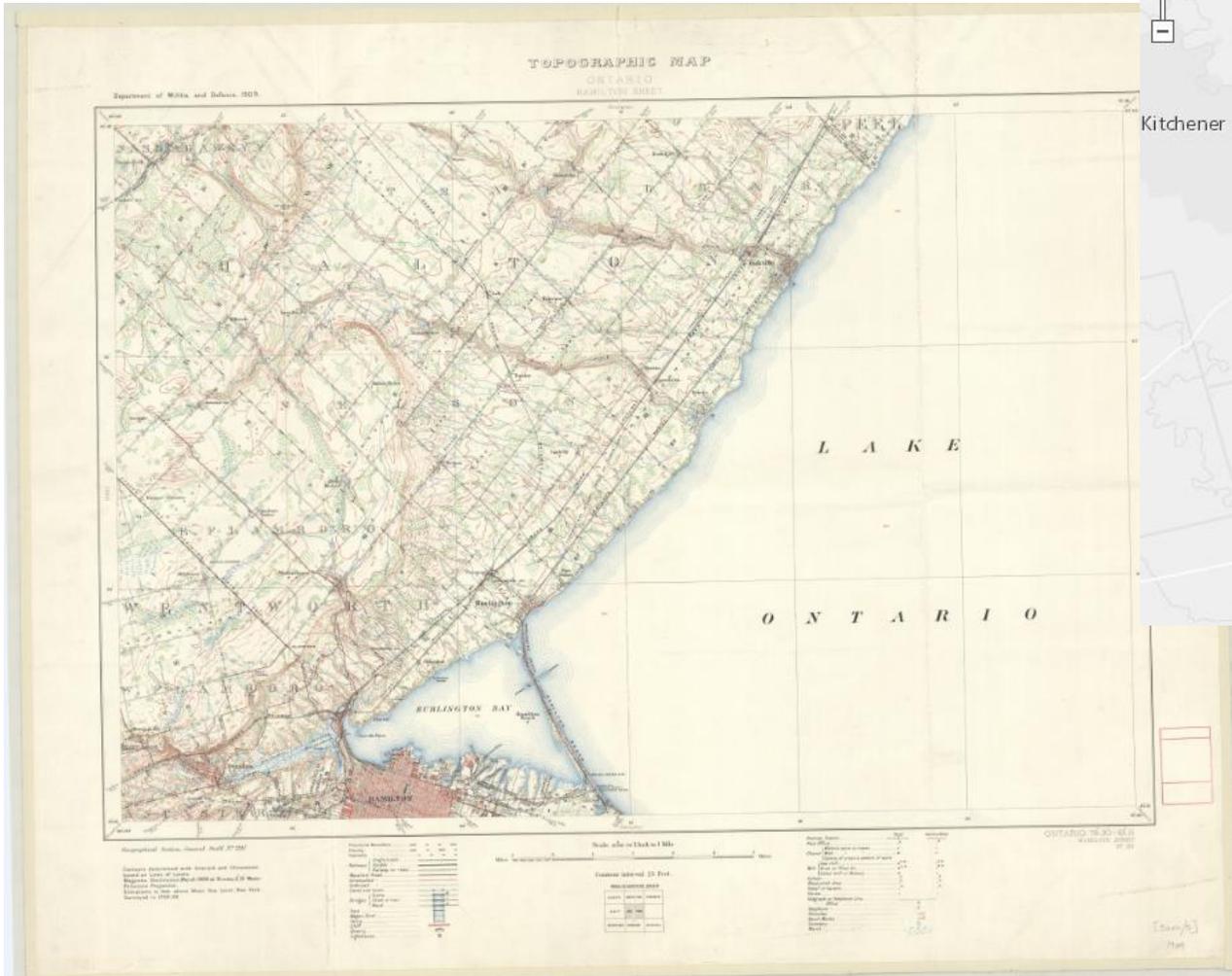
## Will the data meet your needs?

Spatial Reserves Blog, Joseph Kerski

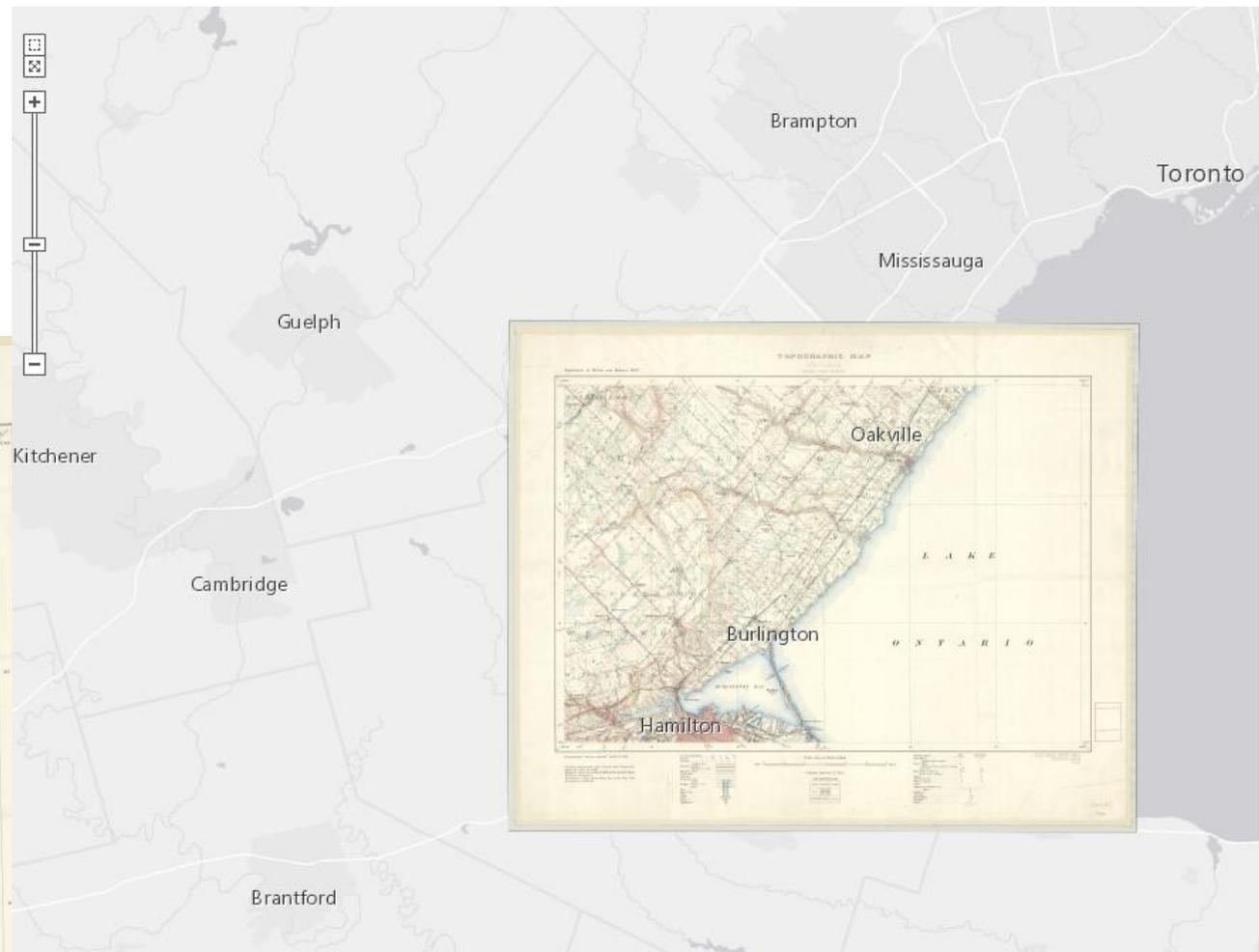
For a more detailed analysis, see Nathan Heazlewood's Garbage In Garbage Out checklist of data errors.



# Usable format



Hamilton, Ontario. 1:63,360. Map Sheet 030M05. [ed. 1]. 1909



# Coordinate System



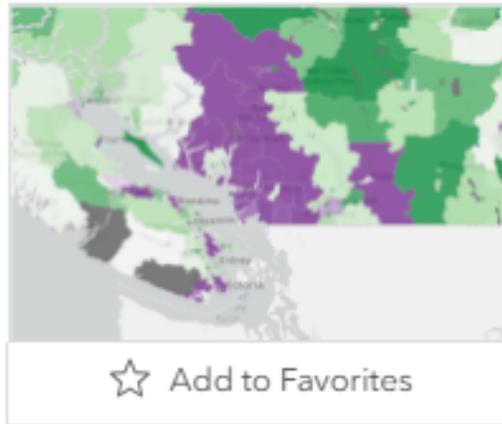
## Unknown Coordinate System

"Map" data source is missing coordinate system information.  
[Click here to view details.](#)

*Mediterranean  
Sea*

## Canadian Shelter Costs 2021

Reliable Source



Shelter cost-to-income ratios for house Division (CD) and Census Subdivision (CSD)

Feature layer from [Esri Canada](#)  
Managed by [EsriCanadaContent](#)

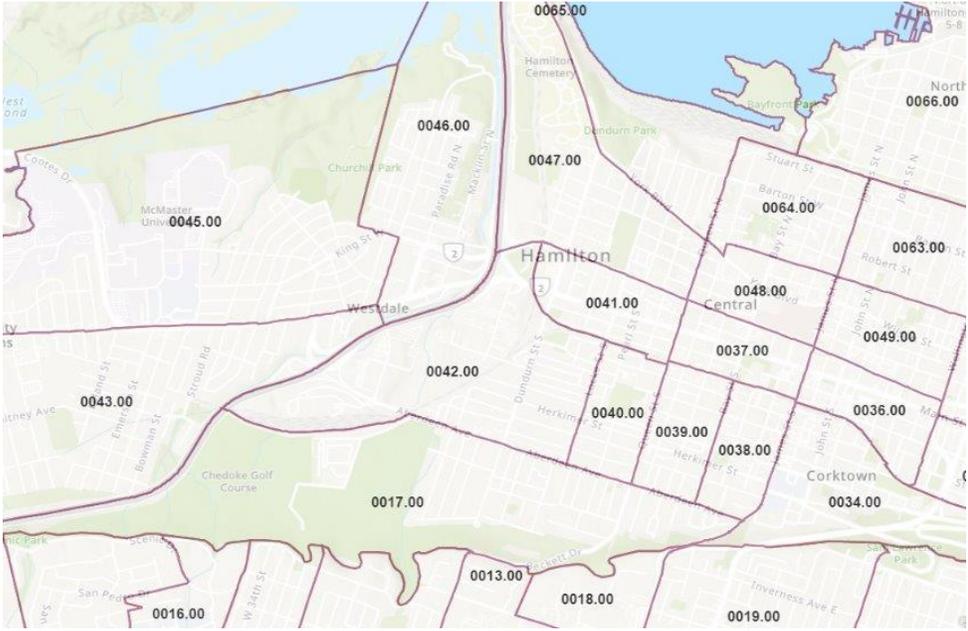
Item created: Feb 21, 2023 Item updated:

✓ Authoritative

🔄 Living Atlas

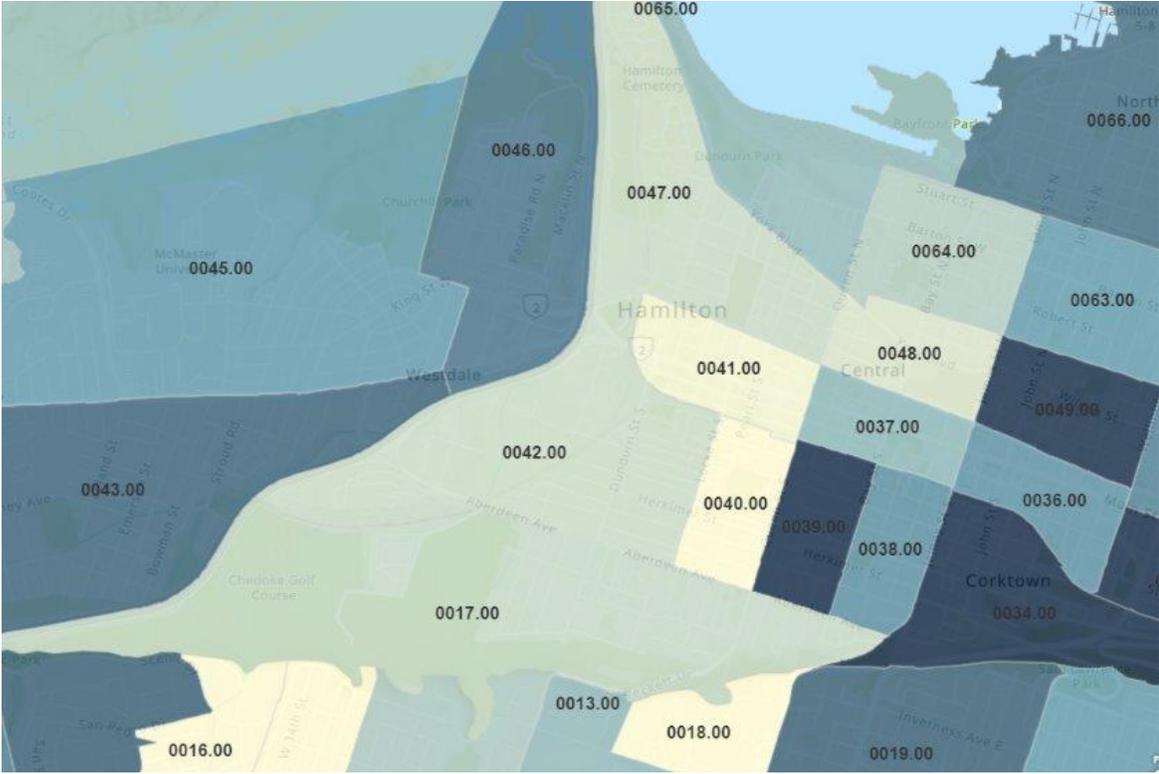
### Terms of Use

Please refer to Statistics Canada's [General Terms and Conditions](#)



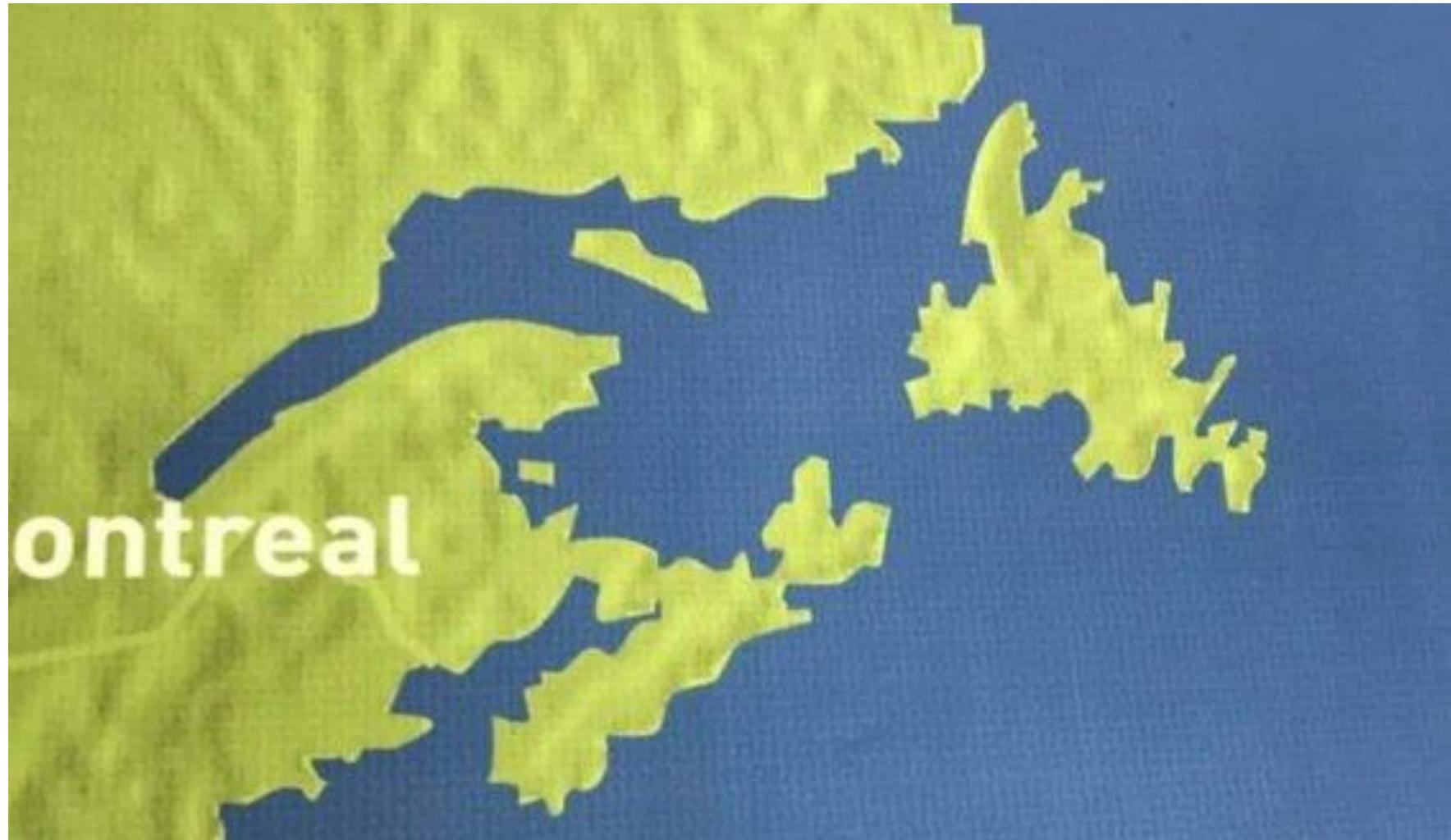
# Attributes

0051.00	409	4,225
0052.00	334	3,881
0053.00	220	3,070
0054.00	211	2,670
0055.00	287	2,989
0056.00	312	3,260
0057.00	276	3,022
0058.00	201	2,545
0059.00	260	3,062
0060.00	195	2,691
0044.00	305	3,917



*COVID19 Case counts by census tract, Open Hamilton*

**Scale**

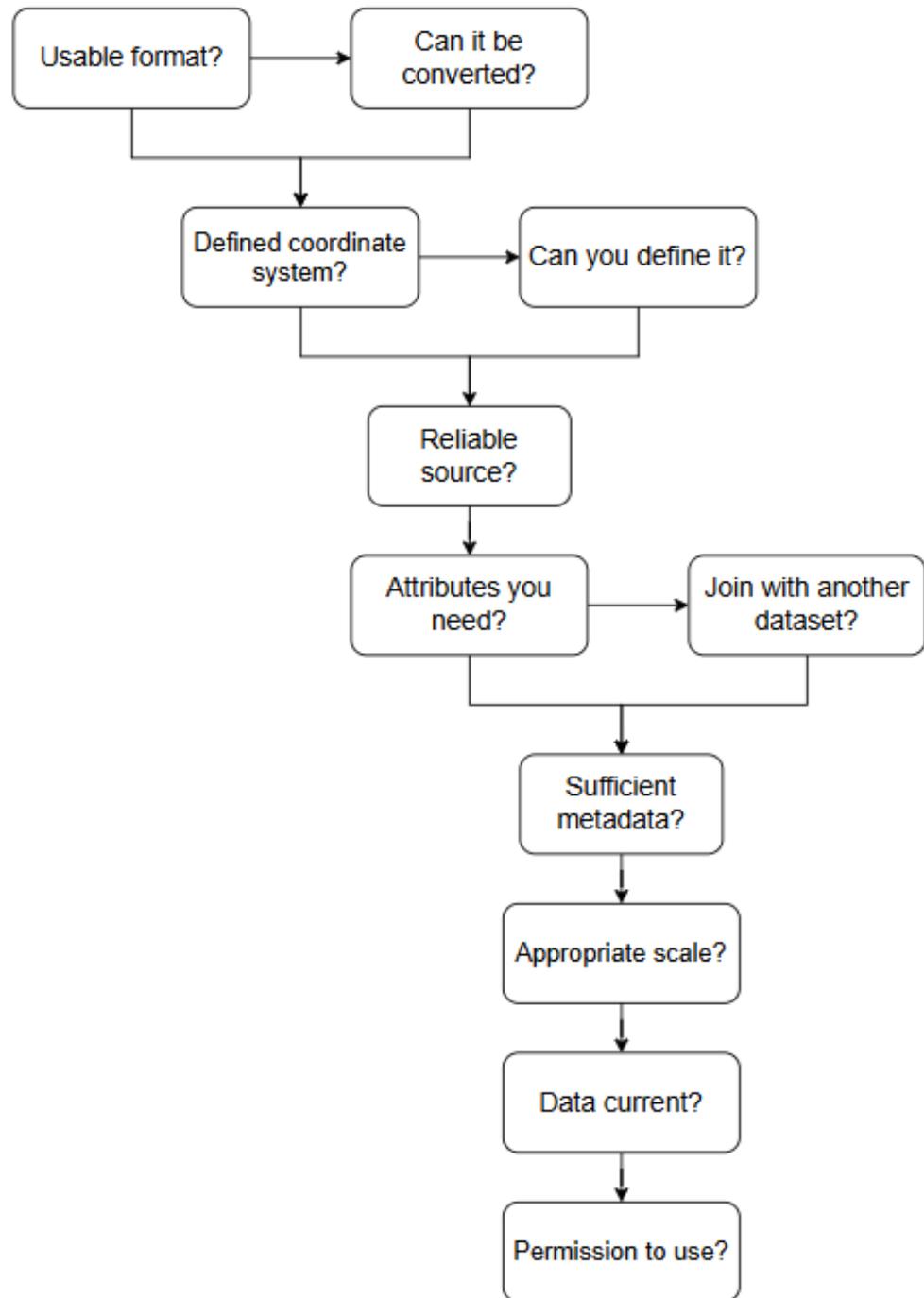


*Source: CBC*

## Will the data meet your needs?

Spatial Reserves Blog, Joseph Kerski

For a more detailed analysis, see Nathan Heazlewood's Garbage In Garbage Out checklist of data errors.



## GIS Services

Send GIS Services an Email:

[libgis@mcmaster.ca](mailto:libgis@mcmaster.ca)

Schedule a Consultation:

<https://libcal.mcmaster.ca/appointments/gis>

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## SCDS Links

Send SCDS an Email:

[scds@mcmaster.ca](mailto:scds@mcmaster.ca)

Subscribe to our Newsletter:

<https://u.mcmaster.ca/sign-up>

GIS Services Website:

<https://library.mcmaster.ca/services/gis>

Register for a Workshop:

<https://u.mcmaster.ca/scds-workshops>

Schedule a Consultation:

<https://libcal.mcmaster.ca/appointments>

