Journalism
JOUR 4101

Introduction to QGIS and Basic Geoprocessing Skills

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Agenda

- Downloading and displaying datasets
- Querying and extracting
- Spatial join
- Finding and joining Census or National Household Survey data
- Exploring cartographic principles and generate a map layout

Downloading Census Geography

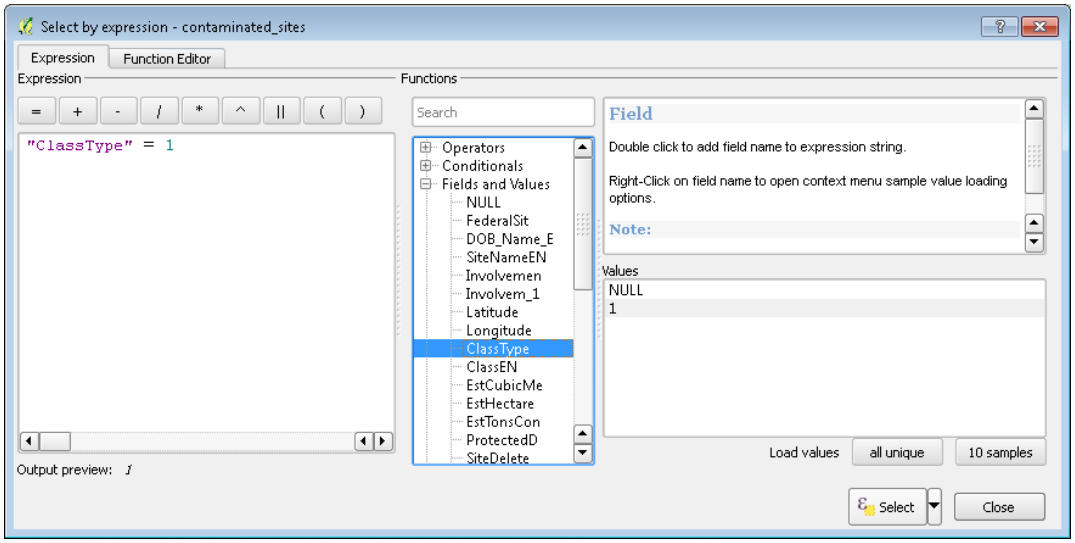
- Free!
- Boundary files for all census geographies in shapefile (GIS) format
- Federal Electoral Districts (FEDs) are the geographic areas for which one Member of Parliament is elected

Display data in non-geospatial format

- E.g.: spreadsheet
- Need some/any sort of geographic element
  - Address
  - Latitude/longitude coordinates
  - Country, city, etc.
- Lat-long is easiest but can find lat-long with addresses (called **geocoding**)

Querying Data in QGIS

- Querying allows you to extract subsets from large datasets
- QGIS uses SQL queries in a relatively easy-to-use interface



Spatial Joins in QGIS

- Spatial joins allow users to find out how many points fall within a polygon, etc.
  - Can also find average, sum, min/max, etc.

http://imgur.com/gallery/i8SpBem

Finding and downloading Census data

- Except in 2011, the Canadian Census had a long form and short form, both obligatory
- In 2011, only the short form (population, language, household) was mandatory
  - Voluntary longer form was the National Household Survey (NHS)
- Keep this in mind: NHS is *less accurate* despite having the more interesting data
- Happily, the long form census returned in 2016 and data will start to be released in 2017

Downloading Census and NHS Data

- 2 ways of downloading the data
  - Through Census or NHS Profile
    - Download data in Beyond 20/20 Data (free)
    - Manipulate data in Beyond 20/20 and export as .csv
  - Through Canadian Census Analyser
    - Available to Student, faculty and staff ONLY
    - Save data as .dbf
- We'll look at INCOME, which can be found in the NHS.

Map Projections

- Map projections are mathematical algorithms that allows representation of the 3D earth on a 2D surface
  - There is ALWAYS distortion of any combination of area, direction, distance or shape
- See what different map projections look like! It's animated!
  - http://www.jasondavies.com/maps/transition/
- See the distortion!
  - http://bl.ocks.org/enjalot/bd552e711b8325c64729

What is a map?

A map shows information spatially, typically emphasizing a theme.

They are a graphic representation of the real world.

Mapmakers select and symbolize what they want to show on the map.

Elements to consider when making a map

- What is the intent of the map?
- Who is the audience?
  - Professor? Editor? Members of the public?
- What is the format?
  - Print? Digital? Both?
- How will it be produced?
  - Colour, greyscale or b&w?
- How will it be viewed?
  - In a magazine? On a computer screen? In a newspaper?

Cartographic Elements

- **Title**
- **Legend**
- **Scale**
- **Orientation (North Arrow)**
- Theme
- Symbolization
- Inset Maps

Necessary map elements

Maps that make Rebecca want to punch the closest thing that won't break her hand

http://www.macleans.ca/news/canada/putting-canada-on-the-map/

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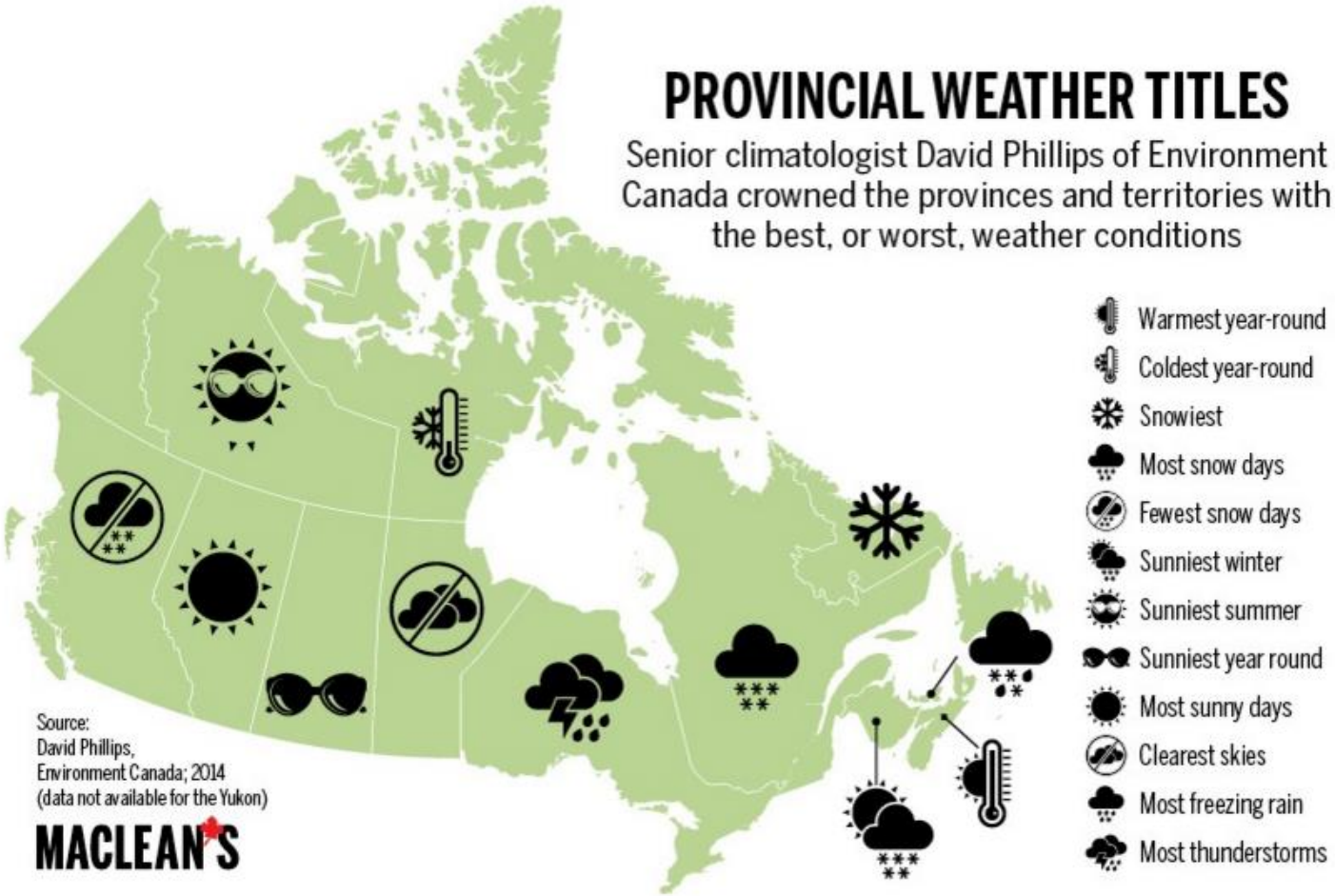

http://www.macleans.ca/news/canada/putting-canada-on-the-map/

Tips to keep Rebecca from hunting you down in the future

- Title, north arrow, scale, and legend
- Keep labels **entirely** inside or outside features and, for the love of all that is holy, *keep the text direction the same direction unless it's a river*
- Make the font legible
- **Don't map things that don't need to be mapped**

Geocoding

- Uses a description of a location (Address or postal code) to find geographic coordinates.
- Can be done using online tools or by using desktop mapping software.
  - CARTO web geocoding workshop notes
  - Google Maps / OpenStreetMap API
  - Using a Street Layer

Further Resources

- Open Data repositories
  - http://www.library.carleton.ca/find/gis/geospatial-data/open-data-repositories
- Statistics Canada Boundary files & data
  - http://www.library.carleton.ca/find/gis/geospatial-data/census-geography-files
- Our mindbogglingly amazing GIS page
  - http://www.library.carleton.ca/find/gis/

Thank you!

- Please don't ever hesitate to contact us about GIS
  - GIS@carleton.ca
  - @GIS_Carleton on Twitter
  - Lower floor of Library: MADGIC

- GIS Day on Wednesday, November 16th at the library's Discovery Centre (4th floor)