Open Source Geospatial Analysis

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GIS and Spatial Data Center

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GIS Services in the Libraries

- Workshops - 10 offerings available

  - Geospatial tools in R coming soon

- 1:1 consulting, collaboration

- Customized guest lectures/lab exercises

- Geospatial Researcher in Residence Program

- GIS lab in 4120 open for use during Library hours

- Access to free online tutorials and software trials

- See www.lib.umd.edu/gis for more information

Add'l Research Services

- Research Commons services:

- General research assistance

  – Proposals, ORAA requirements, presentations, etc.

- Data management

- Statistics consulting

- 3D scanning and printing; video editing

- Funding for open access publishing

- See www.lib.umd.edu/rc for more information

Workshop Outline

1. Introduction – What is Open Source Geospatial Analysis?
   1. GDAL
   2. Quantum GIS (QGIS)
   3. CARTO
   4. Mapbox

2. Exercises at your own pace.

3. Questions and concerns throughout – feel free to ask questions at any time!

What is Open Source Geospatial Analysis?

An open source application by definition is software that you can freely access and modify the source code for. Open source projects typically are worked on by a community of volunteer programmers.

Open source GIS programs are based on different base programming languages. Three main groups of open source GIS (outside of web GIS) in terms of programming languages are: "C" languages, Java, and .NET.

Pros and Cons of Open Source Geospatial Analysis

Pros
- Free
- User friendly
- Multi-platform
- Continually evolving in real time as developers add to it and modify it

Cons
- Fewer functionalities
- Less support available for when things go wrong

Start with the most popular open source software systems that have built up a large community of support behind them, so you have somewhere to go to if you need advice.

Common Open Source and Free Geospatial Analysis Tools

1. GDAL
2. Quantum GIS (QGIS)
3. CARTO
4. Mapbox
5. gVSIG
6. GRASS GIS
7. Diva GIS
8. Whitebox GAT
9. SAGA
10. GeoDa
11. FalconView
12. Google Earth Engine
13. R

GDAL

- Stands for Geospatial Data Abstraction Library

- A computer software library for reading and writing raster and vector geospatial data formats

QGIS

- QGIS (previously known as Quantum GIS) is a free and open-source cross-platform desktop geographic information system (GIS) application that supports viewing, editing, and analysis of geospatial data

CARTO

- CARTO (formerly CartoDB) is a Software as a Service (SaaS) cloud computing platform that provides GIS and web mapping tools for display in a web browser.

- CARTO builder: users can manage data, run user side analysis and design custom maps. The builder is intended for non developers and beginners to have access to, and be able to use advanced geospatial tools

Mapbox

- **Mapbox** is a large provider of custom online maps for websites and applications.

- The data are taken both from open data sources, such as OpenStreetMap and NASA, and from proprietary data sources, such as DigitalGlobe.

Let's Go!

ArcGIS Exercises

lib.umd.edu/gis/workshops