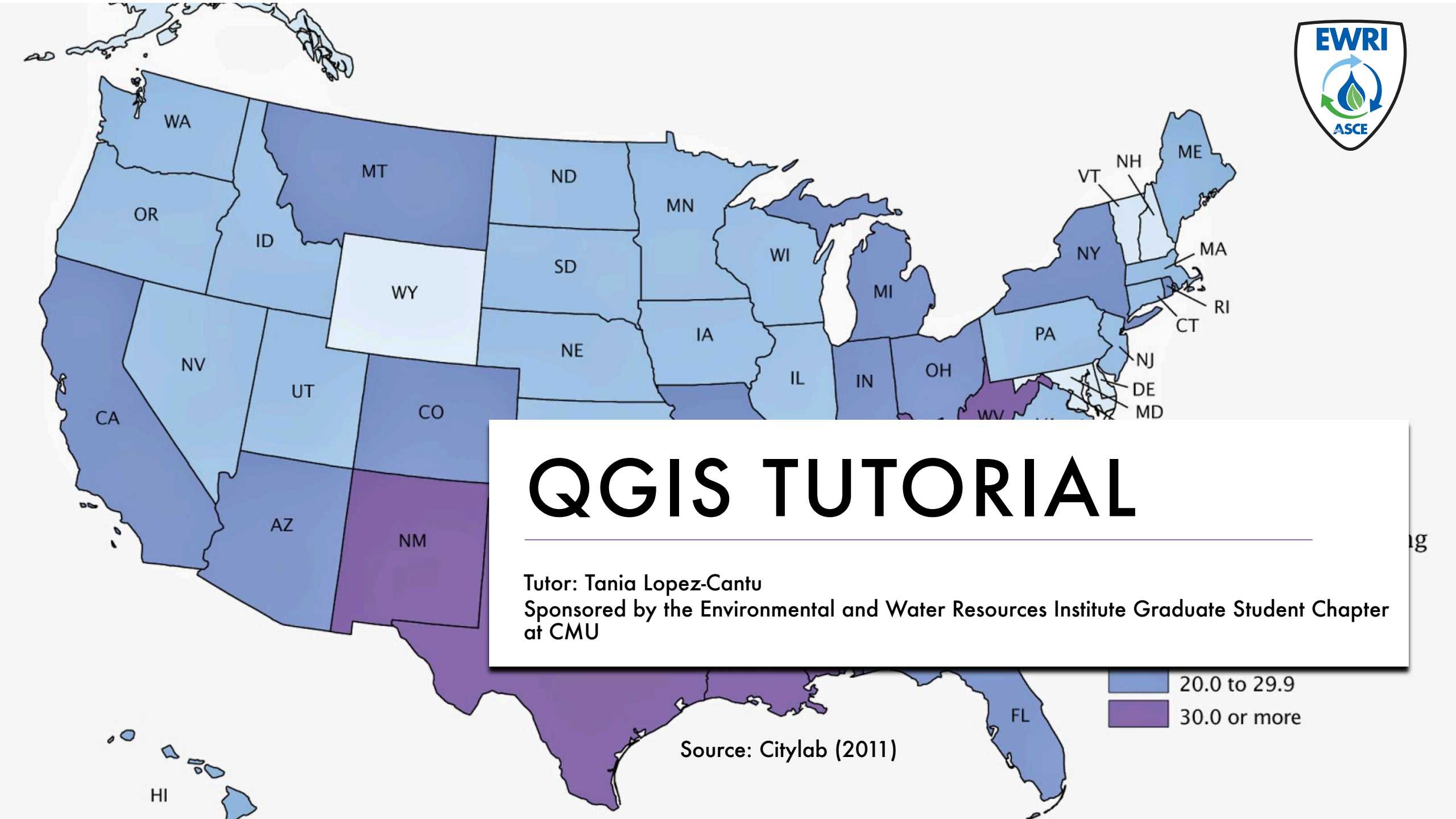


QGIS TUTORIAL

Tutor: Tania Lopez-Cantu

Sponsored by the Environmental and Water Resources Institute Graduate Student Chapter at CMU

Source: Citylab (2011)

What are geographic information systems software?

Framework for compiling, managing and analyzing data with spatial location.

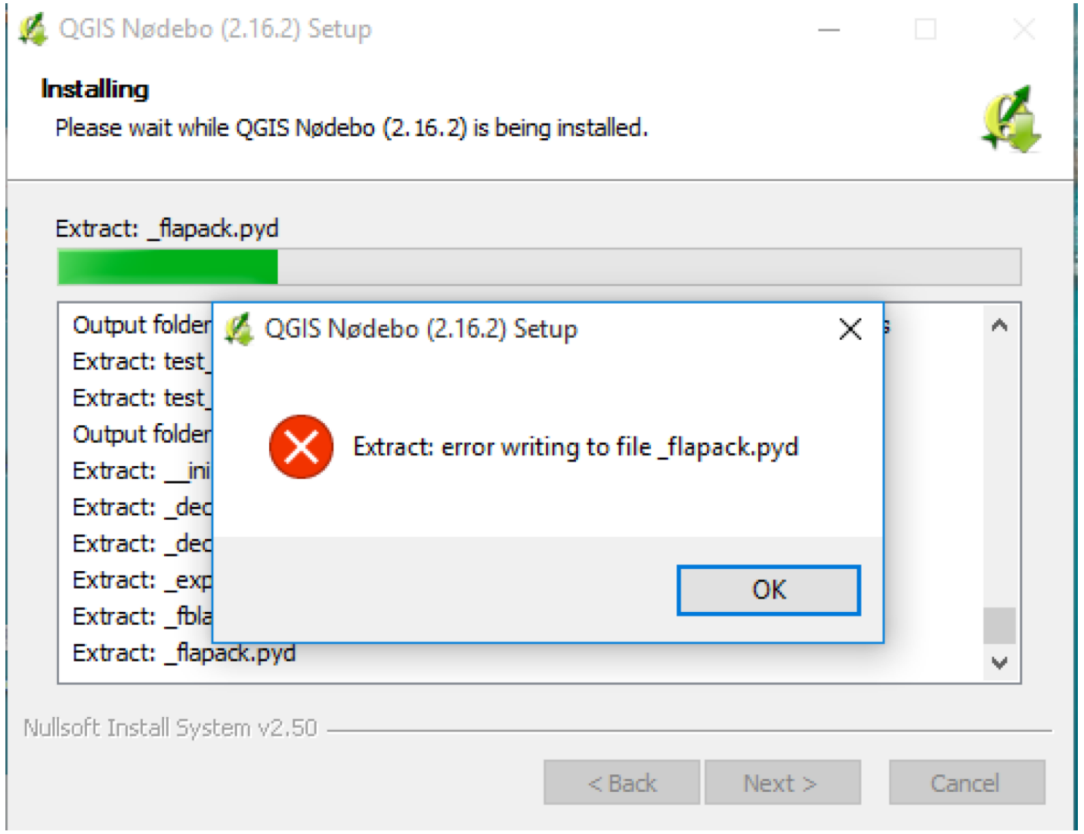
ESRI ArcGIS®

Source: BirdseyeviewGIS (2018), ESRI (2018)

ArcGIS OR QGIS?

- Documentation
- Operating System Support
- Development
- Data Entry
- Plugins

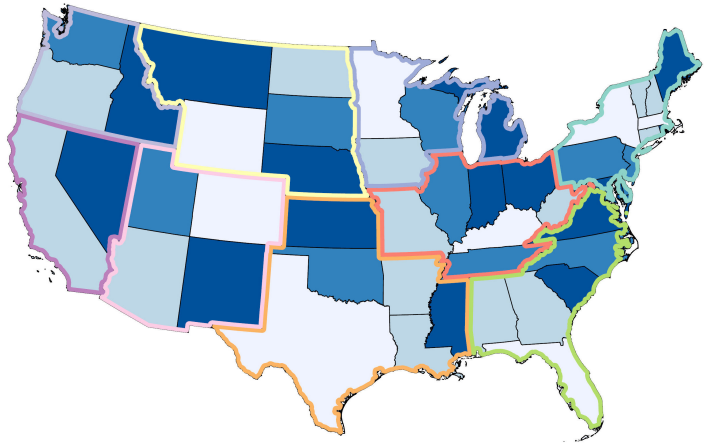
Troubleshooting



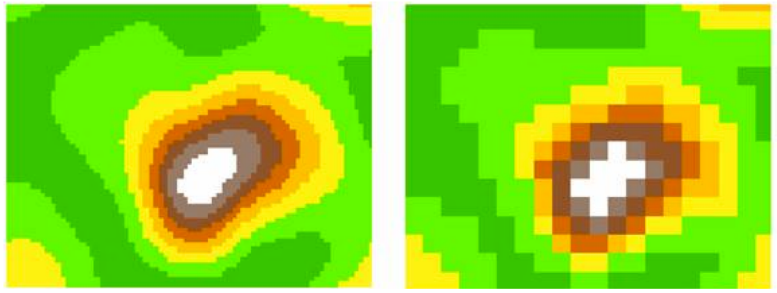
Source: GIS StackExchange (2016), Percona (2016)

There are two comprehensive data types, vector and raster data

- Vector data: representation of the world using points, lines, and polygons.



- Raster data: representation of the world as a surface divided into a regular grid of cells.



Source: Lopez-Cantu & Samaras (2018), UWC

Where can I obtain free official GIS data for my research?

- TIGER products from the US Census Bureau https://www.census.gov/geo/maps-data/data/tiger.html?#
  - State, County boundaries
  - Roads
  - Water features
  - Demographic and Economic Data
- For Pennsylvania:
- Western Pennsylvania Regional Data Center http://www.wprdc.org/
  - Geography
  - Health
  - Environment
- Pennsylvania Spatial Data Access (PASDA) http://www.pasda.psu.edu/

Working with QGIS

Learning objectives

- Become familiar to the QGIS user interface
- Become familiar with QGIS Plugins
- Learn to navigate through the interface (Workflow)
- Load data into the Map Canvas
- Learn to manipulate polygon shapefiles
- Symbolize maps (Thematic maps for qualitative attributes)
- Create and import map as .jpeg or other image formats

Raster data and more advanced functions in QGIS

Learning objectives

- Learn to filter data via the Attribute Table
- Learn to manipulate polygon shapefiles
- Load different other types of data in the Map Canvas
- Compute statistics within specific boundaries using the Zonal Statistics plugin
- Sample from raster using a point layer and the Point sampling tool