GIS Data (Part 4)

1. Making Better Maps!
2. Mapping (X,Y) Data
3. Mapping Address Data
4. Homework Assignment #8

Course Website
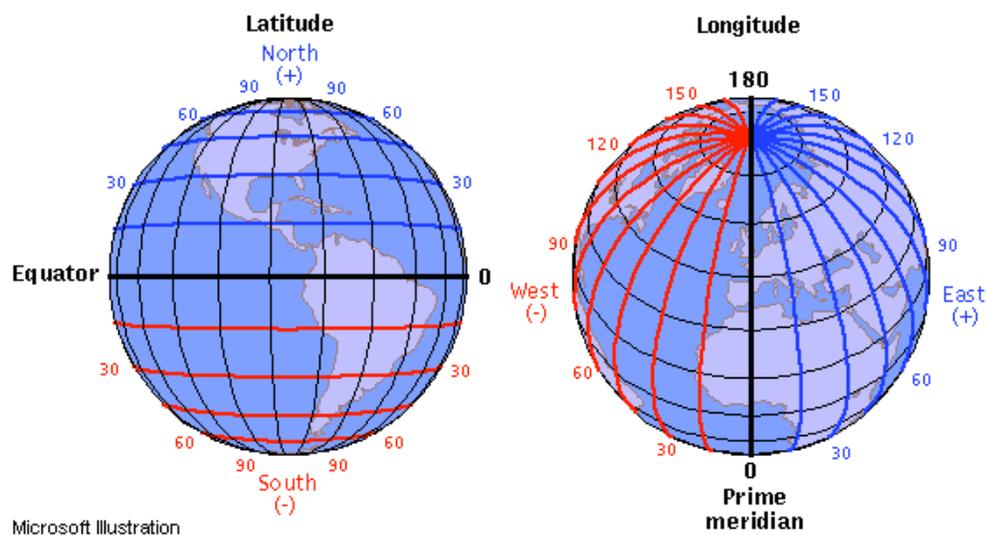https://sites.google.com/site/garp0244fall2014/home

GIS Resources
http://www.westfield.ma.edu/cbraun/resources/gis-resources/

Cool Maps
Geocoding Services (Texas A & M)
geocoder.us
Jawbone and Earthquake

Microsoft Illustration

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1) Making Better Maps!

My Jerry's Tips Sorting

1. Know your data!
2. Use thematic mapping with care!
3. Legends are essential!
4. Limit your information!
5. Include the caveats!
6. Use colors with care!
7. Clear titles!
8. Check in grey scale!
9. Scale bar!
10. North arrow!

My Two Tips

- Know your audience…if possible!
- What's your message?

More Suggestions!

Text in Maps
- Use to explain your map!
- Don't abuse as filler

Be Subtle!
- When lying…
- With colors…

2nd or 3rd Opinion / Review
- Minor issues…
- Meaning!

Your Message or Story!
- What are you telling?
- Not every story should be told by a map!

Inform and Entertain!
Function first!
Form second!

Break Points!
- Gains/Losses
- National averages
- Consult the data = the histogram!

Your Audience!
- Who is it?
- No jargon and acronyms!

TMI!
- Don't overwhelm the paper or the audience!

Which one is the best?
You experimented with classification systems, number of classes, break points, colors, sorting, outliers, etc…and you have 20 possible maps…which one is the most objective?

- The one that looks the best!
- KISS!
- Look at your data, look at the histogram!

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2) Mapping (X,Y) Data

You have a series of geographic coordinates, for example from a GPS receiver: locations where you measured snow depth and pH, locations where you sampled water along the Westfield River, or locations of homicides.

1. First, collect the geographic coordinates using a GPS receiver, Google Earth, or whatever.

2. Enter the latitude and longitude into MS Excel.

    Use Latitude and Longitude as column headings.
    Latitude and longitude have to be in decimal degrees.
    Latitude is positive north of the equator and negative south of the equator.
    Longitude is positive east of the prime meridian.
    Longitude is negative west of the prime meridian.

    $$DD = \deg + \frac{min}{60} + \frac{sec}{60^2}$$

    $$where, DD = decimal\ degrees$$
    $$\deg = 79$$
    $$min = 22$$
    $$sec = 34$$

    $$DD = 79 + \frac{22}{60} + \frac{34}{60^2}$$
    $$= 79 + 0.36667 + 0.0094444$$
    $$= 79.376111 DD$$

    You need to know the datum/coordinate system/projection of your latitude and longitude: In general, GPS data should be using in WGS84. Google Earth uses the WGS84.

    Degrees, Minutes, Seconds and Decimal Degrees Latitude/Longitude Converter:
    http://transition.fcc.gov/mb/audio/bickel/DDDMMSS-decimal.html

3. Save your MS Excel file as a MS Excel 97-2003 Workbook or as a CSV file.
4. Start ArcMap and add a global base layer from ArcGIS Online.
5. File – Add Data – Add XY Data…Browse to your MS Excel workbook or CSV files and add the worksheet.
6. Define X Field as longitude and Y Field as latitude.
7. Click Edit…and find…Geographic Coordinate System - World - WGS 1984.prj. Click Apply and OK.
8. Click OK again and your points are added to your map. Zoom around and see!
9. Export your data as a feature class or shapefile and add to your map – done!
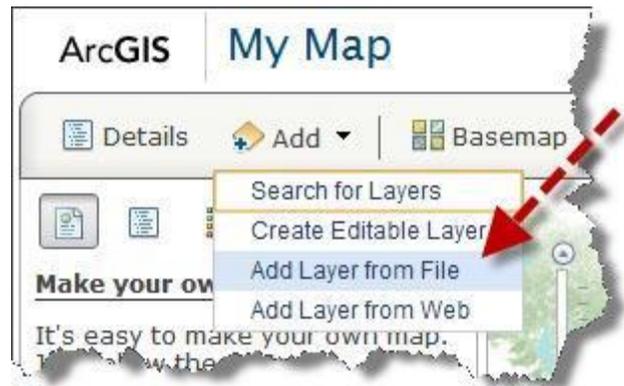
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3) Mapping Address Data

In general, you will need to save your address MS Excel spreadsheet as a CSV file for geocoding.

1. Create a map in ArcGIS Online.
2. Drag and drop your CSV file onto your ArcGIS Online map.
3. Or: Choose Add – Add Layer from File, and choose your CSV file.

Done – you just geocoded!

Or: use Geocoding Services (Texas A & M)

More about all that in Advanced GIS.

4) Homework Assignment #8

This assignment has two parts: work through Chapter 11 in GTKArcGIS to prepare for next week and create maps using raster data from MassGIS.

Part 1: GTKArcGIS Chapter 11

Chapter 11 takes you through the steps needed to create (i.e. digitize) your own data: create a geodatabase, create feature classes, and set-up fields and domains. Next week and in Chapter 12 we will then add features by digitizing. Please note: you cannot 'cheat' on this chapter - you need to perform all the steps, otherwise Chapters 12, 13, etc. will not work.

Part 2: Mapping Raster Data

Make two perfect maps of Westfield: one using the topographic maps as your base layer, one using the 2005 aerial photographs as your base layer.

Make two perfect maps of campus: one using the 2008/2009 aerial photographs as your base layer, and one using the 2013/2014 aerial photographs as your base layer.

- For the Westfield maps: Also show the fire stations, police station(s), and hospital(s) using different symbols. Show the roads, using a different line symbol or line color depending on the road class.
- Create your maps in 8.5 by 11 inches. Make your data frame as large as possible and zoom-into Westfield or the campus as much as possible – without cutting-off anything. Make sure, however, that you leave sufficient room for the map elements and the legend.

Make perfect maps with great legends, text, titles, and all map elements!
Please note: the mapping here is pretty easy, but it takes time to download all the tiles.

Deliverables. Please submit professional, well-written report using proper English language and professional formatting and layout. Think in terms of using this report as a sample of your work for a job interview. Include:

- An introduction section, describing your overall mapping project.
- A step-by-step documentation of your mapping procedure Think in terms of writing a cook book recipe that a similarly-trained GIS user can follow along to repeat your mapping. I need to be able to understand your methods to assess your work. Use a numbered list to organize your recipe.

    Be sure to include information and documentation as to which data layers you downloaded from MassGIS to make your maps. Include the specific website address for each datalayer used in your maps.

- Your 4 printed maps.
- Due Date: next class meeting.

As always, include a cover page and page numbers in the page footer. Your report will have about 8 pages (cover page, ~3 pages for the introduction and documentation, and 4 pages for the maps). The maps, the introduction/documentation, professionalism and attention to detail are all equally important in terms of your assignment grade.

➔ ***Contact me for help or clarification of this assignment or my expectations as needed.***