Title: Geographic Information

Critical Resources: An internet-enabled computer with MS Word, access to myCourses, access to ArcGIS (available in all IST labs), and Assignment_6_data_sets.zip file.

Learning Objectives:

The learning objectives of this assignment are:

- Understand how geographic information can be used for space/time analysis
- Understand how to work with a commercial GIS tool and GIS datasets

Deliverables:

See section below.

Background:

Earthquakes are a persistent global hazard. In this assignment, you will import earthquake data into ArcGIS and conduct a space/time analysis.

Instructions:

1. Download Past 30 Days, M2.5+ Earthquakes - Colored by Age KML
http://earthquake.usgs.gov/earthquakes/feed/v1.0/kml.php

2. Import KML into ArcGIS as a feature class
http://desktop.arcgis.com/en/arcmap/10.3/tools/conversion-toolbox/kml-to-layer.htm

4. Add field named time (type: text) to your imported KML file
http://desktop.arcgis.com/en/arcmap/10.3/manage-data/tables/adding-fields.htm

5. Use the field calculator and run the script KML_time_parser.cal on the time field[1] to extract time values from the PopupInfo field
http://desktop.arcgis.com/en/arcmap/10.3/manage-data/tables/calculate-field-examples.htm

6. Add field named magnitude (type: text) to your imported KML file
http://desktop.arcgis.com/en/arcmap/10.3/manage-data/tables/adding-fields.htm

7. Use the field calculator and run the script magnitude_parser.cal on the magnitude field[2] to extract magnitude values from the name field
http://desktop.arcgis.com/en/arcmap/10.3/manage-data/tables/calculate-field-examples.htm

[1] make sure **parser is set to python**
[2] make sure **parser is set to python**

8. Export your imported and modified KML data as a new shapefile
http://desktop.arcgis.com/en/arcmap/10.3/map/working-with-layers/exporting-features.htm

9. Import data into tracking analyst, see:
http://resources.arcgis.com/en/help/main/10.1/index.html#/Analyzing_hurricanes_using_Tracking_Analyst/006300000040000000 for specific steps. If this link does not take you to the "Analyzing hurricanes using Tracking Analyst" tutorial, manually copy and paste the link into your browser.

10. Add a base map to provide context for your data
http://resources.arcgis.com/en/help/main/10.2/index.html#//00q80000012v000000

11. Stylize your time data using temporal representation techniques you learned about via the tracking analyst tutorial from Step 9. For example, showing earthquake magnitude changes over time and highlighting earthquakes of a certain magnitude.

12. Add one or more of the Assignment 6 datasets to support your analysis. For example, world population by country, potential earthquake impacts on roads etc.

13. Make a video of your time series and map using the animation tool:
https://desktop.arcgis.com/en/arcmap/10.3/guide-books/extensions/tracking-analyst/093-using-the-animation-wizard.htm

Deliverables

1. The video you made in Step 13 showing your earthquake analysis.

2. A 200-300 word description of what you found interesting about your analysis of the earthquakes in space and time.

Extra credit (**can** make lab grade go over 100 points)

- (10 points) Either caption or record an audio track of your 200 to 300-word description of what you found interesting about your analysis of the earthquakes in space and time over your video. If you do this, then only submit only the video and not the 200 to 300-word description.