

Lab 2

GEOG 171/172

Spring, 2008

Due: Wednesday, February 27

PROJECTIONS AND COORDINATE SYSTEMS

1. (16 points total) Examine the coordinate systems for the files *gas_stations.shp*, *septicwest.shp*, and *brentfriends.shp* from Lab 0. For each one, answer the following questions:
 - a. What is the name of the coordinate system?
 - b. Is it projected or unprojected?
 - c. What are the map units?
 - d. What is the x-y extent?
2. (15 points total) Open the map document *ex_5* in the *mgisdata\MapDocuments* folder.
 - a. What is the coordinate system of the data frame in this map?
 - b. What are the map units of the frame?
 - c. What are the display units of the frame?
 - d. What are the map units of the of source data?
3. (15 points) Create a new map document of world countries (*World\countries.shp*) and their capitals (*World\natcapitals.shp*) in the "Asia_South_Lambert_Conformal_Conic" projection. Make the continents a color of your choosing and the capitals small yellow stars. Export this map to PDF (call it "lab2map1.pdf"), and be sure to include all the usual map metadata (north arrow, scale bar, mapmaker, data source), *including now the projection*. All maps should now have their projection listed on them (Look at maps on the wall... They all will). Turn in this map with your word documents on which you are completing this assignment.
4. (10 points) Look at your map for problem 3. Which of the four map properties appear to be fairly well preserved in this projection? Where? Which ones appear poorly preserved? Where? Explain your reasoning.
5. (15 points) When you load a shapefile with a different projection than the active data frame into a map document,
 - a. What happens?
 - b. Why does this happen?
 - c. If you loaded a shapefile that had no defined projection (no ".prj" file), what would happen if the projection matched that of the active data frame?
 - d. What if it didn't?
6. (20 points total) Using *ex_3.mxd*, complete questions 3 - 6. To receive credit, you must provide a brief explanation of how you got your answer and why the answer makes sense.
7. (20 points) Pick one state besides Oregon and South Dakota and choose the best projected coordinate system for that state (must not be one that already exists). Export a complete PDF map of your state using the *states* feature in the *mgisdata\Usa\Usa.mdb* geodatabase. Be sure to explain your projected coordinate system choice, discussing the three components of a projected coordinate system:
 - a. Projection and its parameters (most important)
 - b. Geographic Coordinate System
 - c. Linear Unit