Rebecca Rosenstiel

Lab 02: Projections and Coordinate Systems

Overview— This is the worksheet you will turn in with your answers. Please save your document in the following format (Lastname_lab02) so I can identify each student's lab document. If a question requires a screenshot, make sure the window you wish to capture is selected then hold Alt and PrtScn at the same time. Then navigate to this word document and paste it into the designated area. Lastly, please answer all written portions in **Bold Blue** text so I can differentiate your response from the initial question.

Question 1

What is the name of the Geographic Coordinate System for each of your three layers? What does a geographic coordinate system define?

NAD 1983, Unknown Coordinate System, and NAD 1983 StatePlane Oklahoma North FIPS 3501 (US Feet).

Question 2

What is the Projected Coordinate System and Map/Linear Units in which the coordinates are recorded in the *okcounties.shp* layer? What is the Projected Coordinate System and Map/Linear Units in which the coordinates are recorded in the *cleveland_county.shp* layer? After adding *okcounties.shp* to the *Map*, what is the "Current XY (Coordinate System)" of the *Map*? Does the coordinate system of this *Map* object match either of the layers you added to it? If so which one(s)? How is it possible that these two layers align on the map even though they have different Projected Coordinate Systems?

NAD 1983 StatePlane Oklahoma North FIPS 3501 (US Feet) and US Feet for the *okcounties.shp* layer.

NAD 1983 UTM Zone 14N and meters for the *Cleveland_county.shp* layer.

Question 3

What is the coordinate system embedded into the *cleveland_county_broken.shp* layer? What does this mean?

Unknown Coordinate System which means that the coordinate system is not defined for *Cleveland_county_broken.shp*.

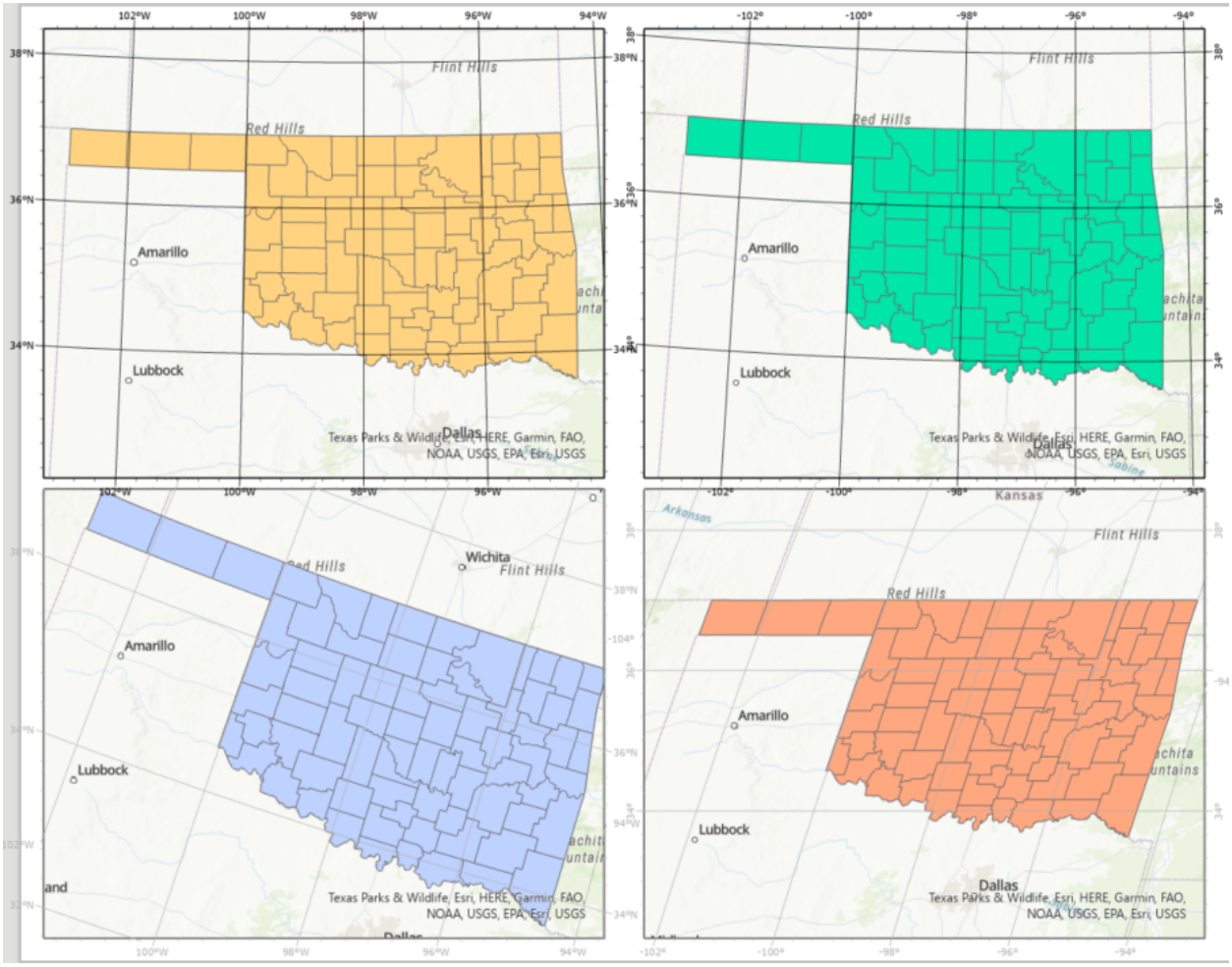
Question 4

As a new user of ArcGIS Pro, what are some of the benefits of using Layout view?

It is a way to place and/or view multiple maps on one screen. And that one can use the layout to print the maps if one chose to do so.

Question 5

After changing the projected coordinate system of each of your 4 Maps/Map Frames in lab, what happened visually to each? Take a screenshot of your entire map in the Layout view so that all 4 map frames are visible and paste it below.



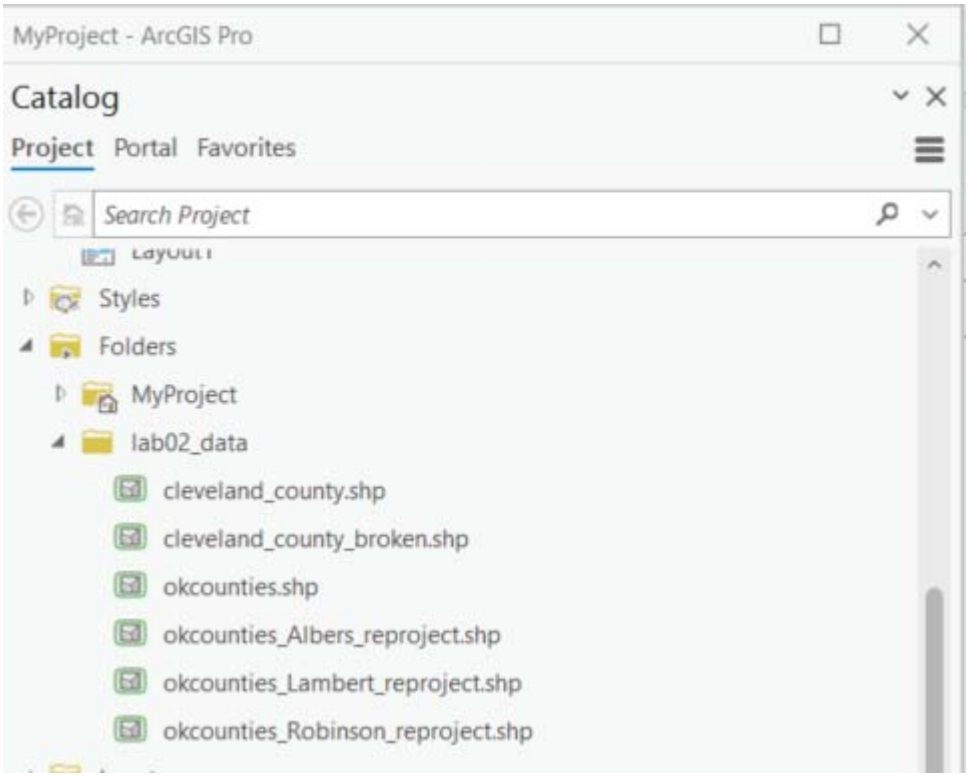
Question 6

In each respective Map View for your newly distorted Maps, you may have noticed the linear units as-displayed at the center-bottom of the application interface in each of the possible projected coordinate systems are usually Meters or Feet. If you wanted to change the linear/map units displayed where might you look to do so? (hint: you can achieve this stay in the data frame properties window but if you are really stuck consider using the ArcGIS help files.)

I would select the map in the map frame then right click and select t"Properties" then under the General tab I would change the display units from feet to meters, or vice versa.

Question 7

Once you have created your new reprojected layers, open the Catalog Pane and take a screenshot so I can see that all of your new layers are contained in your lab geodatabase (or folder, if you've chosen to export shapefiles) along with the original layers and paste below. You should now have 6 total items in your working directory:



Question 8

Locate Cleveland County in each of your new layers attribute table. Compare the areas of the three projections and note them in the spaces below. What do you notice? How may the projected coordinate system affect the layer you use in analysis in the future?

I would believe the areas appear to be distorted in some fashion. I attempted to fix my error message to no avail. The solution present on ArcGIS help page and Google searches did not solve my issue.