


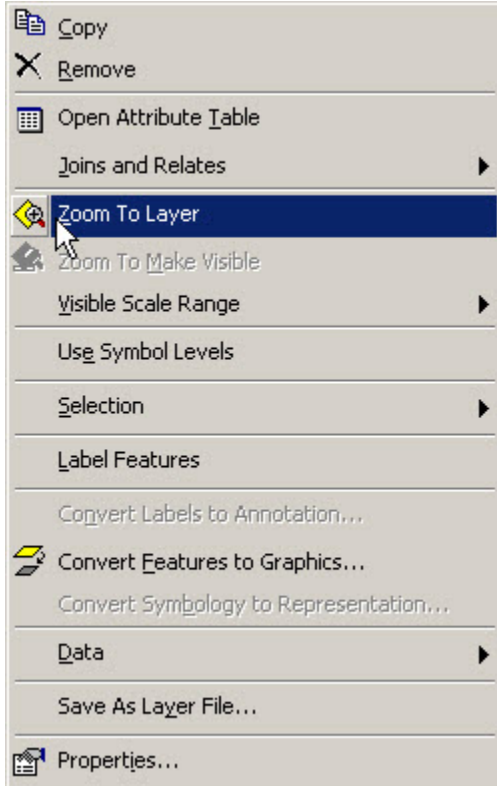
GEOG 2017EL
Applied Cartography and Introduction to GIS
Lab 10
Projections

The purpose of this lab is to introduce the student to the steps used in ArcMap needed to select and change map projections and to provide an appreciation of the basic differences of various map projections.

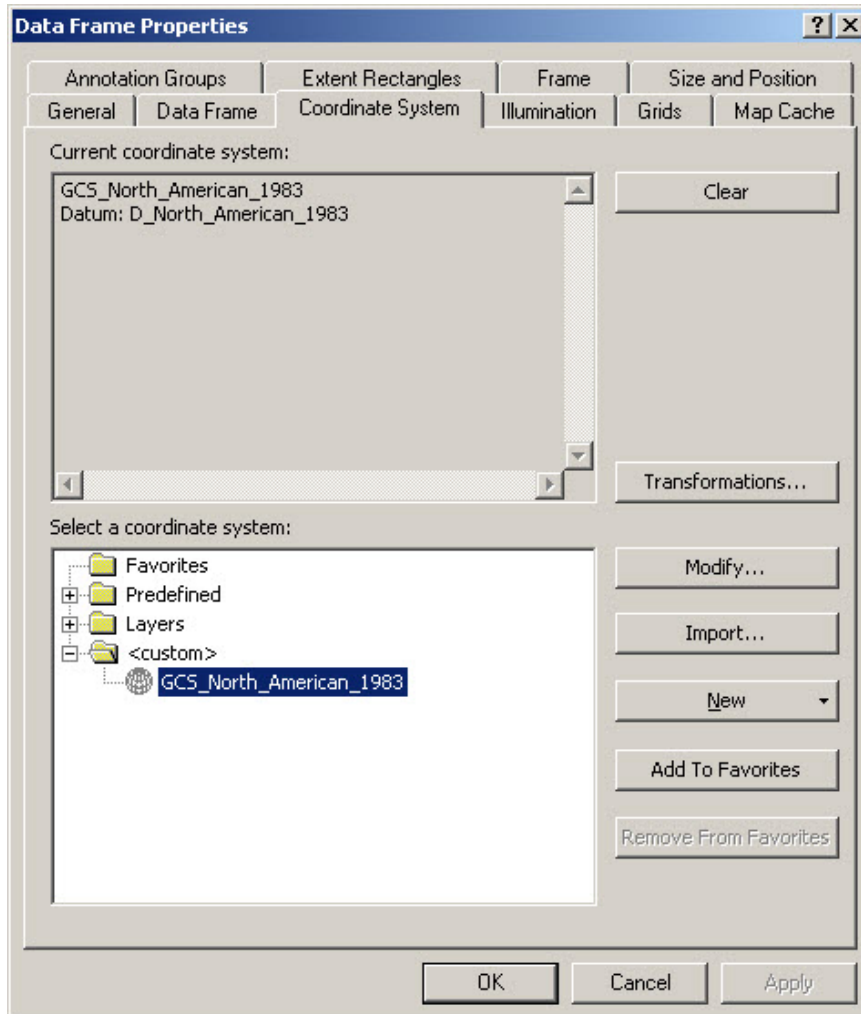
Part 1 Changing map projections (10 points)

1. Create a new map using your Ontario Economic Regions shapefile

2. Zoom to “full extent”  or from your ER layer right-click Zoom to Layer



3. Copy your ER layer to **four** (4) new data frames (see lab Lab 6 Part 1 “Add Multiple Data Frames...”)
4. Right click anywhere on any data frame’s Data View to bring up the Data Frame menu and select Properties from the bottom. This will bring up the following window:



5. Click the Coordinate System tab

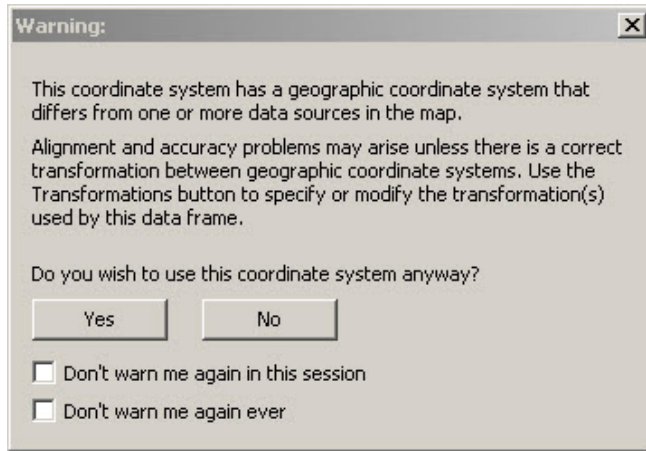
Q1. What is the current coordinate system? (1 point)

You are about to change the Projection of 3 of 4 of your data frames; make sure one of your data frames remains unchanged from when you added the ER data to your map originally and call it "Unprojected"

6. Double-click Predefined (or expand with the + sign)

7. Double-click Projected Coordinate Systems

If you get the following warning (next page), simply ignore and click "Yes"



8. Activate each data frame one at a time and change the Coordinate System to:

- From Predefined >Projected Coordinate Systems>Continental>North America
 - Canada_Albers_Equal_Area_Conic
 - Canada_Lambert_Conformal_Conic
- From Predefined >Projected Coordinate Systems>UTM>NAD 1983>
 - NAD_1983_UTM_Zone_17N

Remember to name each inset map properly. You should have four data frames projected as follows:

- Unprojected
- Albers Equal Area Conic
- Lambert Conformal Conic
- NAD 83 UTM Zone 17N

If you accidentally changed the unprojected data frame, you can change it back by going to Predefined>Geographic Coordinate Systems>North America>North American Datum 1983

Make sure you can see (are zoomed out to full extent) the whole province for each map. Add a title (TYPE of PROJECTION) and scale bar to each map, export and send a copy (8 points – 2 points per inset map)

Which of your maps seems the most distorted compare to the others (1 point)

Part 2 More on projections (5 points)

Go to the National Atlas of Canada website

http://atlas.nrcan.gc.ca/site/english/learningresources/carto_corner/map_projections.html/#mapproj

Complete the following table (carefully!) adapted from the National Atlas of Canada website. (4 points)

Which pairs of properties can be combined in one projection?				
Projection	Area	Scale	Angle	Shape
Conformal				
Azimuthal				
Equidistant				
Equal-area				

What cylindrical projection is typically used for large-scale topographic maps (1 point)

Another useful site to help understand map projections is the US National Atlas at

http://www.nationalatlas.gov/articles/mapping/a_projections.html