**Git/GitHub links:**

Here are some [Git desktop apps](https://git-scm.com/downloads/guis) like RStudio's Git app

The [Git Pro Book](https://git-scm.com/book/en/v2) – definitely designed for engineers but may someday be useful

**Group 1:**

Add a file to your repository through the file explorer (i.e., not in RStudio)

* Try to ***Commit/Push*** the change to your repository
  + you should see an error on ***Push*** (section 12 in [Git/GitHub Quick Setup](https://d2l.msu.edu/d2l/le/content/1459992/viewContent/12243559/View)) – this is because I added a chapter to your book (an image of where I will be backpacking in May)
* ***Pull*** my Commit first, then ***Push*** your Commit

Add a user in your breakout group to your repository (section 10 in [Git/GitHub Quick Setup](https://d2l.msu.edu/d2l/le/content/1459992/viewContent/12243559/View))

Send a message to that user using ***Issues*** (section 9 in [Git/GitHub Quick Setup](https://d2l.msu.edu/d2l/le/content/1459992/viewContent/12243559/View))

**RMapping:**

Spherical vs Projected Coordinates

* [helpful webpage](https://www.esri.com/arcgis-blog/products/arcgis-pro/mapping/gcs_vs_pcs/)
* [funny video](https://www.youtube.com/watch?v=jtBV3GgQLg8) (might not be useful but I enjoyed the video!)

The wiki page about [UTM Zones](https://en.wikipedia.org/wiki/Universal_Transverse_Mercator_coordinate_system) – the [simplified view of the contiguous US](https://en.wikipedia.org/wiki/File:Utm-zones-USA.svg) is a helpful image.

**RMapping Terms:**

Coordinate reference systems (crs)

**Refers to how spatial data is represented on the earth’s surface is flattened. Allowing you to map on a 2D surface**

EPSG registry

* 4326
* 29616

Geographic coordinate system

**A coordinate system that is used to relate locations on earth using latitude and longitude**

* Longitude/Latitude

Projected coordinate system

**Flat two dimensional representation of earth, it uses linear units of measure for coordinates so that calculations of distance and area can easily be done.**

* Northing/Easting
* Universal Transverse Mercator (UTM)
  + Lansing is in UTM 16N or (more specifically) 16T

Datum

**It is essentially a model of the earth that is used when mapping, datum is made up of a series of numbers that define the shape and size of the ellipsoid and it’s orientation in space.**

**Group 2:**

* Fill out the definitions.
* Answer the following in the same file as the definitions:
  + Why do we need to use different datums?
  + **We need different Datum’s because we need the correct numbers that correspond to the area we want to map**
  + What is a false northing/easting? Why is this used?
  + **False northing/easting are linear values applied to the origin of the Y coordinates. These are used to ensure the x and Y coordinates are positive**
* Put definitions/answers in your repository and Push/Commit.
  + In the Commit message, give the file name that has the answers.

**Homework:**

* Update Zoom to newest version (5.9.7 as of 3/17/22)
* Finish Group 1 and Group 2 work
* Install all the packages in the two lesson09 script files from the FW891 repository (this is so you do not spend 30 minutes in class next week installing the packages)
* From [Git/GitHub Quick Setup](https://d2l.msu.edu/d2l/le/content/1459992/viewContent/12243559/View) lesson (D2L)
  + Add email notifications on Push for you and [belinsky@msu.edu](mailto:belinsky@msu.edu) (section 8)
  + Send a message to ***belinskyc*** using ***Issues*** (section 9)
  + Do this after you add email notifications
* Add a shapefile (or a CSV with lat/long coordinates or a KMZ/KML file)
* Commit/Push all the changes above
  + make sure your Commit Message is descriptive
  + In Commit message, talk about what the shapefile represents