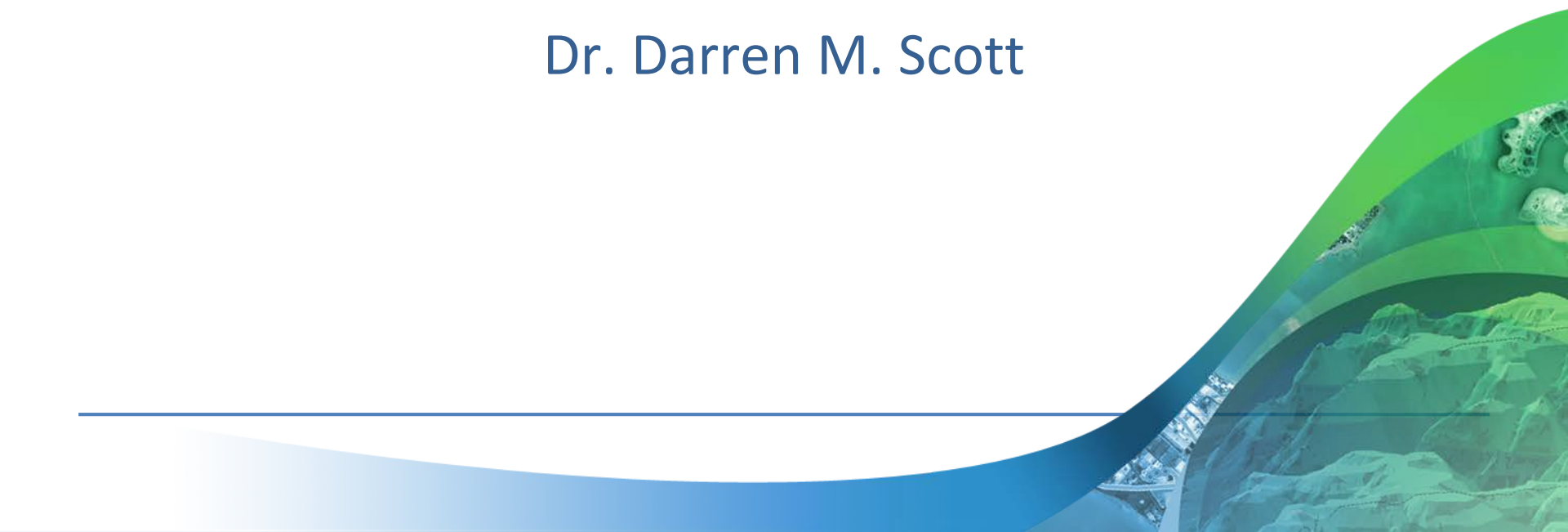
EARTH SC/ENVIR SC/GEOG 2GI3

Exercise 2: Overview

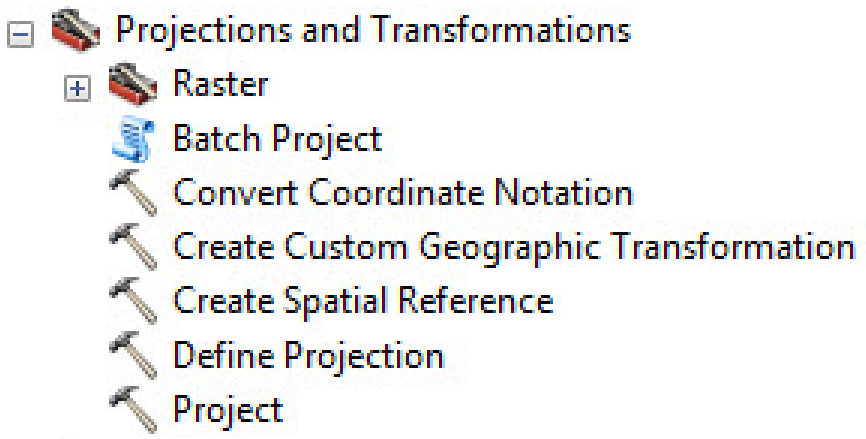
Dr. Darren M. Scott



Learning Objectives

- Understanding the ArcMap interface
- Learning how to navigate the Help system
- Working with geographic coordinate systems
- Working with projected coordinate systems
- Understand the difference between “defining” and “projecting” data

Accessing the Projection Tools

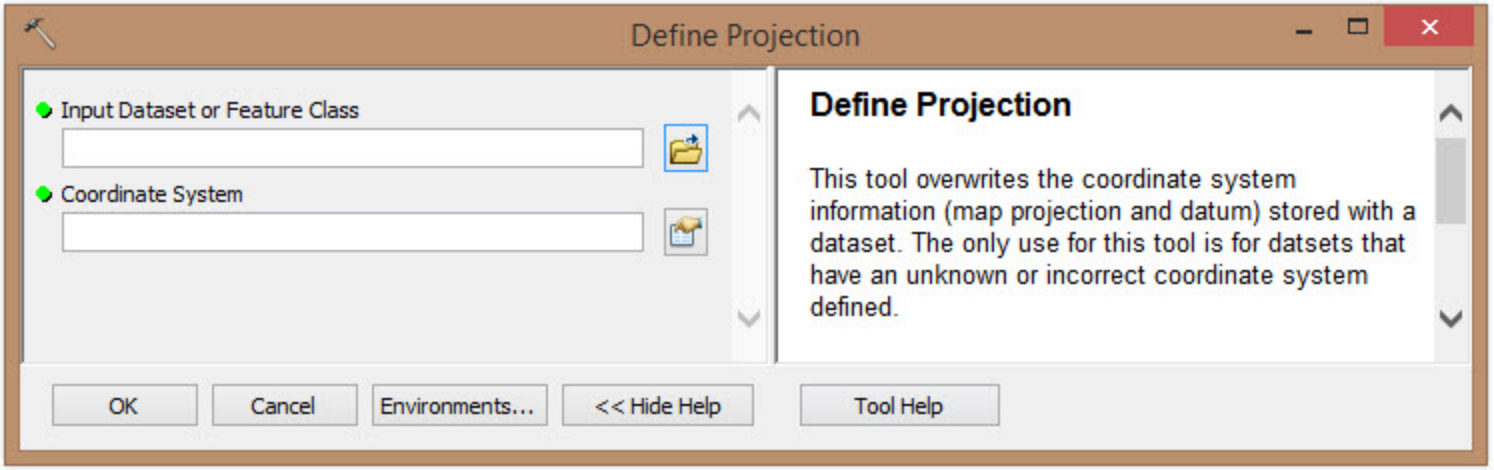


Defining and Projecting Data (1)

- You should use “Define Projection” when your data set is missing a coordinate system (i.e., spatial reference)
  - ArcGIS will tell you if a spatial reference is missing when you try to load your data set

Defining and Projecting Data (2)

Define Projection Tool

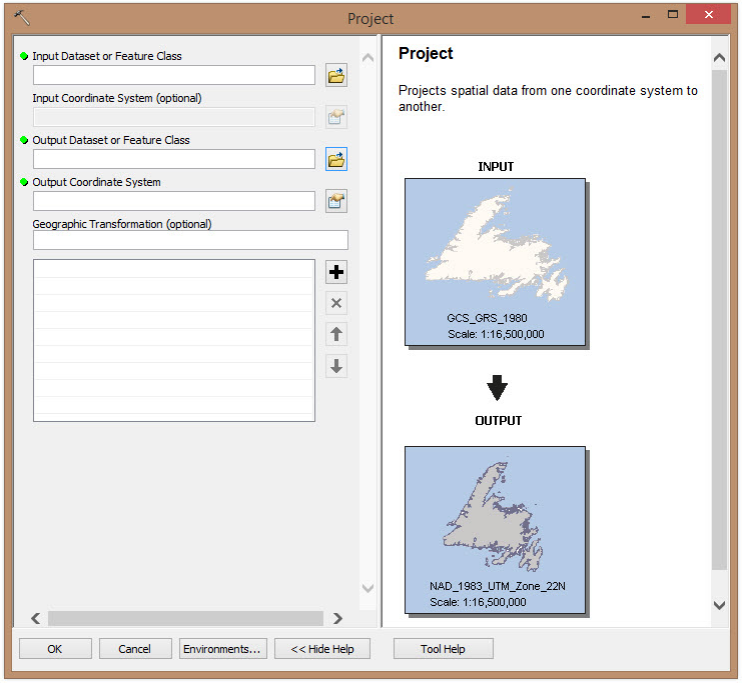


Defining and Projecting Data (3)

- Geographic Coordinate System (GCS)
  - A GCS has spherical coordinates (longitude, latitude), a Prime Meridian, and a datum
- Projected Coordinate System (PCS)
  - A PCS has linear coordinates (X, Y coordinates measured in linear units such as meters and feet) measured from a known origin

Defining and Projecting Data (4)

- Project Tool
  - Can only be used when data have a coordinate system (either GCS or PCS)
  - Purpose is to CHANGE from one system to another
  - Changes the geometry of the features, creating a new dataset
  - This is what we mean by “hard projection”



Defining and Projecting Data (5)

- Soft vs. hard projection
  - When you load a data set into a data frame for the first time and it contains a coordinate system, the data frame adopts that system
  - If you load a second data set that is **defined** as something different, the system changes it on the fly, to be shown in the system that has been adopted by the data frame

Style and Format Guidelines (1)

- Answers must be typed using MS Word, OpenOffice, or some other word-processing package; otherwise your grade = 0
- Style and format is worth 20% of your mark or 6 marks out of 29 for this exercise
- 1 mark is deducted for each unique mistake

Style and Format Guidelines (2)

- To avoid losing marks, ensure the following:
  - Title page contains the exercise number and name (Exercise 2: Projections and Coordinate Systems), your name and lab section, submission date, and your TA's name
  - Staple your submission in the upper left-hand corner
  - Use 12 point font
  - Use 1.5 spacing between lines
  - Use 1 inch borders
  - Pages must be numbered in the bottom right-hand corner
  - Correct all spelling and grammatical mistakes
  - Do not use ink or pen on the submission