# *Demo 01: Loading Data*

The goal of this first exercise is simply to give you an overview of the ArcGIS software suite. We will load and experiment with both vector and raster data.

I. First, we must prepare the sample data

    a. Download the data for this exercise from the website

        1. It is a file called **Demo01_Data.zip**

    b. At this point, you probably want to think about how you plan to organize your files. GIS databases can get very complicated and if you can not find your data, it may as well not exist. So, before we begin, just a few suggestions.

        1. I would recommend creating a GIS folder in the base directory of a permanent location

            i. For Notre Dame students, your N: drive works well

        2. Within this, you should create a new, clearly labeled folder each week (Week02_Raster, Week03_Vector, etc).

        3. Avoid spaces in file and folder names if you can. There are occasionally older tools in ArcGIS that do not deal with spaces or long filenames very well.

        4. When you download the example data for each week, I would extract it to a folder called Demo within that week's folder.

        5. Then, when you do the assignment try to keep the data for your park separate.

        6. Be clear in the names of your assignment files, you well need to use outputs from early Labs much later in the semester. It will be a lot easier to figure out "PotatoCreek_ASTER_Clip.tif" than "TrialClip05.tif"

    c. The **Demo01_Data.zip** file can be found in the Week02 section of Sakai.

    d. Extract the archived files from Demo01_Data.zip

        1. You should either double click on the file and drag the contents to the folder where you want it
        2. Or, right click on it and choose Extract.
        3. This should leave you with many small files
            i. Each batch of files with the same name is part of one ArcGIS dataset. We will deal with the specifics later

    e. Now it is time to load up ArcGIS so we can look at these data.

        1. Find the ArcMap shortcut in the start menu and start the program.

        2. ArcMap is the main 2d data viewer for the ArcGIS suite.

        3. At first, a window will popup asking you if you want to load a new map.

            i. Double-Click on the Blank Map icon

        4. When it loads, you should see a window split into two main sections.

            i. The smaller window on the left is the Table of Contents. It shows all of the layers that are currently in your view.
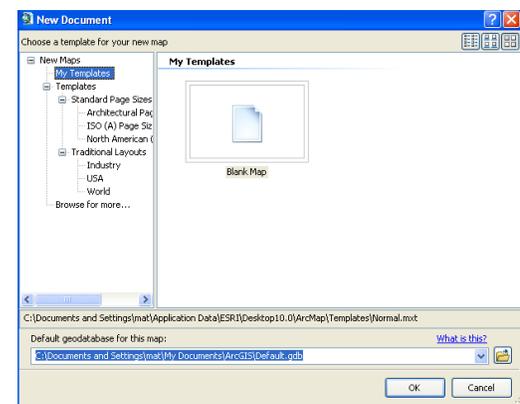
      ii.   The larger main window is the viewer. It should currently be blank because we have not added any data.

  f. Now we should add the data from **Demo01_Data.zip**.

    1. ArcGIS is a little weird about adding data. You first have to map a connection to the folder. There are two ways we can do this.

      i.   First, you can Add Data directly from within ArcMap by clicking the button with a plus in   a yellow diamond :

      ii. This will bring up the Add Data window.

      iii. In this window, click on the icon of a folder with a plus sign:

      iv. This will let you map to a particular folder that will then always be present in your folders list (unless, of course, you delete it).

      v. I would recommend choosing the root folder (something like H:\) and not the specific folder you put the data in. This will let you navigate more easily later.
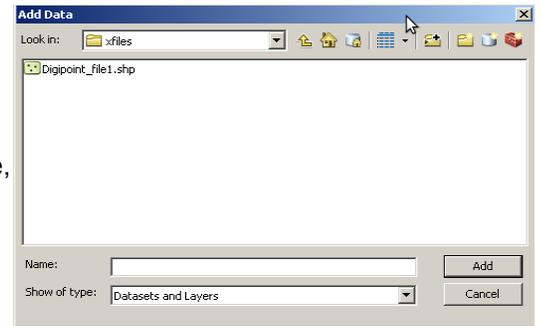
    2. Second, you can use ArcCatalog, the file management part of ArcGIS

      i.   To the far right of your ArcMap window you should see a button that says Catalog

      ii. This will let you access the file system

         a. You will still have to map you your folder if you have not already

      iii. From here, you can drag data layers into the Table of Contents

         a. This is also where you create new files, which we will do a bit later in the semester
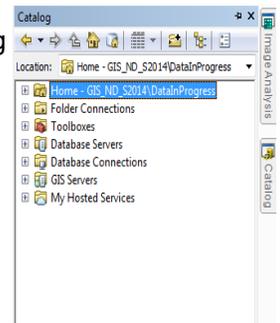
II. Basic ArcMap Skills

  a. You will navigate around the map by experimenting with the zoom and navigation tools:

    1. Adjust the scale of the view with the Zoom In and Zoom Out tools.

    2. Zoom in at a fixed increment with the other two zooming tools (and   ).

    3. To zoom out to a scale that encompasses all of the data in the map, click Zoom to Full Extent   .

    4. To zoom out to the full extent of a single layer, right-click that layer's name and choose Zoom to Layer.

    5. To return to the previous view, click Return to Previous Extent   .

    6. Define a scale by manually entering it into the Scale box `1:53,561,939` .

  b. You can turn layers on and off via the check-boxes.

  c. The details of the layer can be hidden with the "minus in a box" symbol.

  d. You can drag and drop the layers to control which is on top. Note that some layers can be hidden by others. Move the layers to match the image on the right.

    1. Layers appear in the map in the same order that they appear in the Table of Contents (left side of the window).

    2. Move IN_Places so it is below NLCD2000_Landsat_Bands1-4.tif

      i.   This layer is no longer visible because it is beneath another layer.

      ii. Move IN_Places so that it is back on top

    3. In general, you will want to display polyline and point layers above polygons.
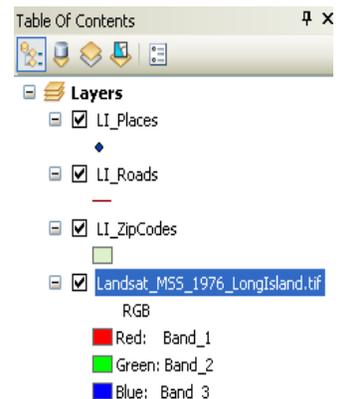
III. Saving files

  a. ArcGIS is a little odd about how it saves files as well. When you choose the save button at the top of the screen, all it will do is save your map document.

1. The map document (*.mxd) is just a list of links to data layers and how to display them.

2. IT DOES NOT ACTUALY SAVE THE DATA

3. So, you should always be very careful that you have made a local copy of anything created as temporary (which unfortunately, will often be the default)

   The process of creating copies is outlined in section 4.b.3.ii.5 above.