GIS Lab #1: ArcGIS tutorial

Thanks to Mark Helper of Texas University and to Phil Hurvitz of Washington University

Objective:

To become familiar with the following:

- ArcGIS modules basic functionality and user interface
- Data display
- Basic cartography

And to provide the background necessary for future lab exercises.

Data

ArcGIS_lab01_data/Forest/ [Streams, Roads, Stands, Boundary, Culverts]

File and Folder Naming Conventions

Most of the GIS software we will use was recently redesigned to operate seamlessly within Microsoft Windows. In theory, file/folder names should thus obey Windows rules, with nearly any name (except those using special characters like back- and forward-slashes, periods, asterices, etc.) allowed. In practice, some of the software (i.e. some tools within ArcToolbox) still demands file and folder names that adhere to older DOS naming conventions. It is thus good practice to avoid names that contain spaces (e.g. a folder called "My Documents" should not be used but a folded called My_Documents is OK) or that are longer than 13 characters. Use an underscore or hyphen instead of a space, e.g. "file_1.txt" or "file-1.txt" is acceptable; "file 1.txt" is not. The older DOS "8.3" convention required file names that were limited to 8 characters, followed by a period and a 3 character extension that denotes the file type. This is still the safest way to name files and folders when using this software; however few of us still adhere to it.

All Windows software automatically adds a three character extension to a file name when a file is saved, though you may not see it when browsing with Windows Explorer unless you turn off "Hide file extensions for known file types" in the folder options. You should configure all folders to view file extensions.

Procedures

1. **About ArcCatalog**
    a. **Starting ArcCatalog**
    b. **What's in ArcCatalog**

       c. How data are represented
       d. Connecting to data
       e. What can be done in ArcCatalog
           i. Finding data in ArcCatalog
           ii. Managing your data
  2. About ArcToolbox
       a. Starting ArcToolbox
       b. What is in ArcToolbox
  3. About ArcMap
       a. Starting ArcMap
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       c. What is in ArcMap
       d. Symbology and data appearance
       e. Display
       f. Bookmark and magnifier
       g. Cartography
       h. Export map
  4. Using ArcPublisher and ArcReader
  5. Explore ArcScene
  6. Explore ArcGlobe
  7. Conclusion

1. ArcCatalog

1-1 Introduction to ArcCatalog

ArcCatalog is the ArcGIS module used for organizing, browsing, and managing your data and map files, as well as for viewing and editing metadata (data about the data). In many ways, ArcCatalog is similar to Windows Explorer. For instance, when you modify a file's location, or create or delete a file, you do not need to save the changes -- it is done automatically. Since it is easy to delete files this way, you should be careful to delete only when you are sure that you will not need the file any longer.

1-2 Starting ArcCatalog

Start ArcCatalog by clicking the **start** button and navigate to All Programs -> ArcGIS -> ArcCatalog.

1-3 What is in ArcCatalog?

ArcCatalog is similar in structure to Windows Explorer -- on the left-hand side is a view of the Catalog "tree" showing how data are organized. The right hand side provides options for exploring the contents of the data shown in the Catalog tree. You will notice

that there are different icons used to represent the folders and their contents. When ArcCatalog starts, it automatically looks for folders containing spatial data.
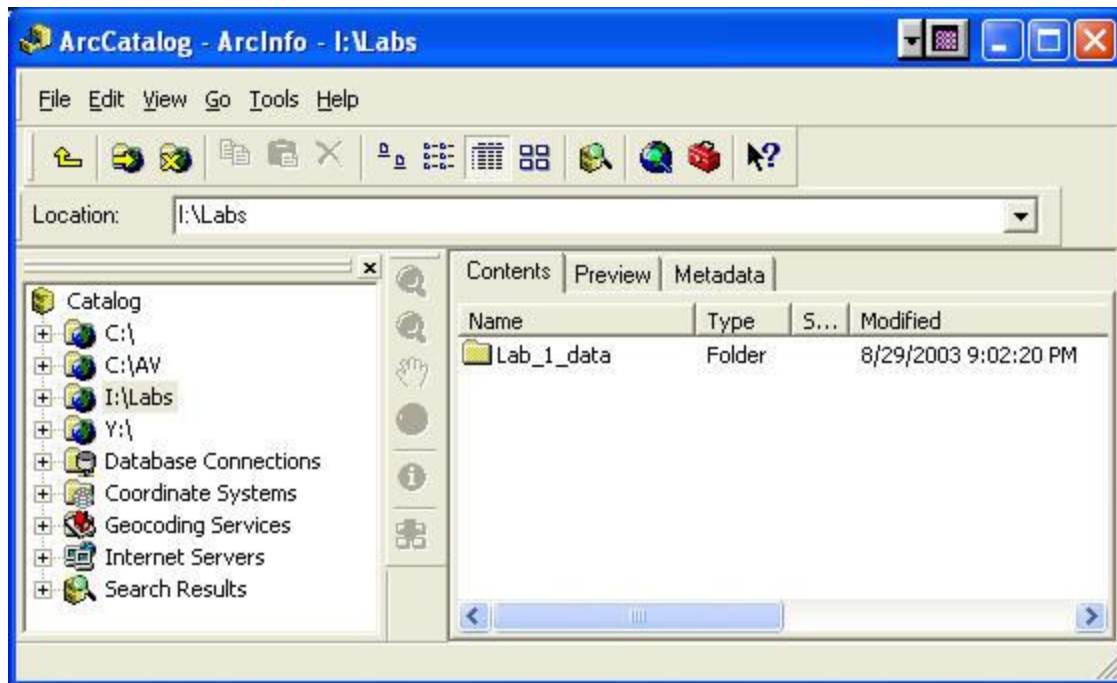
If spatial data are found somewhere within a folder, an icon with a globe is used to represent this (such as is seen in C:\, I:\ and Y:\ of the above image -- your ArcCatalog window will likely show different items in the catalog).

If no spatial data are found, a regular folder icon is used. There are also icons for Database Connections, Geocoding Services, Internet Servers, and Search Results (not discussed at this time). Outside of the area for exploring the catalog folders and their contents, there are several menus and toolbars. We will explore a number of these in this lab, however we will not examine all of them. Other toolbars can be displayed, or the ones shown turned off, by using the "Customize..." option under the Tools menu at the top of the ArcCatalog window. It functions exactly like that of Microsoft Office software, only the tools are different.

To determine what a particular tool does, hold your cursor over the button for several seconds. A tip will appear telling the function associated with the tool, and a more informative description will appear on the bottom of the ArcCatalog window -- if you hold your cursor over the upward pointing arrow (the first button directly under 'File'), you will see a note reading 'Up One Level,' and the bottom of the window will read 'Go to the next level up in the catalog tree' (the ArcCatalog window must be the active window for this to work).

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1-4 the various symbols-icons of ArcGIS

The following is a list of several icon types that you may encounter while working with ArcGIS. This list is not comprehensive, but does cover the basics. For a more complete listing, see "Exploring our World" in the digital books folder

🌐	Folder connection containing geographic data (Workspace)	▦	Grid data	📄	Map document file
🛢	Geodatabase	📁	Folder containing no geographic data	🌐	Folder containing geographic data - inside a Workspace (second level)
🔲	Geodatabase feature dataset				
▨	Geodatabase feature class - Polygon	🔳	Coverage - Polygon	▨	Shapefile - Polygon
⊞	Geodatabase feature class - Arc	🔳	Coverage - Arc	⊞	Shapefile - Arc
⊡	Geodatabase feature class - Point	🔳	Coverage - Point	⊡	Shapefile - Point
Ⓐ	Geodatabase feature class - Annotation				

To connect to your data, click on the "Connect to Folder" button. 🗂

Navigate to the folder containing your data for this lab- in this example C:\temp1\GIS_F2011\Lab_data\ArcGIS_lab01_02_04_06_data. Select the folder (it will be highlighted in blue), and then click "OK".
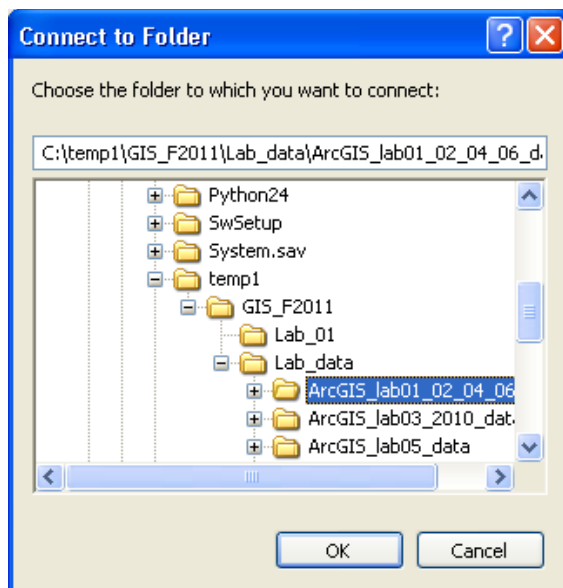
A direct connection to your data folder will now appear in the Catalog tree.

Try this out again by connecting to a flash drive, and/or a folder within the class folder..

1-5 What can I do in ArcCatalog?

For organizing data, ArcCatalog is quite easy to use. However, if you delete, move, or otherwise alter the data using ArcCatalog, it is permanent (i.e., if you delete a coverage, it is GONE - you can not retrieve it; you will not be able to delete data from the class folder, however, because it is write-protected).   Data organizing in ArcCatalog is very similar to that in Windows Explorer - you can drag and drop coverages, shapefiles, or geodatabases into new workspaces, or you can use the Windows shortcut keys (Ctrl-X and Ctrl-V).

Try this out by copying and pasting your lab data into a new folder. (Delete the new folder when done.)

Browsing through your data is simple using ArcCatalog - the Catalog tree displays in a hierarchical fashion all of the items in the Catalog - much like how data browsing is done through programs such as "Windows Explorer." A folder that contains files will have a box with a plus or minus sign to the left of the file name. This indicates whether or not the folder has been expanded.

Take a moment or two to explore the data in the Catalog tree - you can use the arrow buttons on your keyboard, or your mouse to navigate. While navigating, pay attention to the changes that take place on the right hand side of the ArcCatalog window.

| Contents | Preview | Metadata |
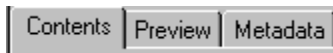
1-5-1 Finding data in ArcCatalog
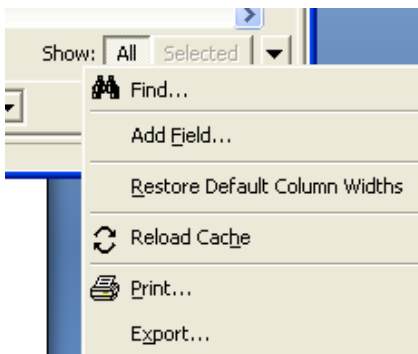
When previewing tabular data in ArcCatalog, it is possible to search for specific entries in the table. To do this, choose a data file, click the Preview tab, open to the table view, and click on the Options button or the downward arrow head (to see this button, which is on the far lower right side of the window, expand the ArcCatalog window to full screen), then Find.

Clicking on the Find option will open the Find window,

where you can enter a text string to search for. You can search down the attribute list, up the attribute list, or search all of the attribute list.

Once the first match has been found, you can look for further matches by clicking on the 'Find Next' button.

As well as finding data, you can also add fields to the table, reload the table to view recent changes, or export the table as a .dbf file (a format readable by many spreadsheet programs, including Microsoft Excel)

1-5-2 Managing your data

Managing your data is also done in ArcCatalog. You can examine and/or modify the properties of your data simply by right-clicking on a coverage, shapefile, layer or geodatabase feature class/dataset in the Catalog tree and selecting "Properties". Different file types have different Properties windows.

Question 1:

What is the spatial reference for stands?

2. ArcToolbox

2-1 Introduction to ArcToolbox

ArcToolbox is the ArcGIS module for data processing, analysis, and conversion. ArcToolbox also provides an option for the user to write scripts and create customized data processing/analysis/conversion tools.

2-2 Starting ArcToolbox

To start ArcToolbox, you can either open it through the Start menu or through ArcCatalog. From the start menu, you can click on the Start button and navigate to All Programs -> ArcGIS -> ArcToolbox. Or, from ArcCatalog, you can click on the icon.

2-3 What is in ArcToolbox?

As you can see when looking at ArcToolbox, it provides tools for "geoprocessing" - Data Management, Analysis, and Conversion. Let's explore the organization of ArcToolbox a bit more:

ArcToolbox is organized in a fashion similar to the catalog tree in ArcCatalog. By clicking on the + next to a toolbox heading (Data Management Tools, Analysis Tools, etc.) you can open that toolbox to view its tools. In the figure below, the "Analysis Tools" toolbox is open to show the "Extract" tools.
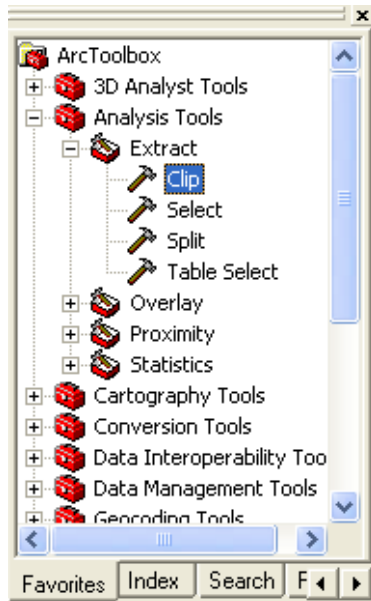
To use a tool, double-click on the icon for the tool. Doing so brings up a "wizard" window that provides brief explanations of the fields where you will enter information. It also contains a "Help" button that takes you to a full explanation of the tool. We will have many occasions to use tools within some of the toolboxes, beginning with Data Management Tools for projection and transformation.

As stated above, one of the principle differences among the three licensing levels of ArcGIS (ArcView, ArcEditor, ArcInfo) is the type and number of tools available in ArcToolbox. Our ArcInfo software license includes every tool available.

With so many tools available, searching for the right tool by simply looking in each tool box becomes onerous. A better approach is to instead use "Search" window described above, but with the "Tools" option instead of the "Data" option used before.

Take a few minutes to explore the toolbox and the "geoprocessing" options provided. Few will make sense to you now, but you will at least get a feel for their vast numbers.

Question 2:

Use the Search window to find a list of "projection" tools (use "projection" as the keyword).

a.) What toolbox contains the "Define Projection" tool?

Open the Define Projection tool wizard window.

b.) What does the Define Projection tool do?

3. ArcMap

3-1 Introduction to ArcMap

ArcMap is the ArcGIS module for creating, viewing, querying, editing, composing, and publishing maps.

3-2 Starting ArcMap

Similar to ArcToolbox, ArcMap can be opened via the Start menu (Start -> All Programs -> ArcGIS -> ArcMap) or from ArcCatalog (click on the 🌐 ArcMap icon). In addition, you can open ArcMap by double clicking on any map document file 🗺 visible in the catalog tree of ArcCatalog.

When you first start ArcMap, you may see the "Welcome to ArcMap" window - this window provides the options to 1.) Create a new empty map, 2) Create a new map using a map template, or 3) Open an existing map. This semester we will most often use options 1 and 3 (creating a new map, and opening existing maps).
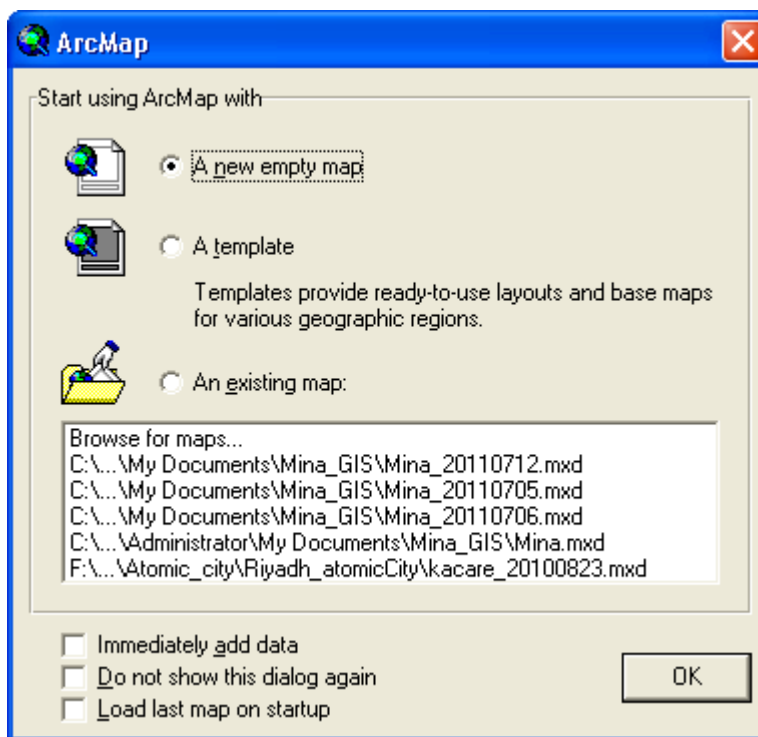
3-3 Adding data / Creating your own map

To add data to a map, there are several options:

1. Use the "Add data" button on the ArcMap toolbar 📥

2. Navigate to File -> Add data

3. The quickest method: Drag and drop data from ArcCatalog. With ArcCatalog open within ArcMap, left click and hold on the data file in the ArcCatalog tree that you want

to add to your map - hold the mouse button down, do not release the button yet. Drag the data straight from ArcCatalog to a Data or Layout View window in ArcMap, or into the TOC. Release the mouse button and the data will load into ArcMap.

Try each of these methods to add the Streams, Roads, Stands, Boundary and Culverts to your new map file. Answer OK to any warning messages that may appear.

It is helpful to use a "relative path" to your data. This will be handy if you copy your lab data folder to a local drive to work, or if you move it from one drive to another.

To set your map document to use relative path names, click on File -> Map Properties, select Data Source Options, and "Store relative path names." Click OK. Note: You will probably want to do this with ALL map files that you create in this course.

Occasionally, even if you set the map file to use relative path names you will still have problems with "broken sources." These will be indicated by a red ! next to the layer's name: ⊞ ☑! streams_arc .

To fix this problem, click on the red exclamation point and reset the source to the appropriate location by browsing to the data's location. ArcMap is somewhat smart - if you fix one broken source location, others will be fixed automatically if they too are at the same location.

Order of data layers: Depending on the order in which you added the data, your stands may be "on top" of your roads (in which case the latter would not be visible on the map). You can change this by clicking and dragging data layers "on top" of other data layers, just as you might do in Photoshop.
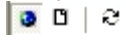
3-4 What is in ArcMap?

Before going any further, careful read and study A Quick Tour of ArcMap, an excellent summary of the basic features of ArcMap. As you do so, refer to your map document open in ArcMap.

Some important highlights:

- The top portion of the ArcMap window contains the menu and toolbars. You can change which toolbars are displayed by right-clicking on the top portion of the window (the gray part) and selecting which toolbars you need or don't need. They can be docked or undocked by dragging the left end of the toolbar.
- The left portion of ArcMap is the Table of Contents (TOC). It shows a layers icon 🗇 that denotes a Data Frame. As the name suggests, a **Data Frame** is a conceptual rectangle that encloses all of the data that are needed for a particular analysis, for a display, or for part or all of a printed map. Most of these data will occupy layers, but others may simply be database tables. Like

the files we examined in ArcCatalog, Data Frames have properties that can be explored by a right-click on the Data Frame name, or by asking for "Data Frames Properties..." beneath the View menu at the top of the window. Map documents can have more than one Data Frame, but only one at a time can be displayed or analyzed.

- There are several ways to view the TOC - Display; the topmost layers are drawn on top of the bottom-most layers. The layers can be also be viewed by source and selection (to be explained later). You can toggle between the views by selecting the appropriate icon at the bottom of the Table of Contents window.

- With the "Display" view, the TOC shows the layer name, whether or not the layer is turned on (a check in the box next to the name indicates such), and symbology for the layer (to see this, click on the + to the left of the name to expand the tree). Alternatively, the "Source" view shows the location (or "source") of the data. We generally work with the TOC in Display rather than Source mode, but Source mode is useful when trying to keep track of where data are stored, and it is needed to see stand-alone tables. A third choice, "List by Selection", provides an important way to choose which layers are available for "selection" by tools we will explore later.

- The central portion of the ArcMap window provides a view of the layers that are turned on in the TOC. Three very important small buttons in the lower left corner of the map viewing window provide a means of viewing data in "Data View" , "Layout View" or a way to refresh (redraw) the view. The left icon brings the 'data view', the middle icon brings the 'layout view' and the circular arrows redraw the map window. These buttons are easily lost among everything else, but they are extremely handy. The same functions are available under the "View" menu at the top of the ArcMap window.

- While in either Data View or Layout View, you can zoom in, out, pan, identify, select, measure etc. map data in the map viewing window by using the tools of the "Tools" toolbar:

Tools Toolbar - I like to dock this on the left side of the ArcMap window.

Zoom in and out and otherwise explore the data using the above tools. Use the Help menu for a full explanation of the Select Features and Identify Tools, two of the most useful but least intuitive tools on this toolbar.   The globe and blue arrow tools are also invaluable - they will return you to either a view of the entire data set or to the previous viewing extent. Get used to using these tools-they are far more effective and efficient than the magnifying glasses for many operations. (what about the fixed zoom in and out tools?)

Notice that as you zoom in and out, line thicknesses, labels, etc. change size. When zoomed way out, some things become nearly invisible. What controls this, and will you have to redo all the symbols every time you want to look at or print a map at a different scale? No. The answer is contained in a map "reference scale". All symbols, labels, etc. are drawn to their proper relative sizes only at an assigned "reference scale" for the map. Zooming out and in takes you away from the reference scale and symbols

appear either too small or too large. To restore the symbols to their proper relative size, either 1) return the display to the reference scale, or 2) reset the reference scale to match the scale of the display.

Both of these extremely important functions are accessible by a right-click on the Data Frame name

3-5 Symbology and data appearance:

In ArcMap, to view the properties of a data layer, double click on the data layer's name. This will take you to the very important Layer Properties window. Note: The ArcMap Layer Properties window will provide different information than was found in the ArcCatalog Properties window.

You can also do this by right clicking on the data layer and selecting the Properties option. From the properties window you can view and modify numerous properties of a dataset - including the layer's transparency, labeling options, symbology, and source. This lab will only cover a few of the options (display, symbology), but you will want to take a few moments to familiarize yourself with some of the other tabs in the properties window.

Symbology: Under the symbology tab are the options for how data are symbolized. From here you can decide to display the data as Features (single symbol), Categories (unique values, unique values many fields, or match to symbols in a field), Quantities (graduated colors, graduated symbols, proportional symbols), or Multiple attributes (quantity by category). You can also decide what color(s) and symbol(s) to use to represent the data.
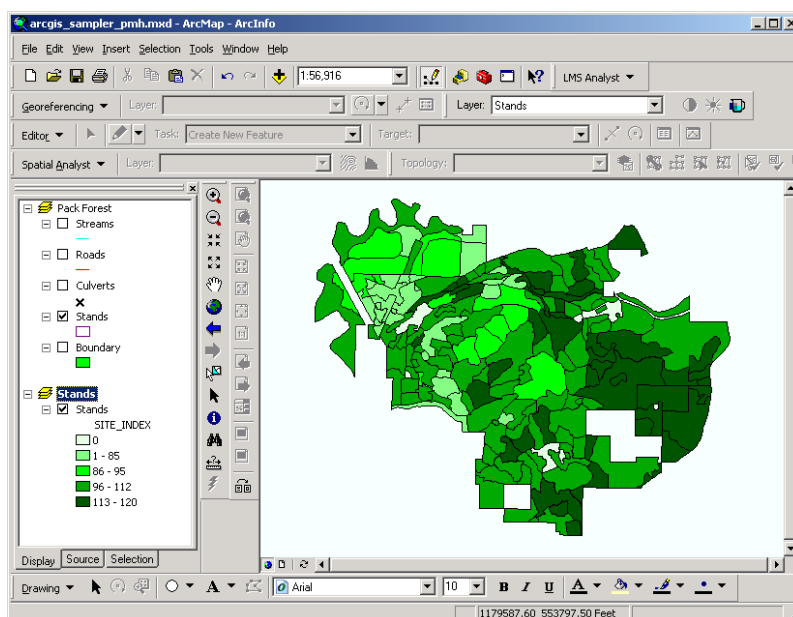
3-6 Display

An important feature of Layer Properties is a Display tab that allows the option to set transparency. This allows for a layer to be seen through another layer. For lab this week, this is not a critical feature, but we will find it very useful in coming labs. To explore this, we'll make the stands layer partly transparent.

Open the properties window for this layer and select the Display tab. Under " % Transparent" enter 75 and click OK. This noticeably dims the stands and their boundaries, making the culverts more visible for display. Try it and see.

This is a very cursory introduction to cartography (producing a map); your skills in this area should improve throughout the semester as you get feedback on your maps. Among many good web sources, the ESRI Mapping Center is a good place to start for information on making great maps with ArcInfo. See particularly the Maps pages for nice examples and techniques to emulate.

3-7 Bookmark and magnifier

When you have zoomed to an area of interest, you can set a spatial bookmark. A spatial bookmark will allow you to zoom to exactly the same area whenever you want. To set the bookmark, select View -> Bookmarks -> Create. To return to a bookmarked view, select the bookmark from the list you create under View->Bookmarks.

"Overview" and "Magnifier" window are available under the Window menu. Try them; they're very cool and self explanatory.

3-8 Create a layout

Layout View gives a what-you-see-is-what-you-get preview of a printed page. A page, its margins, a set of rulers and the Data Frame layers that are turned on are shown. The size of the page that is displayed, landscape vs. portrait mode, etc. are set under the File ->Page Setup menu. We will explore Page Setup properties during a later lab - for this lab you leave them alone. The actual Data Frame is visible by clicking on the map, which brings up a dashed box with blue vertices that can be used to enlarge or reduce the size of the Data Frame. Try it and see.

In a map layout, you can place graphical elements containing views, graphs, tables, images, and graphical primitives on a page. The layout can then be sent to a printer or plotter, or saved as a graphics file. This step in the exercise will create a simple map from the site index view.

Click the Layout View button [icon] at the lower left of the map display. This will change from data view to layout view.

A somewhat confusing aspect of Layout View is a new set of tools on a Layout Toolbar, shown below. While these tools superficially appear to perform nearly identical functions to those of the Tools Toolbar, they do not.

The key thing to remember about these tools is that they operate on the page itself, not the Data Frame. For example, zooming with the magnifier tool of the Tools toolbar will change the map scale (displayed near the top of the ArcMap Window), whereas zooming with the magnifier on the Layout toolbar simply gives you a closer look at what is on the page.

Question 3

Explain what the "Zoom to 100%" and "Zoom Whole Page" tools do.

While in Layout View, to insert a title, legend, neatline, etc. on your map, use the Insert menu and select the object that you would like to add. Experiment with adding information to your map - try adding a title, legend, scalebar, north arrow, and your name. The drawing tools at the bottom of the window can also be used to insert text, draw and fill boxes, polygons, etc, and to format text. You may want to use this map file later in the lab, so save your changes. Do so with a new file name in your Lab_01 folder.

3-9 (VERY) Basic principles of cartography

1. Data in maps:
    a. The data should take up a majority of the area; avoid excess white space.
    b. Inclusion of unnecessary data should be avoided; simpler is better.
    c. Bright, flashy colors such as red should not be used unless you specifically need to do so.
2. Titles:
    a. Should usually be in upper case.
    b. Should not be sentences, but should be simple and to the point. For maps, a title should contain the subject of the map (e.g. Soil Map of ....) AND the location (...Jeddah)
    c. Should not be the focal point of your map.
    d. Should almost always be black or dark text.

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      e. Should be placed in a location on the map so as to not obstruct any other portion of the map.

3. Scale bars:
   a. NEVER have a scale bar that extends all the way across a page. Scale bars should not be the focal point of the map, they are for reference only.
   b. Scale bars should use appropriate measurement systems. Example: km for Jeddah city, meters for the KAU campus.
   c. Use intervals that make sense. Units of 2,5,10, 20 are common. For example, do not use intervals of 23.4, or even 23. Note that the ESRI default scale bar properties allow the interval values to change when the scale bar is lengthened or shortened. You will always want to change this default so that the interval is fixed to avoid awkward interval values. The default scale bars are also (IMHO) too thick and use characters that are too large.

4. Borders:
   a. Maps need borders, they should usually be black.
   b. Borders are known as "neat lines."
   c. Neat lines should not detract from the focus of the map, i.e. overly thick or dark.

5. North Arrows:
   a. Should be unobtrusive.
   b. Are unnecessary and misleading on maps of large areas at small scales, i.e. where lines of longitude would show noticeable curvature.
   c. The default size of the ESRI default north arrows are universally too large - scale them down on your maps. Likewise, the original intent of map north arrows was not decorative; they were the practical means of precisely orienting a map! Some of us still use them that way...

6. Legends:
   a. Legends should be unobtrusive
   b. Legends should only show features that are not labeled on the map or aren't obvious from universally recognized symbols.

7. Text on Map:
   a. Text should NEVER cross other text or other features of the SAME color.
   b. Labels for natural features such as streams, lakes etc. should be in italics.
   c. Text should be legible! Save or print your final product at the reference scale of the map so that all symbols and text are properly scaled.

8. Name on Map:
   a. Unless the map is being published, names should be kept outside of the neat line. For this class your name can go above the neat line in the upper right corner.

9. White Space:
   a. Do not waste space. Try to find the balance between too much white space, and cluttered data.

3-10 Export map…

4. ArcPublisher and ArcReader

4-1 what is Arcpublisher

ArcPublisher (ArcGIS Publisher) is an extension of ArcMap. It can be used to publish completed maps as published map files (.pmf). These files are easy to transport and distribute. They can be emailed or posted on the internet for view by individuals who have ArcReader. Despite these files being produced in ArcMap, a license to that program is not necessary for viewing them. The primary benefit of ArcPublisher is that maps can be made more accessible and easily available to a potential audience that may not have ArcMap.

4-2 Using ArcPublisher (Publishing a Map)

Open the completed map that is to be published in ArcMap.

Turn on the Publisher Toolbar:

 a. click View on the Menu Bar

 b. choose Toolbars

 c. click/check Publisher

Turn on the Publisher extension:

 a. click Tools on the Menu Bar

 b. choose Extensions…

 c. check the box next to Publisher

 d. click the Close button the close the Extensions window

To change the settings for the map:

 a. click the Publish button on the Toolbar

 b. choose Settings…

c. click each tab to view the various setting options. (most of these limit the viewing abilities of the viewer.
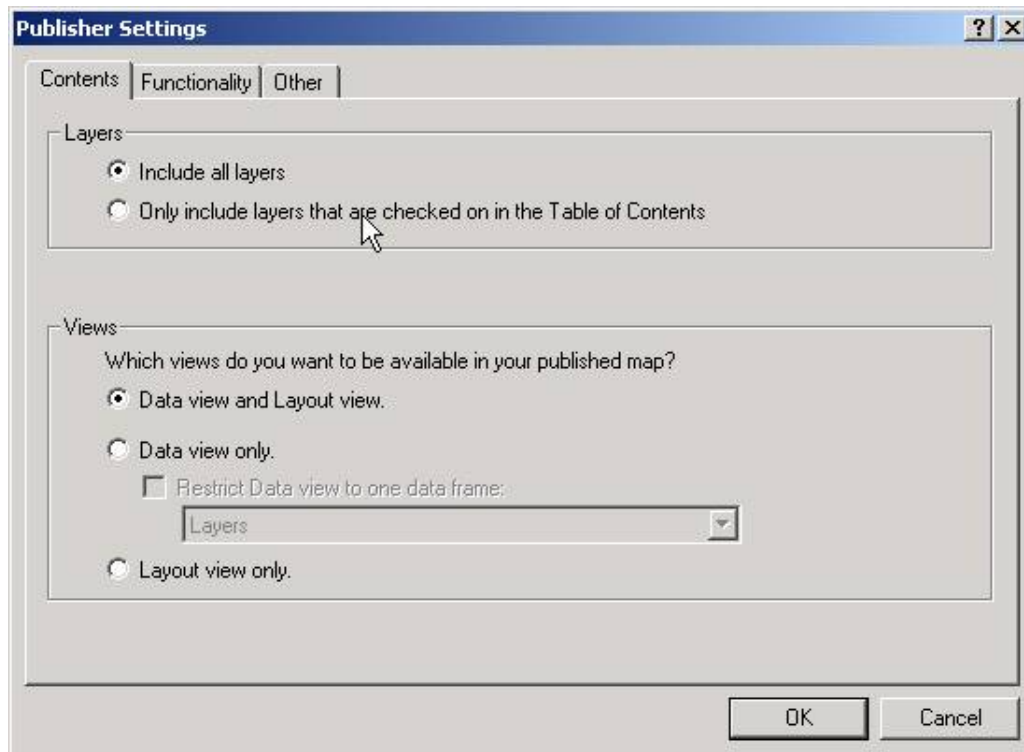
To publish the map:

a. click the Publish Map button

b. choose a location and filename for the .pmf that will be created

Note: If you want to put this published map online for download you also need to have the data contained within it (i.e. layers) be available online also. The Published Map File is similar to a .mxd file in that it only saves pathways to the data portrayed in it. One way to make the map viewable without having the viewer download all related files is to host the required data online and create pathways in the map file that lead to the online data.

4-1 what is ArcReader

ArcReader is a free program available from ESRI for viewing published map files (.pmf) from ArcMap/ArcPublisher. ArcReader allows the viewer to turn on and off layers of a map as well as some other basic functions (measuring distances, print, etc.). However, maps cannot be edited (colors changed,

etc.) in this program. ArcMap also allows access to The Geography Network website to search and download a variety of free maps (as .pmf).

4-2 Using ArcReader

a) Locate the file to be viewed.

 (if the file is on the internet, after clicking the link you are given the option to Open or Save the file. Either option is acceptable. If you chose to Open the file, you do not need the next step because it will have opened ArcReader.)

b) Double-click or right-click/open the .pmf to be viewed. ArcReader will start and the map will be open in the viewing window. (If ArcReader is not installed on the machine being used, it can be downloaded for free from the ESRI website:

 http://www.esri.com/software/arcgis/arcreader/download.html)

* ArcReader functions much like ArcMap. The layers can be turned on and off by checking and un-checking the corresponding boxes in the table of contents. The buttons/icons for the tools that are present are the same as the ones in ArcMap (i.e. measuring, views, and zoom).

5. Explore ArcScene

5-1 what is ArcScene

 ArcScene is a map display similar to ArcMap that is customized for displaying 3-D data.

ArcScene requires ArcGIS Desktop and the extension 3D Analyst. In ArcScene, the entire three-dimentional scene is loaded into memory so there is a limit as to how large the 3D scene can become. ArcScene has memory limitations, so it can only be used to view smaller 3D scenes.

5-2 Starting an ArcScene Session

You can start ArcScene session in the same way as an ArcMap session:

Start>all programs>ArcGIS>arcScene, Or

View>toolbars>3D analyst and hitting the ArcScene symbol:

We will cover ArcScene in details in the 3D lesson.

6. Explore ArcGlobe

6-1 what is ArcGlobe

ArcGlobe is a 3D visualization application that allows you to view large amounts of GIS data on a globe surface.

ArcGlobe provides a new and unique way to view and analyze your GIS data. Spatially referenced data is placed on a 3D globe surface, displayed in its true geodetic location.

ArcGlobe also requires ArcGIS Desktop and the extension 3D Analyst. ArcGlobe only loads the current view into memory, so ArcGlobe supports loading large amounts of data and multiple areas onto one globe. ArcGlobe has a single elevation surface and requires data to project it correctly on the globe. ArcScene is more flexible in these areas and is better suited for underground visualization.

6-2 Starting an ArcGlobe Session

You can start ArcGlobe session in the same way as an ArcMap session:

Start>all programs>ArcGIS>ArcGlobe , Or

View>toolbars>3D analyst and hitting the ArcGlobe symbol:

We will cover ArcGlobe in details in the 3D lesson.

7- Conclusion

In this lab, the basic functions of ArcGIS's modules were explored. You may not yet feel comfortable navigating the software, but you will. True mastery (if there is such a thing) comes only with prolonged practice. Keep at it - spend as much time as possible working with the software.

As with any new software, these basics do not come close to being comprehensive - to really grasp the software, you will need to spend quite a bit of time just exploring, trying out different functions, seeing what works (and what doesn't), and just clicking on buttons, menus, bits of data, and especially the help files. Don't be afraid to explore. You can always Exit and start over.