

Hands On Session

View Data in ArcMap

Ocean Teacher Global Academy (OTGA)
Training Course on
'Marine GIS for Operational Oceanography'
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ITCOcean



IODE International Oceanographic
Data and Information
Exchange

What is ArcGIS?

ArcGIS is a family of software products from GIS Industry leader



ArcGIS

[ArcGIS](#) is a complete system for designing and managing solutions through the application of geographic knowledge.

- [ArcGIS for Desktop](#)
- [ArcGIS for Mobile](#)
- [ArcGIS for Server](#)
- [ArcGIS Online](#)

[What's New in ArcGIS 10 »](#)

Data

[Esri data](#) provides a range of ready-to-use, high-quality data for your GIS visualization and analysis projects.

- [Basemaps](#)
- [Imagery Data](#)
- [Demographic, Consumer, and Business Data](#)
- [Free Data](#)

Developer Tools

[Developer tools](#) allow you to add mapping to your web, mobile, and desktop applications using a choice of languages.

- [Esri Developer Network](#)
- [Mobile Runtime SDKs](#)
- [Web APIs](#)

ArcGIS for Desktop License Levels

Basic/ ArcView

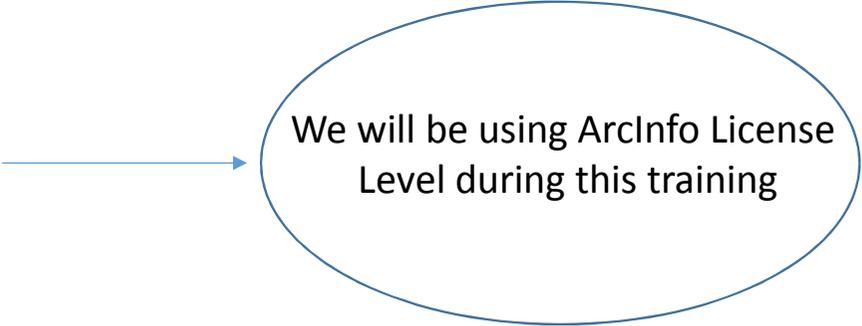
- Map Creation
- Interactive Visualization

Standard/ ArcEditor

- Multiuser Editing
- Advanced Data Management

Advanced/ ArcInfo

- Advanced Analysis
- High-End Cartography
- Extensive Database Management



We will be using ArcInfo License Level during this training

ArcGIS for Desktop Extensions

Analysis

- 3D Analyst
- Geostatistical Analyst
- Network Analyst
- Schematics
- Spatial Analyst
- Tracking Analyst
- Business Analyst
- Publisher
- Workflow Manager
- ArcScan
- Maplex

Productivity

- Data Interoperability
- Data Reviewer

ArcGIS for Desktop Components

ArcMap

- Symbolize and query data
- Create map layouts



This session will focus
on ArcMap

ArcCatalog

- Organize files and metadata

ArcToolbox

- Manipulate data

ArcGlobe and ArcScene

- Visualize 3D data

ArcReader

- Distribute maps

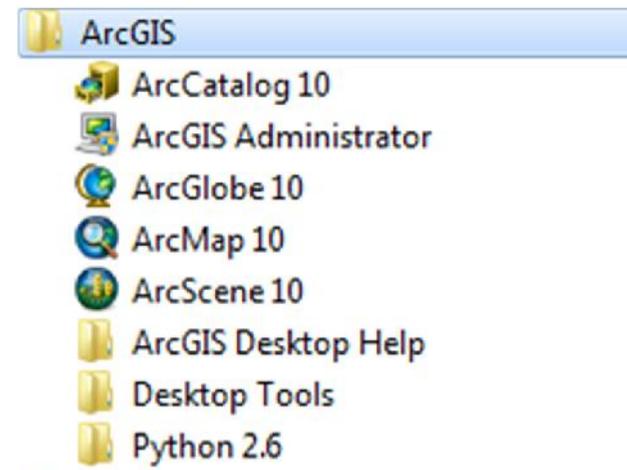
ArcGIS for Desktop Components

- ArcGIS Desktop application suite:

- ArcMap
- ArcCatalog
- ArcScene
- ArcGlobe

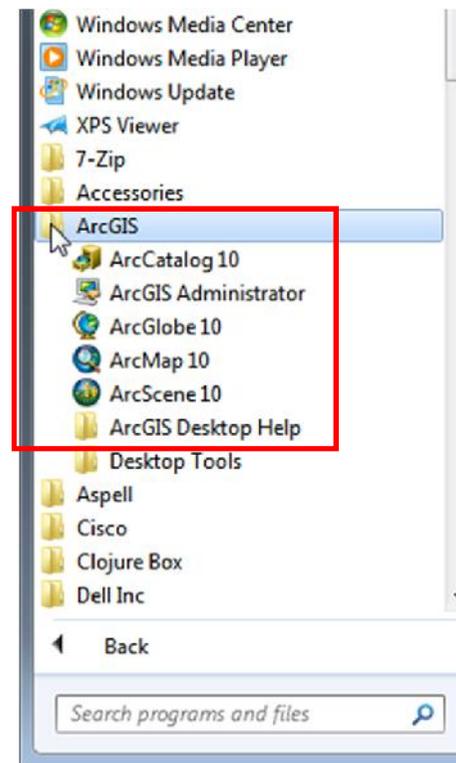
- Other components include

- ArcToolbox and ModelBuilder
- ArcGIS Administrator



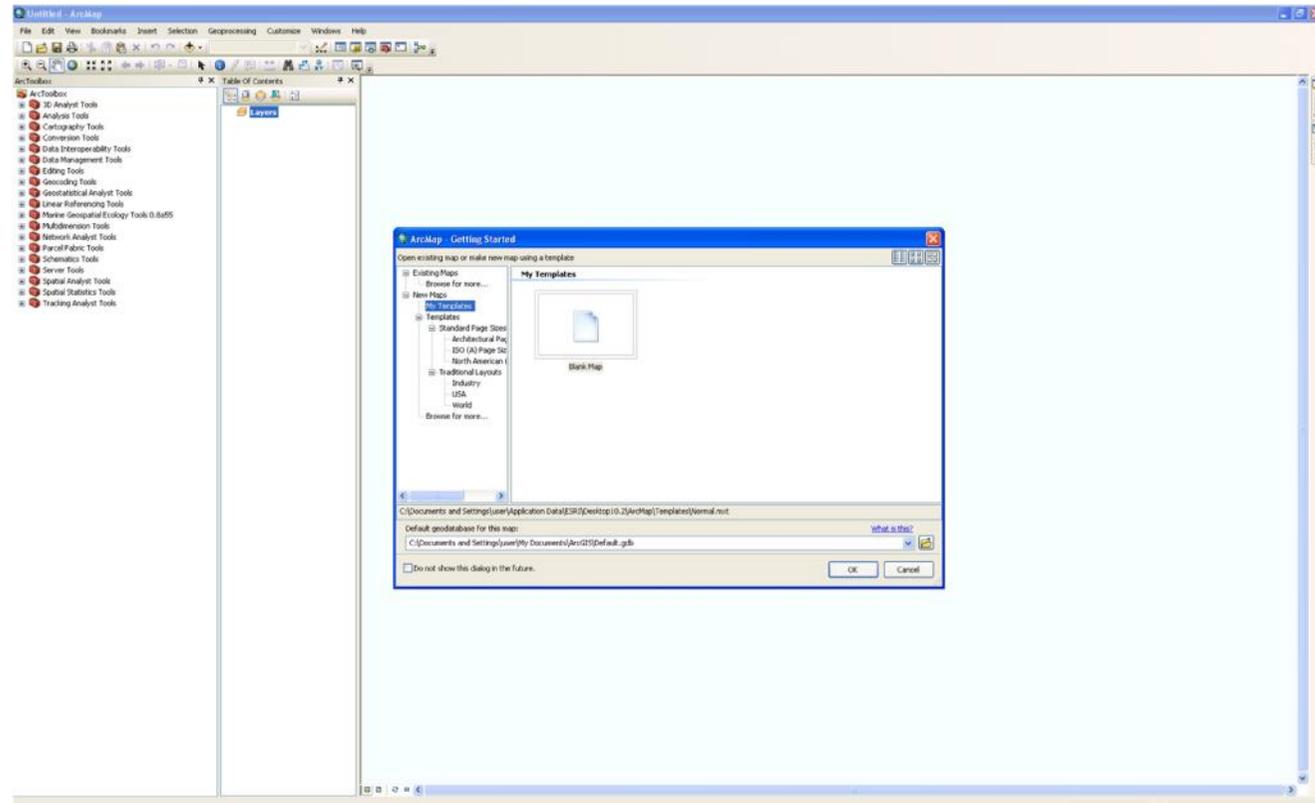
ArcMap

- How do you access these?
- From the start menu
 - >> All Programs
 - >> ArcGIS



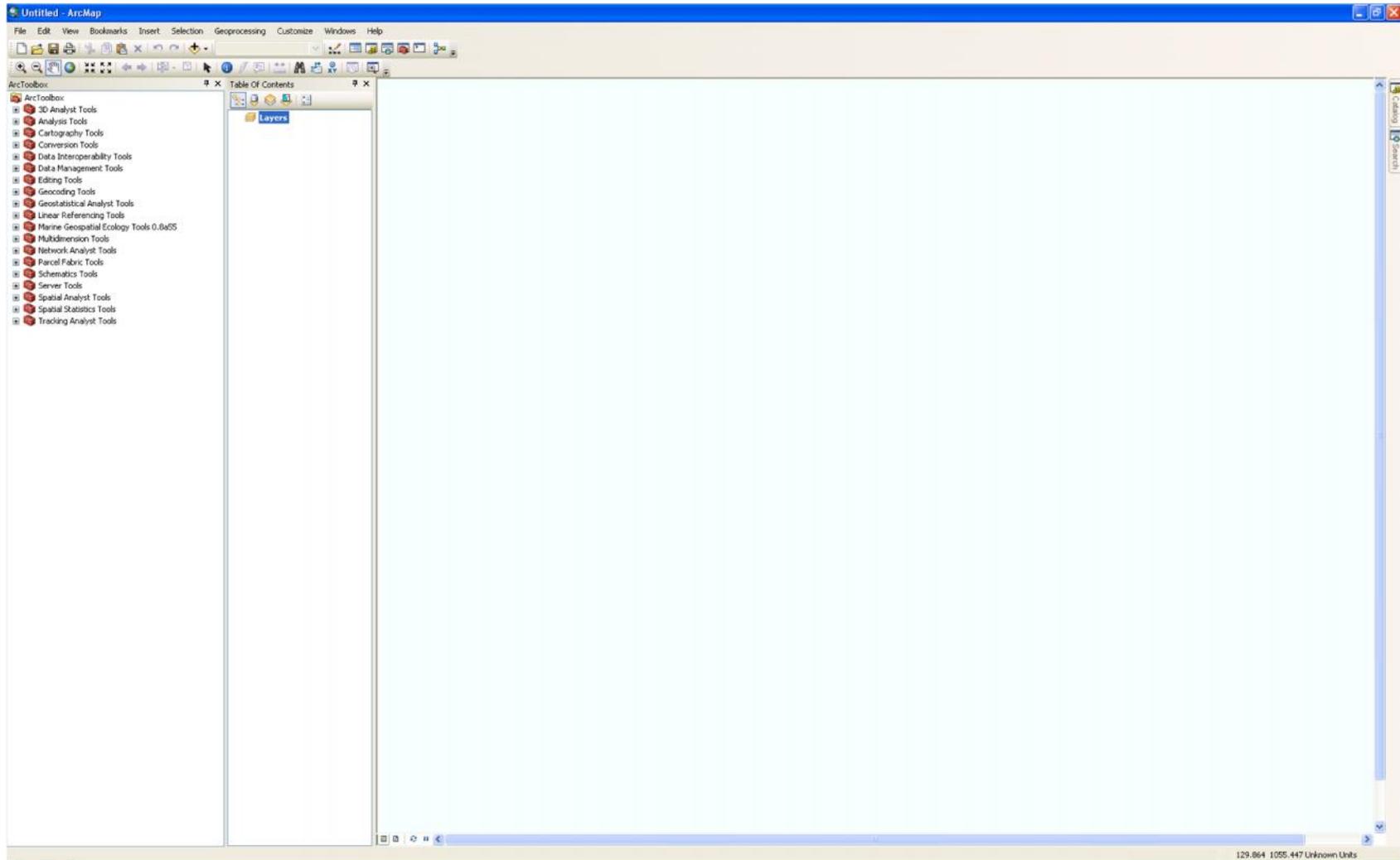
ArcMap

Loading a Blank Map Document



ArcMap

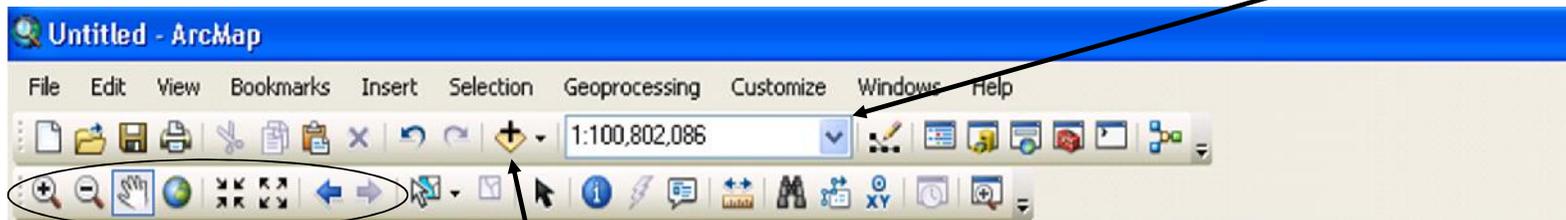
Blank Map document in ArcMap- Explore the tools



ArcMap

- ArcMap is where you'll do most of your mapping and visualization of spatial data
- This is the default upper tool and menu bar

Change map's display scale (zoom factor)



Zoom & pan tools

Zoom to full extent

Select feature

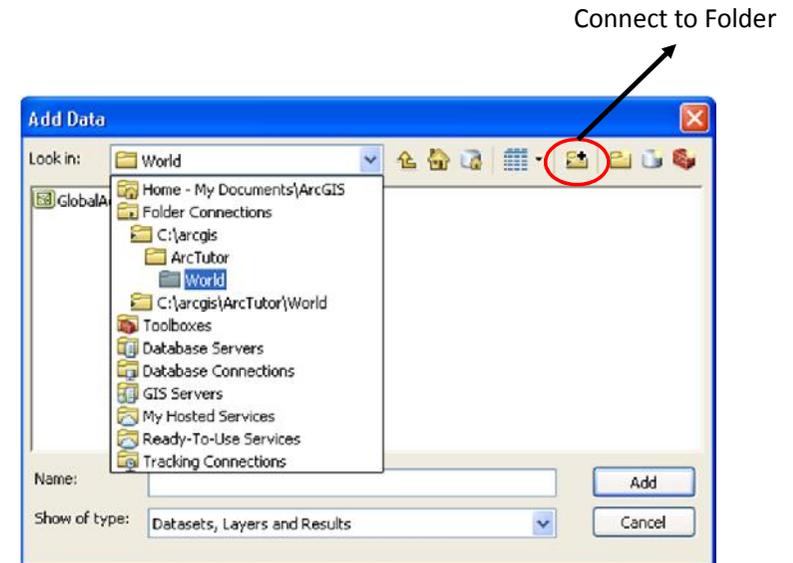
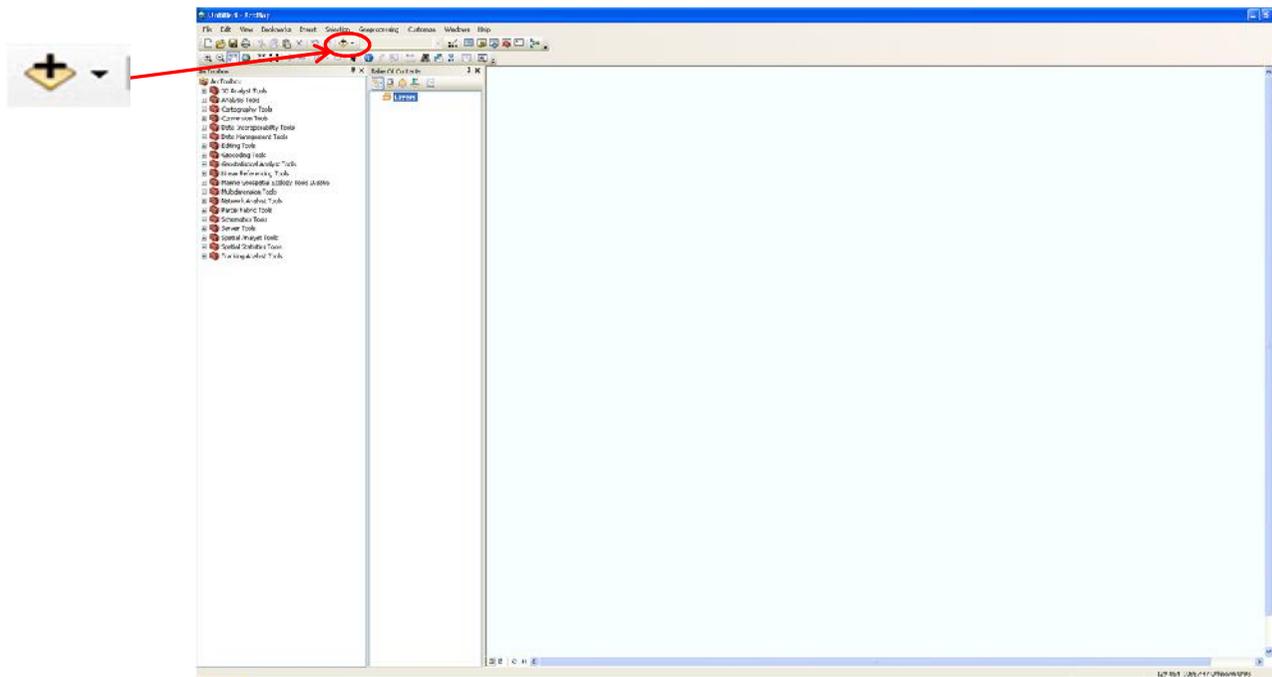
Add new layer

Measure

Find feature

ArcMap: overlaying data

- Using the add data button, you can overlay any number of layers for which geographic reference information exists.
- Click on “Add Data” and Connect to Folder C:\arcgis\ArcTutor\World and select GlobalAdminBoundaries.shp



ArcMap: overlaying data

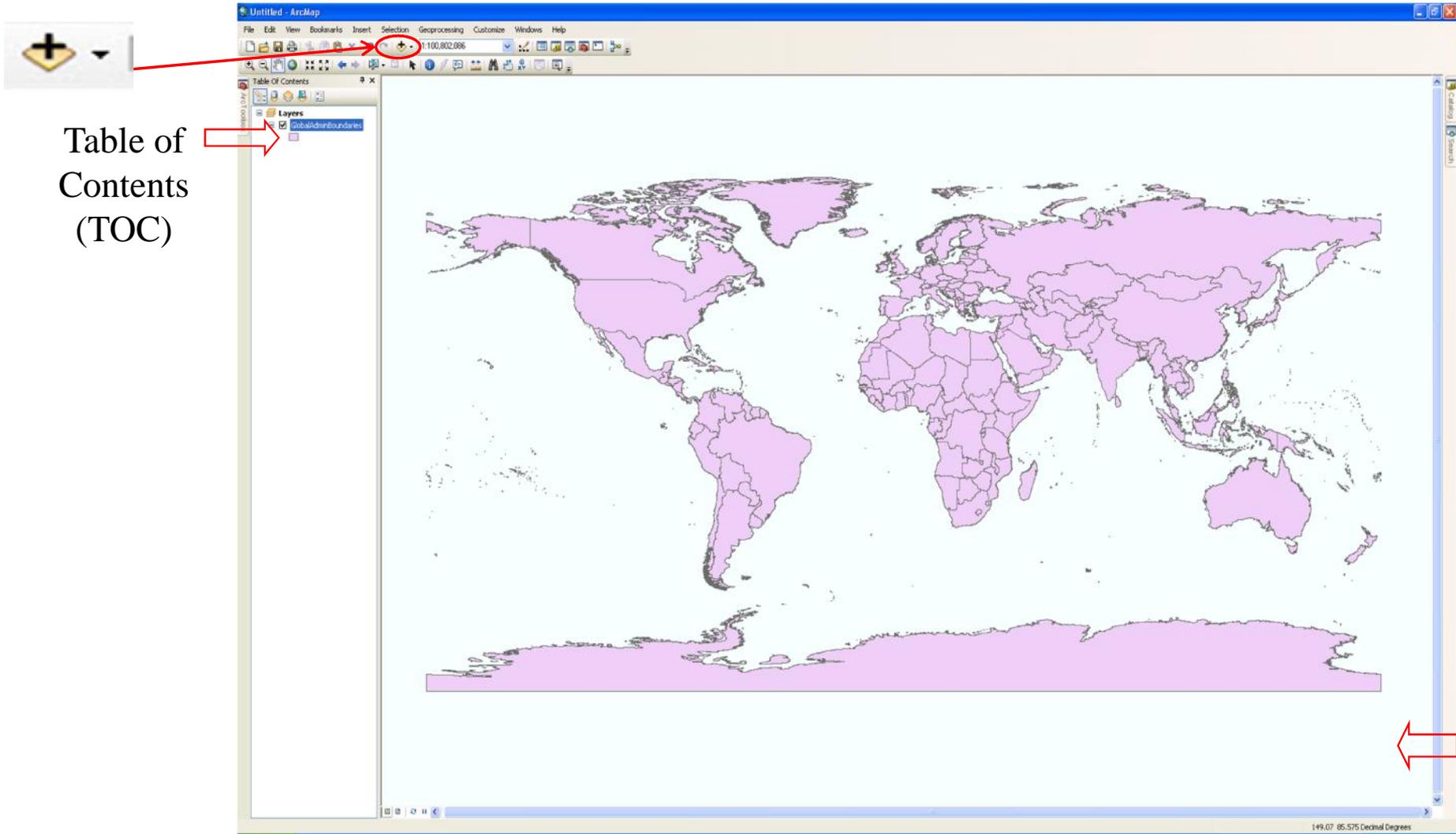
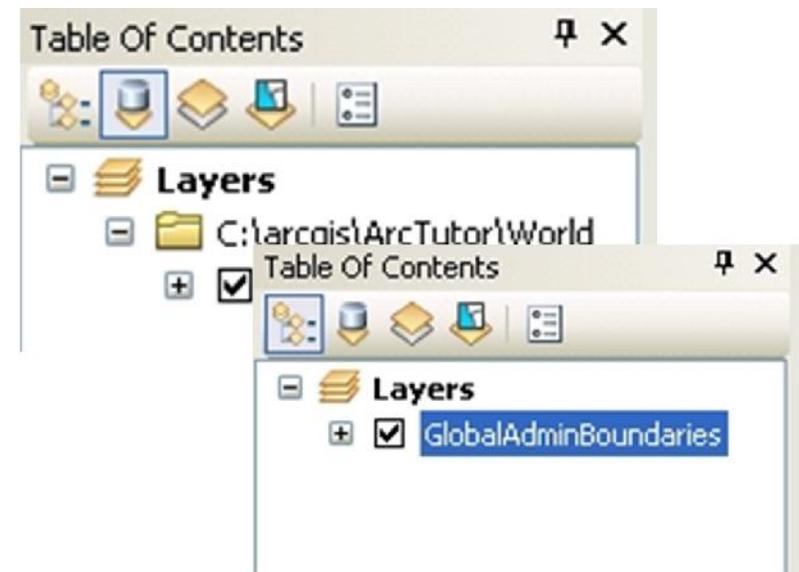
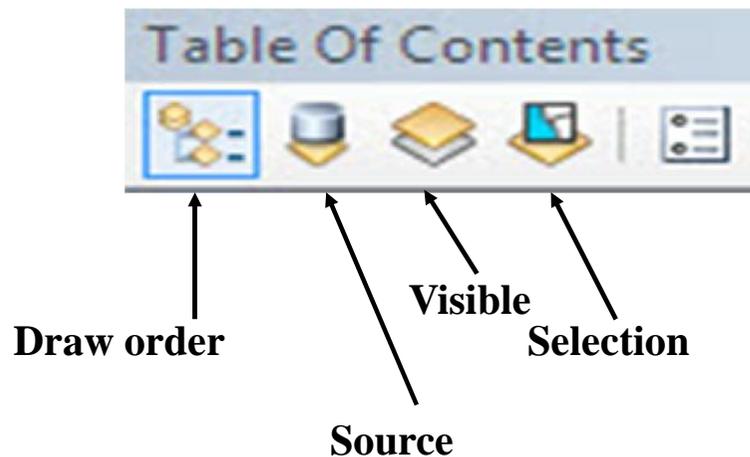


Table of Contents (TOC)

Display Window

ArcMap: Table of Contents

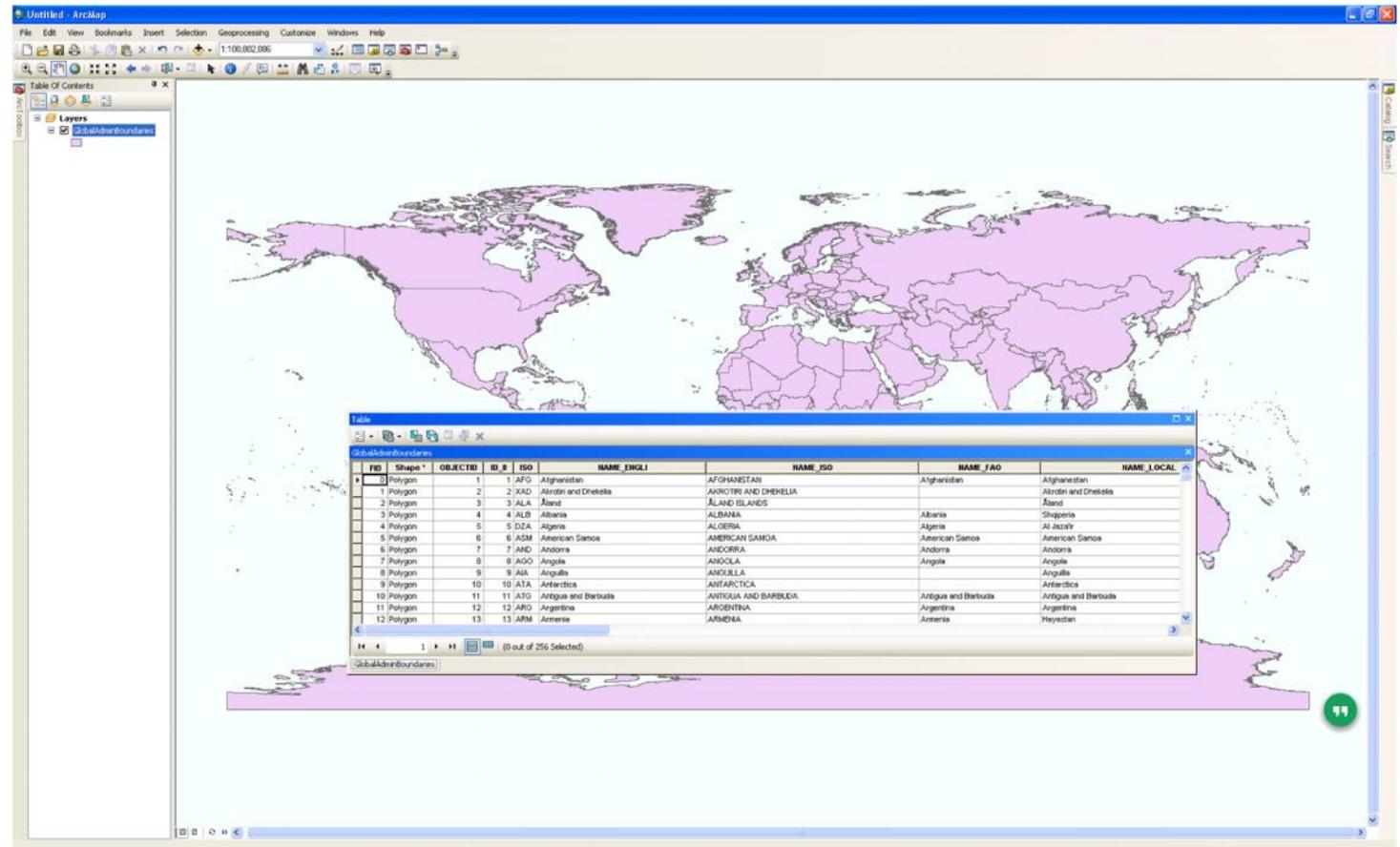
- The window on the left side of ArcMap is the Table of Contents, where project data layers are listed
- There are several TOC views, including display and source



ArcMap: Properties

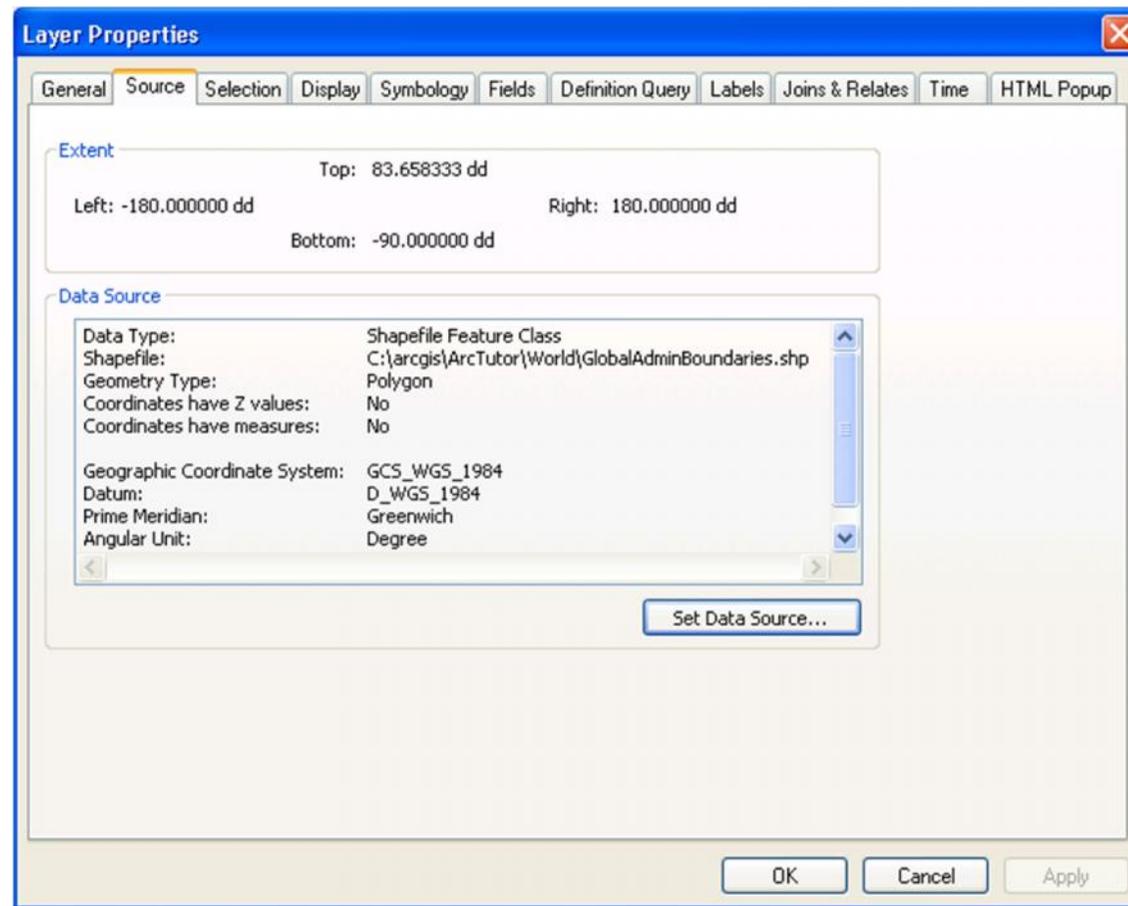
- You can access many functions by right clicking on the layer in the TOC.

You can access, edit and query attribute tables from a special interface



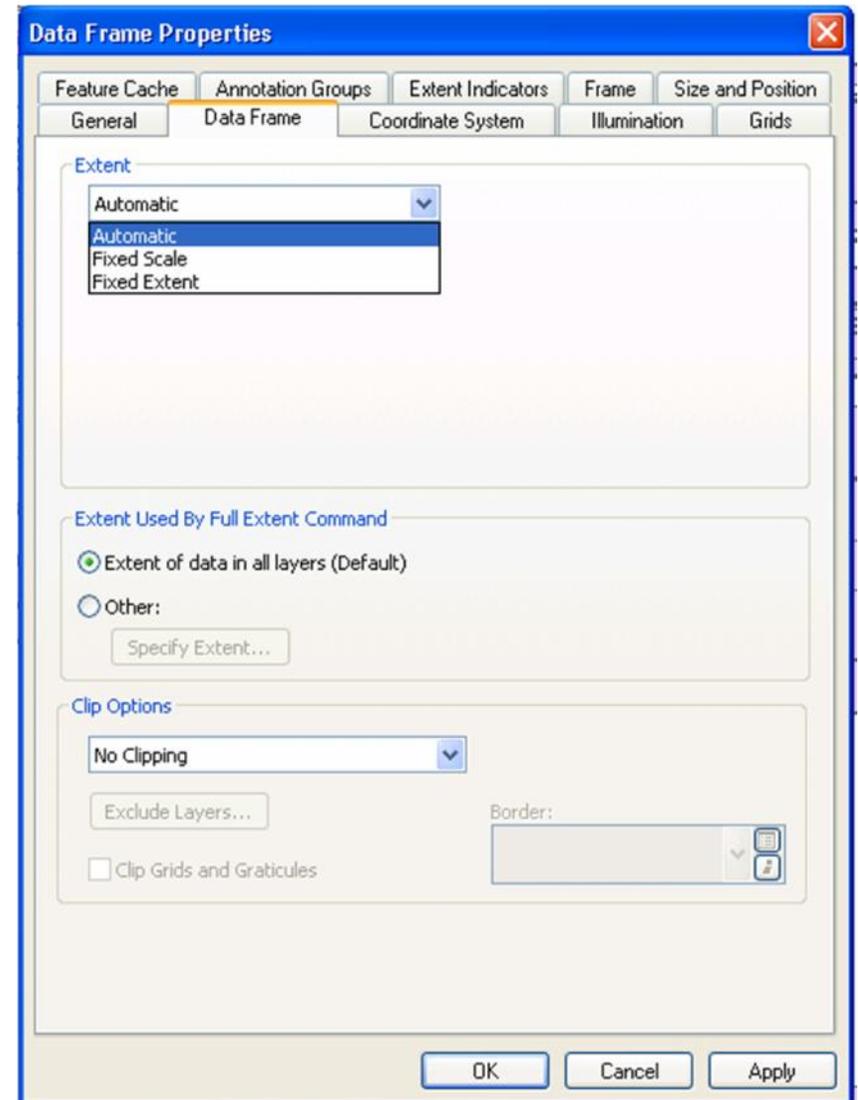
ArcMap: Layer Properties

- You can access layer properties by double clicking on that layer: much functionality is found there



ArcMap: Data Frame

- You can access properties for the whole data frame by double clicking on “Layers” at the top of the TOC or by right clicking on the data frame

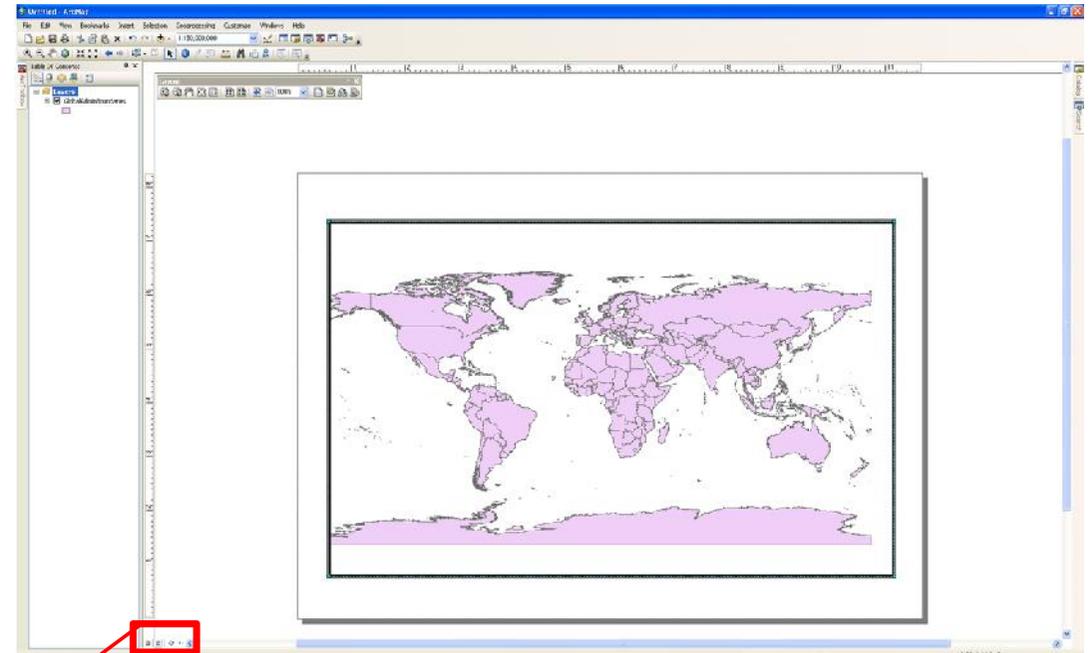
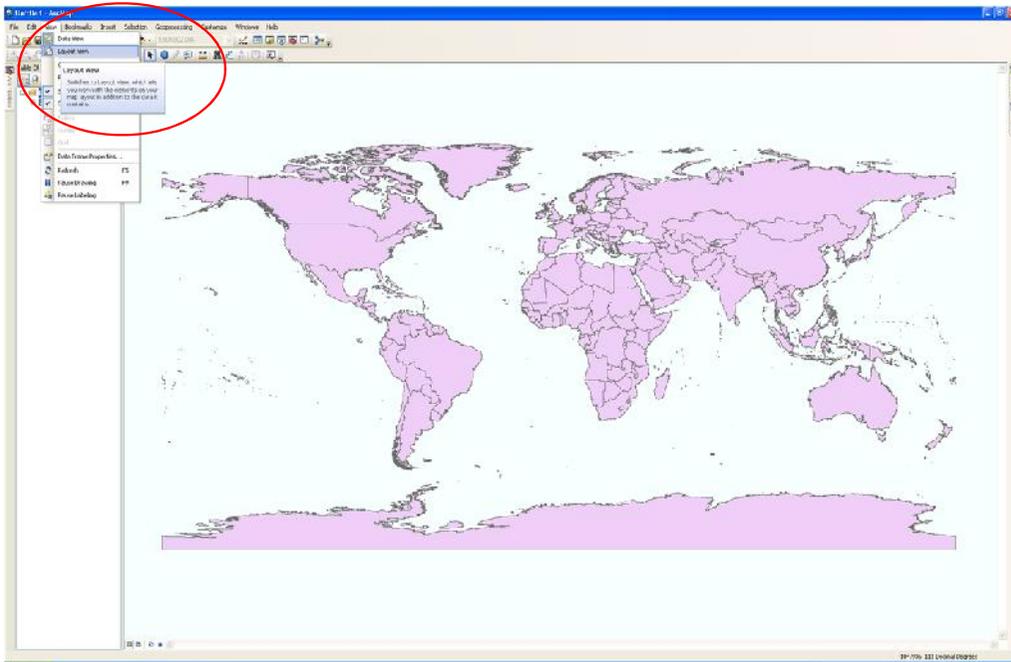


ArcMap: Content Pane

- ArcMap can view in two modes:

Data view: for viewing, analyzing and manipulating data

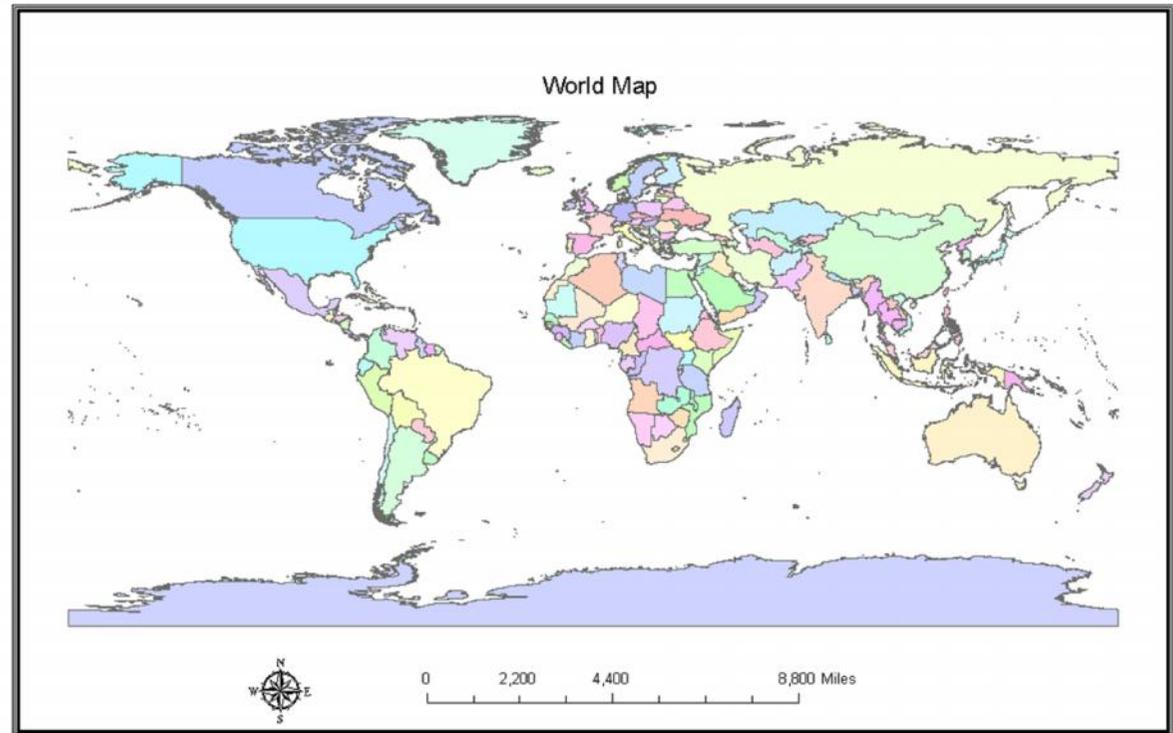
Layout view: for laying out data for presentation



Explore the Layout View by changing Data Frame Properties

ArcMap: Layouts

Maps are created in the layout view, where titles, legends, north arrows, scale bars, and other elements can be added and arranged.

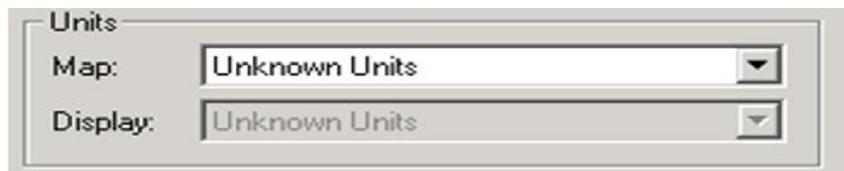


ArcMap: Data frame—Units

- Two of the most important properties are Map and Display units. Where the Map units are already set (because reference info exists) they will be “grayed out” but display units are still changeable.



When the units are unknown to the system (reference info not embedded in the file) you'll see:



This turns into guesswork

ArcMap: Units

- Once you've set display units, future geographic measurement functions should be in those units, even if they're different from the Map units; however, this does not apply to non-spatial attribute values
- If you use the ruler tool for instance, measurements will likely be in the selected Display units at the bottom of the page unless you've selected different units in the ruler tool interface



ArcMap: Scale

- Translation factor between one unit on the map and same unit in the real world
 - map units: ground units (ratio)
 - 1:10,000 means that 1 inch equals 10,000 inches in real world



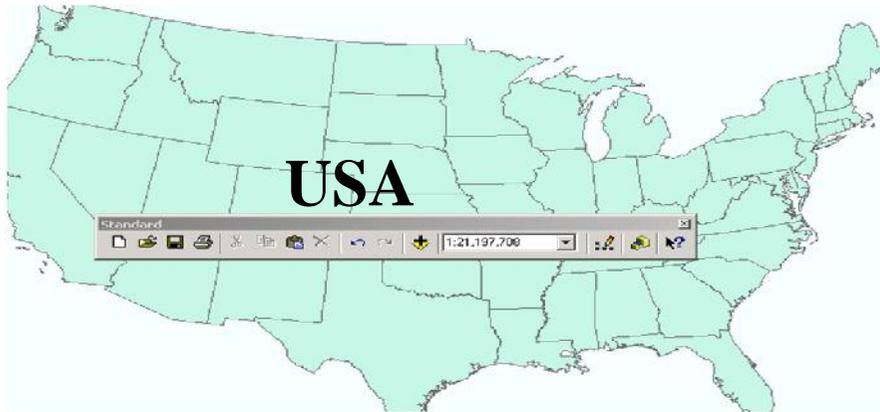
1 foot is 1.98 million feet in real world

- Scale is a dimensionless number

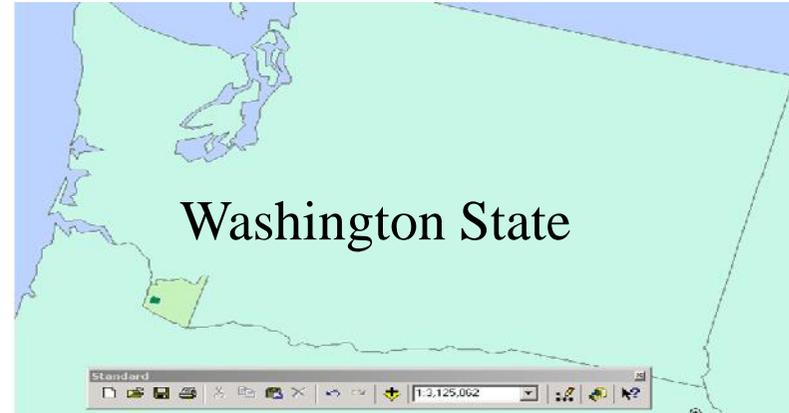
Large vs. Small Scale

- Large scale
 - Lots of detail
 - Shows small features
- Small scale
 - No much detail
 - Shows large features

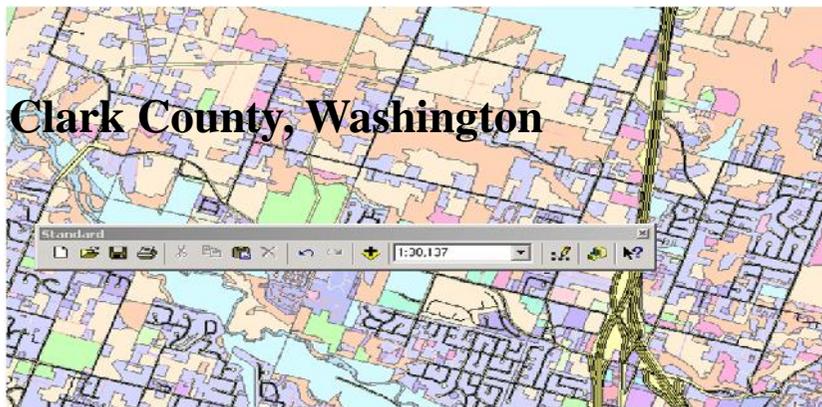
Large vs. Small Scale



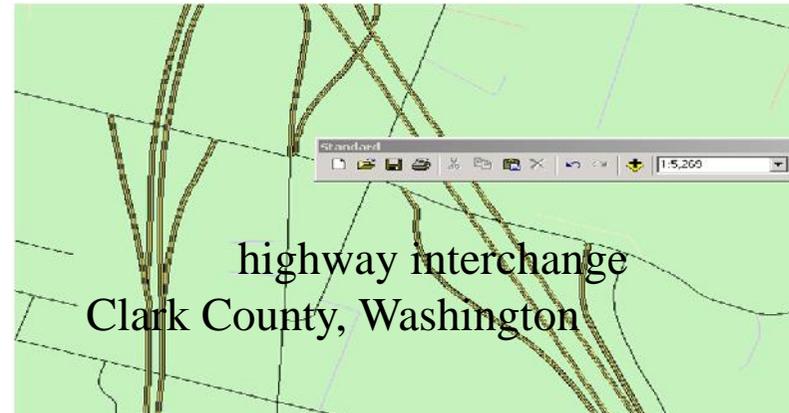
1:21,197,708



1:3,125,078



1:30,137



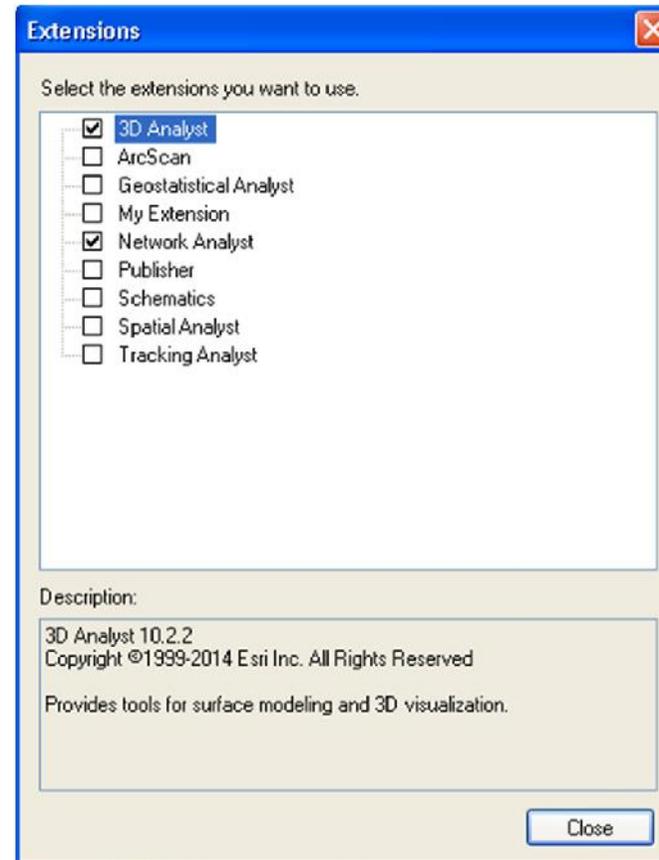
1:5,269

ArcGIS: Extensions

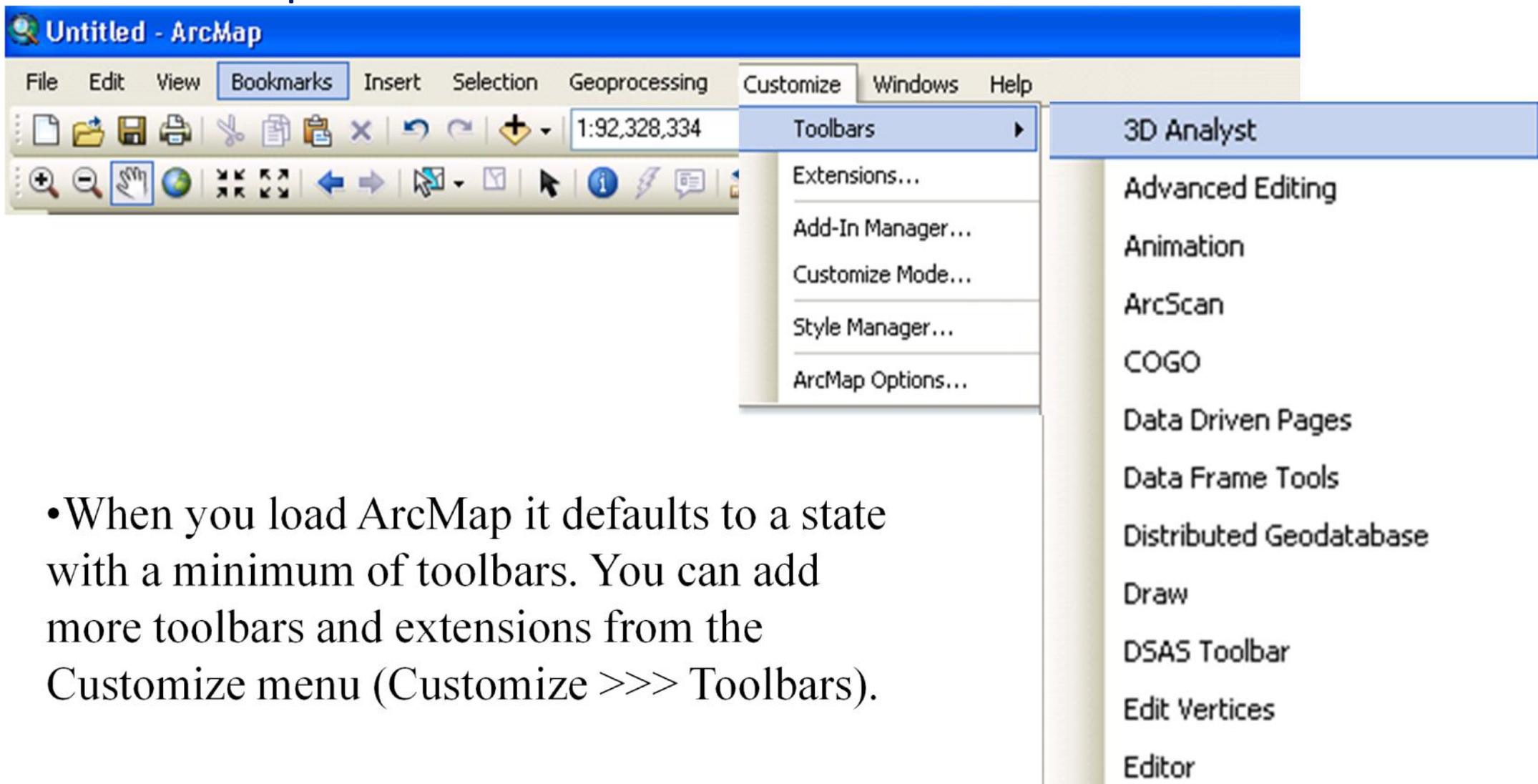
- Specialized applications
 - 3D Analyst
 - Spatial Analyst
 - Geostatistical Analyst
 - Tracking Analyst, X Tools...
 - Others...

ArcGIS: Extensions

- Activate by going to **Customize>>extensions**



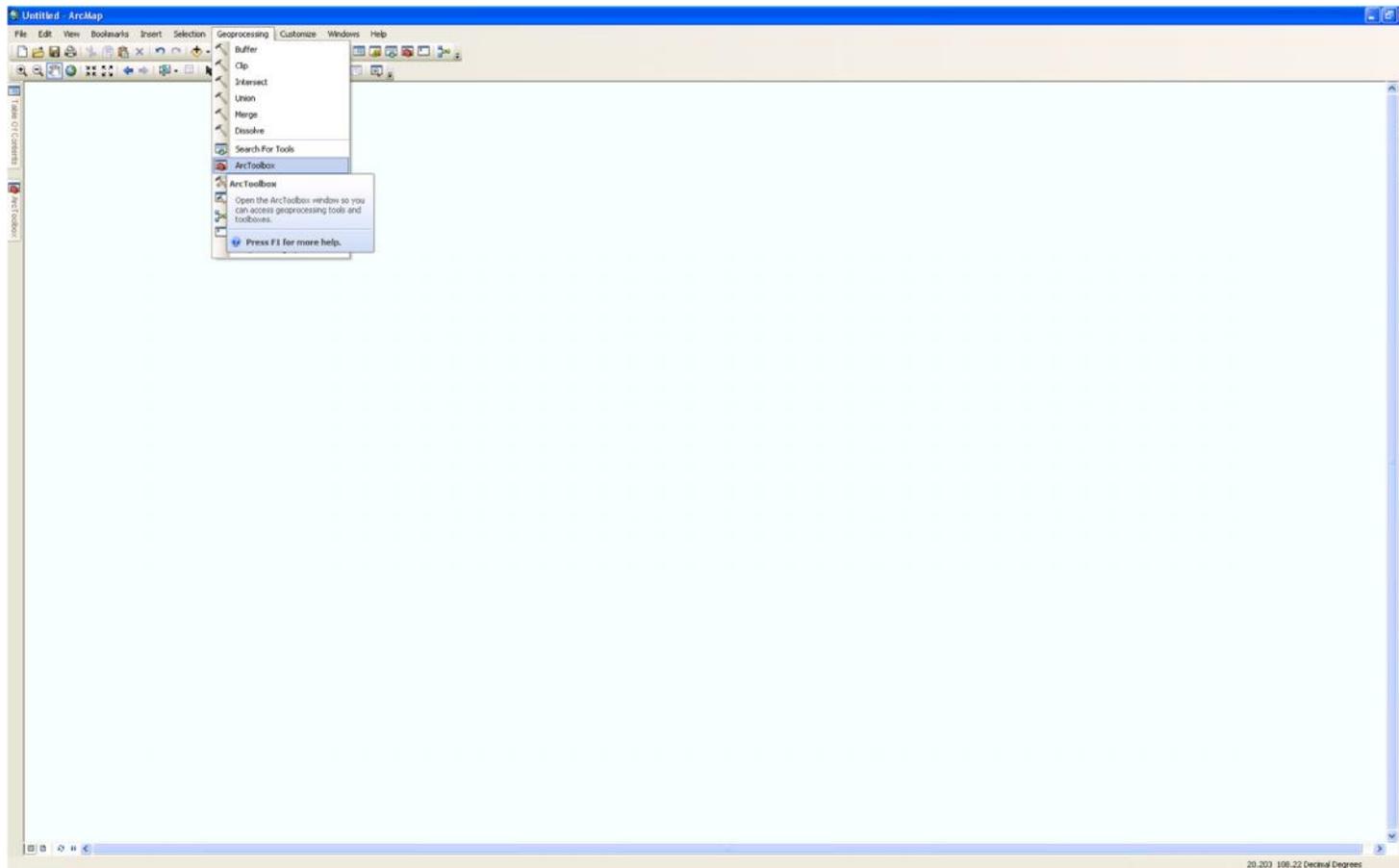
ArcMap: Toolbars



- When you load ArcMap it defaults to a state with a minimum of toolbars. You can add more toolbars and extensions from the Customize menu (Customize >>> Toolbars).

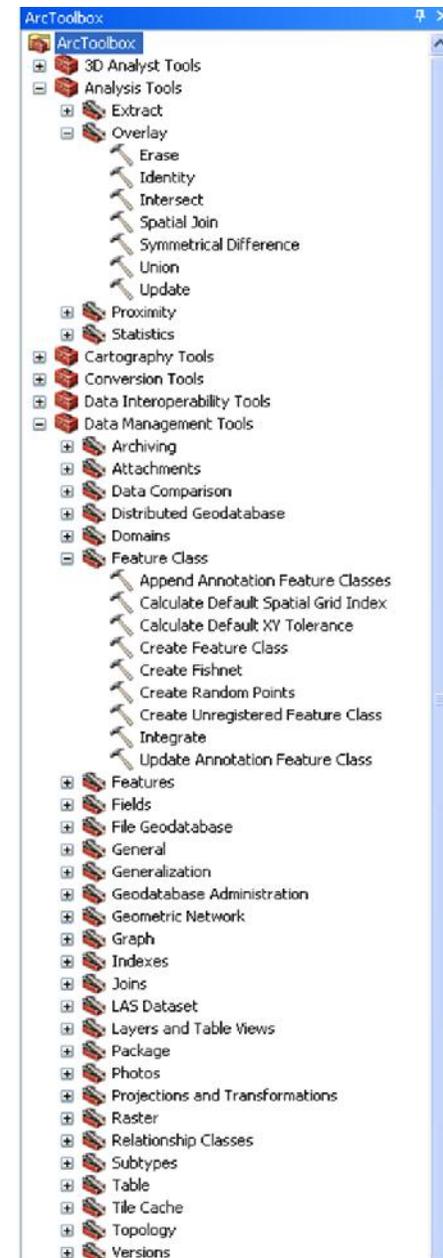
ArcToolbox

- Embedded within both ArcMap & ArcCatalog



ArcToolbox

- Advanced Analyses
 - Extract
 - Overlay
 - Proximity
 - Statistics
- Data Management
- Conversion Tools
- Etc.



Most Useful links from ESRI to learn ArcMap and also Free Online Web Courses:

- **Using ArcMap Tutorial** – ArcTutor data is required to complete the exercises.
(Data available at C:\arcgis\ArcTutor\
http://webhelp.esri.com/arcgisdesktop/9.3/pdf/arcmap_tutorial.pdf
- **Using ArcMap in ArcGIS Desktop 10 – Free Online Web Courses**
<http://training.esri.com/gateway/index.cfm?fa=catalog.webCourseDetail&courseID=1822>
- **Editing in ArcMap**
<http://help.arcgis.com/en/arcgisdesktop/10.0/pdf/editing-tutorial.pdf>
- **ArcGIS10 Officials Tutorials**
- <http://en.acolita.com/arcgis-10-official-tutorials-pdf.html>



Thank you

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