

GIS



Database Information System

Database Concepts

1. Non-Spatial Database

table, document ..

2. Spatial Database

locational databases (geographic)

+ attribute databases

Geographic data models

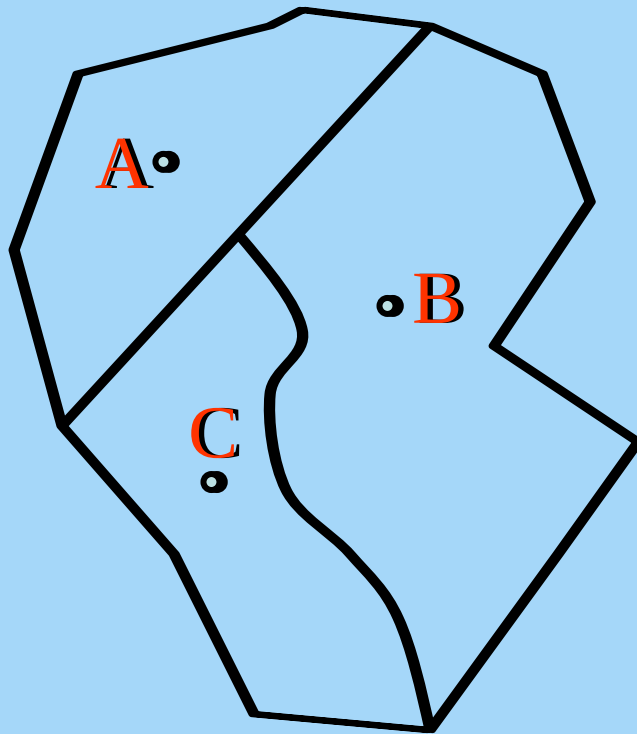
Analogue form : Maps and Drawings

Computer format :

1. Vector (points, lines and polygons)

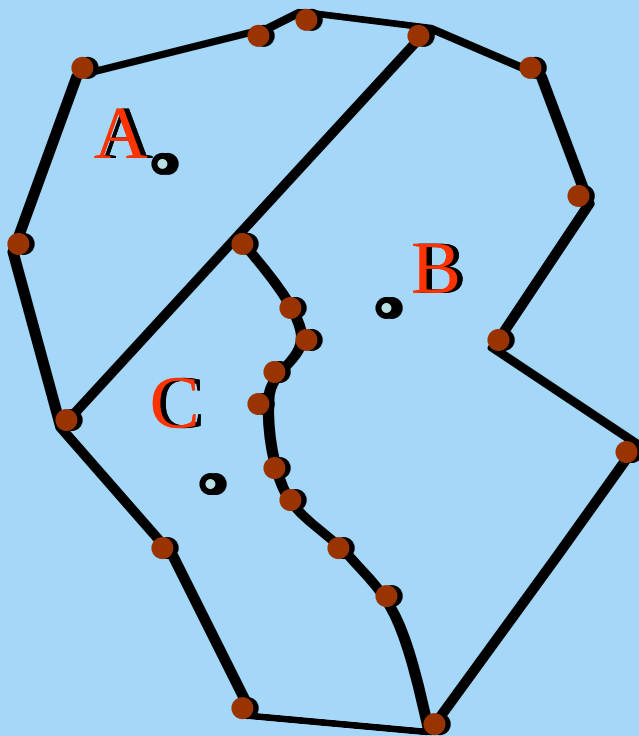
2. Raster (cells and grids)

Map 1



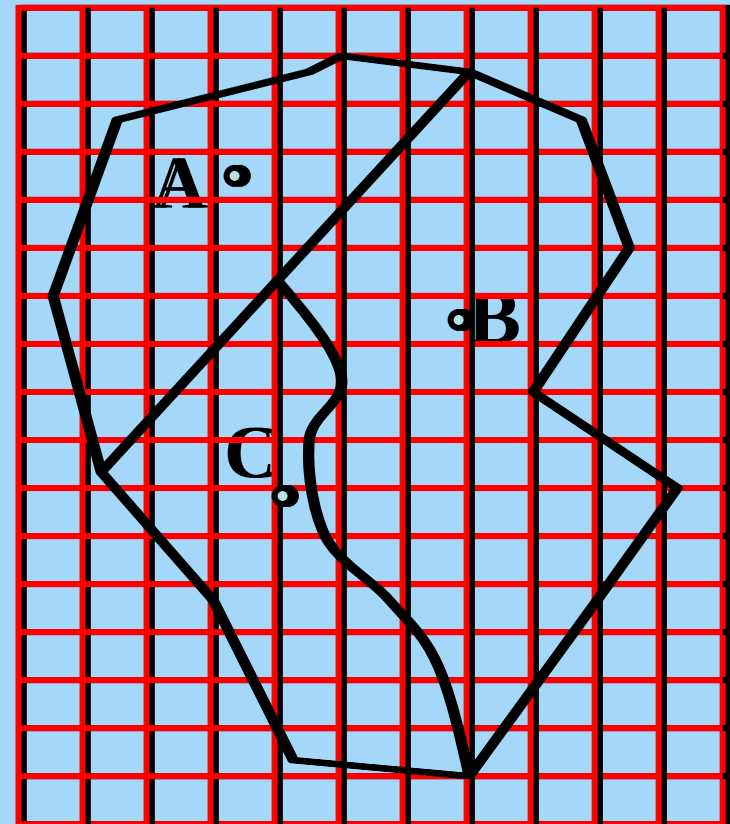
Vector base

(points, lines and polygons)



Raster base

(cells and grids)



linking the information to geographic locations

Map 1

District

pop.

Malaria cases

A

15,672

51

B

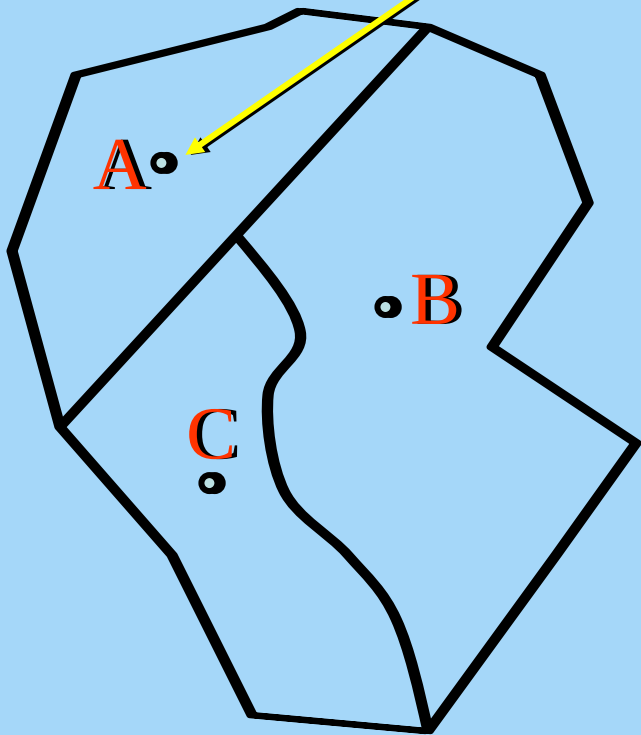
9,820

118

C

12,010

350



analysing data on a map

District

pop.

Malaria cases

A

15,672

51

B

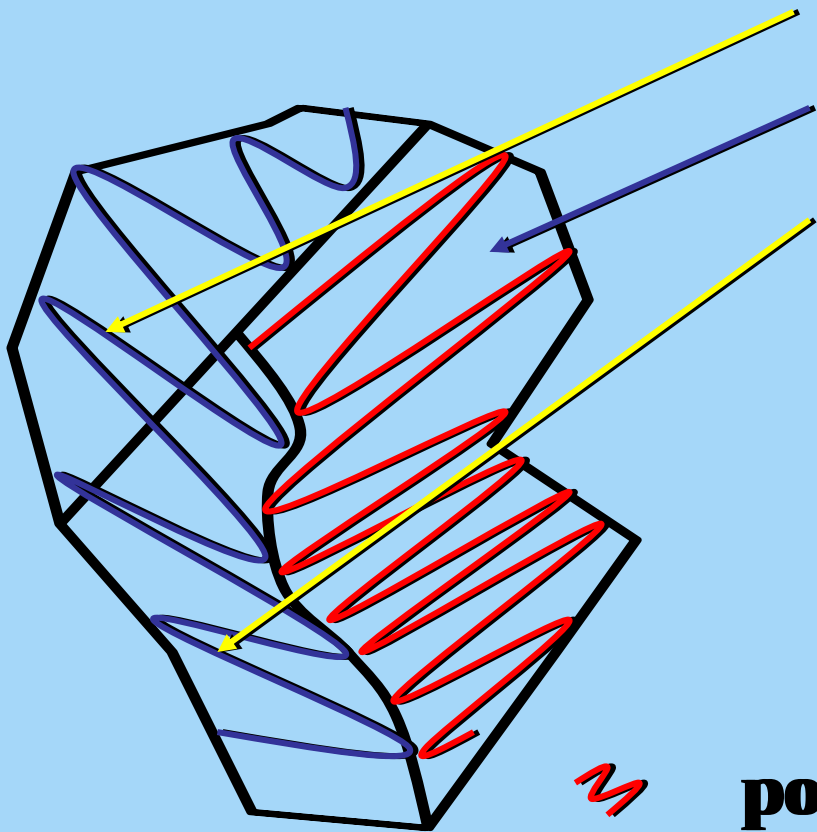
9,820

118

C

12,010

350

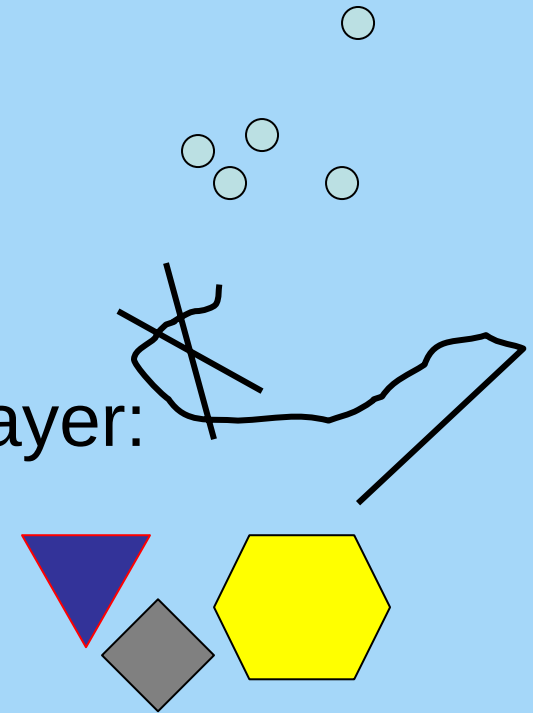


pop < 10,000

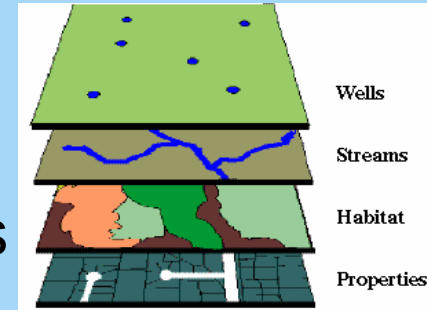
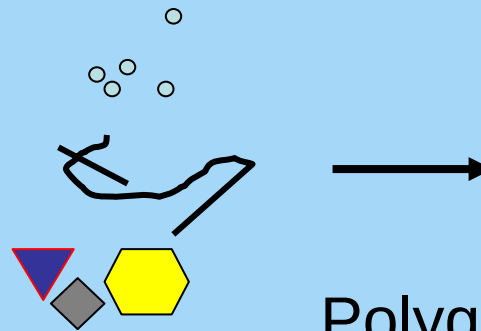


pop > 10,000

There are three types of layers:
points, **lines**, and **areas**. stored in a layer:



Examples of types of layers



Points

Businesses
Cities, towns
Hospitals
Power Poles
Airports
Clinics
Warehouses
Customers
Patients
Vehicles

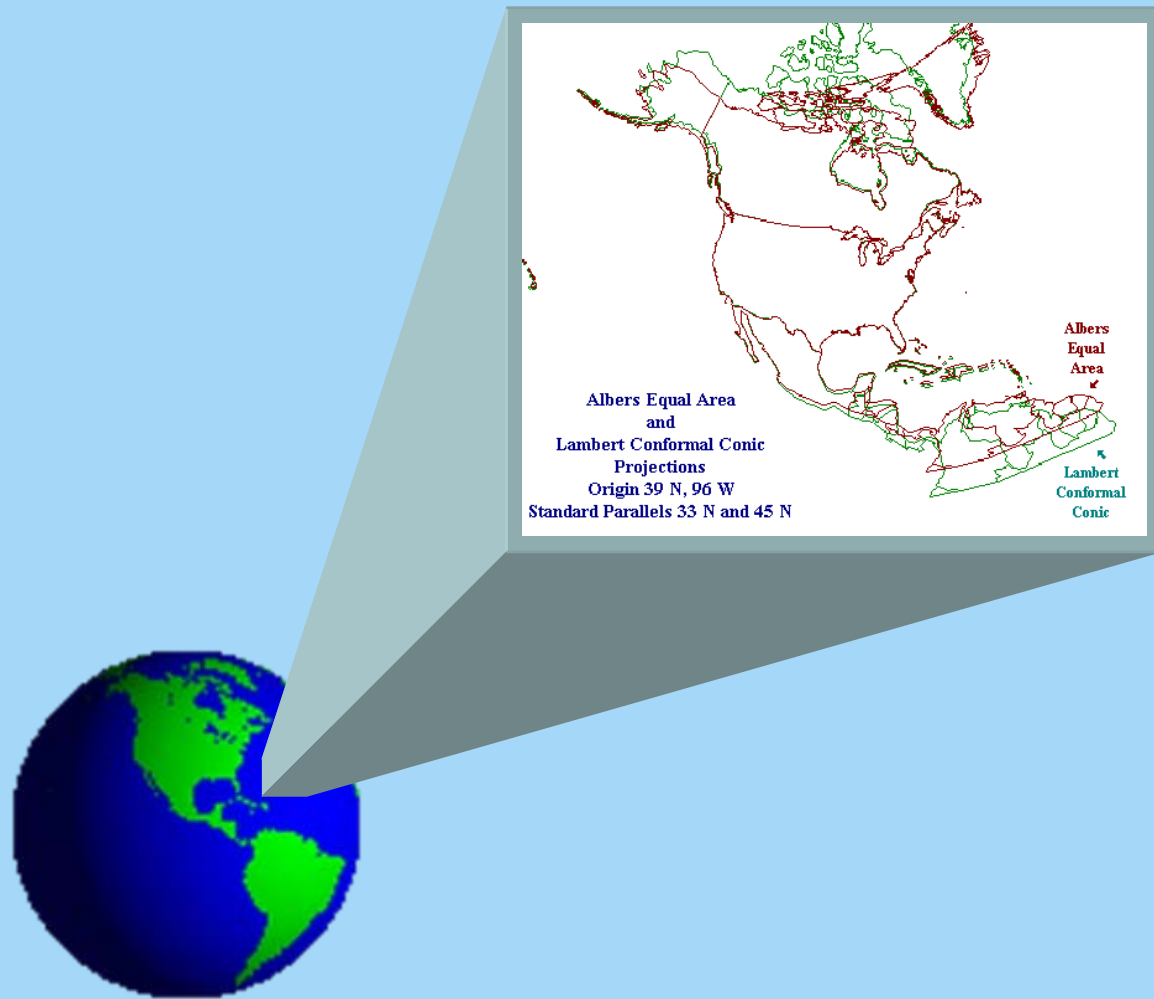
Lines

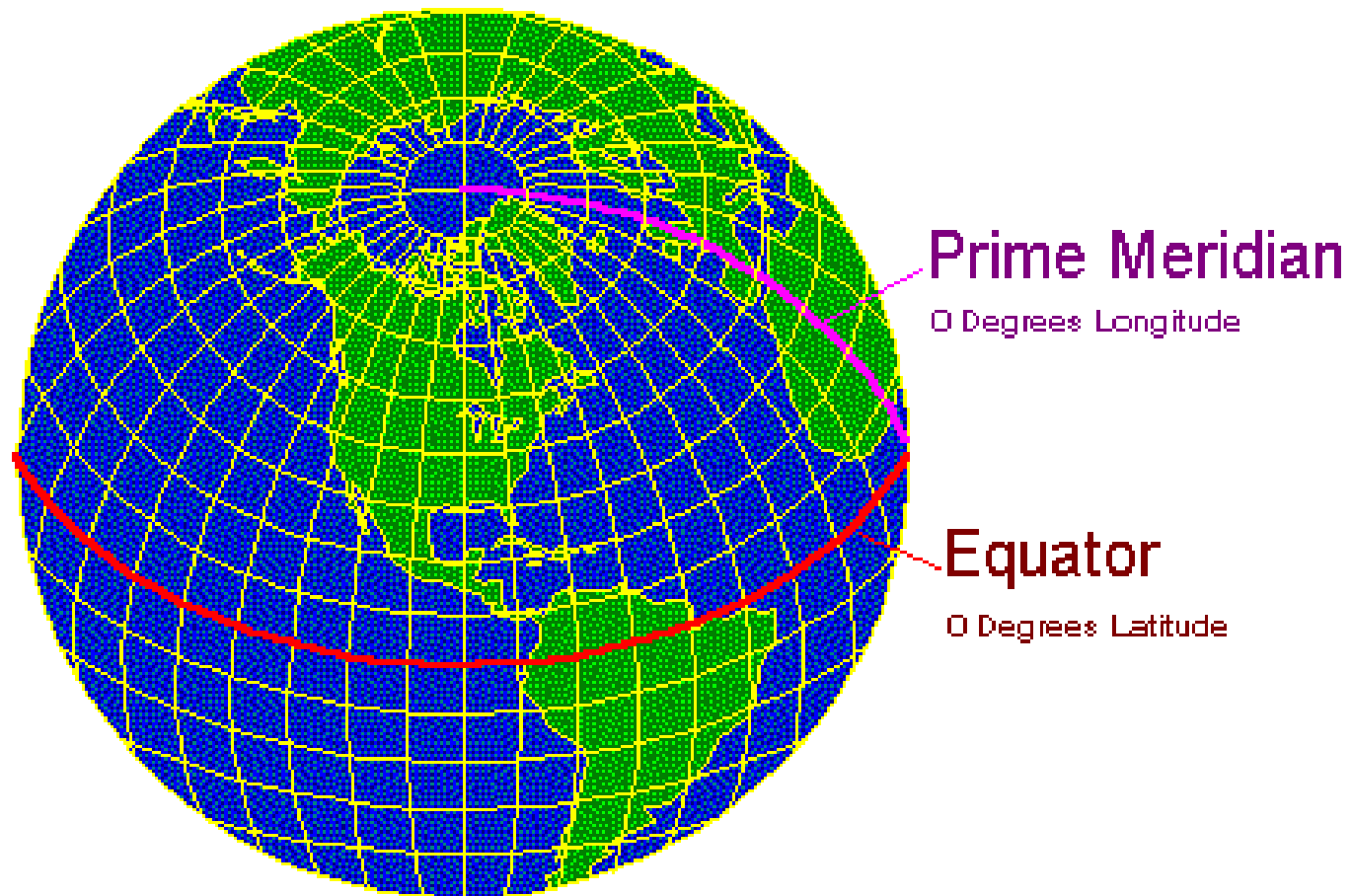
Highways
City Streets
Power Lines
Rivers
Water, Sewer Lines
Railroads
Ambulance routes
Bus Routes
Pipelines
Runways

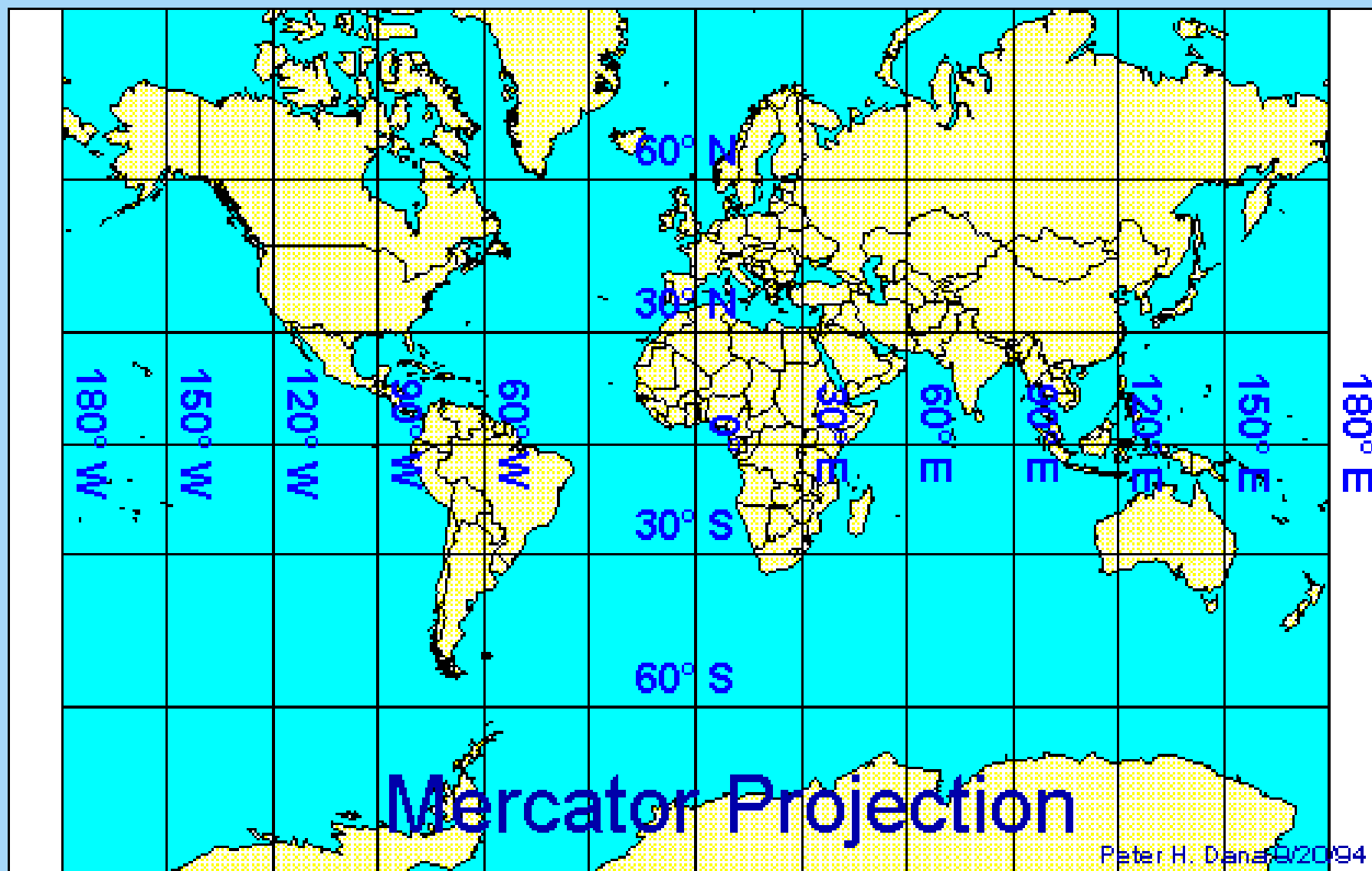
Polygons Areas

Countries
Postal Codes
Tax Parcels
Census Tracts
Voting Districts
Building Outlines
Military Installations
Continents
School districts
Counties

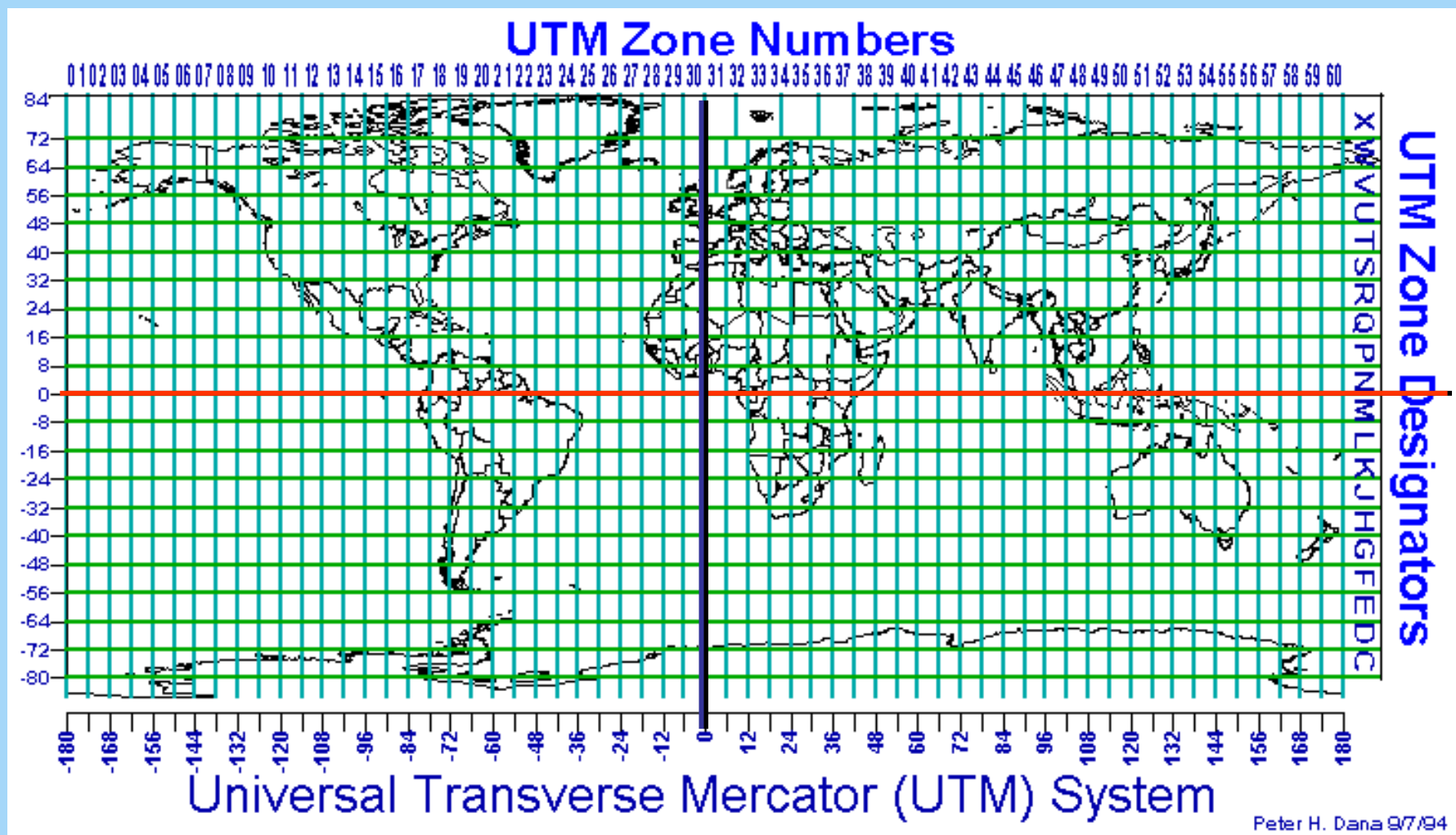








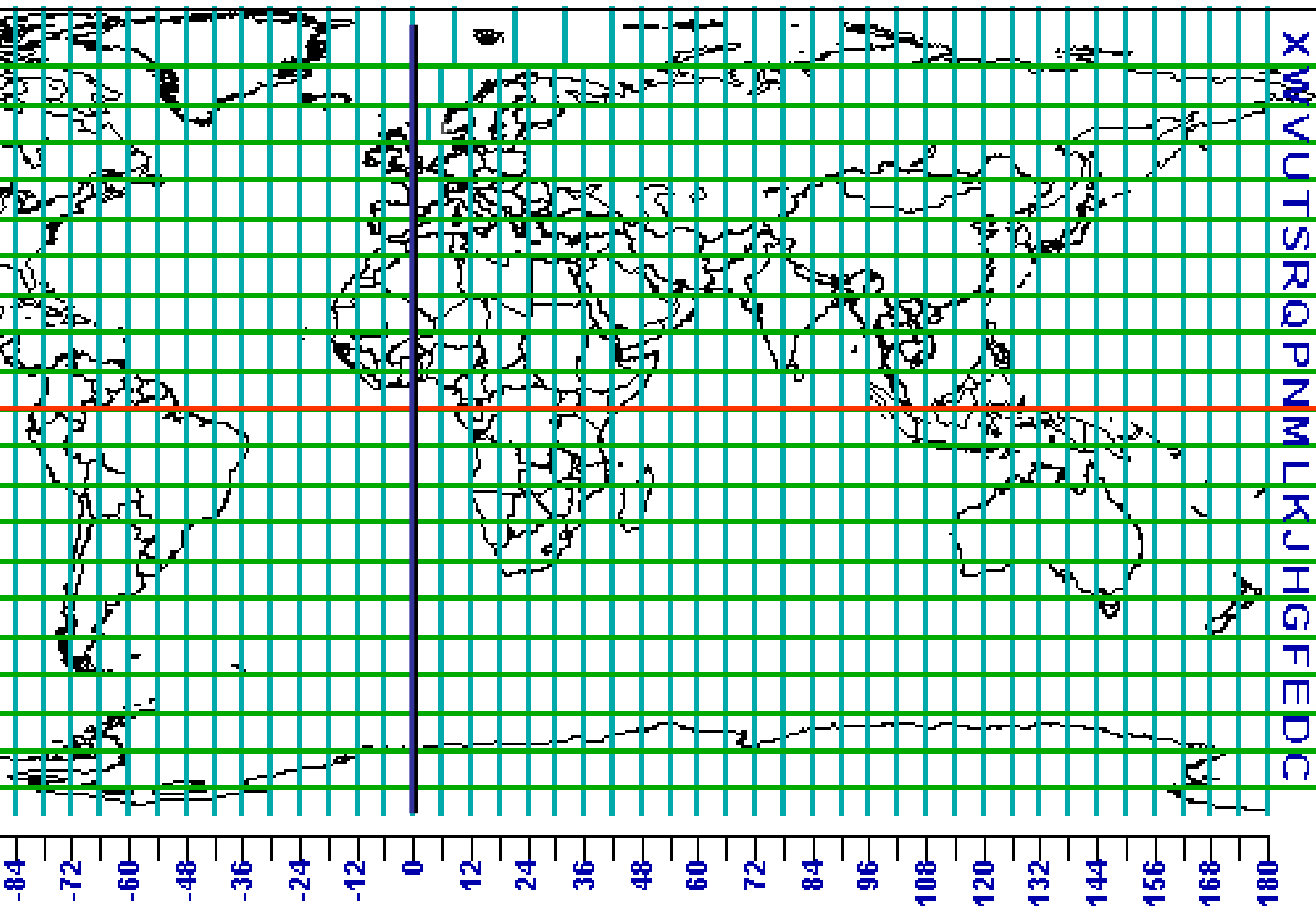
Universal Transverse Mercator (UTM) projection





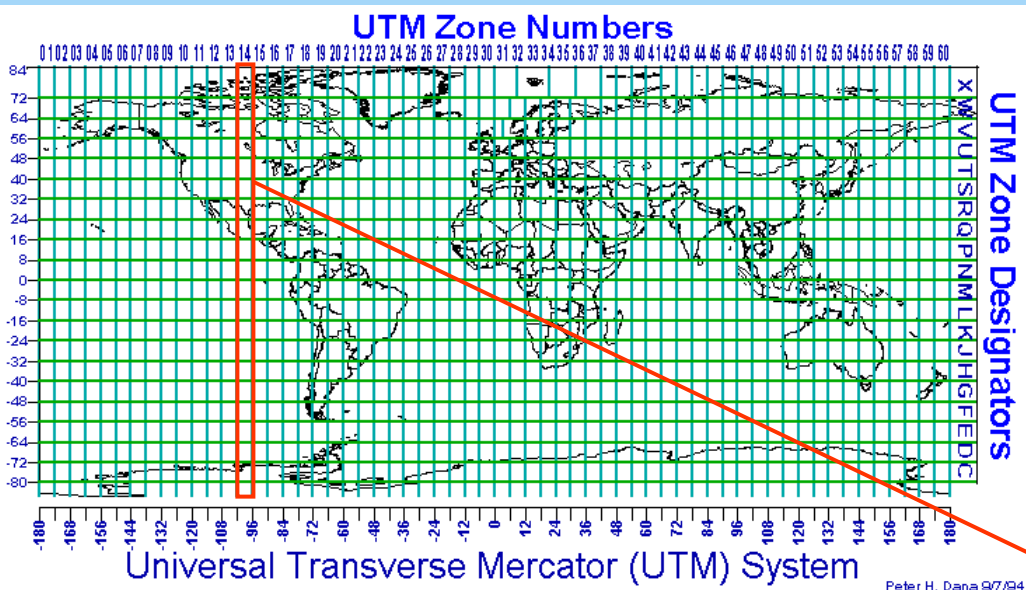
UTM Zone Numbers

17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60

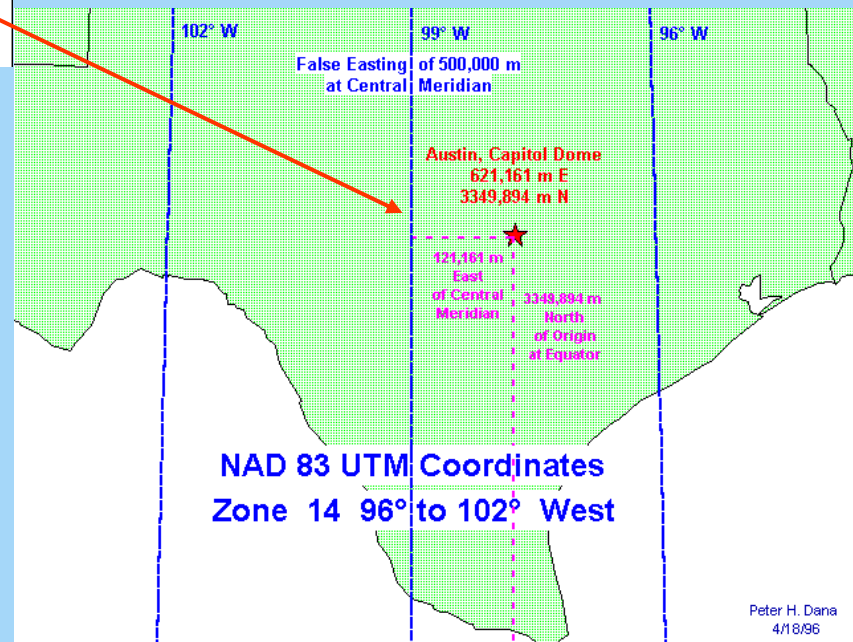


UTM Zone Designators

Transverse Mercator (UTM) System



Each zone has a central meridian.
Zone 14, for example, has a central
meridian of 99 degrees west longitude.
The zone extends from 96 to 102
degrees west longitude.



Implementing a GIS

Hardware & Software

15 %

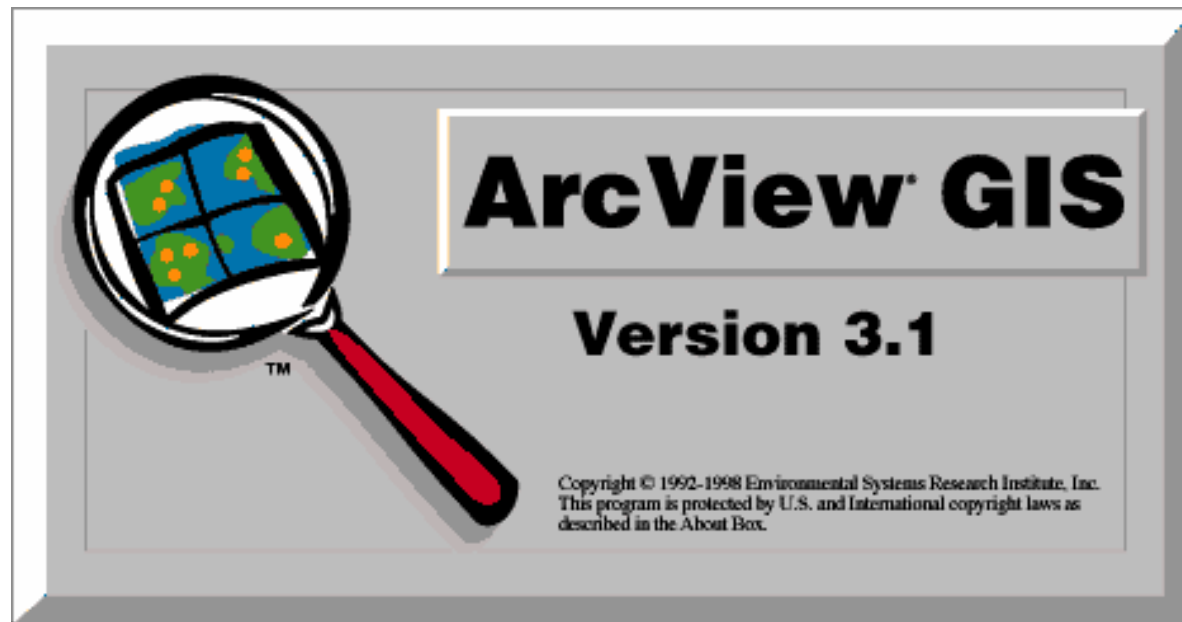
Database
Management

85%

Applications ?

SS GIS

organizational impact



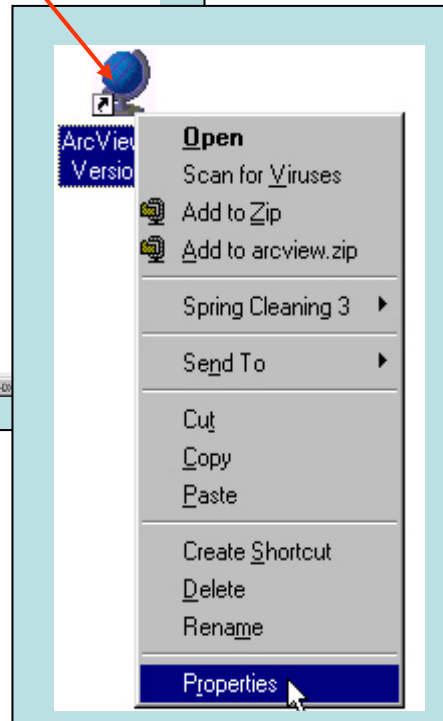
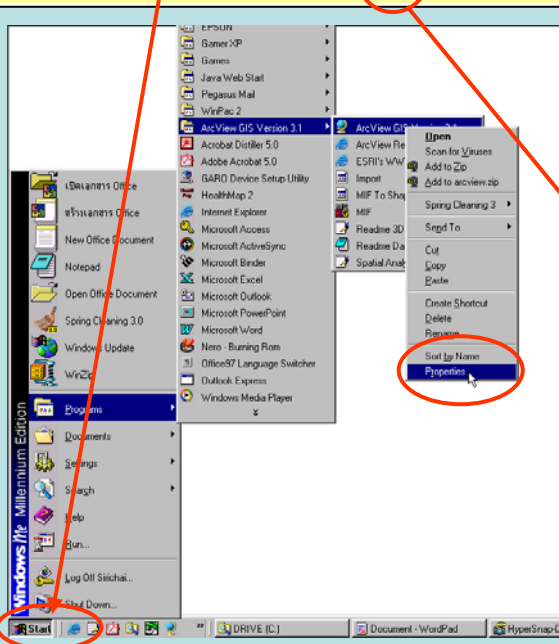
Project and View

ArcView Set up environment

Before Start ArcView, Set up properties “Start in” in shortcut menu of ArcView (2 way to setup)

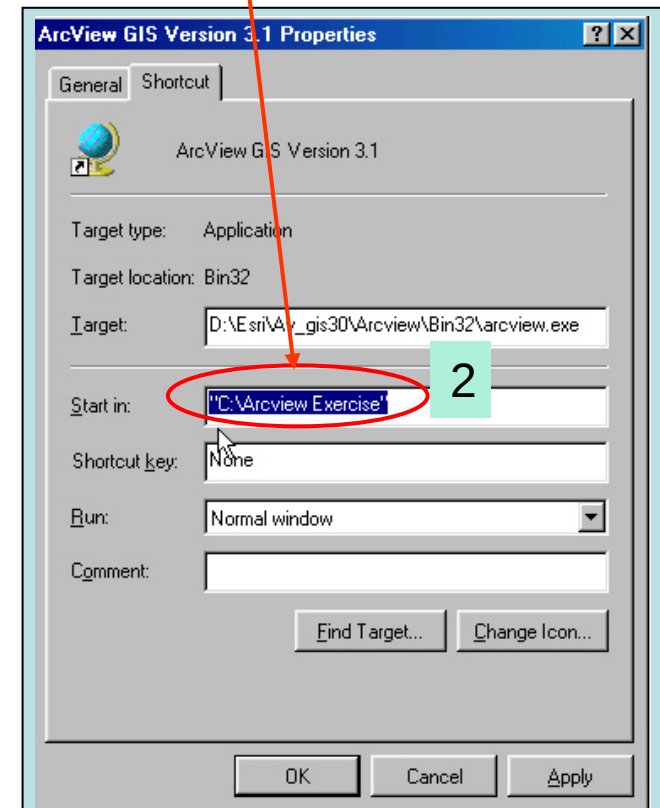
:1. in Start menu find ArcView 3.x and Click Right hand mouse and select Properties

or :2. in Shortcut ArcView on desktop Click Right hand mouse and select Properties

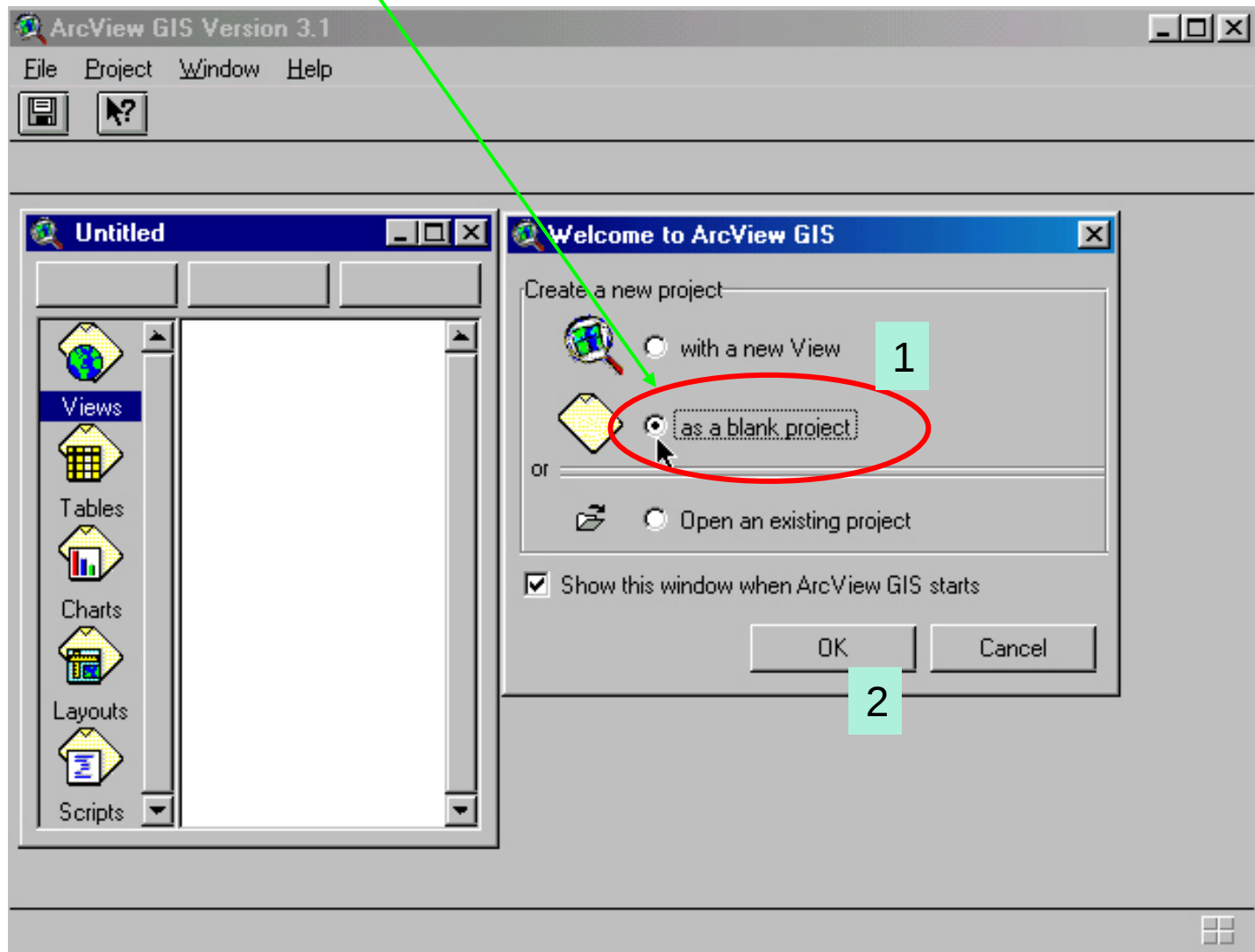


Next Set up working folder in Shortcut ArcView

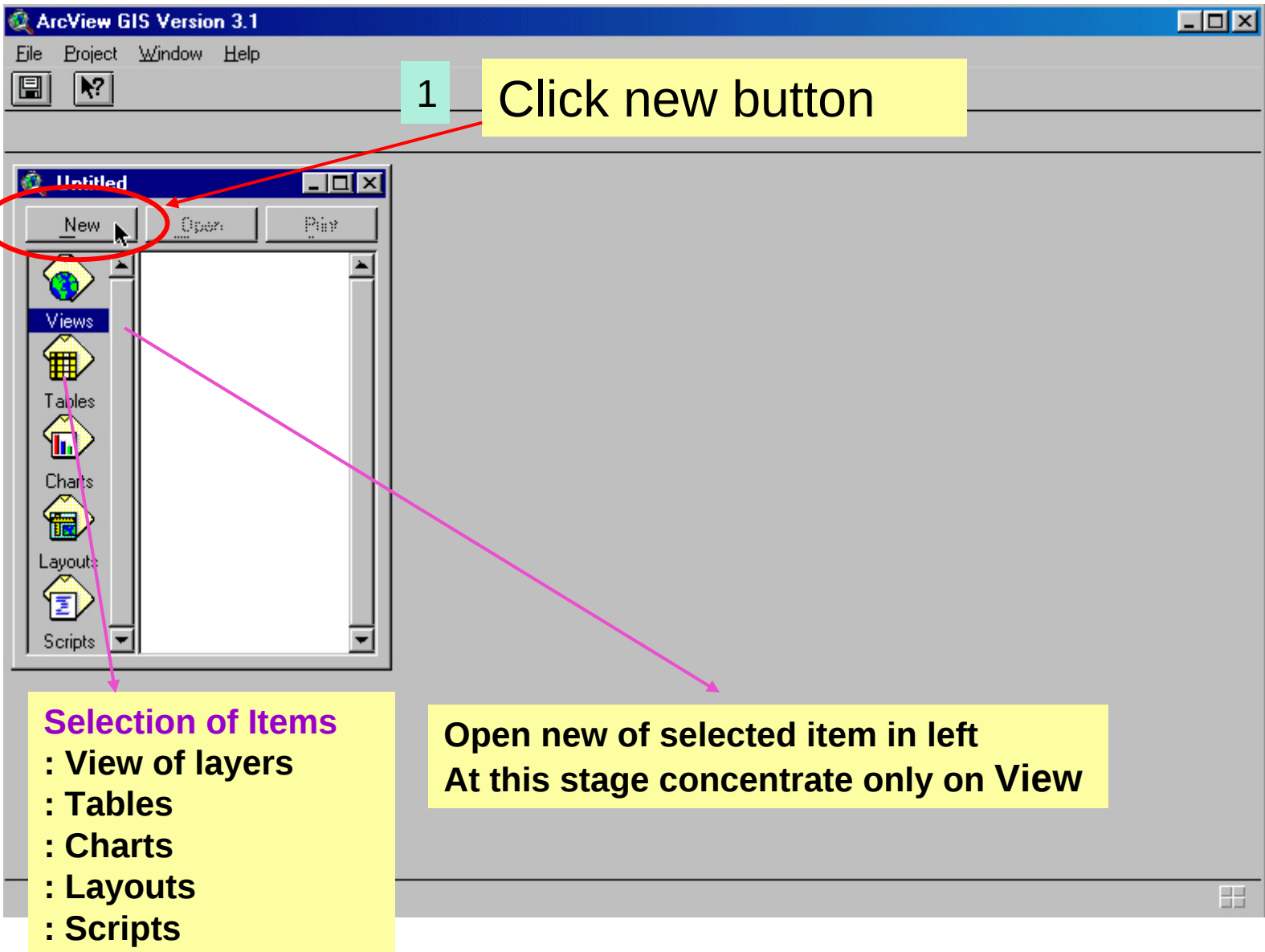
“Start in” box type “C:\Arcview Exercise”



1. Start Program ArcView in Start menu or Desktop Icon
2. After ArcView Start Click open as a blank project



Learning View window and Project window



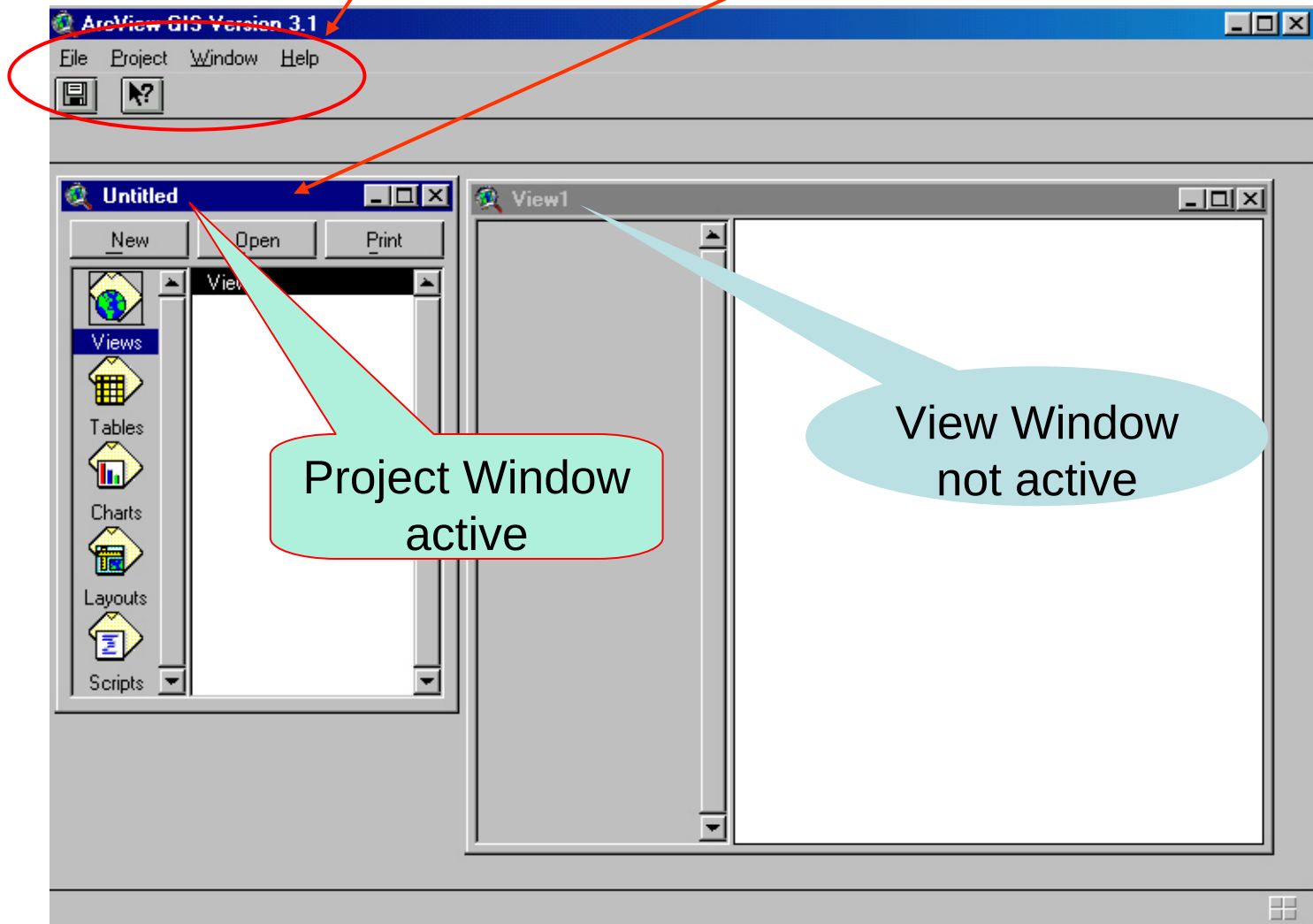
1 Click new button

Selection of Items
: View of layers
: Tables
: Charts
: Layouts
: Scripts

Open new of selected item in left
At this stage concentrate only on View

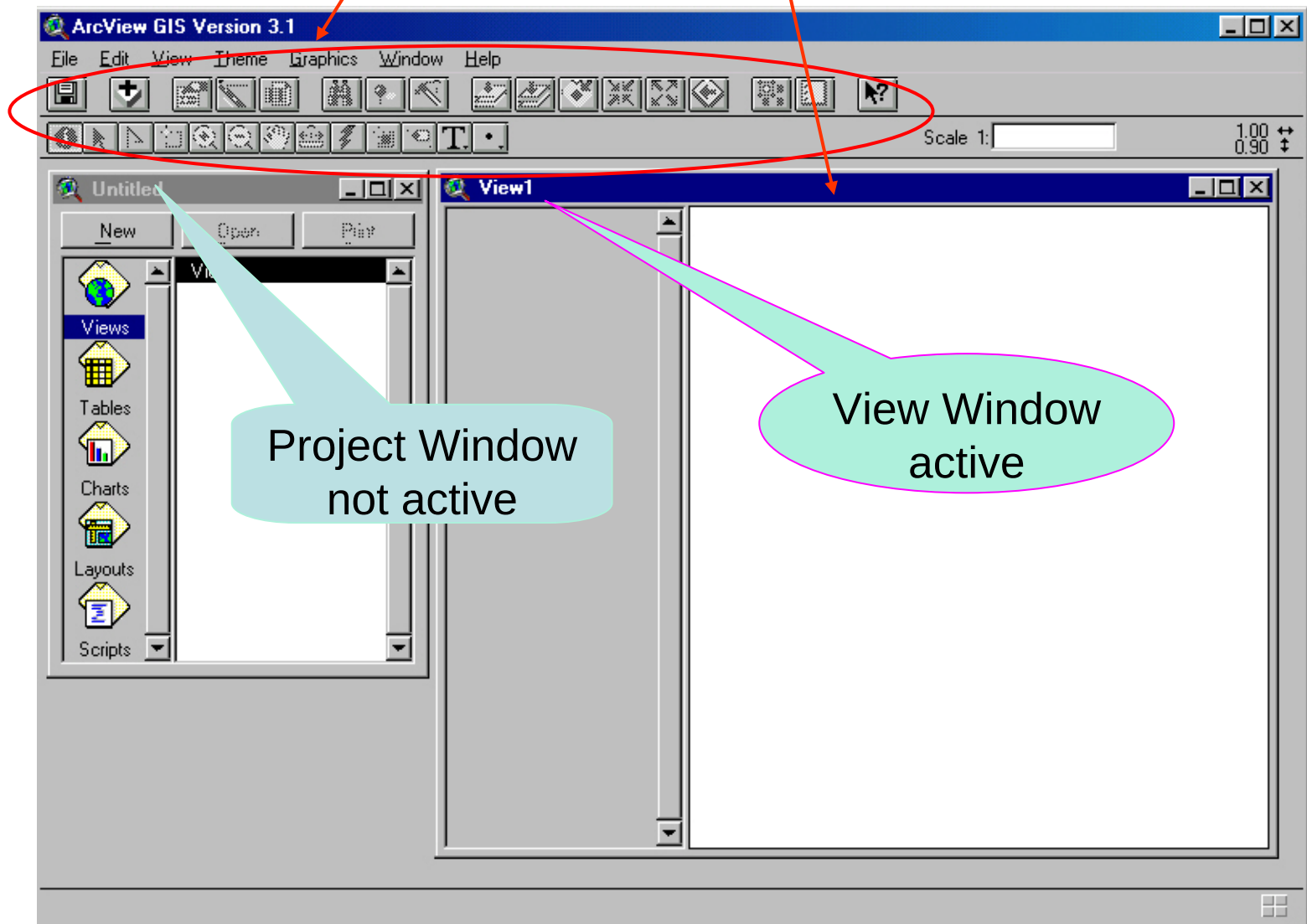
Learning View window and Project window

1. Project Menu will active when Project window is active

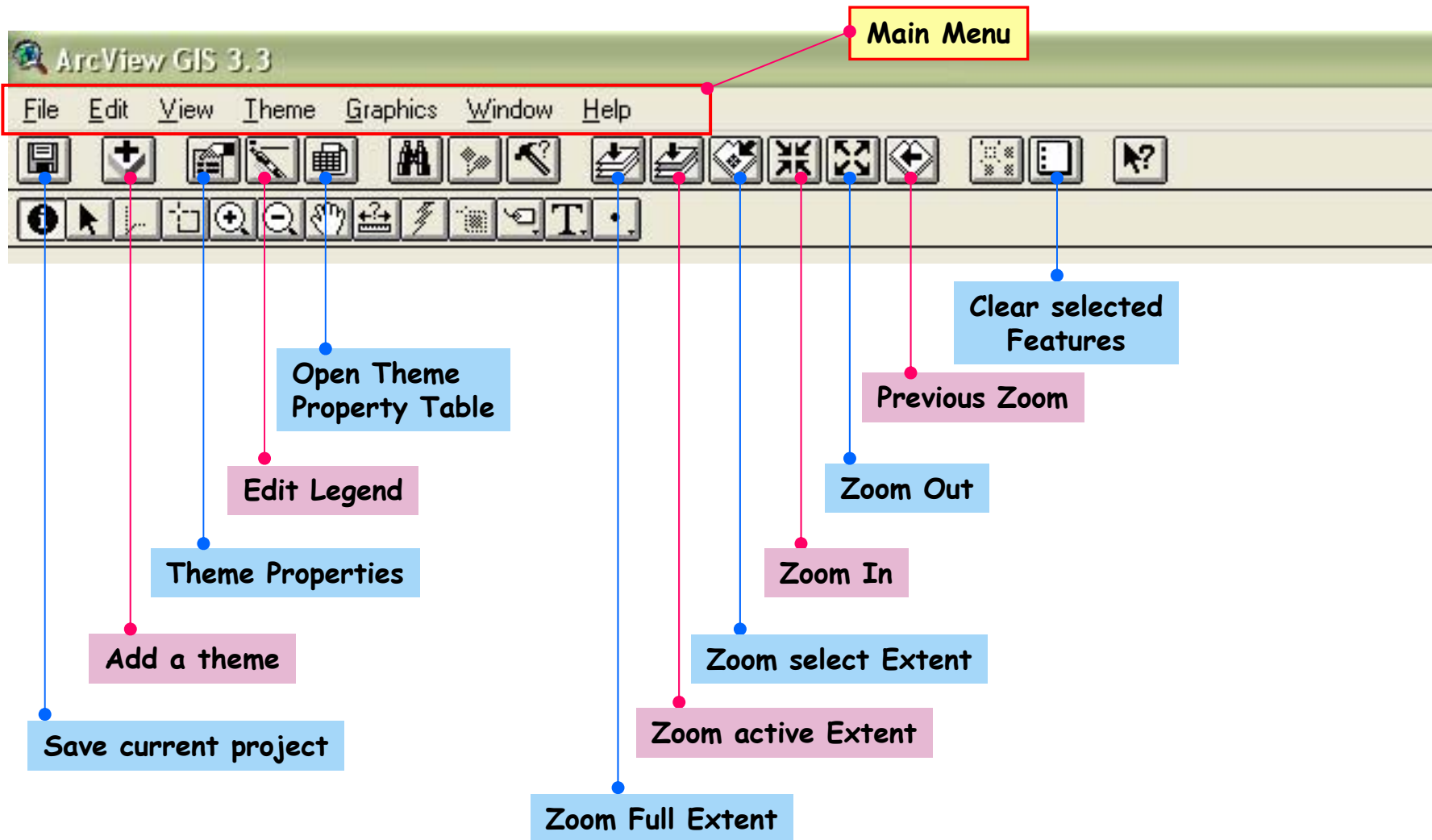


Learning View window and Project window

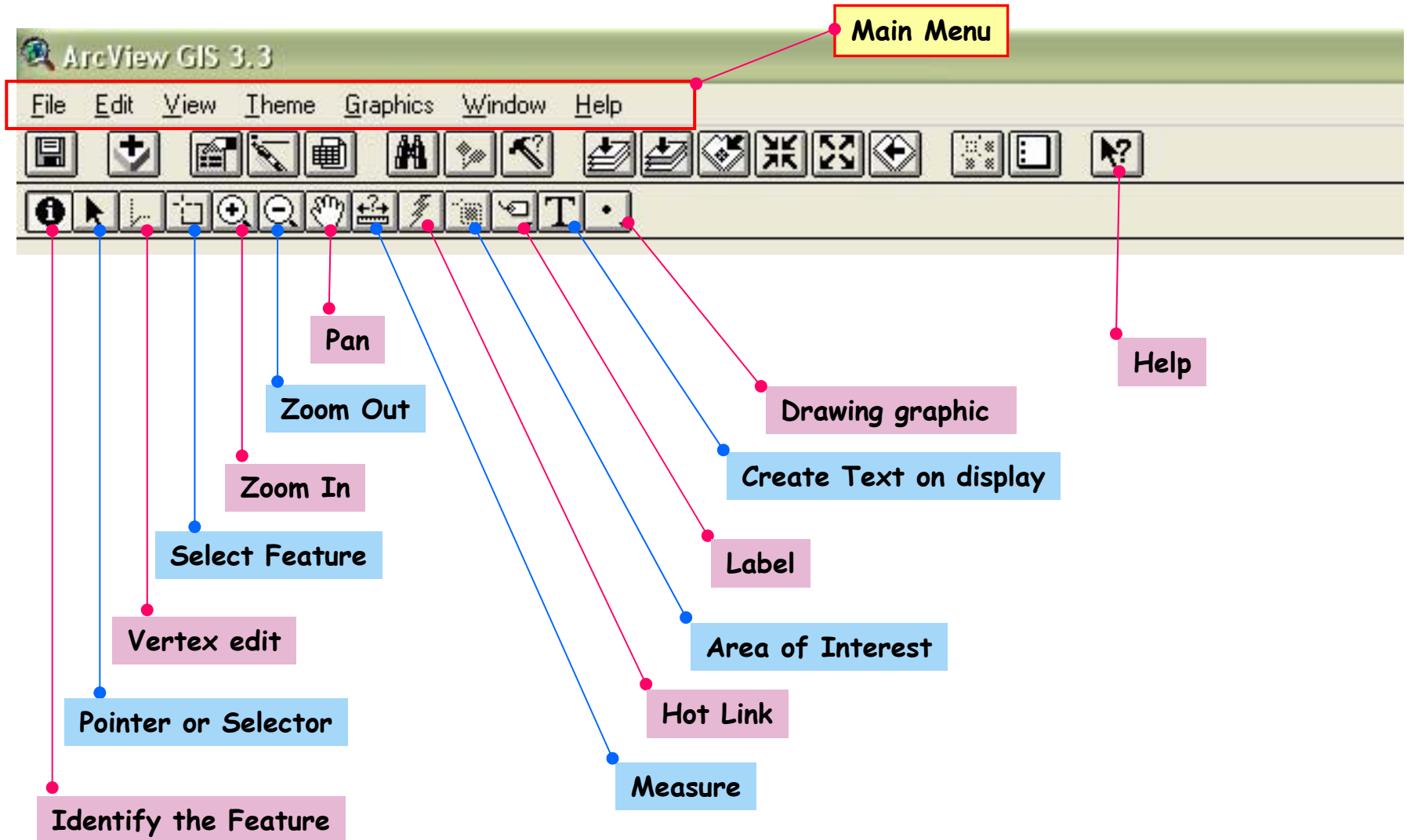
2. View Menu will active after View window is active



The ArcView Main Menu and Button for View Windows



The ArcView Main Menu and Button (cont.)

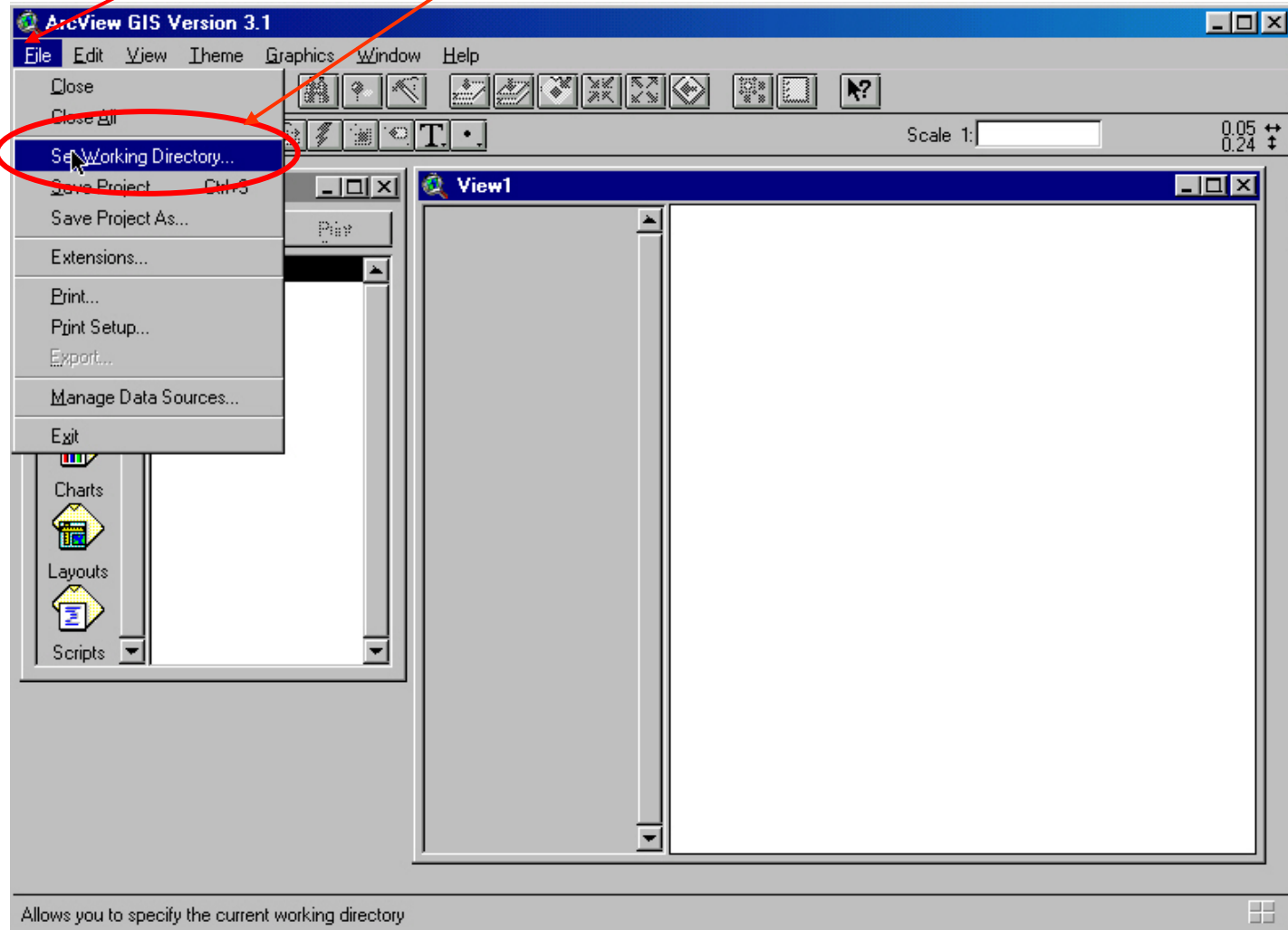


Learning View window and Project window

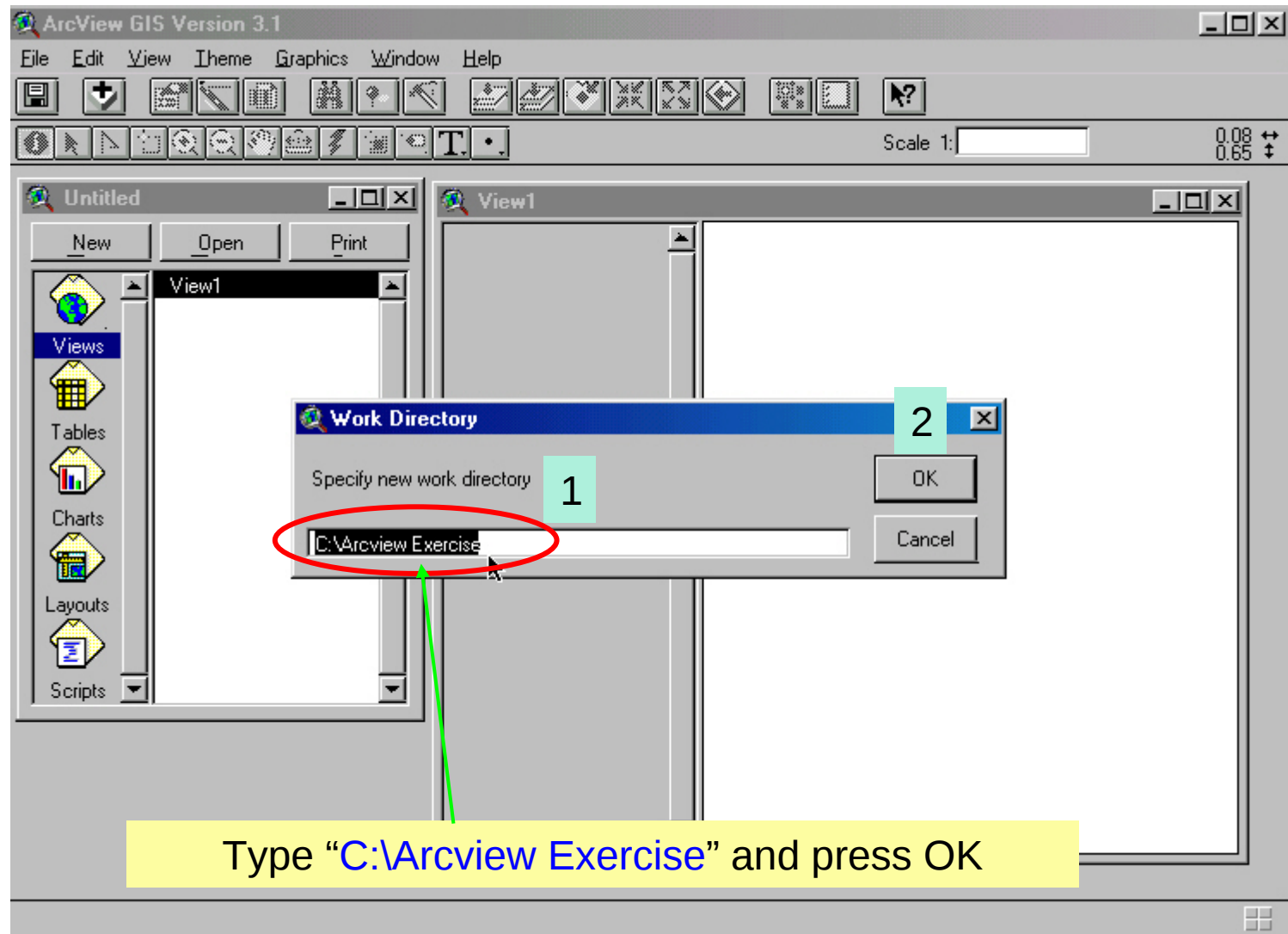
Click File menu and Set Working Directory

1

2

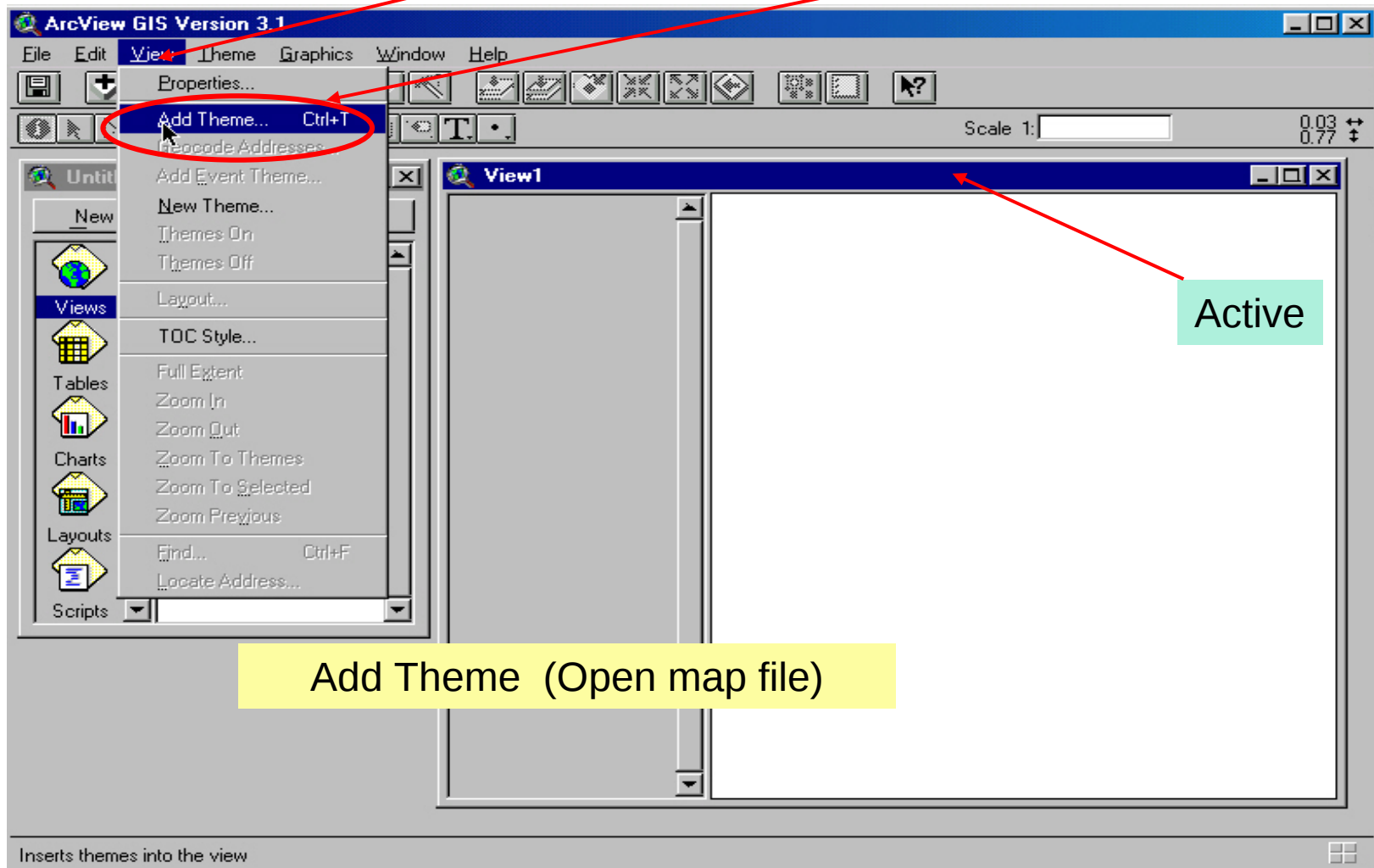


Learning View window and Project window



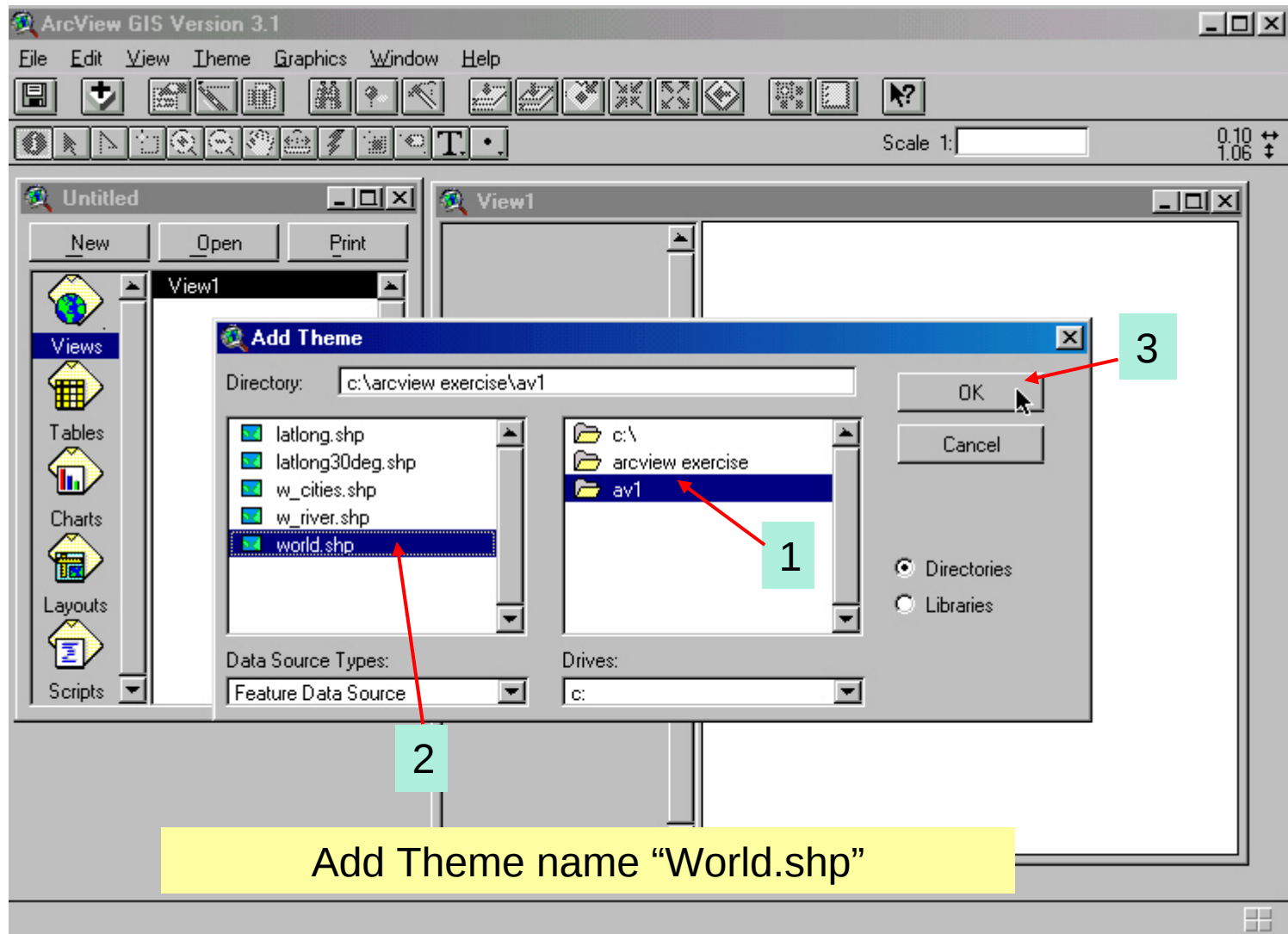
Learning View window and Project window

1. Click View menu and 2. click Add Theme

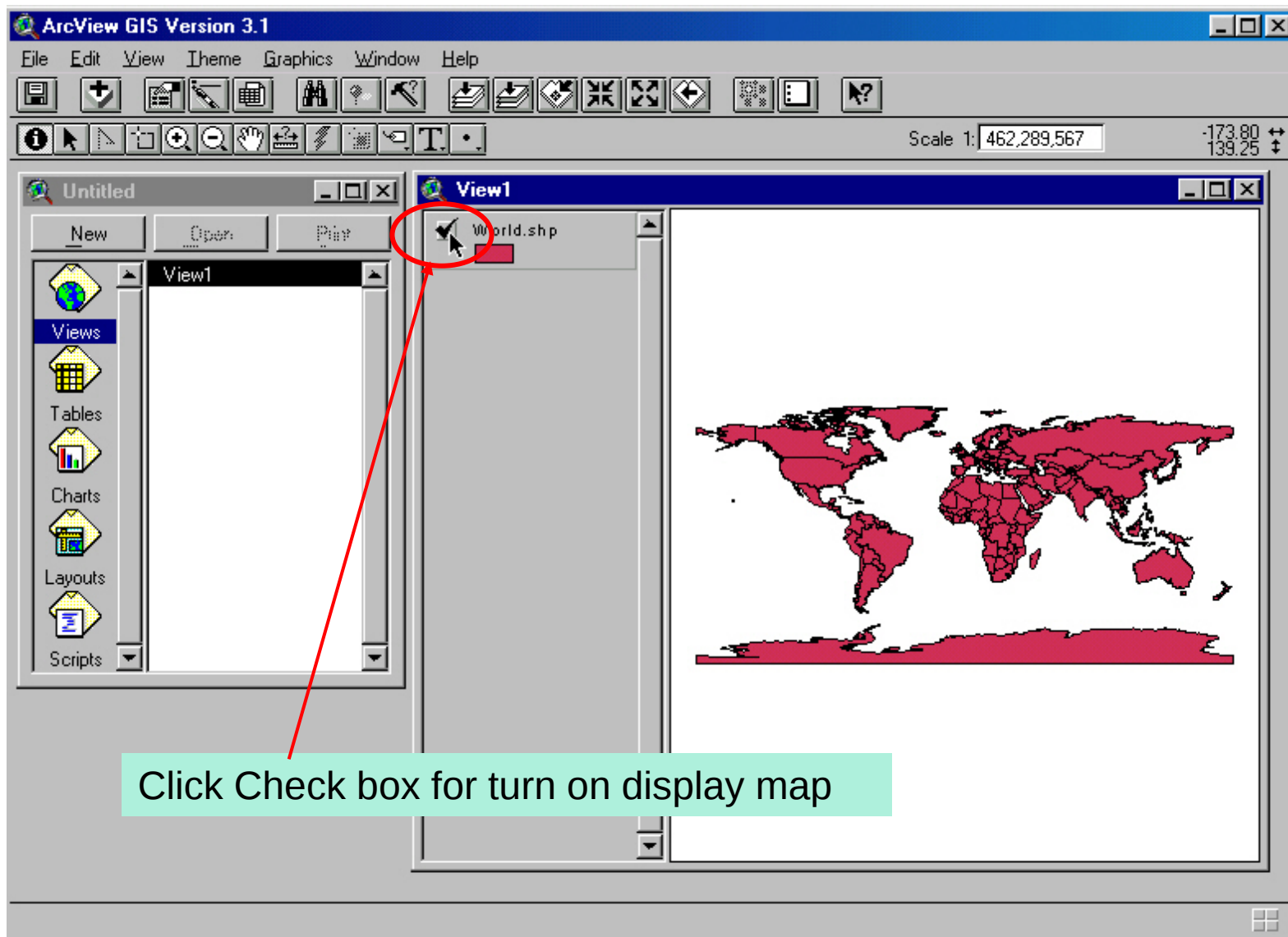


Learning View window and Project window

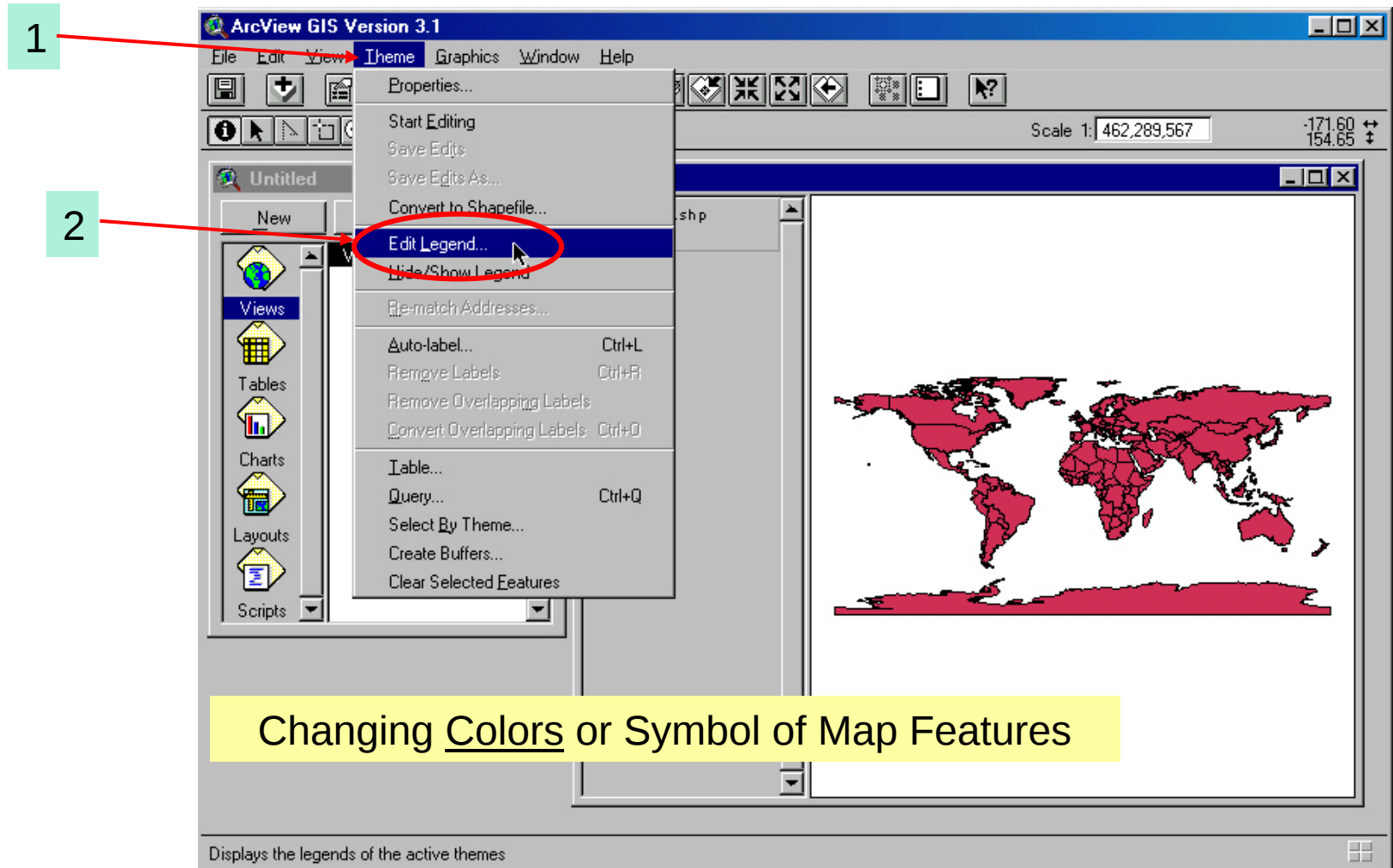
(format of map in ArcView called “Shape file”)



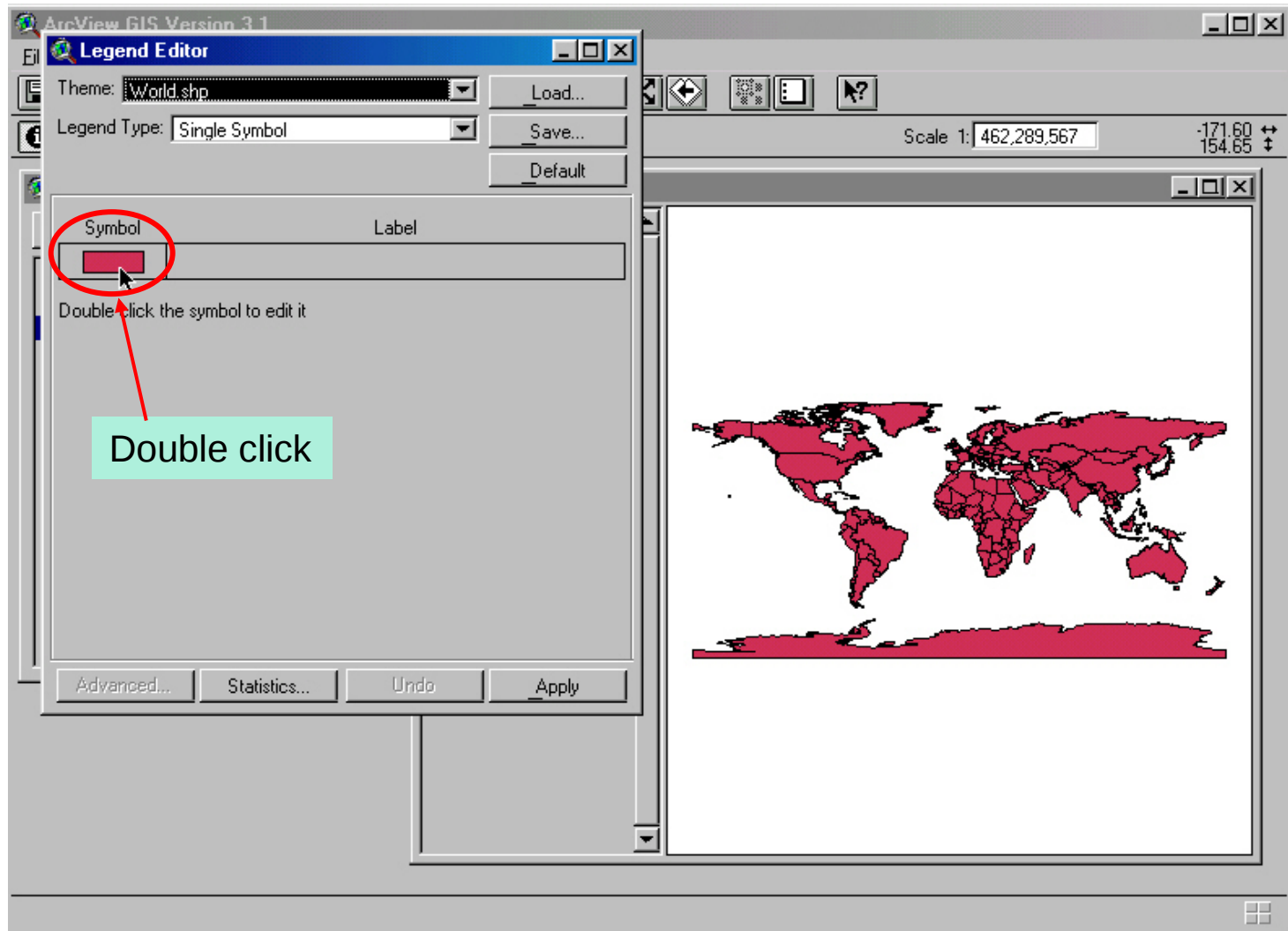
Learning View window and Project window



Learning View window and Project window

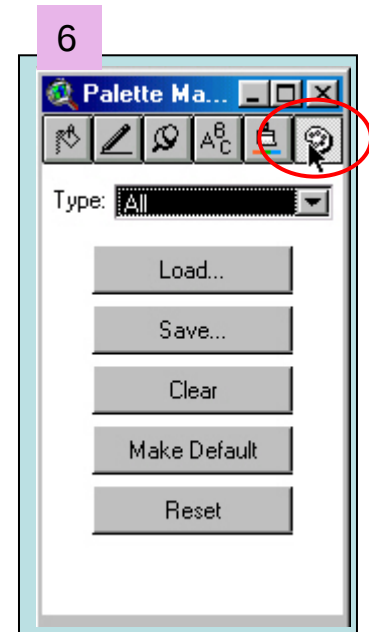
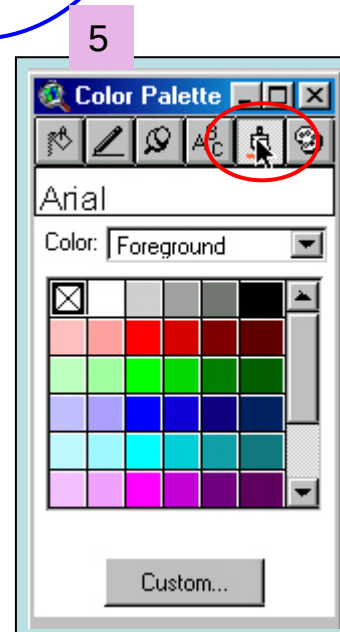
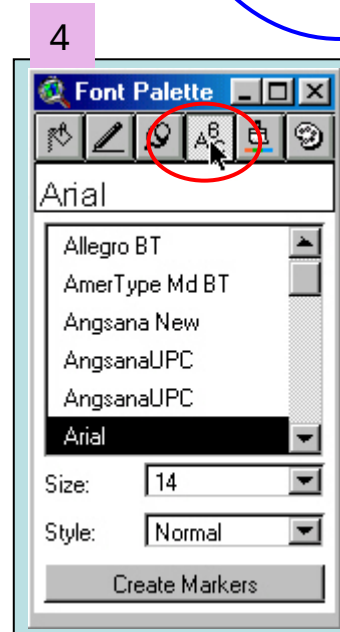
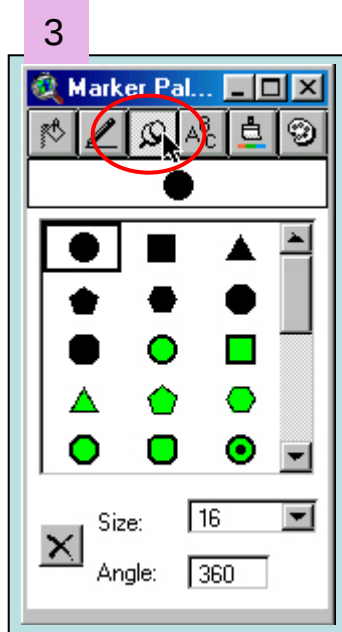
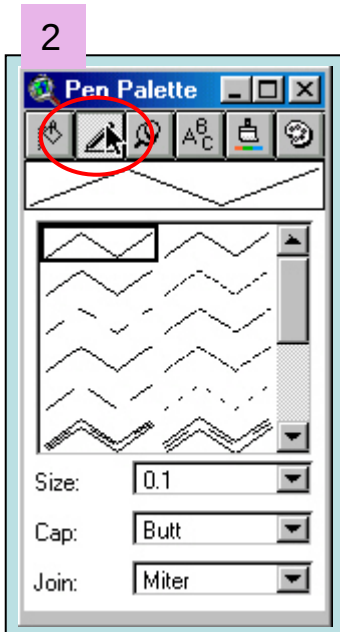
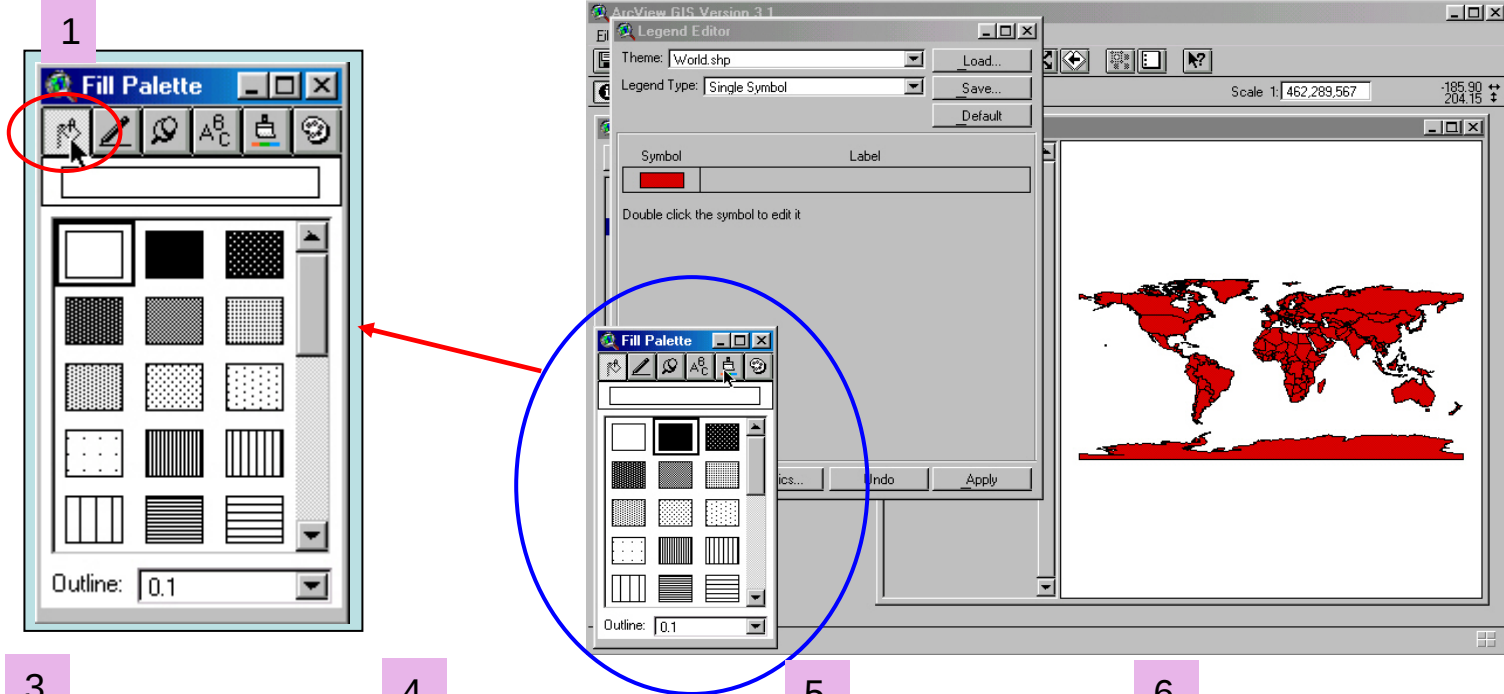


Learning View window and Project window



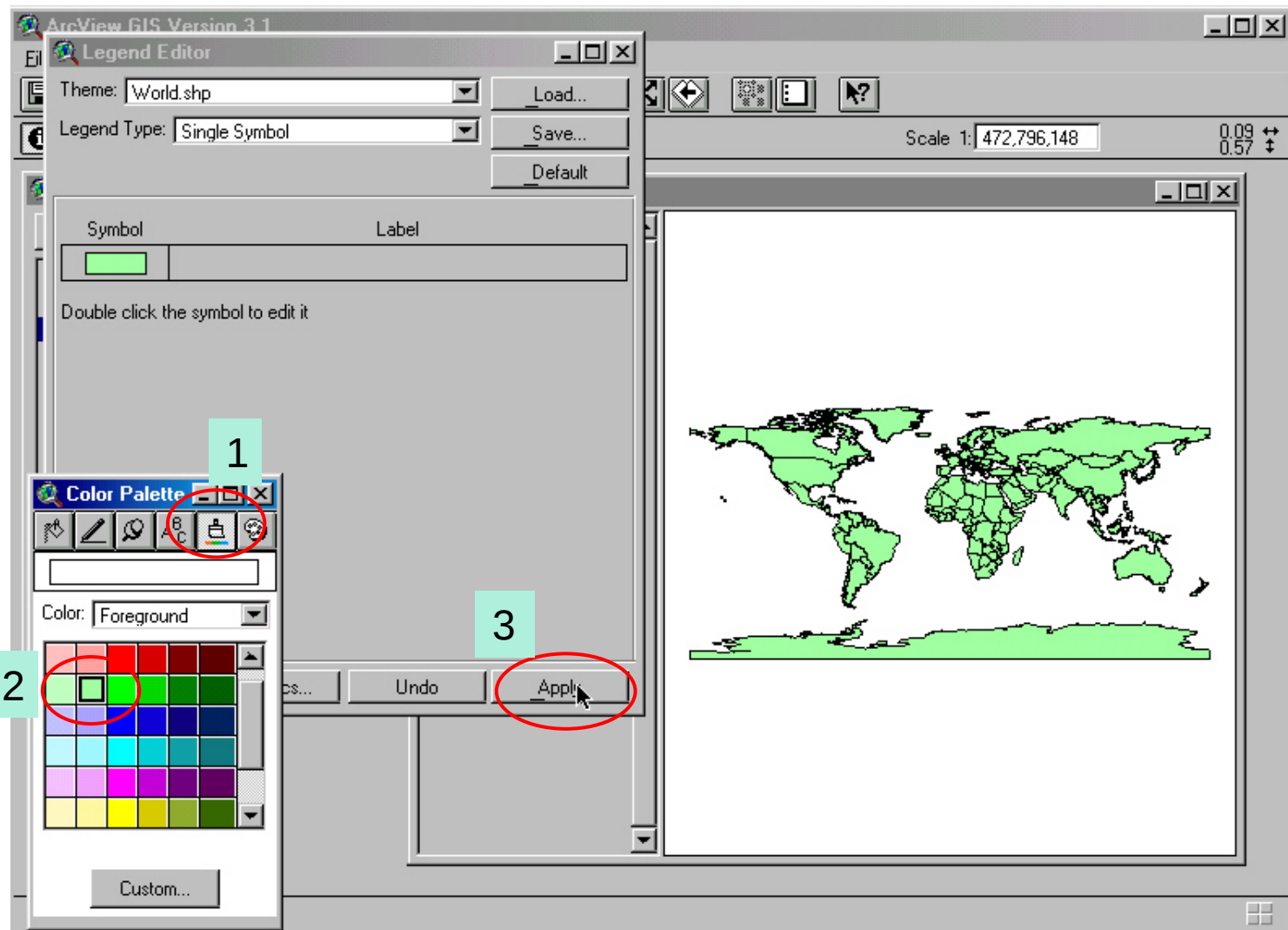
Type of Palette

- 1 : Fill Palette
- 2 : Pen Palette
- 3 : Marker Palette
- 4 : Font Palette
- 5 : Color Palette
- 6 : Palette Manager



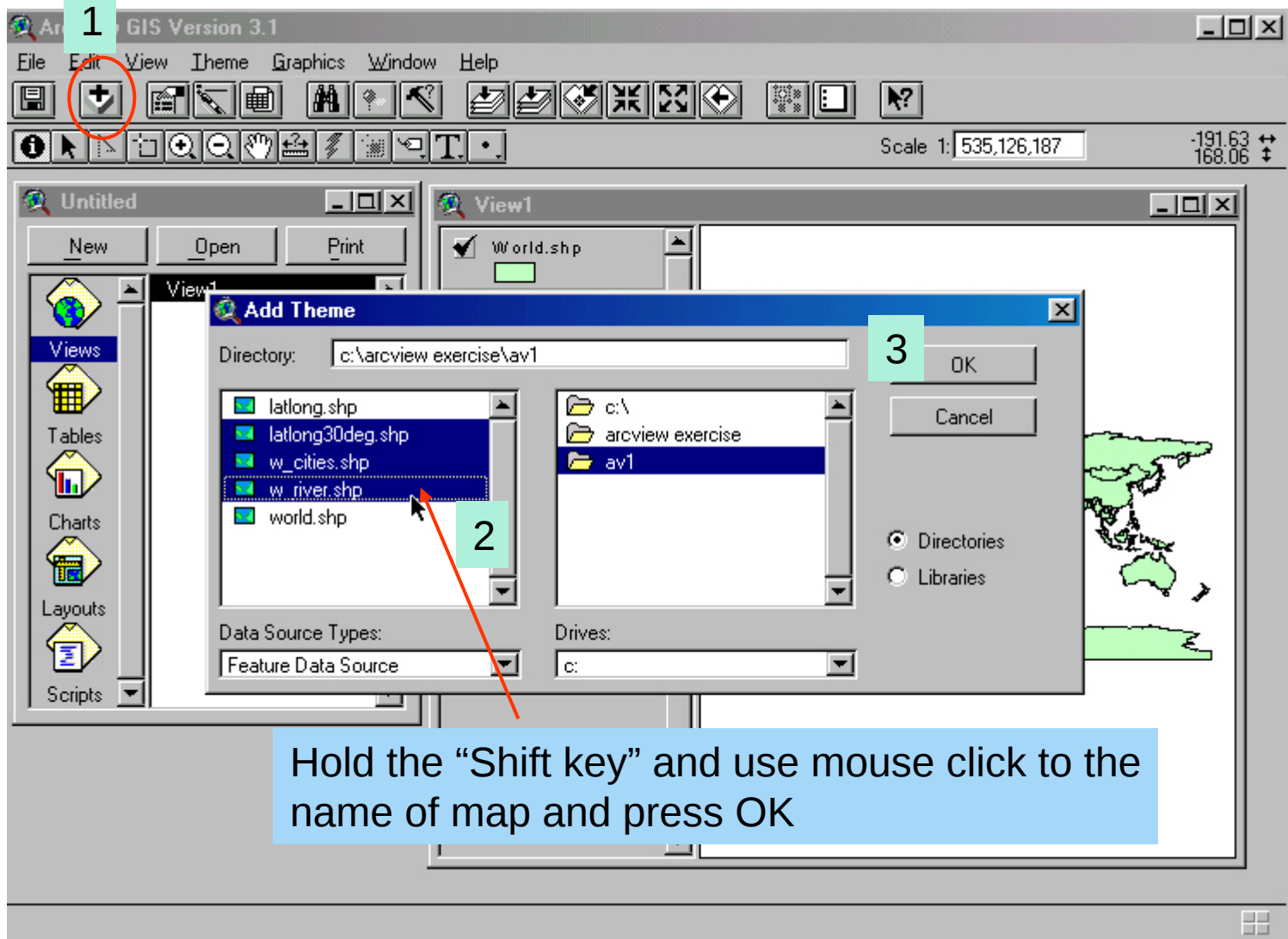
Learning View window and Project window

Change map color



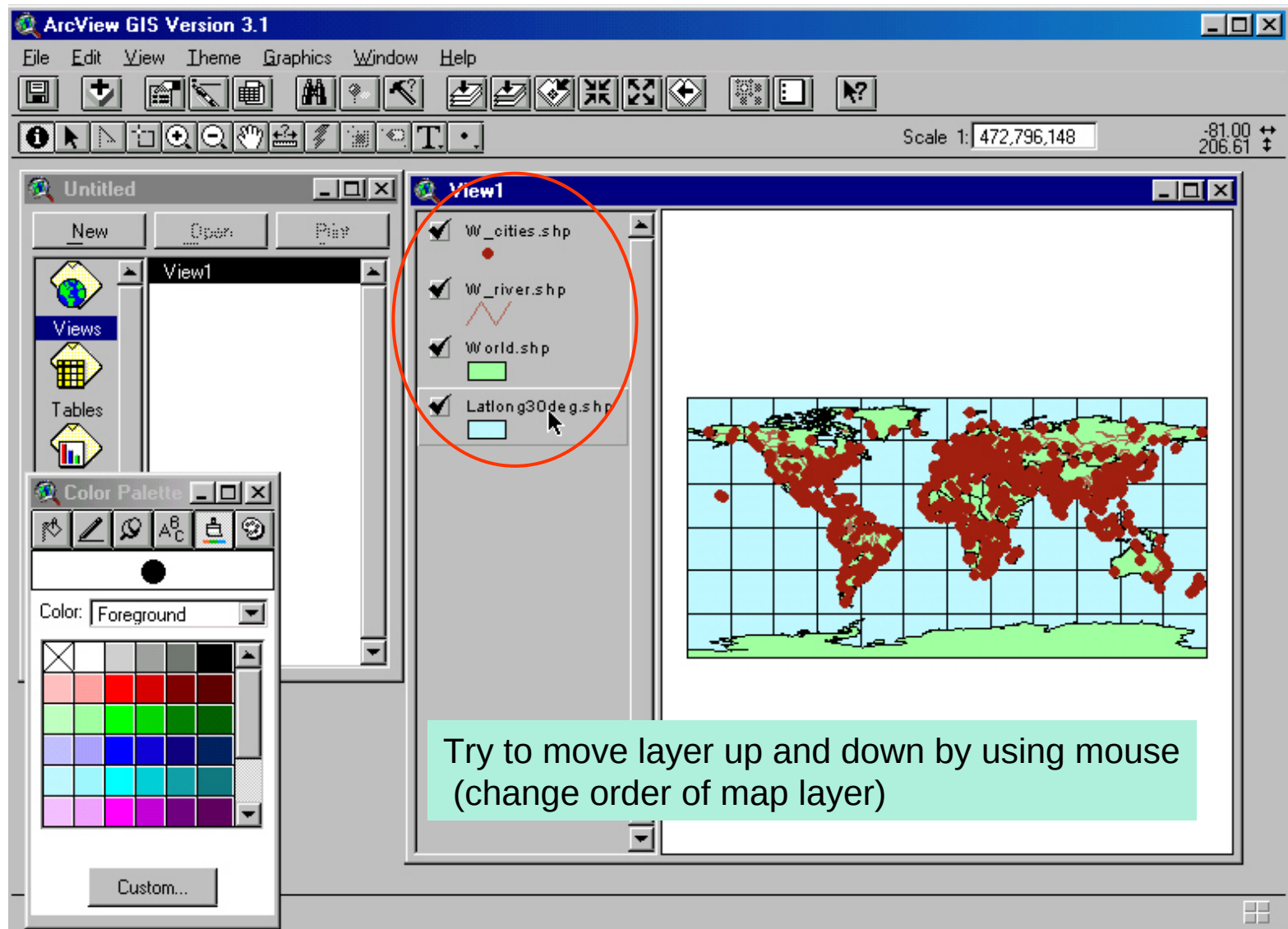
Learning View window and Project window

Add more map in the view

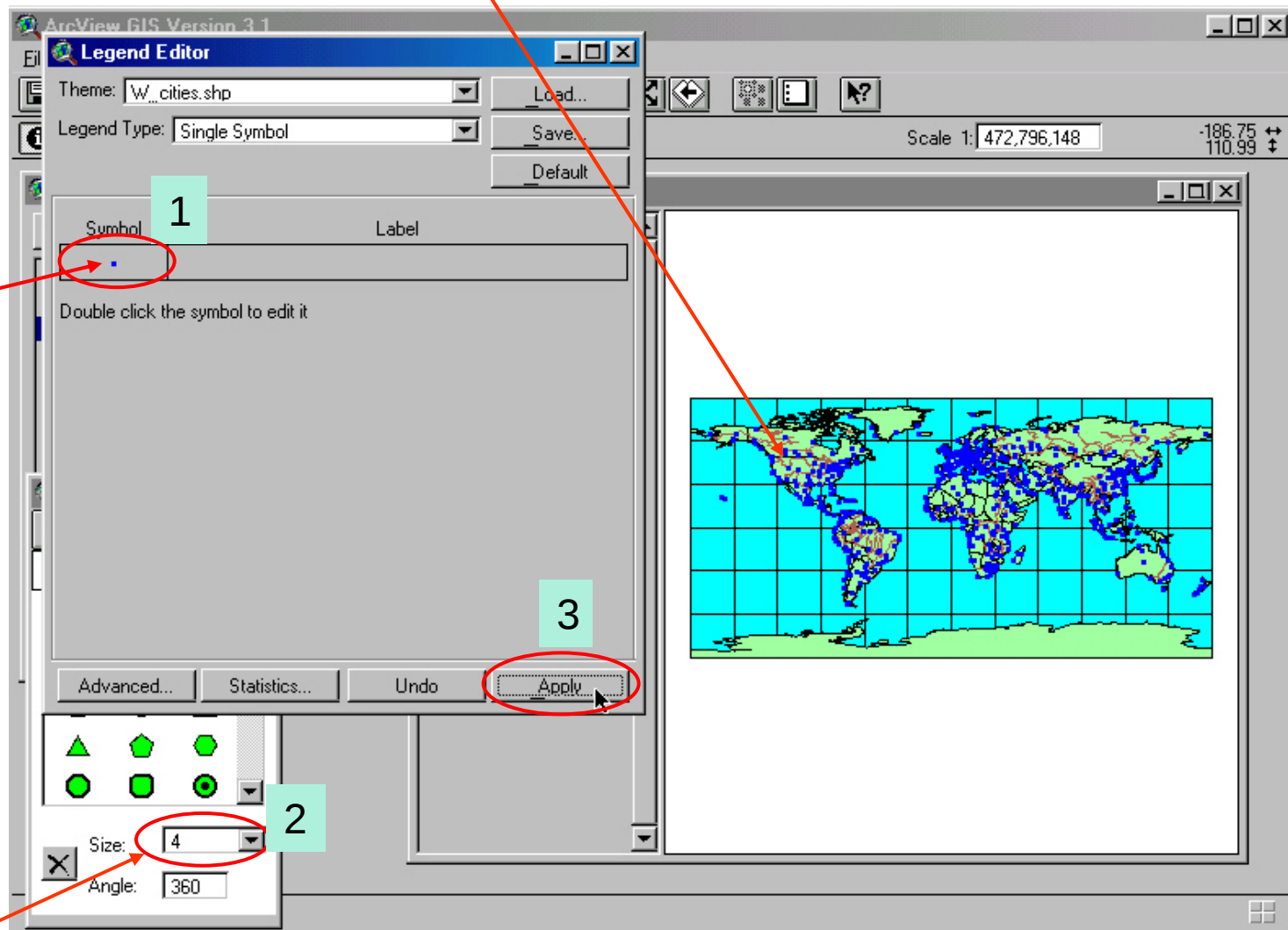
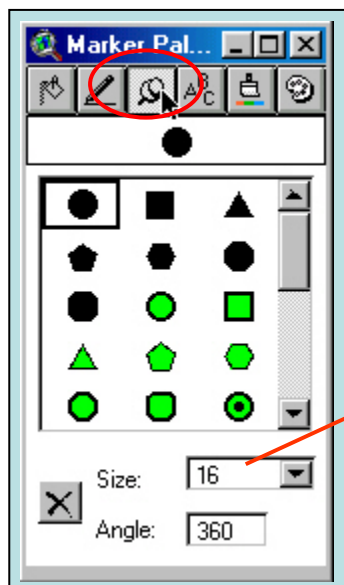
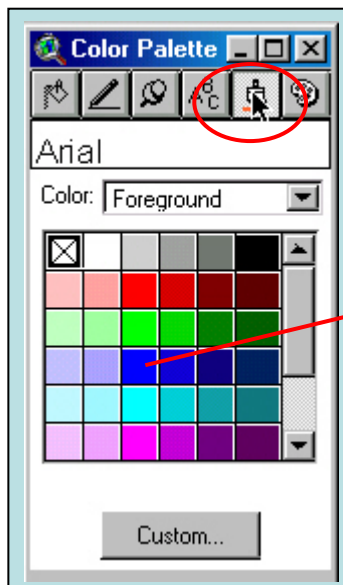


Hold the "Shift key" and use mouse click to the name of map and press OK

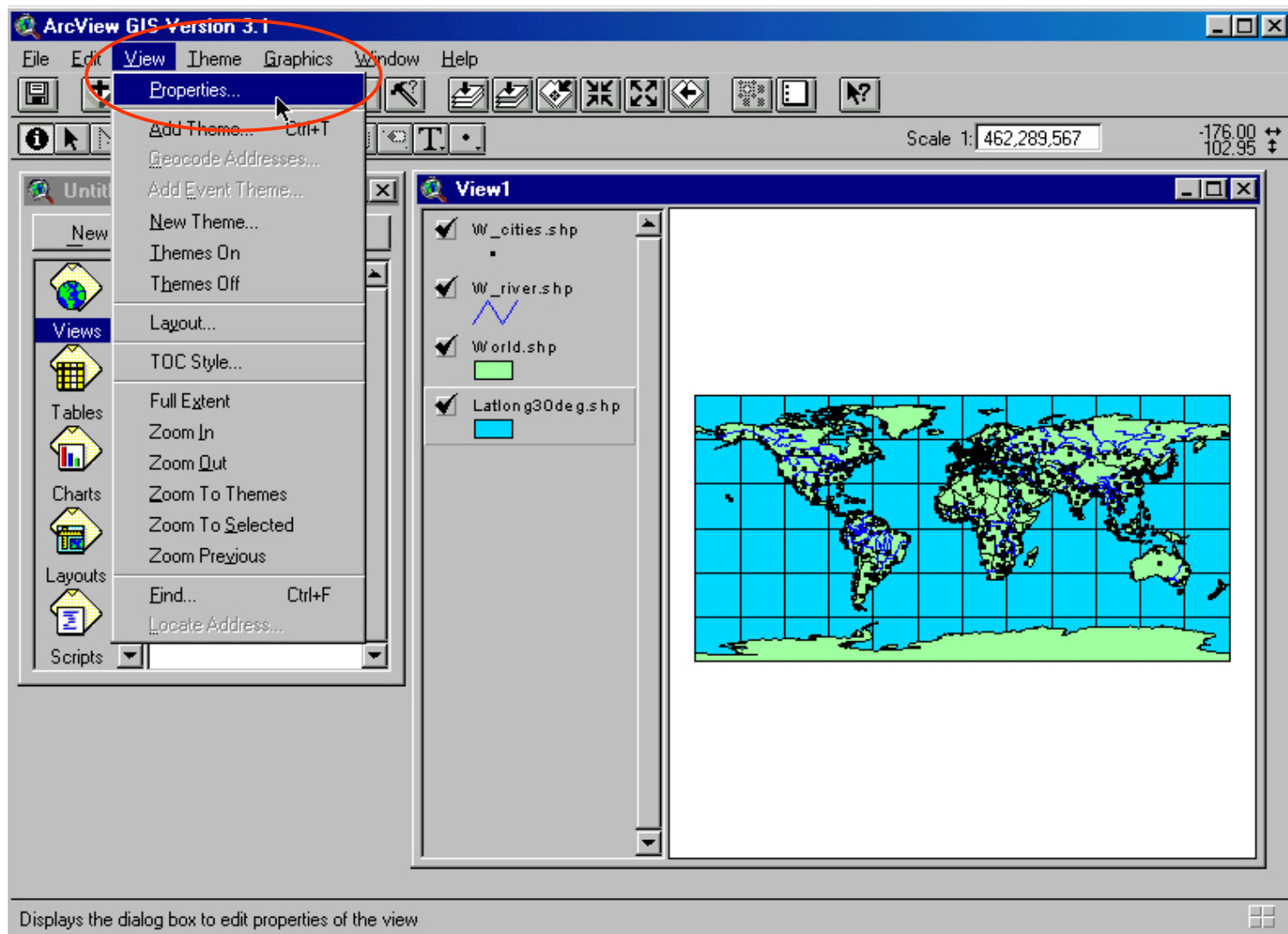
Learning View window and Project window



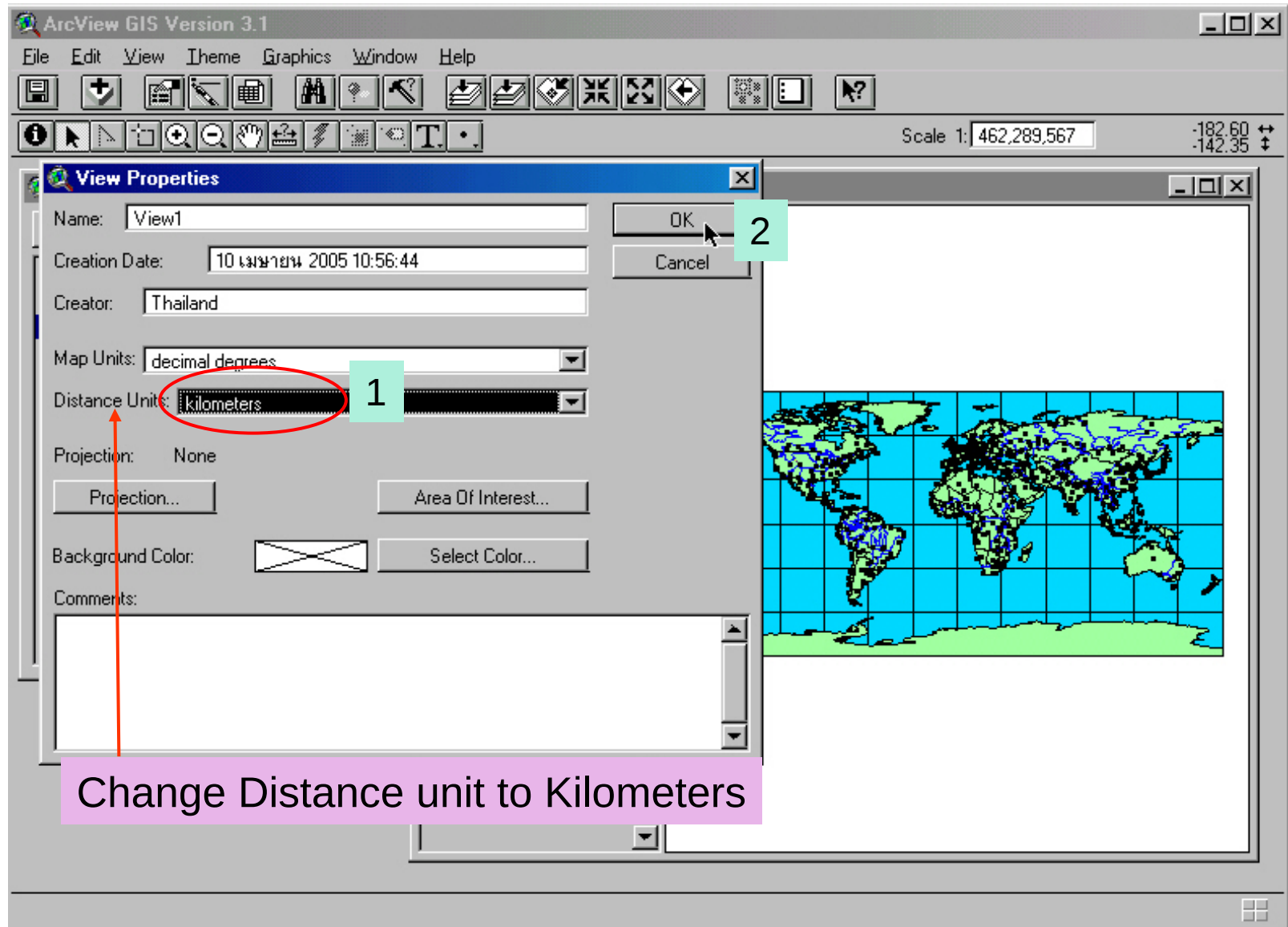
Change Color of Dot and Size by “Color Palette and Marker Palette”



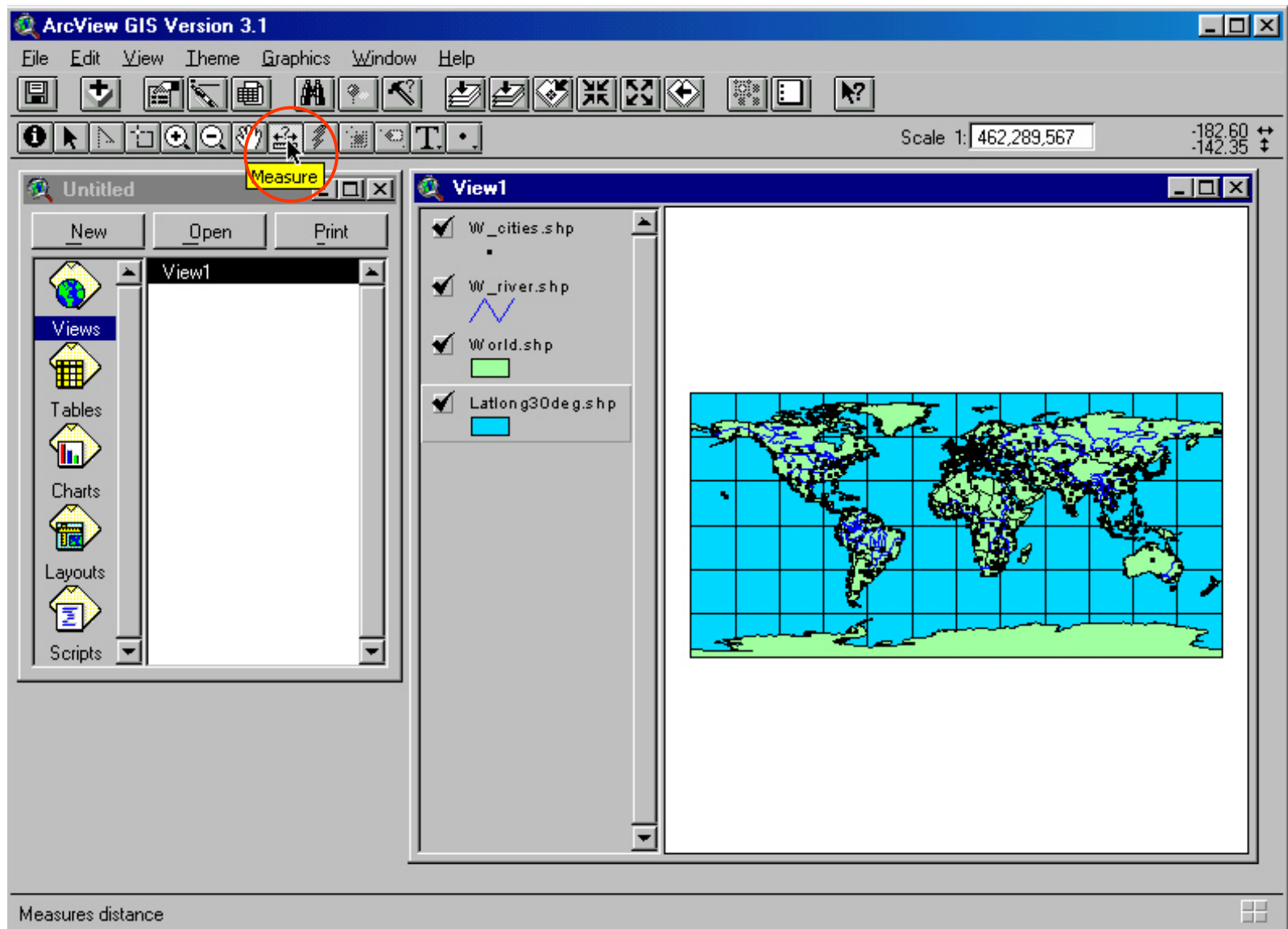
Setup Properties of Theme

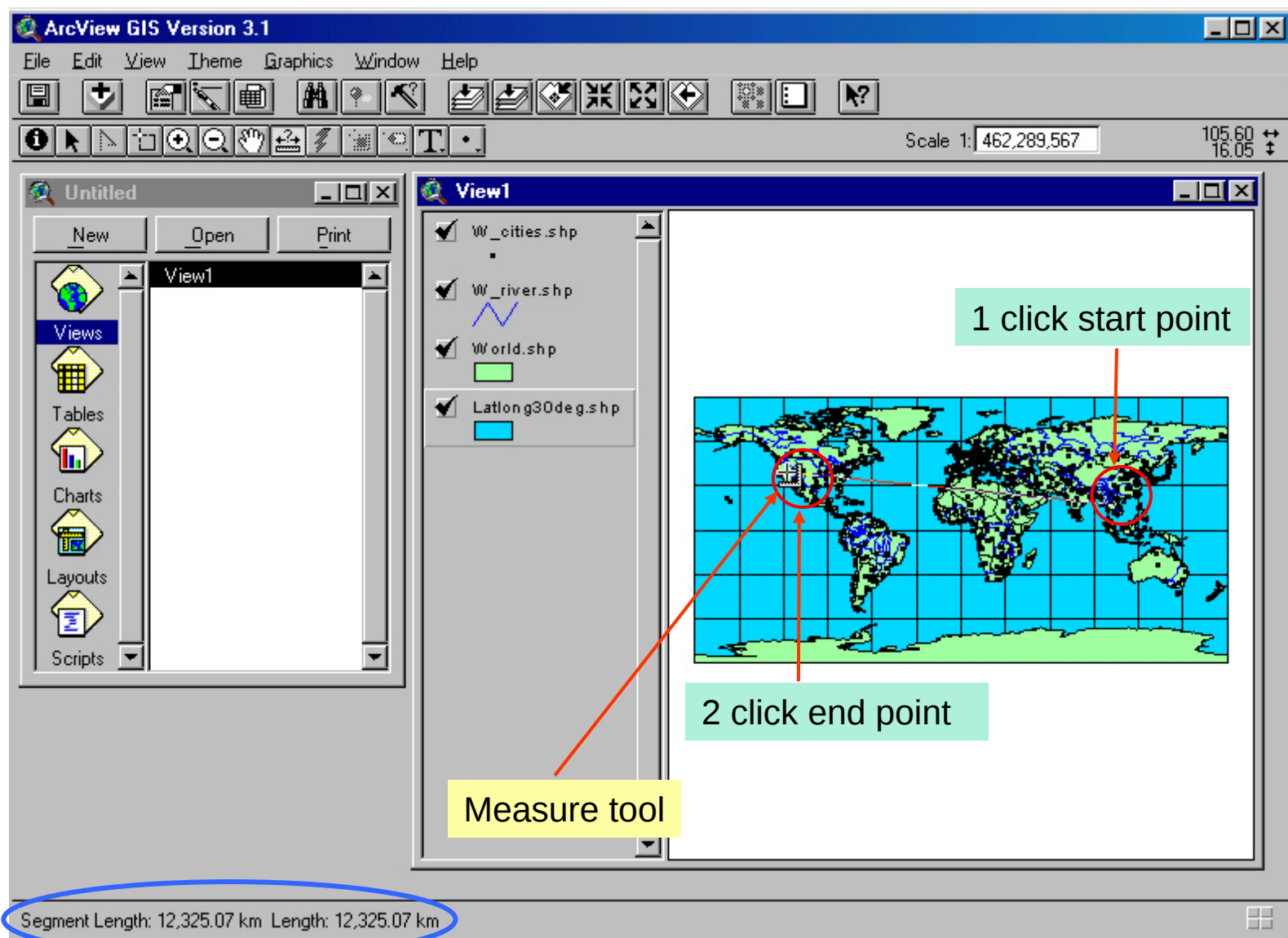


Properties of Theme



Use Measure button for measure distance

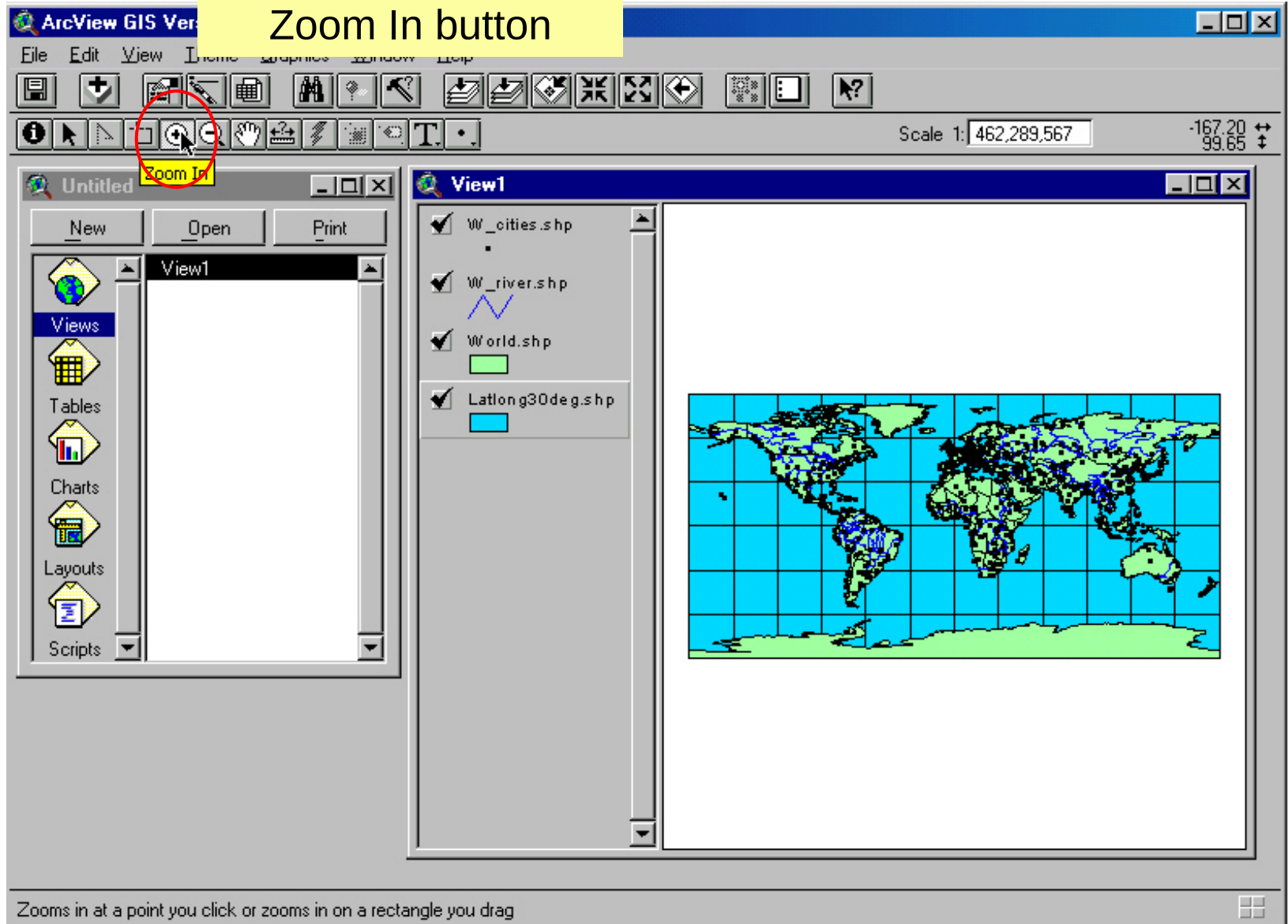




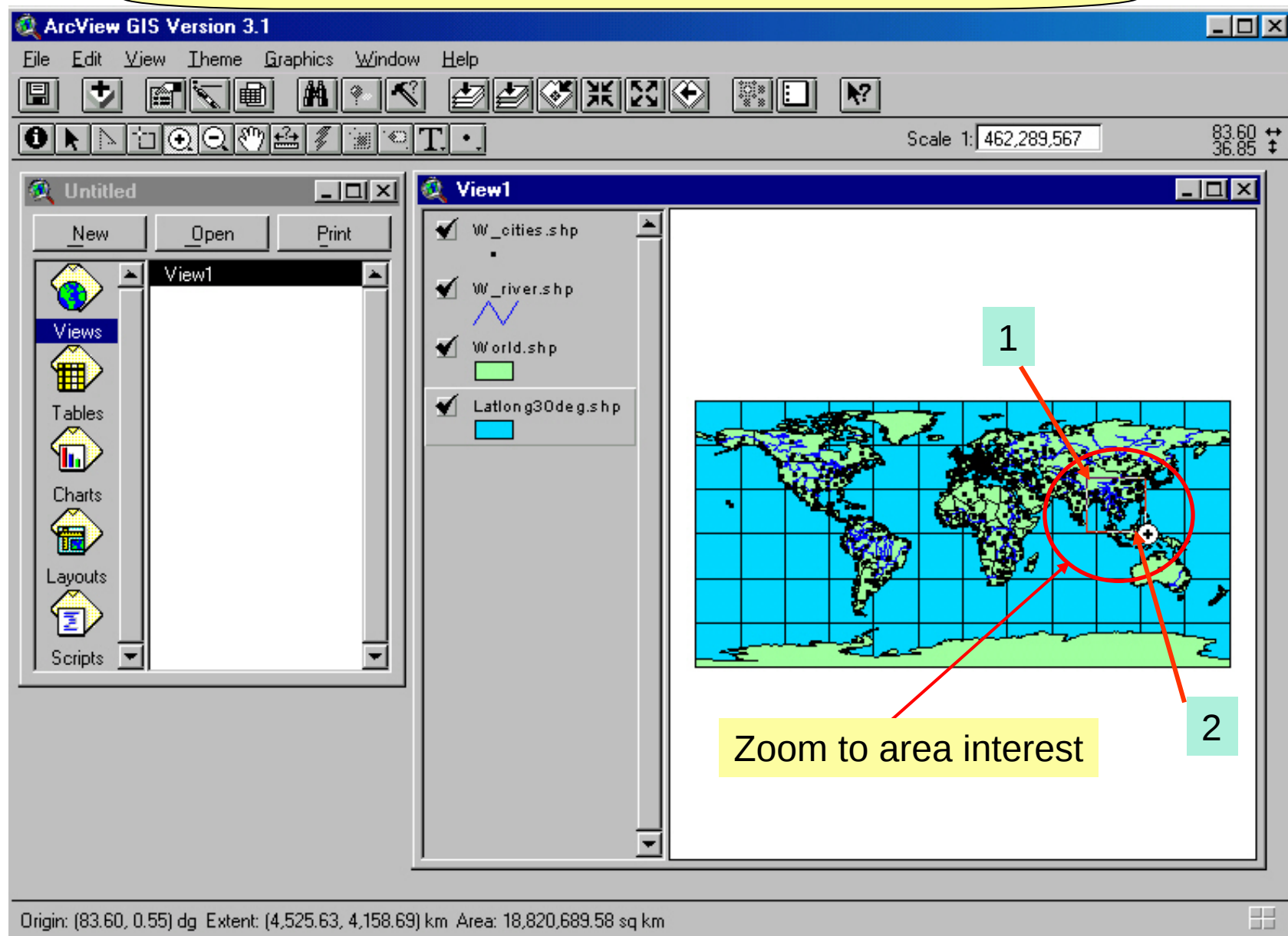
How many kilometer from Thailand to USA? (approximate)

Learning View window and Project window

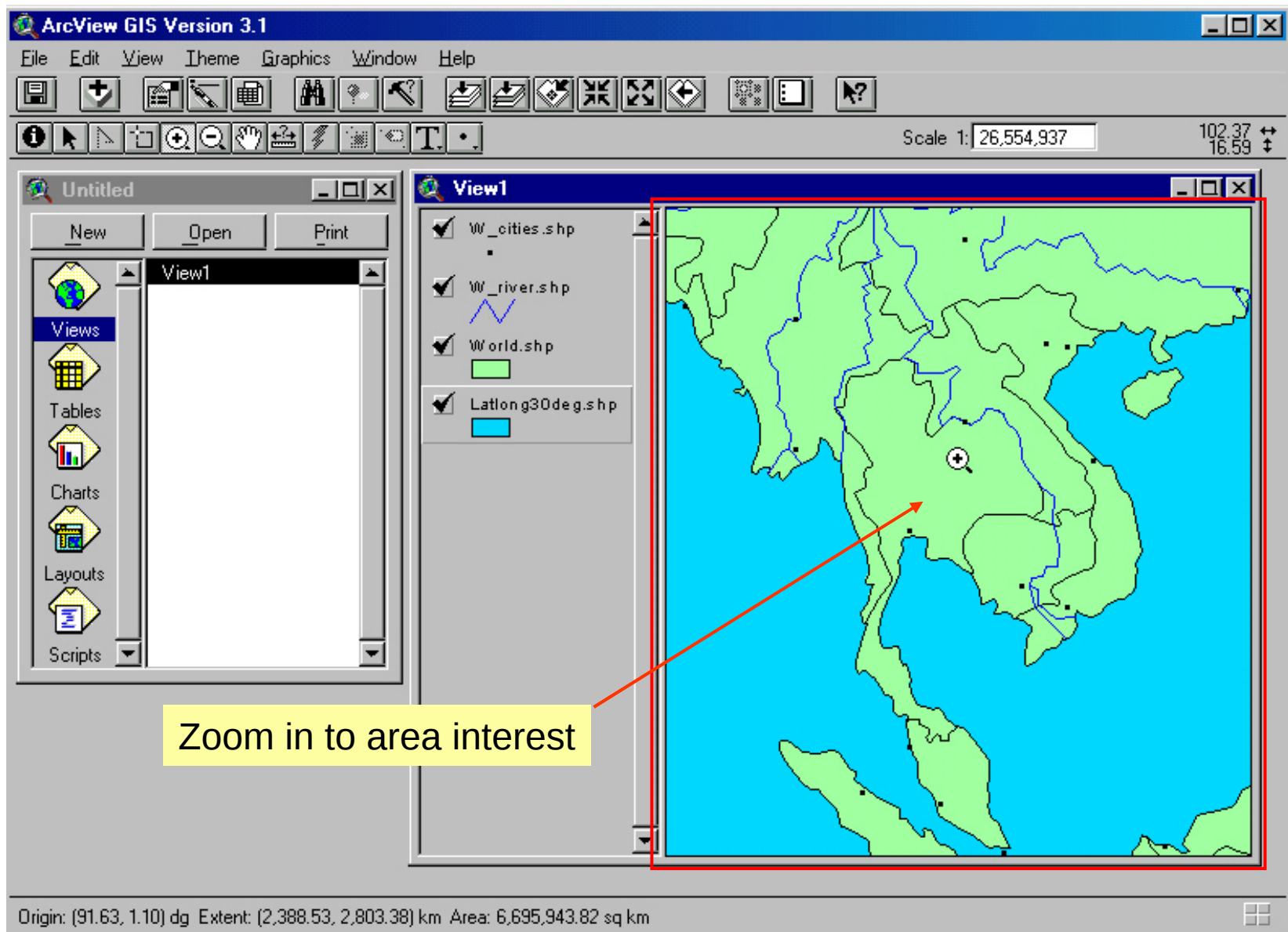
Zoom In button



Learning View window and Project window



Learning View window and Project window



Learning View window and Project window

ArcView GIS Version 3.1

File Edit View Theme Graphics Window Help

Zoom to Full Extent

Scale 1: 26,554,937 102.37 16.59

Untitled

New Open Print

Views

Tables

Charts

Layouts

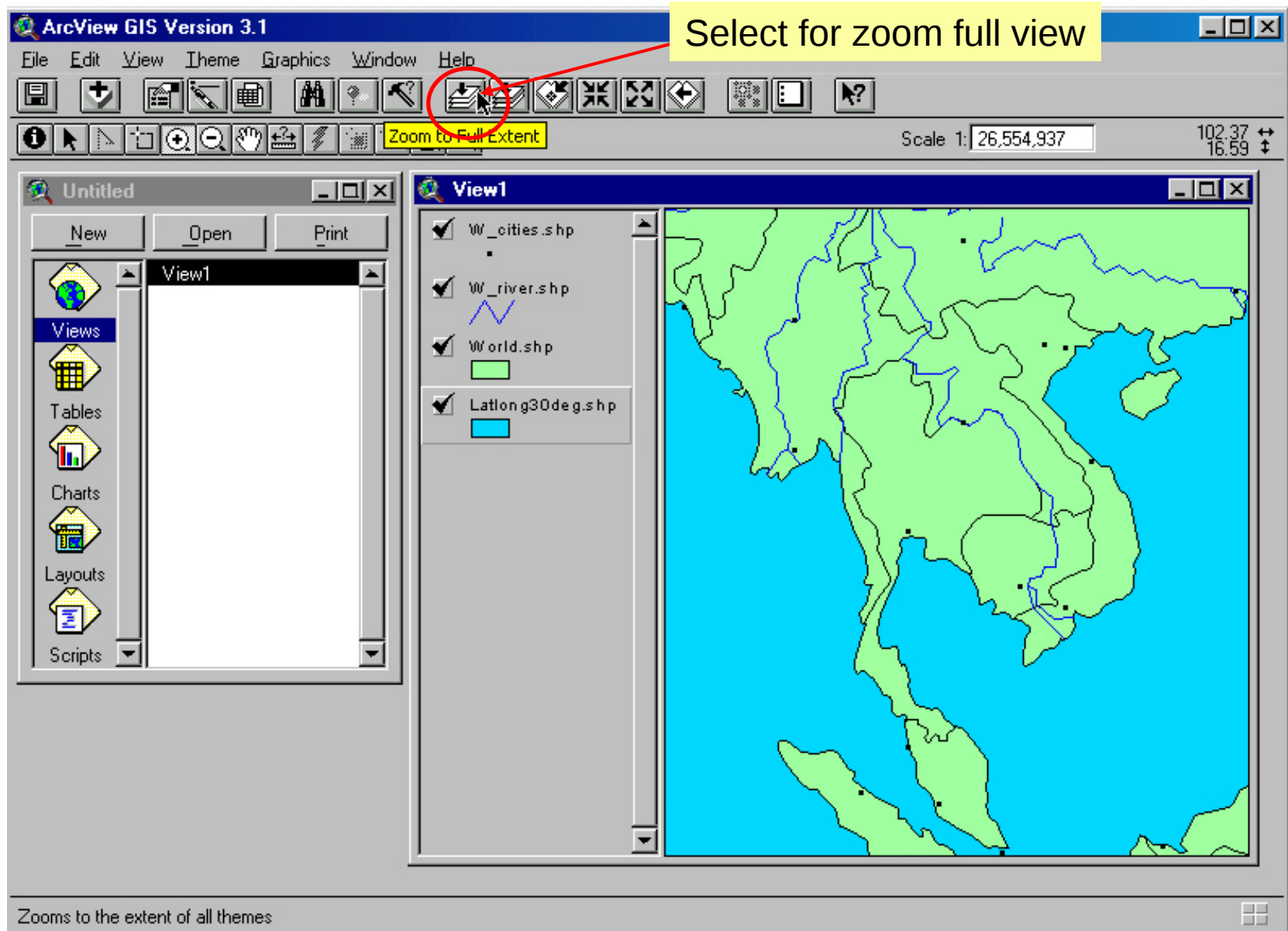
Scripts

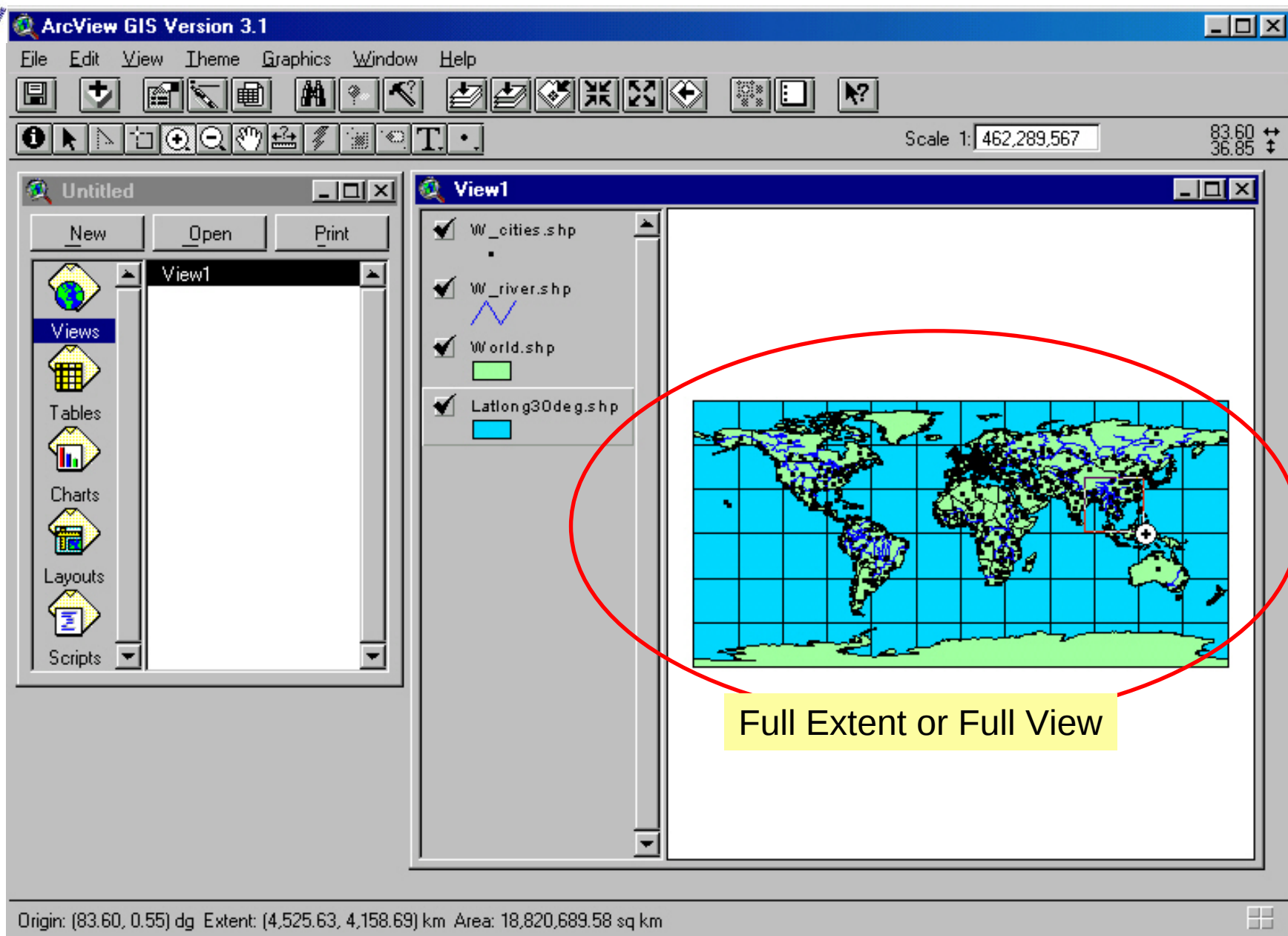
View1

- ☒ W_cities.shp
- ☒ W_river.shp
- ☒ World.shp
- ☒ Latlong30deg.shp

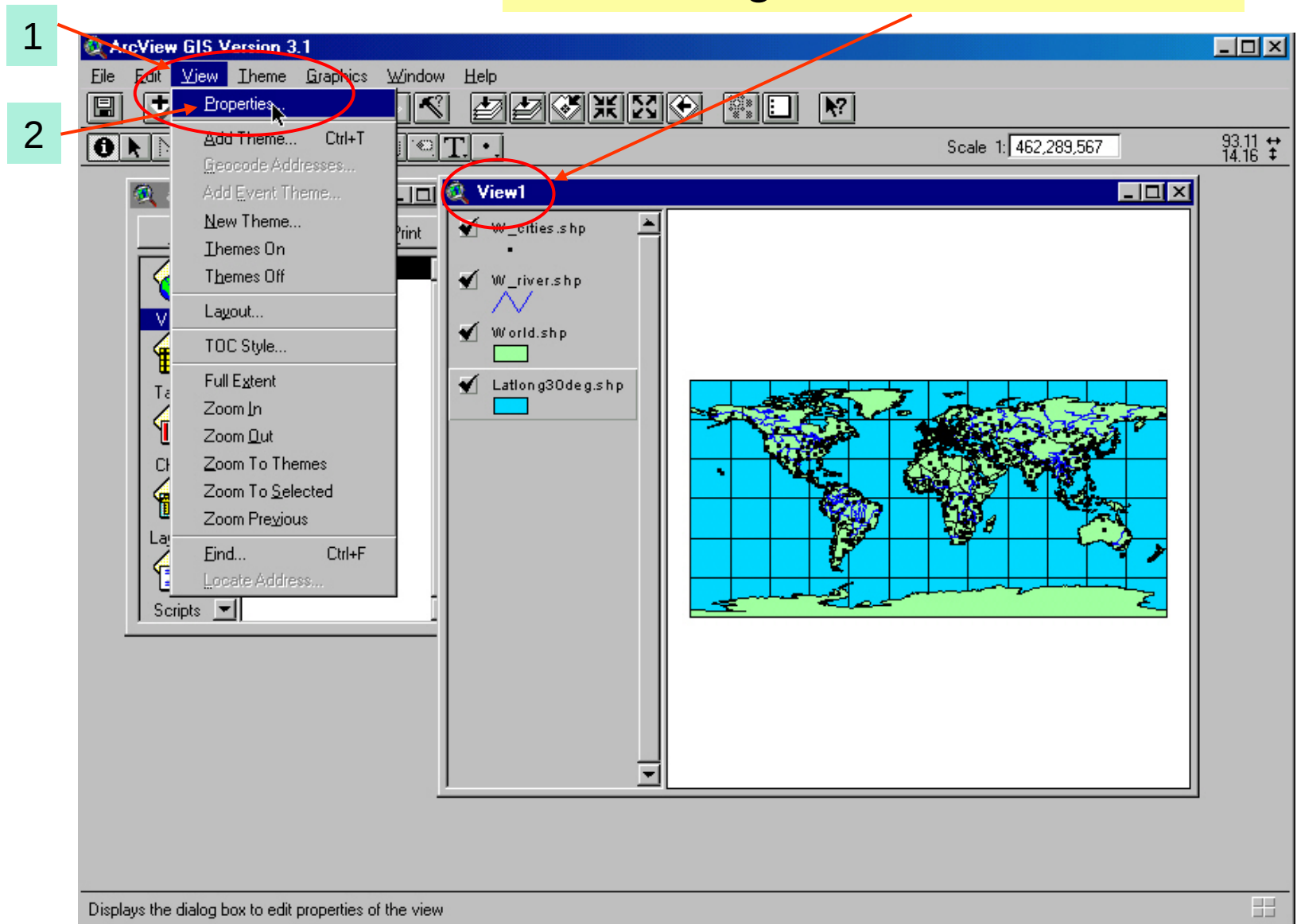
Zooms to the extent of all themes

Select for zoom full view

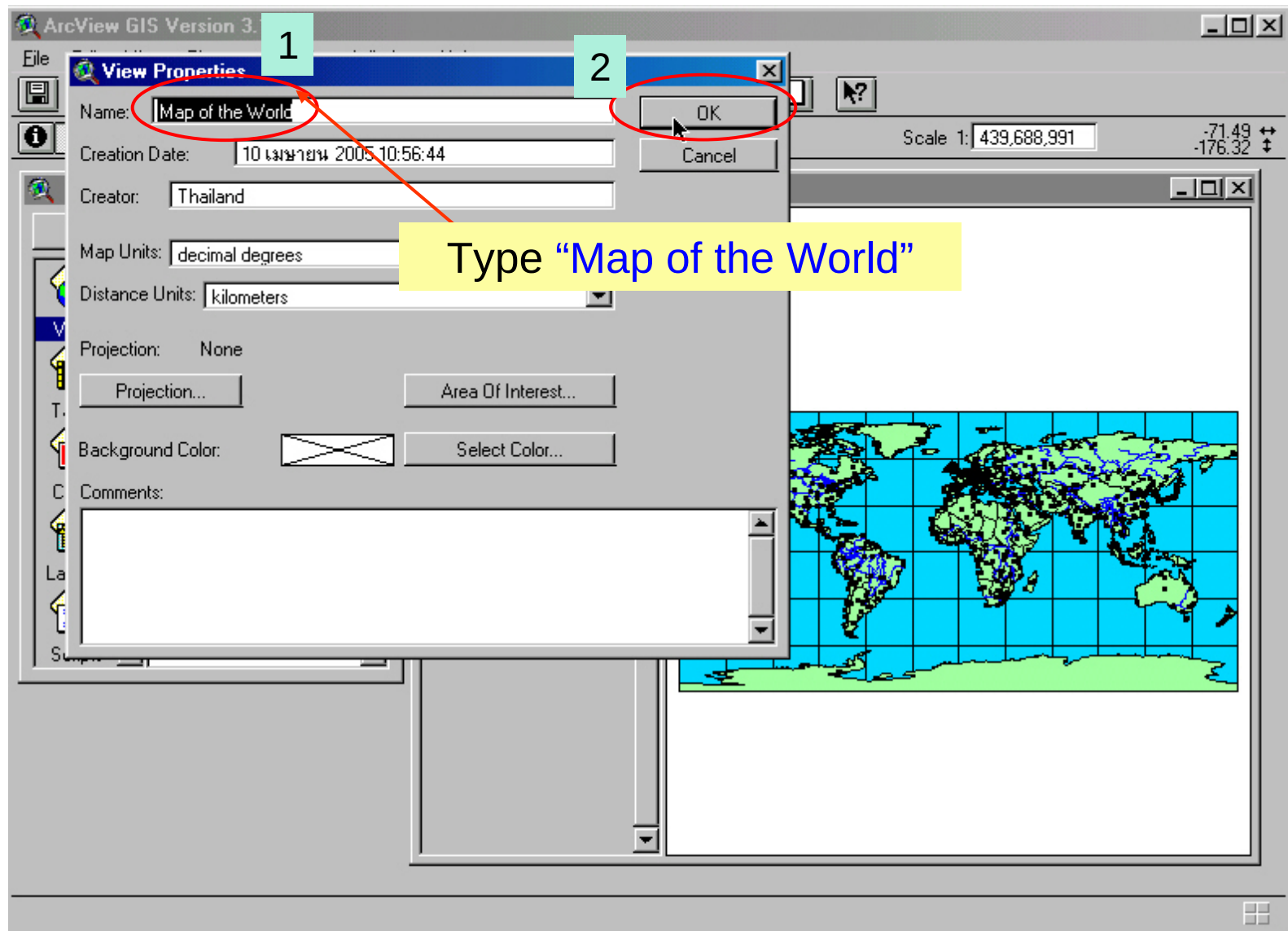




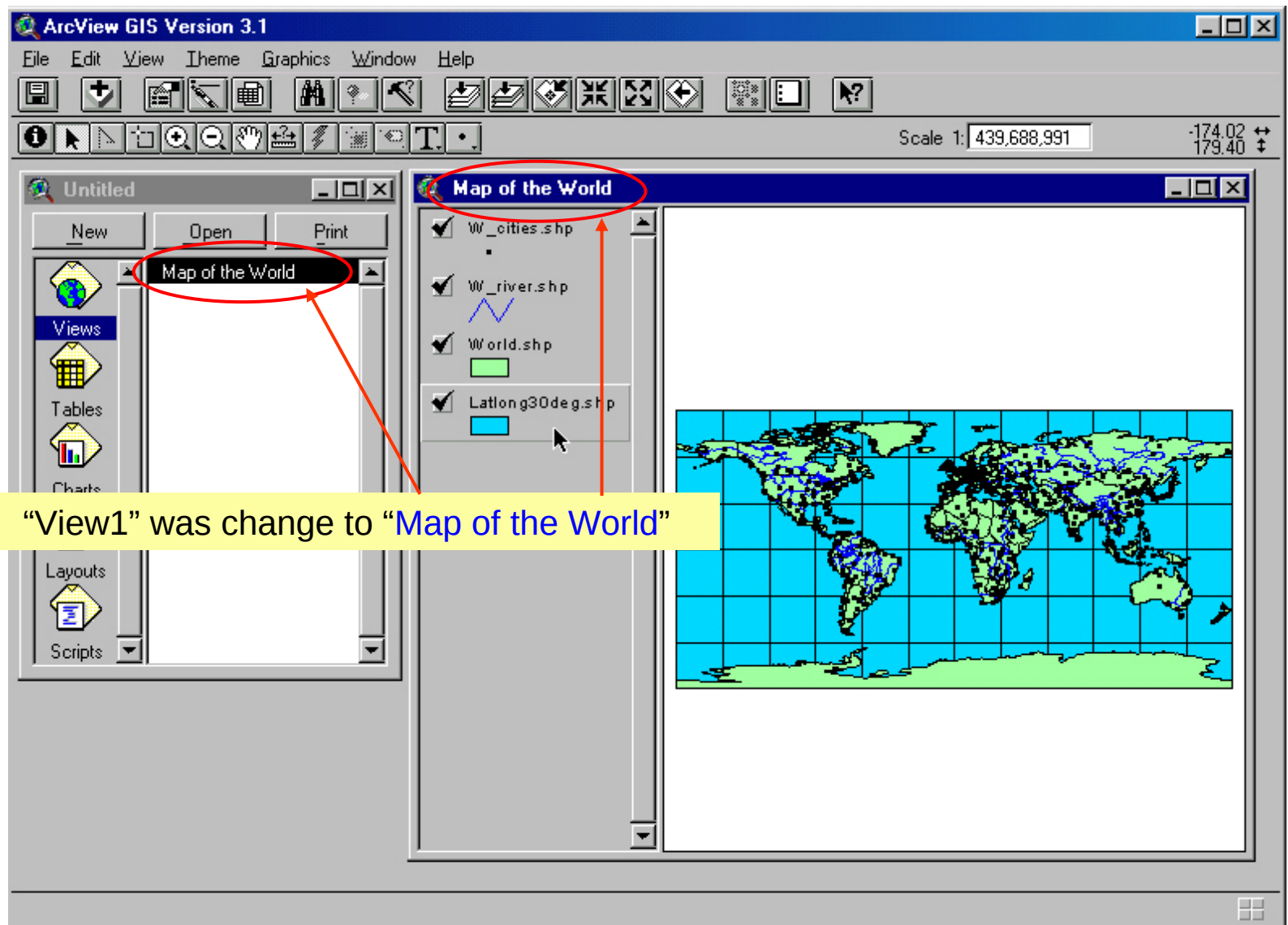
Change name of View



Learning View window and Project window



Learning View window and Project window

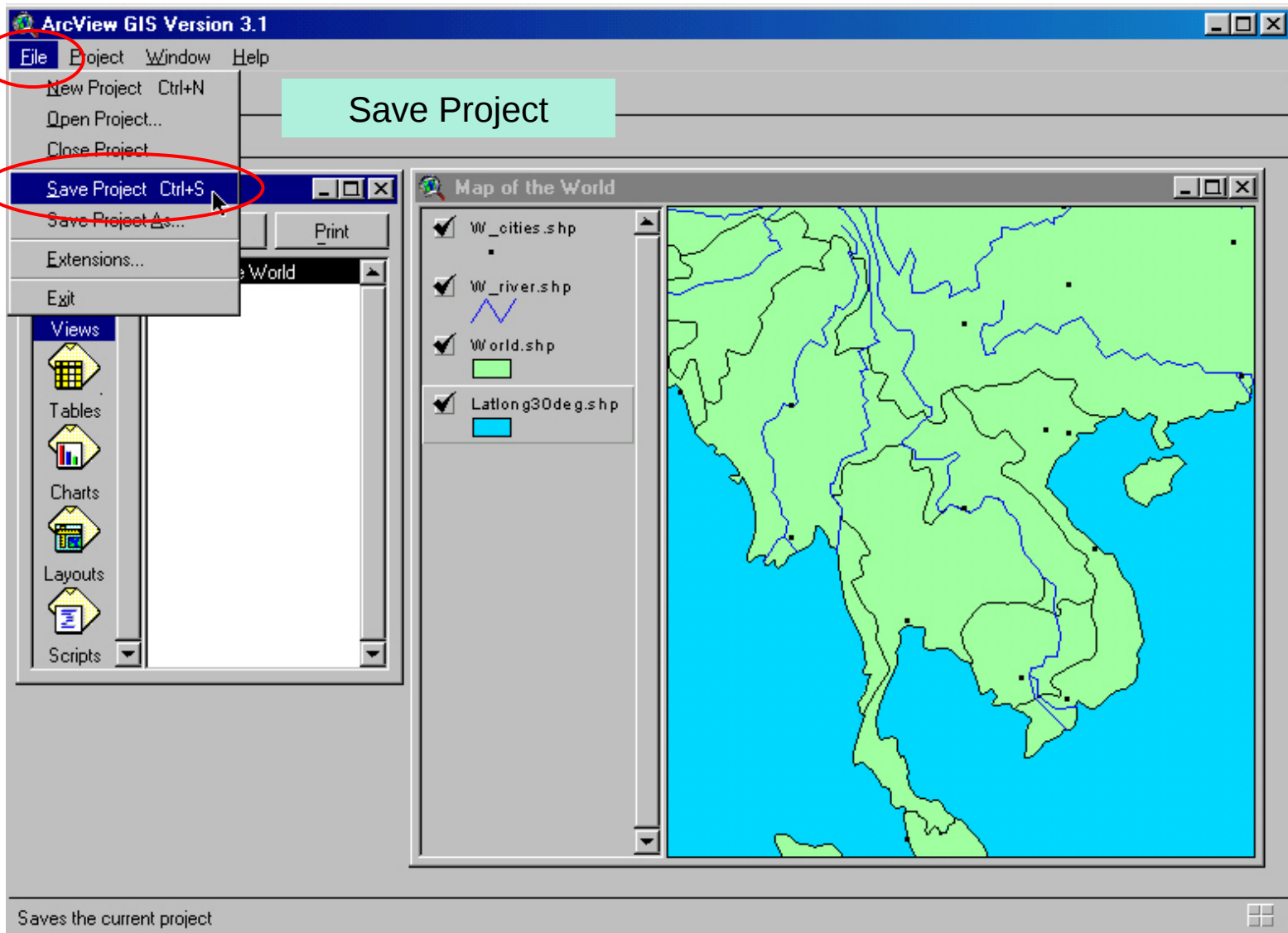


"View1" was change to "Map of the World"

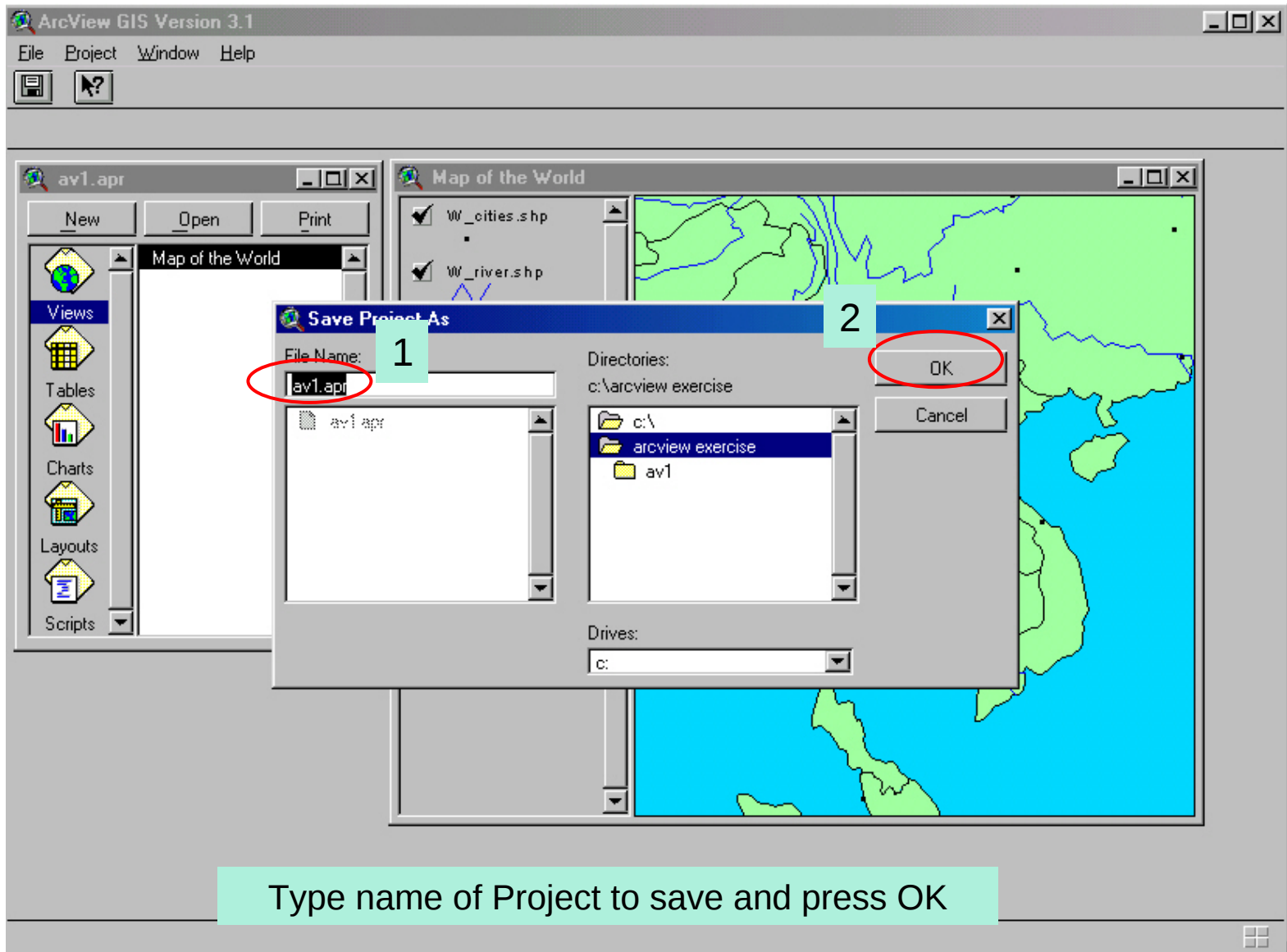
Learning View window and Project window

1

2

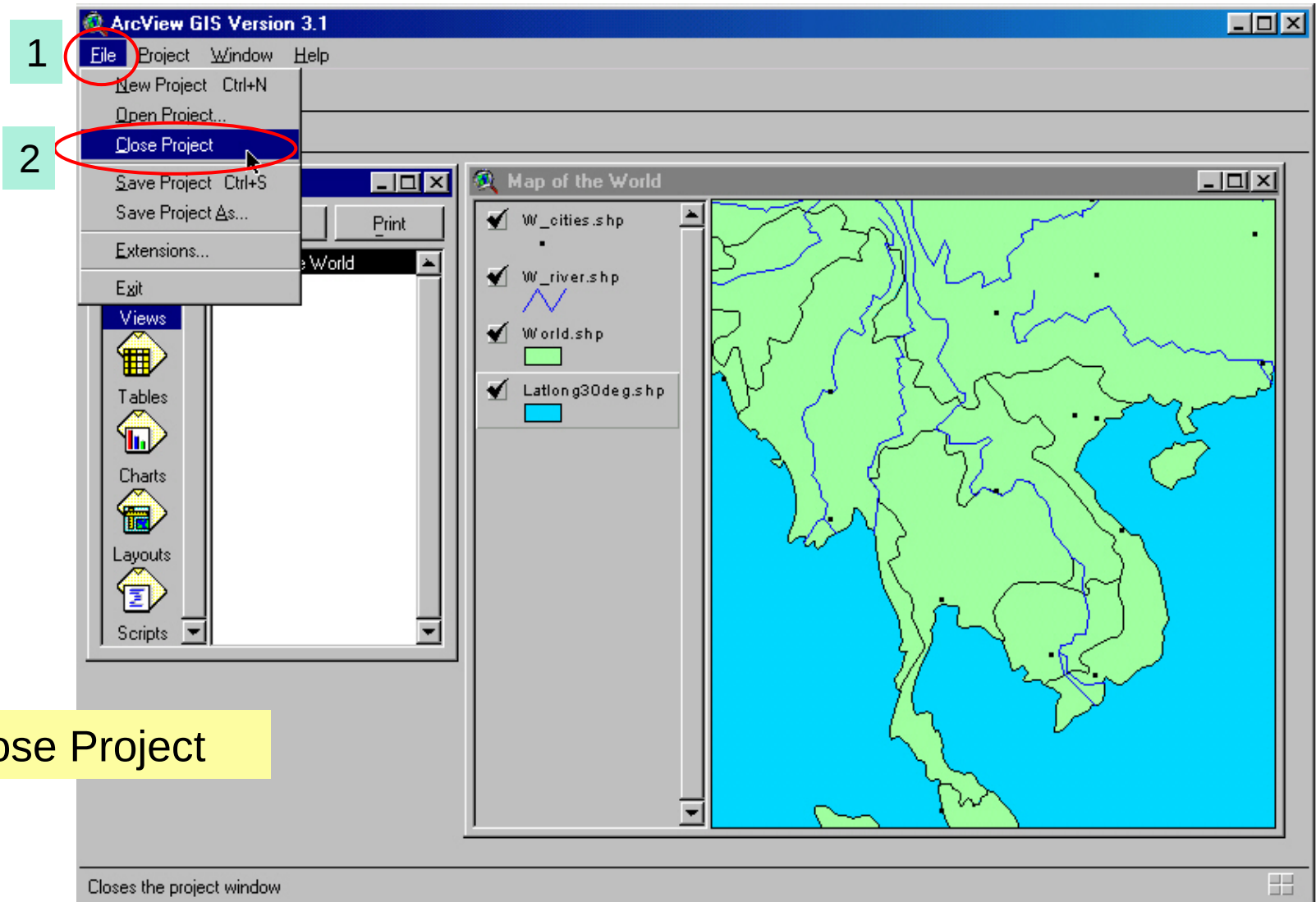


Learning View window and Project window



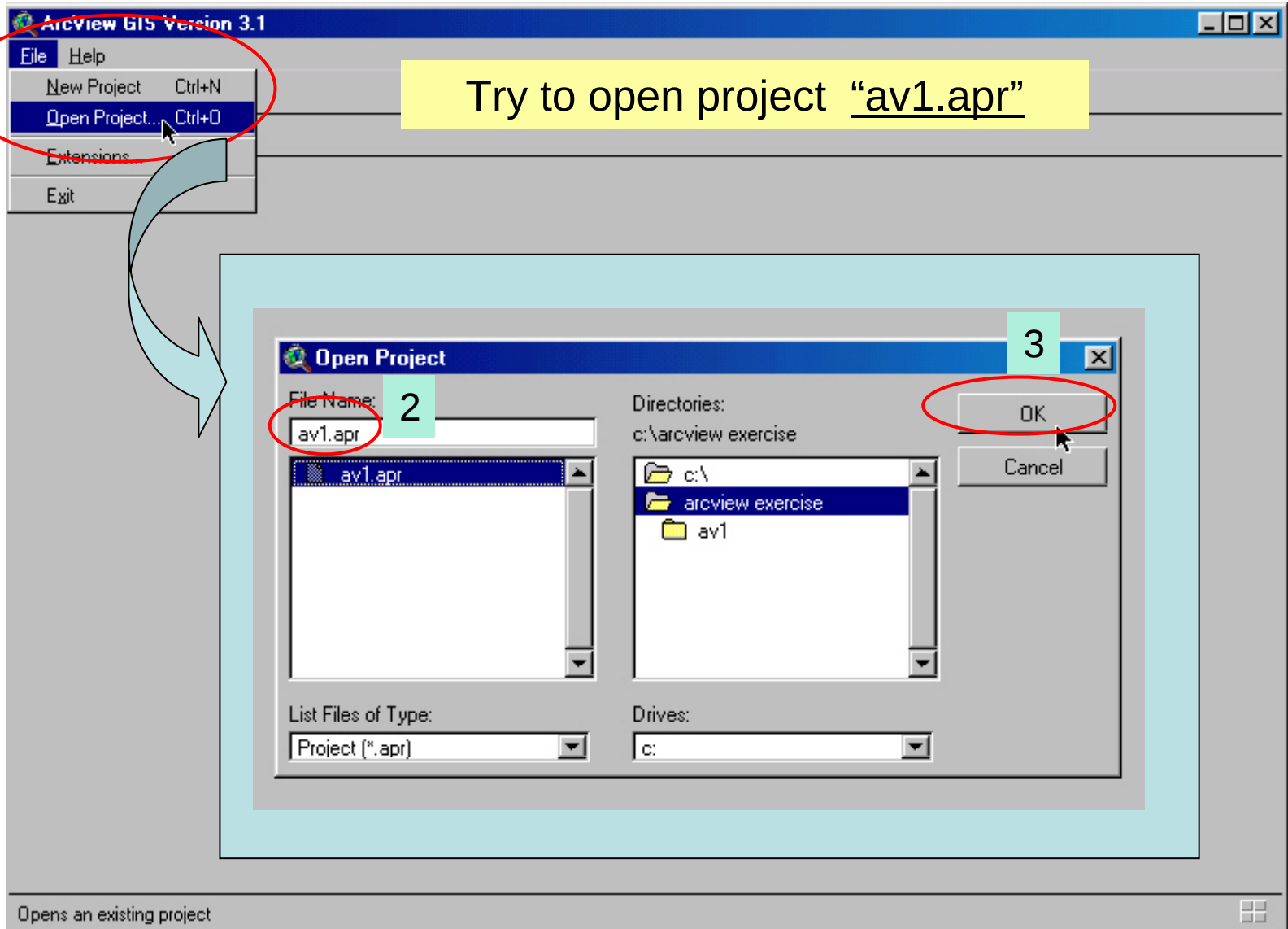
Type name of Project to save and press OK

Learning View window and Project window



Learning View window and Project window

1





Exercise

1. Find distance from north to south of Cambodia, China, Lao PDR, Myanmar, Thailand, VietNam
2. Change distance unit to miles.
3. Change W_cities point size to 6 and dot color to blue.
4. Change color of W_Latlong30deg to dark blue
5. Change the color w_river to brown