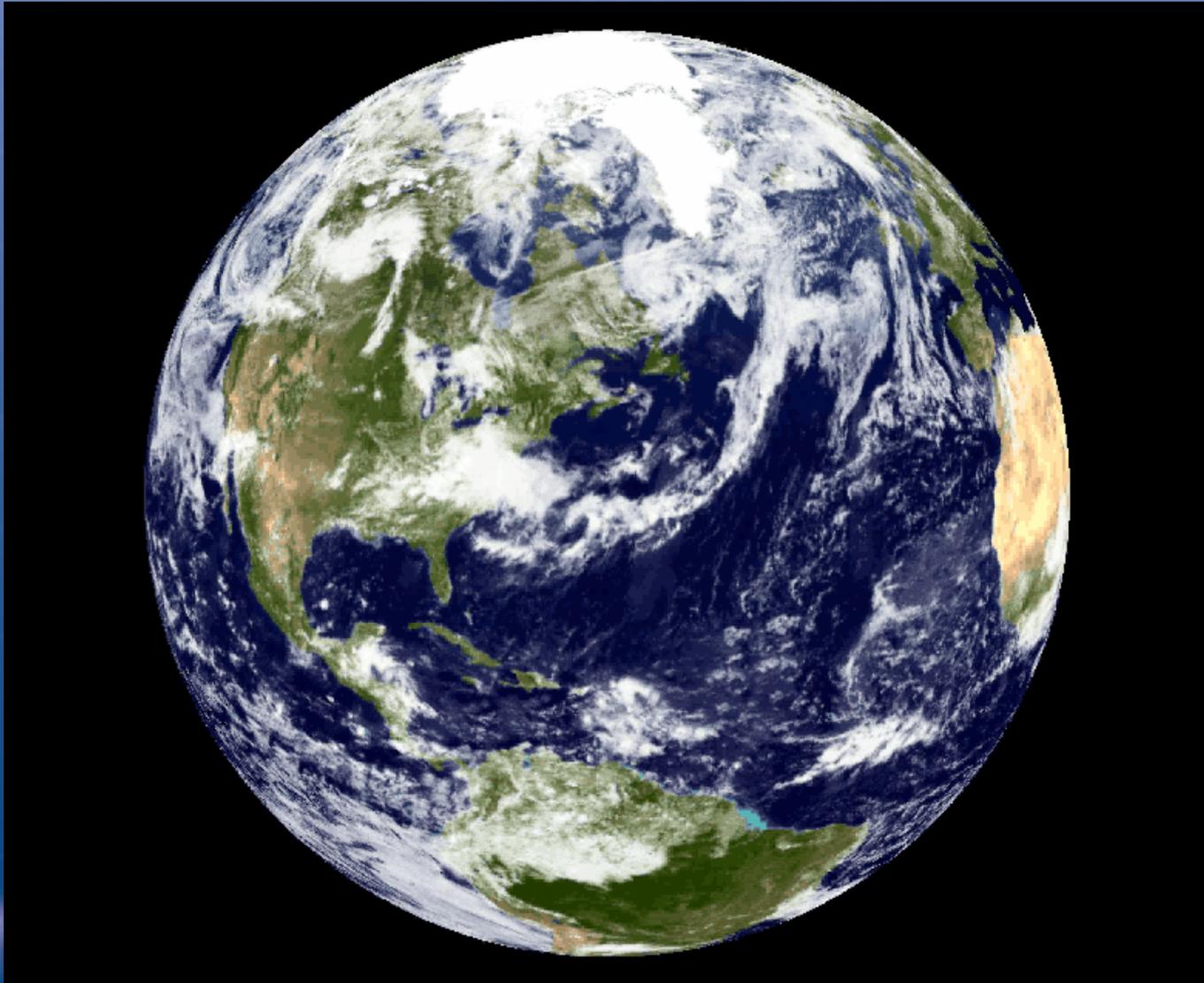


Geographic Information Systems: Opportunities for Innovative Partnerships In Conservation



Agenda

- GIS Primer - What is GIS
 - Demonstration
- Who Uses GIS
- Why is GIS Important
- Examples of Partnerships using GIS
 - Demonstration
- Opportunities
- Q & A

What is GIS ?

A Generic Definition

- A spreadsheet with a map added
- A different way of looking at existing data
- A digital representation of the real world

GIS - A Conceptual Definition



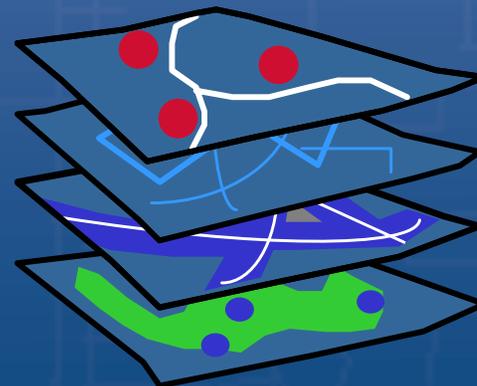
*Printed
Maps*

Abstraction

Representation

Conversion

Presentation



*Digital
Model*



*Real
World*

Analysis

Action

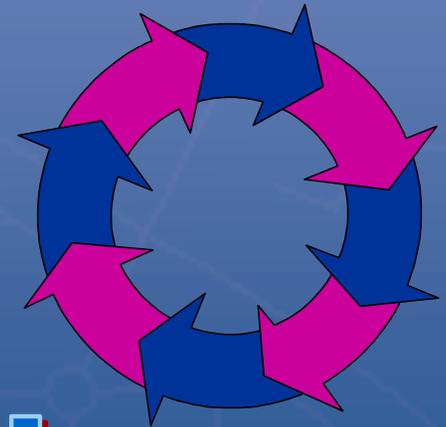
GIS Defined



People

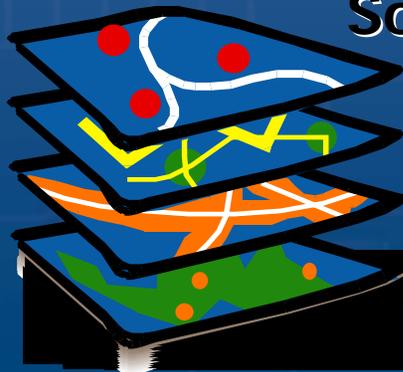


Hardware



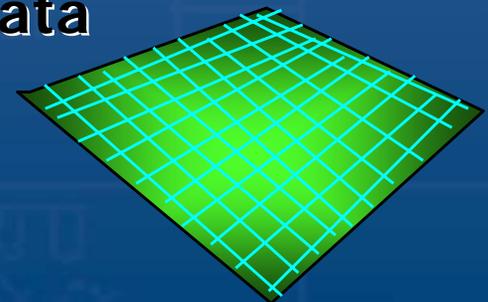
Procedures

Integration!



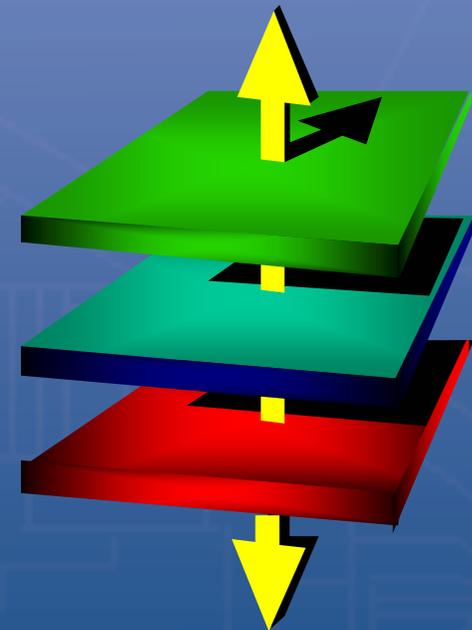
Software

Data



Benefits of GIS

- Time & money savings
- Consistency
- Better science
- Cross-cutting thinking
- Better problem solving
- Better decisions



No different than any other information system

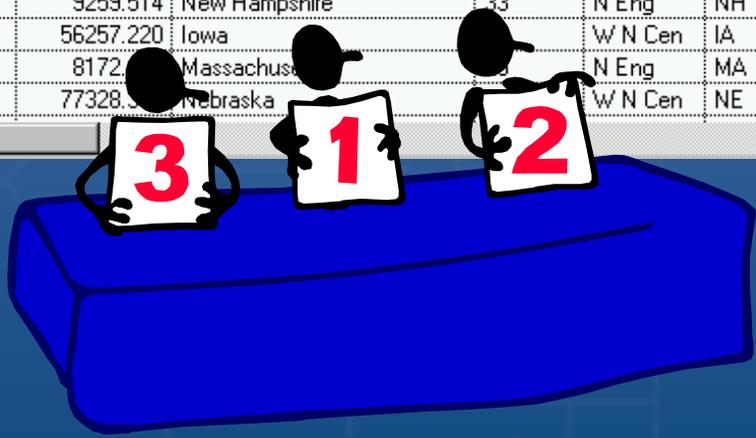
Geographic

- Geography is a science that enables us to find answers to questions about the world around us—about where things are and how and why they got there
- The common theme is **location**

Geography Gives Us A Different Perspective

Attributes of Population

Shape	Area	State_name	State_fips	Sub_region	State_abbr	F
Polygon	67286.878	Washington	53	Pacific	WA	
Polygon	147236.028	Montana	30	Mtn	MT	
Polygon	32161.664	Maine	23	N Eng	ME	
Polygon	70810.153	North Dakota	38	W N Cen	ND	
Polygon	77193.624	South Dakota	46	W N Cen	SD	
Polygon	97799.492	Wyoming	56	Mtn	WY	
Polygon	56088.066	Wisconsin	55	E N Cen	WI	
Polygon	83340.595	Idaho	16	Mtn	ID	
Polygon	9603.218	Vermont	50	N Eng	VT	
Polygon	84517.465	Minnesota	27	W N Cen	MN	
Polygon	97070.748	Oregon	41	Pacific	OR	
Polygon	9259.514	New Hampshire	33	N Eng	NH	
Polygon	56257.220	Iowa		W N Cen	IA	
Polygon	8172.000	Massachusetts		N Eng	MA	
Polygon	77328.000	Nebraska		W N Cen	NE	



Population by State, 1997



Traditional Tools Of The Geographer

- **Databases**

Shape	Area	State_name	State_fips	Sub_region	State_abbr	F
Polygon	67286.878	Washington	53	Pacific	WA	
Polygon	147236.028	Montana	30	Mtn	MT	
Polygon	32161.664	Maine	23	N Eng	ME	
Polygon	70810.153	North Dakota	38	W N Cen	ND	
Polygon	77193.624	South Dakota	46	W N Cen	SD	
Polygon	97799.492	Wyoming	56	Mtn	WY	
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Polygon	83340.595	Idaho	16	Mtn	ID	
Polygon	9603.218	Vermont	50	N Eng	VT	
Polygon	84517.465	Minnesota	27	W N Cen	MN	
Polygon	97070.748	Oregon	41	Pacific	OR	
Polygon	9259.514	New Hampshire	33	N Eng	NH	
Polygon	56257.220	Iowa	19	W N Cen	IA	
Polygon	8172.482	Massachusetts	25	N Eng	MA	
Polygon	77328.337	Nebraska	31	W N Cen	NE	

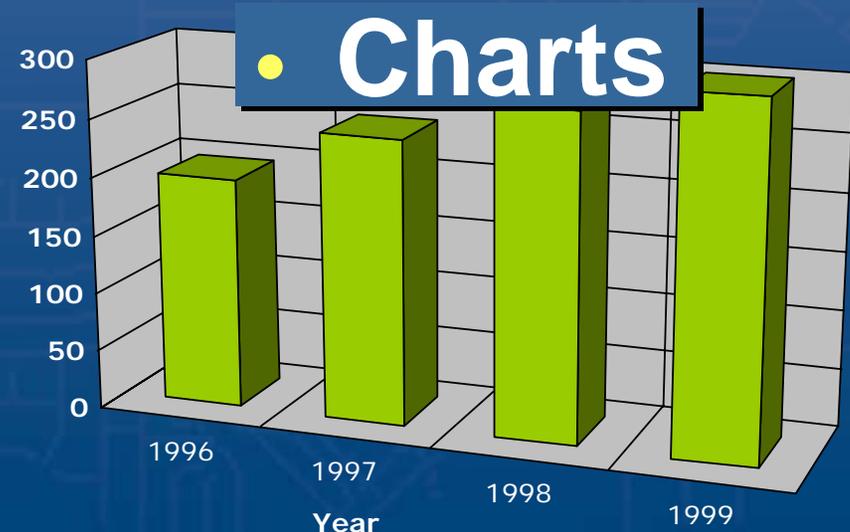
- **Statistics**

$$SD = \sqrt{\frac{\sum (X - \bar{X})^2}{N}}$$

- **Maps**

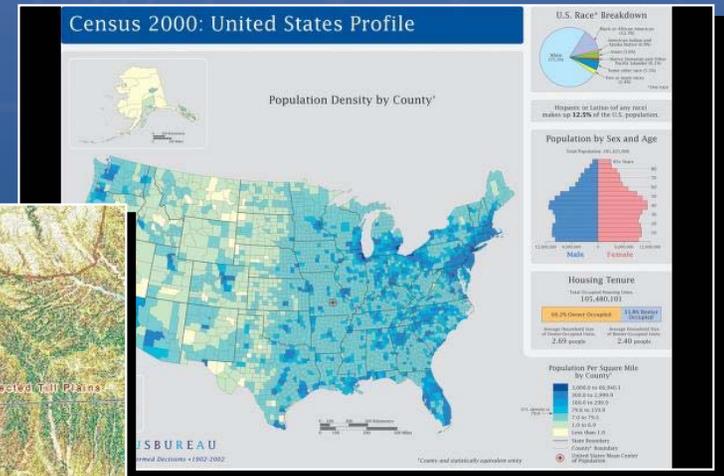
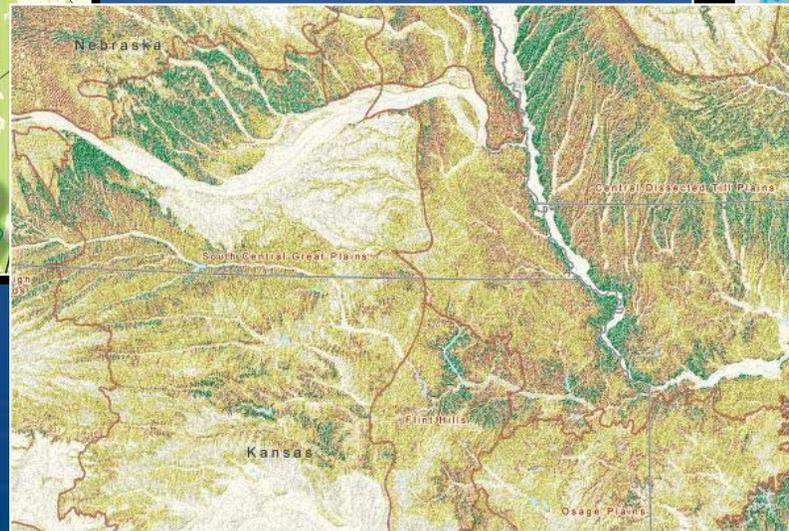
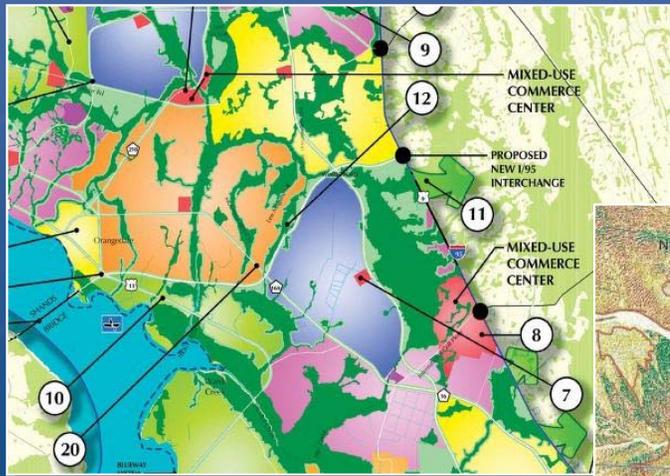


- **Charts**



Geographic Information Systems (GIS)

Tools For Geographers and Other People Interested In Location



Information

Websters Defines Information:

1. Knowledge derived from study, experience, or instruction.
2. Knowledge of specific events or situations that has been gathered or received by communication; intelligence or news. See Synonyms at knowledge.
3. A collection of facts or data: *statistical information*.
4. The act of informing or the condition of being informed; communication of knowledge: *Safety instructions are provided for the information of our passengers.*
5. Computer Science. Processed, stored, or transmitted data.
6. A numerical measure of the uncertainty of an experimental outcome.

Examples of Spatial Data within a GIS database

Census Tracts

Roads

Cadastral Data

Public Utilities

Private Utilities

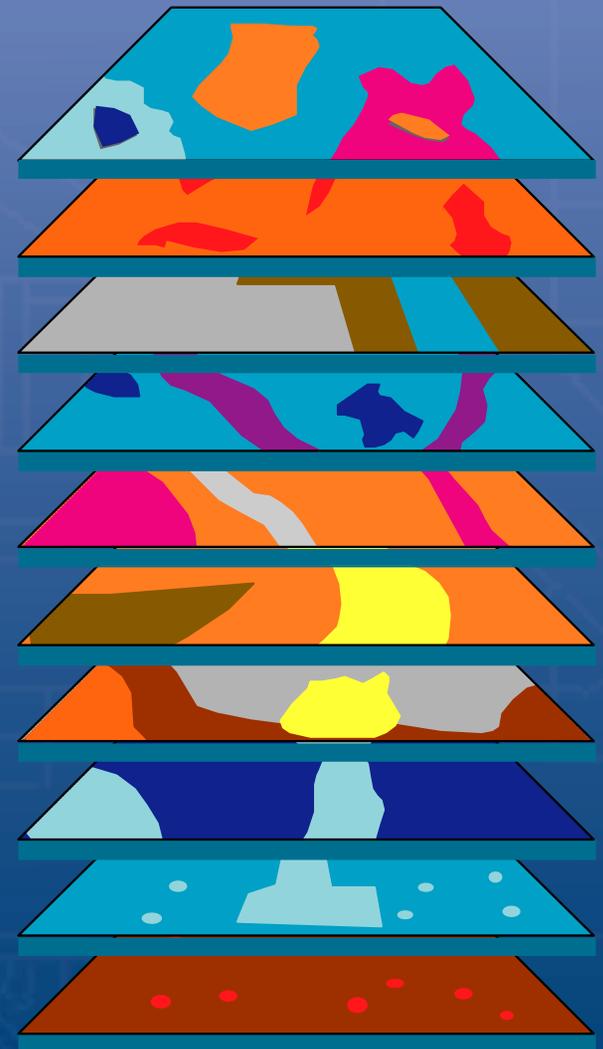
Zip Codes

Natural Features

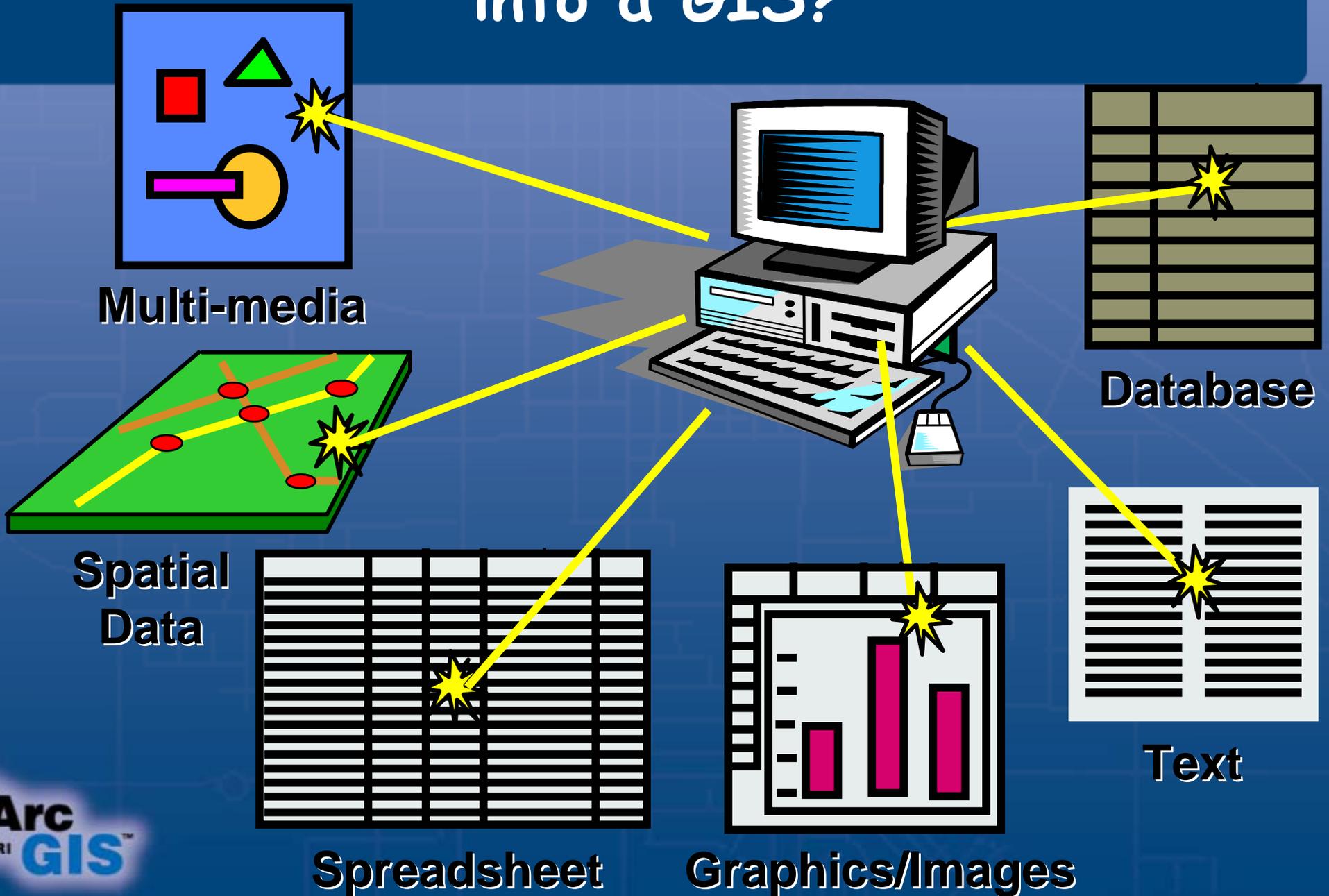
School Attendance Districts

Planimetric Data

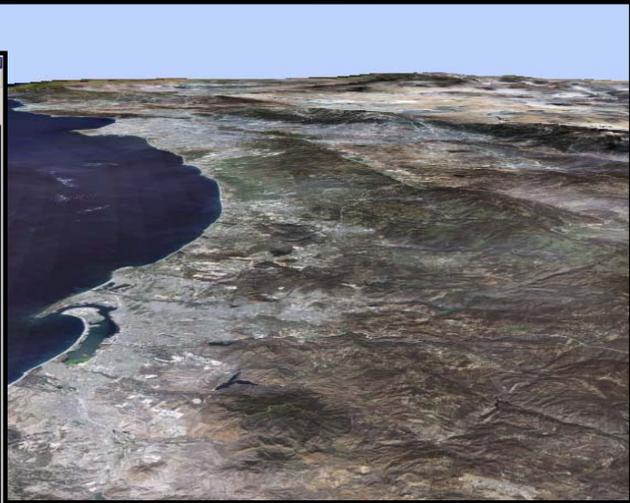
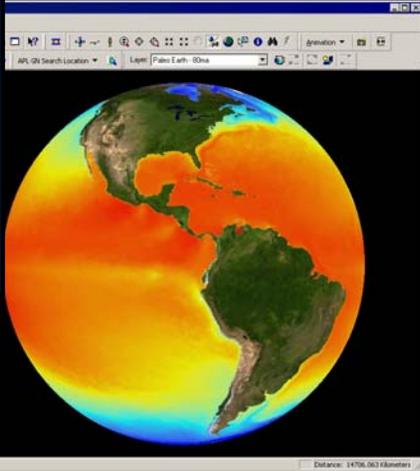
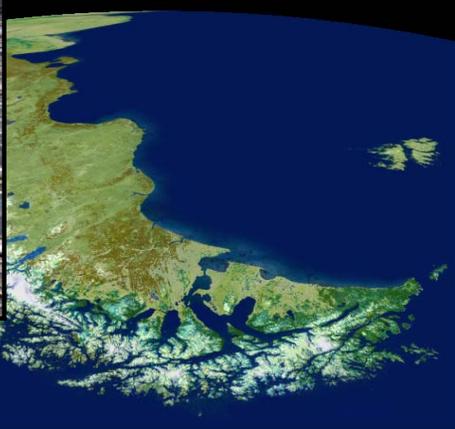
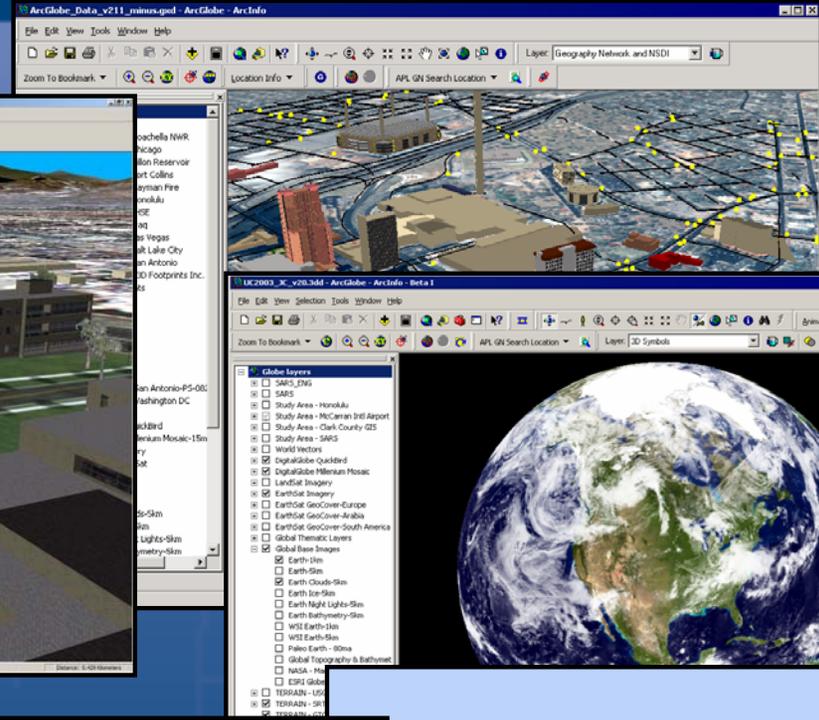
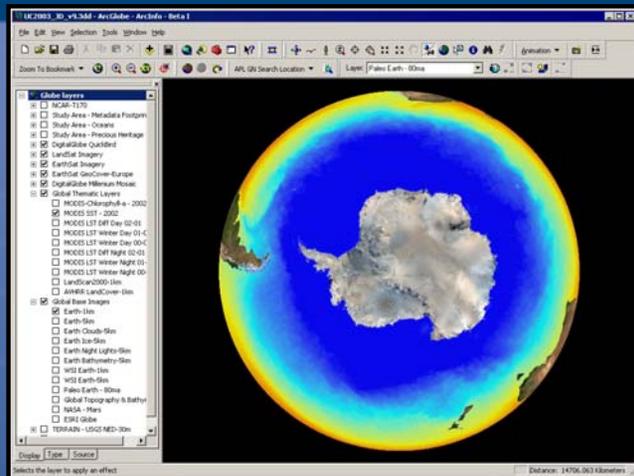
Zoning



What Information is integrated into a GIS?



Whole Earth Visualization New Context for Geographic Information



"Best Practices" Applications are Modeled and Scripted

Cost Surface Model

```

    graph LR
        viewsbed((viewsbed)) --> ReClassViewShed[ReClass ViewShed]
        ReClassViewShed --> ReClassifiedViewshed((ReClassified Viewshed))
        veggd((veggd)) --> ReClassVegetation[ReClass Vegetation]
        reclass_veg((reclass_veg.g.txt)) --> ReClassVegetation
        ReClassVegetation --> ReClassifiedVegetation((ReClassified Vegetation))
        ReClassifiedVegetation --> CombineFactors[Combine Factors]
        CombineFactors --> OutputCostSurface((Output cost surface))
    
```

A process

```

    graph LR
        InputData2((Input data 2)) --> GeoprocessingTool[Geoprocessing Tool]
        InputData1((Input data)) --> GeoprocessingTool
        GeoprocessingTool --> OutputData((Output data))
    
```

Gnatcatcher Habitat Suitability

```

    graph LR
        MajorRoads((Major Roads)) --> Buffer[Buffer]
        Buffer --> RoadsBuffer((Roads Buffer))
        RoadsBuffer --> Erase[Erase]
        Erase --> SuitableVegetation((Suitable Vegetation Minus Roads))
        Elevations((Elevations less than 250ft)) --> Intersect[Intersect]
        Slopes((Slopes less than 40%)) --> Intersect
        ClimateZones((Climate Zones)) --> Intersect
        SuitableVegetation --> Intersect
        Intersect --> IntersectOutput((Intersect Output))
        IntersectOutput --> Dissolve[Dissolve]
        Dissolve --> DissolveOutput((Dissolve Output))
        DissolveOutput --> MultipartToSinglepart[Multipart To Singlepart]
        MultipartToSinglepart --> SinglepartOutput((Singlepart Output))
        SinglepartOutput --> Select2[Select2]
        Select2 --> OutputPotentialHabitat((Output Potential Habitat))
    
```

Near Model

```

    graph LR
        FireStations((Fire Stations)) --> Select[Select]
        Schools((Schools)) --> Select
        Select --> SelectedSchools((Selected Schools))
        SelectedSchools --> Near[Near]
        Near --> NearestSchool((Nearest School))
        NearestSchool --> Buffer[Buffer]
        Buffer --> BufferedSchools((Buffered Schools))
    
```

Map Labels: Main menu, Toolbar, Model diagram in the display window

... And Shared

Sample Geographic Questions

- Where should Wildfire control / prevention measures take place?

Wildfire Factors

- Fuels
- Wildland Urban Interface
 - Home locations
 - Water sources
 - Defensible area
 - Evacuation
- Ignition sources
- Terrain



Sample Geographic Questions

- Where should Wildfire control / prevention measures take place?
- Why do peaches grow well in Georgia but not in Idaho?

Peach Preferences



- Soil type
- Topography
 - Elevation
 - Aspect
- Climate
 - Length of growing season
 - Precipitation
 - Hours of sun
 - Temperature



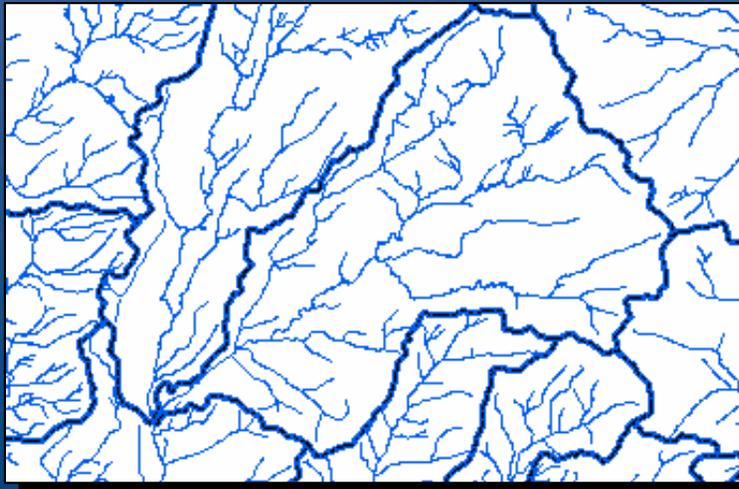
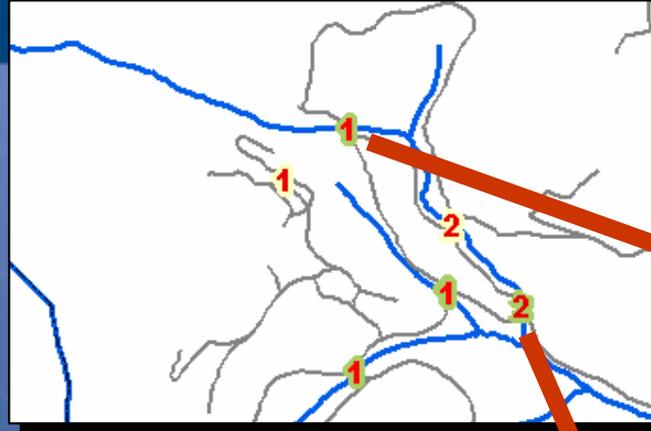
Sample Geographic Questions

- Where should Wildfire control / prevention measures take place?
- Why do peaches grow well in Georgia but not in Idaho?
- What affects the migration of Salmon in the Pacific Northwest?

Salmon movement



- Streams
- Roads
 - Culverts
 - Bridges
- Land ownership



Organizing The World To Make Understanding It Easier

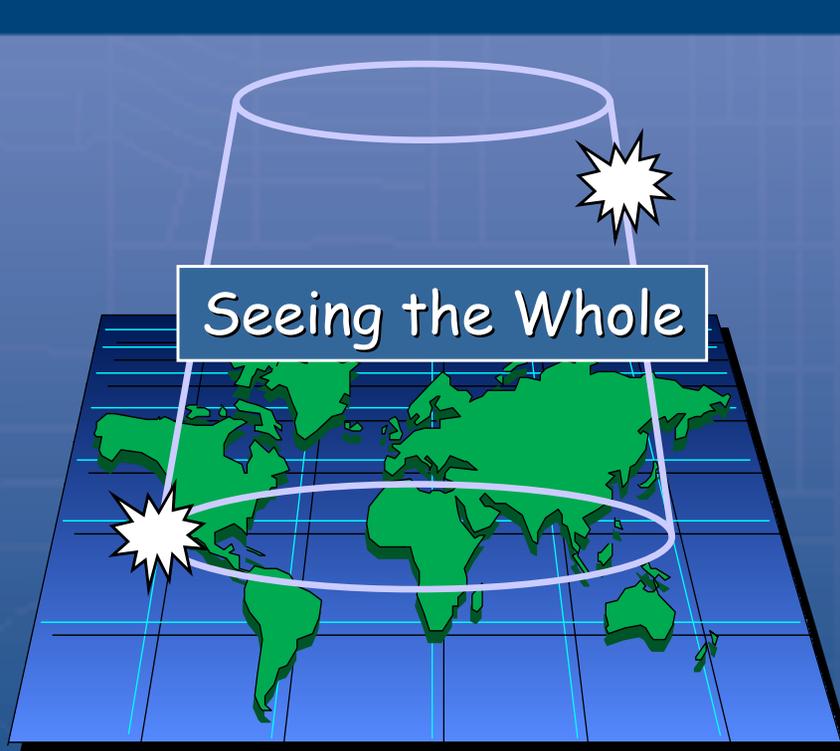


The world is too complex when taken as a whole!

More Thoughts On GIS

- An instrument for implementing geographic thinking
- Provides the framework for studying complex systems
- Provides access to information to diverse groups of people
- Provides the context for discussion across multiple disciplines

Context and Content



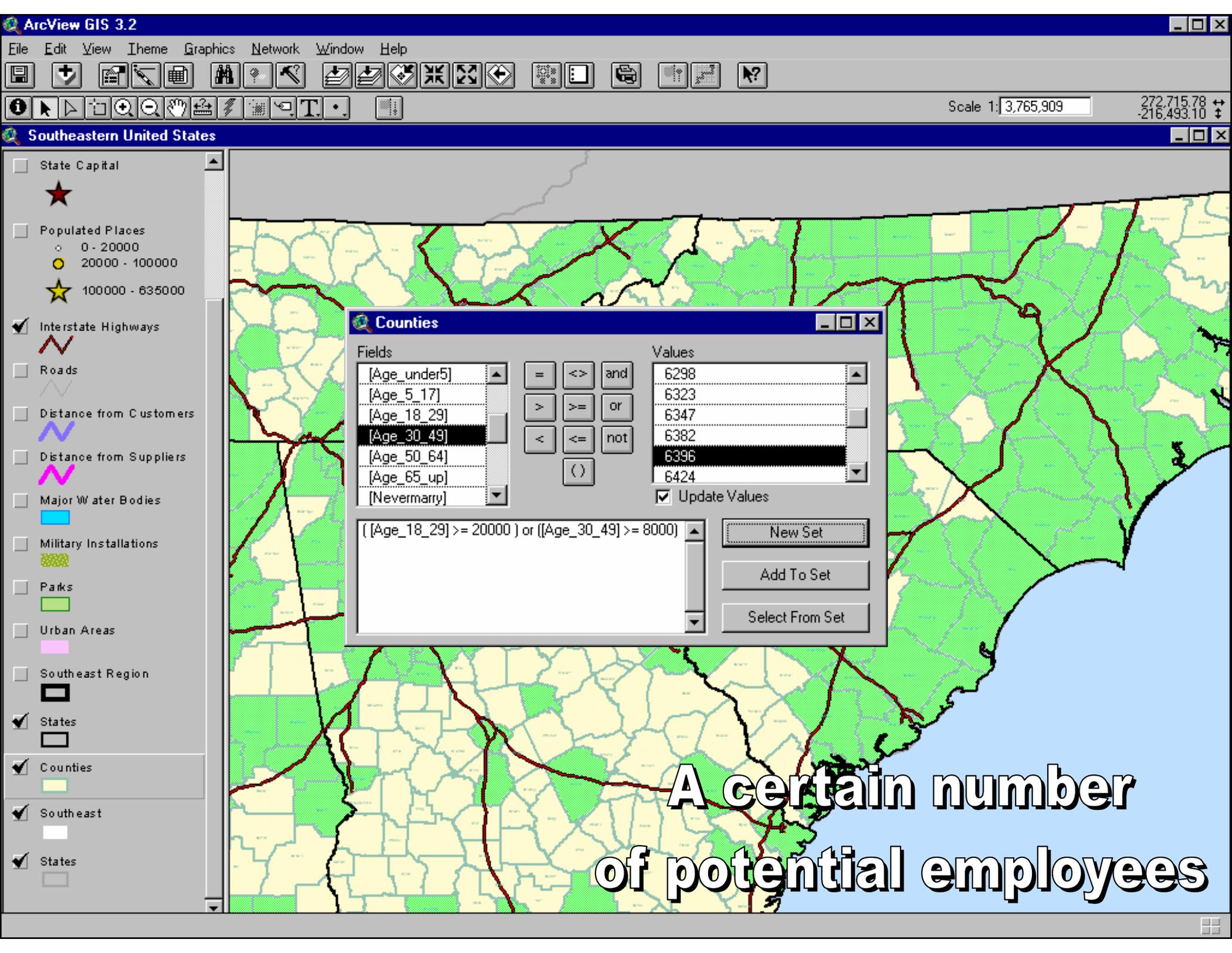
- Patterns
- Linkages
- Trends

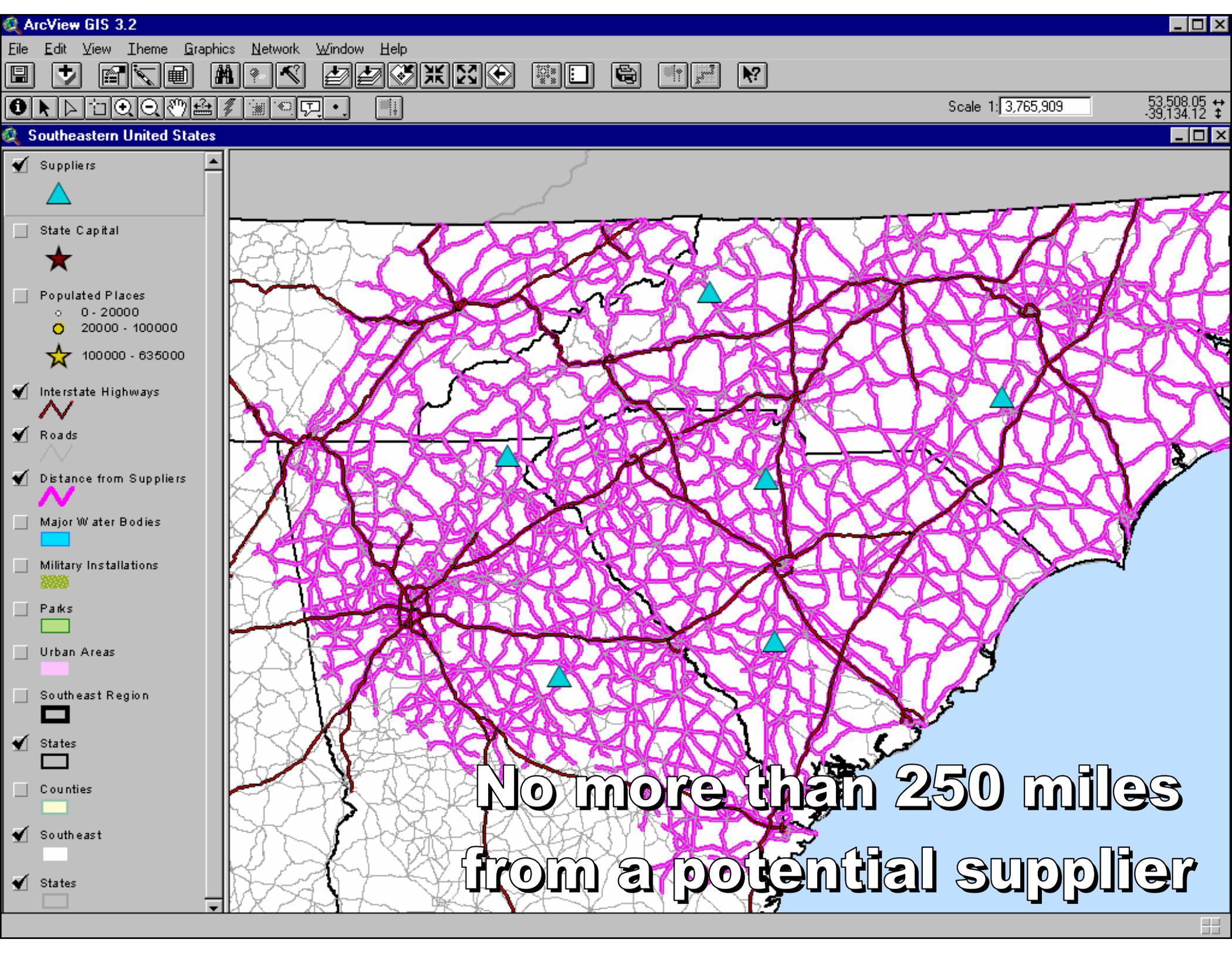


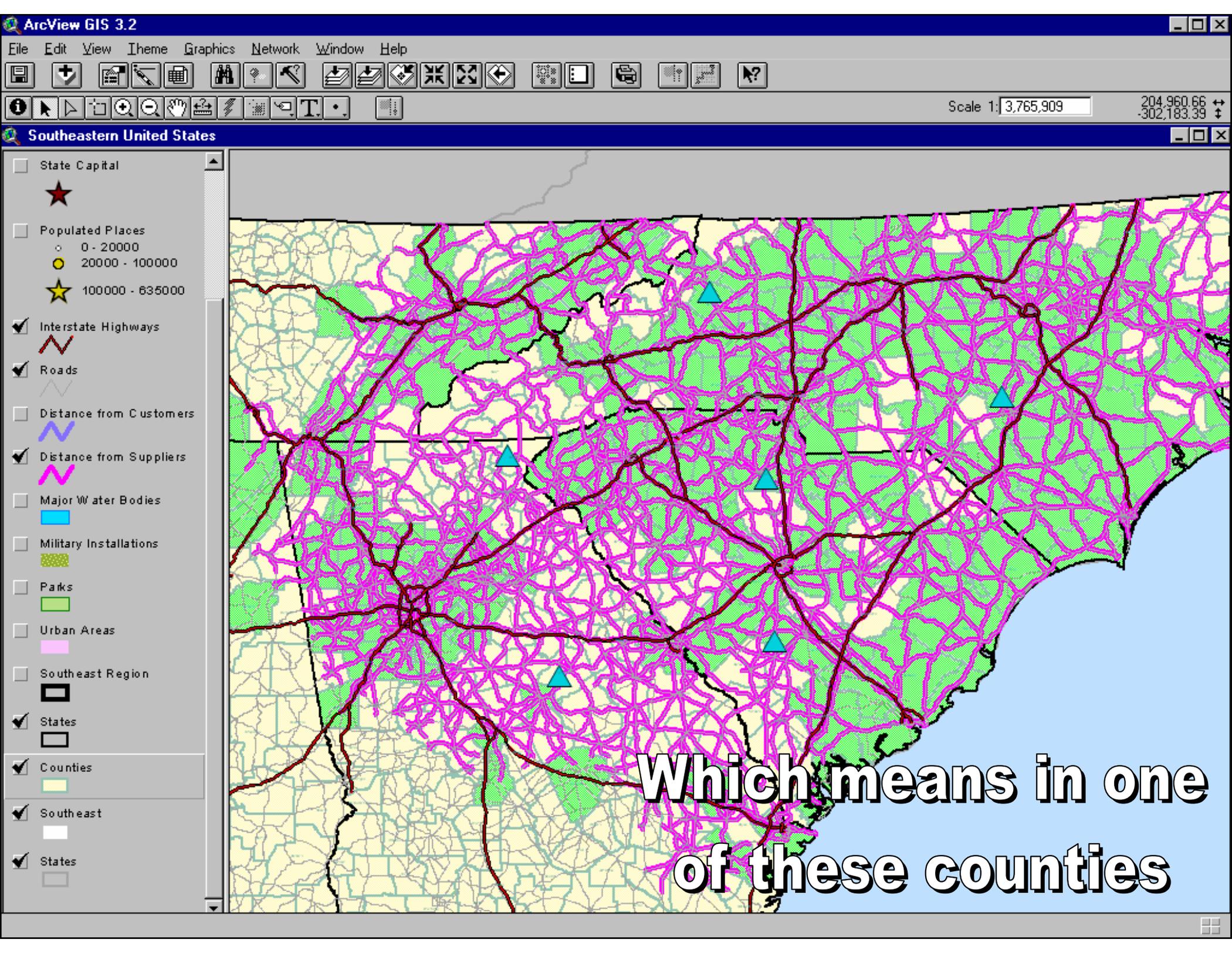
- Watersheds
- Communities
- Neighborhoods
- Ecosystems

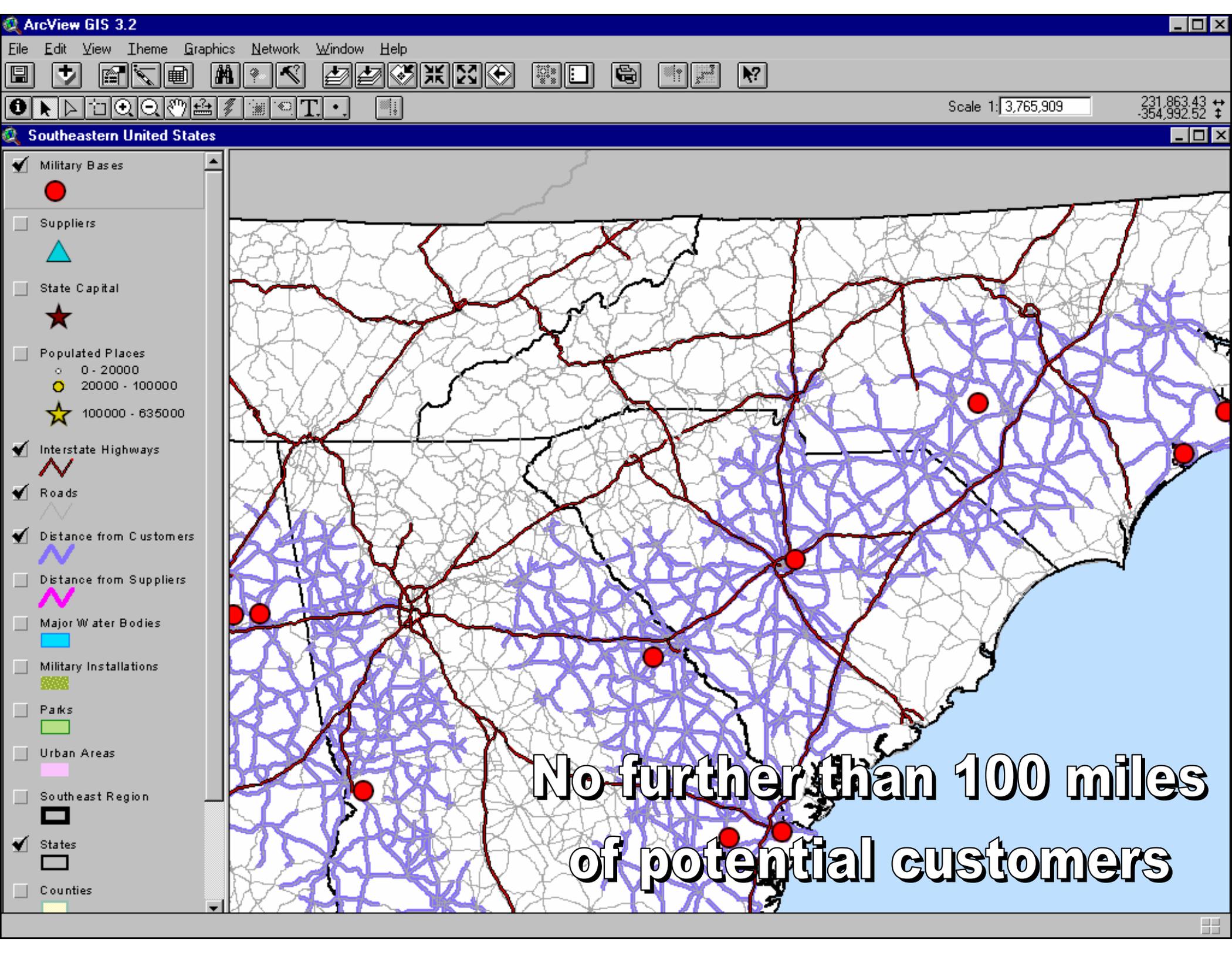
Finding Solutions

- Use an example to explain this
- Let's look at finding a suitable location for an industrial location
- This problem works to see how solutions are found using GIS

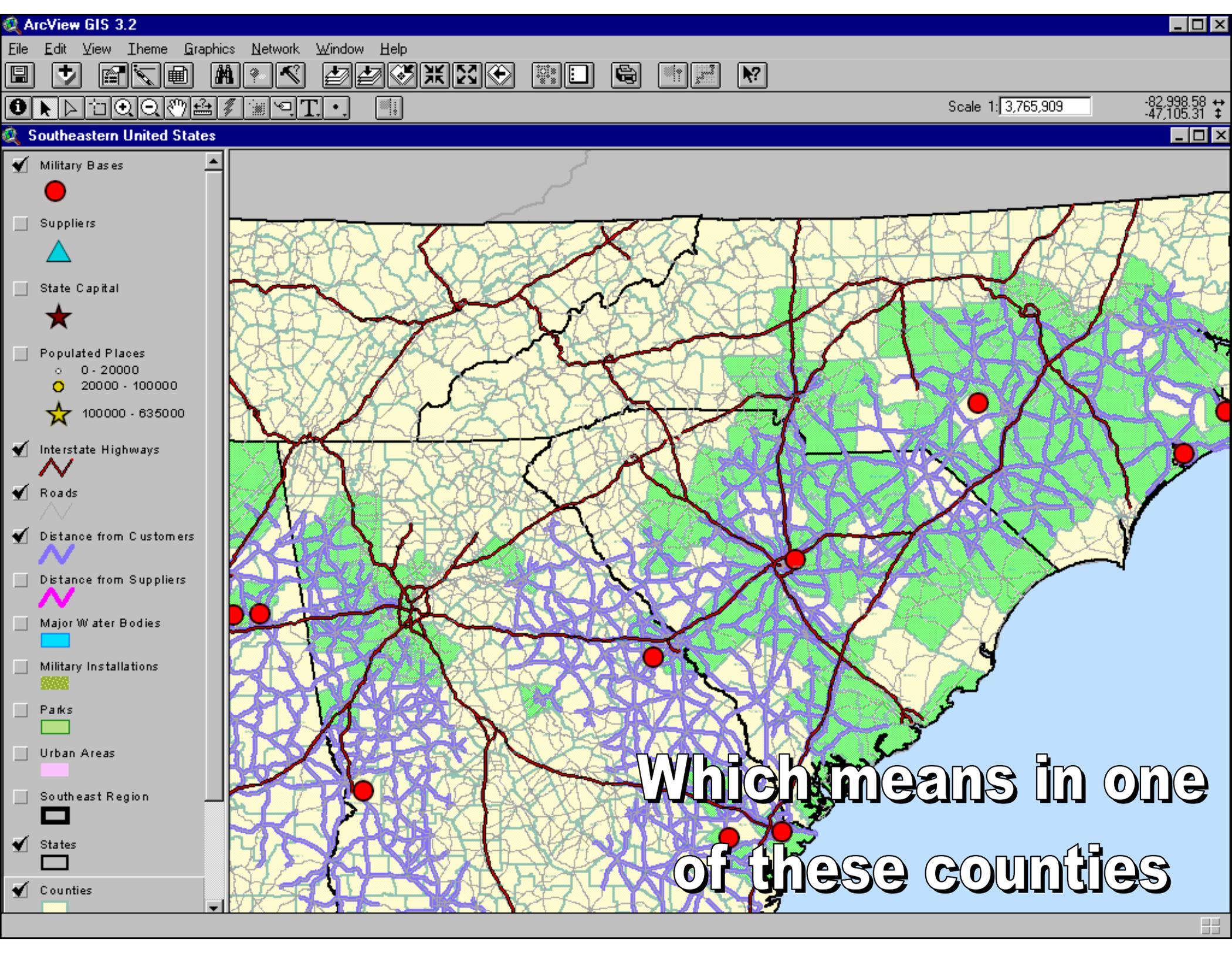


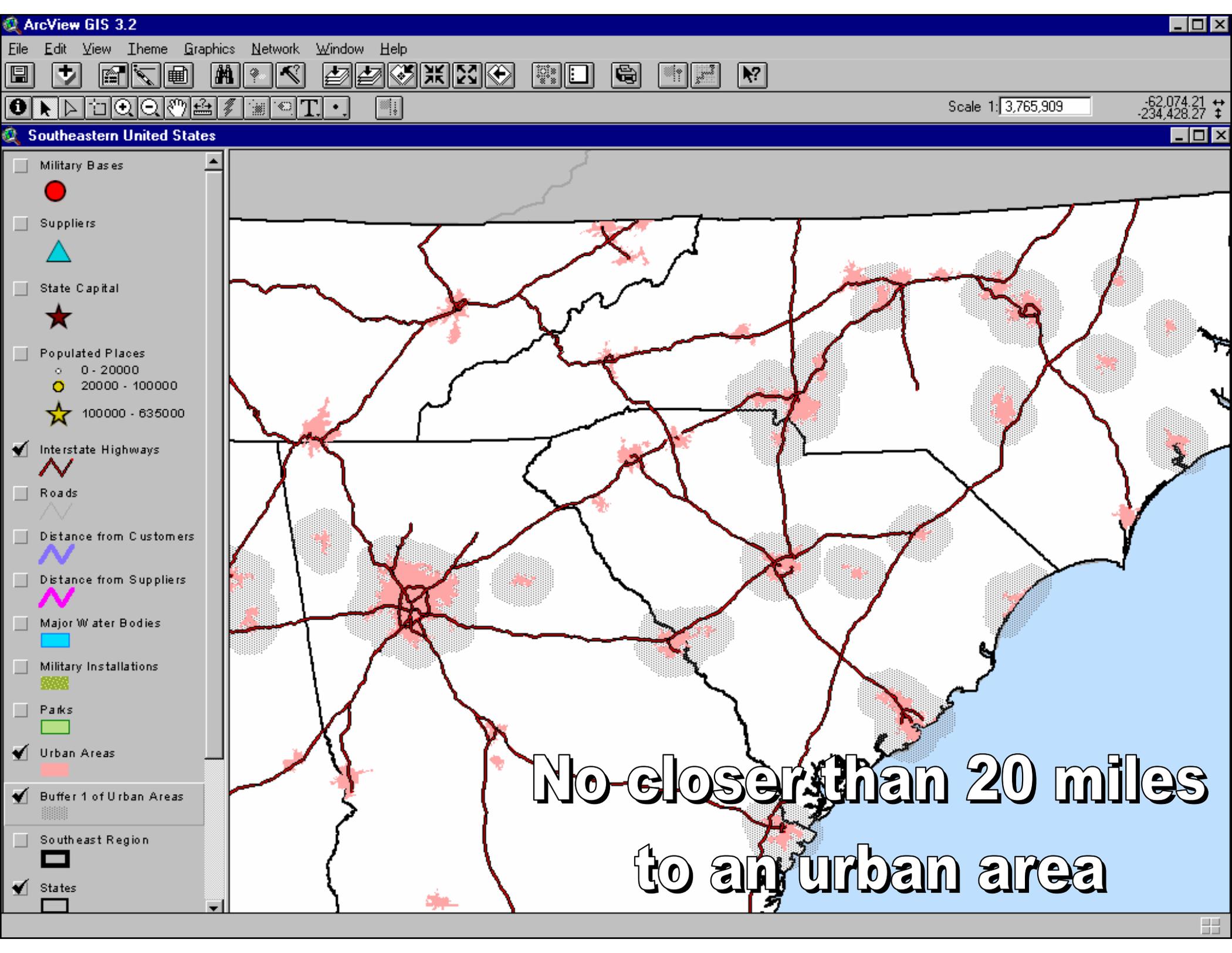




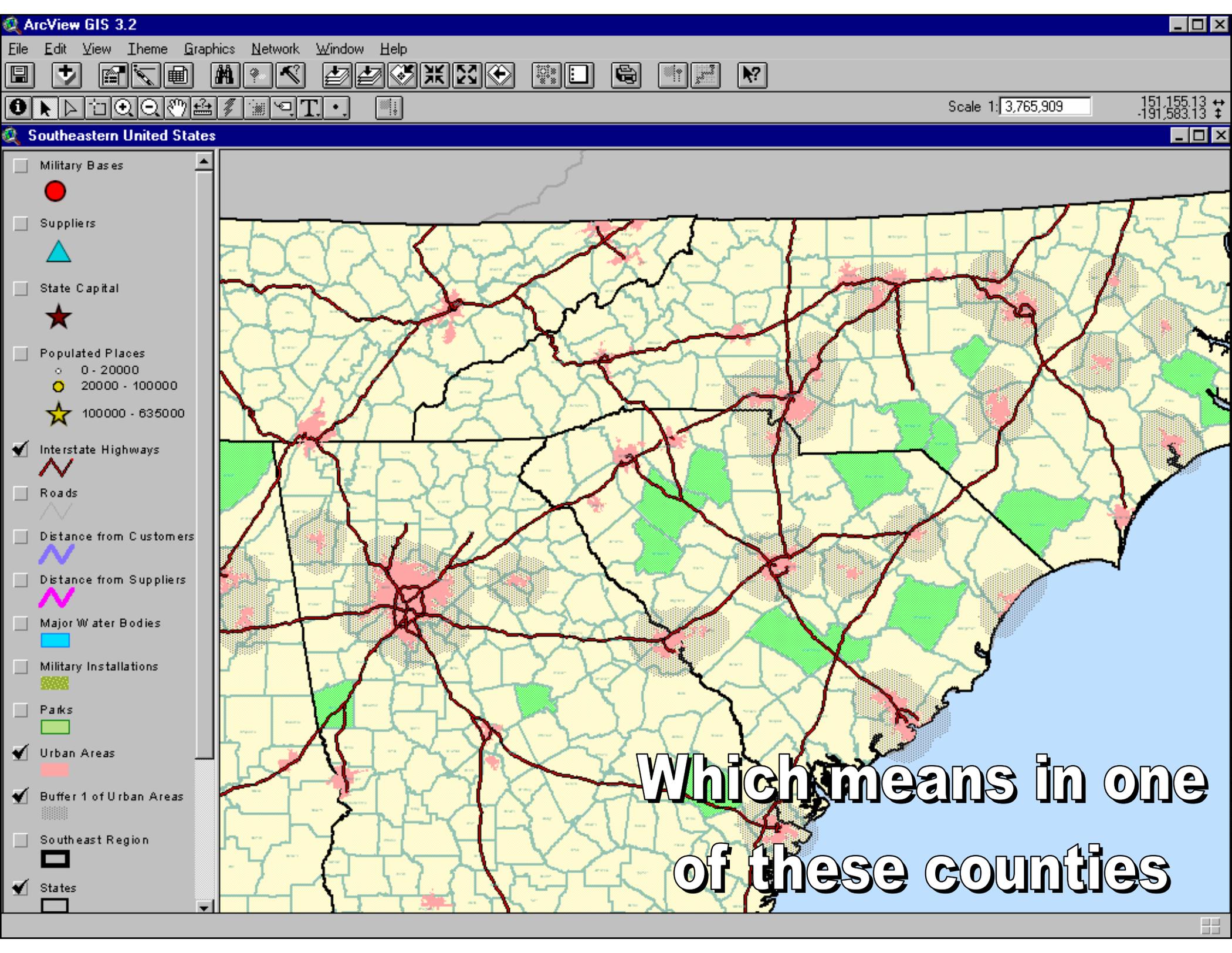


**No further than 100 miles
of potential customers**





**No closer than 20 miles
to an urban area**



Proposed Factory Locations

**The result - a decision
made using location**

Evolution of a GIS

In the beginning...

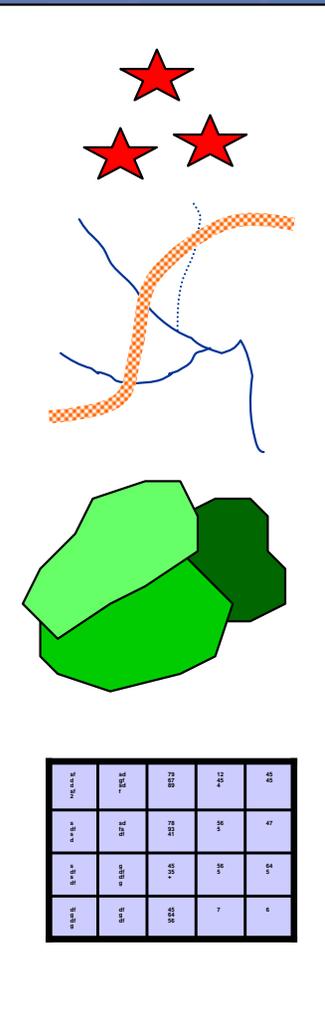
There was Points, Lines, and Polygons....

Points represent discrete locations on the ground or area features too small to portray as polygons.

Lines represent linear features such as streams and roads as well as the boundary between areas.

Polygons represent areas that have some common values such as political designation, natural resource, ownership, and others.

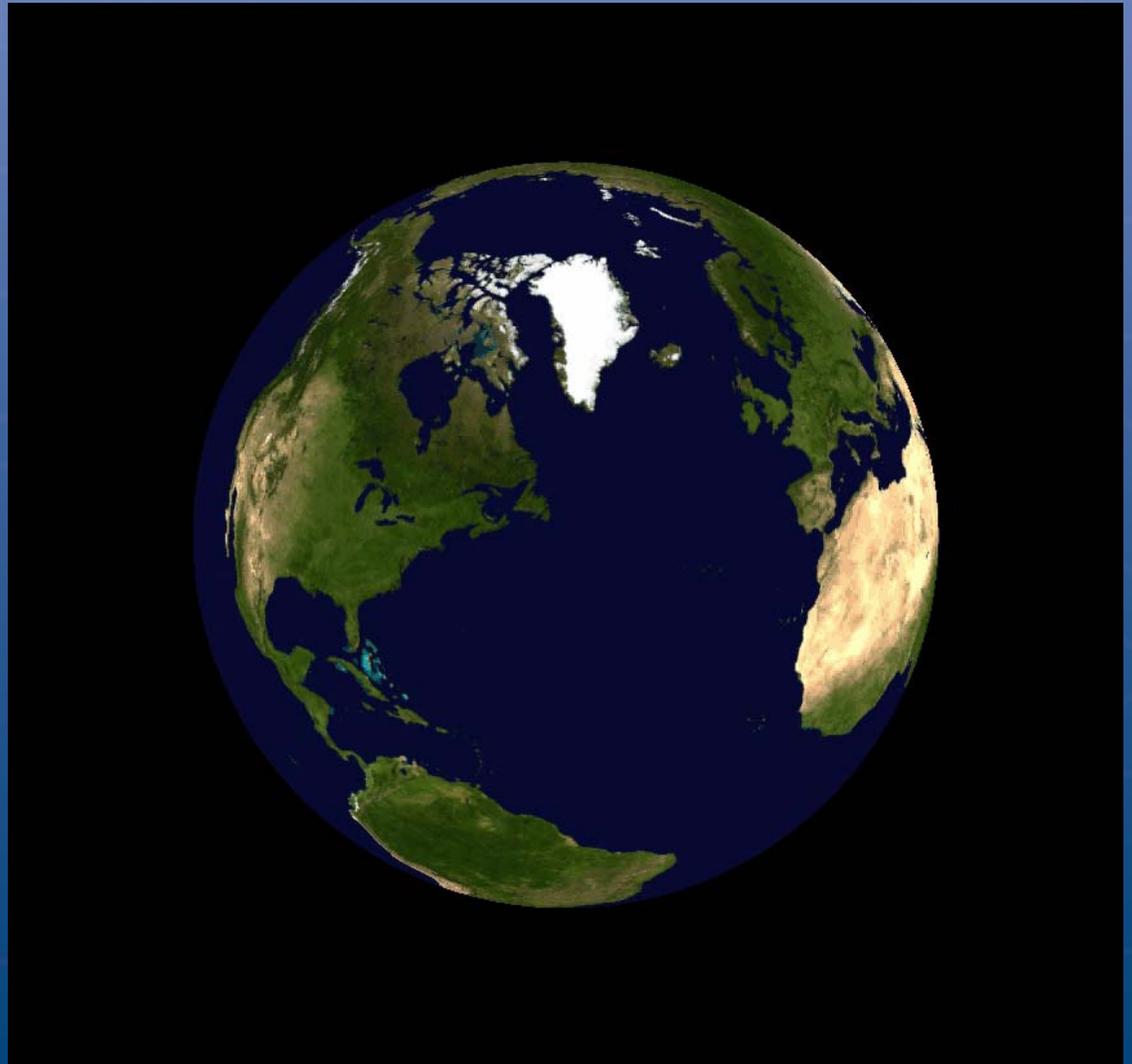
Attributes add intelligence to these features by describing the features.



1	2	3	4	5	6
7	8	9	10	11	12
13	14	15	16	17	18
19	20	21	22	23	24

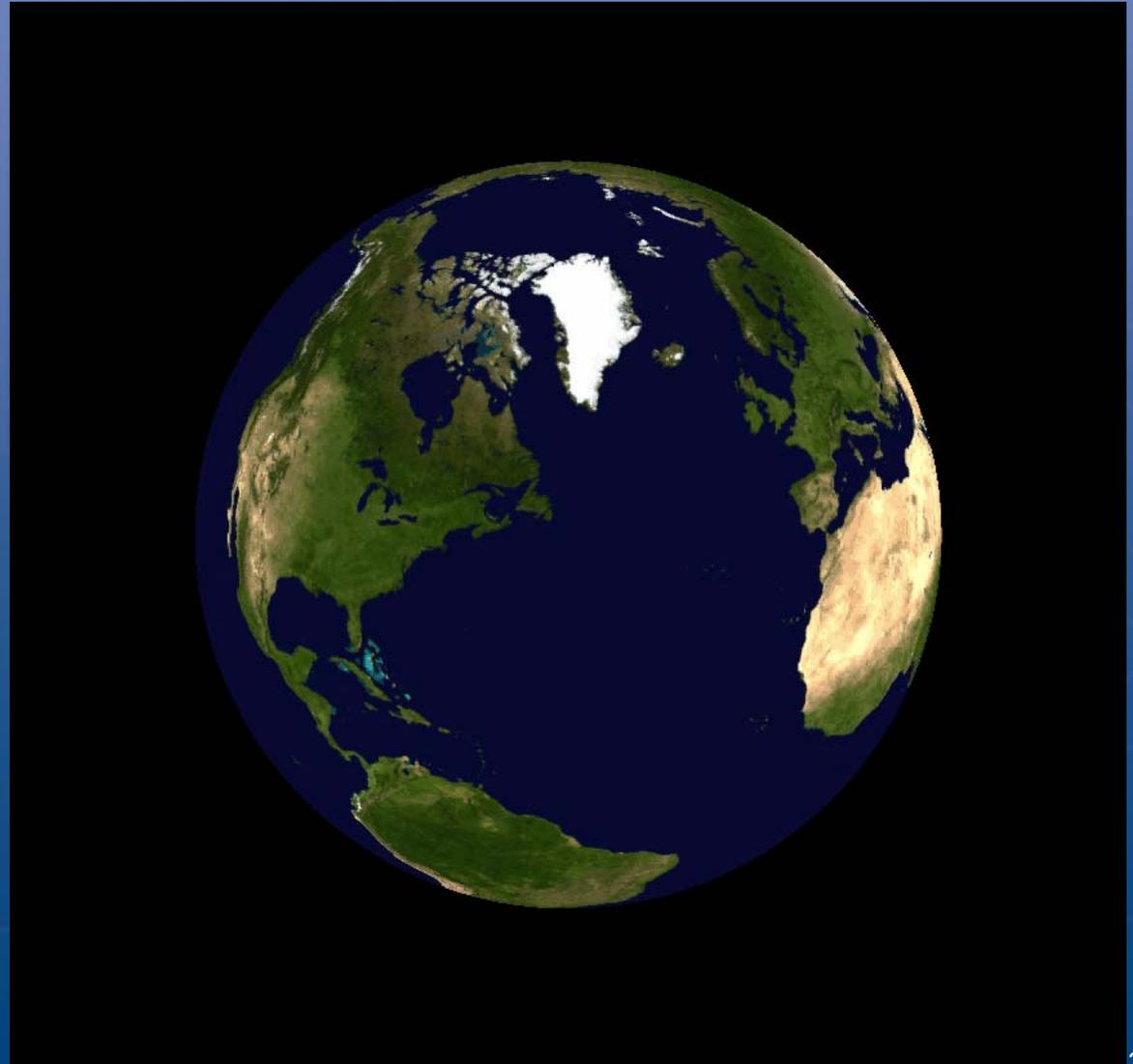
Case Study: SCA Fire Wise Inventory Van Buren, Missouri

- Field Crews perform details property assessments
- Properties categorized by defensible distance categories:
 - < 30 feet
 - 30 to 70 feet
 - 70 to 100 feet
 - > 100 feet
- Priority areas selected based on property buffer and proximity to open road



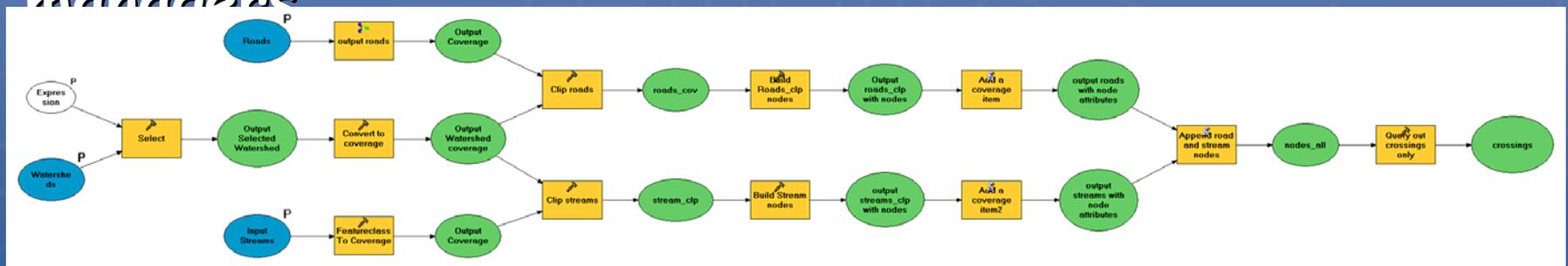
Case Study: SCA Property Asset inventory in Shelter Cove, CA

- Detailed Asset inventory of Shelter Cove subdivision
- Information provided to fire fighters in advance of several fires within a few miles of the subdivision
- Evacuation plans and suppression tactics supplemented with information



Case Study: Culvert inventory for fish migration, Boise and Sawtooth National Forests

Challenge: Provide detailed information on the status of fish migration corridors to area managers



GIS.

action

GIS can be used to direct crews to priority locations for survey.

GIS can then be used to analyze the data to focus on remediation to improve upstream migration paths.

Who Uses GIS - Federal Civilian

- **Federal Civilian**
 - National Park Service
 - Bureau of Land Management
 - US Geological Survey
 - Minerals Management Service
 - Bureau of Reclamation
 - Office of Surface Mining
 - Bureau of Indian Affairs
 - Fish and Wildlife Service
 - US Forest Service
 - Natural Resources Conservation Service
 - Farm Services Agency
 - APHIS
 - Environmental Protection Agency
 - NASA
- Health and Human Services
- Department of Homeland Security
- National Oceanic and Atmospheric Administration
- National Weather Service
- Department of Energy
- Centers for Disease Control
- Smithsonian
- Federal Emergency Management Agency
- Department of State
- US Department of Transportation
- Department of Labor
- Department of Justice
- Department of Labor
- Plus many more....

Who Uses GIS - Defense

- Joint Forces Command
- Naval Surface Warfare Center
- US Coast Guard
- US Navy
- Office of Naval Intelligence
- US Air Force
- US Army
- Strategic Command
- Defense Intelligence Agency
- National Imagery and Mapping Agency
- Central Intelligence Agency
- Office of Naval Intelligence
- Defense Intelligence Agency
- National Security Agency
- National Reconnaissance Office
- National Geospatial Intelligence School
- US Army Topographic Engineering Center
- US Army National Guard
- US Marine Corp
- Naval Security Group
- US Army Environmental Center
- US Army Facilities and Ranges

Who Uses GIS - State / Local

- States - All of them
 - Departments of Natural Resources/Conservation
 - Departments of Revenue
 - Departments of Transportation
 - Departments of Agriculture
 - Departments of Environmental Quality
- Counties (<2/3's)
- Cities
 - Most over 20-30K population
 - Metro Districts
- Conservation Districts (2700+)
- Fire Districts
- Others

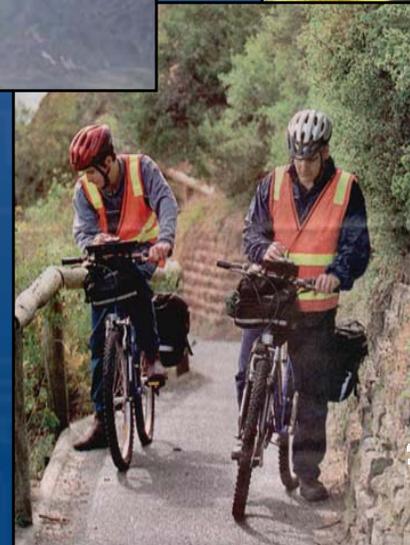
Who Uses GIS - Universities / NGO's

- Auburn University
- University of Alaska
- Johns Hopkins
- Towson University
- Louisiana State University
- University of Kentucky
- Kansas State
- University of Iowa
- University of Maine
- Michigan State University
- University of Nebraska
- Harvard University
- Hundreds more...
- Also Community Colleges, K-12, Museums
- Student Conservation Association
- Conservation Fund
- NatureServe
- The Wilderness Society
- Ducks Unlimited
- World Wildlife Fund
- World Resources Institute
- Global Forest Watch
- Ecotrust
- Environmental Defense Fund
- George Wright Society
- Thousands more both in the US and worldwide

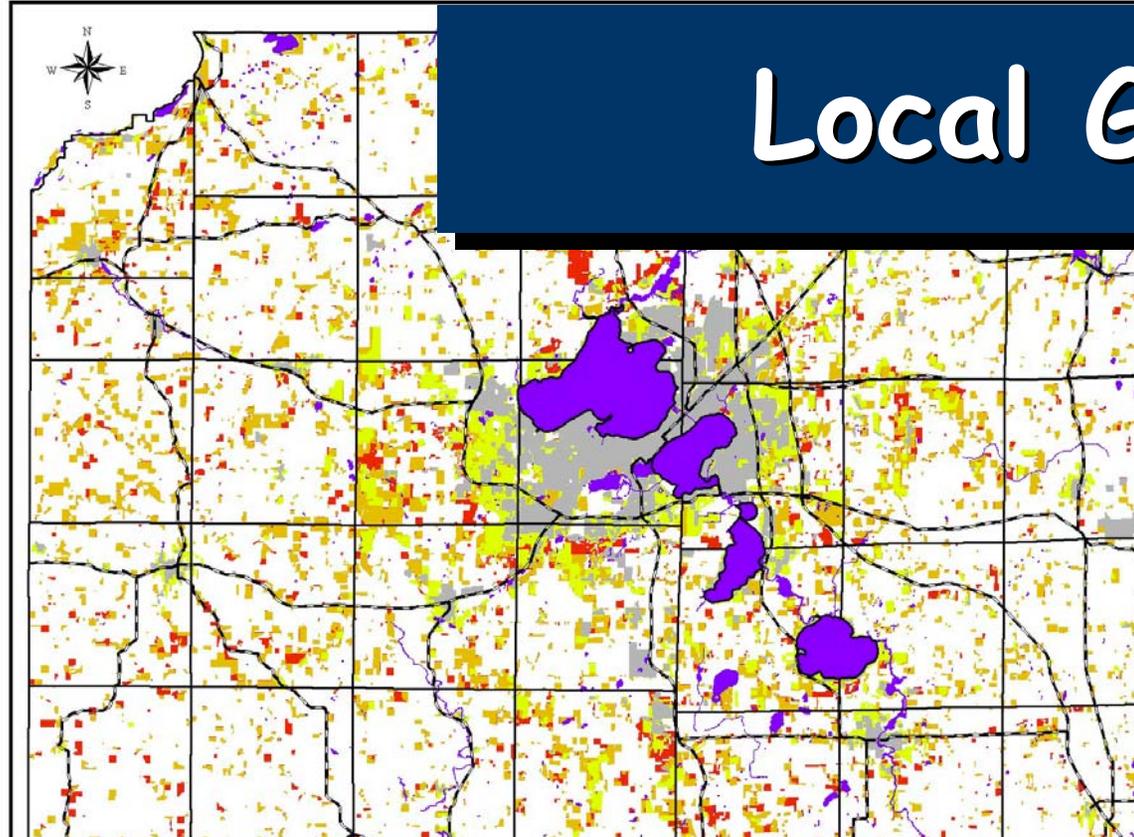
What Do They All Do With GIS

- Development
- Forestry
- Natural Resources
- Land use
- Urban Development
- Health
- Defense
- Utilities
- Education
- Science
- Roads/Transportation
- Survey/Cadastral
- Planning
- Environmental Conservation
- Agriculture
- Statistics
- Energy
- Telecommunications
- Public Safety
- Business

Mobile GIS



Local Government



Devel. Acres = 62,875
1995 Development

arcmap - Arc Map

File Edit View Insert Tools Window Help

Default Values UtilityNetwork Find Connected

Editor Create New Feature Water Service: service

Property	Value
METER_EGP_MUNICIPAL	GRL
STREET_SURFACE_TY	C
STREET_DIR	
STREET_NAM	123 LaSalle Ave
BACKFILL_C	YES
STREET_DSG	
ZIP_CODE	80632
BLDG_ENTRY	No
DWELLING_U	0
SUBTYPE_1	
STATUS_CD	IS
DATE_STATU	
LENGTH_SRC	MS
PIPE_CLASS	

22 features

Selection: Select Layers

Water Facilities Maintenance Tool

Default Values

2215025.22, 394635.21 Meters

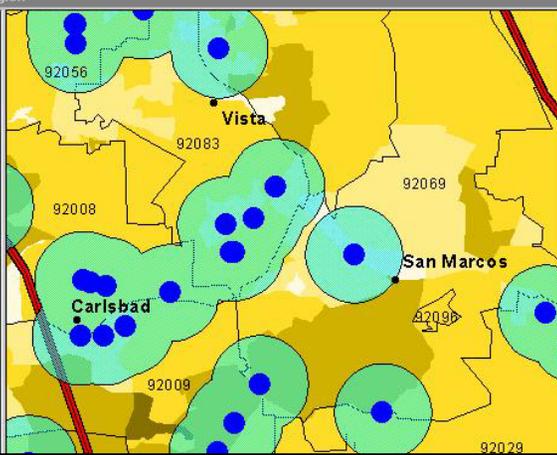
File Edit View Theme Analysis Surface Graphics Network Business Window Help

Scale 1:151,478

6,292,638.39
2,012,742.18

Study Area: North San Diego Region

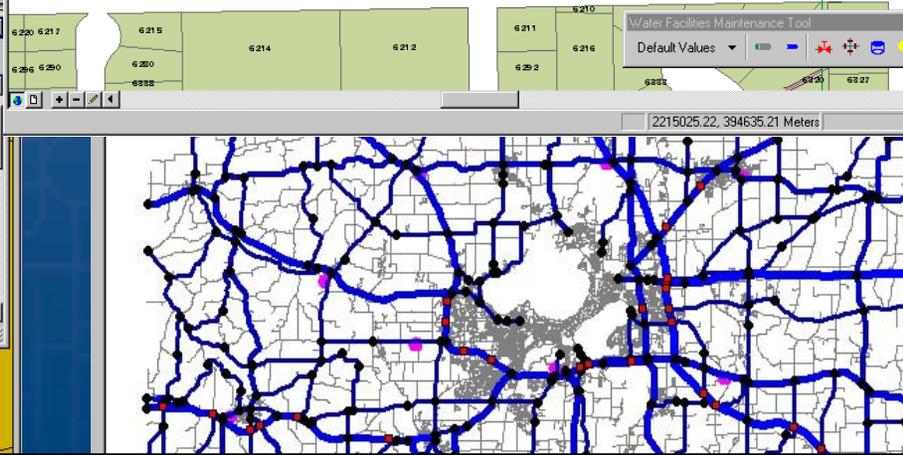
- City
- Clothing Centers
- Clothing Centers Analysis
 - Within 1 Mile
- Fire ways
- ZIP Codes
- Median Family Income (1999)
 - 0 - 34285
 - 34286 - 53912
 - 53913 - 75574
 - 75575 - 109374
 - 109375 - 237500
- Distance to Clothing Centers
 - 0 - 4021.897
 - 4021.897 - 8043.794
 - 8043.794 - 12065.692
 - 12065.692 - 16087.589
 - 16087.589 - 20109.486



Income Report

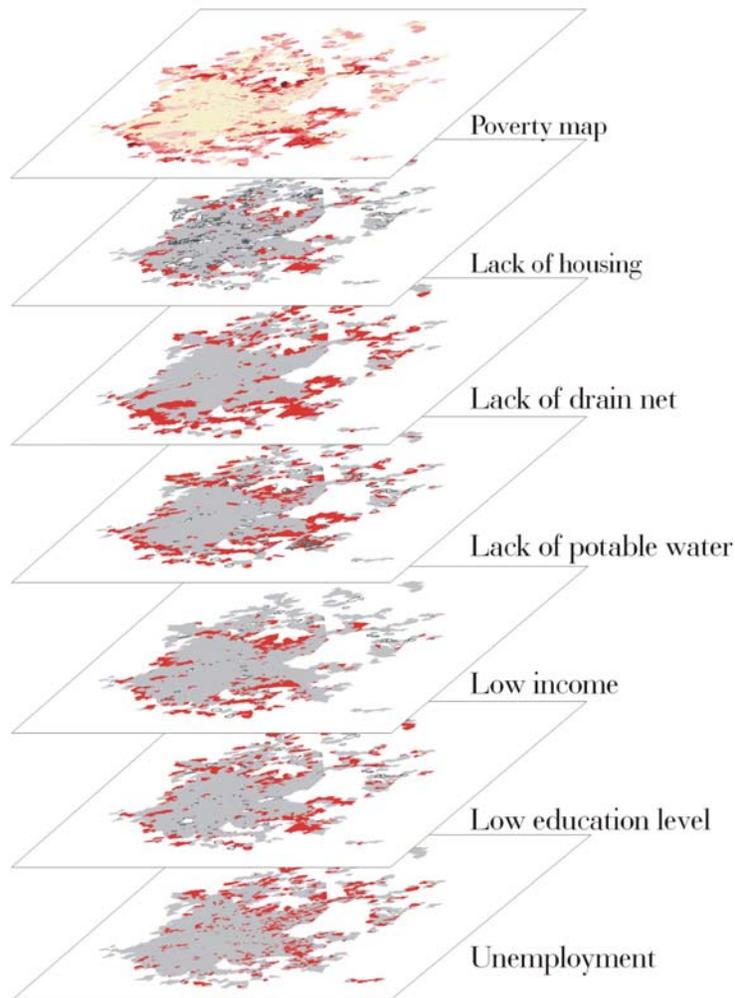
2 of 3+

Area ID	Year 1999 Total Households	Total Annual Hc \$150K + \$10K
92026	15,837	3.9
92027	14,931	4.1
92028	12,265	6.4
92029	8,219	10.6
92036	984	2.1
92037	17,089	16.1
92040	14,107	3.4



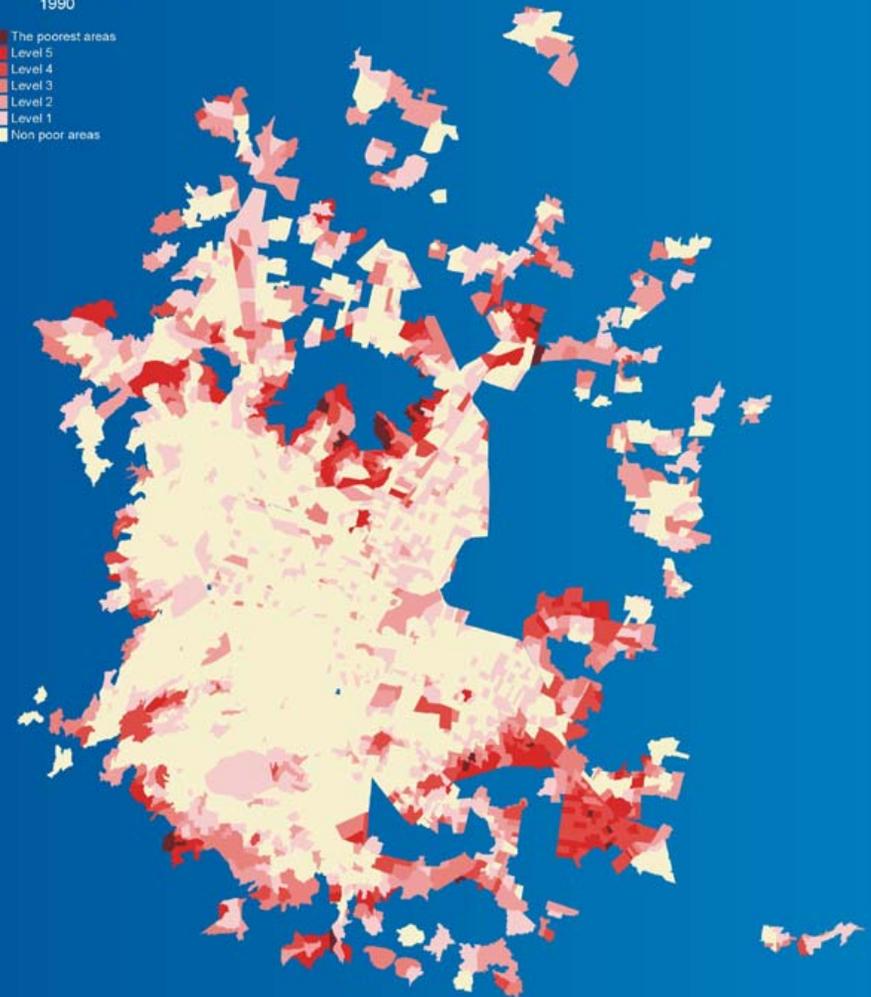
Socioeconomic Analysis

Overlay analysis of Urban Poverty in Mexico City

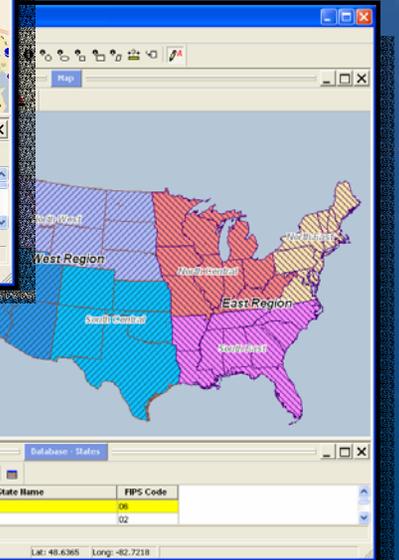
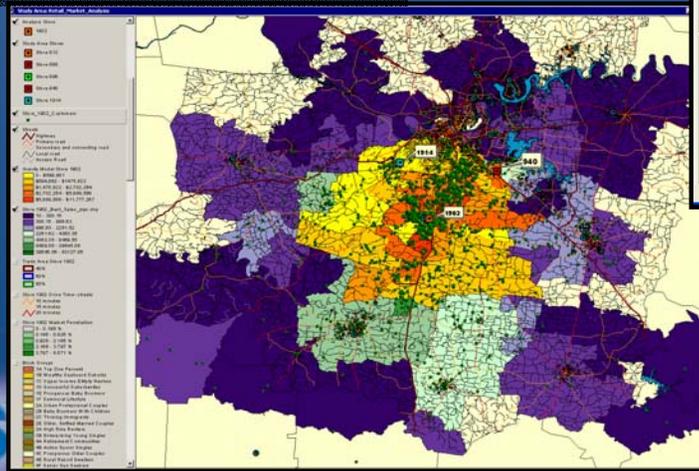
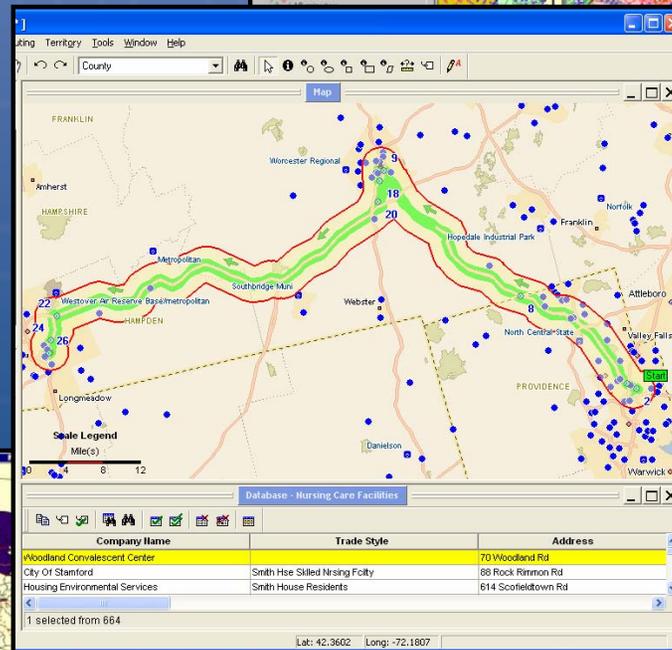
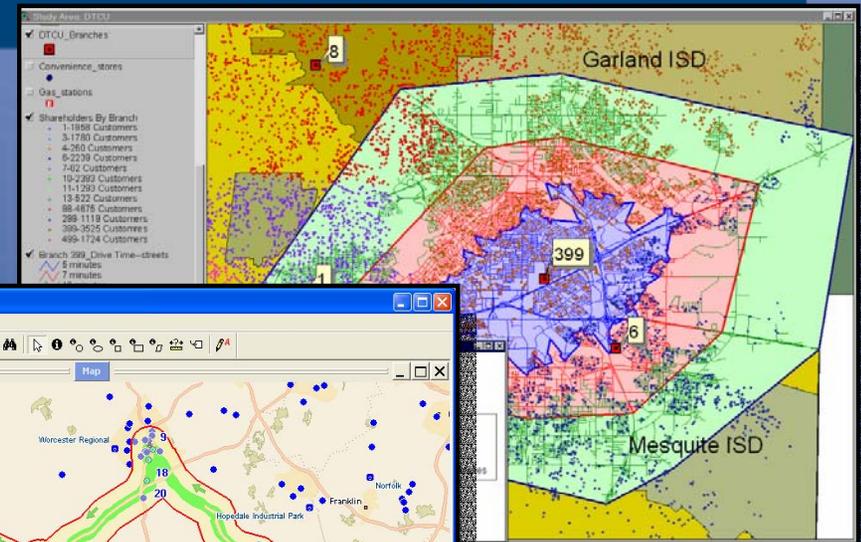
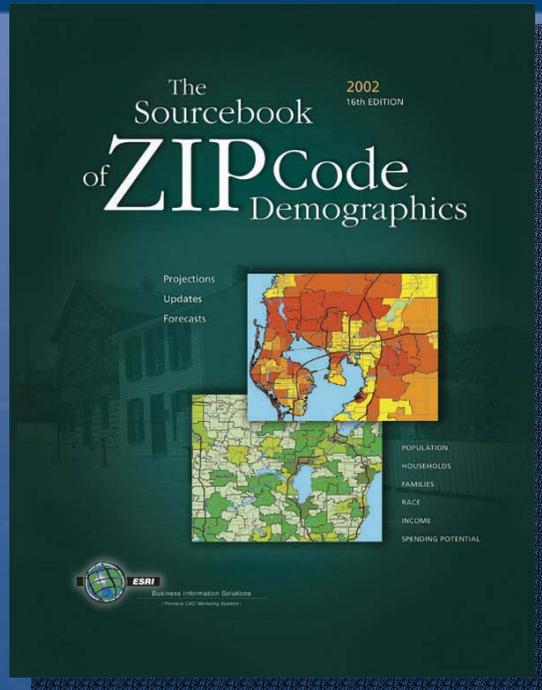


Map of Urban Poverty in Mexico City 1990

- The poorest areas
- Level 5
- Level 4
- Level 3
- Level 2
- Level 1
- Non poor areas



Demographic Analysis



Surveying

Survey Explorer - 7: Details [DirectionDis...]

From Point: Proj01_P4
 Direction: 262.299 g
 Distance: 5.171 m
 Result Point: Proj01_P5

Identify Results

Layers	Location	Property	Value
COGO Measurements	5566714.668952	Proj01	7
		61.635	13.901
		61.635	13.901

Surveying

Auto link SurveyPoints
 Link Command
 Show Link Conflicts
 Update Feature Vertices
 Unlink Command
 Properties ...

Attributes

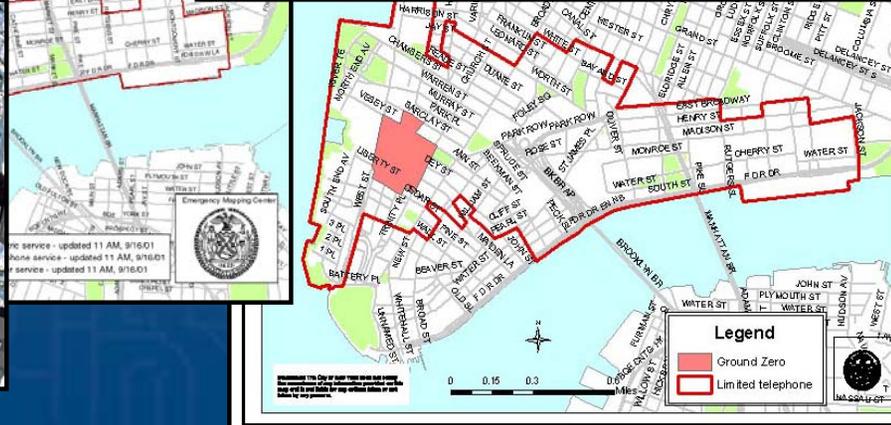
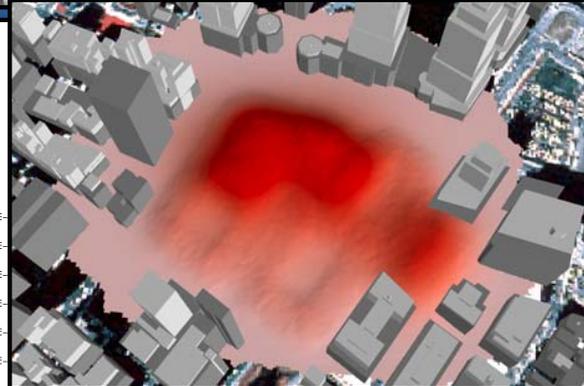
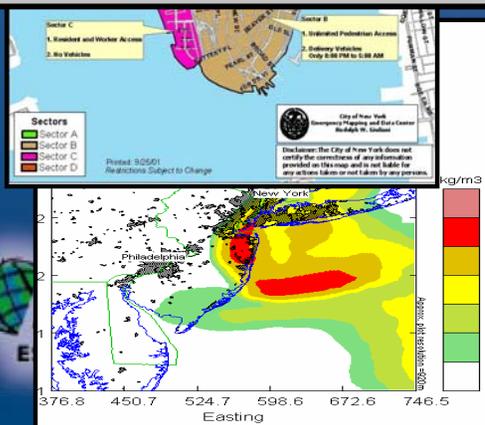
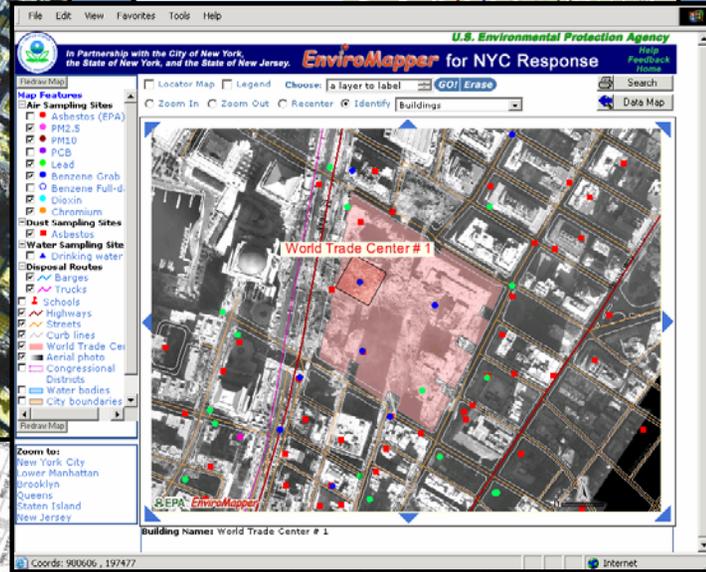
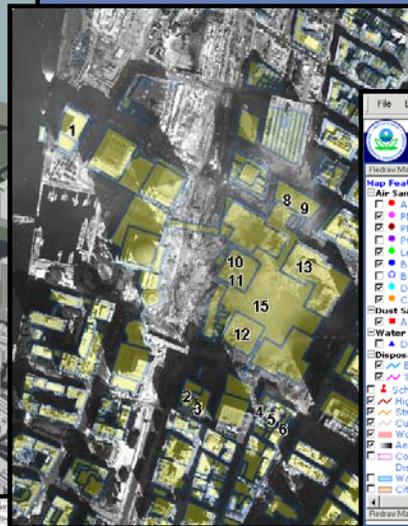
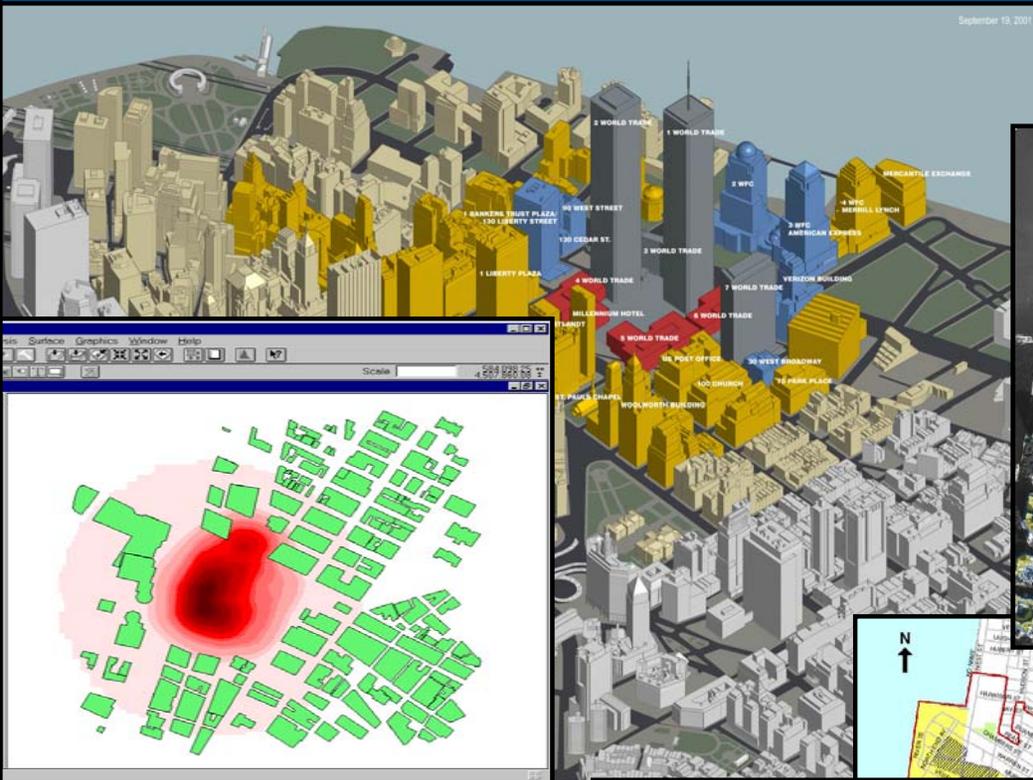
Property	Value
OBJECTID_1	603
OBJECTID	175
AREA	162.97424999
PERIMETER	53.216482682
EXR1BUILD	176
EXR1BUIL_1	1932
FCODE	BLDG
Shape_Leng	53.216484904
Shape_Length	53.216485359
Shape_Area	162.97423031

Attributes

X	Y
4948075.964	4948279.876
4948272.364	4948338.475
4948346.323	4948294.424
5566706.304	5566699.891
5566733.798	5566769.307
5566717.843	5566731.296
5566720.241	5566745.148
5566731.96	5566757.474
5566756.849	5566756.849
4948301.693	4948304.163
4948326.061	4948312.415
4948302.292	4948313.747
4948304.956	4948325.076
4948312.415	4948332.583
4948313.747	4948338.895

5566714.66 4948344.22 Meter:

Disaster Management



Modeling

hurricane.mxd - ArcMap - ArcView

File Edit View Insert Selection Tools Window Help

1:5,039,309

Layers

Florida Businesses

Hurricane Forecast

Nexrad

Wind Forecast

MAX_WIND

34 kt

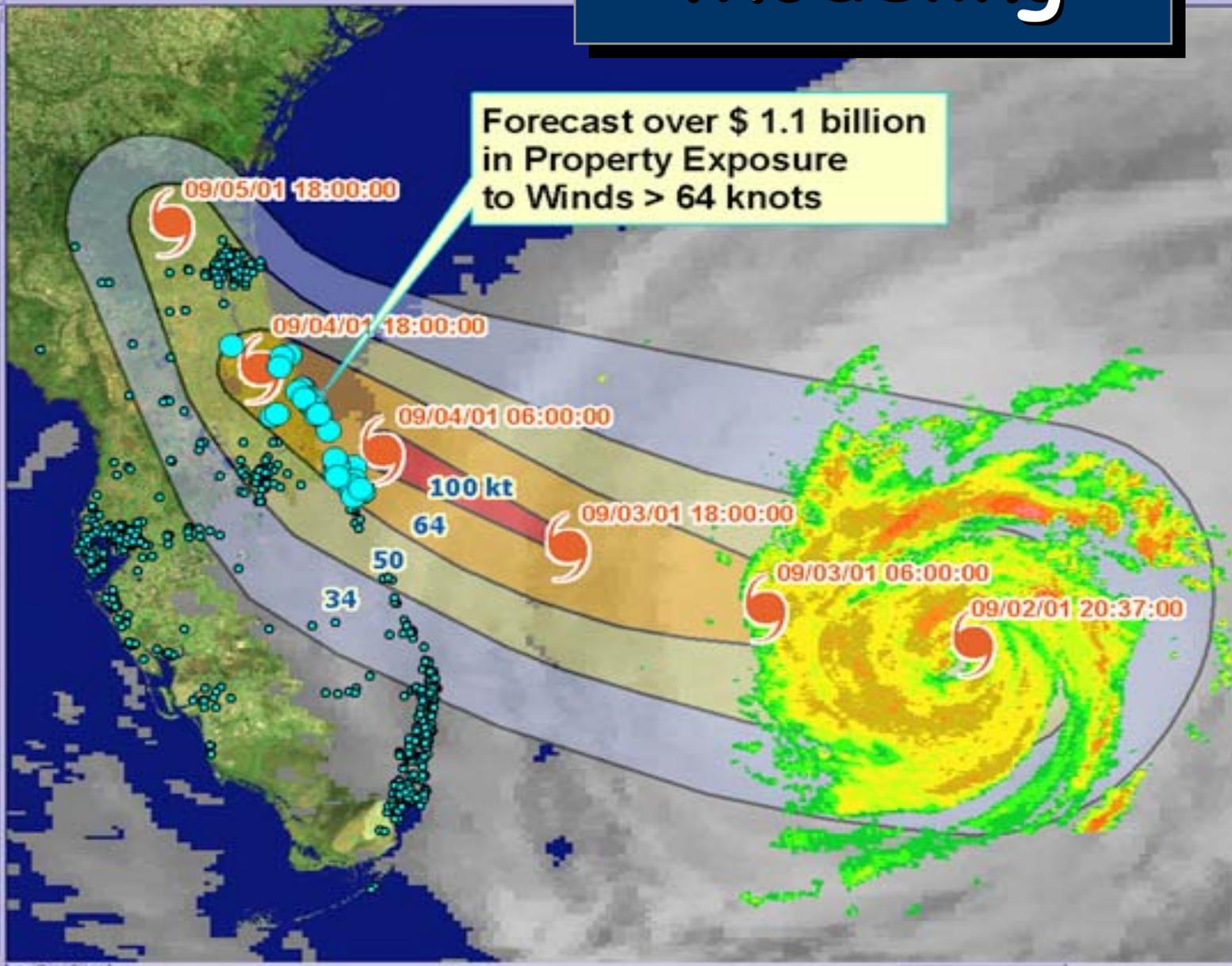
50 kt

64 kt

100 kt

Clouds

Terrain



Display Source

Drawing 176

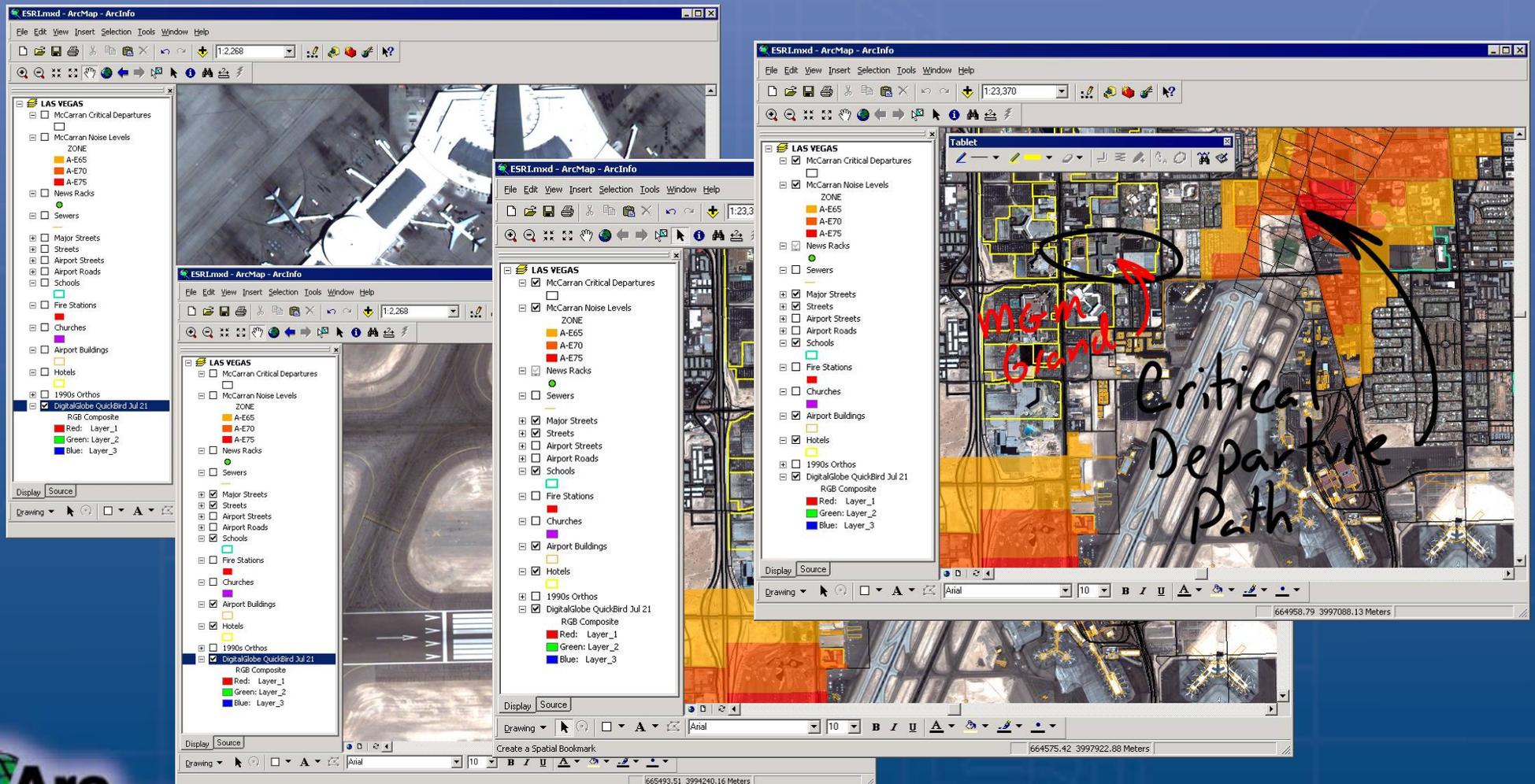
Number of features selected: 37

82°14'52.23"W 31°1'10.56"N

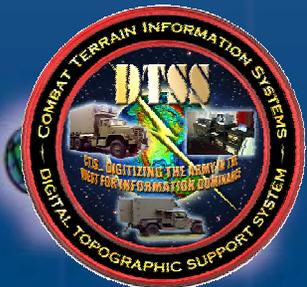
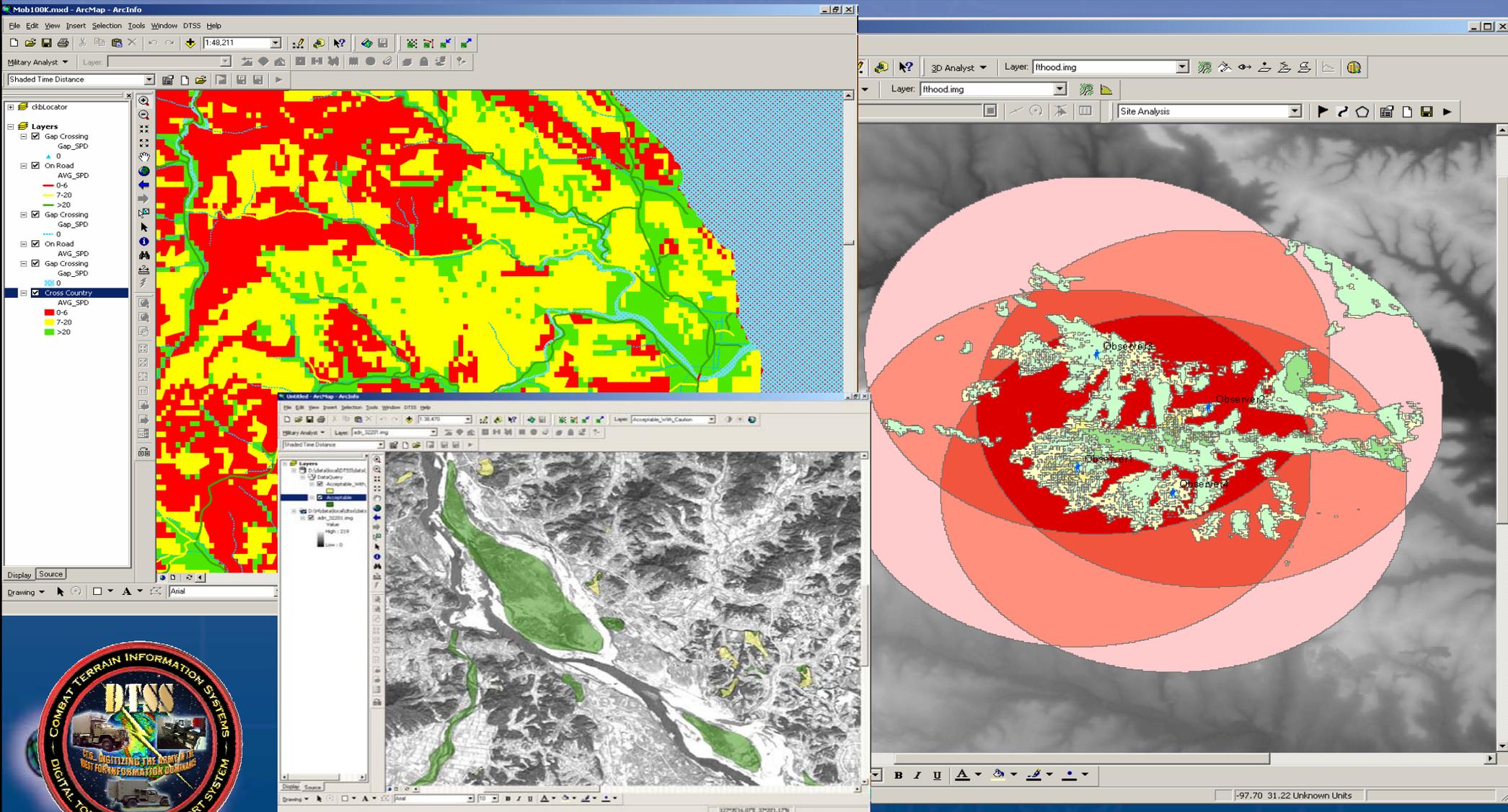
Emergency Response: US Department of Health and Human Services Command Center



Las Vegas – Homeland Security at McCarran Airport



Defense



Intel

Joint Intelligence Virtual Architecture Visualization

JIVA - Microsoft Internet Explorer

Address: <http://defdemo2.esri.com/jivav/jiva/servlets/com.esri.defserv.servlet.ServiceInfoServlet>

Classification: All associated caveats

United States

center coordinates: lat = 34°40'12"N lon = 77°15'0"W

Find by Name: (Wild card character is *)
City:
Country: Unknown
U.S. States/Territories are listed at the bottom of the Country list.

Find by Degrees-Minute
Latitude: 0 0 0
Longitude: 0 0 0

DGI-NET - Microsoft Internet Explorer

Refresh Map

NOTE: Click on "Refresh" button after selecting items

JIVA DATA

Selection Options

Lejeune

- Shaded Relief
- Buildings
- Transportation

JIVA Custom Data

- Coalition Headquarter
- Enemy Radar
- Enemy Theater Order Of Battle Naval

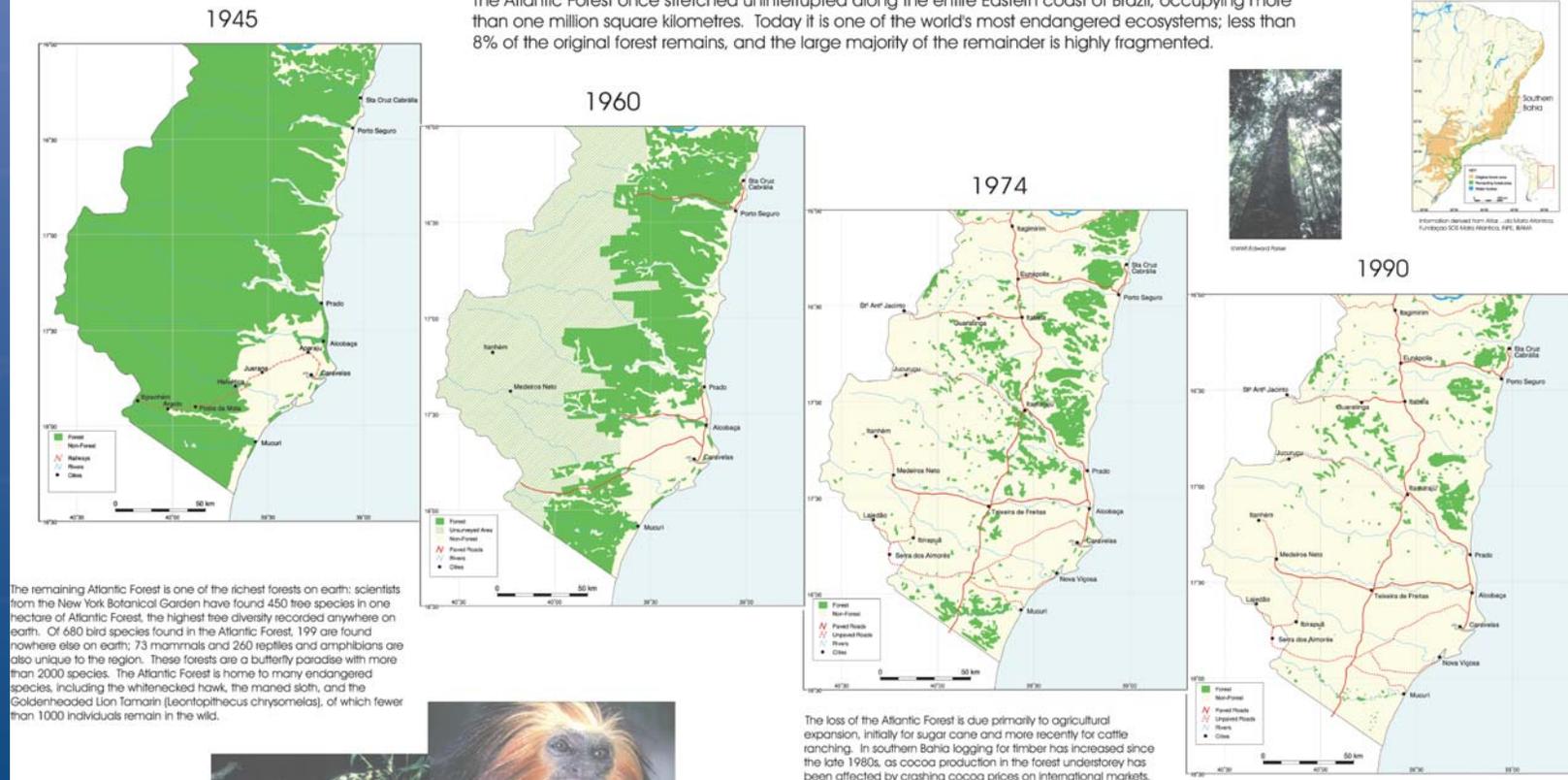
Resource Assessment

ATLANTIC FOREST LOSS

FRAGMENTATION OF FOREST COVER IN SOUTHERN BAHIA, BRAZIL. 1945 - 1990

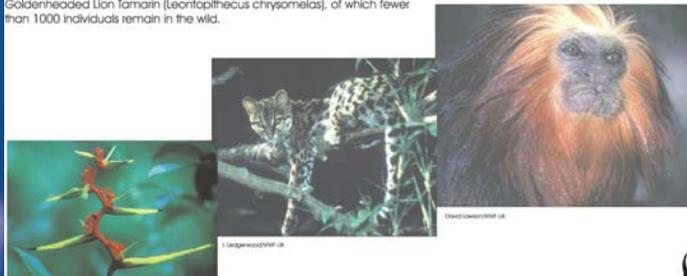
Research by The New York Botanical Garden and the Centro de Pesquisas do Cacau

The Atlantic Forest once stretched uninterrupted along the entire Eastern coast of Brazil, occupying more than one million square kilometres. Today it is one of the world's most endangered ecosystems; less than 8% of the original forest remains, and the large majority of the remainder is highly fragmented.



The remaining Atlantic Forest is one of the richest forests on earth: scientists from the New York Botanical Garden have found 450 tree species in one hectare of Atlantic Forest, the highest tree diversity recorded anywhere on earth. Of 680 bird species found in the Atlantic Forest, 199 are found nowhere else on earth; 73 mammals and 260 reptiles and amphibians are also unique to the region. These forests are a butterfly paradise with more than 2000 species. The Atlantic Forest is home to many endangered species, including the whitenecked hawk, the maned sloth, and the Goldenheaded Lion Tamarin (*Leontopithecus chrysomelas*), of which fewer than 1000 individuals remain in the wild.

The loss of the Atlantic Forest is due primarily to agricultural expansion, initially for sugar cane and more recently for cattle ranching. In southern Bahia logging for timber has increased since the late 1980s, as cocoa production in the forest understorey has been affected by crashing cocoa prices on international markets. The situation worsened in 1989 when 'witch's broom' fungal disease swept through the cocoa plantations.



THE NEW YORK BOTANICAL GARDEN



Mendonça, J. R., A. M. de Carvalho, L. A. Mattos Silva, and W. W. Thomas. 1994. 45 Anos de Desmatamento no Sul da Bahia. Rememorações do Mata Atlântica - 1945, 1960, 1974, 1990. Projeto Mata Atlântica Nordeste. CEPAC, Ilhéus, Bahia, Brasil.

Land Management Planning

Comment Submission - Microsoft Internet Explorer

Comment Submission

User Information

Are you representing a group ? Yes NO

First Name * Last Name *

Address City

State Zip code

Country Email *

Phone Title

Do you want your name withheld from publications ? *

Yes NO

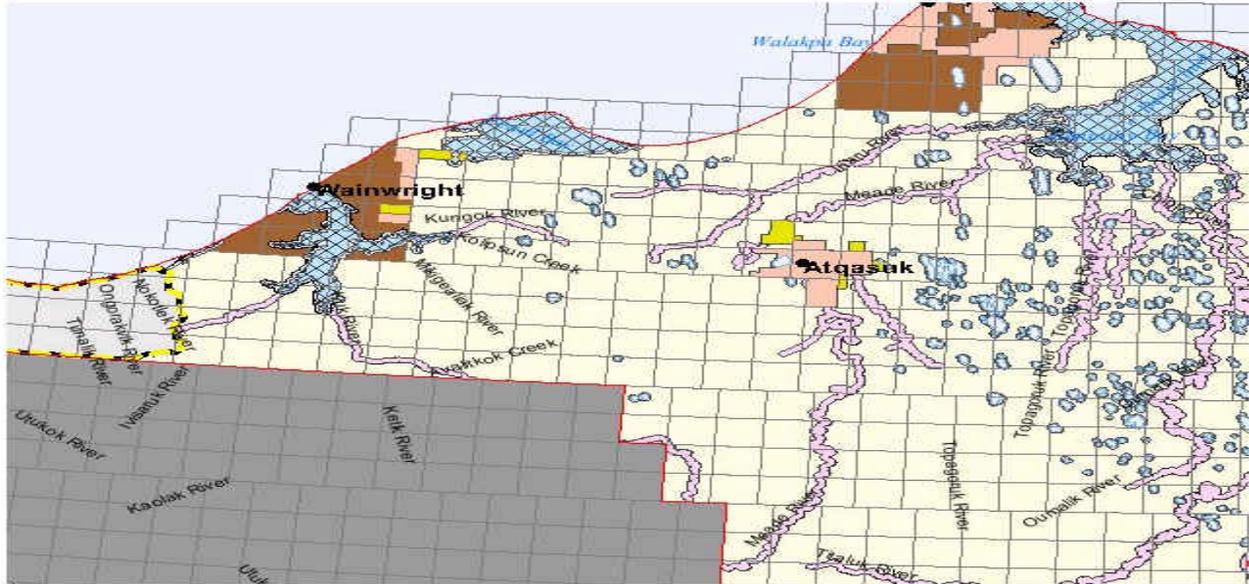
[Read Disclaimer](#)

Do you want to subscribe with NPRA Email List ? Yes NO

Comments:

Category :

Submit a map as part of your comment:



Done Done Internet

on/off query

ESRI

RMA - Crop Loss Prediction

SummaryOfBusiness.mxd - ArcMap - ArcView

File Edit View Insert Selection Tools Window Help

1:27,054,589

Drought Data

- Primary Producer Locations
- AgentLocations
- County SOB for drought areas 08/17/2002
- State Lines
- U.S. Drought Monitor Map - 08/13/2002
 - Classification
 - Abnormally Dry
 - Moderate Drought
 - Severe Drought
 - Extreme Drought
 - Exceptional Drought
- Modified Climate Prediction Center Areas
- County Lines

Summary Of Business

- RMA/FSA County Data
- State Lines
- County Lines

Identity Results

Layers: <Top-most layer>

County SOB for drought areas 08/17/2002

- 0011
- 0016
- 0041
- 0043
- 0051
- 0062
- 0078
- 0081
- SUM*

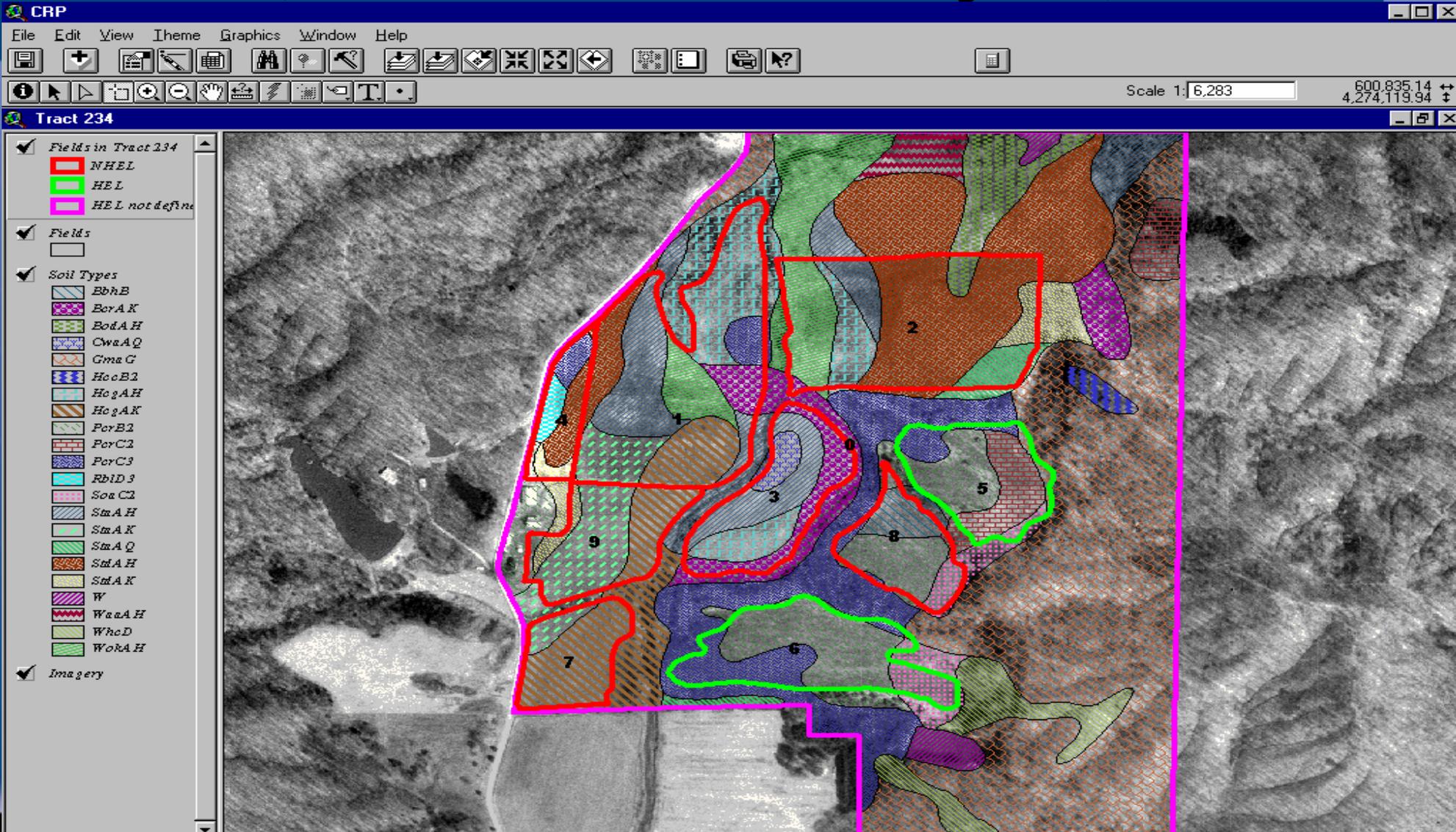
Location: (-99.722332 40.787646)

Field	Value
FIPS Code	31047
Crop Code	SUM*
Policies Sold	1,966
Premium Earning Policies	1,101
Premium Earning Units	3,008
Indemnified Policies	33
Indemnified Units	42
Net Reported Acres	216,946
Liability	\$51,659,033.00
Total Premium	\$3,420,347.00
Indemnity	\$77,426.00
Loss Ratio	0.02
County	Dawson County

Dawson County

Farm Service Agency - SCIMS

(Customer and Land Records Management)



Farm Service Agency Digital Compliance

DOQ, CLU with Single Rectified 35mm Slide



NRCS - Conservation



Conservation Reports

- Create new plans and contracts quickly with the Report Wizard
- Print conservation plans and contracts from Excel
- Revise plans and contracts in Excel

Practice Schedule

Selected Land Units:

Tract	Land Unit
903	2

Practices:

Practice Code	Practice Name	Local Name
310	Bedding	
311	Alley Cropping	
312	Waste Management System	
313	Waste Storage Facility	
314	Brush Management	
317	Composting Facility	

Planned Practices:

Tract	Land Unit	Code	Narr	Amount	Units	Month
903	2	310	00N	5	AC.	12
903	2	314	00N	5	AC.	6
903	2	441	00N	1	NO.	12
903	2	449	00N	5	AC.	6
903	2	590	5	5	AC.	6
903	2	595	5	5	AC.	7
903	2	608	00N	0.1	FT.	12
903	2	608	1	5	FT.	12

Applied Practices:

Amount	Units	Date	Cost Share
	AC.		EQUIP
	AC.		EQUIP
0	NO.		EQUIP
0	AC.	8/29/99	EQUIP
0	AC.		EQUIP
0	AC.		EQUIP

Planner: _____

Sort by Land Unit | Sort by Practice | **Report Wizard**

OK | Apply | Cancel

Toolkit Function

USDA
NRCS
Alabama Service Center
535 E. Wood St.
Alabama, TX 00011
555/212

Contract Support Document

Contract Number: _____

161109 Contract Number: _____ Page 1 of 2

MS Excel

Contracts_5.xls

USDA
Natural Resources Conservation Service
Example Field Office
452 Hwy. 98 North,
Okeechobee, FL, 55555
(555) 555-5555

Contract Support Document

Smith, John
33 County Road 9
Centerville, FL 55555-5555

Contract Number: 526Y3

Tract	Field	Item #	Conservation Treatment	Planned Amount	Estimated Units	Cost / Unit	Program	Cost Share	1997	1998	1999	2000
0	1	1	PUMPING PLANT FOR WATER CONTROL (533)									
			Install a pumping facility to transfer water for a need(s).									
			533-Pump.Plt/ Submers. w/Pres. Tank & inclusions	1.0	Each	\$2,400.00	EQUIP	75.0% AM	\$1,800			
0	1	2	FENCE (382)									

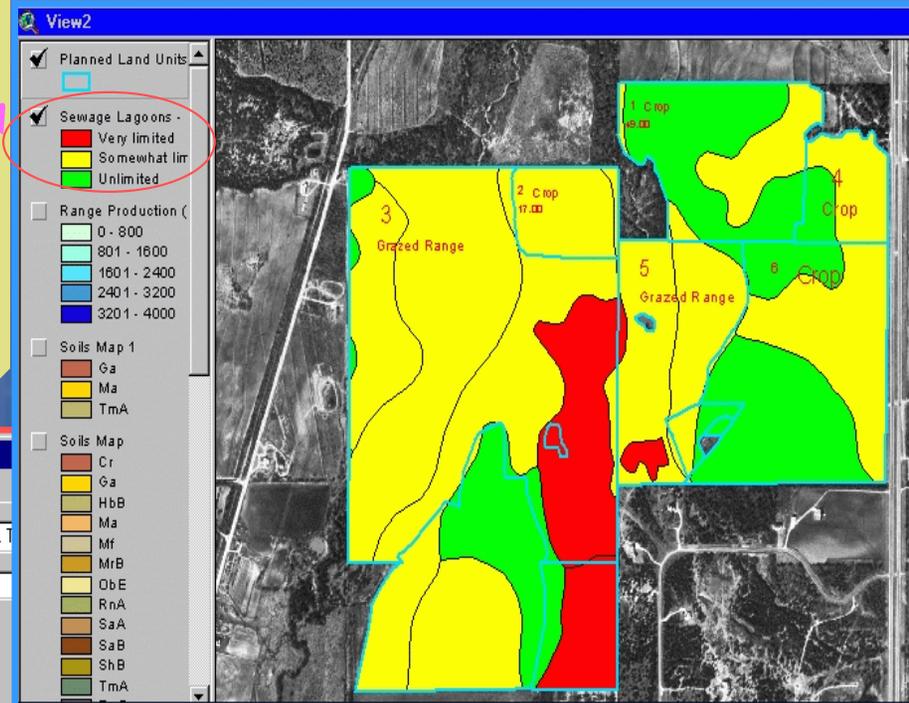
NRCS - Soils Interpretations



Soil Data Viewer

Access and display soils data in ArcView

- Create maps of a variety of soils interpretations
- Create maps based on soil properties
- Show best/worst locations for conservation practices based on soil properties



Soil Data Viewer

Nonirrigated Capability Subclass
Irrigated Capability Class
Irrigated Capability Subclass

Building Site Development
Construction Materials
Rangeland
Range Site ID
Range Site Name
Range Production (Favorable Year)
Range Production (Normal Year)
Range Production (Unfavorable Year)
Sanitary Facilities
Septic Tank Absorption Fields
Sewage Lagoons
Sanitary Landfill (Area)
Soil Properties

Data Options | View Data | View Results

Soil Survey Area: TX441 - TAYLOR COUNTY, T

Column Name: sewageLL

Data Filter Options
 Averages
 Most Limiting
 Least Limiting
 Dominant Soil
 Dominant Condition
 Absence/Presence

Description:
Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are

Process Data | Reset | Cancel

Screen may be resized. (6120,10500)

Foolkit Functions
in ArcView

ArcView GIS Version 3.1

File Edit View Theme Graphics Window Help

Scale 1:19,323

NRCS - Performance Reporting



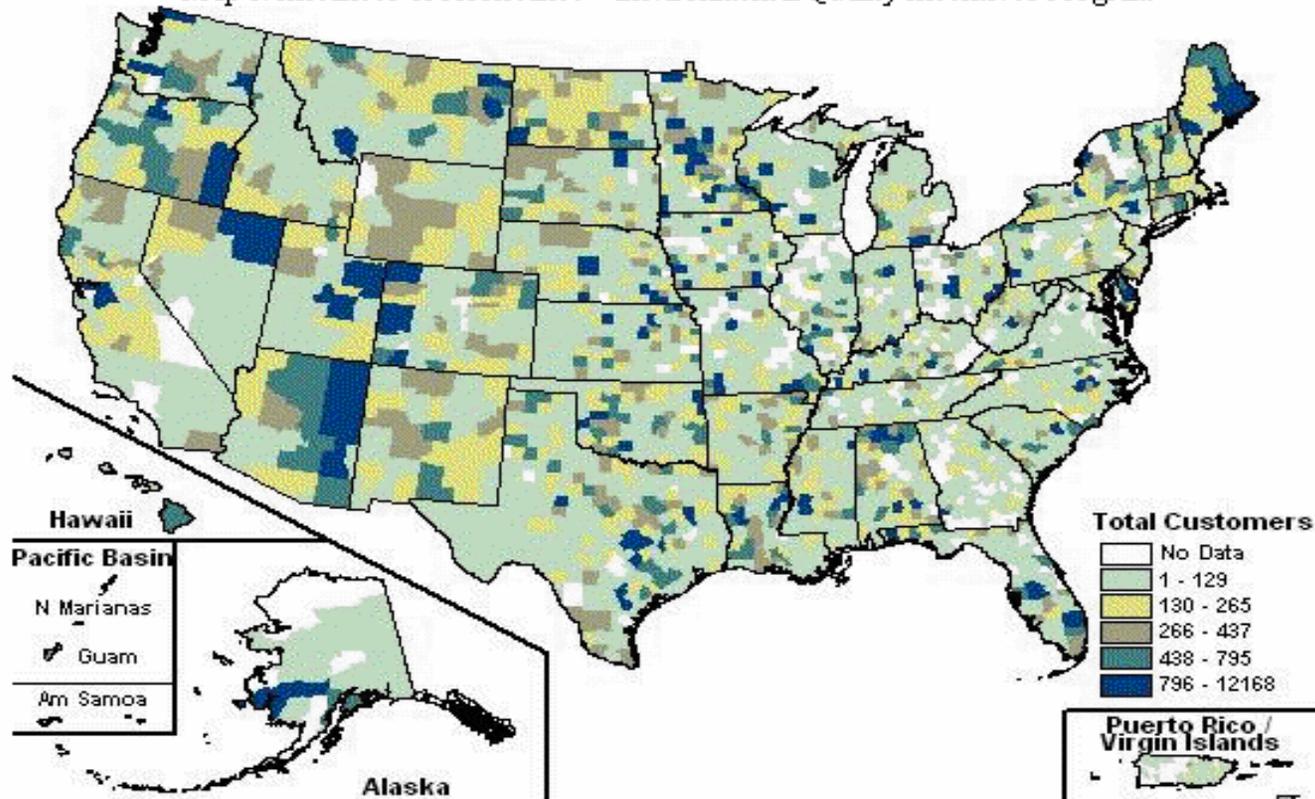
PRMS

Natural Resources Conservation Service
Performance and Results Measurement System



Instances of Assistance Environmental Quality Incentives Program National Summary (October 1 through September 18, FY 2000)*

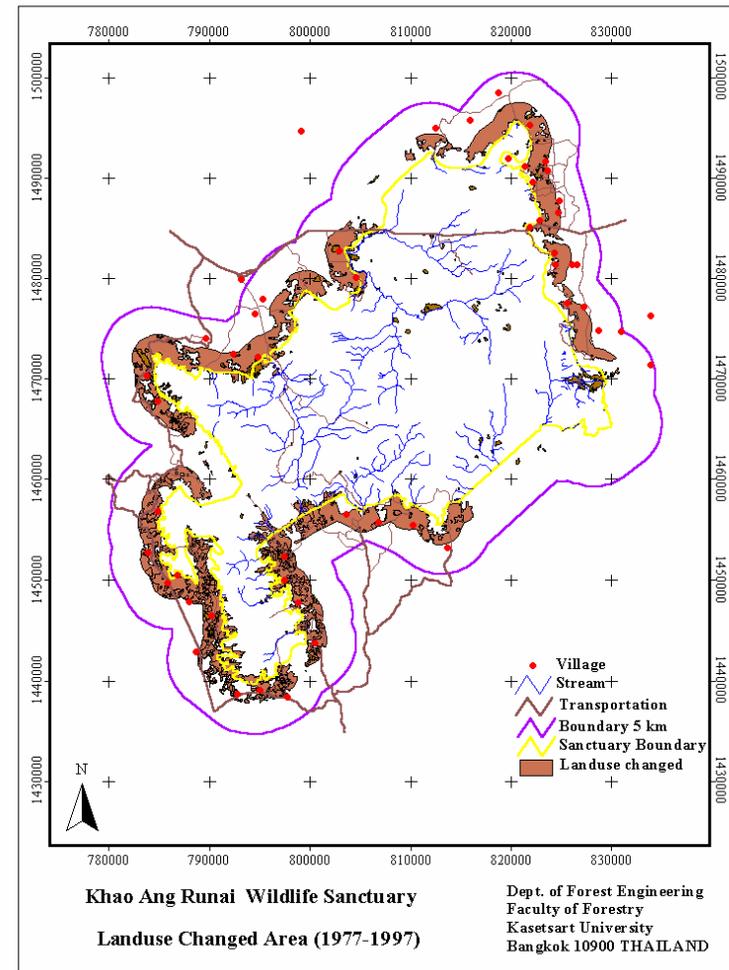
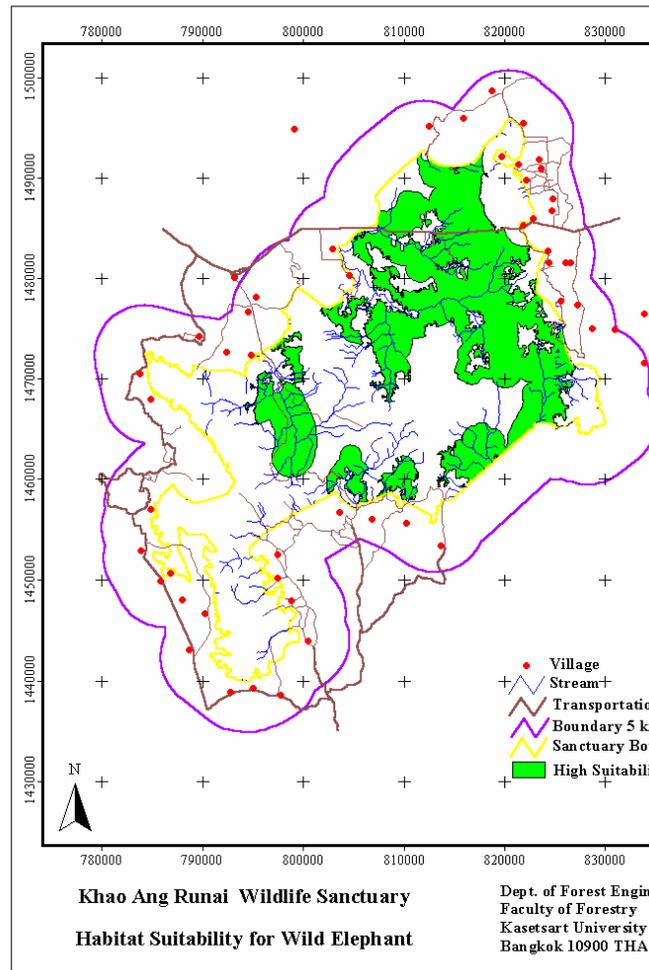
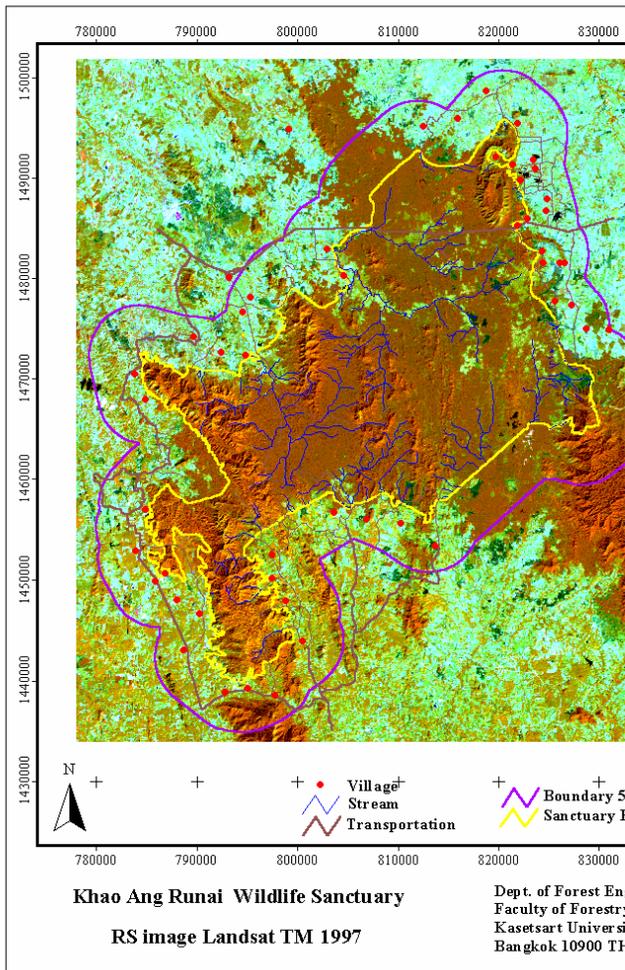
Map 1: Instances of Assistance—Environmental Quality Incentives Program



***Caution:** This report may have incomplete data. All NRCS offices may not report regularly.



Thailand - Wildlife Conservation



Natural Resources: Habitat Protection

The Arctic Refuge Coastal Plain Birth Place & Nursery Grounds of the Porcupine Caribou Herd



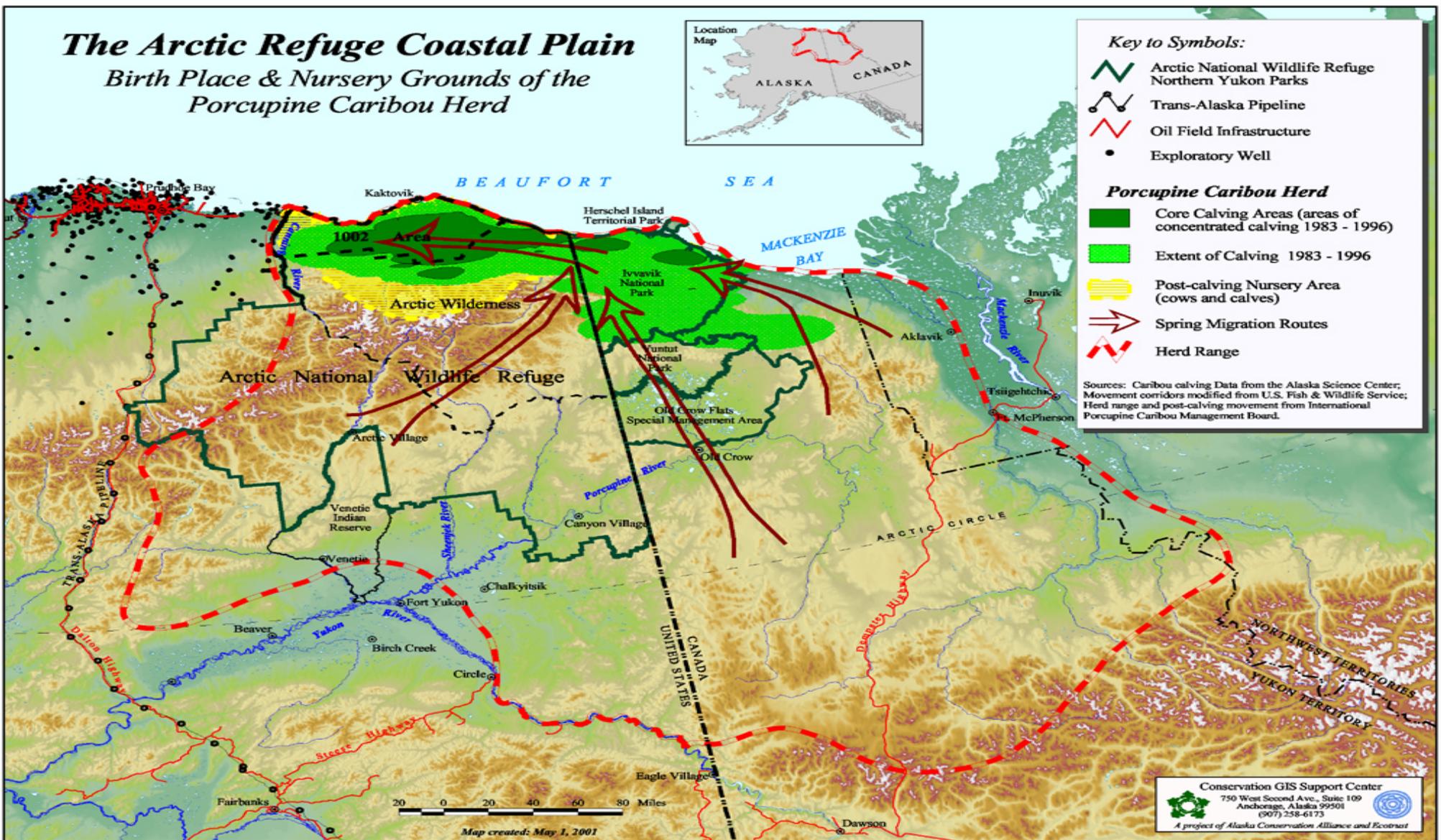
Key to Symbols:

- Arctic National Wildlife Refuge
- Northern Yukon Parks
- Trans-Alaska Pipeline
- Oil Field Infrastructure
- Exploratory Well

Porcupine Caribou Herd

- Core Calving Areas (areas of concentrated calving 1983 - 1996)
- Extent of Calving 1983 - 1996
- Post-calving Nursery Area (cows and calves)
- Spring Migration Routes
- Herd Range

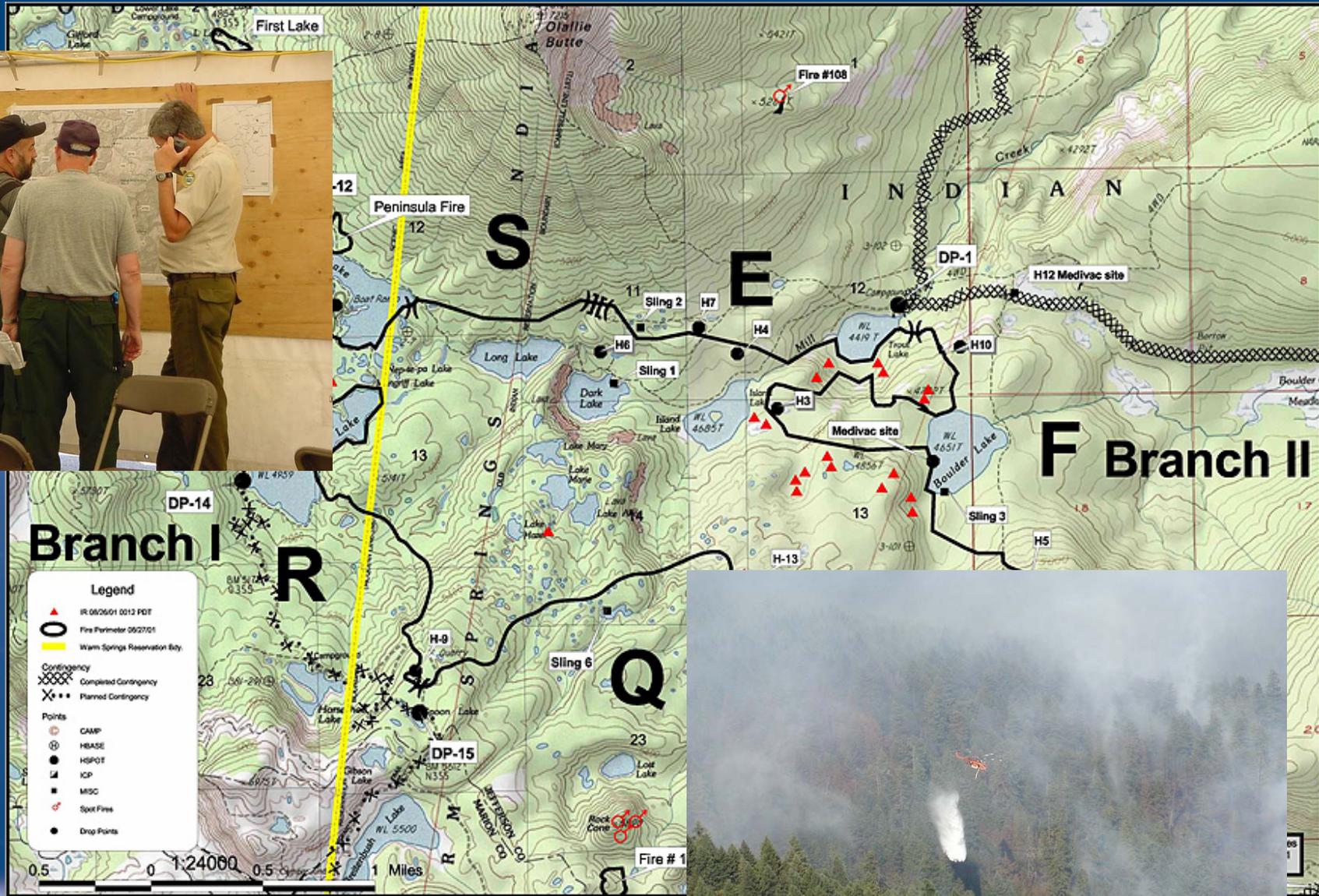
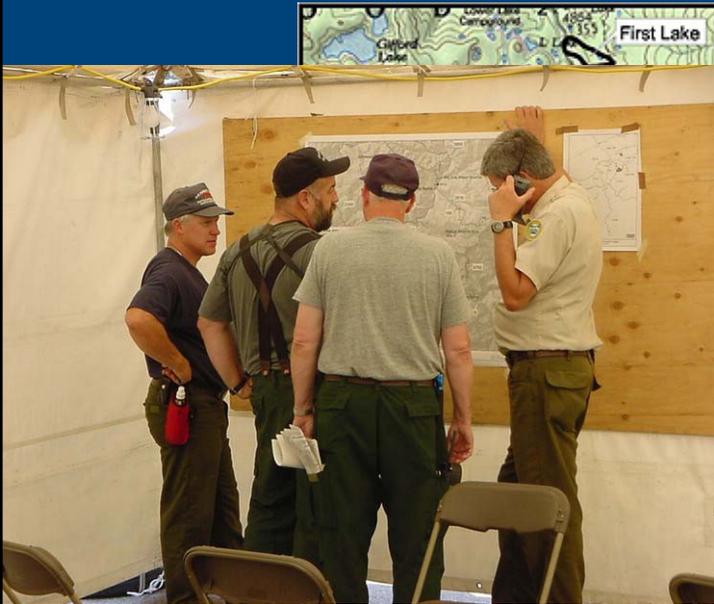
Sources: Caribou calving Data from the Alaska Science Center; Movement corridors modified from U.S. Fish & Wildlife Service; Herd range and post-calving movement from International Porcupine Caribou Management Board.



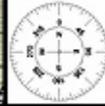
Map created: May 1, 2001

Conservation GIS Support Center
750 West Second Ave., Suite 109
Anchorage, Alaska 99501
(907) 258-6173
A project of Alaska Conservation Alliance and Ecotrust

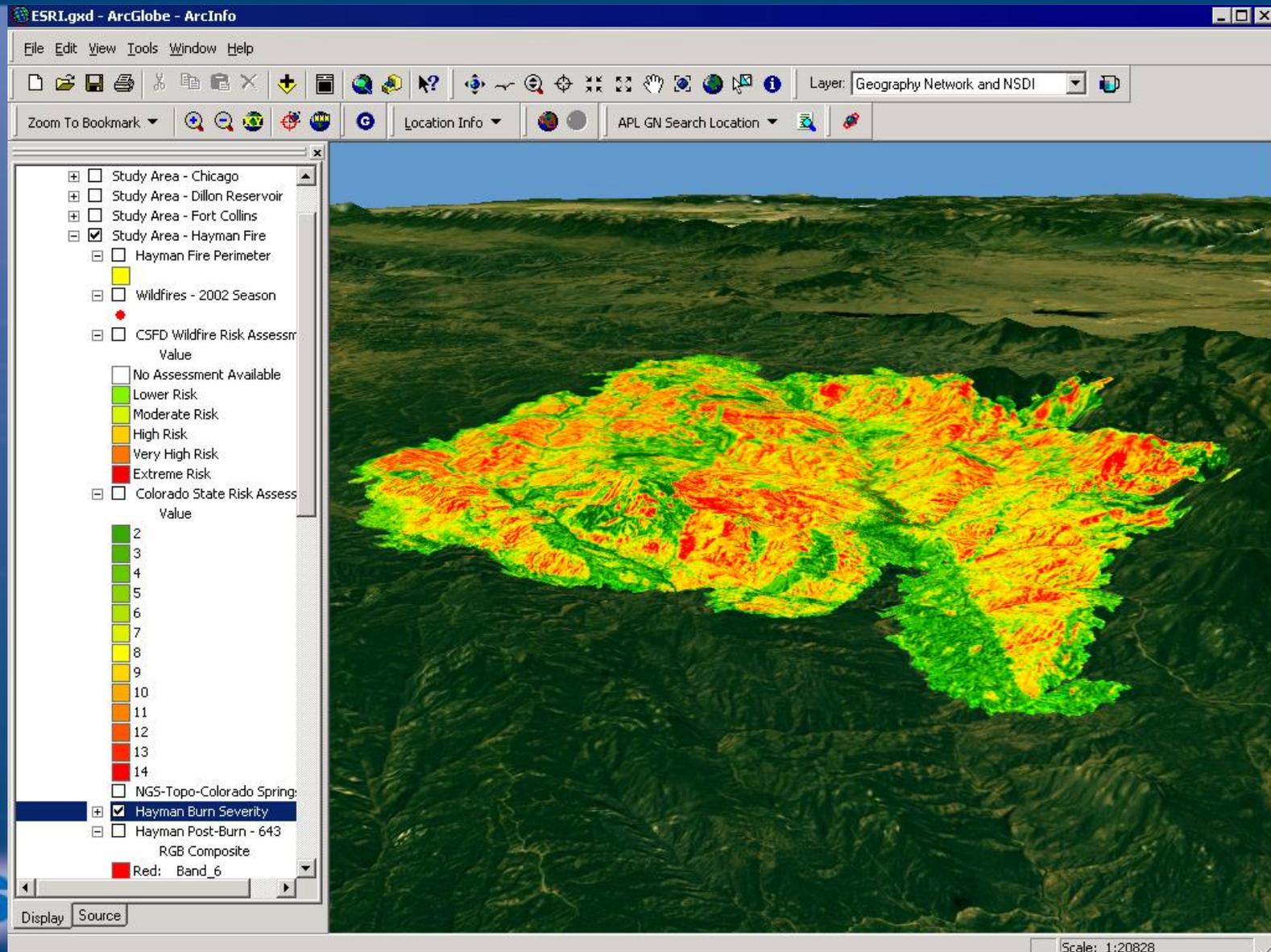
Wildland Fire - Incident Command



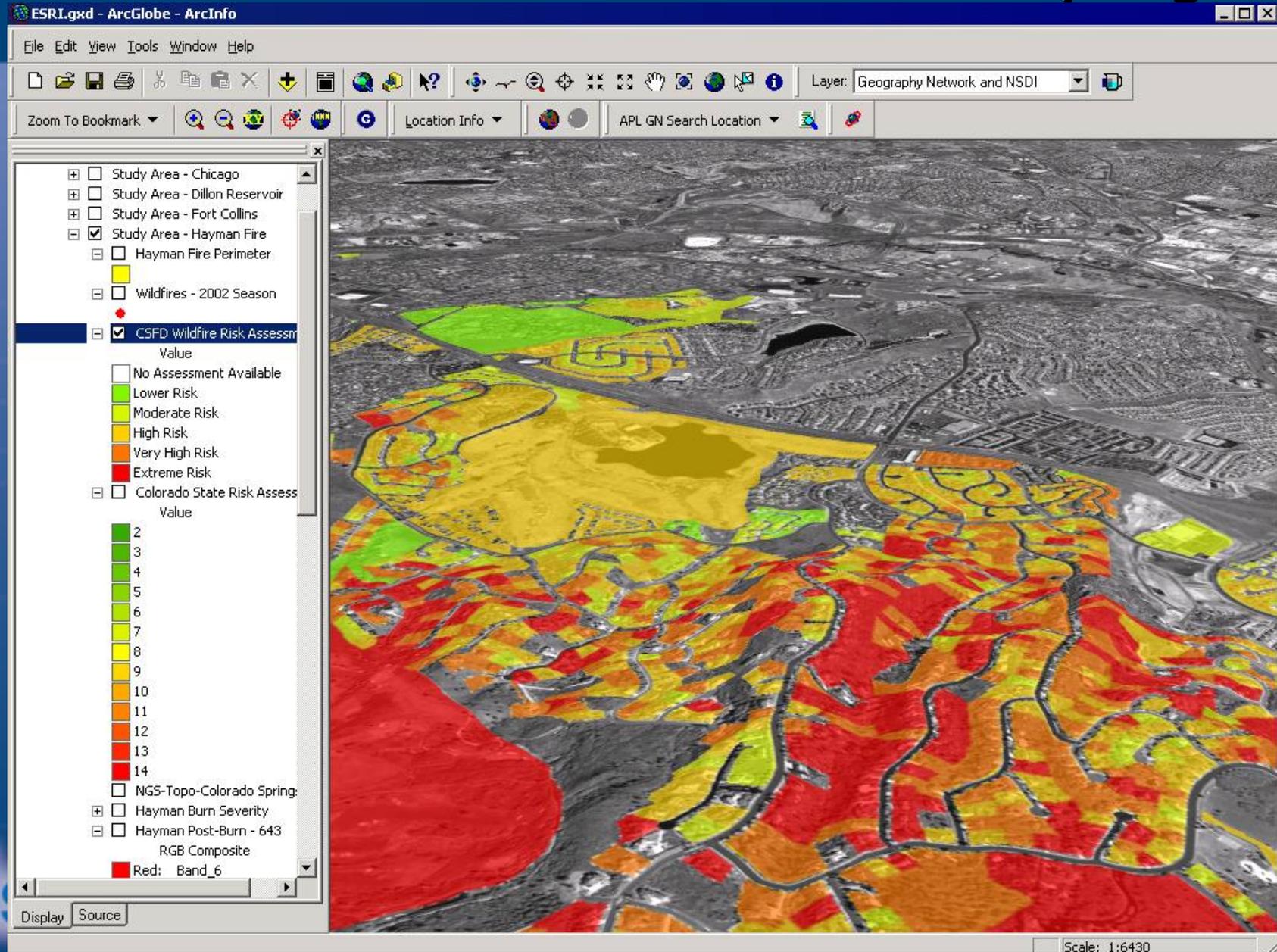
OLALLIE COMPLEX 08/28/2001 OR-MTH-143
 WARM SPRINGS RESEVATION / MOUNT HOOD NATIONAL FOREST



Wildland Fire - BAER Hayman Fire - 30m Landsat



ArcGlobe - QuickBird Wildfire Risk Assessment - Colorado Springs



MapShop

Map Graphics for Non-GIS Users

The screenshot displays the MapShop web application interface. At the top, there is a navigation bar with the MapShop logo and menu items: DATA PROVIDERS, PREFERENCES, CONTACT US, HELP, RESET, and LOG OUT. Below this is a secondary navigation bar with tabs: AP Web Graphics, Define Area, Basic Mapping, Advanced Mapping, and Output. The main map area shows a satellite view of Baghdad, Iraq, with a red rectangle highlighting a specific area. The map includes a scale bar at the bottom indicating 0, 0.35mi, 0.6km, and 20km. To the right of the map are three panels: BASE MAP LAYERS, THEMATIC LAYERS, and COLOR PALETTE. The BASE MAP LAYERS panel shows a dropdown menu set to 'Iraq Maps' and several checkboxes: Utility Lines (unchecked), National Capital Cities (checked), State-Level Capital Cities (checked), and another checked item. The THEMATIC LAYERS panel shows a dropdown menu set to 'Show All Layers' and checkboxes for Cities with Detailed Data, No Fly Zone, Fault Lines, and Satellite Imagery. The COLOR PALETTE panel shows radio buttons for CMYK (selected) and RGB. At the bottom left, there is an 'IMAGE SIZE' section with fields for Width (1 col.), Depth (inch), and a scale of 1: 3,734,146. A 'NAVIGATOR' panel shows a small map of Iraq with a red rectangle indicating the current map's location. The ArcGIS logo is visible in the bottom left corner.

MapShop
API ESRI

AP Web Graphics Define Area Basic Mapping Advanced Mapping Output

DATA PROVIDERS PREFERENCES CONTACT US HELP RESET LOG OUT

BASE MAP LAYERS
Iraq Maps

Utility Lines
 National Capital Cities
 State-Level Capital Cities

METADATA UPDATE MAP

THEMATIC LAYERS
Show All Layers

Cities with Detailed Data
No Fly Zone
Fault Lines
Satellite Imagery

METADATA UPDATE MAP

COLOR PALETTE
 CMYK
 RGB

UPDATE MAP

LEGEND MARKERS DISTANCE HIGHLIGHT

IMAGE SIZE
Width: 1 col.
Depth: inch
Fixed:
1: 3,734,146

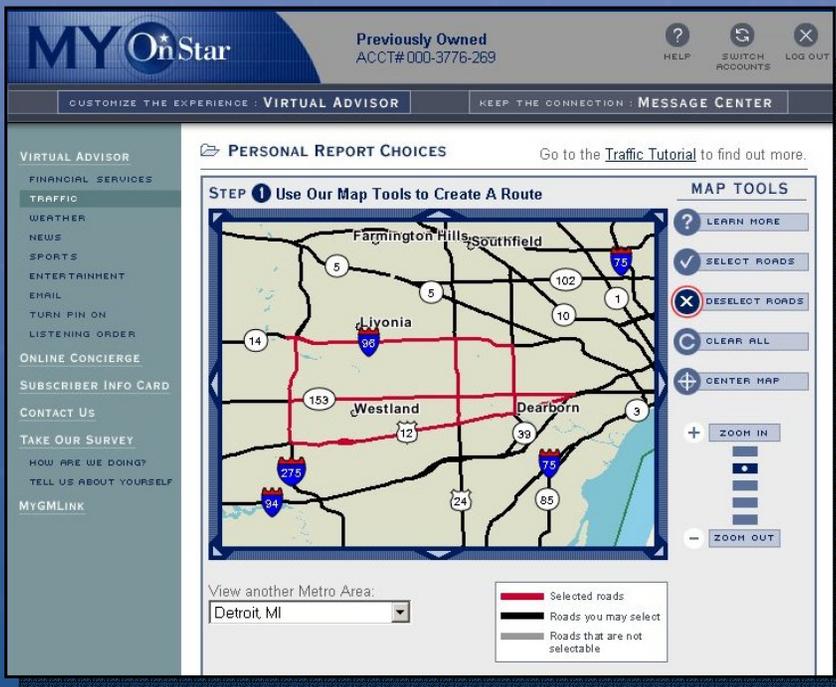
NAVIGATOR

SOURCE: ESRI, NIMA, East View Cartographic, i-cubed

0 0.35mi 0.6km 20km

ArcGIS
ESRI

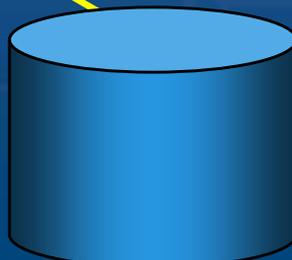
OnStar Virtual Advisor - Traffic



Voice Request



Profile Setup



Real-Time Traffic Data

ESRI Conservation Program

- Support (Over 4100 Organizations)
- Grants (Hardware, Software Training Scholarships)
- Society for Conservation GIS
 - Conference
 - Scholars
 - Publications
- Partners
 - Hewlett Packard (HP)
 - World Bank
 - Wilderness Society
 - TNC & Nature Serve
 - National Geographic Society

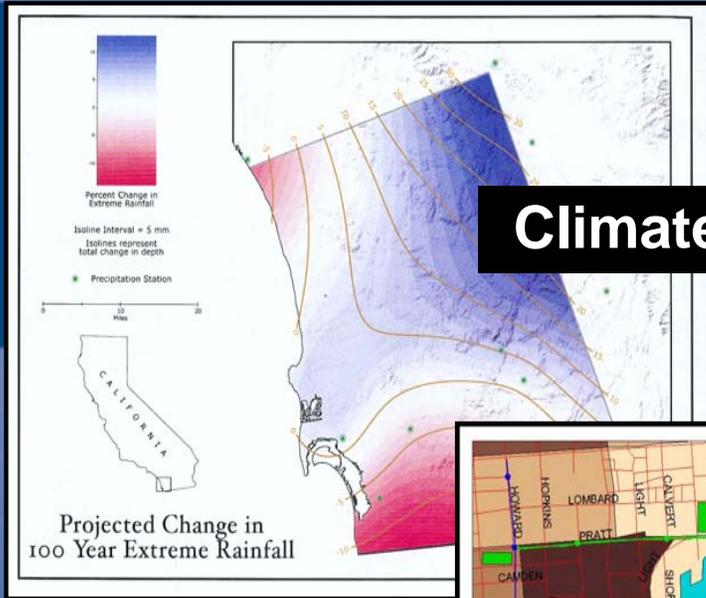
www.conservationgis.org

Education - MYCOE

A Program for GIS and Sustainability

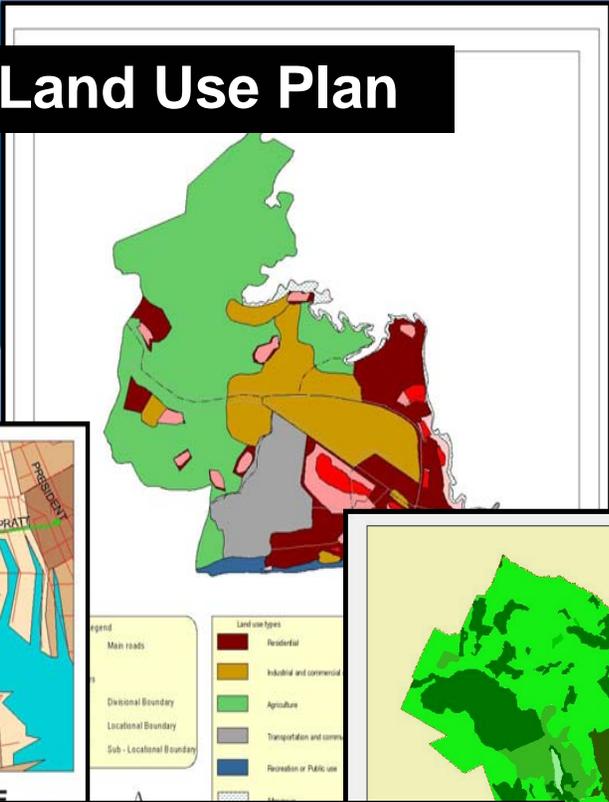


2000+ Schools, Hundreds of Projects and Mentors
... Ongoing



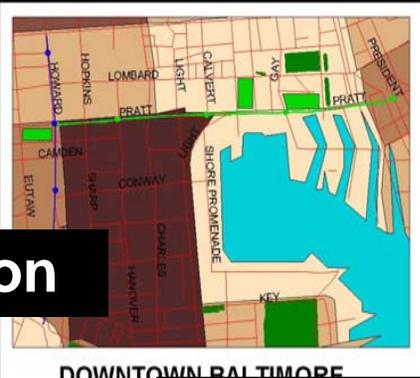
Climate

Land Use Plan

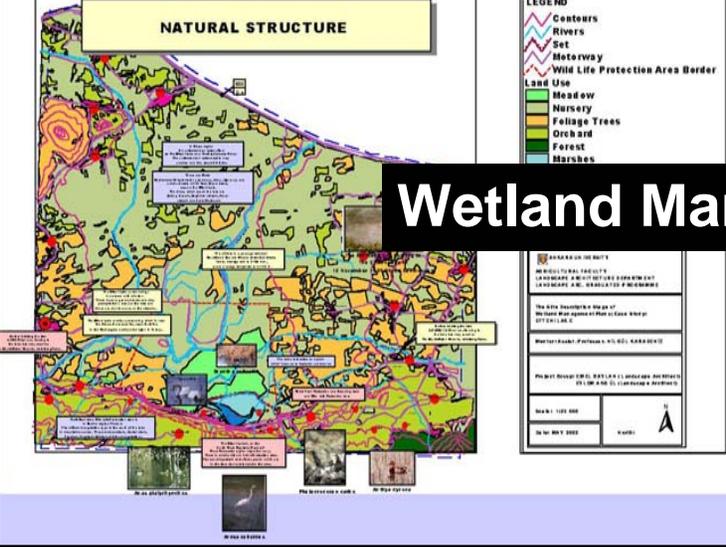


Coastline Study

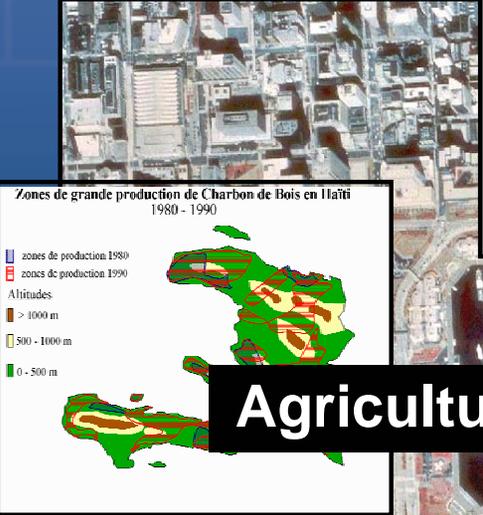
Transportation



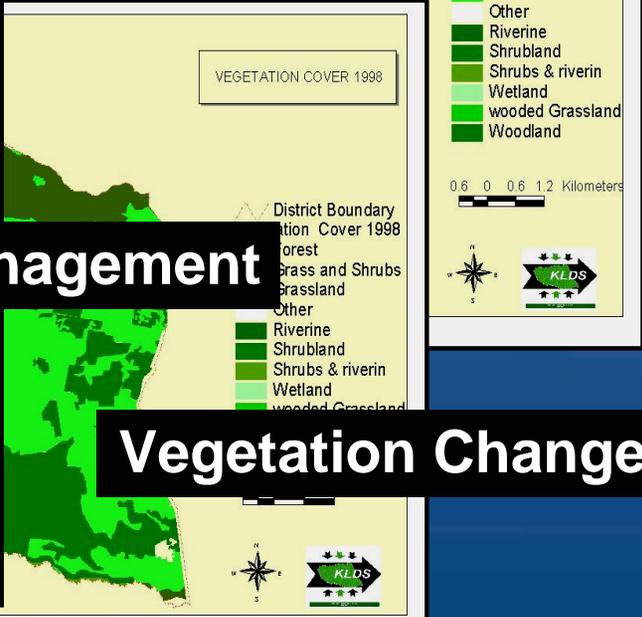
THE SITE DESCRIPTION STAGE OF WETLAND MANAGEMENT PLANS; CASE STUDY: EETENLLAKE PROJECT NO:1057



Wetland Management



Agriculture

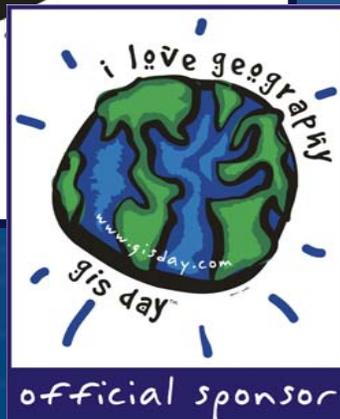


Vegetation Change

GIS Day

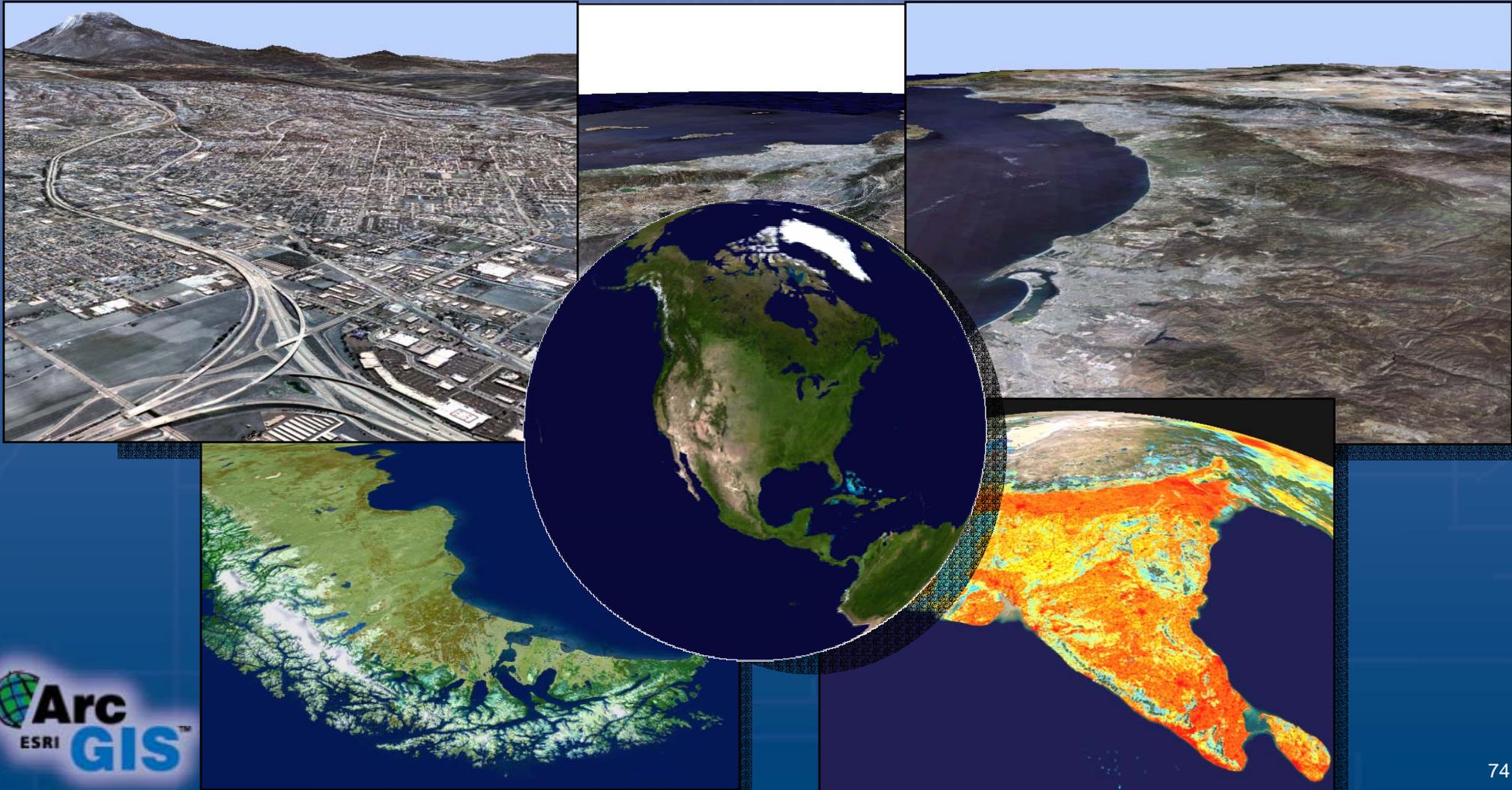
November 19, 2003

- Single Day Event
- Teach A Class
- Open House/Demos
- Poster Exhibits
- Press Event

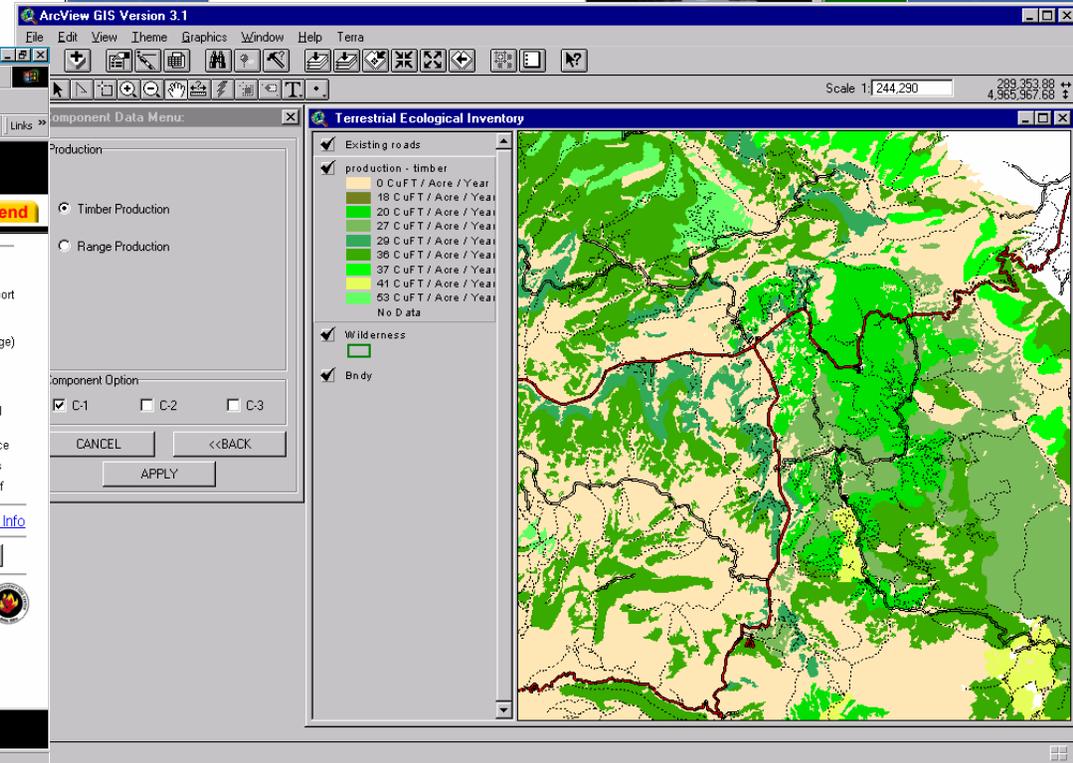
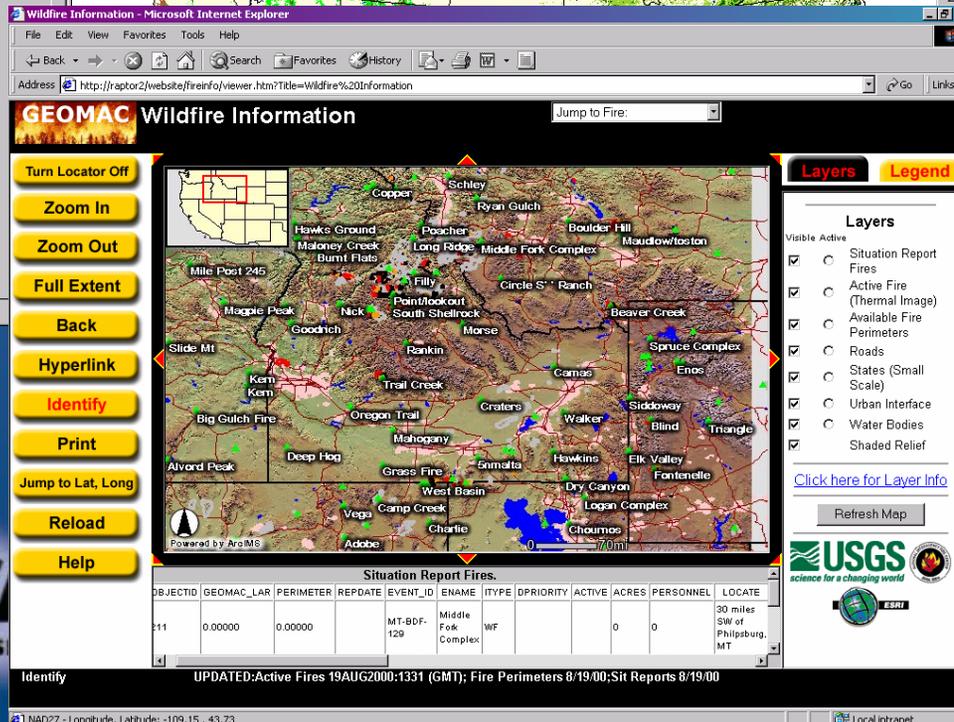
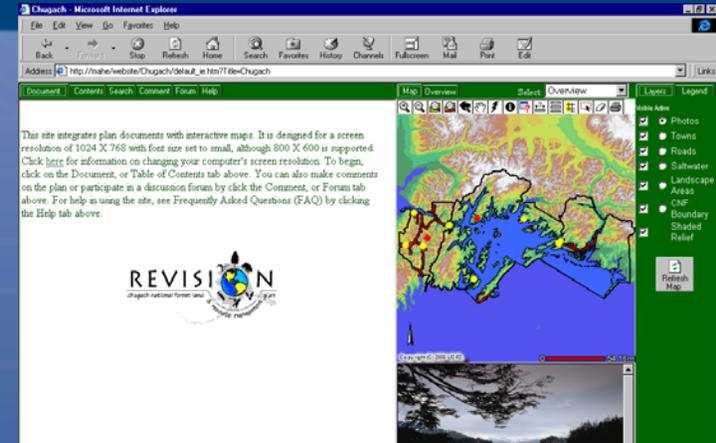
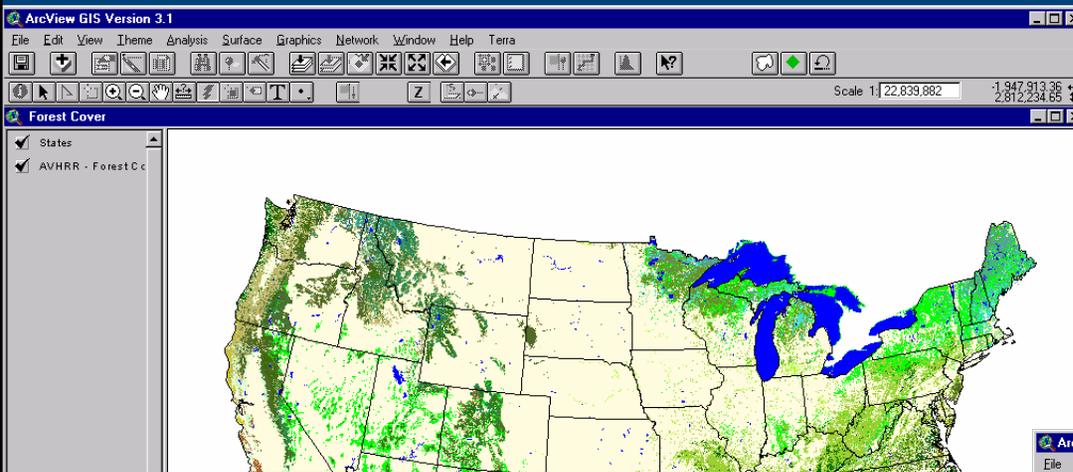


**Sharing Your
Knowledge**

Visualization

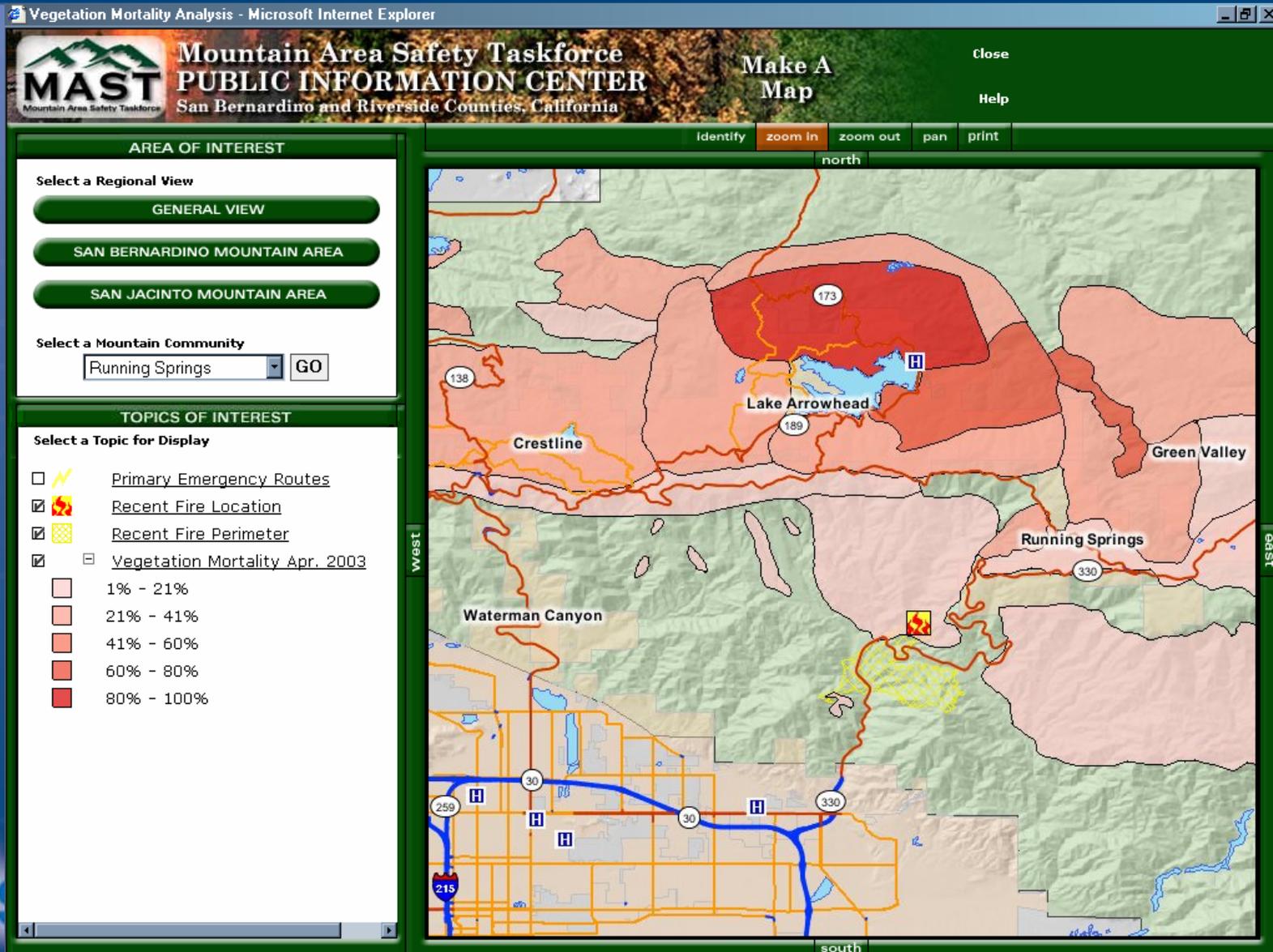


Federal - US Forest Service



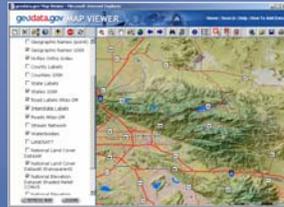
MAST

www.calmast.org



Information Center

Public Information

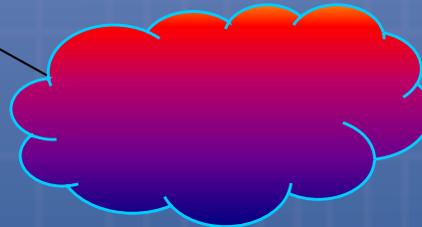


Web-Based Maps

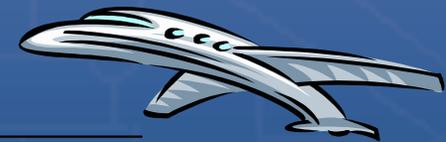


Community Status Maps

Database



Database



Imagery

Analysis & Mapping



Fire Modeling

Mortality Modeling

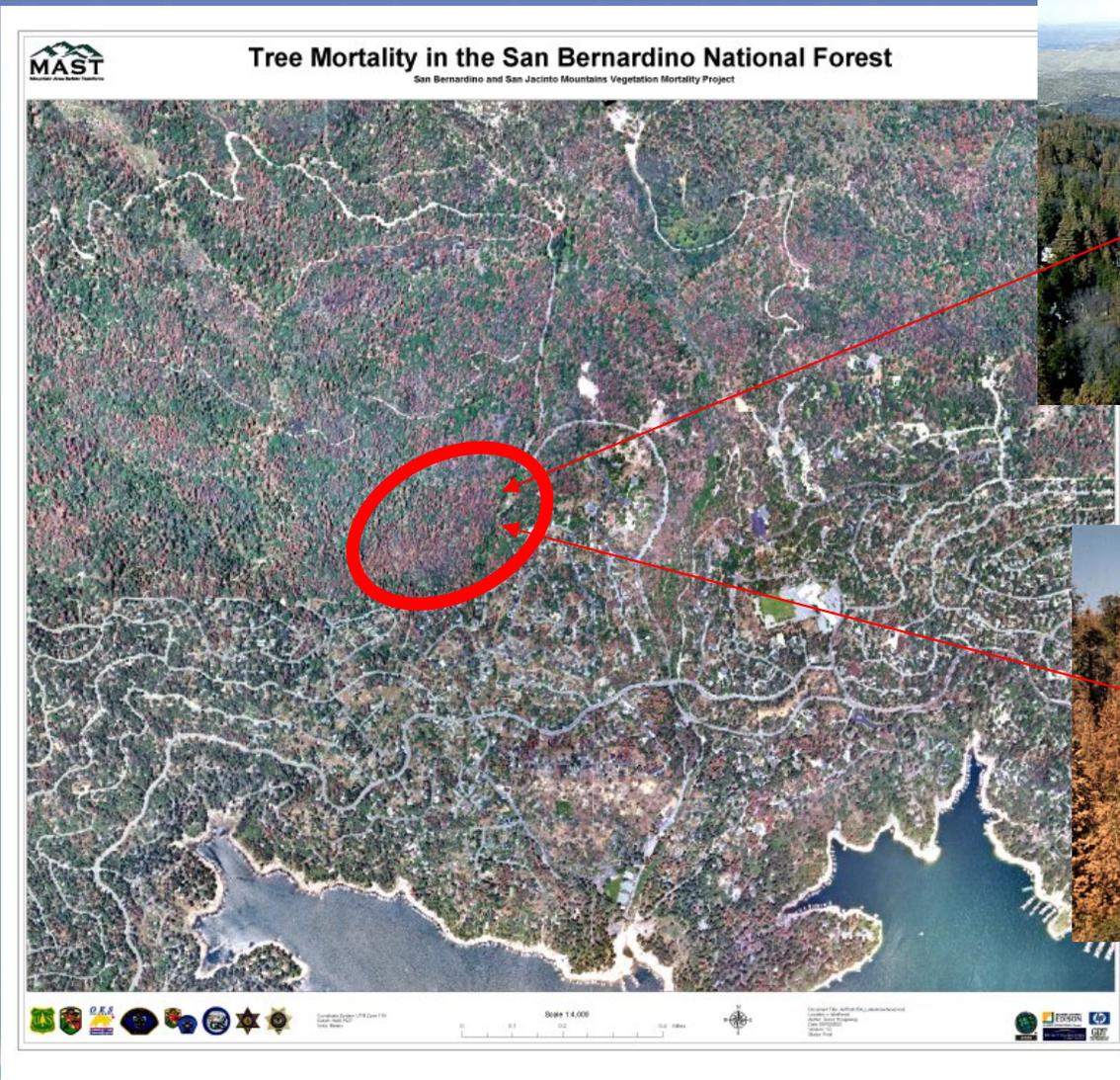
Evacuation Routing

Status Mapping



Forest Health

One Example of Affected Forest

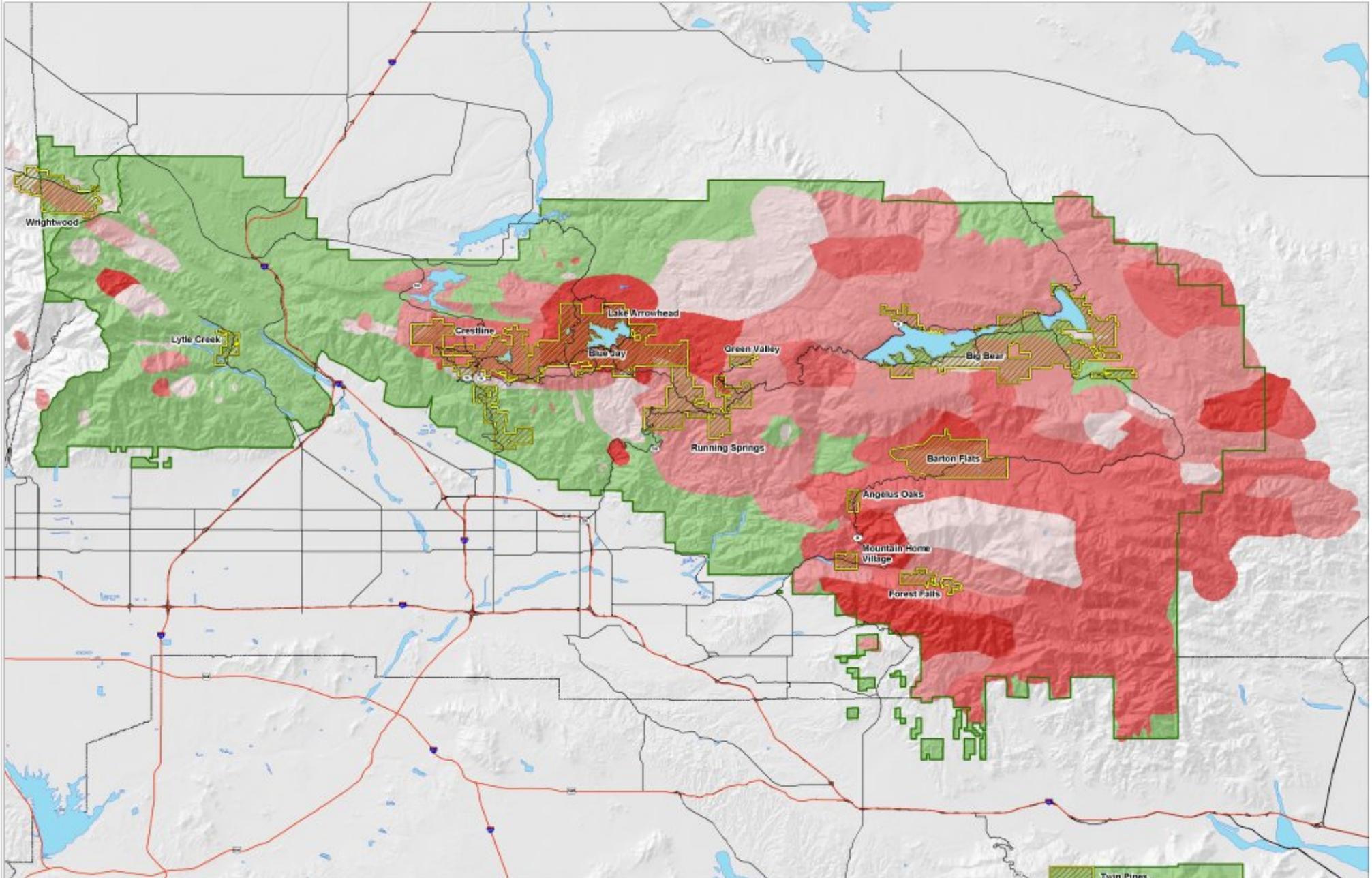


April 2003



August 2003

San Bernardino and San Jacinto Mountains Vegetation Mortality Project



Coordinate System: UTM Zone 18N
Datum: NAD 1983
Units: Meters

Scale 1:95,000



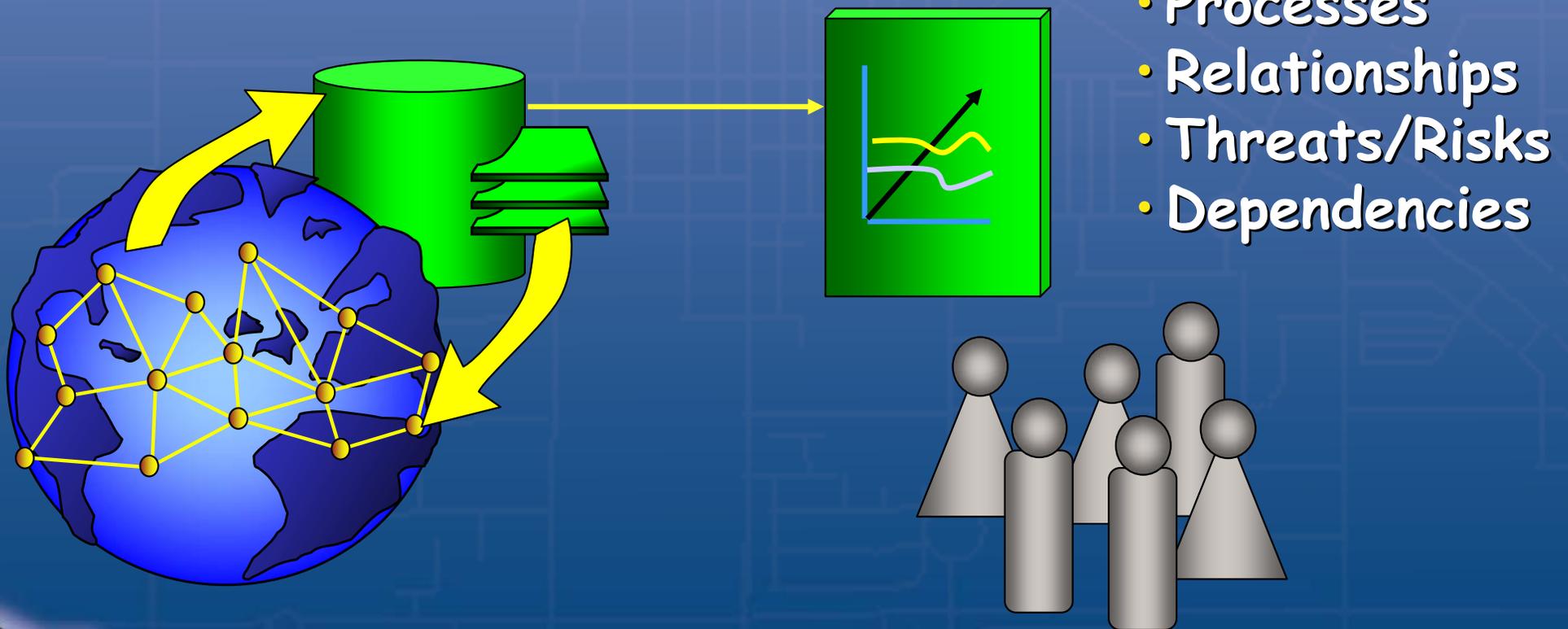
Document Title: SB_VegMortality_F0.mxd
Location: C:\GIS\SB_VegMortality
Author: Curtis Holzner
Date: 08/18/2010
Version: 1.0
Status: Draft



Why Is GIS Important

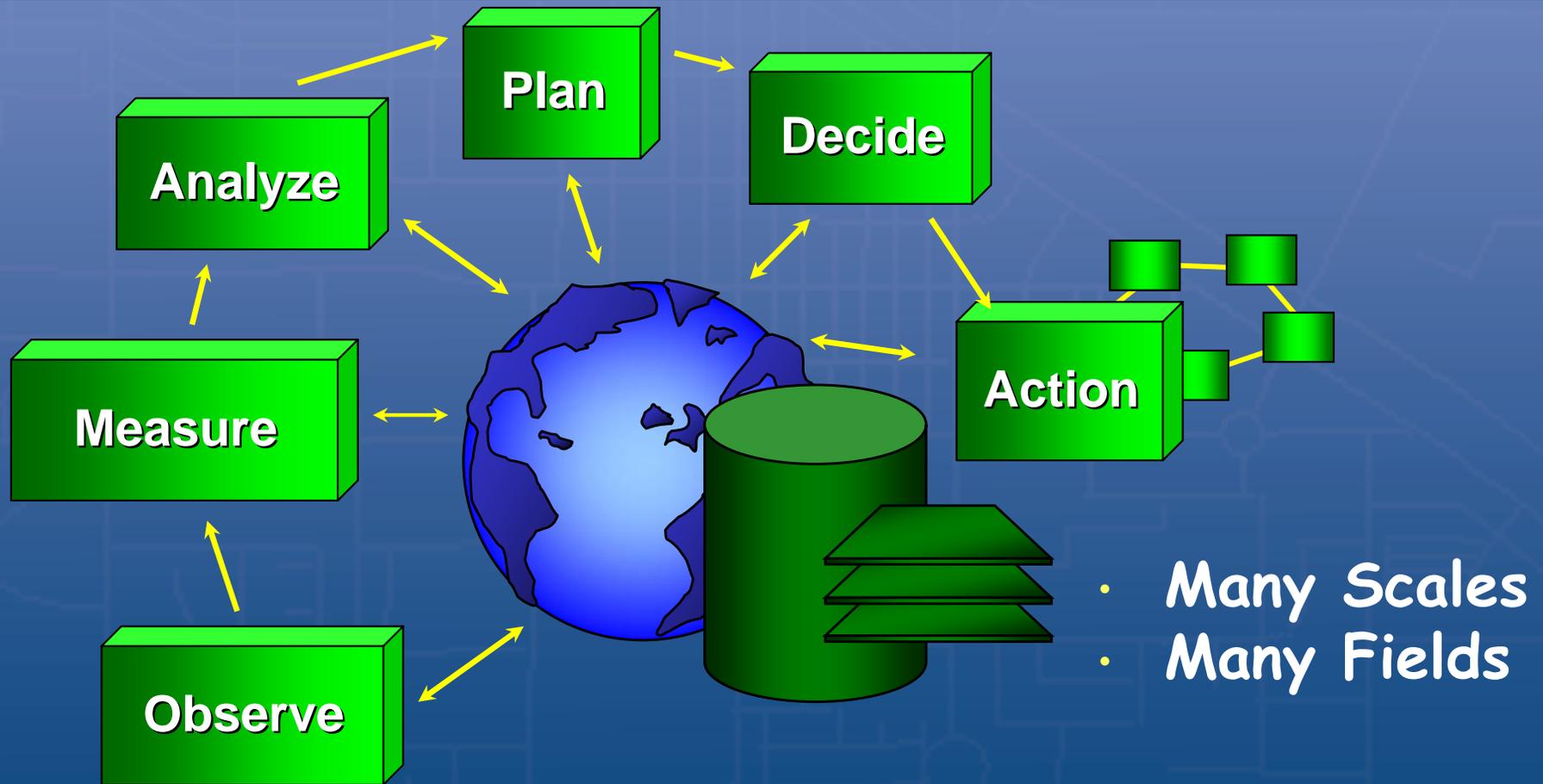
- GIS is an Information System
- GIS is an Integrative Technology
- Underlying Concepts
- Provides a Framework
 - To improve our Knowledge
 - To integrate our activities
- It's pervasive in conservation and resource management
 - Skilled practitioners are in high demand
 - Practical experience sometimes difficult to obtain

Geography and GIS Provide a Ideal Framework for Understanding What's Going On



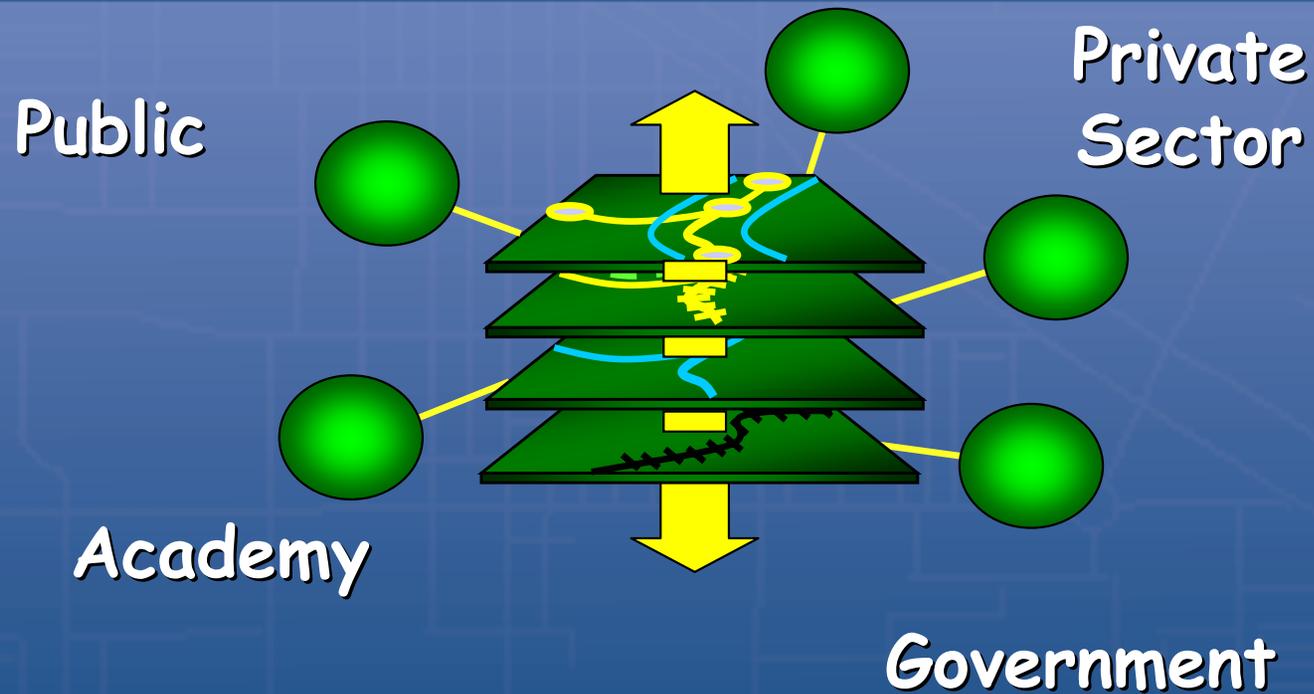
- Resources
- Processes
- Relationships
- Threats/Risks
- Dependencies

And a Process for Guiding and Integrating Human Activities



... a Framework For Action

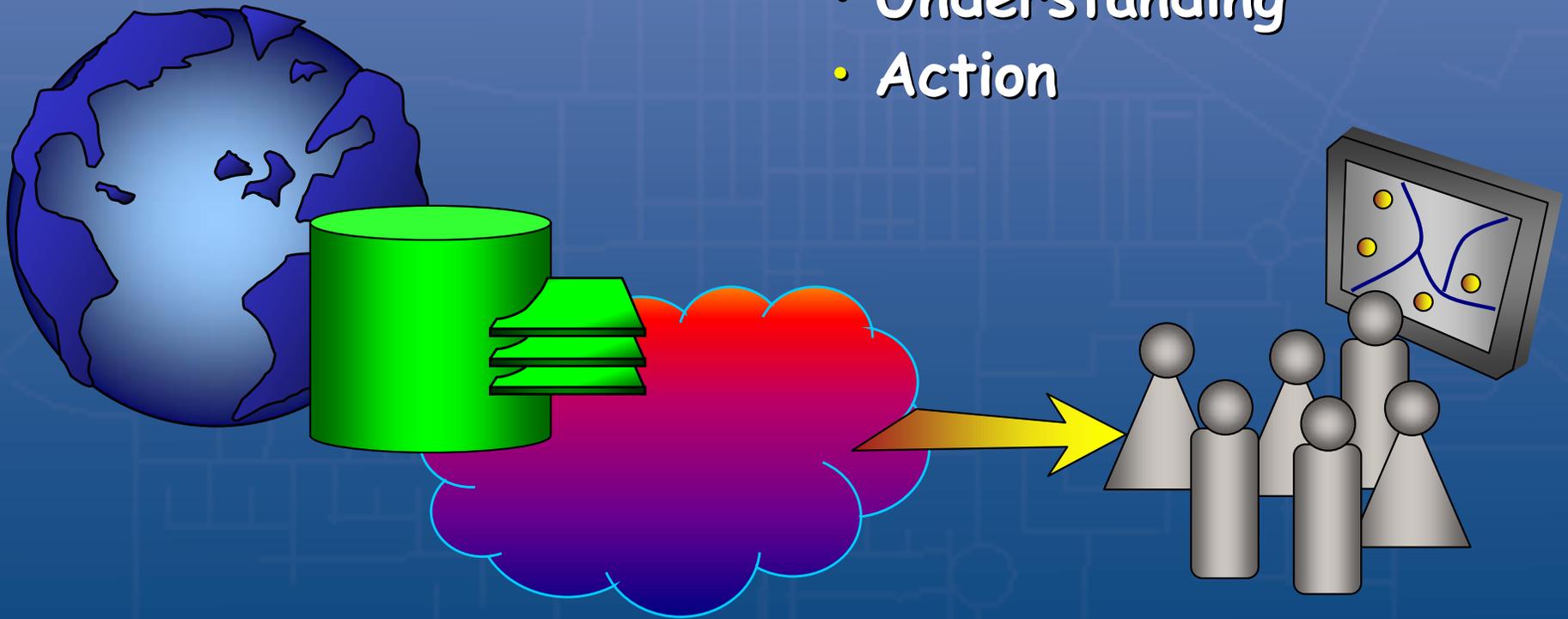
GIS Helps Us Integrate Many Points of View



Incorporating Many Values into Our Decision Making Process

...And Helps Us Communicate About Sustainability

- Awareness
- Understanding
- Action



GIS Provides an Infrastructure

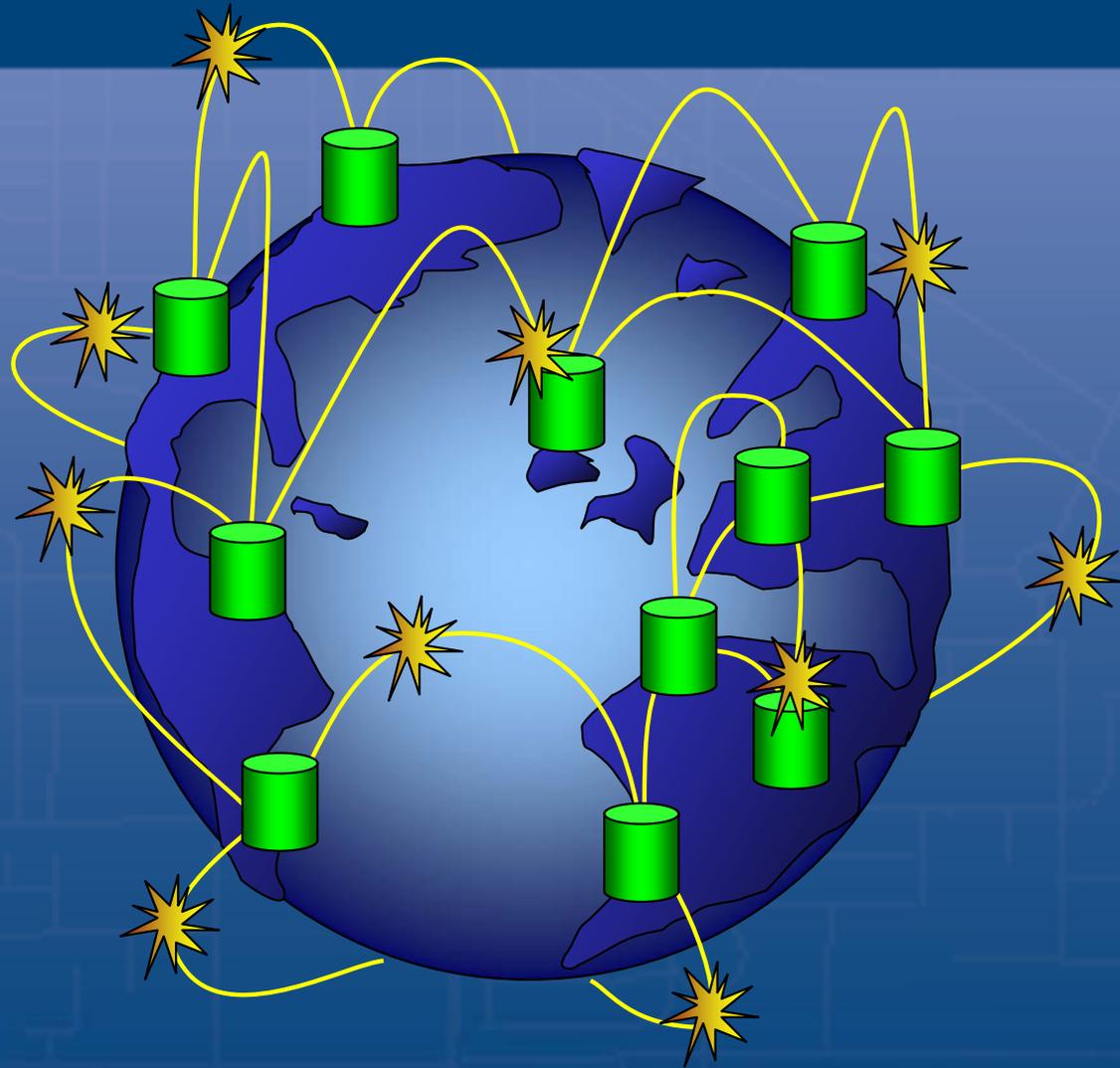
The collage illustrates the practical application of GIS infrastructure. It features several photographs: a man pointing at a map on a wall, a group of people gathered around a computer monitor displaying a GIS interface, a man pointing at a large map on a wall, a man pointing at a computer screen, a man pointing at a map on a wall, and a man pointing at a computer screen. In the foreground, there is a stylized blue globe and a green 3D cylinder representing a database, with three green rectangular blocks stacked on top of it.

- Data
- Systems
- Applications
- Products
- Organization



... Systems That Make a Difference

Creating a Digital Earth



Opportunities

- No agency has all of the GIS resources they could use
 - Data collection / validation / QA/QC
 - Collaborative analysis
 - Monitoring
 - Outsourcing of services
- A technology for NGO use
 - Marketing
 - Advocacy
 - Meeting unmet needs
 - Democratizes the process / levels the playing field

...But

- Implementation is not a trivial consideration
- Any information system needs care and feeding
 - People
 - Data
 - Technology
 - Policy
 - Process

Questions?

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Thank You