

Current and Potential Uses for Geospatial Information and Technologies in Government

Arctic GIS Workshop
January 22, 2001

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Agenda

- Government Focus Areas for GIS
- Some Examples - Local to Federal Levels
- Directions for the Future

Government Focus Areas Relevant to GIS

- Spatial Data Infrastructure
- Place based decision-making
- Web Applications and portals
- G-Government
- Data Consortia
- Standards Based Commercial Off the Shelf Products

National Spatial Data Infrastructure (NSDI)

Clearinghouse (catalog)

Metadata

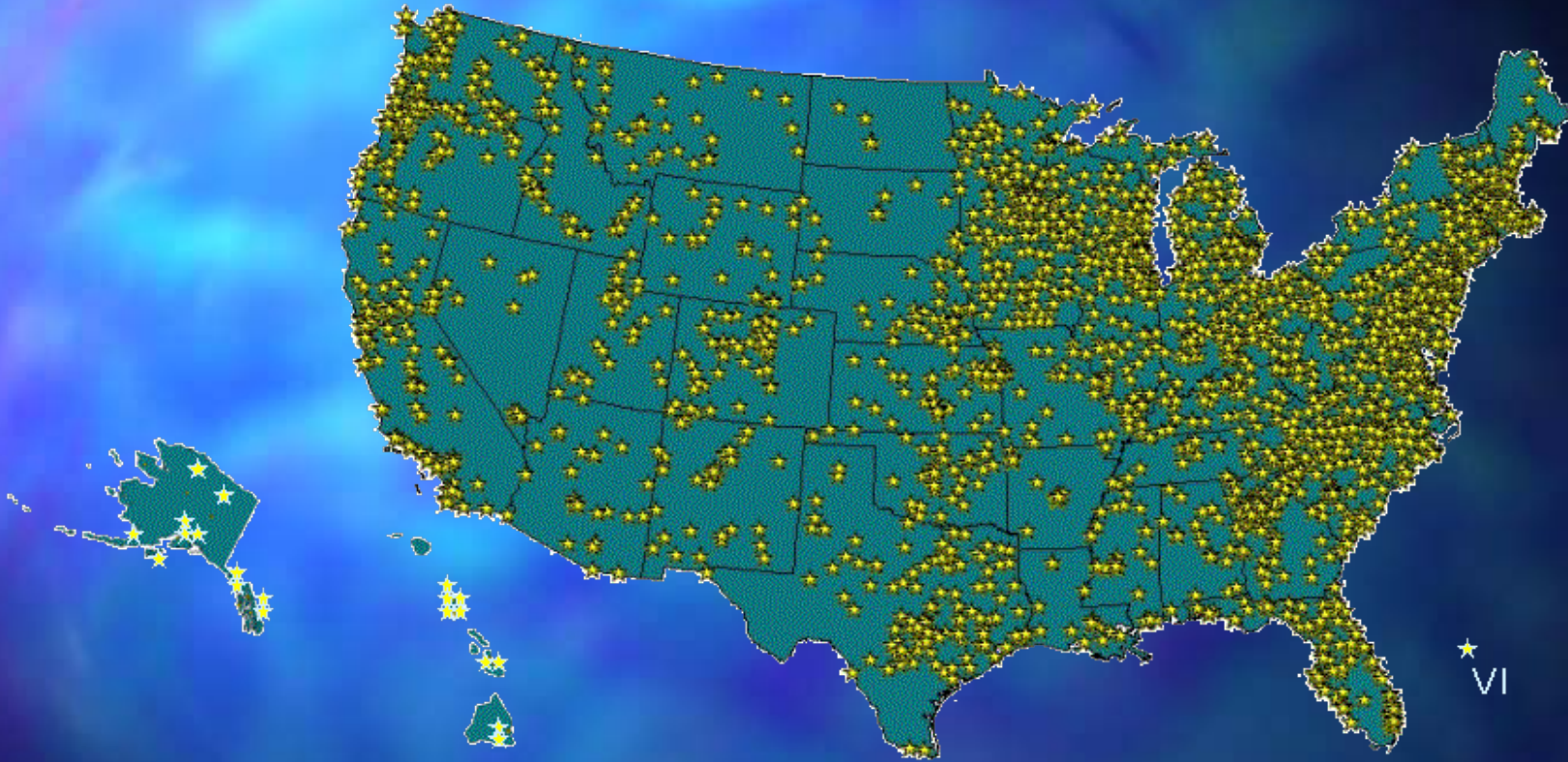
Framework

GEOnet

Standards

Partnerships

A Network of NSDI Organizations



National League of Cities

National Association of Counties

Intertribal GIS Council

University Consortium on GI Sciences

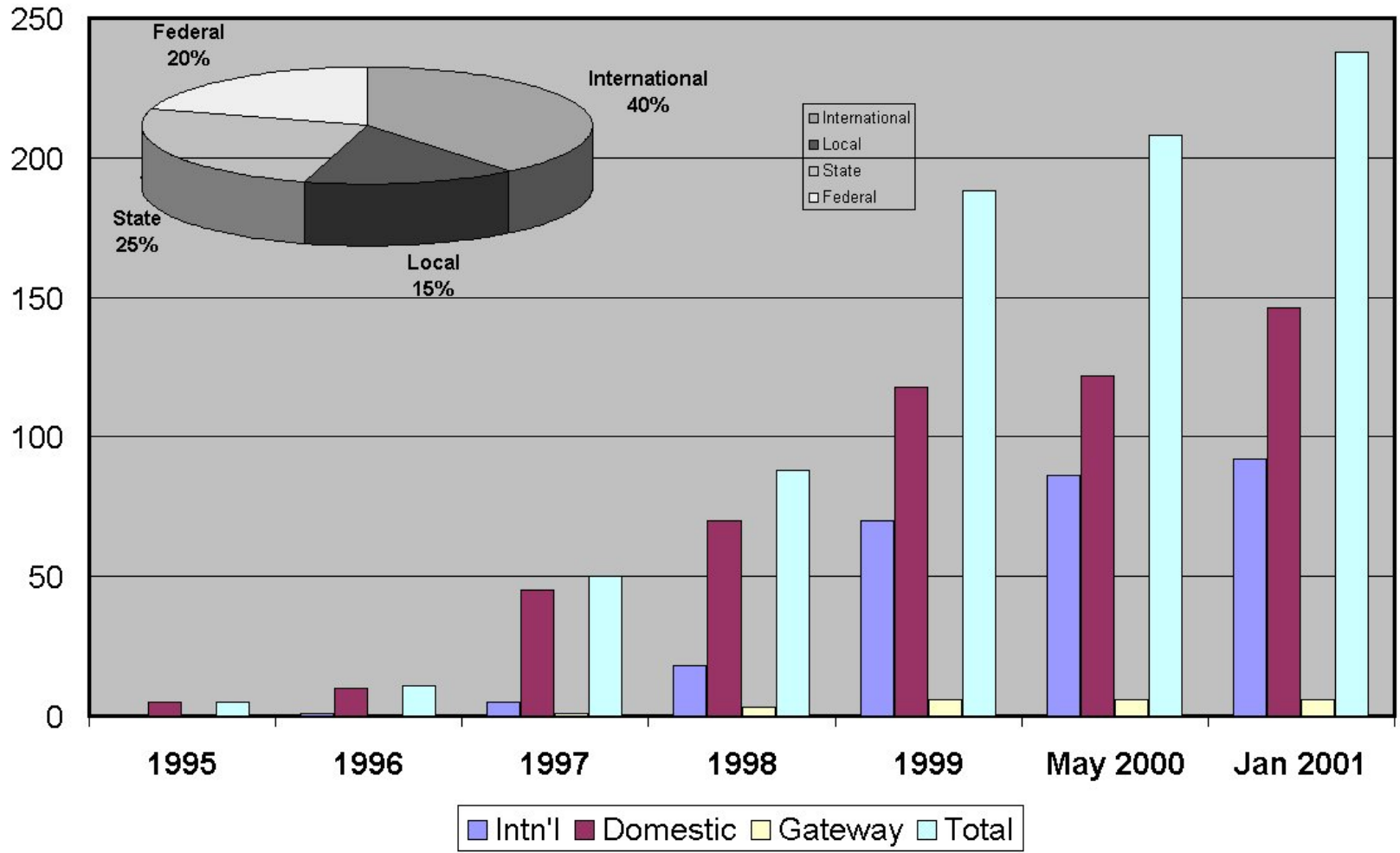
Open GIS Consortium

Federal Geographic Data Committee

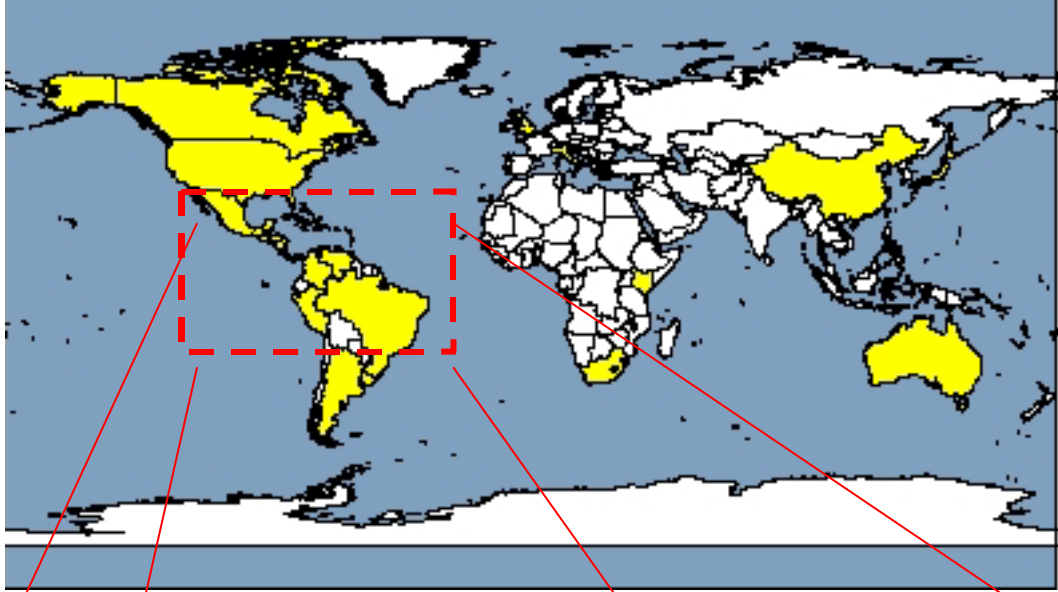
National States Geographic Information Council

International City / County Managers Association

SDI Clearinghouse Growth 1995 – January 2001



Clearinghouse Nodes Around the World



As of Jan 2001

Argentina:	1
Australia:	18
Barbados:	2
Brazil:	2
Canada:	41
Chile:	1
China:	1
Colombia:	1
Costa Rica:	3
Dominica:	1
Dominican Republic:	1
El Salvador:	1
Guatemala:	1
Honduras:	2
Italy:	2
Japan:	1
Jamaica:	1
Mexico:	2
Nicaragua:	1
Peru:	1
South Africa:	2
Trinidad & Tobago:	1
United Kingdom:	2
United States:	146
Uruguay:	2
Venezuela:	1

Many Local, National, Global Gateways to Spatial Information Catalogs

Find NC Advanced Search - Microsoft Internet Explorer provided by EarthLink
Clearinghouse Gateway Search Page - Microsoft Internet Explorer provided by EarthLink

Address: <http://130.11.52.184/serve/GSDISearch>

GSDI

Global Spatial Data Infrastructure Catalog Search

Define the Geographic Area of Coverage

Specify a query region by selecting or entering values

Don't search based on location Use coordinates from a country or region name:

Alghanistan
Africa
Albania
Algeria

Enter bounding coordinates: *If you interact with the map to set coordinates, select this option*



North: 90 West: -180 East: 180 South: -90

Zoom to Rectangle Zoom to Globe

Specify Time Period of Content

Specify a date or date range for desired spatial data by selecting **one** of the

January 19, 2001

Tutorial

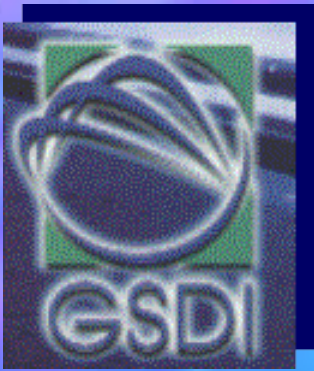
-52 East

to "search for phrase"
les" -temperature

ons.

Search

Done Internet Internet



Global Spatial Data Infrastructure

- Encourage growth of National Spatial Data Infrastructures capable of supporting collaboration on regional and global issues of importance
- Steering Committee representing all continents
- SDI Implementation Guide available at www.gsdi.org



Accra, Ghana - August 2000

GIS and Government

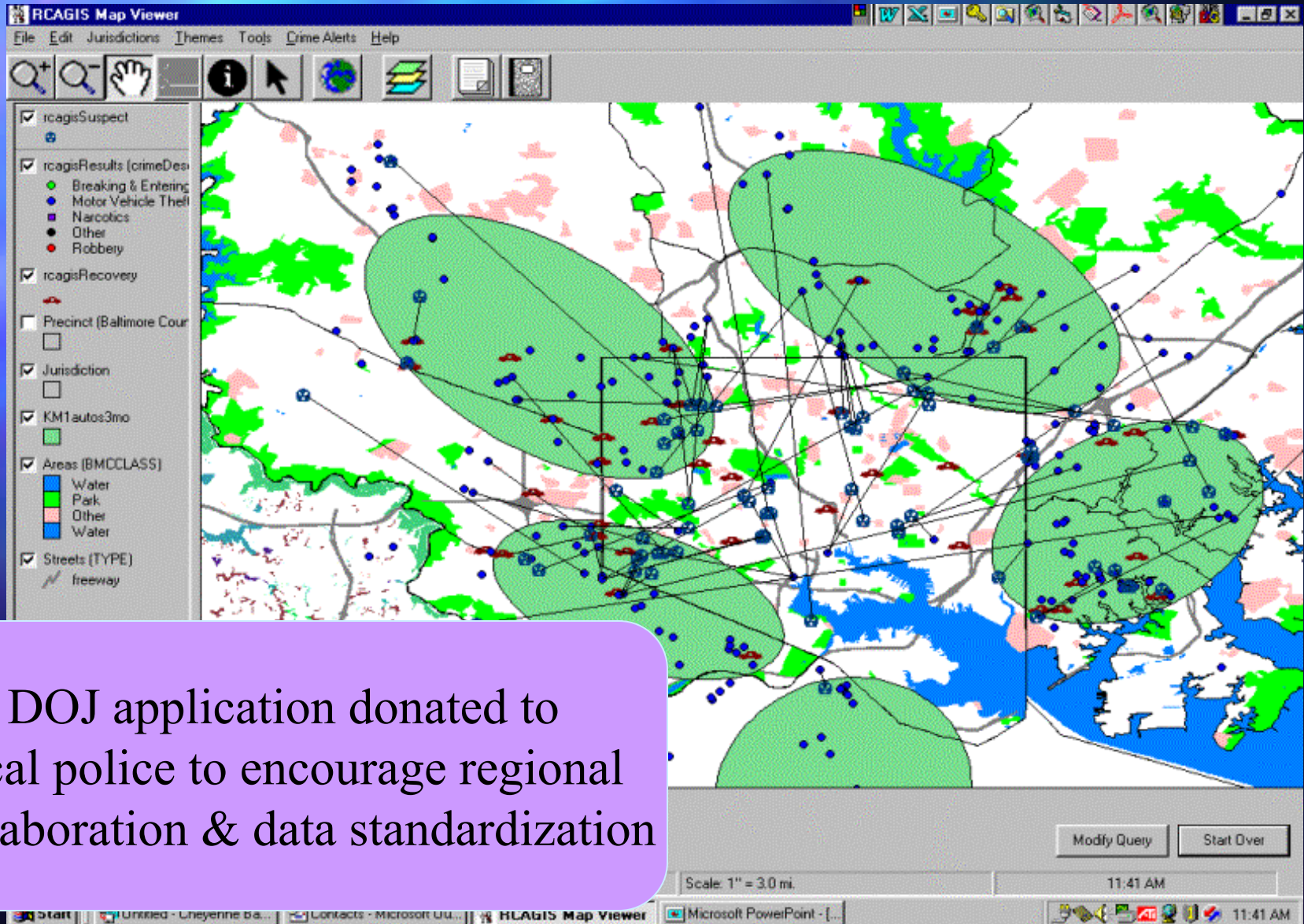
- Tools and spatial information are:
 - Improving decision-making
 - Driving policy decisions
 - Increasing Accountability
- Some illustrations follow...

Crime Mapping and Analysis

- Baltimore Police and US Dept of Justice
- Uses GIS for crime analysis, accountability, and community-based policing
- Regional crime coordination



Detect Trends and Identify Potential Suspects



DOJ application donated to local police to encourage regional collaboration & data standardization



Office of State Planning-Center for

MAP

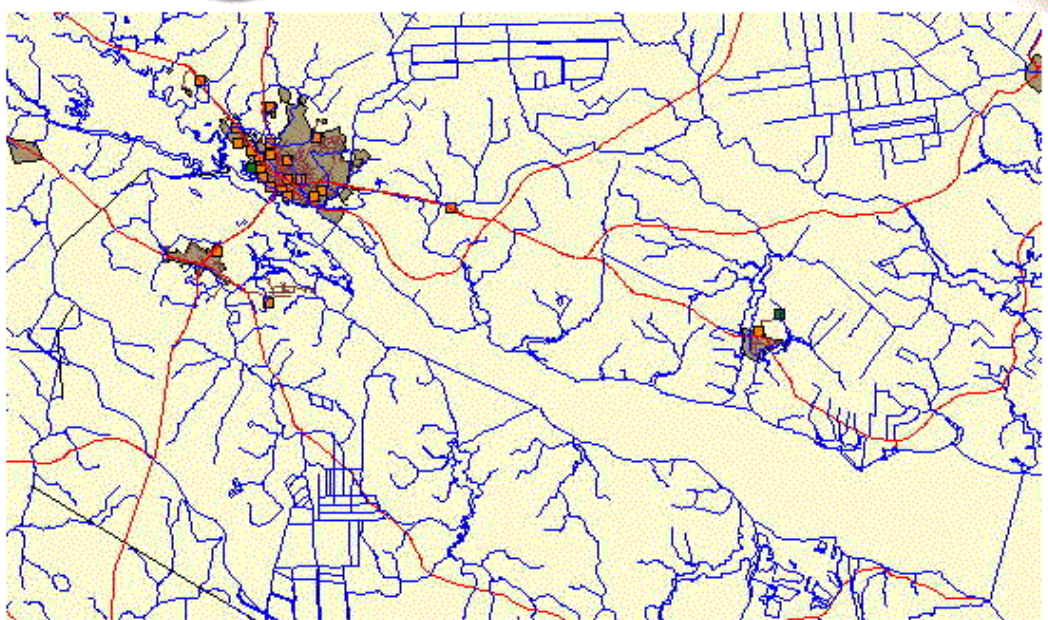
This web service provides access to information about the State of North Carolina and its



- Base Layers:
 - 1993 Aerial Imagery
- Thematic Layers:
 - County Boundaries
 - Municipal Boundaries
 - 1997 Congressional Districts
 - 1992 House Districts
 - 1992 Senate Districts
 - River Basins
 - Hydrography
 - Primary Roads
 - Detailed Roads
 - Geodetic Control Points
 - NPDES Sites
 - State-Owned Complexes
 - Sanitary Sewer Pipes
 - Sanitary Sewer Pumping Stations
 - Sanitary Sewer Treatment Plants
 - Water Distribution Surface Intakes
 - Water Distribution Pipes
 - Water Distribution Storage Tanks



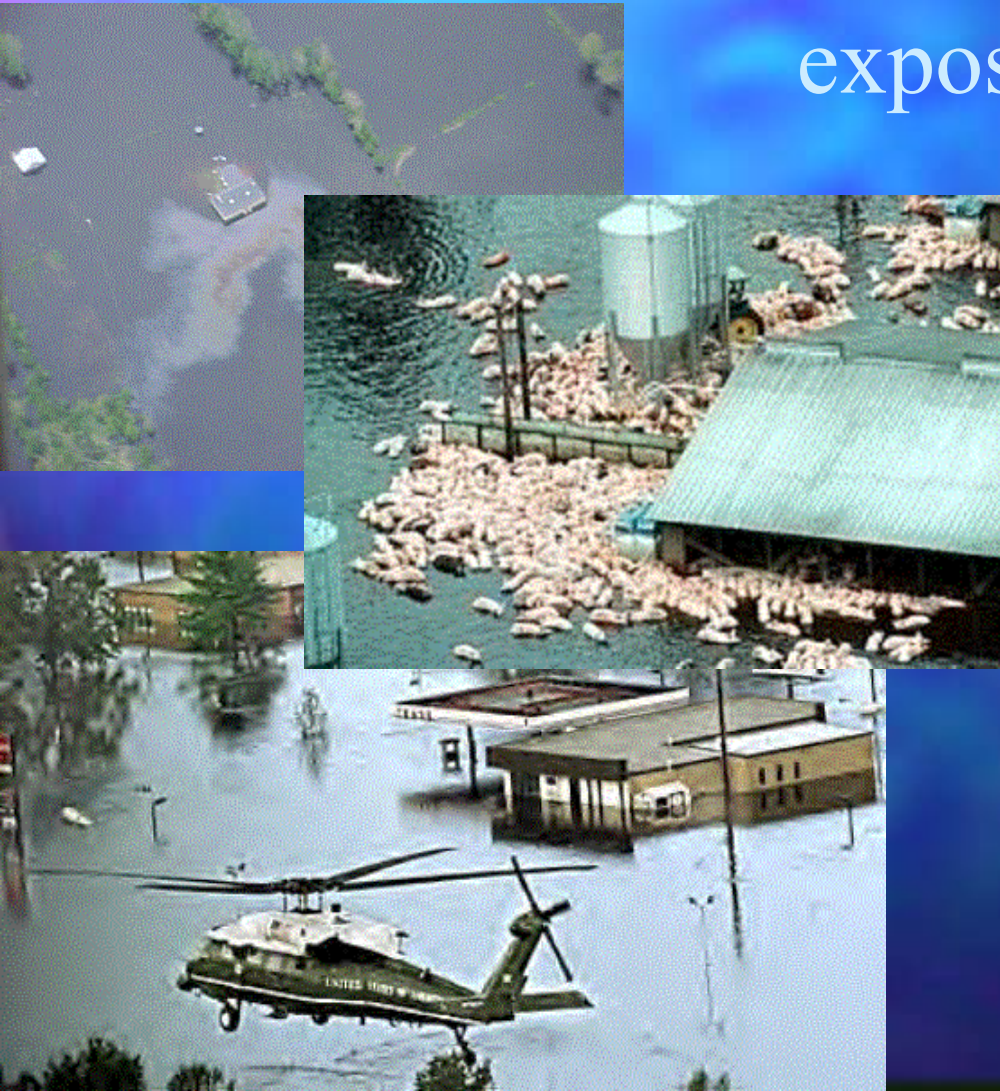
Zoom In
Click on the map below to zoom in. The map will re-center to the location where you click.



North Carolina and GIS

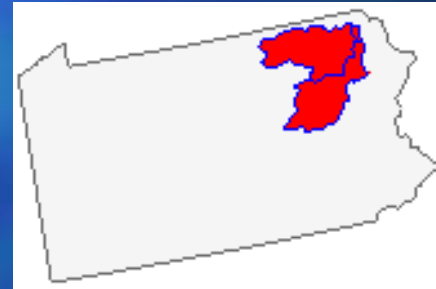
Hurricane Floyd experience
exposed need for:

- *An ongoing program that supports a digital, large scale, integrated Framework (with metadata)*
- Other Thematic Datasets
- Better GIS Tools
- Spatial Access to Other Scientific and Technical Material



Upper Susquehanna/Lackawanna Watershed

- Flooding and environment
- Pennsylvania GIS Consortium and EPA are partners
- American Heritage River
- OGC Interoperability Pilot to test Regional Consortia concepts
 - Use of distributed Local, federal, vendor data
 - Standards-based COTS tools and spatial data servers



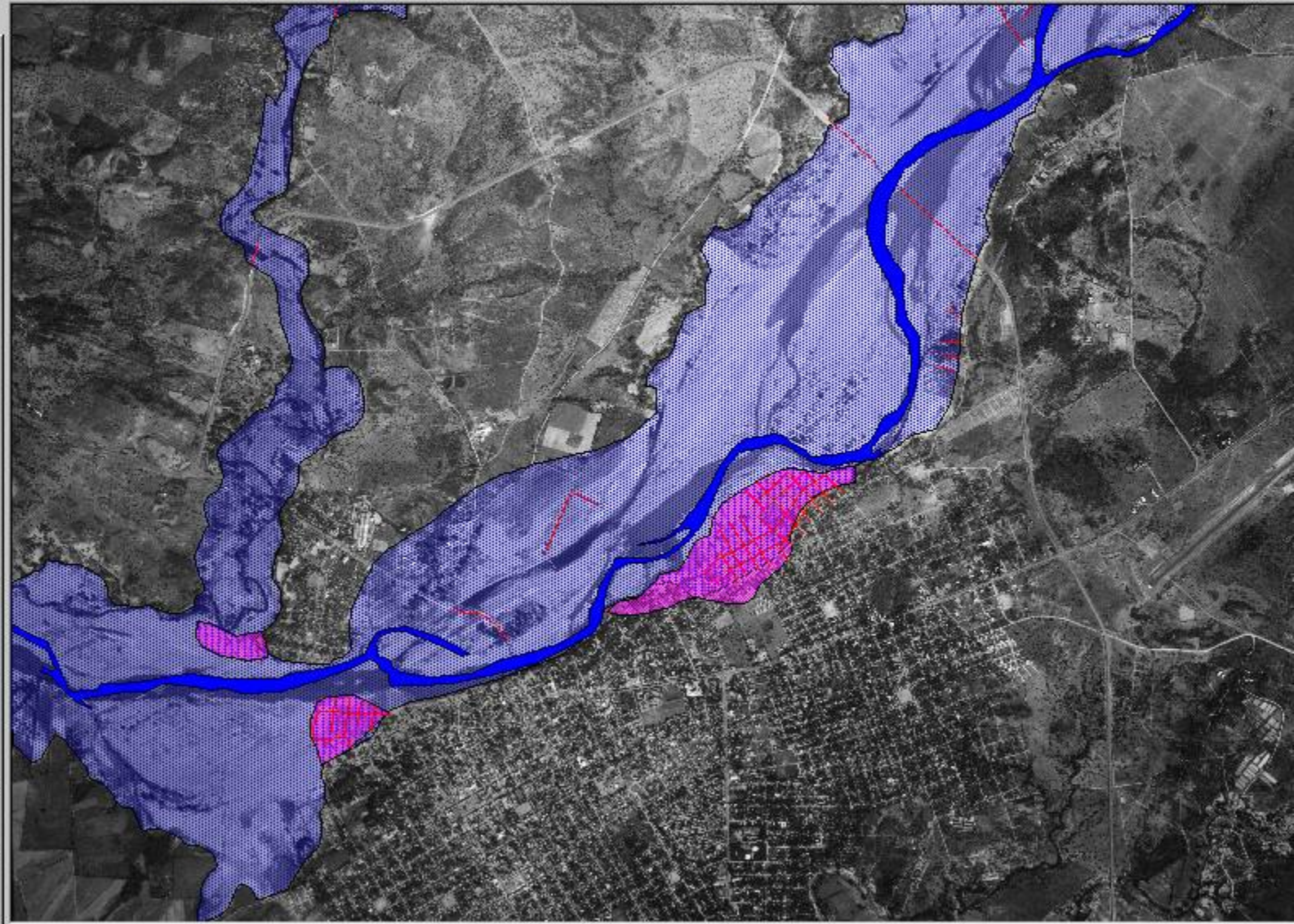
Hurricane Mitch

USGS Information Technology Supporting:

- Disaster Response***
- Reconstruction and recovery***
- Mitigation of Future Hazards***

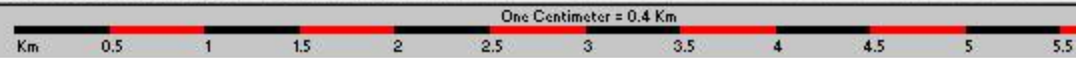


- Local | WWW |
- HURRICANE PATH
■
 - CHOLUTECA REGION
□
 - COUNTRY BOUNDARIES
□
 - USGS-USACE SITE REPT
1
 - PHOTOS (HOTLINK)
■
 - VIDEO CLIPS (HOTLINK)
▲
 - NEW RIVER COURSE
□
 - FLOODED ROADS
/
 - PRE-MITCH RIVER COURSE
□ land
■ water
 - FLOODED INFRASTRUCTURE
■
 - EXTENT OF FLOODING
■
 - FLOODED AGRICULTURE
■
 - RIVERS (1:1 MILLION SCALE)
/
 - AERIAL PHOTO (Image) ↕
 - BASE MAP (Image) ↕



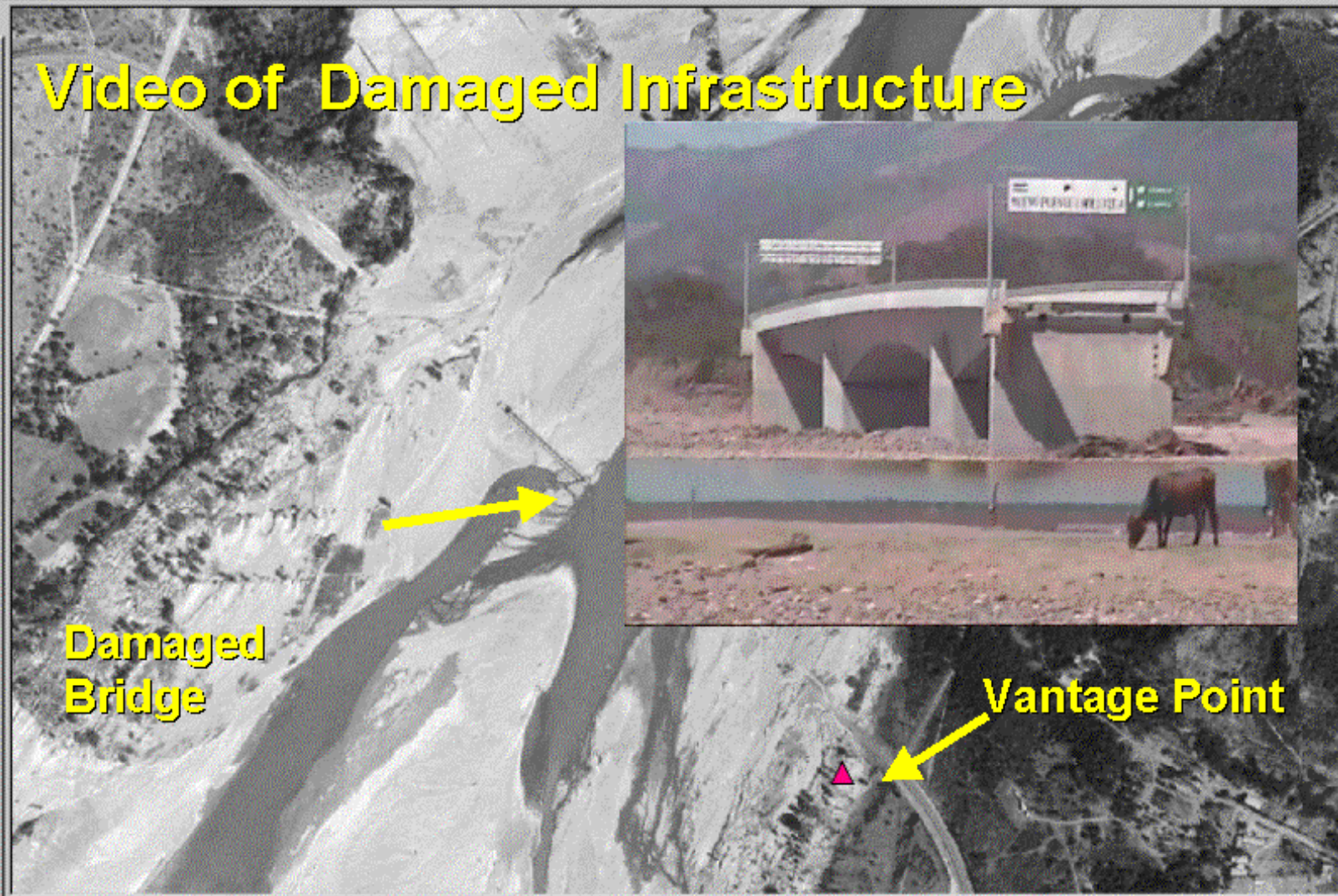
X: -87.2198
Y: 13.3029

1: 39,737





- Local | WWW |
- HURRICANE PATH
 - CHOLUTECA REGION
 - COUNTRY BOUNDARIES
 - USGS-USACE SITE REPC
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 - FLOODED AGRICULTURE
 - RIVERS (1:1 MILLION SC/
 - AERIAL PHOTO (Image*)



Video of Damaged Infrastructure



Damaged Bridge

Vantage Point



Federal Geodata Portals on the Web

EnviroMapper - Microsoft Internet Explorer provided by EarthLink

Address: [y=200&IndexMap=on&Left=-190.0&Bottom=15.0&Right=-63.0&Top=73.0](#)

EPA United States Environmental Protection Agency **EnviroMapper** EM Home Envirofacts Feedback

Map Features

- Discharges to water
- Superfund sites
- Hazardous waste
- Toxic releases
- Air releases
- Others
- Multiple
- Schools
- Hospitals
- Churches
- Populated Places
- Streets
- Streams
- Water Bodies
- Zipcodes
- Counties

Zoom-In By: Locator Map
2X Zoom Reset
Radius

Zoom-Out By: 2X

Recenter Map
Identify
Show Location

MAP LEGEND
Biology

- Very High Diversity
- High Diversity
- Moderately High Diversity
- Moderately Low Diversity
- Low Diversity
- Very Low Diversity
- Water

10.0 mi across. Tips: Click on the map or choose another option. On-Line Help

How can I apply the data from multiple sources in my application?

Future Direction

- Continued movement of government toward E- and G-government
 - Service not by agency mission, but by topic / theme
 - Service based on the citizen's location
- Increased emphasis on standards-based spatial technologies
 - Applications that operate across different networks, platforms, and vendor brands
 - Allow quick adoption of new technology

Future Direction

- Continued growth of standards-based web spatial capabilities
 - Decision Support, modeling
 - Location Based Services
 - 3D and 4D
- Geospatial Policy and Partnerships
 - Multi-sector pooling of resources for spatial data and technology initiatives
 - Procurements that demand standards-based COTS
 - (Major OMB initiative has interest of over 20 States)

What's Happening with Geospatial Data and Technologies?

Stove piped, and centralized:

- GIS
- Earth Imaging
- CADD
- AM/FM
- Navigation Sys.
- Big Data Files



Open and distributed:

- Web access, catalogs
- Live map links, live data links
- Geo-Application Services
- Location Services for position-aware devices
- Non-visual geospatial services



Few users, few sources

Many users & sources, geo enabled markets

OGC Vision & Mission

■ **Our Vision:**

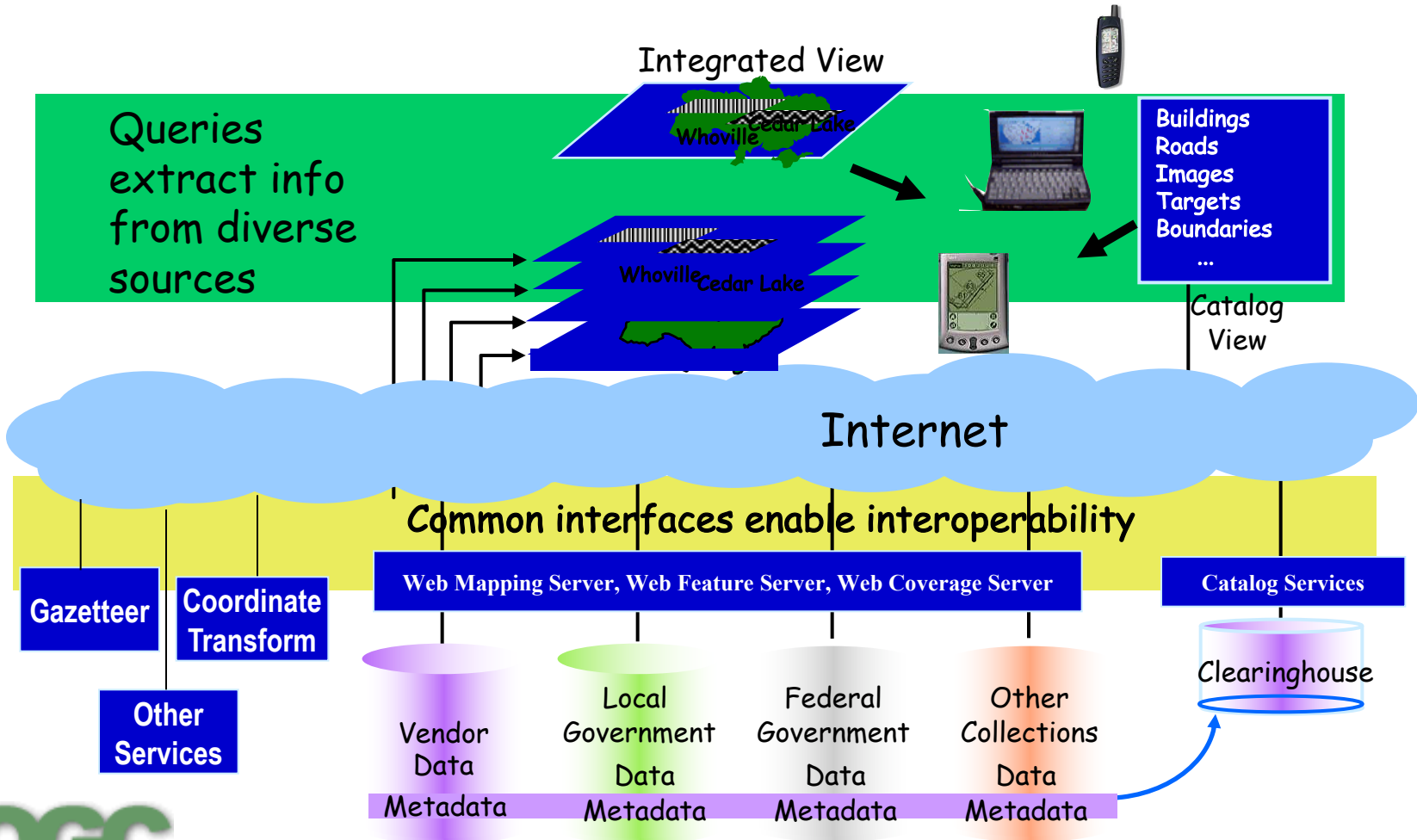
- The complete integration of geospatial data and geoprocessing resources into mainstream computing.

■ **Our Mission:**

- Develop interface specifications that facilitate the use of “spatial” or “location” information and services across networks, platforms, and brands.
- Enable developers and integrators to agree at the interface, so they can focus more on workable component solutions.
- Encourage fielding of Standards-based Commercial off the Shelf products and services to consumers at reasonable cost.

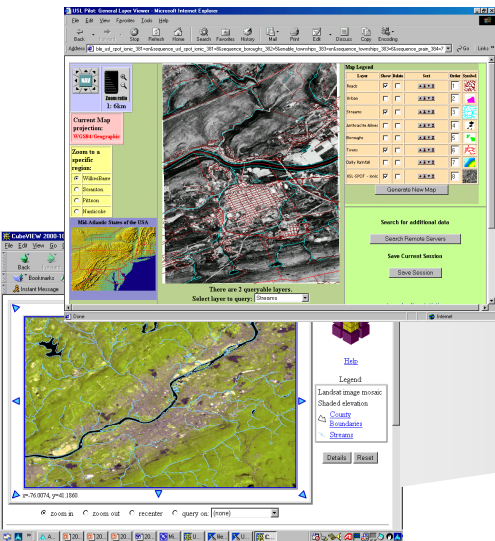


OGC Web Services: Generate spatial views and analysis from multiple distributed servers simultaneously using a plain web browser, regardless of software vendor, data format, spatial reference system...



What OGC Brings to the Table: Interfaces to Support Interoperable, Component-based Products

Visualization, Analysis, Modeling, Decision Support



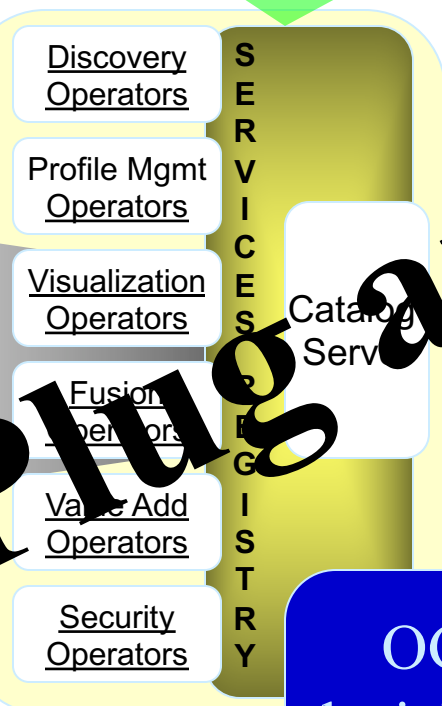
Web Pages, Symbolized Graphics, Data, Geolinks, Metadata, Applications

Information Management

Services Metadata

Sources

XML



Plug and Play

OGC will be addressing decision support and modeling interfaces in 2001

From a simple web browser to robust GIS Applications



Geoservices Management System

For More Information:

OpenGIS Consortium

www.opengis.org

Web Mapping

www.webmapping.org

FGDC

www.fgdc.gov

GSDI

www.gsdi.org

National Atlas

www.nationalatlas.gov

Enviromapper

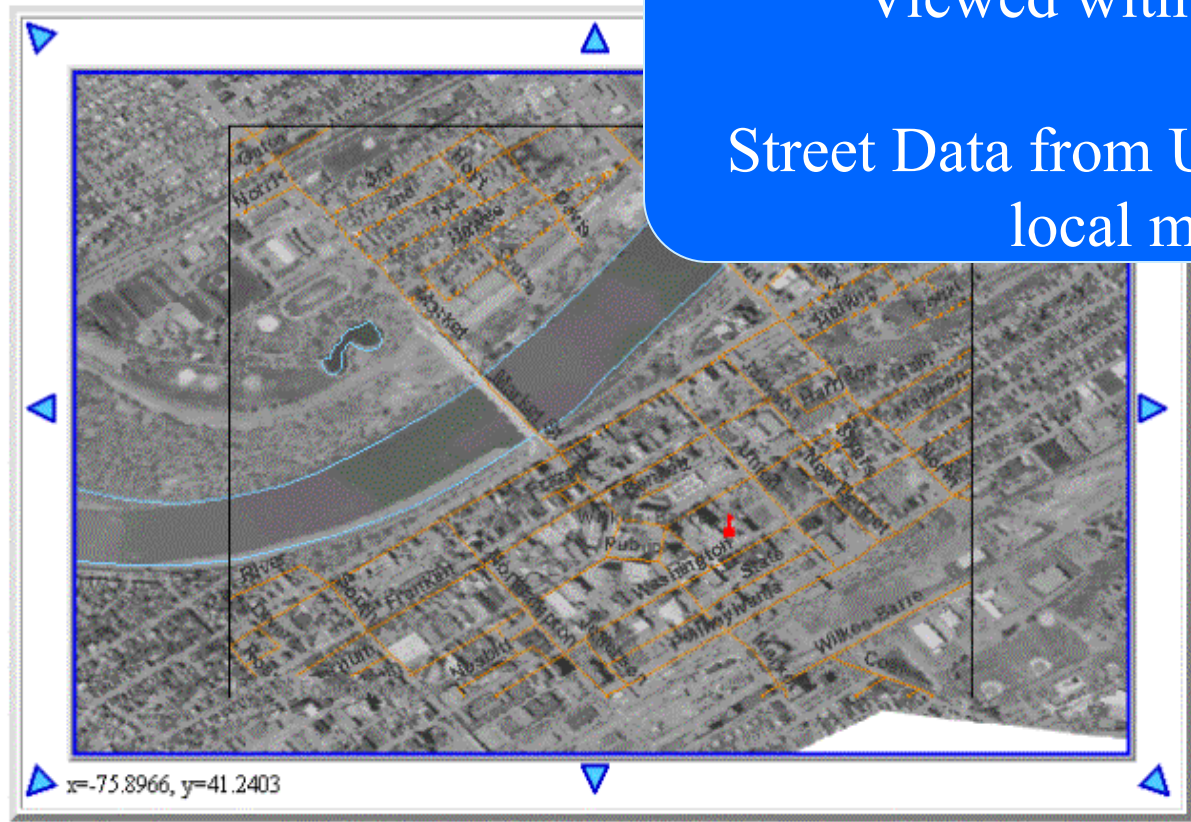
<http://maps.epa.gov/enviromapper/>

NC MAPNET



www.ncmapnet.com

OGC Upper Susquehanna-
Lackawanna Pilot Project
Examples Follow

Immediate integration of different sources
Viewed with a web browser
Street Data from US EPA, Image from local map server



Legend:

- Susquehanna River orthophoto II
-  Streams
- Schools
- Hospitals
- Churches
-  Streets

Details Reset

zoom in zoom out recenter query on: (none)

Data Stores: USLPP

Themes: DRAINAGE

Layers: Streams

Selected Layers:

- Susquehanna River orthophoto II
- Streams
- Schools
- Hospitals
- Churches

Up Down Remove

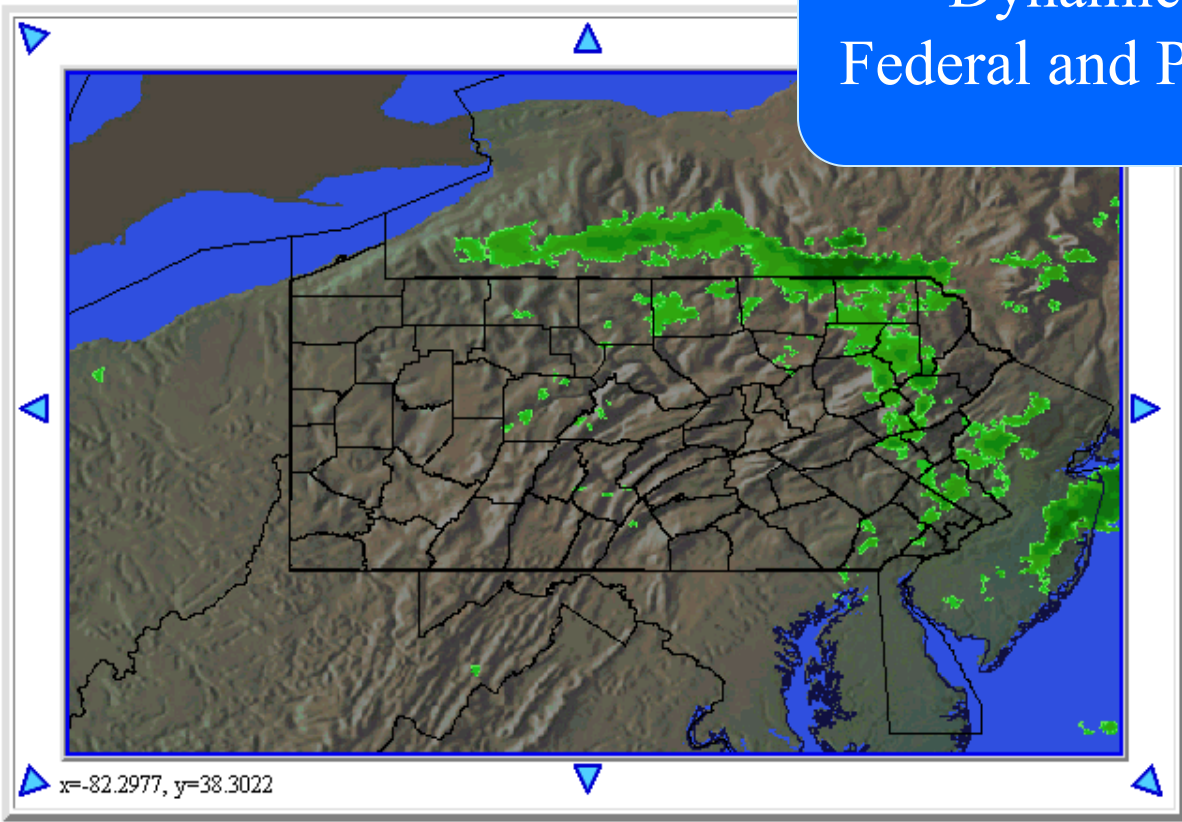
File Edit View Go Communicator Help

Back Forward Reload Home Search Netscape Print Security Stop

Bookmarks Location: 02152¤tScale=6M¤tImageWidth=560¤tImageHeight=3




Instant Message WebMail Contact People Yellow Pages Download

Dynamic integration of Federal and Private Sector Data



[Help](#)

Legend:

- US Topo
- Smooth Nexrad
-  [County Boundaries](#)
-  COASTL_1M(2)
-  POLBN DL_1M

zoom in
 zoom out
 recenter
 query on: (none)

Data Stores: Accuweather

Themes: (unthemed)

Layers: Smooth Nexrad

Selected Layers:

- US Topo
- Smooth Nexrad
- County Boundaries
- COASTL_1M(2)
- POLBN DL 1M