

# GIS in Response



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## Brief history of maps and GIS



2,300 B.C.E.  
Babylonian  
Clay Tablet

## Brief history of maps and GIS



450 B.C.E.  
"Known World"  
map

## Brief history of maps and GIS



1400 - 1500 C.E.  
Another  
"Known World"  
map

## Brief history of maps and GIS



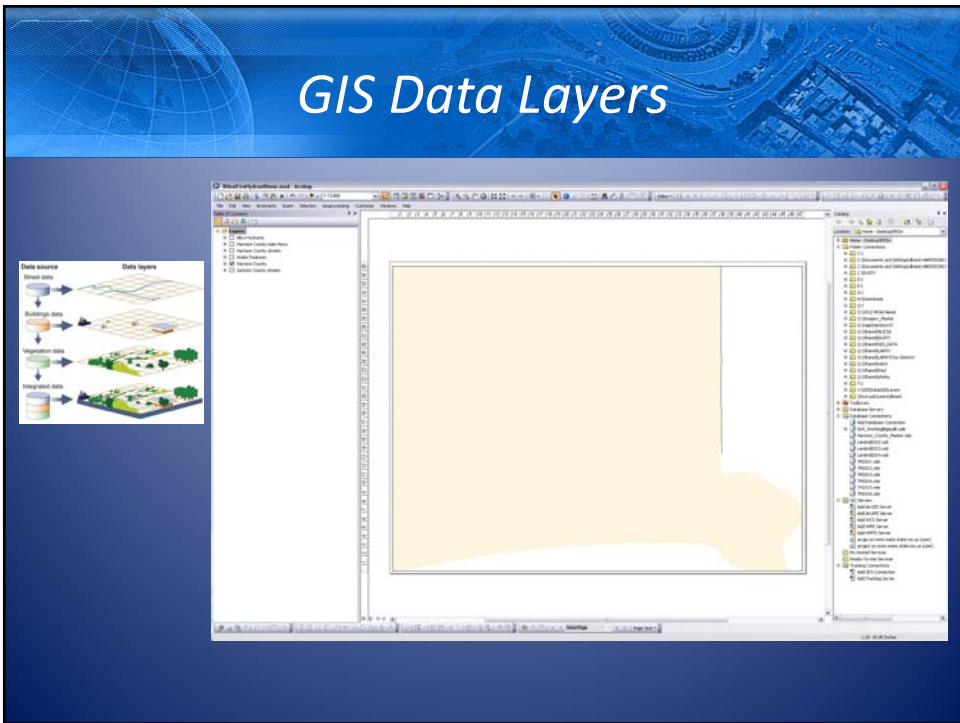
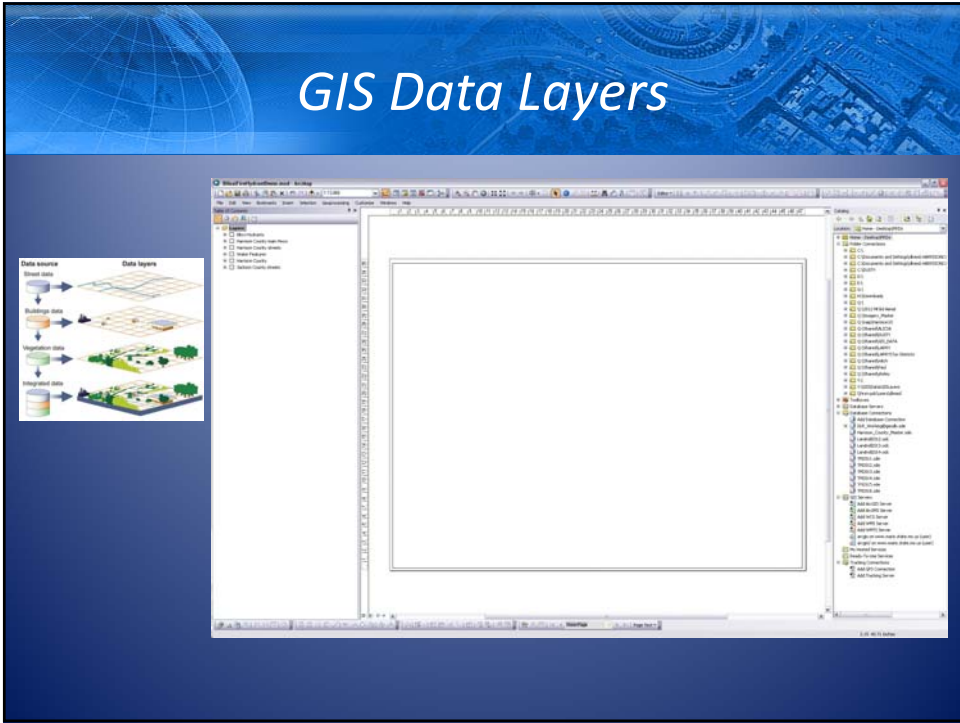
Modern  
Road Map  
"Road Atlas"

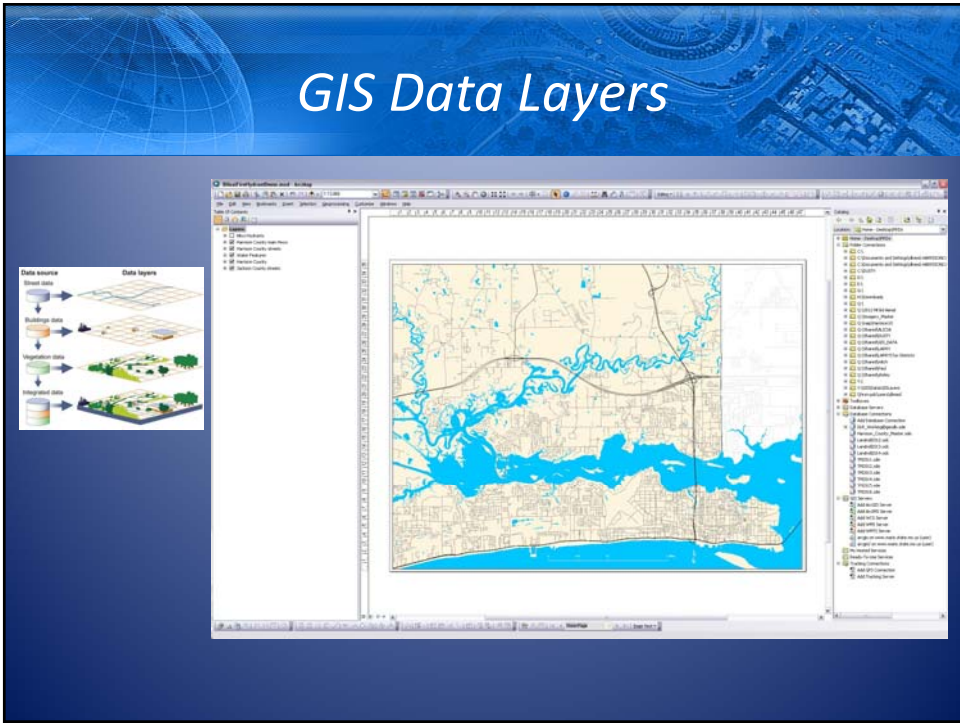
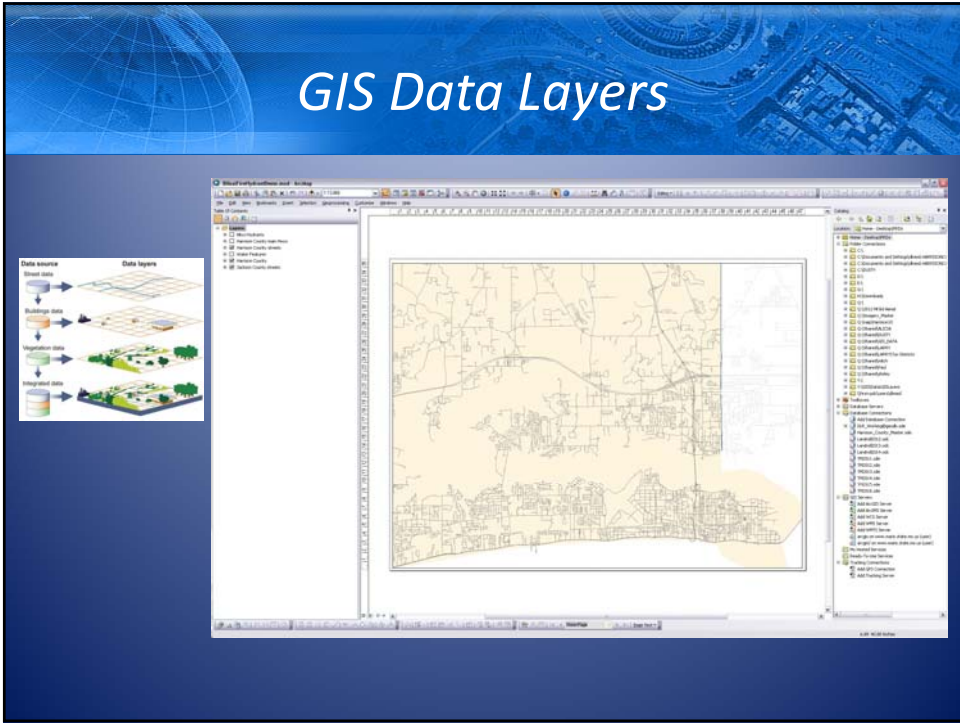
## Brief history of maps and GIS



1<sup>st</sup> "GIS" map  
John Snow  
1854  
Cholera Outbreak







# What can GIS do?

A tool to analyze, manage, and visualize data

Anything can be mapped!

# Analyze, Manage and Visualize Data

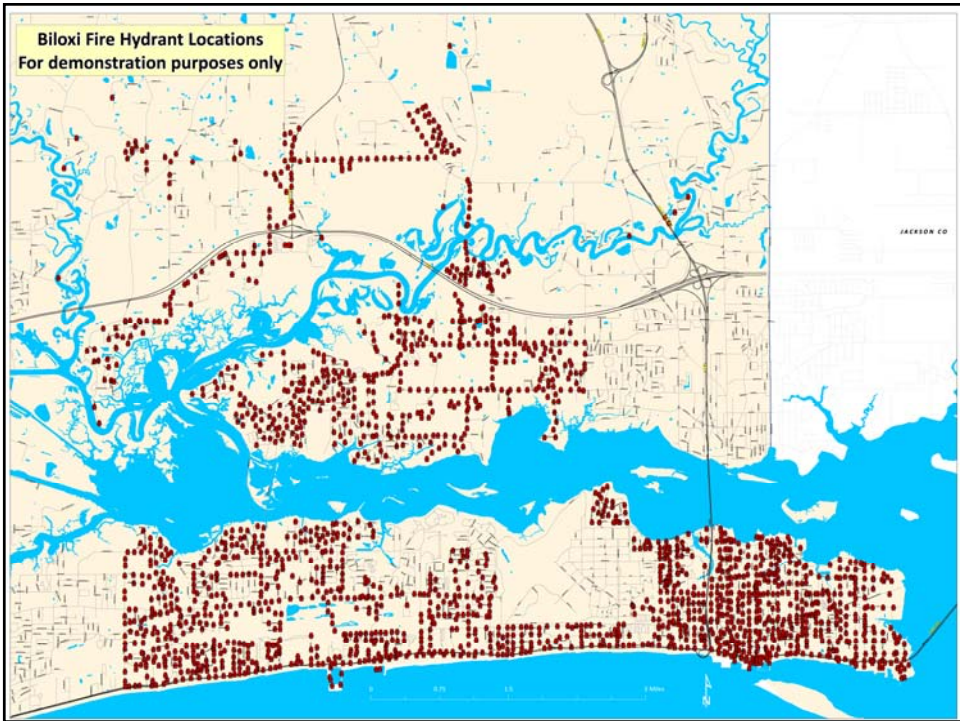
FID	Shape *	Manufacturer	YEAR	PLUGS	PRIVATE
332	Point	American Darling	1995	3 Way	N
350	Point	American Darling	1989	3 Way	N
390	Point	American Darling	2005	3 Way	Y
391	Point	American Darling	2005	3 Way	Y
583	Point	American Darling	1981	3 Way	Y
711	Point	American Darling	1978	3 Way	Y
749	Point	American Darling	1971	3 Way	Y
751	Point	American Darling	1971	2 Way	Y
752	Point	American Darling	1973	2 Way	Y
753	Point	American Darling	1974	2 Way	N
763	Point	American Darling	1973	2 Way	Y
764	Point	American Darling	1973	2 Way	Y
774	Point	American Darling	1974	3 Way	Y
789	Point	American Darling	1980	3 Way	Y
790	Point	American Darling	1980	3 Way	Y
917	Point	American Darling	1995	3 Way	N
921	Point	American Darling	2006	2 Way	N
1003	Point	American Darling	2004	2 Way	Y
1112	Point	American Darling	1996	3 Way	N
1241	Point	American Darling	1965	3 Way	N
1400	Point	AMERICAN DARLING	1995	3 Way	N
1950	Point	American Darling	Unknown	3 Way	Y
1464	Point	AWWA	2002	2 Way	N
78	Point	Clow	Unknown	3 Way	N
79	Point	Clow	1994	3 Way	N
80	Point	Clow	1994	3 Way	N
82	Point	Clow	1988	3 Way	N
83	Point	Clow	1988	3 Way	N
87	Point	Clow	Unknown	3 Way	N
145	Point	Clow	2001	3 Way	N
196	Point	Clow	1997	3 Way	N
294	Point	Clow	1998	2 Way	N
320	Point	Clow	1999	3 Way	N
330	Point	Clow	Unknown	3 Way	N
439	Point	Clow	2004	3 Way	N
452	Point	Clow	1998	3 Way	N
582	Point	Clow	1997	3 Way	N
595	Point	Clow	1991	3 Way	N
632	Point	Clow	2006	3 Way	N
641	Point	Clow	1990	3 Way	N

Fire hydrant data sample

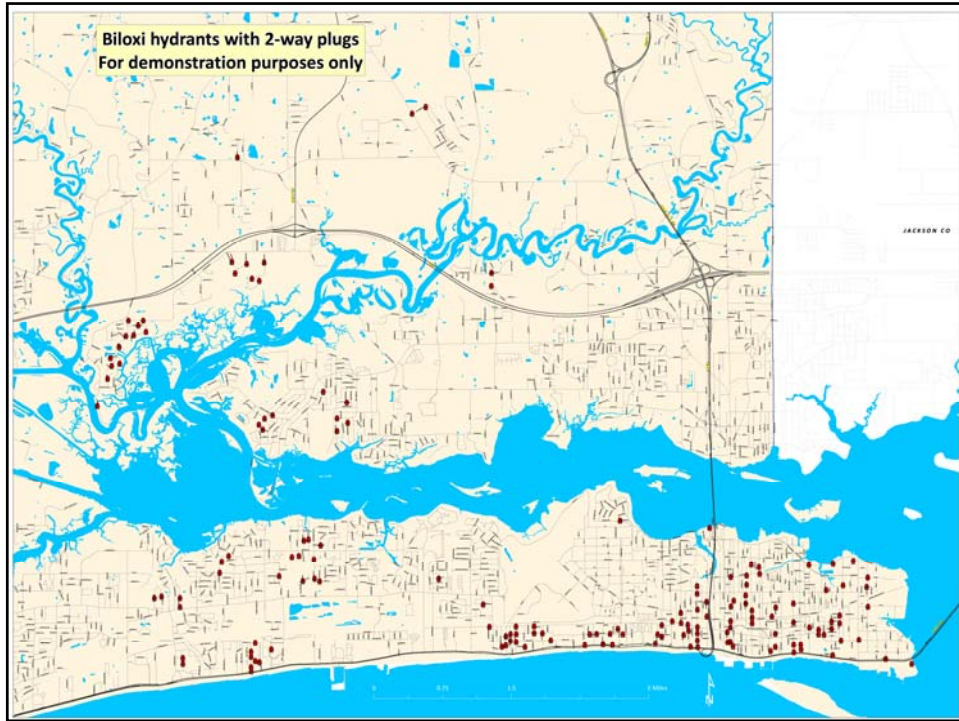
## Analyze, Manage and Visualize Data

FID	Shape *	Location	Manufacturer	YEAR	PLUS	PRIVATE
332	Point	9137 Woolmarket Rd	American Darling	1995	3 Way	N
350	Point	9195 Scenic River Dr	American Darling	1989	3 Way	N
390	Point	1891 Poppas Ferry Rd	American Darling	2005	3 Way	Y
391	Point	1891 Poppas Ferry Rd	American Darling	2005	3 Way	Y
583	Point	495 Poppas Ferry Rd	American Darling	1981	3 Way	Y
711	Point	2600 Beach Blvd	American Darling	1978	3 Way	Y
749	Point	2436 Beach Blvd	American Darling	1971	3 Way	Y
751	Point	2436 Beach Blvd	American Darling	1971	2 Way	Y
752	Point	2428 Beach Blvd	American Darling	1973	2 Way	Y
753	Point	2428 Beach Blvd	American Darling	1974	2 Way	N
763	Point	2436 Beach Blvd	American Darling	1973	2 Way	Y
764	Point	2436 Beach Blvd	American Darling	1973	2 Way	Y
774	Point	2350 Beach Blvd	American Darling	1974	3 Way	Y
789	Point	2046 Beach Blvd	American Darling	1980	3 Way	Y
790	Point	2046 Beach Blvd	American Darling	1980	3 Way	Y
917	Point	168 Benachi Ave	American Darling	1995	3 Way	N
921	Point	150 Seal Ave	American Darling	2006	2 Way	N
1003	Point	880 Cedar Lake Rd	American Darling	2004	2 Way	Y
1112	Point	206 Seal Ave & Esposito St	American Darling	1996	3 Way	N
1241	Point	1707 James Madison Dr & Rodenberg Ave	American Darling	1965	3 Way	N
1400	Point	434 Reynoir St	AMERICAN DARLING	1995	3 Way	N
1950	Point	340 Nichols Dr	American Darling	Unknown	3 Way	Y
1464	Point	250 Maple St & 5th St	AWWA	2002	3 Way	N
78	Point	648 Beach Blvd & Dukate St	Clow	Unknown	3 Way	N
79	Point	792 Gentry St	Clow	1994	3 Way	N
80	Point	732 Waters View Dr	Clow	1994	3 Way	N
82	Point	1936 Bayside Dr	Clow	1988	3 Way	N
83	Point	629 Sunrise Ct	Clow	1988	3 Way	N
87	Point	699 Division St & Main St	Clow	Unknown	3 Way	N
145	Point	1526 Brodie Rd	Clow	2001	3 Way	N
196	Point	751 Cambridge Dr	Clow	1997	3 Way	N
294	Point	13016 Marvin St	Clow	1998	2 Way	N
320	Point	9358 W Oaklawn Rd	Clow	1999	3 Way	N
330	Point	486 Cove Dr	Clow	Unknown	3 Way	N
439	Point	736 Sharon Hills Dr	Clow	2004	3 Way	N
452	Point	413 Alicia Dr	Clow	1998	3 Way	N
582	Point	397 Poppas Ferry Rd	Clow	1997	3 Way	N
595	Point	336 Catherine Dr	Clow	1991	3 Way	N
632	Point	200 Rodenberg Ave	Clow	2006	3 Way	N
641	Point	2568 Rue Palafox	Clow	1990	3 Way	N



Fire hydrant data sample with location added







## GIS in Emergency Response

Wildfires	Flooding	Sinkholes
		
Hurricanes	Earthquakes	Human-Caused Incidents
		

This complex block serves as a title slide for a presentation on GIS in Emergency Response. It features a blue background with a globe and city map imagery. The title 'GIS in Emergency Response' is centered at the top. Below the title, there is a grid of six categories, each with a representative image: Wildfires (a person silhouetted against a fire), Flooding (an aerial view of a flooded residential area), Sinkholes (an aerial view of a large sinkhole in a street), Hurricanes (a satellite view of a hurricane's eye), Earthquakes (a road with a 'Los Angeles CITY LIMIT' sign and a large crack in the pavement), and Human-Caused Incidents (a large industrial pipe or structure that has collapsed or burst).

*GIS in Emergency Response*

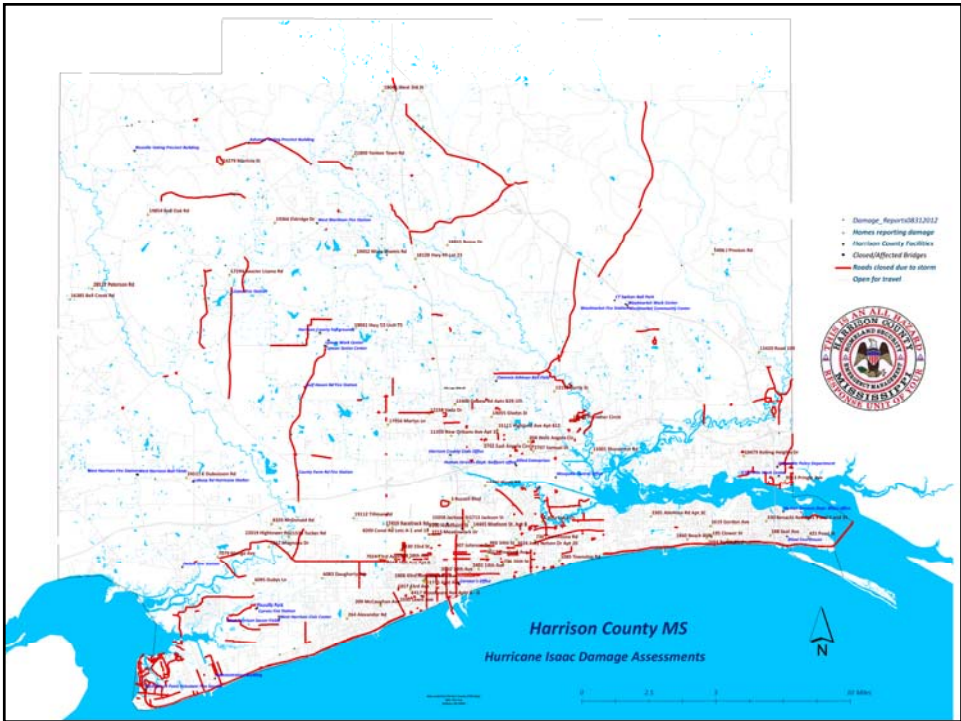


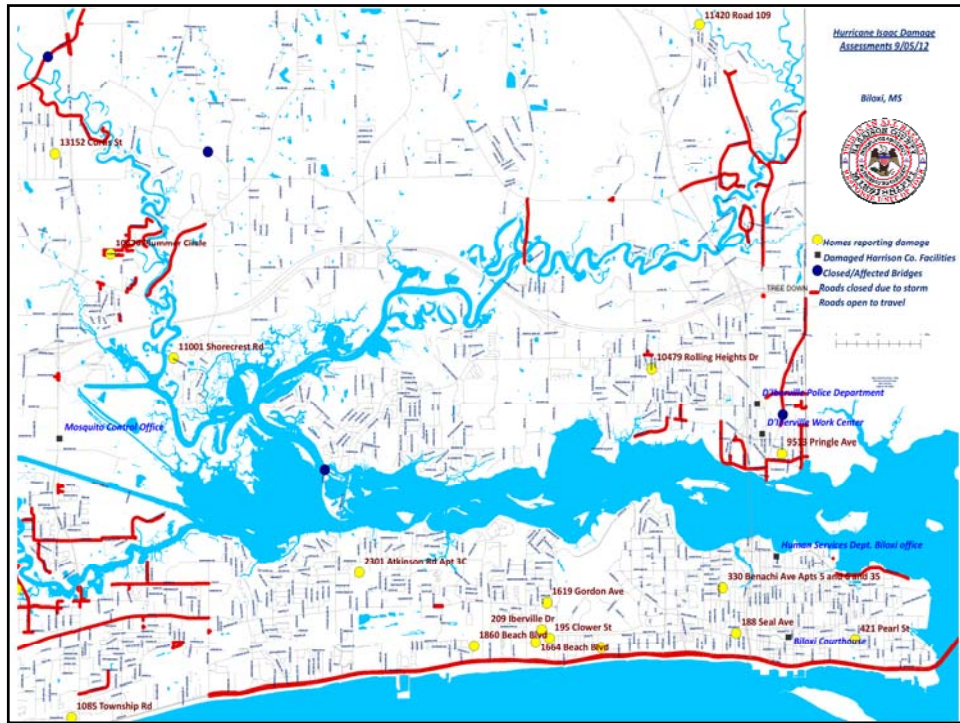
Hurricane Isaac  
Aug 28-29, 2012

80 mph max  
sustained wind

Slow moving

The top section features a blue header with the text "GIS in Emergency Response" in white. Below the header is a satellite image of Hurricane Isaac, showing its characteristic eye and spiral cloud structure over the Gulf of Mexico. To the right of the satellite image is a dark blue vertical panel containing white text that reads "Hurricane Isaac Aug 28-29, 2012", "80 mph max sustained wind", and "Slow moving".





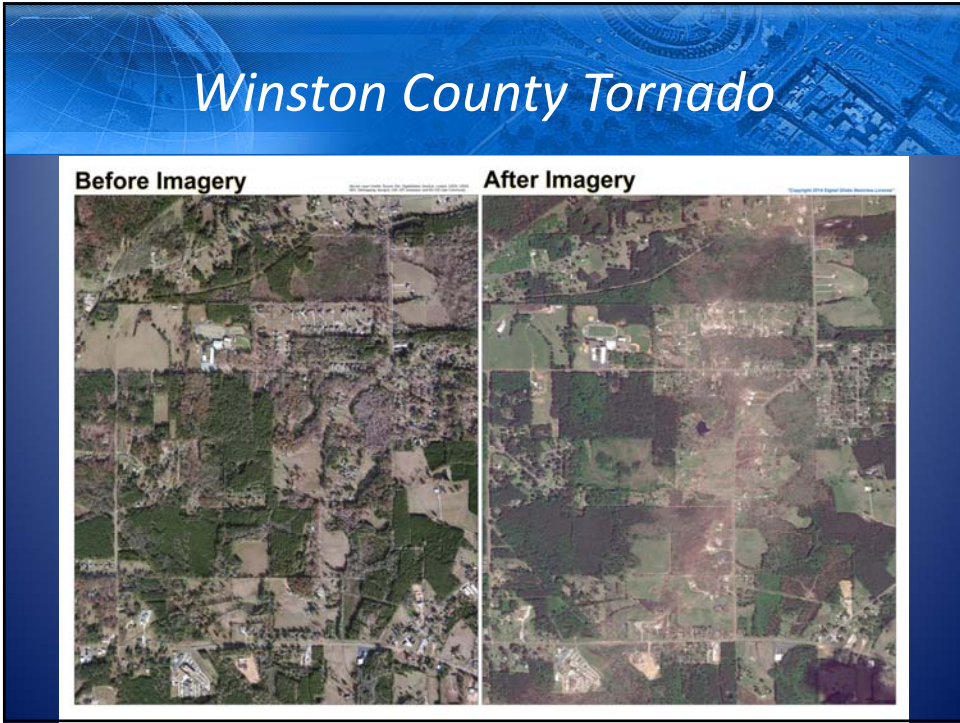
## GIS in Emergency Response

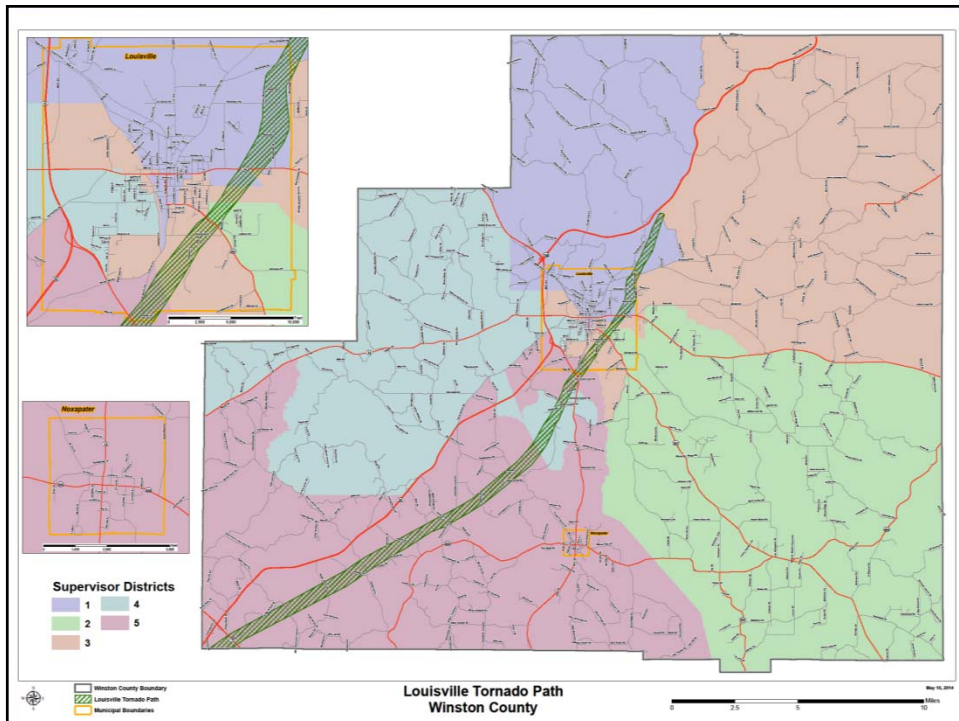
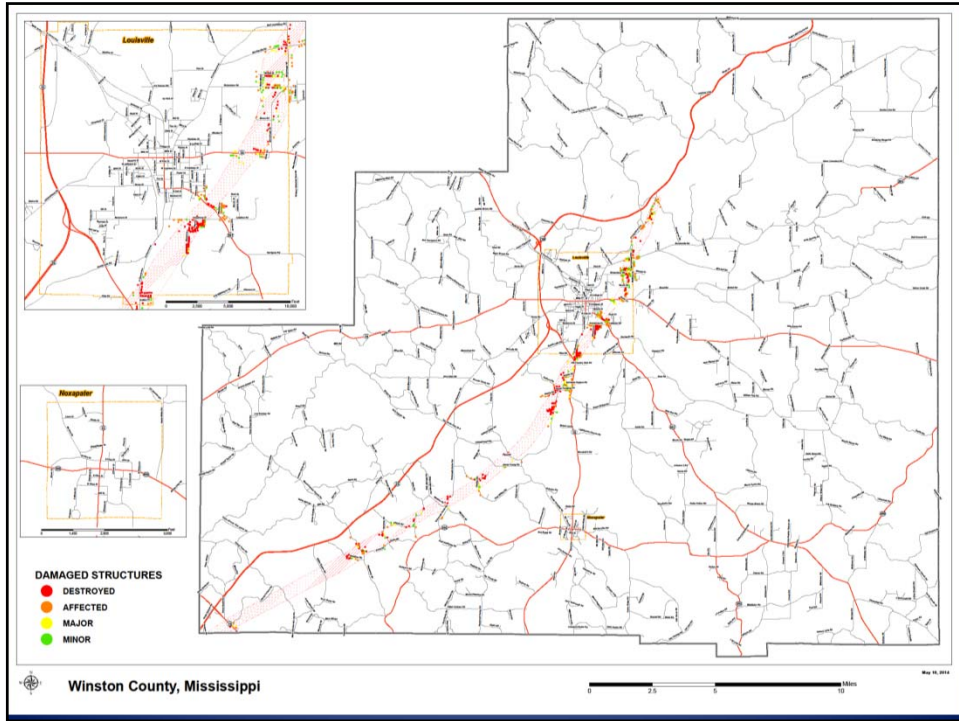
Major Communities in Winston County, Mississippi

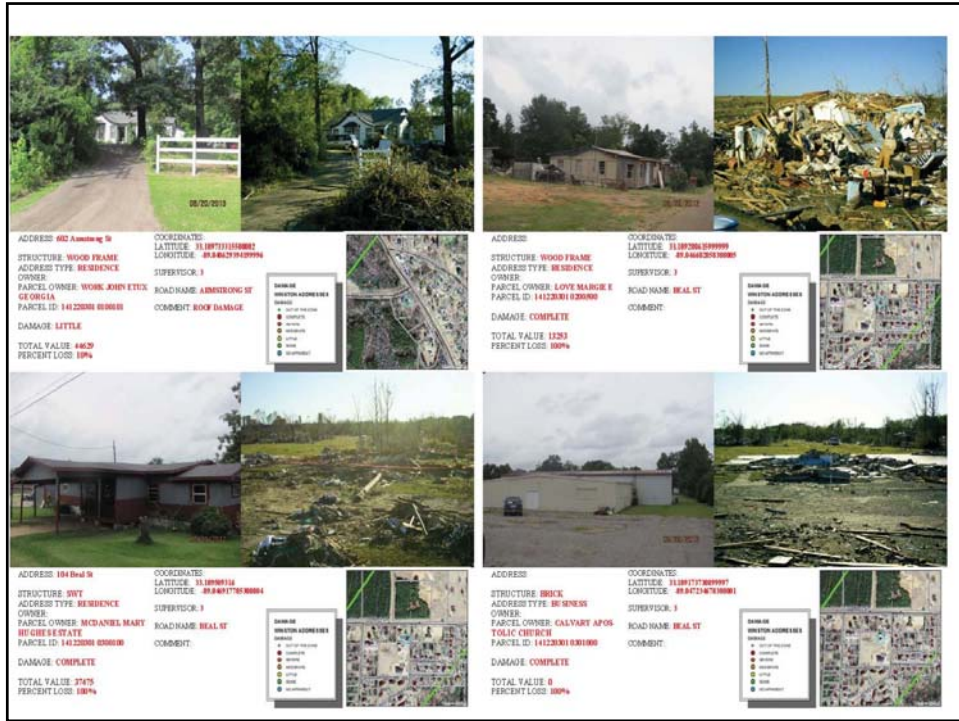
Winston Co.  
Tornado  
April 28, 2014

EF-4 with 185 mph winds

$\frac{3}{4}$  mile wide







## Winston County Tornado

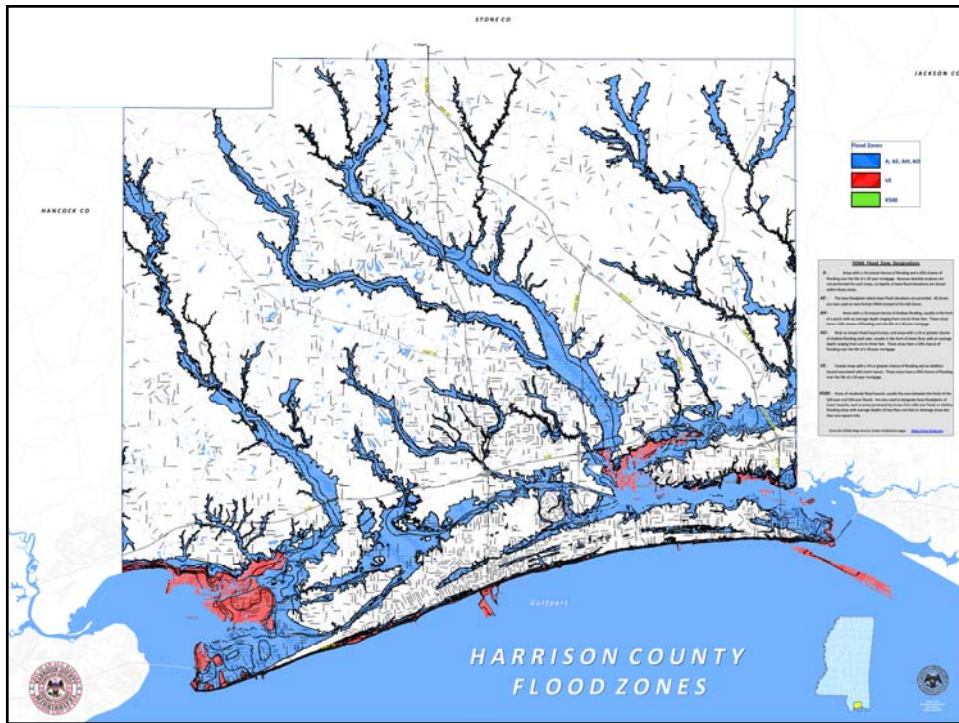
**Strengths of Winston Co. GIS response:**

- The ability to produce map products in a timely manner
- Quality of available data
- Understanding GIS capabilities by Incident Management team members

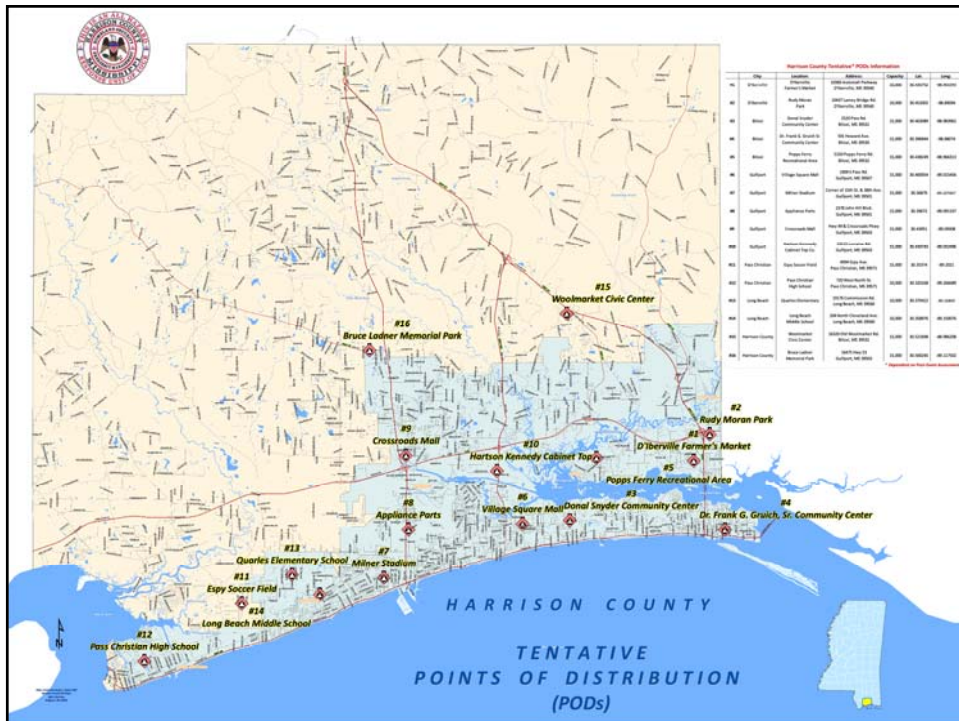
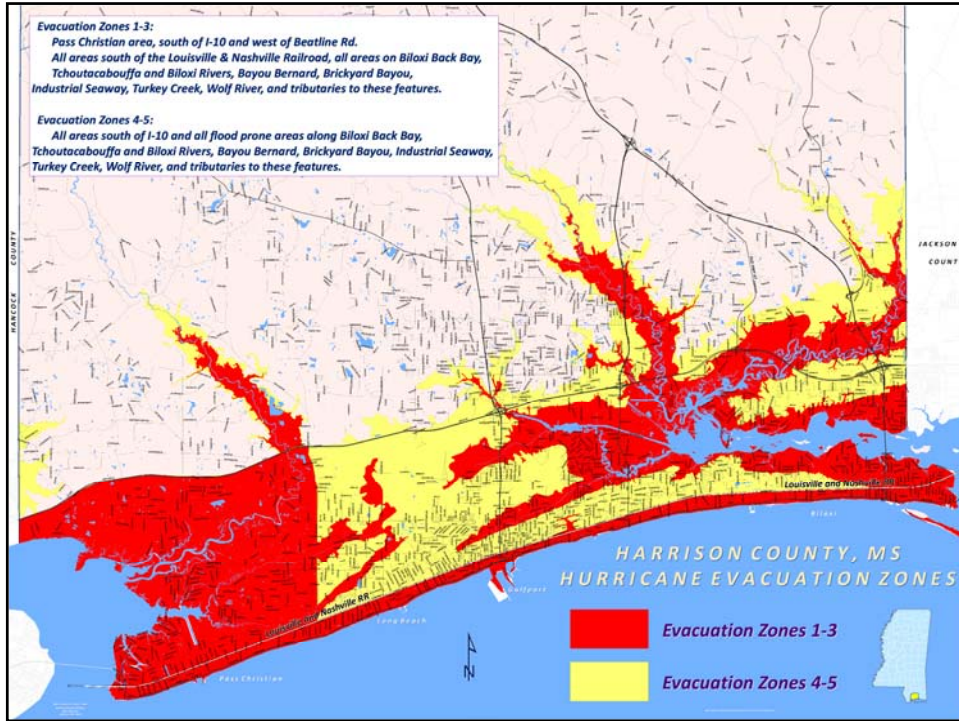


# Pre-Incident GIS Uses

<p>Wildfires</p> 	<p>Flooding</p> 	<p>Sinkholes</p> 
<p>Hurricanes</p> 	<p>Earthquakes</p> 	<p>Human-Caused Incidents</p> 







## Pre-Incident GIS Uses

**Relative Vulnerability**

- More Vulnerable
- Vulnerable
- Less Vulnerable
- Surface Water Bodies

**Wildland Fire Risk Potential - 2013**

**WILDLAND FIRE POTENTIAL**

- Very Low
- Low
- Moderate
- High
- Very High

## GIS in Museums and Libraries

GIS is a tool to analyze, manage, and visualize data.

**Smithsonian** SMITHSONIAN HISTORY SCIENCE INNOVATION ARTS & CULTURE TRAVEL AT THE SMITHSONIAN [SUBSCRIBE](#) [SHOP](#)

**Decisive Moments in the Battle of Gettysburg**

**DECISIVE MOMENT**

**JULY 2, 9:00 AM**  
Lee decides to launch a major attack

**Show Panorama**

Early on July 2, Confederate scouts reported, erroneously, that there was no Federal presence around the two large hills south of Gettysburg called the Round Tops. They moved several thousand Union troops that were in the vicinity until dawn. Looking his cavalry "eyes" and unable to see Union troops that had gathered in the night, Lee decided to strike the Union's vulnerable left flank, the far end of the "fishhook" descending from Cemetery Hill. He intended to lead the move before the rest of Meade's army arrived.

**MAP** **LEGEND**

Wednesday July 1, 1863  
Thursday July 2, 1863  
Friday July 3, 1863

Lee decides to launch a major attack

McPherson Ridge  
Seminary Ridge  
GETTYSBURG

East, HERE, Delaware, YouTou, USA, MET

Smithsonian  
Museum  
Web Map

# GIS in Museums and Libraries

GIS is a tool to analyze, manage, and visualize data.

**North Carolina statewide datasets**

- NC OneMap** (Maintained by the NC Center for Geographic Information & Analysis, or CGIA) - Current and archived data versions, including information about the former BasinPro data collections. For public access to current data layers, go directly to [NC OneMap GeoPortal Data Download](#).
- NC Department of Transportation (DOT) Data** - Various transportation related datasets and map products. Important details about much of the data provided by NCDOT are provided on websites listed below (ie, DRGs, elevation, flood data, etc.)
- Census Data Guide** ([Web](#), [Data Server](#), [CD/DVD](#)) - Links and resources for finding Census data, from the 1790 Census to the present. Explanation of Census terminology and data products.
- County Government GIS Data** ([Web](#), [Data Server](#), [CD/DVD](#)) - Public Access links, NCSU Libraries' collection of current and archived local government orthophotos, parcel data, street centerlines, etc. To see NCSU Libraries' holdings, click the "Lib Web" links.
- ESRI Data & Maps and StreetMap USA for ArcGIS** ([Data Server](#), [CD/DVD](#)) - A wide variety of world, U.S., Canadian, Mexican and European data.
- ArcGIS Online Services** ([Web](#)) - Regularly updated 2D map services and 3D globe services for basemapping needs. Includes street maps, topo maps, imagery, elevation, and more for the US, world, and even Mars.
- Coastal GIS Data** ([Web](#), [Data Server](#), [CD/DVD](#)) - Federal and state sources for GIS data of coastal and marine areas, and ocean data. Includes archived collections.
- Digital Aerial Imagery and Orthophotographs** ([Web](#), [Data Server](#), [CD/DVD](#)) - Also known as digital aerial photographs, orthomagey, orthophotos, and orthos.

North Carolina State University Online Libraries' GIS Data Collection (pg. 1)

# GIS in Museums and Libraries

GIS is a tool to analyze, manage, and visualize data.

- Digital Raster Graphics (DRGs)** ([Web](#), [Data Server](#), [CD/DVD](#)) - Digitized, georeferenced 1:24k, 1:100k, and 1:250k topographic map quadrangle sheets.
- Elevation Data Sources** ([Web](#), [Data Server](#), [CD/DVD](#)) - Raster elevation datasets, including DEM, SRTM, GTOPO, and LIDAR based, and sources for vector contour lines. See also: [DEM data](#).
- Energy Data Resources for GIS** ([Web](#), [Data Server](#), [CD/DVD](#)) - Various geospatial data collections and sources that pertain to energy resources.
- FEMA Flood Data** ([Web](#), [Data Server](#), [CD/DVD](#)) - Data from NC Floodplain Mapping Program (NCFMP), including geodatabases with flood zones, DFRMs, and LIDAR. Also, FEMA Digital Q3 data.
- FEMA HAZUS-MH Data** ([Data Server](#), [CD/DVD](#)) - Hazard mitigation software and data. Includes flood, hurricane, shelter, facilities, infrastructure, and background data. NC and national coverage.
- Geographic Names Information System (GNIS)** ([Web](#)) - A point database containing locations for millions of physical and cultural geographic features in the United States.
- Geologic Maps of North Carolina** ([Web](#)) - Hundreds of scanned and georeferenced maps showing the geology of NC at many different scales, extents, and from multiple sources.
- Hyperspectral Imagery** ([Data Server](#)) - Multi-spectral, multi-band, color infrared - all terms used to describe aerial and satellite imagery that contain a fourth color value beyond R,G,B.
- Inter-University Consortium for Political and Social Research (ICPSR)** ([Web](#)) - Data related to political science, economics, sociology, psychology, education, social work, public administration, criminal justice, etc.
- Land Use/Land Cover (LU/LC)** ([Web](#), [Data Server](#), [CD/DVD](#)) - Various sources for raster-based land cover data, including the National Land Cover Dataset.

North Carolina State University Online Libraries' GIS Data Collection (pg. 2 – there is lots more on the website)

## GIS in Museums and Libraries

GIS is a tool to analyze, manage, and visualize data.



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Lowe's  
Store  
Map

## GIS in Museums and Libraries

GIS is a tool to analyze, manage, and visualize data.



Stennis Space  
Center's  
Infinity  
Museum

## And Lastly, GIS Data Resources

GIS is a tool to analyze, manage, and visualize data.

The screenshot shows the MARIS website interface. At the top, it features the MARIS logo and the tagline "Serving Mississippi's GIS needs by providing Mapping, Geo-data, Education, and Service since 1982." Below this, there is a navigation menu on the left with options like Home, Download Data, MAPPING, Links, Training, News/Events, Misc Information, FAQ, Index, and Calendar of Events. The main content area is titled "MARIS Mapping" and contains several sections: "Interactive Mapping" (describing an interactive service using GeoCortex Essentials), "MapServices" (describing a standard protocol for serving map images), "ImageServices" (describing a standard protocol for serving raster datasets), "Printable Maps" (describing pre-generated maps in Adobe PDF format), and "Other Maps" (describing other map services available from various sources). Each section includes a "Click Here" link.

An excellent source for Mississippi Geospatial Data and Resources

## GIS in Response

Questions?