

Beyond TIGER Files: Federal Government Geospatial Data Sources to Support GIS Research Needs

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DLC Meeting & FDL Conference

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Overview

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- [GIS Data Types](#)
- [Federal GIS Data Sources & Map Viewers](#)
- [Example State & Local Data Sources](#)
- [Esri + Government Data](#)
- [Citizen Science](#)
- [Questions & Answers](#)



GIS Overview



Geospatial Data

- Geospatial data is data that is associated with a particular location.
- It has a spatial component – like an address, latitude & longitude, country, state, county, place, zip code, etc.



Geographic Information Systems

Definition

GIS refers to a system where geographic information is stored in layers and integrated with geographic software programs so that spatial information can be created, stored, manipulated, analyzed, and visualized (mapped).

Dempsey, C. (2014). What is the difference between GIS and geospatial? Retrieved from <https://www.gislounge.com/difference-gis-geospatial/>



Maps + Tabular Data + Analysis Capabilities



Image by [The National Atlas](#).

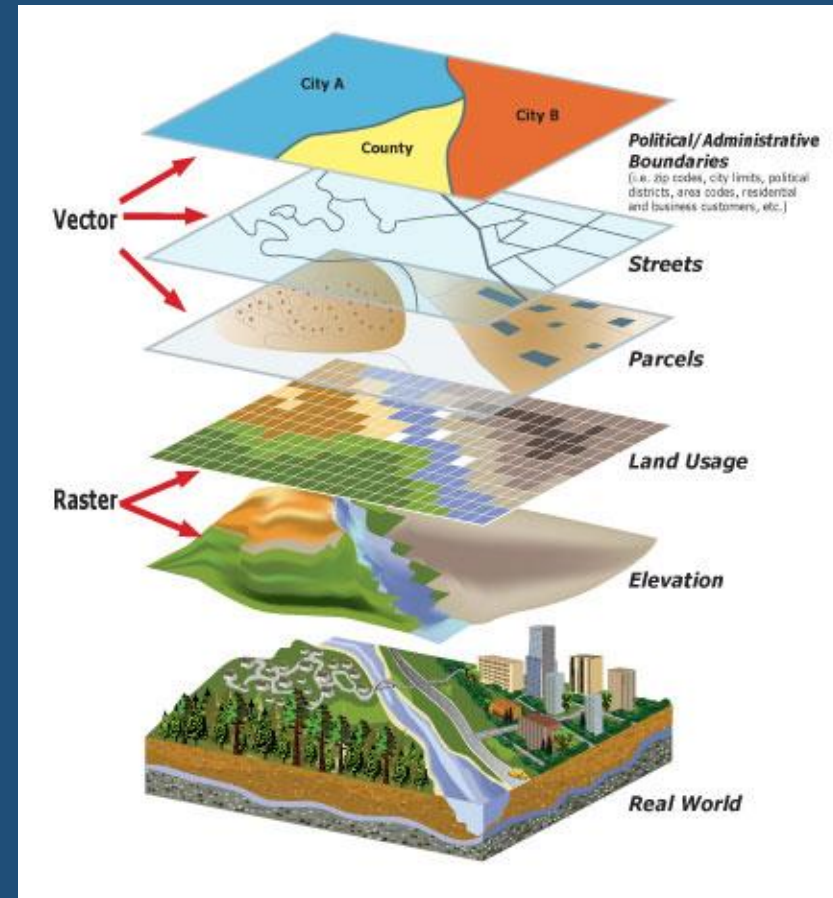


Image by [GNOME icon artists](#) CC BY-SA 3.0

Layers

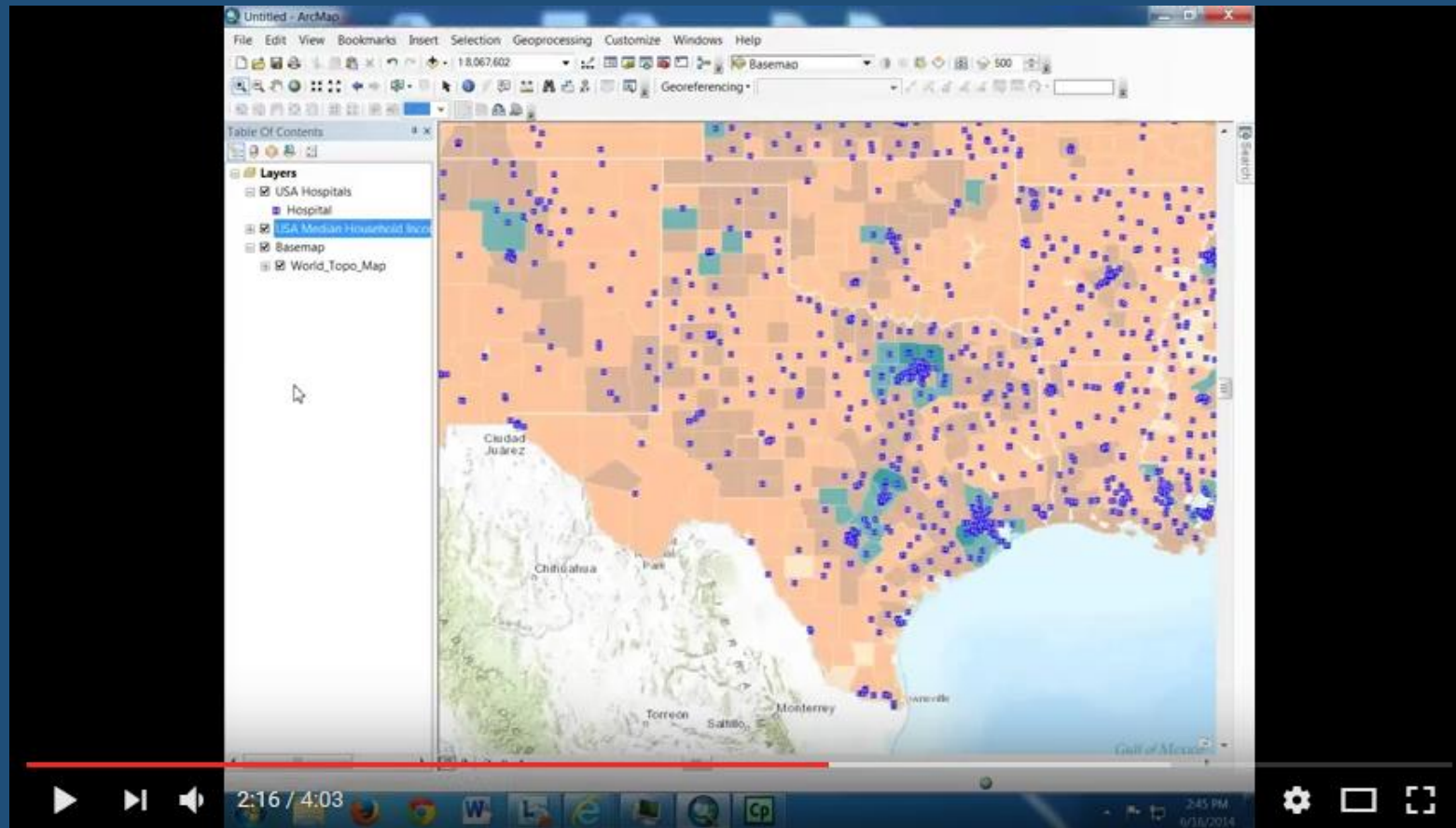
Geographic Information Systems allow data to be overlaid in layers.

This data can be analyzed – and relationships between the data can be investigated.



ArcGIS Informational Model <https://doc.arcgis.com/en/arcgis-online/reference/geo-info.htm>

ArcMap Demonstration



ArcMap demonstration by Rory Elliott <https://www.youtube.com/watch?v=E-B5E4OCYYU>

GIS & Government Information

- Government bodies produce an enormous amount of statistics & geographical information.
- If the data has a spatial component, it can be used in a GIS.
- GIS allows the library user to get more from the data we have historically provided.



Types of GIS Data

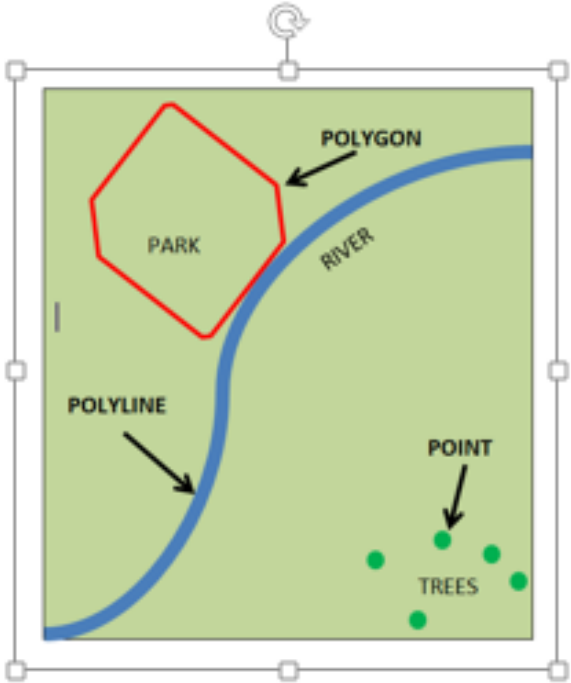
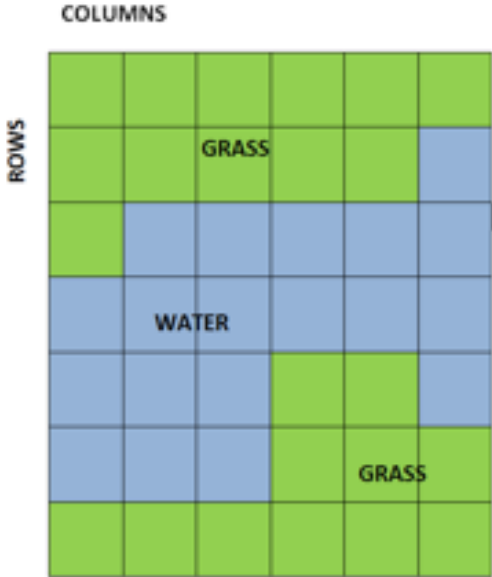


GIS Data

- **Spatial Data:** Identifies the geographic location of features. It includes coordinates and projection information. It is the “Where”
 - Vector: Points, lines, polygons, Shapefiles, KML
 - Raster: Images
- **Attribute Data:** Describes and classifies the features. It is the ‘What, Where, and Why’
 - Tabular: tables, Excel, CSV, txt



Spatial Data

Vector	Raster
Points, Polylines, and Polygons	Cells in a grid; Pixels in an image
Definite <u>x,y</u> coordinates	<u>Georeferenced</u> to a coordinate system.
File Types: <u>Geodatabases</u> , <u>Shapefiles</u> , KML	File Types: .JPG, .PNG, .TIFF
 <p>The diagram illustrates vector data with three types of features: a red polygon labeled 'PARK', a blue curved line labeled 'POLYLINE' representing a 'RIVER', and several green dots labeled 'POINT' representing 'TREES'. The entire scene is enclosed in a square frame with corner handles and a rotation icon at the top center.</p>	 <p>The diagram illustrates raster data as a 6x6 grid. The top row is entirely green. The second row has five green cells followed by one blue cell. The third row has one green cell followed by five blue cells. The fourth row has two blue cells followed by four green cells. The fifth row has one blue cell followed by five green cells. The bottom row is entirely green. The grid is labeled 'COLUMNS' at the top and 'ROWS' on the left. The words 'GRASS' and 'WATER' are placed within their respective colored cells.</p>



Vector Data

The screenshot shows the ArcGIS desktop environment. The main map area displays a light gray background with blue lines representing trails in the Austin, TX area. Labels for 'Cedar Park', 'Round Rock', and 'Austin' are visible on the map. The 'Table of Contents' on the left shows a layer named 'geo_export_1f616858-7bd4-42f2-af03-68b12e31d2e2' selected. The 'Table' window at the bottom displays the following attribute table:

FID	Shape	build_stat	width	urban_tr_3	trail_surf
0	Polyline	PROPOSED	12	RED LINE TRAIL	Concrete
1	Polyline	PROPOSED	12	VIOLET CROWN TRAIL	Concrete
2	Polyline	PROPOSED	12	SLAUGHTER CREEK TRAIL	Concrete
3	Polyline	PROPOSED	12	MARY MOORE SEARIGHT PARK TRAIL	Concrete
4	Polyline	PROPOSED	12	WATCHFUL TO GRIZZLY OAK CONNECTOR	Concrete
5	Polyline	PROPOSED	12	ONION CREEK TRAIL	Concrete
6	Polyline	PROPOSED	12	ONION CREEK TRAIL	Concrete
7	Polyline	PROPOSED	12	NORTHSTAR GREENBELT TRAIL	Concrete
8	Polyline	PROPOSED	12	BERSHING TRAIL	Concrete

Name	Date modified	Type	Size
geo_export_1f...	9/28/2016 5:56 AM	DBF File	1,191 KB
geo_export_1f...	9/28/2016 5:56 AM	PRJ File	1 KB
geo_export_1f...	9/28/2016 5:56 AM	SHP File	579 KB
geo_export_1f...	9/28/2016 12:57 AM	LOCK File	0 KB
geo_export_1f...	9/28/2016 5:56 AM	SHX File	4 KB

Shapefile of Austin, TX trails



Attribute Data

- Attribute data describes and classifies the features.
- It is the 'What, Where, and Why.'
- Attributes are often in the tabular formats.

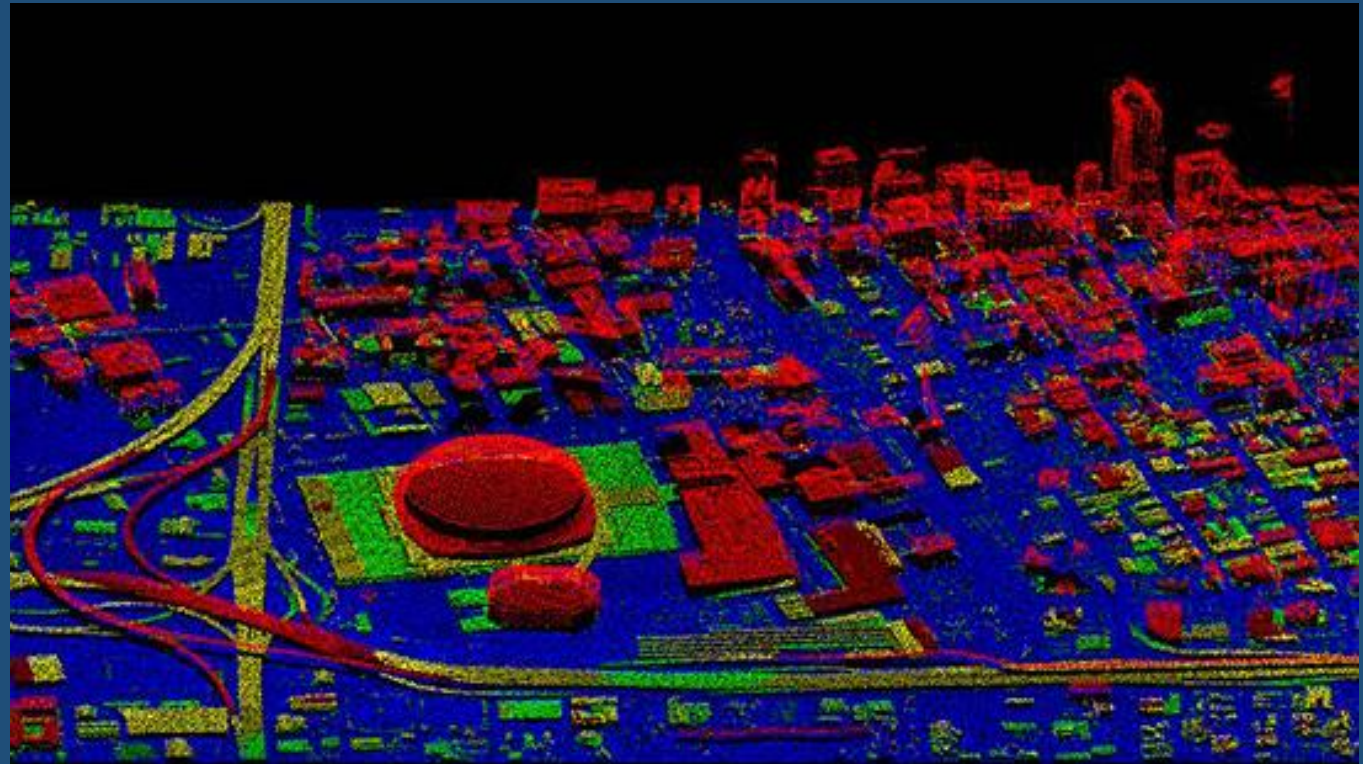
Table

geo_export_1f616858-7bd4-42f2-af03-68b12e31d2e2

urban_tr_3	location	objectid	priority	urban_tr_4	length_mil
RED LINE TRAIL	ALONG_ROADWAY	196	TIER I	DENSON DR TO ALEXANDER AVE	3.1
VIOLET CROWN TRAIL	NEIGHBORHOOD_CO	197	TIER II	JONES RD	0.27
SLAUGHTER CREEK TRAIL	WITHIN_PARKS	198	TIER II	CIRCLE C RANCH METRO PARK	0.86
MARY MOORE SEARIGHT PARK TRAIL	WITHIN_PARKS	199	TIER II	MARY MOORE SEARIGHT PARK TRAIL	1.15
WATCHFUL TO GRIZZLY OAK CONNECTOR	ALONG_CREEK	200	TIER II	ALICE MAE LN TO SOUTH PARK MEADOWS GREENBELT	0.27
ONION CREEK TRAIL	WITHIN_PARKS	201	TIER II	ONION CREEK TRAIL CONNECTOR	0.14
ONION CREEK TRAIL	ALONG_CREEK	202	TIER II	ONION CREEK TRAIL TO SLAUGHTER LN	0.18
NORTHSTAR GREENBELT TRAIL	WITHIN_PARKS	266	TIER II	NORTHSTAR TO NORTHERN WALNUT CREEK TRAIL CONNECTOR	0.24
REDSHINE TRAIL	ALONG_ROADWAY	267	TIER II	DENVER AVE TO MANOR RD	0.24

Point Cloud Data

- LiDAR:
 - Light + Radar or Light Detection And Ranging
- Uses green visible light, ultraviolet light, or near infrared light to collect x,y,z measurements.
- Creates accurate 3D models of surface and structures.



Source: Earth Resources Observation and Science (EROS)
<http://eros.usgs.gov/topographic-research/structures>

Raster Data

Can include thematic data, continuous data, & pictures.

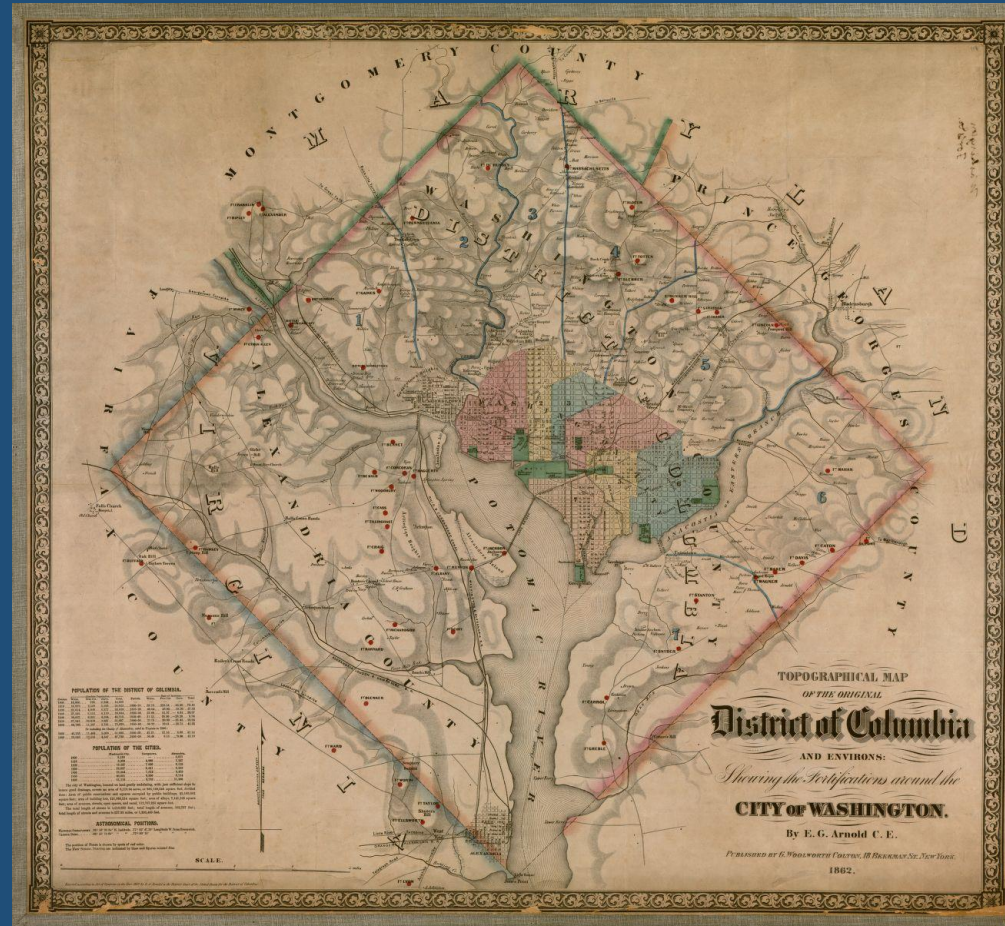
Common types of Raster Data:

- Orthoimages
- Multispectral Images
- Digital Elevation Models
- Scanned Maps



Scanned Maps

Scanned maps can be georeferenced to a particular location on Earth.



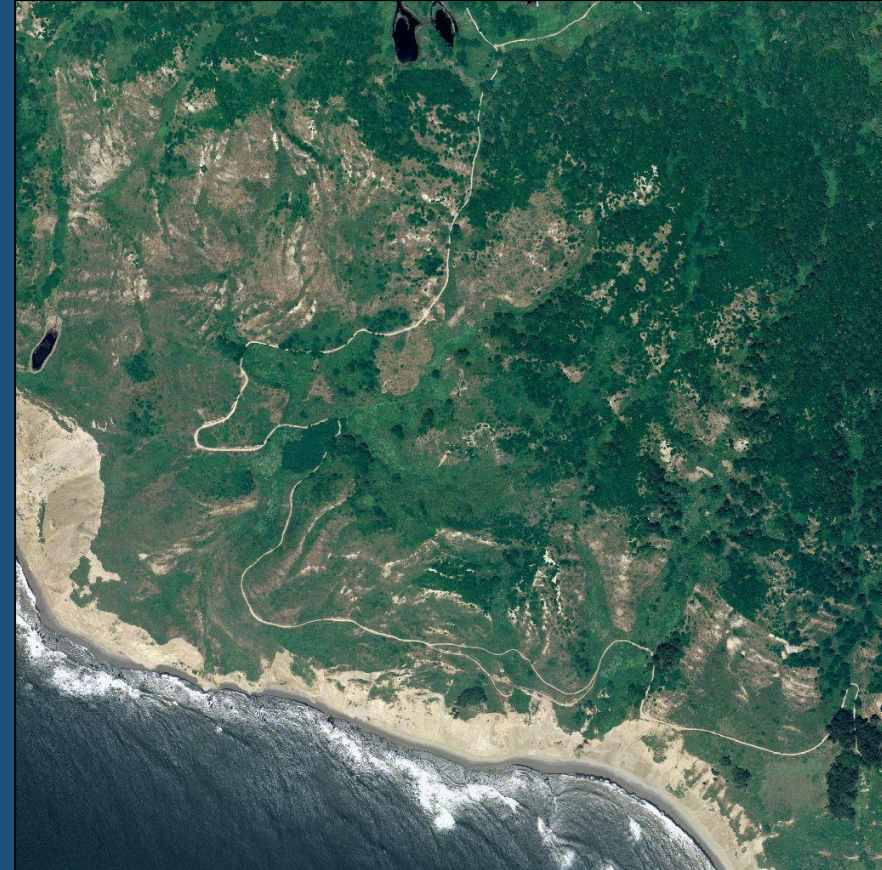
Arnold, E. G. & Colton, G. W. (1862) *Topographical map of the original District of Columbia and environs showing the fortifications around the city of Washington*. New York: G. Woolworth Colton. [Map] Retrieved from the Library of Congress, <https://www.loc.gov/item/88690604/>



Orthoimagery

Orthoimages: high resolution aerial images that combine the visual attributes of an aerial photograph with the spatial accuracy and reliability of a planimetric map.

Source: The National Map: <http://nationalmap.gov/ortho.html>



Orthoimagery from www.sciencebase.gov



Multispectral Imagery

Multispectral Imagery includes satellite imagery at various wavelengths of the electromagnetic spectrum captured by a multispectral scanning radiometer.

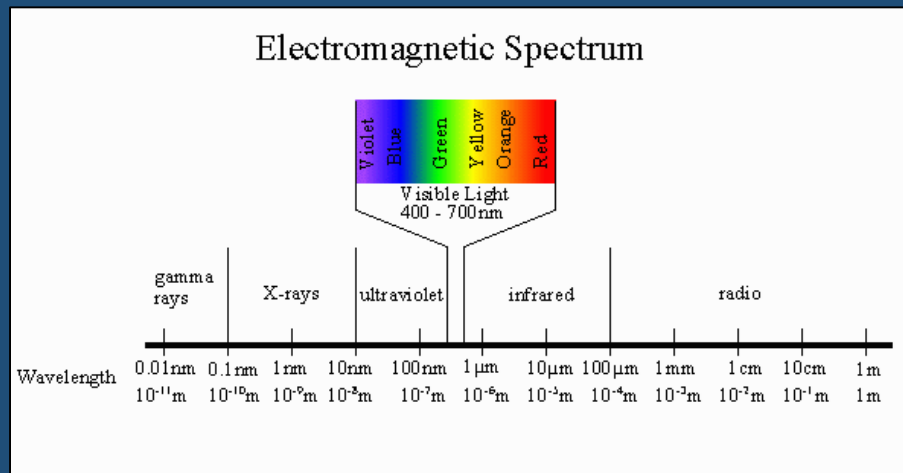
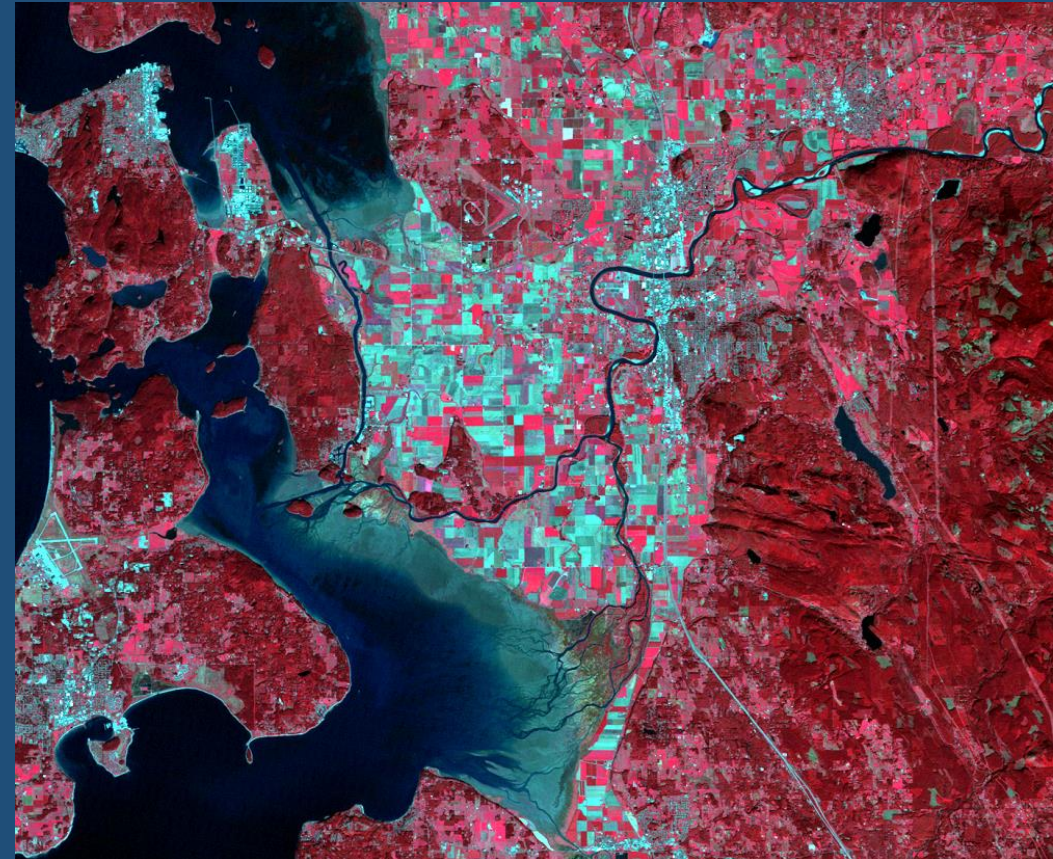


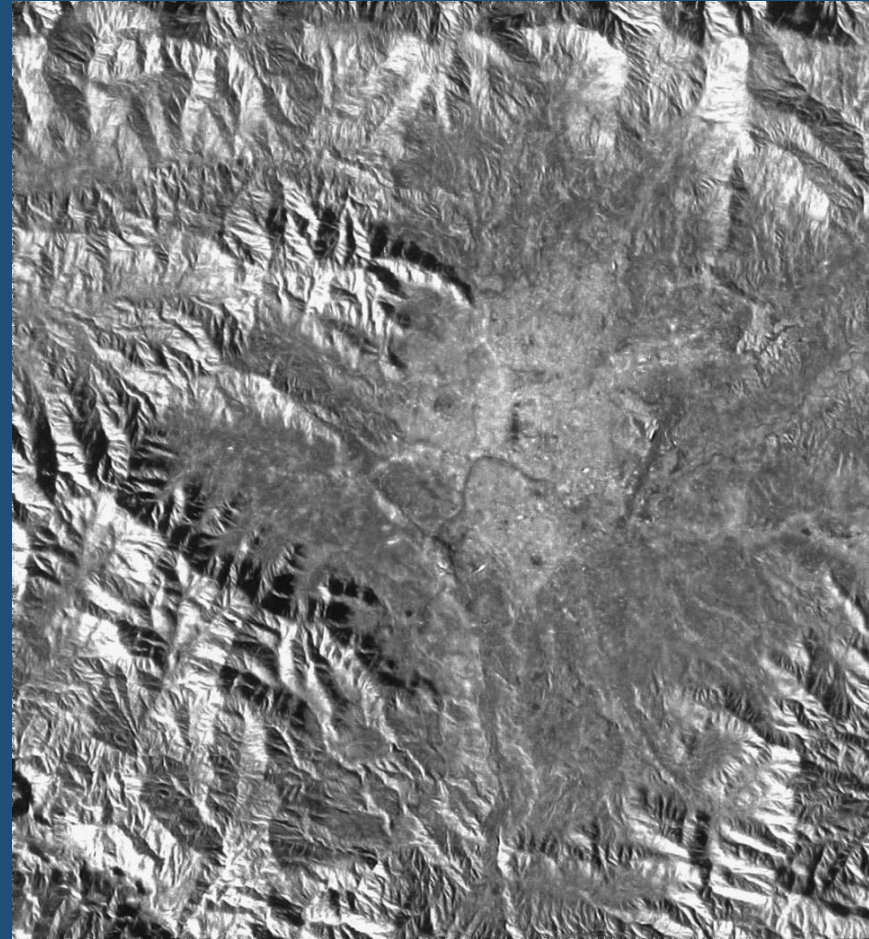
Image from NOAA's [Solar Calculator Glossary](#)



Landsat Infrared imagery of Mount Vernon. Source: Earthshots by USGS <http://earthshots.usgs.gov/earthshots/about#ad-image-6>

DEM – Digital Elevation Models

- Gridded arrays of elevation
- Mostly derived from LiDAR
- Each cell has elevation data
- Types of DEM include:
 - DSM – Digital Surface Models
 - DTM – Digital Terrain Models



Elevation Map of Kathmandu, Nepal. Source: Earth Observatory by NASA
<http://earthobservatory.nasa.gov/IOTD/view.php?id=1872>



Terrain Extraction & Segmentation

Video shows items being extracted from LiDAR.

What would be a Digital Surface Model will be transformed into a Digital Terrain Model.



Source: Terrain Extraction & Segmentation Demo by Geospatial Laser Applications & Measurements at Applied Research Laboratories. <http://www.arlut.utexas.edu/glam/index.html>



Spatial Data Gathering Technology

Global Positioning System Receivers (GPS)



Remote Sensing

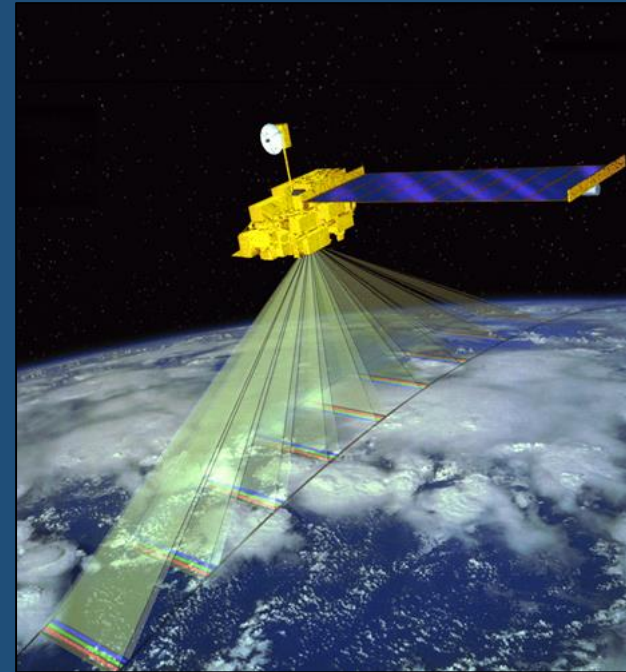
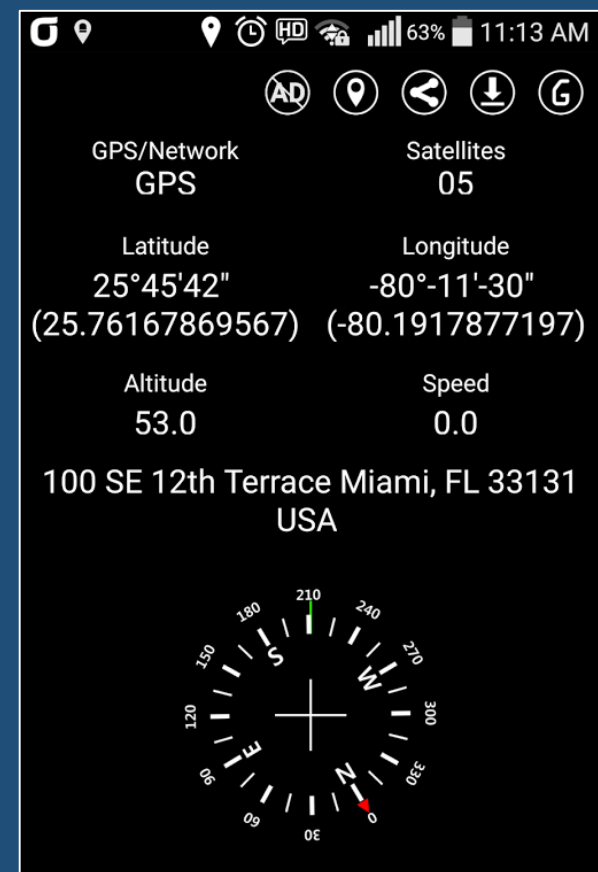


Image: [TERRA Satellite](#) from USGS EROS Virtual Tour



Global Positioning Systems (GPS)

- GPS receivers record coordinates, as well as collect attribute data (e.g. text, time stamps, images, etc.).
- There are GPS apps, but standalone GPS receivers are currently more powerful.
- GPS is operated and maintained by the U.S. Air Force.



[Simple GIS Coordinate Display_app for Android](#)

HOW GPS WORKS



GPS

IS A CONSTELLATION OF 24 OR MORE SATELLITES FLYING 20,350 KM ABOVE THE SURFACE OF THE EARTH. EACH ONE CIRCLES THE PLANET TWICE A DAY IN ONE OF SIX ORBITS TO PROVIDE CONTINUOUS, WORLDWIDE COVERAGE.

1 GPS satellites broadcast radio signals providing their locations, status, and precise time $\{t_1\}$ from on-board atomic clocks.

2 The GPS radio signals travel through space at the speed of light $\{c\}$, more than 299,792 km/second.

3 A GPS device receives the radio signals, noting their exact time of arrival $\{t_2\}$, and uses these to calculate its distance from each satellite in view.

To calculate its distance from a satellite, a GPS device applies this formula to the satellite's signal:
distance = rate x time
 where **rate** is $\{c\}$ and **time** is how long the signal traveled through space.

The signal's travel **time** is the difference between the time broadcast by the satellite $\{t_1\}$ and the time the signal is received $\{t_2\}$.

4 Once a GPS device knows its distance from at least four satellites, it can use geometry to determine its location on Earth in three dimensions.



The GPS Master Control Station tracks the satellites via a global monitoring network and manages their health on a daily basis.

Ground antennas around the world send data updates and operational commands to the satellites.



The Air Force launches new satellites to replace aging ones when needed. The new satellites offer upgraded accuracy and reliability.

How does GPS help farmers? Learn more about the Global Positioning System and its many applications at

WWW.GPS.GOV

This poster is a product of the National Coordination Office for Space-Based Positioning, Navigation, and Timing, an office of the United States Department of Defense. Poster design courtesy of NASA.

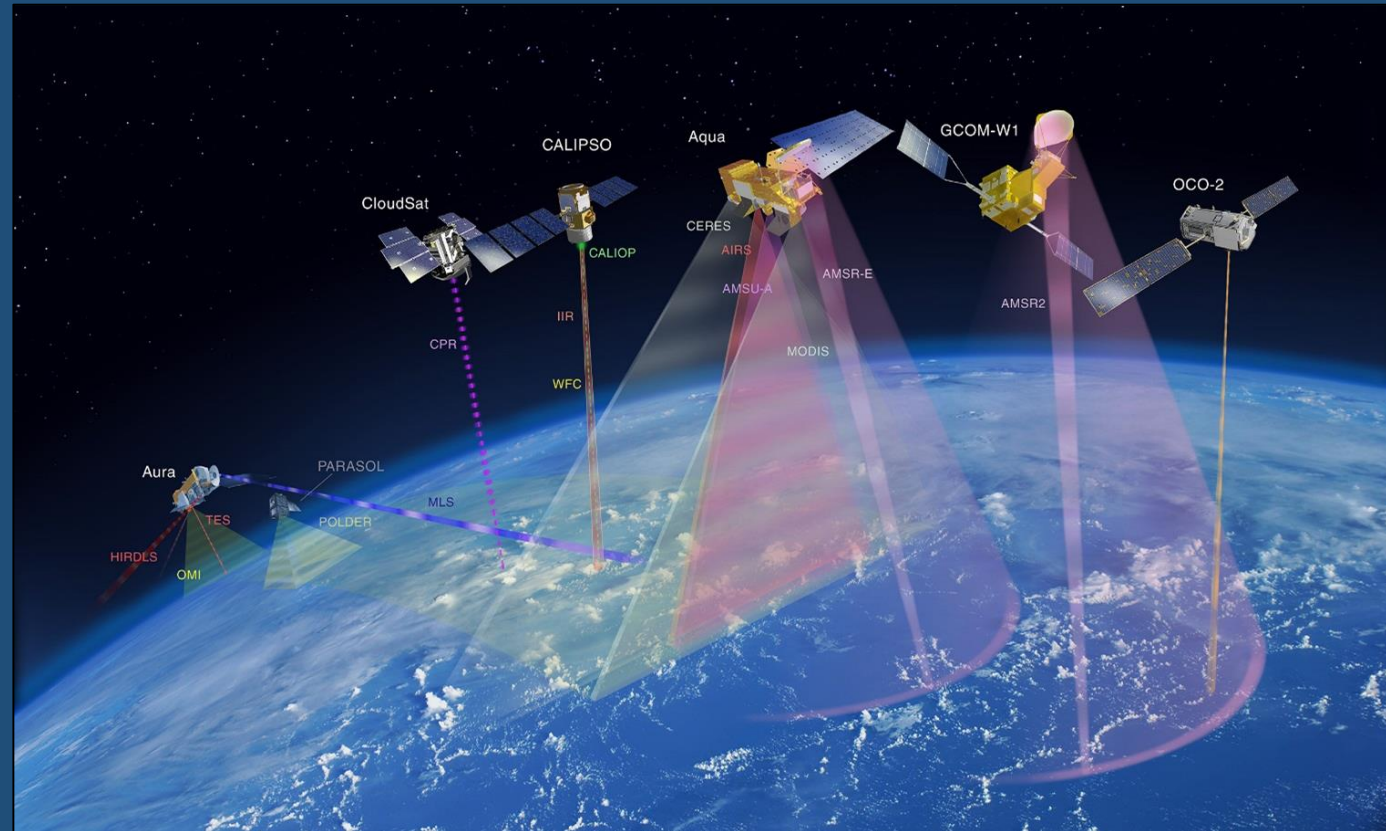
Remote Sensing

Remote Sensing:
information is obtained
from a distance

Planes or satellites
gather information from
the earth's surface,
such as:

- Aerial Photographs
- Infrared
- RADAR
- LiDAR

"The Afternoon Constellation" of satellites



<http://atrain.nasa.gov>

Federal GIS Data Sources



Geospatial Data Powerhouses

- Census
- USGS
- NASA
- NOAA



TIGER Products by U.S. Census

<https://www.census.gov/geo/maps-data/data/tiger.html>

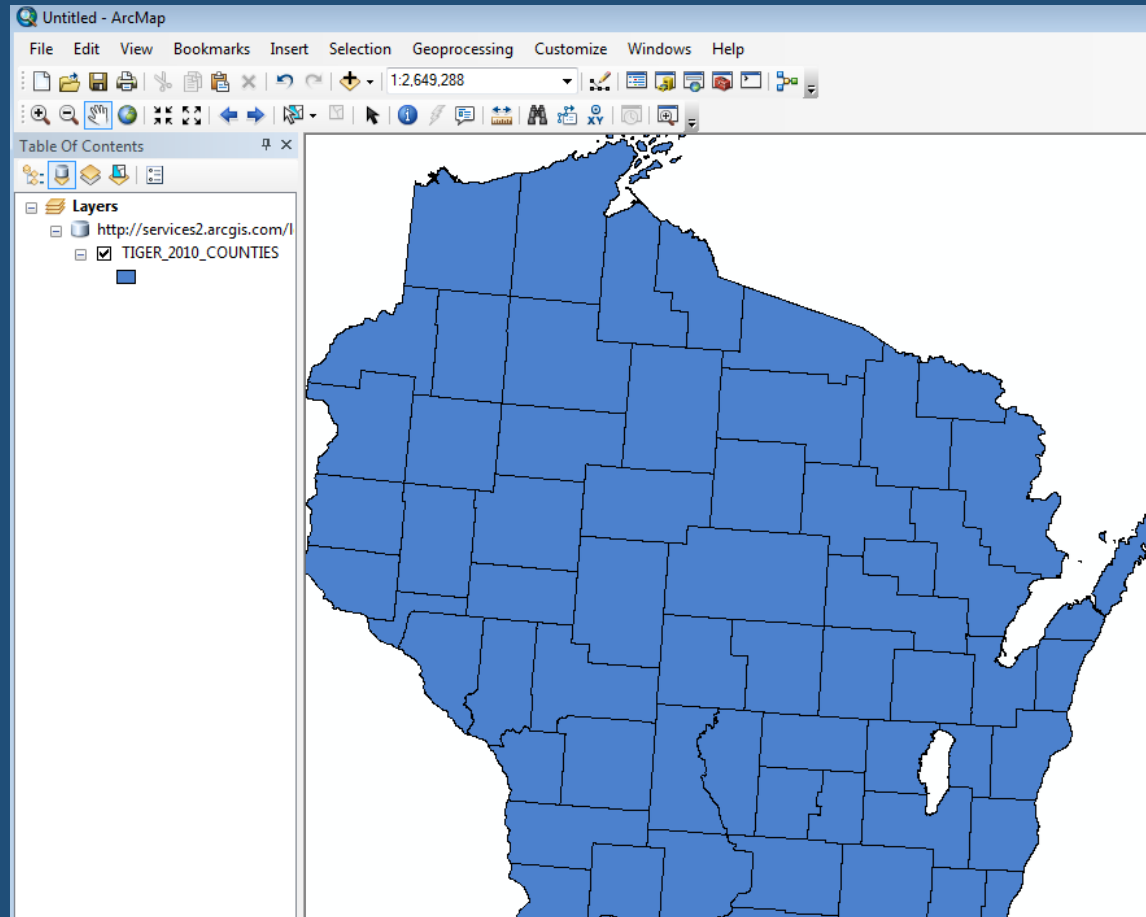
- TIGER (Topologically Integrated Geographic Encoding and Referencing) products:

vector files of features such as roads, railroads, hydrography, statistical boundaries (such as census tracts), government boundaries (such as counties), and administrative boundaries (such as school districts).

- These files are very helpful for creating thematic maps.
- GeoIDs in TIGER files can be used to link to the Census Bureau's demographic data found in American Factfinder



TIGER Shapefiles



Shapefile of the counties of Wisconsin



TIGERweb

<https://tigerweb.geo.census.gov/>

The screenshot displays the TIGERweb interface. At the top, there are navigation tabs for 'Layers', 'Legend', and 'Task Results'. The main header includes the 'United States Census Bureau' logo and the text 'TIGERweb Geography Division'. A toolbar on the right contains icons for home, search, and help. The left sidebar features a 'Select Vintage' dropdown menu currently set to 'Current'. Below this is a list of map layers with checkboxes, including 'Labels', 'Transportation (Roads and Railroads)', 'PUMAs, UGAs, and ZCTAs', 'Tribal Census Tracts and Block Groups', 'Census Tracts and Blocks', 'Military and Other Special Land Use Areas', 'School Districts' (checked), 'Places and County Subdivisions', 'American Indian, Alaska Native, and Native Hawaiian Areas', 'Legislative Areas', 'Census Regions and Divisions', 'Urban Areas', and 'Metropolitan and Micropolitan Statistical Areas'. The main map area shows a map of Texas with purple outlines representing school district boundaries. Labels for school districts include 'Coupland Independent School District', 'Pflugerville Independent School District', 'Elgin Independent School District', 'Manor Independent School District', 'Del Valle Independent School District', 'Austin Independent School District', 'Ranes Independent School District', 'Lake Travis Independent School District', and 'Anderson Independent School District'. The word 'TEXAS' is prominently displayed in the center. A 'Landmass' button is located on the right side of the map. At the bottom left, a scale bar indicates a zoom of 11, with a scale of 1:288,895 and distances of 6km and 4mi.

American FactFinder by U.S. Census

<https://factfinder.census.gov>

- Find demographic, economic, and social characteristics of United States
- Data from various Census sources:
 - Decennial Census
 - American Community Survey
 - Puerto Rico Community Survey
 - Economic Census
 - Population Estimates Program
 - Annual Economic Surveys
- Has Geoids to easily join with spatial boundary files



Download Center - A step-by-step guide to downloading data

- 1 Start 2 Dataset 3 **Geographies** 4 Search Results

Select geographies to add to Your Selections. Click **Next**.

The download center allows you to select from groups of geographies, such as all counties in a state. To select from all available geographies, use [Advanced Search](#).

Select a geographic type:
..... County - 050

Select a state:
Wisconsin

Select one or more geographic areas and click **Add to Your Selections**:
All Counties within Wisconsin

ADD TO YOUR SELECTIONS

Your Selections

Search using...

Dataset:
2010 ACS 5-year estimates

County:
All Counties within Wisconsin

Tables matching your selections: 909

PREVIOUS NEXT CANCEL

GEO.id	GEO.id2	GEO.display-label	HC01_EST_VC	HC01_MOE_VC01	HC02_EST	HC02_MOE_VC	HC03_EST
Id	Id2	Geography	Total; Estim	Total; Margin of Er	Male; Esti	Male; Margin c	Female; E
0500000US	55001	Adams County, Wisconsin	1229	49	683	38	546
0500000US	55003	Ashland County, Wisconsin	1646	78	846	52	800
0500000US	55005	Barron County, Wisconsin	3545	86	1876	51	1669
0500000US	55007	Bayfield County, Wisconsin	826	43	478	20	348
0500000US	55009	Brown County, Wisconsin	24820	170	12172	138	12648
0500000US	55011	Buffalo County, Wisconsin	997	18	528	8	469
0500000US	55013	Burnett County, Wisconsin	821	52	404	38	417

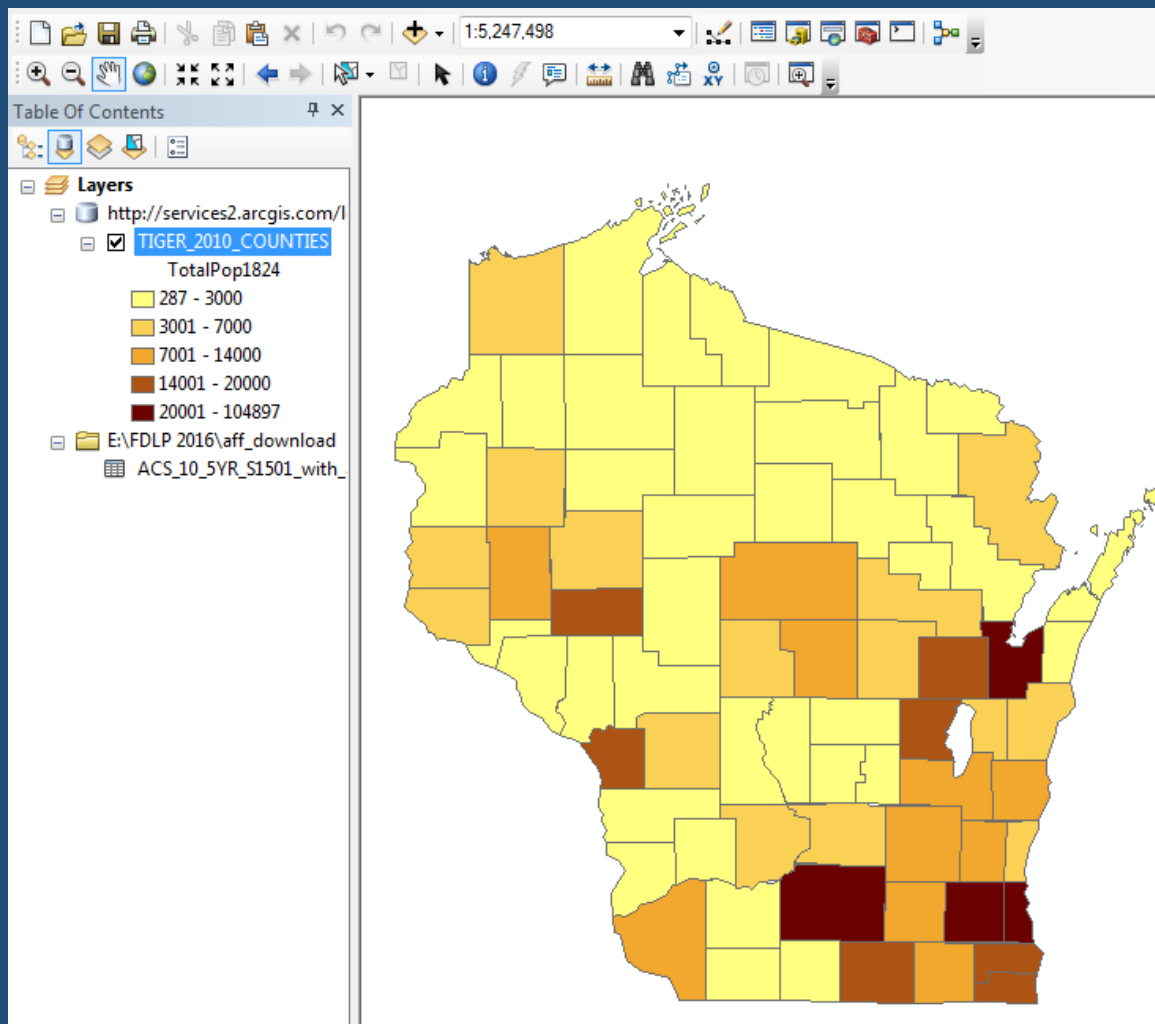
Geographic Identifiers (GEOIDs)

<https://www.census.gov/geo/reference/geoidentifiers.html>

- **Federal Information Processing Series (FIPS) codes**
“States, counties, core based statistical areas, places, county subdivisions, consolidated cities and all types of American Indian, Alaska Native, and Native Hawaiian (AIANNH) areas”
- **Geographic Names Information System (GNIS) codes**
“Most types of physical and cultural geographic features, both current and historical. Does not include road and highway features.”



Joined TIGER & AFF Data



Population of 18-24 year-olds in Wisconsin in 2010.

Inputting Tabular Data

- Data with a spatial component can be input into a GIS!
- Easier if has coordinates information or geographic identifiers (GEOIDs)
- May need to clean up the data – even from AFF.
 - Make sure only one column header.
 - Remove spaces between words in column header.
 - Remove special characters.
 - Check for missing data.
 - See “Importing Data from Excel Spreadsheets” for more info:
<http://www.esri.com/news/arcuser/0312/files/excelmagic.pdf>



Geocoding

- Geocoding is converting addresses and other geographic data to geographic coordinates, such as latitude and longitude.

300 Army Navy Drive
Arlington, Virginia 22202-2891



38.863785, -77.052683



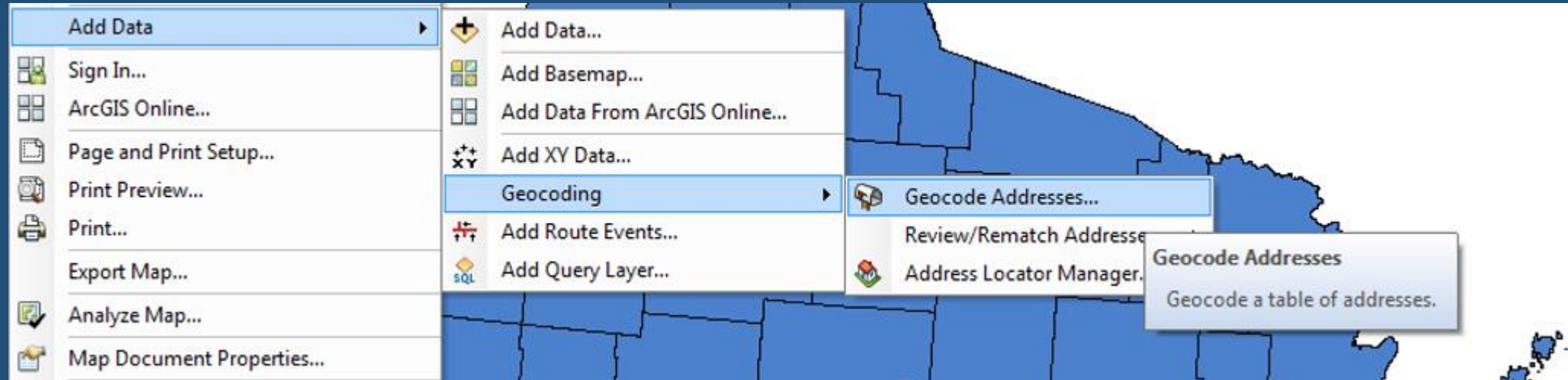
Geocoders

- ArcGIS Online Geocoding Service

- Census Geocoder

<http://geocoding.geo.census.gov/geocoder/>

- Texas A&M's Geocoder List <https://geoservices.tamu.edu/Services/Geocode/OtherGeocoders/>



Data.Gov

<https://www.data.gov/>

- A repository of government data with >185,000 as of Sept. 2016
- Filter options include location, organization, topic, tags, file formats, & more.

Dataset Type Clear All

A-Z 1-9

non-geospatial (10154)

geospatial (3047)

DATA.GOV DATA TOPICS IMPACT APPLICATIONS DEVELOPERS CONTACT

DATA CATALOG / Datasets Organizations ?

Search datasets... Order by: Select an option

Datasets ordered by Popular

Filter by location Clear

Enter location...

Map tiles & Data by [OpenStreetMap](#), under [CC BY SA](#)

Topics Clear All

A-Z 1-9

Local Government (14494)

186,459 datasets found

National Stock Number Extract 1405 recent views Federal

General Services Administration – National Stock Number extract includes the current listing of National Stock Numbers (NSNs), NSN item name and descriptions, and current selling price of each... Excel

Consumer Complaint Database 1274 recent views Federal

Consumer Financial Protection Bureau – These are complaints we've received about financial products and services. CSV CSV JSON XML API

Demographic Statistics By Zip Code 1017 recent views City

City of New York – Demographic statistics broken down by zip code CSV RDF JSON XML

Data.Gov File Formats

Formats		Clear All
A-Z	1-9	
HTML (76046)		
XML (43663)		
PDF (36501)		
originator data format (26105)		
ZIP (17791)		
TIFF (13662)		
CSV (13212)		
MrSID (12884)		
WMS (11716)		
JSON (11410)		
XYZ (7957)		

RDF (7935)
WCS (5628)
Esri REST (5591)
JPG (5570)
TXT (4832)
NetCDF (4419)
application/octet-s... (3740)
iwxmm-us (3560)
JPEG (3223)
Excel (3168)
application/vnd.lot... (3109)
KML (2758)
WFS (2710)

gml (2402)
tif (1907)
hdf (1749)
esri shapefile (1665)
application/vnd.goo... (1012)
fema-dcs-hydrology (960)
opendap (954)
application/vnd.goo... (951)
fema-dcs-hydraulics (919)
arce (911)
TAR (841)
fema-dcs-terrain (804)
geotiff (800)

XLS (738)
ascii (679)
api (509)
xlsx (407)
fema-dcs-survey (336)
application/unknown (317)
shapefile (314)
web page (302)
export (297)
geojson (292)
ngdc created iso me... (256)
erdas compressed wa... (247)



Geoplatform.gov

<https://www.geoplatform.gov/>

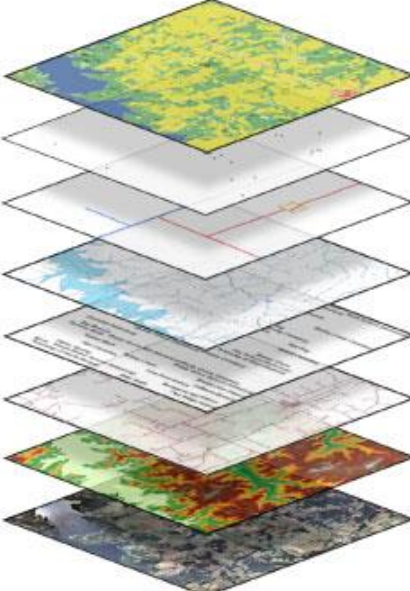
- Data maintained by Data.gov, but data coordinated by Federal Geographic Data Committee.

The screenshot displays the GeoPlatform Map Viewer interface. At the top, it says "GeoPlatform Map Viewer" with "Help" and "Sign In" links. The main area is divided into three panels:


- Browse Layers:** Contains a "Search Layers" section with a search box, a "Sort Layers" section with dropdowns for "Name" and "Ascending", and two lists of layer sources and types with scrollable arrows.
- Available Layers:** Shows "17472 results" and "10 per page". It lists several layers, including "1 Meter", "1 arc-second", and "1-Month Standardized Precipitation Index", each with a brief description and a red star icon.
- Preview:** Features a map of the United States and Mexico. Below the map, there is a message: "Please be patient, some layers may take several seconds to appear." and a section for "Previewed Layers" with an "Apply" button.

National Map by USGS

<http://nationalmap.gov/>

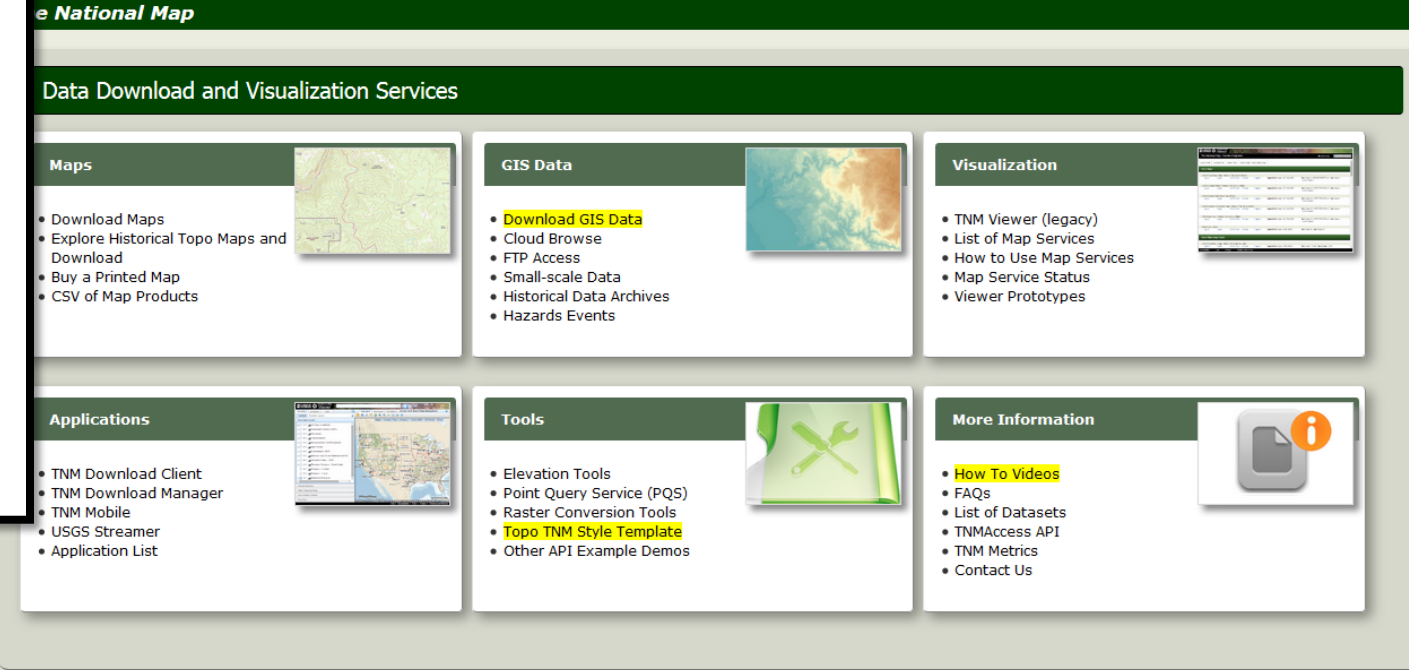


- Land Cover
- Structures
- Boundaries
- Hydrography
- Geographic Names
- Transportation
- Elevation
- Orthoimagery



The National Map

TNM Datasets



The National Map

Data Download and Visualization Services

Maps	GIS Data	Visualization
<ul style="list-style-type: none">Download MapsExplore Historical Topo Maps and DownloadBuy a Printed MapCSV of Map Products	<ul style="list-style-type: none">Download GIS DataCloud BrowseFTP AccessSmall-scale DataHistorical Data ArchivesHazards Events	<ul style="list-style-type: none">TNM Viewer (legacy)List of Map ServicesHow to Use Map ServicesMap Service StatusViewer Prototypes
Applications	Tools	More Information
<ul style="list-style-type: none">TNM Download ClientTNM Download ManagerTNM MobileUSGS StreamerApplication List	<ul style="list-style-type: none">Elevation ToolsPoint Query Service (PQS)Raster Conversion ToolsTopo TNM Style TemplateOther API Example Demos	<ul style="list-style-type: none">How To VideosFAQsList of DatasetsTNMAccess APITNM MetricsContact Us

The National Map (TNM) Download by USGS

<https://viewer.nationalmap.gov/basic/>

View a variety of datasets in the interactive map viewer & easily download the data for import into a more robust GIS for further analysis.

Data includes elevation data from the new 3DEP incorporating NED (National Elevation Dataset).

The screenshot displays the USGS TNM Download (V1.0) web application. The interface is divided into several sections:

- Header:** USGS logo on the left, "The National Map" logo on the right, and navigation links for "How to", "Start Over", "Custom Views", "Share Link", and "Contact Us".
- Left Panel (Navigation):**
 - Datasets:** Includes a "Find Products" button and a link to "Advanced Search Options".
 - Map:** Includes checkboxes for "US Topo" and "Historical Topographic Maps".
 - Data:** Lists various datasets with checkboxes, including "Boundaries - National Boundary Dataset", "Elevation Products (3DEP)", "Elevation Source Data (3DEP)", "Hydrography (NHD) and Watersheds (WBD)", "Imagery - 1 foot (HRO)", "Imagery - 1 meter (NAIP)", "Map Indices", "Names - Geographic Names Information System (GNIS)", "National Land Cover Database (NLCD)", "Small-scale Datasets", "Structures - National Structures Dataset", "Topo Map Data and Topo Stylesheet", "Transportation", and "Woodland Tint".
- Main Map Area:** A map of the United States with various search and filter options at the top:
 - Use Map:** Radio buttons for "Box/Point", "Current Extent" (selected), "Coordinates", "Located Point", and "Polygon".
 - Map Indices:** Radio buttons for "1 Degree", "15 Minute", "7.5 Minute", and "All".
 - Search:** A search bar for "Address/Place" with "Go" and "Clear" buttons.
 - Map Controls:** Includes zoom in (+), zoom out (-), home, and search icons.

3D Elevation Program (3DEP) by USGS

3DEP View (V1.0) How to Start Over Custom Views Share Link

Datasets Products

Advanced Search Options Find Products

Keyword(s) e.g. Maps Date Range

Product Search Filter

- All Subcategories
- 1 arc-second DEM [Show Availability](#)
- 1 meter DEM [Show Availability](#)
- 1/3 arc-second DEM [Show Availability](#)
- 1/9 arc-second DEM [Show Availability](#)
- 2 arc-second DEM - Alaska [Show Availability](#)
- 5 meter DEM (Alaska only) [Show Availability](#)
- Contours (1:24,000-scale) [Show Preview](#)

Availability legend

Elevation Source Data (3DEP)

Product Search Filter

- All Subcategories
- DEM Source (OPR) [Show Availability](#)
- Ifsar Digital Surface Model (DSM) [Show Availability](#)

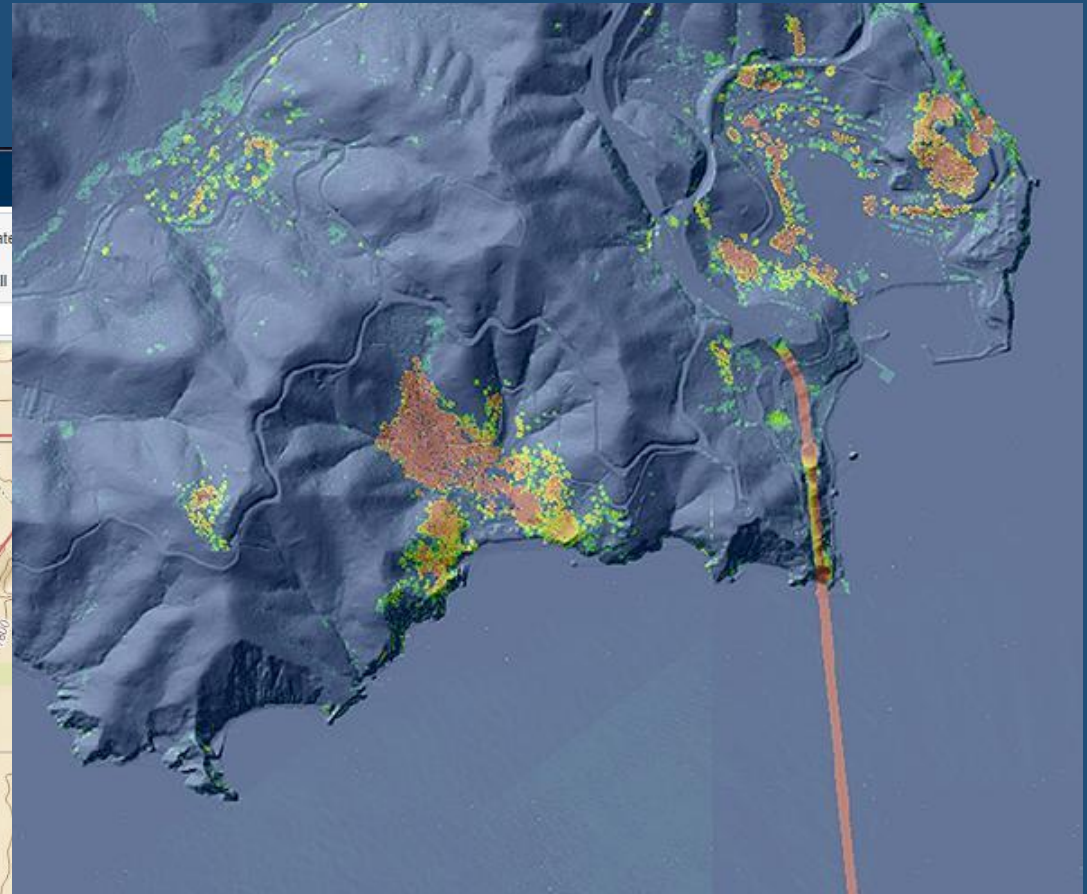


Image from [3DEP Transition webpage](#).



EarthExplorer by USGS

<http://earthexplorer.usgs.gov/>

Interactive map from USGS with an enormous selection of remote sensing data including:

- DEMs (Digital Elevation Models)
- NAIP (National Agriculture Imagery Program)
- Landsat
- & more!

The screenshot displays the EarthExplorer web application. At the top, the USGS logo and tagline "science for a changing world" are visible. The page title is "EarthExplorer" and it includes a "Page Expires In 1:59:15" indicator. Navigation links for "Home", "New System Messages", "Login", "Register", "RSS", "Feedback", and "Help" are present. The main content area is divided into "Search Criteria", "Data Sets", "Additional Criteria", and "Results" tabs. The "Data Sets" tab is active, showing a section titled "2. Select Your Data Set(s)" with instructions to check boxes for desired data sets. A "Data Set Search" input field is provided. A list of data categories is shown, including Aerial Imagery, AVHRR, CEOS Legacy, Commercial Satellites, Declassified Data, Digital Elevation, Digital Line Graphs (with sub-options for DLG 1:100k and DLG Large Scale), Digital Maps, EO-1, Global Fiducials, and Global Land Survey. To the right, a "Search Criteria Summary" section shows a map of the Northeastern United States with a red location pin over Pennsylvania. The map includes state names and coordinates (34° 24' 57" N, 070° 10' 50" W). A "Clear Criteria" button is located in the top right of the map area.

Including declassified reconnaissance images from Corona!

Earthdata by NASA

<https://earthdata.nasa.gov/>

The screenshot displays the Earthdata Search interface. At the top, the heading "Discover Earth Science Data" is followed by the instruction "Search NASA Earth Science data by keyword and filter by **time** or **space**." Below this is a search input field with the placeholder text "Type any topic or collection name". To the right of the search field are two filter dropdown menus: "Temporal" and "Spatial". The "Temporal" dropdown is open, showing a "Start" field with the format "YYYY-MM-DD HH" and a "Recurring?" checkbox. The "Spatial" dropdown is also open, showing options for "Polygon", "Rectangle", "Point", and "File (KML, KMZ, ESRI, ...)". Below the search field are two buttons: "Browse All Data" and "See featured collections". A "Welcome to Earthdata Search" dialog box is overlaid on the right side of the interface, containing the text "Enter your search terms or click **Next** to take an introductory tour." and two buttons: "End Tour" and "Next".



Earthdata Search

The screenshot displays the Earthdata Search interface. At the top, there is a search bar with the text "Type any topic or collection name" and filters for "Temporal", "Spatial", and "Clear Filters". A "Feedback" link is located in the top right corner.

Browse Collections

Agriculture	1893
Atmosphere	7630
Atmosphere-Biosphere Interactions	1
Biological Classification	4214
Biomass	1
Biosphere	7008
Climate Indicators	545
Cryosphere	3038
Glaciers/Ice Sheets	1
Human Dimensions	3855
Hydrosphere	105
Land Surface	5388
Models	1
Oceans	10553
Paleoclimate	1577
Solid Earth	3143
Spectral Engineering	2
Spectral/Engineering	2479

32284 Matching Collections

Add collections to your project to compare and retrieve their data. [Learn More](#)

Search Time: 2.6s [Report a metadata problem](#)

Recent and Featured

- MODIS/Aqua Near Real Time (NRT) Aerosol 5-Min L2 Swath 10km**
MYD04_L2 v6NRT - NASA/GSFC/EOS/ESDIS/LANCEMODIS
2015-12-06 ongoing | 1549 Granules
- MODIS/Aqua Near Real Time (NRT) Snow Cover 5-Min L2 Swath 500m, Version 006**
MYD10_L2 v6NRT - NASA/GSFC/EOS/ESDIS/LANCEMODIS
2002-05-04 ongoing | 1576 Granules

More Collections

- 15 Minute Stream Flow Data: USGS (FIFE)**
doi:10.3334/ORNLDAAC/1 v1 - ORNL_DAAC
1984-12-25 to 1988-03-04 | 39 Granules
- 30 Minute Rainfall Data (FIFE)**
doi:10.3334/ORNLDAAC/2 v1 - ORNL_DAAC
1987-05-29 to 1987-10-26 | 117 Granules
- A Compilation of Global Soil Microbial Biomass Carbon, Nitrogen, and Phosphorus Data**

The map on the right shows a satellite view of the Middle East and surrounding regions, with various countries labeled. A red grid is overlaid on the map, and a vertical scale bar is visible on the left side of the map area.

Geospatial Data Gateway by USDA

<https://gdg.sc.egov.usda.gov/>

GeoSpatialDataGateway

Home Status Maps Help FAQ Contact Us A^A - A^A + AA =

WHAT

Here are the available map layers for your selected area of interest.

Cadastral

- Public Land Survey System (PLSS) Townships, 1 map 0.09 MB [i](#) [+](#)
- Public Land Survey System (PLSS) Sections, 1 map 1.171 MB [i](#) [+](#)

Census

- TIGER 2015 Census Blocks, 1 map 2.737 MB [i](#) [+](#)
- TIGER 2015 Census Block Groups, 1 map 0.123 MB [i](#) [+](#)
- TIGER 2015 Census Tracts, 1 map 0.097 MB [i](#) [+](#)
- TIGER 2015 State and County Demographic Statistics by State, 1 map 0.616 MB [i](#) [+](#)
- TIGER 2009-2013 County Social, Econ, Housing Stats by State, 1 map 2.118 MB [i](#) [+](#)

Climate Precipitation

- 1961-1990 Monthly Average Precipitation by State, 12 maps 2.042 MB [i](#) [+](#)
- 1961-1990 Annual Average Precipitation by State, 1 map 0.159 MB [i](#) [+](#)
- 1971-2000 Monthly Average Precipitation by State, 12 maps 7.191 MB [i](#) [+](#)
- 1971-2000 Annual Average Precipitation by State, 1 map 0.773 MB [i](#) [+](#)
- 1981-2010 Monthly Average Precipitation by State, 12 maps 3.331 MB [i](#) [+](#)
- 1981-2010 Annual Average Precipitation by State, 1 map 1.171 MB [i](#) [+](#)

Climate PrismRaster

YOUR ORDER

Order Area (Where): Adams County, Wisconsin

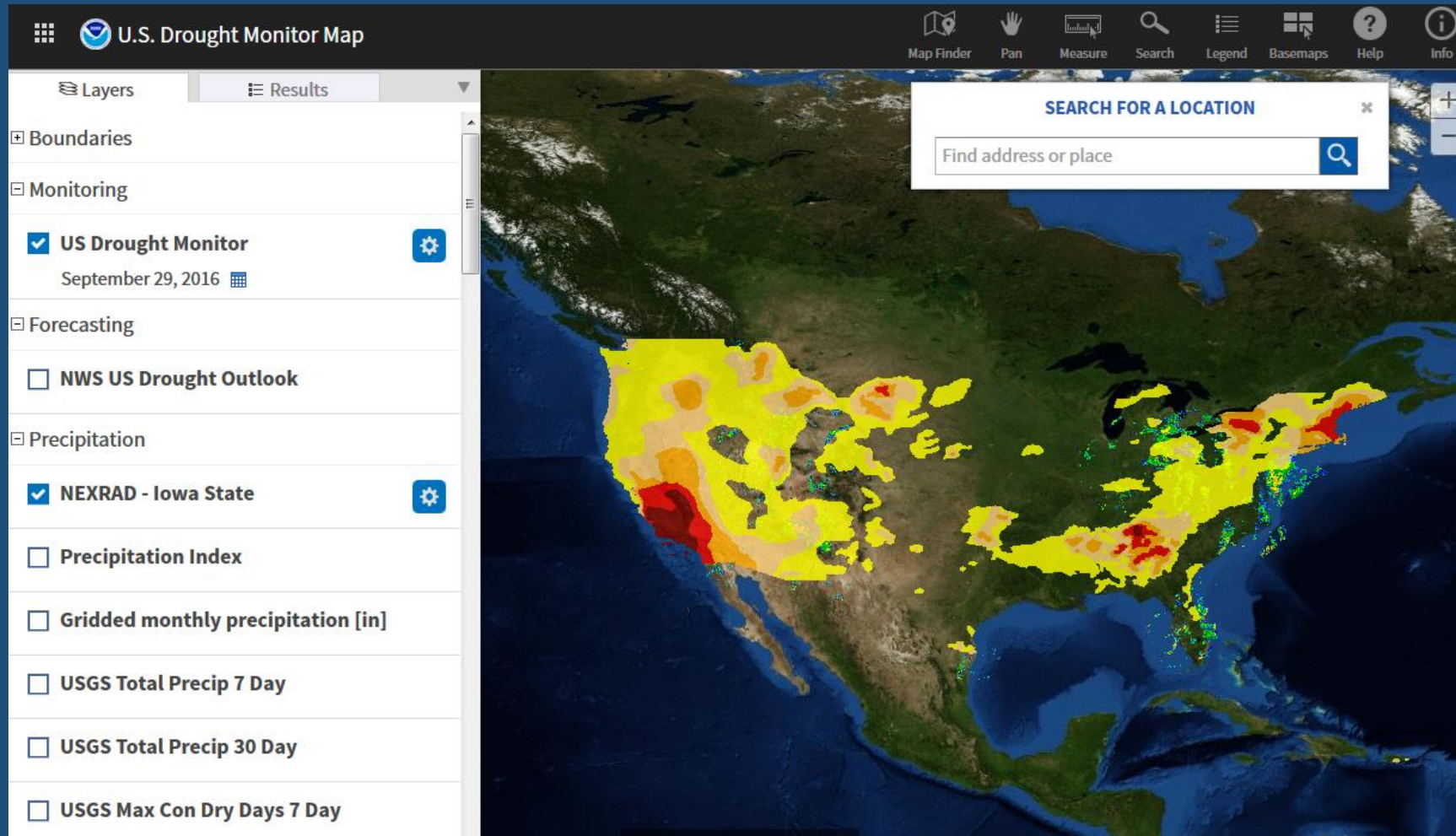
Order Map Layers (What):

Order Format (How): None
Order Projection (How): None
Order Inclusion (How): None
Order Delivery Method (How): None

Order Recipient (Who):

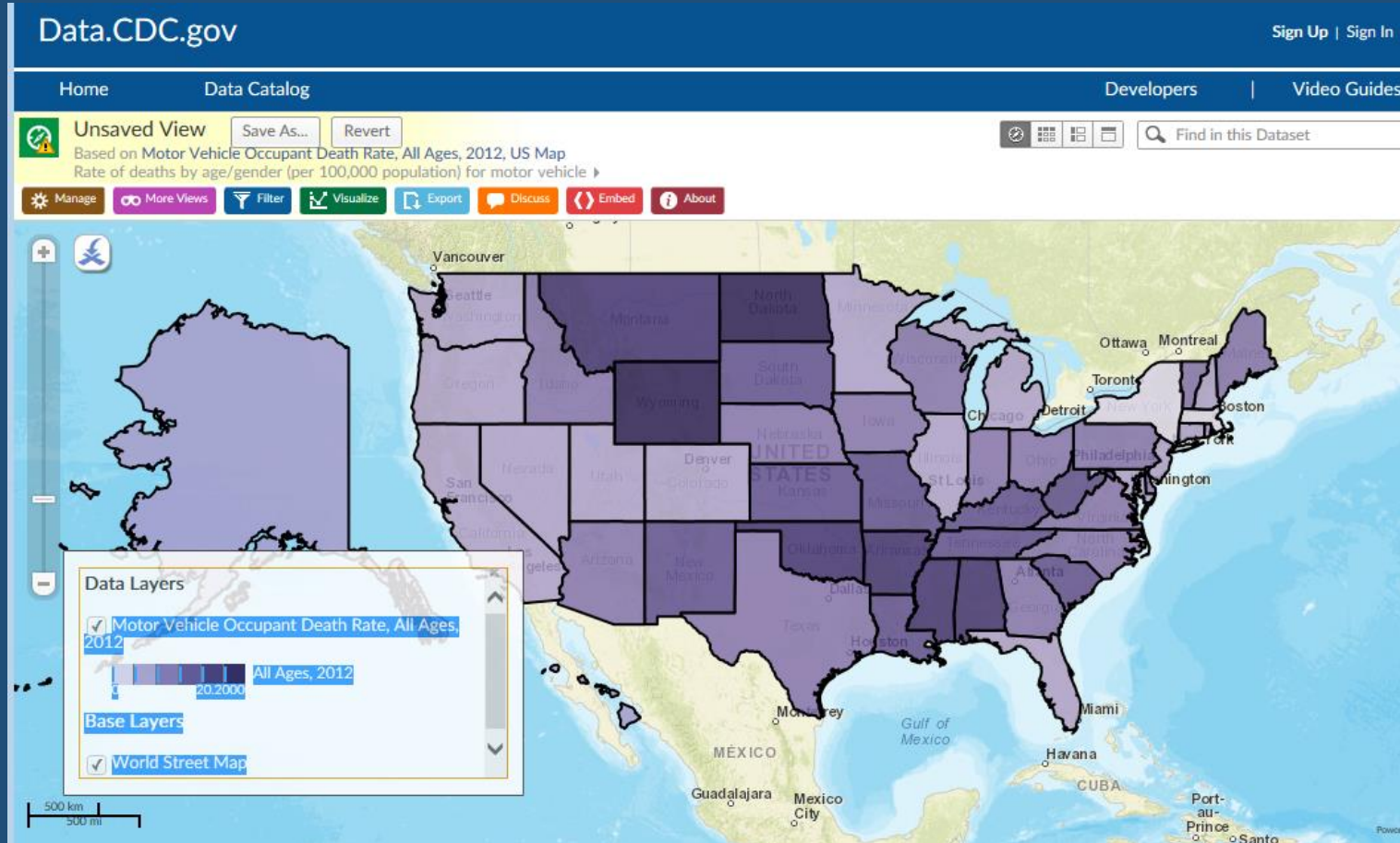
NCEI Map Viewer by NOAA

<https://gis.ncdc.noaa.gov/maps/ncei/>



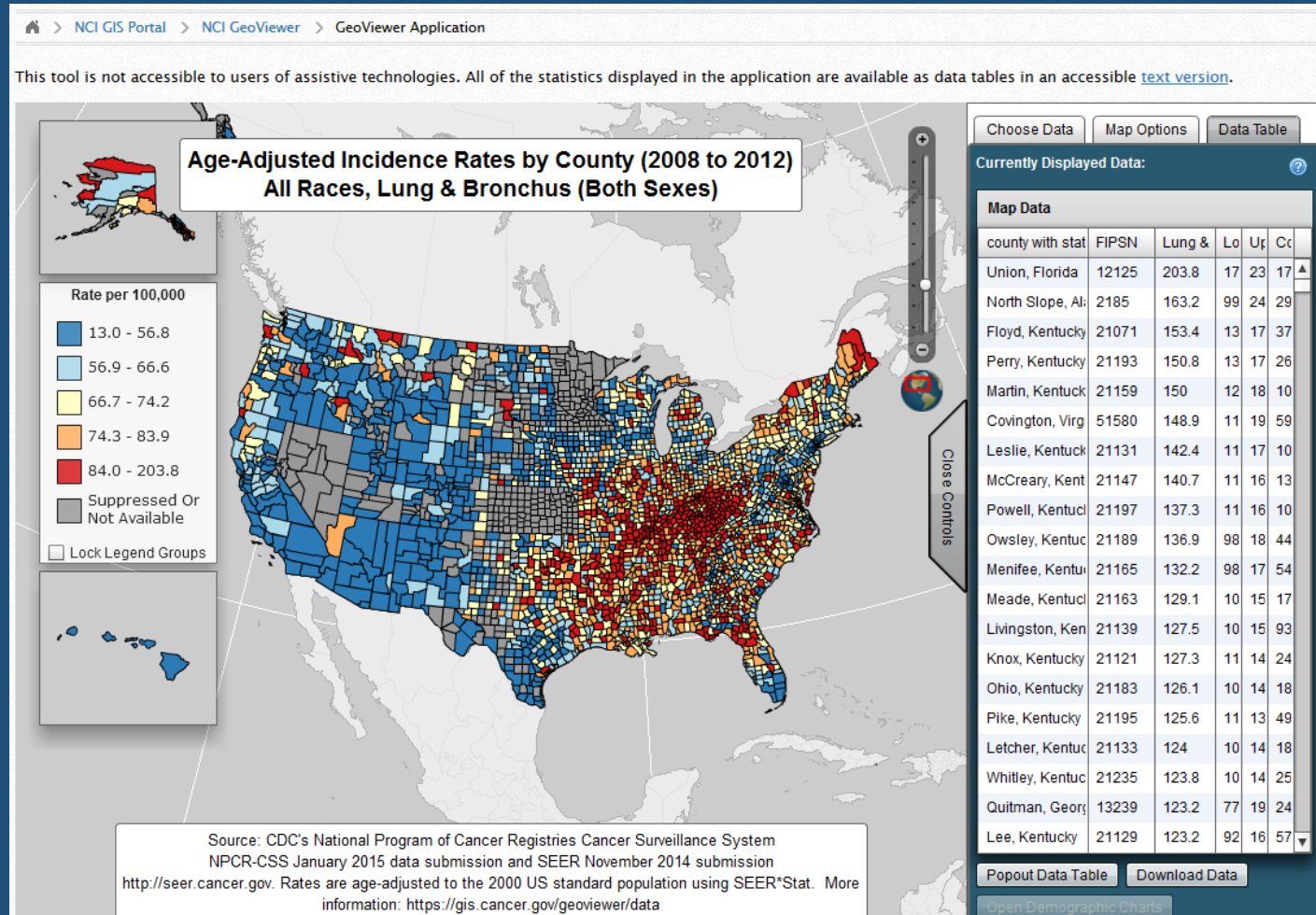
Data.CDC.Gov by Centers for Disease Control & Prevention

<https://data.cdc.gov/>



NCI Geoviewer by National Cancer Institute

<https://gis.cancer.gov/geoviewer/app/>



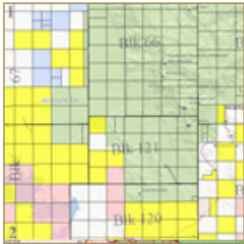
Example State & Local Government Geospatial Data Sources



Texas General Land Office

<http://www.glo.texas.gov/land/land-management/gis/index.html>

GIS MAP VIEWERS



GISWEB Viewer

The GISWEB, an interactive mapping application, provides access to vast collections of land and energy related data at the Texas General Land Office. The GISWEB display upland and submerged Original Texas Land Survey boundaries, Permanent School Fund land, upland and coastal leases, oil and gas well locations, and current imagery.

[Launch GLO - GISWEB Viewer](#)



Texas Beach Watch

The goal of the Texas Beach Watch program is to provide the public with information about water quality at selected recreational beaches along the Texas coast.

[Launch Texas Beach Watch](#)



Texas Coasts

Find Your Perfect Beach. From fishing and boat ramps, to camping and BBQ—the Texas Coast provides a wealth of resources to all visitors. The GLO is proud to offer this free resource to help you explore all that our shores have to offer.

[Launch Texas Coasts](#)



Texas Parks & Wildlife

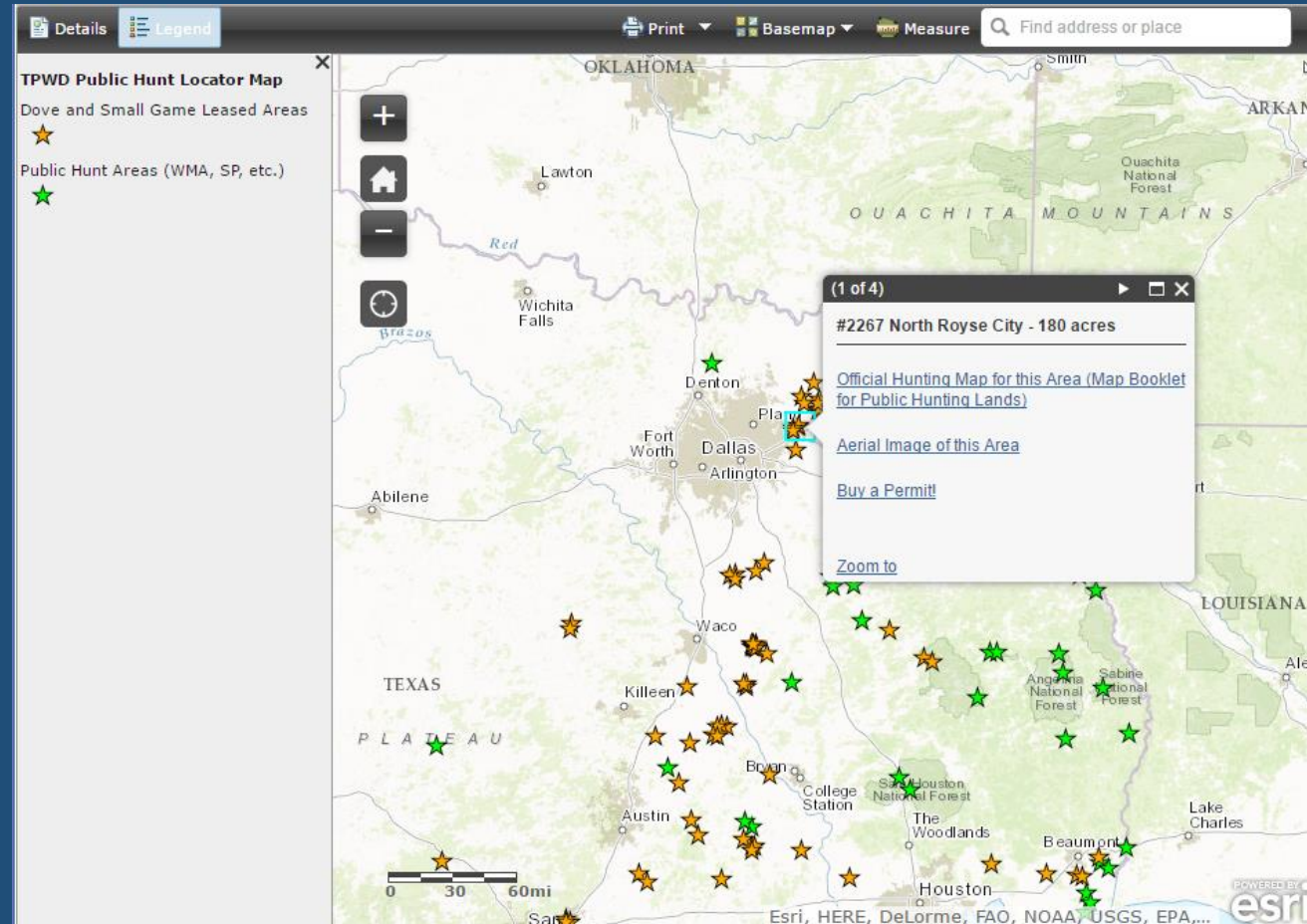
<http://tpwd.texas.gov/gis/data/downloads>

Boundaries

- [Counties](#)
- [State Plane Zones](#)
- [Texas-Louisiana Boundary Line - 1976](#)
- [Texas-Louisiana Boundary Points - 1976](#)
- [Quads - 24K](#)
- [City Points](#)
- [Wildlife Management Areas](#)
- [State Park Boundaries](#)

Ecological Mapping Systems of Texas

- [Omernik Ecoregions Level III Map](#)
- [Texas Ecological Systems Data by Ecoregion](#)
- [Texas Ecological Mapping Systems Statewide \(Raster\)](#)
- [Supporting Documents](#)



TNRIS: Texas Natural Resources Information System

<https://tnris.org/>

Data Catalog



Browse through the TNRIS datasets and map products to find out what is hosted online or available for order.

[Browse the Catalog](#)

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The RDC offers a variety of additional products, support and services from our in-house staff. We provide hands-on assistance and expertise.

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Applying design, communication, and technology to provide custom data solutions and cartographic products.

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TNRIS is a division of the Texas Water Development Board

City of Austin

ftp://ftp.ci.austin.tx.us/GIS-Data/Regional/coa_gis.html & <https://data.austintexas.gov/>

Description	Metadata	Feature Type	Updated
ABIA Planimetrics	metadata	Line	01/25/2013
Address Points	metadata	Point	Monthly
Aerial Photo Index Grid 2003 and 2006	metadata	Polygon	08/27/2007
Austin 200' City Grid	metadata	Polygon	06/11/1999
Austin Water Utility Service Area	metadata	Polygon	07/27/2015
Building Footprints 2003	metadata	Polygon	09/24/2007
Building Footprints 2013	metadata	Polygon	7/02/2014
Combining and Overlay Zoning Districts	metadata	Line/Polygon	11/18/2013
Community Registries	metadata	Polygon	Monthly
Core Transit Corridors	metadata	Line	09/06/2007
County Boundary	metadata	Polygon	12/15/1999
Creek Lines	metadata	Line	Monthly
Decks 2013	metadata	Polygon	7/02/2014
Edwards Aquifer Contributing Zones	metadata	Polygon	07/13/2015
Electric Service Area	metadata	Polygon	03/22/2012
Future Land Use Map	metadata	Polygon	Monthly
GPS Monuments	metadata	Point	12/05/2008
Imagine Austin Centers	metadata	Polygon	Monthly



Esri + Government Data



Federal Data in ArcGIS Online

<https://www.arcgis.com/home>

The screenshot shows the ArcGIS Online interface with a search for 'owner:USGS_TNM_Services'. The search results are arranged by relevance and show 10 results. The results are displayed in a grid of cards, each representing a map service. Each card includes a thumbnail image, the title of the service, a brief description, the provider (USGS_TNM_Services), the date of the last update, and links for 'Details' and 'Add'.

Service Title	Description	Provider	Last Updated	Details	Add
USGS - National Hydrography Dataset (NHD) 1		USGS_TNM_Services	12/16/2015	Details	Add
USGS - Governmental Unit Boundaries WMS	Governmental Unit Boundaries Data from The National Map	USGS_TNM_Services	4/3/2012	Details	Add
USGS Transportation from The National Map	Transportation data from The National Map	USGS_TNM_Services	6/19/2014	Details	Add
USGS - Geographic Names Information System		USGS_TNM_Services	1/11/2012	Details	Add
USGS - Large Scale Shaded Relief WMS from T		USGS_TNM_Services	1/11/2012	Details	Add
USGS - National Landcover Database (NLCD) 2		USGS_TNM_Services	12/2/2011	Details	Add
USGS Orthoimagery from The National Map		USGS_TNM_Services	8/28/2014	Details	Add
USGS Structures from The National Map	Structures data from The National Map	USGS_TNM_Services	6/18/2014	Details	Add
USGS Topo Large Base Map from The National					
USGS Elevation Contours					



Story Maps

<http://storymaps.arcgis.com/en/gallery>

marinecadastr...     

MAPPING

Human Uses of the Ocean

The ocean is a busy place, and it is getting busier every day. Understanding the many ways we use the ocean is essential to making sound and effective coastal management decisions.

The participatory mapping process developed by the National Oceanic and Atmospheric Administration (NOAA) fills critical data needs for marine planning by engaging ocean use communities in documenting their expert knowledge about ocean use activities.



Mapping Human Uses of the Ocean by NOAA




Citizen Science



Did You Feel It? by USGS

<http://earthquake.usgs.gov/data/dyfi/>

Menu

Did You Feel It?

Did You Feel It? (DYFI) collects information from people who felt an earthquake and creates maps that show what people experienced and the extent of damage.

Report it Here - Tell Us!


Find the earthquake you felt, and then tell us about it. Not in the list?

Report an Unknown Event

DYFI, Past 24 Hours

|| [M 2.2 - 4km SE of Calistoga, Califo...](#)

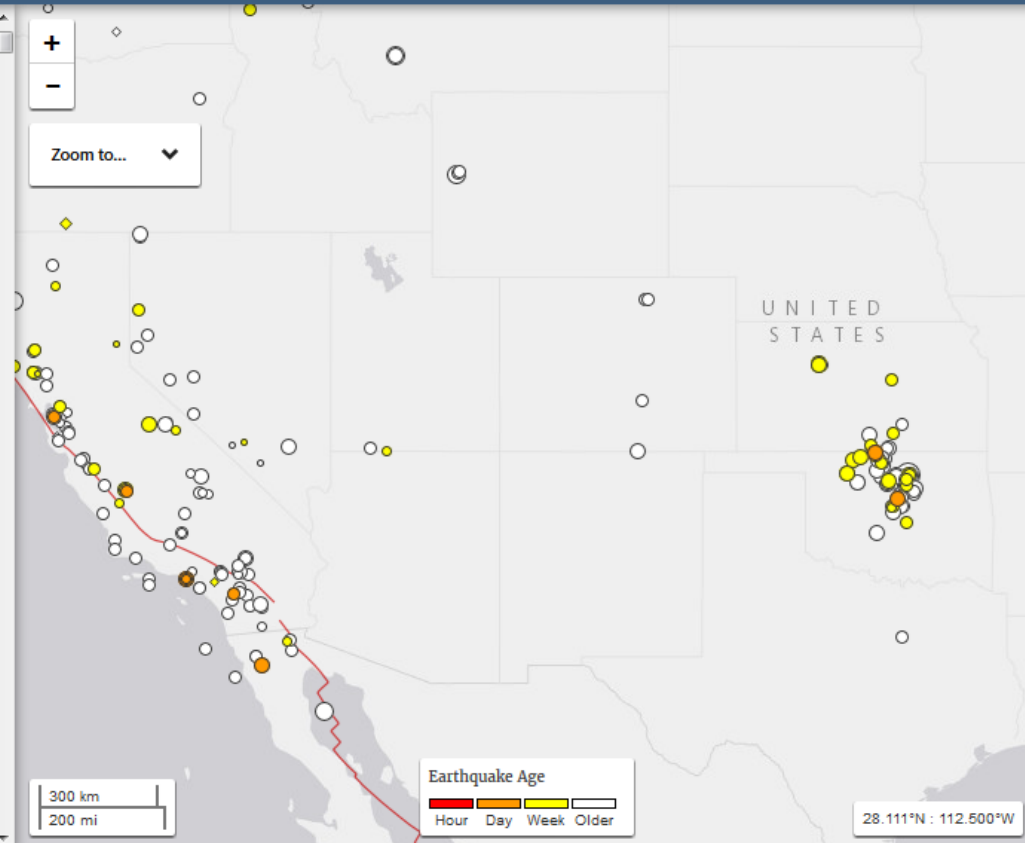
2016-09-21 15:20:31 UTC 1 respo...

☰ 🌐 ⚙️ ?

Search Results

290 of 322 earthquakes in map area.

2.5	7km ENE of Avenal, California	2016-09-21 11:41:30 (UTC)	10.0 km
3.4	8km S of Langston, Oklahoma	2016-09-21 06:18:48 (UTC)	5.0 km
2.3	10km NNW of Aguanga, CA	2016-09-21 05:45:00 (UTC)	12.3 km
1.9	3km N of Gardena, CA	2016-09-20 23:15:40 (UTC)	10.4 km
2.6	10km S of Langston, Oklahoma	2016-09-20 22:01:40 (UTC)	6.6 km
3.2	50km E of Maneadero, B.C., MX	2016-09-20 19:09:39 (UTC)	17.6 km
3.1	20km NW of Medford, Oklahoma		



The National Map Corps Mapping Challenge by USGS

The National Map Corps is enlisting help from volunteers in confirming locations of structures such as schools, hospitals, post offices, police stations, and other important public buildings.

File Edit View Favorites Tools Help

USGS

The National Map Corps

The National Map

USGS Volunteer Map Editors update points in support of The National Map and US Topo maps.

[TNMCorps Overview](#)

[TNMCorps Project Webpage](#)

[User Guide](#)

[Q&A Community](#)

[Getting Started...](#)

[Contact The National Map Corps Team](#)

Lat: 51.1424 Lng: -121.8419

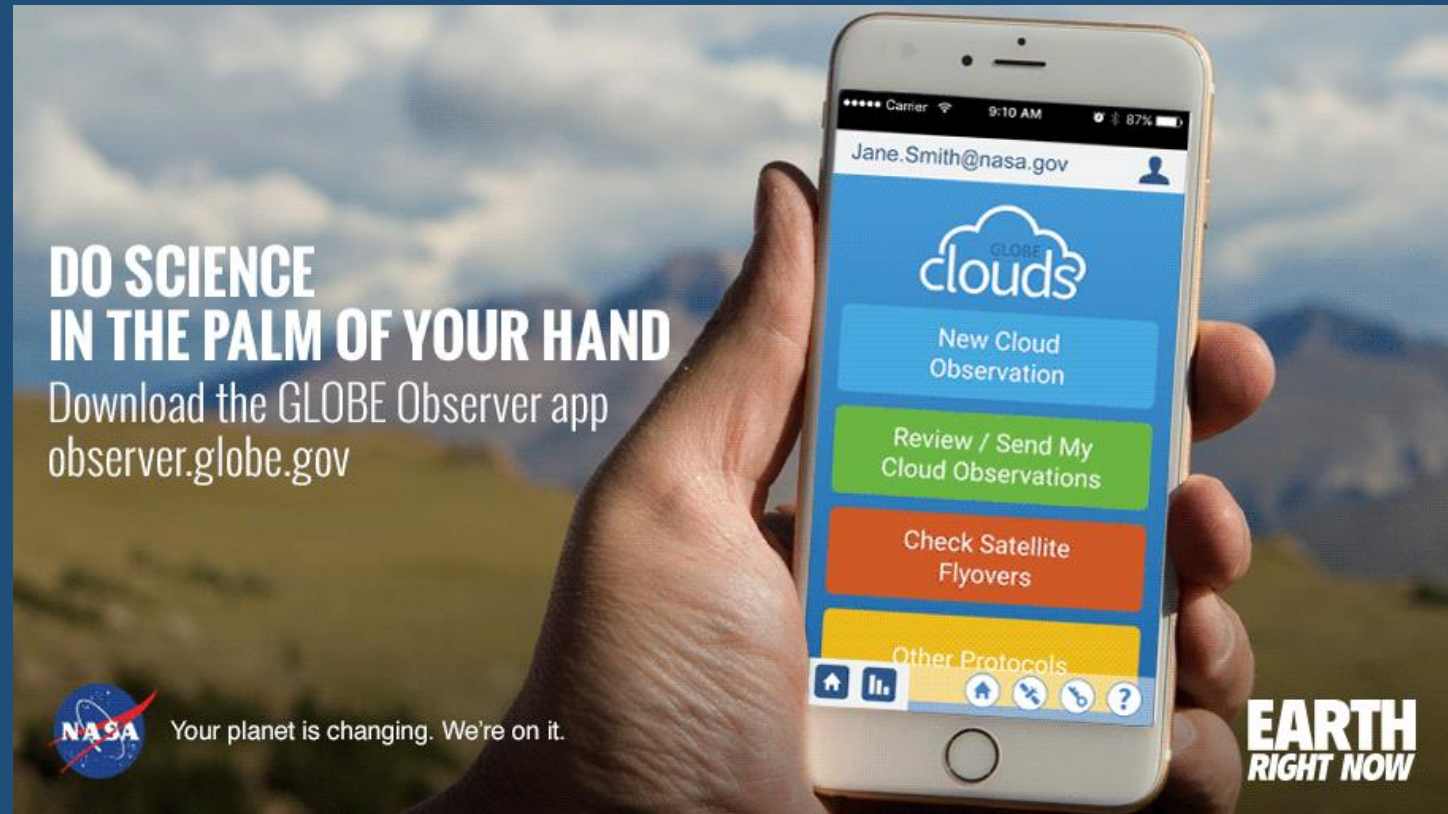
Leaflet | USGS Hybrid Tile, USGS Image Only Dynamic Map, USGS Imag

Version: 0.1.0.21776 8/25/2016 1:05:54 PM Accessibility FOIA Privacy Policies and Notices OMB 1028-0111 Expires: 1/

GLOBE Observer by NASA & NSF

<http://www.globe.gov/>

GLOBE Observer app allows people to gather cloud data and submit it. This data can be downloaded from the GLOBE website.



**DO SCIENCE
IN THE PALM OF YOUR HAND**

Download the GLOBE Observer app
observer.globe.gov

clouds

New Cloud Observation

Review / Send My Cloud Observations

Check Satellite Flyovers

Other Protocols

NASA Your planet is changing. We're on it.

**EARTH
RIGHT NOW**

Image Source: <http://www.jpl.nasa.gov/edu/news/2016/8/31/nasa-earth-science-app-wants-you/>

Additional Resources

List of additional resources & references:

<http://guides.library.txstate.edu/BeyondTIGERFiles>



Questions?



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San Marcos, TX 78666

512.245.8877

re19@txstate.edu

