

Using USGS Topographic Maps in ArcGIS Online



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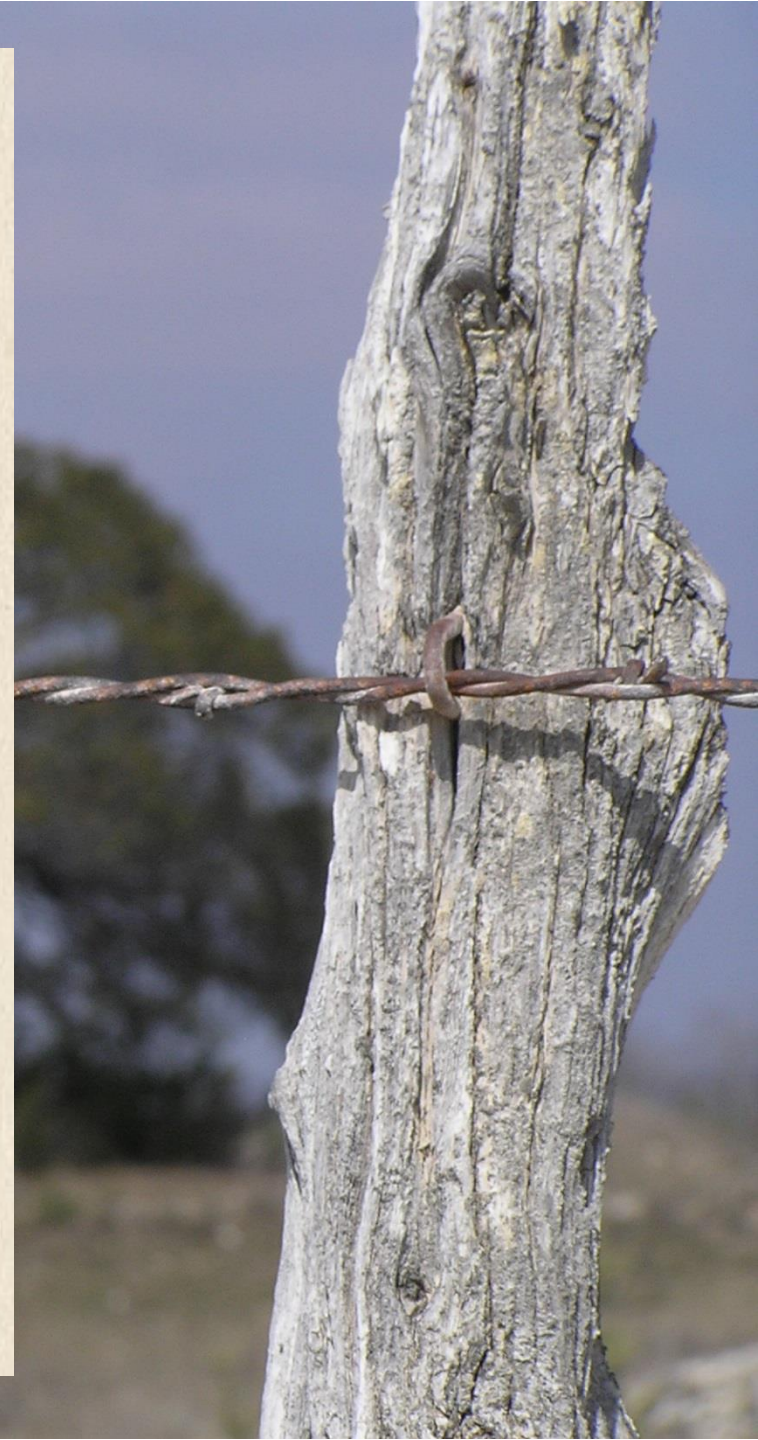
edcommunity.esri.com/blog

spatialreserves.wordpress.com



More than 175,000 historical topographic maps from the U.S. Geological Survey (USGS) are now available on ArcGIS Online. For over 130 years, the USGS has prepared these detailed maps to accurately show the complex geography of the nation. Maps cover the extent of the United States and show diverse landscapes from that of the subtropical climate of Highlands, TX, near Houston to the maritime climate of Barnstable, MA, on coastal Cape Cod.

In the past, these maps have been available primarily as printed lithographic copies and more recently as a [free, downloadable GeoPDF](#). Users with an ArcGIS Online subscription may now access the historical maps as high resolution georeferenced raster images for use in ArcGIS and web mapping applications. Published U.S. maps of all scales and all editions are available. View [An Introduction to the USGS Historical Topographic Map Collection](#) story map to learn more about this collection.



The USGS Historical Topographic Map Collection

Explore the comprehensive cartography of the United States' oldest mapping agency.

A story map



1 Oldest Maps of the Collection

The United States Geological Survey (USGS) was established on March 3, 1879. Under the agency's second director, John Wesley Powell, Congress approved topographic mapping of the United States in 1882.

The oldest map in this historical collection is an 1882 map from Humboldt County, Nevada. As you zoom out, footprints encompassing some of the earliest maps in this collection will guide you. Simply zoom in to these footprints to view these beautiful historical topos with dates ranging from 1882-1900. Maps from Alaska, California, Montana, Nevada and Utah are featured.



USGS historical maps - story map - introduction to the collection.

Historical maps are an important resource as they provide the long-term record and documentation of the natural, physical, and cultural landscape. The history documented by this collection and the analysis of distribution and spatial patterns is invaluable throughout the science and non-science disciplines.

Genealogists, historians, educators, anthropologists, archaeologists and others may




use this collection for research as well as for a framework on which a myriad of information can be presented in relation to the landscape. Educators and students can use these maps to explore how a place is shaped by nature and humans and learn about and experience their own community history.

Planners can see what used to be a natural water flow now changed by an earthquake, flood, or a human-made structure. A person can see what development changes have taken place since the map was created, or simply notice what used to be a lake and is now dried up. There are numerous uses possible by scientists, engineers, urban planners, historians, and travelers alike.



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A story map   



1

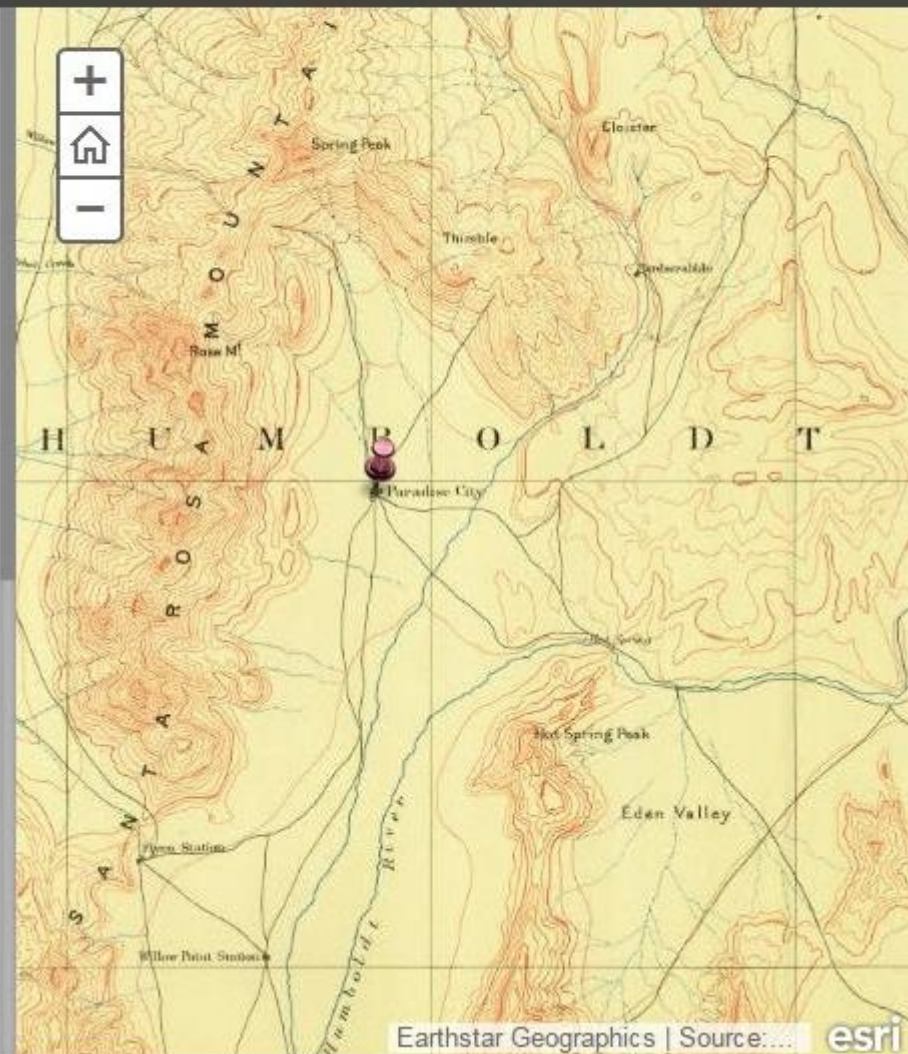
Oldest Maps of the Collection

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"Without a good topographic map geology cannot be thoroughly



Uses of historical USGS Maps:

1. Build map interpretation skills: Contour lines, slope and aspect, map symbology, map scale, density, patterns, distance, direction, more.
2. Teach Web GIS skills: Maps, layers, time aware sliders, popups, filtering, data types, multimedia, saving and sharing maps, maps vs apps, metadata, more.
3. Teach cultural geography: Settlement patterns, population change, reservoir construction, land use, more.
4. Teach physical geography: Coastal erosion, historical water levels, watersheds, volcanic eruptions, geomorphology.
5. Incorporate biology, mathematics, history, language arts (*STEAM) into education.
6. Research: Land cover change, human-environment interaction, more.



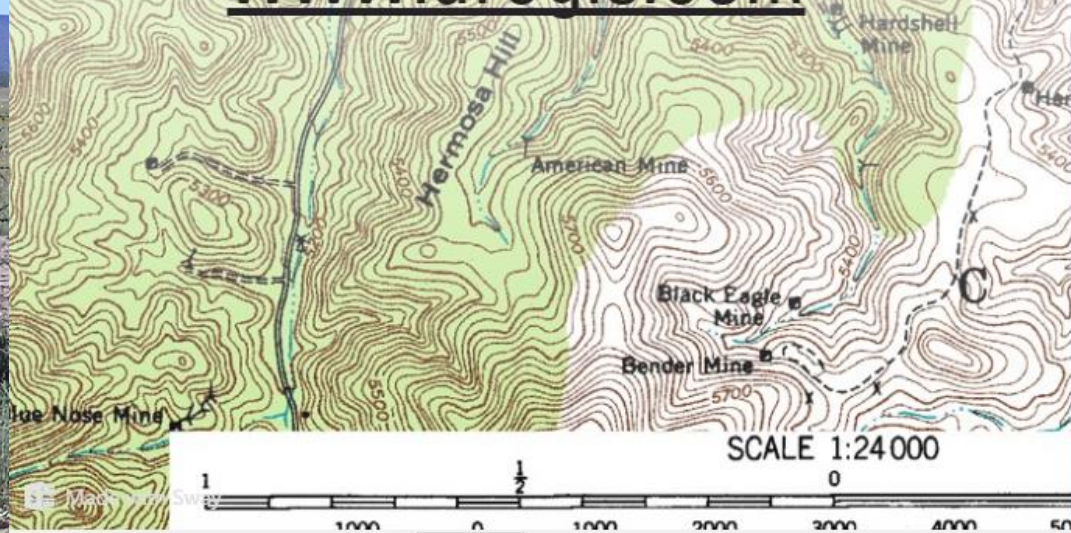
ArcGIS Online is a web-based GIS platform. It is a Software-as-a-Service (SaaS) system that allows users to access, create, and share maps, scenes, web applications, analytics, and data.

- 1) ArcGIS Online can be used to access map content from local, regional, state, federal, and international government agencies, academia, nonprofit organizations, private companies, citizen scientists, and individuals.
- 2) ArcGIS Online also allows you to create your own data, from field research, spreadsheets, scanned or digitized maps, smartphone apps and tracks, GPS receivers, real-time data feeds, and other sources.
- 3) ArcGIS Online allows maps to be created, symbolized, classified, and shared with collaborators on a project, or with anyone with web access.
- 4) ArcGIS Online also allows for spatial analysis

to be conducted on the data, such as tabular and spatial query, filtering, map overlay, proximity, routing, and spatial statistics functions.

- 5) ArcGIS Online allows an organization to manage its map and geographic data content, groups, users, and web site configuration.

(1) Use USGS Topographic Maps as a Basemap [http:// www.arcgis.com](http://www.arcgis.com)

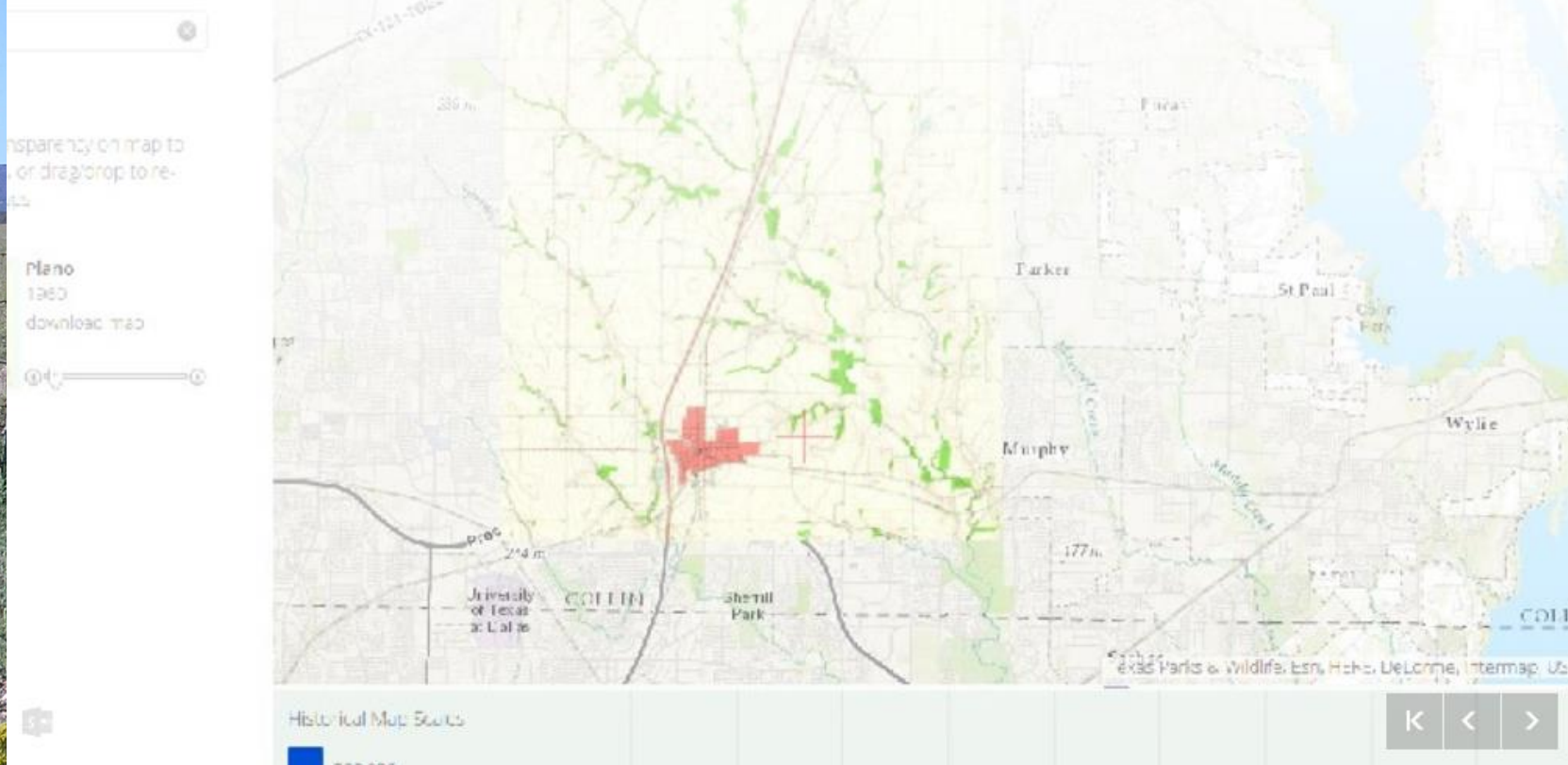


To use:

1. Go to www.arcgis.com
2. Select "modify map."
3. Use "Add" and search for the layer in ArcGIS Online "USA Topo".
4. Select "Done Adding Layers".
5. Zoom to your area of interest and begin exploring.

Historical Topographic Map Explorer

(2) USGS Historical Topographical Map Explorer <http://historicalmaps.arcgis.com/usgs/>



The USGS Historical Topographic Map Explorer is a customized application in ArcGIS Online that runs in a web browser that shows the dates and scales of the available USGS topographic maps for any area of the USA below a chosen area of interest.

To use:

1. Go to a desired location by zooming or panning the map, or by entering a place name.
2. Click on the map to access the historical maps for that place.

Another way to access the historical USGS maps through an explorer interface is via USGS TopoView: <http://ngmdb.usgs.gov/maps/TopoView/>



USGS Historical Topographic Map Explorer



Go to a location to the location you want to explore, then Click on a place to see its historical maps.

Q Plano, TX

3 Slide transparency on map to compare, or drag/drop to re-order maps.



New Orleans
1964
download map

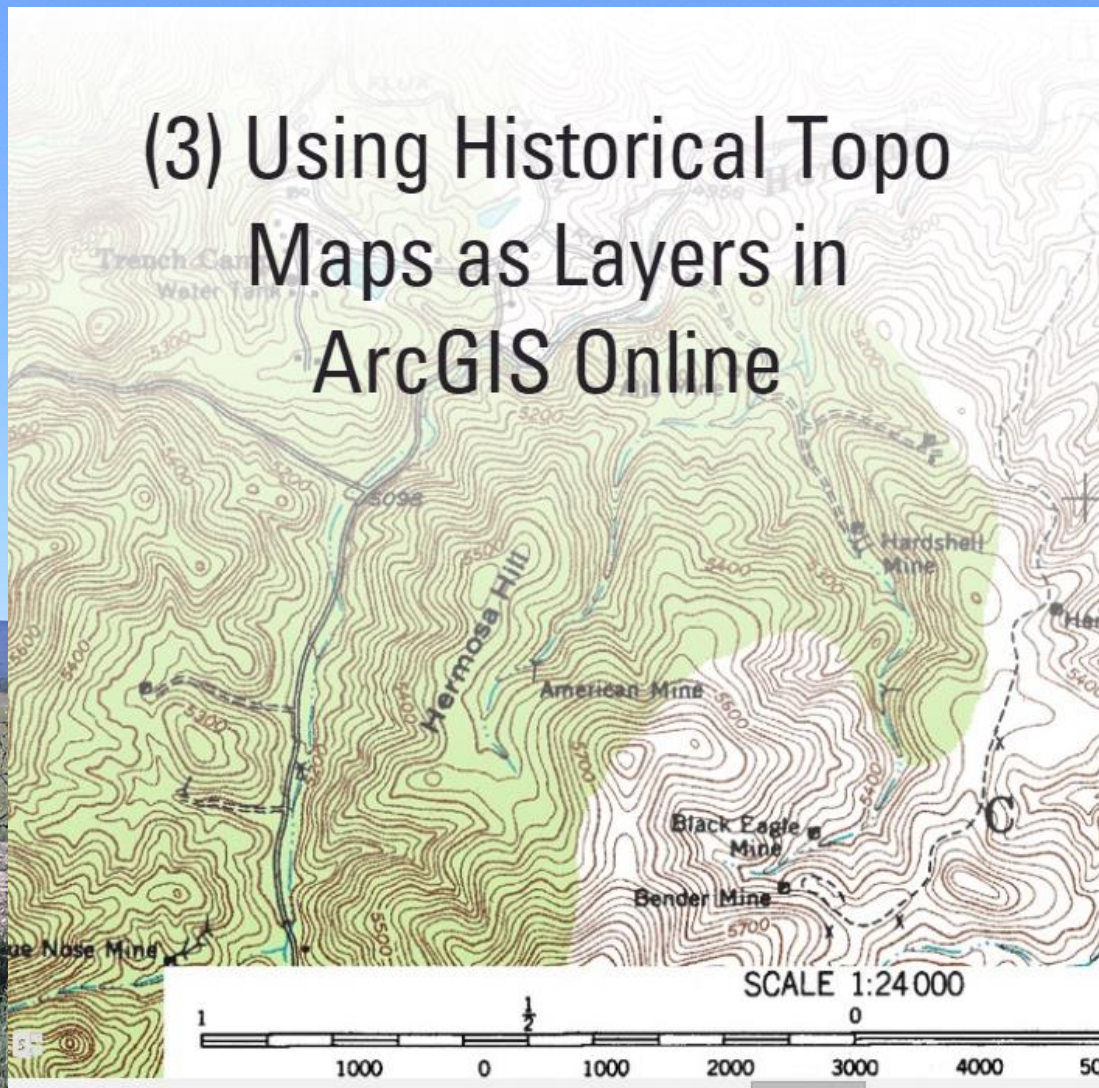


Historical Map Scales



Using the USGS Historical Topographic Map Explorer

(3) Using Historical Topo Maps as Layers in ArcGIS Online



To use:

1. Go to www.arcgis.com Sign in to an ArcGIS Online account.
2. Use "Add" and search in Browse Living Atlas Layers under "historical" for the desired scale(s) of USA Historical Topo Maps that you are interested in. For each scale, use "Add layer to map" underneath the thumbnail image and select "as layer." Note that the available map choices span more than 1 screen. When done, select "Close".
3. Zoom to your area of interest and begin exploring.



Browse Living Atlas Layers



Show Esri Layers Only

Historical Maps



USA Topo Maps



Add layer to map ▾

North America
1811



Add layer to map ▾

World Globe 1790



Add layer to map ▾

MDA NaturalVue
Satellite Imagery



Add layer to map ▾

USA Historical
Topo Maps



Add layer to map ▾

USA Historical
Topo Maps



Add layer to map ▾

USA Historical
Topo Maps



Add layer to map ▾

USA Historical
Topo Maps



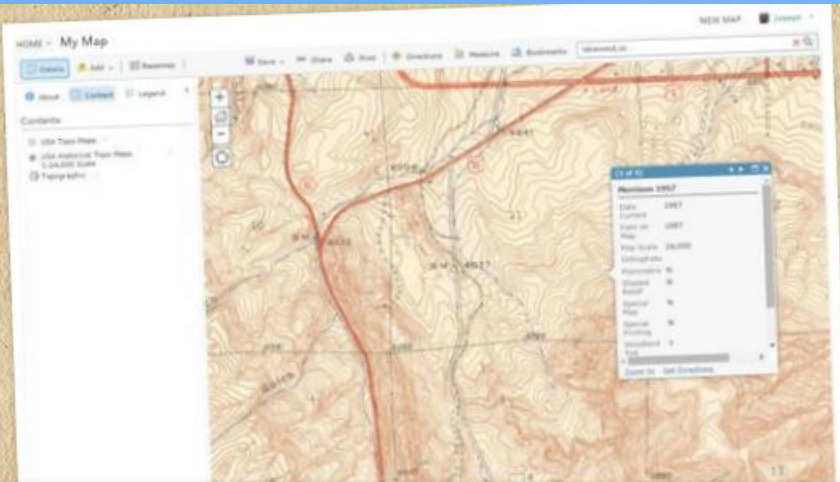
Add layer to map ▾

1

2

CLOSE

Sample USGS Historical Maps



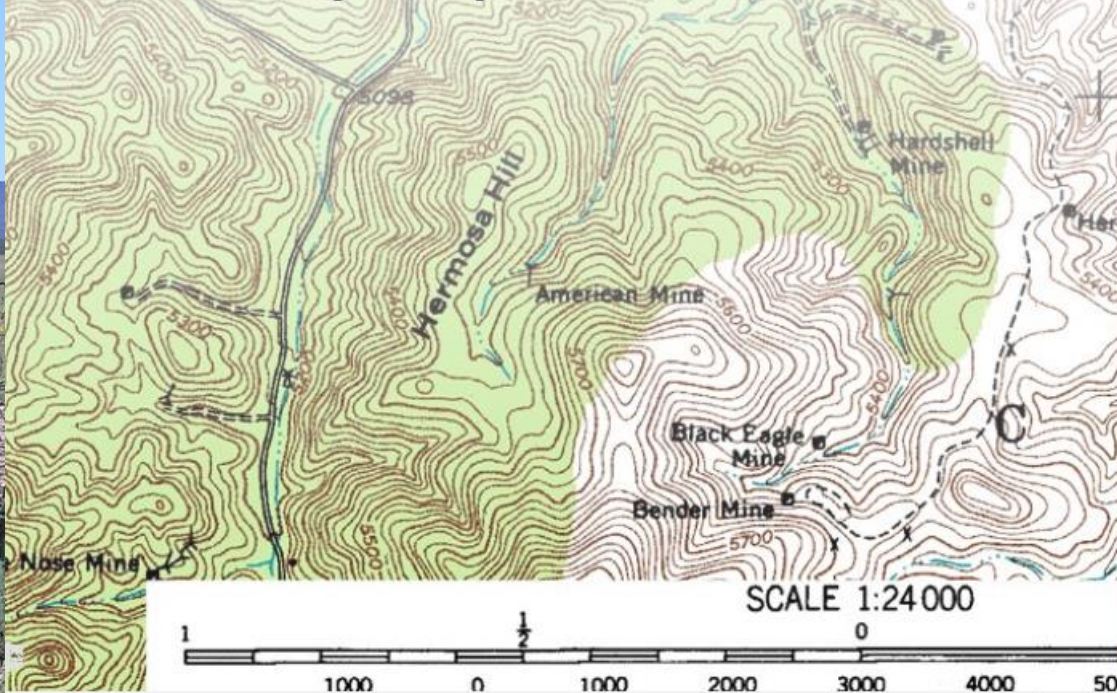
1957 1:24,000-scale map of a section of Morrison, Colorado



1995 1:24,000-scale map of a section of Morrison, Colorado



(4) Go Deeper with Historical USGS Topo Map Exploration



Because you are using these historical maps in a web base **GIS** environment, you have numerous tools at your fingertips to enhance your experience. Here is a short set of additional ideas: filtering, animations, display order, and popups.

1. Access www.arcgis.com and sign in with your account.
2. Apply a filter to narrow the date range (or other attributes of the maps). You can add multiple expressions to your filter. In this example, maps newer than 1964 and older than 1970.



Filter: USA Historical Topo Maps 1:24,000 Scale



View

Edit

+ Add another expression Add a set

Display features in the layer that match All ▼ of the following expressions

Date on Map ▼ is greater than ▼ 1964 ✖
 Value Field Unique

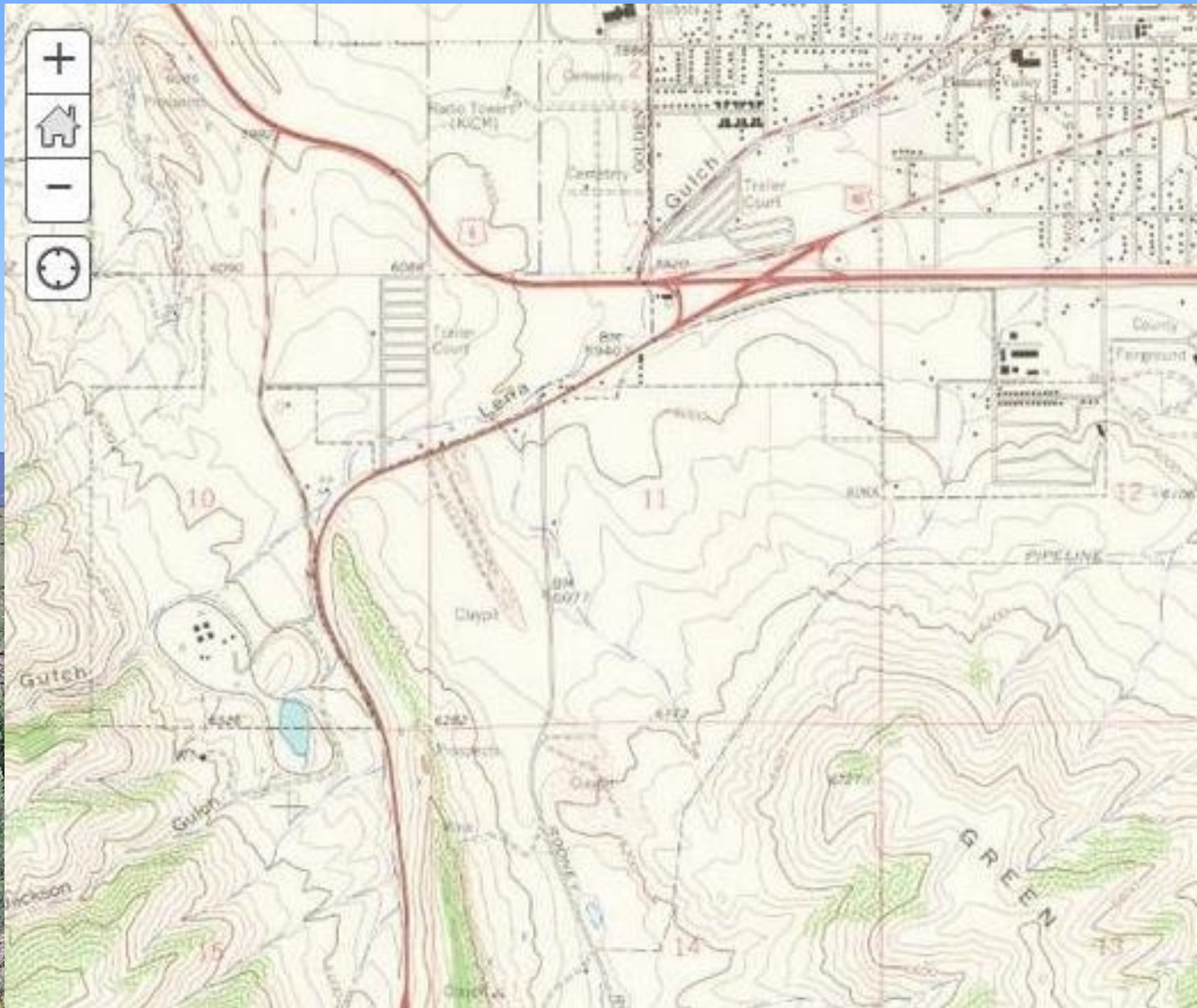
Ask for values ▼

Date on Map ▼ is less than ▼ 1970 ✖
 Value Field Unique

Ask for values ▼

APPLY FILTER

CLOSE



3. Enable Time animation and play an animation showing all topographic maps and dates for your specific area of interest.



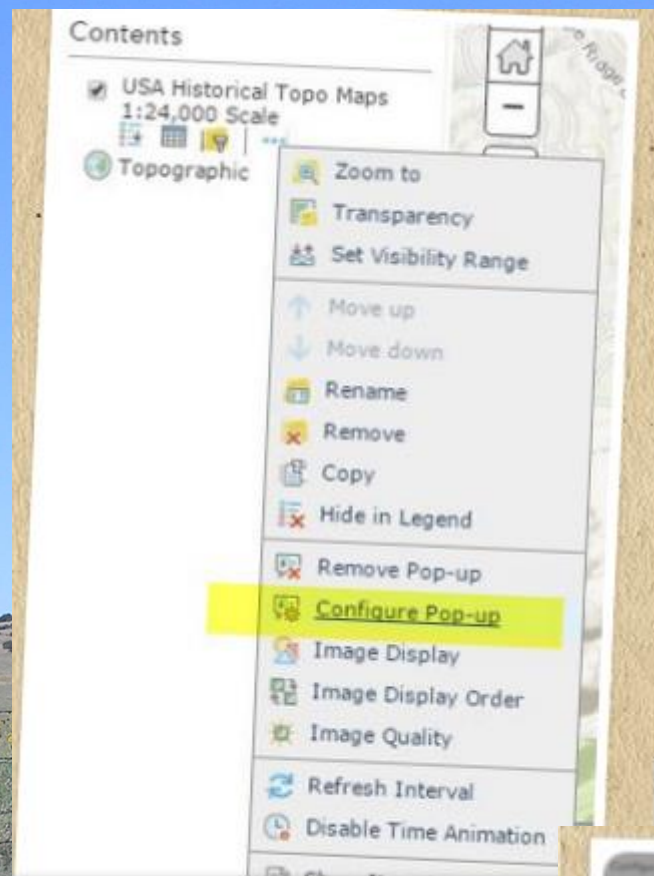
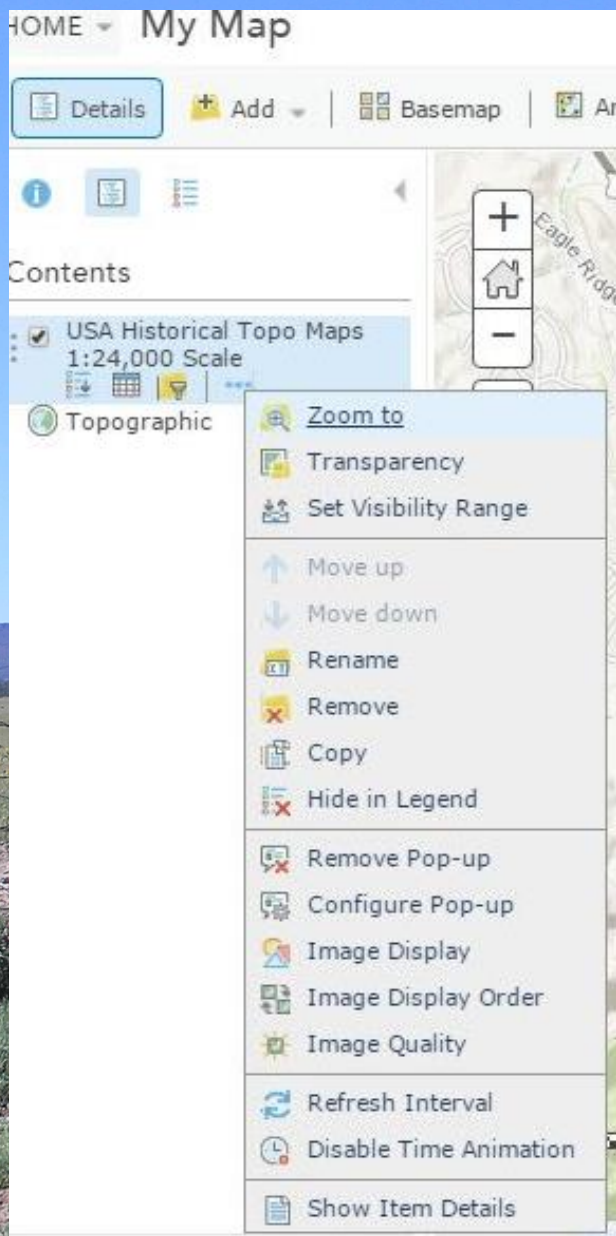
Animation tool.



Animation of historical maps in ArcGIS Online.

4. The Default view in ArcGIS Online is to show the oldest map on top. Change image display order to Date Current.





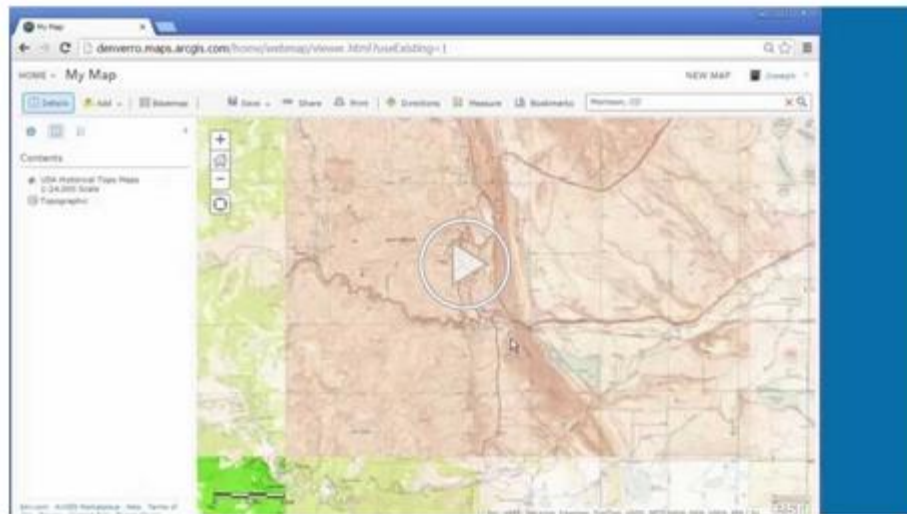
Accessing the menu to configure the popup.



Configuring the popup.



Accessing the configured popup.



<https://www.youtube.com/watch?v=es4b5X-3TC4>



USGS Historical vs Current Edition vs Esri Topographic Maps

for examining change over time

(5) Use a web mapping application to compare land across 3 time periods

SYNOPSIS OF MAPS

USGS Historical Topographic Maps

USGS Latest Edition Topographic Maps

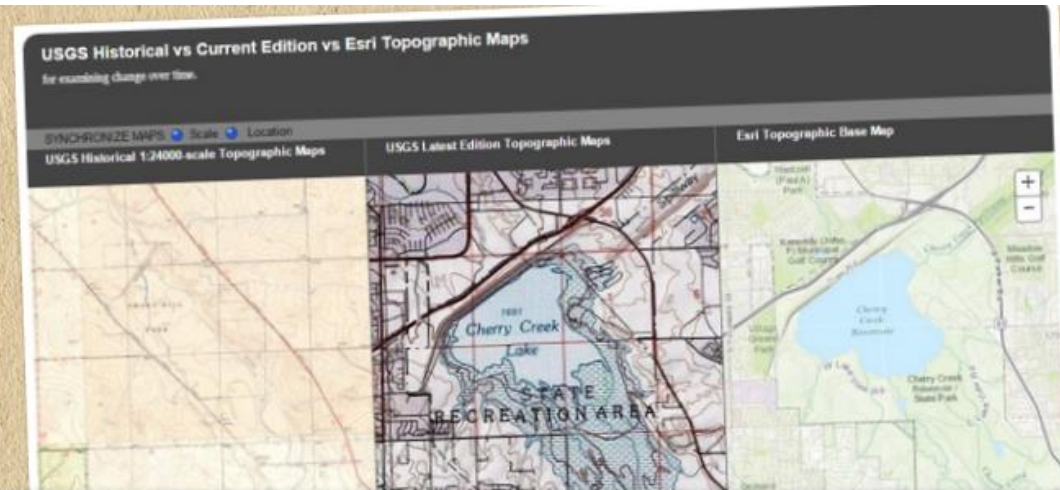
Esri Topographic Base Map



Create a web mapping application with 3 panels that are sync-ed in scale and area to compare land use change.

See example below (You need to be logged in to ArcGIS Online to use it, since it accesses historical USGS content, or simply examine image below link.)

http://denverro.maps.arcgis.com/apps/Compare/storytelling_compare/index.html?appid=4cf85d7beef14f91a1b478a814e6248b



Assessing change via 3 panel USGS mapping application built on ArcGIS Online.

USGS Historical vs Current Edition vs Esri Topographic Maps

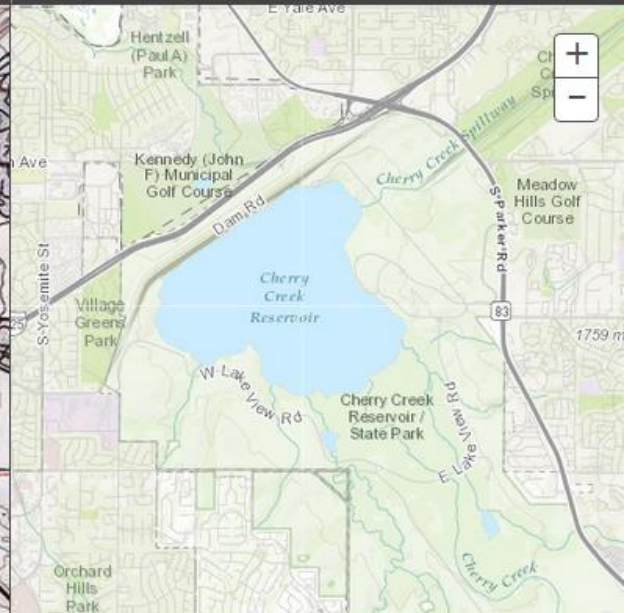
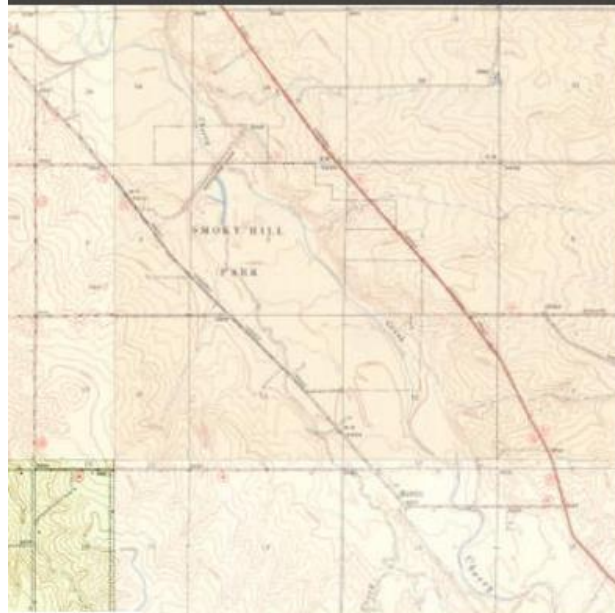
for examining change over time.

SYNCHRONIZE MAPS: Scale Location

USGS Historical 1:24000-scale Topographic Maps

USGS Latest Edition Topographic Maps

Esri Topographic Base Map



Description ▼ City of Centennial, City of Gree... esri

City of Centennial, City of Gree... esri

City of Centennial, City of Gree... esri

Questions? Comments?



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