GEOINT DATA EXPLORER

Android and iOS App for IGAPP GEOINT App Store

MANUAL

GEOINT DATA EXPLORER is a rapid data visualization and discovery mapping app that works equally well offline disconnected limited availability environments as well as when partially or fully connecting to ESRI and OGC Mapping Services. The Map has powerful data management and built in tools for analysis and display and management of data. It supports IP **GeoLocation** and Internal Sensors (GNSS/GPS) as well as the ability to connect to high precision external GNSS/GPS Receivers via Bluetooth. It is designed to work on Tablets and Phones and has user interface that adjusts to different screen sizes and pixel density and screen orientation. The app can load a variety of mapping formats as well as download data for use offline.

https://geodataexplorerapp.techmaven.net/geoint_data_explorer/

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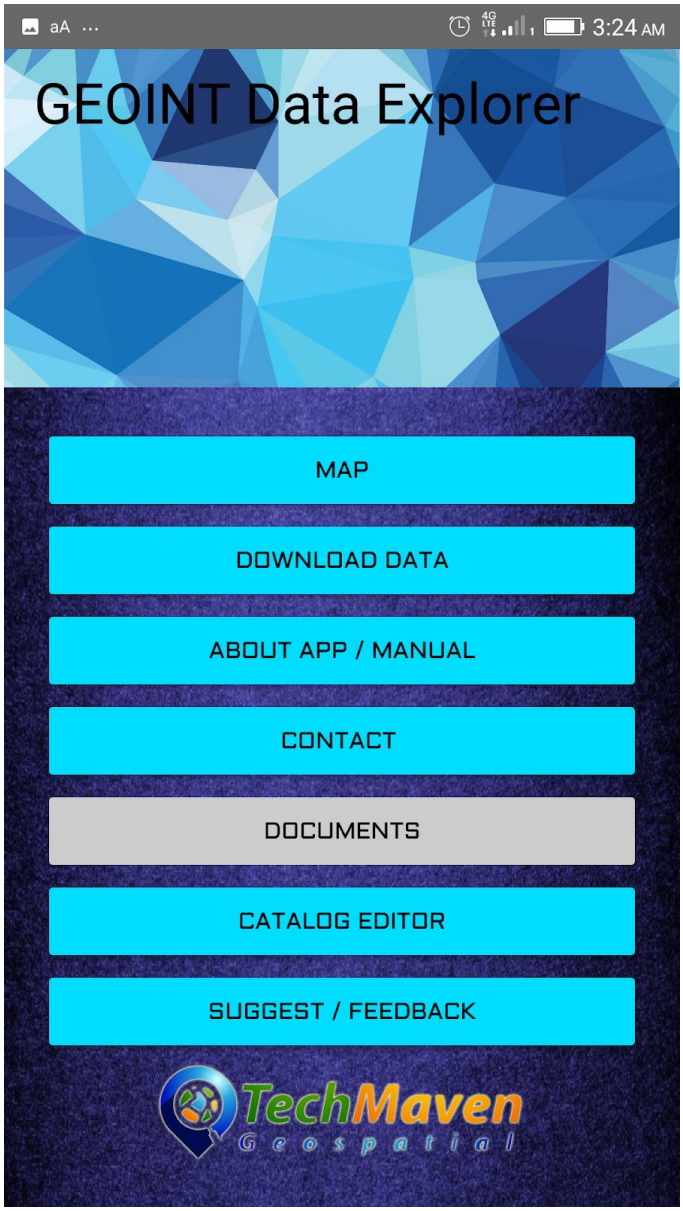
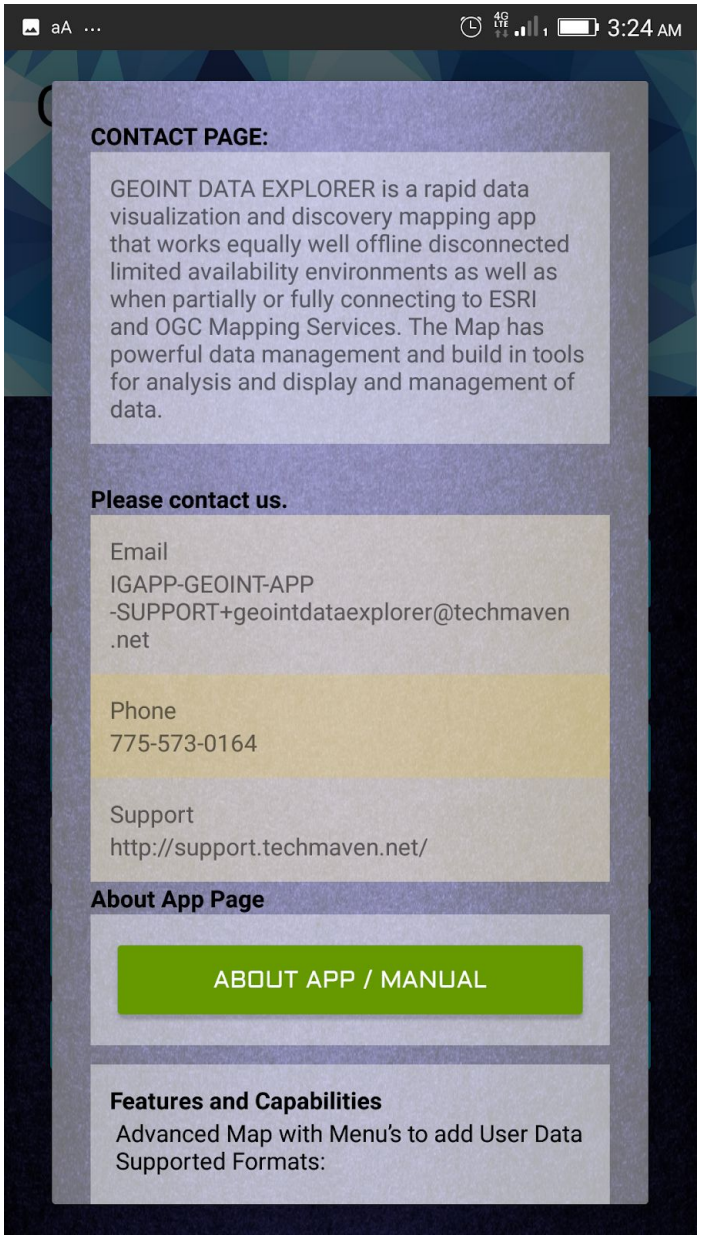
Main App Screen





Toggle On/Off Map Features

Coordinates

Show GPS Coordinates in 1 Form: ddd.ddddd

Show GPS Coordinates in 3 Forms: ddd.ddddd / ddd mm.mmm / ddd mm ss.s

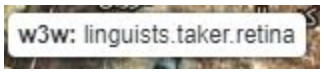
UTM - Universal Transverse Mercator coordinate system

[UTMREF/MGRS/USNG Coordinates] Military Grid Reference System and US National Grid

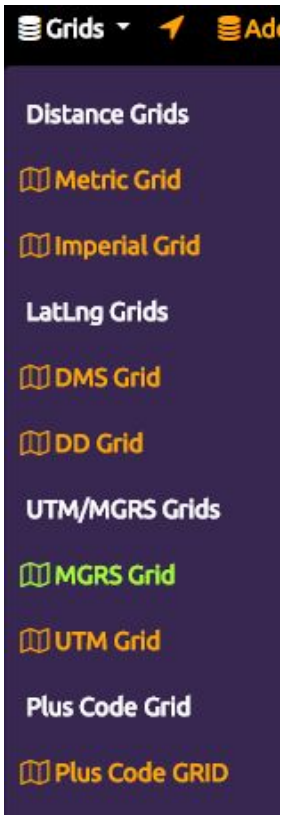
QTH- Maidenhead Locator System and **IARU Locator**)

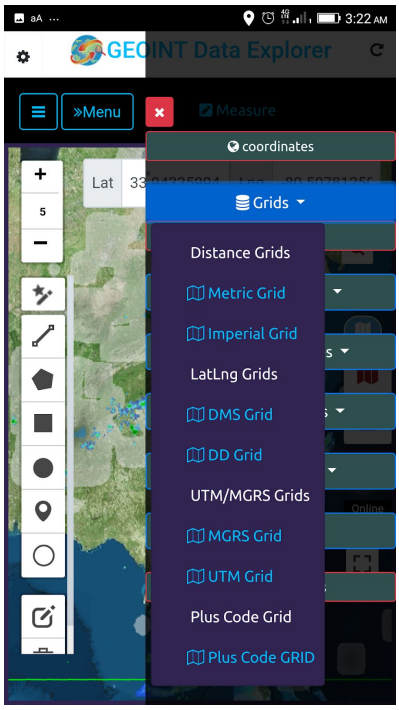
NAC-Natural Area Code (or Universal Address) is a proprietary geocode system for identifying an area anywhere on the Earth,

What3Words *Requires internet



Display GRIDS





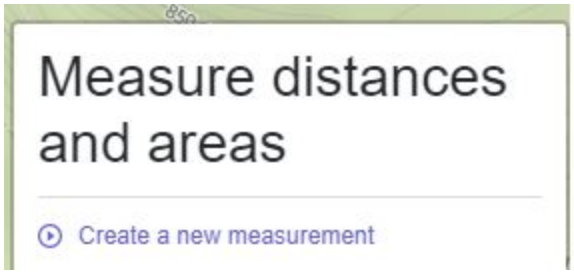
Military Grid Reference System

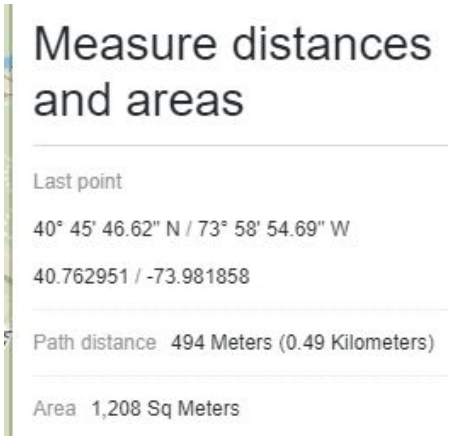
In future releases we will add the following GRIDS: GARS Grid to the menu currently it's in the Add Layer as a vector tile layer and What3Words Grid * Requires Internet. However, you can view what3words under Map Tools and show those just not as 3meter square grid.

Plus Code is the same as OpenLocationCode by Google.

Measure Tool

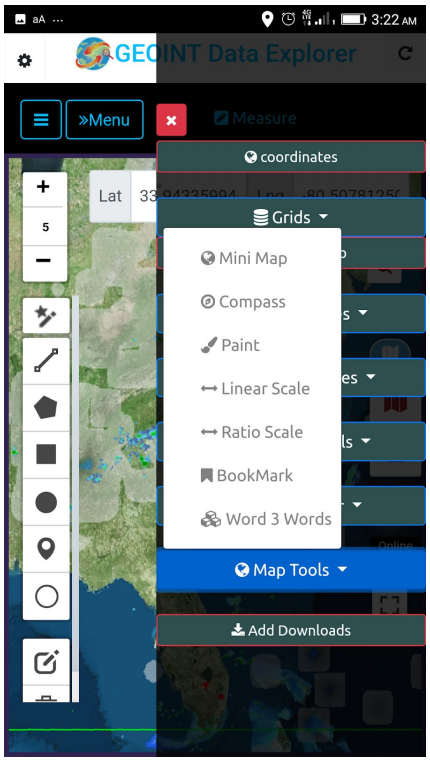
Measure Linear and Area





MAP TOOLS

MapTools - Mini Map, Compass, Paint, Linear Scale, Ratio Scale, Spatial Bookmarks,What3Words

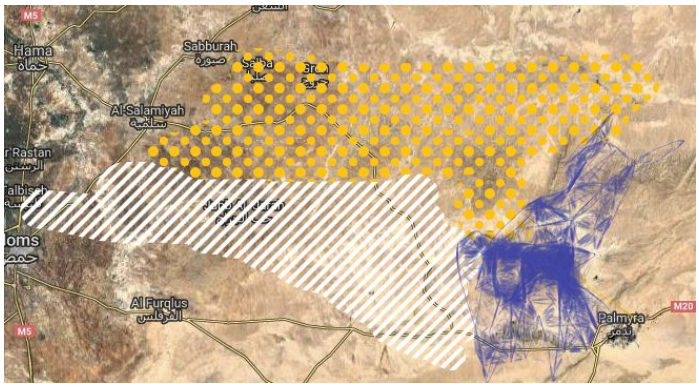


- Mini Map
- Compass
- Paint
- Linear Scale
- Ratio Scale
- BookMark
- Word 3 Words

Mini OverView Map

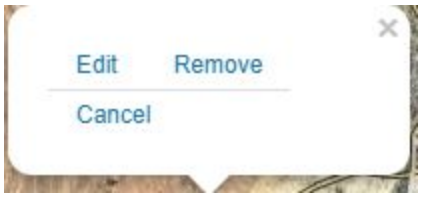
You can also Move the Square/Rectangle to pan the map and also resize it to zoom/in out

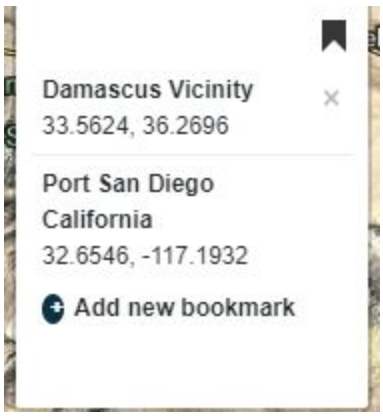
PAINT



Quickly Annotate and Paint over the map

Spatial Bookmarks



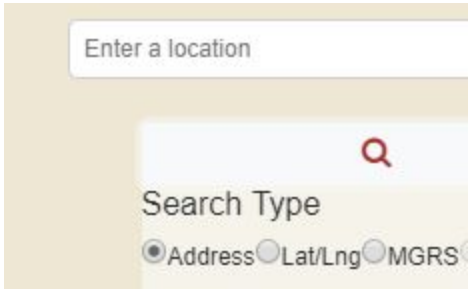


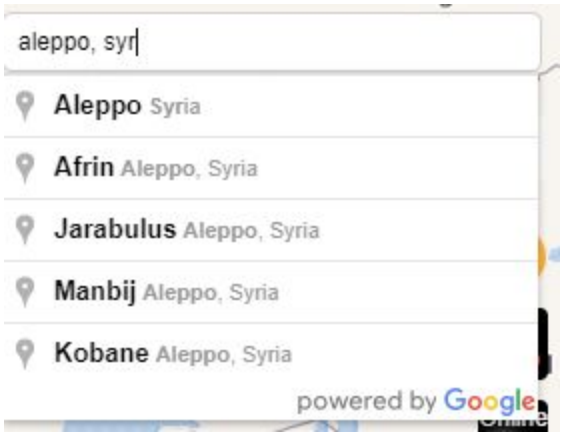
Map Scale

Both a scale bar in Metric (M or KM) and traditional Map Scale 1:500,000 or 1:50,000 is included as to optionally toggle on.

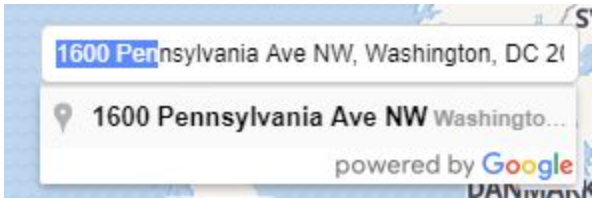
Search

Search uses Google Maps API/Places and enables Geocoding Addresses or Place Searches. In Address Mode(Google) Requires Internet
In the upper right of the map - Enter a Location Box type your search term
You should see some matches and click one and the map should move to that location.

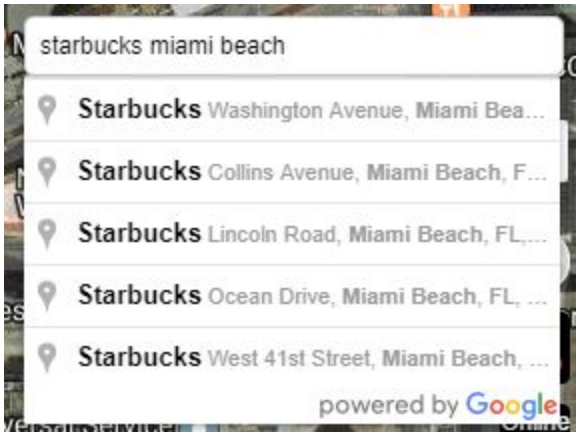




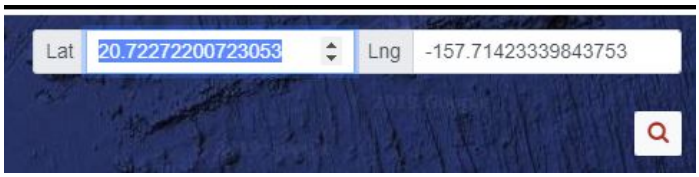
Enter Address (geocode)

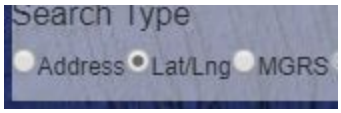


Place Search



Lat Long Coordinate Search

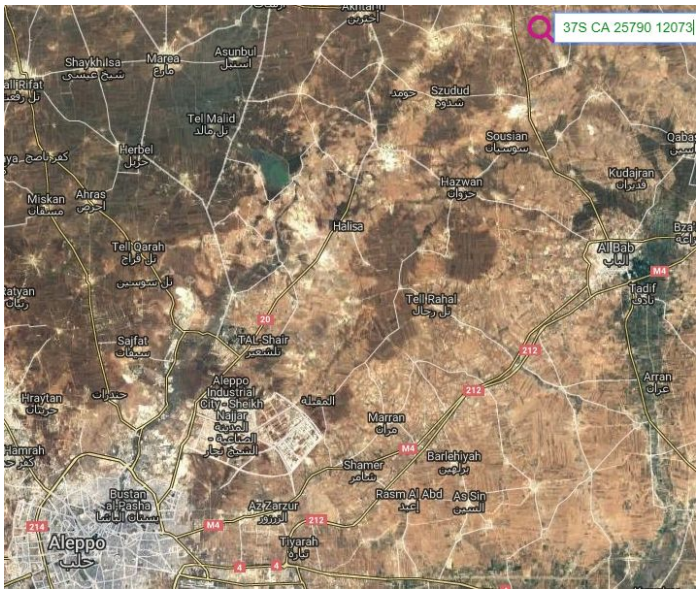




MGRS Search

37S CA 25790 12073 - Aleppo Syria
The MGRS search currently requires
Spacing with the following digits
3 2 5 5
This search will center the map to that location.

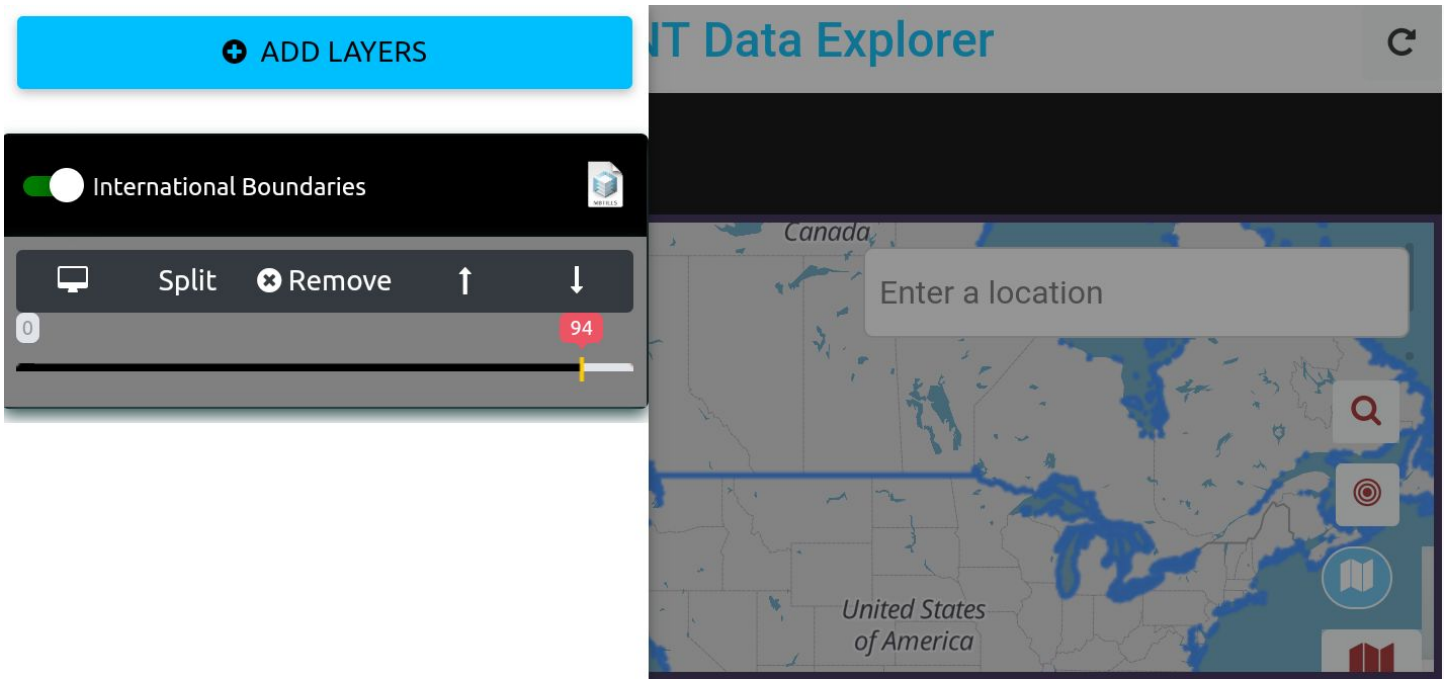
(in the future we are adding GARS search)

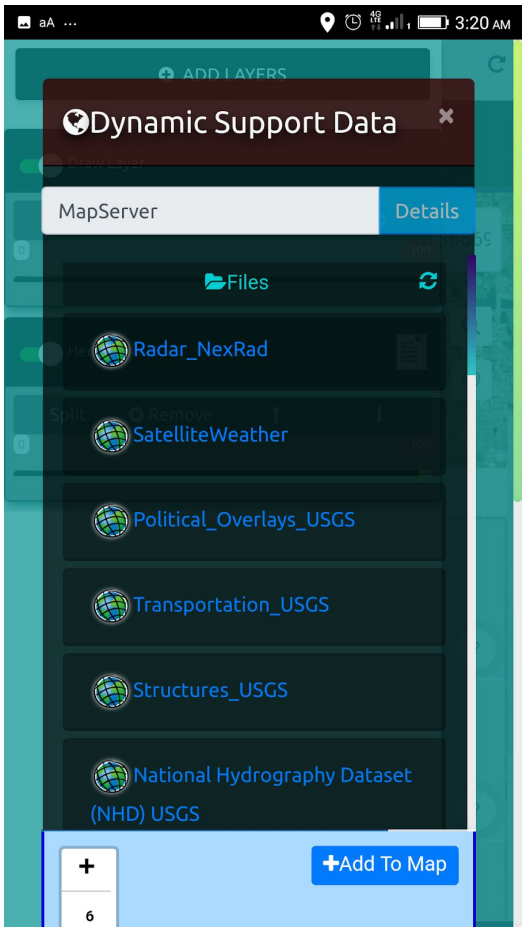


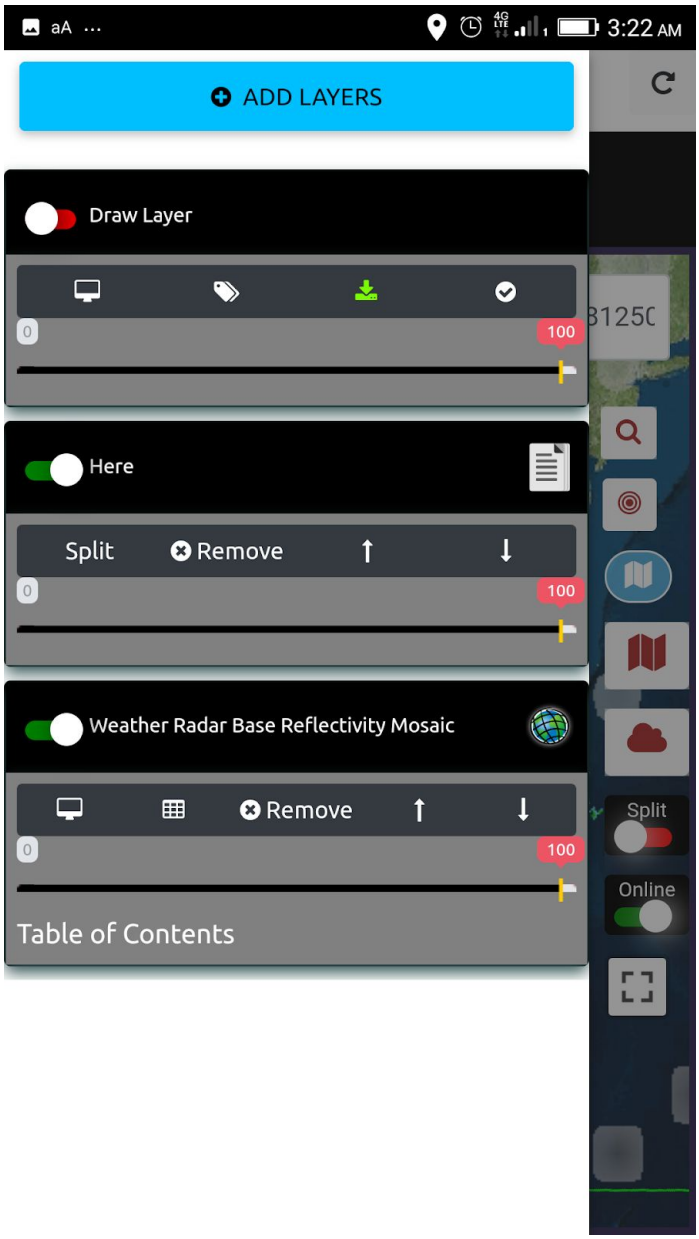
Map Overlays

Enable the Table of Contents Mode (by default enabled on Landscape mode in Portrait mode click the hamburger menu icon) **Click Add Layers**
The App should display - Dynamic Support Data (This is the JSON Catalog that get's loaded by default with the app. Users can load their own JSON Data catalog of mapping services too)

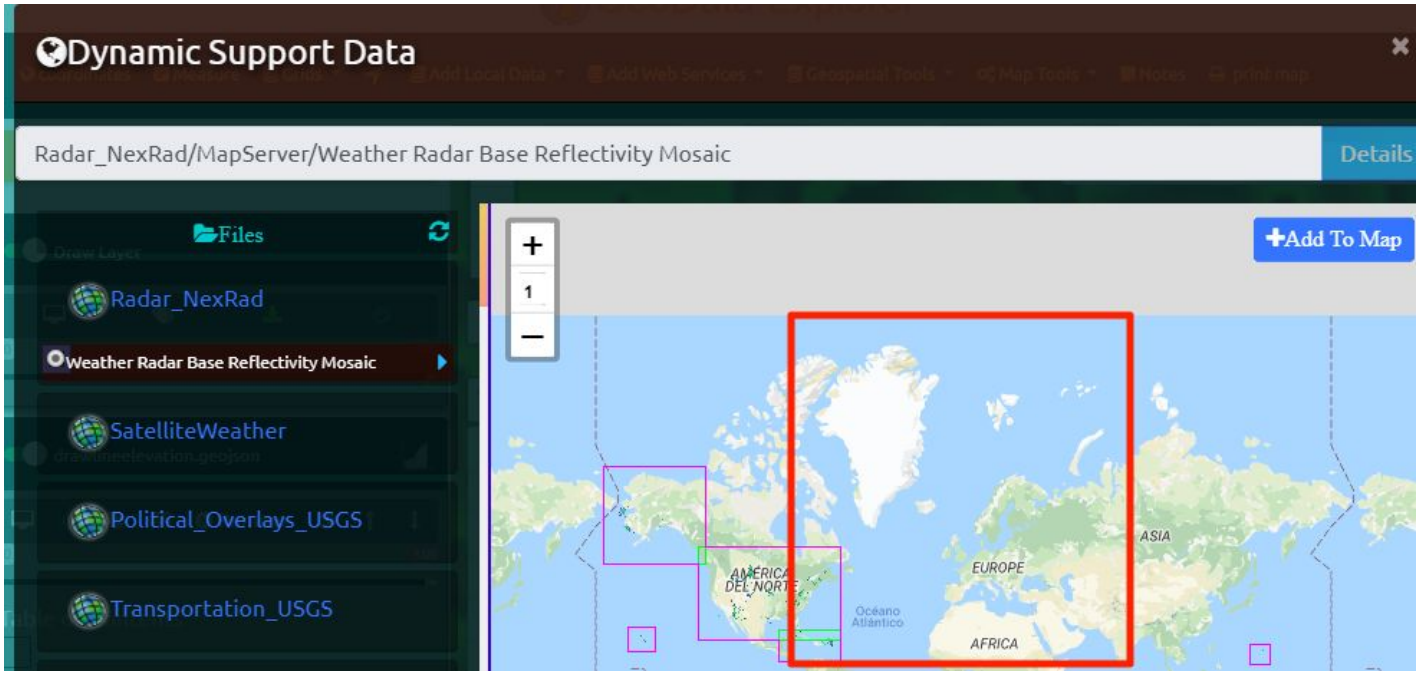
The Vector Tile Layers show mbtiles icon
Choose/Select a Layer Click the Add to Map Icon
Item should appear on the map and in the Table of Contents
You can click the zoom to extent on the table of contents or pan and zoom around to see the data. The Up and Down arrows control the layer order (the TOC item does not move)

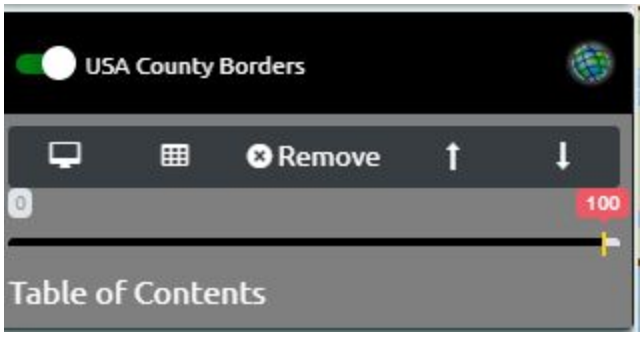




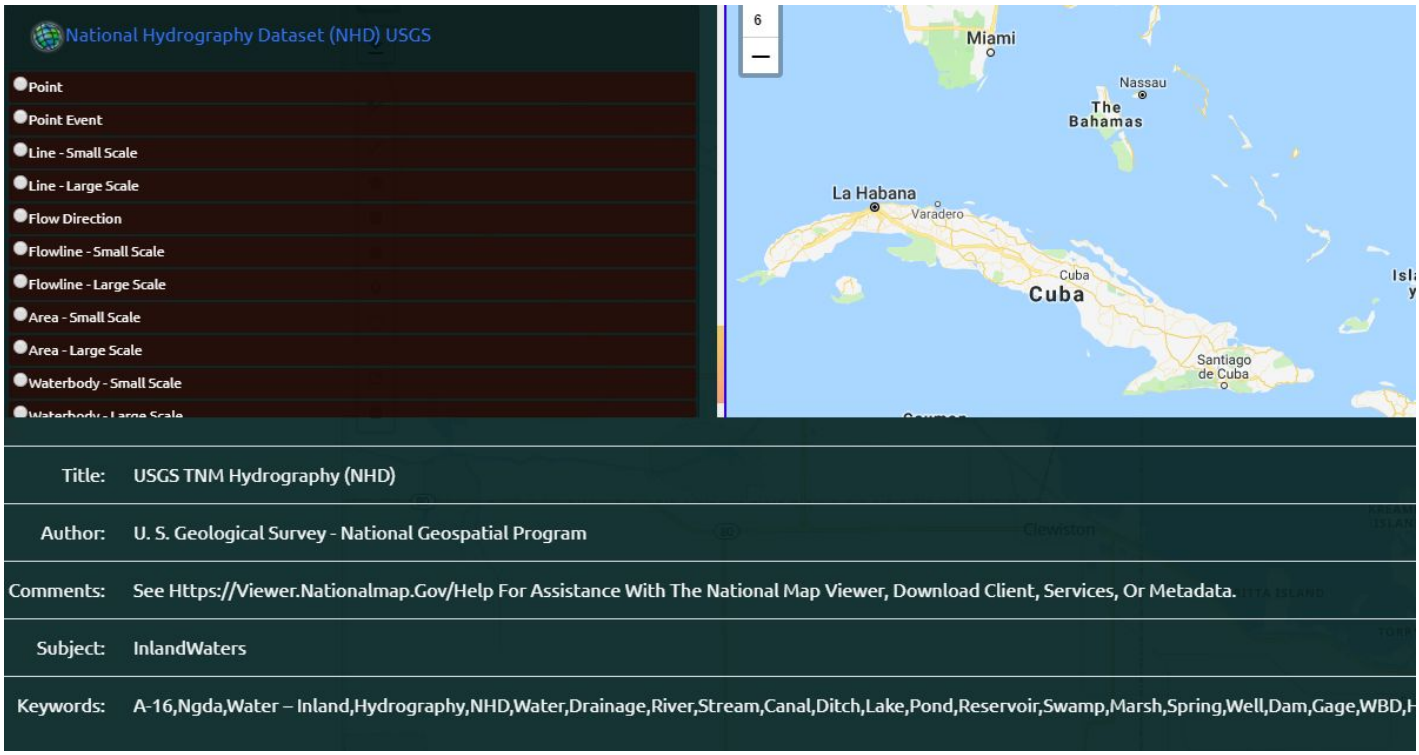


Click on the Add Layers button. This data is from JSON Catalog file.



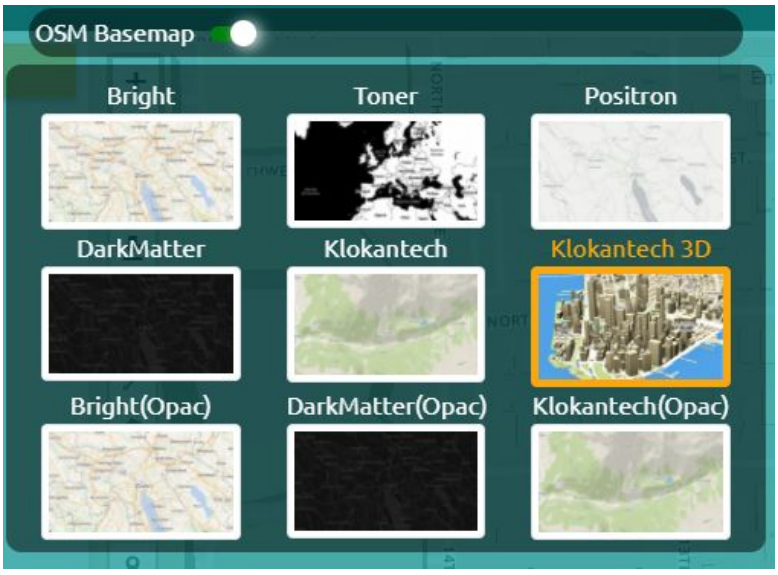


Metadata is shown from the Map Services



Vector Tile Open Street Map Styles Picker

This control works with both the default internet connected vector tile Open Street Map basemap (from OpenMapTiles hosted by Tech Maven Geospatial) as well as the optional offline data.
The app includes support for the following Styles - Bright, Toner, Positron, Dark Matter, Klokantech, Klokantech3D. And 3 styles for use with other basemaps below the OSM vector tiles so those styles have Opacity settings/transparency for the polygons (Bright, Dark Matter, and Klokantech) Note about offline osm_vectortiles.mbtiles to change the style you need to reload the data.



Note there is a toggle to turn off the OSM Basemap.

If you load a Raster Tile Basemap from the Basemap Picker you will NOT see if unless you've either turned off the OSM Basemap or switched the style to one with Opacity

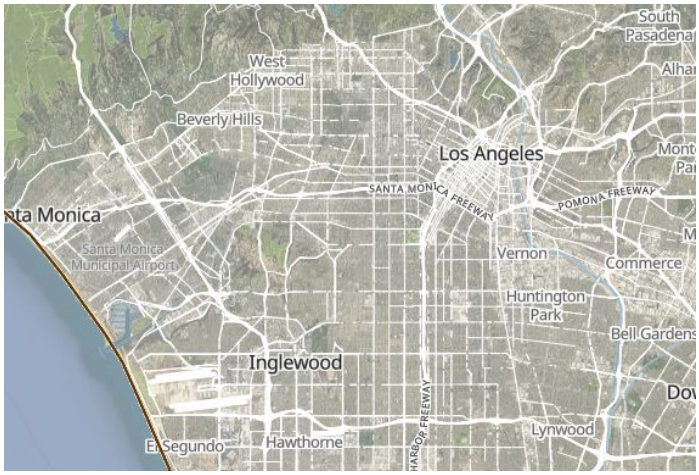
Raster Tile Basemap Picker

The App includes Raster Tile Basemaps from many popular Providers some Free and some commercial. One of the neat features of this is that allows multiple selection.

Basemaps	Tech Maven Geospatial is Paying for usage for the following commercial providers with their API KEY or Tokens
Open Street Map	Google Maps
Stamen	Thunderforest
ESRI	HERE
NASA	CartoDB
Justice Map	Microsoft BING Maps

Future versions of the app may include MapBox Basemaps, Apple Mapkit Basemaps and others.

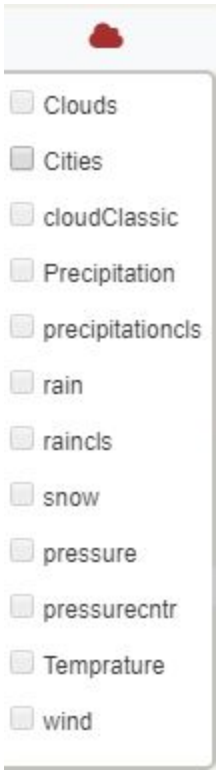
Notes: Users can load any Basemap they want via the Add Internet Mapping Services via their URL.
So if you want to add USGS National Map Basemaps for CONUS and Alaska or you have a Digital Globe, Planet, Airbus Atlas, Geomni, NearMap, Others Account most likely you can add them via the OGC WMTS or XYZ/TMS Raster Tile URL. We evaluated many of these commercial providers that NGA/DOD licence and were able to successfully integrate in the imagery into the map.



In this example Google Satellite has been selected with OpenMapTiles Klokantech (Opac) option the Open Street Map Vector Tile Data in all the reference roads and labels.

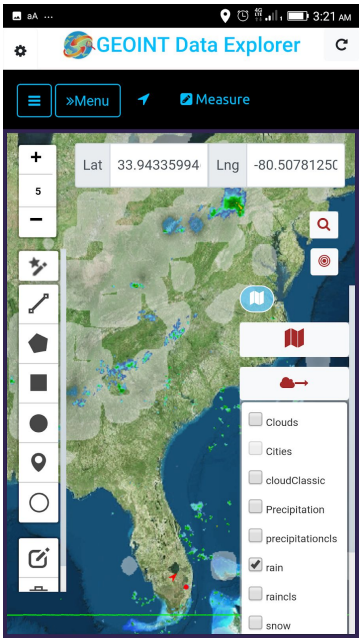
Weather Overlays

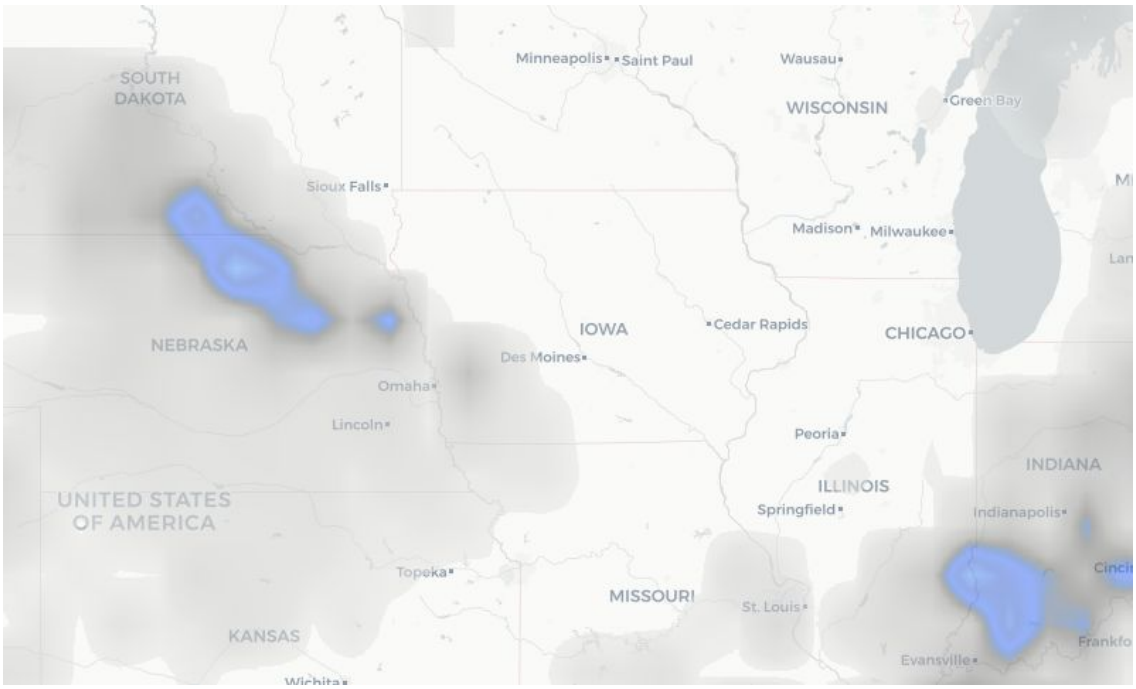
The Weather Overlays come from OpenWeatherMap https://openweathermap.org/

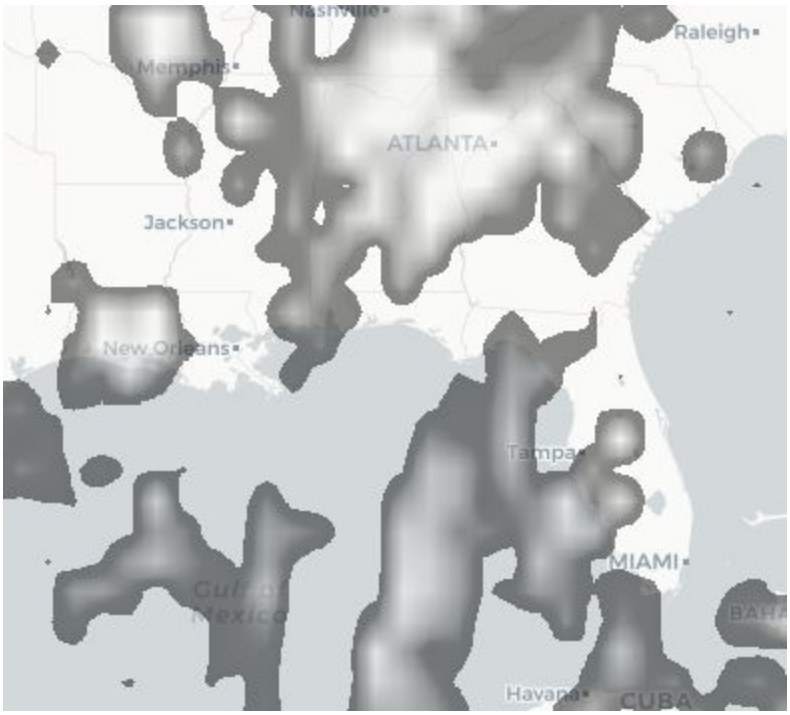


Users can load multiple Weather Overlays by clicking the check box

Some items show legend on the map

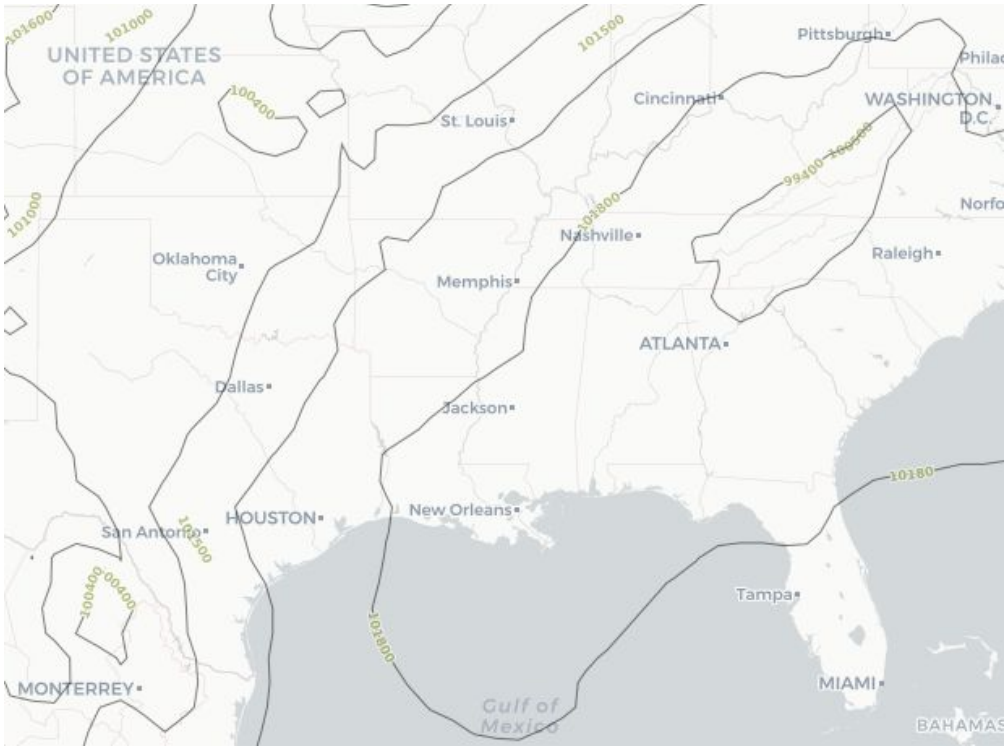



Minneapolis
Saint Paul
Wausau
SOUTH DAKOTA
WISCONSIN
Green Bay
Sioux Falls
Madison
Milwaukee
IOWA
Cedar Rapids
CHICAGO
NEBRASKA
Des Moines
Omaha
Lincoln
Peoria
INDIANA
ILLINOIS
UNITED STATES OF AMERICA
Springfield
Indianapolis
Topeka
MISSOURI
St. Louis
KANSAS
Evansville



Clouds

This example is Pressure CNTR

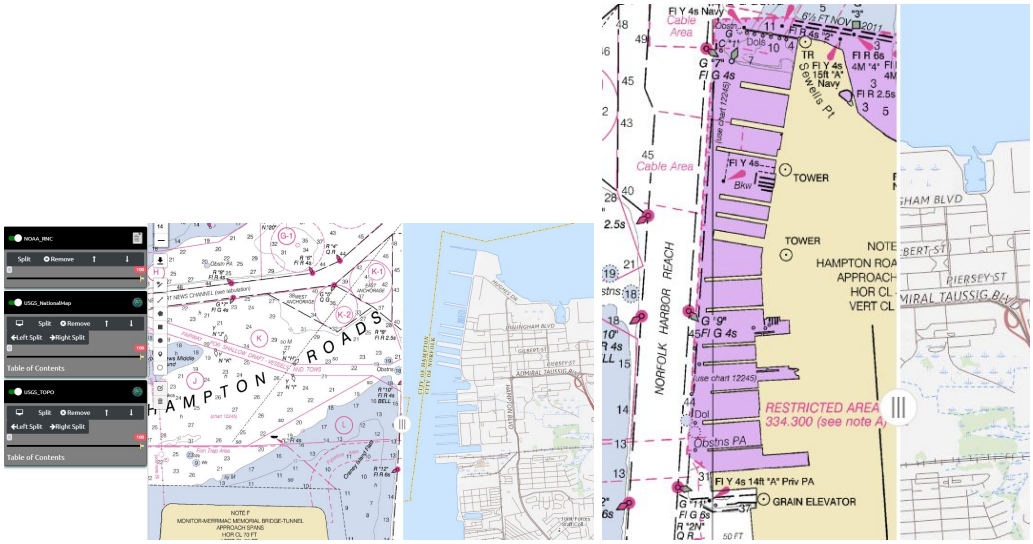


Notes: Users can load their own Weather data via Internet Mapping Services (NOAA Mapping Services URLs or from Commercial Providers like Weather.com, Aeris Weather, Barrons Weather and other).

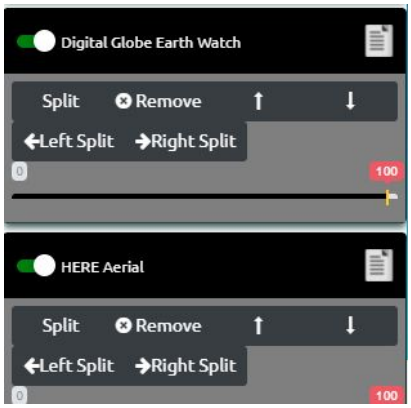
SPLIT (Map Swipe) Tool

The SPLIT control allows Left/Right assigning Data and then moving the Slider

This can work with any data loaded in the table of contents.
It currently does not work with basemap picker. You can have a basemap on but that would appear on both sides. Which is also good if you've set transparency/opacity slider to see below a layer


HAMPTON ROADS
NORFOLK HARBOR REACH
TOWER
GRAIN ELEVATOR
RESTRICTED AREA
334.300 (see note A)
Fl Y 4s 14ft "A" Priv PA
Cable Area
DECATUR AVENUE

DECATUR AVENUE
DECATUR AVENUE



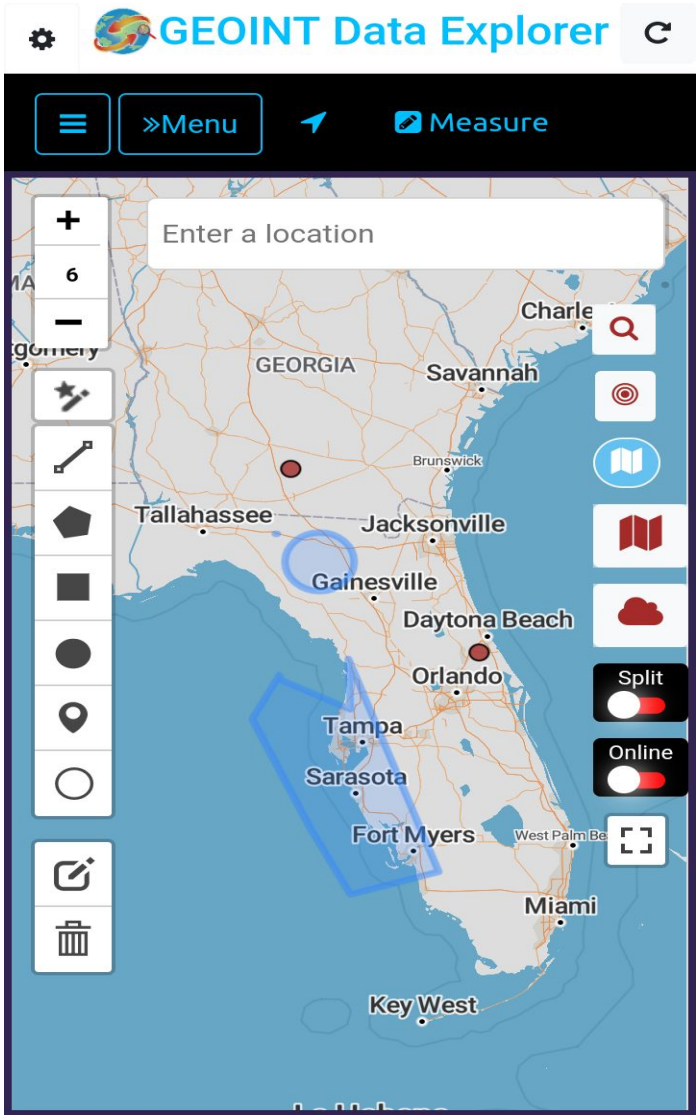
This Example Shows using a basemap layer so Google Satellite where nothing has been configured for Right and therefore the basemap was on. Shows new launch pad

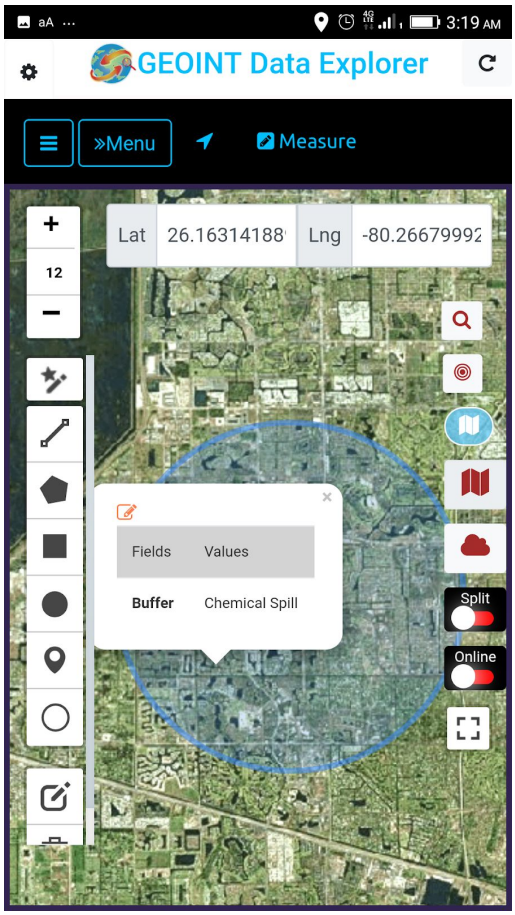
Draw/Digitize Tools

Users can create vector data through the draw/digitize toolbar which allows both the creation and the editing of existing.
It's loaded as a Table of Contents Item and Analysis and other operations can be done with that data
Vector Data can be saved as GeoJSON. GeoJSON is a text based format that's human readable (open in notepad) and easily consumable by many applications. If you want to convert this to a GeoPackage or other formats you can use QGIS Desktop or OGR2OGR command line or GeoPackage-JS.

The following geometries are supported:

- Polyline
- Polygon (area)
- Rectangle
- Circle
- Marker Point

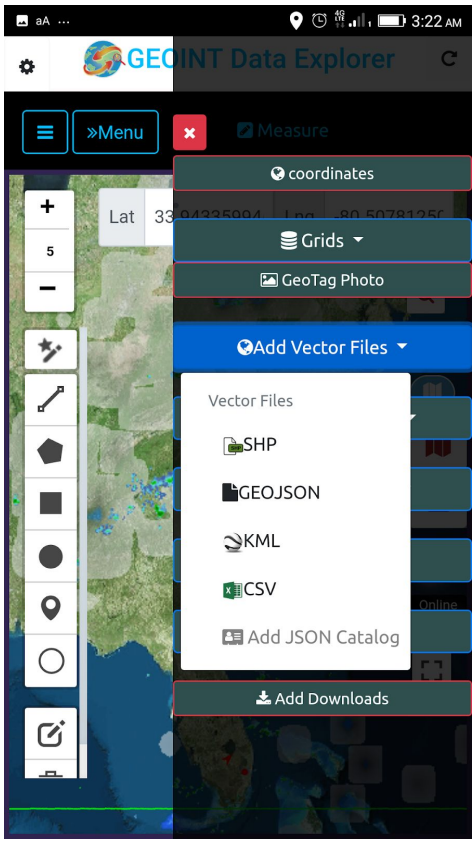




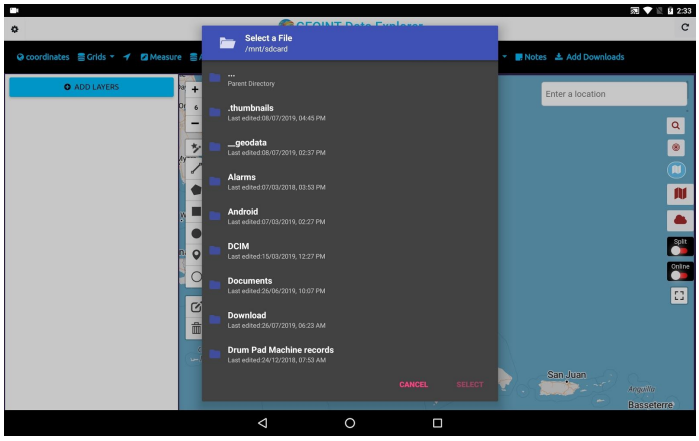
Attributes can be assigned to draw features.
Additional Rows can be added with whatever information

Adding Local Data that's on the device memory.

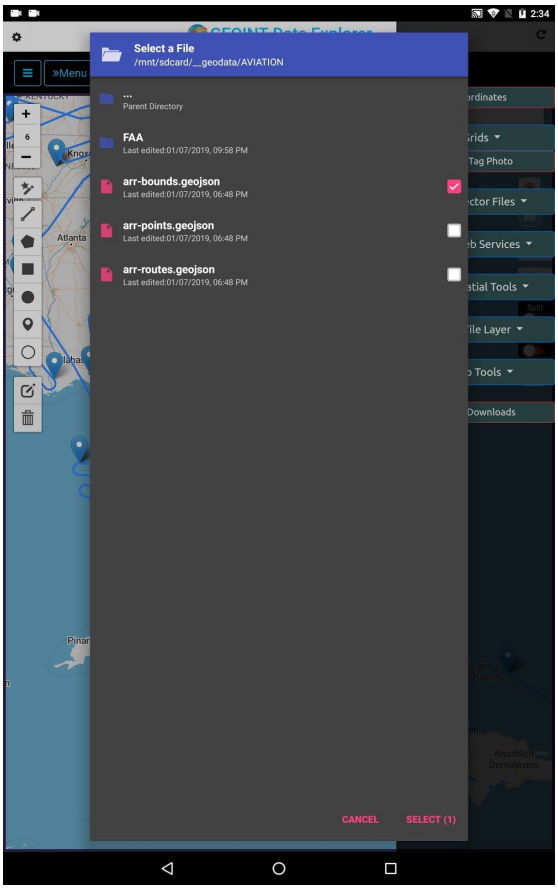
Add local data:



Notes about Local Data on the device. On Android, local data files can be stored anywhere on internal memory or on an MicroSD Card or even on an OTG- Flash Drive. For the iOS (iphone/iPAD) version they are stored in Documents directory and transferred by iTUNES or iCloud. The app has in app vector tiling engine. What does this mean? If you load a SHP or GeoJSON file the app will break that data into 256x256 Pixel JSON Map Tiles for efficient loading and only load what's in the current view as the user pans and zooms it will generate new tiles accordingly. This allows the app to handle larger files without loading them all into memory.

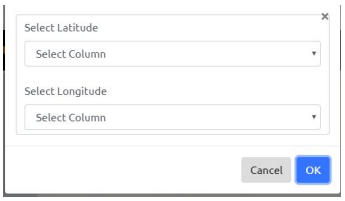


- Add **SHP** Local ESRI **Shapefile** vector format (EPSG 4326 Geographic WGS84 Coordinate Reference System and contained inside a zip file do not put them inside folders must include the following 3 files SHP, DBF, SHX. The file name and zipfile name should contain no spaces. The Specification is 2gb of less we recommend keeping shapefiles to 20mb or less for the app.)
- Add local **GeoJSON** (GeoJSON geospatial data interchange format based on JavaScript Object Notation (JSON).
  can support multiple geometries types in one file it's best to keep them simple and small sized)



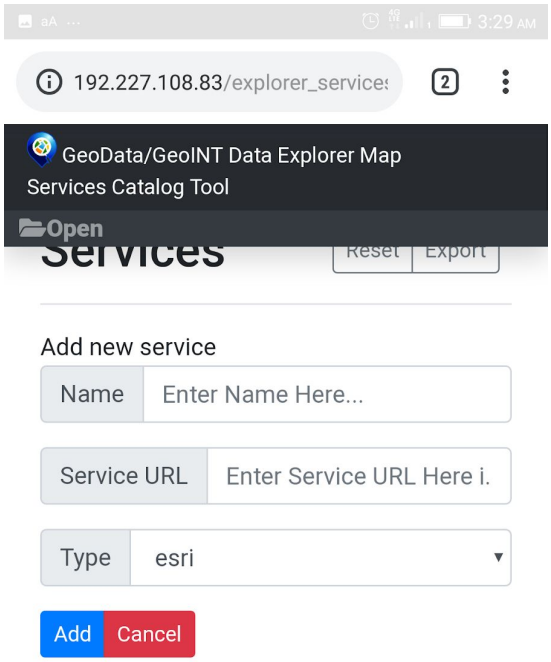
- Add Local **KML** (Keyhole Markup Language originally part of Google Earth) (KMZ is NOT supported) Some network link KML may not work we support local KML files. KML SuperOverlay Raster data is NOT supported.

- Add local **CSV** (Comma Separated Value with Lat Long values can be named anything) The Coordinates should be in Decimal Degrees in unprojected Geographic WGS84 EPSG 4326. (In the future releases we will allow Degrees Minutes Seconds and MGRS, GARS as well as other separators like TSV or | Pipe. Projected Coordinates are NOT supported so if you have Lambert Conformal Conic or World Mercator or Albers Equal Area of UTM this will NOT work)



- Add **Raster Tiles MBTILES** - (Raster Tiles PNG, JPG, WebP are supported. other image formats are NOT supported, Supports Hybrid tiles with mix of JPG and PNG. Tiles can be a view or a table. Metadata table must include the following required records: name, description, format, minzoom, maxzoom and bounds. Center is optional Mbtiles are always in Spherical Web Mercator Coordinate Reference System as per the spec some tools/implementations allow for building mbtiles in other but we do not support that. The raster tiles can be in multiples of 256x256 pixels 512x512 or 1024x1024 are also supported. The APP currently does NOT allow OVERZOOMING of Raster Tiles if the data goes to Zoom Level 17 you will not be able to zoom to 18, 19, 20,etc)
- Add **Vector Tiles MBTILES** - (Vector Tiles supported must be GZIPPED PBF binary Protocol Buffer Tiles (we do not support in plain/non compressed PBF at this time or geojson tiles or json tiles inside mbtiles). In the initial release of the app there is no option of loading a GL JSON Stylesheet or manually styling the vector tiles we have applied a default style for all loaded vector tiles) Overzooming of vector tiles is allowed so if you have data that ends at zoom level 10 it can continue showing all the way down with no loss of quality.
- Add **OSM Vector Tiles MBTILES** - (OSM Vector Tiles in the OpenMapTiles Specification are supported and we have those as optional downloads in the app. When loading these the user will be presented with the style picker to select what Stylesheet to use to render those vector tiles. The Metadata table must include format=pbf and JSON record as well as minzoom,maxzoom and bounds)
- Add OGC **GPKG Raster Tiles** - (GeoPackage Raster Tiles are currently only supported that are in 3857 Spherical Web Mercator/Auxiliary WebSphere Coordinate Reference System. We are working in future releases to support NSG Spec GPKG in Geographic WGS84 and World Mercator.)
- Add OGC **GPKG Vector** Features -(GeoPackage Vector Features should be unprojected Geographic WGS84 we do not support reprojecting vector data at this point). A GeoPackage can contain multiple feature tables each one will appear in the Table of contents with a toggle to enable. We recommend using QGIS Desktop or OGR2OGR to convert other GIS Data into GeoPackage for use in the app. The app features two methods for showing GeoPackage. 1) as vector geometries drawing the points, lines and polygons or converted in the app to a raster tile image. Their is an Icon to enable the graphic. So if you want quick rendering of your geopackage and don't care about interactivity with mouseover or labels then go with the raster option.

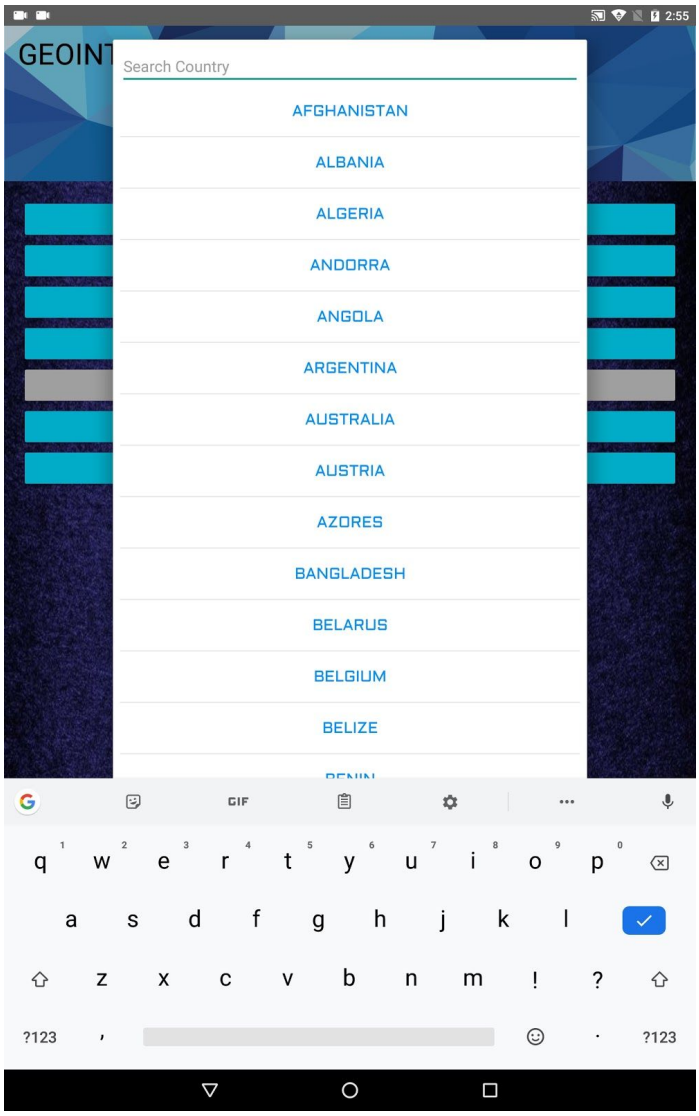
- Add **Elevation Tiles MBTILES** - (we support and provide in the optional data downloads MapZen Terrarium PNG format Elevation Tiles this is Digital Terrain Model that's been encoded in a Raster PNG tile in the Red,Green and Blue (RGB) values of the image and a formula is used to decode the elevation in meters.)
- GeoJSON for Elevation and GPX for Elevation contain Z Values/elevation for each coordinate
- Add **JSON Catalog file** (Catalog JSON files are created via an online tool http://192.227.108.83/explorer_services_json_creatoreditor/ there is a link to this from main app screen but it's probably easier to do this on your computer and have easier access to copy and pasting URL's) a default catalog comes with the app and users can load their own catalogs.

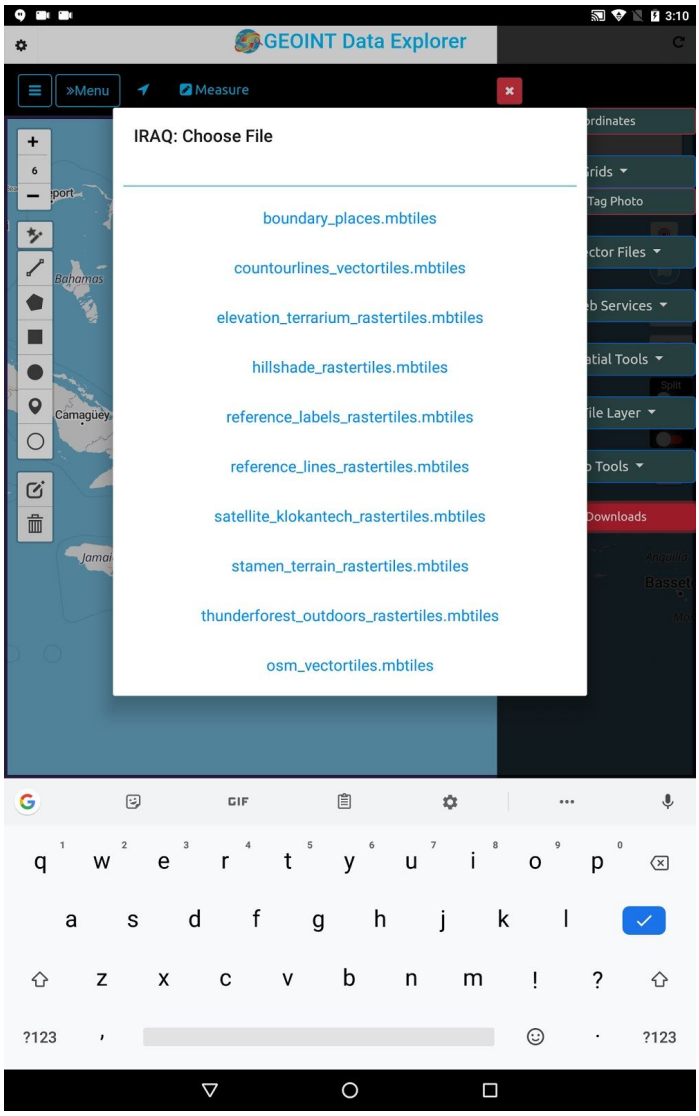


If you ever need to reset the catalog. Go to the Cog Wheel/Settings and REST and Click Reset Layers.

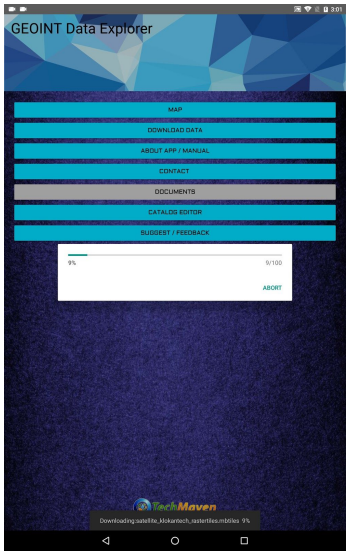
Loading the optional Downloaded Data

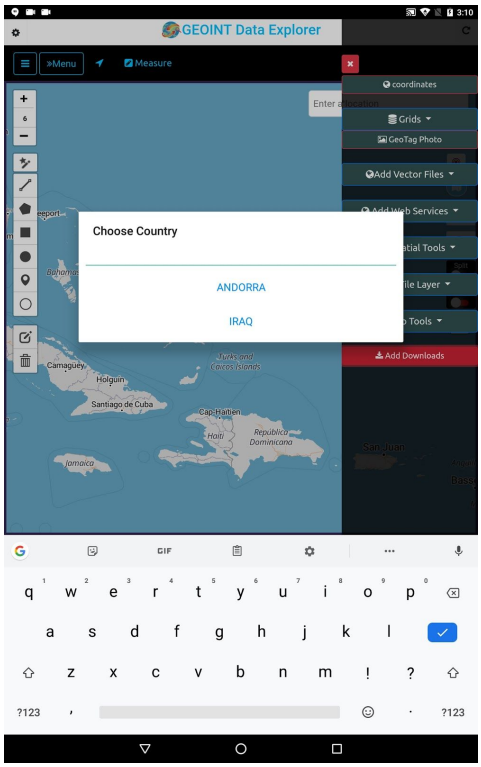
Data is organized by Country. In some cases large Countries are divided up into some Regions (USA by Alaskas and 3 areas for CONUS and Canadian Provinces). We allow you to download multiple Countries. After selecting the Country, select the data you want to load. We recommend osm_vectortiles.mbtiles as a great basemap along with satellite_klokantech_rastertiles.mbtiles There is a boundary.geojson that is polygon vector file deliniate the boundary of that Country and makes it easy to zoom to the extent of that data.



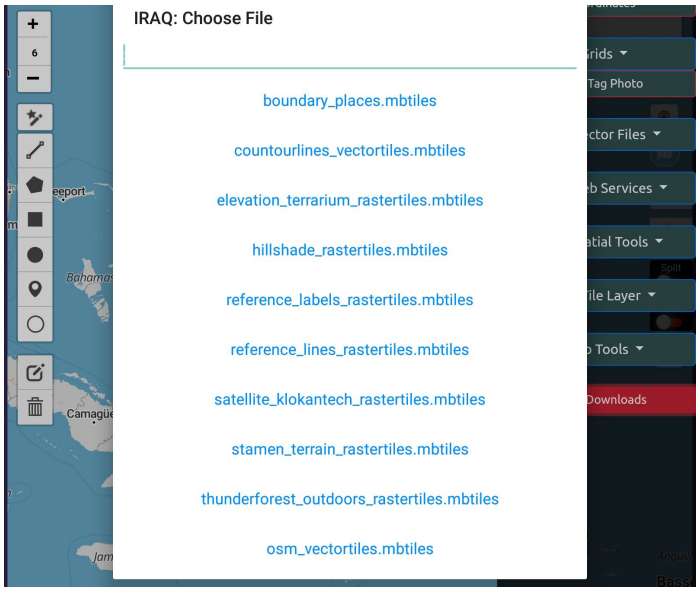


We've added boundary.geojson to each Country and this is useful for Centering Map, Going to Extent or Visualizing Country Boundary.



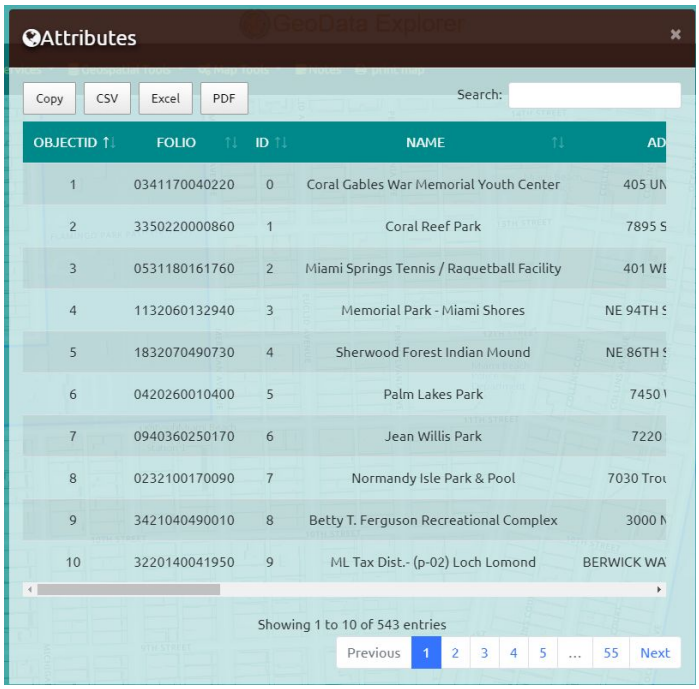


Add Downloaded data to the Map - Click Local Downloads and Add Downloads if in Portrait mode or Landscape it's Upper Left Menu Item



Select each file you want to load. In future releases we will have load all button.

View Attribute Table



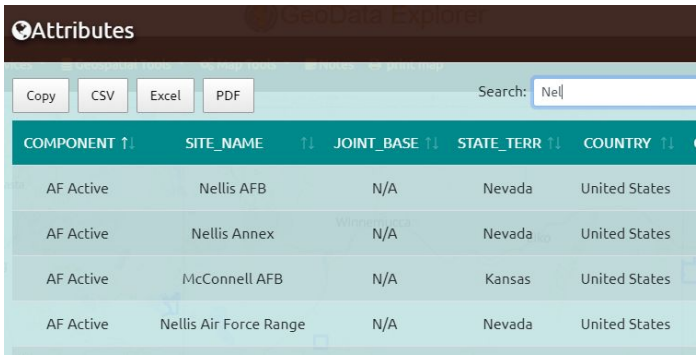
You can quickly JUMP TO record - zoom/pan to that record

You can search for data

Copy attributes

Export the Attribute data (from either map service or local vector files) to CSV, Excel or PDF.

The table/grid control should transform to any screen size and pixel density to work.

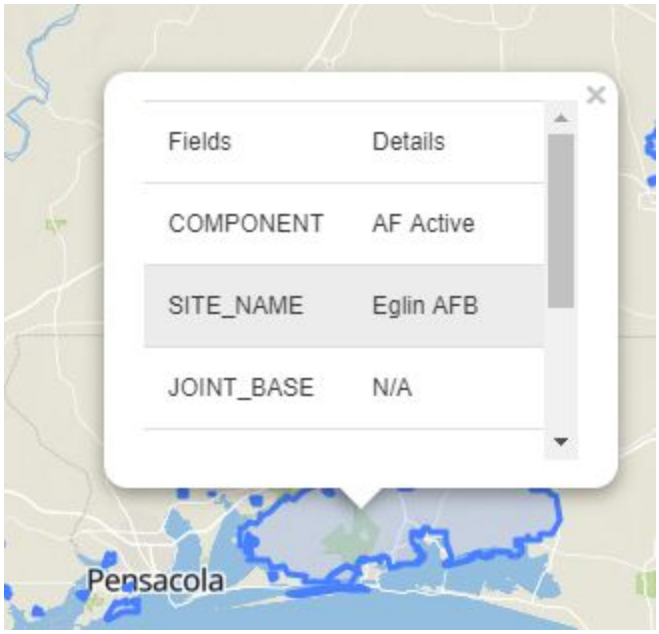


COMPONENT	SITE_NAME	JOINT_BASE	STATE_TERR	COUNTRY	OPER_STAT
AF Active	Nellis AFB	N/A	Nevada	United States	Active
AF Active	Nellis Annex	N/A	Nevada	United States	Active
AF Active	Nellis Air Force Range	N/A	Nevada	United States	Active

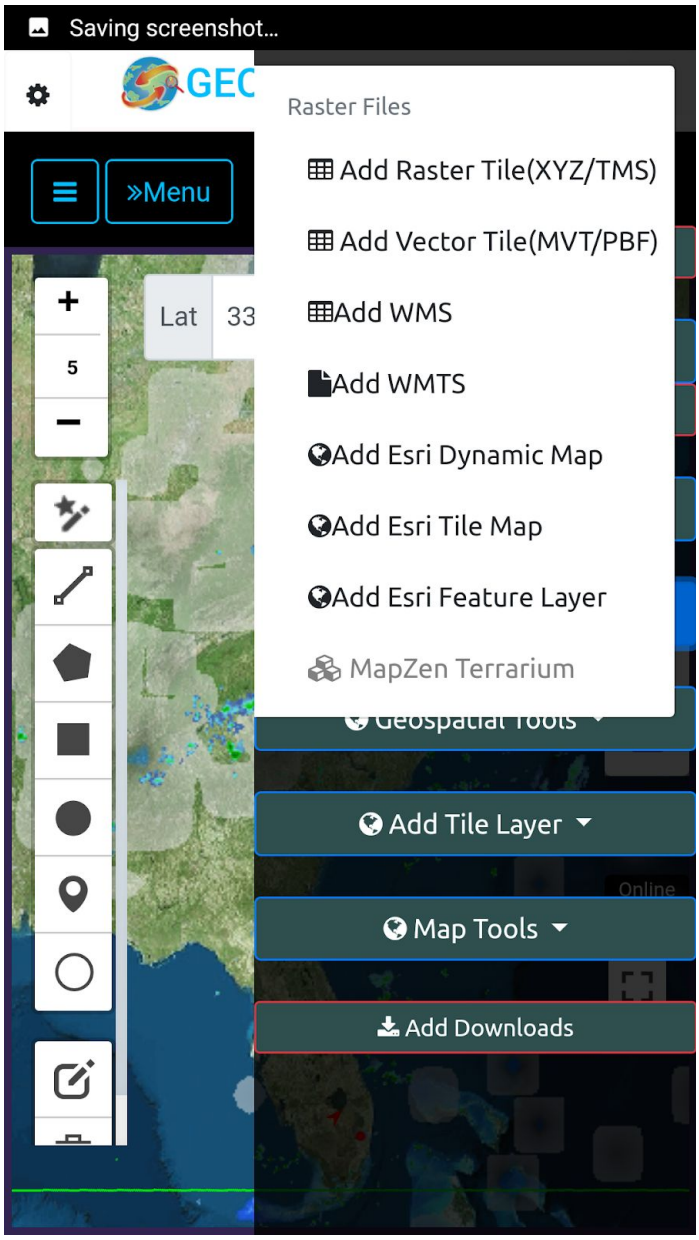
Example of the PDF export

On a rare occasion the app may get stuck rendering or retrieving data and is not responding. We've built in a reset feature to reset the map. This is also good to clear out all loaded layers and start fresh with new loaded data. (in future releases we will have the capability to save all loaded data both local and internet services sa a JSON project file)

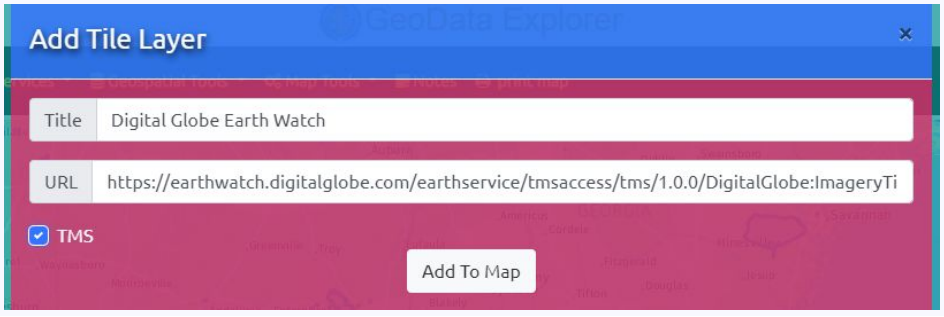
View Attribute Data Popups



Add Internet Mapping Services:



- Add Raster Tile Server (XYZ or select toggle if TMS) These MUST include the Tile Number Placeholders and Extension https://{s}.tile.openstreetmap.org/{z}/{x}/{y}.png

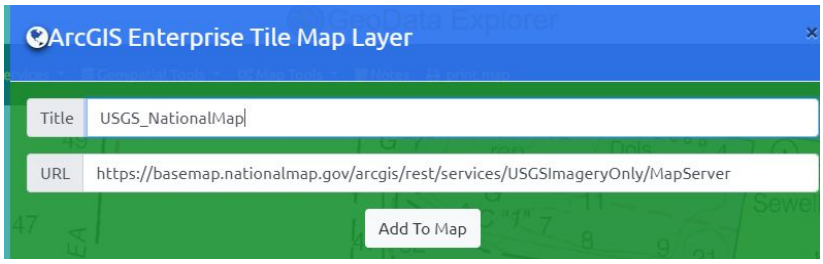


- Add **Vector Tile Server** (assumes XYZ Top Left Origin) - (URL must include Placeholders and either PBF or MVT as the Extension /{z}/{x}/{y}.pbf)
- Add OGC **WMS** - (URL and LayerName)
- Add OGC **WMTS** -Raster Tiles

Type or paste in the URL and click add to Map

For ESRI Mapping Services - (do not include Layer Names or Query Parameters as part of the URL End the ESRI URL's with the Service type: MapServer, ImageServer) Add a Tile (name it whatever you want for your reference and the URL)

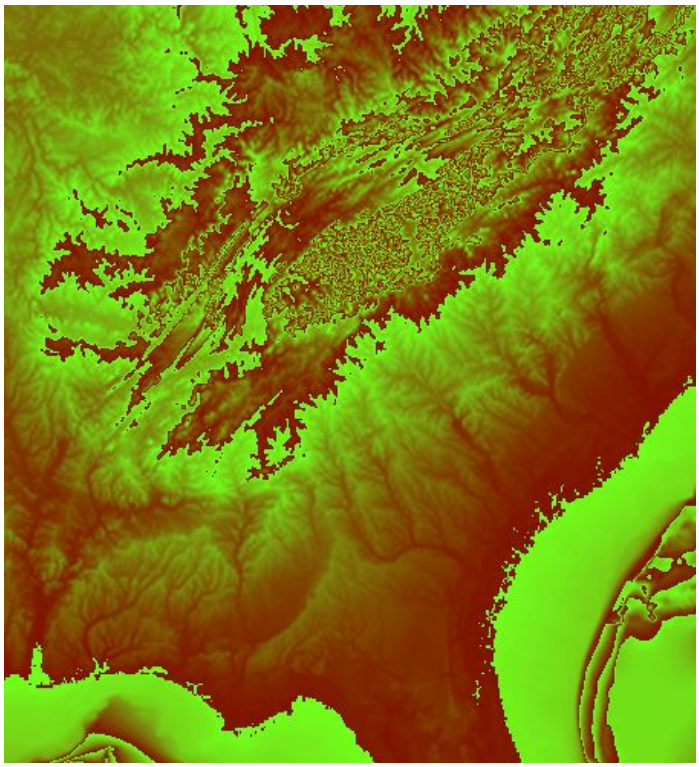
- Add **ESRI Dynamic Map** (MapServer) (only use this for Dynamic Map Services Non cached)
- Add **ESRI Tile Map** (Use this for Cached Tiled MapServer and ImageServer)

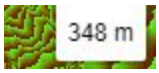


- Add **ESRI Feature Layer** (FeatureServer) - must include layer in the URL someurl/featureserver/0 (go to the webpage REST endpoint and see the layer names the app does not query the layernames like it does with MapServer)

View Attribute Table from Mapping Services

- Add **MapZen Terrarium** PNG **Elevation Tiles for SPOT Elevation and Terrain Profile View. (click EL)** - these are from AWS OpenData in an S3 Bucket https://registry.opendata.aws/terrain-tiles/ and streamed to the app to provide SPOT Elevation in meters and Terrain Profile View Graph. Currently, the PNG data is rendered on the map and it could provide some value showing some visual representation of the data but in the future we will make it default to NOT show it and only include the spot elevation data. In addition, it does NOT appear as a Table of content entry. To turn off the data go back to Add Web Services and click MapZen Terrarium. (elevation_terrarium_rastertiles.mbtiles is the offline version that can be downloaded for each Country)



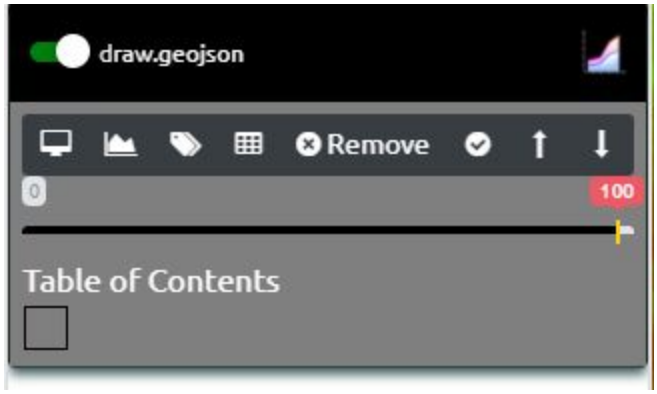


The data is seamless and worldwide and also includes ocean bathymetry shown as a negative number.

Terrarium format *PNG* tiles contain raw elevation data in meters, in Web Mercator projection (EPSG:3857). All values are positive with a 32,768 offset, split into the red, green, and blue channels, with 16 bits of integer and 8 bits of fraction.

In other words, the red channel encodes the "256s" place, the green channel the "1s" place, and the blue channel the fractional component, which is 0 - 0.99609375 (255/256) in increments of 0.00390625 (1 / 256).

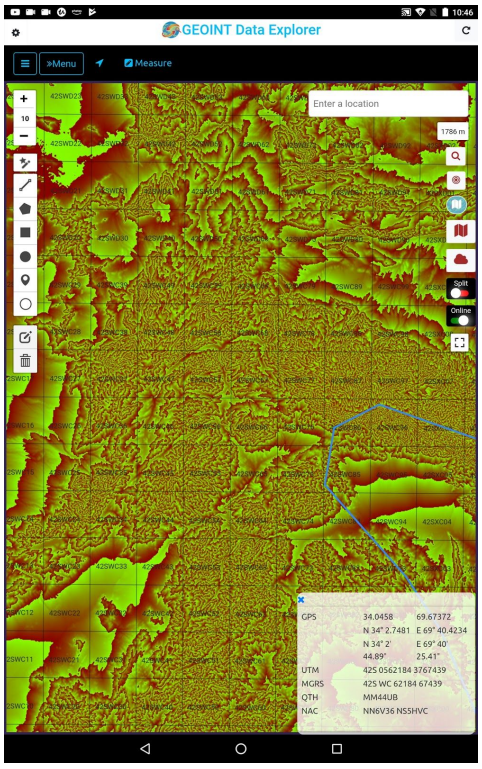
The range of the elevation data **(-11000 - 8900 meters)** spans rgb(85, 8, 0) - rgb(162, 198, 0), or [0.33203125, 0.03125, 0] - [0.6328125, 0.7734375, 0].

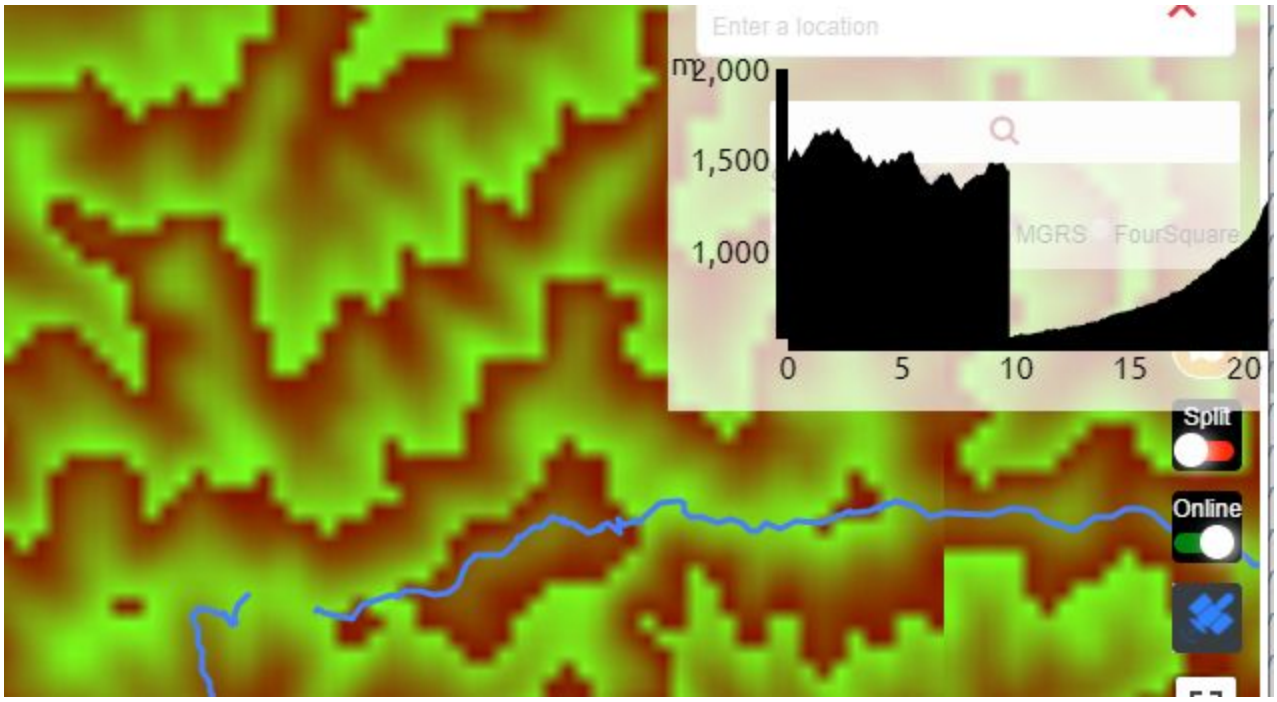


To Enable Terrain Profile View

Draw a Line and save it or load an already existing GeoJSON or GPX file

Click the Terrain Profile Graphic Icon on the Tablet of Contents

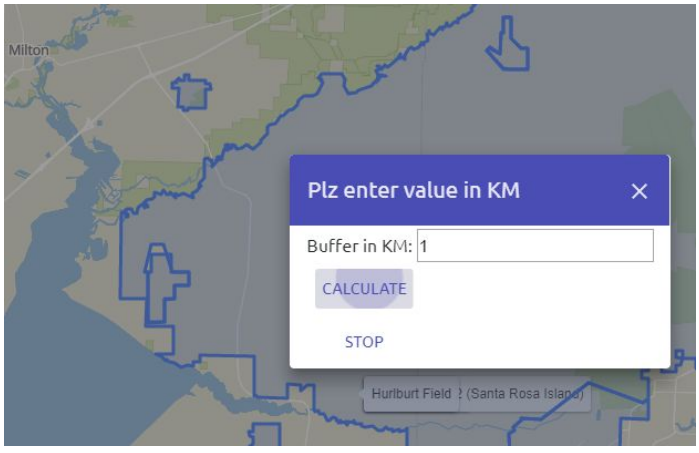


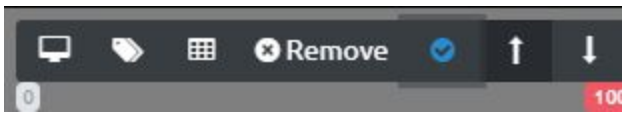


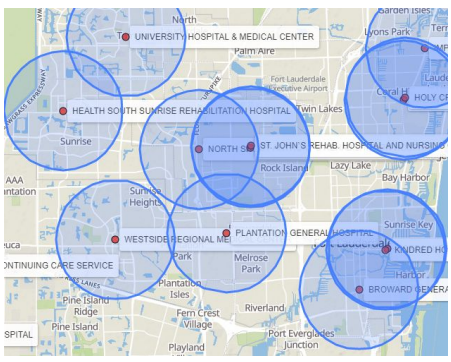
NOTES:Currently **NOT** supported Formats:
Mapping Services: OGC WFS,OGC WCS,OGC SOS, ESRI VectorTileServer hosted vector tile URL.
File Formats: ESRI FileGeodatabase, LPK - Layer Package, MMPK - Mobile Map Package, LERC Elevation Tiles in mbtiles.
We are planning to support additional file formats and mapping services in future releases

Geospatial Tools

BUFFER





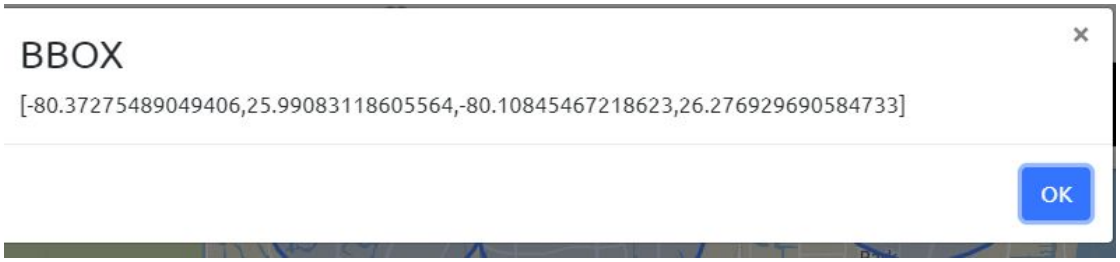


Example of 2

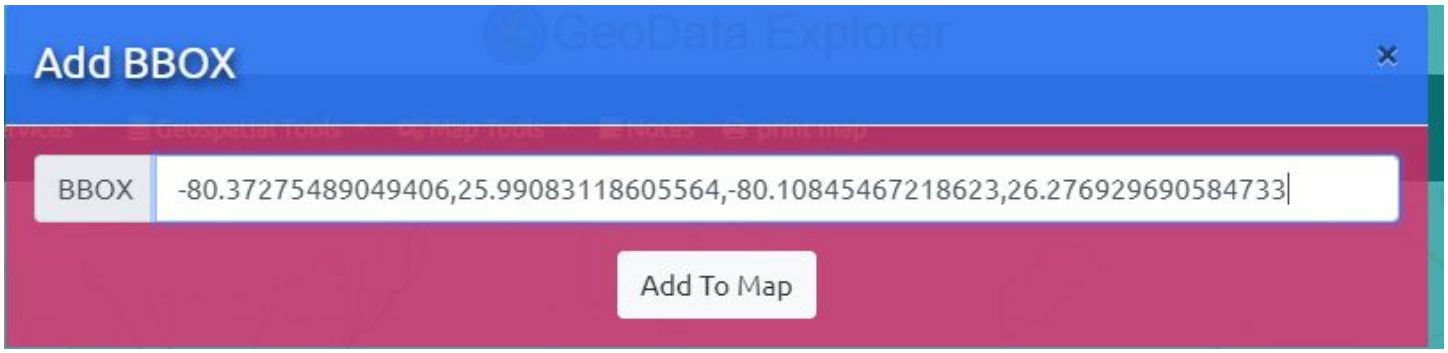
KM buffer around Hospitals

CENTER

BBOX - Bounding Box



You can also go to a bounding box

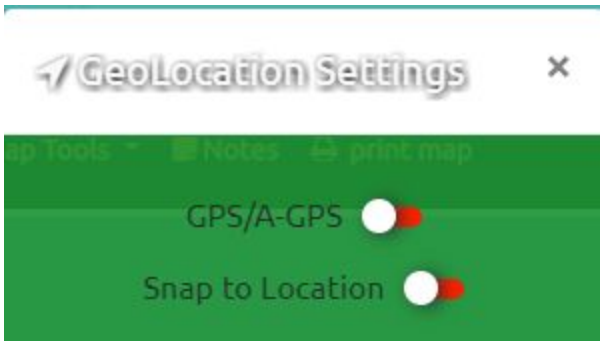


ENVELOPE

GeoLocation - show device location on the map

Turn on Device Location in Settings of your tablet/phone
In the app click the Triangle Icon on top menu (Geolocation Settings) Click Enable GPS /A-GPS.
And Snap to Location (you can have this off and there is button on map to center to current geolocation)

The Arrow Control in Top Menu controls the Geolocation Settings. Your device (Android or iOS Native Location Services must be turned on to use this service)

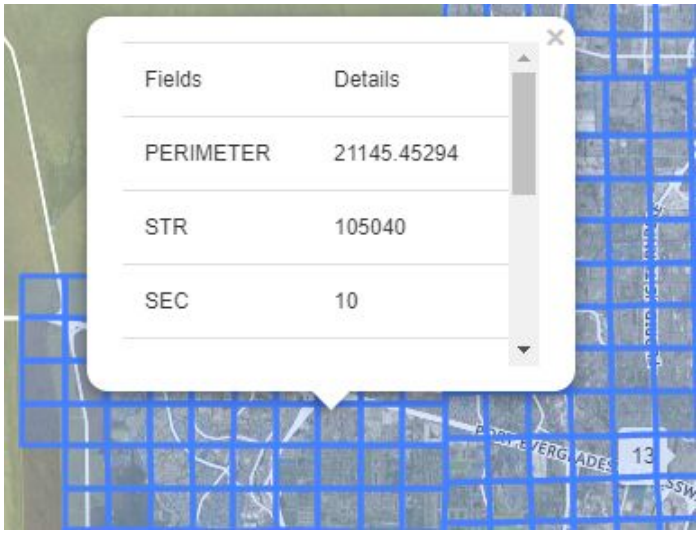


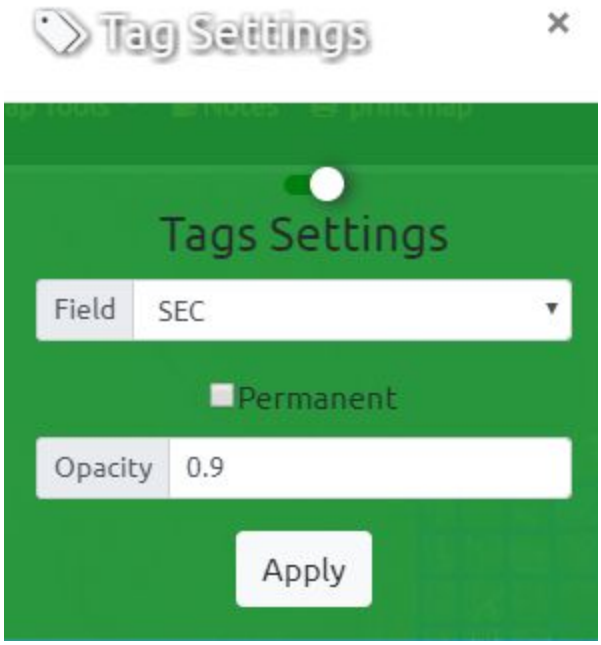
Test ONLINE Toggle

if toggle to Offline Mode Internet Basemaps and MapServices should be disconnected

Add mouse over labels or permanent Labels

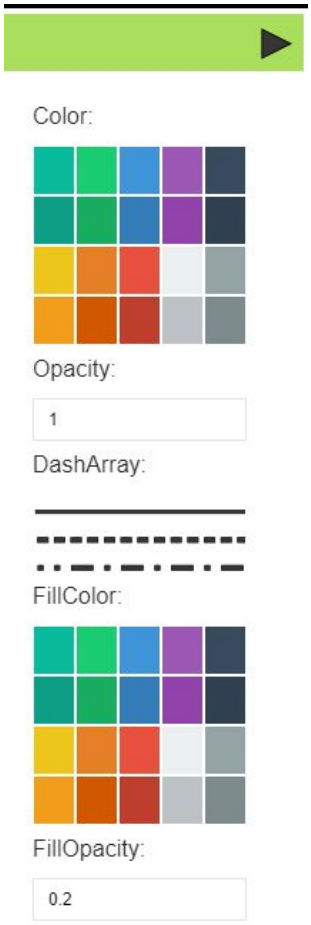
Click the TAG/Label Icon





Style Data

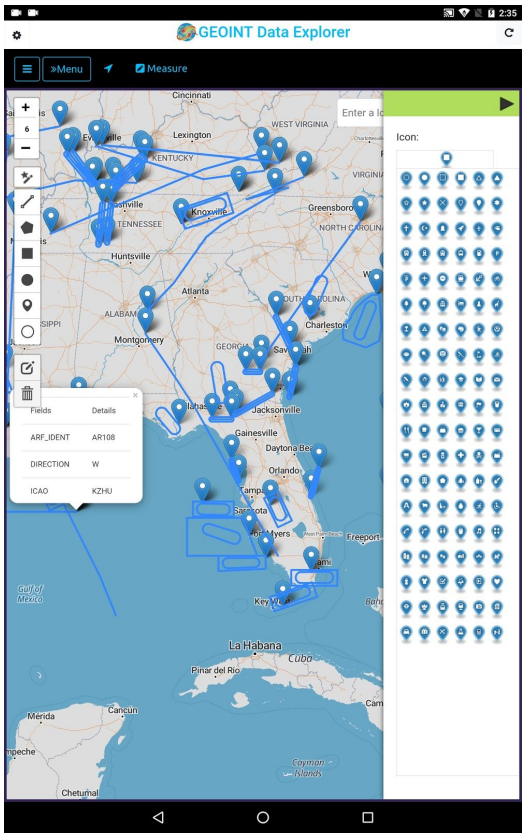
Edit style of overlayer feature
Change Outline color
Change fill color
Set border opacity
Set fill opacity
Change border style



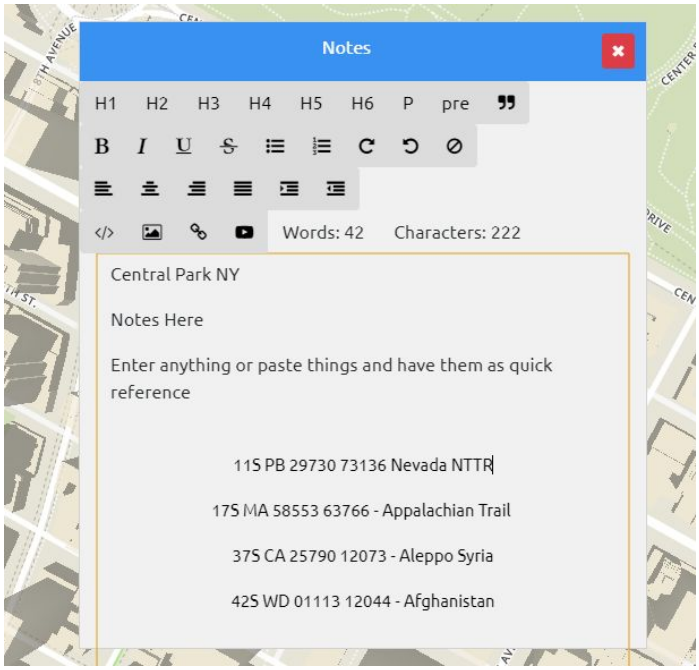
Currently, the styling tools works with the following data:
Draw Tool
Shapefile
GeoJSON
CSV

In future releases we will extend this capability to support GPKG,

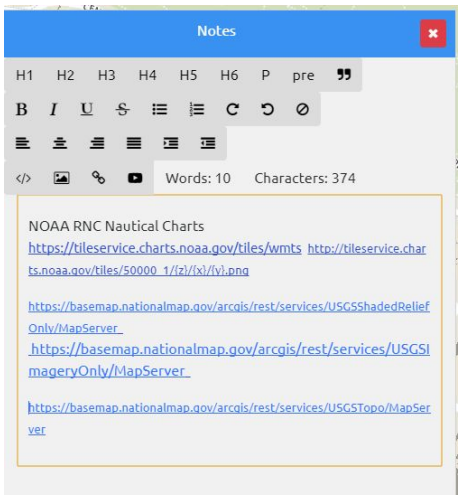
In addition, POINT/Markers Symbols work for GeoJSON



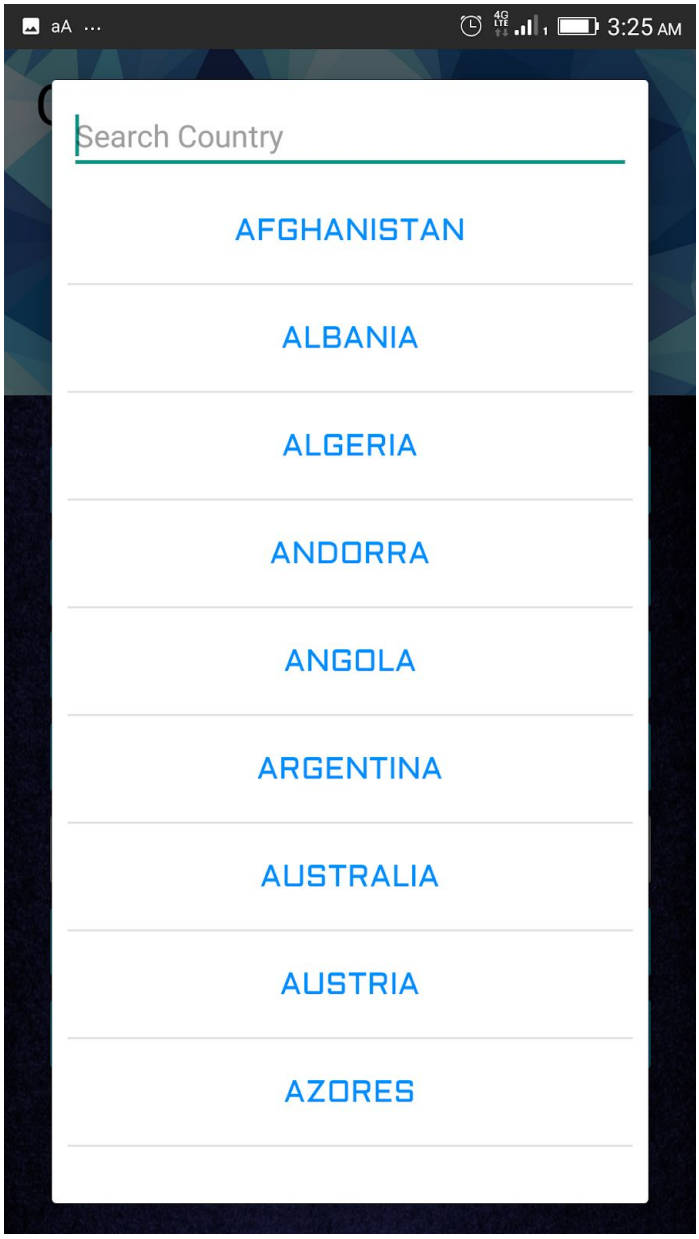
NOTES Tool

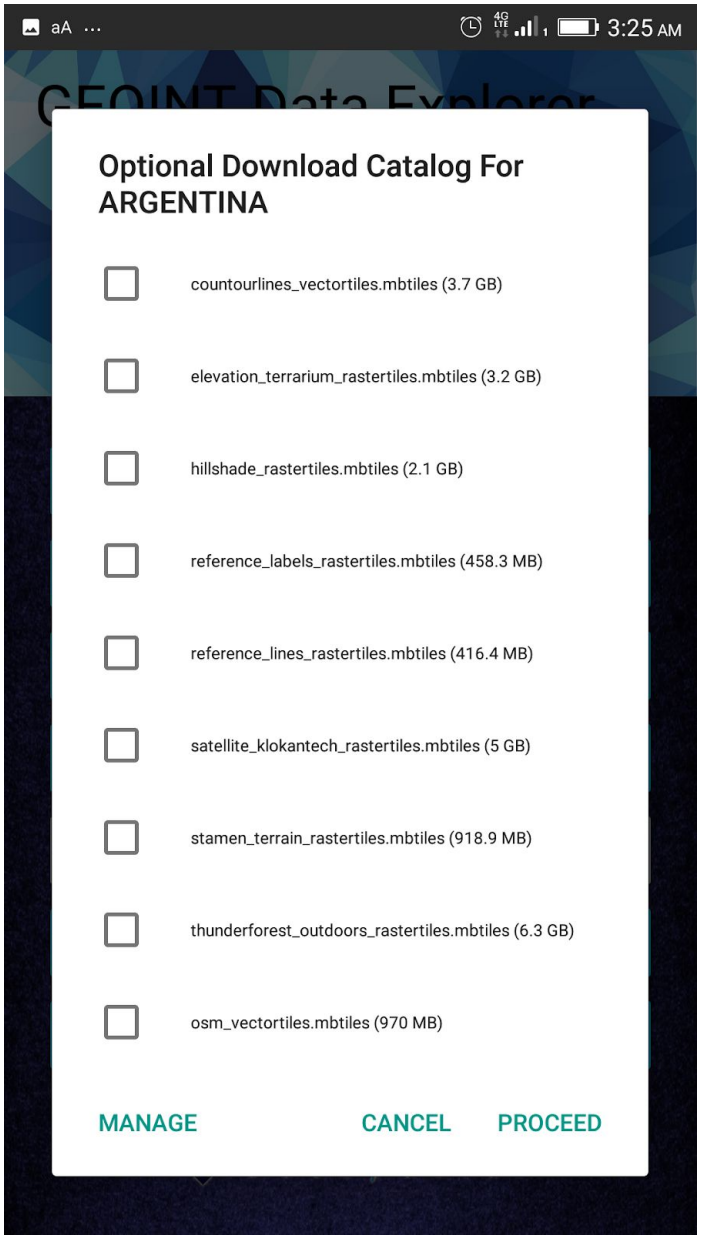


This is just a convenient place if you've got some
Mapping URL's or Coordinates and you want to have them handy for copy and pasting

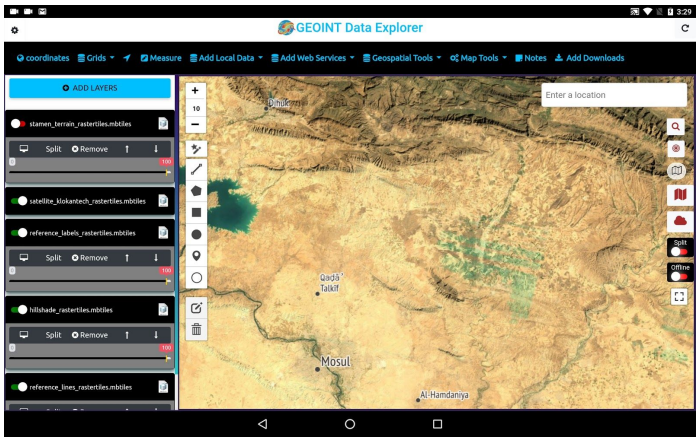


Download Optional Offline Data

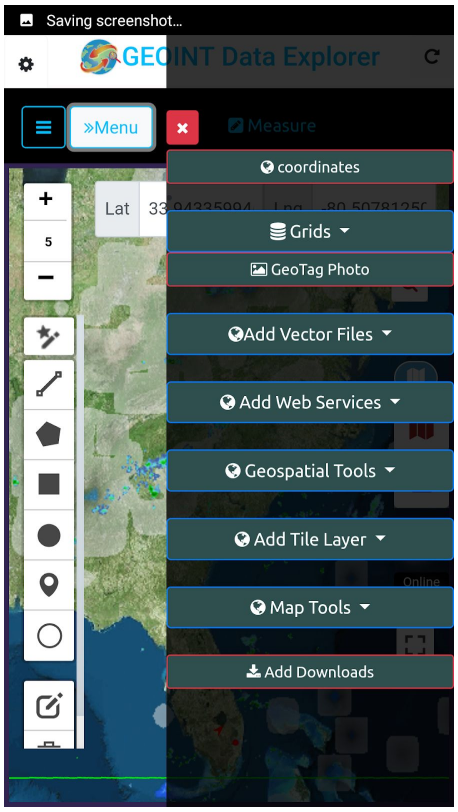




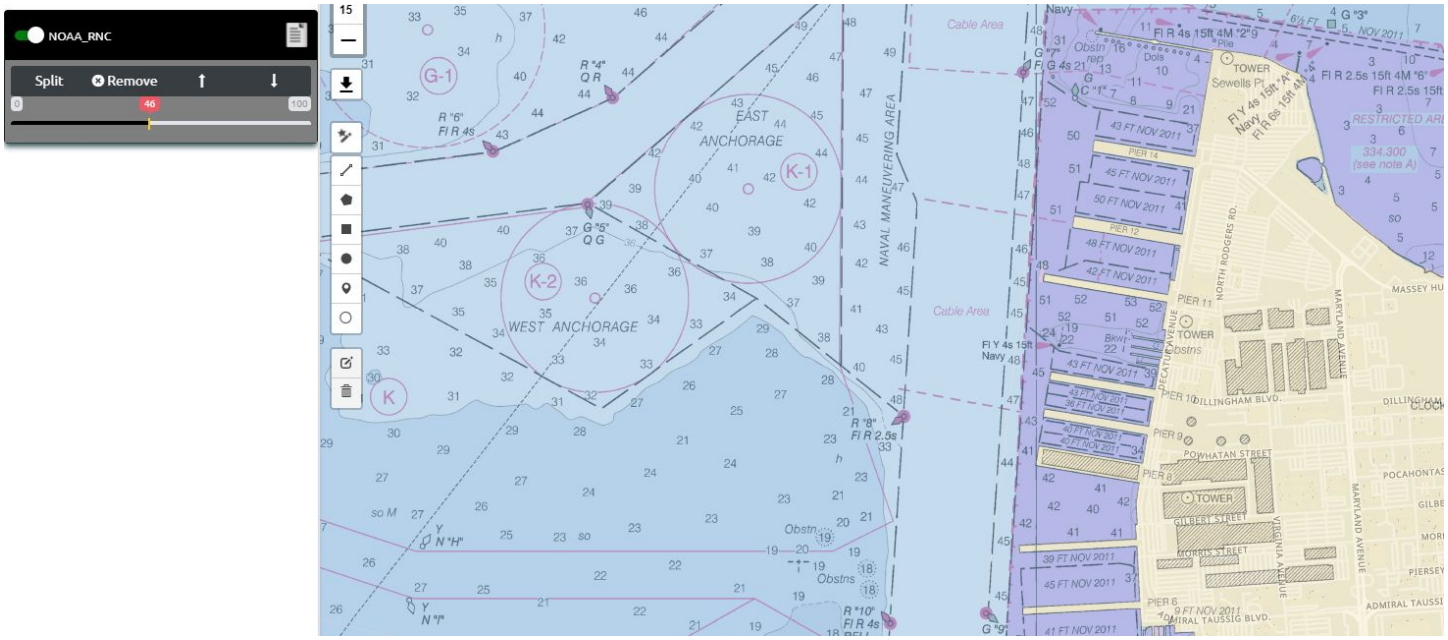
Once you've downloaded data, go to the Map



Click Add Downloads

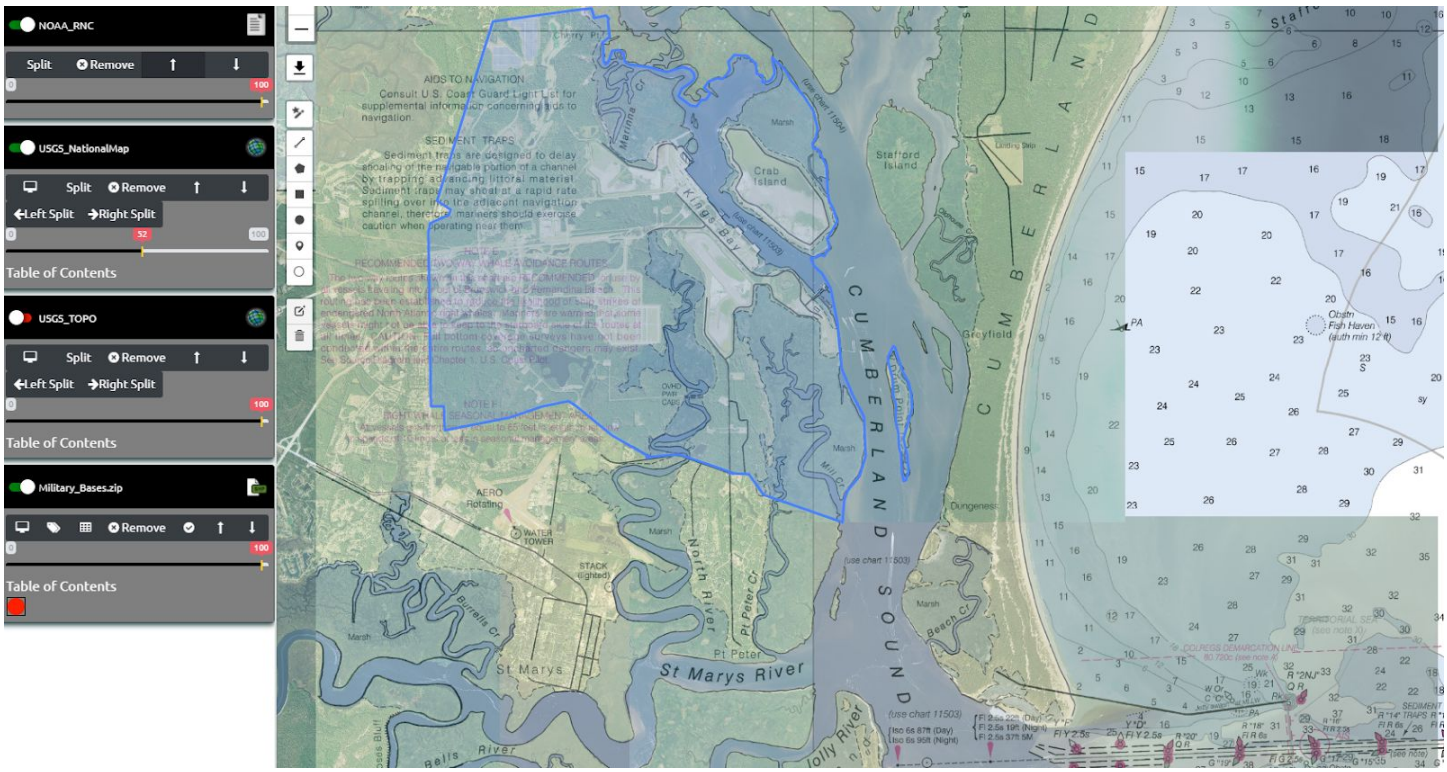


Adjust Opacity/Transparency

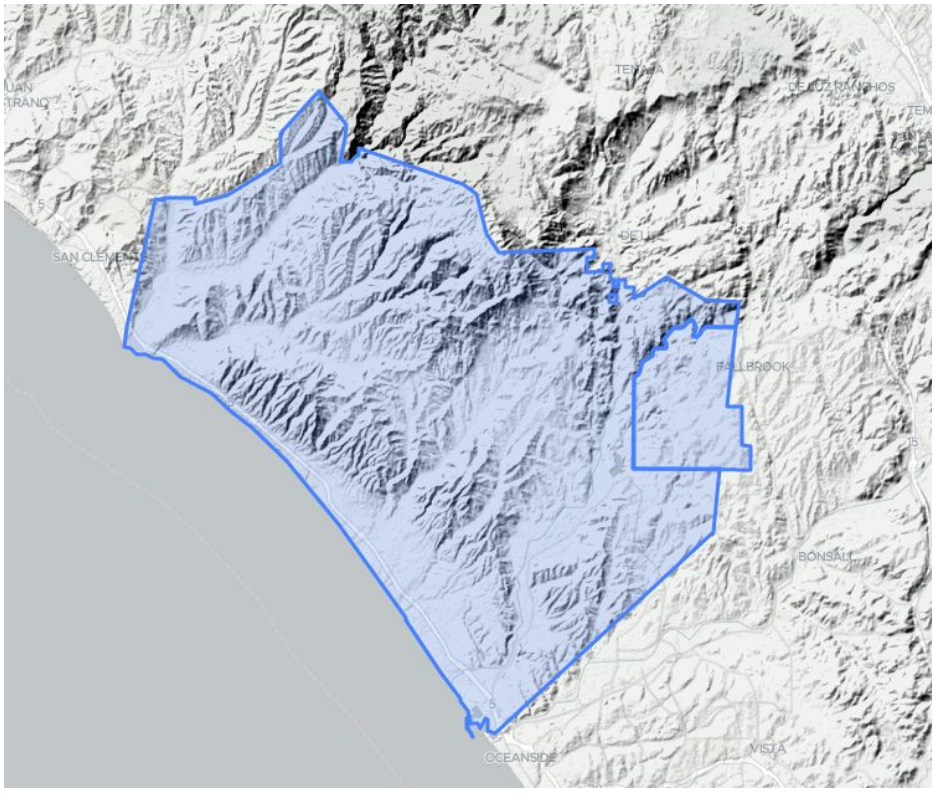


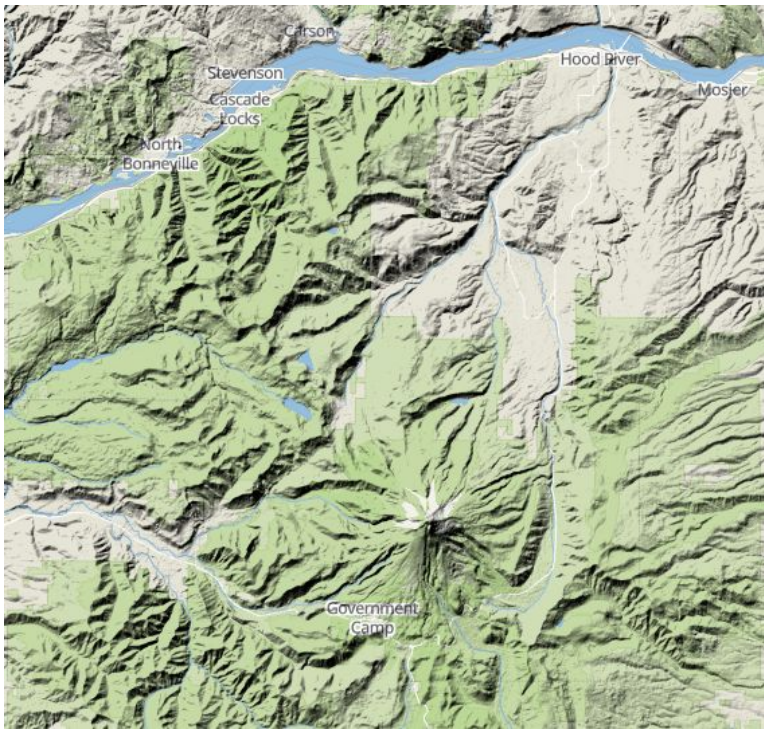
Quickly Mashup Data

Add local and internet data and change layer order and opacity to get the map to meet your unique operational and Geospatial Intelligence Analysis needs.

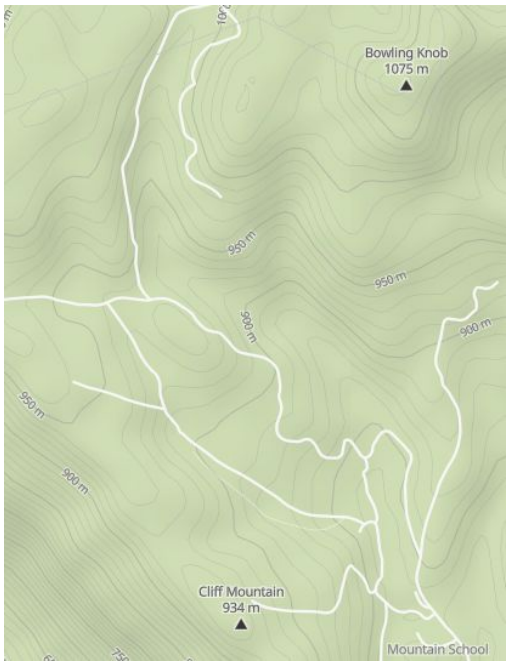


Load Raster Hillshade

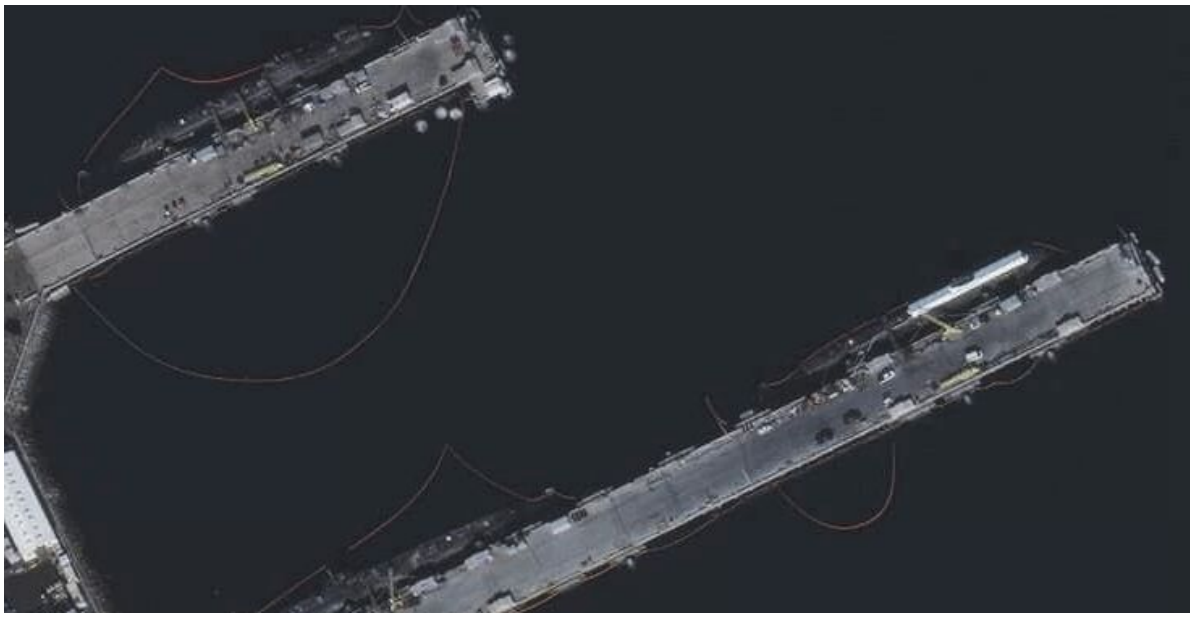


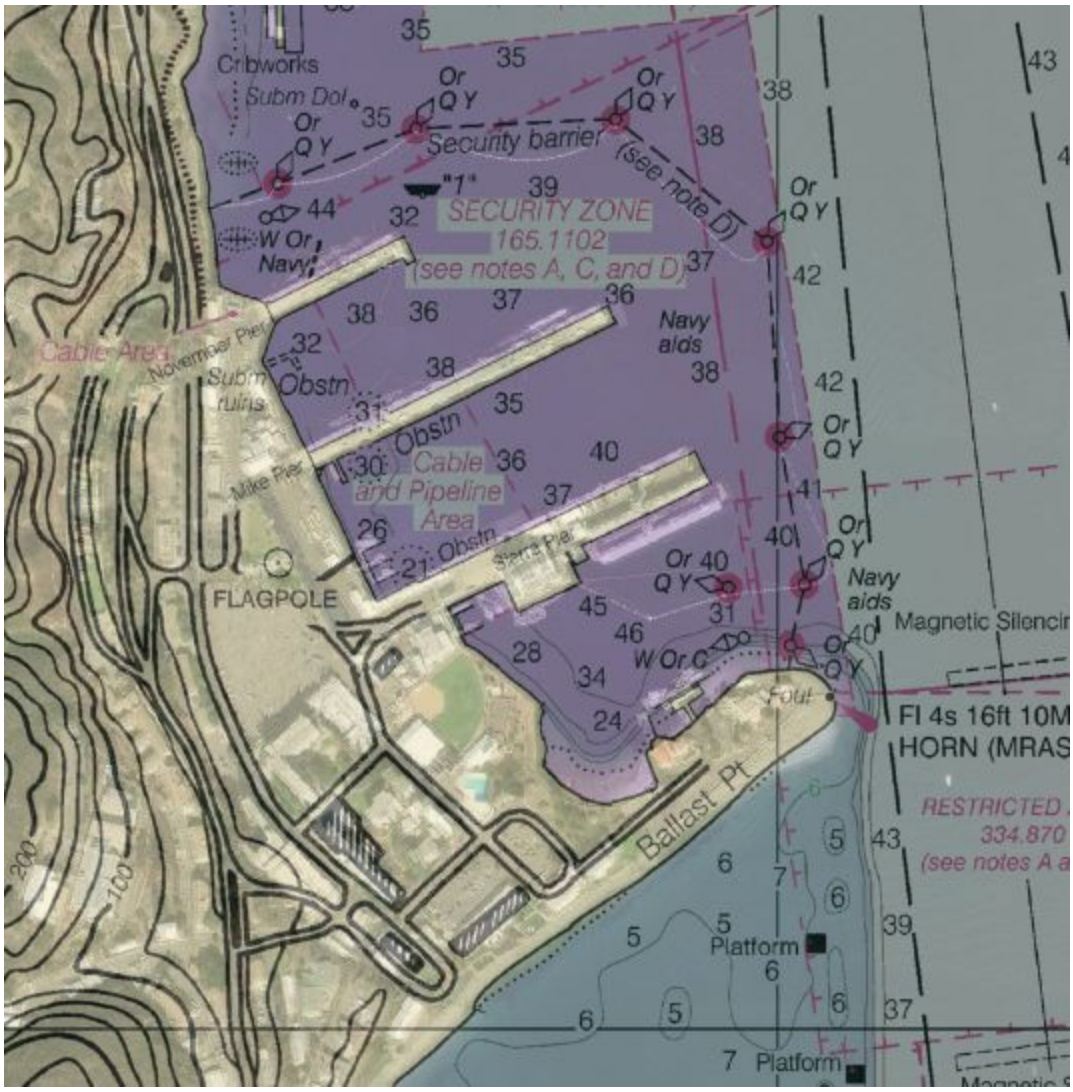


View Contour Lines


Bowling Knob
1075 m
950 m
950 m
900 m
900 m
950 m
900 m
Cliff Mountain
934 m
Mountain School

Toggle Layers On/Off as another way quickly Compare (in addition to SPLIT functionality)

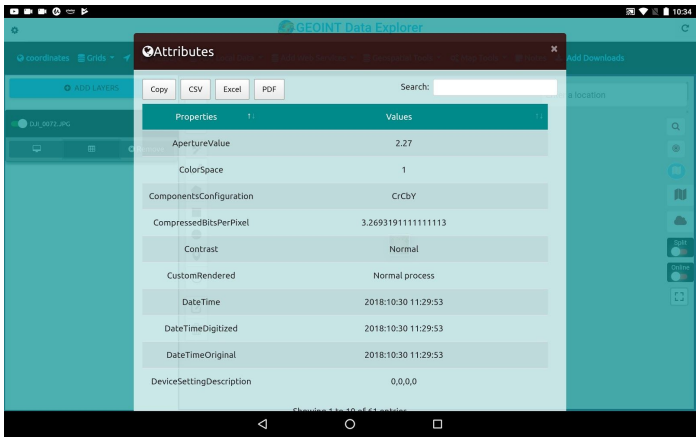


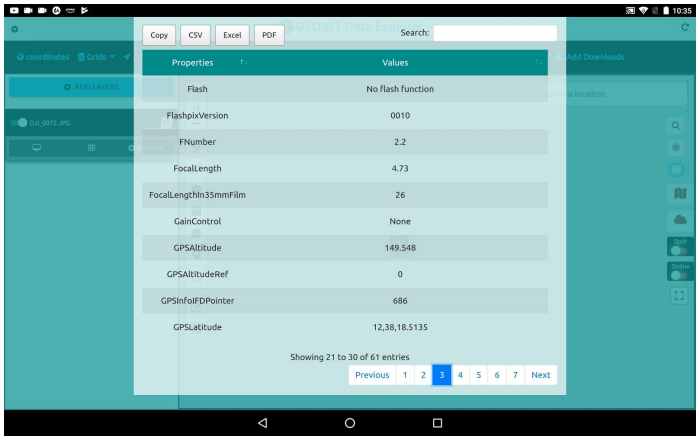


Easily compare Imagery from different Sources or days

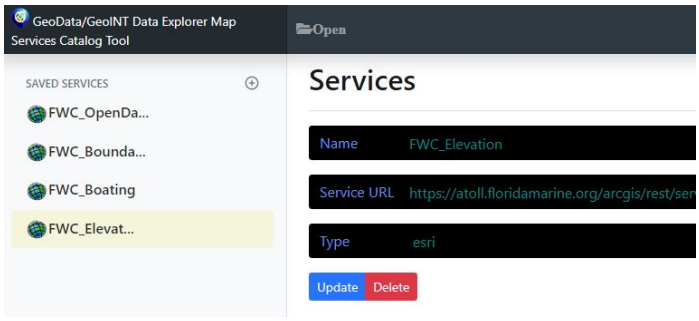
View GeoTagged Photos on the Map

View GeoTagged Photos and even open up Attribute Table of the **(Exif headers)** The Photos are very small and can not be clicked to open. (future releases may offer that capability)





Catalog Builder Tool



http://192.227.108.83/explorer_services_json_creatoreditor/# This URL is accessible in the APP or via your computer browser. A little tool hosted by Tech Maven Geospatial.

DO NOT include any Query Parameters or Layer Names.End the URL with Service

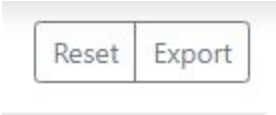
Types: ESRI refers to all 3 ESRI Supported Dynamic Map REST Services (MapServer,FeatureService,ImageServer)
XYZ is Raster Tile URL
GeoServer is generic Term for any OGC Web Map Service-WMS
TileJSON is for Vector and Raster Tiles

Type for ESRI map services.
XYZ must include place holders and image extension like /{z}/{y}/{x}.png or /{z}/{x}/{y}.png (do not do {reverse y} or -y for TMS Click the check box which puts,"conf":{"tms":true}

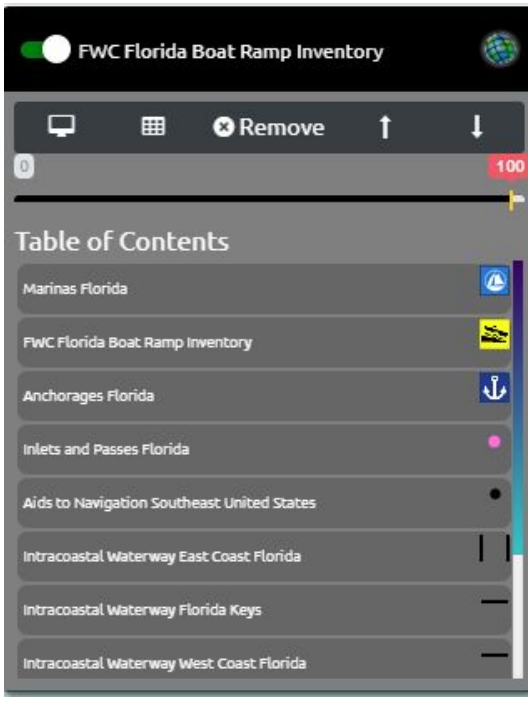
If you know JSON then you can also hand code it here is an example JSON file.

[{"name":"FWC_OpenDataLocations","url":"https://atoll.floridamarine.org/arcgis/rest/services/FWC_GIS/OpenData_Locations/MapServer","server":"esri"},{"name":"FWC_Boundaries","url":"https://atoll.floridamarine.org/arcgis/rest/services/FWC_GIS/OpenData_Boundaries/MapServer","server":"esri"},{"name":"FWC_Boating","url":"https://atoll.floridamarine.org/arcgis/rest/services/FWC_GIS/OpenData_Boating/MapServer","server":"esri"},{"name":"FWC_Elevation","url":"https://atoll.floridamarine.org/arcgis/rest/services/FWC_GIS/OpenData_Elevation/MapServer","server":"esri"}]

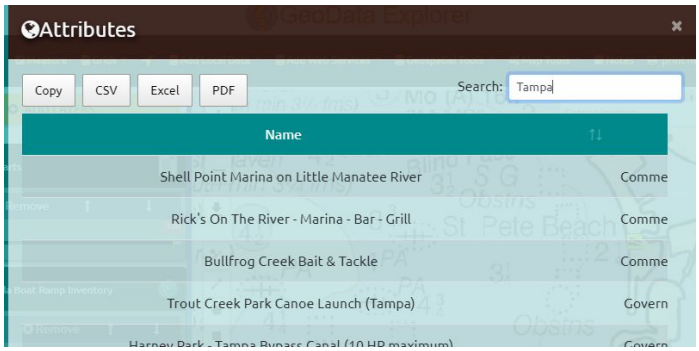
After you've added the URL's
Click Export. This Saves a JSON file that can be imported into the app. Add Accessible via Add Layers Button



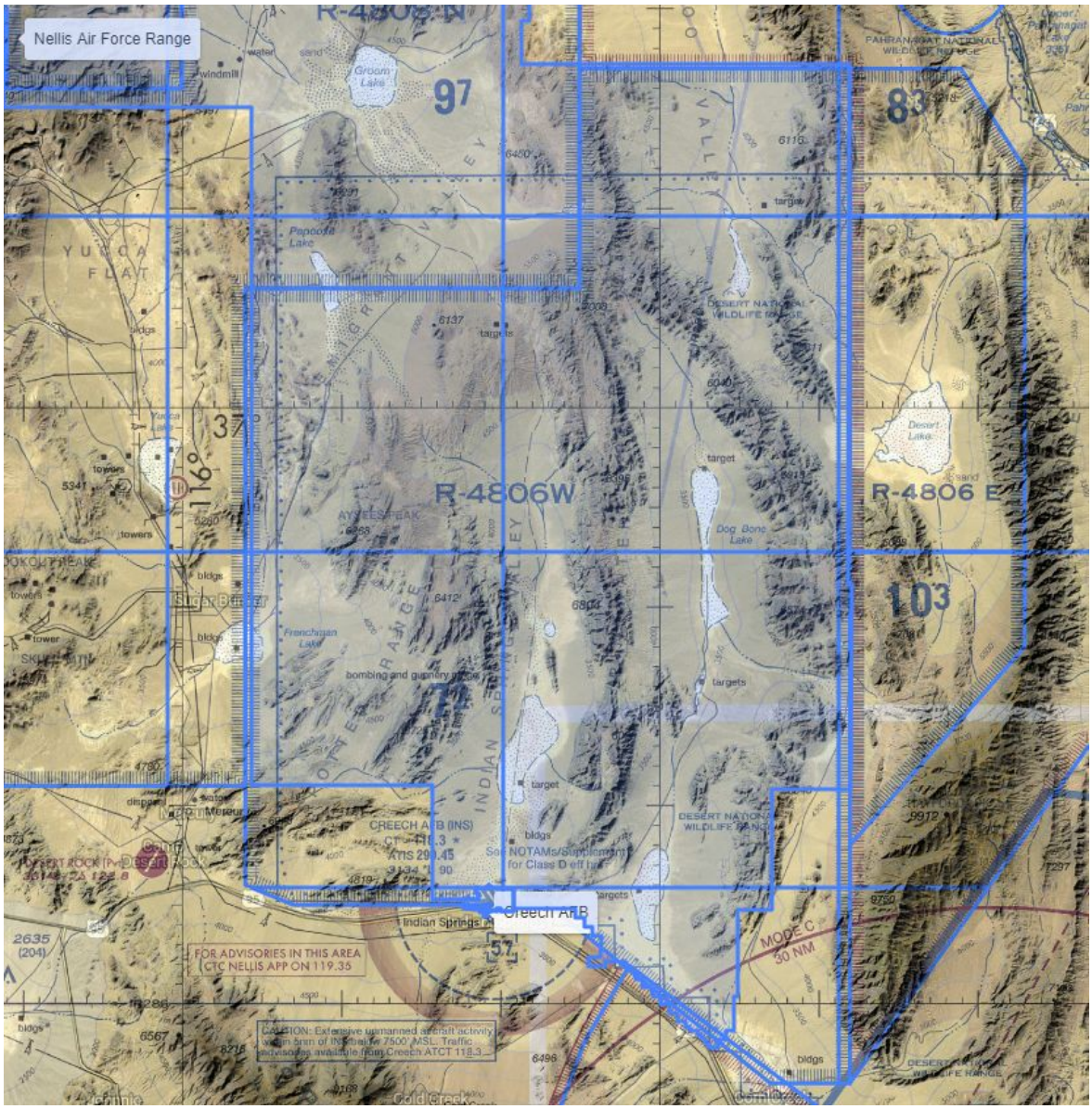
View Table of Contents and Legend of MapServices

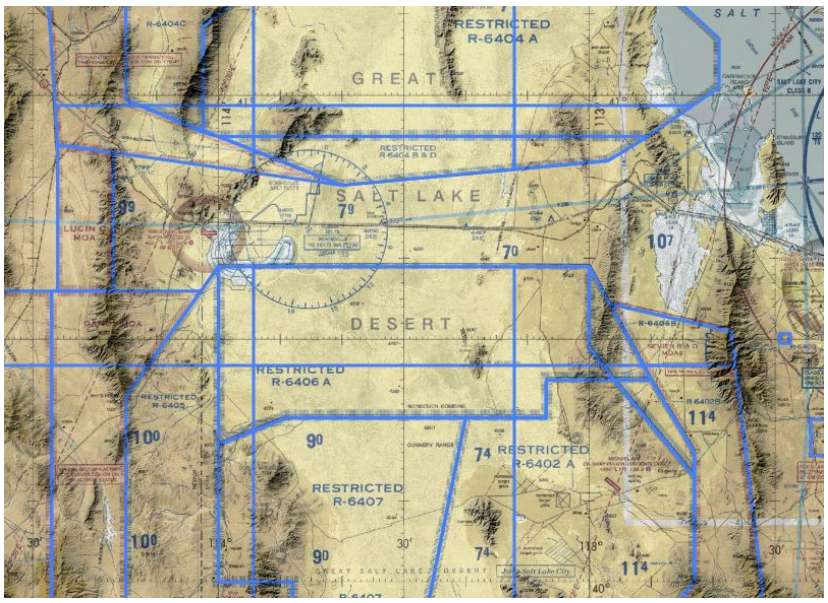


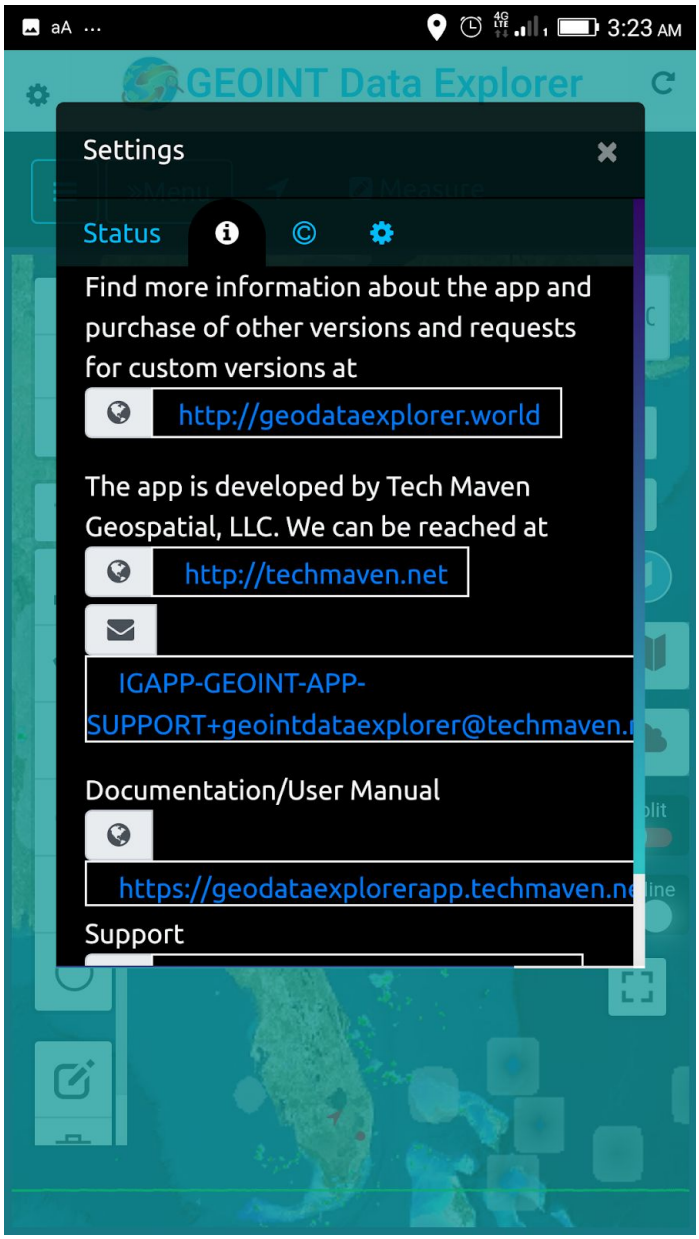
Search Attributes in MapServices

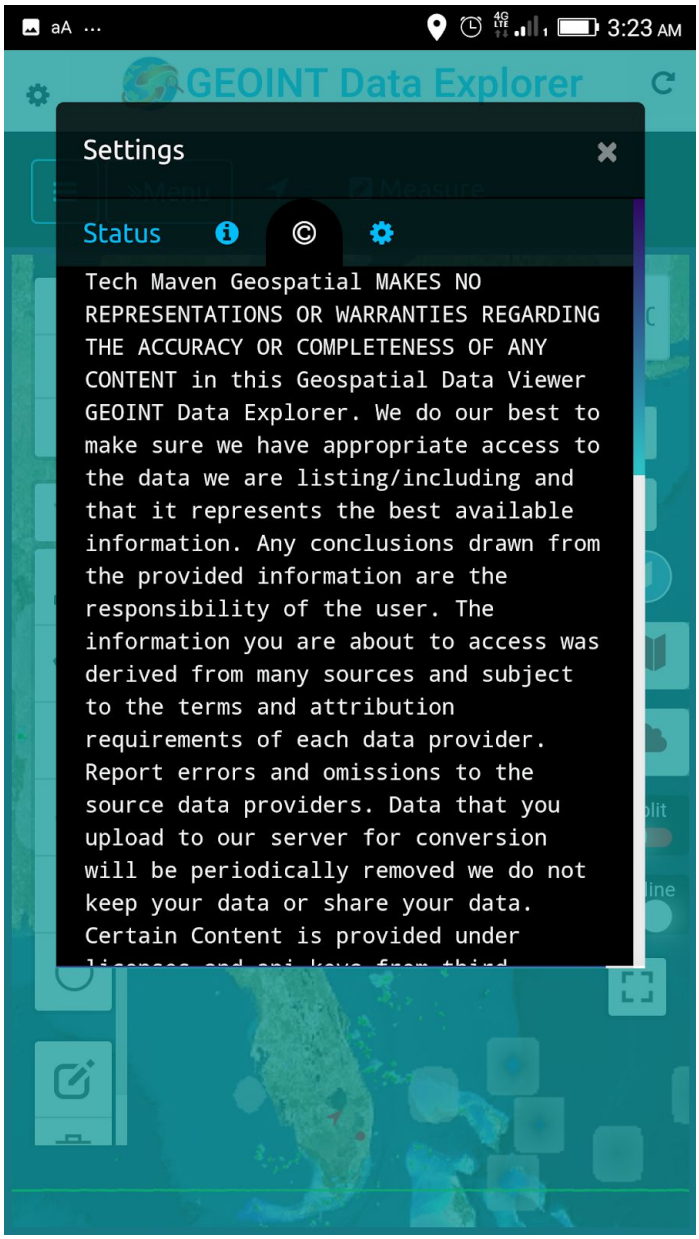


The app can be used for Mission Planning and pre-flight planning. Review airspaces, Elevation information and other datasets like AVDAFIF or AeroApp mbtiles.


Nellis Air Force Range
R-4806W
R-4806 E
Creech AFB
Indian Springs
FOR ADVISORIES IN THIS AREA
CTC NELLIS APP ON 119.35
MODE C
30 NM
DESERT NATIONAL WILDLIFE RANGE


RESTRICTED
R-6404 A
GREAT
SALT LAKE
DESERT
RESTRICTED
R-6406 A
RESTRICTED
R-6407
RESTRICTED
R-6402 A


3:23 AM
GEOINT Data Explorer
Settings
Status
Find more information about the app and purchase of other versions and requests for custom versions at
http://geodataexplorer.world
The app is developed by Tech Maven Geospatial, LLC. We can be reached at
http://techmaven.net
IGAPP-GEOINT-APP-SUPPORT+geointdataexplorer@techmaven.
Documentation/User Manual
https://geodataexplorerapp.techmaven.n
Support


3:23 AM
GEOINT Data Explorer
Settings
Status
Tech Maven Geospatial MAKES NO REPRESENTATIONS OR WARRANTIES REGARDING THE ACCURACY OR COMPLETENESS OF ANY CONTENT in this Geospatial Data Viewer GEOINT Data Explorer. We do our best to make sure we have appropriate access to the data we are listing/including and that it represents the best available information. Any conclusions drawn from the provided information are the responsibility of the user. The information you are about to access was derived from many sources and subject to the terms and attribution requirements of each data provider. Report errors and omissions to the source data providers. Data that you upload to our server for conversion will be periodically removed we do not keep your data or share your data. Certain Content is provided under

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We do not offer phone support but you can call and leave a Voicemail and also send SMS to 775-573-0253

Feedback Form

Name

Email Address

Existing Customer

- Exisiting Customer
- Prospective Customer

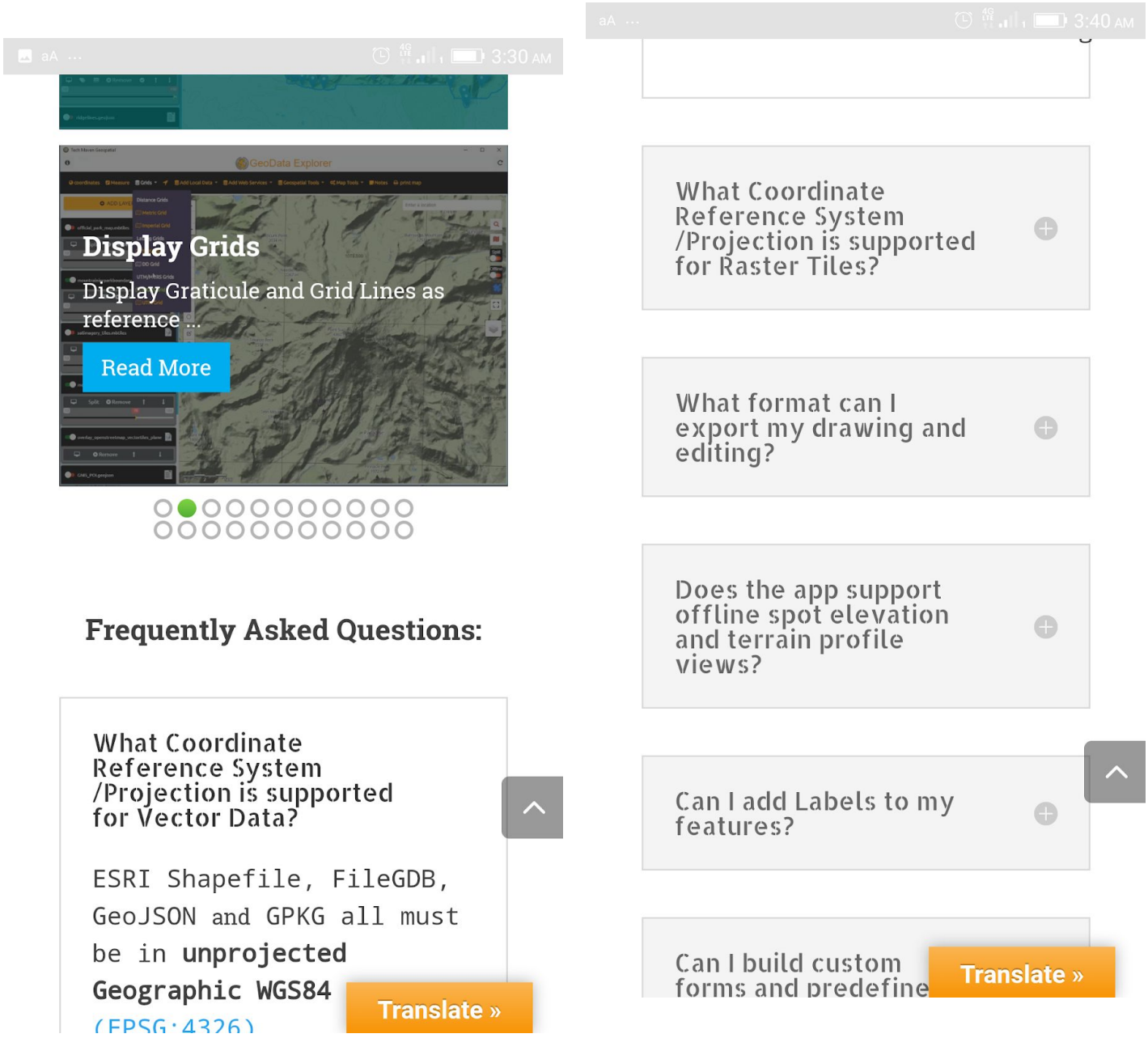
Type

May We Contact You

- May we Contact You

Message

Translate »



The app does NOT collect any user data and does not Report any Geolocation information. Any user data loaded stays on the device and never gets uploaded to any servers.

Contact Information

More Information is available at
https://geodataexplorerapp.techmaven.net/geoint_data_explorer/

Tech Maven Geospatial is proud to support the Defense and Intelligence Community, US State Department, Homeland Security and other users of the IGAPP GEOINT APP Store with this powerful and innovative app.
We hope you like the results of several years of hard work and dedication and continued commitment to excellence and building a mobile GEOINT toolkit.

This App and document was created for the IGAPP GEOINT APP STORE by the US Government managed by Engility/SAIC as part of a National Geospatial-Intelligence Agency program.

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