

DIGITAL MAPPING TECHNIQUES 2022

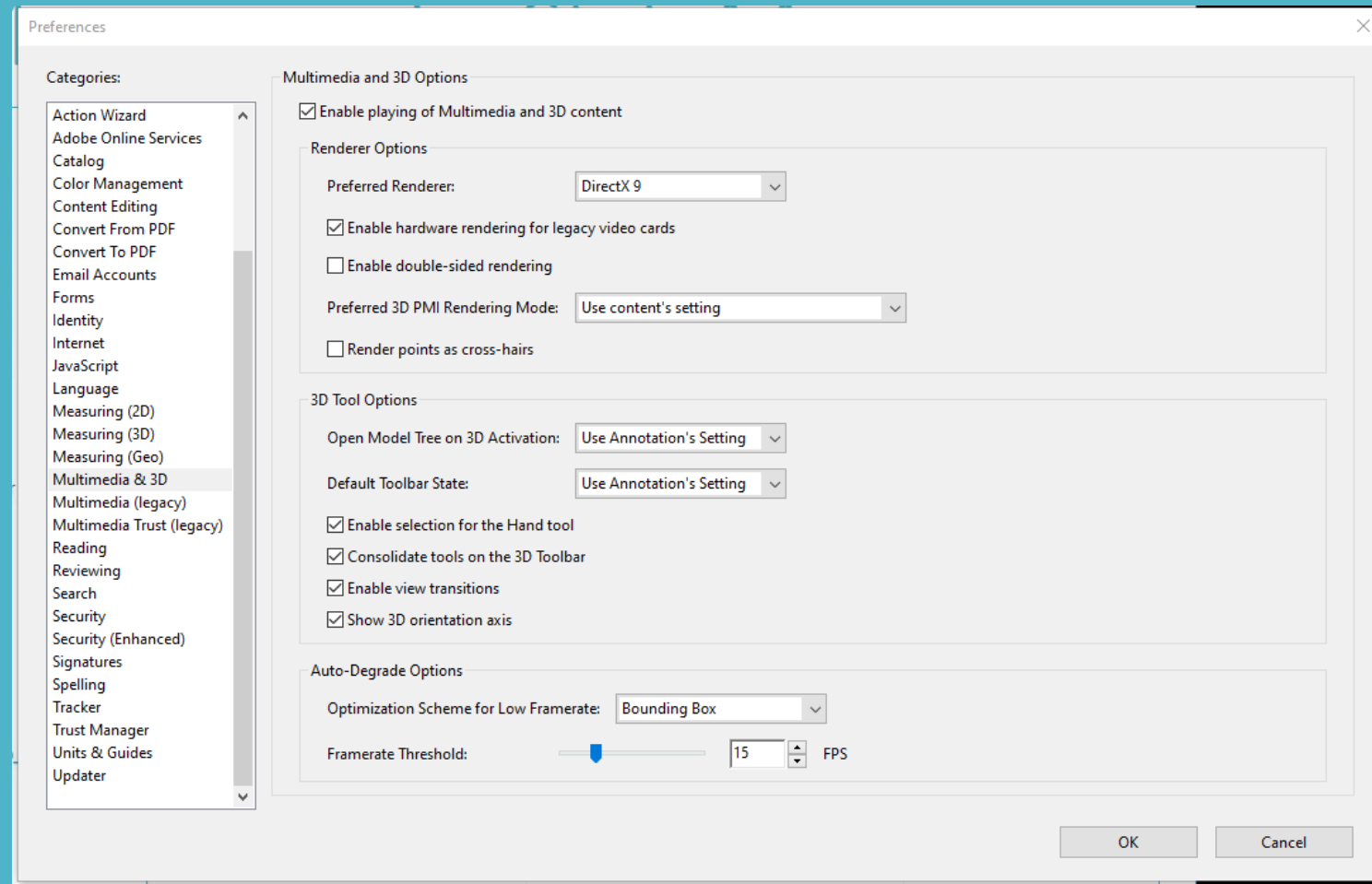
The following was presented at DMT'22
May 22 - 25, 2022

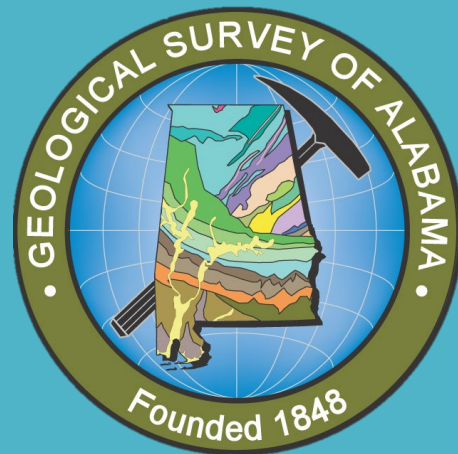
The contents of this document are provisional

See Presentations and Proceedings
from the DMT Meetings (1997-2022)

<http://ngmdb.usgs.gov/info/dmt/>

This PDF contains videos, to view the videos you need to download the file. To enable media in Adobe Acrobat, Edit>>Preferences>>Multimedia & 3D>>Check “Enable playing of Multimedia and 3D content.”










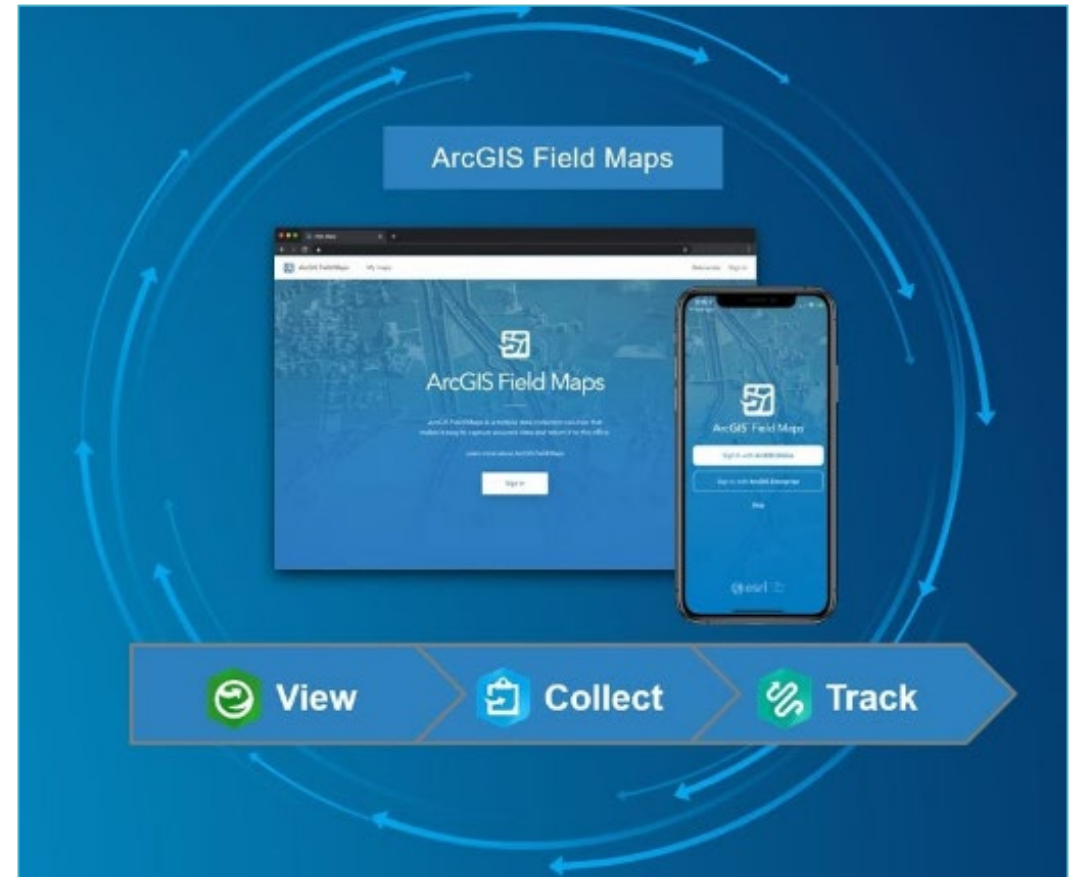
Using Esri ArcGIS Field Maps for geologic fieldwork

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Geological Survey of Alabama
DMT May 2022

“The all-in-one app for fieldwork”



	Old application	Functionality
	Explorer	Explore maps
	Collector	Collecting data
	Tracker	Tracking position
	Navigator	Navigation
	Workforce	Tasks creation and management



Field Maps updates

Web app–ArcGIS Online

The latest version of the Field Maps web app on ArcGIS Online was released in March 2022. It includes the following:

- [Add choice form elements](#) to provide mobile workers with a list of values to choose from when filling out the form.
- [Add calculated expressions](#) to automate data entry in the form.
- Various bug fixes and improvements.

Mobile app–22.2.0 (Android and iOS)

The 22.2.0 release of ArcGIS Field Maps on Android and iOS includes the following:

- [Select contingent values](#) when filling out the form.
- Various bug fixes and improvements including the following:
 - [BUG-000148306](#)

New capabilities (03/2022)

Choice form elements

Calculated expressions

Contingent values

Conditional visibility (12/2021)

The screenshot shows a mobile application interface for a form titled "FormBuilder test". The form has three main sections: "Date" with a "No value" field and a calendar icon; "Sample Taken" with a dropdown menu showing "NA" and a list icon; and "Rock Type" with a radio button selection list including "No value", "Sand", "Silt", "Clay", "Loam", "Cobble", "Pebble", and "Boulder". The interface is dark-themed with white text and icons.

This screenshot shows a desktop view of the same form. The "Sample Taken" field is a dropdown menu with "NA" selected. Below it, the "Rock Type" section features radio buttons for "No value" and two other options that are currently disabled or blurred.

Form builder

Form Elements

BASIC

Barcode

Date / Time

Number - Double
Decimal, e.g. 1.2

Number - Integer
Whole, e.g. 1

Text - Multiline

Text - Single line

CHOICE

Combo box

Radio buttons
Recommended for up to 5 values

Switch

LAYOUT

Group

Using Form builder

- Create a feature layer
- Drag and drop form elements
- Or add fields in the Data table
- Existing fields in a feature layer can be configured as form elements or converted from a pop-up

Attachments

Enable Attachments

Layers

- poly_test
Polygon layer
- line_test
Polyline layer

- Point layer
- Line layer
- Polygon layer
- Table

Create a feature layer

Specify name and type

Poly_test	Polygon layer	<input type="checkbox"/>
Line_test	Line layer	<input type="checkbox"/>

+ Add

Form Templates

Start configuring a form for the layer

Drag fields and form elements into this area or convert the pop-up

Convert pop-up

Forms are not compatible with all Esri apps. [Learn more](#) about form compatibility.

Form builder

Form Elements

BASIC

- Barcode
- Date / Time
- Number - Double
Decimal, e.g. 1.2
- Number - Integer
Whole, e.g. 1
- Text - Multiline
- Text - Single line

CHOICE

- Combo box
- Radio buttons
Recommended for up to 5 values
- Switch

LAYOUT

- Group

Add Field

Field Name:

Display Name:

Type:

Length:

Default Value: (Optional)

Field_Observations

Overview Data Visualization Usage Settings

Table Fields

Double-click a value in the table to change it. Data Last Updated: May 6, 2022, 1:34:27 PM

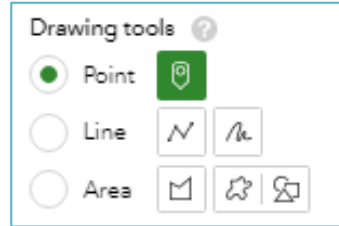
survey (Features: 38, Selected: 0)

Date of observa...	Fieldbook/Stati...	Observed rock t...	Observed map ...	Sample collected?	Notes	Compass readin...	Position source t...	Horizontal Accu...	Vertical /
2/24/2022, 11:33 AM				no	nothing obvious	242.89	Integrated (System) Location Provider	2.82	3.29
2/24/2022, 11:49 AM					impassable, some land clearing beyond the	0.81	Integrated (System) Location Provider	2.35	3.29

Add Field
Append Data to Layer
Clear Selection
Show/Hide Columns

How I built my data collection layers

- Build form in web app Survey123
- Create a feature layer using the existing Survey123 form



<input type="checkbox"/>	Lignite_Field_Form	Form	
<input type="checkbox"/>	Lignite_Field_Form_stakeholder	Feature Layer (hosted, view)	
<input type="checkbox"/>	Lignite_Field_Form_fieldworker	Feature Layer (hosted, view)	
<input type="checkbox"/>	Lignite_Field_Form	Feature Layer (hosted)	

Select an existing feature layer
Browse for an existing feature layer within your organization.

Create a feature layer

Existing feature service
 Lignite_Field_Form

Layer details

survey
Point layer

Create a feature layer

My content ▾

Lignite_Field_Form

Show details ▾

Add **Edit** **Appearance** **Options**

- Singleline text
- Multiline text
- Single choice
- Single choice grid
- Dropdown
- Multiple choice
- Rating
- Likert scale
- Ranking
- Number
- Date
- Time
- Date and time
- Signature
- Image
- File upload
- Address
- Map
- Email
- Website
- Note
- Group
- Page

Field Observations

Lignite and other relevant rock type observations in SEAL for the DOE Lignite project.

Point location*

Date of observation

Fieldbook/Station ID

Observed rock type?

Observed map unit?

Sample collected?
Include sample label if applicable.

Notes:

Attach image or use camera

Submit

How I built my data collection layers

- Add GPS metadata fields
- Add data collection feature layer into AGOL Map, you can add Content in Field Maps web app too
- The existing fields in the feature layer can be added to the Form builder or converted from a pop-up

- Speed (km/h)
- Direction of travel (°)
- Compass reading (°)
- Position source type
- Receiver Name
- Horizontal Accuracy (m)
- Vertical Accuracy (m)
- Latitude
- Longitude
- Altitude
- PDOP
- HDOP
- VDOP

Create a feature layer

Options

Add GPS metadata fields
Add fields to point layers that support capturing GPS receiver information.

Lignites_download

Layers

- Field_Observations
- B_123_pts
- QQQs_outcrops_EAL
- Outcrops_Table2_B123
- field_AOI2
- Digital_Geologic_Map_of_AL_polys

+ Add layer

Fields

Fields store values within the layer

Add all (6) Delete

Find Fields

Date of observation	{date_of_observation}
Fieldbook/Station ID	{fieldbook_id} abc
Observed rock type?	{observed_rock_type} abc
Observed map unit?	{observed_map_unit} abc
Sample collected?	{sample_collected} abc
Notes:	{notes} abc

Maps > Lignites_download

Overview Content

Content

Find content

Offline

App settings

Sharing

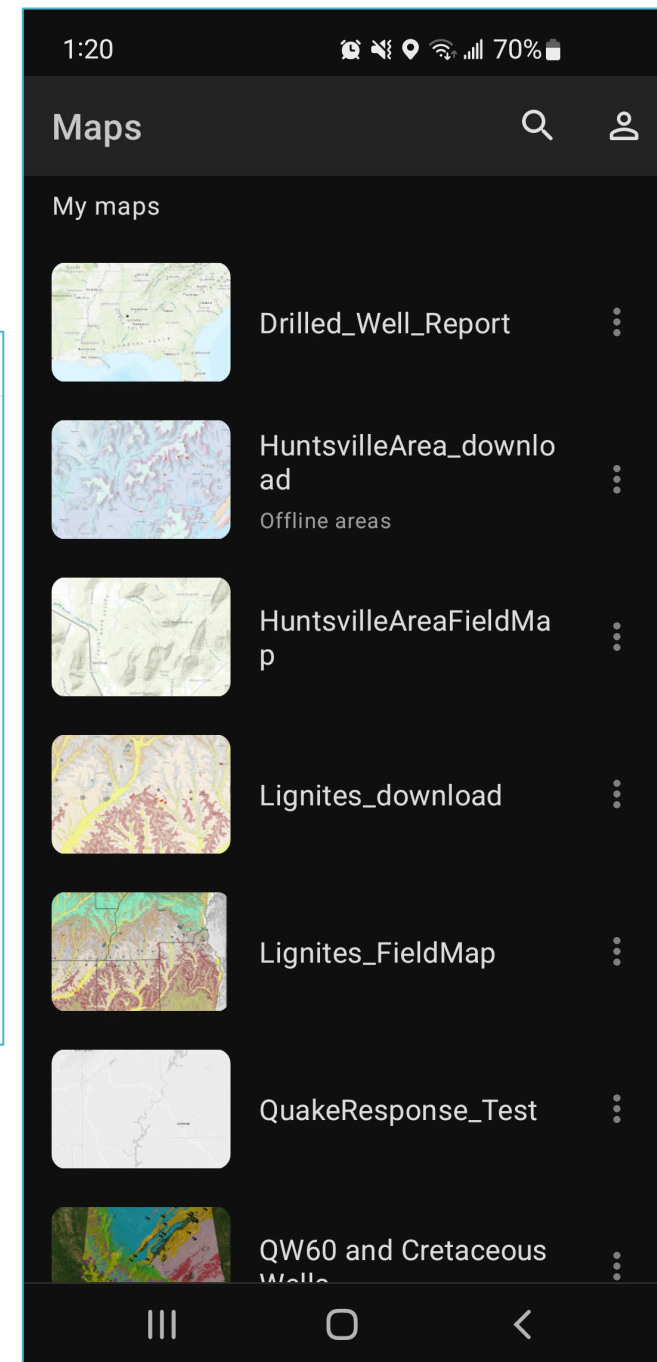
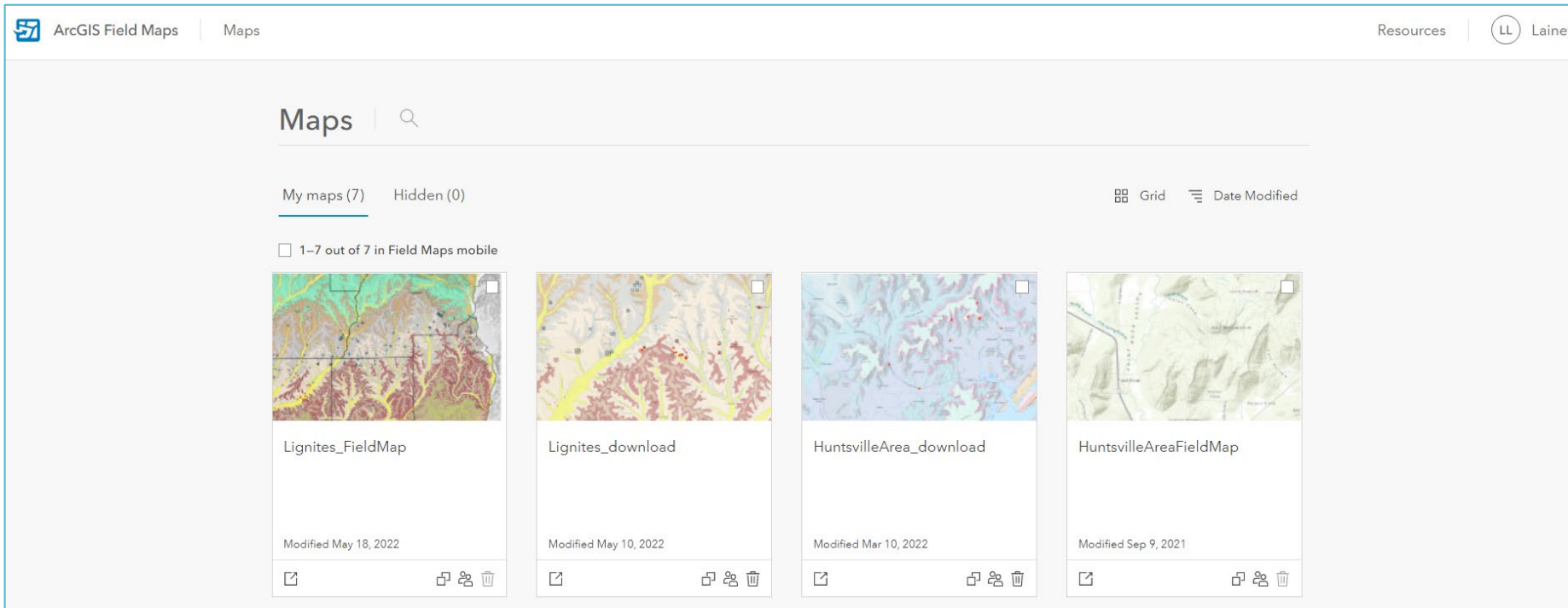
Add layers

Layers

- Field_Observations
- B_123_pts
- QQQs_outcrops_EAL
- Outcrops_Table2_B123
- field_AOI2
- Digital_Geologic_Map_of_AL_polys

After you save your map

It automatically appears in your Field Maps web application and mobile app



Collecting data

Collection

Accuracy

Set required location accuracy for data collection.

Distance

Report horizontal and vertical accuracy at a higher confidence level.
95% Confidence

Delete all points

Discard all points in line or polygon during collection or editing.

GPS averaging

Set the number of points you would like to average.

Points to Average

Photo upload size

Limit the size of photo attachments. Smaller attachments sync faster.

Photo Size

Show related types

Enforces the relationship between features. Turn on to show features for all types during collection.

Snapping

Snapping automatically centers the map on the location of a nearby feature.

Streaming

Set how often to collect a new point while streaming.

Distance Feet

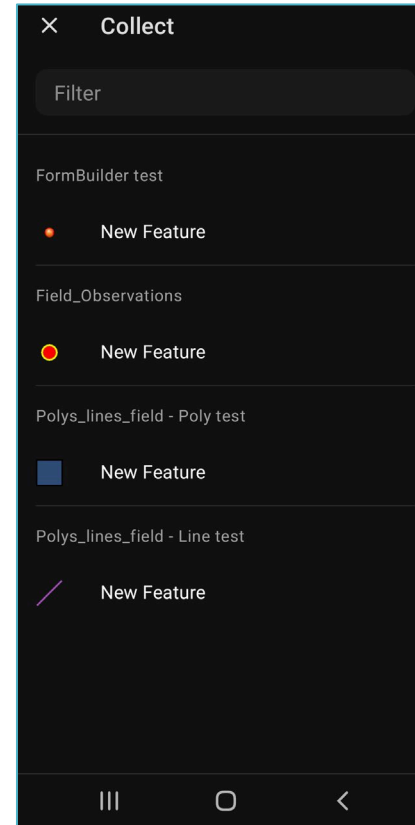
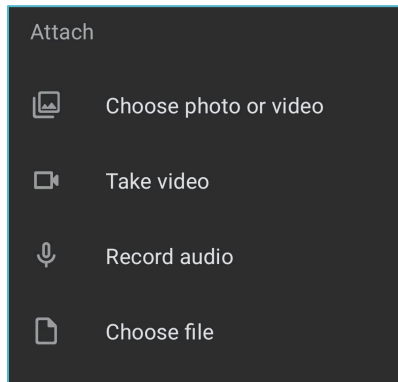
Time

You can capture data

- at your location
- automatically while walking or driving (streaming)
- at a location chosen on the map
- at an X, Y coordinate

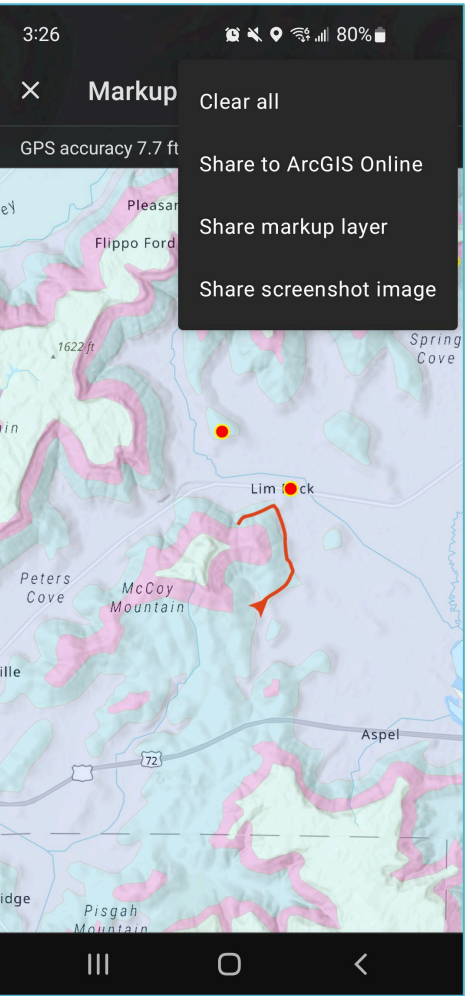
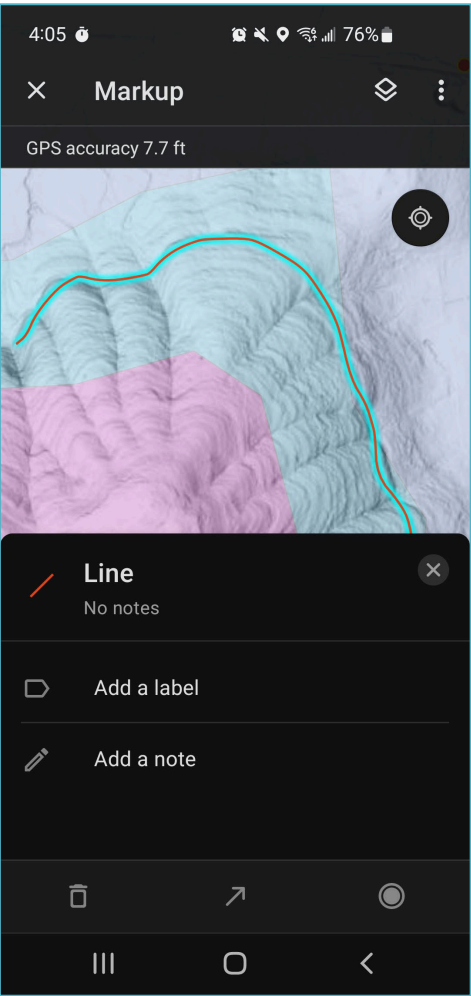
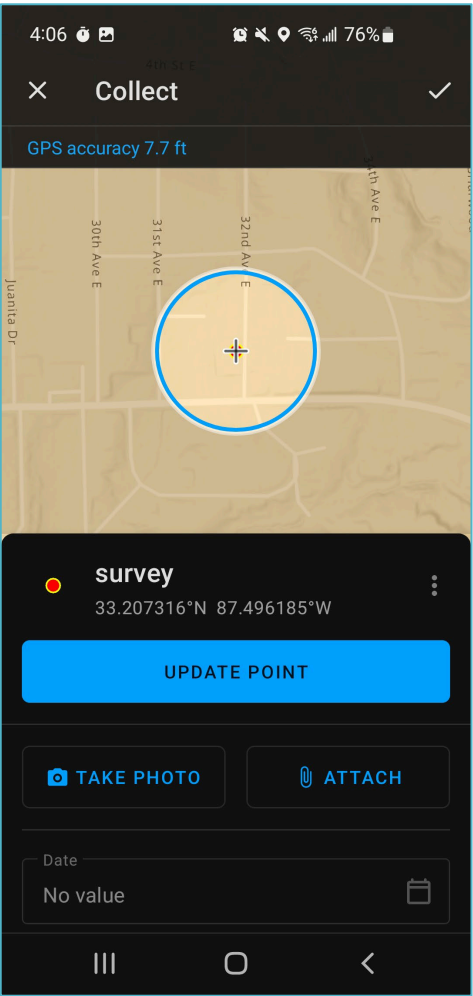
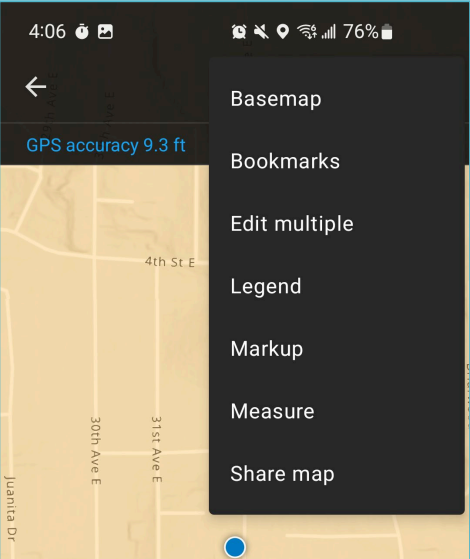
Collect point, polygon, and line data

<https://doc.arcgis.com/en/field-maps/android/help/capture.htm>



In the Mobile app

- Android and iOS
- Edit existing points
- Attach files
- View attachments
- Change base-map
- Change layers
- Markup
- Measure



Taking offline

Maps > Lignites_download

Resources | (LL) La

Overview | Offline | Content | App settings | Sharing

Offline

Enabling offline mode allows this map to be downloaded and used in locations without a reliable internet connection. When offline mode is enabled, mobile workers can download the map in apps that support offline workflows.

Offline

Content

Map areas ⓘ

You have no map areas. Click Manage Areas to get started.

Open in Map View

Feature Layer (hosted)

Editing

- Enable editing
- Keep track of changes to the data (add, update, delete features).
- Keep track of who edited the data (editor name, date and time).
- Enable Sync (required for offline use and collaboration).

Manage areas

Create offline area

Define your offline area below

Create offline area

Click the sketch tools on the map to define your offline area

Details

Name

Lignites_download_MapArea

Level of detail

World to Neighborhood

Packaging schedule

Weekly at 09:18

Optimizations

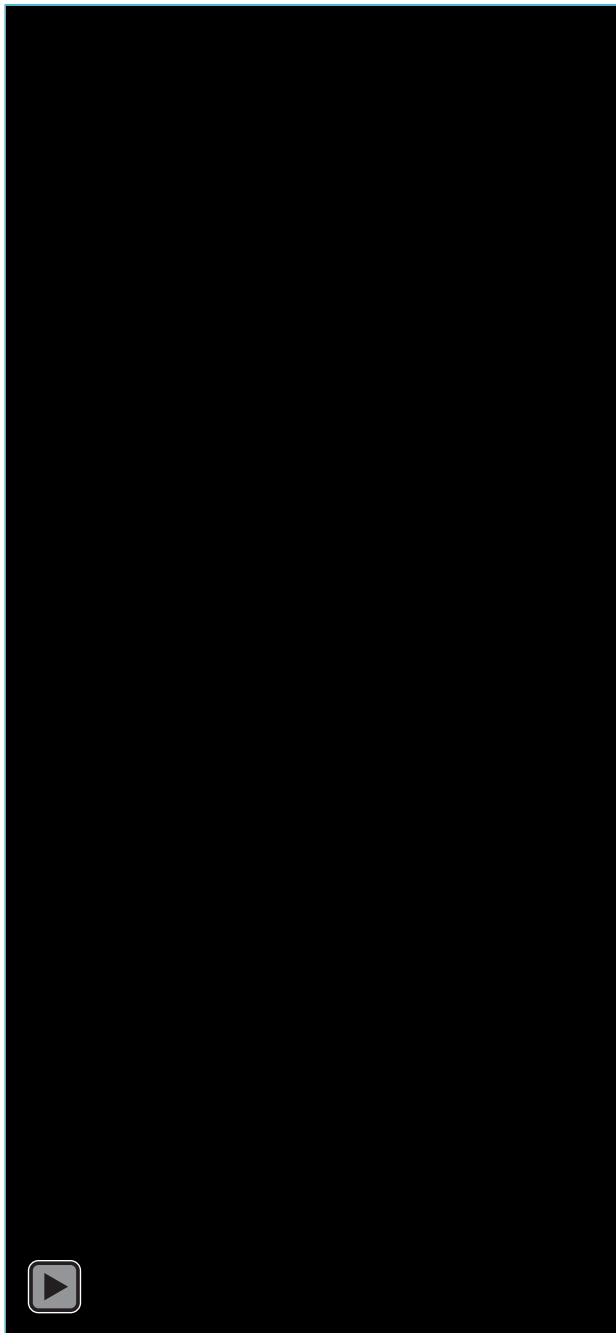
Disabled

Content

An item in this map needs to be updated to enable offline mode

Layers 1

- ✓ FormBuilder test
- ✓ Field_Observations
- ✓ QQQs_outcrops_EAL
- ✓ Outcrops_Table2_B123
- ✓ field_AOI2
- ✓ B_123_pts
- ✗ AL_Counties
Sync is not enabled.
- ✓ Digital_Geologic_Map_of_AL_polys



Field Map example, StateMap

Edit thumbnail



Huntsville Area field map for download.

Web Map by lleblanc_gsaogb

Created: Mar 2, 2022 Updated: Mar 10, 2022 View Count: 71

Add to Favorites

Description

Huntsville Area web map for use in Field Maps application. Downloadable.

Layers

 **ALGeoSurvey**
Feature Layer

 **Digital_Geologic_Map_of_AL_polys**
Feature Layer

 **LimPaintRock_HS**
Tile Layer

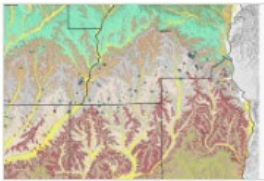
 **TrianaCachetile**
Tile Layer

survey (Features: 50, Selected: 1)		
Date	Notes:	Photos and Files
4/12/2021, 1:22 PM	contact with monteagle and Hartselle is 2 m above my head. pics on phone. artifact digging going on. possible wall. top of monteagle ia a 2m thick cb set. upper 30 cm is horizontal. Hartselle is 30-40 cm cb sets. shallow dippinh.	(1) Show
4/12/2021, 1:34 PM	~3m above me is the contact	(0) Add
4/12/2021, 2:15 PM	Hartselle dipping steeply to the southeast	(0) Add
4/12/2021, 2:37 PM	oolitic light gray limestone.	(0) Add
4/12/2021, 2:42 PM	mudstone interbedded with criboid and brachippod rich limestone. fossil brach collected, see photo.	(2) Show
4/12/2021, 2:48 PM	v light gray micritic ls	(0) Add
4/12/2021, 2:50 PM	micritic spar. spar seems to form flakes that are weathering out. also partially articulated crinoid stalks and archimedes.	(1) Show



Field Map example, DOE Lignite

Edit thumbnail



Field Map for DOE Lignite project. Edit

Web Map by lleblanc_gsaogb

Created: Feb 15, 2022 Updated: May 17, 2022 View Count: 166

☆ Add to Favorites

Description

Web map created for use in Field Maps for data collection in the field for the DOE Lignites project, 2022. Contains a hillshade basemap, the map unit polygons of the geologic map of Alabama, a data point collection feature layer, drill hole points from the Alabama Lignite publication (Bulletin 123), and outcrop quarter sections pulled from Table 2 in B123.

Options

- Cache automatically on the server
- Cache manually on the server
- Cache locally ⓘ

Temp cache location

C:\Users\LLeBlanc\AppData\Local

Allow clients to export cache tiles

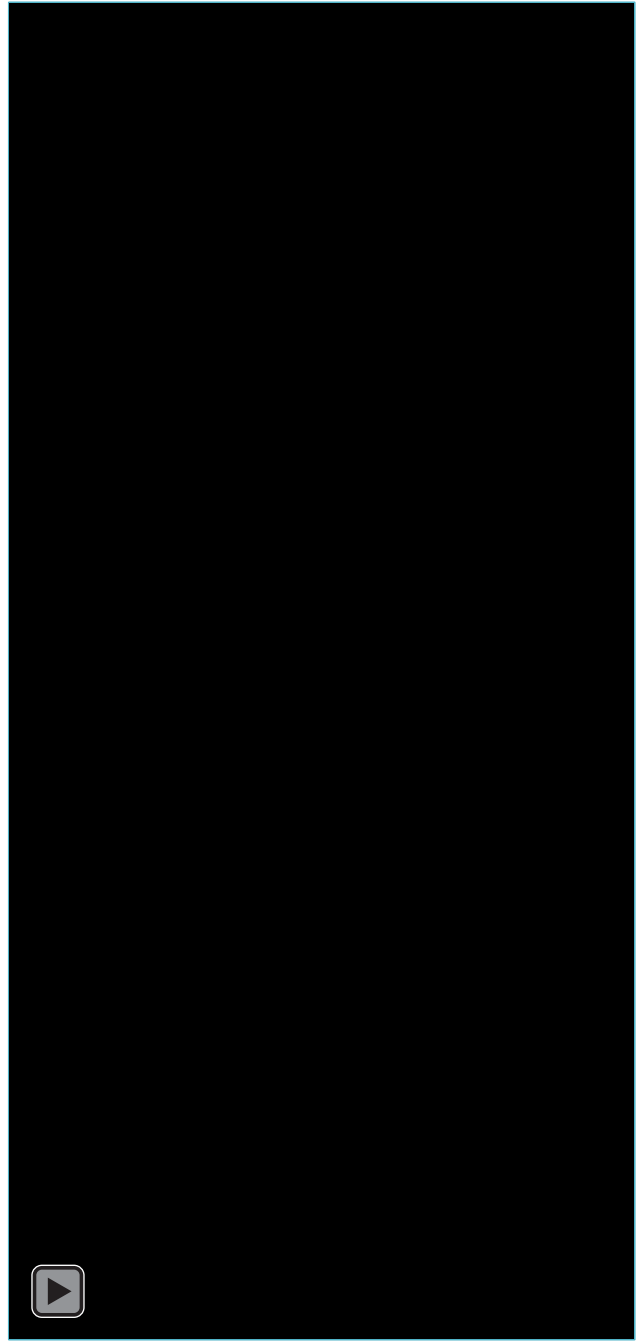
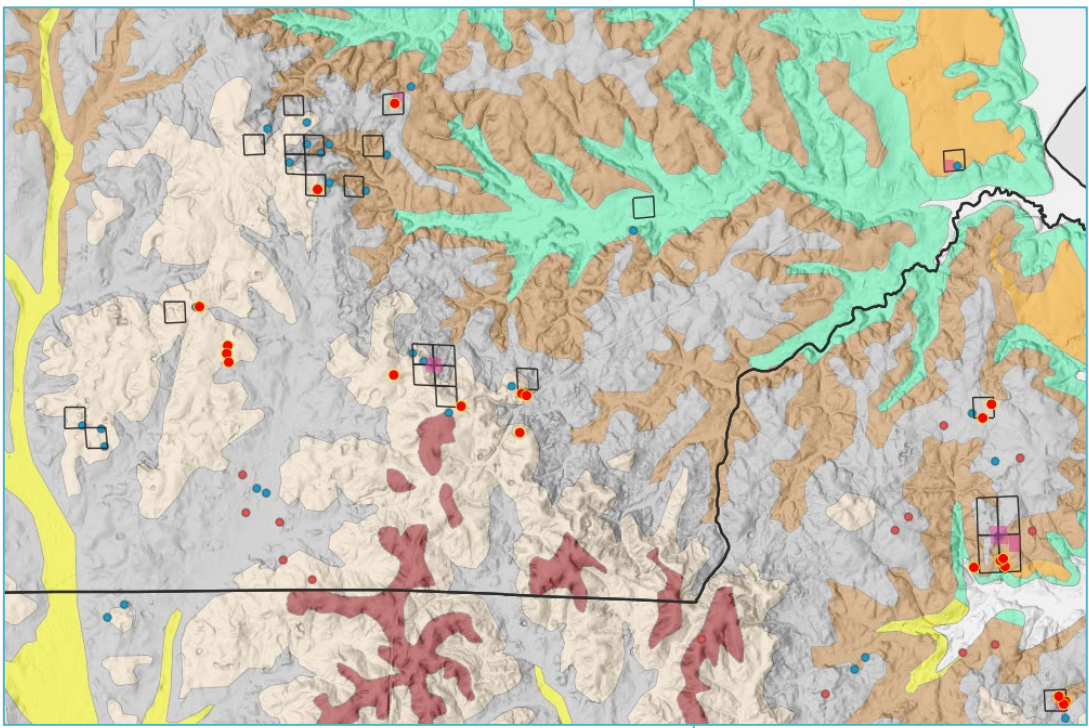
Limit export to 100000 tiles

Layers

- Field_Observations Feature Layer
- QQQs_outcrops_EAL Feature Layer
- Outcrops_Table2_B123 Feature Layer
- field_AOI2 Feature Layer
- B_123_pts Feature Layer
- AL_Counties Feature Layer
- Digital_Geologic_Map_of_AL_polys Feature Layer

Basemap

- hillshade_SE_AL Basemap
- hillshade_SE_AL Tile Layer



Field Map example, EarthMRI

EMRI_FY21-23_Mapping



Earth MRI FY21-23 project map for Field Maps. Includes topographic basemap, LiDAR hillshade, unpublished student geologic map data, project station data, and sample locations. See individual layers for details. Quadrangles: Mitchell Dam, Flag Mountain

Web Map by [ebollen_gsaogb](#)

Created: Oct 19, 2021 Updated: May 6, 2022 View Count: 259

★ Add to Favorites

Description

An in-depth description of the item is not available.

Layers

Samples_March11_2022
Feature Layer

Stations_March11_2022
Feature Layer

QuadBoundaries
Feature Layer

AllisonGeoMapping_tif
Tile Layer

EMRI_AOIhs
Tile Layer



Future improvements?

Enable freehand polygon drawing

2527 18 03-19-2021 12:25 PM

Status: Open ?

<https://community.esri.com/t5/arcgis-field-maps-ideas/enable-freehand-polygon-drawing/idi-p/1038811>

Enable touch to enter vertices

1065 10 04-06-2021 09:13 AM

Status: Open ?

<https://community.esri.com/t5/arcgis-field-maps-ideas/enable-touch-to-enter-vertices/idi-p/1044195>

Enable easier access to attachments / photos captured with Field Maps - batch download from AGOL or local saving to device

1273 7 03-01-2021 07:37 AM

Status: Open ?

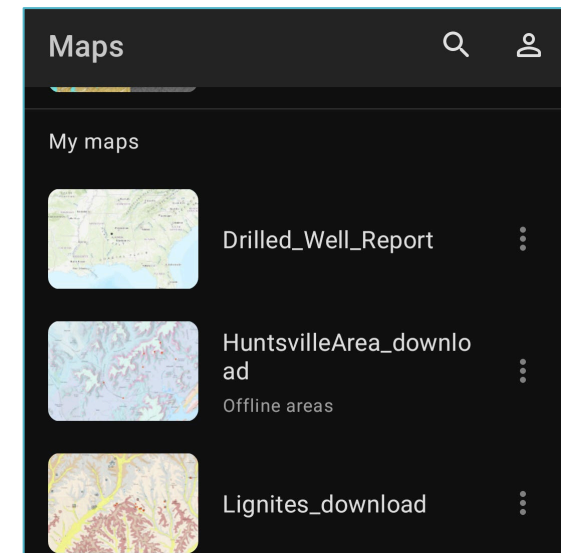
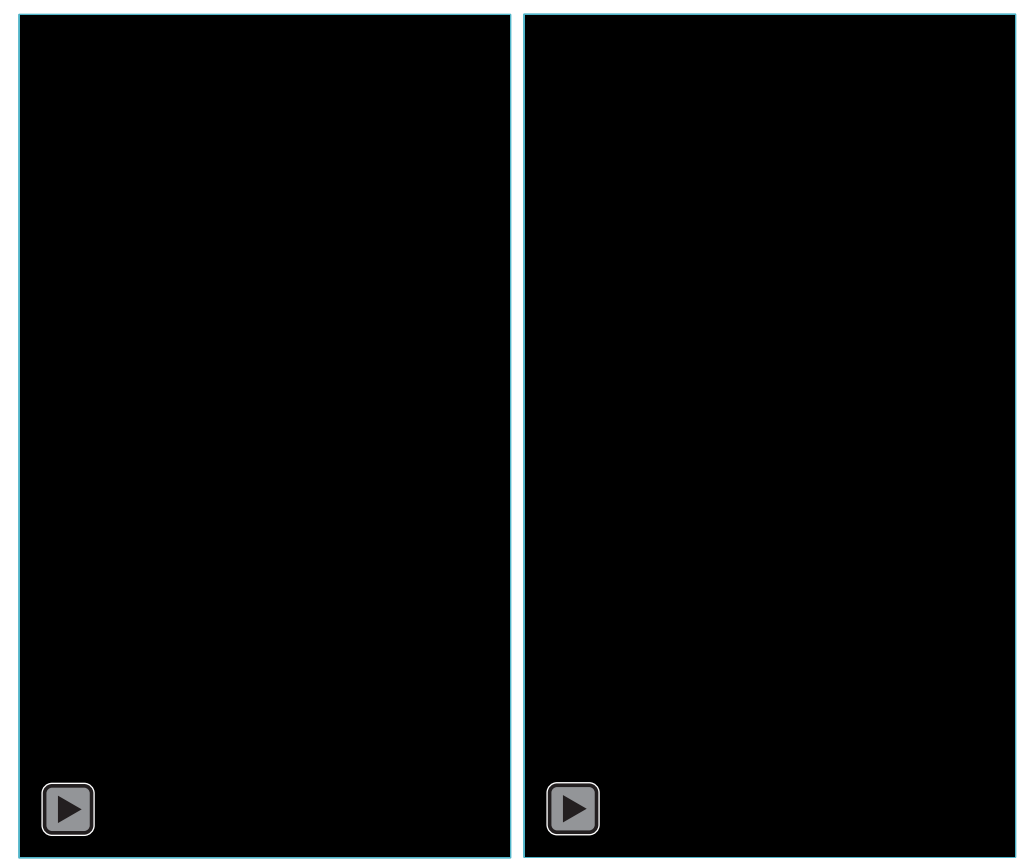
<https://community.esri.com/t5/arcgis-field-maps-ideas/enable-easier-access-to-attachments-photos/idi-p/1031523>

Simultaneous use of offline areas and online map

3035 22 12-17-2020 12:24 AM

Status: Under Consideration ?

<https://community.esri.com/t5/arcgis-field-maps-ideas/simultaneous-use-of-offline-areas-and-online-map/idi-p/1010512>





Thank You

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205-247-3567