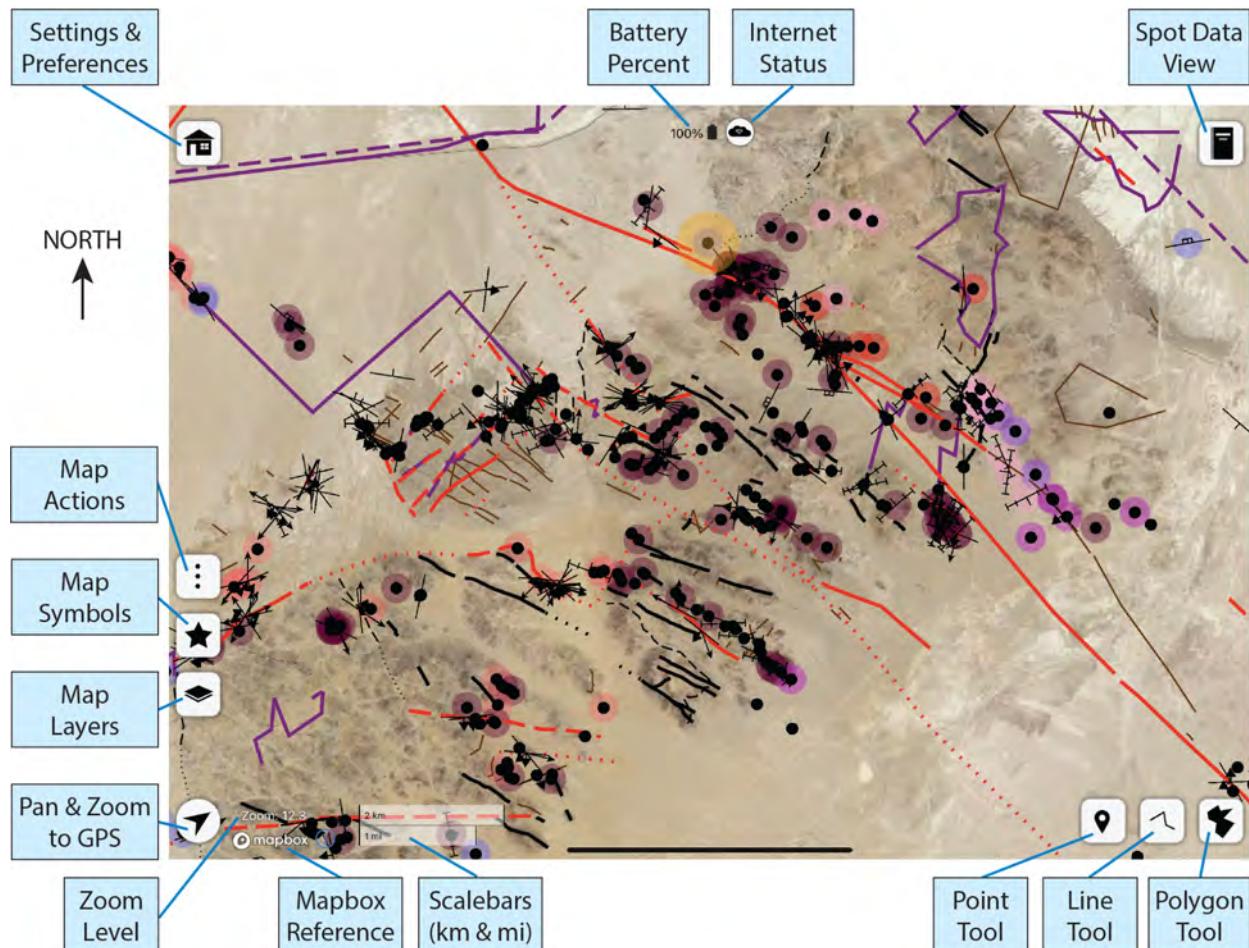


StraboSpot2 Main Map View

-Summary of screen icons and tools. Each is explained in detail in the following pages. This map view shows an example dataset, overlying a satellite image basemap.



- The tools are arranged so that:

- **Controls for projects, datasets, and viewing** are on the left

- **Data creation and editing** are on the right.

- **Spots** (the essential georeferenced data for StraboSpot2) are shown as points, lines, or polygons.

- Each symbol type has a built-in, **standarized symbology**:

- **Point data** as black dots, or as standardized strike & dip and plunge & trend symbols.

- **Line data** as unclassified (thin brown lines), faults (red lines), contacts (black lines), and other types (purple) in this example. Lines are dashed and dotted according to their quality.

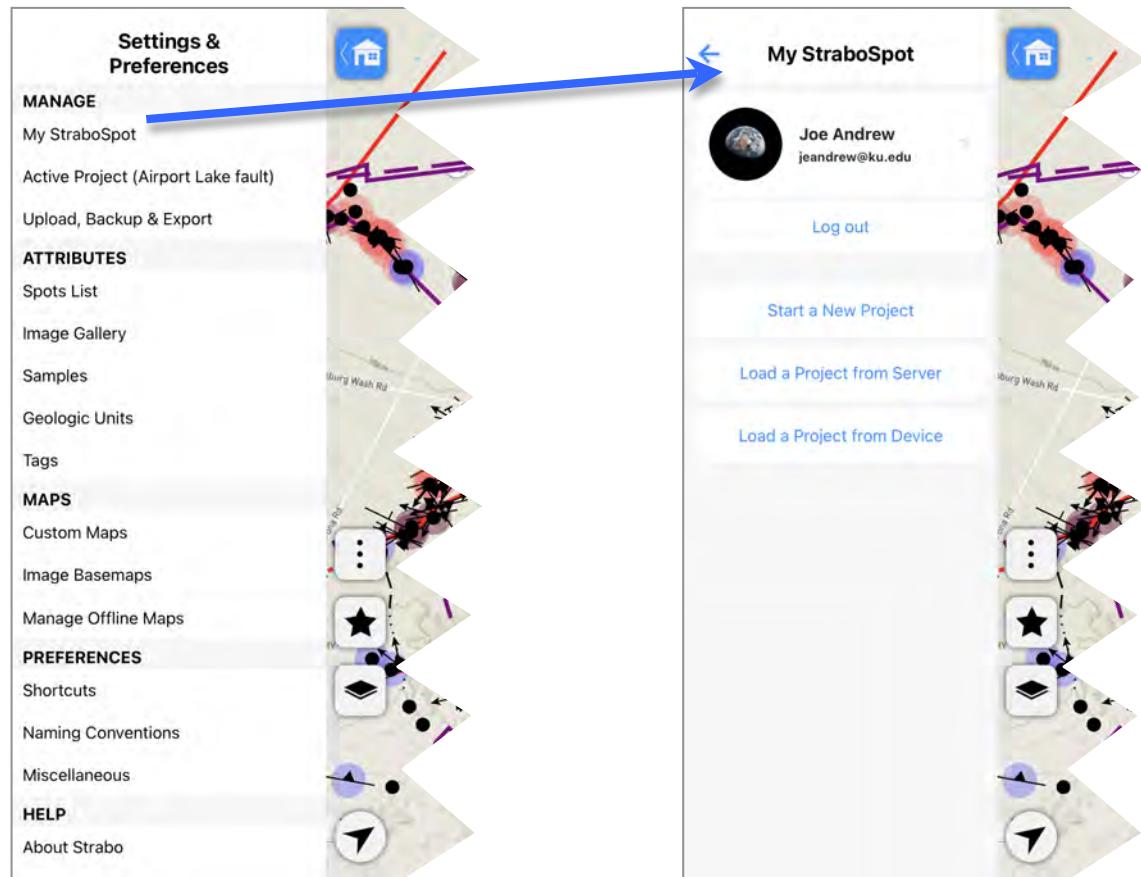
- **Polygon data** (not shown here) are colored semi-transparent blue.

- The standardized symbology of the StraboSpot2 features can be augmented using attributes called **tags**. A special type of tag is the geologic unit tag. This example view shows many of the point spots with a colored ring that denotes the user-defined colors of user-defined geologic units. Similar coloring schemes can also be applied to lines as colored halos and polygons can be filled with the geologic unit colors using tags. Any attribute can be a tag and thus can be used in this extra color symbology.

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Detailed explanation of the StaboSpot2 tools and menus (blue text indicates actions like opening subtabs and menus or editing data; red text indicate loss of data warning)

SETTINGS & PREFERENCES



MANAGE

My StraboSpot

User profile

- Avatar/Photo, Name, email.
- Open for more details and to change profile data.

Log Out

- Backup, Logout, or Cancel.
- Note: Logging out will erase local data**

Start A New Project

Warning! Delete local project!
Backup, overwrite, or cancel.

– CREATE A NEW PROJECT

- Basic Info
 - Start date
 - End Date
 - Notes
- Technical details – instruments, datum, declination
- General details – ORCID ID, other team members, area of interest, Purpose of study, grant ID, Funding agency
- Save new Project

Load Project from server

- Projects on Server

-List of all available projects on your account.

-Selecting a project will lead to **warning that choosing will delete local copy of active project.**

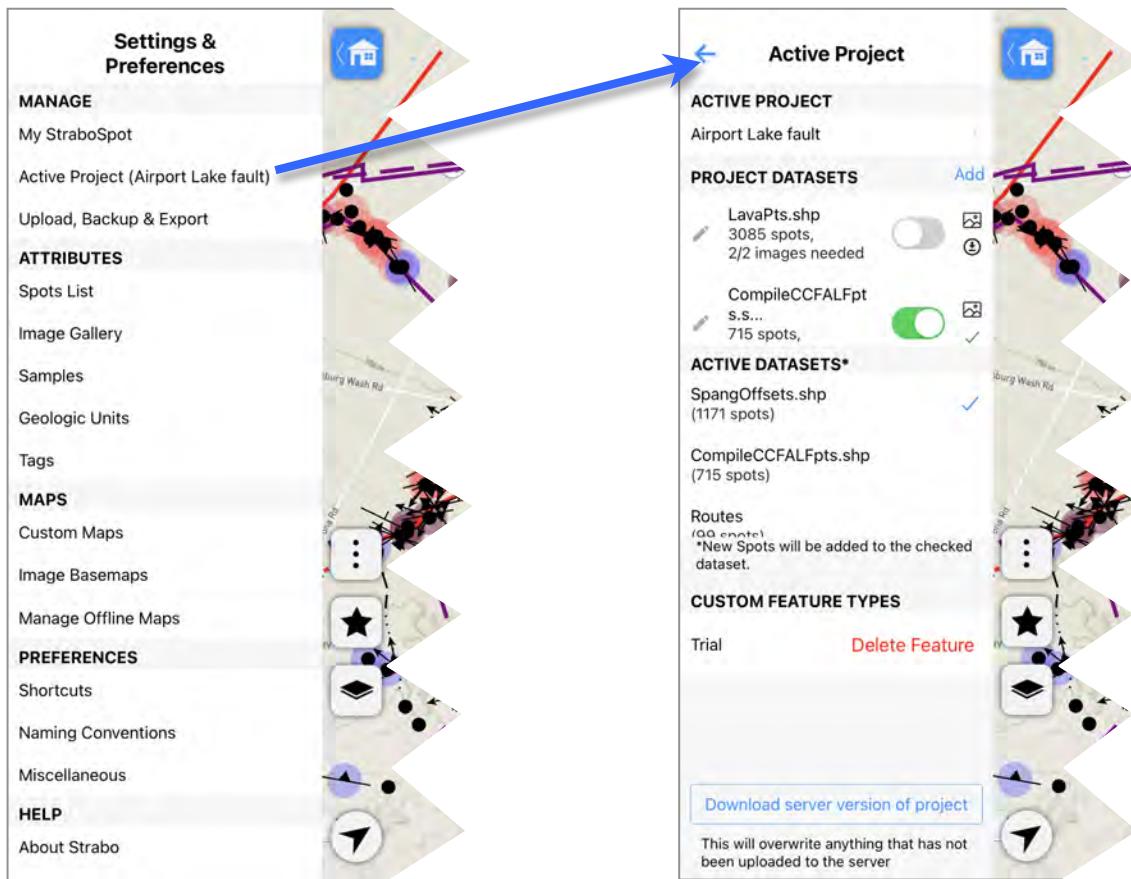
– Active Project

-Side arrow opens Project Description information that can be viewed and edited.

-Daily notes can be added.
-A toggle for Privacy setting.

Load project from Device

- Lists selectable projects on local device
- Can view/edit files on device



Active Project

[project name]

- Side arrow opens Project Description, see also in My StraboSpot on page 2.

PROJECT DATASETS

- List of datasets in the project.
- **Pencil tool** allows editing of dataset name or to delete.
- Dataset Name, # of spots, needed images (loaded/total)
- **Toggle datasets for visibility and interaction**
- Below the photo icon is the dataset status on the device: checkmark = downloaded
- It is possible to have the dataset loaded but not all of the images; the **download arrow** will bring in the missing images.

ACTIVE DATASETS

- List of the active datasets (those toggled on in the Project Datasets above).
- The editable active dataset is indicated by a green checkmark on the right side.
- To change the active dataset for adding features, **check the right side of the wanted dataset**.

CUSTOM FEATURE TYPES

- List of custom feature types
- Custom feature types are added in the Spot creation workflow using the Other Features tab ([see page 21](#)).
- Custom features not used in this dataset can be deleted.

Download server version of project

- **Warning!** This will delete the device version of the project.

Upload, Backup & Export

- Upload project to StraboSpot
-Need to be online
- Backup project to device
-This is a good daily practice.
- View/Edit files on device

ATTRIBUTES

Spots List

- Shows spots in the active editable dataset.
- Sorting choices:
 - (1) All in reverse chronological order
 - (2) all in map extent
 - (3) recently viewed spots.
- Blue icon indicates spot type: point, polyline, or polygon
- Spot name/Spot ID
- Small icons indicate data type contents of the Spot (see key above).
- Spots with Geologic unit data are also labeled with the unit label and geologic unit name.
- The [small right arrow](#) notebook tab to see and edit the Spot's data ([see page 13 for details on Notebook view](#))

Image Gallery

- Shows Images and Sketches in the active editable dataset
- Can be sorted like Spots List

Samples

- Shows Samples in the active editable dataset
- Can be sorted like Spots List

Geologic Units and Tags

- Geologic units are a special type of tag in StraboSpot and they behave similarly.
- Sorting choices:
 - (1) Alphabetical/Categorized
 - (2) All in map extent
- Each defined Geologic Unit/Tag in the project is listed with the # of total instances in active datasets

Spot data content type symbols

Symbol	Data Type
A	- Notes
Clock	- Measurements
Camera	- Photos & -Sketches
Tag	- Tags
Geologic Unit	- Geologic Units
Sample	- Samples
3D Structure	- 3D Structures
Alteration Rock	- Alteration & Ore Rocks
Igneous Rock	- Igneous Rocks
Metamorphic Rock	- Metamorphic Rocks
Sedimentary Rock	- Sedimentary Rocks
Mineral	- Minerals
Document	- Data (Webpages & Tables)
Other Feature	- Other Features

Spots Lists

- Shows spots in the active editable dataset.
- Sorting choices:
 - (1) All in reverse chronological order
 - (2) all in map extent
 - (3) recently viewed spots.
- Blue icon indicates spot type: point, polyline, or polygon
- Spot name/Spot ID
- Small icons indicate data type contents of the Spot (see key above).
- Spots with Geologic unit data are also labeled with the unit label and geologic unit name.
- The [small right arrow](#) notebook tab to see and edit the Spot's data ([see page 13 for details on Notebook view](#))

Image Gallery

- Shows Images and Sketches in the active editable dataset
- Can be sorted like Spots List

Samples

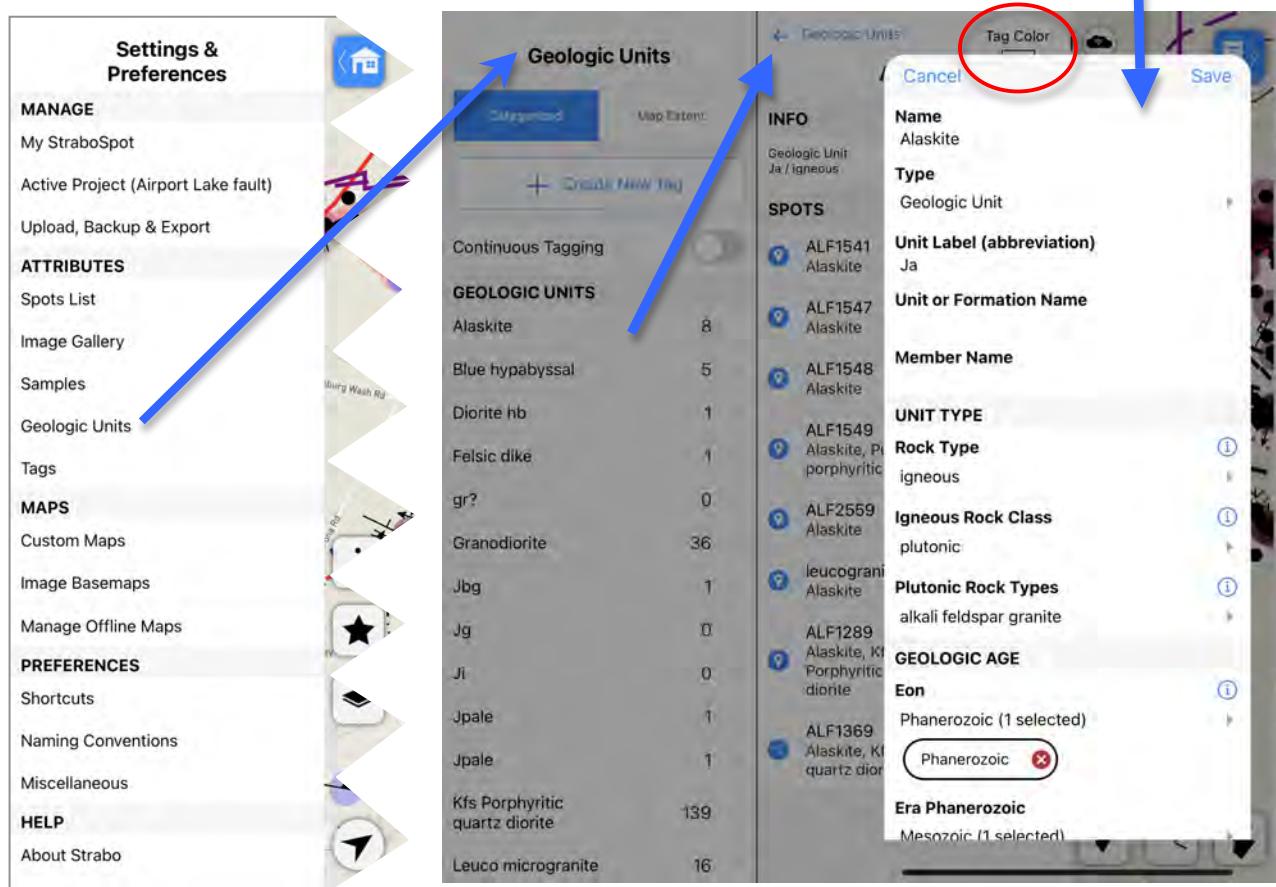
- Shows Samples in the active editable dataset
- Can be sorted like Spots List

Geologic Units and Tags

- Geologic units are a special type of tag in StraboSpot and they behave similarly.
- Sorting choices:
 - (1) Alphabetical/Categorized
 - (2) All in map extent
- Each defined Geologic Unit/Tag in the project is listed with the # of total instances in active datasets

(or # within map extent if chosen as sorting type).

- Each item in the list can be selected, which brings up a list of the Geologic Unit/Tag info, all of the tagged spots in the project, and all of the tagged features.
- These items can be viewed and edited. This also allows the user to add a display color for each Geologic Unit/Tag.
- [Create New Tags button](#) to open tag creation menu.
- [Continuous Tagging can be toggled on](#)
- Toggled on applies the checked Geologic Unit/Tag to any new spots created until toggled off.



Geologic Units and also Tags

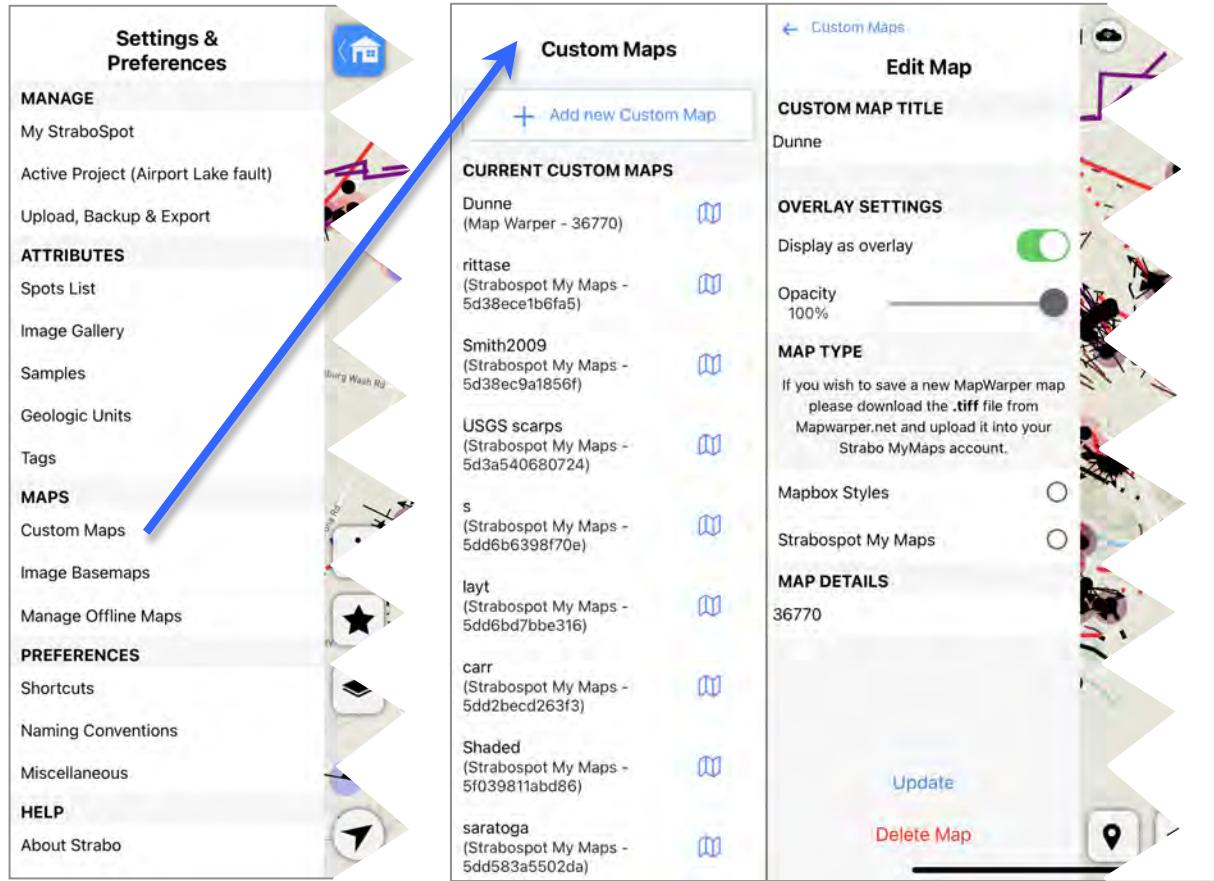
- This diagram shows the list of geologic units in the project.
- ‘Alaskite’ is chosen from this list, which opens up a side menu listing all of the Spots that contain this Geologic Unit.
- Clicking on edit (hidden by overlapping window) Geologic Unit opens the Geologic Unit definition tab and grays out the background items.
- This defines the name, label, type, age, description (scroll downward), and notes (scroll downward).
- At the bottom of this form is an option to delete this Geologic Unit and its description.

- This tab is the same as the create Geologic Unit tab.
- Note that the color for this Geologic Unit is controlled in the side menu beneath the Geologic Unit editing window (partly shown, circled in red).
- Geologic Units are a specific type of Tag, so the other Tags work similarly. Each other type of Tag has its own criteria and descriptions. Each has the option for the user to create a name and notes for their tag.
- Except for the Geologic Unit tag, all of the other Tag types are loosely defined and can be creatively used in a project.

– The following are the types of Tags and their subtypes:

- Geologic Units
- Concept
 - Geologic structure
 - Marker layer
 - Deformation Event
 - Degree of Deformation
 - Metamorphic Facies
 - Other Concept
- Documentation
 - Observation Timing
 - Type of Data
 - Other
- Rosetta
 - Imagined to be used for key observations critical to the users study.
- Experimental Apparatus

MAPS



Custom Maps

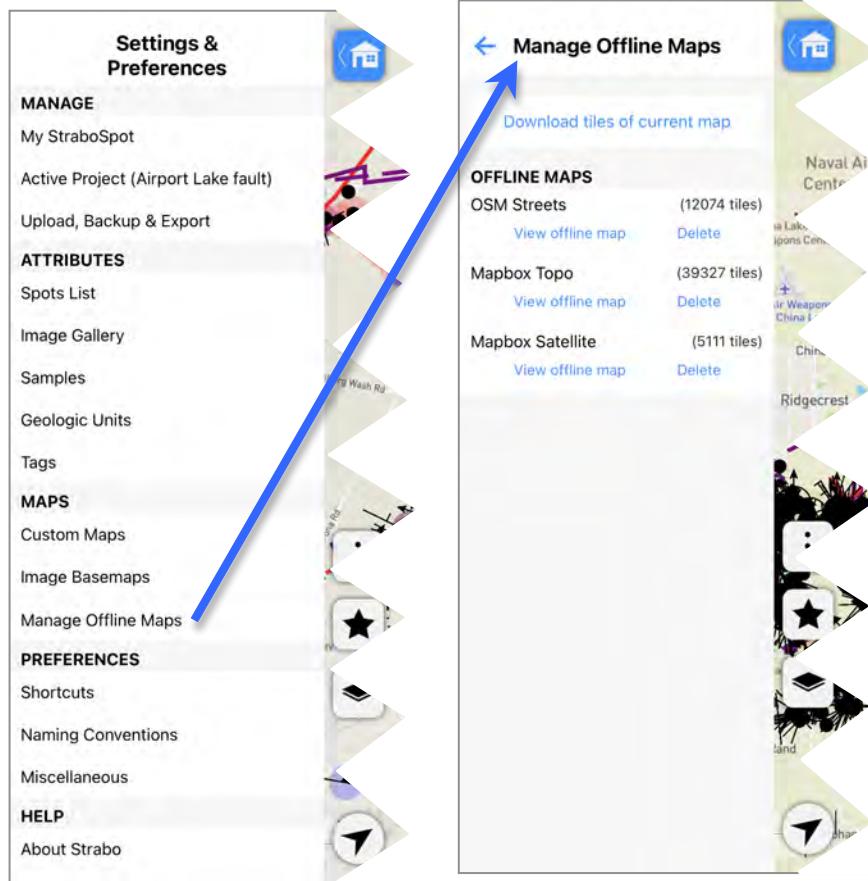
- A list of the current Custom Maps in this project.
- **New Custom maps can be added** from existing StraboSpot My Maps (using the StraboSpot My Maps ID) or from Mapbox styles (using Mapbox Styles URL).
- Our preferred method for creating custom maps to add is from the StraboSpot My Maps.
- The StraboSpot My Maps map ID code can be used by any other Strabo users if they have the Map ID code.

- The settings for each Custom Map can be looked at or changed by clicking on the **blue folded map icon**. This is the same window used for adding Custom Maps
- Each Custom Map can be displayed as a custom baselayer or as an overlay.
- Overlays can be set with various amounts of opacity by clicking on the map name and adjusting the slider. Any changes done in this editing mode need to be updated using the **blue 'Update'** button at the bottom of the menu.
- Custom Maps can be removed from the project by clicking 'Delete Map'.
- The visibility of custom maps as overlays is controlled using

the Map Layers icon on the main map. This tool allows layer visibility to be toggled.

Image Basemaps

- This shows of all of the images that have been classified as image basemaps in the image tab of the notebook ([see page 18 for details](#)).
- Image basemaps can be treated like the main map with point, polyline, and polygon spot data drawn and plotted on it. Clicking on an image will pull up the image basemap and any spot data on them.
- Use the (x) in the lower right corner to exit the image basemap mode.



Manage Offline Maps

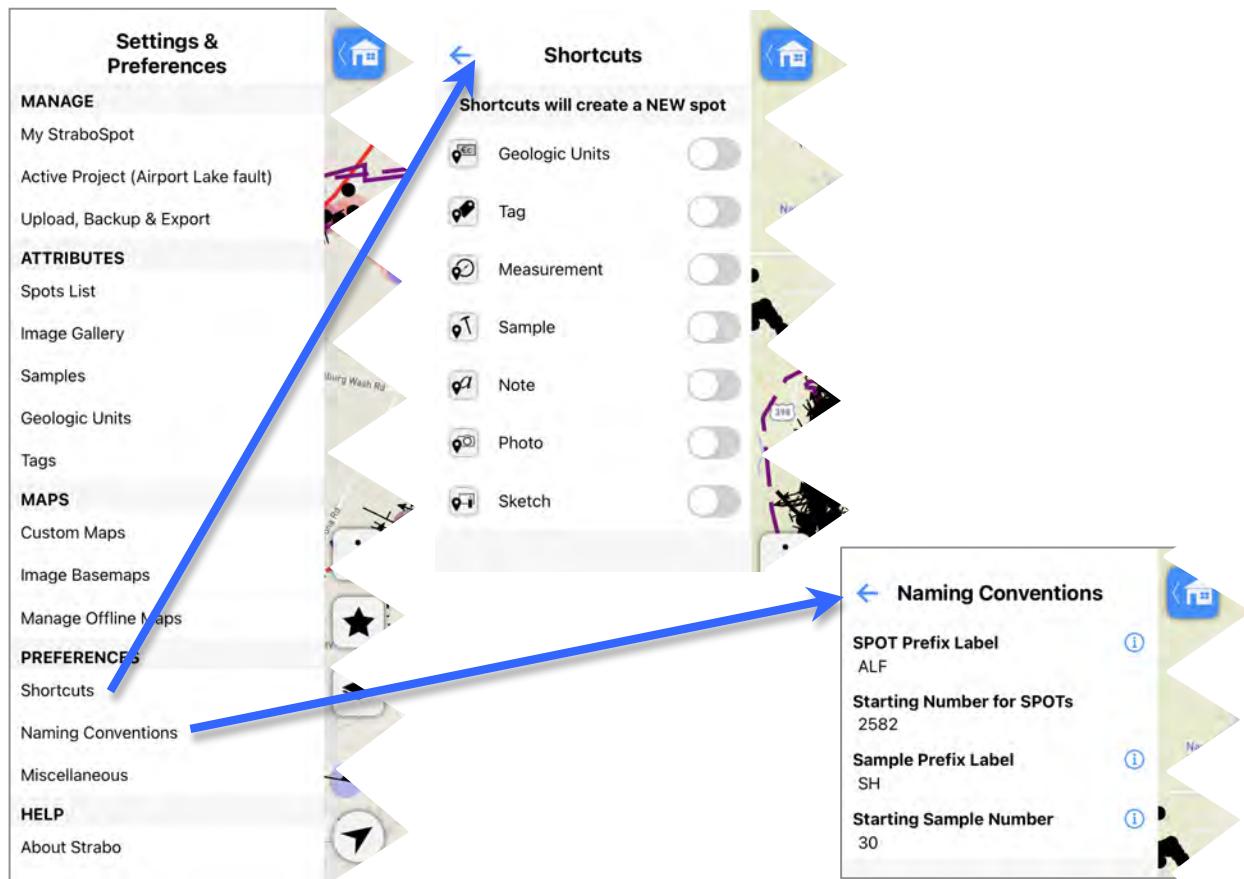
- This shows a summary of the already downloaded offline maps. Offline maps are needed when the user is offline and can't access the server-based data used as basemaps.
- The list shows the different basemap categories:
 - Mapbox Topo,
 - Mapbox Satellite,
 - OSM Streets
 - Geology from Macrostrat.
- Each item has the number of map tiles downloaded, generally in the many 1000s.
- The available offline maps can be viewed using the **blue text button**. These offline maps are scale-dependent, so a thorough check of the

offline maps will entail zooming in and out, particularly zoomed into your probable working scale and areas in the field.

- The **download tiles button** allows the user to download additional tiles for the current map extent. The map tiles are from several sets of scales, with the more detailed scales (higher numbers) having geometrically many more tiles.
- The user sets the maximum zoom level to download. Experimentation will allow the user to download the tiles for the needed map area extent and needed scale levels. A very large map extent of a detailed zoom

level might need a few iterations of different zoomed-in extents to get full coverage.

- The download process is limited in the number of tiles that can be downloaded in one process (~11000 for Mapbox Satellite). The maximum zoom level adjusts to fulfill the tile download limit. The maximum zoom level is 19, but with too large of an extent the download might only allow a maximum zoom level of 16, for example. In this case, zoom-in more and reiterate. Overlapping extents are not an issue as the software knows which tiles already are downloaded.



PREFERENCES

Shortcuts

- This menu allows the user to add data type specific Spot point creation tools to the map interface. These tools are used to create a new spot and bring the user immediately to the data type specified on the tool.
- For example, the Sample tool will create a point spot on the map and pull up the Sample data Notebook tab for quick input of samples.

Naming Conventions

- This allows the editing and creation of automatic Spot and Sample labeling schemes.
- Spot Prefix label
- Starting # for new Spots to be subsequently created
- Sample Prefix Label
- Starting Sample Number

Miscellaneous

- These are development tools

HELP

About Strabo

- Shows the StraboSpot app version number

Documentation

- (Scroll downwards)
- Links to documents for Strabospot app use, best practices, and the online Strabospot Help menu.

Close Menu

(Scroll downwards)

MAP ACTIONS

(tool circled in red below)

Zoom to Extent of Spots

– Self explanatory.

Save Map for Offline Use

- This saves tiles of the active basemap similar to the manage offline maps on the home menu ([see discussion on page 8](#)).
- The user sets the maximum zoom level and the app will display the number of tiles needed for that zoom level and the current extent with the active basemap. Click [download](#) to continue.

Add Tag(s) to Spot(s)

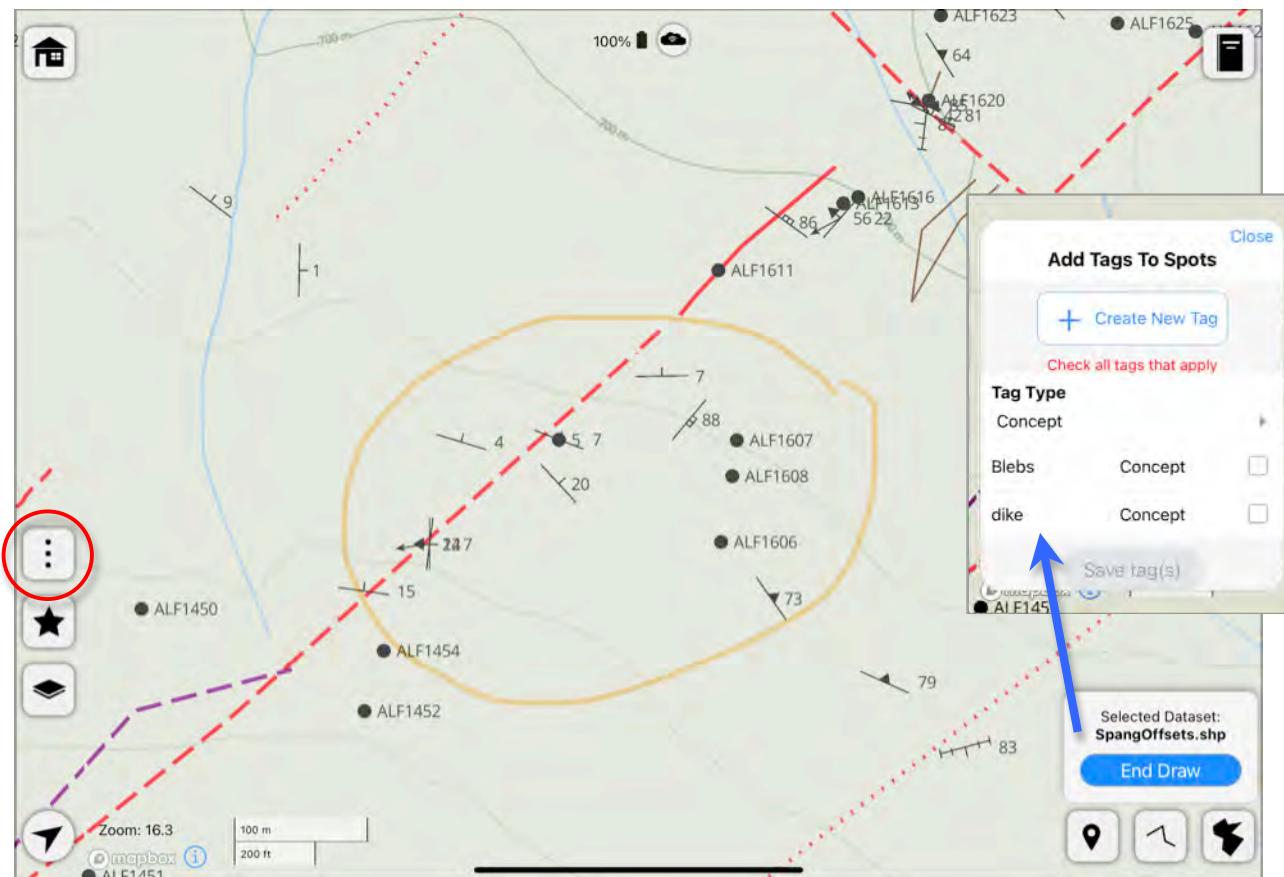
- This allows adding the same tag to multiple Spots.
- This tool brings up a line drawing tool, trace a circle (orange line below) around the wanted Spots to select them for adding tags.
- The user can draw multiple circles to enclose the wanted Spots.
- When done circling, press the [End Draw](#) button to bring up the tags menu, which displays a list of spots.
- The user can select from a list of all tags or sort by tag type. The below example shows concept tags. For more information on tags see sections on Geologic Unit Tags under Manage ([pages 5](#)), Notebook ([page 14](#)), and Polygon Color ([page 28](#)).

Lasso Spots for Stereonet

- This uses a similar process of circling data as in the add tags to spots process.
- When the [end Draw](#) is pressed the measurement data (strike and dips, plunge and trends) for selected Spots is copied to the device clipboard for pasting as input into the app Stereonet.

Measure Distance

- This pulls up a measurement tool.
- Adding points creates a line with additional points lengthening the line.
- A total distance (in km) is displayed in the corner.
- Click End Measurement when done.



MAP SYMBOLS

(star icon on left side)

- The top part of this tool shows a list of predefined Spot point symbols that can be toggled on/off.
- These items are strike and dip and plunge and trend symbols related to measurement data.
- The app uses common geologic map symbology, some of which are shown in the below example: fractures, contacts (dikes), and faults.

All Symbols

(toggle)

- This toggle hides/shows all of the symbols without measurement data.

Symbol Labels

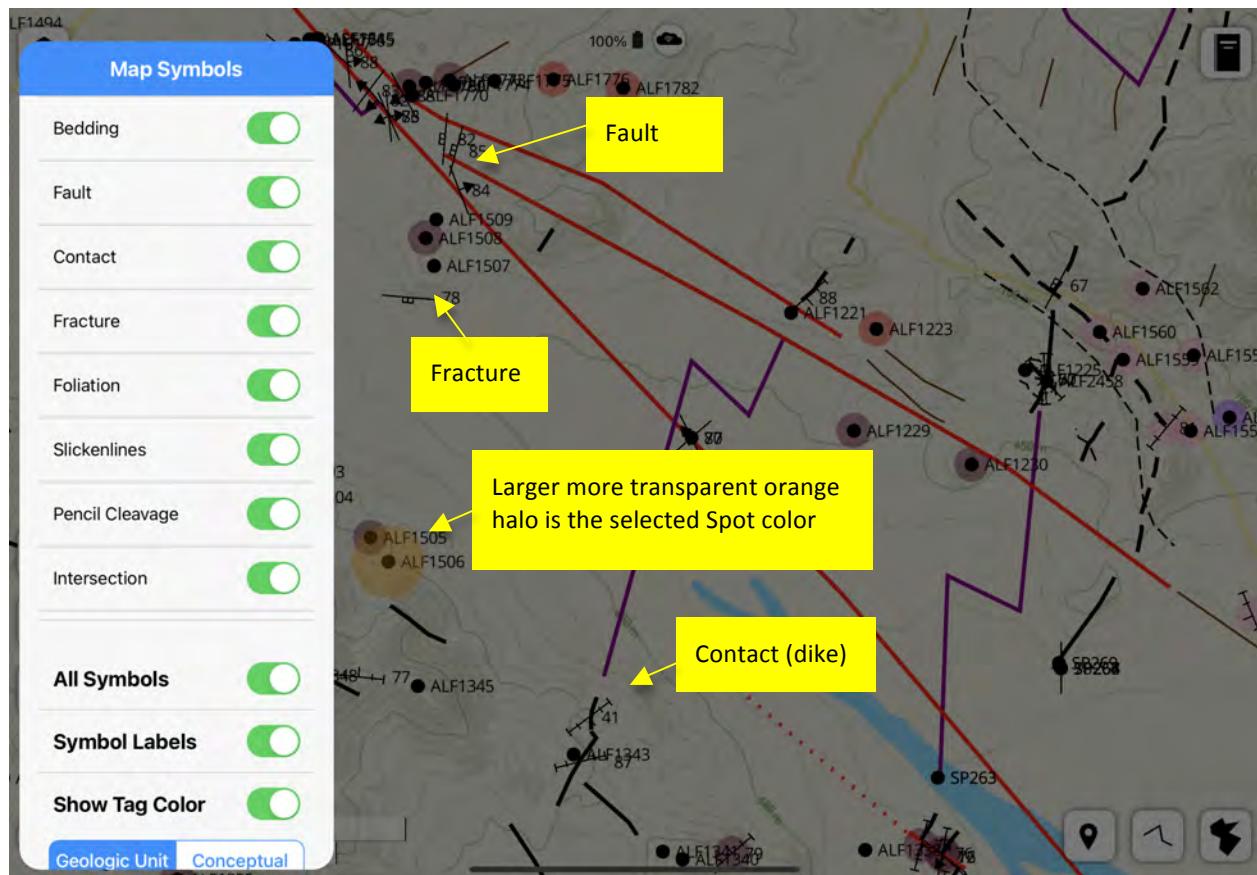
(toggle)

- The symbol label is the dip or trend value for a measurement symbol or the Spot ID for point spots without measurements data.
- The Spot ID prefix for this project is 'ALF' (under Preferences & Settings/ Naming Conventions/Spot Prefix, [see page 9](#)). This prefix is combined with a number to make the Spot ID Label

Show Tag Color

(toggle)

- Select the tag datasets for coloring; 'Geologic Unit' or 'Conceptual'.
- The below example shows spots colored based on their Geologic Unit tags with four different colored halos around point Spots.
- The Geologic Units tags and other types of Tags are user defined and given display colors, see more detail in Settings & Preferences/ Attributes/ Geologic Units and Tags on [page 5](#).



MAP LAYERS

Default Basemaps

- Select the default basemap to use, the blue checkmark denotes the active basemap.
- When offline the only options will be those that are downloaded as offline maps ([see page 8 for more detail](#)).
- StraboSpot2 uses several default basemaps delivered via web servers and scaled for different zoom levels.
 - **Mapbox Topo**
 - Topographic contour lines plotted with roads, cities, places, areas, etc.
 - **Mapbox Satellite**
 - High altitude and satellite imagery.

– OSM Streets

- OpenStreetMap lines and areas such as roads, boundaries, places, etc.

– Geology from Macrostrat

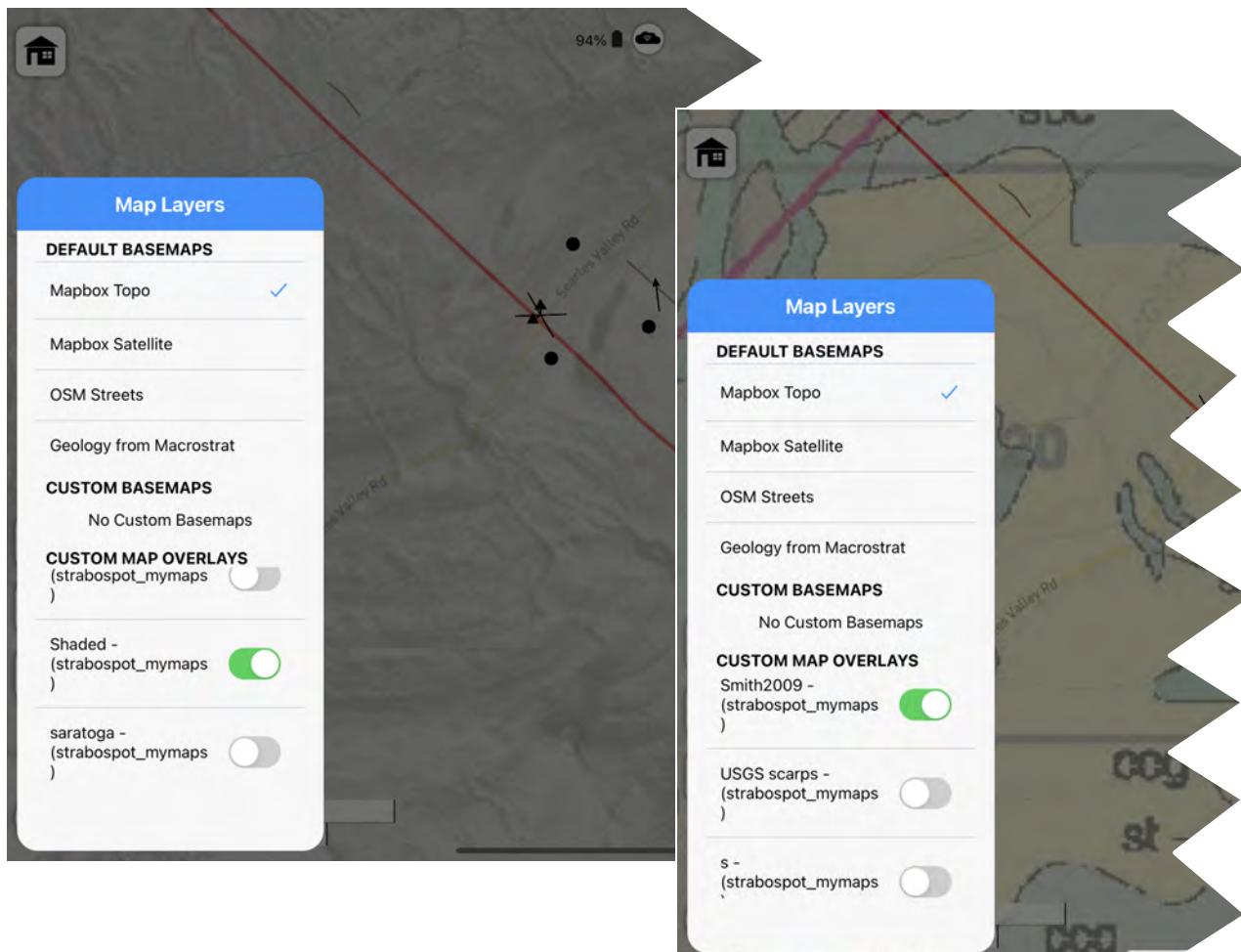
- Geologic map unit data provided by the ongoing MacroStrat project (see <https://macrostrat.org/> for more information).
- This geologic map data has no key in StraboSpot2 except for the color of the areas using standardized geologic maps colors based on geologic age.
- The geologic unit data can be investigated via the Macrostrat web page.

Custom Basemaps

- managed under Custom Maps on the Home menu ([see page 7 for more details](#)).

Custom Map Overlays

- Toggle the available map overlays off and on. These maps can be managed under Custom Maps on the Home menu ([see page 7 for details](#)).
- The examples below shows a shaded relief topography and a geologic map overlain on the Mapbox Topo default basemap.
- Multiple overlays are drawn in order shown in the list (the order they were added into the project).



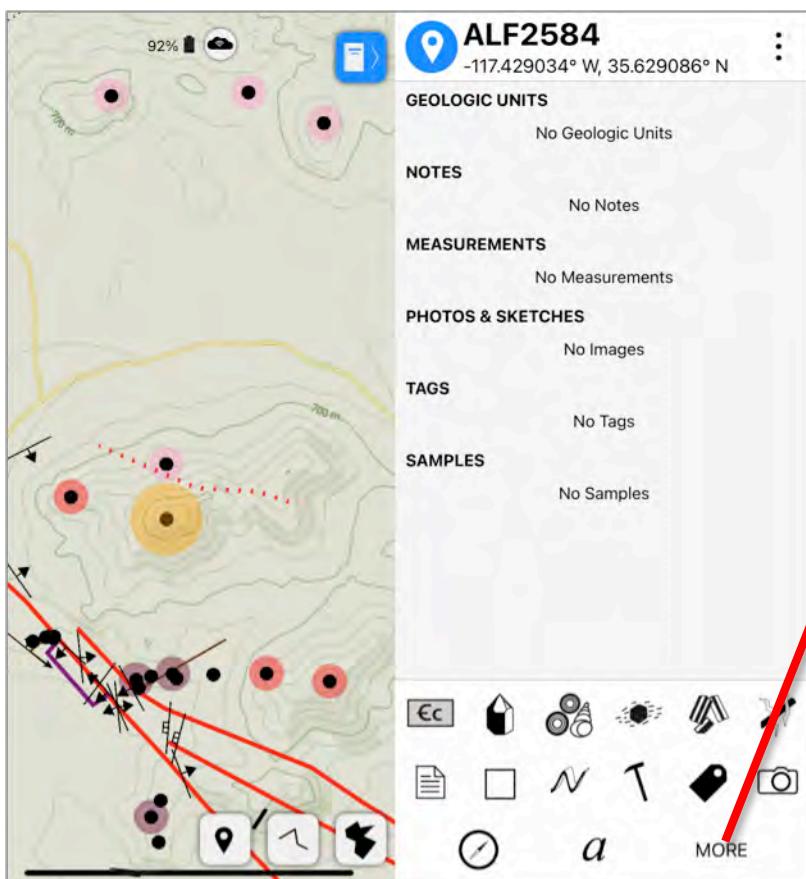
CREATING SPOTS and NOTEBOOK

CREATE POINT SPOTS

- Click on the point Spot tool (circled in red) to activate tool, then draw a dot at the place of interest on the map view of the screen.
- After clicking dot location the notebook tab will open on the right side.

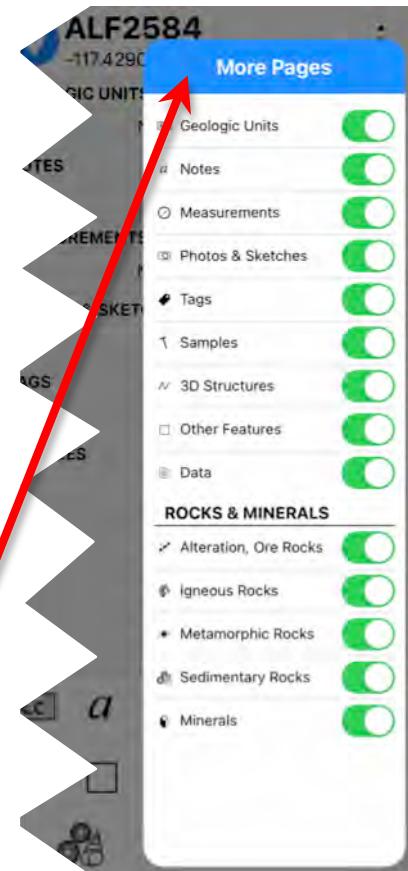
NOTEBOOK

- Shows selected Spot data or a list of Recent Spots if nothing selected.
- The top-left blue symbol shows the data category (point in this example, polyline or polygon will be shown in subsequent sections, pages 27 to 28)
- The large font bold type shows the spot name or spot ID (uses spot numbering scheme set under [Home/Naming Conventions, page 9](#)).



- Below spot name/label is the longitude and latitude of the Spot location in decimal degrees.
- The 3-dot icon in the upper right opens the Spot Actions popup, allowing the user to:
 - Copy this spot
 - Zoom to this Spot –zooms a little and pans this spot to center of map view
 - Delete this Spot – **popup to confirm deletion**
 - Show Nesting – shows structure of nested subspots, if any ([see page X for more details](#))
 - Close Notebook.
- Below the header is the overview of this spot's data.
- The data for a Spot is divided into several categories. The default Notebook is shown in the example below:

- Each data type can be viewed and edited by clicking on the heading for a summary list page of the contents or by selecting the specific entry to directly view/edit its data.
- Note, for Geologic Units/tags this will bring the user to the tag definition pages that controls all instances of this tag.
- Since this a newly created Spot it will not contain data, only the headings.
- Additional data type tools can be added or removed to the notebook as icons at the bottom. Clicking 'More' brings up a popup to control the icons for the data type tools shown in the Notebook (all are on in the example shown below). Some of these tools repeat the default Notebook items.



CREATING SPOTS and NOTEBOOK

POINT SPOTS DATA

- Add Data by clicking an item in the Notebook summary or by clicking one of the shown icon data type tools. These same steps on an already created Spot will allow editing of the data.

Geologic Units

- Click on the Geologic Units bold type header in the Notebook Summary
- To add a geologic unit click **assign/remove** which opens the Geologic Unit popup (shown below).
- Alternatively, thus can be reached by clicking the Geologic Units tool.
- At this point the user can simply select a previously defined geologic unit (or more than one) or create a new Geologic Unit using the Create New Tag button,

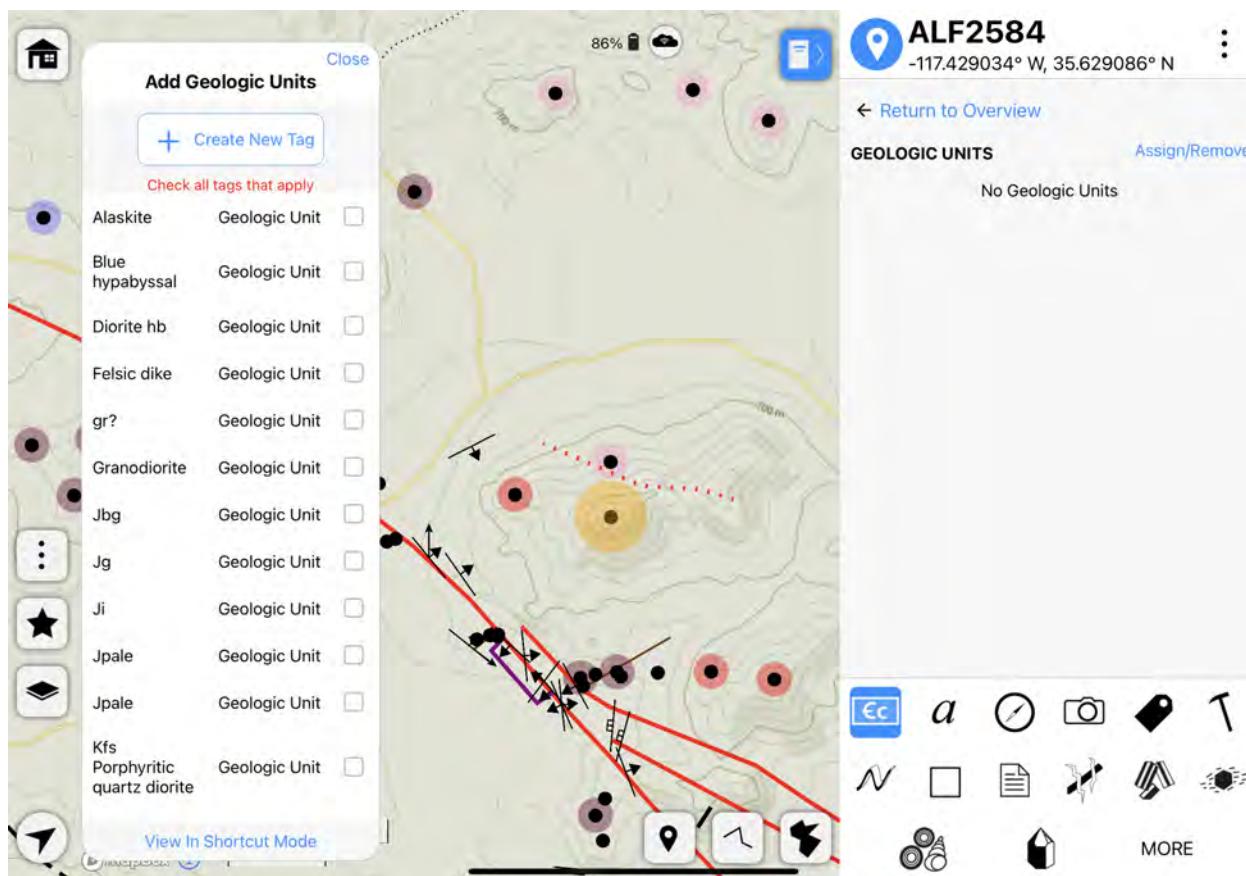
which opens a popup for defining the new geologic unit. The symbol color for the geologic unit has to be defined separately at Settings & Preferences/ Attributes/ Geologic Units ([see page 5](#)).

- Defining a new Geologic unit takes the user through a series of data fields that change and expand via the previous choices, for example: Rock Type brings up choices of igneous, metamorphic, sedimentary, or sediment; if choose igneous then a list of igneous rock classes; if choose volcanic it then yields a list of volcanic rock types.

Notes

- This data type is the simplest, a keyboard pops up to fill text into the Notes view.

- A set of templates can be defined and used to streamline items text or long descriptions.
- Toggle templates on, then click Select Note Templates to open a popup.
- Previously defined templates will be shown in a list with a title. -Click one or more of these and click **done**.
- If wanting to create a new template select **Define New Note Template** at the bottom opening a popup and keyboard to fill in the Name and text for the new template. **Save**
- Writing notes can be difficult with the iPad's autocorrection settings. A quick method is to copy and paste a list of your commonly used uncommon words into Strabo to add to the iPad dictionary.



CREATING SPOTS and NOTEBOOK

CREATING POINT SPOT DATA

Measurements

- Click on the Measurements bold type header in the Notebook Summary
- To add a measurement click on the data type to measure (Planar, linear, or both combined), which opens the measurement popup compass (shown below).
- The Notebook compass icon can also be used to get to this same place of measuring orientations.
- The compass uses the iPad's built in sensors to measure planes, lines and combined planes and lines.
- Numerous measurements can be made using this tool. When done close the compass popup.

- The compass tool can be skipped if you are using a different compass.
- Manual readings using another compass can be input by clicking the red text at the top of the compass graphic.
- Quality of the measurement can be set here.
- Show compass data displays the iPad's raw sensor data.
- View in Shortcut mode keeps the compass popup tool active and every time the compass center is clicked to record a measurement it makes a new Point Spot at the users current location.

planar features will spin the compass symbol (strike and dip and/or plunge and trend).

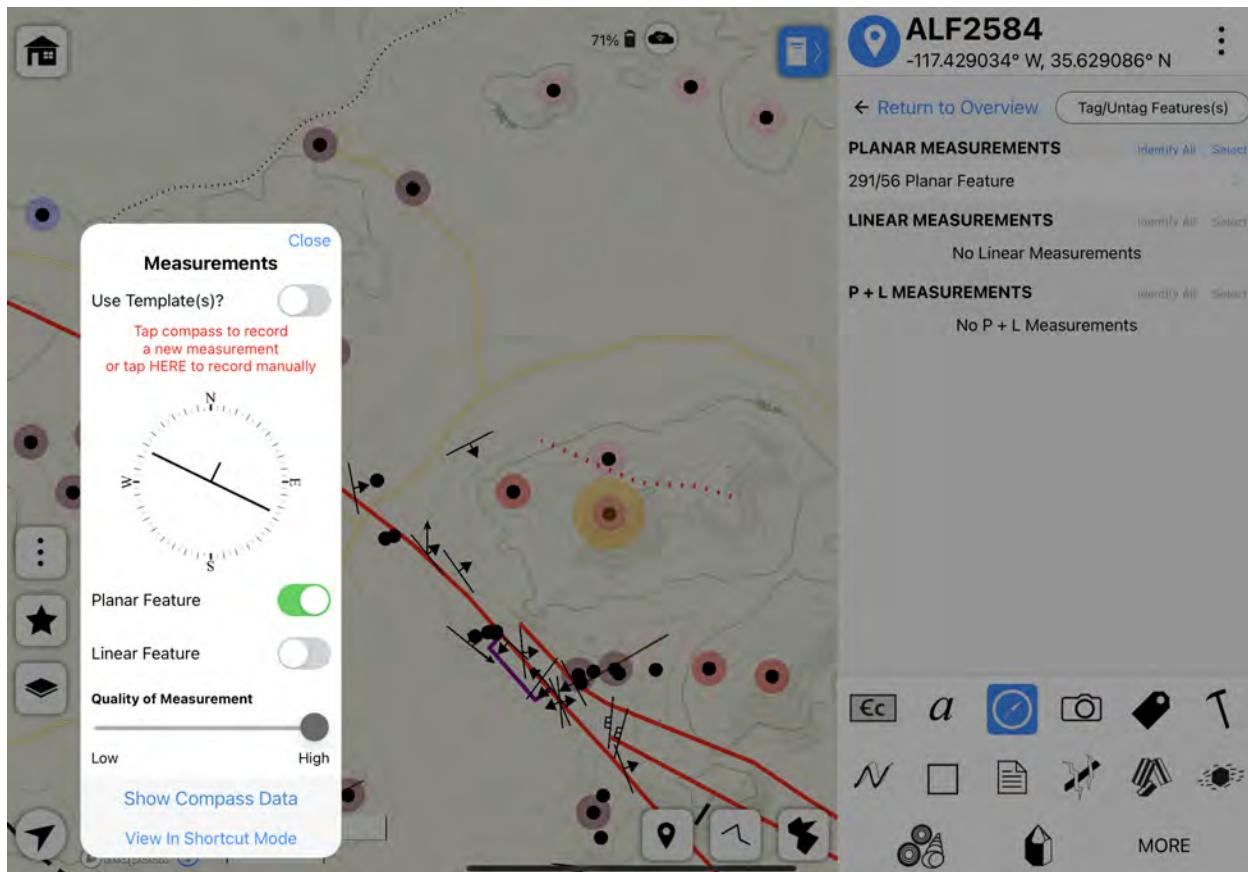
- Clicking the symbol in the compass will record the compass azimuth and dip (and/or plunge and trend). The feature type can be controlled below compass graphic.

Linear Features

- The long linear edge of the iPad is used for aligning with linear geologic features to measure the plunge and trend.

Planar and Linear Features

- A specific placement of the iPad's flat side and long edge can be used for combined planar and linear features.



CREATING SPOTS and NOTEBOOK

CREATING POINT SPOT DATA

Data for Measurements

- When finished measuring, close the compass popup, select the measured item to add information to (see examples on this page):
- After the compass, several fields might be already filled, such as strike, dip and quality.

- Planar feature type**, choose from a list of 14 options.
- One option is 'Other', which allows the user to create a new planar feature type.
 - One or more subheadings will appear based on feature type selected from above:
 - Example 1: planar feature type is bedding, which opens a new item called Bedding Type and also Plane Facing.
 - Example 2: planar feature is fault, which leads to: Type of Fault, Movement Justification, Directional Indicators, and Movement Amount. Note, some data fields allow more than one option to be selected as under the Directional Indicators field in the example below.
 - Planar Feature Thickness (measured in meters)
 - Planar Feature Length (measured in meters)
 - Planar Feature Notes

Tabular Zone option at the top of this window allows creation of Tabular zone, i.e. a planar body with a thickness.

-Tabular feature types offer different types: stratigraphic, intrusive body, injection structure, vein, vein array, zone of fracturing, zone of zone, alteration zone,

enveloping surface, unknown, or other.

- The other field will allow the user to create a new tabular feature type.
- One or more subheadings will appear based on tabular feature type selected from above.
- Click Add Associated Line to add a linear feature to be associated with this planar feature (see next section on measuring linear features), used with measuring a lineated gneiss, slickensides on a fault plane, flow direction on bedding, etc.

- The add linear feature can be repeated to add many lines to one plane.

-Be sure to **Save** this data

ALF2584
-117.429034° W, 35.629086° N

Cancel Save

+ Add Associated Line

Planar Feature **Tabular Zone**

FEATURE TYPE

Label

Strike 318

Azimuth Dip Direction

Dip 35

Planar Measurement Quality 5 - excellent

Planar Feature Type fault

Type of Fault or Shear Zone Boundary normal

Movement N side up

Movement Justification offset bedding (1 selected)

offset bedding

Directional Indicators Multiple Selected (2 selected)

riedel shear

crescentic fractures

Movement Amount (m)

Planar Feature Thickness (m)

Planar Feature Length (m)

Planar Feature Notes

Delete Measurement

ALF2584
-117.429034° W, 35.629086° N

Cancel Save

+ Add Associated Line

Planar Feature **Tabular Zone**

FEATURE TYPE

Label

Strike 318

Azimuth Dip Direction

Dip 35

Planar Measurement Quality 5 - excellent

Planar Feature Type fault

Type of Fault or Shear Zone Boundary normal

Movement N side up

Movement Justification offset bedding (1 selected)

offset bedding

Directional Indicators Multiple Selected (2 selected)

riedel shear

crescentic fractures

Movement Amount (m)

Planar Feature Thickness (m)

Planar Feature Length (m)

Planar Feature Notes

Delete Measurement

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Adding a Linear Measurements

- Add Associated Line asks to save the planar data and then opens up the compass.
- The example shown is the screen after closing the compass. The top lists the 2 associated features with their compass readings and a few keywords.
- The keyboard will open for the user to add a name if wanted, and a numerical keyboard will open for editing plunge and trend.
- The trend, plunge and quality will be filled if the user used the compass tool, otherwise these numbers can be added and edited here.
- There are a huge number of options for the Linear Feature Type (see example), but the user can also choose 'Other' and create their own.
- Below the Linear Feature Type are text fields of Lineation Defined By, and Line Notes (not shown in this example, scroll downwards in the window).

- The bottom of the page has a [Delete Measurement](#) option.
- Additional lines can be added to the planar feature using [Add Associated Line](#).
- Be sure to [Save](#) your data.

Measuring Linear Feature Only

- The window and pop-ups are the same for the process of just adding a linear feature only, or adding a linear feature and then associating a planar feature, or measuring both P&L together.

MORE ON THE COMPASS TOOL

Templates

--There is an option of using templates in which the user defines ([Select Planar or Linear Template](#)) and fills in the various fields for a planar, linear feature and then this data can be applied to subsequent measurements by selecting that particular template on the compass. Several templates can be made to chosen from.

--Templates are great for measuring a quick high n-values traverse of a monotonous series of features.

Shortcut Mode

--A quick collection of similar features is even faster if combined with the '[Shortcut Mode](#)', which keeps the compass tool active and adds a spot every time the compass is clicked using the GPS location.

The screenshot shows a mobile application interface for geological measurements. At the top, it displays a location pin icon, the identifier 'ALF2584', and coordinates '-117.429034° W, 35.629086° N'. There are 'Cancel' and 'Save' buttons in the top right. Below this, the text '318/35' and '17→005 Fault - NORMAL + Associated Linear Feature' is visible. A blue header bar labeled '17→005 Linear Feature' contains a '+ Add Associated Line' button. The main area is titled 'FEATURE TYPE' and lists several categories with dropdown menus:

- Label:** A dropdown menu with a single entry '5'.
- Trend:** A dropdown menu with a single entry '17'.
- Plunge:** A dropdown menu with a single entry '17'.
- Rake:** A dropdown menu with a single entry '17'.
- Linear Measurement Quality:** A dropdown menu with a single entry '5 - excellent'.
- Linear Feature Type:** A dropdown menu with the heading '— Select Linear Feature Type —' followed by a long list of geological terms:
 - stretching
 - intersection
 - pencil cleavage
 - crenulation
 - striations
 - slickenlines
 - fold hinge
 - s-fold
 - z-fold
 - m-fold
 - slickenfibers
 - groove marks
 - parting lineations
 - magmatic mineral alignment
 - xenolith/enclave alignment
 - mineral alignment
 - deformed marker
 - rodding
 - boudin
 - mullions
 - mineral streaks
 - vorticity axis
 - flow/transport direction
 - vergence
 - vector
 - other

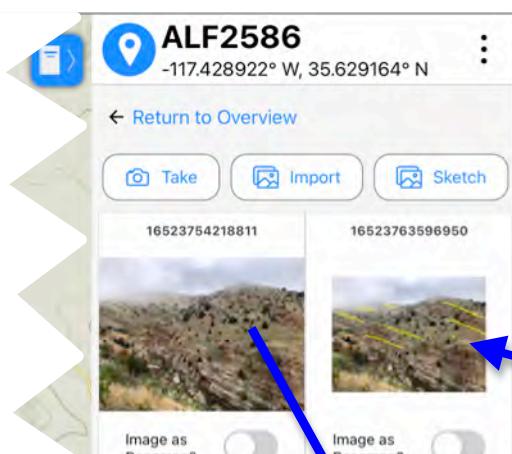
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Photo & Sketches

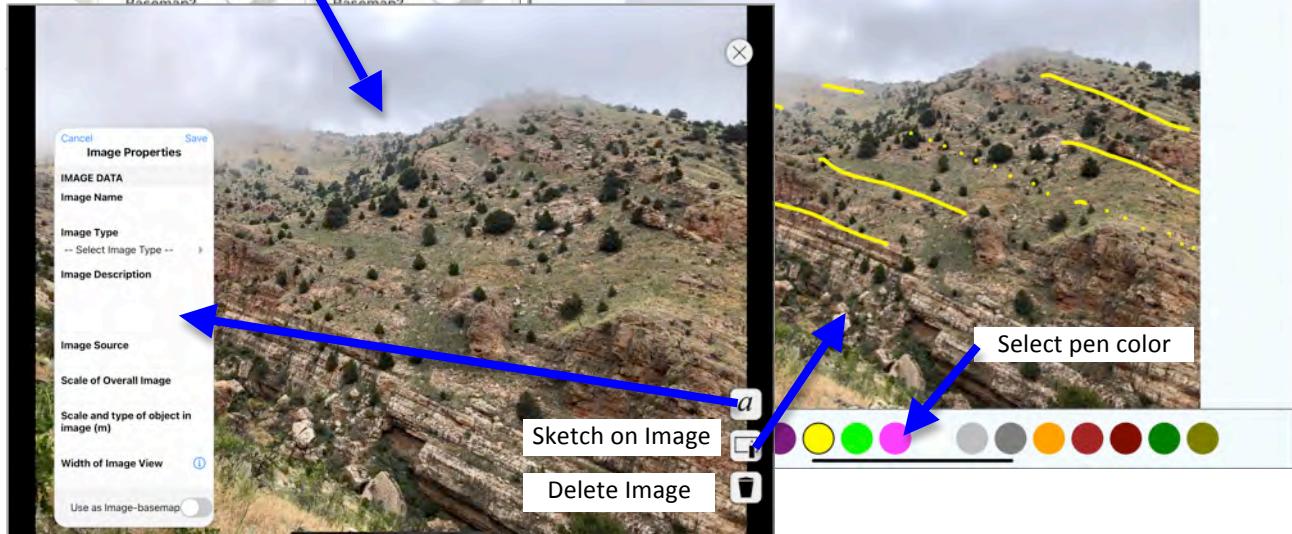
(1) Take a Photo

- First time you might need to give device access for the app
- Opens camera app
- Take photo with **shutter button**
 - Retake or Use Photo?
 - Adds photo but remains in the camera, click **shutter button** for more photos or **Cancel** to return to StraboSpot.
- Notebook view shows the thumbnails (see below).
- Each is labeled with a photo ID number or a name
- Toggle for ‘Image as Basemap?’



- Image as Basemap creates a georeferenced image that can have Spots added to it as if it was the main map, with the image as the mapping base.
- To add, see, or edit Spot data on this image click **View as Image Basemap**, which opens to the StraboSpot2 mapping mode with the image as a background instead of a geographic map.
- Nesting is created when the user creates Spots on image basemaps, these are not on the main geographic map but instead are in the pixel space of the image basemap. Multiple levels of this nesting can be created via subsequent image basemaps.

- The Show Nesting function in the upper right of the Notebook view, under the three-dot icon, shows where a Spot fits within this nested structure.



- Back to the image summary in the Notebook window, an image can be opened by clicking on it.

(2) Import Photo

- Three options appear:
- Add notes and data about the image with the ‘a’ icon, which opens a menu as shown in this example.
- To sketch on the image, use the **pen & paper icon**, which brings up drawing tools. To keep a drawing click **Save**, which saves the image separately with the sketched lines on it.
- The **trashcan icon deletes the image**.

(3) Create a Sketch

- This is the same process as drawing on a photo, except it is without the image.

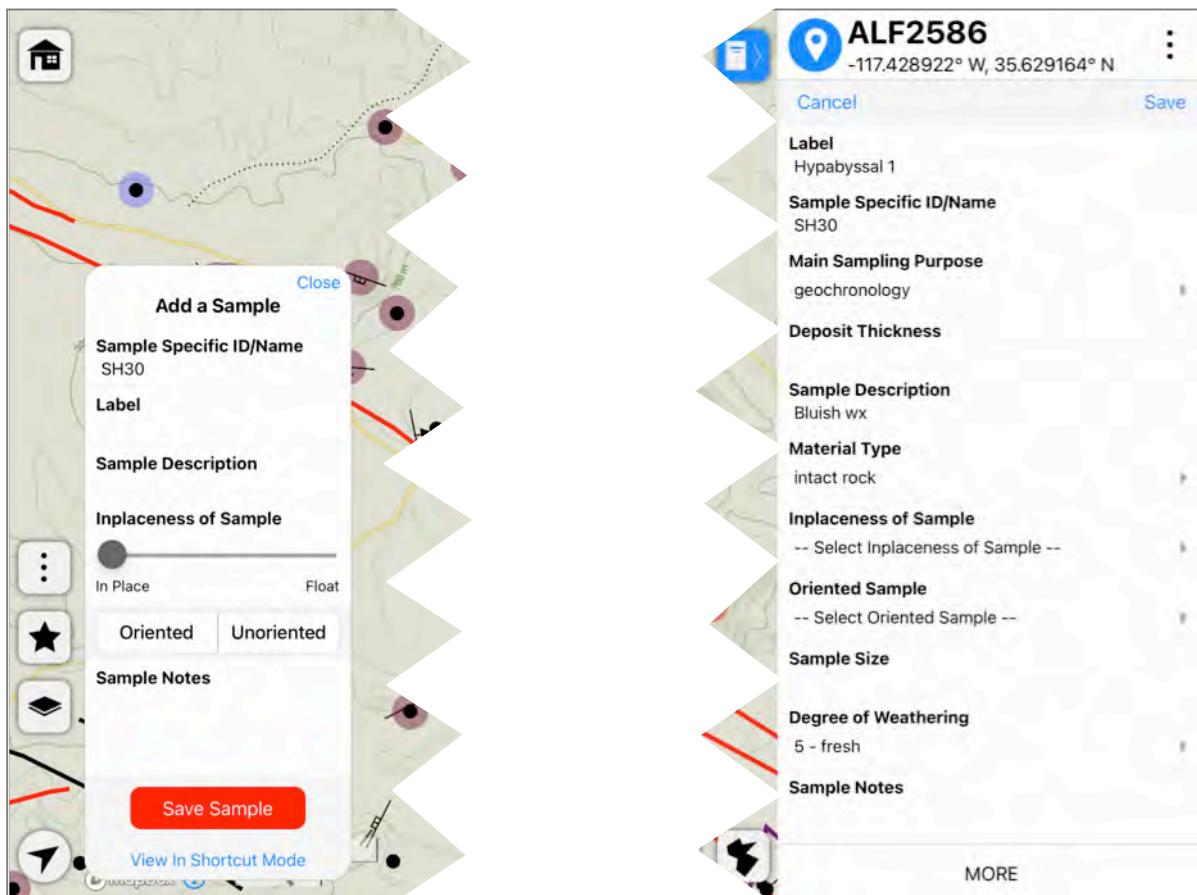
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Samples

- A specific Samples field allows streamlined note taking for collecting samples with an automated sample ID of a user-set prefix with an incremental number.
- Using the header line under Samples in the Notebook view or the Sample tool icon at the bottom, opens up the Sample pop-up.

- Fields for an Auto-filled but editable Sample ID, Name, Description, Implaceness, and Notes.
- Save Sample returns to Sample window of the Notebook.
- The shortcut tool operates similar to the shortcut tools for the Compass, Geologic Units, and Tags. Leaving the Sample pop-up open and creating a new Sample each time the save sample button is pressed with a new Spot at the device's GPS coordinates.



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3D Structures

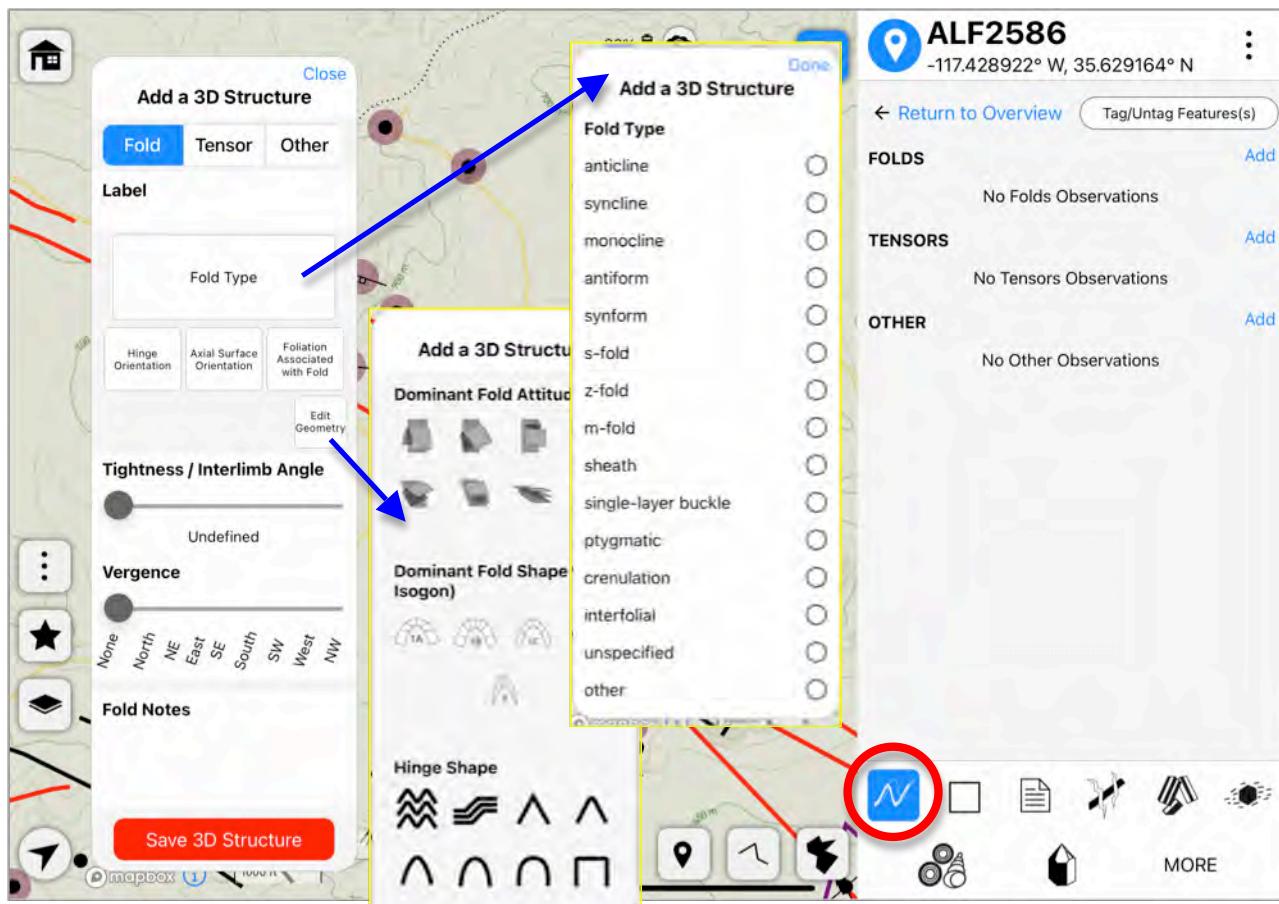
- This (and the following tools) can only be accessed using the 3D structure tool at the bottom of the Notebook window (red circle in example below). This tool needs to be added by clicking ‘MORE’ which opens a list of Toggles for different Notebook tools.
- This tool covers folds, tensors and a user-definable other.
- Multiple 3D structures can be added.
- 3D structures can be tagged/untagged
- The Add a 3D Structure pop-up opens in Fold mode.

FOLDS

- This has a series of text, click-open boxes, and sliders to describe folds.
- Fold Type and Edit Geometry pop-ups are shown below.
- Hinge Orientation, Axial Surface Orientation, and Foliation Associated with Fold all brings up a compass pop-up tool.
- [Save 3D Structure](#)
- [Close](#) popup to return to notebook.

TENSORS

- This allows the user to different types of tensors:
- Each of type and subtype has different sub-categories and fields to fill in: orientations, notes, values, etc.
- Types and Subtypes
 - Ellipsoidal data** = finite strain, shape preferred orientation, anisotropy of magnetic susceptibility, stress, infinitesimal strain, aspect ratio, and other
 - Non-ellipsoidal** = flow apophyses, displacements, and other
 - Elliptical** = finite strain, shape preferred orientation, aspect ratio, and other



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Other Features

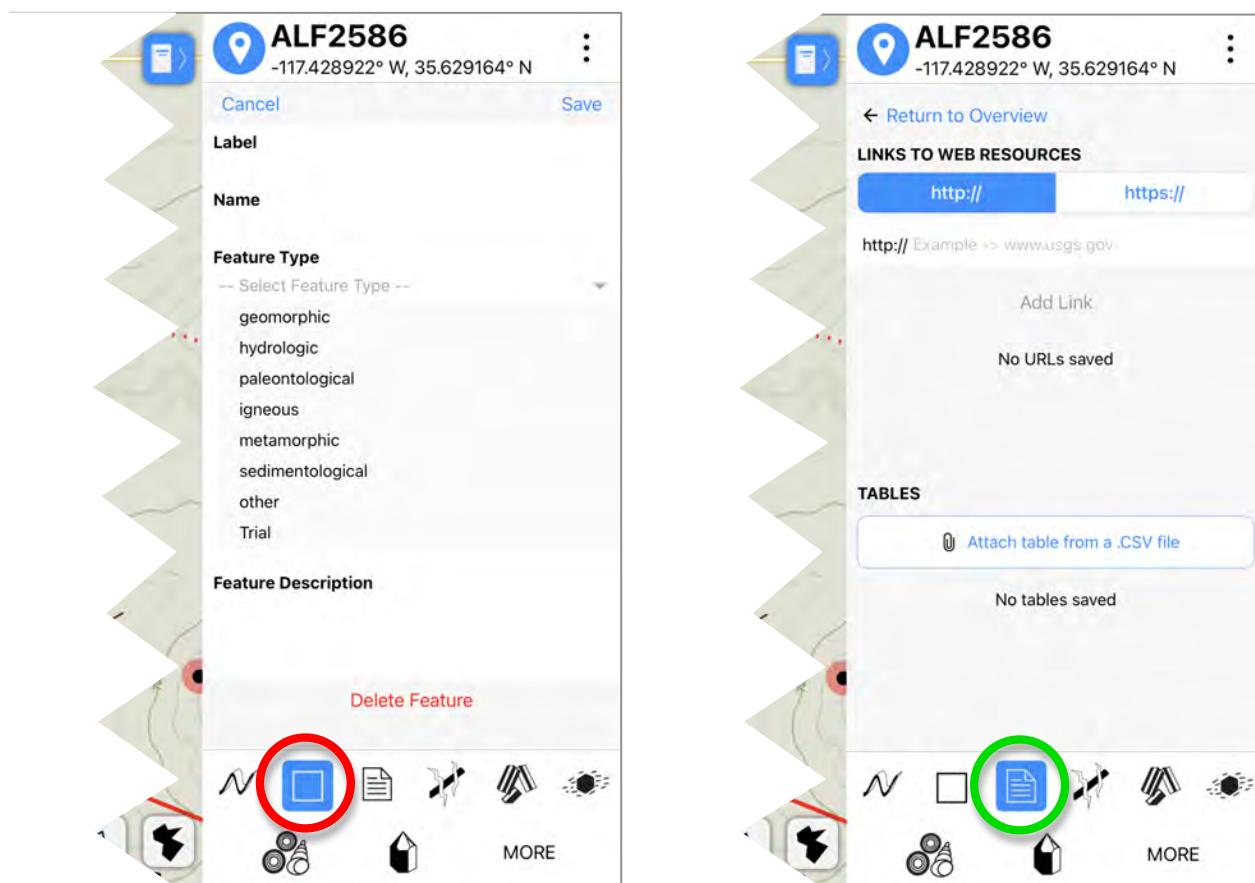
- This tool (red circle in example below) is used to add other items to this Spot's data structure.
- Click Add feature, which brings up the window shown below in this example.
- Label, Name, and Description are open text fields, with Feature Name being a required field.

- Feature type lists the options shown in the below example. The option 'other' brings up a new field to name the new feature type.
- The option labeled 'Trial' was previously defined and saved in my project and then shows up as an option to apply to other spots.
- To see or delete user-defined Other Features, navigate to the Active Project window

on the Settings & Preferences window (Home icon in upper left corner on main map screen). All of the user-defined other features are listed as Custom Feature Types.

Web Resources & Tables

- This tool (green circle in example below) is used to link to a webpage or to a table.



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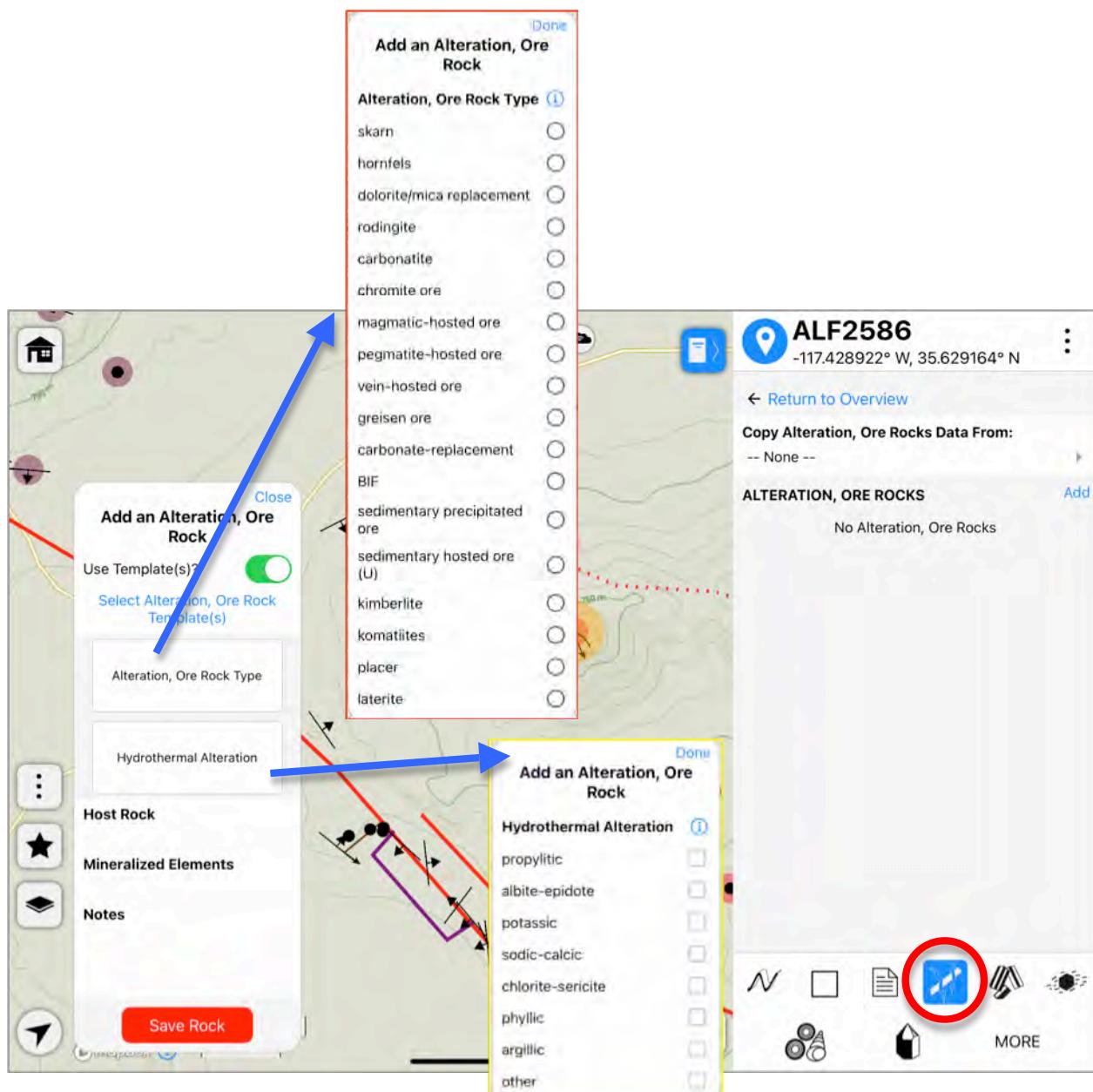
Alteration, Ore Rocks

- Access this popup using the tool circled in red below.
- This tool can copy other instances of 'Alteration, Ore Rocks' from the project to apply to this Spot. If another Spot has alteration, ore Rocks entries, these can be

applied by choosing the appropriate Spot number.

- Click Add to add a new Alteration, Ore Rocks entry. This opens up a new popup window.
- There is a popup menu for Alteration, Ore Rocks, as shown below.

- Another popup list of Hydrothermal Alteration, as shown below.
- The fields for Host Rock, Mineralized Elements, and Notes are open text fields.
- Multiple Alteration, Ore Rocks can be added to one spot.



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Igneous Rocks

- This tool is used to add igneous rocks details.
- This description and attributes can be saved and then applied to other Spots.
- To add a new igneous rock entry, click the corresponding **Add** buttons for plutonic rocks or volcanic rocks. This opens a Popup window.
- The Igneous Rocks tool can be set up to use templates where the user defines rocks and can then recall them easily to apply to other Spots. These templates work similarly to the templates described on [page 14](#).

Plutonic Rocks Popup

- [Plutonic Rock Types](#) opens a popup with numerous choices and also an ‘other’ option to add your own igneous rock.
- [Occurrence](#) open lists of choices such as pluton, dike, stock, etc.
- [Texture](#) opens choices such as grain sizes, porphyritic,
- [Color Index](#) opens a popup. Click below the words Color Index and type a number for the corresponding % of dark color. After adding a percentage, choices for the data source appear: StraboTools (a separate app) or visual estimation.

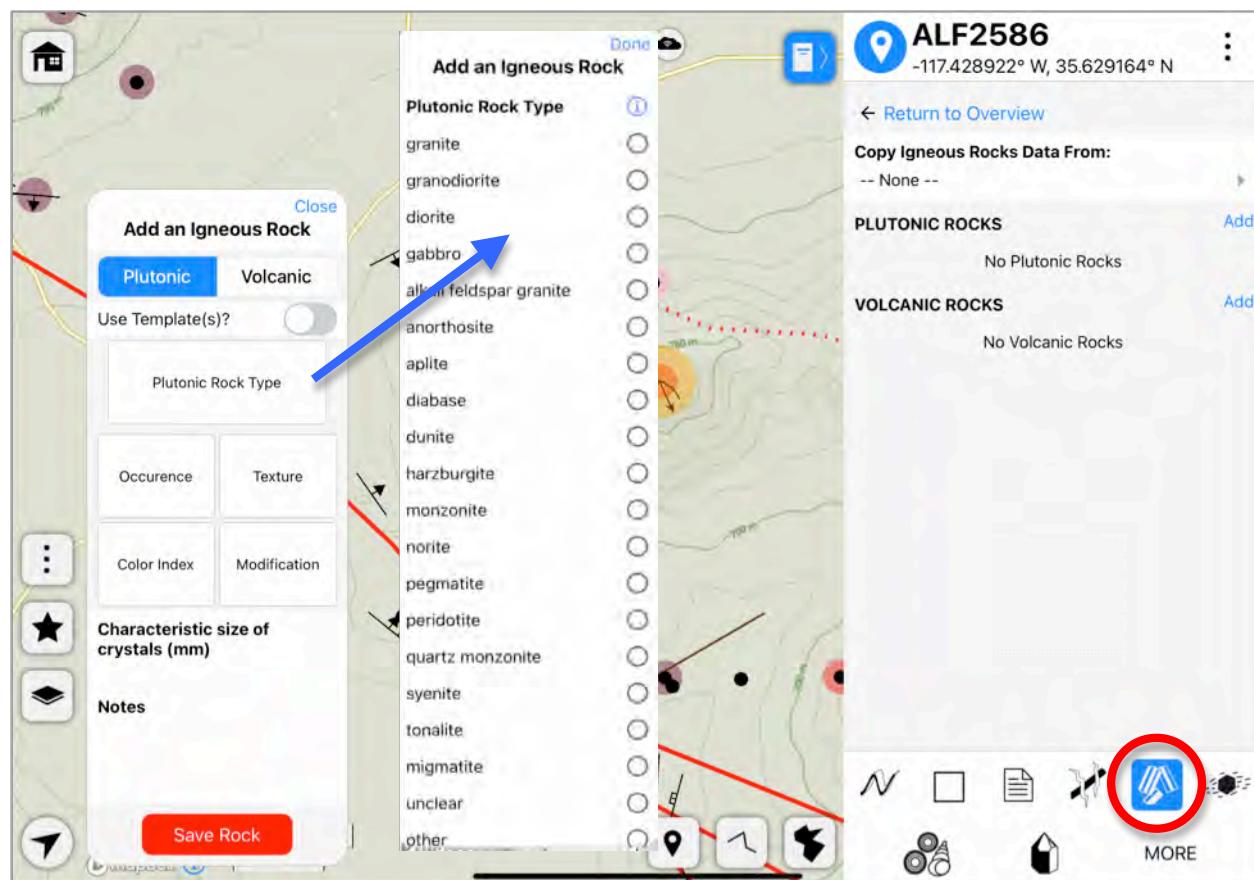
– [Modification](#) opens a popup with choices such as altered, shattered, veined, etc.

– Use keyboard to fill in [Characteristic Crystal Size](#) and [Notes](#).

–

Volcanic Rocks Popup

- Similar input tools but with different choice lists for rock names, occurrences, textures, and modification.



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Metamorphic Rocks

– This tool adds a structured dataset on metamorphism to the Spot. The tool (red circle below) opens a popup window as shown in this example.

- This tool operates similarly to the igneous rocks tool, with lists of choices and an open text Notes field.
- Each box opens a new popup with a set of choices, most have the option to add a user-defined ‘other’ choice.

- It’s possible to use templates with this tool to define and recall a defined Metamorphic Rock.



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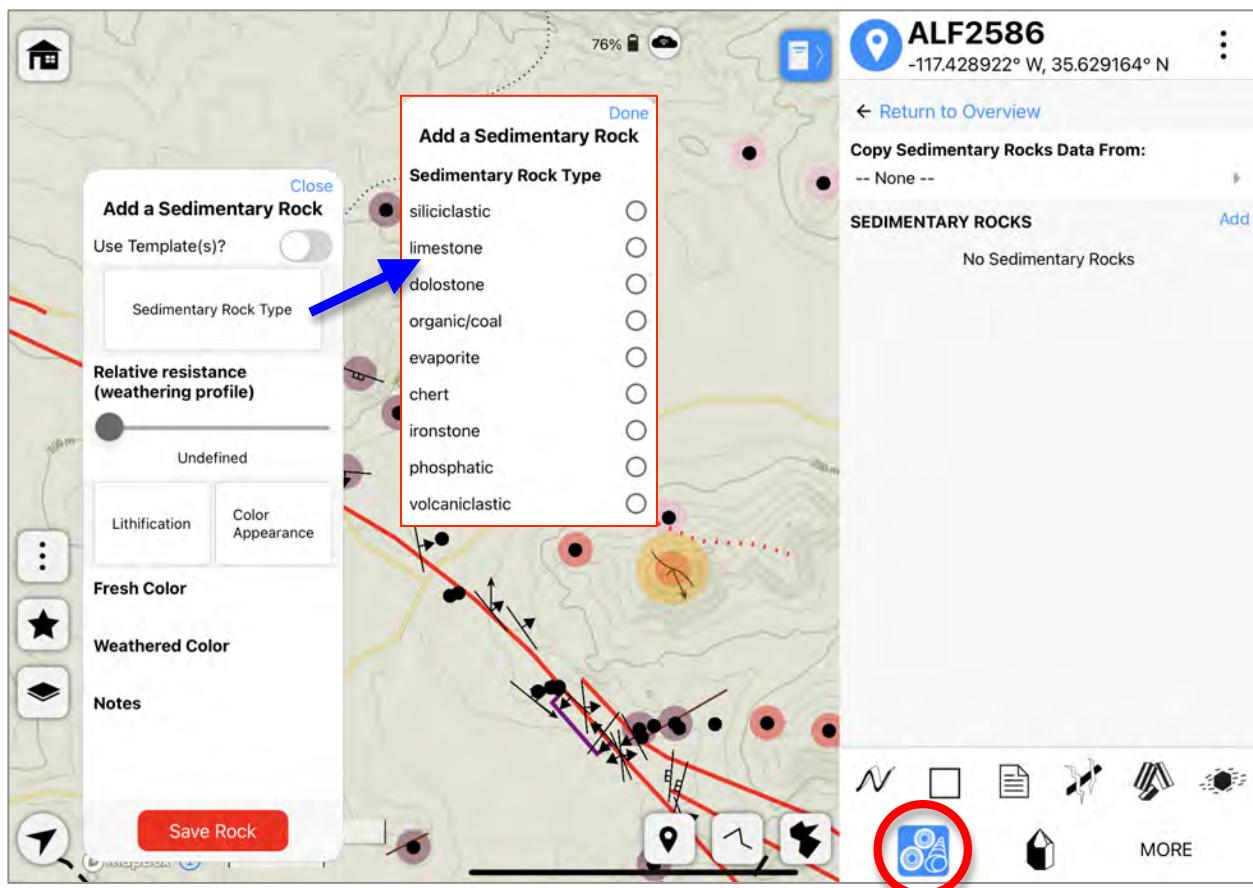
CREATING POINT SPOT DATA

Sedimentary Rocks

- This tool adds a structured dataset on Sedimentary Rocks to the Spot. The tool (red circle below) opens a popup window as shown in this example.

- This tool operates similarly to the igneous rocks tool, with lists of choices, a slider for Relative Resistance and open text fields for Fresh Color, Weathered Color, and Notes.
- Each box opens a new popup with a set of choices, most have the option to add a user-defined 'other' choice.

- It's possible to use templates with this tool to define and recall a defined Sedimentary Rock.



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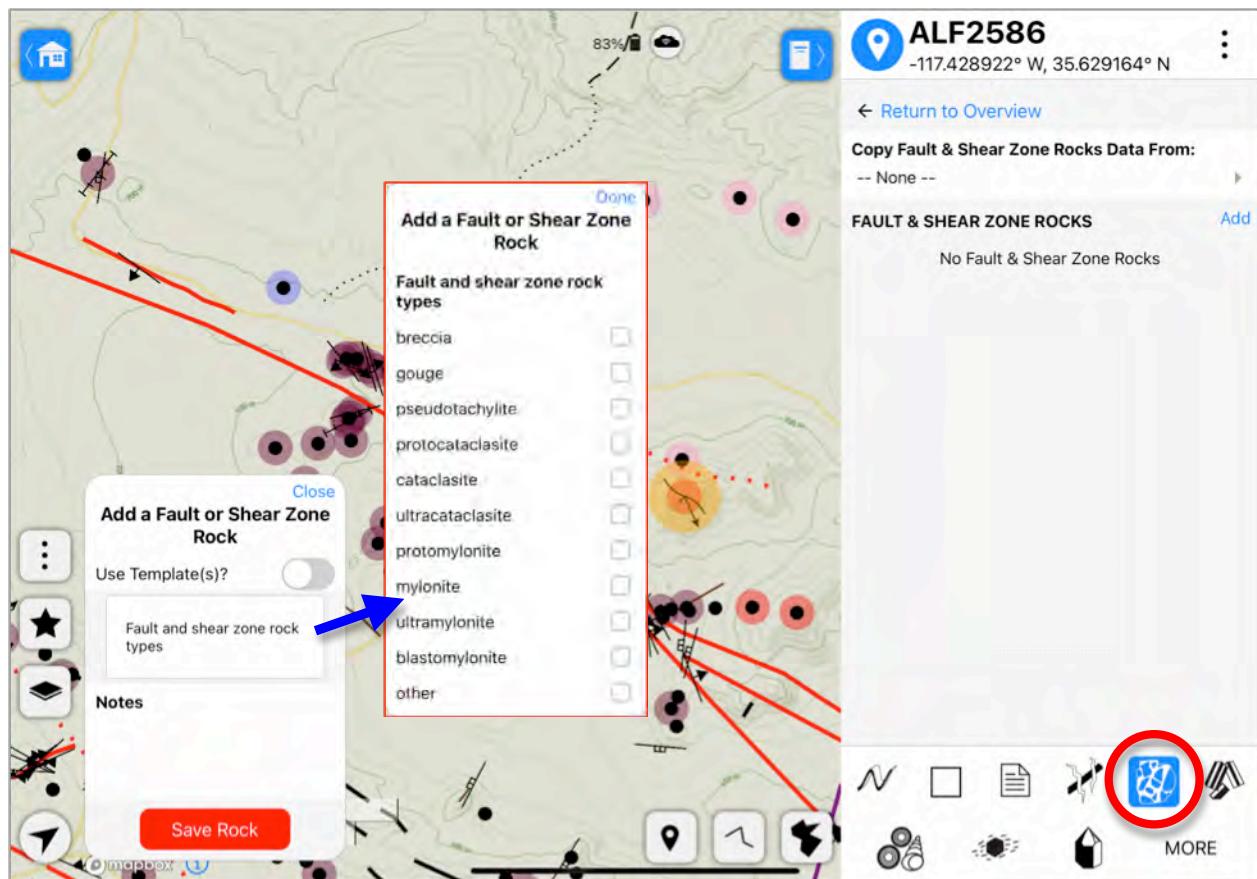
CREATING POINT SPOT DATA

Fault & Shear Zone Rocks

- This tool adds a structured dataset on Fault & Shear Zone Rocks to the Spot. The tool (red circle below) opens a popup window as shown in this example.

- This tool operates similarly to the igneous rocks tool, with lists of rock type choices and an open text fields for Notes.
- Each box opens a new popup with a set of choices, most have the option to add a user-defined 'other' choice.

- It's possible to use templates with this tool to define and recall a defined Sedimentary Rock.



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LINES SPOTS DATA

- The [Draw Lines](#) tool (red circle) is used to create a line feature on the map. Clicking on the tool activates the drawing mode, each click on the screen draws a new vertex of a line (orange dotted thick line while drawing). When finished click [End Draw](#).
- While drawing the tool tells which dataset that the new features will be added to.
- After completing the drawing the Notebook will open.
- The top lists the Spot ID in bold large font.
- The Notebook window will have blue circle icon with a white line in it and there is text that says ‘[LineString](#)’, which, if clicked, brings up the

X-Y coordinates of each vertex of the line. Three other fields are listed: GPS Accuracy (m), Altitude (m), and Radius of Spot (m).

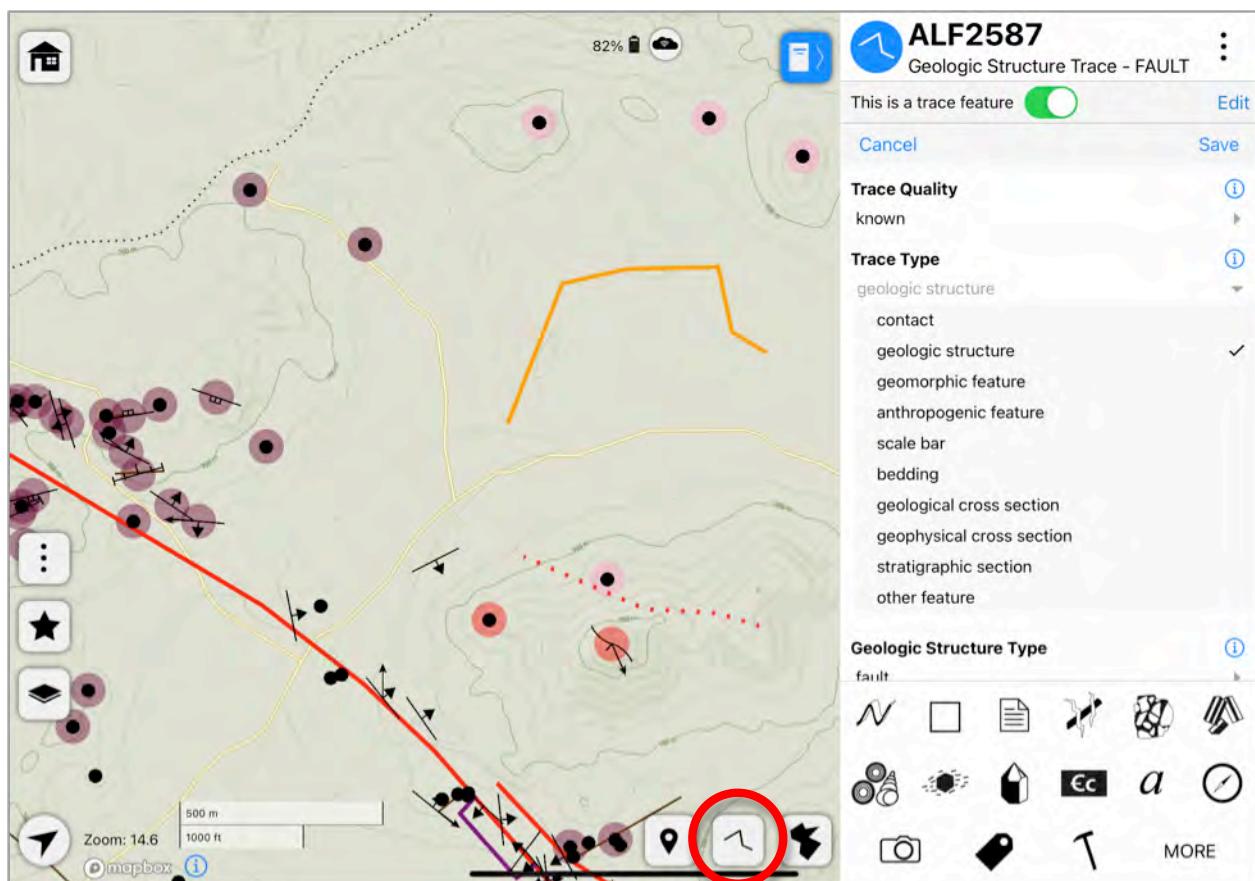
- Below the heading is a toggle for ‘[This is a trace feature](#)’.
- The rest of the Notebook is the same as with Point Spots.

Trace Feature

- This brings up choices to define the line as a feature.
- [Trace Quality](#): known, approximate, inferred, etc.
- [Trace Type](#) is a required field. Most Trace Type choices (see example below) bring up subsequent type and subtype options:
- a. [Trace Type](#) = contact
–> [Contact Type](#) = intrusive
----> [Intrusive Type](#) = dike.

- b. [Trace Type](#) = geologic structure
–> [Geologic Structure Type](#) = fault
---> [Shear Sense](#) = dextral.

- Trace Notes is open text
- These fields can be later edited via an [Edit](#) button that appears on the overview Notebook page for the Spot. Any changes must be saved to be kept.
- The Trace Type controls the line appearance on the map:
 - contact = fine black
 - geologic structure = thick red
 - geomorphic feature = thick blue
 - anthropogenic feature = thick purple
 - the other trace type and unclassified are drawn as thin dark brown.



CREATING SPOTS and NOTEBOOK

POLYGON SPOTS

- The [Draw Polygon](#) tool (red circle) is used to create a polygon (area) feature on the map. Clicking on the tool activates the drawing mode, each click on the screen draws a new vertex of a line (translucent orange filled area with a orange dotted thick line while drawing). When finished click [End Draw](#).
- While drawing the tool tells which dataset that the new features will be added to.
- After completing the drawing the Notebook will open.
- The top lists the Spot ID in bold large font.
- Since this a polygon the Notebook window will have blue circle icon with a white filled shape in it and there is

text that says 'Polygon', which, if clicked, brings up the X-Y coordinates of each vertex of the polygon. Three other fields are listed: GPS Accuracy (m), Altitude (m), and Radius of Spot (m).

- Below the heading is a toggle for '[This is a surface feature](#)'.
 - The rest of the Notebook is the same as with Point Spots.
- NOTE:** StraboSpot does not use topology or snapping so that for a geologic map like display it is impossible to have perfectly aligned polygons without small gaps or overlaps for contiguous polygons.

- The Surface Feature Type choices are shown in the example below.

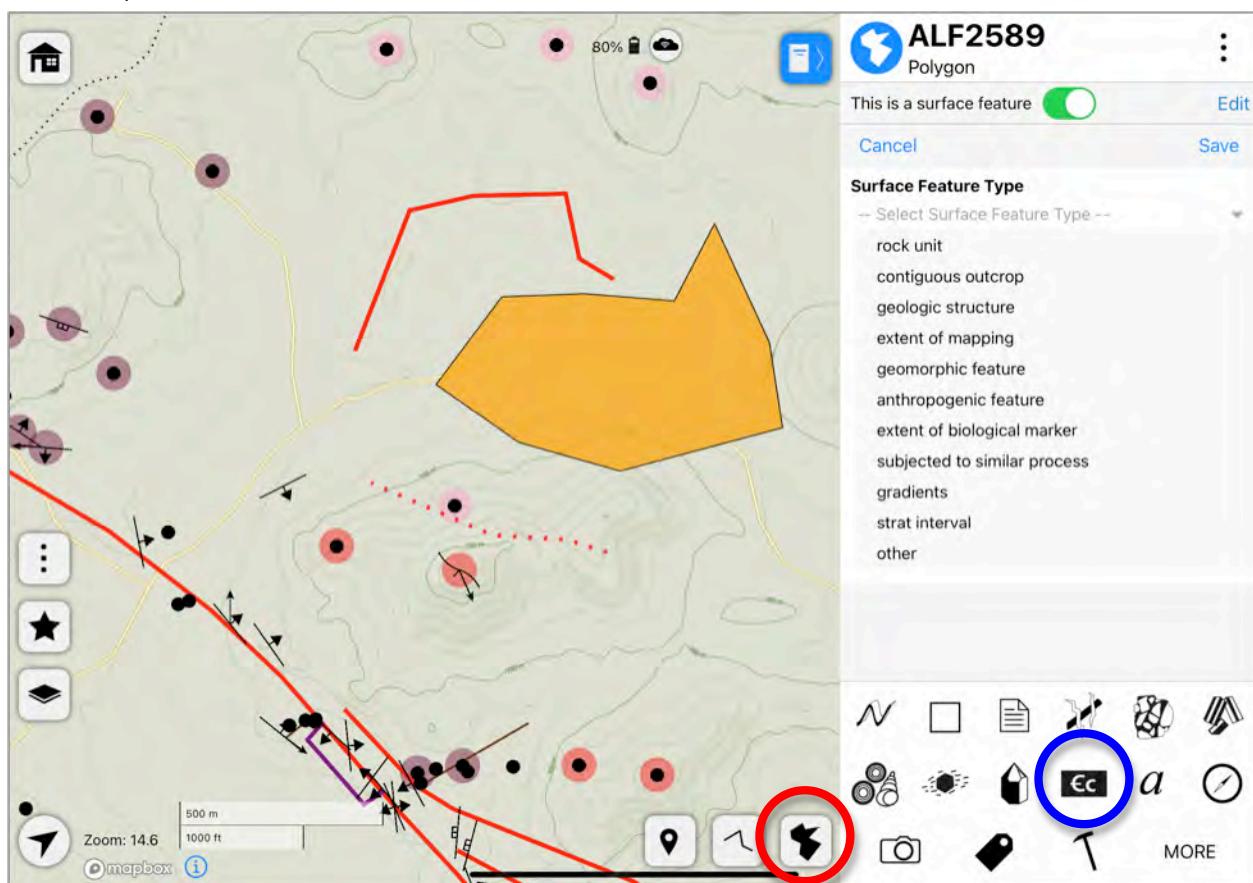
- Click Save when done choosing.

Geologic Unit Polygons

- After defining as a surface feature the user can classify the polygon using tags. These tags can then be used to color same tag polygons. For example, to apply Geologic Unit tags click the Geologic Unit Tag tool in the Notebook (blue circle). This brings up the Add Geologic Units popup window that lists all of the previously defined Geologic Units in the active project. After a geologic unit has been selected, click [Close](#).

Surface Feature

- This brings up choices to define the polygon as a feature.



CREATING SPOTS and NOTEBOOK

Polygon Colors

- The default color of polygons is translucent teal.
- The user can use Tags to color polygons, either regular Tags or Geologic Unit tags.
- The Map Symbol popup controls the tag color scheme for the map as using either Geologic Units tags or Conceptual Tags. Both types of Tags work similarly.

– For example, to color using Geologic Units tags the Geologic units need to be assigned colors.

– Color can be assigned or edited via the Geologic Units window (see example below). Either click on a polygon with an assigned geologic unit tag or navigate to Setting & Preferences (Home icon in upper left of map)/Attributes/Geologic Units.

– Clicking on the Geologic Unit of interest will show the list of all the Spots assigned with this Geologic Unit and at the top of this list will be the Tag color box, click on it and choose or change a color.

