

ArcGIS Collector for grid sample data collection

cengel - 4/3/14

Below are detailed instructions for how to use ArcGIS collector on an iPad in offline mode to collect field data on a grid of determined cell size (20x20m) overlaid on a base map of high resolution imagery. Forms are set up to have drop down menus and time stamps are automatically recorded.

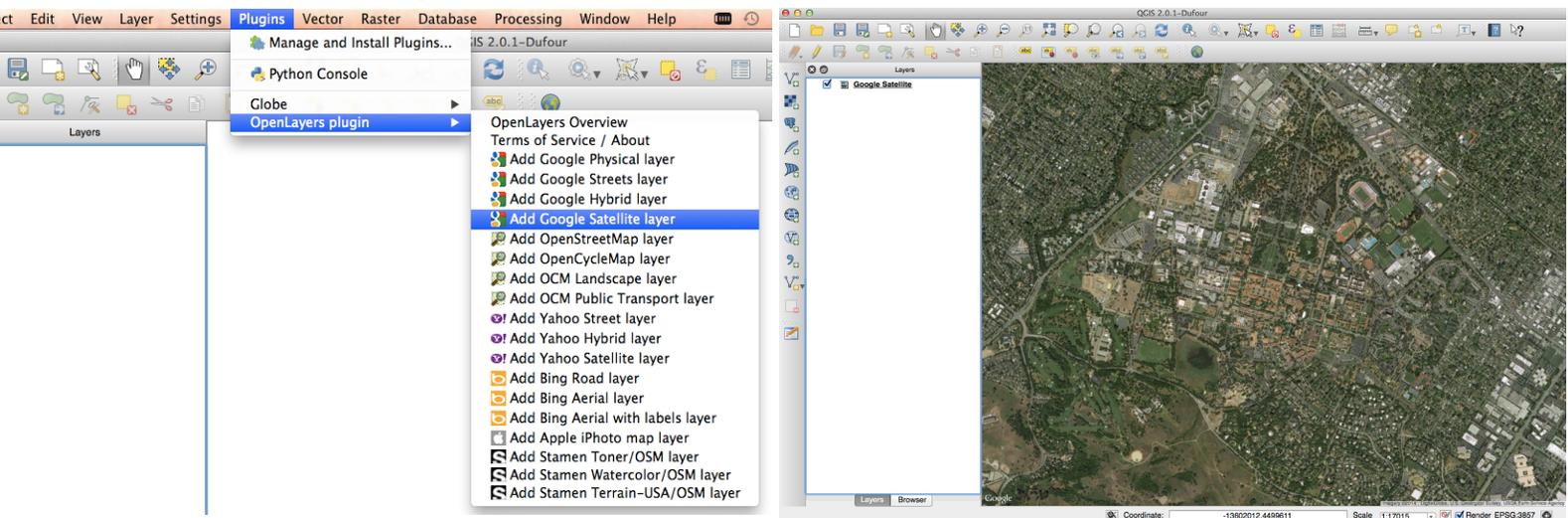
Tools used:

- Qgis (free) www.qgis.org
- ArcGIS
- ArcGIS online account (Stanford affiliates request access from carbajales@stanford.edu)
- ArcGIS Collector (free) <http://doc.arcgis.com/en/collector/>
- iPad

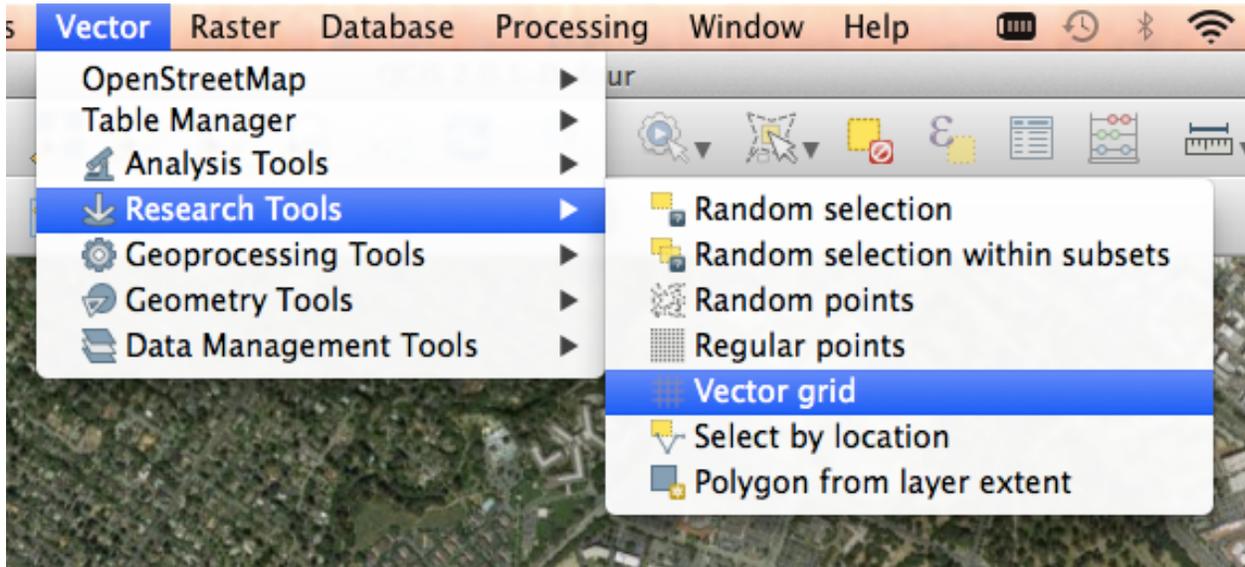
A. Create the grid (*Qgis*)

(ArcGIS has a Fishnet tool - but I found it a headache to use and overkill for this purpose. Here I used Qgis, which makes it a few simple steps.)

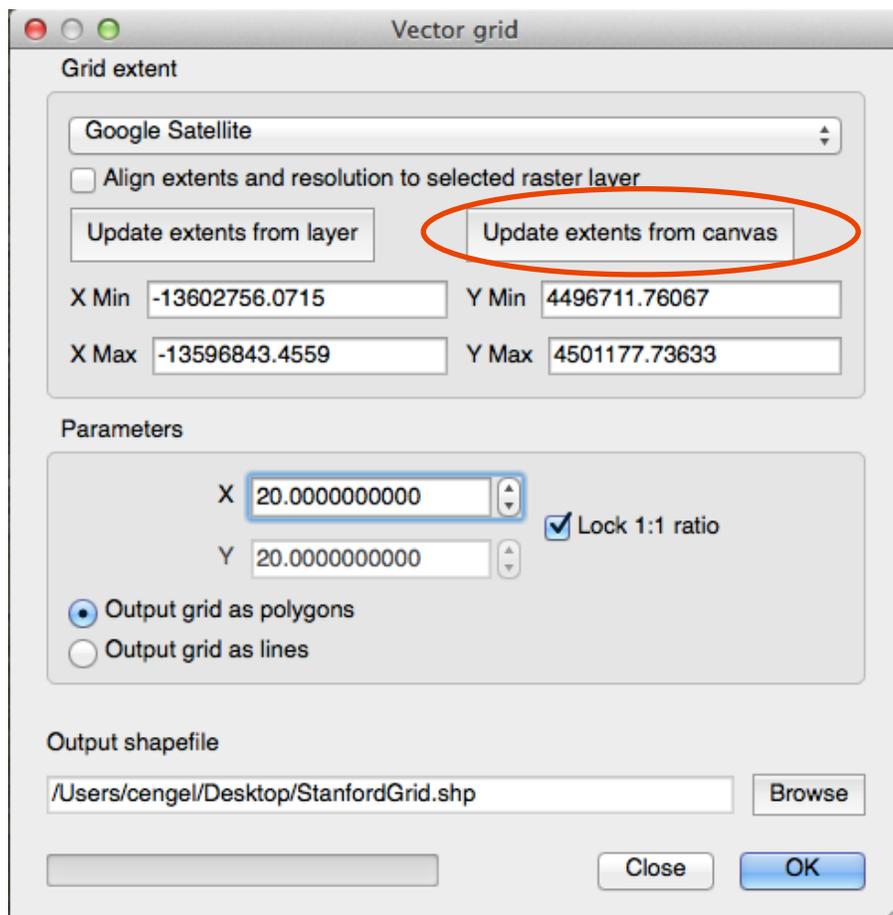
1. Open Qgis. If you haven't, install the OpenLayers plugin. (Plugins > manage and Install Plugins, search for OpenLayers)
2. Load a Google layer and zoom to the area of your interest



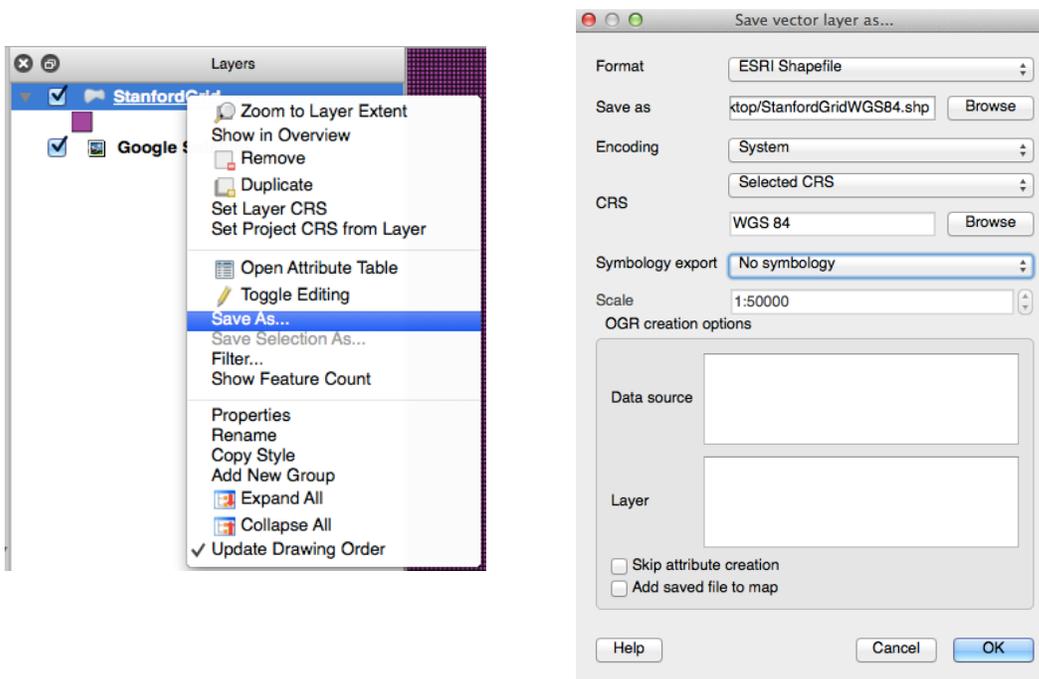
3. Go to Vector > Research Tool > Vector Grid



4. Choose the following settings: Update extents from canvas, 20.0 for X and Y (map units are in meters), output grid as polygons, and save as StanfordGrid.

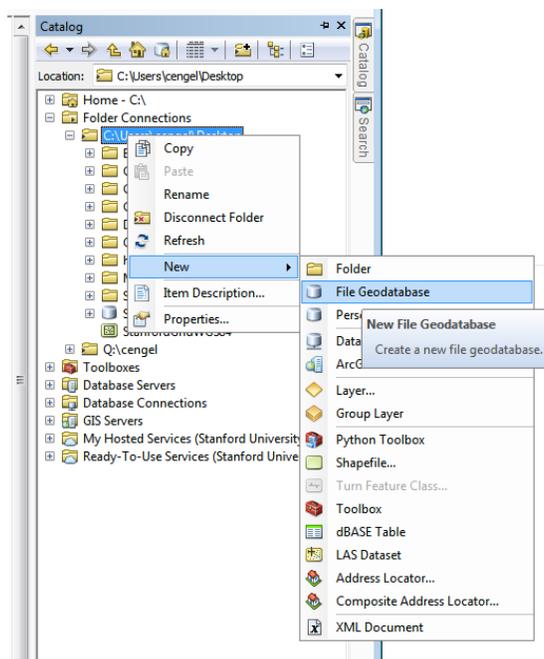


- When prompted load the layer and save as StanfordGridWGS84 with projection (CRS) WGS84.

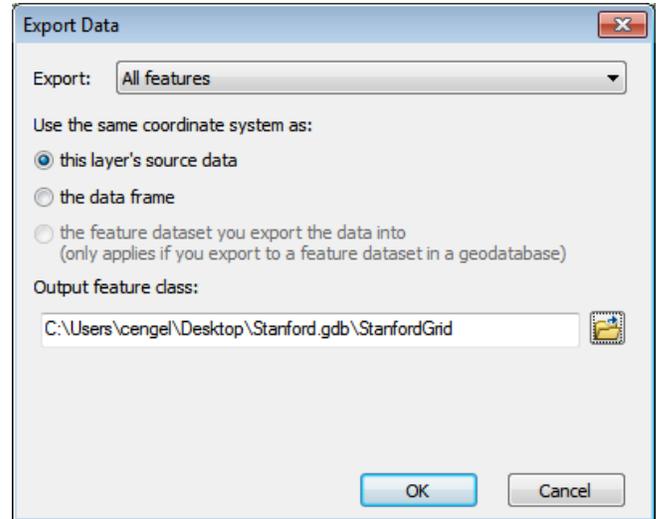
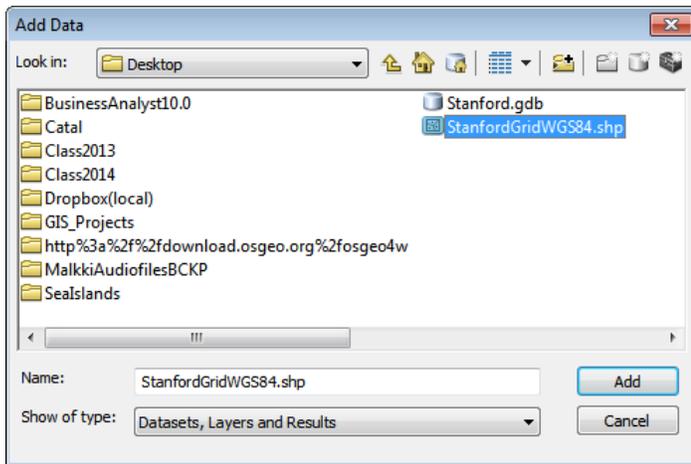


B. Add attribute data for grid cells (aka form fields) (*ArcGIS*)

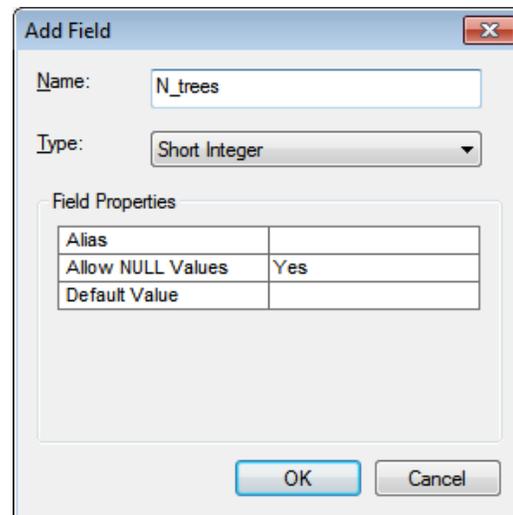
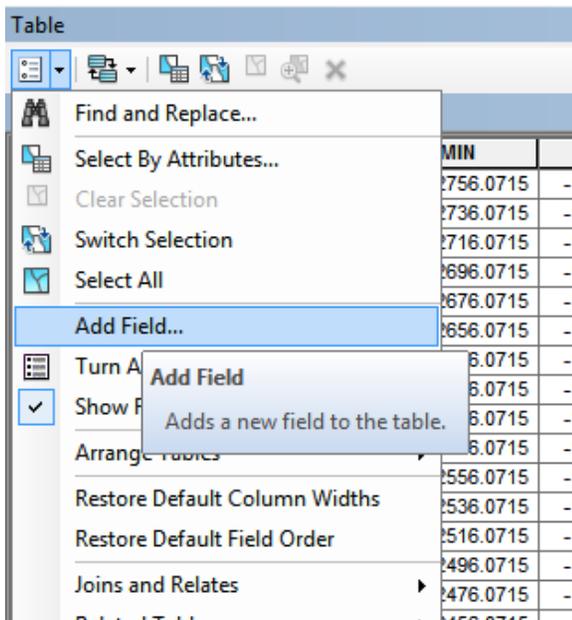
- Open ArcMap, and in ArcCatalog create a new File Geodatabase, named Stanford.

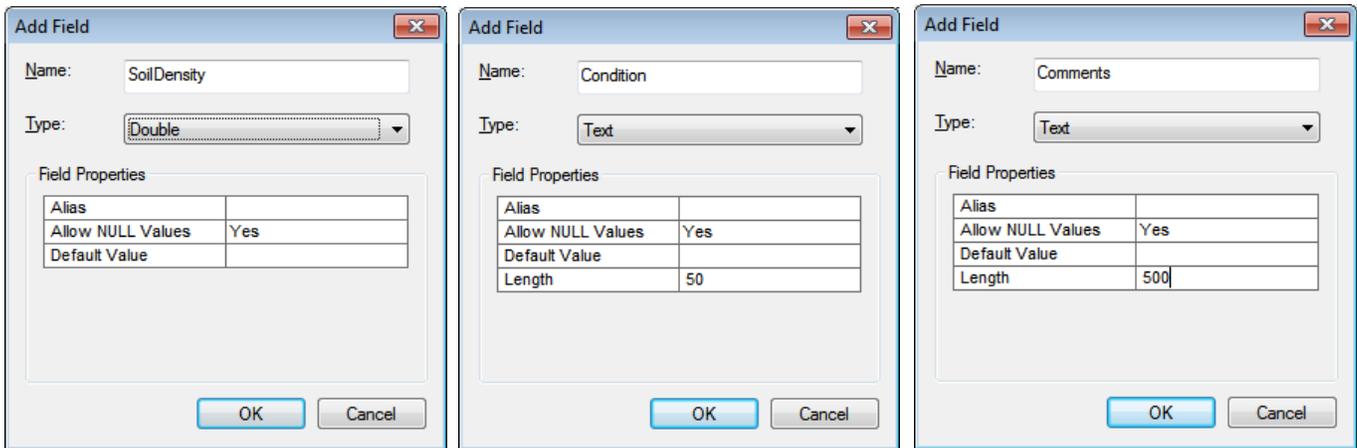


2. Load StanfordWGS84.shp into ArcMap and save it as File Geodatabase feature class named StanfordGrid to the Stanford File Geodatabase - then load as layer and remove StanfordWGS84.shp.

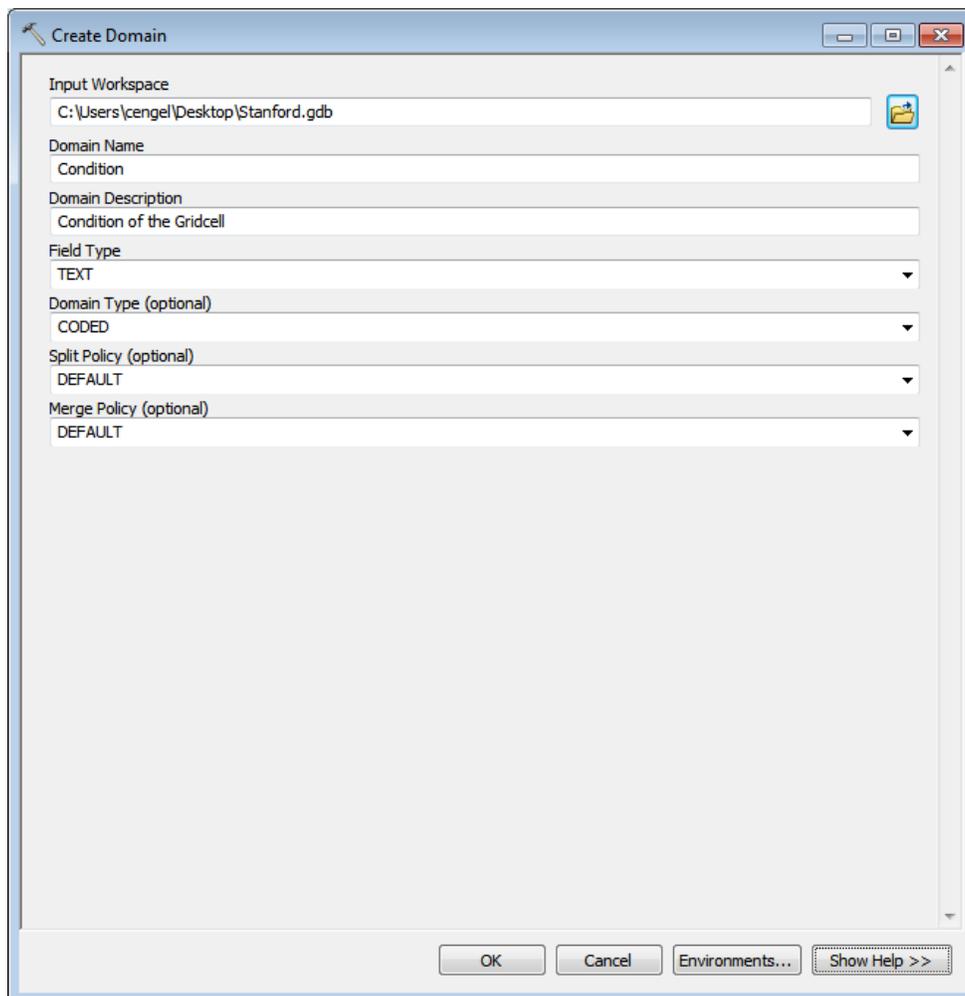


3. Open the attribute table of the StanfordGrid Layer and add the fields needed for data collection.

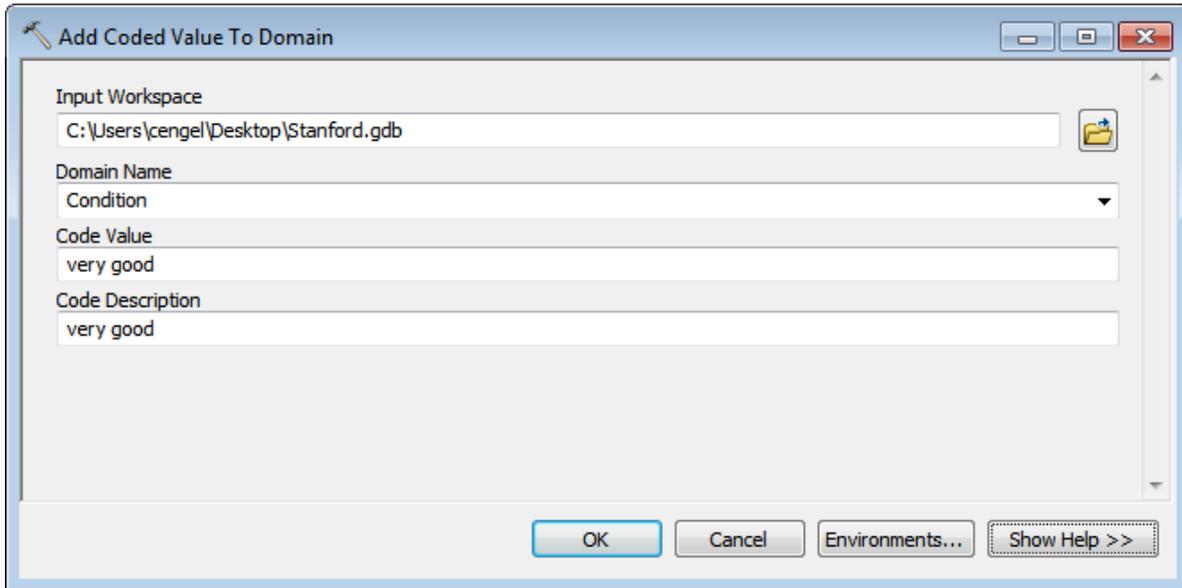




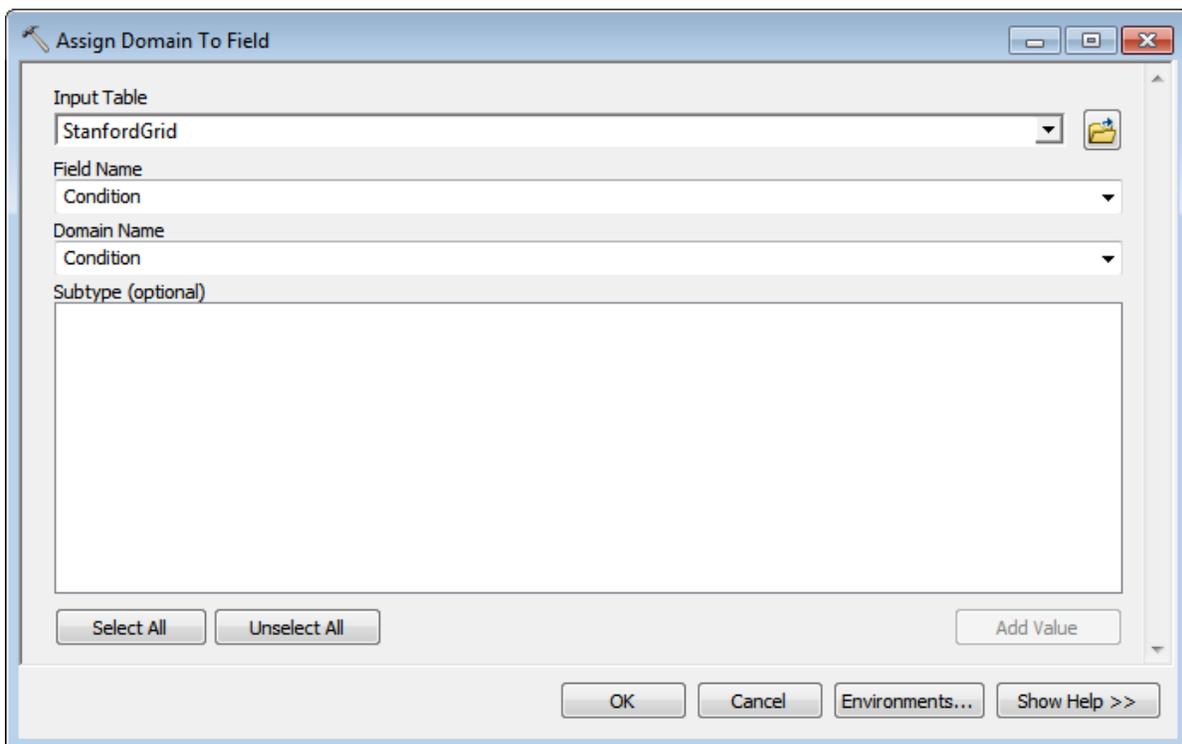
- For the field that have restricted data entry, define preset values [or ranges]. In ArcToolbox go to Data Management Tools > Domains > Create Domain. Input workspace is the File Geodatabase. In this example we use as Domain Name the same as the same field name determined above (Condition). [Ranges can be set under Domain Type, if needed.]



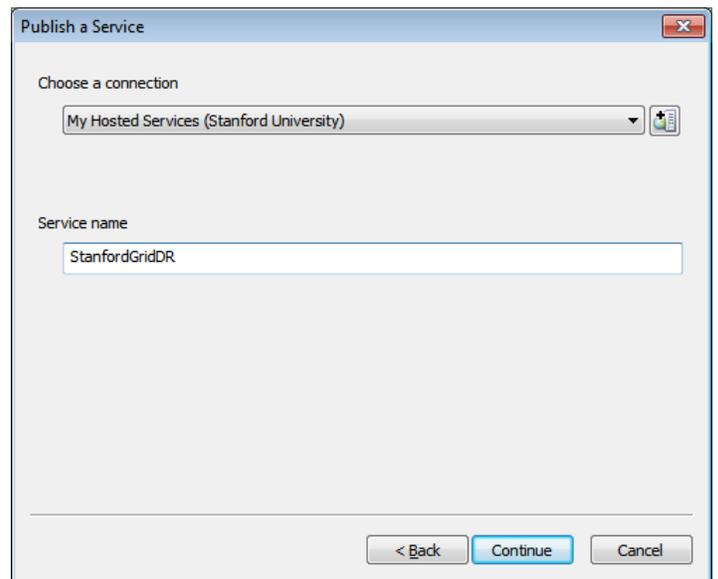
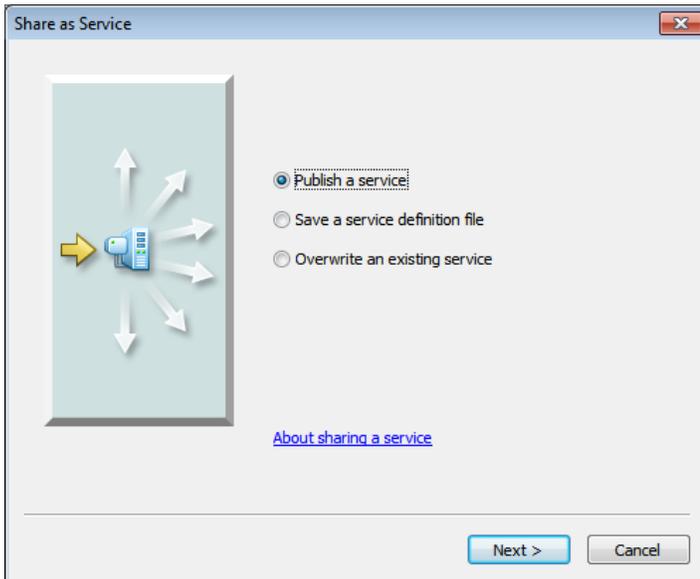
- In ArcToolbox go to Data Management Tools > Domains > Add Coded Value to Domain and enter the value. Repeat this step for each value. In this example, we add : very good, good, bad, very bad.



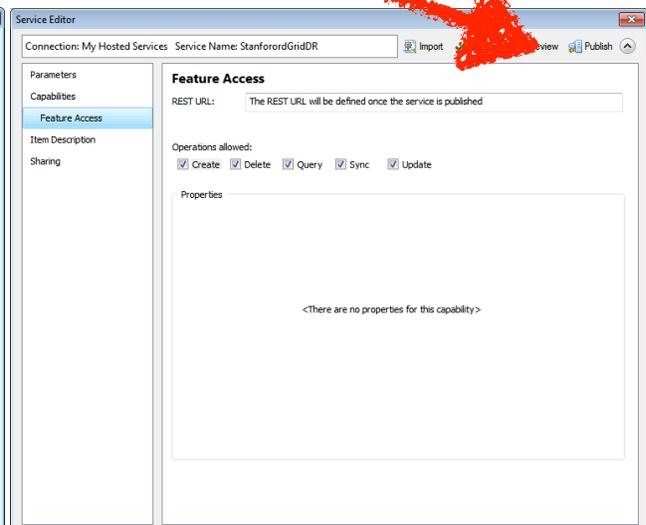
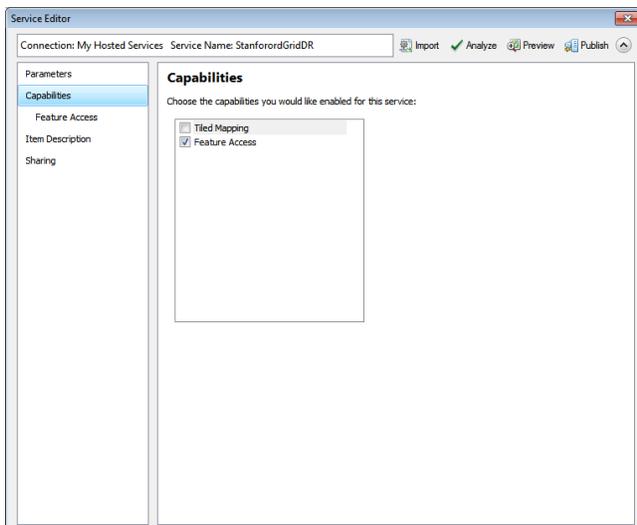
- In ArcToolbox go to Data Management Tools > Domains > Assign Domain to Field. For StanfordGrid match the Field (Condition) with the Domain (Condition).



7. Go to File > Sign in and log into ArcGIS online. Go to File > Share as.. > Service. In the Wizard choose: Publish as service, click next, and as connection choose My Hosted Services (Stanford University), and provide a service name: StanfordGridDR. Continue.



8. In the Service Editor under Capabilities check Feature Access only, under Feature Access check all operations, provide an item description and publish. The uploading process - particularly server-side post processing- can take a while.



C. Prepare the map for sampling (*ArcGIS Online*)

1. Go to <http://stanford.maps.arcgis.com> and log in. Find the StanfordGridDR **Feature** under “My Content” and click on it. Click on the EDIT button and scroll down to Properties. Check “Keep track of who created...” and make sure the other options (Editing: add, update, delete, and Sync) are checked as below. Save.

Properties

Tags: stanford x grid x Add tag(s)

Credits: [Empty field]

Delete Protection: Prevent this item from being accidentally deleted.

Extent: Left: -122.2 Right: -122.14 Top: 37.44 Bottom: 37.41 SET EXTENT

Editing: Enable editing and allow editors to:
 Add, update, and delete features
 Update feature attributes only
 Add features only

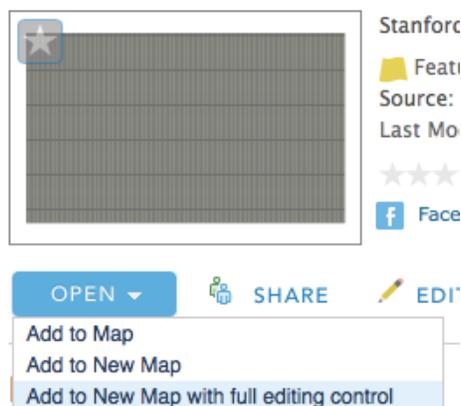
Export Data: Allow others to export to different formats.

Sync: Enable Sync (disconnected editing with synchronization).

Track Edits: Keep track of who created and last updated features.
 Editors can only update and delete the features they add.

SAVE CANCEL

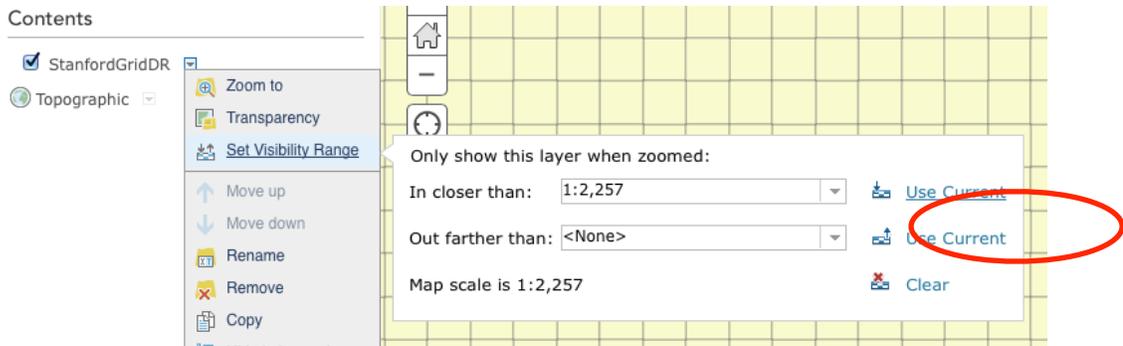
2. Scroll back up and click on the Open drop down > Add to new map with full editing control.



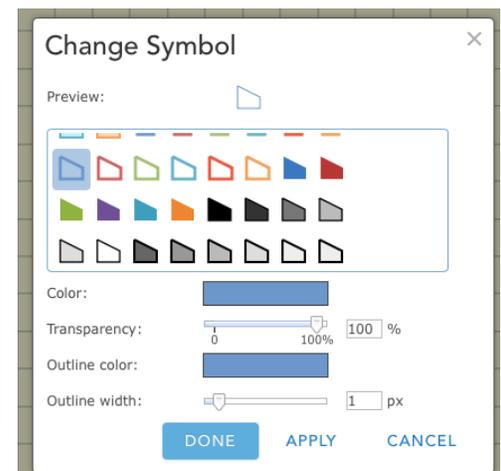
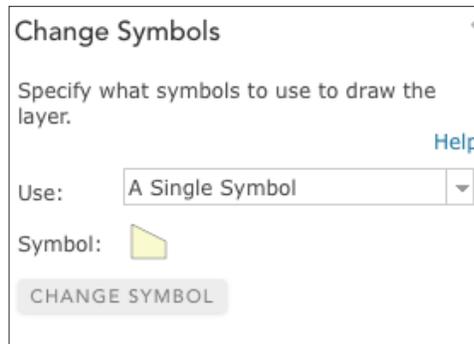
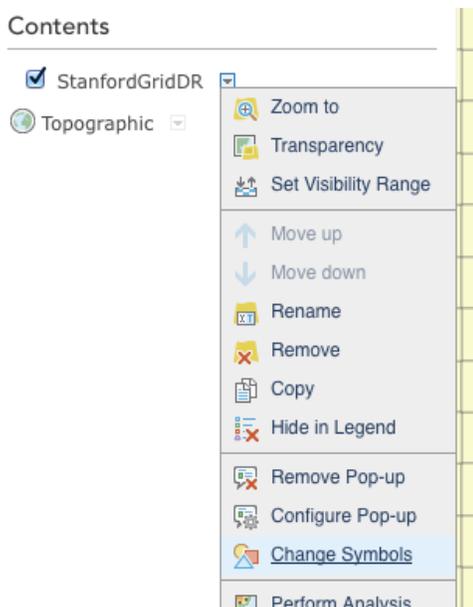
- You may get a warning when the map opens or your grid does not display correctly. In either case, zoom in to a level that just draws fine - but not further.



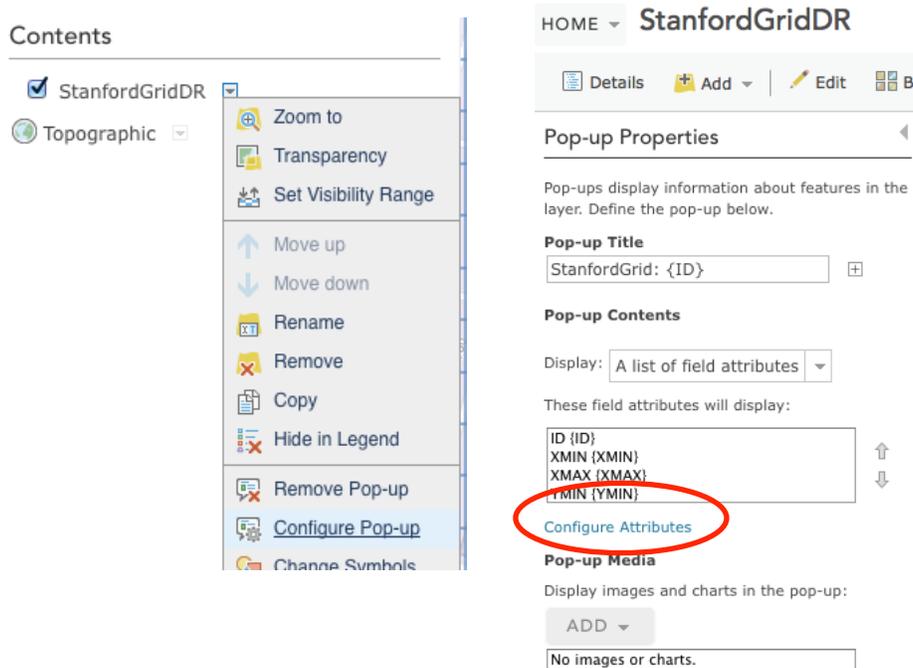
- Open the drop down of the grid layer > Set visibility Range: Only show this layer when zoomed in closer than: “use current” [extent].



- Open the drop down of the grid layer > Change Symbols. Use a single symbol and change it to an easily visible, 1px border color, no fill.



6. Open the drop down of the grid layer > Configure Popup. Configure attributes.



7. Scroll down and check EditDate and Editor (and CreationDate and Creator - if you wish) to be displayed and change the date format of the EditDate (and CreationDate - if you wish) to show the time of the day.

Configure Attributes

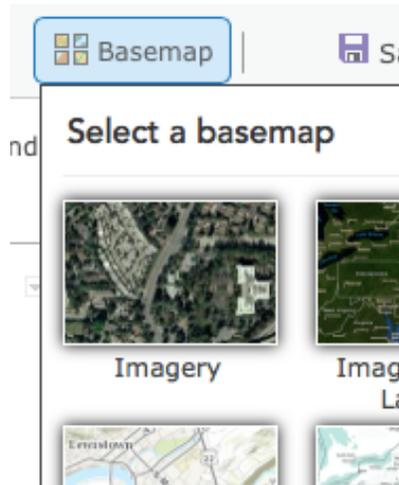
Check the fields you want to display and edit. Select a field to change its alias, order it, and format it.

<input type="checkbox"/> Display	<input type="checkbox"/> Edit	Field Name	Field Alias
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	{Condition}	Condition
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	{Comments}	Comments
<input type="checkbox"/>	<input type="checkbox"/>	{GlobalID}	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	{CreationDate}	CreationDate
<input checked="" type="checkbox"/>	<input type="checkbox"/>	{Creator}	Creator
<input checked="" type="checkbox"/>	<input type="checkbox"/>	{EditDate}	EditDate
<input checked="" type="checkbox"/>	<input type="checkbox"/>	{Editor}	Editor

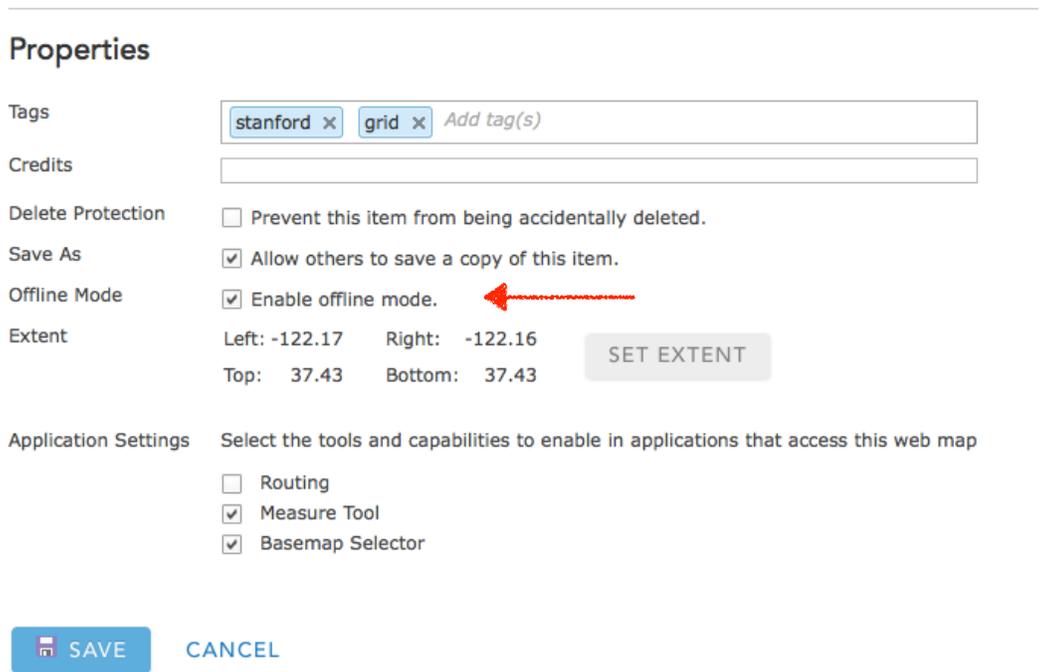
Format: 12/21/1997 6:00 PM

OK CANCEL

8. Finally, change the basemap to “Imagery”.

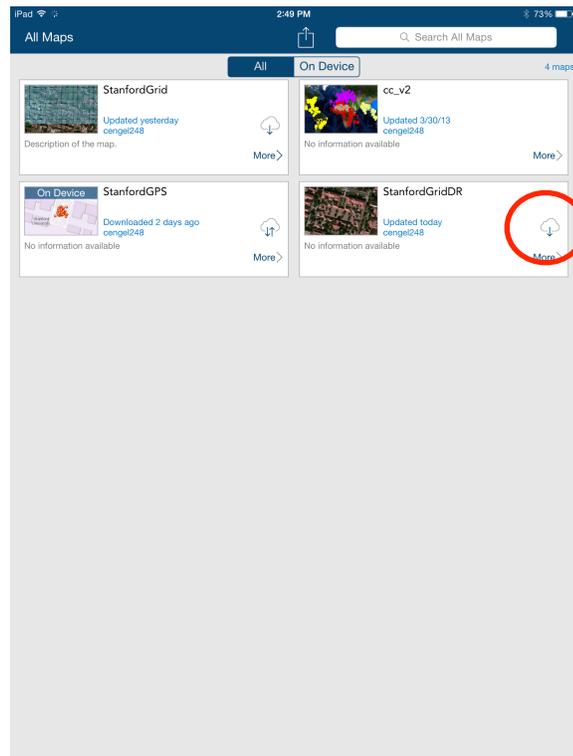


9. Save the map as StanfordGridDR. In “My Content” click on the webmap, go to Edit, scroll down to properties and make sure office mode is enabled.

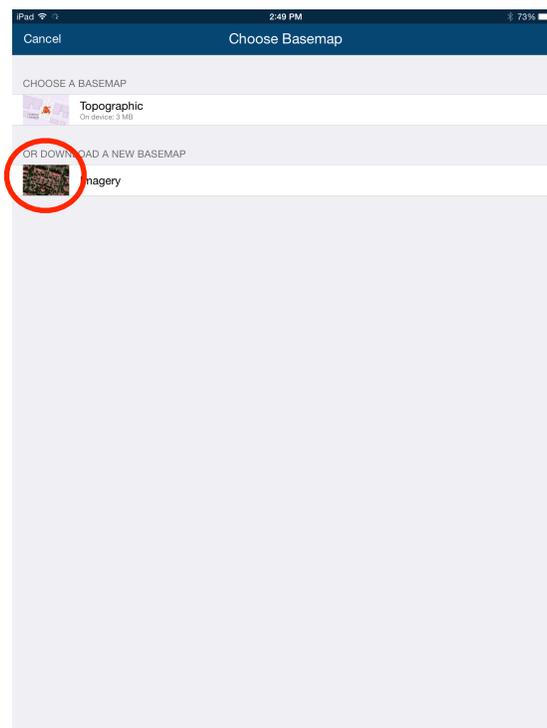


Download and configure for data collection (*ArcGIS Collector*)

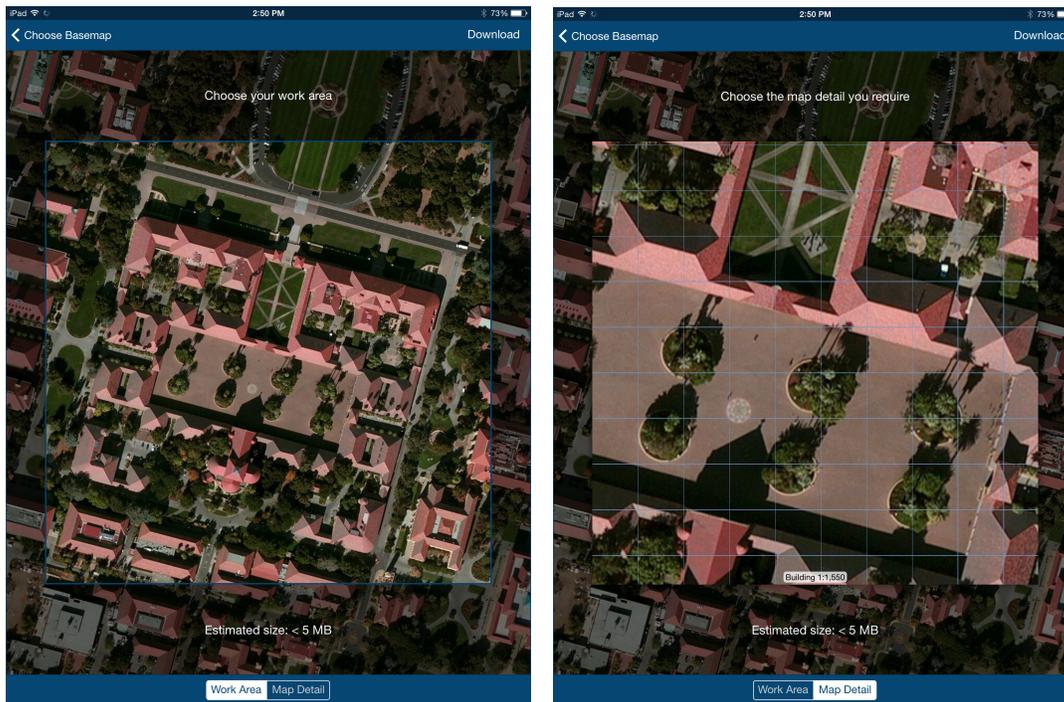
1. On the iPad open ArcGIS Collector and log in to stanford.maps.arcgis.com
2. Find the web map StanfordGridDR and click on the cloud to download.



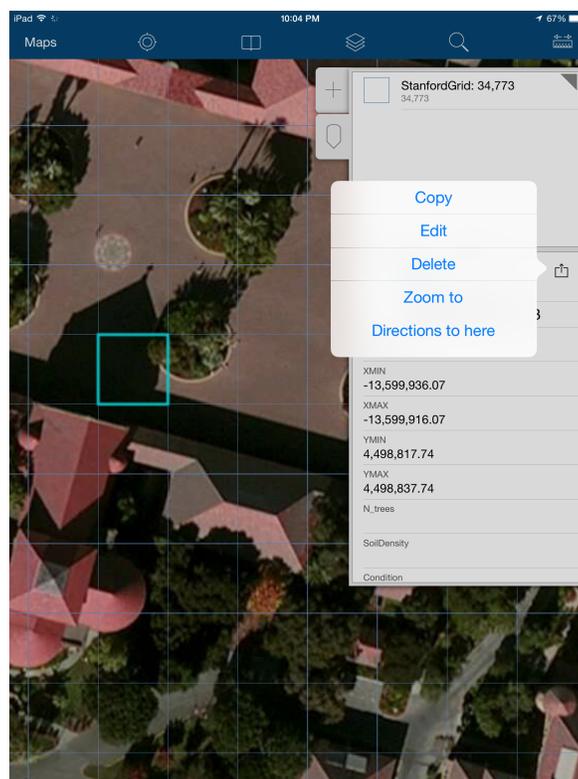
3. Download “Imagery” as a new basemap.



4. Choose a work area, then tap on Map Detail and zoom in as closely as possible for the highest detail. Tap to download the map to your device.



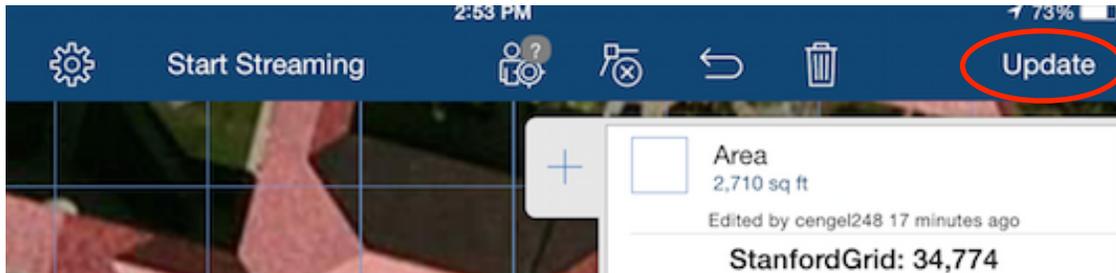
5. Open the downloaded map (More > Open) and zoom in. (The grid will only show when zoomed in more closely, since we set the visibility for closer zoom only). Tap on a grid cell then tap on the icon to edit.



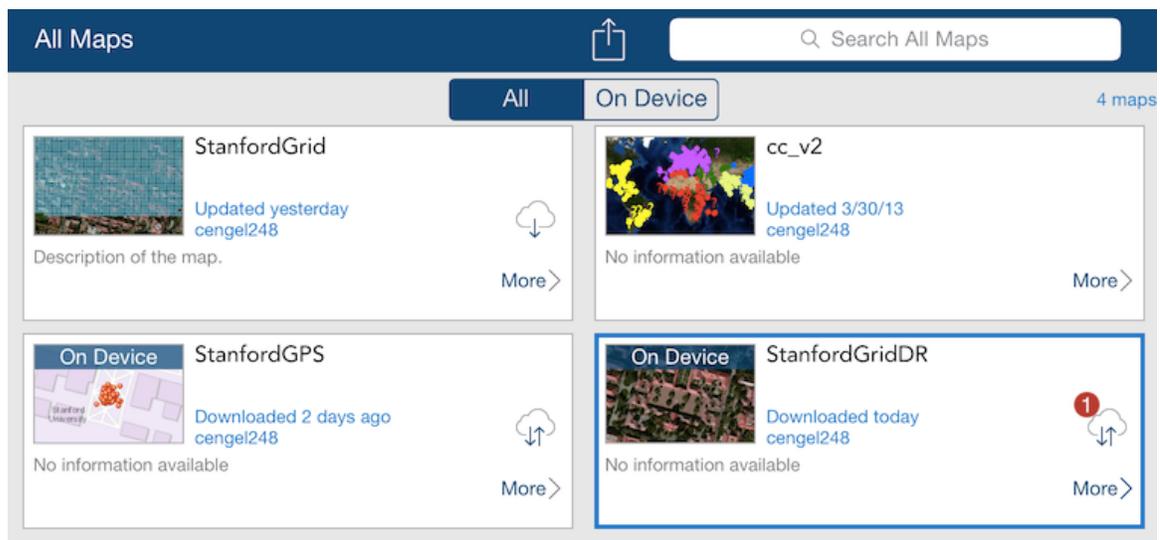
6. Fill in the fields. The “Condition” field displays a choice from a drop down.



7. Tap Update when done. That will save the edits to the local copy.



8. Go back to maps, which will indicate that updates have been made to the local map. Tap on the cloud to sync with the remote Webmap.



9. Changes, including the edit timestamp, are now visible on the online webmap.

The screenshot shows the ArcGIS online interface for a map titled "StanfordGridDR". The map displays an aerial view of a building complex with a blue grid overlay. A pop-up window is open over one of the grid cells, displaying the following metadata:

StanfordGrid: 34,774.00	
ID	34,774.00
XMIN	-13,599,916.07
XMAX	-13,599,896.07
YMIN	4,498,817.74
YMAX	4,498,837.74
N_trees	1
SoilDensity	0.30
Condition	very good
Comments	Demo
CreationDate	4/3/2014, 2:35 PM
Creator	cengel248
EditDate	4/3/2014, 2:53 PM
Editor	
Zoom to Get Directions Edit	

The interface includes a top navigation bar with "HOME" and "StanfordGridDR", a search bar, and a toolbar with icons for "Details", "Add", "Edit", "Basemap", "Save", "Share", "Print", "Directions", "Measure", and "Bookmarks". A left sidebar shows "Contents" with "StanfordGridDR" and "Imagery" layers. The bottom of the map shows a scale bar (100 ft) and logos for "DigitalGlobe", "Microsoft", and "esri".