

ArcGIS Drone2Map

TRAINING MANUAL

CURRICULUM GUIDE

Advanced Drone Pilot Course



Mapping. Modeling. Measuring.
From Imagery to Insight.



@DronePilotsForUS 2026

Contents

Training Outcomes	5
How Teachers Should Use This Manual	5
Recommended Teaching Flow	6
Part 1: Drone2Map in the Mapping Workflow	6
Part 2: Teacher Preparation Before Class	7
Teacher Verification Before Delivery	7
Part 3: Instructor-Led Drone2Map Procedure	7
A. Start Drone2Map and Select a Workflow	7
Using the Rapid Template	8
Create a Rapid project	9
B. Process your Rapid 2D imagery.	15
C. 2D Products Processing Workflow.....	17
Download 2D Product Sample Data	17
Configure processing options	18
Process your 2D imagery.....	23
D. Adding 3D option to the 2D mapping process.....	24
E. 3D Products Processing Workflow.....	26
Download 3D Product Sample Data	26
Configure processing options	28
Adding Map Control Points and Accuracy	32
F. 3D Products Processing Workflow - Castle.....	35
Download 3D Product Sample Data	36
Configure processing options	38
Process your 3D imagery.....	42
Part 4: Share Drone2Map Outputs to ArcGIS Online	43
B. Map Viewer – Map Tools to use for Measuring various structures	48
C. Saving your Map so it can be turned into an app.....	51
Part 5: Create an Interactive Web App	52
Student Practice Sequence	61

Assessment Deliverables.....	61
Teaching Troubleshooting Guide	62
Instructor Verification Before Teaching.....	62
Appendix A: Current Esri and ArcGIS Online Updates	63
Appendix B: Drone2Map Products and Processing Reference	64
Appendix C: Control Points and Accuracy Reference	64
Appendix D: ArcGIS Online Sharing and Web App Reference	65
Appendix E: Source List.....	65

ArcGIS Drone2Map Teacher Training Manual

Purpose: This manual is organized for teachers leading an ArcGIS Drone2Map lesson. The main procedure is in one teaching sequence, with reference details moved to appendices for preparation and follow-up.

Use note: Use the lesson sequence during instruction. Use the appendices before class or when a student needs deeper reference information. Verify live Drone2Map screens before teaching because menus, account access, and supported devices can change.

Training Outcomes

By the end of this training, students should be able to:

- Explain where Drone2Map fits in the mapping workflow after image capture.
- Create a Drone2Map project from drone imagery using an appropriate processing template.
- Use the Rapid template as a quick quality and coverage check.
- Use the 2D Product template to create classroom map deliverables.
- Review processing outputs, map control points, processing reports, and sharing options.
- Publish or prepare ArcGIS Online deliverables when the account has the required privileges.

How Teachers Should Use This Manual

This manual is organized as a teacher delivery guide rather than a full technical reference. Teach the workflow in phases, verify students at each checkpoint, and use the appendices for updated Esri details, optional features, and source references.

Instructional Block	Teacher Action	Student Evidence
Before class	Verify installation, accounts, sample imagery, local storage, and permissions.	Student can open Drone2Map and locate the imagery folder.
Demonstration	Project the teacher workflow and pause at each decision point.	Student can identify the correct template and output choices.
Guided practice	Have students complete the same step before moving on.	Project opens, image count is verified, and outputs are queued correctly.
Assessment	Require a processed result and short explanation of settings.	Student submits output evidence, report/screenshot, and sharing status.

Recommended Teaching Flow

1. Introduce Drone2Map as the processing step after flight capture, not as the flight app.
2. Confirm accounts, storage, sample data, and project folder conventions before students begin.
3. Demonstrate the Rapid template as a fast quality check before longer processing workflows.
4. Teach the 2D Product template as the main student mapping deliverable.
5. Introduce control points and processing reports after students understand basic output review.
6. Finish with ArcGIS Online sharing and Instant Apps only when student privileges support publishing.

Part 1: Drone2Map in the Mapping Workflow

Workflow position: Drone2Map begins after a mapping mission has been flown and drone imagery has been collected. Students should understand that capture quality, overlap, camera location data, and local file organization determine how well processing will work.

Workflow Stage	Drone2Map Connection	Teacher Emphasis
Plan	Mission choices affect overlap, coverage, and output quality.	Poor capture cannot always be fixed in processing.
Capture	Drone2Map requires image files and GPS/camera location information.	Verify image folder and image count before creating the project.
Process	Templates and processing options determine products and processing time.	Rapid is for checking; 2D Products is the main classroom deliverable.
Analyze	Outputs, measurements, reports, and control points support quality review.	Require students to explain what the output shows and any limitations.
Share	ArcGIS Online and apps communicate results when permissions allow.	Sharing requires account privileges and may use service credits.

Part 2: Teacher Preparation Before Class

- Confirm Drone2Map installation using the updated installation manual.
- Confirm each teacher/student account has the correct license, user type, role, and publishing privileges for the planned activity.
- Store imagery and projects on a local internal drive or SSD; avoid cloud-sync folders and removable drives during processing.
- Prepare a backup sample dataset in case student imagery is incomplete, too large, missing GPS, or poorly overlapped.
- Run the Rapid workflow once before class to estimate processing time on the lab computers.
- Check ArcGIS Online Map Viewer and Instant Apps screens before teaching, because web interfaces change more frequently than desktop screenshots.

Teacher Verification Before Delivery

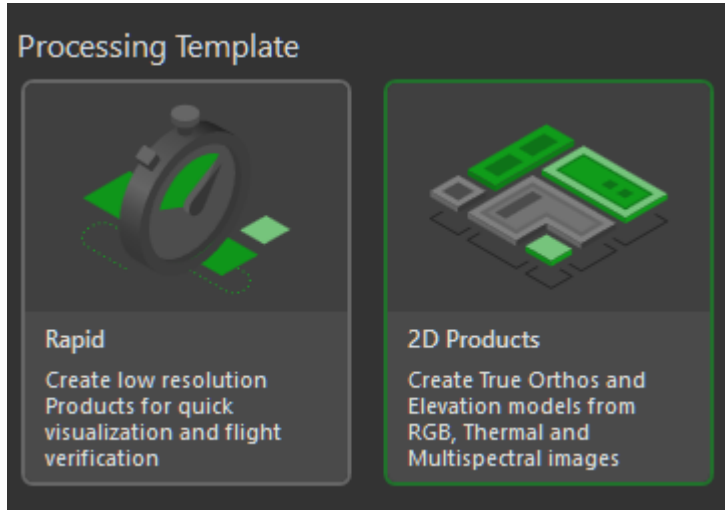
- Open Drone2Map and confirm project templates are available.
- Create a test project and verify image count, processing options, and report access.
- Confirm ArcGIS Online sign-in, web map sharing, and Instant Apps publishing if those tasks are assigned.
- Decide whether advanced topics such as oriented imagery, 3D products, Gaussian splats, or control points are required or enrichment.

Part 3: Instructor-Led Drone2Map Procedure

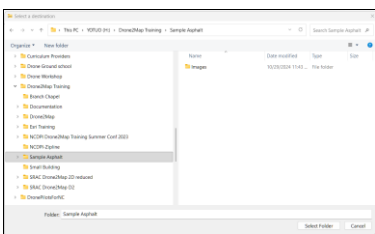
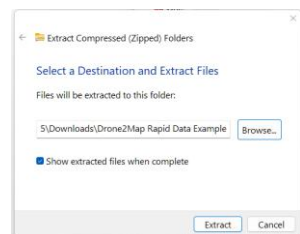
Use the following phases as the projected classroom workflow.

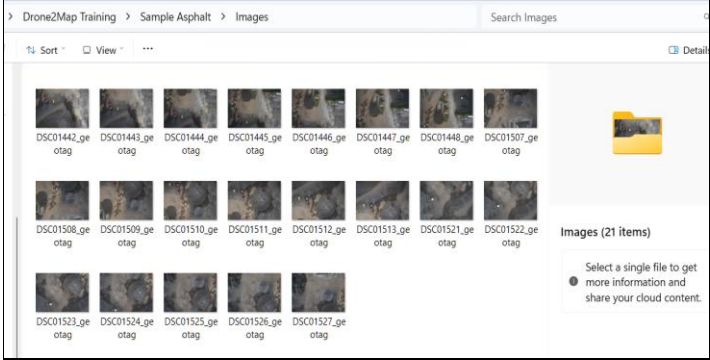
A. Start Drone2Map and Select a Workflow

Step	Instruction	Visual Reference
1	Prior to running Drone2Map, a mapping mission must have been completed, and you must have data (photos captured during your flight) to process. Drone2Map does not capture the data; instead, it processes it into 2D images.	
2	After loading the application on your PC, click on the icon to get started.	 Drone2Map

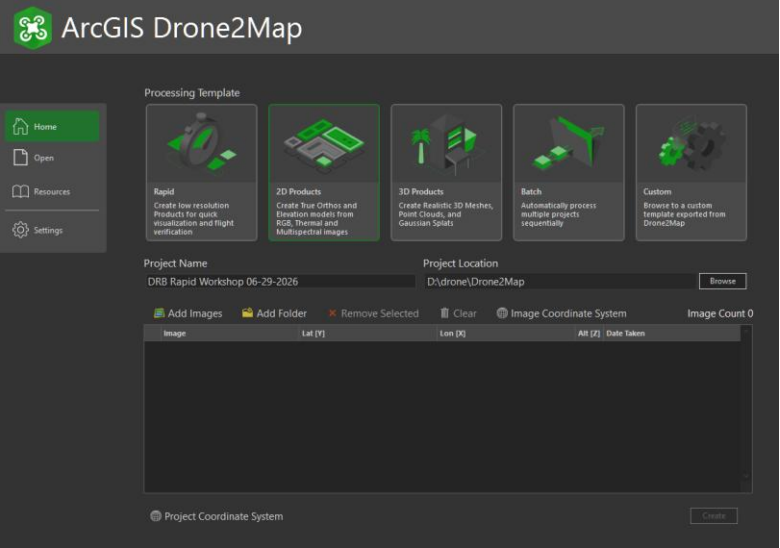
Step	Instruction	Visual Reference
3	The main page of Drone2Map will be displayed.	
4	The first step is to select either a Rapid Template or a 2D Product Template project. <i>Note: Drone2Map Educational license does not include 3D applications.</i>	

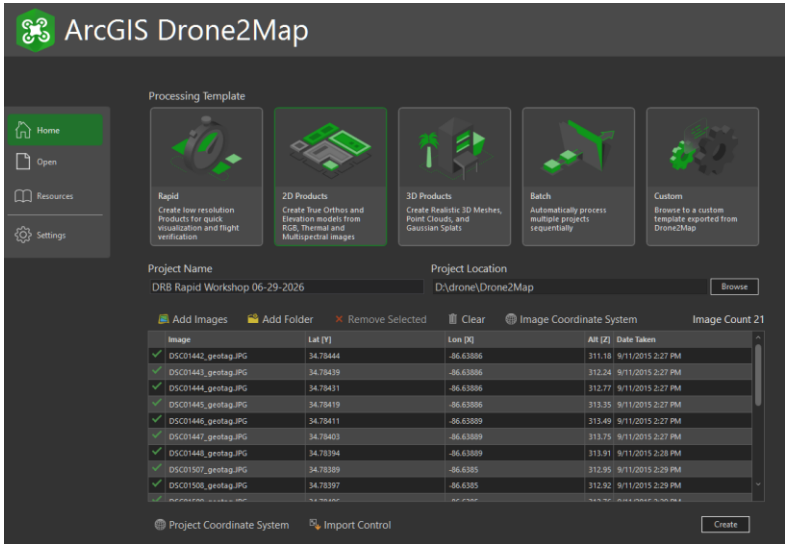
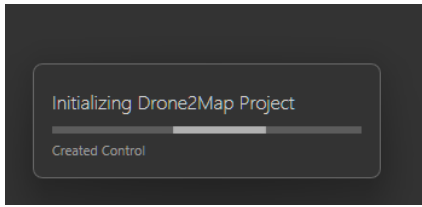
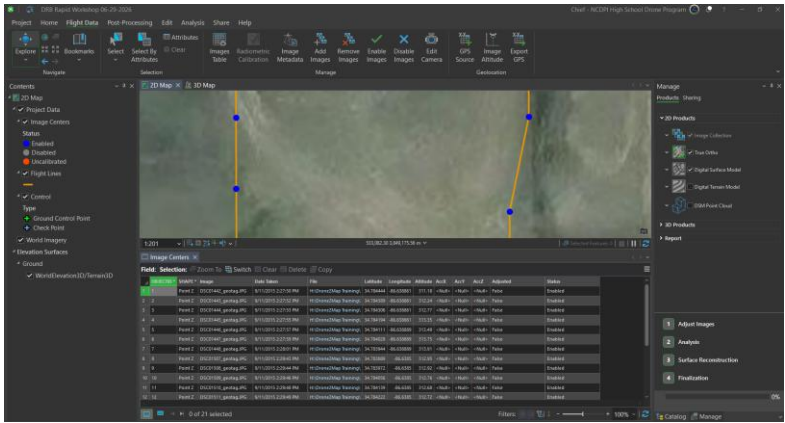
Using the Rapid Template

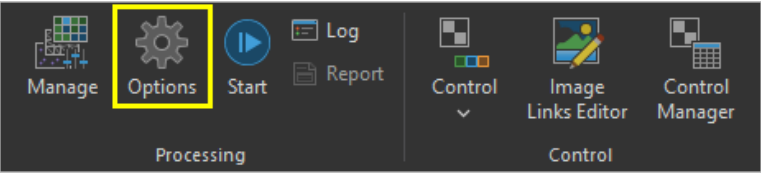
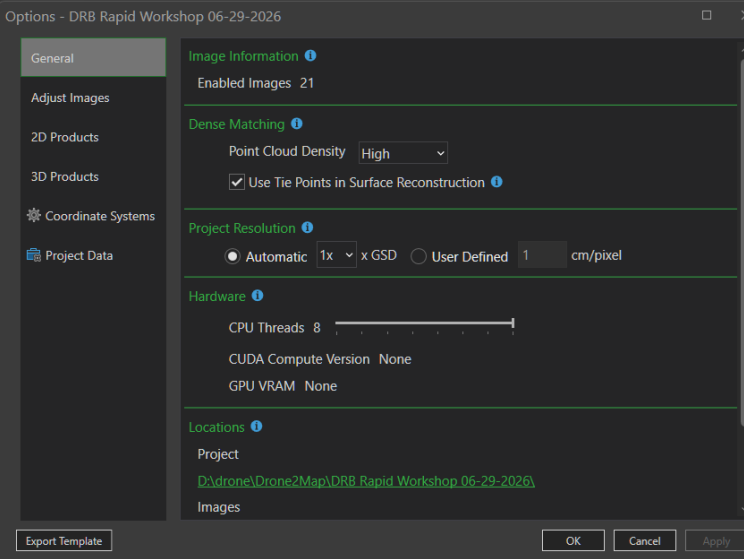
5	The Rapid Template is designed to quickly create orthomosaic, digital surface models, and digital terrain models to verify the coverage and quality of your imagery collection.	
6	a. Download sample data. Sample data for the Rapid template is a collection of images from a flight over an asphalt plant in Alabama	Download the data set by clicking on this link: https://drive.google.com/drive/folders/1Vst8MA7S9wFPSCcEuc_xpH1nu8vCeqOs?usp=drive_link  

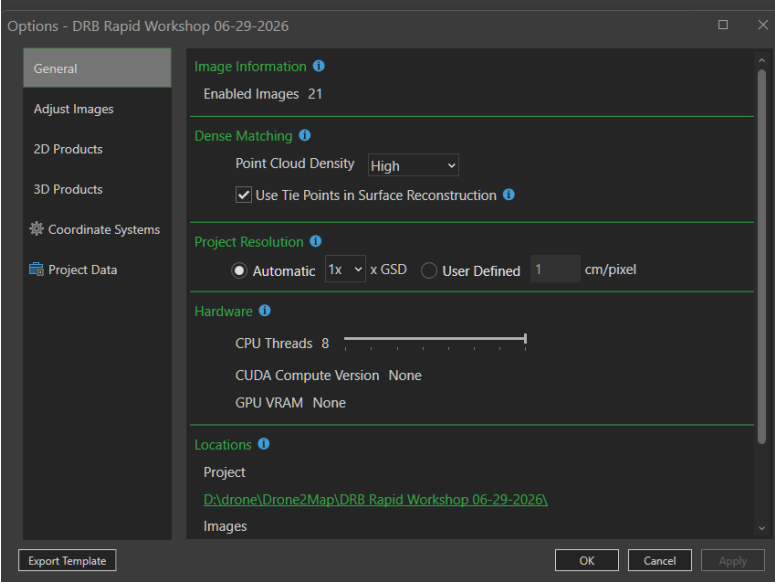
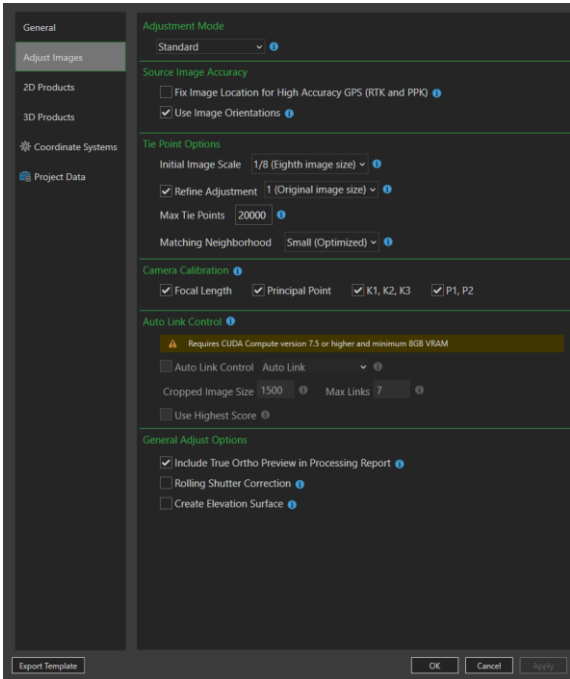
b. Save the download to a folder you will remember for later, such as your download folder. c. Create the folder you plan to use for Drone Data. It is recommended that you do not use a network drive, but one that is quick to find on your PC.	
---	--

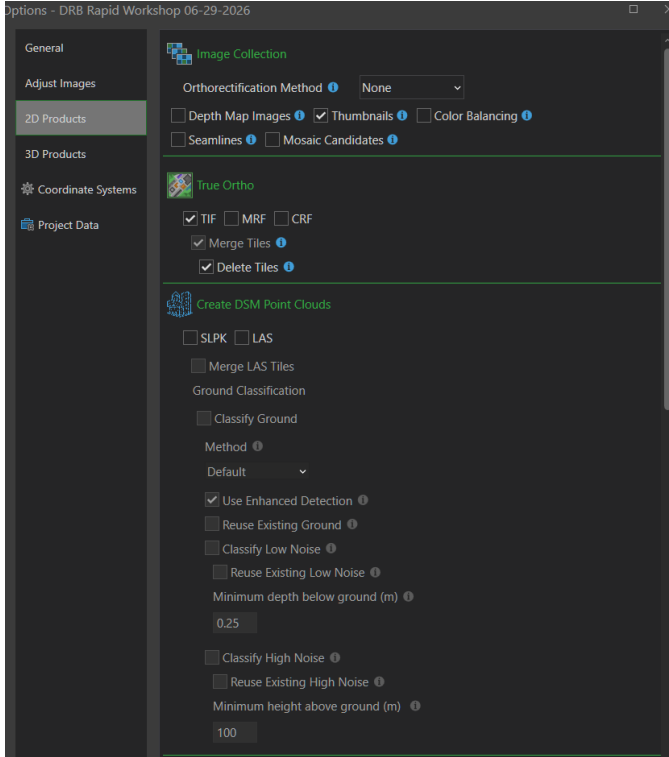
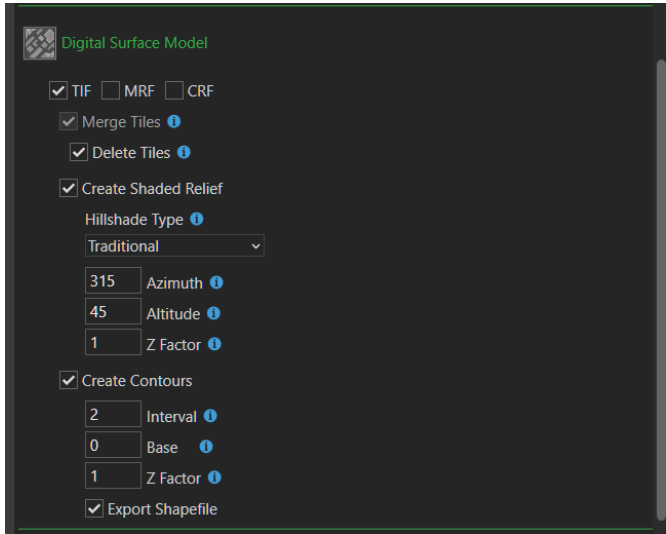
Create a Rapid project

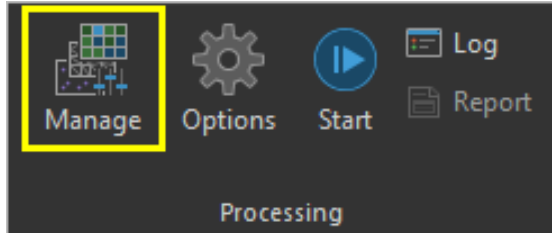
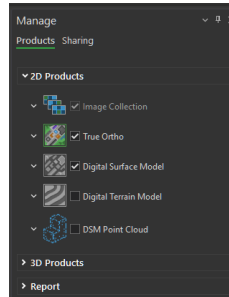
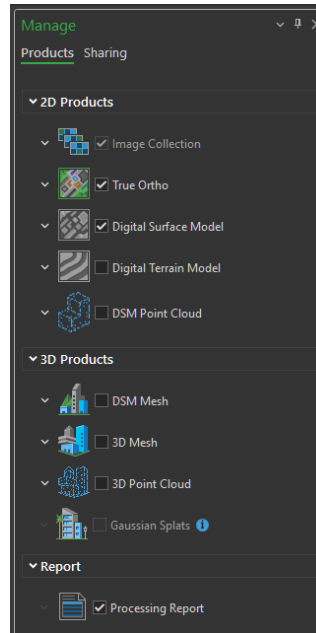
Step	Instruction	Visual Reference
7	To create a sample rapid project, complete the following steps: - Start Drone2Map. - Sign in using your ArcGIS Online organization or Portal for ArcGIS credentials. - Select the Rapid template at the left. - Provide a name for your project and choose a location to save it or accept the default.	

Step	Instruction	Visual Reference
8	Click Add Images or Add Folder and browse to the location of the sample images folder, select the Folder or images within the Folder, and click OK .	
9	Click Create to create the project. And this will appear:	
10	On the Flight Data tab, click the Images Table button to view image information about the imagery collection. click on the Home tab to Return to the main tabs	

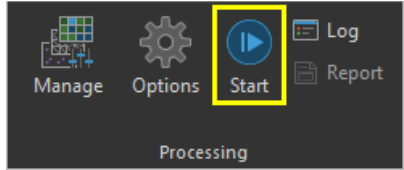
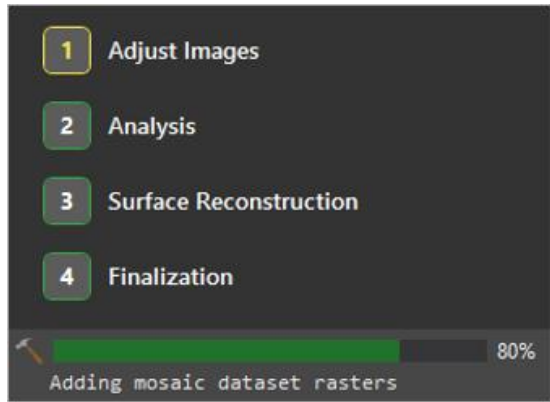
Step	Instruction	Visual Reference
11	Configure processing options The Processing Options window allows you to review your project inputs and outputs before processing your imagery. On the ribbon, click the Home tab. In the Processing group, click Options.	 
12	This window allows you to configure key components of the photogrammetric process to meet your specific analysis requirements. The default options were set when you chose the 2D Products template. In some cases, it might be advantageous to reduce the default settings and quality of your output to quickly process drone imagery. Other times, increasing the settings for higher quality outputs may be beneficial for your drone projects.	

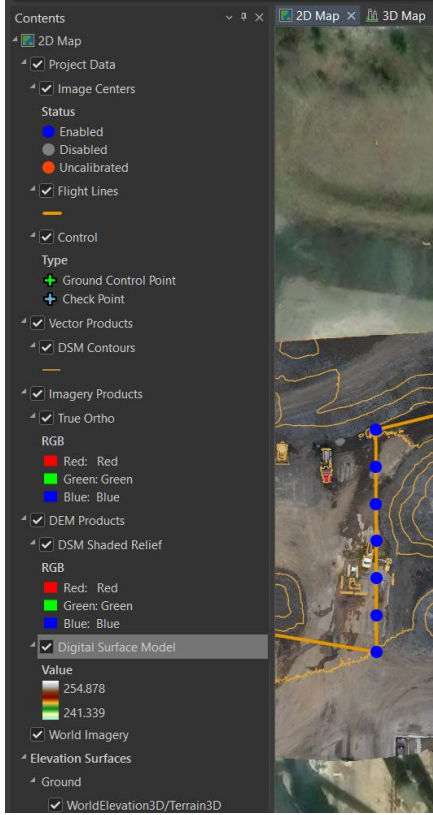
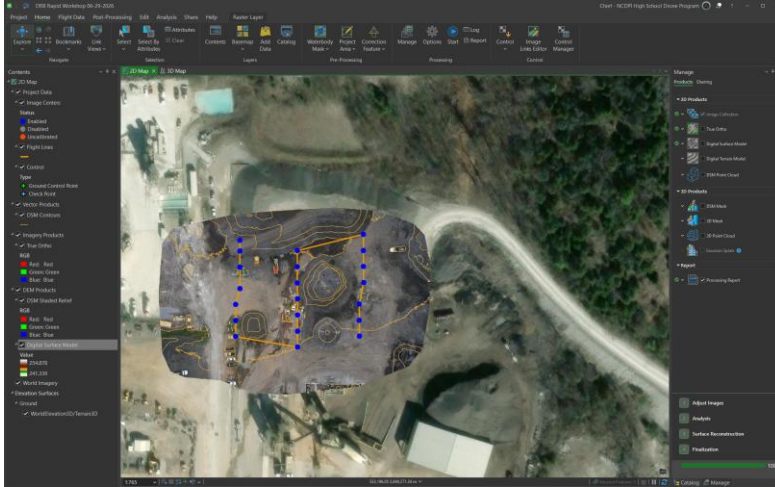
Step	Instruction	Visual Reference
13	Next, you'll explore some of the options. In the Options window, confirm that the General tab is selected. The General tab is where you can adjust the quality and resolution of output products.	 You can also define how much of your computer's processing power is used when generating those products. <i>For example, if you wanted to process your imagery faster, you could change the Point Cloud Density parameter to Medium.</i> <i>This change would process your imagery faster, but also reduce the quality of your outputs.</i>
14	Click the Adjust Images tab The Adjust Images tab allows you to define settings used during the block adjustment process, tie point matching, and point cloud generation. These are the various sub-processes that occur when Drone2Map creates your imagery products.	

Step	Instruction	Visual Reference
15	Click the 2D Products tab. The 2D Products tab allows you to adjust the processing options and desired outputs for your True Orthos, digital surface models, and digital terrain models. The True Ortho and DSM products are selected by default because you chose the 2D Products template.	
16	Under Digital Surface Model, check the box next to Create Shaded Relief, Create Contours, and Export Shapefile You can configure the contours that Drone2Map creates. By default, they are set to a 10 foot interval. You'll change them to be a 2 foot interval. The interval's unit of measurement is feet because the coordinate system of the project is feet.	 If a coordinate system that uses meters was selected, then the unit of measurement would be meters.

Step	Instruction	Visual Reference
17	The other tabs in the Options window allow you to output 3D products, review your project's coordinate system, and view other details regarding your project. Click OK .	
18	Before you begin processing your imagery, you'll review your outputs in the Manage pane On the ribbon, click the Home tab. In the Processing group, click Manage	
19	The Manage pane appears. This pane provides you with an overview of the products that will be created when you process your imagery	
20	Expand the 3D products and Report Groups. Under 2D Products , True Ortho and Digital Surface Model are queued for processing. Under 3D Products , nothing is selected because you chose the 2D Products template. Under Report , a Processing Report will be created. This output provides valuable information about the quality and accuracy of your imagery inputs and outputs.	

B. Process your Rapid 2D imagery.

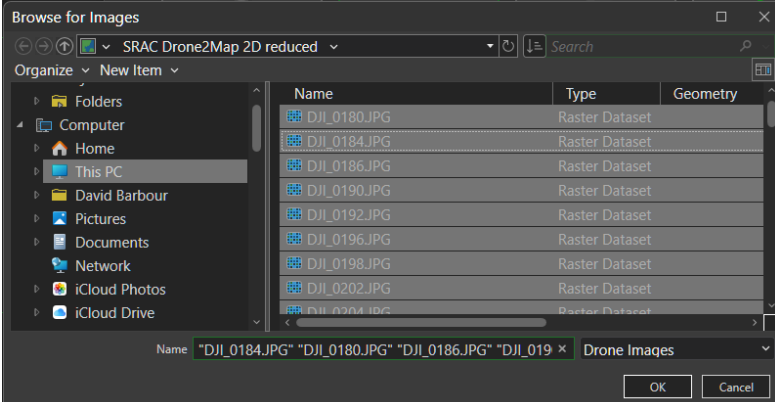
Step	Instruction	Visual Reference
21	On the ribbon, click the Home tab. In the Processing group, click Start .	
22	Note: If the Processing Warning window appears. Click No. This warning indicates that a transformation cannot be found between the coordinate system of the drone imagery and your project's coordinate system. In order to obtain the correct transformation, you need to install ArcGIS Coordinate Systems Data. Save your project, close Drone2Map, install ArcGIS Coordinate Systems Data, reopen the Drone2Map project, and begin processing.	
23	Note: The amount of time it takes to process your imagery depends on your computer's hardware, the number of images you're processing, the resolution of your images, and the products that Drone2Map is generating. For this tutorial, processing may take from 30 minutes to over an hour.	

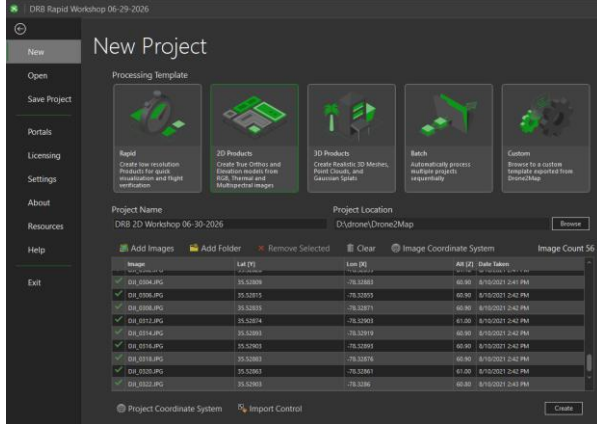
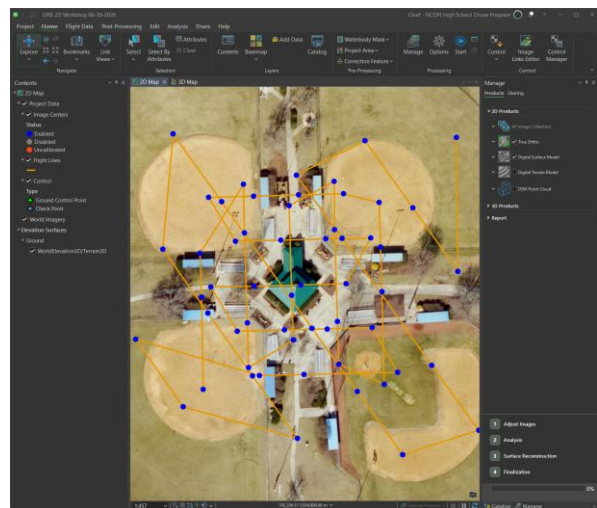
Step	Instruction	Visual Reference
24	When the processing finishes, several layers are added to the Contents pane and the map. Remember the purpose of the Rapid product is to simply verify you did not have any issue before you do the 2D or 3D map, as they are much more time consuming. When processing is complete, the reduced resolution orthomosaic, model are added to your map display in the Contents pane.	 The screenshot shows the 'Contents' pane on the left side of the interface. The layers listed are: 2D Map - Project Data - Image Centers - Status: Enabled (blue dot), Disabled (grey dot), Uncalibrated (orange dot) - Flight Lines - Control - Type: Ground Control Point, Check Point - Vector Products - DSM Contours - Imagery Products - True Ortho - RGB: Red: Red, Green: Green, Blue: Blue - DEM Products - DSM Shaded Relief - RGB: Red: Red, Green: Green, Blue: Blue - Digital Surface Model - Value: 254.878, 241.339 - World Imagery - Elevation Surfaces - Ground - WorldElevation3D/Terrain3D
25	Once the process is complete, the display will look like this:	 The screenshot shows the main map view of the ArcGIS Drone2Map interface. The map displays a reduced resolution orthomosaic and a Digital Surface Model (DSM) overlaid on the imagery. The interface includes a top menu bar, a left 'Contents' pane, and a right 'Layers' pane.

C. 2D Products Processing Workflow.

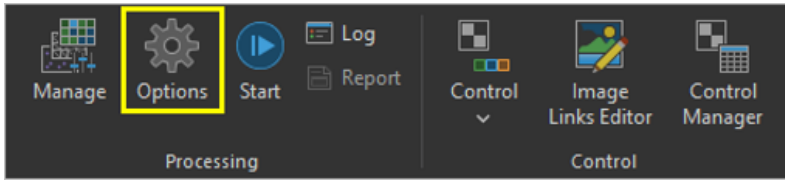
The 2D Product template is designed to create high-resolution orthomosaic and digital elevation models.

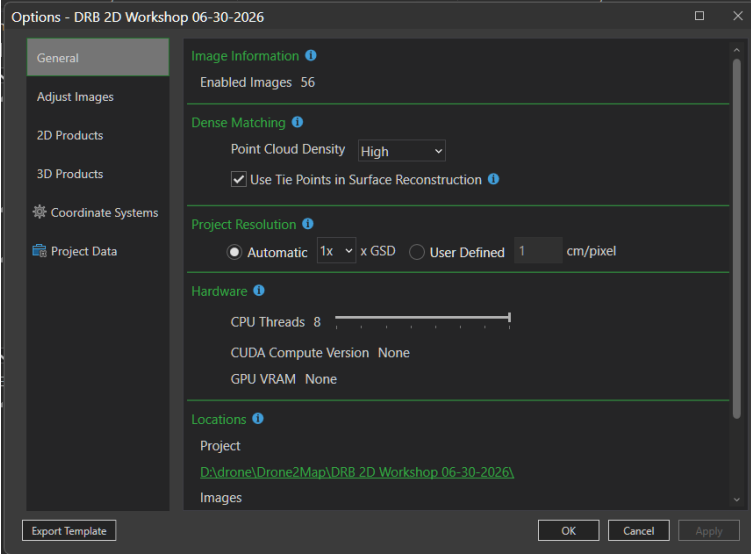
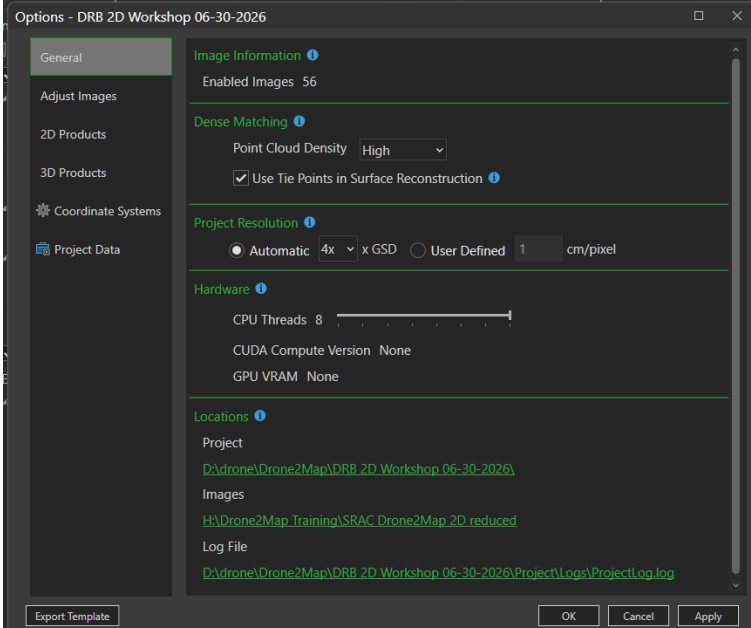
Follow the steps below to process a sample 2D project.

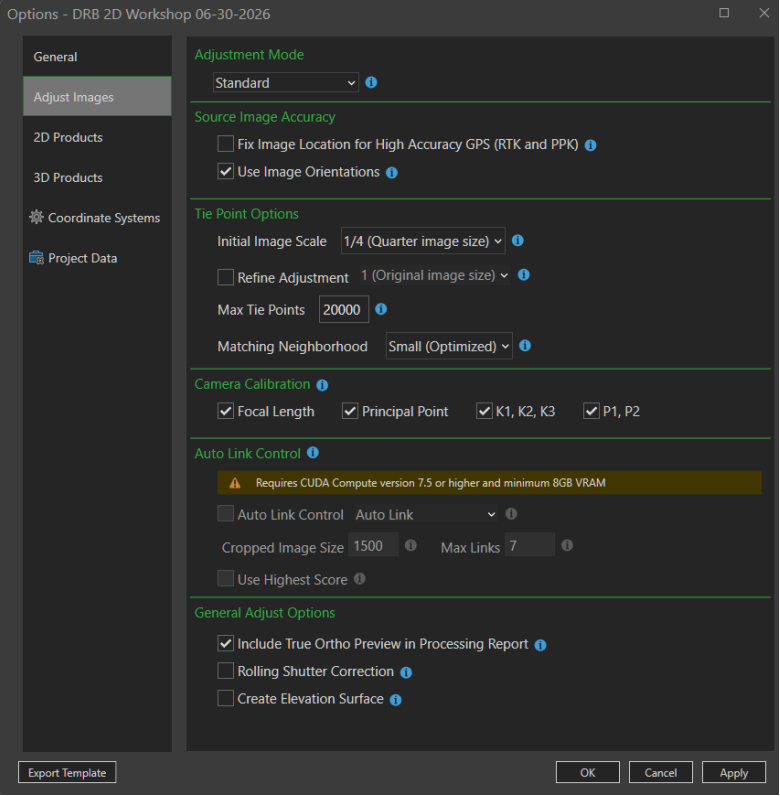
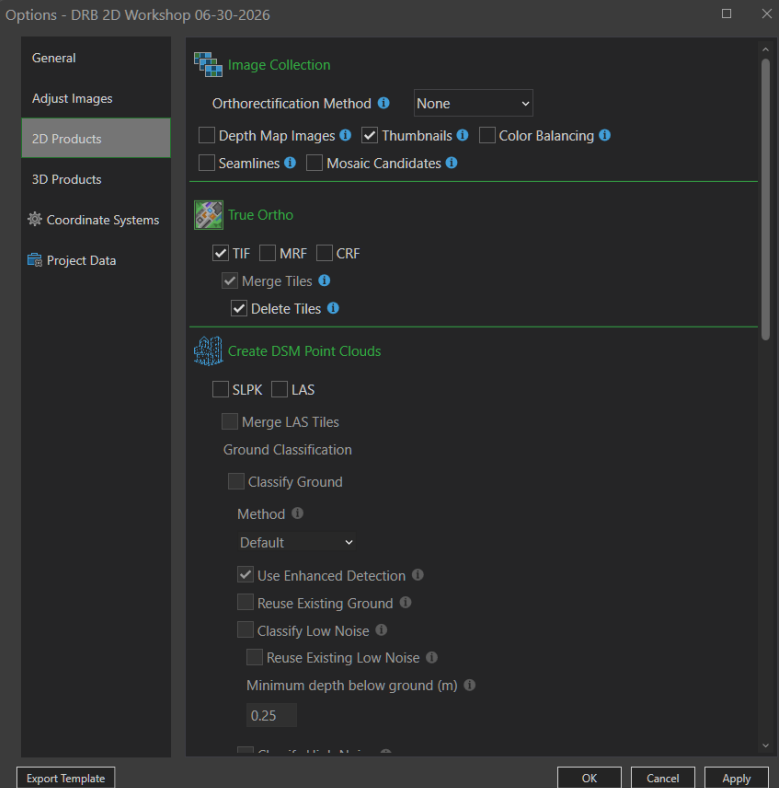
Step	Instruction	Visual Reference
26	Download 2D Product Sample Data Sample data for the 2D Full template is a collection of images from Community Park in Smithfield, NC. To download the sample data, complete the following steps:	1. Download the 2D Full data set by clicking on this Google link for a zip file: https://drive.google.com/file/d/1JGXwWJMa4U_w-koF8FKkoalZ3KZNSy_6/view?usp=sharing 2. Save the download to a folder you will remember for later, such as your download folder. 3. Create the folder you plan to use for Drone Data. It is recommended that you do not use a network drive, but one that is quick to find on your PC. 4. Go to the Drone2Map 2D Full Data Set Example zip file and click “Extract all.” save the files to a folder you will remember. And then click “Extract,” where the files will be located on your computer that you just created.
27	Create a 2D Product Project To create a sample rapid project, complete the following steps:	1. Start Drone2Map. 2. Sign in using your ArcGIS Online organization or Portal for ArcGIS credentials. 3. Select the 2D Product template and name your project. 4. Give Your Project a name. 5. It should default to the same location where you have been storing your projects. If not, change.
28	Click Add Images or Add Folder and browse to the location of the sample images folder, select the Folder or images in the Folder, and click OK.	

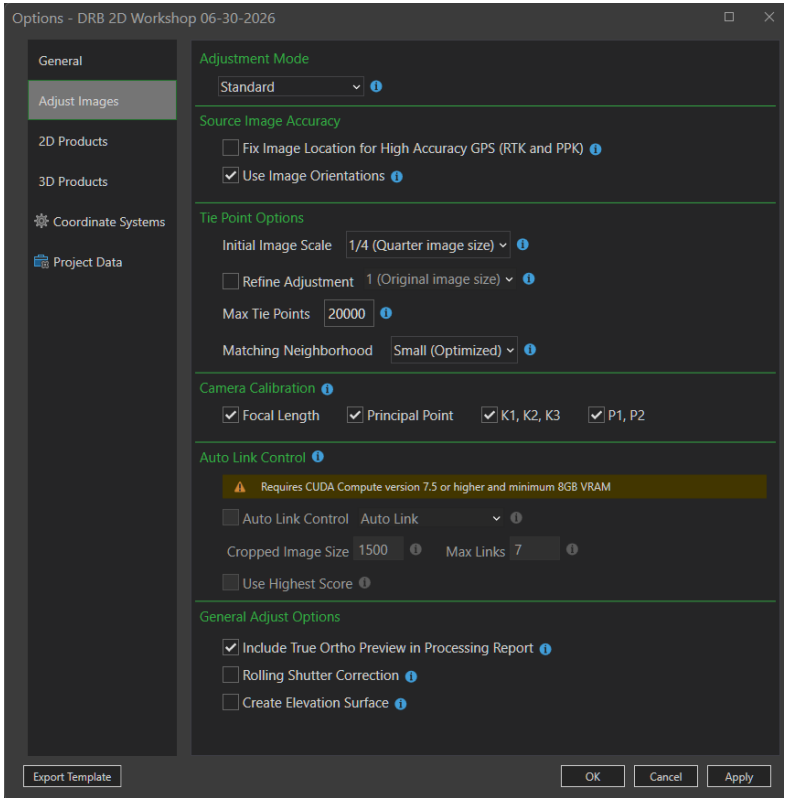
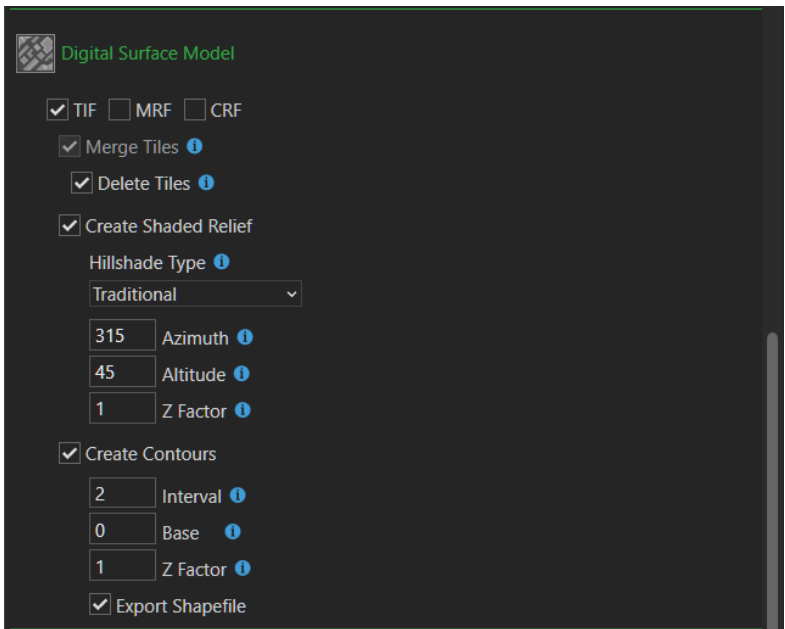
Step	Instruction	Visual Reference
29	And then Create to create the project.	 

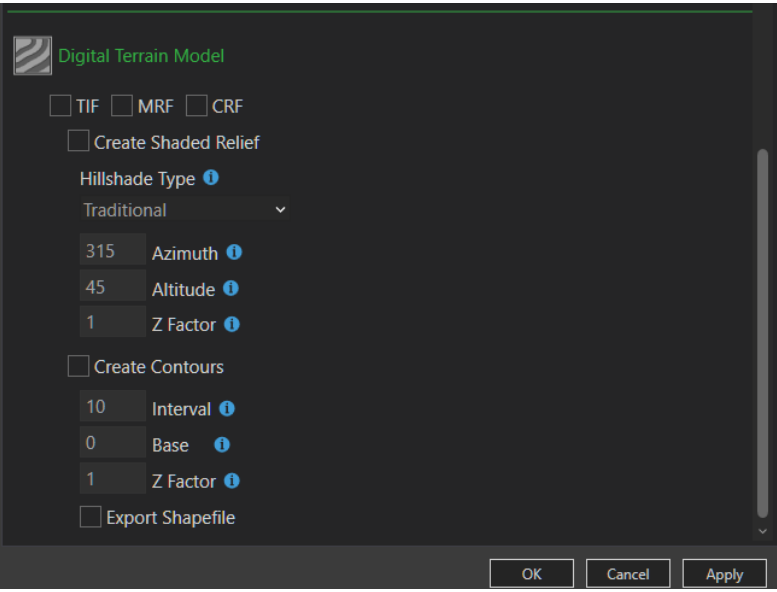
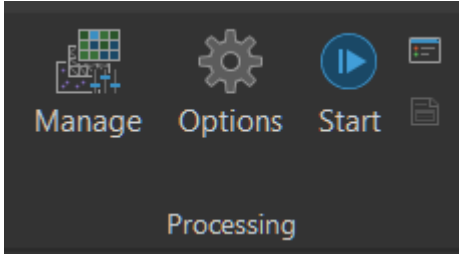
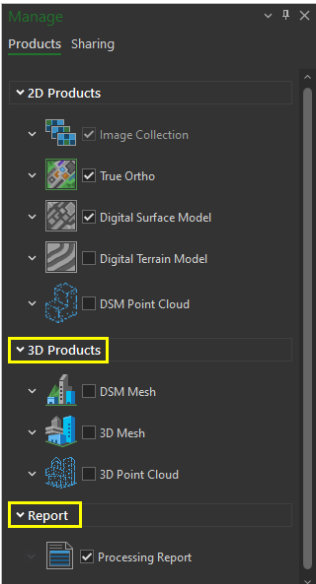
Configure processing options

Step	Instruction	Visual Reference
30	The Processing Options window allows you to review your project inputs and outputs before processing your imagery. On the ribbon, click the Home tab. In the Processing group, click Options.	

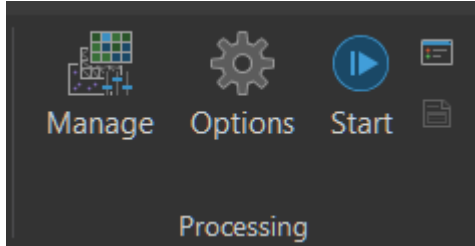
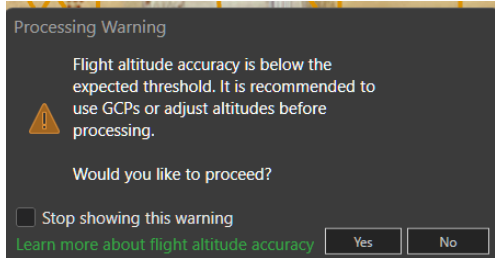
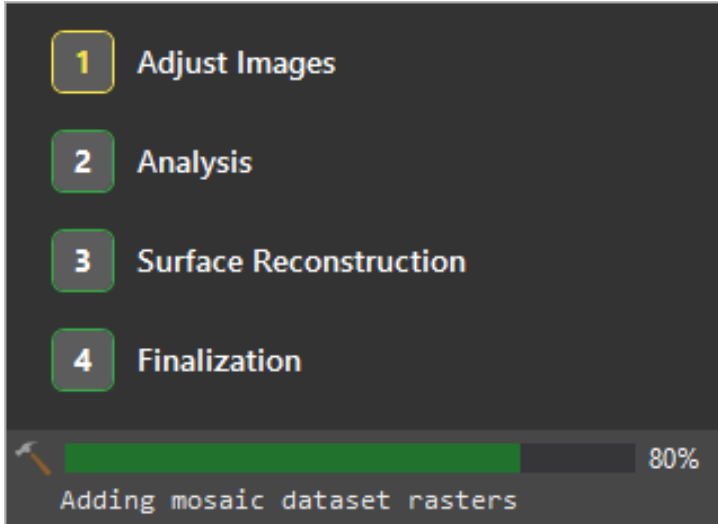
Step	Instruction	Visual Reference
31	The Options window appears. This window allows you to configure key components of the photogrammetric process to meet your specific analysis requirements. The default options were set when you chose the 2D Products template. In some cases, it might be advantageous to reduce the default settings and quality of your output to quickly process drone imagery. Other times, increasing the settings for higher quality outputs may be beneficial for your drone projects.	
32	In the Options window, confirm that the General tab is selected Here you can adjust the quality and resolution of output products. If you wanted to process your imagery faster, you could change the Point Cloud Density parameter to High but also reduce the quality of your outputs.	

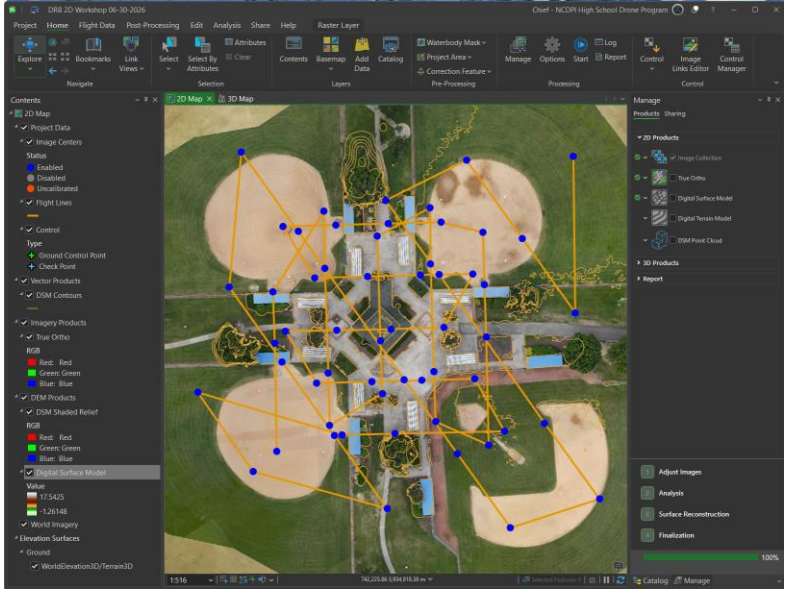
Step	Instruction	Visual Reference
33	Click the Adjust Images tab The Adjust Images tab allows you to define settings used during the block adjustment process, tie point matching, and point cloud generation. These are the various sub-processes that occur when Drone2Map creates your imagery products.	
34	Click the 2D Products tab. The 2D Products tab allows you to adjust the processing options and desired outputs for your True Orthos, digital surface models, and digital terrain models. The True Ortho and DSM products are selected by default because you chose the 2D Products template.	

Step	Instruction	Visual Reference
35	Click the Adjust Images tab The Adjust Images tab allows you to define settings used during the block adjustment process, tie point matching, and point cloud generation. These are the various sub-processes that occur when Drone2Map creates your imagery products.	
36	Under Digital Surface Model, check the box next to Create Shaded Relief, Create Contours, and Export Shapefile. Under Create Contours for Interval, type 2.	

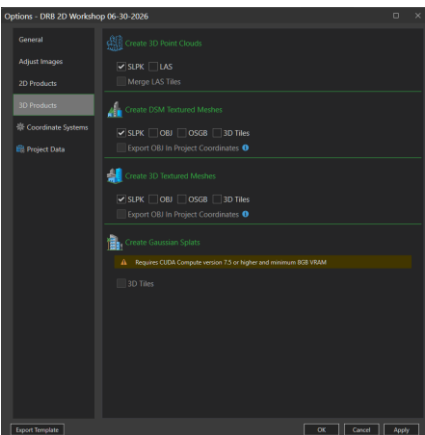
Step	Instruction	Visual Reference
37	The other tabs in the Options window allow you to output 3D products, review your project's coordinate system, and view other details regarding your project. Click OK.	
38	Before you begin processing your imagery, you'll review your outputs in the Manage pane. On the ribbon, click the Home tab. In the Processing group, click Manage.	
39	The Manage pane appears. This pane provides you with an overview of the products that will be created when you process your imagery. Expand the 3D products and Report groups. Under 3D Products, nothing is selected. Under Report, a Processing Report will be created.	

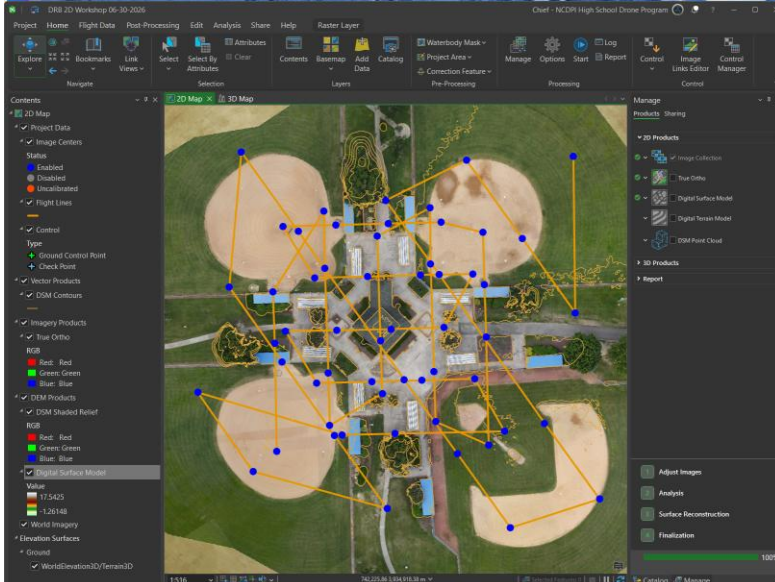
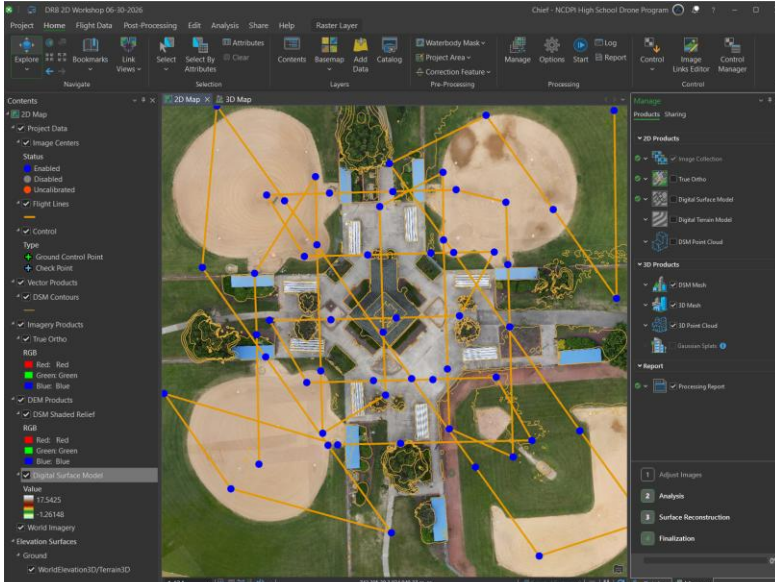
Process your 2D imagery

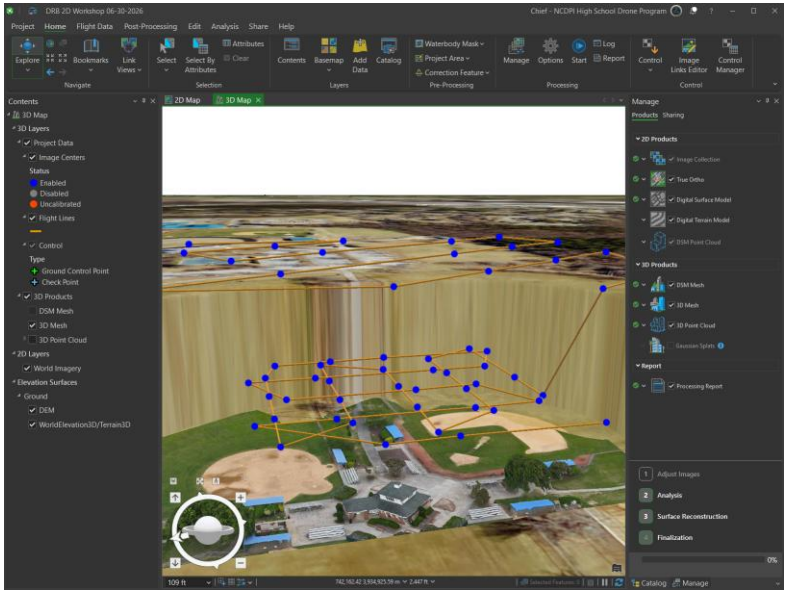
Step	Instruction	Visual Reference
40	On the ribbon, click the Home tab. In the Processing group, click Start .	
41	If you receive this error, ignore and click “Yes”.	
42	The processing progress is visible in the Manage pane Note: The amount of time it takes to process your imagery depends on your computer's hardware, the number of images you're processing, the resolution of your images, and the products that Drone2Map is generating. For this tutorial, processing may take from 30 minutes to over an hour.	

Step	Instruction	Visual Reference
43	When the processing finishes, several layers are added to the Contents pane and the map. Once the process is complete, the display will look like this:	
44	<u>View 2D Product Results</u> 1. When processing is complete, the full-resolution orthomosaic and Digital Surface Model are added to your map display and Contents pane. 2. View the images by panning and zooming around the sports complex and checking your 2D products on and off to view the orthomosaic and Digital Elevation Model layers. Zoom in closely to observe the high-resolution imagery produced with this template.	

D. Adding 3D option to the 2D mapping process

Step	Instruction	Visual Reference
45	Go Back to the Options menu in the Processing Tab and select 3D Products On the 3D Products options ensure the Create options are checked and click OK	

Step	Instruction	Visual Reference
46	Since most desire 3D images along with 2D images, additional settings are recommended. On the 2D Products options ensure the Create Ortho option is checked and click OK.	
47	Click Start to begin processing.	

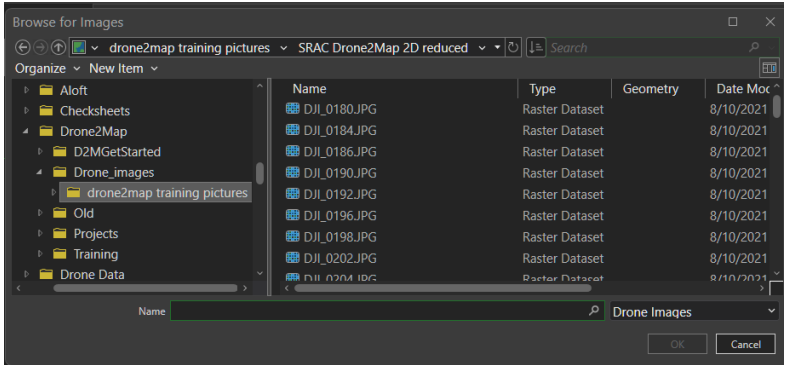
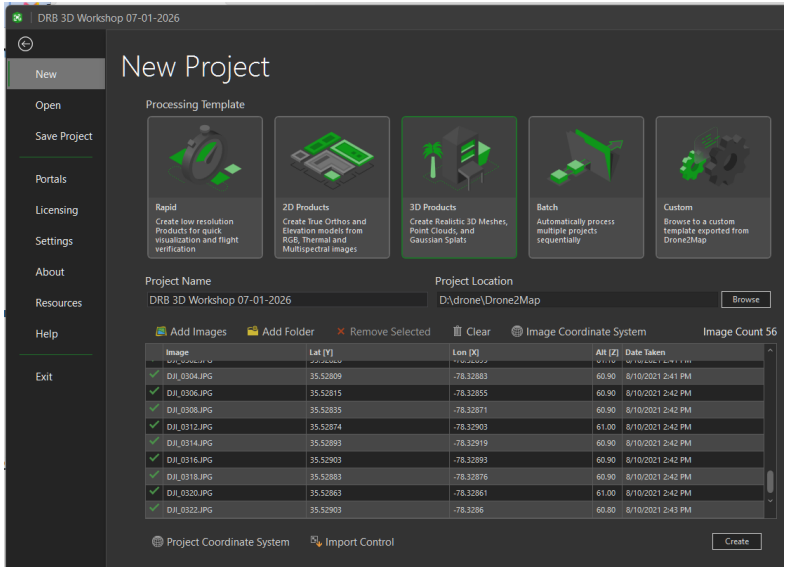
Step	Instruction	Visual Reference
48	You will now have 3D map , but you will notice it is not very good since you only used the 2D processing with the 3D options .	

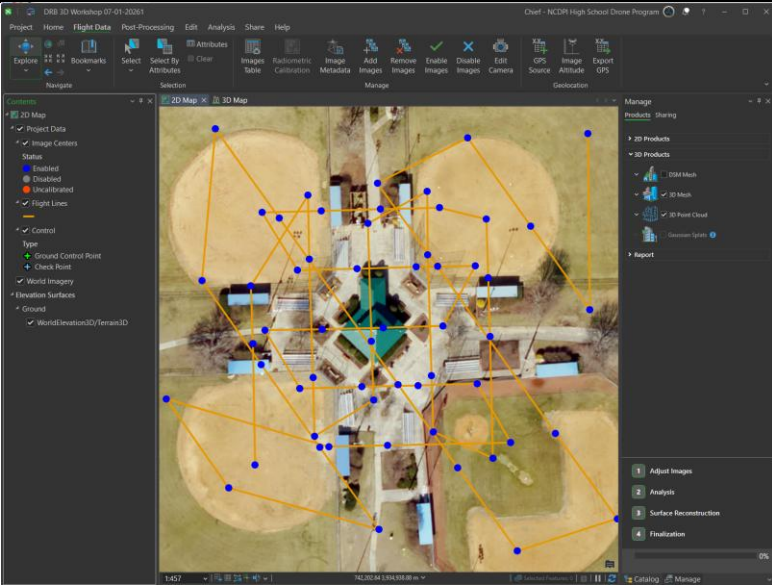
E. 3D Products Processing Workflow.

The 3D Product template is designed to create high-resolution orthomosaic and digital elevation models.

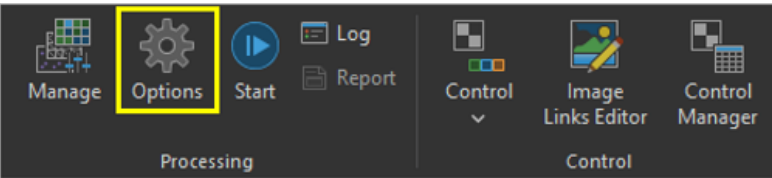
Follow the steps below to process a sample 3D project.

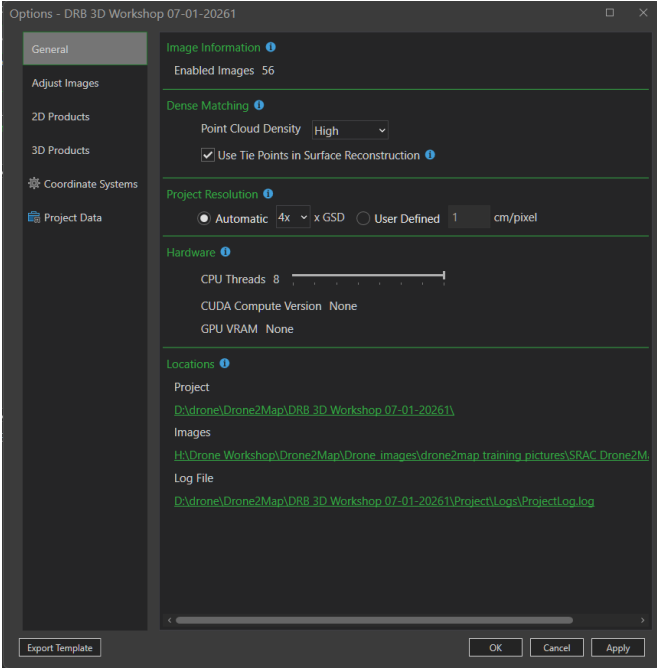
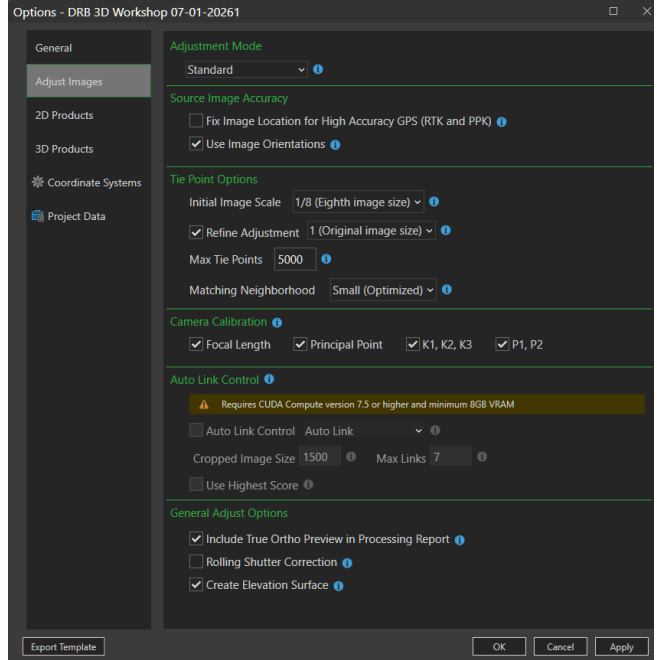
Step	Instruction	Visual Reference
49	Download 3D Product Sample Data Sample data for the 3D Full template is the same data set we used for the 2D. To download the sample data, complete the following steps:	- Download the 3D Full data set by clicking on this Google link for a zip file: https://drive.google.com/file/d/1JGXwWJMa4U_w-kof8FKkoalZ3KZNSy_6/view?usp=sharing - Save the download to a folder you will remember for later, such as your download folder. - Create the folder you plan to use for Drone Data. It is recommended that you do not use a network drive, but one that is quick to find on your PC. - Go to the Drone2Map 2D Full Data Set Example zip file and click “Extract all.” save the files to a folder you will remember. And then click “Extract,” where the files will be located on your computer that you just created.

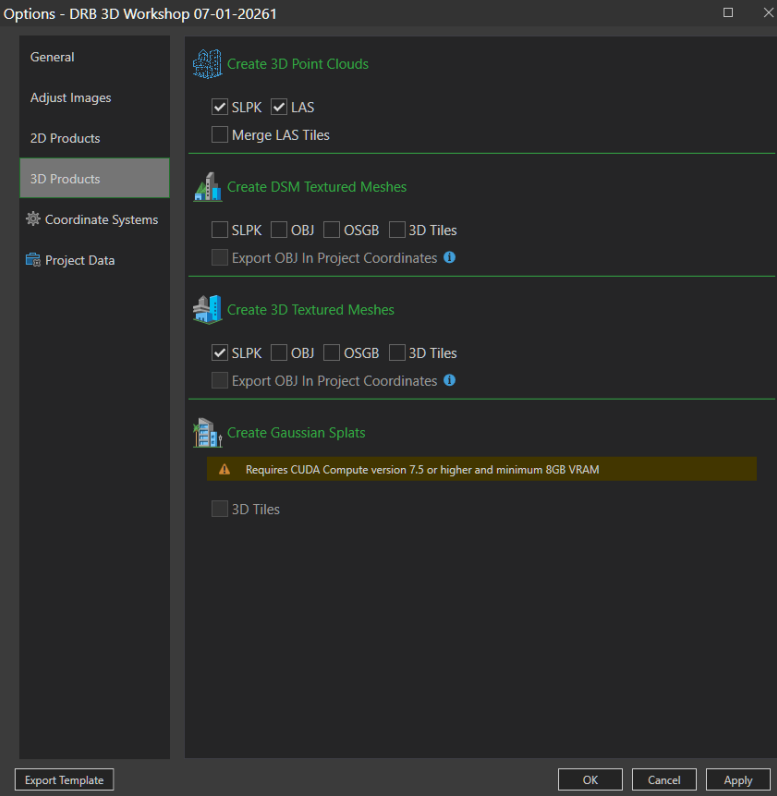
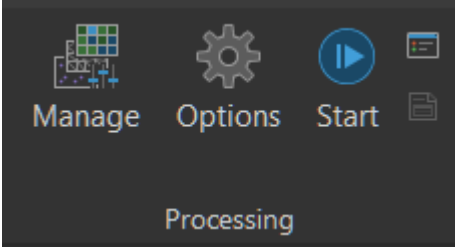
Step	Instruction	Visual Reference
50	Create a 3D Product Project To create a sample rapid project, complete the following steps:	1. Start Drone2Map. 2. Sign in using your ArcGIS Online organization or Portal for ArcGIS credentials. 3. Select the 3D Product template and name your project. 4. Give Your Project a name. 5. It should default to the same location where you have been storing your projects. If not, change.
51	Click Add Images or Add Folder and browse to the location of the sample images folder, select the Folder or images in the Folder, and click OK.	
52	Ensure “3D Product Template” has been selected in the lower left.	

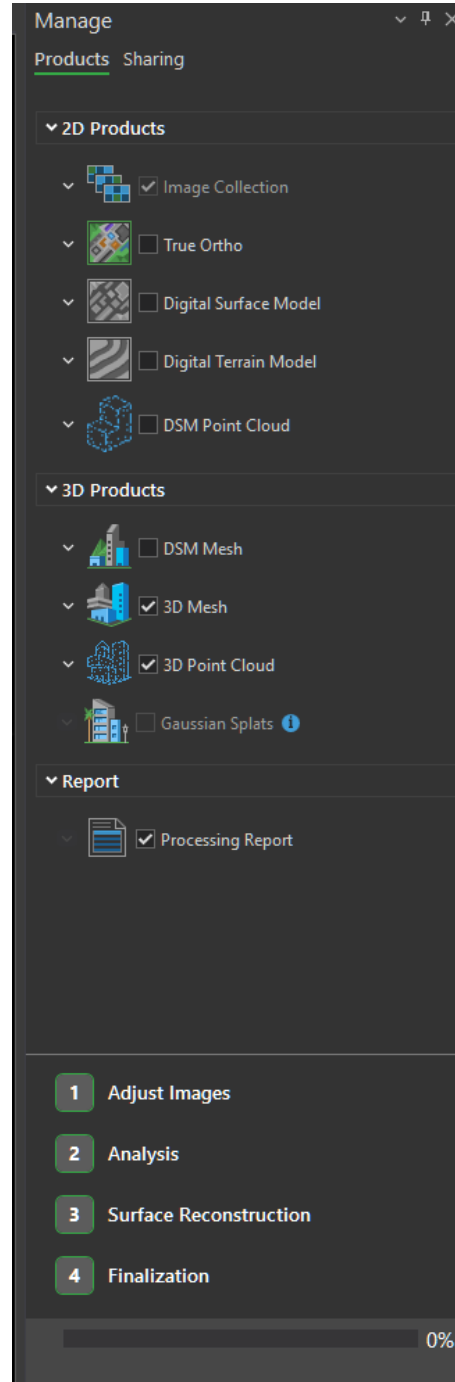
Step	Instruction	Visual Reference
53	And then Create to create the project.	

Configure processing options

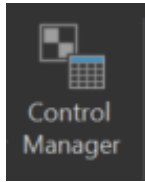
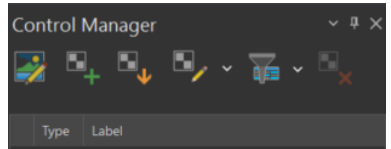
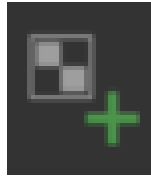
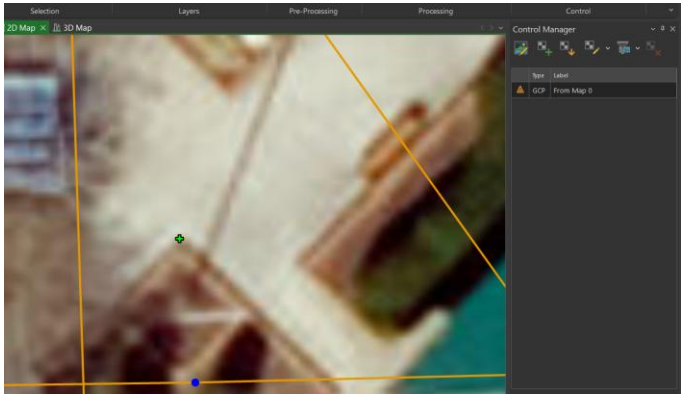
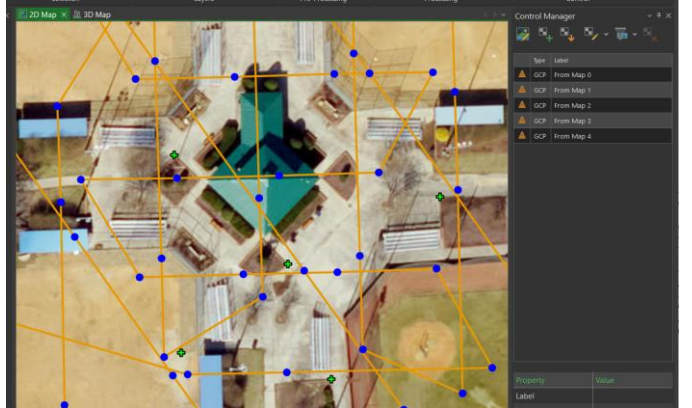
Step	Instruction	Visual Reference
54	The Processing Options window allows you to review your project inputs and outputs before processing your imagery. On the Home tab, click Options. Notice which tabs are checked by default.	

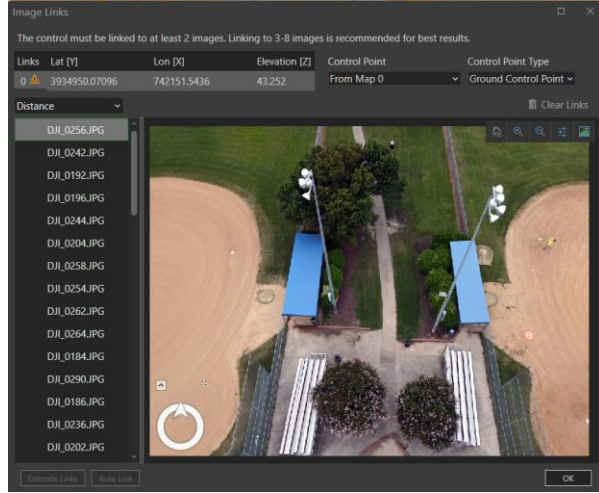
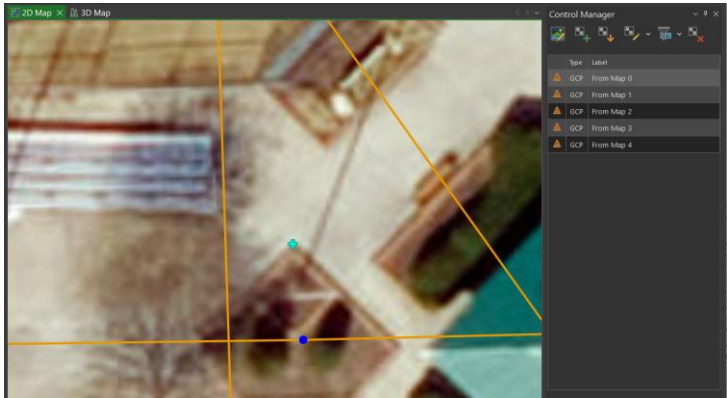
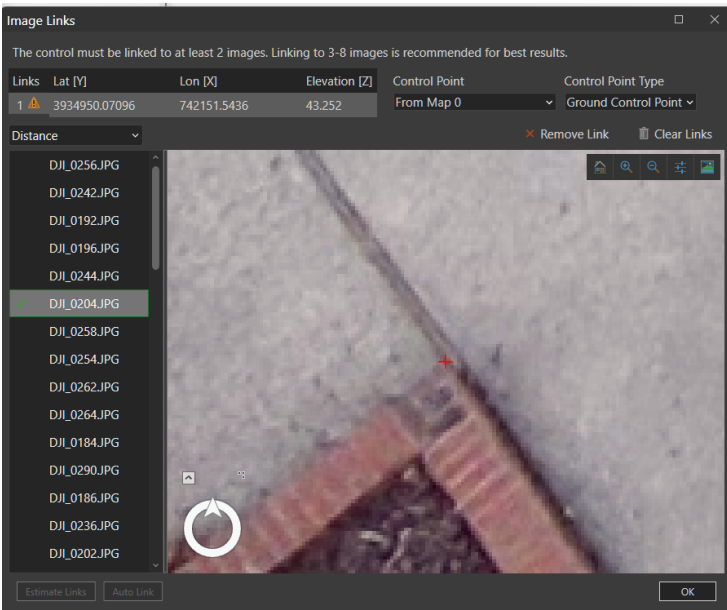
Step	Instruction	Visual Reference
55	In the Options window, confirm that the General tab is selected Here you can adjust the quality and resolution of output products. If you wanted to process your imagery faster, you could change the Point Cloud Density parameter to High but also reduce the quality of your outputs and Project Resolution set to 4X to increase details	
56	Click the Adjust Images tab The Adjust Images tab allows you to define settings used during the block adjustment process, tie point matching, and point cloud generation. These are the various sub-processes that occur when Drone2Map create s your imagery products.	

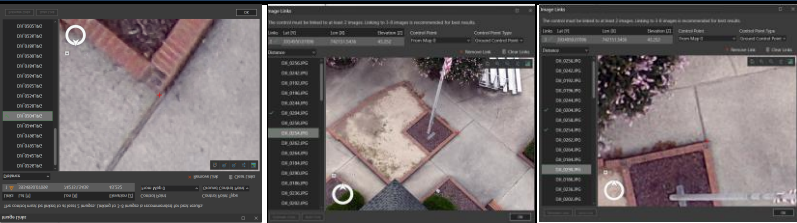
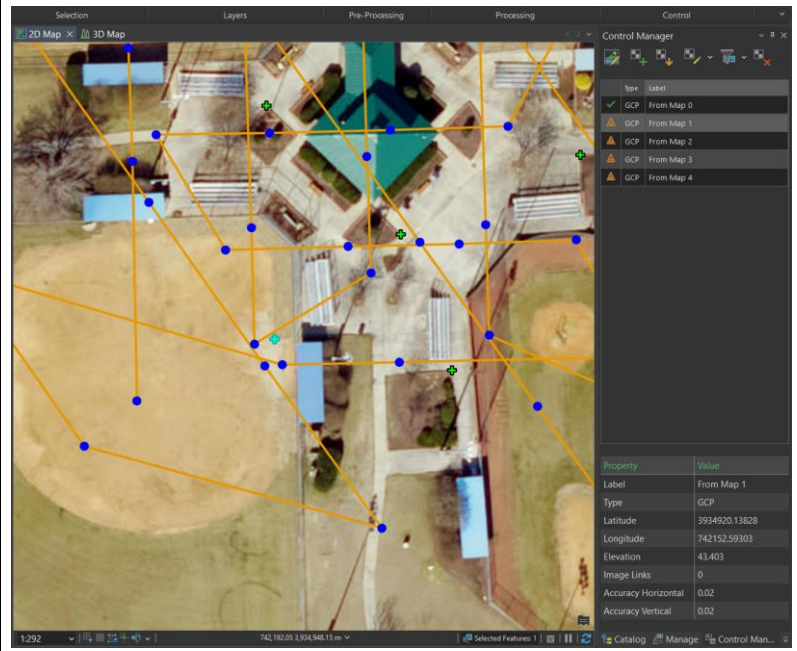
Step	Instruction	Visual Reference
57	Click the 3D Products tab. The 3D Products tab allows you to adjust the processing options and desired outputs for your point clouds, DSM textured meshes, and 3D textured meshes. The Create Point Clouds and Create 3D Textured Meshes products are selected by default because you chose the 3D Products template. These can be created in different formats depending on your use case. The other tabs in the Options window allow you to output 2D products, review your project's coordinate system, and view other details regarding your project. Click OK.	
58	Before you begin processing your imagery, you'll review your outputs in the Manage pane. On the ribbon, click the Home tab. In the Processing group, click Manage.	

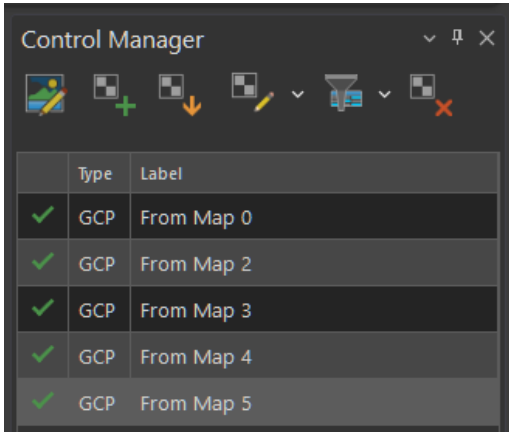
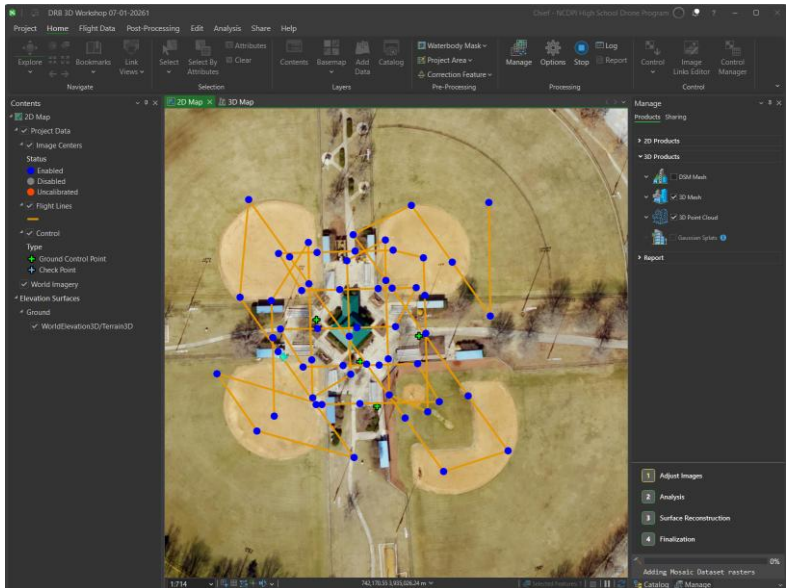
Step	Instruction	Visual Reference
60	The Manage pane appears. In the Manage pane, expand the 2D Products and Report groups Under 3D Products, 3D Mesh and 3D Point Cloud are queued for processing. Under 2D Products, only Image Collection is selected because this is always required when processing imagery with Drone2Map. True Ortho, Digital Surface Model, Digital Terrain Model, and DSM Point Cloud are not checked. This is because you chose the 3D Products template. Under Report, a Processing Report will be created. The report provides valuable information about the quality and accuracy of your imagery inputs and outputs..	 The screenshot shows the 'Manage' pane with two tabs: 'Products' and 'Sharing'. The 'Products' tab is active. It contains three expandable sections: '2D Products', '3D Products', and 'Report'. Under '2D Products', 'Image Collection' is checked, while 'True Ortho', 'Digital Surface Model', 'Digital Terrain Model', and 'DSM Point Cloud' are unchecked. Under '3D Products', 'DSM Mesh' is unchecked, while '3D Mesh' and '3D Point Cloud' are checked. 'Gaussian Splats' is unchecked with an information icon. Under 'Report', 'Processing Report' is checked. At the bottom, a progress bar shows 0% completion, with a list of steps: 1 Adjust Images, 2 Analysis, 3 Surface Reconstruction, and 4 Finalization.

Adding Map Control Points and Accuracy

Step	Instruction	Visual Reference
61	Control Points can increase the accuracy of any project. Follow the steps below to add Map control points to your project. This process will take definable locations on the base map that are also seen in captured drone imagery. It is recommended not to use structures above ground, such as a corner of a structure, due to possible distortions on the imagery.	
62	Select the Control Manager tab in the top menu to access the control options.	 
63	Select the Add from Map tab	
64	Using the mouse to scroll in, find an identifiable landmark that you can easily find in the actual images later and click the mouse. A plus sign  should appear, indicating you have selected a Control point .	
65	Repeat this process until you have a control point in all corners of the 2D map and one in the center. Select four points on the outside and one on the inside of the project area.	

Step	Instruction	Visual Reference
66	Click on the Image link editor tab which will display the image link editor page showing the different mages where one would link the control points selected to those images	 
67	Note where the control point is on the main map. Search the images on the left until you find the landmark same landmark. Move the mouse over the spot as close to the exact location you created the control Point at in step 15/16. Zoom in if needed and click the mouse to mark that spot. This will put an X over the spot. Click OK to save that linked spot.	 

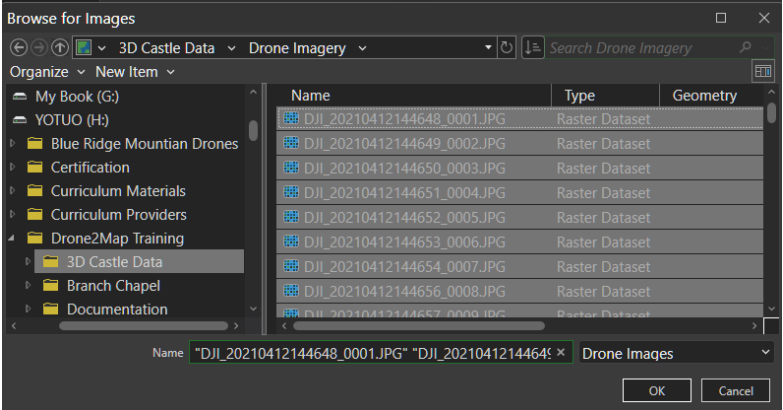
Step	Instruction	Visual Reference																														
68	Repeat this process until you have at least three images to the selected control point.																															
69	Verify in the bottom corner each control point has at least 3 points linked before you move on to the next GCP (Ground Control Point)	Control Manager <table><thead><tr><th>Type</th><th>Label</th></tr></thead><tbody><tr><td>GCP</td><td>From Map 0</td></tr><tr><td>GCP</td><td>From Map 1</td></tr><tr><td>GCP</td><td>From Map 2</td></tr><tr><td>GCP</td><td>From Map 3</td></tr><tr><td>GCP</td><td>From Map 4</td></tr></tbody></table> <table><thead><tr><th>Property</th><th>Value</th></tr></thead><tbody><tr><td>Label</td><td>From Map 0</td></tr><tr><td>Type</td><td>GCP</td></tr><tr><td>Latitude</td><td>3934950.07096</td></tr><tr><td>Longitude</td><td>742151.5436</td></tr><tr><td>Elevation</td><td>43.252</td></tr><tr><td>Image Links</td><td>3</td></tr><tr><td>Accuracy Horizontal</td><td>0.02</td></tr><tr><td>Accuracy Vertical</td><td>0.02</td></tr></tbody></table> Catalog Manage Control Man...	Type	Label	GCP	From Map 0	GCP	From Map 1	GCP	From Map 2	GCP	From Map 3	GCP	From Map 4	Property	Value	Label	From Map 0	Type	GCP	Latitude	3934950.07096	Longitude	742151.5436	Elevation	43.252	Image Links	3	Accuracy Horizontal	0.02	Accuracy Vertical	0.02
Type	Label																															
GCP	From Map 0																															
GCP	From Map 1																															
GCP	From Map 2																															
GCP	From Map 3																															
GCP	From Map 4																															
Property	Value																															
Label	From Map 0																															
Type	GCP																															
Latitude	3934950.07096																															
Longitude	742151.5436																															
Elevation	43.252																															
Image Links	3																															
Accuracy Horizontal	0.02																															
Accuracy Vertical	0.02																															
70	Click on GCP From Map 1 and you will notice the + on the map for that GCP changes color.																															

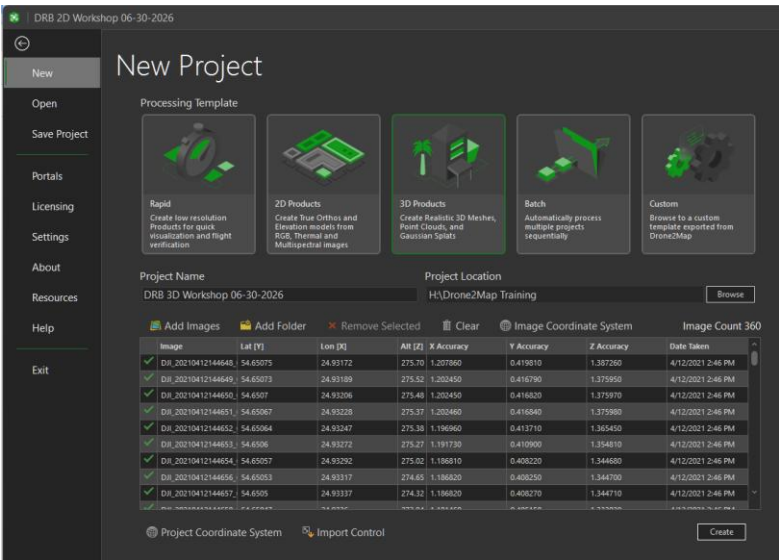
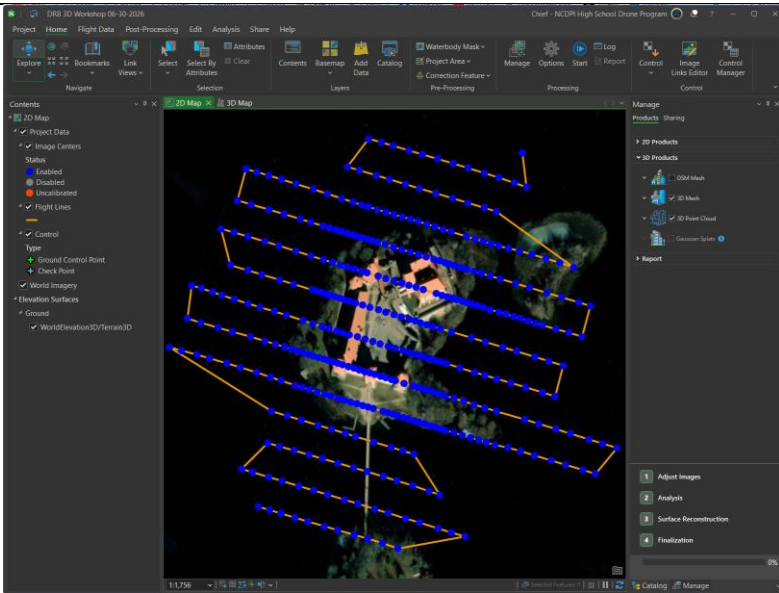
Step	Instruction	Visual Reference																		
71	Repeat Steps 18-21 until all 5 GCP have at least three image linked. Once finished, you can select the Control Manager tab at the top, and on the right, a table shows each control point and the images linked to each.	 <table><thead><tr><th></th><th>Type</th><th>Label</th></tr></thead><tbody><tr><td>✓</td><td>GCP</td><td>From Map 0</td></tr><tr><td>✓</td><td>GCP</td><td>From Map 2</td></tr><tr><td>✓</td><td>GCP</td><td>From Map 3</td></tr><tr><td>✓</td><td>GCP</td><td>From Map 4</td></tr><tr><td>✓</td><td>GCP</td><td>From Map 5</td></tr></tbody></table>		Type	Label	✓	GCP	From Map 0	✓	GCP	From Map 2	✓	GCP	From Map 3	✓	GCP	From Map 4	✓	GCP	From Map 5
	Type	Label																		
✓	GCP	From Map 0																		
✓	GCP	From Map 2																		
✓	GCP	From Map 3																		
✓	GCP	From Map 4																		
✓	GCP	From Map 5																		
72	You can now run Start to produce a more accurate map following the process previously defined.																			

F. 3D Products Processing Workflow - Castle.

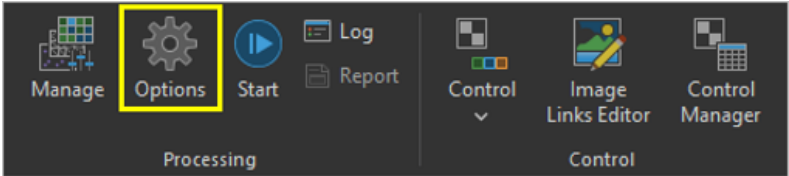
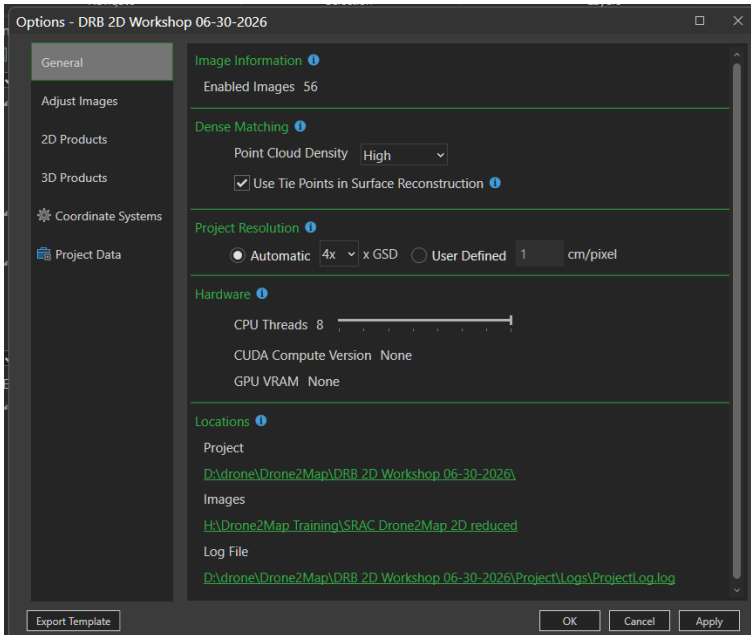
For a more detailed example of the 3D Product template, here is a map model of a Castle. Depending on the power of your PC, it could take as much as 6 to 8 hours to run this example but will produce a high-resolution orthomosaic and digital elevation models.

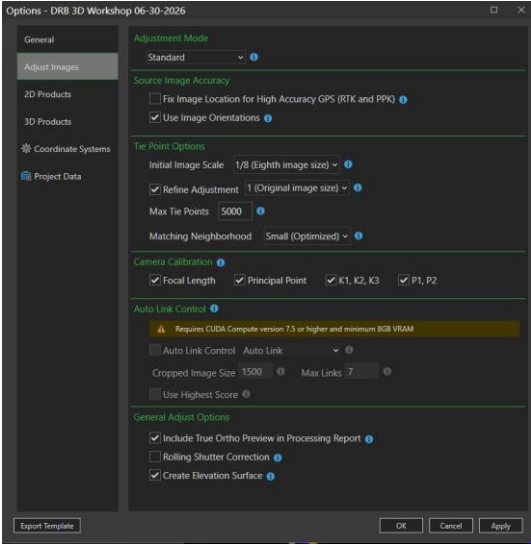
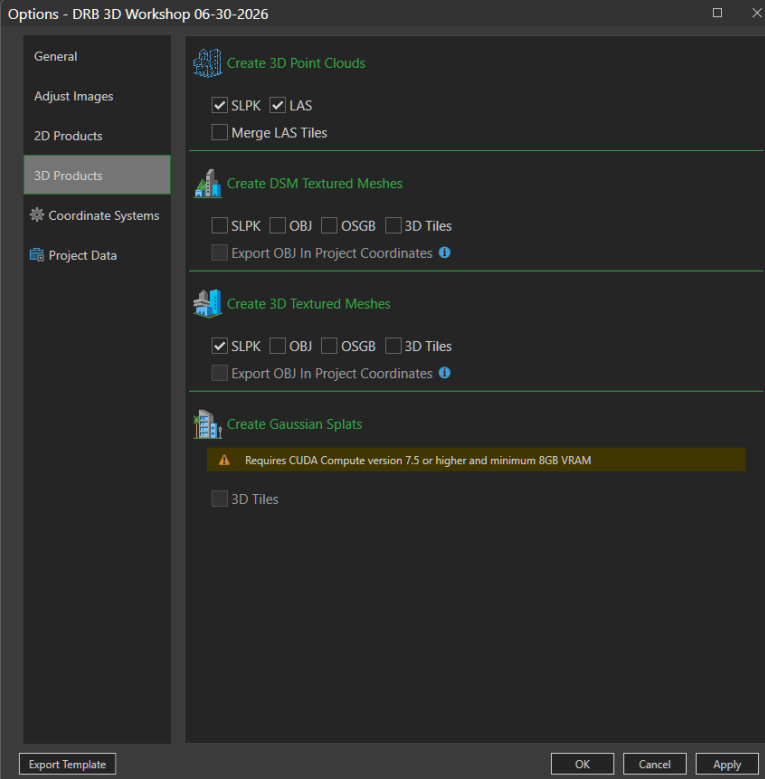
Follow the steps below to process a sample 3D project.

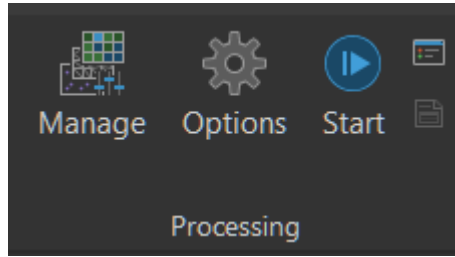
Step	Instruction	Visual Reference
73	Download 3D Product Sample Data Sample data for the 3D Full template is a collection of images an Castle Complex. To download the sample data, complete the following steps:	- Download the 3D Full data set by clicking on this Google link for a zip file: https://drive.google.com/file/d/1yAh7YTBAieRFBVYbtMEFKoxyClmUrznq/view?usp=drive_link - Save the download to a folder you will remember for later, such as your download folder. - Create the folder you plan to use for Drone Data. It is recommended that you do not use a network drive, but one that is quick to find on your PC. - Go to the 3D Castle Data.zip file and click “Extract all.” save the files to a folder you will remember. And then click “Extract,” where the files will be located on your computer that you just created.
74	Create a 3D Product Project To create a sample rapid project, complete the following steps:	- Start Drone2Map. - Sign in using your ArcGIS Online organization or Portal for ArcGIS credentials. - Select the 3D Product template and name your project. - Give Your Project a name. - It should default to the same location where you have been storing your projects. If not, change.
75	Click Add Images or Add Folder and browse to the location of the sample images folder, select the Folder or images in the Folder, and click OK.	

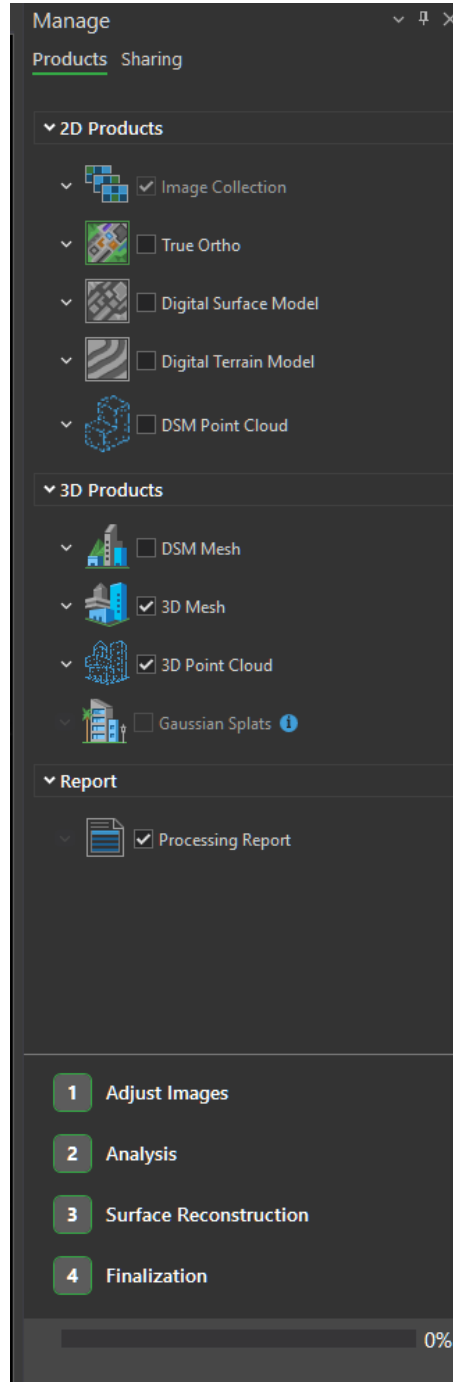
Step	Instruction	Visual Reference																																																																																
76	Ensure “3D Product Template” has been selected in the lower left.	 The screenshot shows the "New Project" dialog in Drone2Map. The "Processing Template" section has five options: "Rapid" (Create low resolution products for quick visualization and flight verification), "2D Products" (Create True Orthos and Elevation models from RGB, Thermal and Multispectral images), "3D Products" (Create Realistic 3D Meshes, Point Clouds, and Gaussian Splats) - this is the selected option with a green border, "Batch" (Automatically process multiple projects sequentially), and "Custom" (Browse to a custom template exported from Drone2Map). Below the templates, the "Project Name" is "DRB 3D Workshop 06-30-2026" and the "Project Location" is "H:\Drone2Map Training". A table of image coordinates is visible at the bottom. <table><thead><tr><th>Image</th><th>Lat [Y]</th><th>Lon [X]</th><th>Alt [Z]</th><th>X Accuracy</th><th>Y Accuracy</th><th>Z Accuracy</th><th>Date Taken</th></tr></thead><tbody><tr><td>✓ D:_20210412144648_54.65075</td><td>54.65075</td><td>24.93172</td><td>275.70</td><td>1.207860</td><td>0.419810</td><td>1.387280</td><td>4/12/2021 2:46 PM</td></tr><tr><td>✓ D:_20210412144649_54.65073</td><td>54.65073</td><td>24.93189</td><td>275.52</td><td>1.202450</td><td>0.416790</td><td>1.375950</td><td>4/12/2021 2:46 PM</td></tr><tr><td>✓ D:_20210412144650_54.65087</td><td>54.65087</td><td>24.93206</td><td>275.48</td><td>1.202450</td><td>0.416820</td><td>1.375970</td><td>4/12/2021 2:46 PM</td></tr><tr><td>✓ D:_20210412144651_54.65087</td><td>54.65087</td><td>24.93228</td><td>275.57</td><td>1.202480</td><td>0.416840</td><td>1.375980</td><td>4/12/2021 2:46 PM</td></tr><tr><td>✓ D:_20210412144652_54.65084</td><td>54.65084</td><td>24.93247</td><td>275.38</td><td>1.196960</td><td>0.412710</td><td>1.365450</td><td>4/12/2021 2:46 PM</td></tr><tr><td>✓ D:_20210412144653_54.65096</td><td>54.65096</td><td>24.93272</td><td>275.27</td><td>1.191730</td><td>0.410900</td><td>1.354810</td><td>4/12/2021 2:46 PM</td></tr><tr><td>✓ D:_20210412144654_54.65057</td><td>54.65057</td><td>24.93292</td><td>275.02</td><td>1.186610</td><td>0.408220</td><td>1.344680</td><td>4/12/2021 2:46 PM</td></tr><tr><td>✓ D:_20210412144656_54.65053</td><td>54.65053</td><td>24.93317</td><td>274.85</td><td>1.186620</td><td>0.408250</td><td>1.344700</td><td>4/12/2021 2:46 PM</td></tr><tr><td>✓ D:_20210412144657_54.65055</td><td>54.65055</td><td>24.93337</td><td>274.32</td><td>1.186620</td><td>0.408270</td><td>1.344710</td><td>4/12/2021 2:46 PM</td></tr></tbody></table>	Image	Lat [Y]	Lon [X]	Alt [Z]	X Accuracy	Y Accuracy	Z Accuracy	Date Taken	✓ D:_20210412144648_54.65075	54.65075	24.93172	275.70	1.207860	0.419810	1.387280	4/12/2021 2:46 PM	✓ D:_20210412144649_54.65073	54.65073	24.93189	275.52	1.202450	0.416790	1.375950	4/12/2021 2:46 PM	✓ D:_20210412144650_54.65087	54.65087	24.93206	275.48	1.202450	0.416820	1.375970	4/12/2021 2:46 PM	✓ D:_20210412144651_54.65087	54.65087	24.93228	275.57	1.202480	0.416840	1.375980	4/12/2021 2:46 PM	✓ D:_20210412144652_54.65084	54.65084	24.93247	275.38	1.196960	0.412710	1.365450	4/12/2021 2:46 PM	✓ D:_20210412144653_54.65096	54.65096	24.93272	275.27	1.191730	0.410900	1.354810	4/12/2021 2:46 PM	✓ D:_20210412144654_54.65057	54.65057	24.93292	275.02	1.186610	0.408220	1.344680	4/12/2021 2:46 PM	✓ D:_20210412144656_54.65053	54.65053	24.93317	274.85	1.186620	0.408250	1.344700	4/12/2021 2:46 PM	✓ D:_20210412144657_54.65055	54.65055	24.93337	274.32	1.186620	0.408270	1.344710	4/12/2021 2:46 PM
Image	Lat [Y]	Lon [X]	Alt [Z]	X Accuracy	Y Accuracy	Z Accuracy	Date Taken																																																																											
✓ D:_20210412144648_54.65075	54.65075	24.93172	275.70	1.207860	0.419810	1.387280	4/12/2021 2:46 PM																																																																											
✓ D:_20210412144649_54.65073	54.65073	24.93189	275.52	1.202450	0.416790	1.375950	4/12/2021 2:46 PM																																																																											
✓ D:_20210412144650_54.65087	54.65087	24.93206	275.48	1.202450	0.416820	1.375970	4/12/2021 2:46 PM																																																																											
✓ D:_20210412144651_54.65087	54.65087	24.93228	275.57	1.202480	0.416840	1.375980	4/12/2021 2:46 PM																																																																											
✓ D:_20210412144652_54.65084	54.65084	24.93247	275.38	1.196960	0.412710	1.365450	4/12/2021 2:46 PM																																																																											
✓ D:_20210412144653_54.65096	54.65096	24.93272	275.27	1.191730	0.410900	1.354810	4/12/2021 2:46 PM																																																																											
✓ D:_20210412144654_54.65057	54.65057	24.93292	275.02	1.186610	0.408220	1.344680	4/12/2021 2:46 PM																																																																											
✓ D:_20210412144656_54.65053	54.65053	24.93317	274.85	1.186620	0.408250	1.344700	4/12/2021 2:46 PM																																																																											
✓ D:_20210412144657_54.65055	54.65055	24.93337	274.32	1.186620	0.408270	1.344710	4/12/2021 2:46 PM																																																																											
77	And then Create to create the project.	 The screenshot shows the Drone2Map main interface. The central view is a 3D map of a building with flight lines overlaid. The "Contents" panel on the left shows the project structure: "Project Data", "Image Centers" (Status: Enabled), "Flight Lines" (Status: Enabled), "Control" (Type: Ground Control Point, Check Point), "World Imagery", and "Elevation Surfaces" (Ground, WorldElevation3D/Terrain3D). The "Processing" panel on the right shows the progress of the project, with steps: 1. Adjust Images, 2. Analysis, 3. Surface Reconstruction, and 4. Finalization.																																																																																

Configure processing options

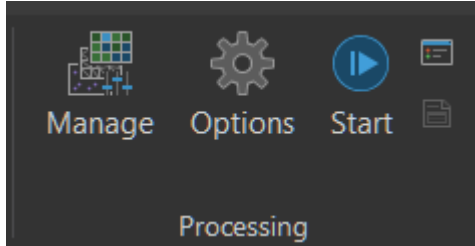
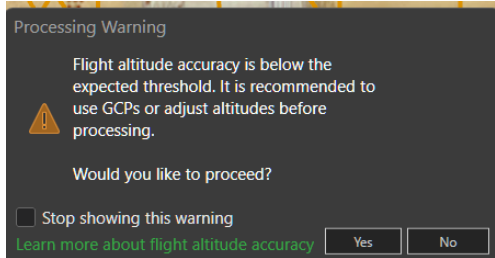
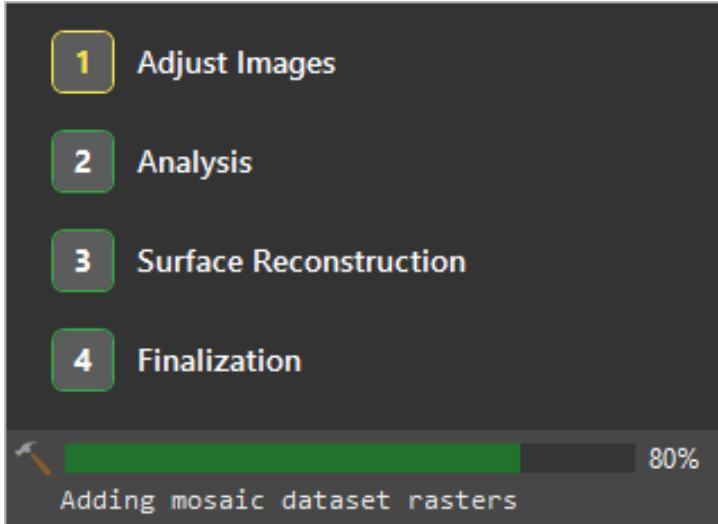
Step	Instruction	Visual Reference
78	The Processing Options window allows you to review your project inputs and outputs before processing your imagery. On the Home tab, click Options. Notice which tabs are checked by default.	
79	In the Options window, confirm that the General tab is selected Here you can adjust the quality and resolution of output products. If you wanted to process your imagery faster, you could change the Point Cloud Density parameter to High but also reduce the quality of your outputs.	

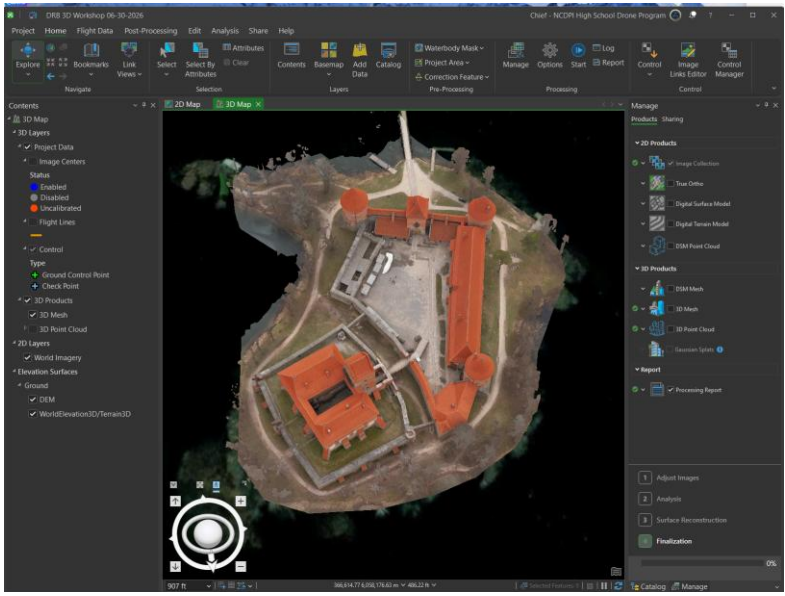
Step	Instruction	Visual Reference
80	Click the Adjust Images tab The Adjust Images tab allows you to define settings used during the block adjustment process, tie point matching, and point cloud generation. These are the various sub-processes that occur when Drone2Map create s your imagery products.	
81	Click the 3D Products tab. The 3D Products tab allows you to adjust the processing options and desired outputs for your point clouds, DSM textured meshes, and 3D textured meshes. The Create Point Clouds and Create 3D Textured Meshes products are selected by default because you chose the 3D Products template. The other tabs in the Options window allow you to output 2D products, review your project's coordinate system, and view other details regarding your project. Click OK.	

Step	Instruction	Visual Reference
82	Before you begin processing your imagery, you'll review your outputs in the Manage pane. On the ribbon, click the Home tab. In the Processing group, click Manage.	 A screenshot of the ArcGIS Drone2Map software interface, specifically the ribbon. The ribbon is dark blue with several icons and labels. In the 'Processing' group, the 'Manage' button is highlighted. The 'Manage' button has a green grid icon. Other buttons in the group include 'Options' (gear icon), 'Start' (play button icon), and a 'Processing' button (document icon). The word 'Processing' is also written below the buttons.

Step	Instruction	Visual Reference
83	The Manage pane appears. In the Manage pane, expand the 2D Products and Report groups Under 3D Products, 3D Mesh and 3D Point Cloud are queued for processing. Under 2D Products, only Image Collection is selected because this is always required when processing imagery with Drone2Map. True Ortho, Digital Surface Model, Digital Terrain Model, and DSM Point Cloud are not checked. This is because you chose the 3D Products template. Under Report, a Processing Report will be created. The report provides valuable information about the quality and accuracy of your imagery inputs and outputs..	 The screenshot shows the 'Manage' pane with three main sections: '2D Products', '3D Products', and 'Report'. In the '2D Products' section, 'Image Collection' is checked, while 'True Ortho', 'Digital Surface Model', 'Digital Terrain Model', and 'DSM Point Cloud' are unchecked. In the '3D Products' section, 'DSM Mesh' is unchecked, while '3D Mesh' and '3D Point Cloud' are checked. 'Gaussian Splats' is unchecked with an information icon. In the 'Report' section, 'Processing Report' is checked. At the bottom, a progress bar shows '0%' completion, with a list of steps: 1 Adjust Images, 2 Analysis, 3 Surface Reconstruction, and 4 Finalization.

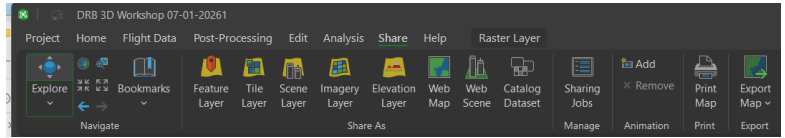
Process your 3D imagery

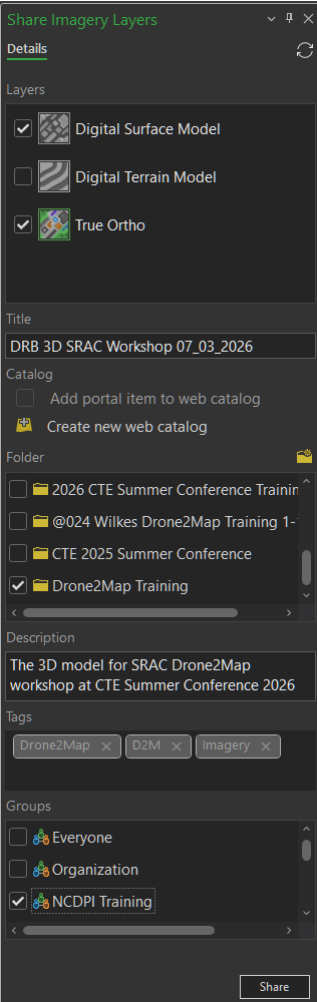
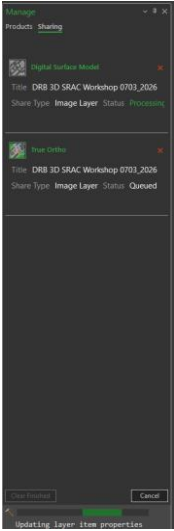
Step	Instruction	Visual Reference
84	On the ribbon, click the Home tab. In the Processing group, click Start .	
85	If you receive this error, ignore and click “Yes”.	
86	The processing progress is visible in the Manage pane Note: The amount of time it takes to process your imagery depends on your computer's hardware, the number of images you're processing, the resolution of your images, and the products that Drone2Map is generating. For this tutorial, processing may take from over 2 hours.	

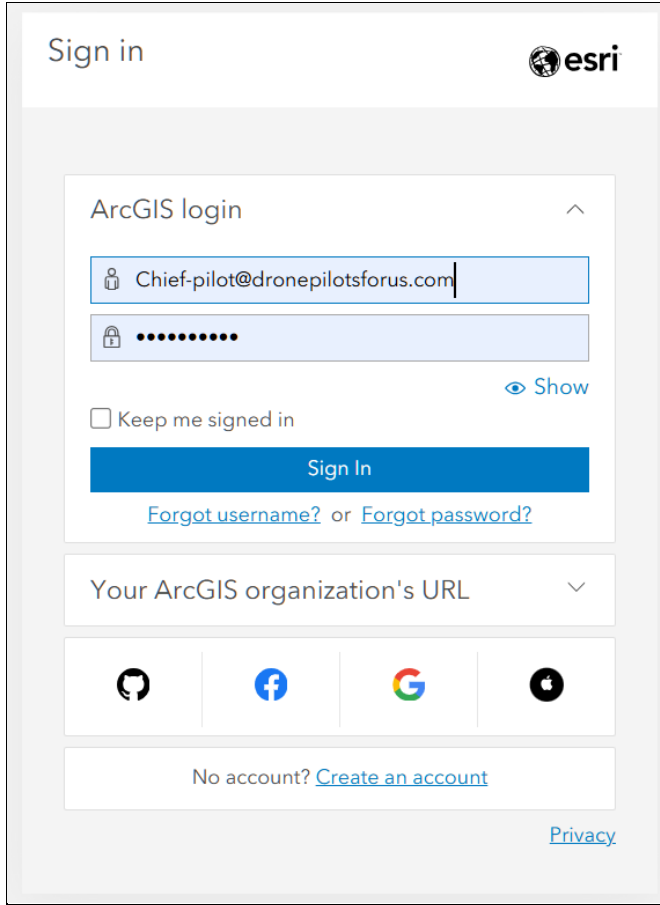
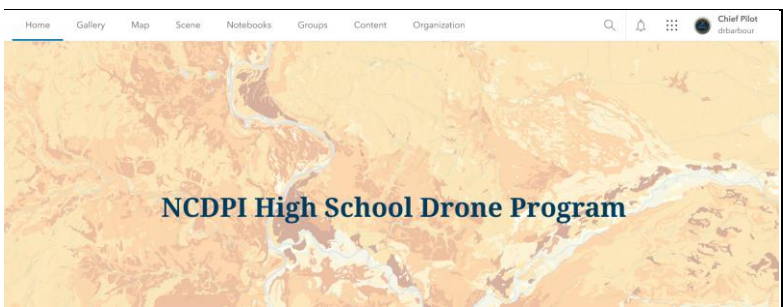
Step	Instruction	Visual Reference
87	When the processing finishes, click the 3D Map view to see several layers that are added to the Contents pane and the scene. Once the process is complete, the display will look like this:	
88	<u>View 3D Product Results</u> As you explore the 3D mesh, note the castle's distinctive design—Trakai Island Castle was constructed in the 14th century as a stronghold for Lithuanian dukes, strategically located on an island to defend against invaders. Today, its preserved architecture reflects the medieval grandeur of Eastern Europe. View the images by panning and zooming around the sports complex and checking your 3D products on and off to view the orthomosaic and Digital Elevation Model layers. Zoom in closely to observe the high-resolution imagery produced with this template.	

Part 4: Share Drone2Map Outputs to ArcGIS Online

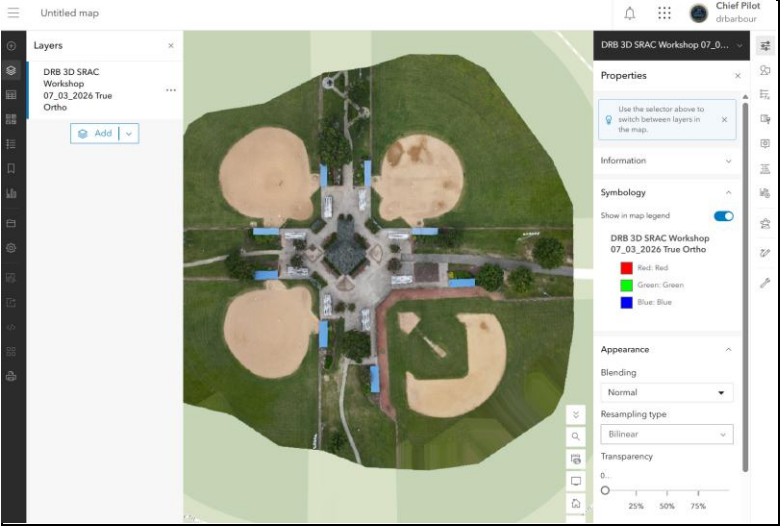
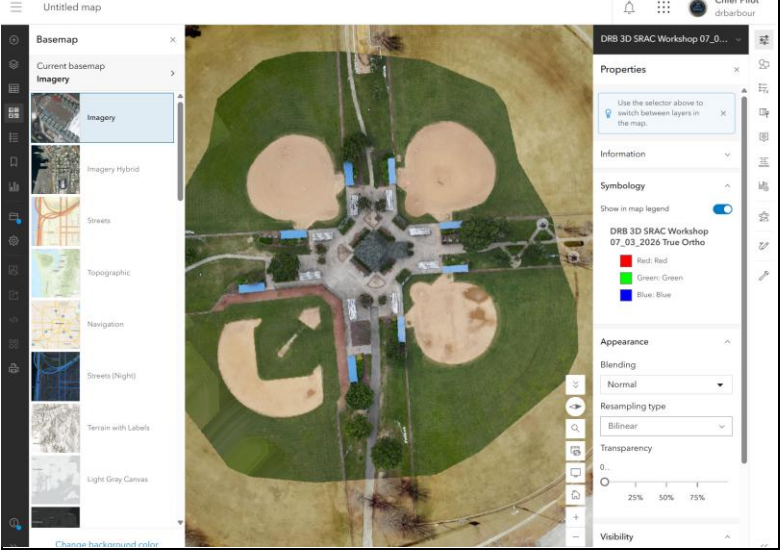
A. Use the following phases as the projected classroom workflow.

Step	Instruction	Visual Reference
1	To share your Data with ArcGIS Online, click on the Share tab at the top of the screen.	

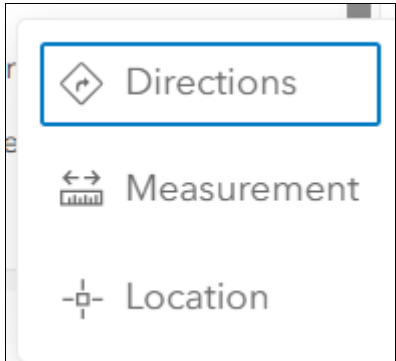
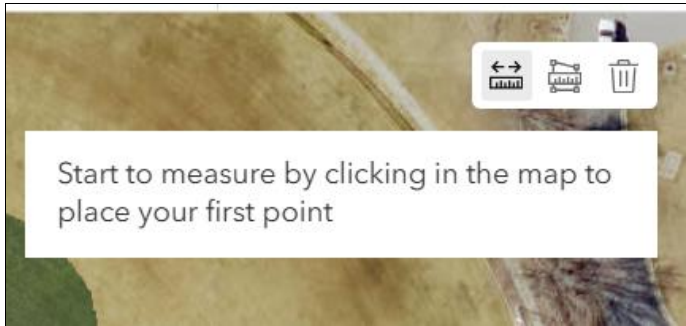
Step	Instruction	Visual Reference
2	Click on Imagery Layer at the top, Select the options you want to share. For this example, select Digital Surface Model and True Ortho. Give the Scene a title and description. Click the Folder in which you want to store the data (Drone2Map Training). If it does not exist, you can create it. Scroll to the bottom and find Groups. Select the appropriate Group (NCDPI Training) where you want to share the information (these should have been created in ArcGIS Online and will be covered later). Once finished, click Share.	
3	The project data will be uploaded to ArcGIS Online	

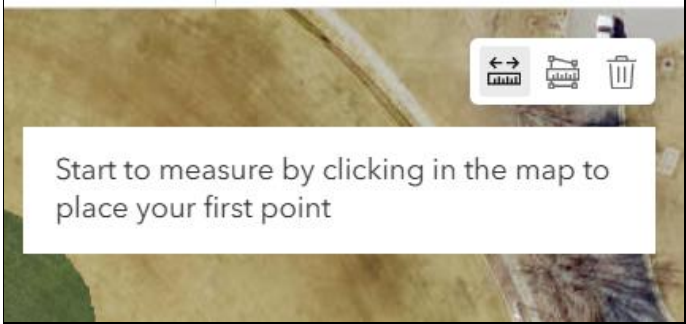
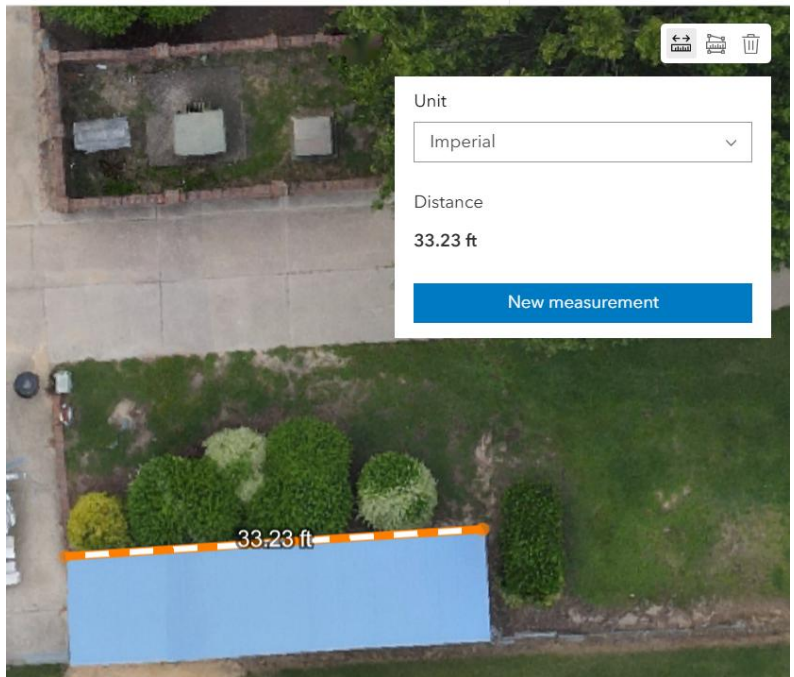
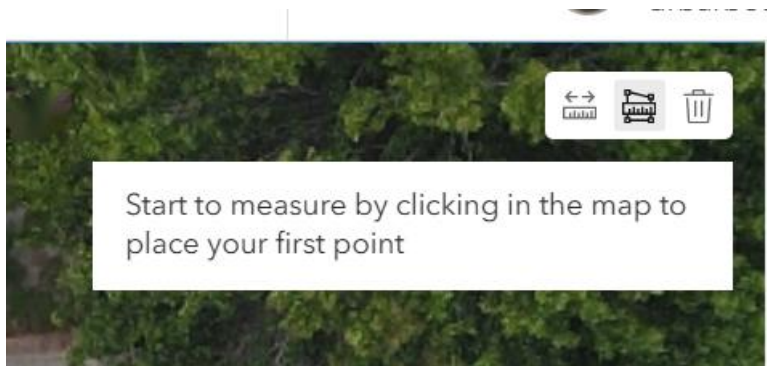
Step	Instruction	Visual Reference
4	The information has now been published to ArcGIS Online.	
5	Log into your ArcGIS Online account. Click on the ArcGIS login (You do not need to enter your ArcGIS organization's URL since ArcGIS already knows where you belong). Teachers must have the Drone2Map license (Username and Password) to use and run Esri Drone2Map applications. <i>The username is typically formatted like this:</i> Username format: name.lastname_DronePilotsForNC	
6	After logging in, you should see the High School Drone Program Main page.	

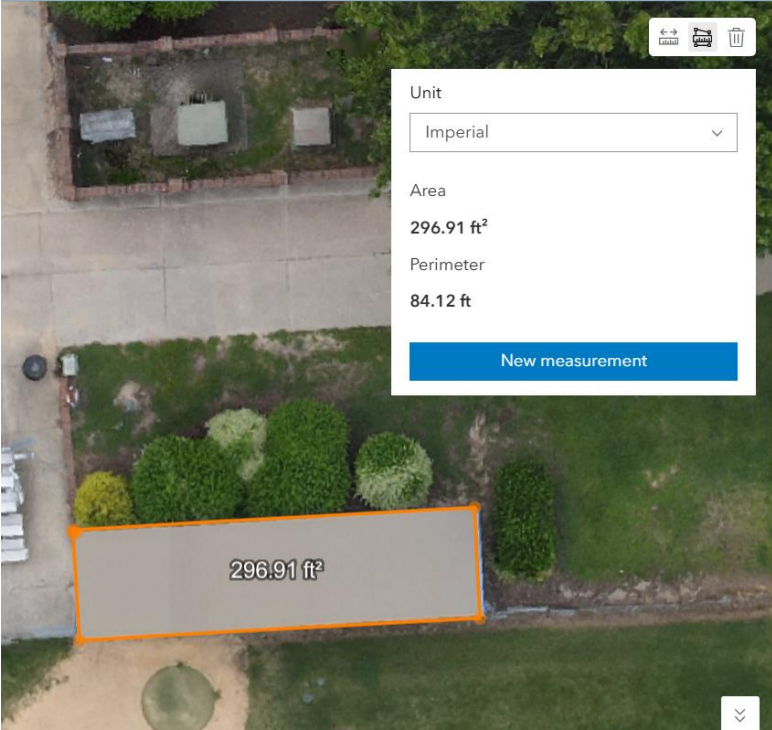
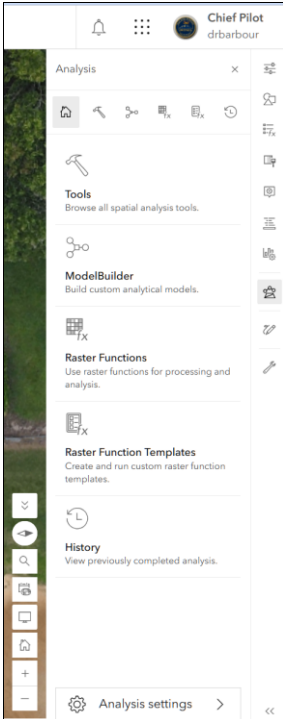
Step	Instruction	Visual Reference
7	Click on the Content tab at the top and then select the Folder we stored the Map in to see the newly uploaded map imagery. If the map is stored in a specific folder, you will need to navigate to it on the left side of the screen. Selecting "All my content" should also show the map at the top of the list. A list of the maps uploaded from Drone2Map will be shown.	
8	Click on the name of the item you wish to share. In this case the Tiled imagery layer (Hosted) that you desire to share. Select those files. If you want to change the title name, you can edit it by simply clicking on the name, then clicking the edit button next to the title to change its name and then clicking save beside it.	

Step	Instruction	Visual Reference
9	Next, Select Open in Map Viewer To navigate around our image, you can use the mouse. • Mouse Scroll wheel – to zoom in and out. • Left Click and drag to pan. • Right-click and drag to rotate the Scene.	
10	To change the basemap, select the  on the left, scroll, and select Imagery on the left, scroll, and select Imagery	

B. Map Viewer – Map Tools to use for Measuring various structures

Step	Instruction	Visual Reference						
11	Next, we can measure various structures using Map Tools. Click on the Map Tool icon on the right  and the The options: Direction, Measurement, and Location will be provided.							
12	Click on Measurement, and three icons will appear in the upper right corner							
13	Several measurement tool options are available	<table><tr><td>Measure Distance</td><td></td></tr><tr><td>Measure Area</td><td></td></tr><tr><td>Clear Measurement</td><td></td></tr></table>	Measure Distance		Measure Area		Clear Measurement	
Measure Distance								
Measure Area								
Clear Measurement								

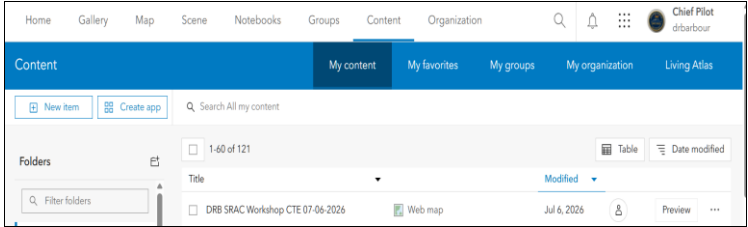
Step	Instruction	Visual Reference
14	<u>To Measure Distance</u> Identify a structure or space you wish to measure and click on the Measure Distance Tool.  You will see instructions pop up stating “Start to measure by clicking in the map to place your first point”. Move your mouse pointer to the corner of the structure to be measured Click one time and then proceed to the second point and click. If this point will complete your measurement, use a double-click in place of a single click and your measurement will be completed.	
		
15	<u>To Measure Area</u> Identify a structure or space you wish to measure and click on the Measure Area Tool.  You will see instructions pop up stating “Start to measure by clicking in the map to place your first point”.	

Step	Instruction	Visual Reference
16	Single click each point of the area you desire to measure until you reach the last point, then double click to let the program know you are finished and the result will show on the screen. When using 2D maps. Elevation measurement is not possible.	
17	Additional analysis can be conducted using the Analysis Tool. 	

Step	Instruction	Visual Reference
18	Once all your analysis has been completed, click the X in the right corner of the Analysis tab to close that window and bring you back to the main Map.	

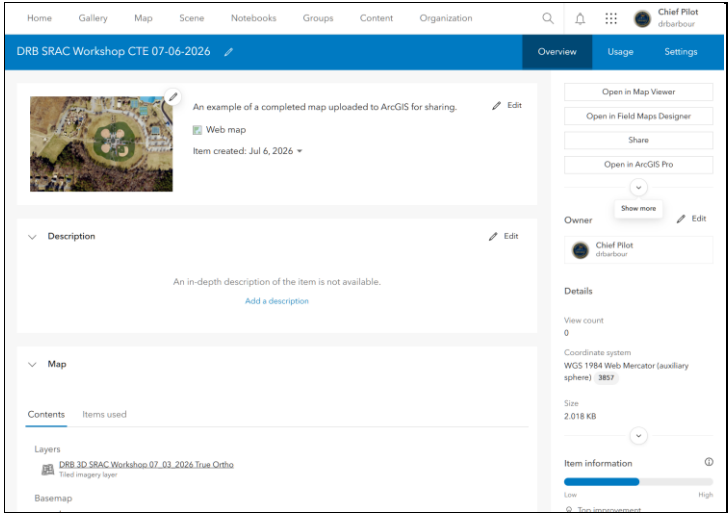
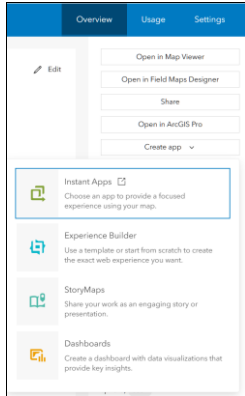
C. Saving your Map so it can be turned into an app

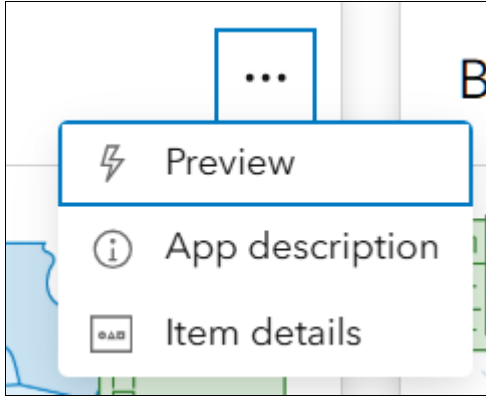
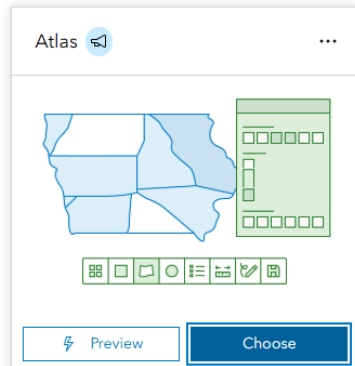
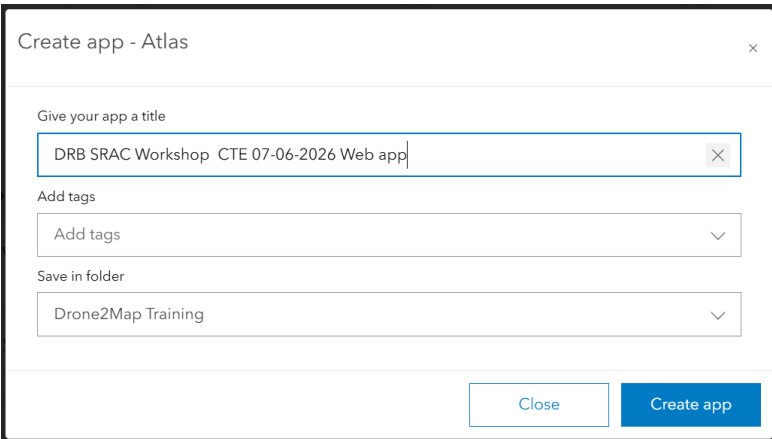
Step	Instruction	Visual Reference
19	The extent to which your user can see your Map is the last extent to which you saved your Map. Update your screen so the entire Map is visible. On the left, click the Save As Icon.	
20	Enter a Title for the Map and ensure it will be filed in the appropriate folder . If you have defined Categories for your map, ensure the correct one is selected. Click Save once that has been completed	
21	You will get a message telling you it has been successfully saved, and you will see the new title shown at the top left.	

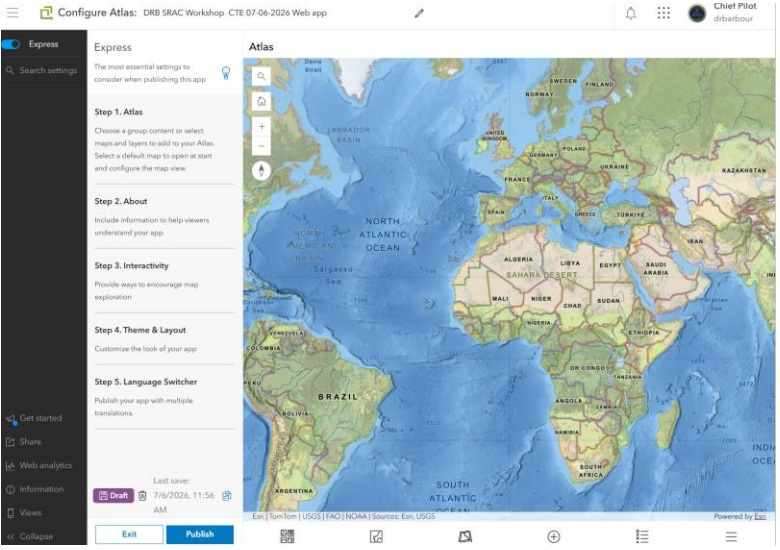
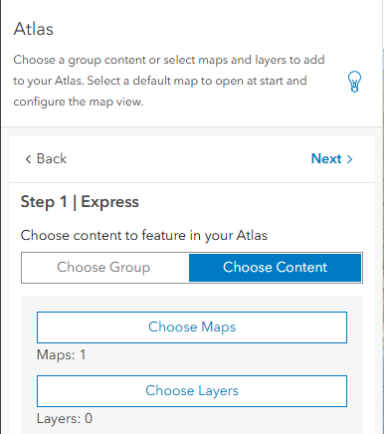
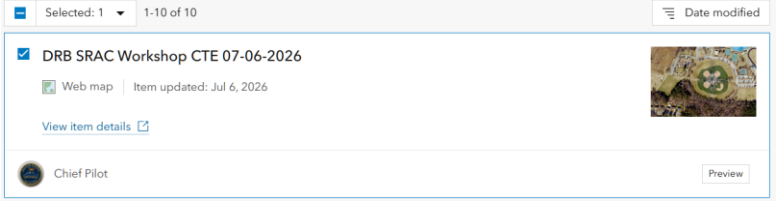
Step	Instruction	Visual Reference
22	Now, make sure your Map has been saved in the correct Folder. Go to the Home tab and select Content. The Content window should show the newly created Web map.	

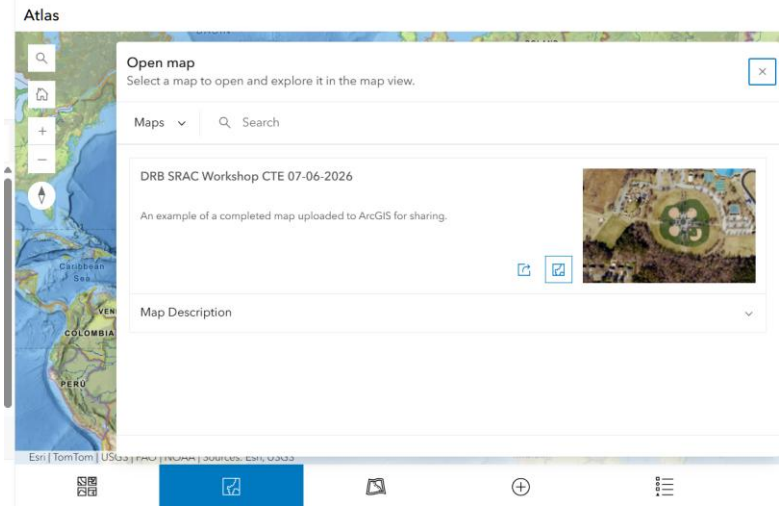
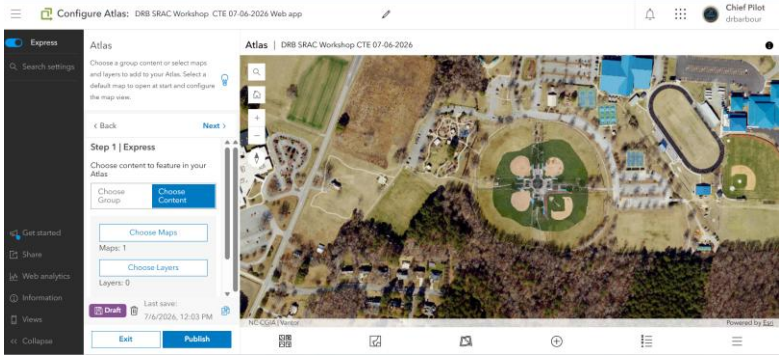
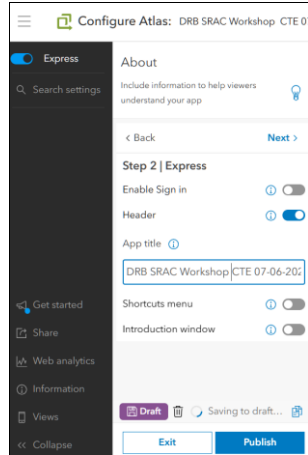
Part 5: Create an Interactive Web App

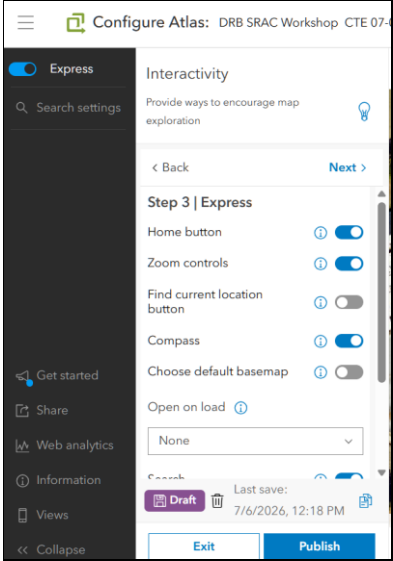
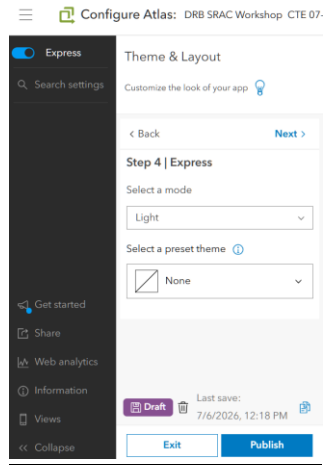
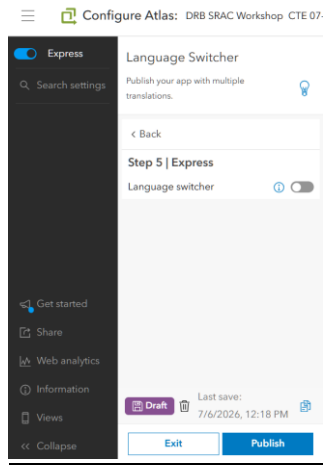
A. Use the following phases as the projected classroom workflow.

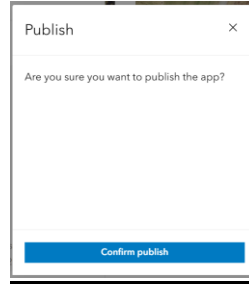
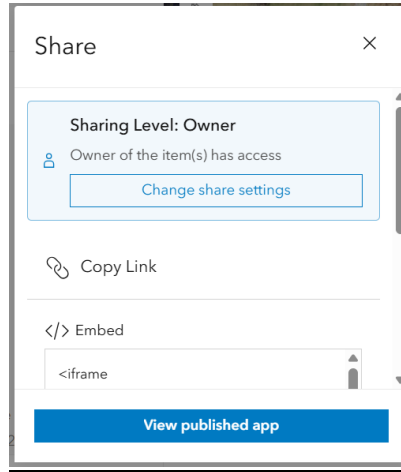
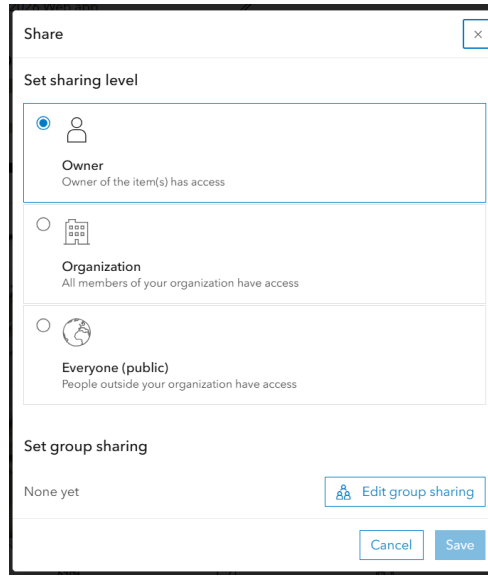
Step	Instruction	Visual Reference
1	Go to the Map that you are sharing from your ArcGIS Online folder. Click on the Map you are sharing.	
2	Click on Create App and select Instant Apps. Note you may have to click on the “show more” to find this option.	

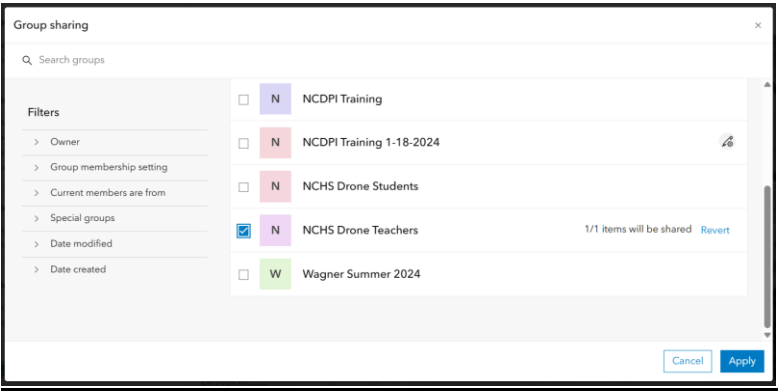
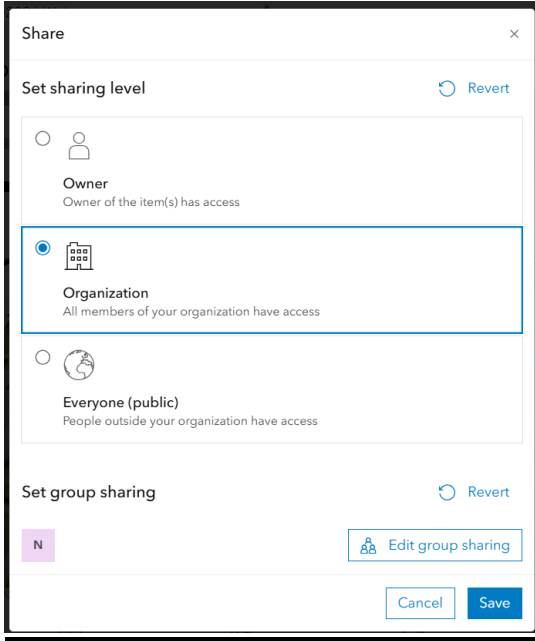
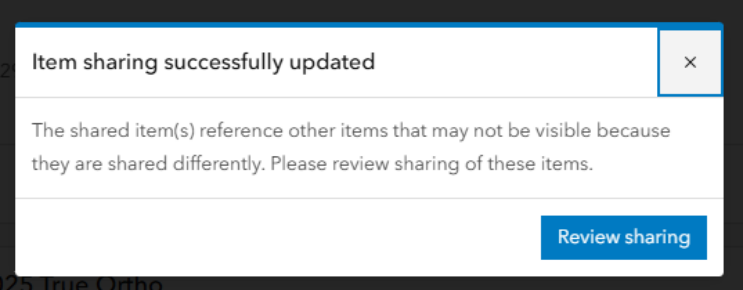
Step	Instruction	Visual Reference
3	A list of options will be displayed. To learn more about each option, click on the three dots at the top of each option ... which will then display the options to see more information about the app.	
4	Many apps can be chosen, but for example purposes, we will choose the Atlas app	
5	A pop-up window will open. The title should be good, but you might want to add “app” to make it more specific. Also, verify that it will be stored in the correct folder, which should be by default. Click “Create app” when ready	

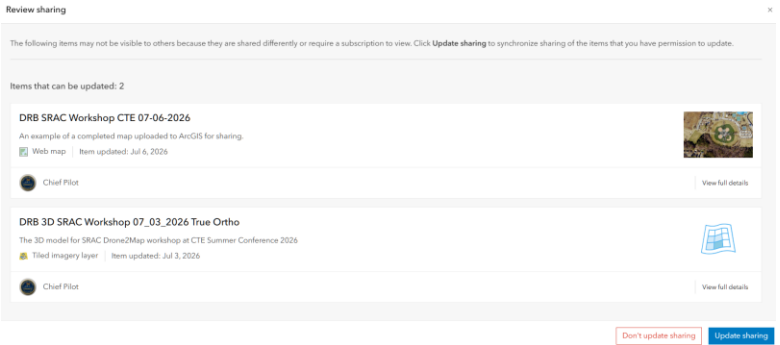
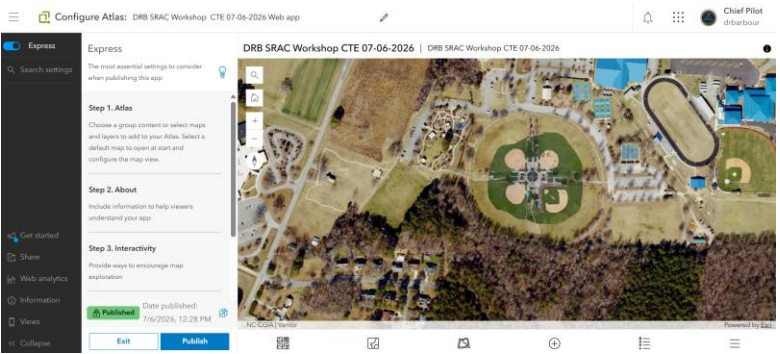
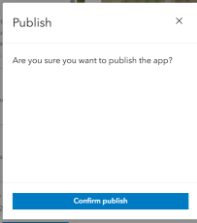
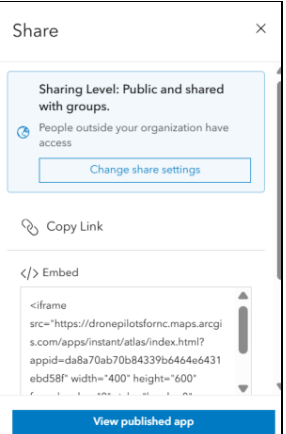
Step	Instruction	Visual Reference
6	The Configure Atlas setting will appear, allowing you to walk through this step-by-step.	
7	<u>Select Step 1:Atlas.</u> Click on the Choose Maps and then select the correct map.	
8	Click on the Web map previously shared and click Select .	

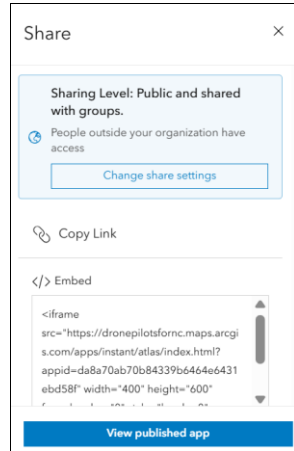
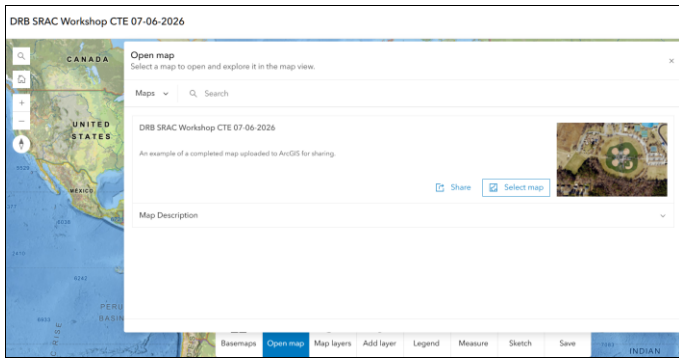
Step	Instruction	Visual Reference
9	Click on Open Map option at the bottom of the screen.  click on the image to select it	 
10	The selected Map should be displayed. If the map is correct, click the Next. If not, choose the correct maps by clicking the “Choose Maps” and select it again.	
11	<u>Step 2: About</u> Click the Header switch to on and add a Title to the Map and then click Next.	

Step	Instruction	Visual Reference
12	<u>Step 3: Interactivity</u> You can select whether you want to add Home button, Zoom controls, Compass, A default basemap or open onload option. Additionally, there are some feature you can load automatically when you open by using the drop down options included. Once you have completed then click Next.	
13	<u>Step 4: Theme and Layout</u> You can select whether you want the background to be dark or light. Select your option and then select Next.	
14	<u>Step 5: Language Switcher.</u> You can select a different language to be used if so desired. We will not use this option so simply ignore. And then click Publish.	

Step	Instruction	Visual Reference
15	You will be asked if you are sure you want to publish. Click Confirm You will be notified that your changes have been published.	
16	You will then be asked about Sharing Unless otherwise assigned, the Owner is the only one with access.	
17	To change access so others can see your app, under “Sharing Level: Owner,” click on “Change share settings.” The Share screen will display the Owner, Organization, or Everyone options. You can share using any of these options. You can also Set Group Sharing so everyone in a group you create can see and no one else.	

Step	Instruction	Visual Reference
18	If you select Group sharing, you can select a group you are a member of. If applicable, select that Group and click Apply.	
19	The Share menu will again show, but this time, it will show that sharing is on for a group, as we specified above. For our purposes, let us go ahead and also select “Organization” and click “Save.” The program will notify you it has successfully updated the sharing of this map.	
20	The program will notify you it has successfully updated the sharing of this map. Click on the Review sharing	

Step	Instruction	Visual Reference
21	Since some of these items are secure, the layers must share permission for everyone to access them. Click “Update.” You will be notified sharing has been updated.	
22	Finally, click “Publish” To make your app available.	
23	You will be asked if you are sure you want to publish. Click Confirm	
24	You will again be asked about Sharing. This time, the sharing will be shared with the Organization.	

Step	Instruction	Visual Reference
25	Click on the “Copy Link” option to put a copy of the web link on the clipboard for future use. This link can then be shared with anyone in to access your finished Map. Click “View Published app” to publish the Web App.	
26	You will return to the world map. But it will be on the Shared Website and not in ArcGIS.	
27	Click Open Map. You will see the maps you have access to.	
28	Click on the image and you will be taken to the map where the user can use numerous tools available to them.	

Student Practice Sequence

- Create a Rapid project and identify whether the imagery coverage is acceptable.
- Create a 2D Product project and explain the selected products before processing.
- Review outputs and describe whether the map result is complete, distorted, or missing expected coverage.
- If assigned, add or review map control points and explain why control improves accuracy.
- If permissions allow, share the map through ArcGIS Online and create an Instant App or equivalent web app.

Assessment Deliverables

Deliverable	Evidence	Teacher Check
Rapid check	Screenshot or short explanation of Rapid result.	Student can state whether imagery is suitable for longer processing.
2D product output	Processed map/output screenshot and selected settings.	Student selected the intended products and can explain processing choices.
Processing report	Report file or summary.	Student reviewed quality checks instead of only viewing the map.
Control point task	Control point screenshot or explanation, when assigned.	Student understands accuracy purpose and placement logic.
Shared map/app	Link or screenshot, when permissions allow.	Sharing level and layer permissions are appropriate.

Teaching Troubleshooting Guide

Issue	Likely Cause	Teacher Response
Student cannot sign in	Wrong organization, password, license, or role.	Verify the account in ArcGIS Online or ArcGIS Enterprise before troubleshooting Drone2Map.
Project will not create	Images missing GPS, wrong folder, cloud-sync location, or corrupted files.	Use the backup dataset and verify image count/location.
Processing is slow	Large dataset, high quality settings, limited RAM/CPU/GPU, or slow storage.	Use Rapid first, reduce dataset size, or process on a stronger teacher workstation.
Products missing	Wrong template or products not selected in processing options.	Return to processing options and verify queued outputs before processing.
Sharing fails	User lacks create-content or publishing privileges; layers have mismatched sharing levels.	Confirm role/privileges and update layer sharing when publishing apps.
Control points do not improve result	Too few points, poor distribution, or edge-only placement.	Use at least three points, five recommended, and distribute them across the project area.

Instructor Verification Before Teaching

- Teacher computer opens Drone2Map and sample project successfully.
- Student accounts can sign in and access assigned ArcGIS capabilities.
- Sample imagery is available locally and not inside a cloud-sync folder.
- Rapid workflow has been tested on lab hardware.
- ArcGIS Online sharing and Instant Apps workflow has been checked if assigned.
- Appendix A has been reviewed for current Esri/ArcGIS Online changes before delivery.

Appendix A: Current Esri and ArcGIS Online Updates

Reviewed June 26, 2026: Use this appendix before teaching because Drone2Map templates, ArcGIS Online sharing controls, and Instant Apps configuration panels can change between releases.

Topic	Current Teacher Guidance	Classroom Impact
Projects and templates	A project stores processing files, products, map parameters, image geolocations, flight path features, and a control feature class. Templates define the starting product workflow.	Have students create a new project for each exercise and keep files together in a local folder.
Available products	Templates can generate True Ortho, DSM, DTM, contours, shaded relief, point clouds, multispectral/thermal products, textured meshes, and Gaussian splats depending on license, imagery, and packages.	Teach Rapid and 2D Products as baseline; treat advanced products as extensions.
Processing options	Initial processing must run at least once. Later steps can run independently. General options show image count and gigapixels. Professional/Professional Plus user types have no project image-size limit; otherwise combined project imagery is limited to 300 gigapixels.	Use Rapid/High/Ultra choices to teach time versus detail.
Control points	At least three control points are required; five are recommended; 5 to 10 are usually enough. Points should be distributed through the project area, not only at edges.	Use control points to teach accuracy after basic processing is understood.
Processing report	Every project includes a processing report after initial processing and the report is available from Home > Processing > Report and in the project folder as PDF and HTML.	Require report review as part of the finished assignment.
Web map sharing	Sharing requires create-content privileges; publishing web layers requires publish privileges. ArcGIS Online sharing may consume service credits.	Confirm permissions before class.
ArcGIS Online June 2026	ArcGIS Online added the Review map tool and Map Viewer updates for symbols, sketch drawing, Arcade debugging, printing templates, forms, and time-series configuration.	Use current Map Viewer tools as quality-review discussion when available.

Appendix B: Drone2Map Products and Processing Reference

Product or Option	Use in Class	Teacher Note
Rapid template	Fast check of coverage and rough quality.	Use before longer processing tasks.
2D Products template	Main orthomosaic/surface map deliverable.	Best baseline for this course.
DSM / DTM / Contours	Elevation and terrain discussion.	Confirm selected outputs before processing.
Processing report	Quality review and documentation.	Make it an assessment artifact.
3D products / point clouds / meshes	Extension or advanced workflow.	Availability depends on license, imagery, hardware, and class time.
Oriented imagery	Advanced high-oblique imagery workflow.	Requires supported organization/portal capabilities.

Appendix C: Control Points and Accuracy Reference

- Use control points when project accuracy must be better than image GPS alone.
- Import control from CSV/text when surveyed control exists, or add points manually for demonstration.
- Use at least three control points for processing to consider them.
- Use five control points as a recommended minimum for teaching accuracy concepts.
- Place points throughout the project area, not just along the outside edge.
- Use more points for complex topography, but explain that more than 10 usually does not significantly improve most ordinary projects.

Appendix D: ArcGIS Online Sharing and Web App Reference

- Sharing a Drone2Map web map requires an ArcGIS organization or ArcGIS Enterprise portal account.
- The user must have create-content privileges; publishing web layers requires publish privileges.
- Sharing choices can include owner only, organization, groups, everyone, or combinations depending on privileges.
- If a web app is shared more broadly than its layers, viewers may not see the content until layer sharing is updated.
- Instant Apps templates and configuration panels change over time. Teach the workflow goal rather than memorizing a single screen layout.

Appendix E: Source List

- Esri Drone2Map project overview:** <https://doc.esri.com/en/arcgis-drone2map/latest/get-started/what-is-a-drone2map-project.html>
- Esri Drone2Map create a project:** <https://doc.esri.com/en/arcgis-drone2map/latest/help/create-a-new-project.html>
- Esri Drone2Map processing options:** <https://doc.esri.com/en/arcgis-drone2map/latest/help/processing-options.html>
- Esri Drone2Map manage control:** <https://doc.esri.com/en/arcgis-drone2map/latest/help/control.html>
- Esri Drone2Map processing report:** <https://doc.esri.com/en/arcgis-drone2map/latest/help/processing-report.html>
- Esri Drone2Map share a web map:** <https://doc.esri.com/en/arcgis-drone2map/latest/help/share-web-map.html>
- Esri Drone2Map share oriented imagery:** <https://doc.esri.com/en/arcgis-drone2map/latest/help/share-oriented-imagery.html>
- ArcGIS Online create content:** <https://doc.arcgis.com/en/arcgis-online/create-maps/create-maps-and-apps.htm>
- ArcGIS Online share content:** <https://doc.arcgis.com/en/arcgis-online/share-maps/share-maps-apps.htm>
- ArcGIS Online What's New:** <https://doc.arcgis.com/en/arcgis-online/reference/whats-new.htm>