
Part 4 of 4
Adding Map Elements and Exporting Maps for Publication

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Important Links


- This USGS website hosts planetary geologic maps for many targets in the Solar System. It’s a helpful resource for exploring current cartographic products that show geology, topography, global mosaics and more.

Learning Objectives

The purpose of this tutorial series is to introduce users to planetary geologic mapping using ArcGIS Pro. At the end of this tutorial, users should be able to:

- Create a layout to export the map at an appropriate scale
- Add standard cartographic map elements – scale bar, north arrow – to a geologic map
- Add a legend that illustrates map units
- Export the map for presentation or publication

This tutorial series is a free educational product created by the Mars Research Group at Tennessee Tech University. Please direct corrections or questions to jwolak@tntech.edu.
Part I: Setting up a Layout for Export

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Step 1. After the geologic units on the map have been finalized, it’s useful to add cartographic elements and export the map for publication.

First, open the *Insert* tab on the toolbar and select *New Layout*.

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Step 2. The window that opens will show many options for layouts. Choose a size that best fits your feature or the printer that you plan to use.
Step 3. Once a size is selected, a new window will be added to the working project named Layout. It will initially appear as a blank page with a blank Contents pane.

Step 4. To add a new name frame to the layout, click on the Insert tab. Choose Map Frame and then select the map you have created.
Step 5. The map should now show up on the Layout. Note that the map has been added at the current working scale. It will be centered in the layout you created.

In the example below, the mapped area is small within the layout. We will correct for this in the following steps.

Step 6. Recall that we selected an appropriate map scale in Tutorial 2 (see Part IV of Tutorial 2). For this example, the map scale was 1:18,000.

Now, we need to adjust the layout scale to match. Right-click on the map within the layout and choose Properties.

Step 8. In this pane, select the Display Options tab.
Step 9. Under the Constraints option, select Fixed Scale.

Step 10. Set the scale to be the publication scale for your map, 1:18,000 in this example.
Step 11. If the map frame does not encompass your whole map, select the corners and stretch the frame accordingly. (Note: If you set the layout size for a printer, be careful that you do not exceed your printing width!)

To reposition the map in the center of the map frame, right-click the map frame and select Activate.

Step 12. If you repositioned the map, turn activation off by clicking on the Activated Map Frame tab and selecting Close Activation.
Part II: Adding Cartographic Map Elements

Step 1. Once the page layout is complete, you can add other map elements like a scale bar and north arrow.

Click on the Insert tab. In the Map Surroundings group, click the drop-down arrow for Scale Bar.

Step 2. Choose a metric scale bar to display on your map. The example below uses the *Alternating Scale Bar 1 Metric*, but there are many other options.

Step 3. The scale bar will appear on your map. Select the scale bar to resize it. If the font needs to be adjusted, select Scale Bar > Format on the top toolbar and use the drop-down arrow to select an appropriate font.
Step 4. To add a north arrow, click the *Insert* tab. In the *Map Surroundings* group, click the drop-down arrow for *North Arrow*.

Select your north arrow and resize it on the map as needed.
Part III: Adding a Legend

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Step 1. In the Contents pane, click on the drop-down arrow next to the Map Frame. Select the layer that you would like to create a legend for. In this example, we will create a legend that corresponds to the feature class FanPolygons.

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Step 2. Click the Insert tab. In the Map Surroundings group, select Legend and draw the legend within the map frame.
Step 3. The legend will populate where you drew it on the map.

If the legend appears very small, resize it and increase the font size by using the Legend > Format tab.

Step 4. Select the legend in the map window to bring up the Format Legend pane. On the Options tab, click Show Properties under Legend Items.
Step 5. Use the Format Legend Item window to select what you would like displayed in the legend. In the example below, the Group Layer Name, Layer Name, and Headings are turned off.

Step 6. If you are satisfied with the appearance of the legend, right-click on the Legend layer in the Contents pane and select Convert to Graphics.
Step 7. In the Contents pane, click the drop-down arrow to show features in the Legend. Turn off the underlying patch and label that correspond to the <all other values> field.

Step 8. Check to verify that your map has a scale bar, north arrow and legend. The map is now ready for export.
Part IV: Exporting a map for publication

Step 1. Once you have all essential map elements, you are ready to export the map for publication or presentation.

First, click the *Share* tab. In the *Export* group, select *Layout*.

Step 2. A new window will open. Browse to the folder where you would like to save your map.

Name your map file and what type of image file you would like to export (PNG, TIFF, etc.).

Set the Resolution (DPI) to 300.

Click Export. If the project is large, the export process may take a few minutes.