

# GIS Tips & Tricks

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## When is Sharing not Sharing?

If you have been following this column, you know that I often draw my tips and tricks from student questions in my GIS class. This month's tips originate in what I thought would be a simple assignment at the beginning of the semester.

### BACKGROUND

My class is comprised typically of students from various backgrounds, academic-level (Sophomores through Seniors although an occasion Freshman sneaks in), and disciplines, some technical (think marine science or environmental science), some from the social sciences (think sociology or history) and some from the business school (think business management.) Most, are familiar with their personal computers, but, that computer happens to be some flavor of a MacBook running some version of MacOS X. The “gottcha” is that in the GIS laboratory, the university is running Esri-ArcGIS Pro (v2.9) on Windows 10x64 computers. So, what would appear to be a simple task for a Windows 10x64 user, turns out to be a pretty complex assignment for most of my beginning GIS students.

### THE ASSIGNMENT

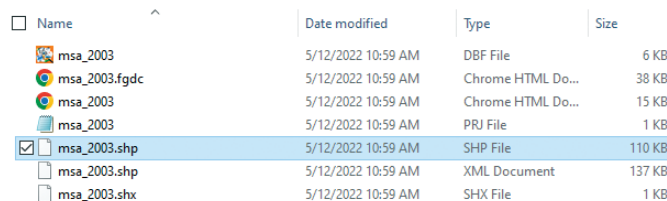
At your choice of GIS-data rich websites (I provided six URLs to websites in the state), download 3 (or more) datasets, add each to a Map Frame, symbolize each in whatever makes sense to you, construct a layer package, and upload that package the class DropBox folder (all students have access to class DropBox folders.)

After being deluged by student e-mails asking for help, here are my tips:

**Tip #1** — When downloading GIS data files, the most common data exchange format is an Esri Shapefile (we actually discuss this in class and the need for four computer files.) The files; a .shp, .shx, .dbf, .prj, etc. are usually archived into a single ZIPped (.zip) file for downloading. The Esri ArcGIS Pro file browser recognizes the .zip format BUT when attempting to open a ZIPped file archive, it appears empty to the Esri file browser. The ZIPped archive must be unzipped using the Windows Operating System (or a dedicated, third-party software program) before ArcGIS can read the files and construct a layer. Of course, unZIPping a file is as easy as clicking on the file and selecting the “Extract All” function on the Windows 10 ribbon. Functionality not commonly used in the MacOS environment.

**Tip#2**—Adding a shapefile to a Map Frame is as easy as selecting the .shp file from a Windows file browser (left-clicking on it) and dragging (holding down the left mouse-button) the selected file onto the Map Frame.

However, quickly looking at the Windows File Browser will show two .shp files as shown in Figure 1. Careful inspection reveals that one is a SHP file while the other is an XML Document. Selecting and dragging the XML Document file (immediately below the SHP file in Figure 1) onto a Map Frame will result in an “Add data” error (Figure 2.)



Name	Date modified	Type	Size
msa_2003	5/12/2022 10:59 AM	DBF File	6 KB
msa_2003.fgdc	5/12/2022 10:59 AM	Chrome HTML Do...	38 KB
msa_2003	5/12/2022 10:59 AM	Chrome HTML Do...	15 KB
msa_2003	5/12/2022 10:59 AM	PRJ File	1 KB
msa_2003.shp	5/12/2022 10:59 AM	SHP File	110 KB
msa_2003.shp	5/12/2022 10:59 AM	XML Document	137 KB
msa_2003.shx	5/12/2022 10:59 AM	SHX File	1 KB

Figure 1. The SHP file for this GIS dataset is highlighted. It can be selected and dragged onto an ArcGIS Pro Map Frame. Dragging the XML Document file, also with the .shp extension, as shown immediately below the highlighted file, onto the Map Frame will result in an error (Figure 2.)

Alternatively, you can attach to a folder in either Catalog or the Map Frame (Insert | Add Folder) and navigate through the ArcGIS Pro file browser interface. Again, navigation through a file structure is not common in the MacOS environment. (Note: If the feature classes are already contained in a GeoDatabase, then just dragging the feature class onto the Map Frame adds it to the Contents pane.)

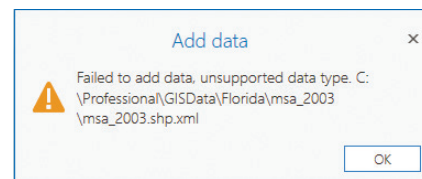


Figure 2. This error will result when the XML Document file is selected and dragged onto an ArcGIS Pro Map Frame.

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**TIP #3** — Creating a Group is as easy as selecting the all the desired layers (holding the <CTRL> down and left clicking on the layers) in the Contents Pane and then right-clicking and selecting “Group” from the options menu (Figure 3.)

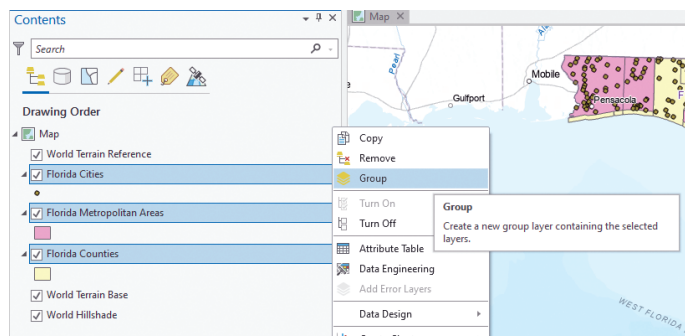


Figure 3. Selecting multiple layers in the Contents Pane and constructing a Group Layer.

Alternatively, Selecting the Map in the Contents Frame, and right-clicking activates the options menu where you can select “New Group Layer”. In either case, name the New Group Layer and drag the layers into the group as needed. Another function not found in the MacOS environment.

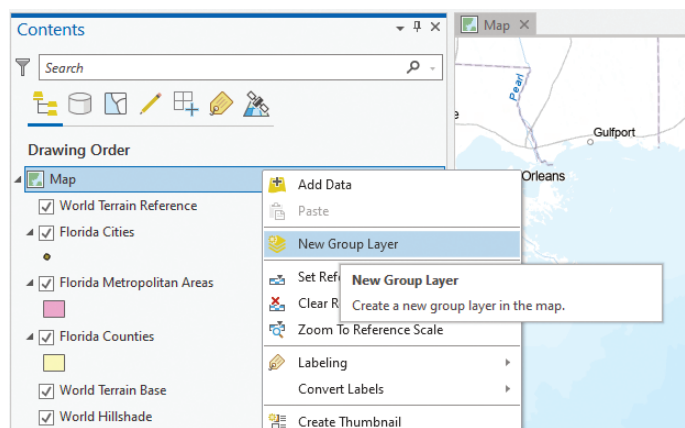


Figure 4. Constructing an empty Group Layer from the Map options.

**TIP #4** — In the Esri-world, making (and saving) a Layer Package is called “Sharing”. This was a source of endless confusion, as I told the students to make, save the package, and send it to our DropBox for me to review. Most were trying to “save” something, but they did not know what (or how) to save.

Right-clicking on the Group Layer presents several options including the “Share As Layer Package” as in Figure 5.

Selecting the “Share As a Layer Package” will start the “Sharing As A Layer Package” wizard (Figure 6). In the Start Packaging section, make sure to select the “Save package to file” radio button; then, in the Item Details | Name field use the folder to open the file browser and navigate to a writable folder to specify an output file path and name. To prevent errors and warnings, also include a Summary and

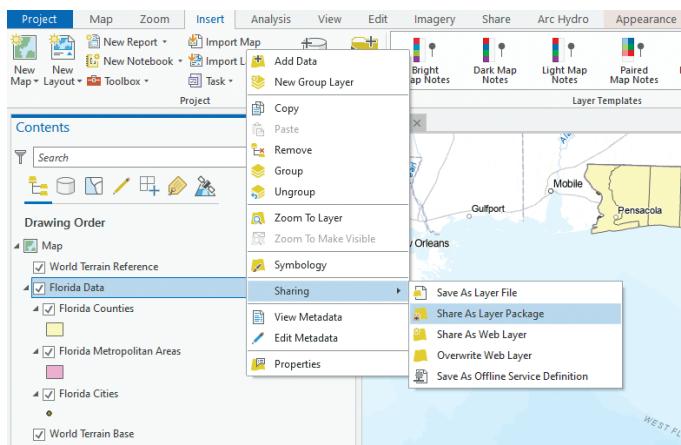


Figure 5. The options menu for a Group Layer shows the “Sharing” options. There is no “save” choice on the options menu.

some Tags. In the Finish Packaging section, use the “Analyze” button to check the file before using the “Package” button to SHARE (=Save) the Layer Package. Of course, if there are any errors, you will need to fix them before you can Package the Layer Package.

Once everything is error-free, it may take a few moments to write the package and finally the Layer Package (Figure 7) will be ready for others to use. This file can be sent to other ArcGIS Pro users for inclusion in their maps. It contains the GIS data, as well as, assigned symbology.

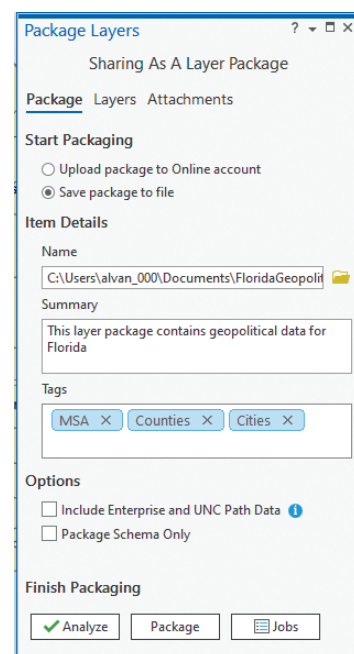


Figure 6. The Package Layers | Sharing as a Layer Package wizard. If wanting to “save” the Layer Package, it is necessary to activate the “Save Package to File” radio button.



Figure 7. A Layer Package as viewed with the Windows file browser.

For those of you who use QGIS, similar functionality can be achieved using the following workflow:

1. Symbolize the layers in the QGIS Layers Pane,
2. Select the desired layers (left-click while holding down the <CTRL> Key),
3. Right-click in the Layers Pane to activate the options and choose “Group Selected” as in Figure 8,
4. Rename the Group Layer,
5. Select and Export the Group Layer | Save as Layer Definition File. This will start a file browser; browse to a writable directory and write the .qlr file.

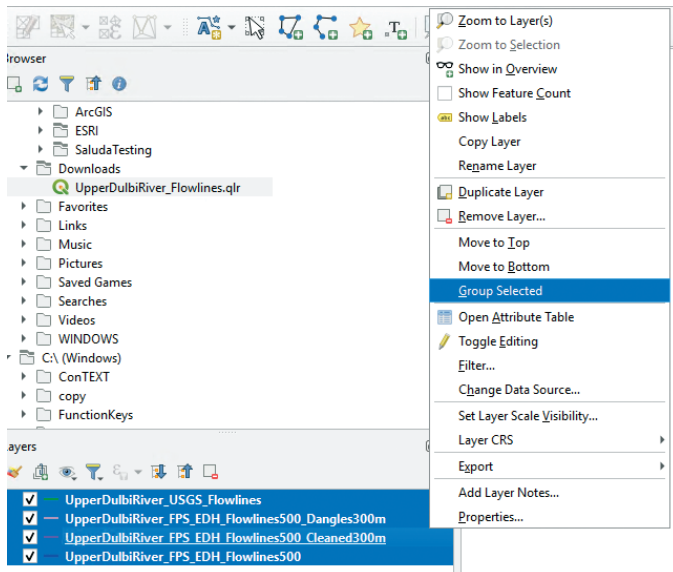


Figure 8. Selecting four layers in the QGIS Layer Pane for grouping.

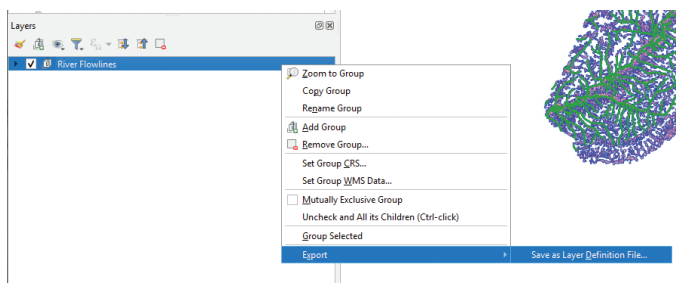


Figure 9. Exporting (saving) the Grouped Layers as a Layer Definition File in QGIS.

As with the Esri-derived layer package (.lpx) file, this QGIS-derived layer package (.qlr) file contains the geometry, symbology and can be ported into another QGIS map frame. It is important to note that these files are NOT interchangeable; ArcGIS Pro cannot draw the QGIS layer package and vice versa.

Send your questions, comments, and tips to [GISTT@ASPRS.org](mailto:GISTT@ASPRS.org).

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# ASPRS GeoByte

## Allen Coral Atlas: A New Technology for Coral Reef Conservation

September 23<sup>rd</sup> at 12 Noon ET

**Presenter: Brianna Bambic, Arizona State University**

Coral reef managers and decision makers at multiple scales need information, in near real time, to react to the increasing threats facing reefs. However, more than three quarters of the world's coral reefs have never been mapped and lack monitoring. To address this knowledge gap and to support, inform, and inspire critical actions to manage and protect coral reefs, the Allen Coral Atlas combines high resolution satellite imagery, machine learning, and field data to produce globally consistent benthic and geomorphic maps and monitoring systems of the world's coral reefs. The initiative's goal is to help stakeholders ranging from local communities to regional and national governments reach their conservation targets and improve their coastal resilience. The multi-disciplinary partnership is led by Arizona State University, in collaboration with Planet, University of Queensland, and the Coral Reef Alliance.

Baseline maps have multiple uses, including: sustainable coastal development, site selection of marine protected areas, planning of restoration activities, and reef fisheries management. In this presentation, we will demonstrate how the Allen Coral Atlas supports data-driven management, conservation, and restoration of coral reefs at local, national, regional, and global scales. We have developed online courses to facilitate increased use and impact of the Atlas, and are collaborating with networks of individuals and institutions who can be alerted when changes are detected (e.g., large-scale bleaching or sedimentation events).

Brianna Bambic leads the Allen Coral Atlas Field Engagement team at the Arizona State University. With a coral reef biology and resource management background, she was an Independent Researcher for 7 years that culminated in a virtual reality experience of Half Moon Caye National Monument, Belize with a National Geographic Explorer Grant, helping communicate science to the public. Brianna received her MS in natural resource management from the University of Akureyri, Iceland in 2019. Her expertise includes coastal and marine management, global science communication, and developing capacity around remote sensing and mapping. With countless hours underwater and >700 logged dives, she loves spending time exploring the ocean..

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