Science Publishing Network

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General Guidelines for Authors Preparing Graphics for Publishing

This document provides authors with guidelines and information on how to prepare graphics for submission to a USGS Publishing Service Center (PSC). By following these guidelines authors will be able to provide file types that make the reports publishing process more timely and cost effective. Additional links have been provided to more detailed instructions.

Guidelines are provided for some of the most commonly used applications within the USGS:

ArcGIS
Excel
PowerPoint
Photographs
SigmaPlot
Video

General Graphic File Format Information

Please follow these general guidelines when creating graphic files.

Raster Data

- Raster or bit map use should be limited to photographs or background imagery (shaded relief, satellite imagery, aerial photography, etc.).
- Image provided should be in full color at 300 dpi resolution.
- The original raster file needs to be provided, as any formatting done has the possibility of degrading the quality of the image.
- The raster file should not be placed in Adobe Illustrator, MS Word, or PowerPoint.
- If information is overlaid on the image, provide a separate PDF file as an example along with the original image files.
- Preferred file types are TIFF, JPEG, Photoshop, and PNG.

Vector Data

- Vector data should be provided for maps, graphs, data points, contours lines, polygons, etc.
- Vector files should be provided as solid lines, with no pattern applied.
- Polygons should be provided as solid color polygons with no pattern applied.
- Text strings should not be applied to a path or auto-positioned by the application.
- If there is a need to differentiate between several lines or polygons, solid colors can be used.
- Preferred file types are Adobe Illustrator, Postscript, Encapsulated Postscript, and PDF.

File Formats for Submission of Graphics to the SPN

Application-Specific Information

ArcGIS

General

The export of Adobe Illustrator (AI) files from ArcMap is a two step process. We need to export the vector data separate from any raster data.

- Set the resolution to 5,000 dpi when exporting vector data.
- Set the resolution to 300 dpi when exporting raster data.
- Remove all transparency effects from any of the layers.

Layout

- Page-size figures: Use page-size ArcGIS MXD templates.
  - Using Page-Size Templates in ArcMap (PDF, 2.14 MB)
  - MXD Templates for ArcMap (ZIP, 154 KB)
- Plates: Final, publication-ready plates are prepared by the SPN; however, templates in AI and MS Word are available for authors to draft and visualize their map sheet layout and, when applicable, the accompanying pamphlet.
- Add base map and data. For multiple figures with the same layout, make only one Arc MXD file, group data layers by figure number.

Base Map

- Add streams/water bodies, county/State and other administrative boundaries, city points, roads optional, place names (mountains, valleys, etc.)
- Symbolize: keep styles simple, complex ones are difficult to format. Can make one MXD copy with complex symbols as an example for the SPN illustrator.
- Point symbols: simple shapes (circle, square, etc.), set either fill or outline only, not both.
- Lines: solid colors, simple line style, no dashing, no multiple layers.
- Polygons: solid colors, no patterns.
- Labels: simple text, centered over the feature.

- All these symbols and text will be finalized by the SPN to publishing standards.

Map Features Required

- Explanation (also refered to as "legend"): all data symbols, except base map, must be described in publication-level detail.
- Latitude and longitude as grid (graticule), not tics. (Automatically added in template; adjust interval to 3-5 lines per side minimum).
- Scale: At least one of miles, kilometers, feet, or meters. (Automatically added as miles/kilometers in template, adjust as needed).
- Coordinate reference system: A note stating the projection and horizontal datum, and vertical datum for elevation data. (Automatic in template.)
- Plates: Add title, authors, year, citation if known, cooperators.

Export

- All data layer transparency effects are set to 0% (under Properties>Display) including grouped layers.
- Vector export resolution is 5,000 dpi (dots per inch). This removes jaggies in objects; it does not increase file size. (But, any transparency remaining in the file will make the file enormous. See first bullet)
- Export raster and vector separately.

Raster Layer Export (Grid, Hillshade, Aerial Photography, Photographs, Etc.)

- Turn off (make non-visible) all vector material that overlies the raster layer, including lat-long grid.
- Make a separate export for each raster layer.
- Settings: TIF format, 300-dpi, CMYK color model preferred, except for grayscale sources such as a hillshade.

Vector Layer Export (Points, Lines, Polygons, Labels/Annotation, Drawn Objects)

- Turn off (make non-visible) all raster layers, remove all transparencies (set display to 0%)
- Settings: AI format, 5,000-dpi, CMYK color model preferred

SPN Figure Package

- Name each file by its figure number and content.
- Add comments, suggestions, examples to the package of files for the SPN illustrator.
- Save a PDF version of the layout if you want to write or mark-up comments for the SPN illustrator.

Providing a Map Package

Some PSCs have the capability to handle map packages created in ArcMap. In such cases, providing map packages in addition to AI or PDF exports would allow the PSC to select the most efficient export process.

- Create a Map Package for Exporting an ArcMap MXD and Data (PDF, 442 KB)

Additional Information

- ArcGIS Map Export Guide
- GIS Users Quick Guide (PDF, 146 KB)
- Design and Preparation of ArcMap Files for Report Maps (PDF, 197 KB)
- Using the Bookmark feature in ArcMap (PDF, 229 KB)
- Grouping Layers in ArcMap (PDF, 197 KB)

Back to the top

Excel

General Tips

The best file type from Excel for publishing production is a copy of your Excel file with your initials and the date in the filename. A PDF file is acceptable if USGS Visual Identity System fonts are embedded and they follow the recommendations on this tip sheet.

- Create a separate worksheet for the graph in Excel.
- Symbols and colors should be defined in the explanation.
- Use solid lines only and vary line color as needed to differentiate data. Dashed lines break apart into line segments when exported to AI.
- Use the USGS Visual Identity Sytem fonts Univers 57 Condensed 8- or 9-point type.
- Angled type at 45° breaks apart when exported to other software. Type can be either 0° or 90°. You can request for the type to be angled differently after it is exported to AI.
- Graphs that will be displayed as a group should maintain the same width and height.
- Do not use special effects such as 3-D, drop shadows, or embellishments found in the Chart Tools>Design menu. They create problems when the file is exported to other software and often makes the file uneditable.
- Spell out units and abbreviations on the axis labels. There are exceptions, in the explanations: <, >, NGVD 28, and °Celsius, for example, can be used in explanations. Check with the editor.
- Use "," before the units on the axes labels and in explanations; for example: Flow, in meters per second.

Axis-Labeling Tips (Author's Guide to Standards for U.S. Geological Survey Page-Size Illustrations p.16)

- Use commas in numbers greater than 999. If they can not be added because of limitations in the software, the SPN illustrator will add it.
- Use numbers instead of scientific notation.
- Numbers less than 1 should consist of a zero and a decimal point.
- Numbers greater than or equal to 1 should have a decimal point and trailing zero only where significant figures dictate.
- Check graphs that will be displayed as a group to make sure significant figures are used consistently.
- Axis minimums and maximums on the primary and secondary axes end at a full numbered increment tick. When it is impractical because of size limitations, the grid can extend to the next half increment.
- Check the order of magnitude for values on axes: for example, whether they should be changed from metric tons to thousand metric tons.
- Numeric intervals on axes should be simple multiples; avoid odd intervals such as multiples of 3s, 7s, or other similar numbers. Multiples of 1, 2, and 5 are easier to interpret.

Back to the top

PowerPoint

Although we do not recommend using PowerPoint to create figures that will be used in publishing, graphics created in PowerPoint can be provided to the PSC as PowerPoint files.

- Provide the PowerPoint file to the PSC.
- If photographs or other graphic items were used in the creation of the PowerPoint slide, provide the original files (JPG, TIFF, EMF, AI, etc.).

Back to the top

Photographs

- Cameras with a larger sensor provide better quality pictures.
- Familiarize yourself with the scene controls.
- Steady yourself or use a tripod or other stable camera base when shooting at low speeds.

Tip Sheet, Basic Introduction to Digital Photography

Back to the top

SigmaPlot

- Export File option EPS with "Convert to Postscript fonts" checkbox on.
- The export from SigmaPlot can be accessed by either the Export option under File on the menu, or by right-clicking on the graph. There are two acceptable choices, JPG (preferable) or TIF.
- There are settings for DPI up to 600. 300 minimum is preferable, but 240 minimum is fine also.
- Under Bit Depth choose either 24-bit for color graphs or Grayscale for black/white.

Note from an author: "This may not be relevant but when exporting Excel->AI we found that fonts mattered and in some cases corrupted the file. When I used Arial throughout the graphs they were fine."

Back to the top

Video

Typical Issues

Videos shot in the field often appear jerky, out-of-focus, or not properly exposed.

Process

- **Compose**
  - Choose proper aspect ratio (4:3, 1:1, 16:9 are most common) for the venue.
  - Frame up the shot on the main subject (avoid distracting items in the frame) but don't put subject dead center (may appear better if the subject is set a little up or down, or to the left or to the right).
  - Use 9-panel grid (available on most cameras) or imagine tic-tack-toe grid in your mind.
  - Do not pan, unless anti-shake is turned off, otherwise the take will be jerky.
  - Do not use "digital zoom" (which alters sampling of sensor).
- **Set Focus and Exposure**
  Camera may have only one reticle (for both focus and exposure) or two reticles (one for focus point, one for exposure).
  - Move reticle(s) to desired point and lock AF and AE.
  - Avoid shooting in the direction of the sun.
  - In shady sun-dappled areas, it may help to bounce light off a sheet of paper or a windshield sun reflector, to bring light into the shade.
  - For indoors shooting (such as in a darkened room during a presentation) put a solo light on the person who is doing the speaking.
- **Steady the Camera**
  - It is best to use a tripod or a monopod.
  - If doing hand-held, bring arms close to body and do not breathe during the shot.
  - Steady yourself by leaning against a tree or wall when possible, or placing camera against or on top of something solid.
  - Volume control on Apple earbuds wire can be used as a shutter release.
- **Save or Send**
  - Record to SD card or in-camera (flash or disk) memory.
  - Short video clips can sometimes be emailed by WiFi or cell phone methods.

Intended Result

- Has a pleasing look.
- Avoided lens flare and sensor overloading.
- Is in focus and properly exposed.
- Appears firm and steady.
- Saved to a format that is useful in post processing.

Basics of Planning a Video Product

Back to the top

Contact your local Publishing Service Center (addresses | PSC location map) for more information.

U.S. Geological Survey Intranet
URL: http://internal.usgs.gov/publishing/toolboxes/generalguidegraphics.html
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