You don’t have to accept the defaults in GlobalMapper

The first thing that I tell my beginning GIS students is, “Never accept the defaults”. GIS software programs like ArcMap, QGIS, and GlobalMapper randomly choose colors, line weights, etc. when a new layer is added to a map. While the software’s defaults are easy enough to modify for vector layers, changing the default color ramps for raster layers usually requires multiple steps.

Rasters are most valuable at helping us visualize things that vary continually through space, like temperature, rainfall, soil moisture, and elevation. These types of variables frequently are associated with “standard” color ramps. For example, we associate areas of high temperatures with reds and oranges, while lower temperatures are usually depicted in blues and greens. Likewise, we generally associate lower elevations with blues and greens, while higher elevations are symbolized with browns and whites as in the “standard” US Geological Survey topographic maps. So, when a raster is loaded into mapping software, the program tries to assign the most likely color ramp. For example, when an elevation raster is loaded into GlobalMapper, the color ramp will generally default to a blue (= lower elevations) to reds (=higher elevations). In ArcGIS, either Desktop or Pro, the ramp defaults to a gray-scale for all non-image rasters.

One workflow used at Dewberry to review lidar surfaces for poor ground filtering, noise, and other anomalies, is to construct an elevation raster for manual inspection. In Brittany’s work, as assistant quality control manager, she inspects these lidar-derived rasters using GlobalMapper. The “default” color ramp works well when there is considerable elevation variation in the surface, but when inspecting relatively flat areas, especially with low-lying vegetation, the slight differences in color are easily overlooked. So, here is her tip for constructing a custom color ramp to help visualize small differences in elevation.

In Figure 1, an elevation raster was loaded into GlobalMapper. The software displayed the raster in the standard blue to red elevation color ramp, but because the area of interest shown in the figure is generally so flat (this is a portion of a Digital Elevation Model in Florida), there is not much differentiation in color over almost a square mile of this elevation raster. So, to understand this area better, she needed to adjust the color ramp (Remember: Never accept the defaults.)

As with most GIS software, there are multiple ways to change the symbology/color ramp and other display parameters (ex., the units, transparency, etc.), so while this is not the only way, here is a simple, six-step, workflow in GlobalMapper:

**Step 1 —**
Right-clicking on the elevation legend as in Figure 2 starts the dialog box that allows you to change the units displaying the data in the two lower lines (Metric Units or Statute Units), and by left-clicking “Elevation Legend Options...” starts the “Configuration – Elevation Legend” (Figure 3) dialog.

![Figure 1. GlobalMapper default color ramp for a Digital Elevation Model in Florida.](image1)

![Figure 2. “Elevation Legend Options...” dialog box. (Note: this is one place where you can change between metric and imperial units.)](image2)
**Step 2** — Once the “Configure - Elevation Legend” dialog opens, use the options on the white portion of the dialog box to select “Display Options” and then the radio button to manipulate the “Elevation Legend” (gray side). There are many style changes that can be made! In this example, choose “Shader Options” under “Point Styles”. (Note: the top line of gray side of this dialog box provides another opportunity to change the legend units.)

**Step 3** — Choosing <new> at the bottom of the dialog box (Figure 4) will start the “Custom Shader” dialog. Enter a name for the new custom shader. In this case, we entered “MyCustomShader”. This shader file will be saved for future use.

**Step 4** — From the “Custom Shader” dialog, the new filename will autopopulate (1), then select <Initialize from Other Shader> (2) and then use the dropdown to select “Global Shader” (3) as in Fig 5. Press <OK> to complete this step.

**Step 5** — The custom shader will load the Global Shader color ramp which you will customize by selecting each color, then the <Change Color> button and select a color from the color palette, and then the <Change Value> button and enter the elevation value to associate with the chosen color. The Custom Shader defaults as Figure 6, so select and change each color and value until the shader appears as Figure 7. You will need to add values by entering the value (in the Height/Slope box) and then pressing the <Add> button to select a color.

Back on the Configuration – Shader Options dialog, press <Apply> and <OK> to complete this step.

**Step 6** — To apply the new “MyCustomShader”, right-click on the legend to return to the “Configuration – Elevation Legend” dialog, select the “Shader Options” (Figure 8.) and use the dropdown selector to find “MyCustomShader”. Press <Apply> and <OK> to complete this step.

![Figure 3](image3.png) The “Configuration – Elevation Legend” dialog showing where to click to customize the color ramp.

![Figure 4](image4.png) The “Configuration – Custom Shader” dialog box.

![Figure 5](image5.png) Dialog to construct your Custom Shader.

![Figure 6](image6.png) Starting configuration for Custom Shader.

![Figure 7](image7.png) Ending configuration for Custom Shader.

![Figure 8](image8.png) Selecting the custom display ramp on the Shader Options menu.
Finally, you may need to set the Minimum and Maximum Elevation Ranges for display on the Display Options menu (Figure 9).

And... Voila, the vegetation (yellow) now stands out from the ground (blues)...

Figure 9. Setting Minimum and Maximum Elevation Ranges.

Send your questions, comments, and tips to GISTT@asprs.org.

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Figure 10. Custom color ramp applied to the Digital Elevation Model in Figure 1.

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