Create a GIS Backdrop Image

Remote Sensing For Ranger Districts Using Image Analysis For ArcGIS

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⚠️ *While the Raster to MrSID compression technique is the best image compression approach in ArcGIS, it can only compress images with file sizes less than 50 MB. However, there are several other file-reducing options available for images with file sizes greater than 50 MB. They include:*

- ***Subset Bands using Image Analysis***. *You can use the subset utility in Image Analysis for ArcGIS to remove certain bands from a multispectral GIS Backdrop Image.*

- ***MrSID Compression using Imagine***. *Use MrSID compression in Imagine's Import utility. There is no file size limit.*

- ***JPEG2000 Compression using Imagine***. *Use JPEG2000 compression in Imagine's Import utility. There is no file size limit.*

- ***RGB Cluster using Imagine***. *Use the RGB Cluster function in Imagine. Visit http://fsweb.geotraining.fs.fed.us/tutorials/10things/pdfs/pdf17.pdf for instructions to perform an RGB Cluster.*

💡 *Good starting compression ratio settings are 20 (as in 20:1) for multispectral and 10 (as in 10:1) for single-band images. The higher the compression ratio, the smaller the output image file size will be, but it may reduce image quality. Thus, experiment with the compression ratio to strike a balance between file size and image quality.*

Objective
- To create a backdrop image for a GIS.

Required Data
- A raster image (e.g., a Landsat TM image or DOQ)

Introduction and Overview of Procedure Steps
A GIS Backdrop Image is accurately georeferenced imagery used as a backdrop for your GIS. A benefit of a GIS Backdrop Image is that it contains a small file size (although it is not a requirement). There are several methods to reduce the file size of your backdrop image without significant cost to the appearance of the image. Some common file size-reducing methods include compression, band removal (only for multispectral images), and advanced classification techniques. The goal of this tutorial is to describe how to create a GIS Backdrop Image that contains a much smaller file size than its original image using a MrSID compression technique. The major steps are:
1. Compress Your GIS Backdrop Image Using the Raster to MrSID Function
2. Inspect and Display Your Compressed GIS Backdrop Image

I. Compress Your GIS Backdrop Image Using the Raster to MrSID Function
1. Launch **ArcCatalog** from the Start menu (**Start | Programs | ArcGIS | ArcCatalog**).
2. Navigate to and click the directory that contains your uncompressed GIS Backdrop Image in the Catalog Tree. Ensure that the contents of the folder are displayed in the **Contents** tab.
3. Right-click your GIS Backdrop Image and select **Export | Raster to MrSID**.
4. Set the output bands appropriately in the **Specify the Band Order** section (Note: This is only if your image is multispectral. If your image is a single band, skip ahead to step 13).
    5. To display your output image in **Natural Color**, set:
        6. *Red*: to the Red Band (commonly Band 3)
        7. *Green*: to the Green Band (commonly Band 2)
        8. *Blue*: to the Blue Band (commonly Band 1), or...
    9. To display your output image in **Color Infrared**, set:
        10. *Red*: to the Near-Infrared Band (commonly Band 4)
        11. *Green*: to the Red Band (commonly Band 3)
        12. *Blue*: to the Green Band (commonly Band 2)

💡 *Natural color and color infrared are two of the most common band combinations for displaying multispectral raster images. However, feel free to experiment with other band combinations.*

13. Set an appropriate **Compression Ratio** (see note to left).
14. Click the **Yellow Folder** button associated with the **Output Raster** field.
15. Navigate to an appropriate **Output Directory**.
16. Type in your output file name in the **Name** field.

17. Click the **Save** button.
18. Click **OK**. This will start the image compression...

II. Inspect and Display Your Compressed GIS Backdrop Image

1. Launch **ArcMap** from the Start menu (**Start | Programs | ArcGIS | ArcMap**).
2. Ensure **A new empty map** is enabled and click **OK**.
3. Navigate to and click your **compressed GIS Backdrop Image**.
4. Click **Add**. Your compressed GIS Backdrop Image should display in the **Data View**.
5. Most likely, your image appears dark. To fix this, you need to apply a stretch to your image (see note to left). To do this:

Stretching your image is not necessary for a single-band image, but significantly improves the display of a multispectral image.

   6. Double-click your GIS Backdrop Image in the **Table of Contents**.
   7. Click the **Symbology** tab.
   8. Select a Stretch Type from **Type** dropdown menu (the **Standard Deviations** stretch is most common).
   9. Click **Apply**, and then **OK**. Your compressed GIS Backdrop Image should display similar to its original, uncompressed version.
10. Toggle between the images in ArcMap. Do you see differences? There should be some image quality loss in the compressed image.
11. Right-click the **Start** menu and select **Explore** from the Windows Taskbar to open Windows Explorer.
12. Navigate to your original and compressed GIS Backdrop Images.
13. Document the files sizes of the original and compressed images. How does the file size of your compressed image compare to that of your original image? The compressed image file size should be much smaller.
14. Continue to experiment with different compression ratios until you have the right balance between image file size and quality.
15. The end.