Image Viewing Tools & Techniques

Using the BARC for BAER Support

RSAC

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Add Data

Zoom-In

Zoom-Out

Full Extent

Pan

*These graphics illustrate the more commonly used buttons (tools) for viewing and exploring imagery in ArcMap. They include buttons of **ArcMap's Standard** toolbar (above) and the **Tools** toolbar (below).*
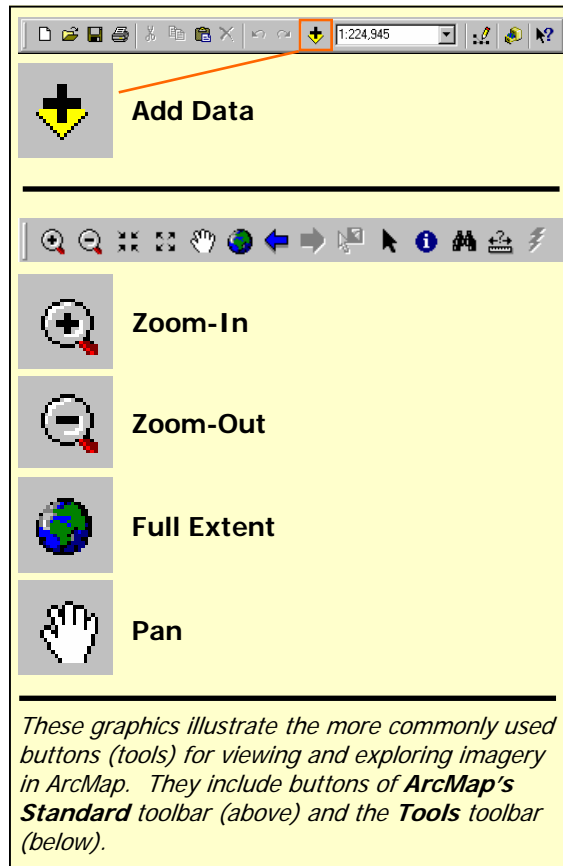
Objective

- To illustrate the simple image viewing tools and techniques in ArcMap.

Required Data

- hayman_20010520_30m_utm.img
- hayman_20020623_30m_utm.img

Introduction and Overview of Procedure Steps

Image viewing tools are fundamental to any GIS and image processing work, including working with the Burned Area Reflectance Classification (BARC). This exercise will provide a complete introduction to the image viewing tools and techniques available in ArcMap. You will:

1. Load a Multispectral Image in ArcMap
2. Change Band Combinations
3. Explore the Zoom In, Zoom Out, Pan, and Full Extent Tools
4. Adjust Image Brightness and Contrast
5. Compare Multiple Images Using the Table of Contents and Effects Toolbar
6. Arrange the Display Order of Layers

I. Load a Multispectral Image in ArcMap

1. Launch **ArcMap** from the **Start** menu (**Start | Programs | ArcGIS | ArcMap**).
2. Select the **Add Data** button from **ArcMap's Standard** toolbar (see graphic to the left).
3. Navigate to your **Data** folder and single-click **hayman_200120623_30m_utm.img**.
4. Select **Add** to load **hayman_20020623_30m_utm.img** into **ArcMap's Table of Contents**.

II. Change Band Combinations

1. Double-click **hayman_20020623_30m_utm.img** in the **Table of Contents**, and select the **Symbology** tab from the **Layer Properties** dialog.
2. Click the dropdown menu arrow of a color gun (Red, Green, or Blue) in the **Bands** section of the **Symbology** tab, and select a different band (or layer) to be displayed using the color gun you've just selected. Try Red = 6; Green = 4; Blue = 3.
3. Select **Apply** to accept the changes, and **OK** to close the **Layer Properties** dialog. Inspect the new display in the **Data View**. Experiment with different band combinations by assigning different bands to each color gun, and then visually examine the results. Try to determine a band combination that provides the best visual discrimination of features within the burned area.

*Colors on a computer's display are created by mixing varying intensities of red, green, and blue. Each color's intensity is determined by the image layer assigned to it. When displaying a Landsat TM image to view fires, it is common to set the red color gun to **layer_6**, the green color gun to **layer_4**, and the blue color gun to **layer_3** (simply called 6, 4, 3). These color gun assignments display the image as a False Color Infrared Composite. Other common Landsat TM color gun assignments include 3, 2, 1 which displays the image in natural color, and 4, 5, 3 which is useful for vegetation discrimination.*

Toggling Images indicates that you switch between two or more images being displayed in the Data View.

Layer: 2002LandsatTMSubset.img

Contrast

Brightness

Adjust Transparency

*This graphic illustrates the **Effects** toolbar and its associated buttons—**Contrast**, **Brightness**, and **Adjust Transparency**.*

III. Explore the Zoom-In, Zoom-Out, Pan, and Full Extent Tools

1. Select the **Zoom-In** button from **ArcMap's Tools** toolbar.
   - Move your **Cursor** over **hayman_20020623_30m_utm.img** in the **Data View**.
   - Single-click on **hayman_20020623_30m_utm.img** to zoom-in to an area of interest, or click and drag a rectangle around an area of interest. Explore the French Fire—in the center of the image.
2. Select the **Zoom-Out** button from **ArcMap's Tools** toolbar.
   - Move your **Cursor** over **hayman_20020623_30m_utm.img** in the **Data View**.
   - Single-click on **hayman_20020623_30m_utm.img** to zoom-out from an area of interest.
3. Select the **Pan** button from **ArcMap's Tools** toolbar.
   - Move your **Cursor** over **hayman_20020623_30m_utm.img** in the **Data View**.
   - Single-click and drag your **Cursor** across the image. Release the click to stop panning.
4. Select the **Full Extent** button from **ArcMap's Tools** toolbar. The image should be displayed in its full extent view in the **Data View**.

IV. Adjust Image Brightness and Contrast

1. Select **View | Toolbars** from **ArcMap's** main menu, and enable the **Effects** toolbar to open the **Effects** toolbar (see graphic to the left).
2. Set the **Layer** dropdown menu to **hayman_20020623_30m_utm.img** from the **Effects** toolbar.
3. Select the **Contrast** button from the **Effects** toolbar, and click on the **Slider Bar** to adjust the image's contrast.
4. Select the **Brightness** button from the **Effects** toolbar, and click on the **Slider Bar** to adjust the image's brightness. Experiment with contrast and brightness adjustments until you have achieved the best visual discrimination of features within the burned area.

V. Compare Multiple Images Using the Table of Contents and the Effects Toolbar

1. Select the **Add Data** button from **ArcMap's Standard** toolbar.
2. Navigate to your **Data** folder and select **hayman_20010520_30m_utm.img**—the pre-fire image.
3. Select **Add** to load the image into **ArcMap's Table of Contents**. Change the band combination to RGB = 6,4,3 to match the post-fire image.
4. *Image comparison technique using the **Table of Contents***. Toggle the images (at the top of the **Table of Contents**) by clicking the 'top-most' image on and off in the **Table of Contents**. Compare features between the images as you toggle. Again, experiment with different band combinations.
5. *Image comparison technique using the **Effects toolbar***. Specify the top-most image in the **Layer** dropdown menu from the **Effects** toolbar.

⚠️ *Contrast and brightness adjustments are applied only to an image's **Look-up Table**. The adjustments are designed to increase the image's visual interpretability. However, ensure that you do not save the contrast and brightness adjustments to the image file if you plan on performing subsequent spectral analysis. If you save the adjusted data as the image's spectral data, you have modified the original data so that it no longer truly measures the reflectance of ground features. **Note:** ArcMap does not save changes made to the visual properties of an image.*

- Select the **Adjust Transparency** button from the **Effects** toolbar.
- Click the **Slider Bar** and adjust the transparency as necessary.

VI. Arrange the Display Order of Layers

1. Single-click the bottom-most image listed in the **Table of Contents**, drag the image up to the top of the list (just under **Layers** in the **Table of Contents**), and release (the order the images are displayed in the **Data View** depends on the order they are listed in the **Table of Contents**—the first image is displayed on top).