

CHAPTER

4

Setting Response Value Colors for Images

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Introduction

When you load data, the software automatically

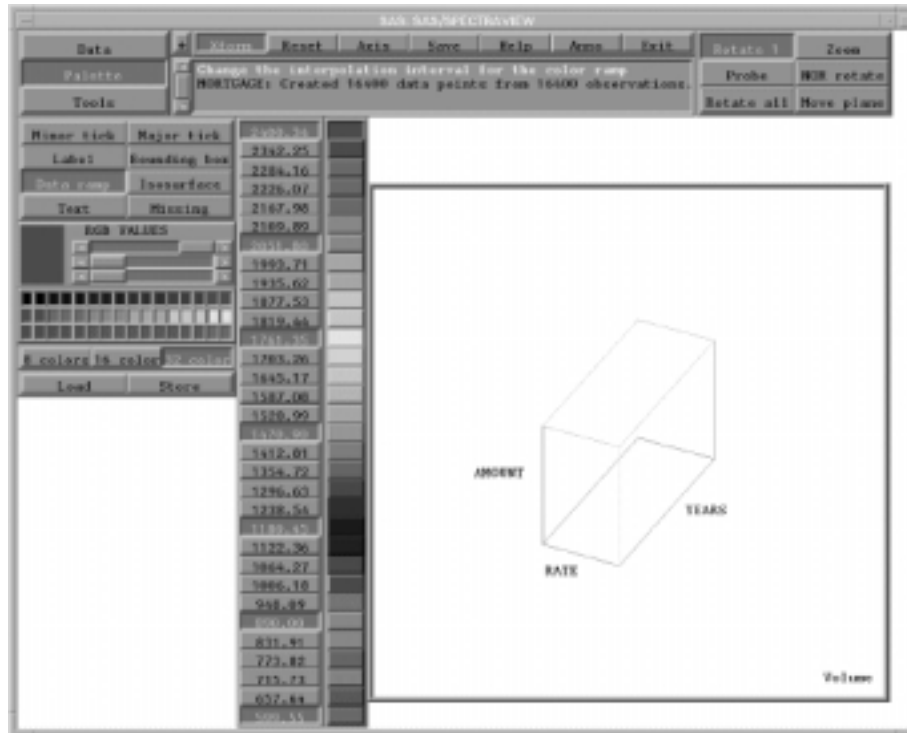
- sets default response value ranges
- color codes those ranges with preset colors.

These are the colors displayed when you create an image with a visualization technique. For example, for response values that are loan payments, the highest range of payments may be preset to red and the lowest range of payments may be preset to blue.

To meet individual needs, you can customize both the ranges and the mapped colors. You can also specify a color for missing values (which are by default transparent) so that you can see their locations in an image as well.

To set colors for an image, select **Palette**, which displays the software's color palette. By default, **Data ramp** is automatically selected, which displays the response value ranges and preset colors located below the text window as shown in Display 4.1 on page 48:

Display 4.1 Color Palette



When you are working with colors, any previously requested image remains displayed in the Volume window and will display your color specifications so that you can easily see the effects.

Note: Using the color palette, you can also specify colors for an isosurface (explained in “Viewing a Response Value as an Isosurface” on page 64) and various image customizations, such as axis labels, lines for axes, the bounding box, and text included in an image (explained in Chapter 6, “Customizing an Image,” on page 73). Δ

Specifying a Color with RGB Sliders and Color Chips

When you select [Palette](#), the software automatically provides RGB sliders (located under the label **RGB VALUES**) and color chips (located below the RGB sliders). You use either the sliders, the chips, or both to select a color for response value ranges and for other SAS/SPECTRAVIEW items like tick marks, an isosurface, and so on.

Using the RGB Sliders

The sliders allow you to set the percentage of red, green, and blue to create a particular color. For example, the RGB values of 0, 0, 0 define black; 100, 100, 100 define white; and 0, 100, 0 define green.

The first slider sets the percentage of red, the second sets the percentage of green, and the third sets the percentage of blue. The resulting color appears in the square to the left of the RGB sliders.

Display 4.2 RGB Sliders

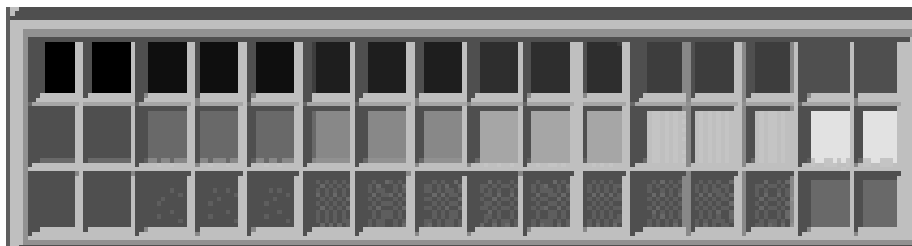


Using Color Chips

To select a color from the color chips, simply click one. The color appears in the square to the left of the RGB sliders and is reflected in the RGB slider values. Note that you can select a color chip, then refine the color with the RGB sliders.

The colors shown in the three rows of chips represent possible combinations that you can obtain by moving one of the three RGB sliders. The top row of color chips corresponds to the possible colors that can be defined by moving the top (red) slider. Similarly, the other two rows of color chips represent the effects of changing their corresponding RGB slider.

Display 4.3 Color Chips



Setting Response Value Ranges and Colors

To set response value ranges and assign specific colors to those ranges, you use the data ramp. The software then uses the specified colors to display response values in cutting planes, point clouds, the response legend, the response histogram, and so on.

For example, if the response values are sales data, you could color the low values in red, the medium values in yellow, and the high values in green, then visually analyze the data to spot trends and relationships not evident in standard reports and graphs.

Understanding the Response Value Ranges and Colors

Located below the text window, the software provides data buttons and color buttons:

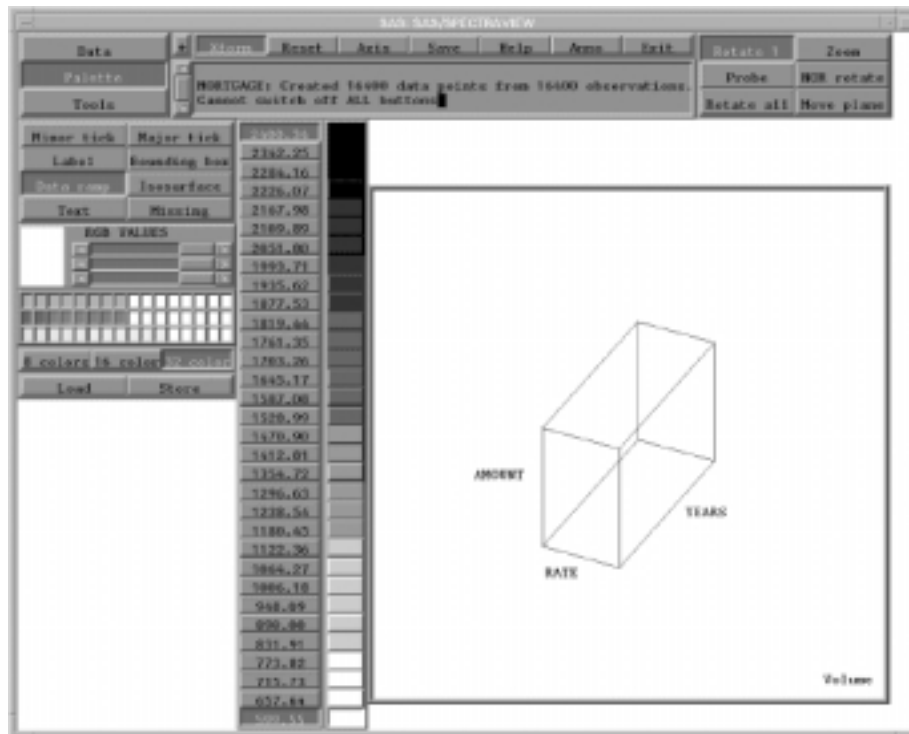
- The *data buttons* display data values and allow you to interpolate between ranges of response values. You cannot change the values displayed on the data buttons. Turning a button on (selected) or off (deselected) changes how colors are interpolated between two selected buttons.
- The *color buttons* display colors associated with the data values and allow you to assign specific colors to defined ranges.

In the default data ramp, each selected data button represents the lower bound of a response value range. The range is bounded above by the value on the next selected data button (exclusive of that value itself). The software interpolates (ramps) colors between selected data buttons. For example,

- 1 Deselect all data buttons except the top and bottom ones (which you cannot deselect).
- 2 Assign black to the top color button by clicking the top color button then using the color chips or sliders to assign 0, 0, 0 to the RGB values.
- 3 Assign white to the bottom color button by clicking the bottom color button then using the color chips or sliders to assign 100, 100, 100 to the RGB values.

The software uses the colors assigned to the top and bottom buttons to ramp intervening colors, as shown in Display 4.4 on page 50. All intervening values are assigned gradations between black and white, that is, a gray-scale ramp. Similarly, response values in a resulting image, such as a point cloud or a cutting plane, display in black to white gradations.

Display 4.4 Ramped Colors Between Top and Bottom Data Buttons



If you then select the color button in the middle of the top and bottom color buttons and assign it a third color (for example, yellow), the software ramps the colors between black (top) and yellow, and also between the yellow and white (bottom). All the response values falling above the middle button are displayed in colors ramped from black to yellow, and all response values falling below the middle button are displayed in colors ramped from yellow to white.

If you select multiple intervening color buttons and assign various colors, the software ramps the colors between each pair of selected buttons and displays response values within that range in the colors assigned.

Specifying Response Value Ranges and Colors

To define response value ranges and color:

- 1 Select **Palette**.
- 2 Select **Data ramp**, which is the default selection. The software displays RGB sliders, color chips, and the default data ramp, which has preset, evenly spaced ranges.
- 3 Determine the level of granularity by selecting:

8 colors to divide the values in the data ramp into 8 segments and colors.

16 colors to divide the values in the data ramp into 16 segments and colors.

32 colors to divide the values in the data ramp into 32 segments and colors. This is the default.

The software creates the color data ramp by determining the range of the response values in your data set, then dividing that range into 8, 16, or 32 equal parts. Even though you can modify the response value ranges so that the 32-color data ramp uses only eight colors, selecting the 8-color data ramp instead has the benefit of uncluttering line contours.

- 4 To define a response value range use the data ramp:
 - a Select the color button next to the data button that displays the lower bound value of the range. (When you select a color button, the data button is also selected.)
 - b Specify a color for the range by using the RGB sliders or by clicking a color chip.

Note that to widen a range, you can deselect a data button. Once deselected, the associated color and those above and below it ramp as part of the surrounding range.

- 5 Repeat for each response value range.

Assigning Color to Missing Values

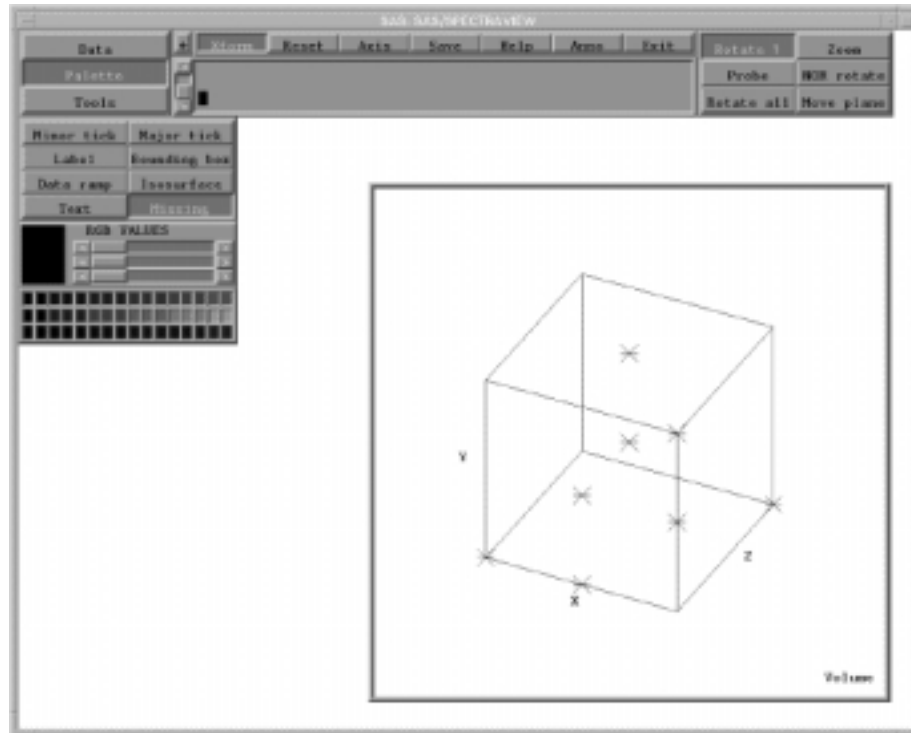
A missing value is a value in the SAS System indicating that no data is stored for the variable in the current observation. (Details about missing values in SAS/SPECTRAVIEW are explained in “Understanding Missing Values” on page 23.)

By default, missing values are transparent in an image; that is, the color assigned to missing values has RGB values set to zero. Changing the missing values to a color displays the data points in the grid without a response value.

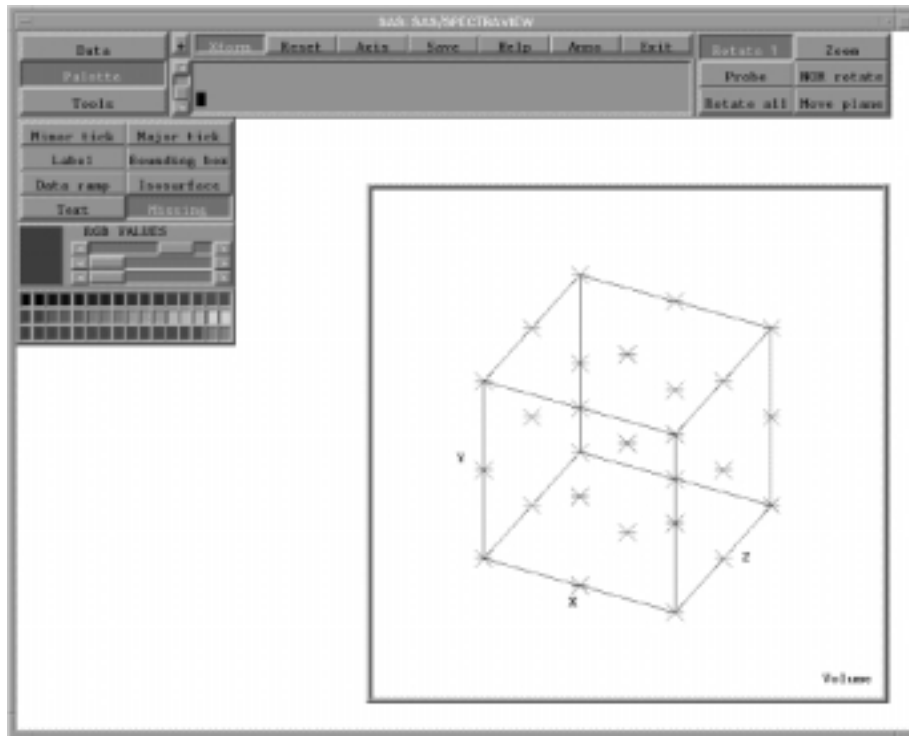
To specify a color for missing values so that they can be displayed in an image:

- 1 Select **Palette**.
- 2 Select **Missing**. Display 4.5 on page 52 shows a point cloud with missing data points, due to the default transparent missing values.

Display 4.5 Transparent Missing Values



- 3 Adjust the RGB sliders. As you move the sliders, the color appears in a square at the left, and the missing values display in the Volume window. *You can also select a color chip, located below the RGB sliders.* Display 4.6 on page 53 shows the point cloud now displaying the data points that are missing.

Display 4.6 Colored Missing Values

Note that subsetting axes values with a WHERE clause when you load the data could cause otherwise valid data points to be discarded and regenerated as filler points, that is, missing.

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