

This Command brings up a dialog box that allows you to set 5 separate levels that control aspects of the image rendering and coloring. The dialog consists of 7 controls and 3 editable text boxes along with the usual Cancel and OK buttons. This is a fun control to just play with, so try it first and if you're still confused read on.

There are two images that dominate this dialog box. The smaller image on the left represents the entire numeric range available for the level parameters. In fact, most of this range is not normally needed. They are there for completeness and to allow you to effectively "turn off" some features by positioning the appropriate level control to a maximum or minimum position.

On the right side of this leftmost, rectangular image, there are two black "handles" with a line radiating from each one to the top and bottom of the other rectangular image. These handles allow you to set the range of the full numeric space to "zoom into" in the larger, rightmost image (the zoom rectangle). By clicking and dragging these handles up or down, you change the zoom range to the right. The upper handle cannot be dragged below the lower one and vice versa. You will notice that the two editable text boxes above and below the rightmost image also change when you change the respective handle. These represent the digital values of the top and bottom of the zoom range. They can also be edited by hand with the restriction that the two values may be no closer than 320 units apart, and that they fall in the range +32,000 to -32,000. If you enter an invalid value for one of these, the program will not let you proceed until the error is corrected. When the dialog is first initiated, the zoom range is set so that all of the 5 levels controls will be visible in the zoom image rectangle.

In the larger, rightmost, rectangular image (the zoom rectangle), you will notice 5 horizontal lines, each with its own "handle" such that each of the 5 handles occupies a different horizontal column. These 5 controls allow you to change each of the associated levels. Those levels are, from right to left, Sea Level, Transition Bottom, Slush Factor, Transition Top, and Snow Level. Their functions are explained below. As each handle is clicked on, its interior color changes to reflect the fact that it is "selected". Also, the title over the editable text box to the right of the zoom rectangle and the contents of the text box change to indicate which level has been selected. The levels may be changed by simply dragging the handle up or down. Also, the text may be edited directly. Each level has restrictions on what comprises a valid entry, and as above, if an invalid entry is made, the program will not let you proceed until that value has been corrected. As you are not able to enter an invalid

value by using the control handles, a simple way to correct and invalid level entry is to click on (and drag) the selected control.

Sea Level is the first editable level. This, quite obviously controls the base level below which Fractal! will clip the terrain flat and force it to be rendered as water. You can play with this value to fill a valley with water — or to empty a lake. The units are arbitrary, but thinking of them as “feet” will give an appropriate feel. This is a signed integer value which is limited from -32,000 to +32,000 but always less than Snow Level. If you drag this control above Transition Bottom, Slush Factor, and/or Transition Top, it will force those levels to its own.

Transition Bottom is the next level. It controls the height below which all polygons that are above Sea Level will be rendered in shades of the Low Mountain Color (see Mountain Color Range command). Polygons that are above this level but below the Transition Top level will be rendered in a color that is intermediate between the Low Mountain Color and the the High Mountain Color based on the polygon’s relative height within that range. This level is in the same units as Sea Level, and is a signed integer limited to the range -32,000 to +32,000, but must always be less than or equal to Transition Top and greater than or equal to Sea Level. Used in combination with Transition Top, you can control the abruptness of the transition between the two mountain colors, as well as the height at which that transition occurs.

The **Slush Factor** specifies a range that extends just below the Snow Level. Within this range, each polygon will be rendered as either snow (white) or the mountain color appropriate for that height, depending upon the orientation of that polygon. The idea behind this is that the flatter (more horizontally oriented) the polygon, the more likely it is to hold snow. The steeper the polygon, the less likely it is to hold snow. This effect is, of course, attenuated by the relative height of the polygon within the Slush Factor range. For example, a polygon that would be rendered as snow near the top of the range, might be rendered as mountain if it were near the bottom of the range. Any polygon that falls below the Slush Factor range will always be rendered as mountain (if it is not below Sea Level). Slush Factor is in the same units as Sea Level, and is a signed integer limited to the range -32,000 to +32,000, but must always be less than or equal to the distance between Snow Level and Sea Level. If the Snow Level is changed, the control for the Slush Factor will stay a constant distance below it unless it is clipped at the bottom by Sea Level.

The next level is Transition Top. It controls the height above which all polygons that are below Snow Level will be rendered in shades of the High Mountain Color (see Mountain Color Range command). Polygons that are below this level but above the Transition Bottom level will be rendered in a color that is intermediate between the Low Mountain Color and the the High Mountain Color based on the polygon's relative height within that range. This level is in the same units as Sea Level, and is a signed integer limited to the range -32,000 to +32,000, but must always be less than or equal to Snow Level and greater than or equal to Transition Bottom. Used in combination with Transition Bottom, you can control the abruptness of the transition between the two mountain colors, as well as the height at which that transition occurs.

The last level is Snow Level, and it specifies the level above which the terrain is always rendered as snow (white). It is in the same units as Sea Level and likewise is a signed integer limited to the range -32,000 to +32,000 with the only limitation being that it cannot extend below Sea Level. If you drag this control below Transition Bottom, Slush Factor, and/or, Transition Top, it will force those levels to its own.