

## BCC Displacement Map Filter

The Displacement Map filter uses the luminance or color information from an alternate video or still image track (the Map Layer) to displace the pixels in the source image horizontally and vertically. This filter creates a distorted version of the source whose distorted regions correspond to the luma or color channel of the Map Layer's media.

Selecting the **Process Alpha Channel Only** checkbox allows you to distort the alpha channel without changing the underlying colors.

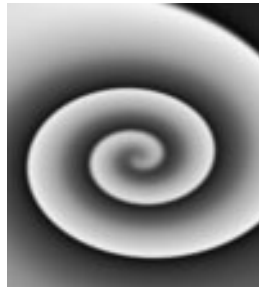
The **Map Layer** menu determines which clip layer in the timeline is used to create the distortions in the source image.



If the Map Layer is partly transparent, the displacement amount is scaled by its alpha values. Pixels whose map alpha is 0 are not displaced.



*Source image*



*Map Layer*



*Filtered image*



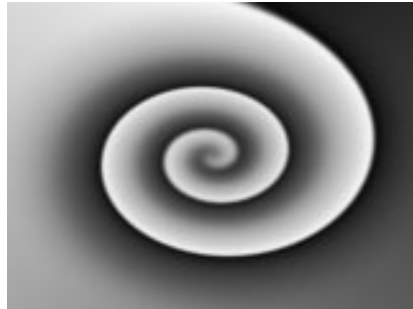
You can use the Noise Map filter to create auto-animated noise patterns that create a continuously flowing displacement effect. Luma gradients also make good Map Layers. You can also try using a title or logo to create a displacement as shown in the example at right.



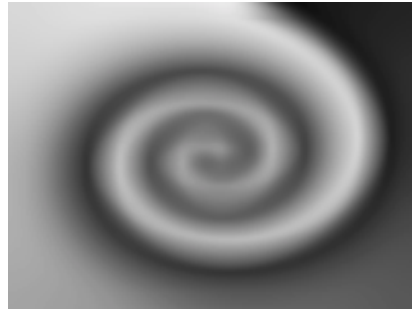
### Map Parameter Group

The Map parameters control the appearance of the map used to distort the source image.

**Pre Blur** applies a blur to the Map Layer. Increasing Pre Blur can help eliminate sharp edges in the map to create a smoother effect.



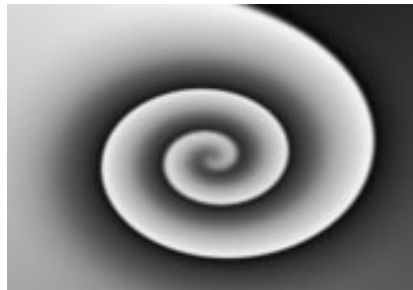
*Pre Blur=0*



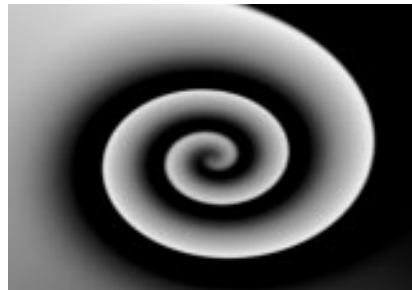
*Pre Blur=50*

Displacement filters often look rough if the Map Layer is high-contrast or has sharp edges. **Blur Threshold** softens the Map Layer before computing the displacements. After the Map Layer is blurred, the blurred track is compared to the original Map Layer, and the color change for each channel is reduced by a relative amount. Increasing Blur Threshold blurs parts of the image with rapid changes in color without blurring subtle details. This is particularly appropriate for a displacement map, which can severely distort areas of the image where the Map Layer changes rapidly.

**Map Black Level** sets the channel values of the map that are output as pure black. All pixels whose value is lower than the Map Black Level value become pure black. For example, if Map Black Level is set to 50, all pixels with a value of 50 or less output to a value of 0. The remaining values (50-255) are remapped to produce a smooth gradient from black to white.

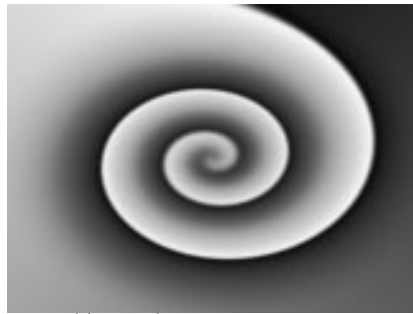


*Map Black Level=0*



*Map Black Level=75*

**Map White Level** sets the channel values of the input image that are treated as pure white by the filter. All pixels whose value is higher than the Map White Level value become to pure white. For example, if Map White Level is set to 200, all pixels with a value of 200 or more are output to a value of 255. The remaining values (0-200) are remapped to produce a smooth gradient from black to white.



*Map White Level=255*



*Map White Level=175*

**Map Gamma** adjusts the midlevel gray values of the input image by adjusting the gamma. Increasing Map Gamma lightens the shadows and reduces contrast. Decreasing Gamma darkens the shadows and increases contrast.

The **View Map checkbox** allows you to view the Map Layer as you adjust it. Deselect this option before rendering.

The **Master Displacement** control defaults to 100 and scales all of the displacement amounts. Animating this controls allows you to animate the total displacement.

The **Horiz. Channel menu** is the channel in the Map Layer used to compute horizontal displacement. The choices are *Red, Green, Blue, Luma, White, Gray, and Black*. White treats all of the pixels as if they were white (i. e. fully displaces each pixel to the Max. Horizontal value). Gray treats all pixels as if they were 50% gray (resulting in no displacement). Black treats all pixels as if they were black, thereby displacing all pixels to the negative of the Max. Horizontal Displacement value.

**Max. Horiz. Displacement** sets the amount of horizontal displacement for pixels in the Map Layer. Positive values move points that correspond to white pixels in the Map Layer to the right; points that correspond to black pixels displace to the left. Negative values displace pixels in the opposite direction (white pixels move to the left and black pixels to the right). The displacement of gray pixels is interpolated between these values. 50% gray pixels undergo no displacement, because they “pull” equally in both directions.



Max. Horizontal=25



Max. Horizontal=75



Max. Horizontal=175

The reference level is the channel value where no displacement occurs. If you want all of the displacement in the horizontal channel, set **Horiz. Reference Level** to 255. To have all the displacement occur vertically, set **Horiz. Reference Level** to 0.

The **Vert. Channel** menu sets the channel in the Map Layer used to compute vertical displacement. The choices are *Red, Green, Blue, Luma, White, Gray, and Black*. White treats all pixels as if they were white (fully displaces each pixel to the Max Vert. Displacement value). Gray treats all pixels as if they were 50% gray (resulting in no displacement). Black treats all pixels as if they were black, thereby displacing all pixels to the negative of the Max Vert. Displacement value.

**Max Vert. Displacement** sets the vertical displacement for pixels. White pixels are displaced up by this amount, and black pixels are displaced down by this amount. The displacement of gray pixels is interpolated between these values. 50% gray pixels undergo no displacement, because they “pull” equally in both directions.

The reference level is the channel value where no displacement occurs. If you want all of the displacement in the vertical channel, set **Vert. Reference Level** to 255. To have all the displacement occur horizontally, set **Vert. Reference Level** to 0.

The **Map Behavior** menu sets how the map is applied when the source is a different size than the Map Layer. If your map is the same size as the filtered clip, the Map Behavior settings all produce the same result.

- *Center Map* centers the map on the source and does not displace the source image outside the boundaries of the centered Map Layer.
- *Stretch Map to Fit* resizes the Map Layer to the size of the source.
- *Tile Map* creates tiles from the Map Layer and uses them to displace the source. Tile Map only has an effect when the map is smaller than the source image.

### The PixelChooser Parameter Group

The PixelChooser is included in many Boris filters and provides several methods to selectively filter an image.



For more information on the PixelChooser, see Chapter 10, “The PixelChooser” in the User Guide, or open the help file for the standalone PixelChooser filter.

### **The Pinning Parameter Group**



The Pinning parameters are described in the User Guide.