

# FALLOFF3

A QUICK INTRODUCTION TO BLURRING

## TABLE OF CONTENTS

## VERSIONS

1

## GETTING STARTED

To use falloff3, you would install it to any version of Apophysis the regular way by copying the correct .dll-file to your Apophysis plugin directory - usually „<Apophysis dir>\Plugins“.

It comes in several versions:

- *falloff3.x86.dll*  
The 32 bit-version. You would install it into Apophysis 7X15D or higher. It has been compiled through a unified process for x86- and x64-targets and offers higher performance than the „classic“ or legacy version but please keep in mind, that you need some prerequisites to use this. See below for more information.
- *falloff3.x64.dll*  
The 64 bit-version. As with the 32 bit-version above, it offers better performance and additionally is ready to be used with Apophysis 7X 64 bit. It can be installed together with the 32 bit-version in the same directory. However, you would need the same prerequisites as for the 32 bit-version.
- *falloff3.legacy.dll*  
The „classic“ or legacy version. It has been compiled using the original plugin headers and the MinGW compiler suite. It doesn't depend on any prerequisites and is fit to be used in non-7X-environments and with runtimes such as Crossover, PlayOnMac and other software using WINE as its environment. This version CAN NOT be used with 64 bit-versions of Apophysis 7X.

Like for any other plugin which has been compiled with the unified process (usually ending with .x86.dll and .x64.dll), you will need additional runtime libraries to use them.

Depending on whether you are using Apophysis 7X15D 32- or 64-bit (or any higher version), please download and install either:

- *Microsoft Visual C++ 2012 Redistributable (32 bit)*  
<http://www.microsoft.com/en-us/download/details.aspx?id=30679>  
Click „Download“ and select „VCREDIST\_x86.exe“
- *Microsoft Visual C++ 2012 Redistributable (64 bit)*  
<http://www.microsoft.com/en-us/download/details.aspx?id=30679>  
Click „Download“ and select „VCREDIST\_x64.exe“

Execute the downloaded file to install the necessary runtime libraries to your system.

You do not need to do that when using the legacy version of falloff3.

There are two other plugins, each coming with the three versions named above (x86, x64 and legacy). You would install these the same way with the same conditions applying to them. The difference between the “regular” falloff3-plugin and pre\_/post\_falloff3 is explained below.

## PURPOSE, BASIC USE AND PRE/POST-VARIATIONS

Originally, falloff has been designed to be used on projections (commonly known as final transformations). This version doesn't change this purpose. Therefore, most explanations focus the use on final transformations.



Name	Value
falloff3	1

Fig. 1 - falloff3 as single projection

The regular use is to just select falloff3 solely on the projection (see Fig. 1)

If you were, however, to apply falloff3 to a regular transformation or after other variations, you would most likely choose post-falloff3. The difference is, that post-falloff3 is applied after other variations.

The logical counterpart to this concept is pre-falloff3. With this variation, the effect is applied before other variations.

If you were, for example, applying a bipolar projection, you could choose between applying the falloff3-variation before or after bipolar by choosing its pre- or post-variation correspondingly.

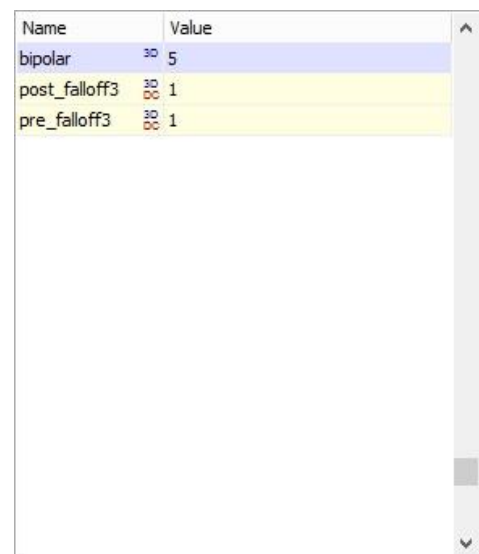
You can also combine pre- or post-falloff3 with each other or even with falloff3 itself (see Fig. 2).

Other than applying its characteristic effect to a transformation or projection, falloff3 generally acts as a linear shape. This means, that its shape equals this of linear (linear3D in non-7X versions of Apophysis or older versions of Apophysis 7X) if you were to disable all effects using its variables.

If you are using falloff3 on regular transformations, the same explanations apply. Additionally, you can use the chaos graph (commonly known as Xaos) to allow a more flexible use of falloff3.

Linked transformations provide an alternate way to pre- or post-apply falloff3 to a transformation. By linking transformation B to transformation A where A contains falloff3, you can achieve the same effect as if you were using pre-falloff3 on transformation B. Likewise, linking transformation A to B (with A containing falloff3) creates the same result as if post-falloff3 were used on transformation B. And of course, you can still use pre- and post-falloff3 on either A or B which gives you the possibility to combine two different configurations of falloff3.

One thinkable use for this concept would be blurring an area outside a circle in a different way than the inside of the same circle.



Name	Value
bipolar	5
post_falloff3	1
pre_falloff3	1

Fig. 2 - pre- and post-falloff3 in combination with a bipolar projection

## VARIABLES

In the following sections, I'm going to explain the variables of falloff3 to you. Please keep in mind, that the same variables are available for the pre- and post-variations likewise. On these, however, they are prefixed with "pre" and "post" as well.

There are plenty of variables available for falloff3 to control the output of this variation. A few of them can be grouped together as they exist each for every axis (x, y, z) and in some cases for the DirectColor-dimension (c)

The following table contains a list of these variables which I will group in this document for simplicity:

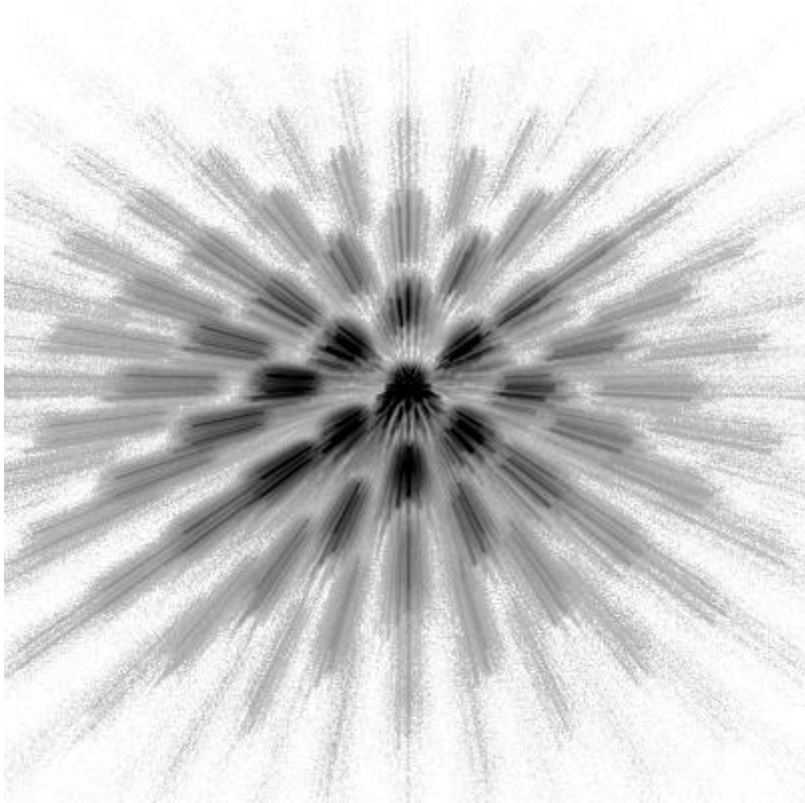
Prefix	Available for	Hint
falloff3_mul_#	x, y, z, c	The per-axis-multiplier for blur strength.  Some blur types may define a different meaning to the mul-x, -y and -z variables.  Please refer to the section "BLUR TYPE" for more information about these exceptions.
falloff3_center_#	x, y, z	The focal point of the blur effect as 3D coordinates.

Other variables appear as a single entry. The following table contains a list of these variables:

Name	Hint
falloff3_blur_type	The blur type of the effect.  Please refer to the section "BLUR TYPE" to find more information about available blur types.
falloff3_blur_shape	The border shape of the effect.  Please refer to the section "BLUR SHAPE" to find more information about available border shapes.
falloff3_blur_strength	The overall (master) strength of the blur effect.
falloff3_min_distance	The size of the border shape.
falloff3_invert_distance	A switch which allows you to invert the border shape.  If you set the value to zero, the blur effect is applied outside the shape and decreases in strength near the boundaries of the shape.  Otherwise (anything non-zero) the blur effect is applied inside the shape and decreases in strength near the boundaries of the shape.
falloff3_alpha	A universal value which has a different meaning for each blur type.  Please refer to the section "BLUR TYPE" to find more information about what this value controls with each blur type.

## BLUR TYPE

The `falloff3_blur_type`-variable is a selector for the kind of blur to be used. The following table contains a list of the available blur types available in this version of falloff and their descriptions.

No.	Name	Description
0	bt_gaussian	<p>The common Gaussian blur.</p> <p>Use <code>falloff3_mul_#</code> to control the strength per axis and <code>falloff3_center_#</code> to set the location of the center.</p> <p><code>falloff3_alpha</code> does not have any effect for this blur type.</p> <p>This type is equal to <code>type = 2</code> in <code>falloff2</code>.</p>
1	bt_radial	<p>The radial blur.</p> <p>The <code>falloff3_alpha</code>-variable controls the strength of the additional spiral blur.</p> <p>This blur type changes the meaning off <code>falloff3_mul_#</code>. Instead of per-axis-control, you're getting control over three different components of geographic coordinates:</p> <ul style="list-style-type: none"><li>• <code>falloff3_mul_x</code> controls the blur strength for the radius</li><li>• <code>falloff3_mul_y</code> controls the blur strength for the longitude</li><li>• <code>falloff3_mul_z</code> controls the blur strength for the latitude</li></ul> <p>In essence, you can imagine the following settings which I'm trying to illustrate with example renders:</p>  <p style="text-align: center;">Fig. 3a - Zoom blur (<math>x = 1</math>, <math>y/z = 0</math>)</p>

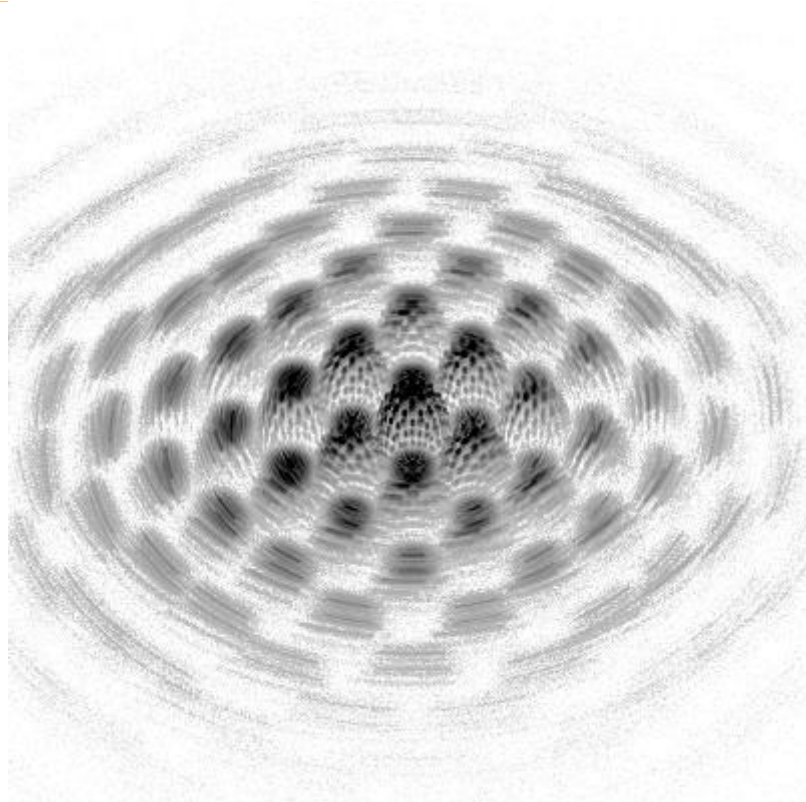


Fig. 3b - Spin blur (lat.,  $y = 1$ ,  $x/z = 0$ )

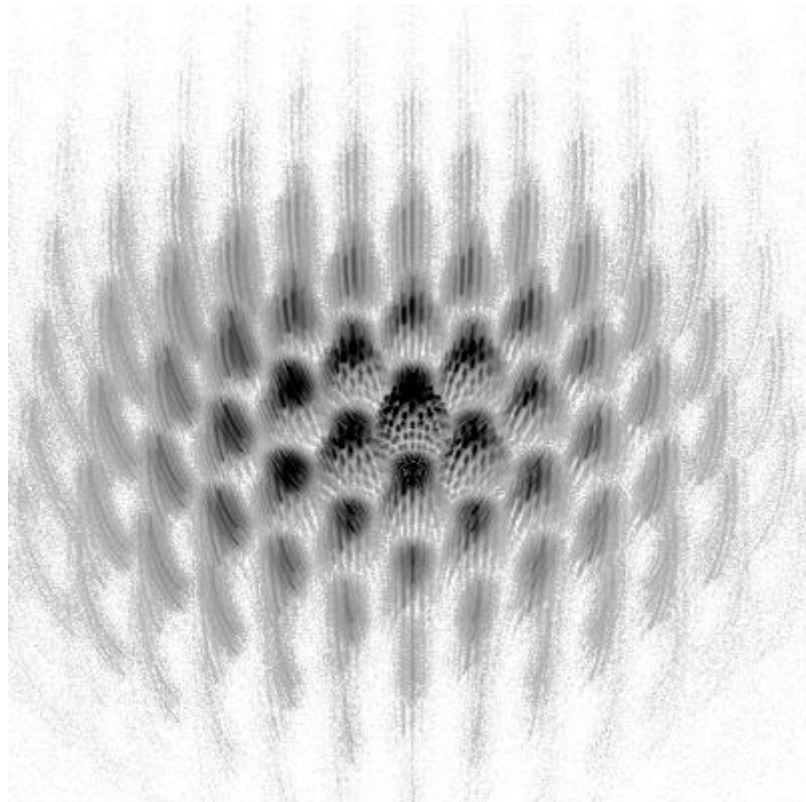
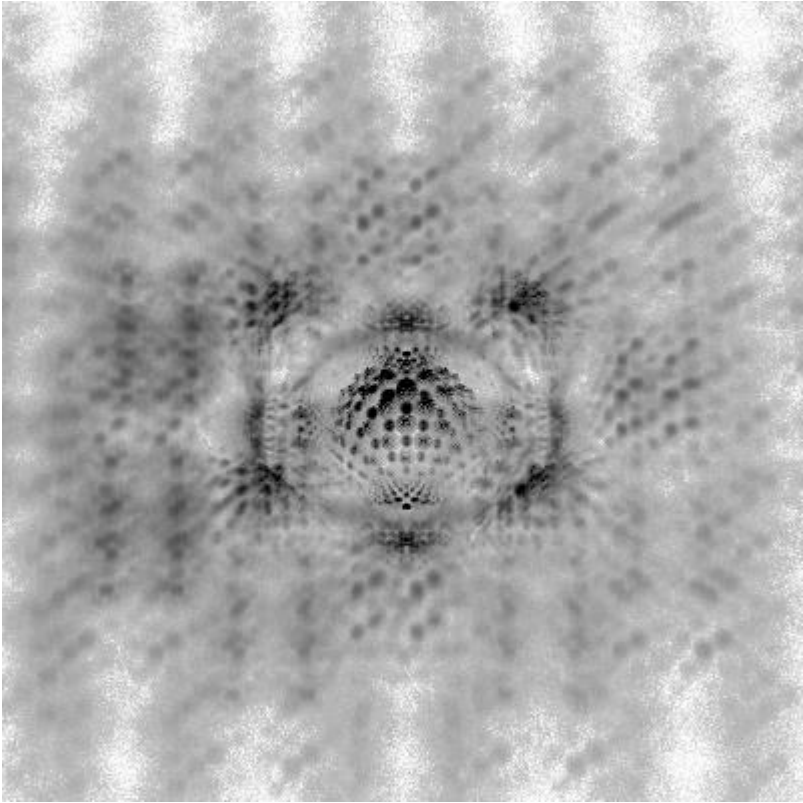


Fig. 3c - Spin blur (lon.,  $z = 1$ ,  $x/y = 0$ )

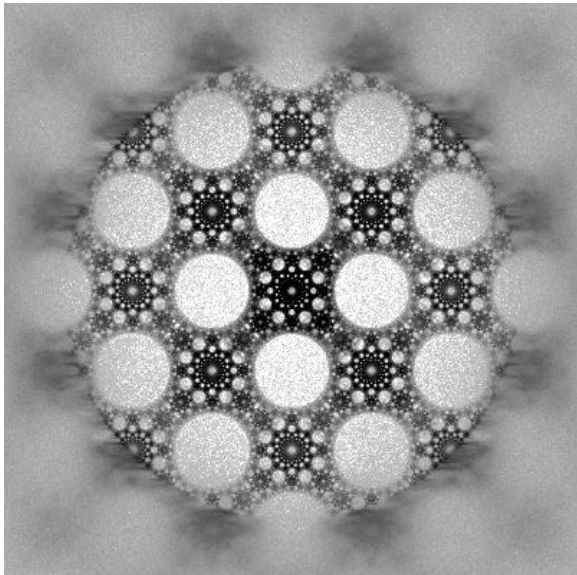
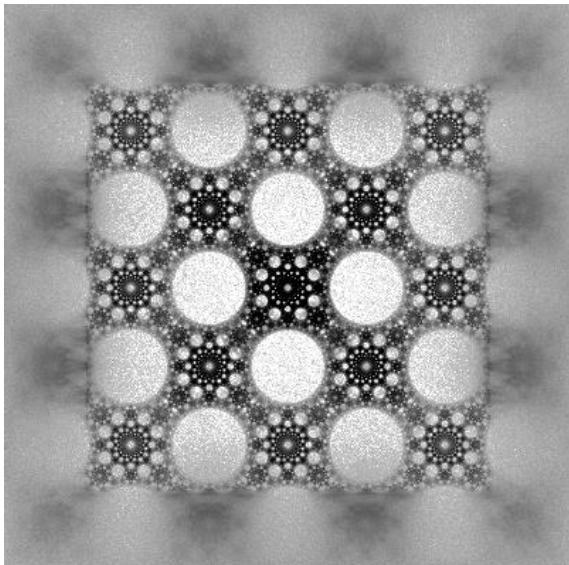
2	bt_log	<p>A logarithm-based blur which subdivides the plane to be blurred into boxes.</p> <p>The falloff3_alpha-variable controls the strength of the logarithmic map outside the border shape which gives a distortion of the effect's characteristic "falloff"-curve near the boundaries of the border shape.</p> <p>Please see the following illustration for an example with alpha = 1:</p>  <p>Fig. 4 - Logarithmic distortion of the falloff-curve</p>
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To select a blur type from Apophysis, set the corresponding variable falloff3\_blur\_type to the number of the blur type you wish to select.



## BLUR SHAPE

The `falloff3_blur_shape`-variable is a selector for the kind of border shape to be used. The following table contains a list of the available border shapes available in this version of falloff and their descriptions.

No.	Name	Description
0	<code>bs_circle</code>	Defines a circle (2D) or sphere (3D) as the border shape. 
1	<code>bs_square</code>	Defines a square (2D) or cube (3D) as the border shape. 

The border shape is the shape in which no blurring is applied. Everything outside the shape is blurred with decreasing intensity towards the boundaries of the border shape.

To select a border shape from Apophysis, set the corresponding variable `falloff3_blur_shape` to the number of the border shape you wish to select.