

# Arctic Erosion Made with Classic Erosion Plugin



Arctic Erosion 2023

In the past, I have seen astonishing pictures, created with the Classic Erosion plugin for Terragen. Recently I purchased a license of the Erosion Plugin from Daniil Kamperov for just 29€ and began to experiment with it.

So this is the story, how I started with eroding terrain in Terragen. In this report I intend first, to achieve a nice looking terrain and second, rendering a cool erosion scenery in the next step.

Allow me to mention, that I had only 7 GB RAM with my outdated computer, just recently I purchased a new machine, an i9900K with 128GB RAM. Equipped with these new capabilities, I started a week full of eroding experience and a lot of coffee.

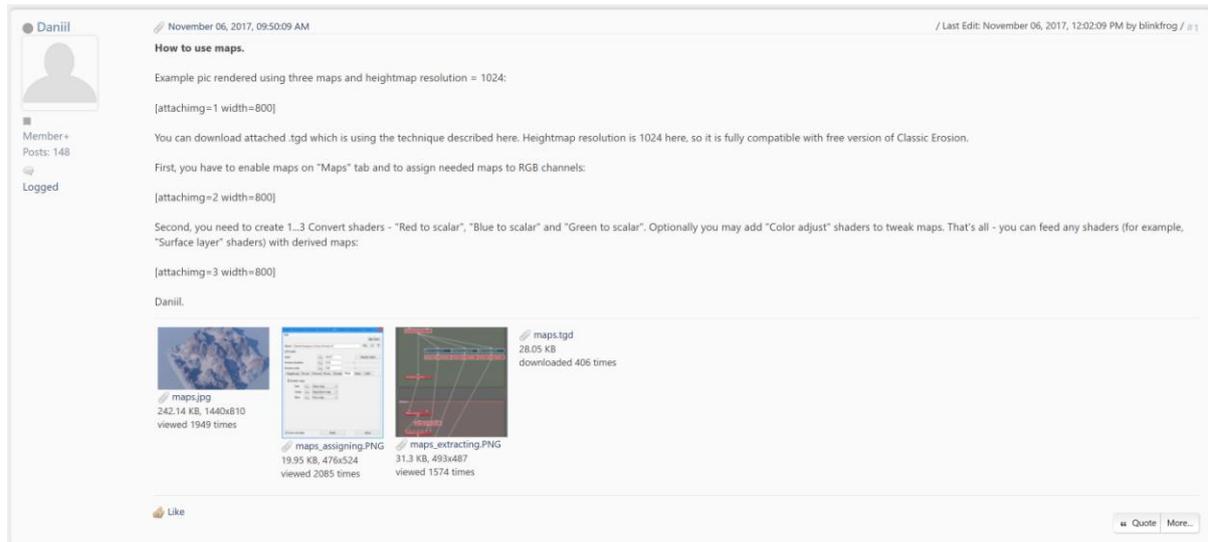
## Creating terrains with Classic Erosion

My Erosion Journey begins...

My first challenge was to find out, how you really start to work with the Classic Erosion Plugin from Daniil Kamperov? So I began to search at the PlanetSide forum and stumbled over a nice example scene file, which has been created by the author of the plugin. It clearly shows how you can set up your scene, before you start to erode own terrains.

Embedded is a starter scene which you can also download.

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Example scene from Daniil Kamperov

<https://planetside.co.uk/forums/index.php/topic,23764.msg240254.html#msg240254>

Based upon this little scene, I created my own setup as a basic starter scene to begin my erosion journey. I try to help you to make a good start, so please allow me to explain a little bit more here at this point. Then I will proceed with my story.

## Scalar and Vector

Very Important to know and to understand for Terragen is this important principle! And I wish, I had known this right from the beginning! It took years to find that out!

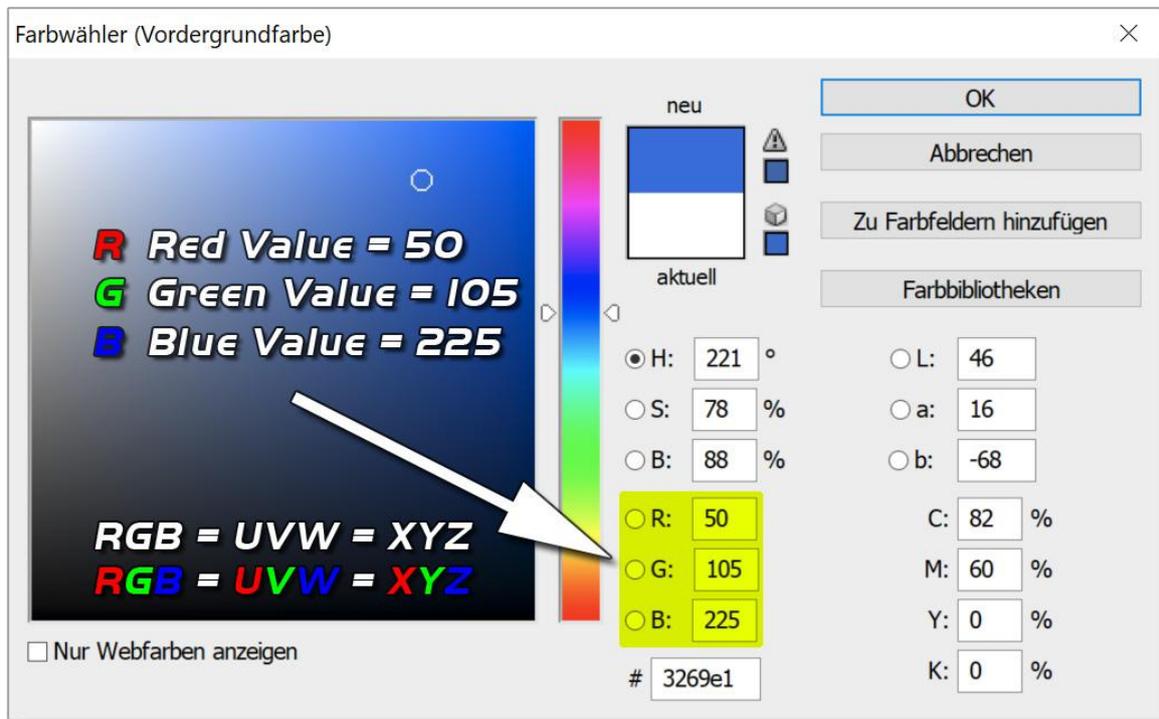
In Terragen scalar and vectors are often used. Scalar values consist of a single number or magnitude, while vector and colour values are made up of several components, such as the values, that make up the **red**, **green**, and **blue** channel of a particular colour.

Simply said, a scalar is a fixed size or number. But what is a vector? Imagine a vector is like an arrow. The length of the arrow defines the size, the tip of the arrow shows the direction, while the arrow itself defines the position in space. The arrow consists of a shaft and an arrowhead. The shaft of the arrow has a beginning and an end. In other words, it has a start and an ending point. The arrowhead in turn is indicating the direction of the arrow. So that is a vector. A start and ending point (line) with an indicator for the direction (arrowhead).

If you imagine the shaft of the arrow alone in 3D space (in a X-Y-Z coordinate system), you got a line somewhere. If you decompose this line, it consists of a share (length) in the X-, a share (length) in the Y- and a share (length) in the Z-plane in 3D space. This way you can define the position of a vector in 3D space. Or in other words, you define a line in a X-Y-Z coordinate system.

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Colors are coded coordinates



RGB = UVW = XYZ

A given color consists of a part in the red channel, a part in the green and a part in the blue. If you take apart a specific color, you can specify the given color by its value in a red, green and blue portion.

Now take the share in the **red** as a value for an **x-coordinate**.  
Now take the share in the **green** as a value for an **y-coordinate**.  
Now take the share in the **blue** as a value for an **z-coordinate**.

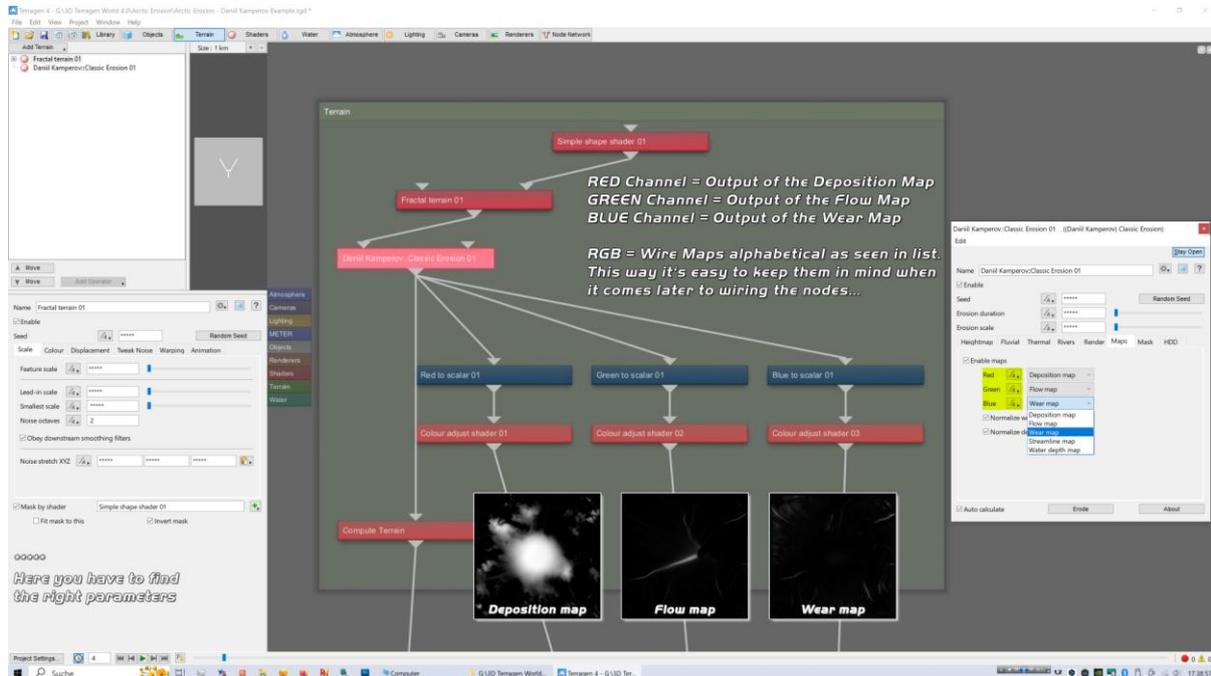
You will end up with a point in space. This point is exactly defined by its x,y,z coordinate. So colors can be used to code a coordinate of a point in a 3D space.

If you understand this, then you are able to understand, how specific colors or color channels are used, to transfer values in Terragen.

This is a very important concept in Terragen!

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## Starter Scene



Starter scene node (Terrain)

Classic Erosion uses the red, green and blue channel to transfer the calculated erosion data represented by erosion maps. Before using the desired output as maps for distribution, masking, coloring ect. you have to transform the data through a „Red to scalar“, „Green to scalar“ and „Blue to scalar“ node. Immediately should follow a „Colour adjust shader“ to simply increase or decrease the output value. Then you can wire it into any node, that has an input channel which normaly will be a shader.

## Map Tab

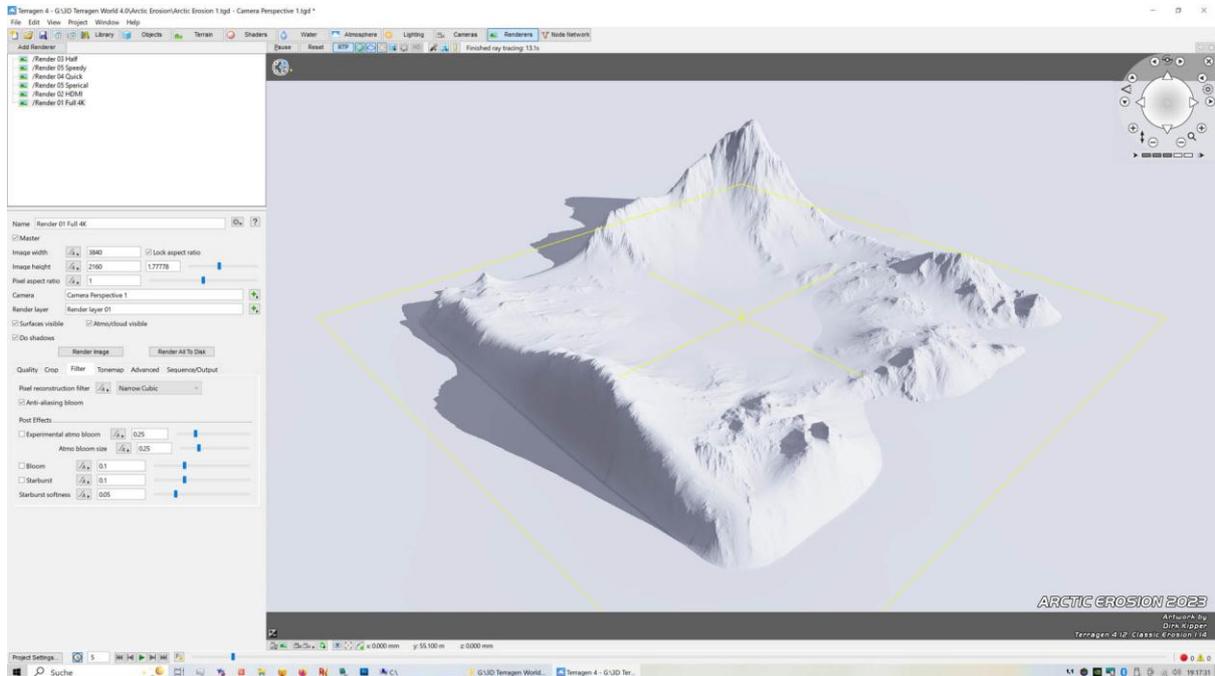
At the map tab you can wire the red, green and blue channel as you like. But I recommend to do that in an alphabetical order. Deposition-Flow-Wear is alphabetical ordered. So follow the same simple principle. It's easy to keep it in mind, when you later wiring many output lines crisscross to your nodes and ask yourself, „damm.. which color channel was the flow map? My way, I can say it was the green channel!

## Generating Terrain

I started to read „Daniil Kamperov's beginner guide“ to learn more about the plugin. His guide can be found in the PlanetSide Wiki. Search for „Daniil Kamperov Classic Erosion“. A direct link to this document will also be provided at the end of this report.

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So I played with all possible parameters until I ended up with this beautiful terrain.

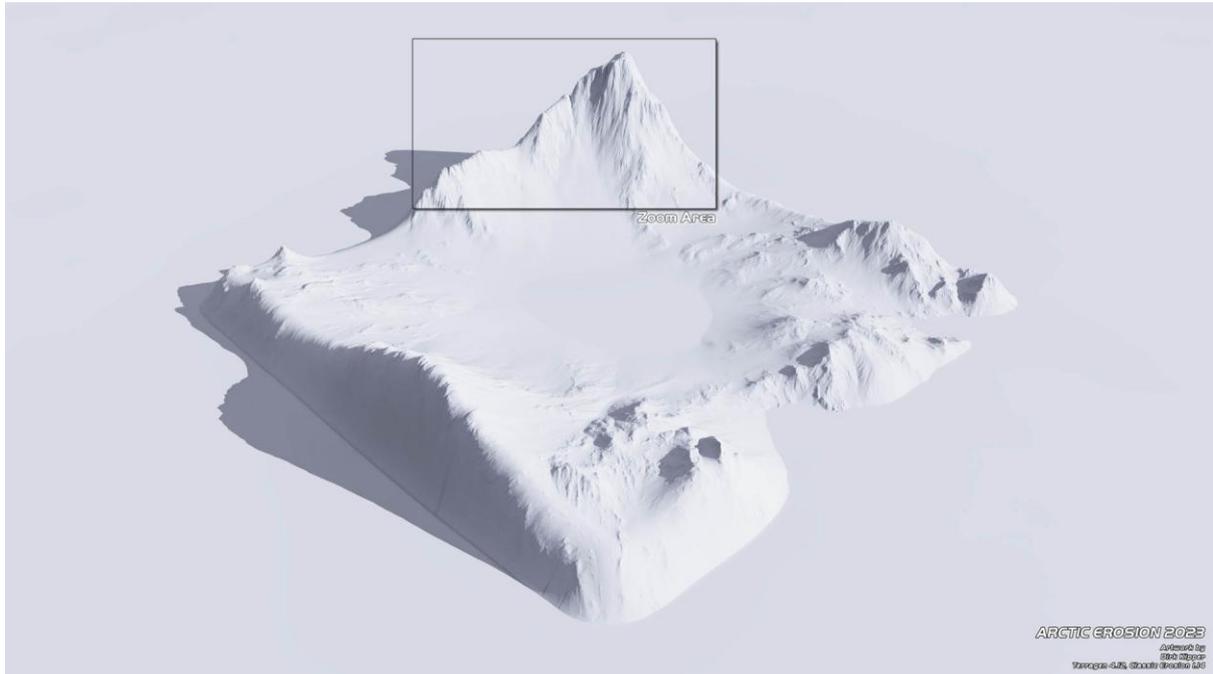


After a lot of experimenting, I ended up with this beautiful Terrain in 16K

Just to give you an idea about render times... The calculation of this 16K high resolution erosion solution took on my i9-9900K with 128GB RAM nearly 4 hours. But at the end, I earned a splendid set of erosion maps, full of details in a terrific resolution by 16234x16234!

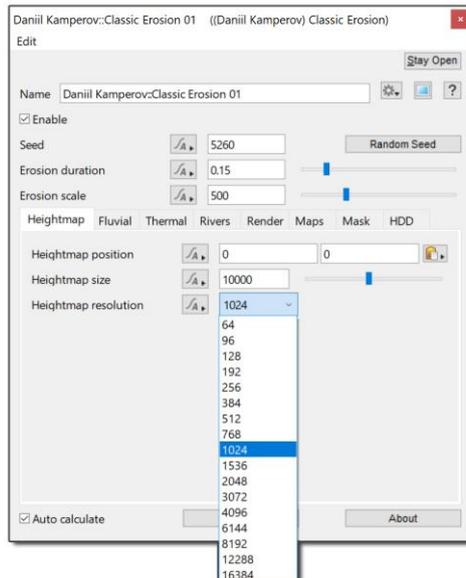
Also, my machine is equipped with a modern SSD. So I can load the huge amount of data which has been calculated within seconds into my computer.

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Original 4K Rendering with the maximum Heightmap of 16384

Next was to find out, which resolution is suitable for terrains? Yes, I know the highest available, but which is also economic? So I started to render the same terrain with an Ambient Occlusion Shader (AO) to see in detail, the fine differences along the night.



Classic Erosion Plugin  
Heightmap Tap

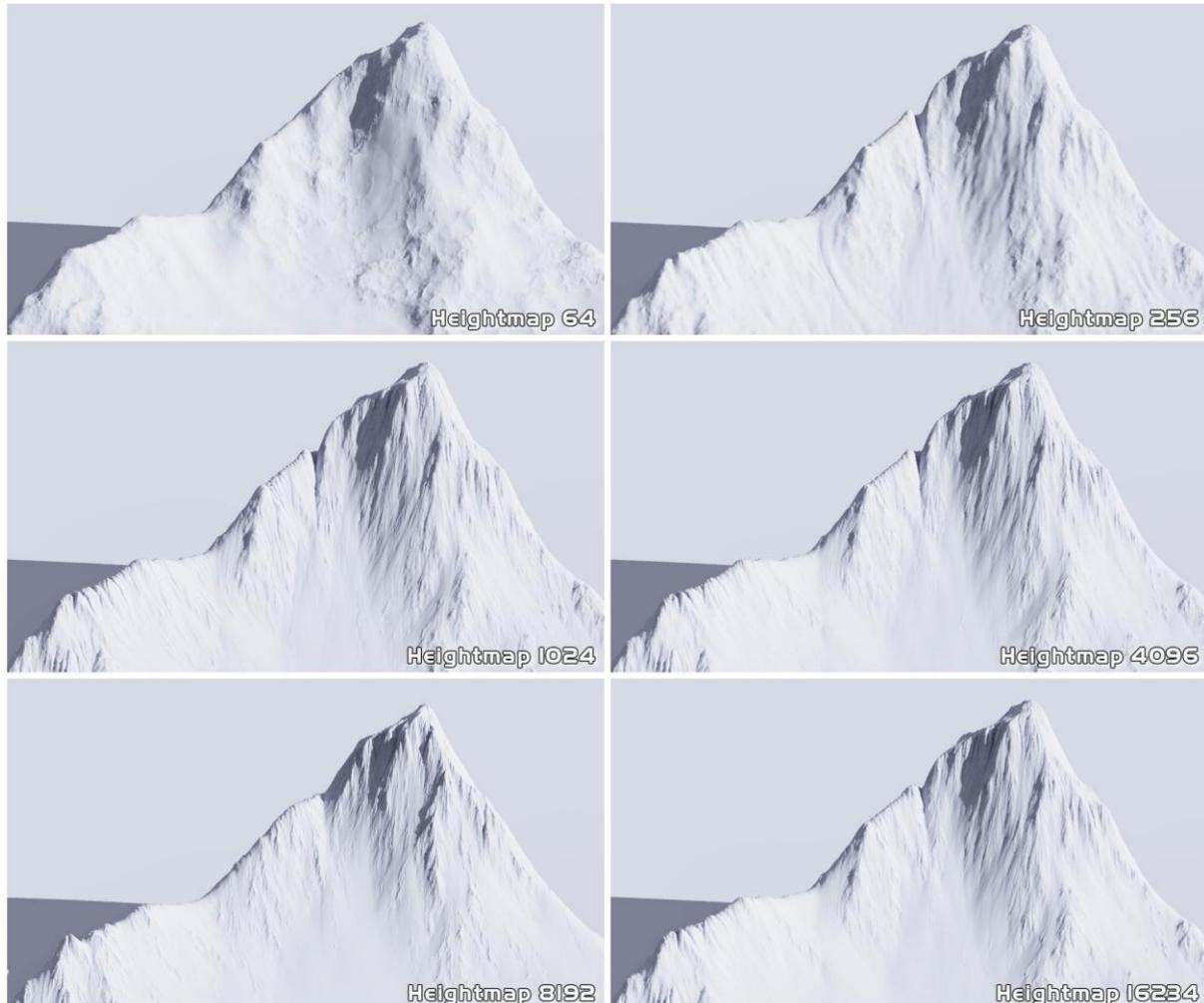
# Arctic Erosion

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### Note:

The free version of the plugin is limited to Heightmaps up to 1024.

From Low Resolution to High Resolution I rendered one after another image in 4K. I just want to find out, which solution is good but also economic, suitable for an intended final outcome, depending on the point of view and level of detail?



Six Different Heightmap Renderings  
(Zoom into the Original 4K Renderings)

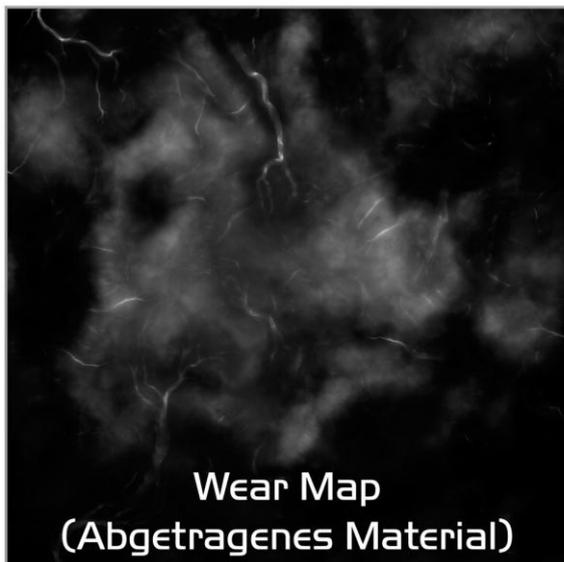
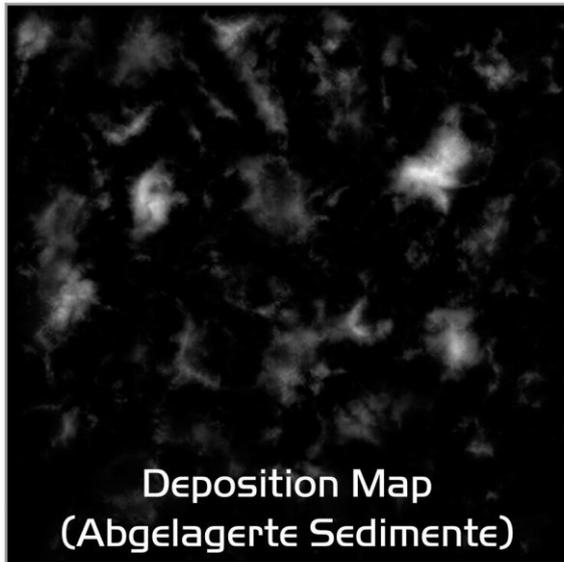
Luckily it is possible to save the calculated erosion data as an .erd file from within the classic erosion plugin at the end of the calculation.

The saved size of the "Arctic Erosion 16K.erd" data file here is 4.75GB (only).

But you can save the erosion data also as separate image maps in the PNG-Format. I saved all four maps of the rendered terrain above as PNG's (Greyscale, 16-Bit, 16K resolution). They have in total just... „Just!“ 858MB.

# Arctic Erosion

## Made with Classic Erosion Plugin



The four rendered Erosion Maps of my „Arctic Erosion“ Terrain in 16K

Well it is much data, which is stored on the computer. But this way you ensure to get the exact same eroded data, and you don't wasting time with calculating it again!

Just load and go on another time with the exact same data and settings...  
So even if you dont like huge files, just do it and save it all for a future erosion party!

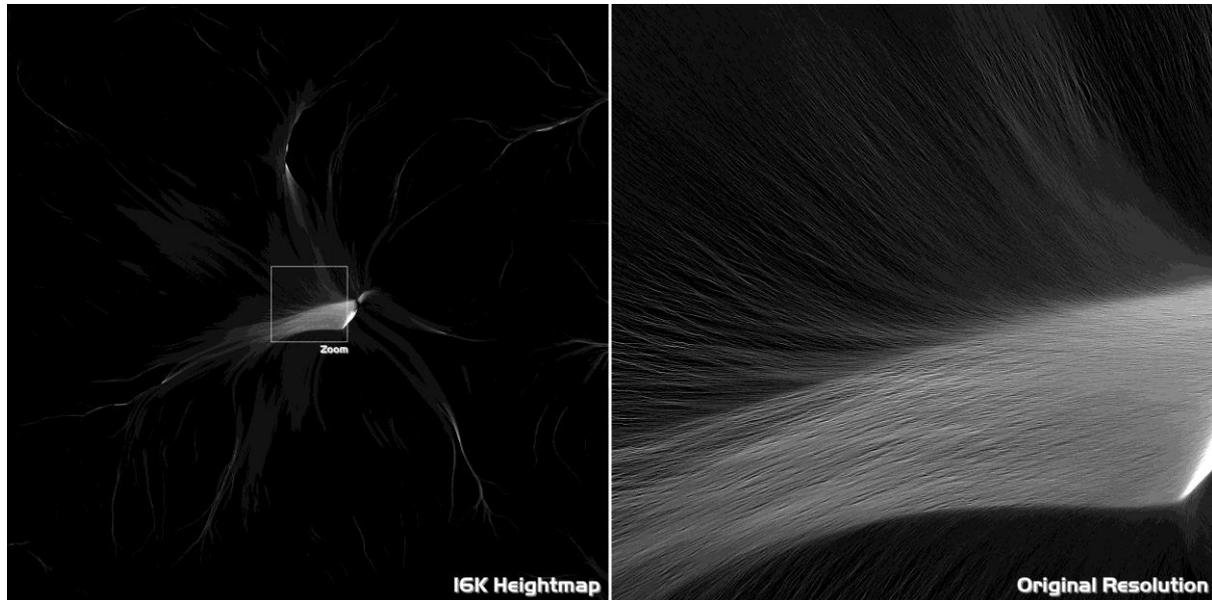
To comprehend what is ongoing here, imagine the same terrain data saved as...

.erd-File	1024 = 19MB	.png-file	1024 = 4.64 MB
	4096 = 309MB		4096 = 67.7 MB
	8191 = 1.09 GB		8192 = 281 MB
	16234 = 4.5 GB		16234 = 858 MB

# Arctic Erosion

## Made with Classic Erosion Plugin

To show you another example of the terrific details which are rendered by the plugin, here comes the original 16K Flowmap with a zoom into its original resolution.



Rendered 16K Flow Map  
Just WOW !!!

All the other Maps are also high quality, they just blow you away if you zoom into! My personal opinion... JUST GET IT !!! Realy awesome...

### Workflow to create the whole scenery

After eroding a really satisfying terrain, I'll come to my second intention. Rendering a really cool scenery with my eroded terrain. I like the arctic a lot, so I will create an arctic scenery.

To transfer this idea into reality, there are several steps necessary. Maybe not all, but some of the following ideas should be visualized.

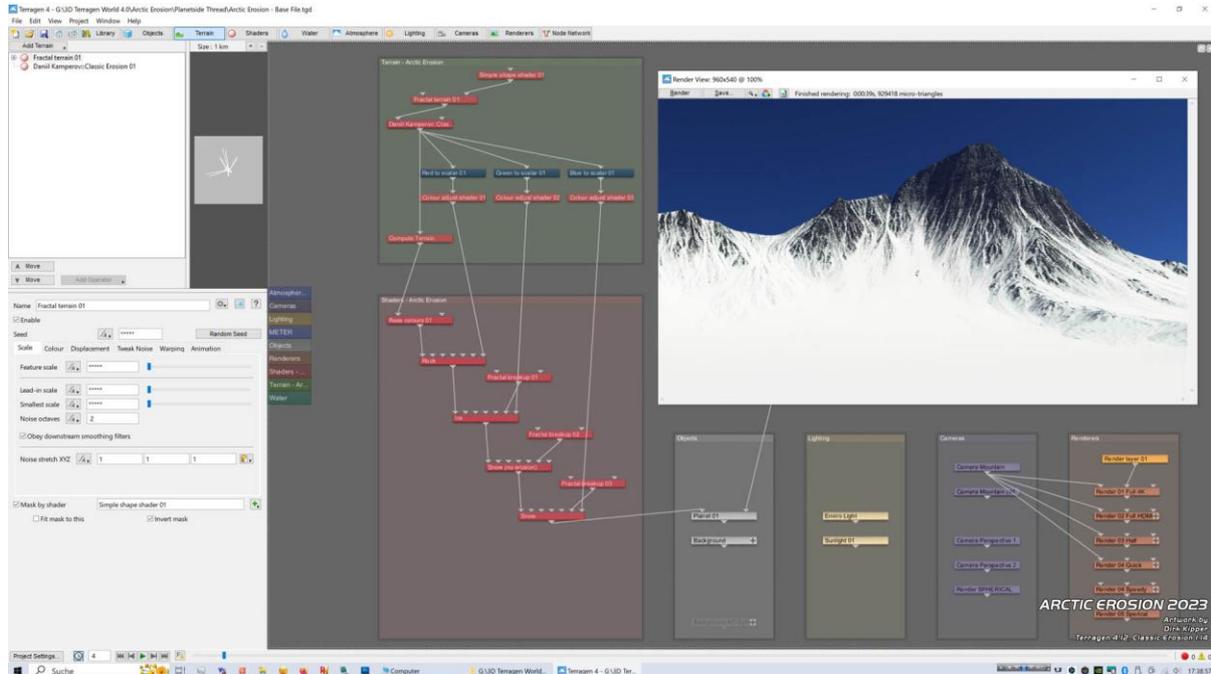
- Finding beautiful viewpoints (perspective, directly frontal and confrontative)
- Creating shaders (rock, snow, ice, water, fake stones, sand, underwater sand)
- Create atmosphere with clouds (snowflakes, rain?)
- Water (lake, ocean, rivers, beach zone, shoreline?)
- Fake stones, boulder rocks, gravel, pebbles, sand

# Arctic Erosion

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### Starting erosion shader design

So after finding some good viewpoints, a major one was set and fixed. I always try to keep things simple in the beginning. So I just created a basic shader setup consisting of four simple main shaders for rock, ice, snow (no erosion) and snow.



Starter scene network and a first “half = 960 x 540” erosion rendering in 39 seconds

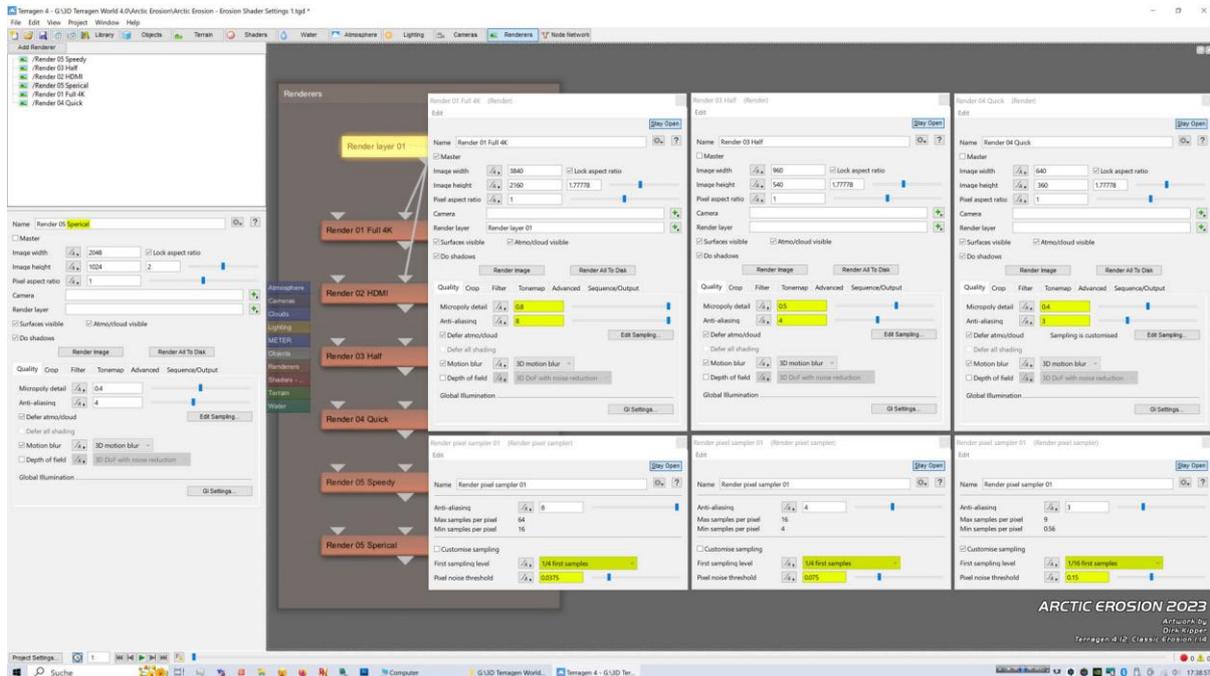
### Render settings

A few words regarding render settings. If you have much render power this may be obsolete, but operating a low-end machine at the other side, it forces you to be economic with your render times. I had such a computer in use for the last 12 years. In 2023 once I booted my machine in the morning and as always it greeted me with ASUS 2009 motherboard, please wait while booting... I bought a new one! So I had the need to develop a good render rig, to be as economic as a miserly Scotsman.

Is it not this way? Many fiddle around with just one or two render settings. They offer a superb scene as .tgd file in the forum, but their Render Tab inside their scene is absolutely poor and spartanic. We can do it better! Absolutely!

And is it not this way? You simply need to know where the clouds are positioned, if the light is bright enough on the hillside, the water color fits into the scene etc. Here you don't need to render a scene with high quality settings. It is better to design a render rig, which has from the low end upwards increasing render settings. The higher you go, the more the settings increase. At the high end, you go on with high quality settings and of course your render layers activated (if you have it available)!

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My standard render rig with economic render settings  
(Please pay attention to the yellow marked settings also in the edit sampling tab)

So why not using a standard render rig like this in your standard scene?

Do you have a standard scene?

Does Terragen load your standard scene when starting?

If not, Preferences -> Startup -> Load from file -> Choose File...

Did you already edit the settings under Edit Sampling?

Do you have a render layer already inside your render tab (if available)?

Did you activate all render layer? (The standard are deactivated check boxes)

Sometimes it happens that you render for many hours only to find out you miss one!

Do you have also a spherical camera in your camera tab? Never seen one in a .tgd!

This way you will have always optimal settings in regard to your changing needs always at your fingertips? If you like it, then copy my standard rig presented above.

Simply create these settings... don't forget to edit the sample settings also...

Render 05	Speedy	480 x 270	MD 0.2 and AA 0.1	1/64 first samples
Render 04	Quick	640 x 360	MD 0.4 and AA 0.3	1/16 first samples
Render 03	Half	960 x 540	MD 0.5 and AA 0.4	1/16 first samples
Render 02	HDMI	1920 x 1080	MD 0.6 and AA 0.5	All Render layers active
Render 01	Full 4K	3840 x 2160	MD 0.8 and AA 0.8	All Render layers active
Render 06	Spherical camera (if available) with individual project settings			

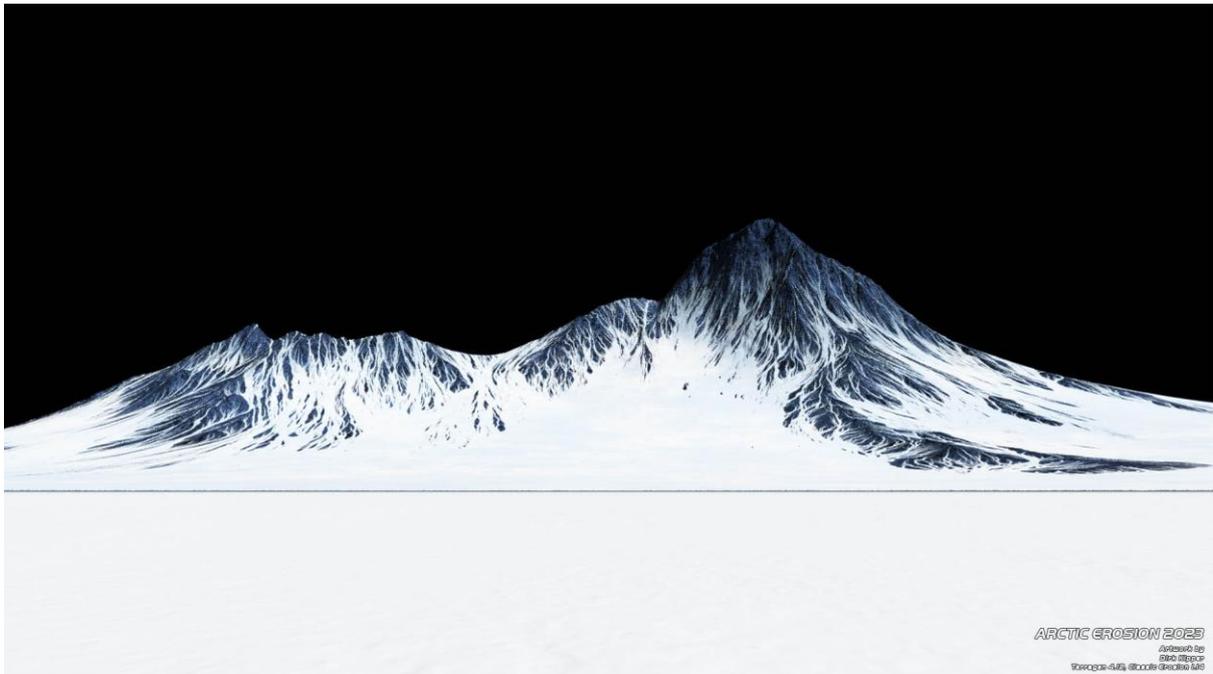
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Tweaking here and there lead me to these first quite cool erosion renderings. A fine line at the bottom is added to mark a future sea level at the mountain base. The sky has been spared to have a black background for a neutral color comparison.



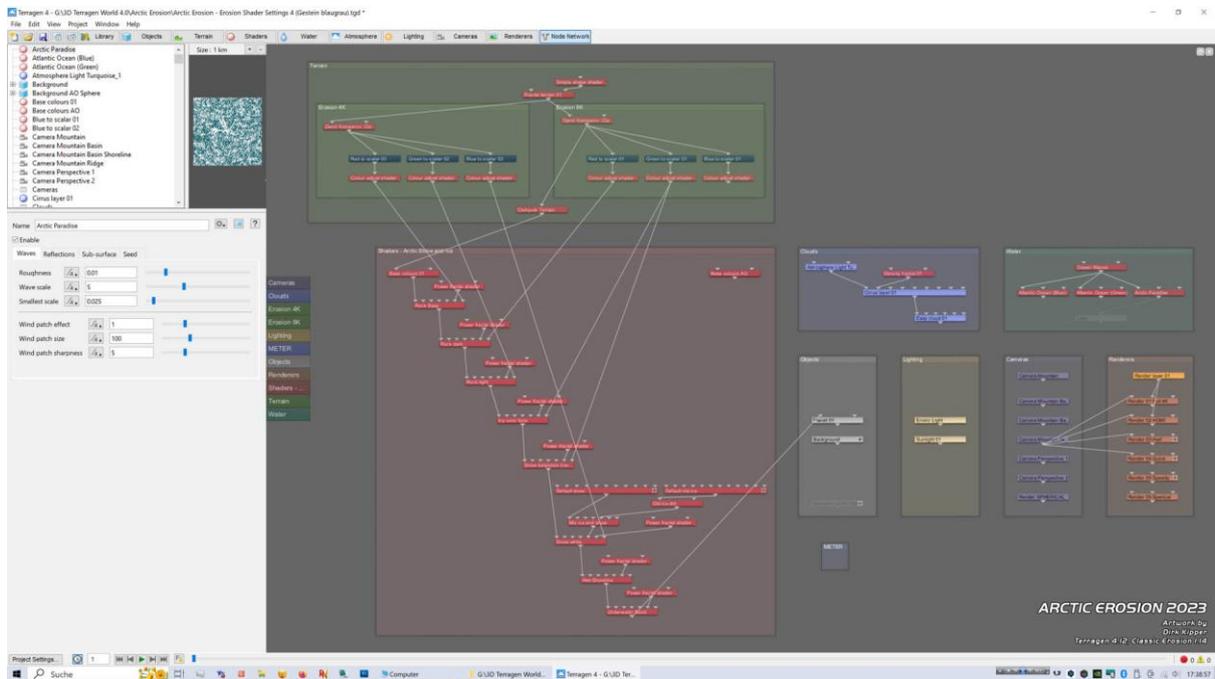
Eroded arctic mountain scenery  
(Rock brownish-grey, improved snow, fine waterline, 4K+8K map mix)



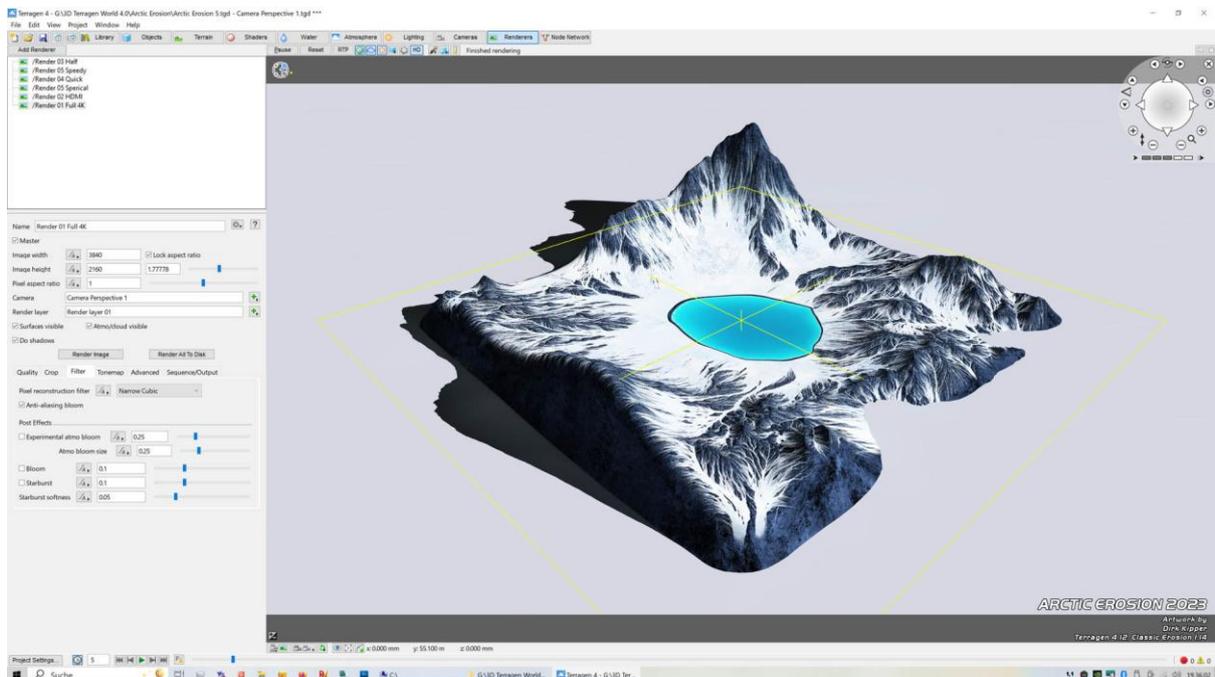
Eroded arctic mountain scenery  
(Rock bluish-grey, improved snow, fine waterline 4K+8K map mix)

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In the Node Network, you can see that many nodes has been added now.  
I also tested mixing up 4K maps together with 8K maps to achieve different results.  
Simple but good-looking water shader and atmosphere with clouds has been added.



Shader Design 4.0  
(snow white, snow greenish, snow-ice mix, wet shoreline, sand, 4K+8K map mix)



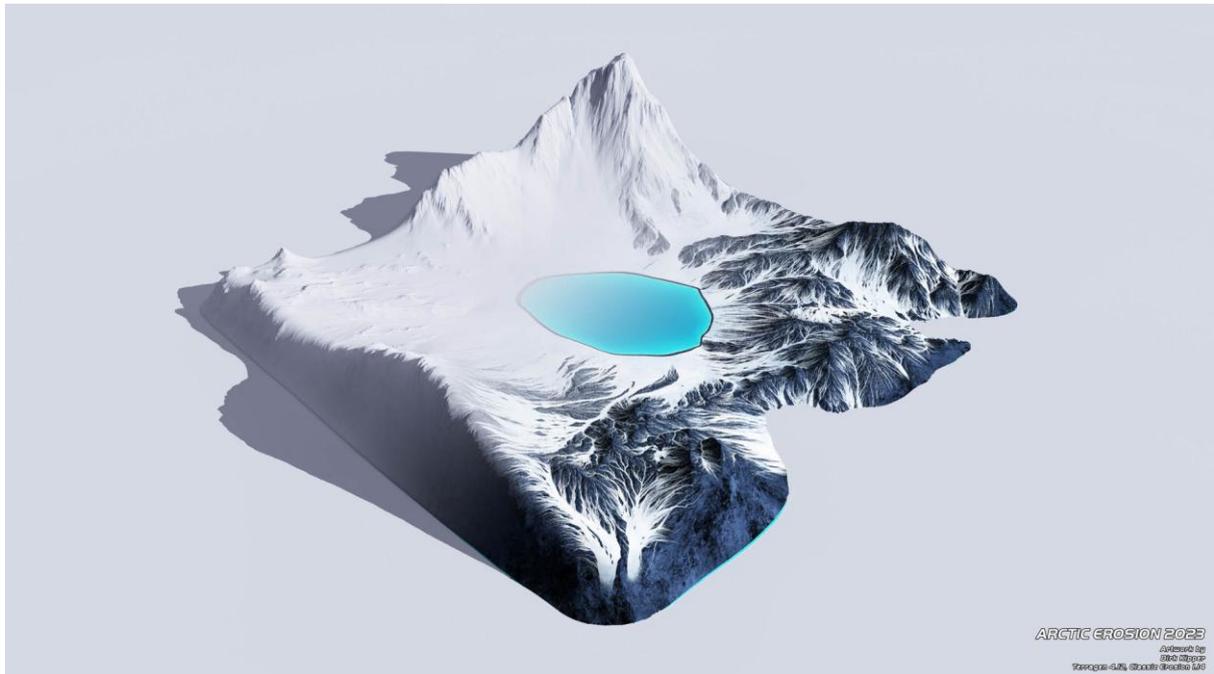
Shader Design 4.0  
Eroded arctic mountain scenery in a perspective view

# Arctic Erosion Made with Classic Erosion Plugin

At this point, I had a little bit fun while rendering this nice erosion scenery.  
Here is one version with my Arctic Ocean water and another blended version.  
Both looking fine, but there is more room for improvements...



Original 4K Rendering with applied shader design 5.0  
(snow-ice mix with sparkled cracks, wet shoreline, underwater sand, 16K maps)



Neutral 4K Rendering blended with applied shader design 5.0  
These two blended terrains are looking so cool!

# Arctic Erosion Made with Classic Erosion Plugin

The first improvement I did, was to create a nice sky with clouds. So the image looks more natural and attractive. Without clouds, it looks somehow sterile, and you miss natural shadows on the terrain, which gives the terrain a more natural appearance.



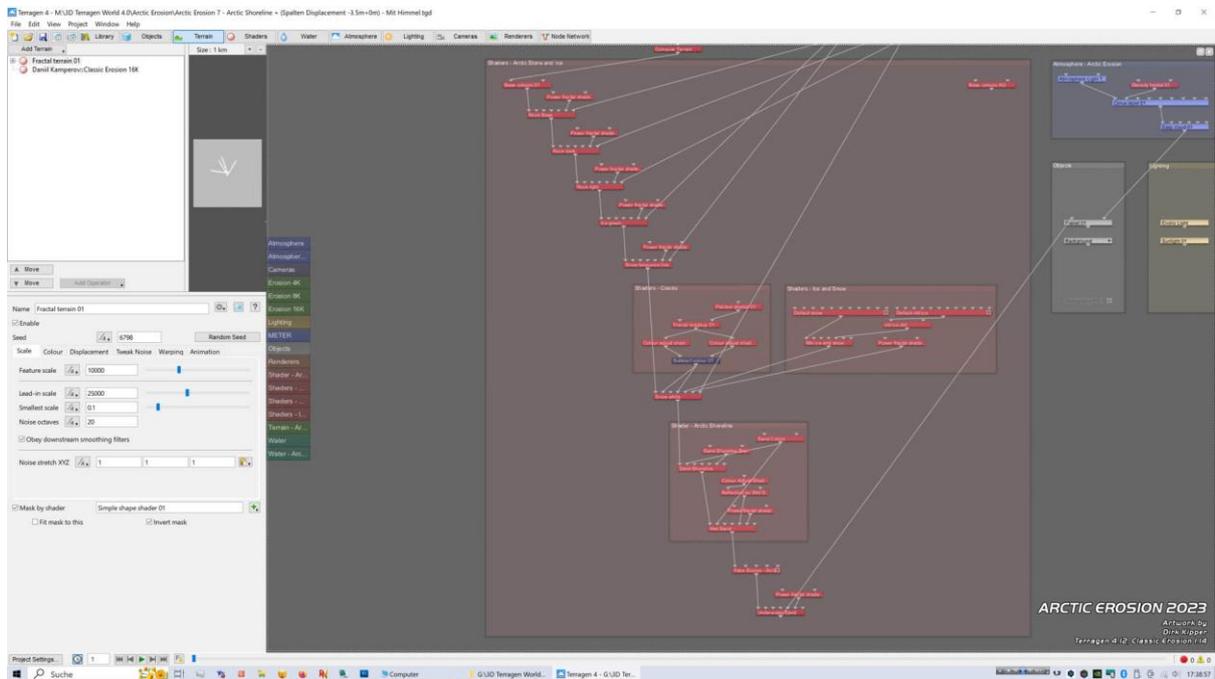
Arctic Erosion without clouds



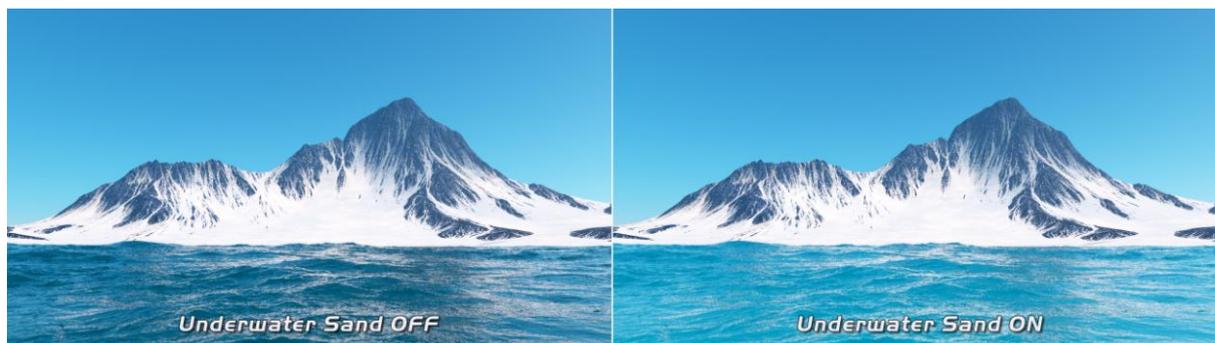
Arctic Erosion with clouds and their shadows on the terrain

# Arctic Erosion Made with Classic Erosion Plugin

At this point, many will ask themselves, how did this guy get this nice looking arctic water? My way to do it, is to set as the last shader a nearly white underwater sand shader. If you have a bright underwater sand, then reflection lightens up the water.



Arctic Terrain  
Shader Design 7.0



Underwater sand layer at the end of the shader tree makes the difference

In a direct comparison, you see the difference at the first glance. The left image is rendered without the white underwater sand shader at the end of the shader tree. Right, it is rendered with the whitish underwater sand. The sand brightens up the ocean water. Isn't it a good idea? This water looks so much more tasty.

By the way... the color of the water is designed to fit the atmosphere color in this image, which is a lightweight turquoise. Maybe too bright, but ice will be added next.

# Arctic Erosion

## Made with Classic Erosion Plugin

Then I added some ice in the water and cracks in the snow. The first render didn't look promising, because the point of view is 30 meter higher than the water level. In the second, I lowered the camera to 55.4 meter, while the water level is at 55 meter.



Camera set 30 meter above sea level  
Sea ice displacement is nearly invisible (but good for drifting ice fields in open water)



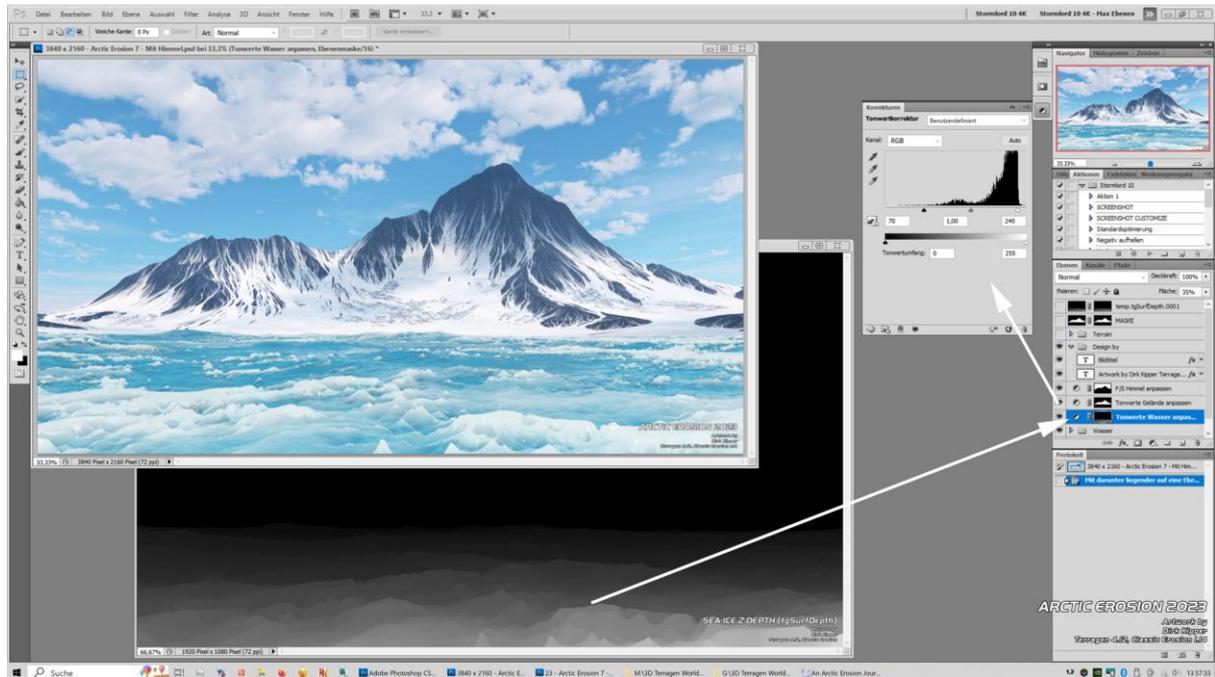
Camera set just 0.4 meter above sea level  
Much more dramatic 3D view of the arctic sea ice and waves at the horizon

# Arctic Erosion

## Made with Classic Erosion Plugin

The camera set is just a little above the sea leads to a much more interesting and dramatic view. You will notice that the waves at the horizon are now curved (dramatic) and the sea ice displacement becomes clearly visible.

To illuminate the sea ice a little bit more realistic, I used some render layer elements to design a better 3D looking effect.



Illuminating the sea ice with a z-depth mask

Because my concept a little bit abstract, I made this screenshot in Adobe Photoshop to make it more clear for you. So just follow the lines in the screenshot above...

Here I spiced up the sea ice a little bit. I took the tgSurfDepth-layer (z-depth) element, masked it and used this mask for a tonal correction layer in Photoshop. This brightens up the ice in front of you, but lowering the influence of the tonal correction layer towards the horizon. In other words, it becomes more 3D looking.

So this small trick generates the sea ice a little bit more illuminated in the front (more whitish) and leaves it normally illuminated at the horizon. To trigger this effect further, I also used the "tgSurfDirectSpec-layer" to light up the sparkles in the ice itself.

Finally, even if you don't see it in this rendering, I added some fake stones at the shoreline to pimp the beach a little bit more. Surely more details like big boulders could be added too, but for now, I think the scene is really a fine first erosion experiment.

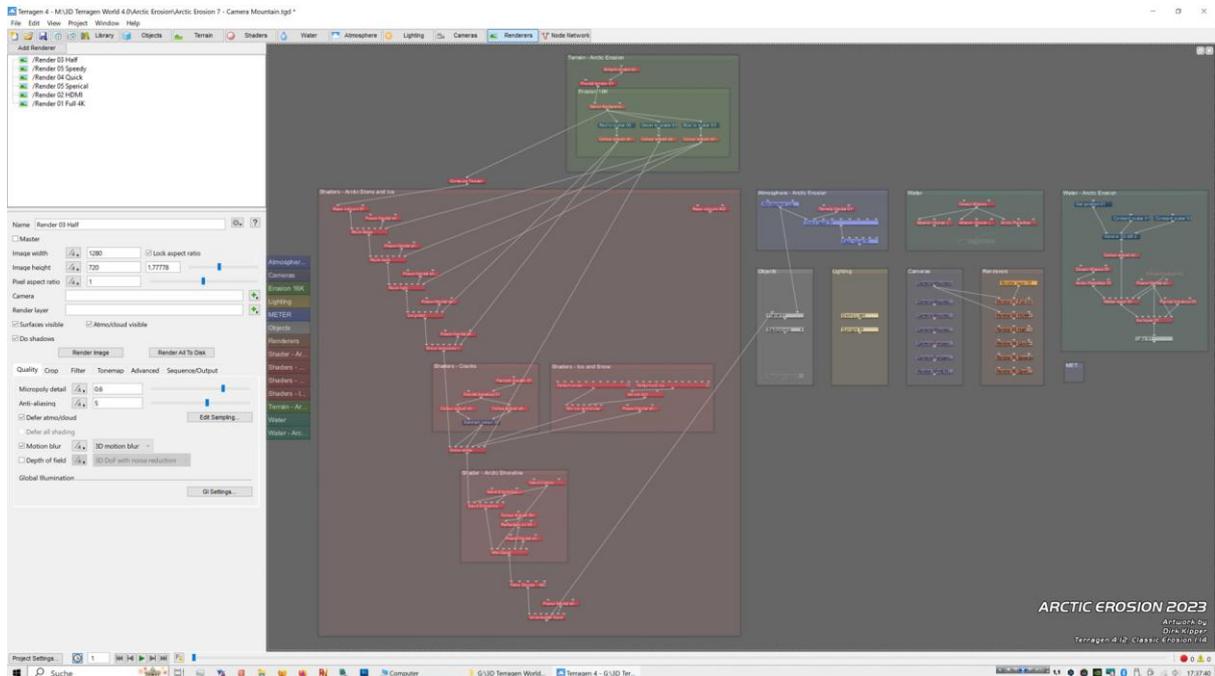
# Arctic Erosion Made with Classic Erosion Plugin

So my journey has come to an end at this point.

I really hope you enjoyed the explanations beside the embedded extra images. So this is my first erosion experience and I learned a lot.

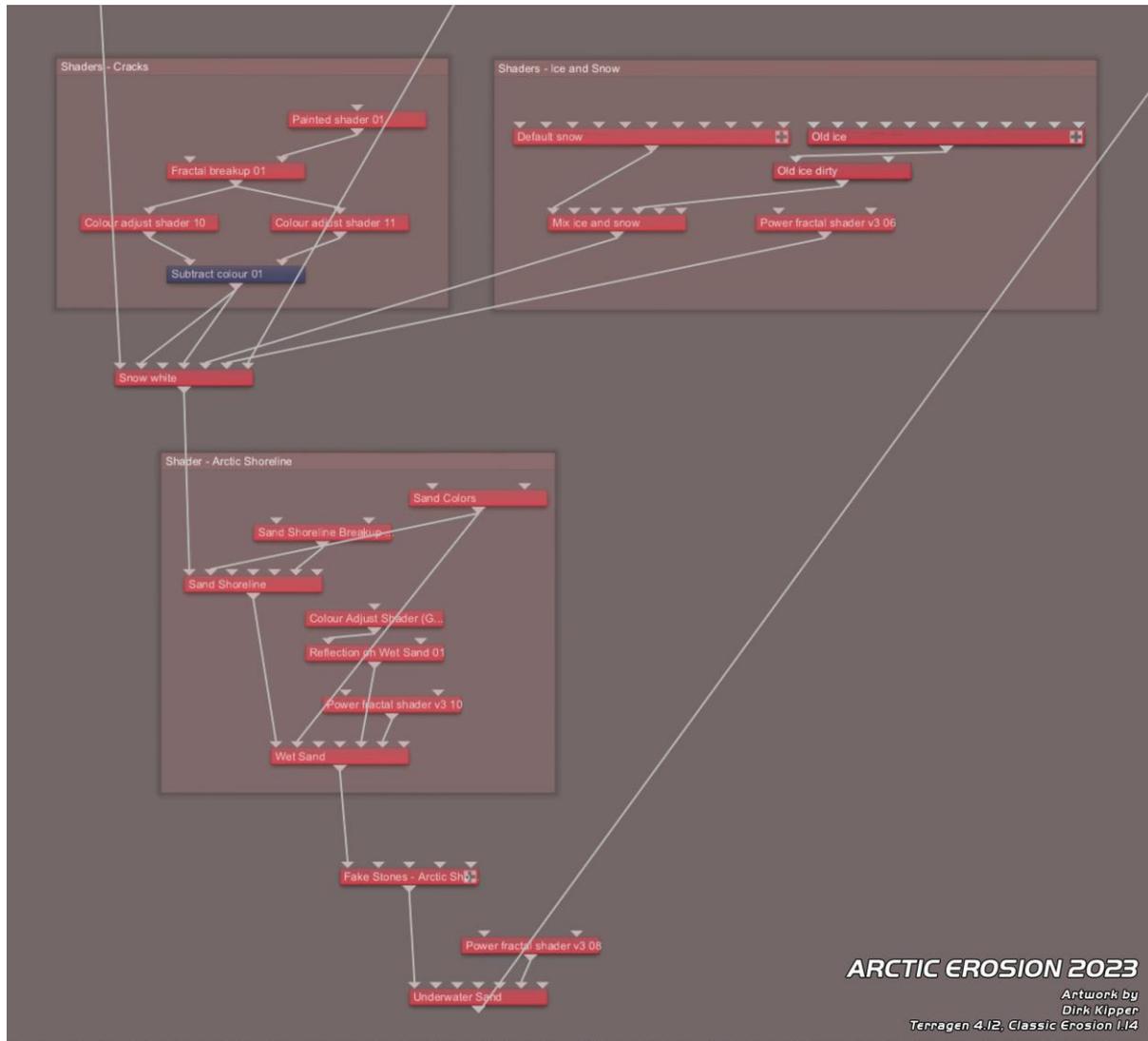
As a bonus let me present here my shader network more in depth. First I will show you an overview of the Node Network and the more interesting shader nodes in detail. My shader design 7.0 for snow and ice, then the great arctic ocean water, ended with the Terrain setup for the Classic Erosion plugin.

DIRK KIPPER



Arctic erosion 2023  
Node Network overview

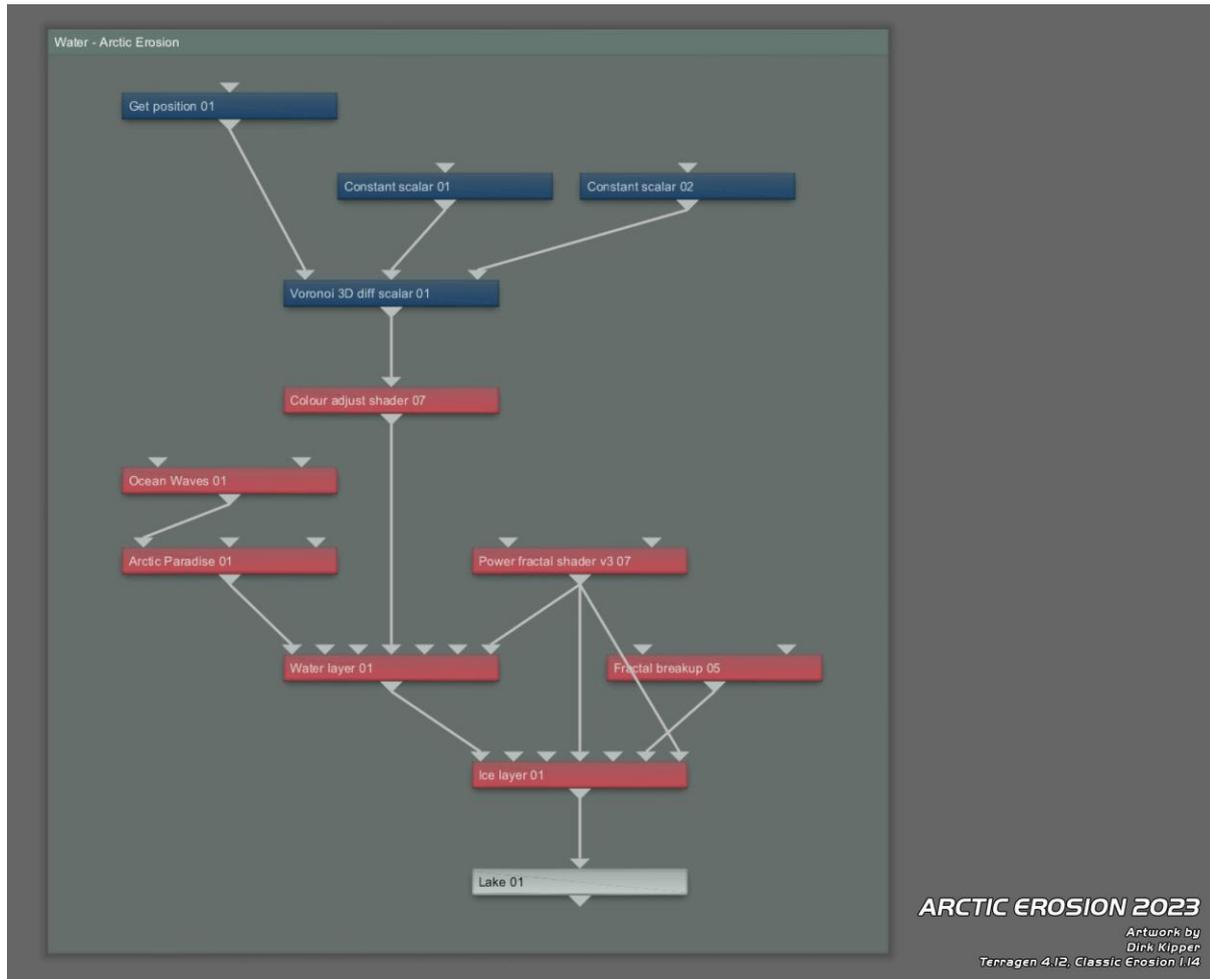
# Arctic Erosion Made with Classic Erosion Plugin



Arctic erosion 2023  
Node Network in detail  
Snow, Ice, Cracks and Shoreline

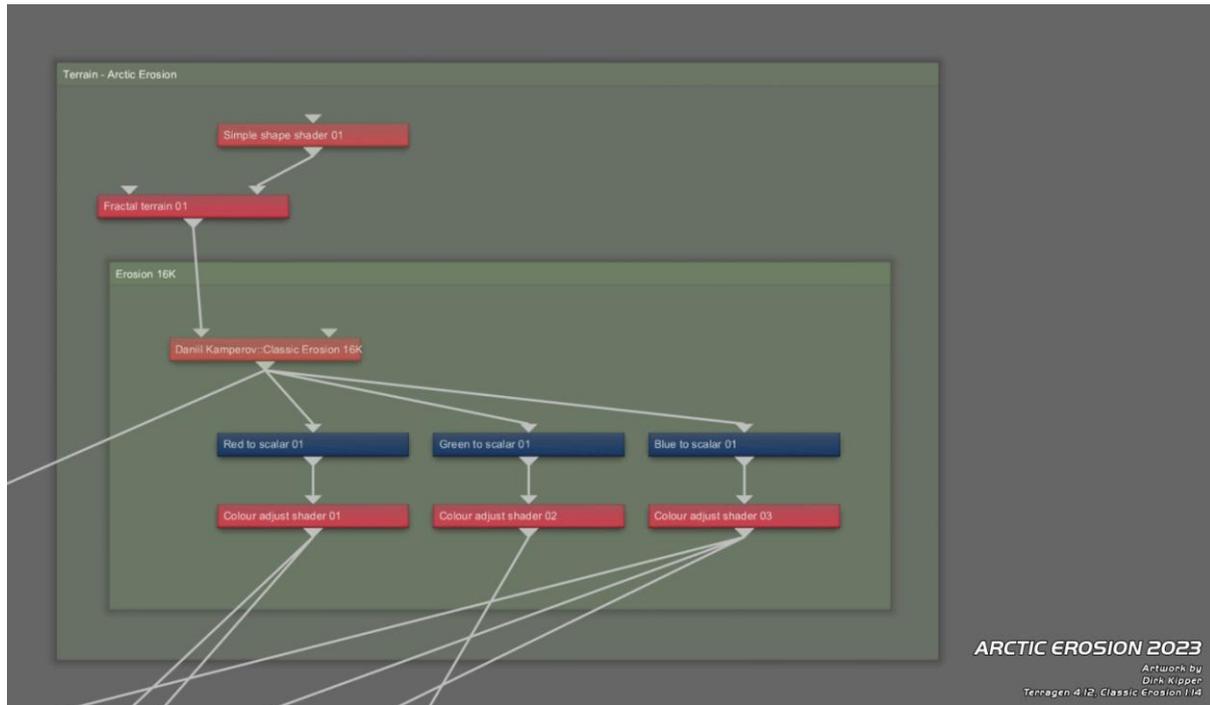
# Arctic Erosion

## Made with Classic Erosion Plugin



Arctic erosion 2023  
Node Network in detail  
Arctic Erosion water shader

# Arctic Erosion Made with Classic Erosion Plugin



Arctic erosion 2023  
Node Network in detail  
Arctic Erosion Terrain (Classic Erosion Plugin)



Arctic erosion 2023  
Arctic Erosion Terrain rendered with border blending

# Arctic Erosion

## Made with Classic Erosion Plugin

Resources:

Author: Dirk Kipper

[www.dirkkipper.de](http://www.dirkkipper.de)

[http://www.dirkkipper.de/Galerie\\_Terragen/Terragen\\_02/index.php](http://www.dirkkipper.de/Galerie_Terragen/Terragen_02/index.php)

Classic Erosion

<https://daniilkamperov.com/>

Classic Erosion User Guide

<https://daniilkamperov.com/download/Classic-Erosion-User-Guide.pdf>