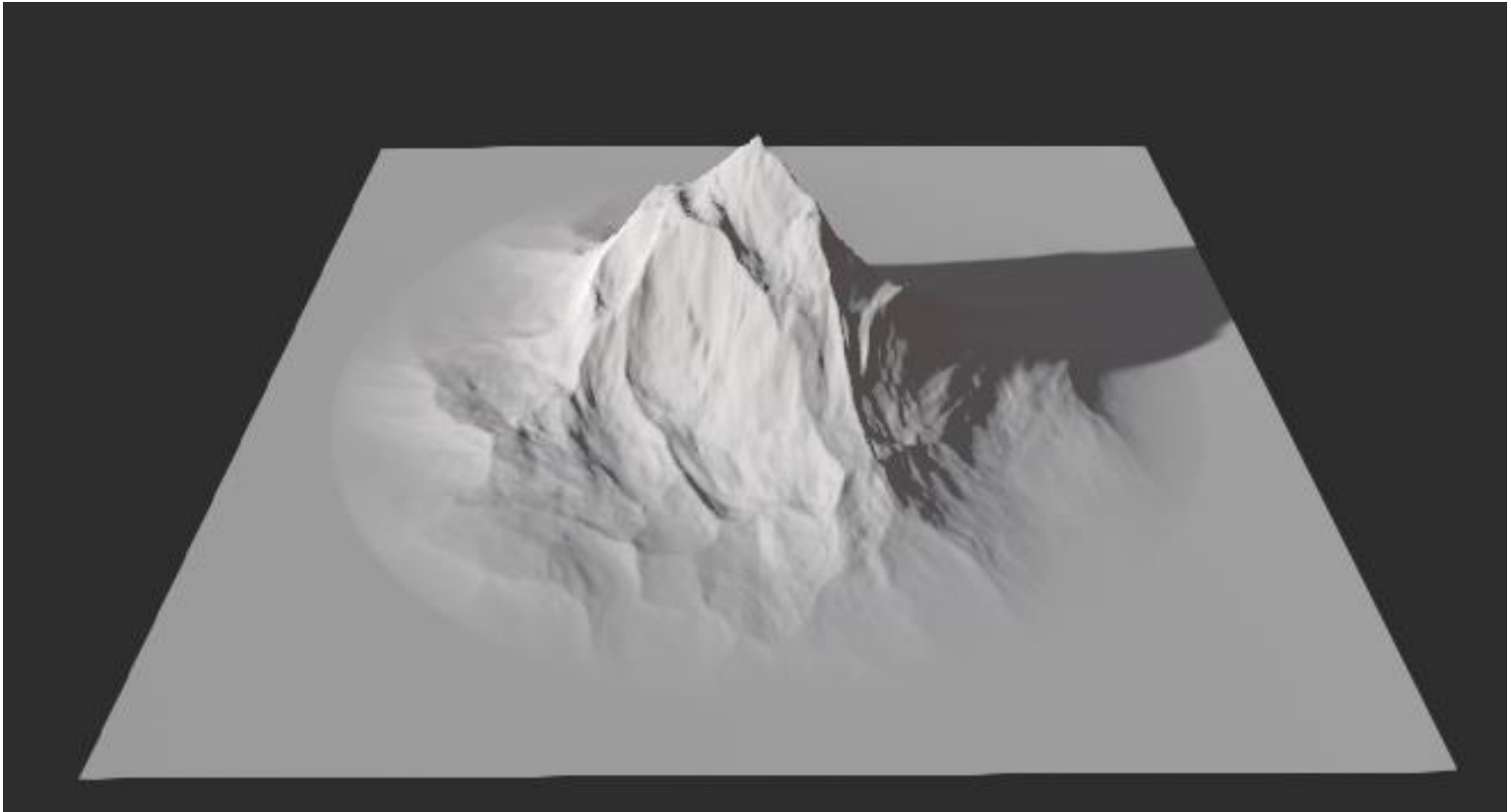


Importing Gaea Terrains into Vue tutorial

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Introduction to Gaea



Gaea is an application by the Quadspinner company to create 3D model terrains. This tutorial will look at Gaea with a view to create terrains for exporting to Vue, whether that is for direct use or for further modification within Vue.

Gaea is considered a “Node-based” modeller which means it uses building blocks or “nodes” with adjustable parameters that connect together to form the final desired model. The parameter adjustments of a particular node will not affect the results of any node upstream from it. This results in non-destructive editing and experimentation along the chain and branches of nodes until the final desired model is achieved.

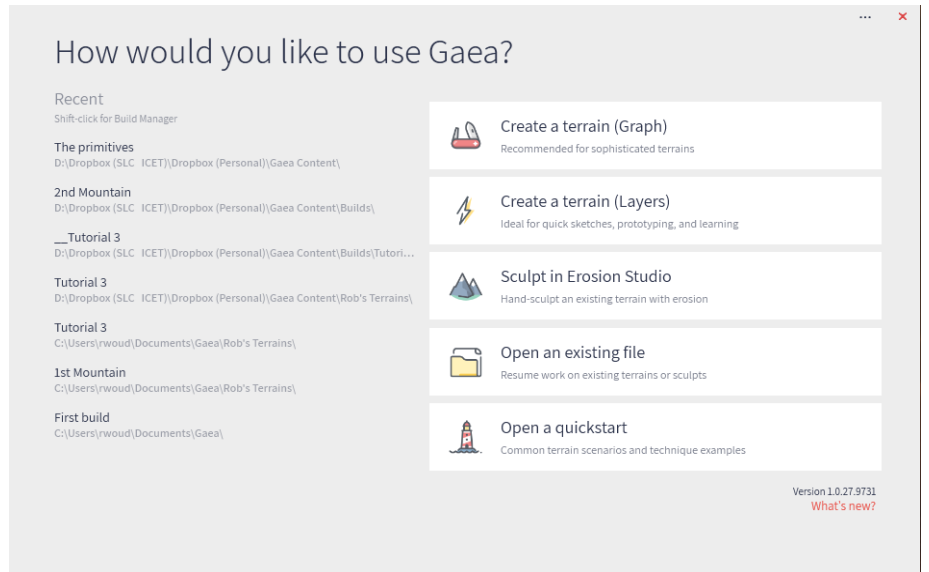
The main display of Gaea shows the interconnected nodes in the lower display area and the resulting 3d model in the upper half of the display.

The final output of a Gaea project will be one or more **height-field** files that can be used to define height, colour and masks for materials by Vue.

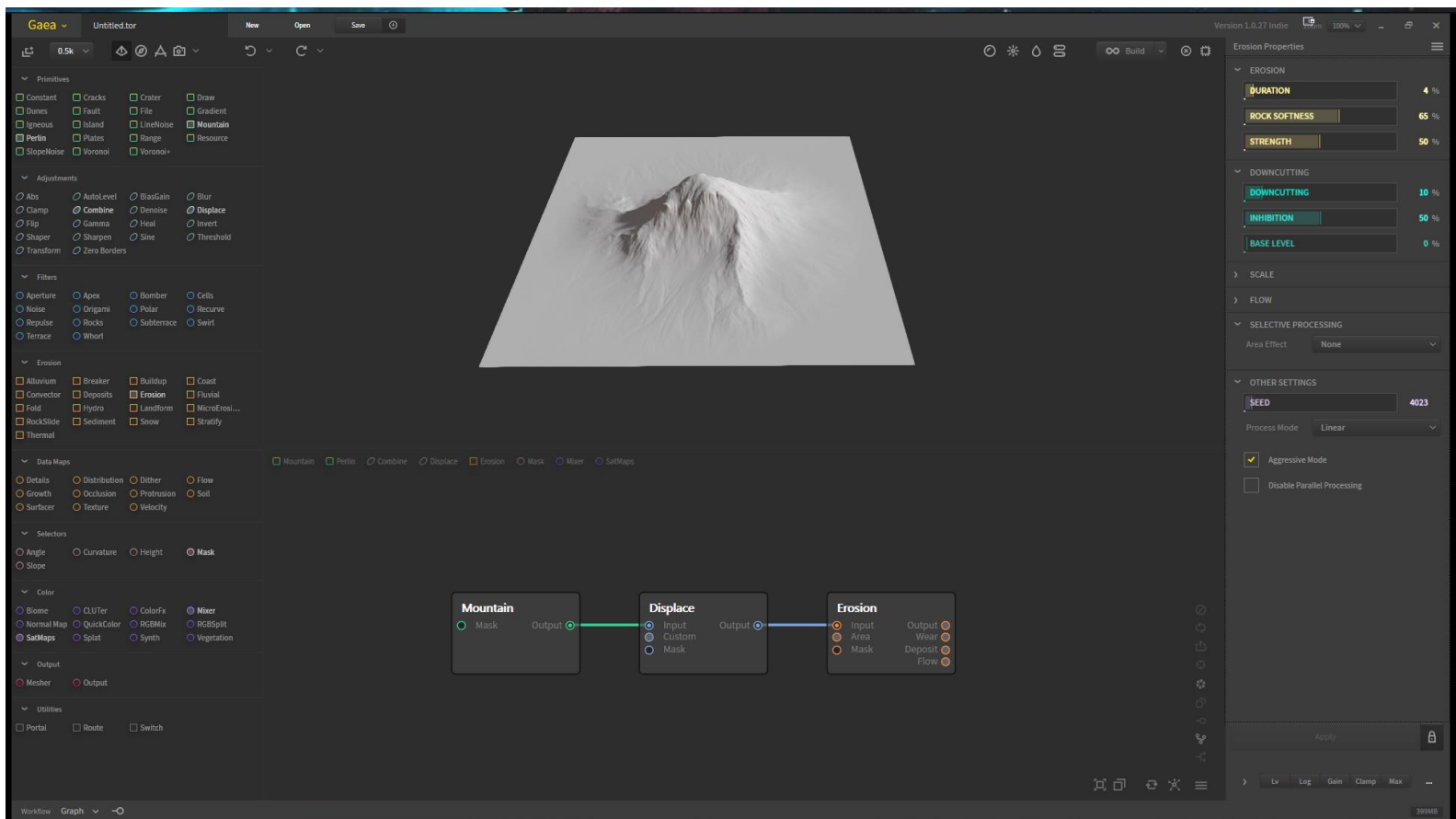
Basic initial example

When you first launch Gaea, its opening screen asks the user to select the type of project to open or create. Recent project files are shown to the left.

Usually, a terrain in Graph form would be selected.



Then the Gaea screen will be opened with one chain of nodes already shown. The right side of the screen shows the nodes that can be added. The left side of the screen shows the adjustable properties for the selected node.



Mouse operations:

Left Mouse:

The left mouse button is generally for selecting and dragging.

- Select a node to see its parameters displayed in the right panel.
- Use the left mouse key to click at different points along a parameter bar-graph of a parameter to set a different value.
- To add a node; use the left mouse key to click-and-drag the node into the node display area.
- To connect nodes; use the left mouse key to click-and-drag a connector from the output of one node to the input of another one.
- To delete a node, select and press Del. Or drag a selection box around many nodes and press Del.

Center Mouse Wheel:

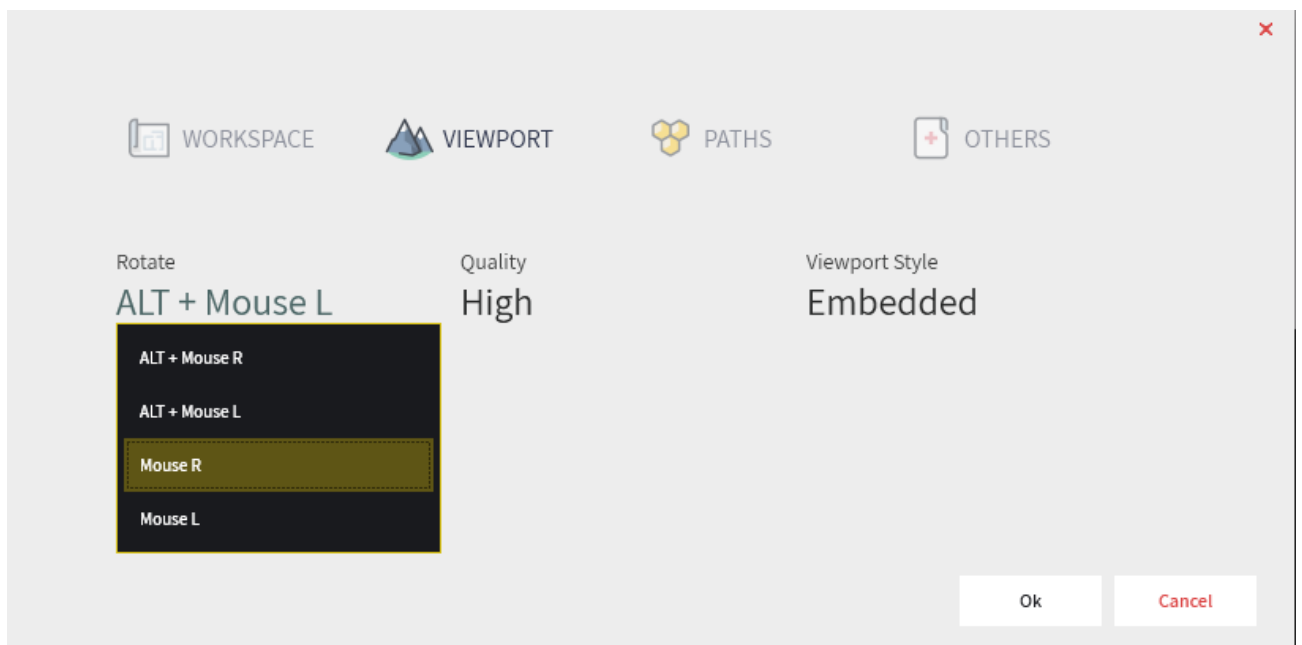
The center mouse wheel/button is used for zooming and panning.

- For the terrain preview in the upper section as well as the node chain in the lower section, press the center mouse button and drag the mouse to pan the display.
- Again, for both the upper and lower display, roll the mouse wheel to zoom in or out of the display.

Right Mouse button:

The right mouse button will be used to rotate the terrain preview. But this must be set up first:

- Left-click the **Gaea** name at the top-left of the screen, then select; **Preferences...** from the listing to show a preferences dialog:
- Select the **Viewport** icon and then click on **Rotate**.
- Click on **Mouse R** to set preview rotation to the right mouse button.

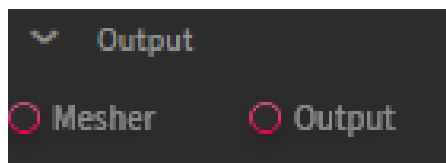
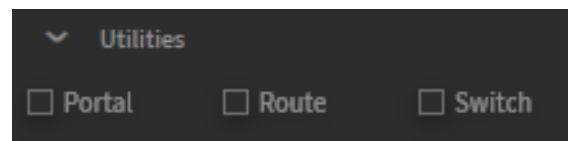
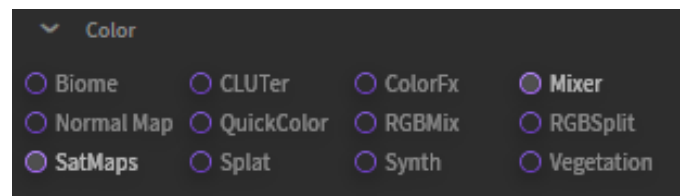
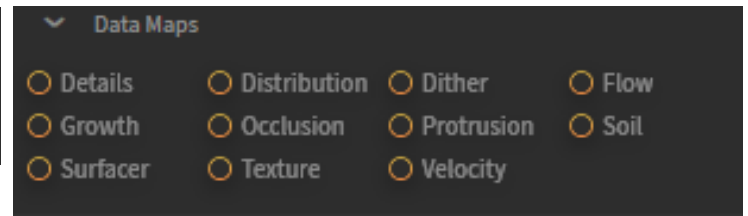
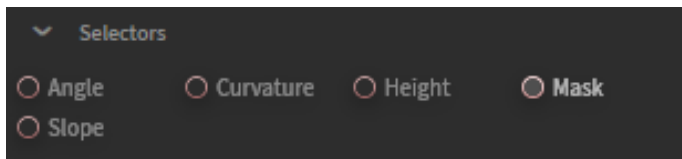
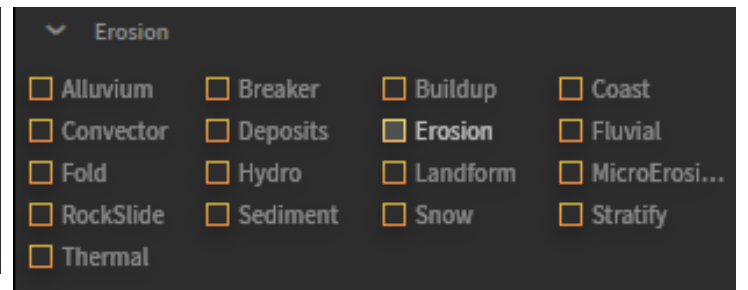
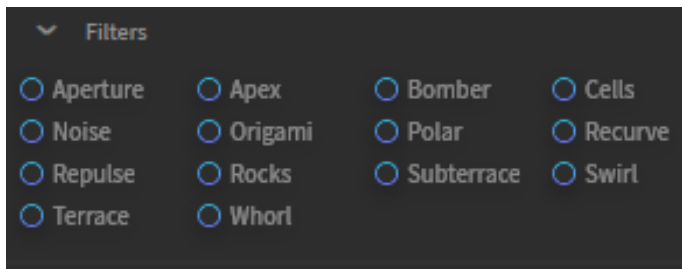
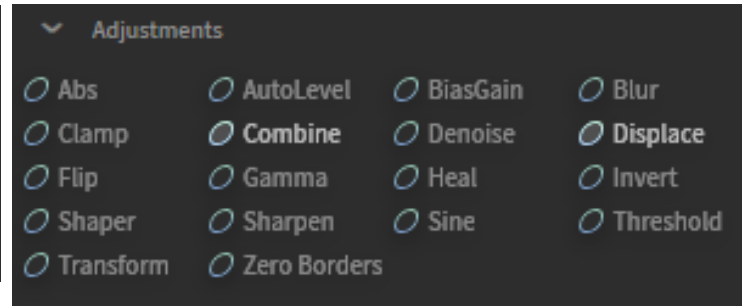


Available Nodes.

To the left of the main display are the various nodes that can be added to the node display. (Scroll this area's right border to see all nodes). They are grouped in a number of families:

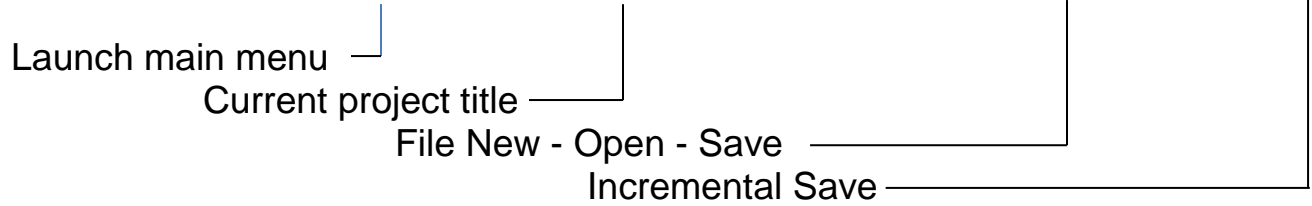
Primitives - A primitive must be the first node in a chain

Adjustments, Filters, Erosion, Data Maps, Selectors, Colour, Output & Utilities

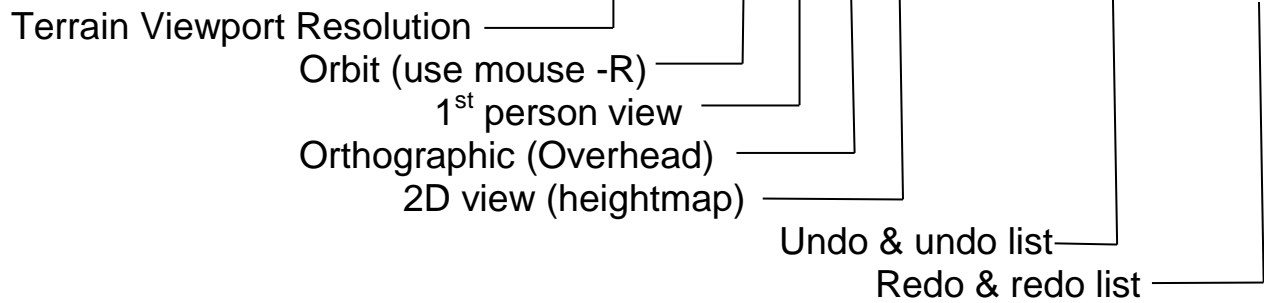
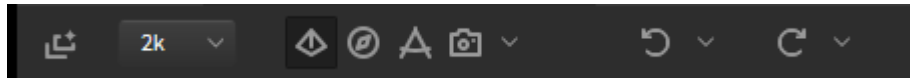




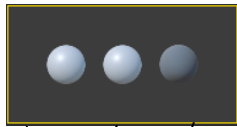
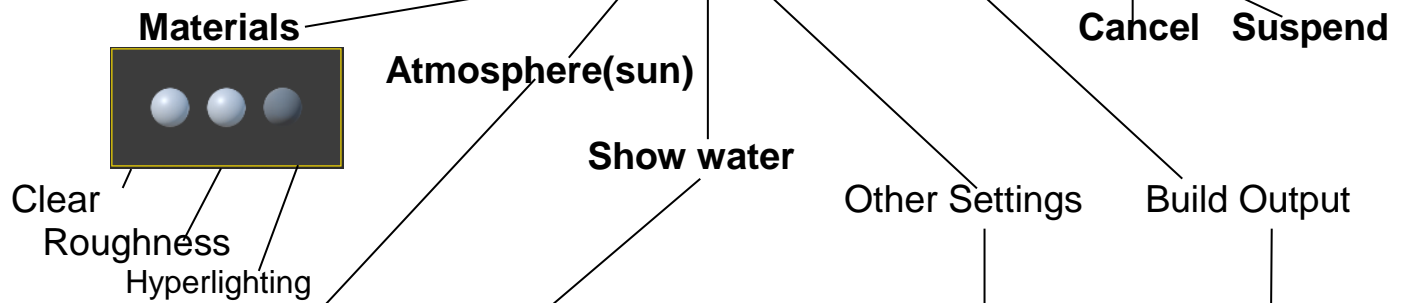
Top Menu Bar



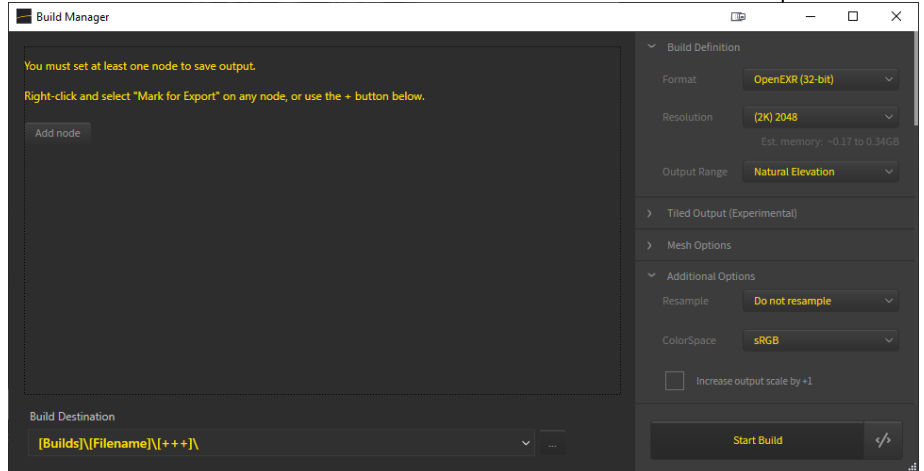
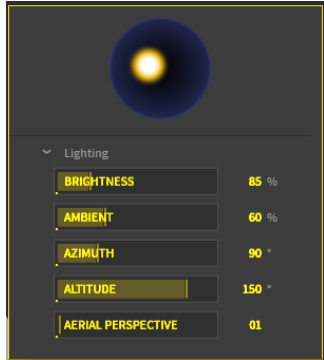
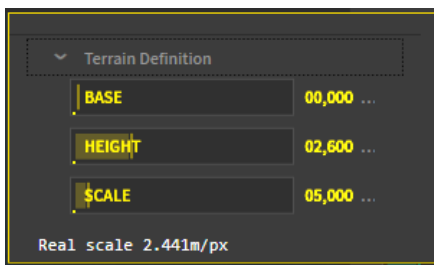
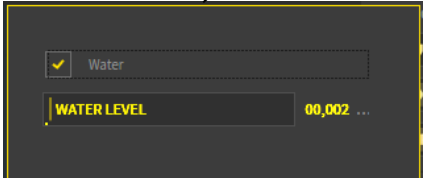
Top-left Icon Menu:



Top-right Icon Menu:



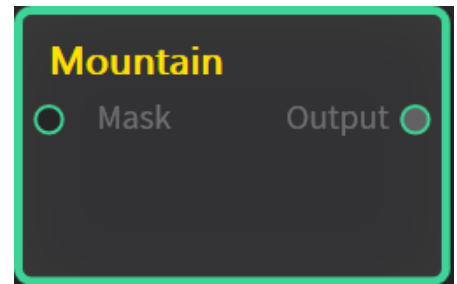
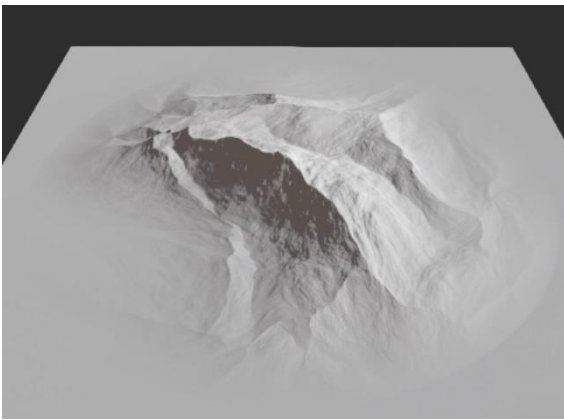
Clear
Roughness
Hyperlighting



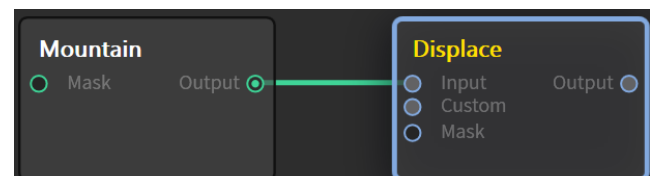
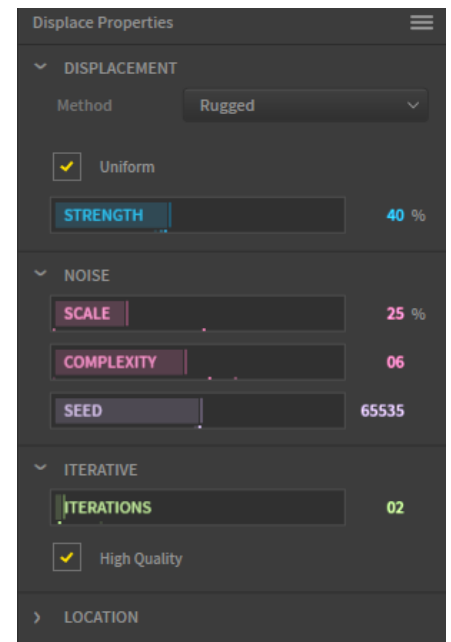
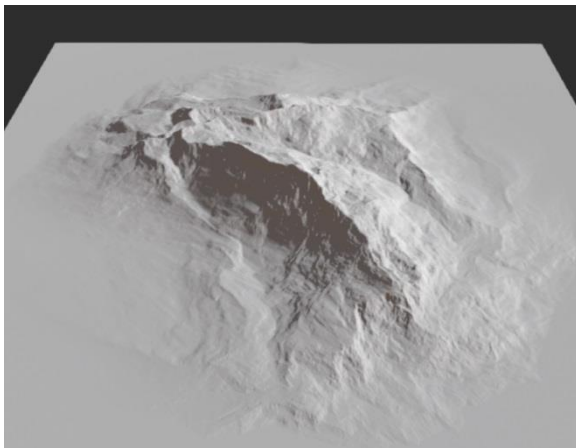
Typical Workflow:

To create a simple terrain to import into Vue, we'll begin by selecting and erasing the default nodes that are shown on start-up.

- In the top-left icon menu set the **Terrain Viewport Resolution** to 2K. (4K really slows Gaea down.)
- Drag a **Mountain** node into the node space
 - Make it a **Type = D** mountain
 - Set the **Height** as **Enhanced**
 - Set **Scale** to 65%
 - Change the **Seed** to 65535 or so
 - Leave the **Edge** at 0.00



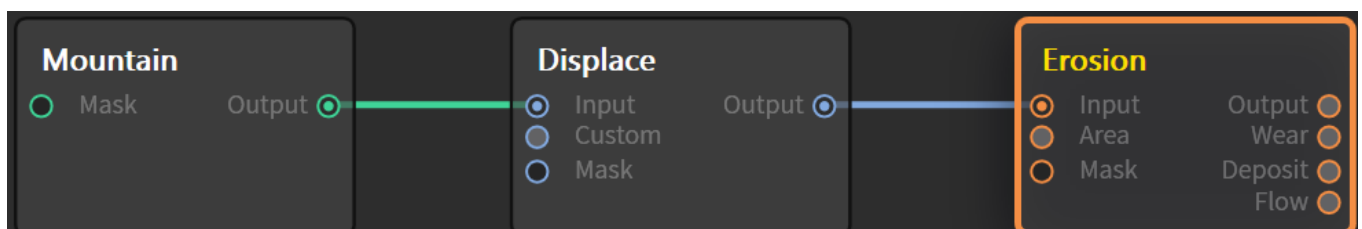
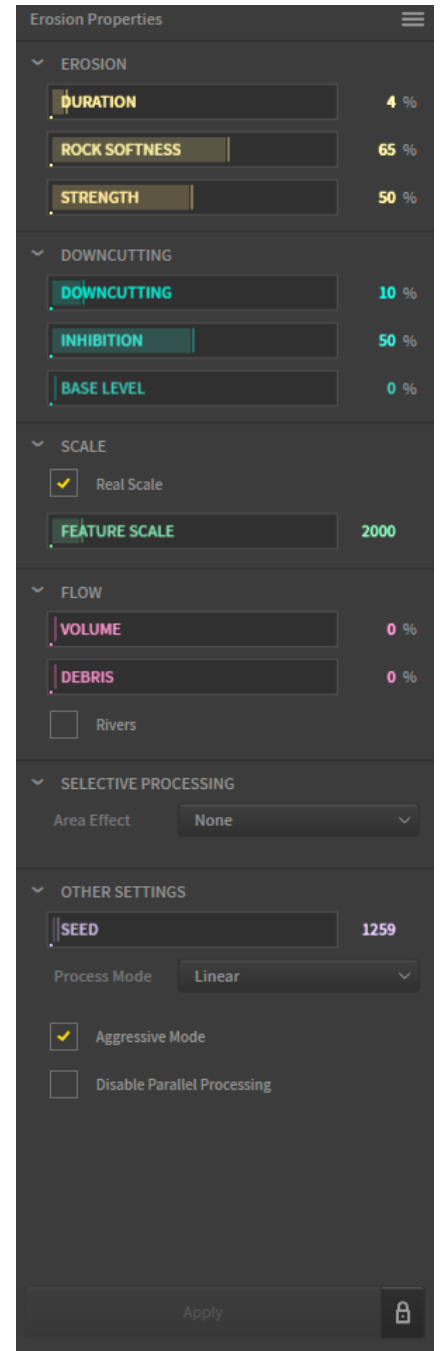
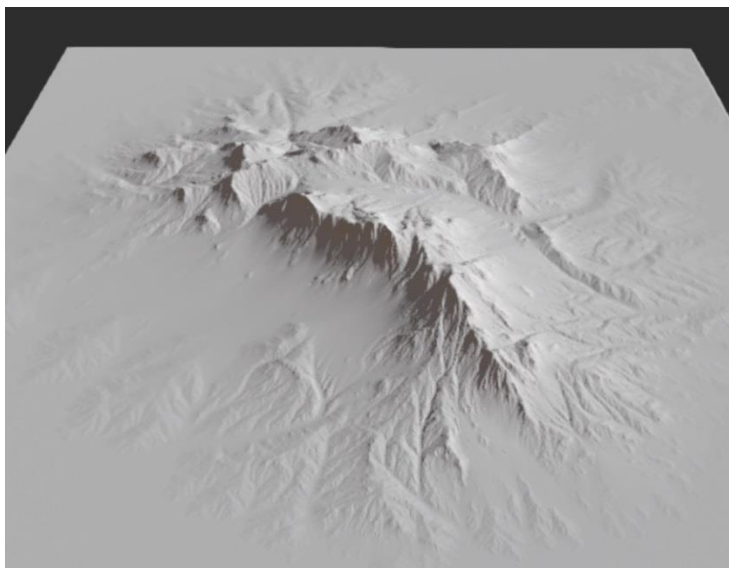
- Drag a Displace node and drop it right on the Mountain node, it will connect to the Mountain node automatically.
 - Change the Displacement Method to Rugged
 - Check the Uniform box if not checked
 - Change the Strength to 40%
 - Change the Noise Scale to 25%
 - Change the Complexity to 06
 - Change the Seed to 65535
 - Set the Iterations to 02
 - Leave the Rotation as is
 - Set the High Quality to ON
(which removes the Rotate line)



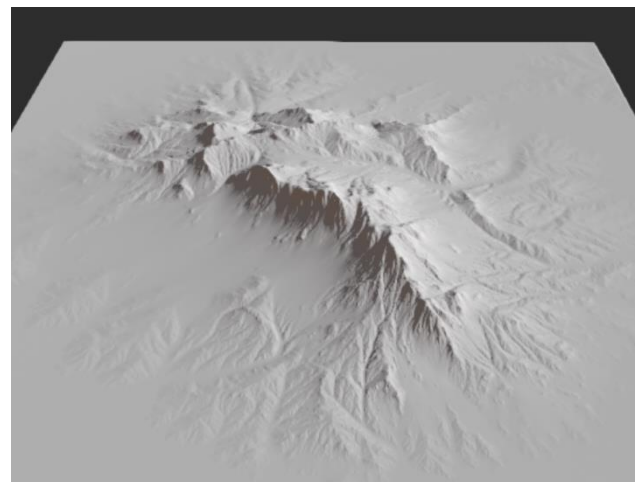
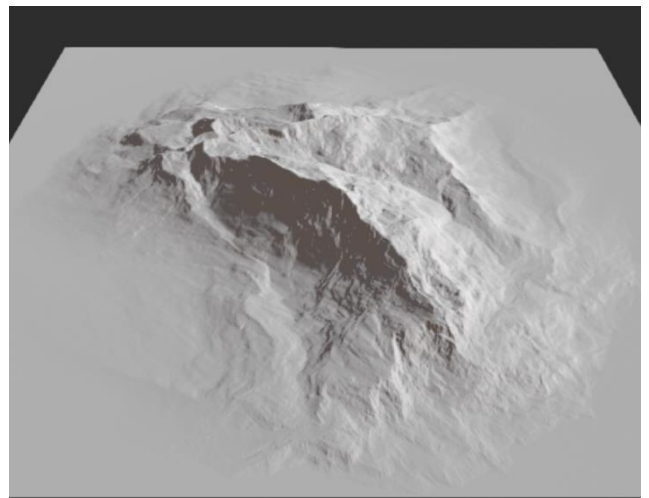
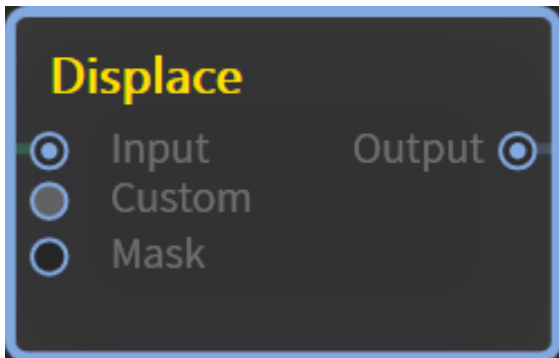
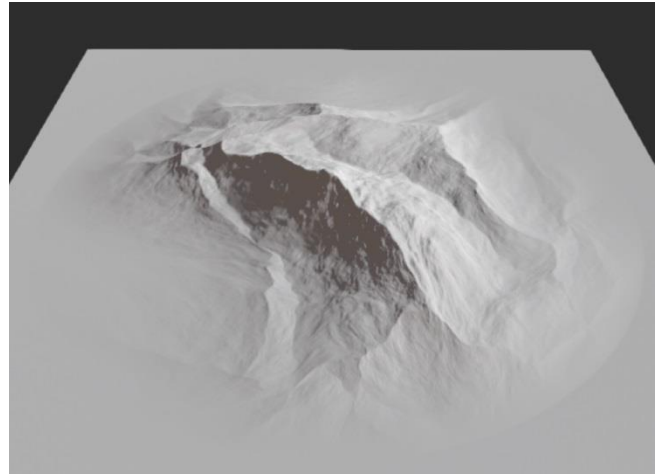
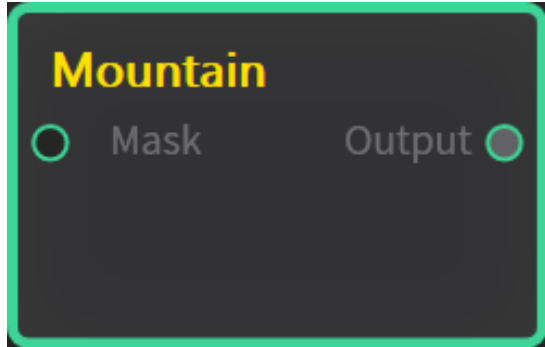
- Drag an Erosion node and place it to the right of the Displace node.
- With the left mouse button drag from the **Displacement's Output** terminal to the **Erosion's Input** terminal to make a connection between them.
- Click the Erosion node to highlight it.
- In the Erosion Properties panel to the right, click any right-facing parameter titles to expand them.

- Set the Duration to 17%
- Set Rock Softness to 70%
- Set Strength to 63%
- Set Downcutting to 21%
- Set Inhibition to 55%
- Leave Base Level at 0%
- Keep Real Scale on
- Leave Feature Scale at 2000
- Set Flow Volume to 20%
- Set Debris to 34%
- Leave Rivers unchecked
- Set Area Effect to None
- Set Seed to 65535
- Set Process Mode to Linear
- Leave Aggressive Mode checked on

- Finally, click the Apply button at the bottom.



By clicking on each node we can see the state of the terrain as it leaves that node. Making adjustments on subsequent nodes does not change the preceding ones.


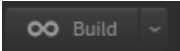


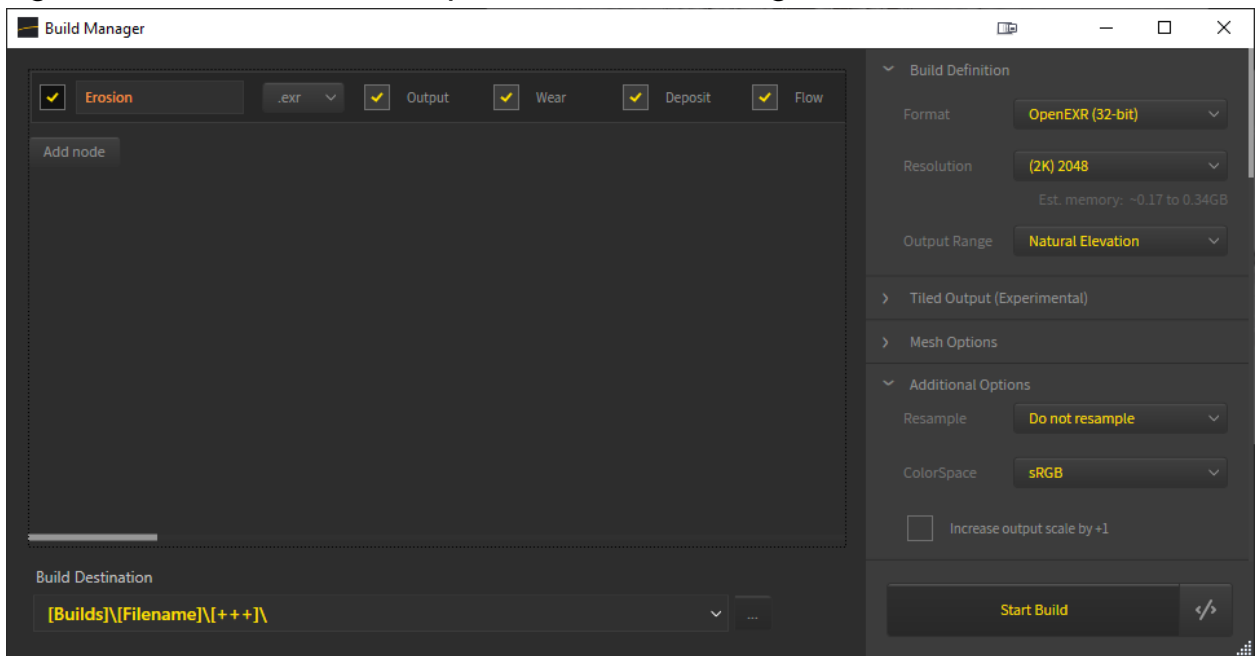
There is an infinite amount of variations that can be applied to the terrain project by simply changing the parameters of the nodes used and/or adding other nodes to the project.

Terrain File Output

The main objective in Gaea is to output the terrains that are created for use in some other software. For this tutorial, that is e-on software's Vue application. Usually, the final node of the project is the one we want to receive the output from, in this case, the Erosion node.

To do this we will mark the node for outputting so that when we start the Build Manager will incorporate it in its output operation.

- To do this, highlight the Erosion node, then right-click it. Then click on Mark for Export. A check mark will show beside it and a “Save” icon;  will show below the Erosion node.
- To initiate the build process, click on the Build button:  in upper-right icon menu. This will open the Build Manager:



Output Destination:

The output will be a grayscale heightfield picture file. The Build destination will be the path that is specified in the main Gaea **Preferences** listing and then ending in [Builds]\[Filename]\[+++]\. This should be kept as is. The file number: [+++] increases automatically as the file is incrementally saved.

File Format:

The file format for proper use in Vue can be either PNG (16 bit) or OpenEXR (32 bit). Both seem to show the same resolution when opened in Vue. Use PNG as it is a more universal picture file format.

Resolution:

Usually, the higher the resolution of the output file, the better but also more time consuming to render. Values are from a minimum of 1K to as high as 256K (but effectively, only 16K). The highest resolution the **Indie** version can produce is 4K. To create terrains as high as 8K x 8K or higher requires the **Professional** version of Gaea

➤ Select 4K for this build. (Or select 8K for Professional).

Output Range:

Select Natural Elevation.

Additional Options:

- Set Resample to Do Not Resample
- Set ColorSpace to sRGB
- Set Increase output scale by +1 on

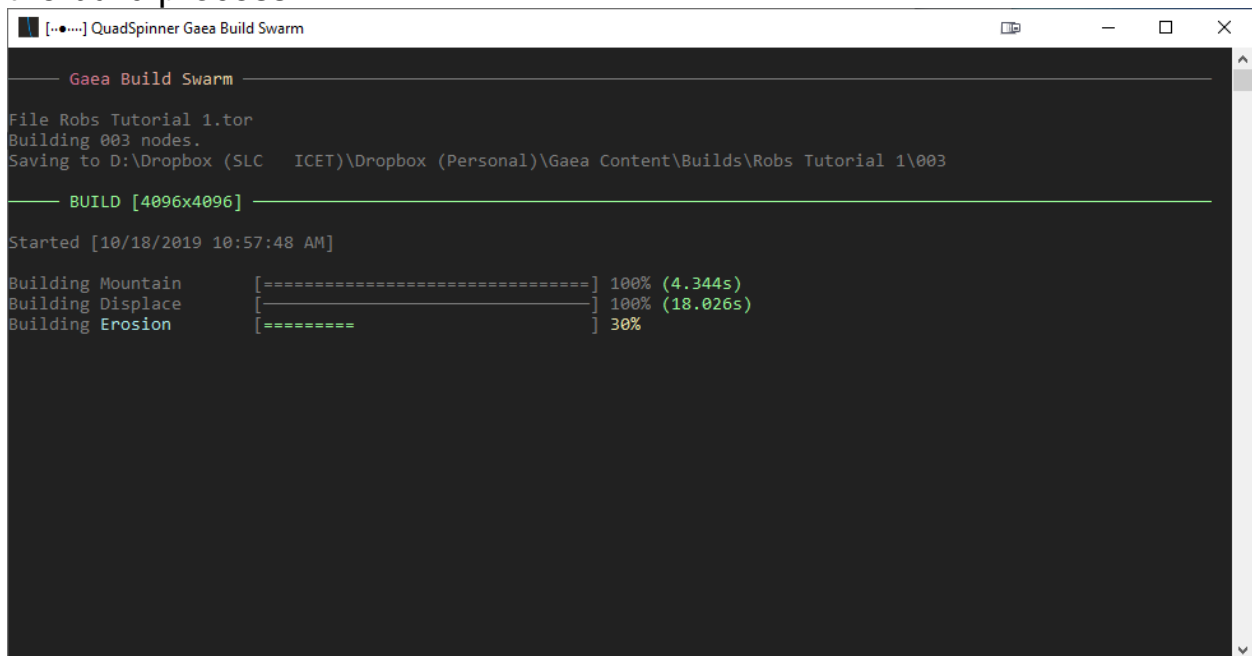
Layers to be Outputted.

There are a number of layers that the Building Manager can output into separate files. Output, Wear, Deposit and Flow. Leave the default selections as it is.

Gaea File

When you then click **Start Build**, Gaea will want to save the project file (called a **.tor** file). Select a location and name for this Gaea project file.

Once the project file has been saved, the build screen will show the progress of the build process:



```
QuadSpinner Gaea Build Swarm
Gaea Build Swarm
File Robs Tutorial 1.tor
Building 003 nodes.
Saving to D:\Dropbox (SLC ICET)\Dropbox (Personal)\Gaea Content\Builds\Robs Tutorial 1\003

BUILD [4096x4096]

Started [10/18/2019 10:57:48 AM]

Building Mountain [=====] 100% (4.344s)
Building Displace [=====] 100% (18.026s)
Building Erosion [=====] 30%
```

Remember to be patient, especially at high resolutions, as each node is processed. Progress (DOS level) is shown as each node is built.


When completed the folder containing the project .tor file and the output file(s) will open.

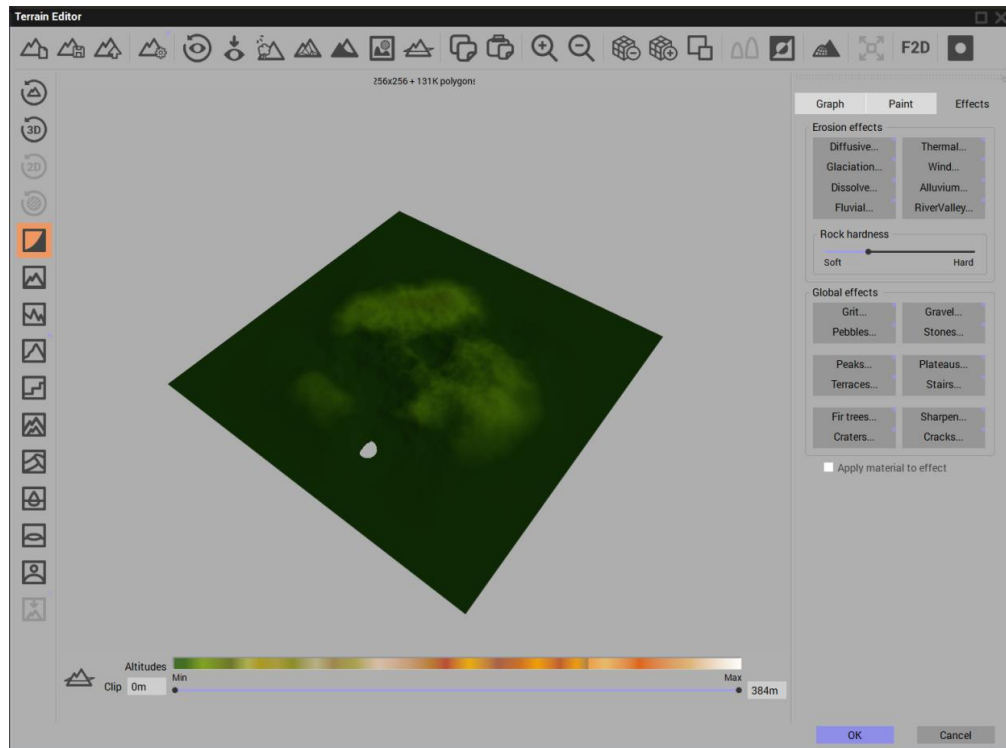


Once the build is done you can close the Build Manager and then close Gaea.

Loading the Height-map into Vue


The next stage in the workflow of this project is to use the height-map outputted by Gaea to create the terrain in Vue.

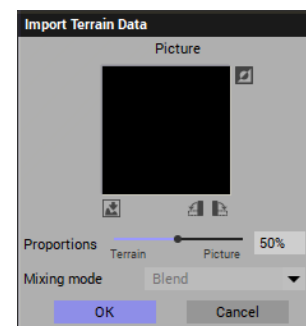
- Begin by opening Vue and selecting to an Empty scene.
- Insert a heightfield terrain into the scene: 
- Double-click the terrain in any view or its title in World Browser to open the Terrain Editor:




The default resolution of the terrain in Vue is 256 bits by 256 bits: This leaves a very crude and rounded terrain. If the computer memory allows, the higher the terrain resolution, the better. At 32Gig, Vue can produce a 8192 x 8192 terrain. More memory would be required for higher.

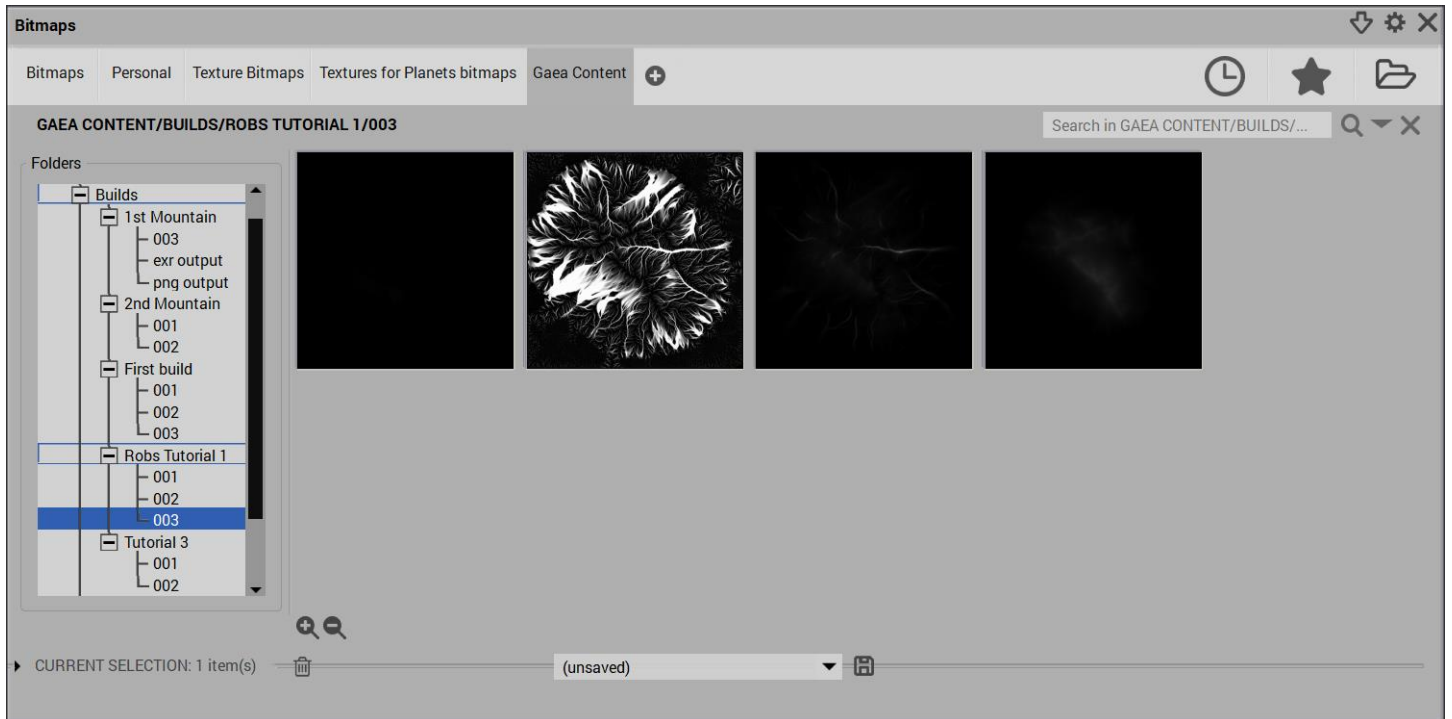




- Click on the plus icon to increase it by two and repeat till the resolution is 4096x4096.
- Select the Picture icon on the left-bottom:  to select a grayscale picture to define the shape of the terrain.
 - An Import Terrain Data window will open:
- Set the **Proportions** setting to 100% **Picture**.



Then the **Mapping Mode** becomes irrelevant at 100% picture proportion and is greyed out.

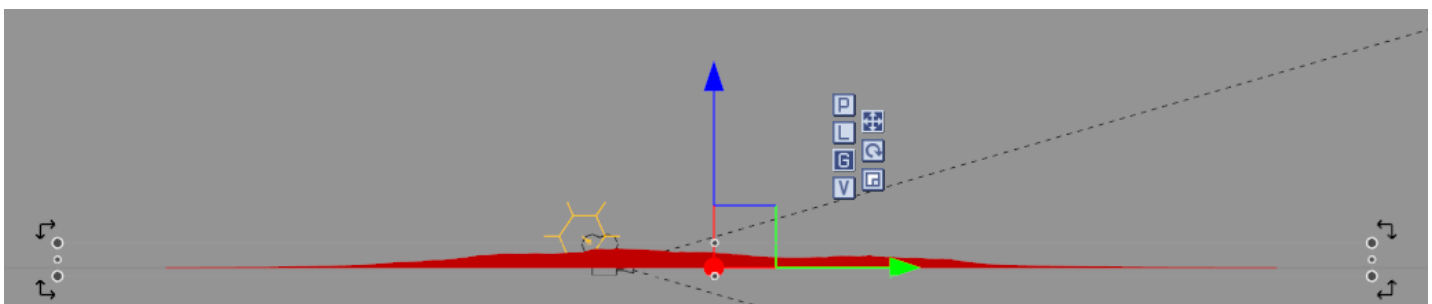
- Click on the **Load Picture** icon:  to open the **Bitmaps** selection window of Vue.



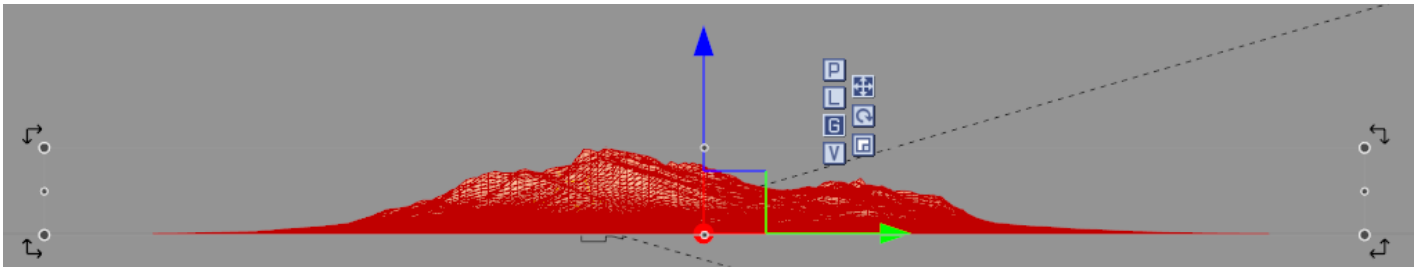
- If Gaea's **Builds** area is not already added to the **Bitmaps** window as a category, you will have to search for it by clicking on the file folder icon:  or add it as a category by clicking on the Add a New Category plus sign: . There are four files available from the build; Erosion-Deposit, Erosion-Flow, Erosion-Wear and just Erosion. The first three will become useful in mapping the various changes that had been made to the original Gaea Mountain when used in Vue or other software but the **Erosion** file is the final Heightmap output from the final Erosion node of Gaea.

- Select the **Erosion** heightmap picture.

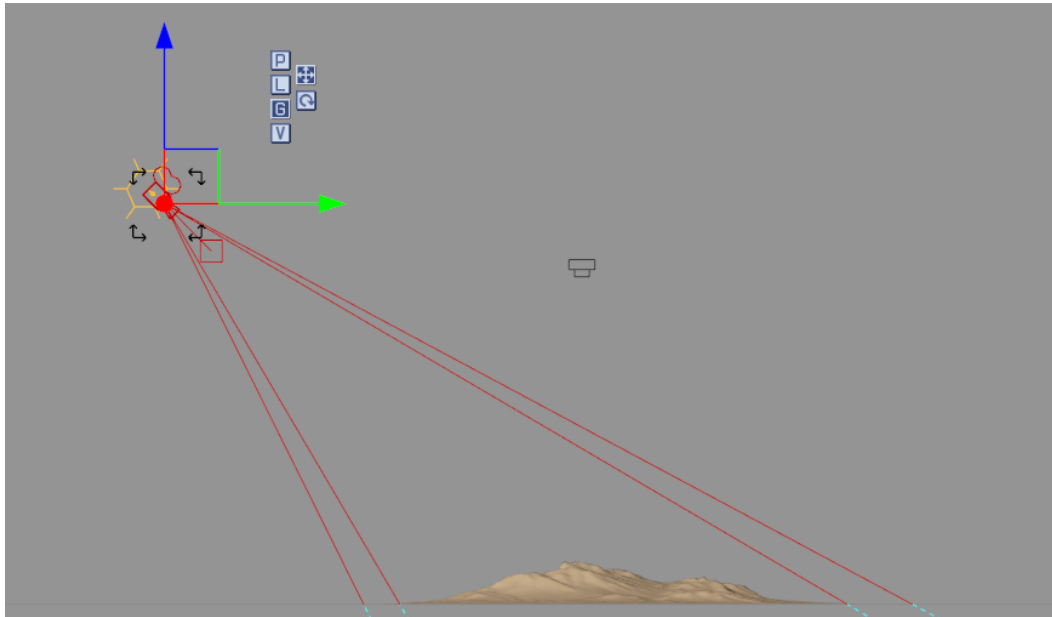
When the heightmap is first loaded in Vue its vertical height is very low.



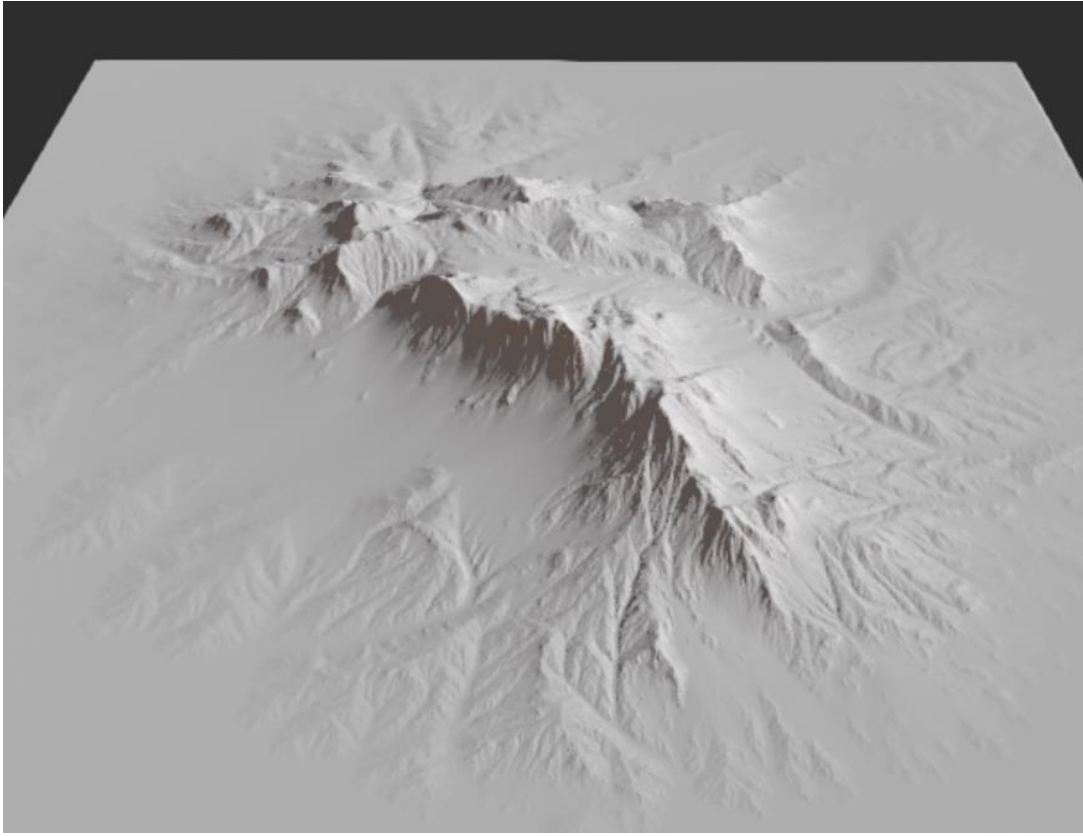
- In the **Side View**, use the vertical grip to stretch the vertical height close to the original Gaea heightmap level



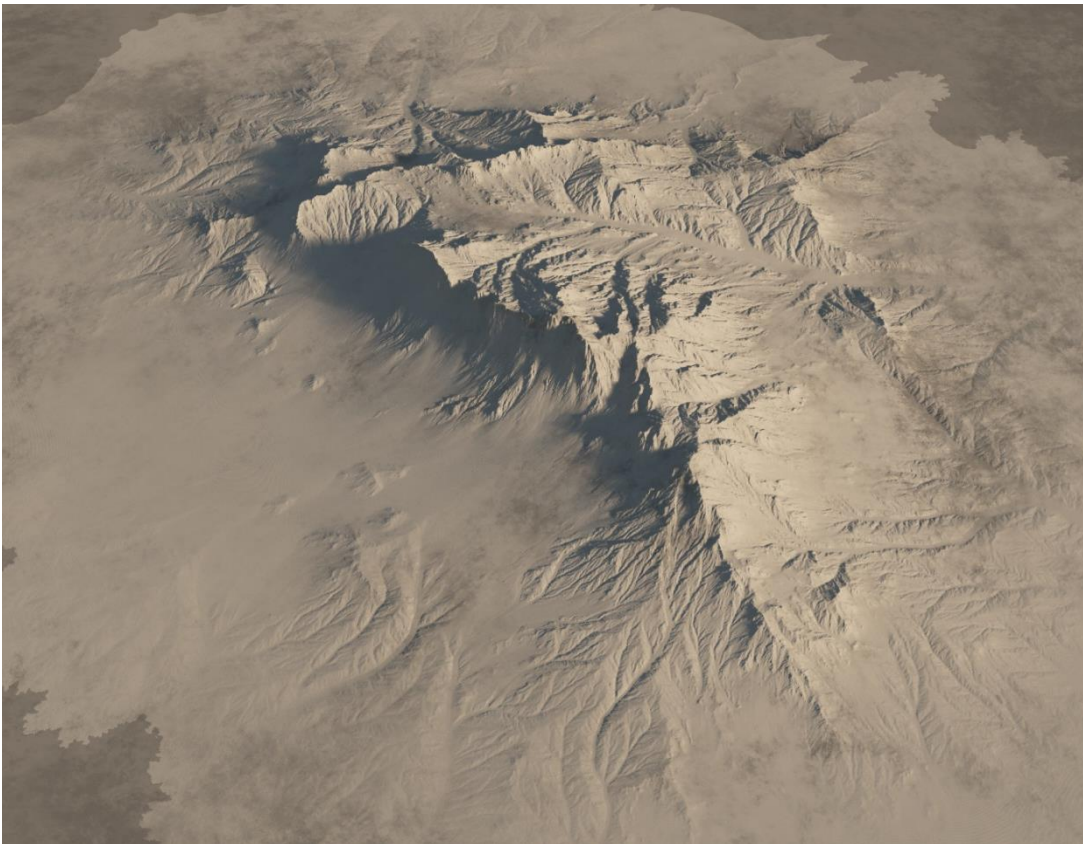
- Now, still in the side view, move the position and tilt of the camera to show the terrain in the preview similar to the view that was shown in the Gaea preview window.



Gaea Preview of Erosion output



4K resolution resulting Vue terrain

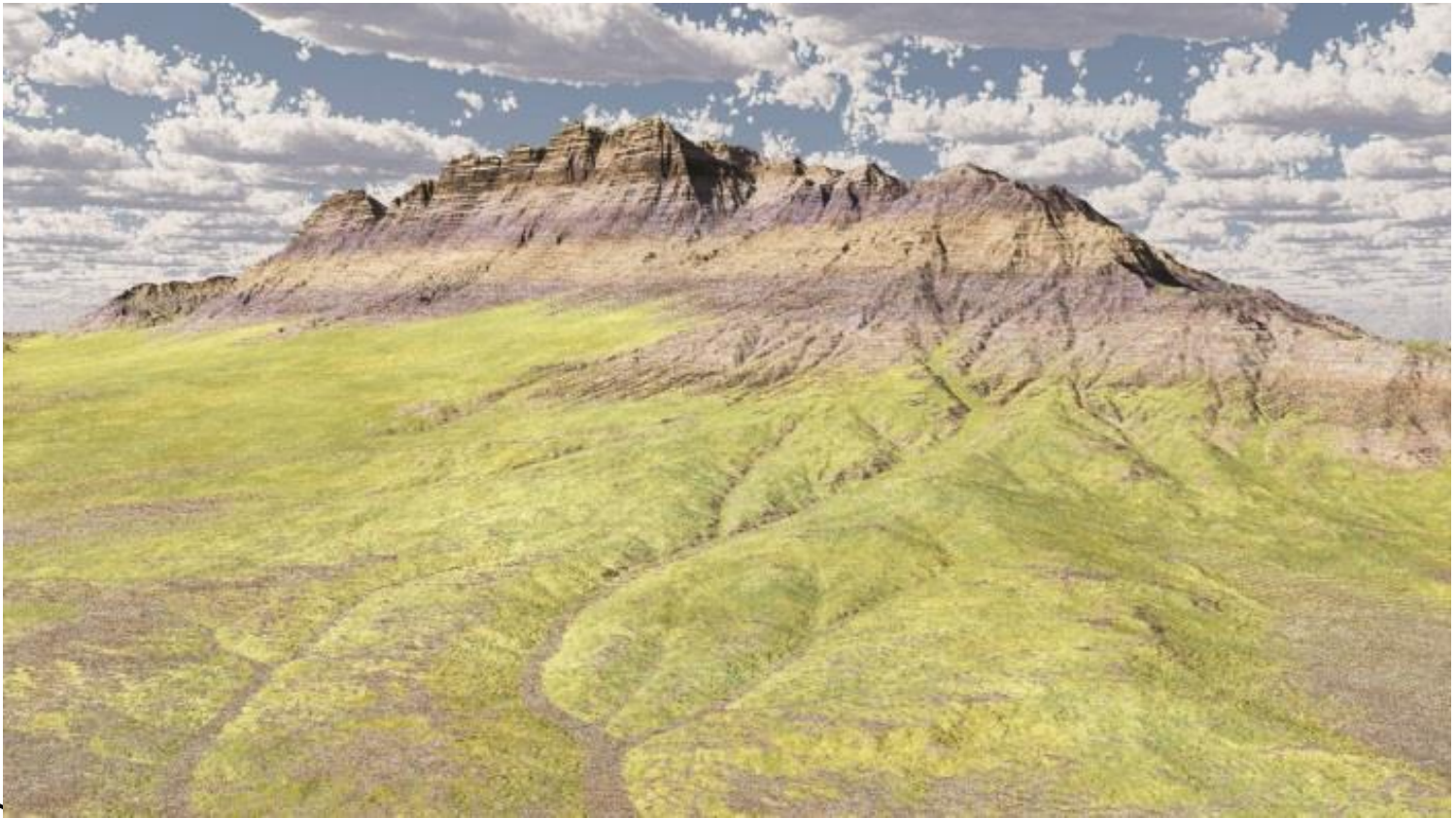


Creating a Scene in Vue

The terrain that was imported in Vue will now be used to create a complete natural scene of a mountain range with overlaid waterflows, ground slide deposits and erosion wear from the output files created in Gaea.


Scene Setup:

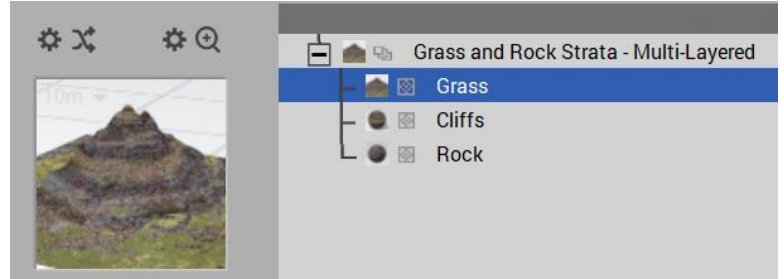
- Move the main camera down, near to the surface of one edge of the terrain
- Rotate the camera to view the highest point of the terrain and tilt it to show both the slope to the mountain and the mountain peaks.
- Set the terrain material to a mixed material one that has both grass lands and bare rock.
 - Adjust Mountain rock and grass lands colours to suit.
 - With the terrain selected set the **Presence** of the grass lands by **Altitude** to expose the upper slopes and top of the cliffs.
 - Add a cumulus clouds layer above the terrain



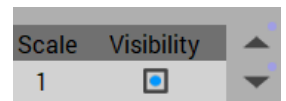
Adding the Flow map overlay;


Four output files were created with Gaea if all the outputs from the Erosion node were checked off. One of those was the Erosion-Flow map that shows where flows would go in the carved out Erosion map. We can show flows in the Vue terrain.

- Open the terrain in the terrain Editor. There should be a mix of materials that make up the rock and grass and so on.
- Add a new layer in the Terrain Editor: 
- Double-click on the new layer's left image to open the **Material** selection window.
- Select something that would suggest flowing water such as **Liquids/Troubled Water** material



- Rename the new layer: **Rivers** and use the up-down arrows to the right to place this new layer at the bottom of the terrain layers list.
- On the **Color** tab below, in the **Mode** drop-down list select **Mapped Picture**.

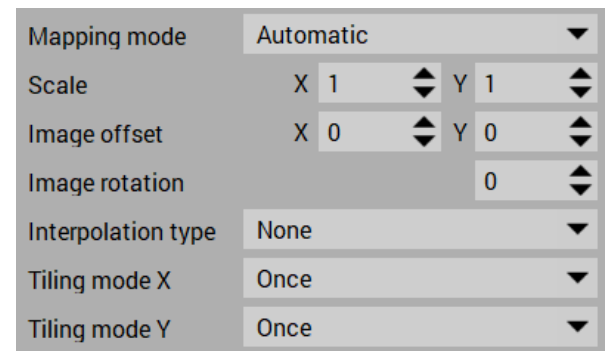


- This should open the bitmap category again
- Select the **Erosion-Flow** bitmap shown to the right:
- This is the reverse grey-scale colours of what we want, right now the flows are masked off in white and the rest is past through in black. We want it the other way around.
- Click the **reverse colours** box in the upper right corner: 



- At the top of the **Material Editor**, change the **Mapping** from **World - Standard** to **Object - Parametric**.

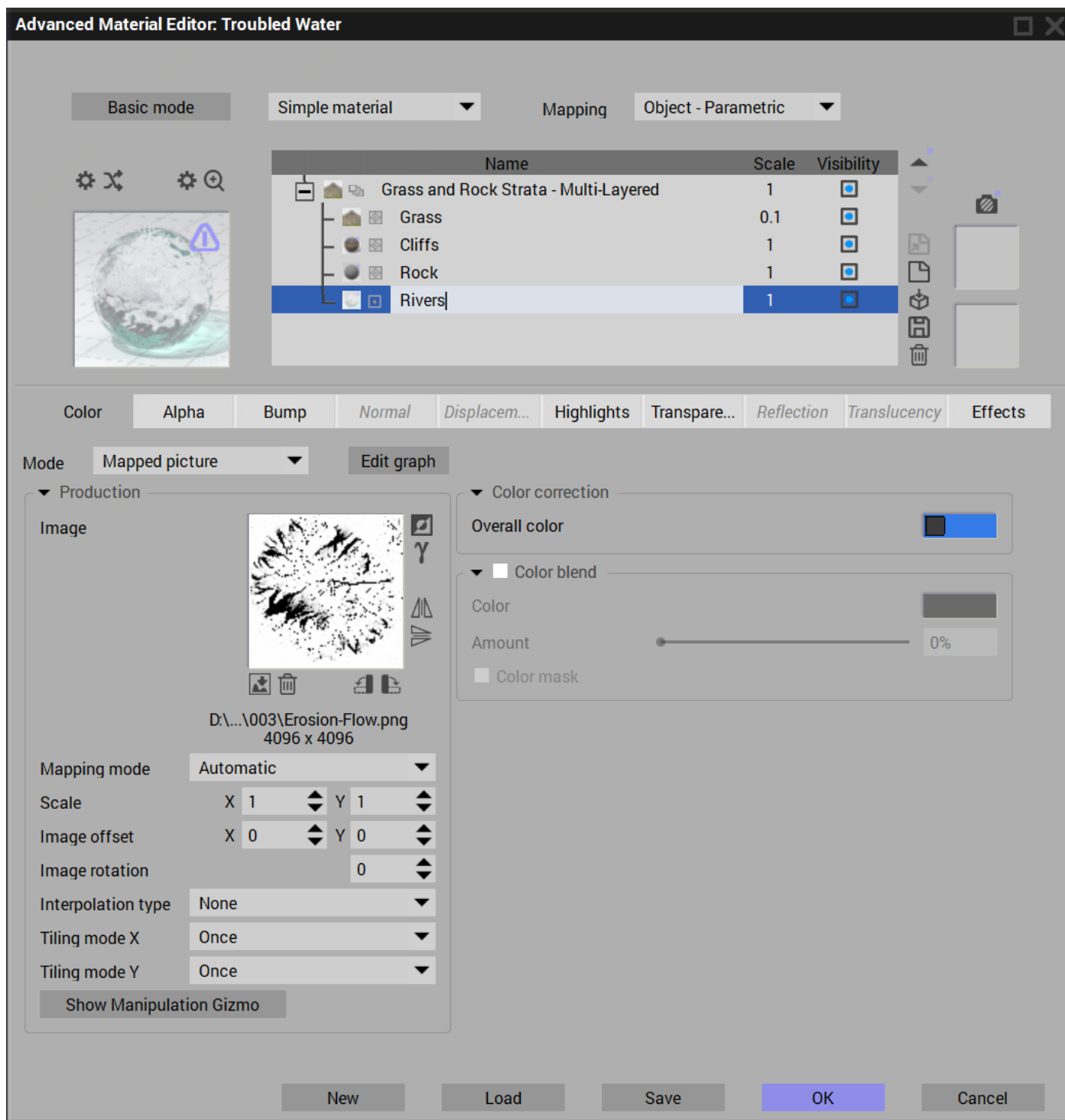
- Below the bit-mapped image, the **Mapping mode**, **Scale** (X and Y), **Image offset** and **Image rotation** can all be left as is.
- The **Interpolation type** should be set to **None**. (probably makes no difference when tiling, below, is set to Once)
- The **Tiling mode** for both X and Y must be set to **Once** so that only a single flow image is placed over the terrain.



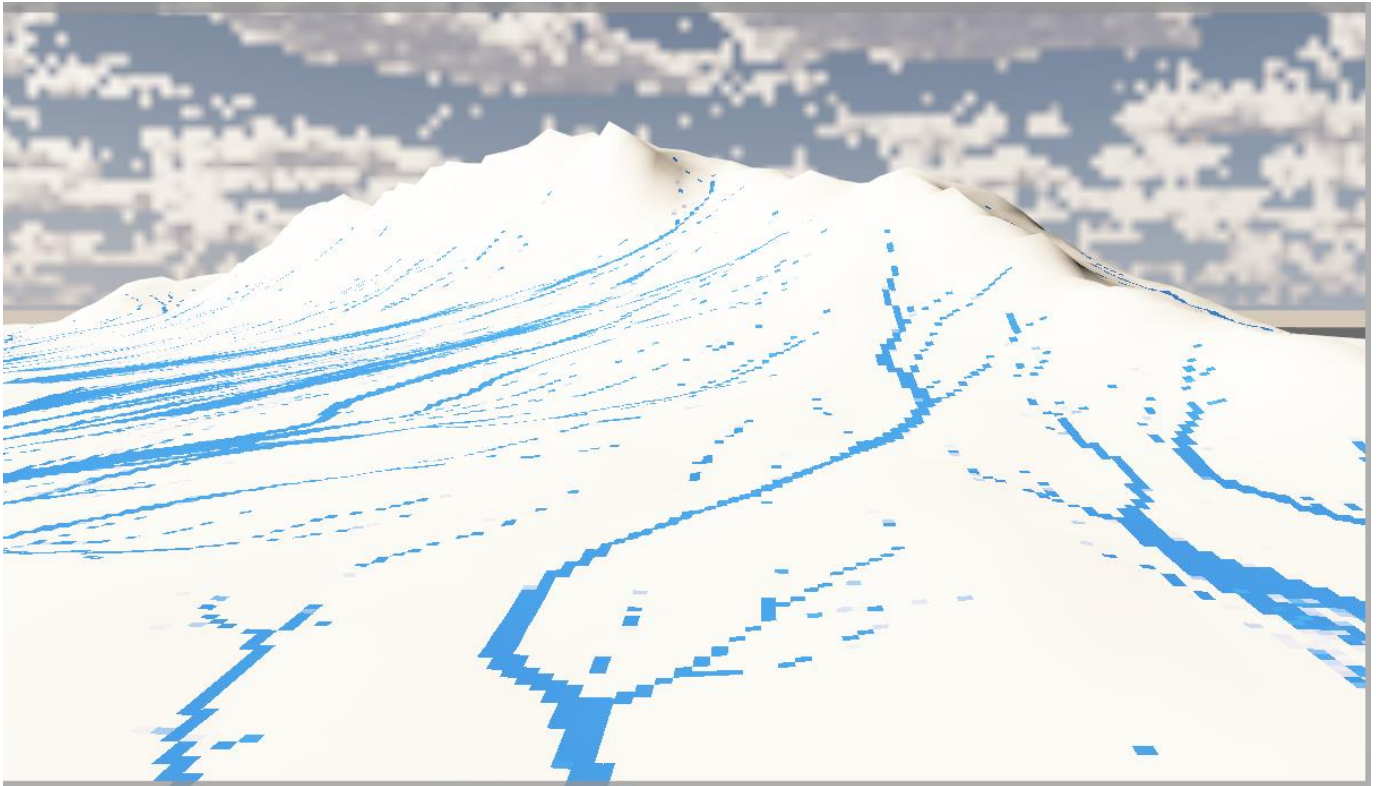
- In the **Color Correction** section, set the **Overall color** to a strong blue.

- The **Troubled Water** material is clear and transparent. So under the **Transparency** tab, set the **Global Transparency** to about 50% to bring its colour up.

The full **Advanced Material Editor** screen as appropriately set is shown here.



In the **Camera View** window the overlay of the **Rivers** layer is shown over the terrain.



The resulting scene shows the blue flows but the terrain colours are washed out . We'll apply a transparency or **Alpha** mask to bring the non-river colours back up.



Applying an Alpha transparency mask

Now we will apply a transparency to all areas except the area where the flows are. This will allow the under-lying areas colour to show through more prominently.

- As before, open the **Advanced Material Editor** for the terrain and highlight the **Rivers** layer.
- Select the Alpha tab to the right of the Colors tab.
- In the **Mode** drop-down list select **Mapped Picture**.
 - This should open the bitmap category again
- Select the same **Erosion-Flow** bitmap shown to the right:
- Again, this is the reverse grey-scale colours of what we want, right now the flows are transparent in white and the rest is blocked in black. We want it the other way around.



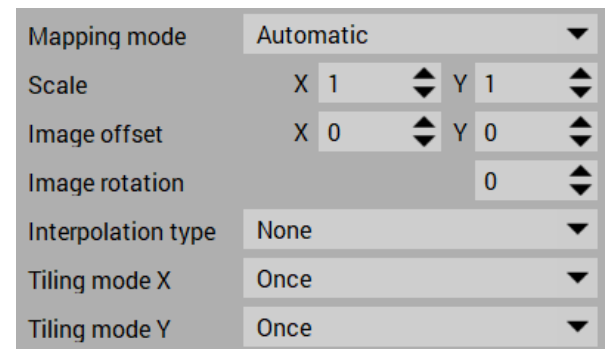
- Click the **reverse colours** box in the upper right corner:



The black image

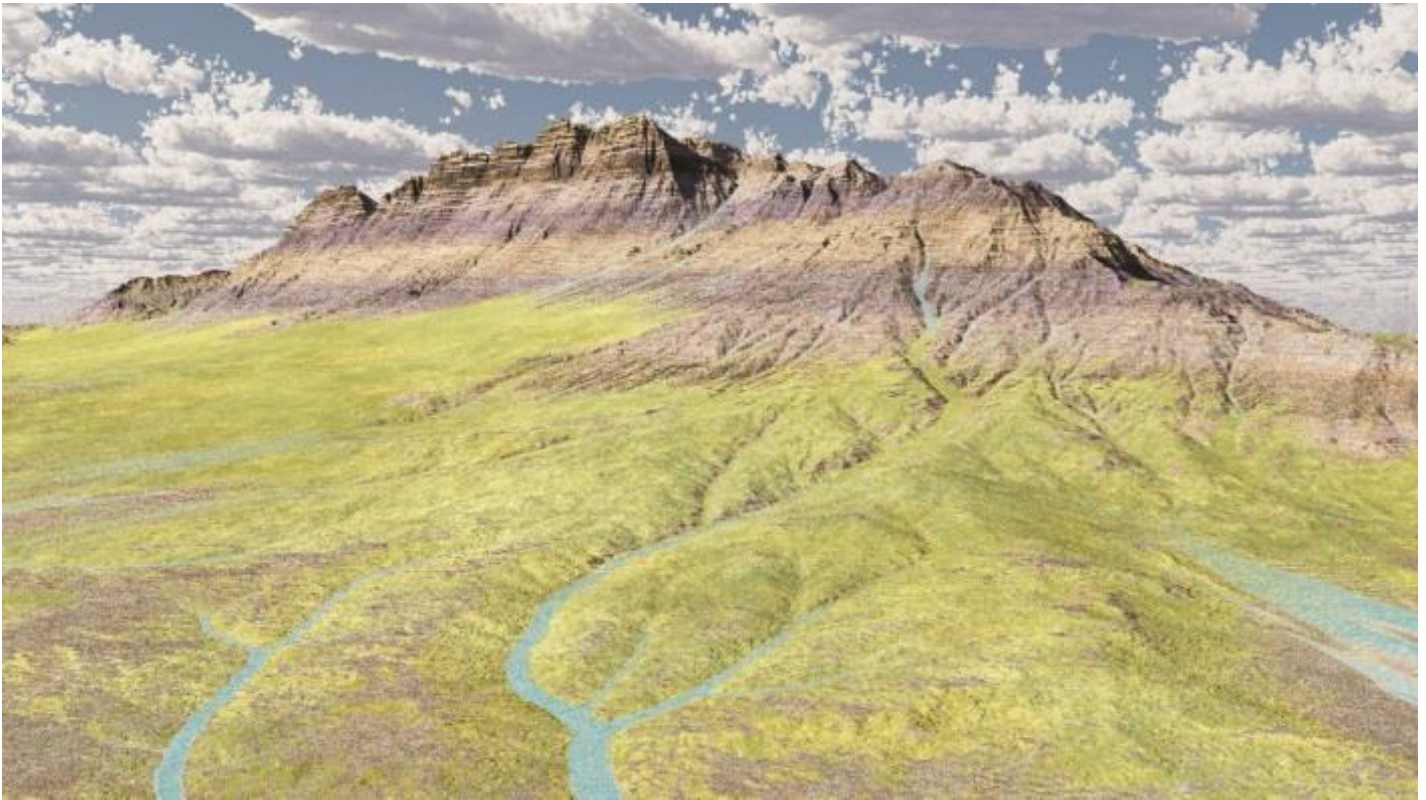


- At the top of the **Material Editor**, change the **Mapping** from **World - Standard** to **Object - Parametric**.
- Below the bit-mapped image, the **Mapping mode**, **Scale** (X and Y), **Image offset** and **Image rotation** can all be left as is.
- The **Interpolation type** should be set to **None**. (probably makes no difference when tiling, below, is set to Once)
- The **Tiling mode** for both X and Y must be set to **Once** so that only a single flow image is placed over the terrain.



There is no colour involved in the Alpha mapping of the scene so no colour selection is shown.

Adding an Alpha layer over the flow map brings the colours of the terrain out more clearly.



In the above render the water flows can be seen filling the terrain gullies even well up the mountain side. This is not very realistic. It would be better to have the visible water flows at the lower altitudes of the mountain range but not at the higher ones.

Showing the water below certain altitudes

For many materials, there is a **Presence** tab that could allow us to show the water material only above or below certain elevations. This doesn't appear to be the case for **Troubled Water** and some other liquid-based materials.

Modifying the Gaea Flow Map

In the original Gaea bitmap the white represented the water flows and the black represented untouched terrain. (though this needed to be reversed in the Vue Material Editor)

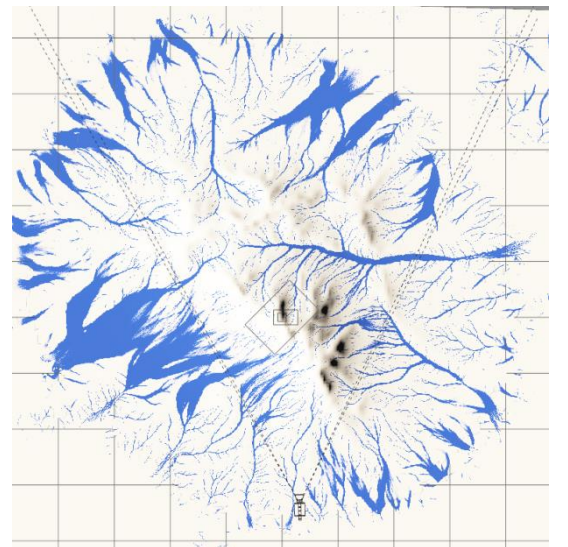
We will modify this map with an illustration application such as Adobe PhotoShop or Corel PaintShop and blacken out the flow areas where we wish to have the water material is not visible.

Then we will reload the modified map into the Material Editor's Colour and Alpha tabs again.

The image to the right shows the original Gaea-produced Flow map. Remember that this view is reversed in the Material Editor to apply the flows correctly to the terrain.



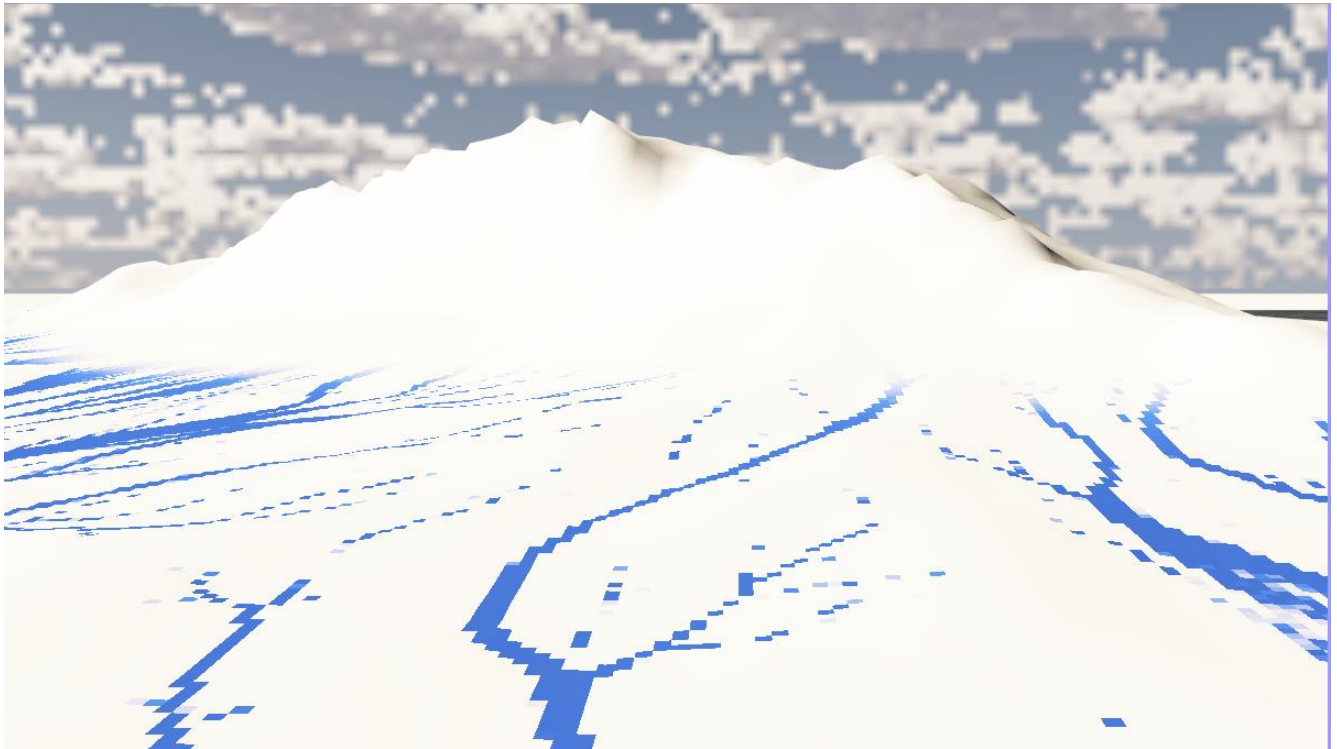
This graphic shows an aerial view (in the Top View of Vue) of the applied flow map. It also shows a view of the mountain range peaks that can be used as a bit of a guide to the relative positions of the mountain range.



- In PaintShop, use a flat black colour to airbrushed over the flow map in the areas where we want the visibility of the water to be erased.
- This bitmap should then be saved under a different name but still as a **.png** file as the original flow bitmap was.
- Remember to reverse the black/white image in the **Colour** and the **Alpha** tabs of the **Material Editor** once they have been reloaded.



Below, again in **Camera View**, is the image of the resulting terrain. The upper altitudes of the flow have been erased by the black airbrush action.



The resulting terrain now only shows the water flow at the lower altitudes.



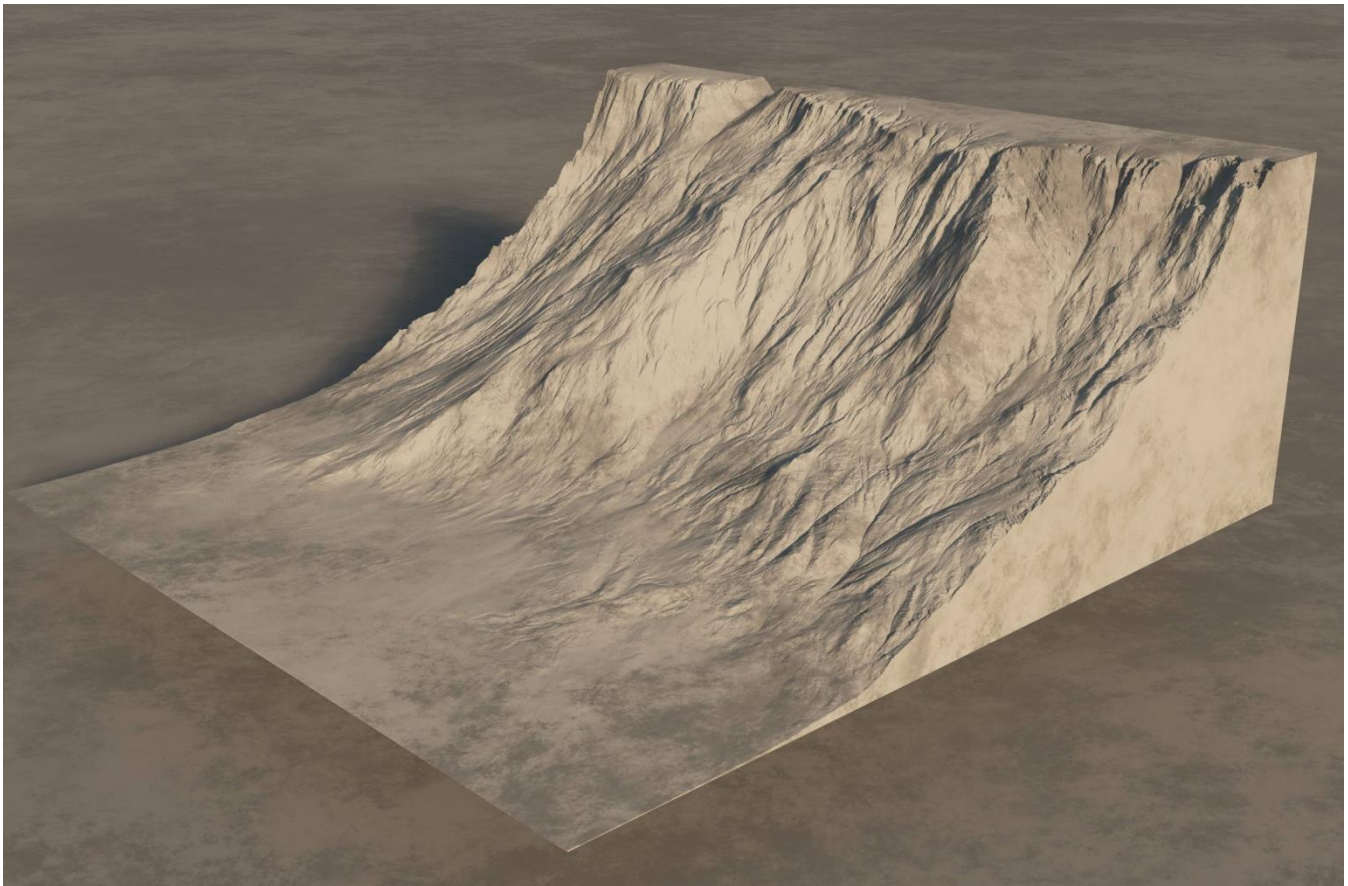
Update: Using OpenEXR type .exr files

When you export the terrain heightmap from Gaea, use the OpenEXR type .exr format. This allows the resolution of the file to be 32 bit as opposed to 16 bit for most other formats

Though most drawing applications can't deal with an .exr file, Photoshop and Vue can.

- Open Gaea's Quickstart file; "Folded Slope" and delete all nodes after the Erosion node.
- Mark just the Erosion node for export and start the Build Manager.
- In the Build manager:
 - Select only the Output, (un-select Wear, Deposit and Flow.)
 - Set Format to OpenEXR (32-bit), 4096 resolution and Forced Full Range
- Start the build.

When completed, place the file in the normal Vue heightfield bitmaps area. Use the above method to bring the heightfield bitmap into Vue

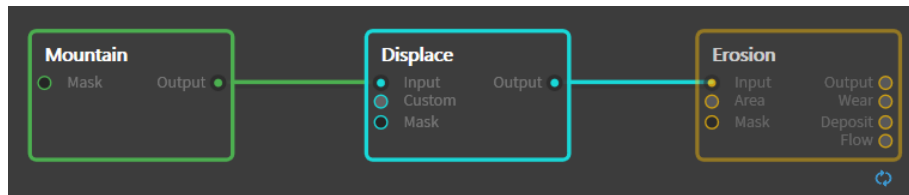
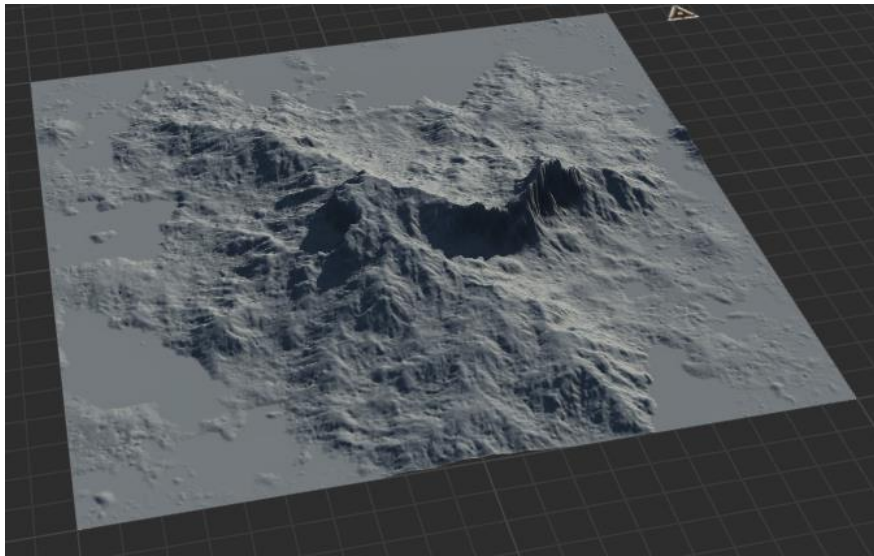


Applying Snow to Mountain Terrains

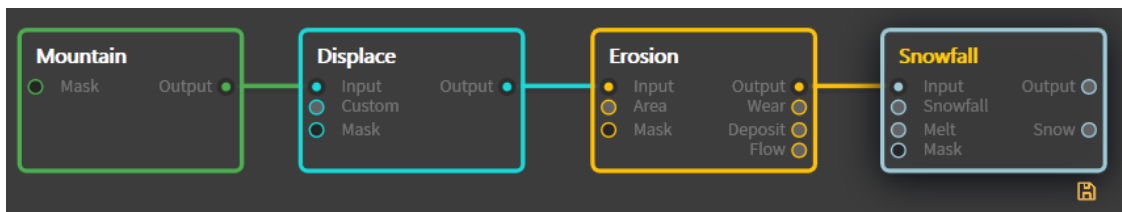
A mountain in Vue can have snow applied to it using the Advance Material Editor and adding layers to the terrain.

A second way, one that offers a great deal of control over the snow appearance is using a Gaea model with a snow node added.

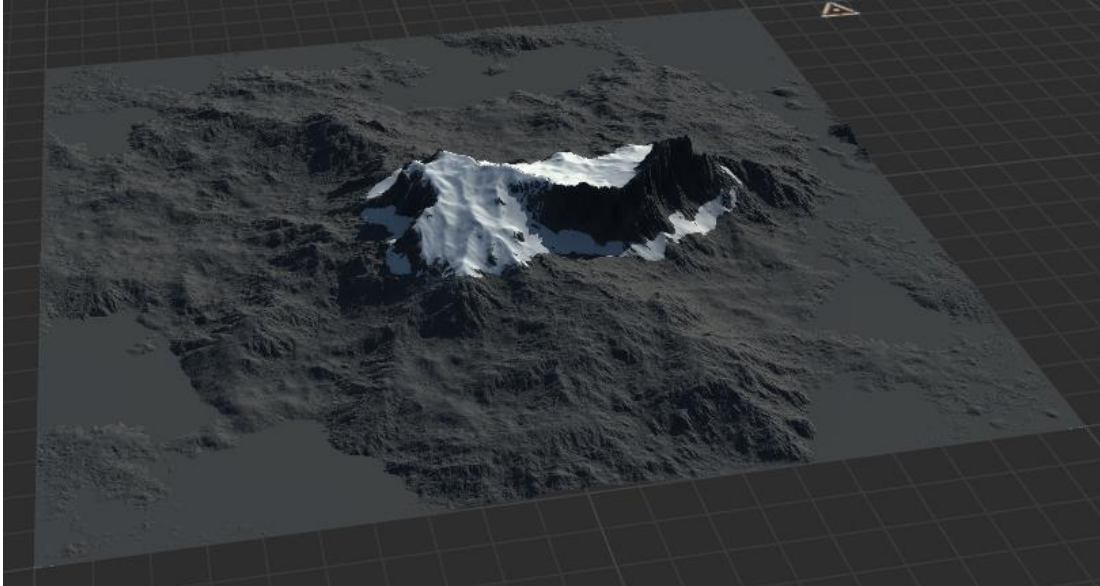
- Begin Gaea and create the standard mountain primitive, connected to a Displacement node and then into an Erosion node.
- Play with the settings of the three nodes to get a good looking mountain



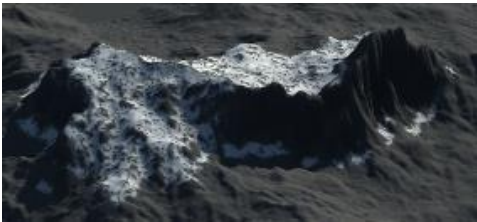
- Now add a Snowfall node and plug the Erosion's output into it. Snow covers the whole terrain but we'll adjust it soon.
- Mark the **Snowfall** node, only, for **Export** (don't need the rest)



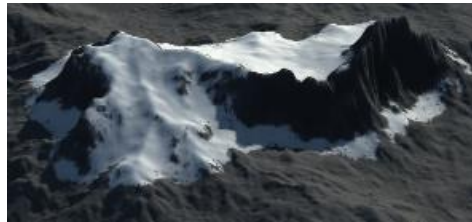
- In the settings for the Snowfall node, raise the **Snow line** value until just the upper sections and peaks of the mountain are snow-covered.



- The **Duration** setting determines how long the snow has been falling and how built up the snow will look on the terrain.



10% Duration:

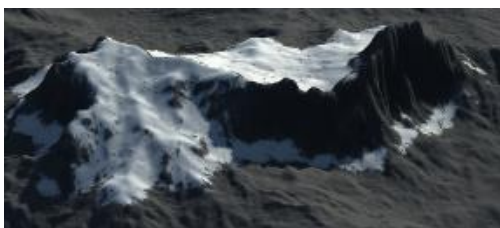


50% Duration



90% Duration

- The **Intensity** of the snowfall relates closely to the Duration but has more influence on the “fullness” of the fallen snow. (Examples at 50% Duration):



- The **Settle-Thaw** setting relates to how long the snow has had time to pack down by gravity / thaw a bit in the sunlight. (Examples at 90% Intensity):



- The **Melt** setting relates to the amount of melting the snow has had, this diminishes the amount and cover of the snow. (Example, all others at 50%)



Advanced Settings

- The **Slip-off angle** is, just as it says, the angle of the terrain at which the snow will slip off of the terrain and accumulate below that angled area. (Example Intensity = 90%)



Angle = 10°

Angle = 45°

Angle = 80°

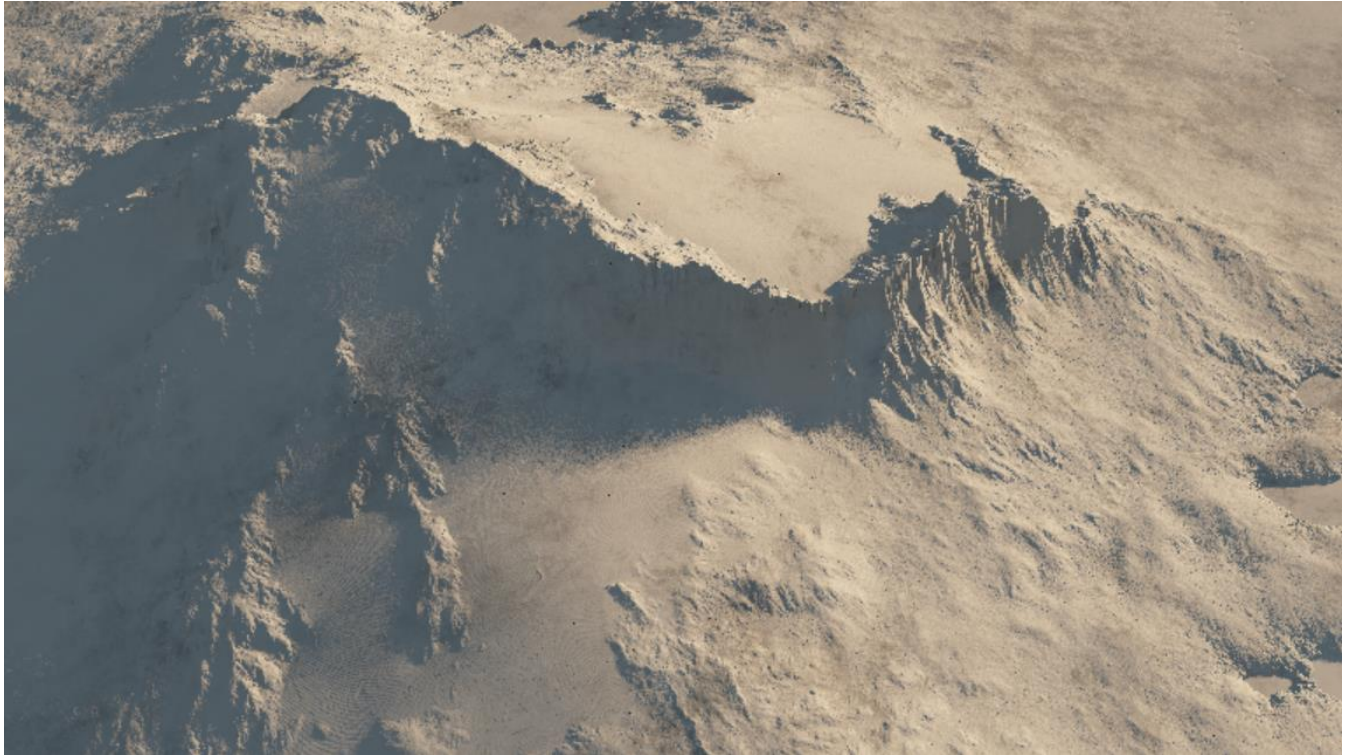
- Adhered snow mass ??

- Try settings: Duration = 90%, Intensity+Settle-Thaw+ Melt = 50%, Slip-off angle = 10°
- Set the Build resolution to 4096 and the file type to EXR then start the build.
- In the build, save the project as Snow Top Mountain.



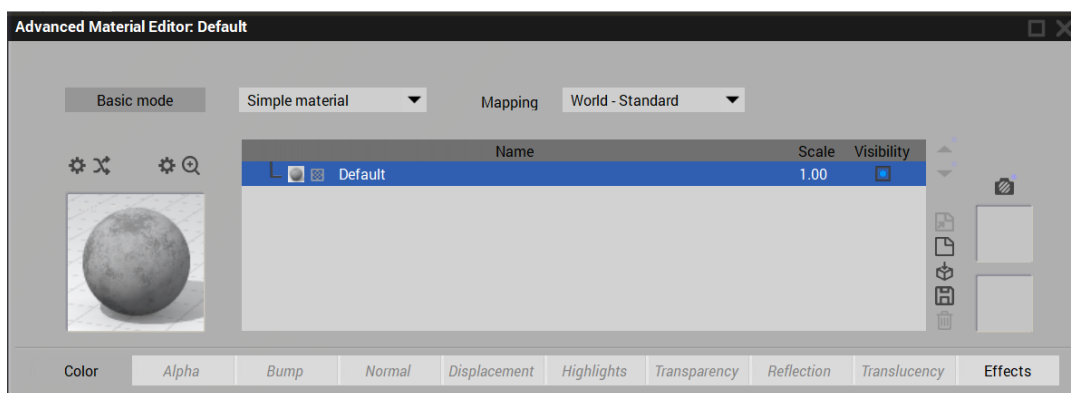
Importing the Gaea Terrain to Vue


- Open Vue to an empty scene and add in a single terrain.
- Using the above process, set the **Terrain Editor** resolution to 4096 and import the Snow top Mountain – Snowfall.png heightmap.
- Set the terrain height, the sun angle and the camera perspective to resemble the appearance of the Gaea output view”



Adding the Gaea snow layer to the Gaea-imported terrain.

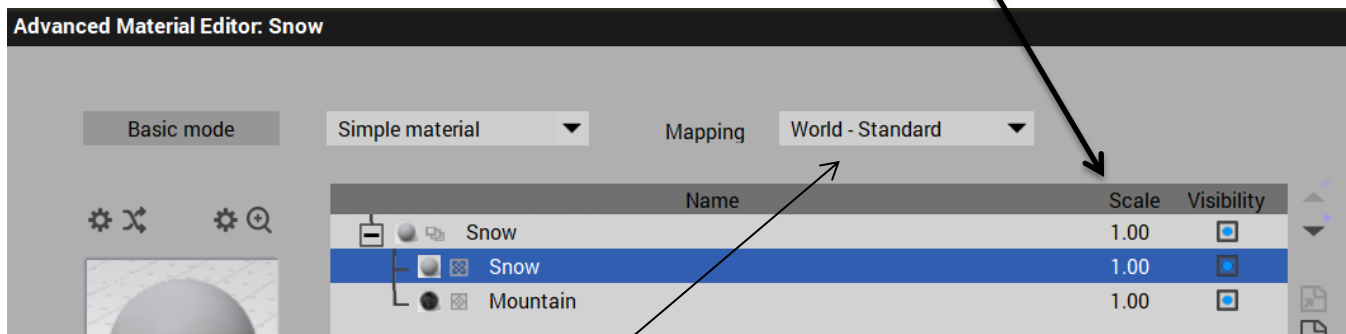
- With the terrain highlighted in **World Browser**, open the **Advanced Material Editor**:



- Change the name of the **Default** layer to **Mountain** and change its colour from light sandy to something darker.
- With the **Mountain** terrain highlighted, click the **Add Layer** icon:  to add a new material layer.
- Click the material sphere to the left of the **New Layer** and select the **Snow** material from the **Materials/Landscapes** area of the **Materials** page.

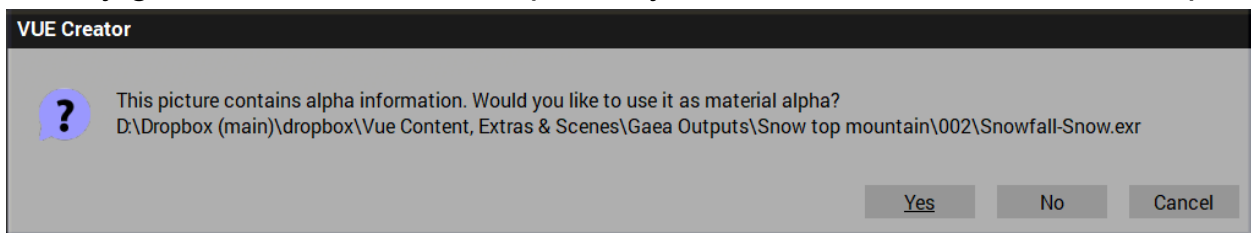
This will update the name of the New Layer to **Snow**. Many of the material parameters of the **Snow** layer will be loaded as well.

- **NOTE:** This may also change the **Scale** of the parent **Snow** layer in the material list window. Be sure to reset this back to 1.0 scale.



- Change the material **Mapping** from **World Standard** to **Object Parametric**.
- With the Snow layer still highlighted, under the Color tab, change the Mode from Procedural colors to Mapped Picture. The **Bitmaps** window will open.
- Find your way to the Gaea outputs files that corresponds to the above Gaea terrain; **Snow top Mountain/Snowfall-Snow.exr**.

You may get a notification and request if you want to use this material's alpha

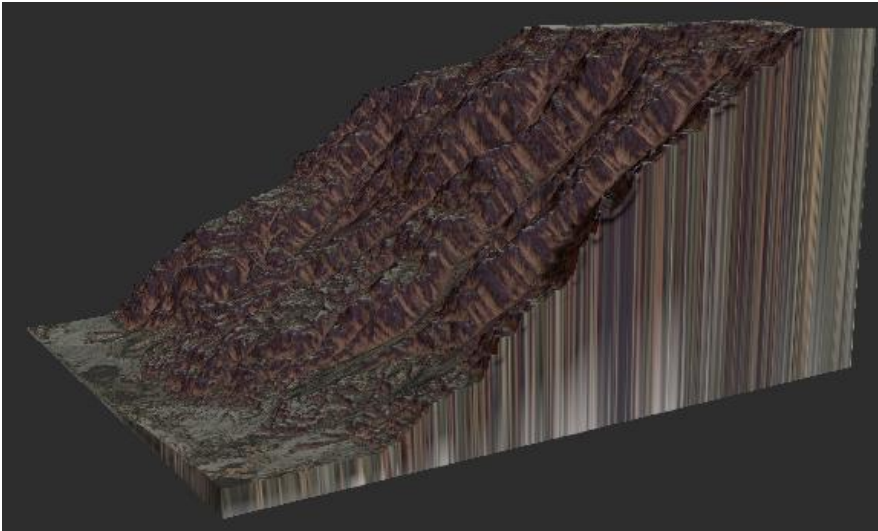


- Click **Yes**. The snow material will be precisely applied to the Vue terrain in the same way it had been in Gaea.

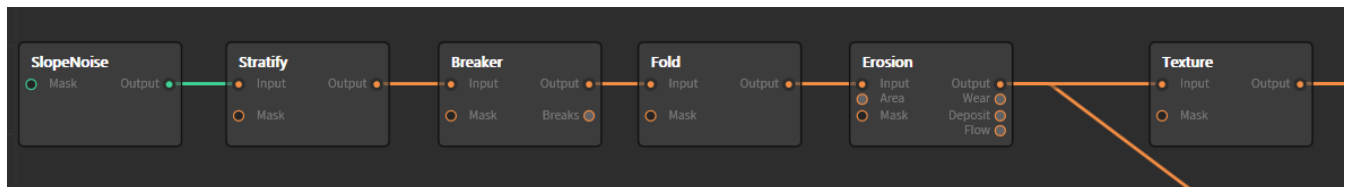
The resulting image in Vue:



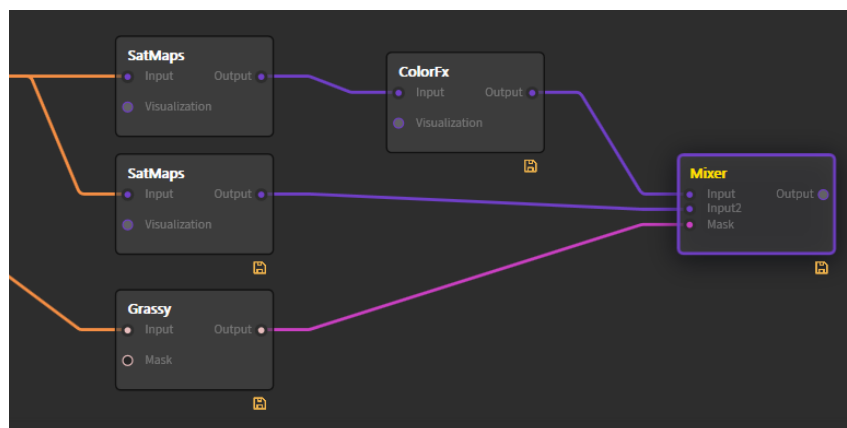
Using Gaea's own colours on imported Vue Terrains



The terrain above was created from Gaea's **quickstart** entry. From this the **Folded Slope** was selected.



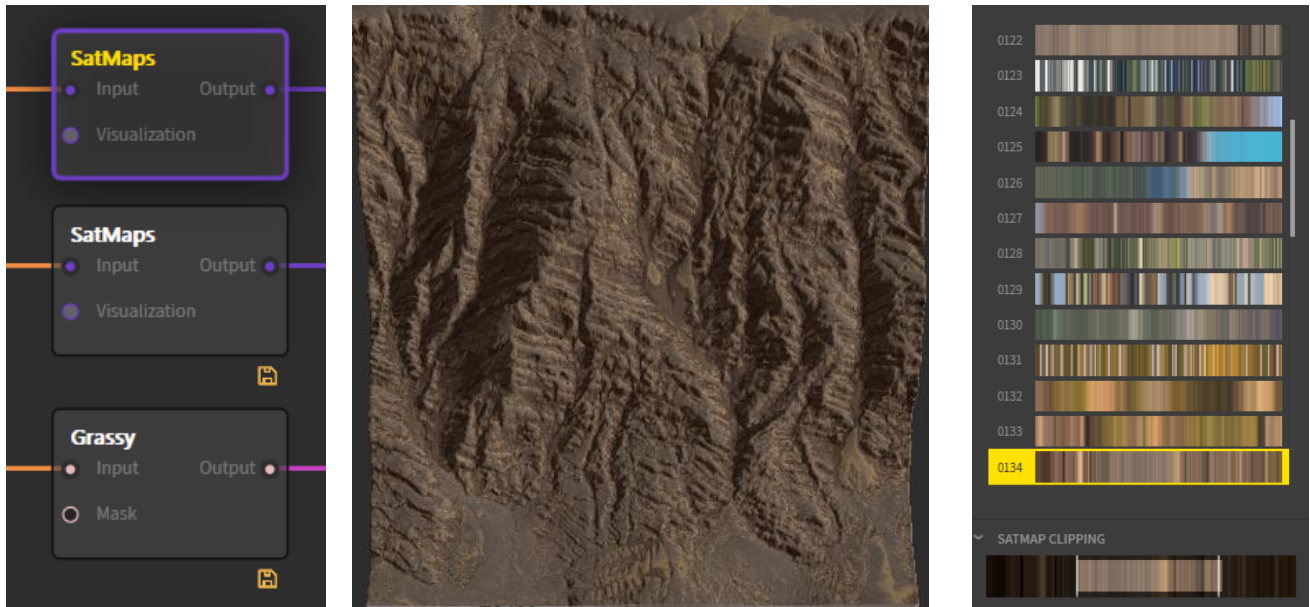
The left nodes of the **Folded Slope** node-chain deal with the **SlopeNoise** primitive and various refinements to the shape of the terrain.



The right nodes of the node-chain deal with colours that are combined and a mask to determine where a grass colour can go based on the slope of the terrain (before texturing).

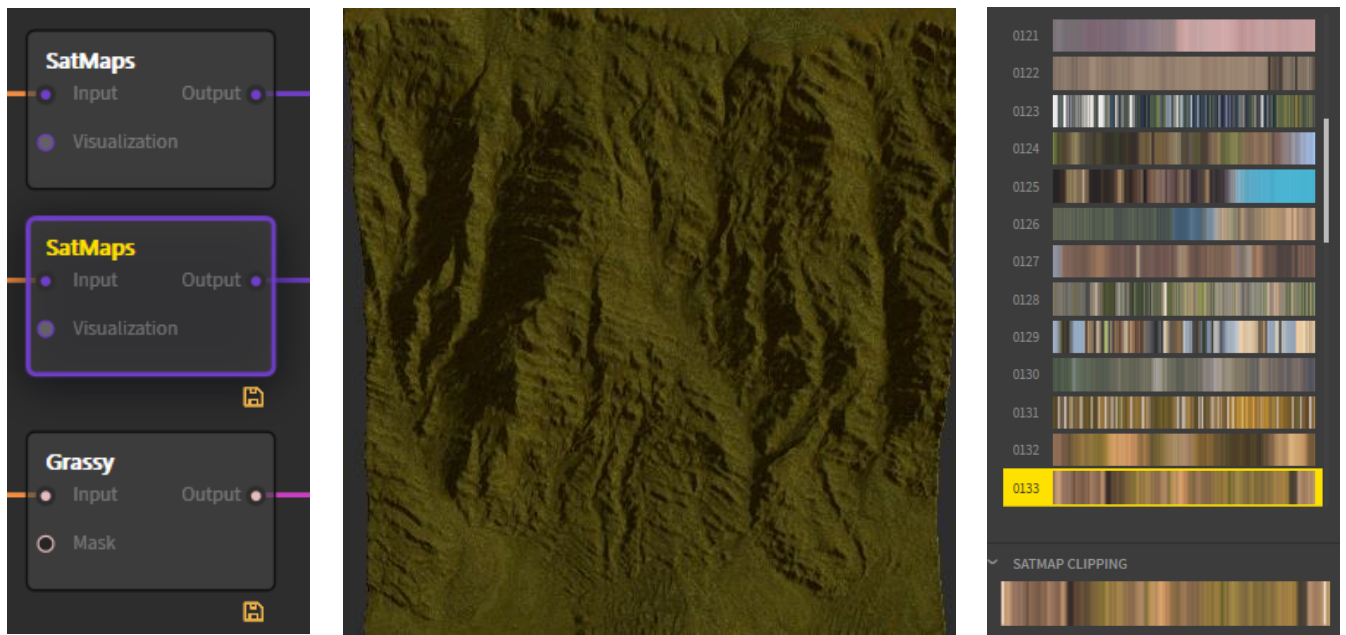
In each of the two SatMaps (satellite data collected colour maps) nodes, you can select from among 400 predefined colour maps to be applied to the terrain. Each of those 400 maps is called a CLUT or **colour lookup table**.

The upper SatMaps node is set to brownish for the rock of the cliff:

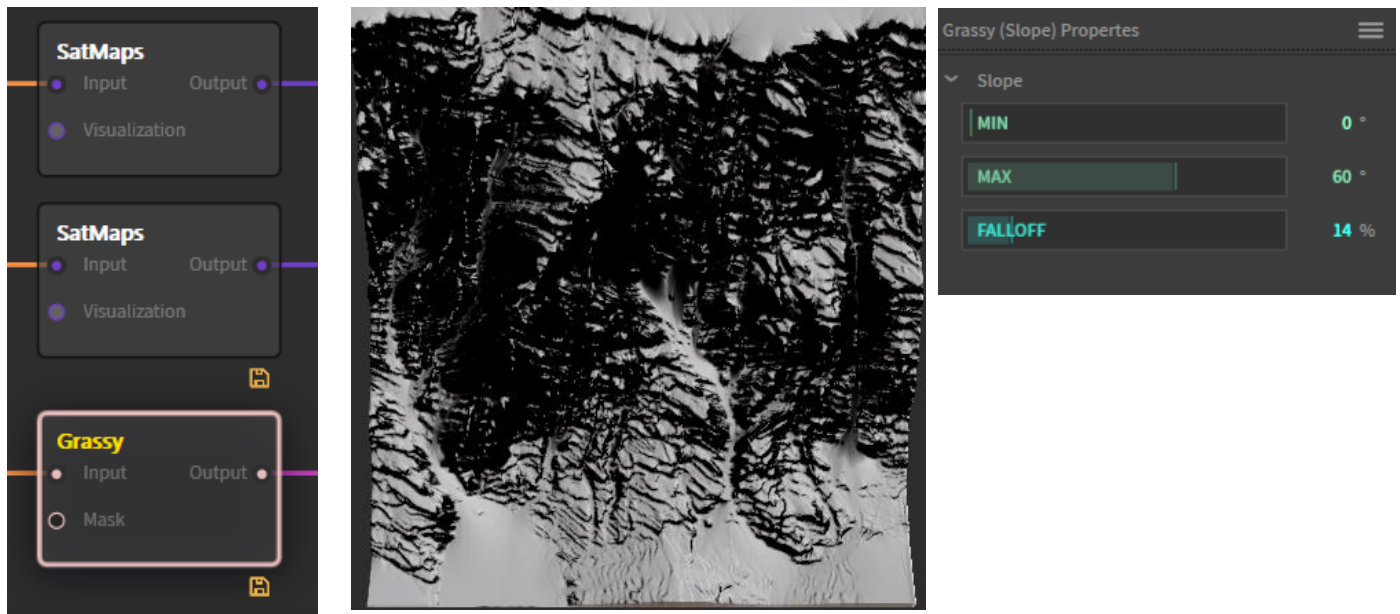


Notice that the clipping option was used in the far right to limit the range of the CLUT that will be applied to the terrain.

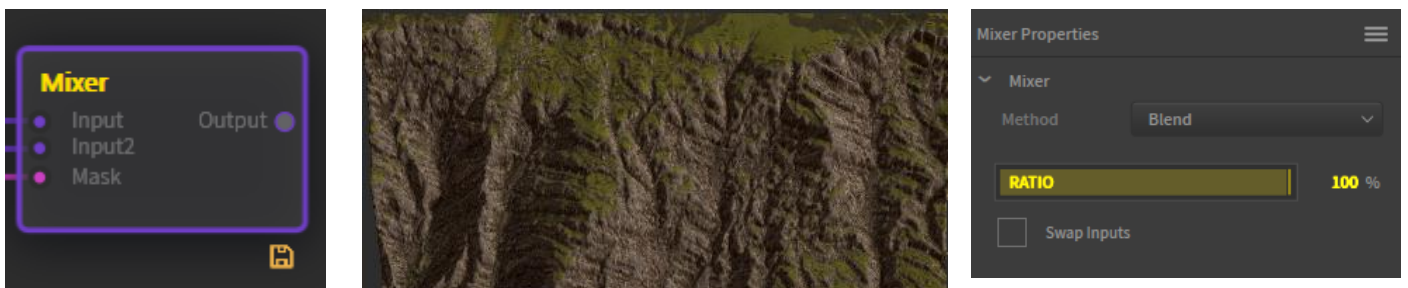
The lower SatMaps node is set to greenish for the grass on the rock of the cliff.



A “Mask” will determine where the green colour will be applied onto the rock of the cliff texture.



The lowest node is called **Grassy**. It shows in black and white where the slope of the texture is flat enough for grass to grow (white) or should not grow (black). This black and white mask is then applied to the final **Mixer** node.



The brownish will be applied to the rock. Then the output will be input2. This input Mask input (if the Grassy determines where the greenish (grass) will be allowed to blend with the brownish rock (white areas) or be “masked” out black areas).

rock SatMaps output will Mixer top input. greenish Satmaps applied to the Mixer will be modified by the (if used) which comes from node’s output so it will

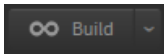
Since the **Mixer** node is the final one, the resulting output colours could be used to colour mask the terrain that we will load into Vue.

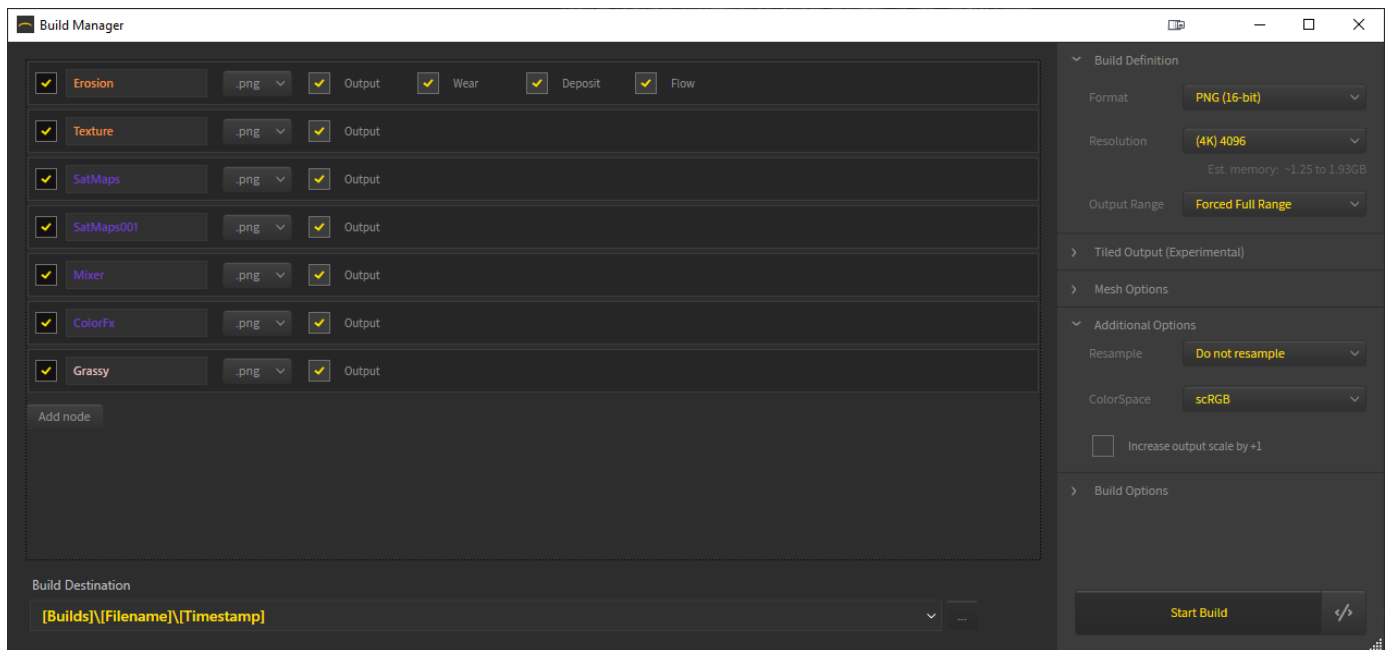
Build the terrain output

As we had done in the earlier example, when we are satisfied with the final terrain, it's time to build the terrain outputs.

In this quickstart example, a number of nodes have already been marked for export so we could use their output in other applications if we want to. But the **Erosion** node contains the grey-scale heightmap information that Vue will need to create the initial terrain with so this must be marked for output.

To have the most choice in applying textures and colours to the terrain once we've imported it to Vue, we'll add some other nodes to this build as well.

- Locate the upper **SatMaps** node, right-click on it and then click on "Mark for Export" to include it.
- Do the same for the **Erosion** and **Texture** nodes
- Click on **Build** button: 



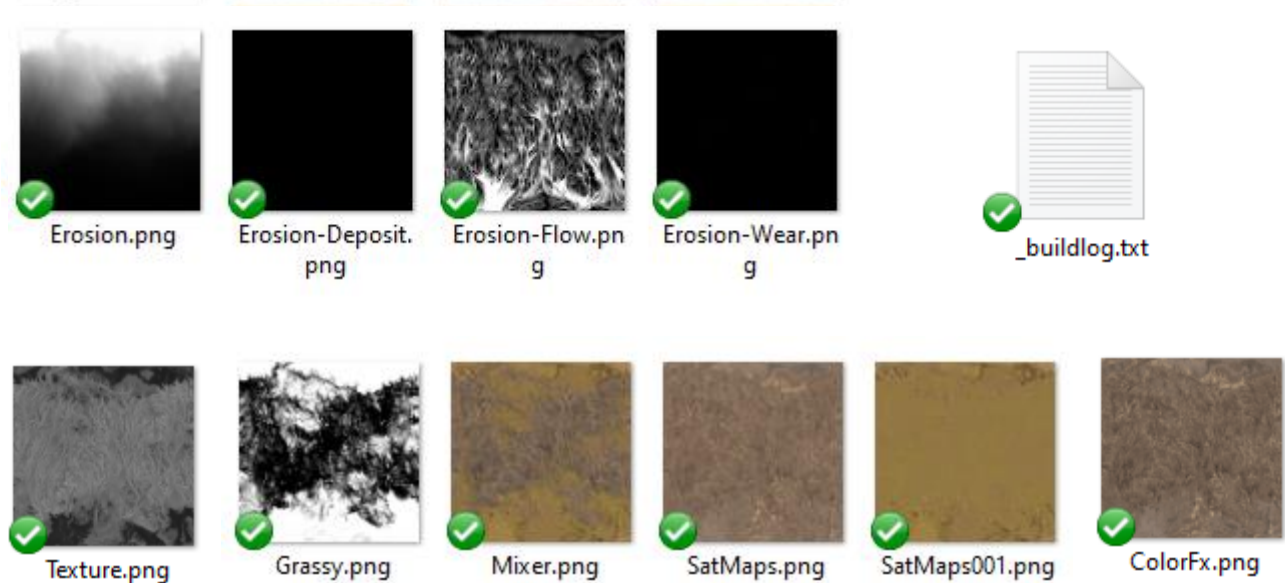
There are seven nodes selected for output and as usual, the Erosion node has outputs for Output, Wear, Deposit and Flow. All should be checked as included.

- Make sure the output format is set to 16-bit .PNG
- Make sure that the resolution is at 4K
- Click on **Start Build** to begin

You will be prompted to give this build a name which will become the .tor file.

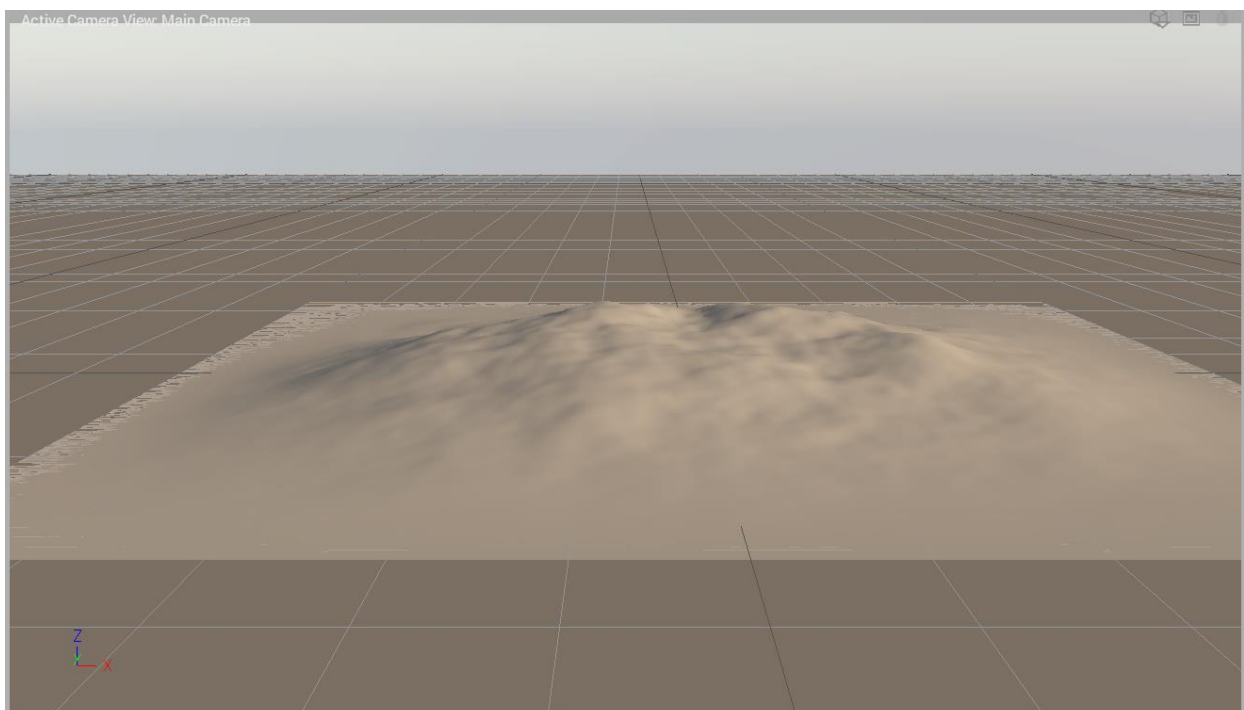
The process will begin and a DOS style **Gaea Build Swarm** window will display the progress. (could take some time at a resolution of 4K)

When the build is done, a log file and a number of output files are created.





Loading the Gaea terrain into Vue


- Open Vue into the default, empty scene and load in one standard heightfield terrain.

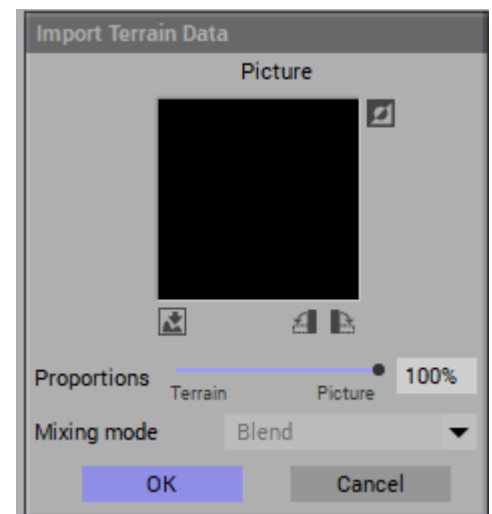


The size or shape of the initial terrain is not important as it will be completely replaced by the imported Gaea terrain.

- Double-click on the terrain in the World Browser to open the **Terrain Editor** display
- Click the **Zero Edges** icon:  if it is on (yellow) to turn it off.
- Click on the positive resolution cube:  until the resolution rises to 4K level = `4096x4096`

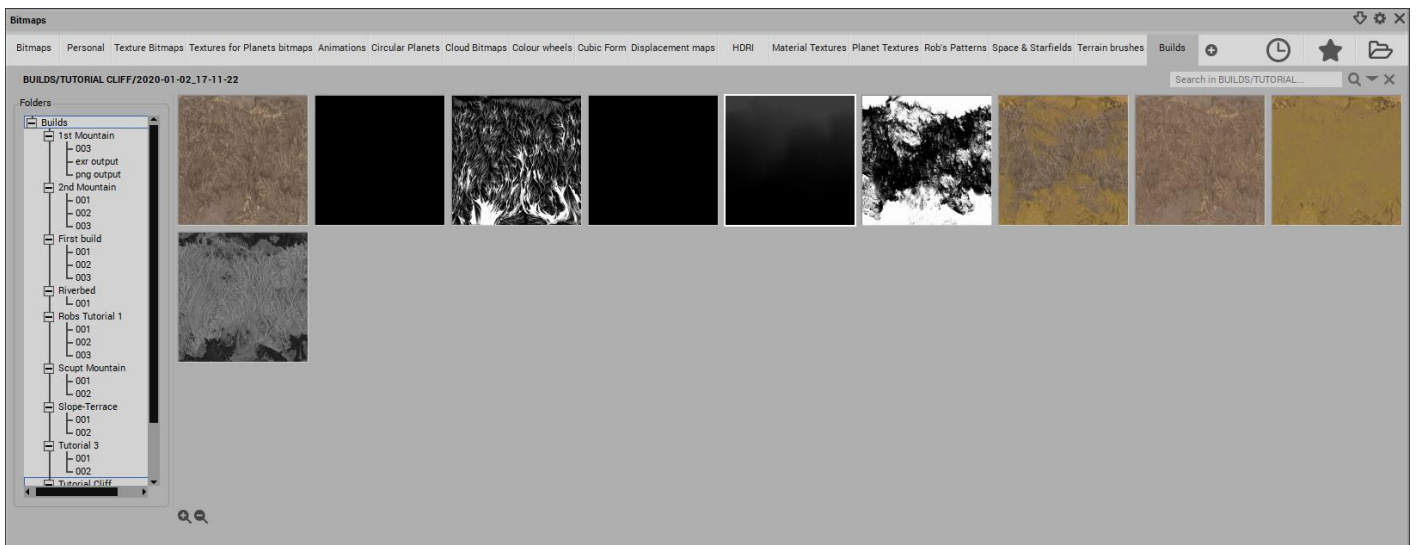
It may take a couple of seconds at 4K resolution but the default terrain will be rebuilt at the new, higher resolution.

- Select the **Picture** icon on the left-bottom:  to select a grayscale picture to redefine the shape of the terrain.
 - An Import Terrain Data window will open:
- Set the **Proportions** setting to 100% **Picture**.



Then the **Mapping Mode** becomes irrelevant at 100% picture proportion and is greyed out.

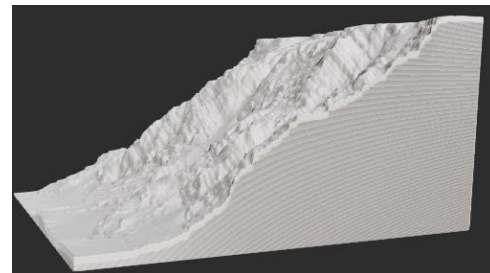
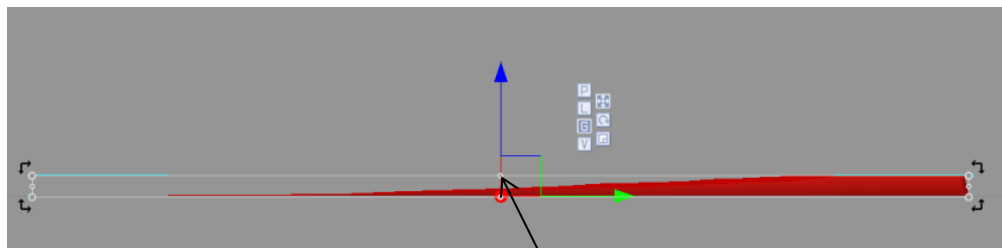
- Click on the **Load Picture** icon:  to open the **Bitmaps** selection window of Vue.



- Navigate to the Gaea outputs directory for this build, locate the Erosion output file and double click to load it.

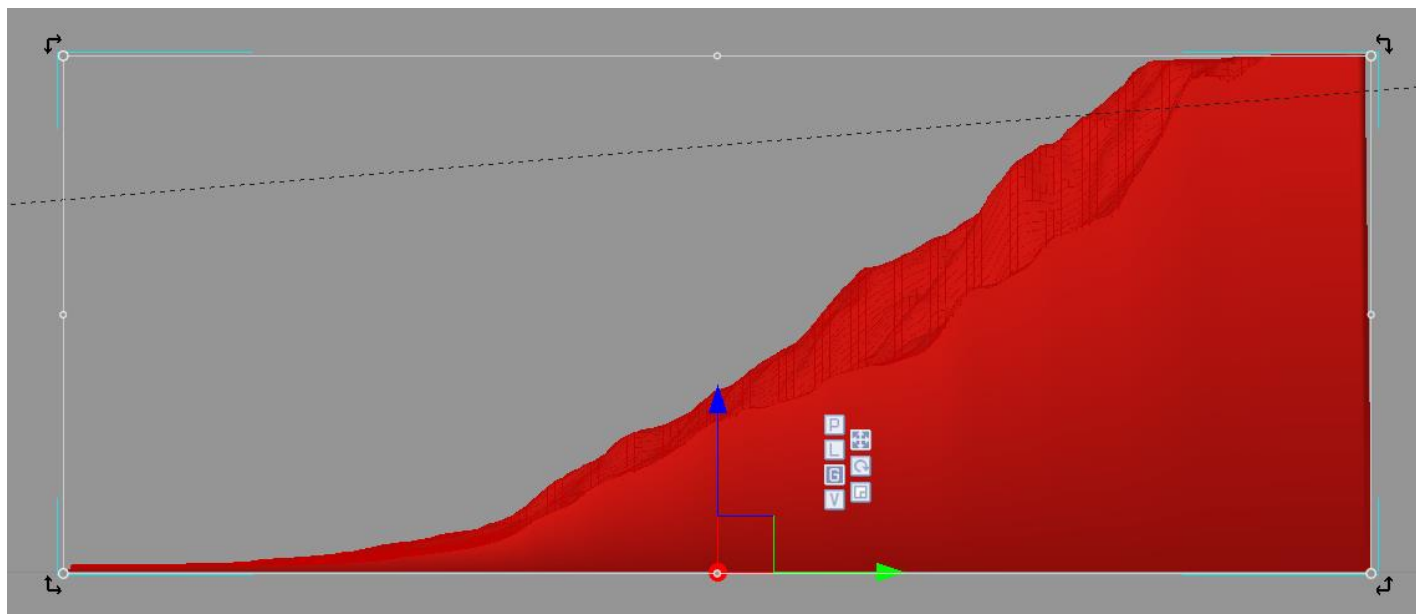
- Once the **Erosion** file has been loaded, click **OK** at the bottom of the **Terrain Editor**. It will then close.

The resulting terrain in Vue will appear quite flat even though the terrain height that was created in Gaea is quite pronounced:



The **Output Range** selection in the Gaea Build window has 1) **Natural Elevation**, 2) **Artificial Scaling** and 3) **Forced Full Range** as its three selections.

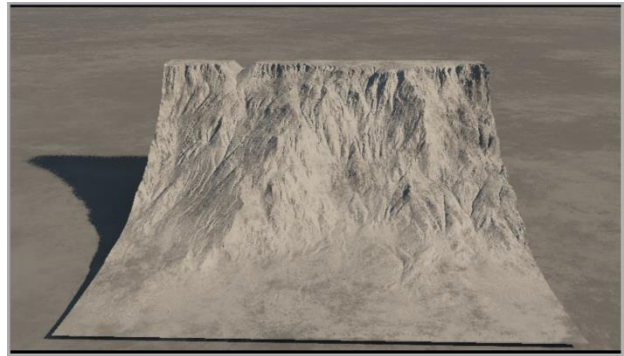
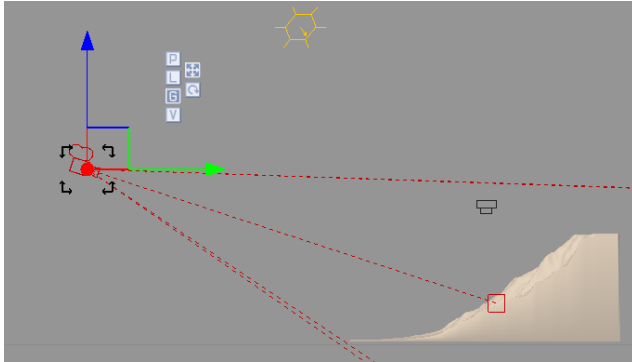
Under any of these three selections, the resulting terrain is quite flat when loaded into Vue. The completeness of the terrain data from Gaea is still there, simply use the X direction expansion grip to grow the terrain upward till it approximates the Gaea proportions:



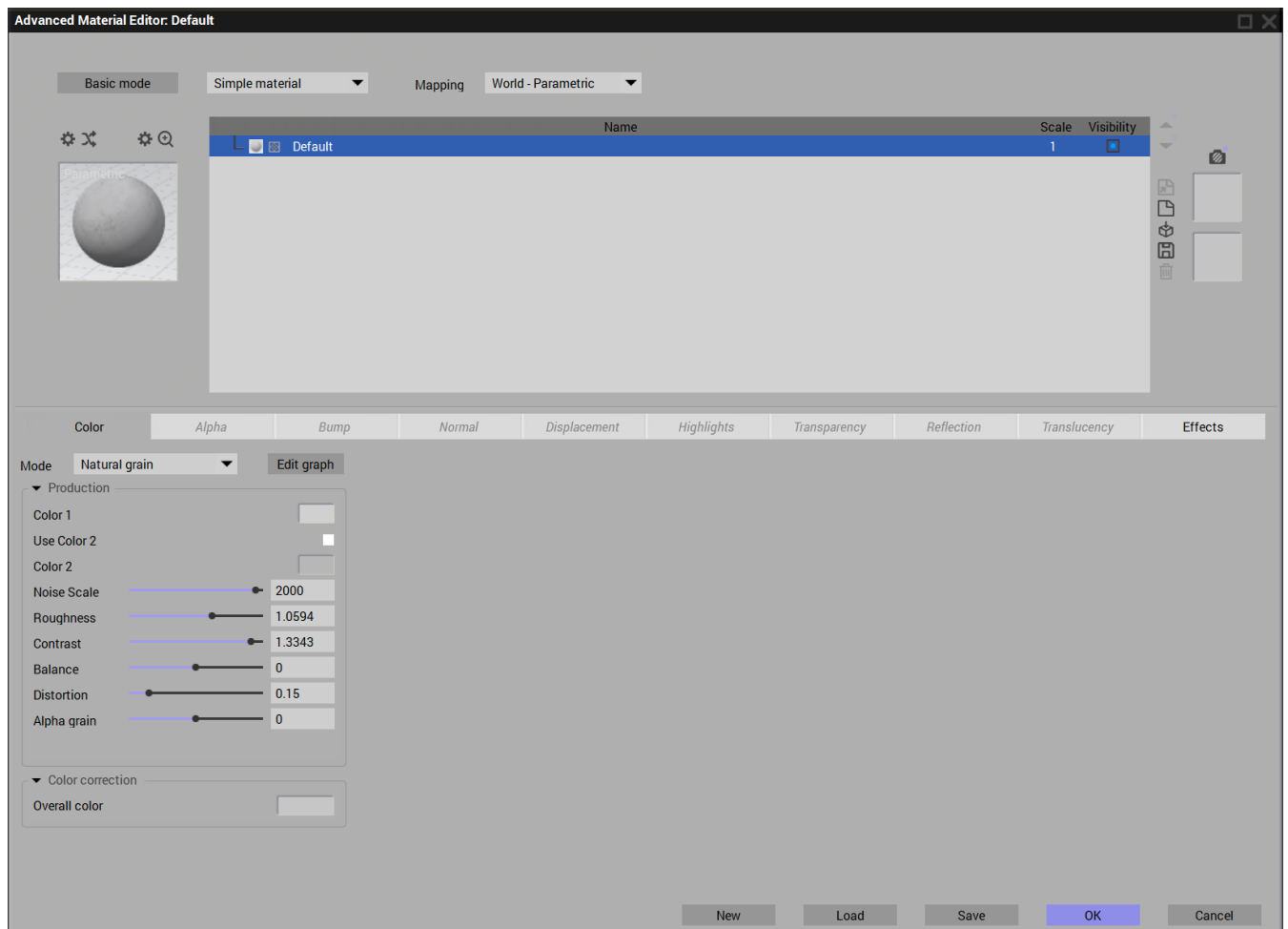
Applying Gaea Colours

Various colour maps are created during the Gaea build process including the rock colour, the grass colour and the final Mixer output, which we will apply.

To begin, arrange the camera to point to face of the cliff terrain



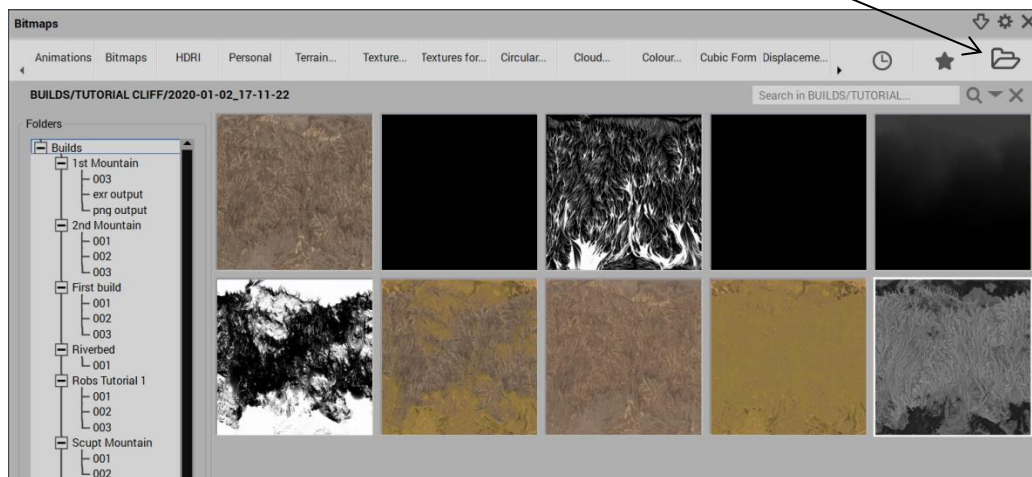
- Highlight the terrain in World Browser
- Double-click the sphere in the Object - Aspect window to open the Advance Material Editor:



In the Material Editor, while there are numerous ways to take direct control of the various terrain parameters, many of these elements can be applied or “laid over” the terrain by means of a mapped picture. These can include the colour, the Alpha (transparency), the Bump, Normal, and Displacement (all ways of emulating texture) and lighting properties like Highlights, Transparency Reflection and Translucency. We will be using this mapped picture approach on this terrain.

- Click on the **Colour** tab
- Click the down-arrow in the **Mode** section and select **Mapped Picture** from the provided list.

A **Bitmaps** window will be shown. If the output bitmaps from the Gaea build are not shown, you may have to open the upper-right folder and navigate to the directory where they can be found.



There are a few different colour maps that were generated by Gaea, a number of them were required by Gaea to generate the final colour output map from the **Mixer** node.

- Double-click on the **Mixer** colour map
- The resulting colour application looks wrong on the terrain, but a few parameters need to change in the **Material Editor** to apply the colour correctly.
- Near the top of the **Advanced Material Editor**, change the **Mapping** from **World - Standard** to **Object - Parametric**.
 - Under the **Color** tab change the **Interpolation type** to **None** and set the **X and Y tiling mode** to **Once**.

The 4K x 4K colour map should now overlay once over the 4K x 4K terrain.

- Click **OK** to close the **Advance Material Editor**.

The resulting render from Vue. A Gaea generated terrain using Gaea's colour output.

