GAIA

By Procedural Worlds

QUICK START GUIDE

Gaia is a system that enables rapid and precise creation of gorgeous looking Unity terrains.

Contents

Welcome!

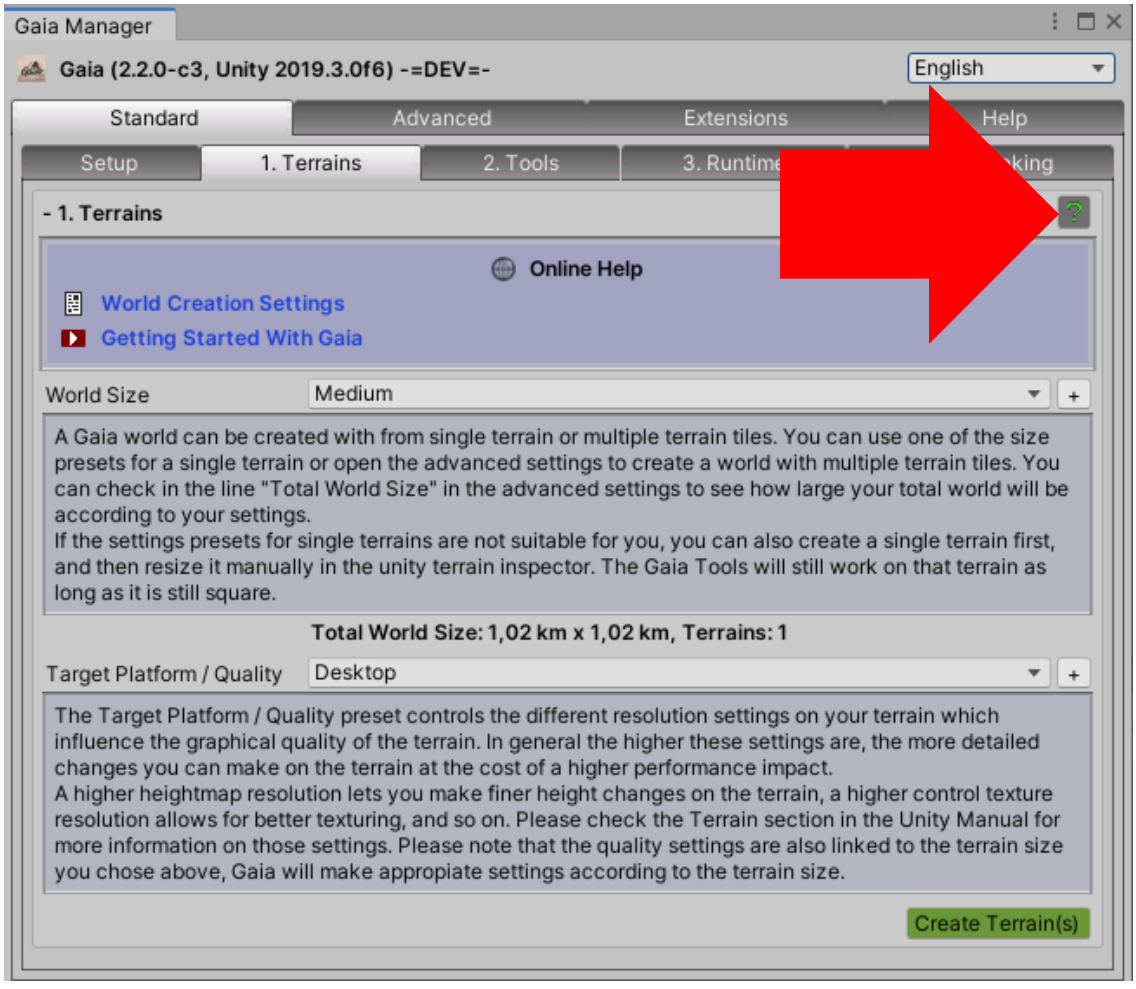
Thank you for purchasing Gaia!

Gaia is a sophisticated tool with a lot of options and while you can go as deep as you like to create fully customized environments, you can also start easily and quickly.

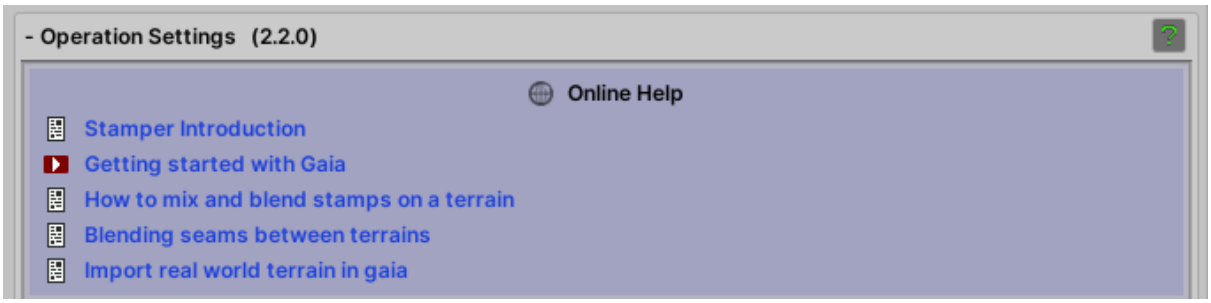
To get up and running as fast as possible, please follow this quick start guide. We also have a range of guide articles and tutorials on our website. You can also find more information in our knowledge base at https://proceduralworlds.freshdesk.com/support/solutions.

Help / Documentation System: This quickstart guide is only a first introduction on how to use Gaia. Most of Gaia's documentation can be found in the help system directly on the User Interface. This saves you opening a manual document or website while working with the application.
Look for a question mark help button in the top right corner: 

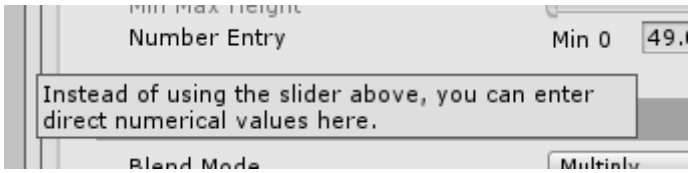
Clicking this button will display additional information on the UI, providing help for the input fields.



If you are not sure what a certain option in Gaia does, the help system would be the first place to check. For more complex tools or workflow information, the system offers links to online help pages in the [Procedural Worlds Knowledge Base.]



Also note that all input fields use tooltips as well that you can see when hovering the mouse over the name of the input field:



PRO TIP:

Did you know that we also have a range of other products to enhance your environments in Unity? For example, with GeNA Pro you can now spawn entire towns from scratch and automatically connect them with roads!

Check out our other products on the next page to learn more!

About Procedural Worlds

Procedural Worlds empowers artists and developers to bring their vision to life by making it easy to create, connect and stream beautiful worlds.

World Creation & Augmentation:

Gaia GeoSpatial - A system that ingests the real world at scale and generates rich lush environments inside of Unity.
Gaia Pro - A world generation system for creating, texturing, planting, populating and streaming scenes from low poly mobile, VR and through to high end desktop.
GeNa Pro - A sophisticated level design tool that intuitively creates anything from forests and valleys to rivers and roads and even entire villages.
CTS 2019 - Nominated by Unity of as one of the best assets in 2017, a PBR terrain shading system that significantly improves terrain look, performance, and usability.
Ambient Skies – An integrated Skies, Post FX and Lighting system for Unity. Ambient skies deliver professionally matched skies, lighting and post effects and a powerful set of tools to help you to get the best out of your scenes.
Ambient Sounds – An Interactive Soundscapes system for Unity. Ambient Sounds organizes your tracks and effects into Sequences that can be used in a multitude of ways to create dynamic soundscapes for your game.

MMO & Connection:

Connect - MMO with a click! Designed with the same 'simplicity is beauty' ethos of all our products, PW-Connect makes it easy to add multi player capability to any scene.

Acceleration & Streaming:

Storm - Storm accelerates the framerate of any unity scene on average up to 10 times faster than pure Unity and can stream an entire planet (4 billion x 4 billion tiles).
SECTR - A suite of performance-enhancing tools that enable open world streaming, massive mobile games and includes the latest techniques in audio occlusion and propagation.

Utilities:

Pegasus - A cut scene and fly through creator that makes it easy to show off gorgeous environments and drive characters through scenes with localised avoidance and mecanim animation support.

Learn more at our website here: https://www.procedural-worlds.com/

Tutorials, Chat, Ticketed Support

Still stuck even after reading the quickstart guide? You can talk to other members of the community on our discord server: https://discord.gg/TggjQNN

Or you can post on the Gaia Unity Forum thread: https://forum.unity.com/threads/gaia-aaa-terrain-generator-procedural-texturing-planting-and-scene-creation.327342/

Or lodge a Support Request with our customer support: https://proceduralworlds.freshdesk.com/support/home

Migrating from Gaia 1

Gaia 1 and Gaia 2 / Pro are not directly upwards compatible - but it is possible to migrate scenes that were created with Gaia 1 into Gaia 2 / Pro so that you can continue working on your terrain with the more advanced tools. Please visit this page for information on how to migrate from Gaia 1:

https://proceduralworlds.freshdesk.com/support/solutions/articles/33000252032-migrating-a-gaia-1-scene-to-gaia-2-pro

Setup

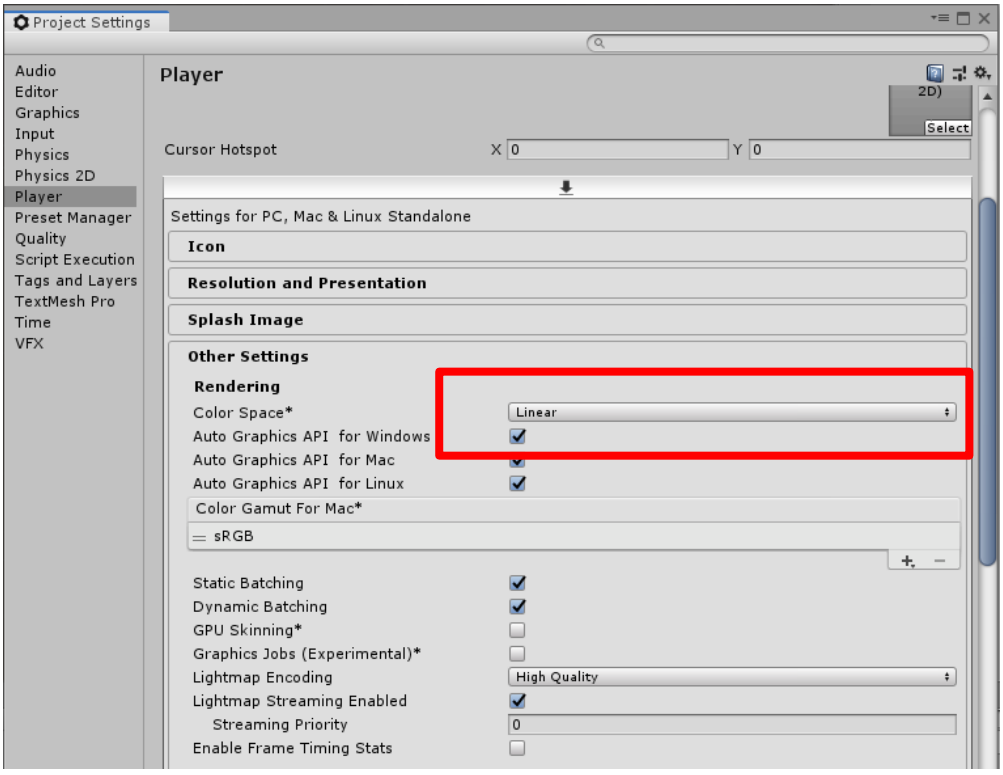
Before you start out with Gaia, please look through these steps to make sure Gaia is correctly installed in your project. While these instructions may seem long, the most text here is mostly informational, the actual steps you need to perform is just a few clicks.

1. Create a new project in Unity or open the project that you want to use Gaia in.

2. **<OPTIONAL>** In most cases you want to work in linear colour space, and it can save you a lot of time to switch the colour space to "Linear" in your project **before** importing Gaia (or any other unity package). By doing so, the included assets will be imported in the correct colour space settings right away (Otherwise all the assets will be re-imported again when switching the colour space later, which can take some time.)

   To find out more about colour space please read the official information from Unity about this topic and decide which colour space you want to use. Unless you are developing for Mobile or VR or have very special requirements, you usually want to choose linear colour space.

   To switch colour space, open
   Edit > Project Settings > Player
   and adjust the colour space under "Other Settings"



Don't worry if you are not sure about this setting – you can always change the colour space later in your project, but processing this change then can take a while.

3. Install Gaia from the Package Manager under Window > Package Manager.

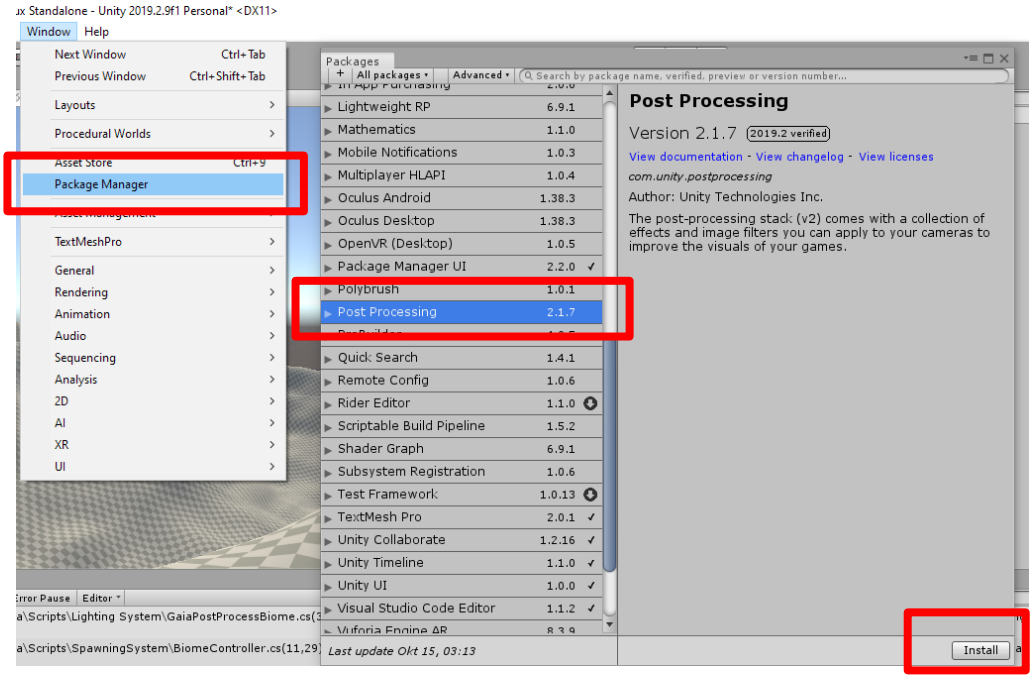
   If you purchased Gaia from the PW store you can install Gaia by exectuting Assets > Import Package > Custom Package… in the Unity editor.

   Please note that with Unity 2020 and higher the old Asset Store Window has been removed, and you **need** to download all asset store content via the package manager now.

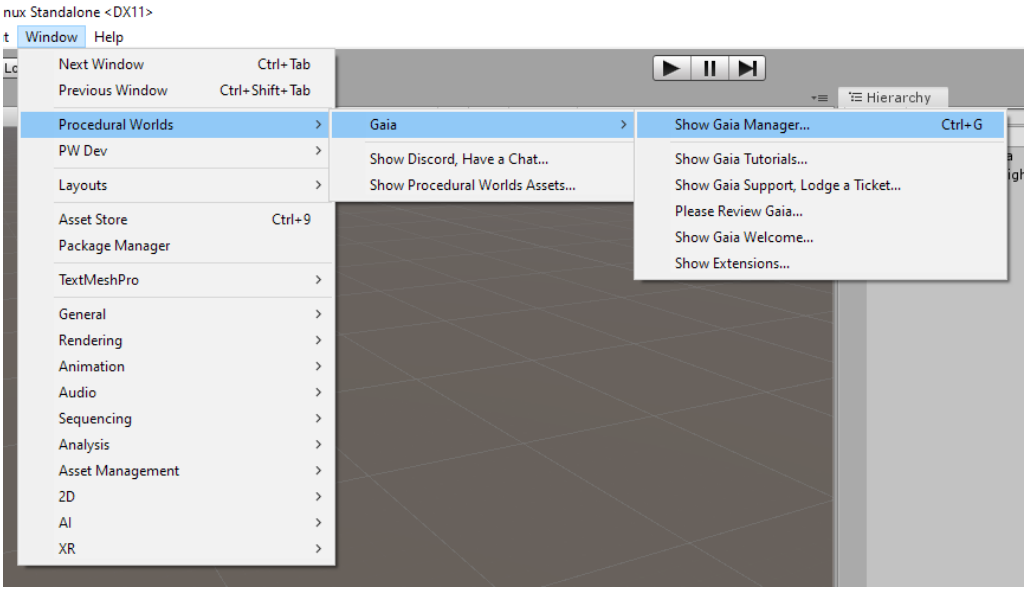
   <OPTIONAL> For a better experience with Gaia in the built-in rendering pipeline it is recommended to install the Post Processing Package from the package manager as well. This is entirely optional – Gaia will work fine without post processing installed, but then can't set up post processing in your scene, e.g. for underwater effects or for lighting in your biomes.

   This optional step is also not required when using HDRP or URP as these rendering pipelines come with their own version of post processing automatically.

   To install post processing in your project, please open the package manager from Window > Package Manager and locate and install the post processing package:



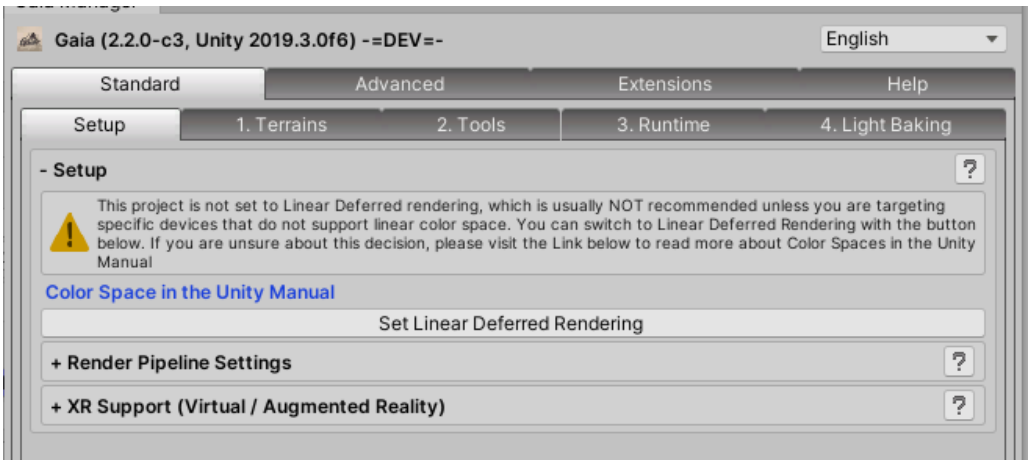
4. Your entry point to using Gaia is the Gaia Manager Window. After importing Gaia from the asset store, you can open the Gaia Manager Window from the Window Menu or by pressing Control + G:



When the Gaia Manager is being opened for the first time after a new installation or an update, it will perform an initial maintenance / setup process which runs by itself.

If the Gaia Manager Menu entry does not appear: In 99% of the cases this is caused by compilation errors in the project. Please check your console for messages that might prevent the successful compilation of your project. In a fresh project this is very unlikely to happen, but in a larger, living project these errors can have many different causes. If you are stuck with a compilation error that you can't resolve, please contact support.

5. In the **Gaia Manager, the Setup Tab will be selected if your project is not in linear colour space or deferred rendering mode.** It will offer buttons to correct this.



Click these buttons to set your project's colour space linear and your rendering path to deferred in order to get the best visuals and performance. This step only ever has to be done once in your project. If you performed the switch to linear before as mentioned in Step 2 this process will be very fast, otherwise it might take a bit to reimport the assets.

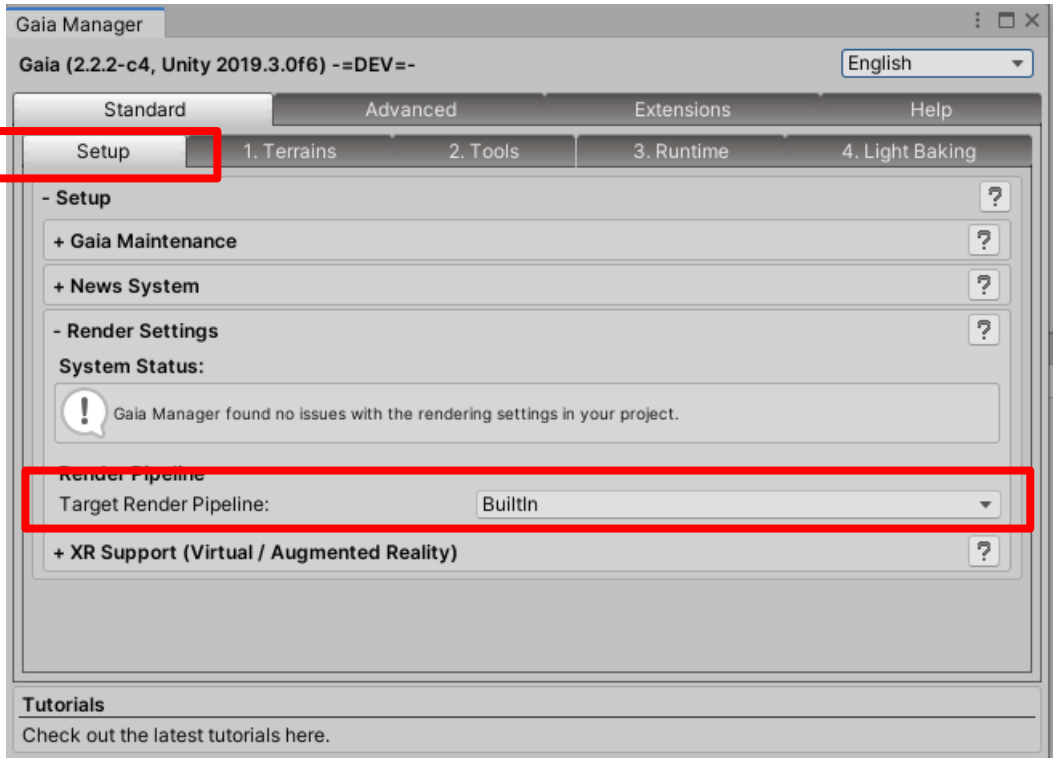
NOTE: If you are using gamma colour space you can ignore this step!

6. **<OPTIONAL>** Gaia comes with its own water and vegetation shaders which also support the Unity scripted rendering pipelines (SRPs). These are commonly known under the terms

   HDRP – High Definition Rendering Pipeline
   LWRP – Lightweight Rendering Pipeline
   URP – Universal Rendering Pipeline

   If you want to use one of these Pipelines, you need to set up Gaia for that specific pipeline. If you want to use Unity's built in rendering, you are done with setting up Gaia already.

   Supporting these pipelines can be challenging for asset store developers as we need to make sure that features like water use the correct shader for the correct pipeline for the correct unity / SRP version. To make this easier for you, we have mostly automated this process in the Setup Tab in the Gaia Manager:

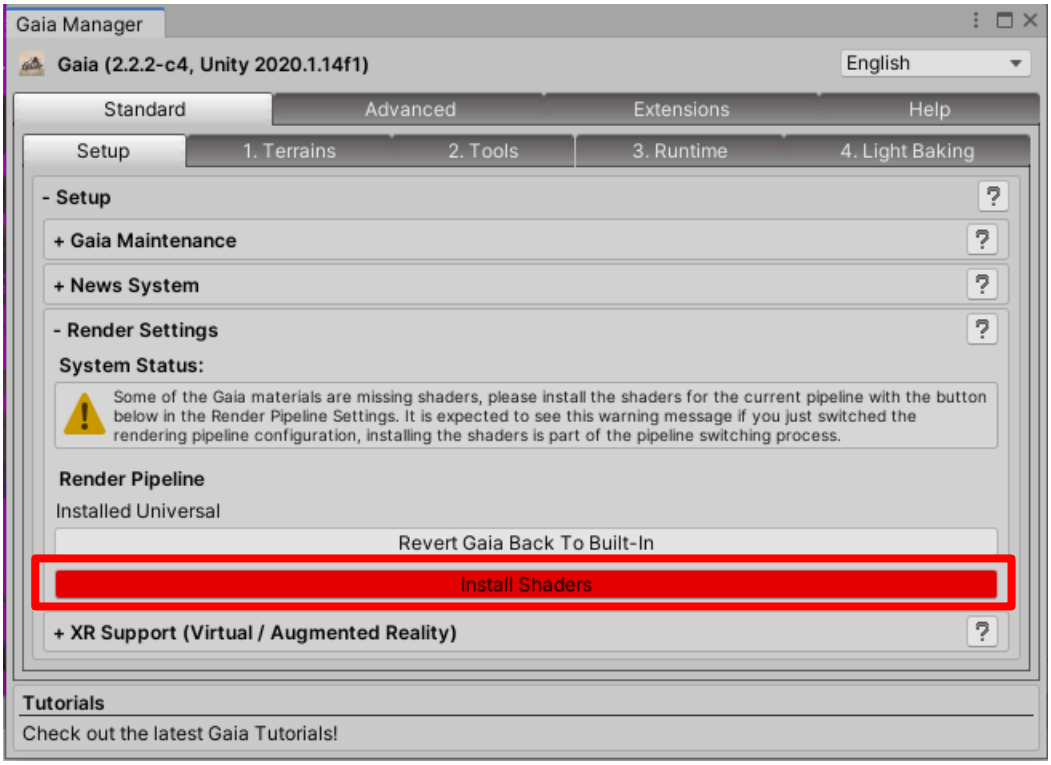


   In this panel you need to do only two things:

A) If you want to use a different pipeline than built-in rendering, select the pipeline you want to use and click the button to upgrade Gaia to this pipeline. This will change the Gaia tools and functions to the respective pipeline. This process can be reverted later as well. **If you want to use built-in rendering only, you don't need to do perform this step, Gaia is pre-configured for built in rendering after import already.**

The installation will take 20-60 seconds to complete, as the project needs to be recompiled. During the installation you might be asked if you want to use Gaias Rendering Pipeline asset or use your own, or if you want to switch out terrain shaders as well. If you are not sure about these questions, choose "yes" to both.

B) After you configured the rendering pipeline, click the "Install Shaders" button. This will install the shaders for both the water and the vegetation for the correct unity version and the pipeline you selected above. If the correct shaders are already installed, this button will not appear.



The Gaia setup process is now done.

Please note: Using the SRPs is not recommended for Unity beginners as using those pipelines come with their own challenges and limitations you need to master. Doing so while just starting out with Unity will make your journey more difficult than it needs to be.
If you decide to use the SRPs please note that all materials you use beyond the Gaia vegetation items and the water need to be compatible with your target pipeline. Gaia cannot set up materials from other asset

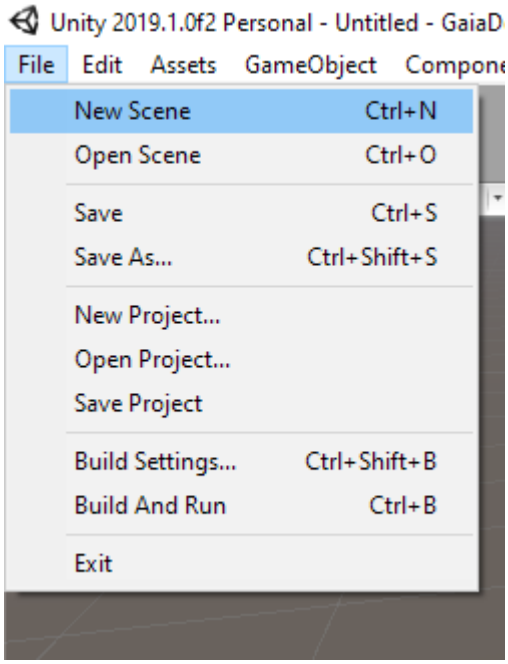
packs or convert shaders written for a different pipeline automagically for you.

When you are switching pipelines it is possible to revert back to built-in rendering later and then switch to another pipeline again.

Create your first terrain with Gaia – in just a few clicks!

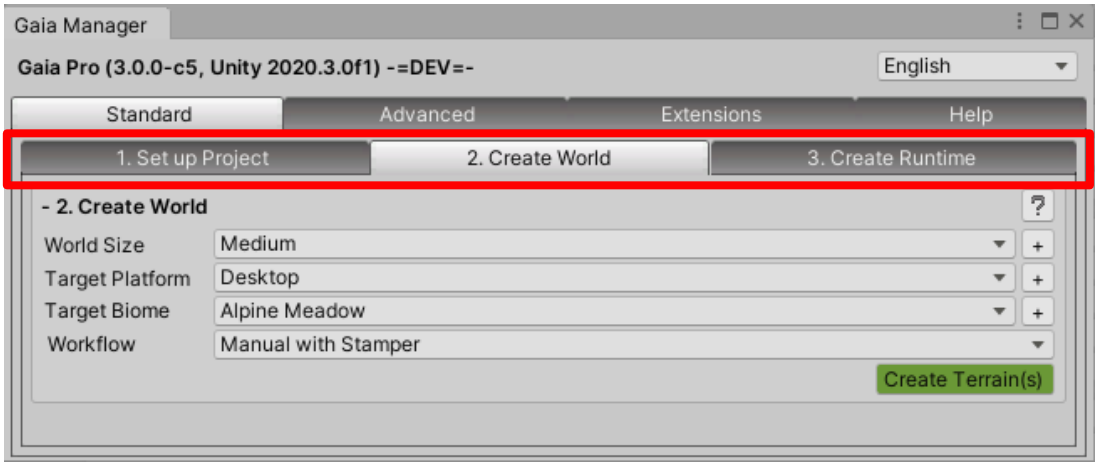
In this scenario we will use Gaia to generate an entire new scene using a simple heightmap stamp and a biome preset – this will create an entire terrain for you in just a few minutes.

1. Create a new scene. To create a new scene, select **File -> New Scene** or **Ctrl + N**.



In your new scene, open the **Gaia Manager** by pressing Ctrl + G or the Window / Procedural Worlds / Gaia / Show Gaia Manager... menu entry and select the "Standard" Tab in the window.

Creating a new scene with Gaia can be done in mostly 3 steps which are represented in these tabs in the Gaia Manager as well:



1. Set up your project (If you followed the setup instructions at the beginning of this guide this should be done already.)

2. Create your world by creating one or more terrains that represent the surface area of your world

3. Create Runtime settings such as Lighting, Water, and a Player to explore the terrain.

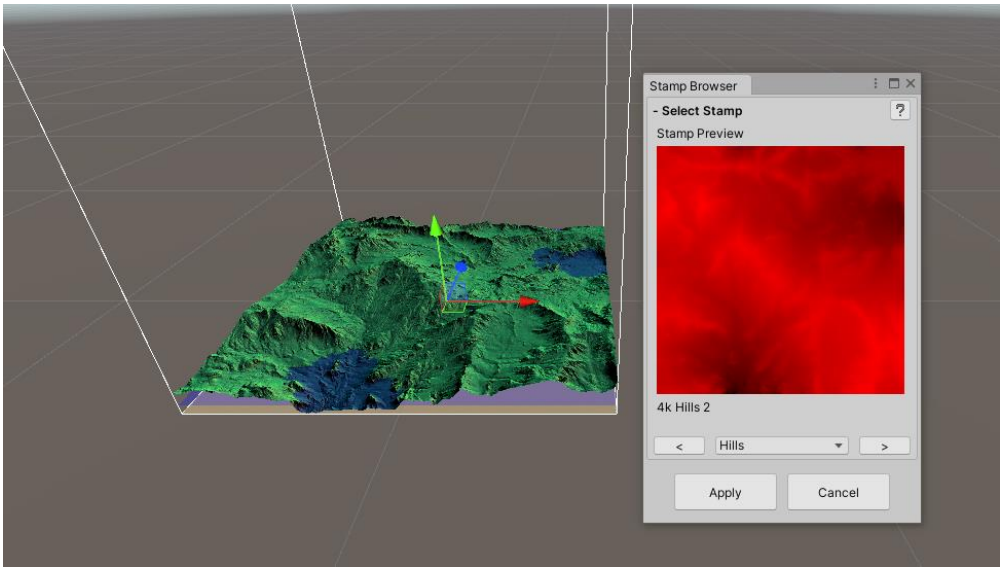
Note that these steps do not necessarily need to be executed in this order – it is possible to change the setup of the project during development, or if you already have an existing terrain, you do not need to go through the "Create World" step. For the sake of this introduction, we will assume you are starting from an empty scene.

In a new scene, the Terrain tab is selected per default. Here you can set up settings for your world size and the target platform (which offers different settings for the visual world quality). You can select a first biome here that you want to spawn on your terrain – a biome is a selection of textures, trees, vegetation, etc. that fit well together and can be spawned together I
You can also choose which workflow you want to use: Manual Stamping or (Semi-) automatic terrain generation with the World Designer.

For your first attempt the default settings in here should be fine – you can always start this process over to select a different terrain size or quality options later. If you are curious, you can click the small "+" buttons to see

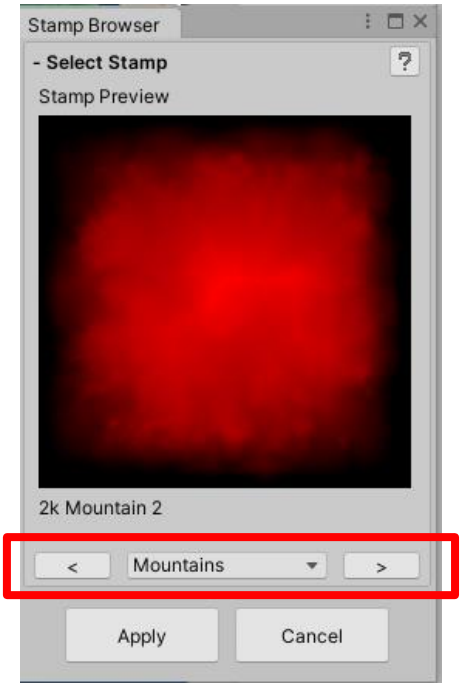
the advanced world size or quality options.
Select the "Manual with Stamper" workflow, then click on "Create Terrain(s)" to create the terrain and set up a stamper tool that will allow you to sculpt the terrain.

2. You should see a new terrain being added to the scene, and the Gaia Manager will switch forward to the Runtime tab.



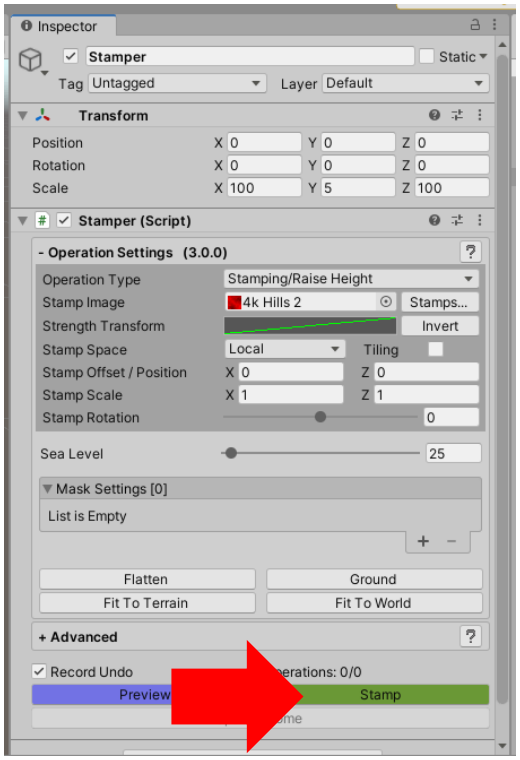
The blue-greenish terrain you see in the scene view now is not your final terrain just yet – it is more a real-time preview of the terrain shape we are about to create. You should also see a stamp browser window which allows you to quickly select one of the stamps ("terrain shapes") that come with Gaia.

3. To get a first impression on how the stamper and the preview works, try selecting a different stamp in the stamp browser by using the back and forward buttons and / or selecting a different stamp category. The stamper preview in the scene view should update immediately with your selection. Try to find a stamp that appeals to you, ideally it also allows a bit of water in the scene (deep blue in the preview) to be visible as well.

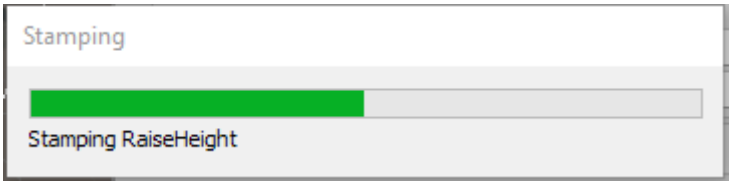


When you are happy with the selected stamp, you can click “Apply”.

4. In the unity inspector you should have the stamper controls selected. Click “Stamp” at the very bottom of the Stamper to apply the selected stamp to the terrain.

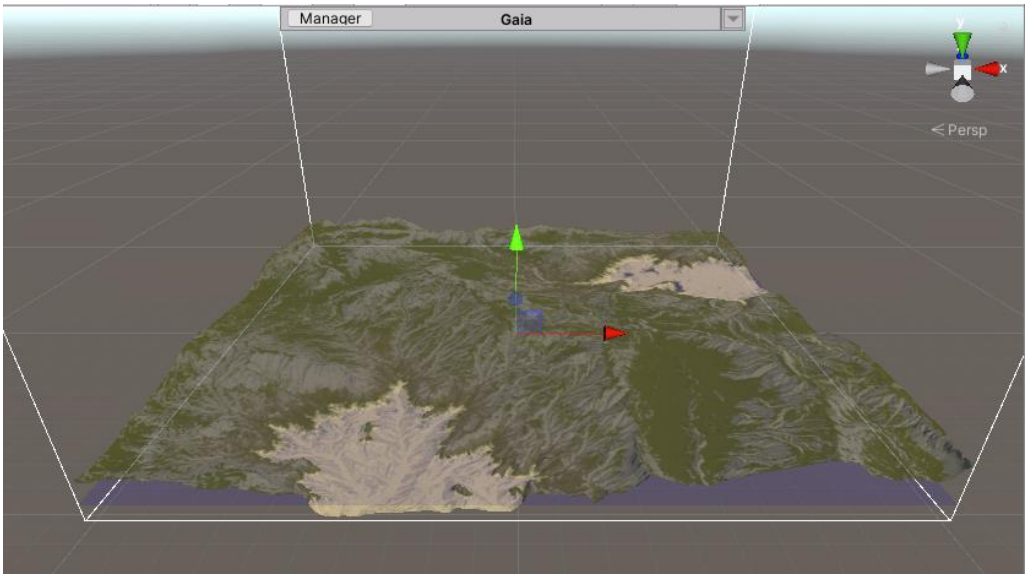


The following is happening now:



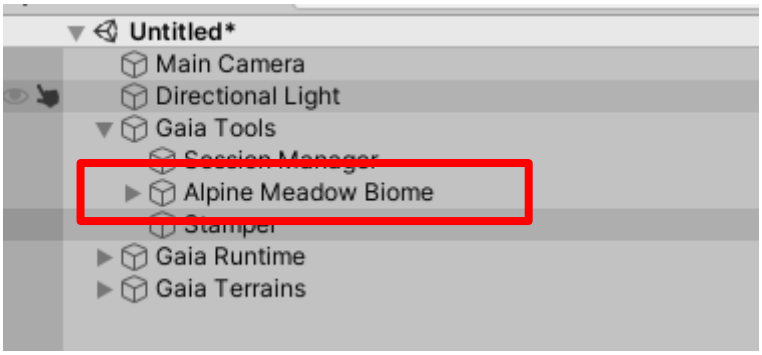
- The stamper adjusts the heightmap on the terrain to form mountains and valleys according to the stamp you selected

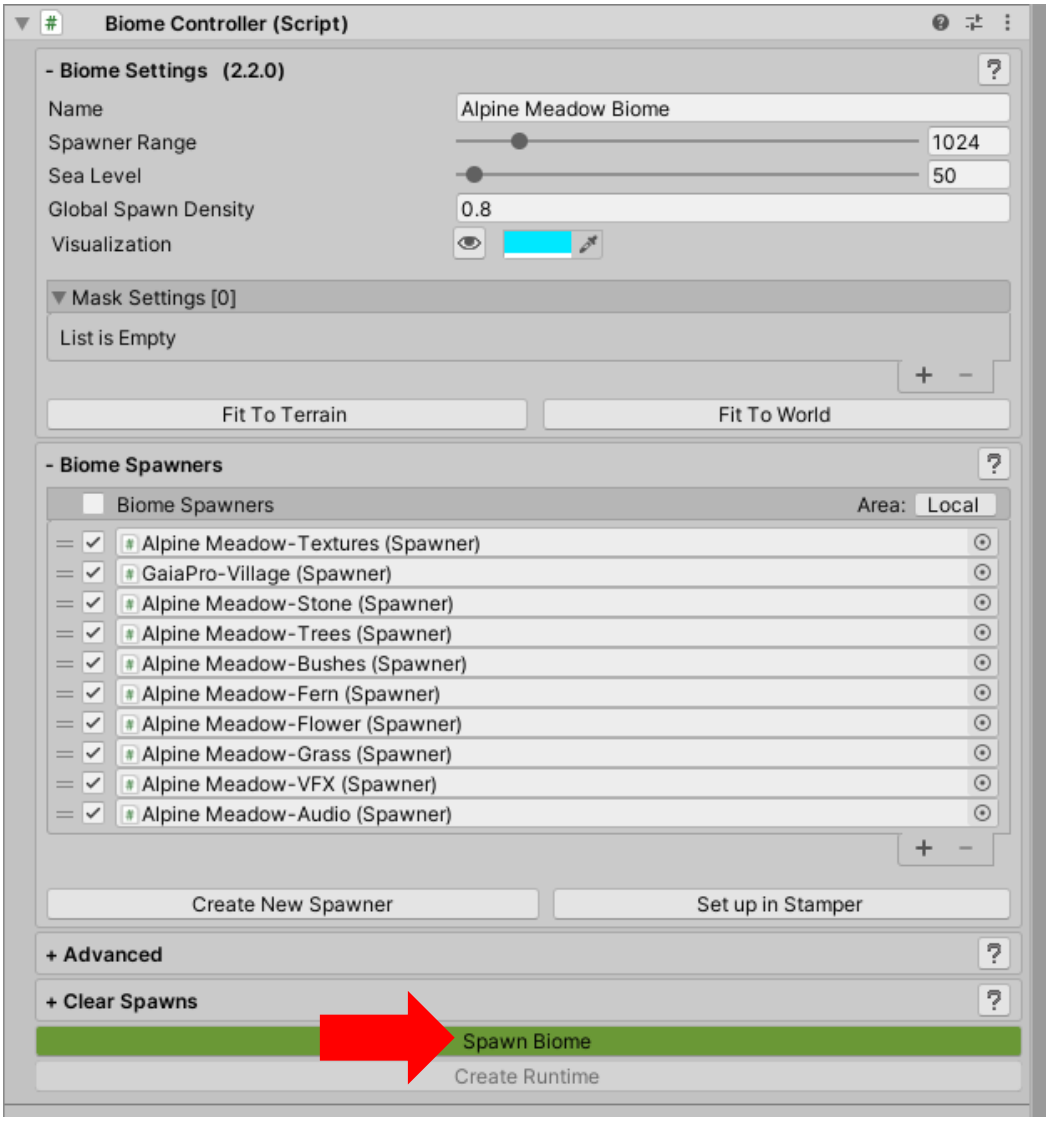
- When stamping is done, per default a texture spawner will apply textures to the terrain so you can estimate better what the outcome of applying this stamp is (having a rock texture on a mountain, grass on plains etc. makes the terrain easier to read).



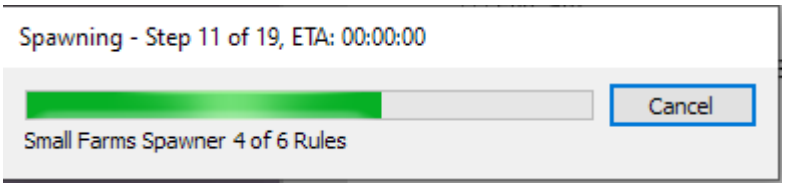
You can repeat this process while moving the stamp around and / or selecting different stamps from the stamp selector window to stamp additional features on the terrain. When you are satisfied with the result, you can look for the "Spawn Biome" button that will place the remaining other assets (grass, tree, game objects) from the biome on the terrain:

This button is just a shortcut for selecting the biome in the scene hierarchy and running the spawn from there:

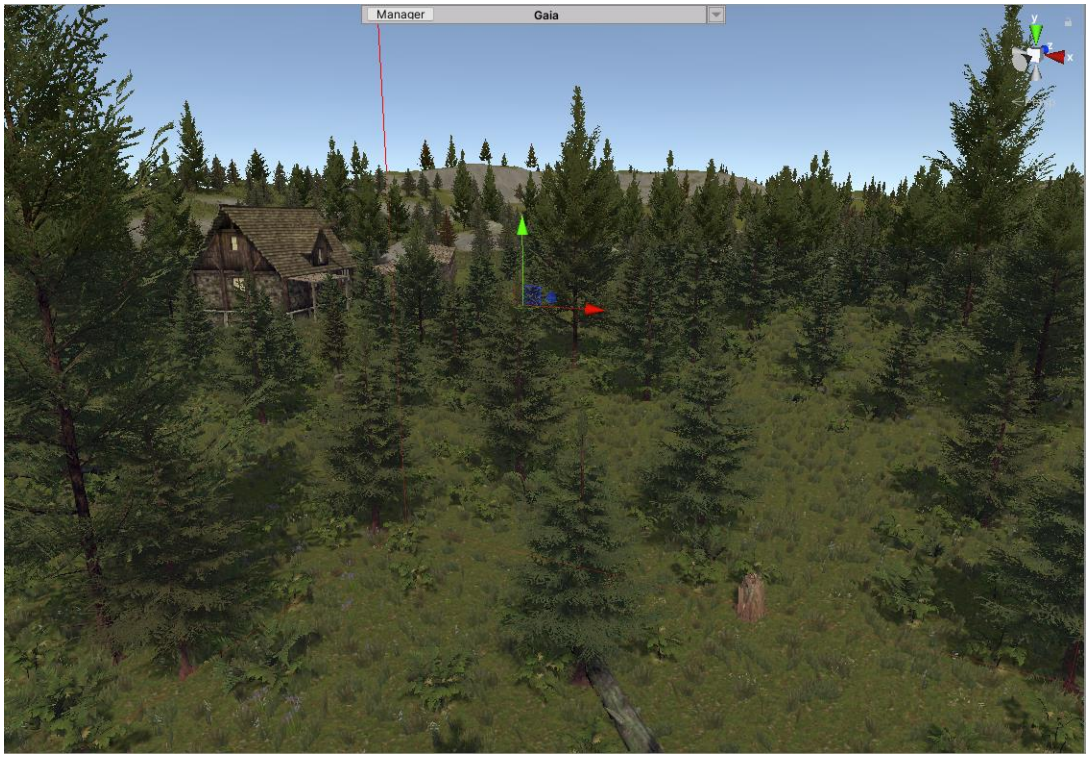




You can either press the "Spawn Biome" button in the stamper or navigate to the biome and start the biome spawn from there.

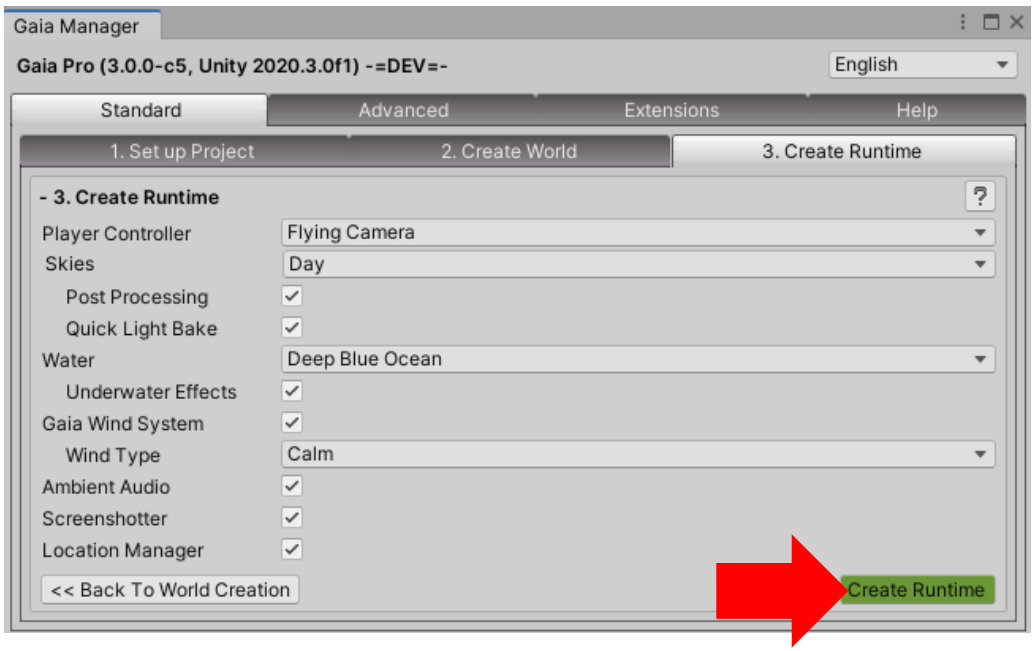


When the progress bar in the centre of the screen disappears and the inspector window becomes active again, the biome spawning process is complete. Zoom in in the scene view a bit and you should be able to see trees and grass on the terrain.



Now that you got your first terrain, let's take the next step to add runtime settings to your scene.

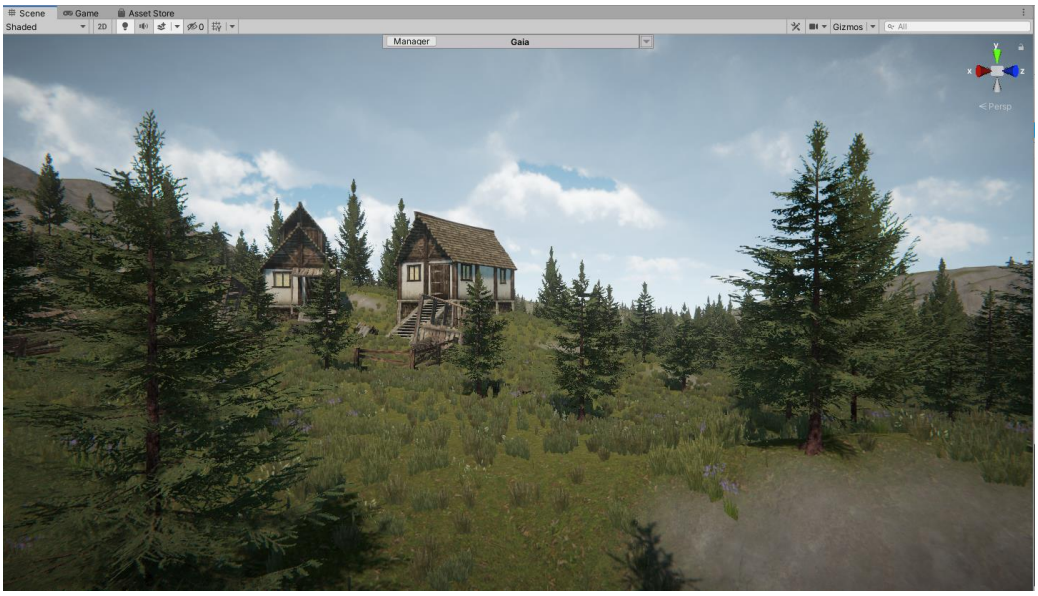
5. Bring up the Gaia Manager Window again. It should automatically select the runtime tab since you already executed the first two steps of the scene creation process.



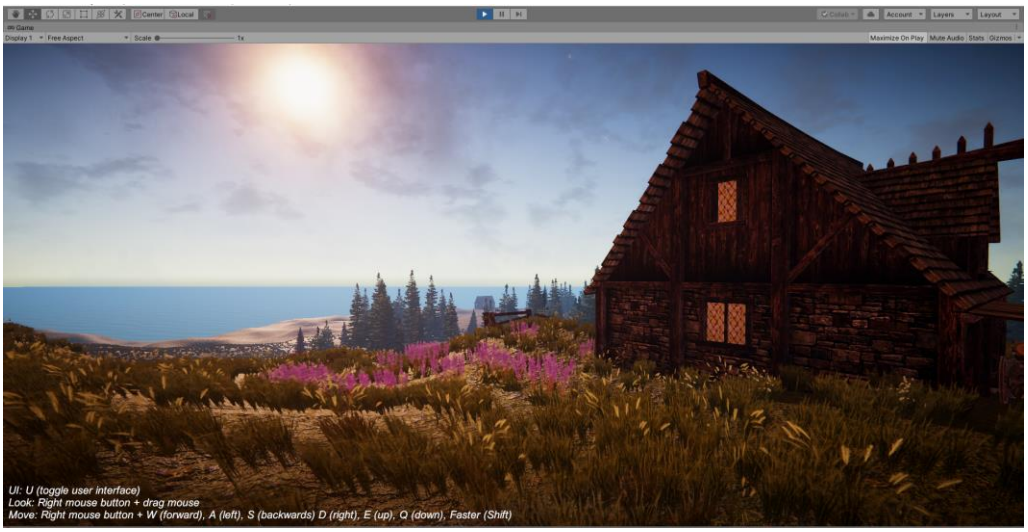
This tab shows you the available runtime elements such as Lighting or Water that you can add to your scene. Unlike the Gaia Tools, these

elements are intended to remain in your final product. You can take a look at the available settings and choose what you want to add to your scene, again the default settings should be fine for the purpose of this guide. Click on "Create Runtime" to add the elements to the scene.

You should notice a huge visual upgrade due to the added sky, lighting and water in your scene, especially if you have post processing enabled.



6. At this point your scene is now fully usable and you can click play to see it in action. Depending on the selected player type you can fly / wander through the scene with the usual WASD + mouse controls.



Try to press F11 to bring up photo mode, which allows you to take screenshots from your scene using various settings:

Note that Photo Mode works in a standalone build as well, saving screenshots in the user data folder. This means you can adapt Gaias Photo mode to add a photo mode to your own project as well quickly.

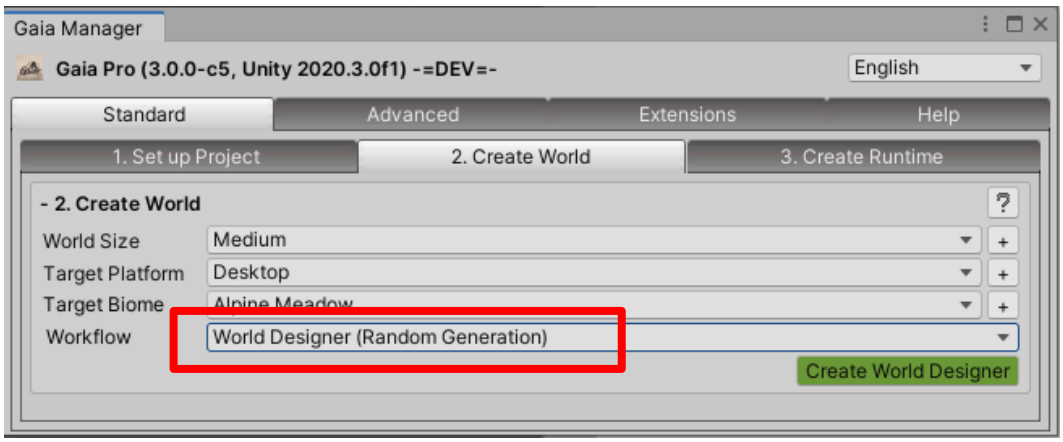
This concludes the Gaia Quickstart Guide for the manual workflow using the Gaia Stamper. Please read on further below for a guide detailing the World Designer (Random Terrain Generation) workflow.

Please Note: This was only the quickest possible introduction to Gaia and we skipped a lot of the steps that a more experienced user would take in Gaia, e.g. a more detailed terrain sculpting process, and building their own set of spawners according to their design goals.
You are not restricted to using a single stamp and then having to live with the result Gaia generates – You can use multiple stamps to form your terrain and control every aspect of the spawning process to populate the terrain so you can get exactly the result you want.
Of course you can also add your own assets to Gaia to spawn them on your terrain in the same fashion as shown in this quickstart guide. To do so, you would need to take a look at the resource settings in the spawner. The online help page for the spawner has more information on this topic.

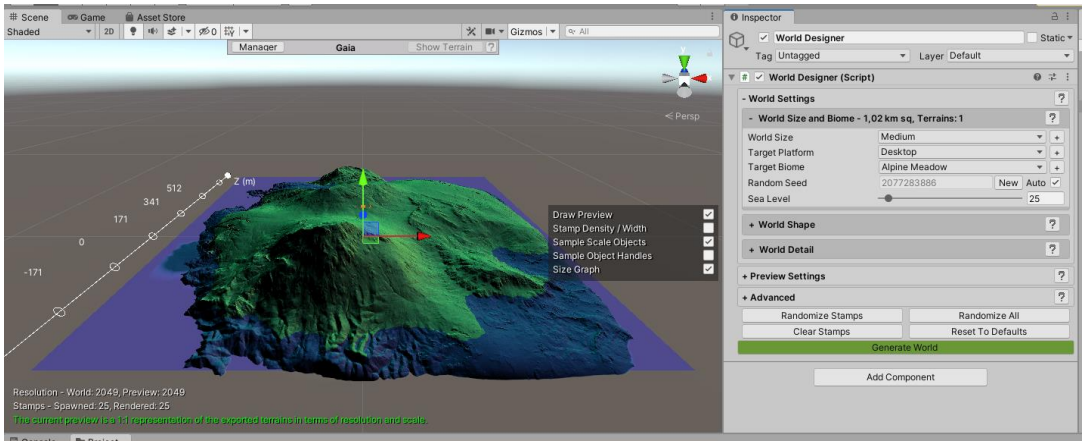
Creating a terrain using World Designer (Random Generation)

The previous section explained the fundamental steps to create a terrain shape manually using the stamper. There is an alternative workflow that replaces the step of stamping out the terrain manually with an automated stamp generation to create a randomized (but still natural) terrain shape.

1. To follow along with this guide, open a new scene and bring up the Gaia Manager again (Ctrl + G or Window > Procedural Worlds > Gaia > Show Gaia Manager). The default settings should be fine again, but this time around switch the workflow mode to "World Designer (Random Generation)"

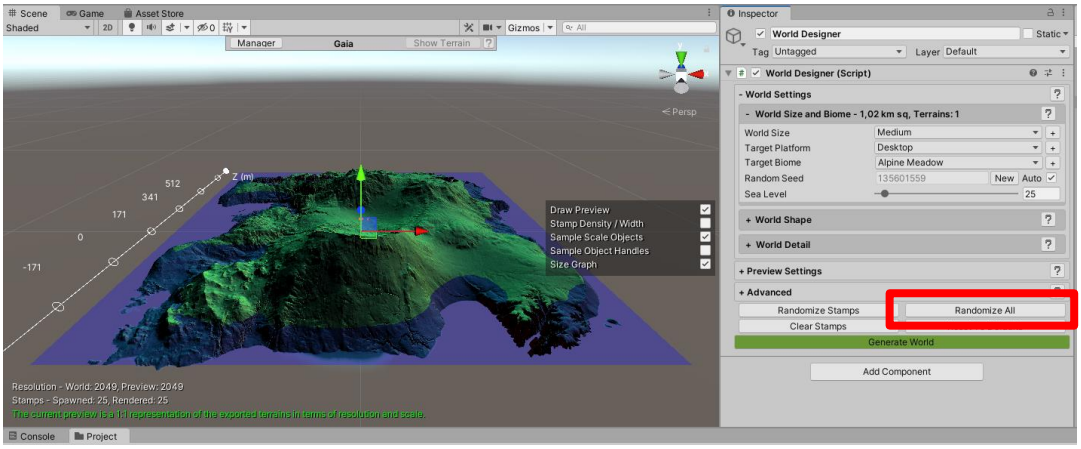


2. Click the "Create World Designer" button. Gaia will open the world designer tool for you and will show you a terrain preview that matches the world size that was previously selected in the Gaia Manager window.



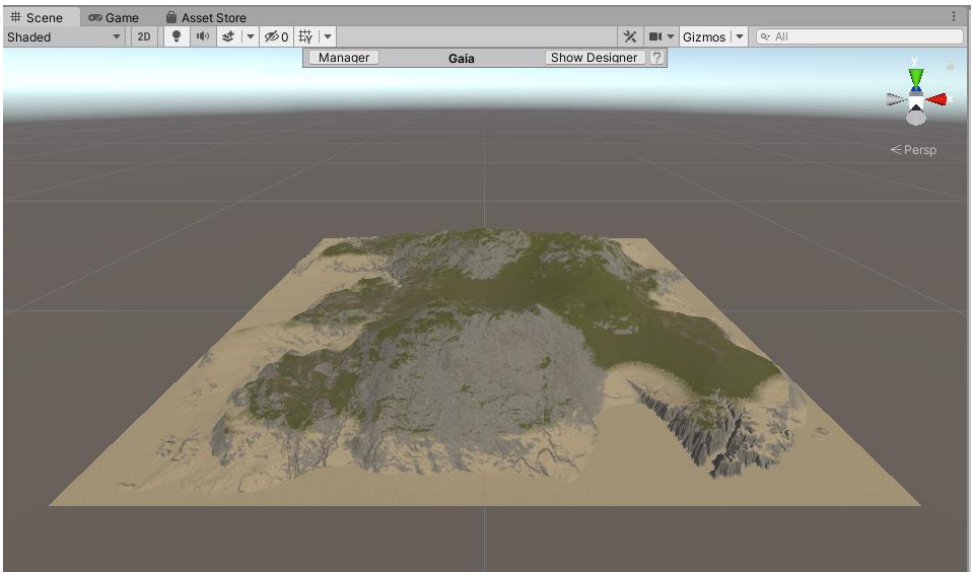
3. The terrain shape is random, so your terrain might look different than what you see in the screenshot above. The very easiest way to use the world designer is to click the "Randomize All" Button. If you click this button, most settings of the

random generator will be shuffled, and a new terrain will be generated. Per default the world designer creates an island, so you should get a different island each time you press the "Randomize All" button.



4. If you see a terrain shape that you like, press the "Generate World" button, and confirm the popup.

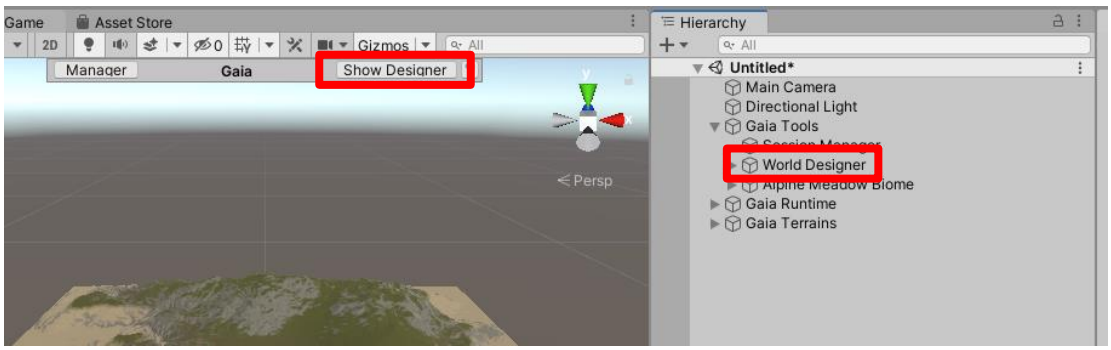
Gaia will now take the preview shape that was displayed before and will create a full unity terrain out of it and spawn the textures from the selected biome:



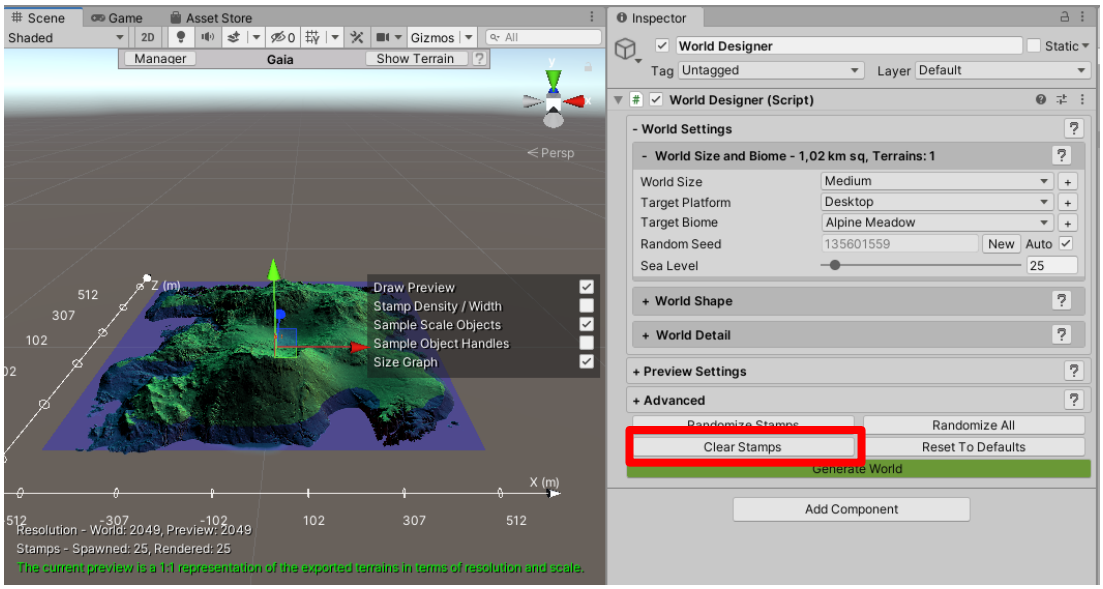
5. From this point on you could continue now and fully spawn the biome and create the runtime setup for lighting / water on this terrain. This works just like in the manual workflow using the Gaia stamper. This would be the absolute

minimal way to use the World Designer: Use the "Randomize All" button until you see a shape you like, and then generate the resulting terrain. However, the World Designer has many more features to help you to generate a more fitting terrain for your project.

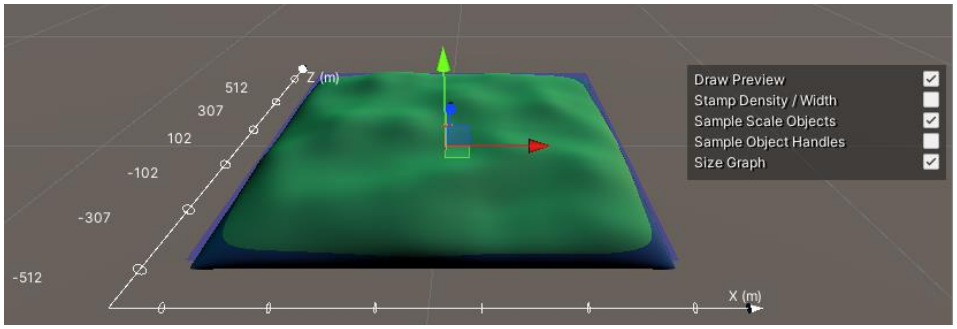
6. To explore these settings, return to the Designer again. You can re-open the World Designer by selecting it in the scene hierarchy, or by clicking the button in the Gaia Scene View Panel:



7. With the designer in view click the "Clear Stamps" Button to clear the stamps that have been created during the last generation run.

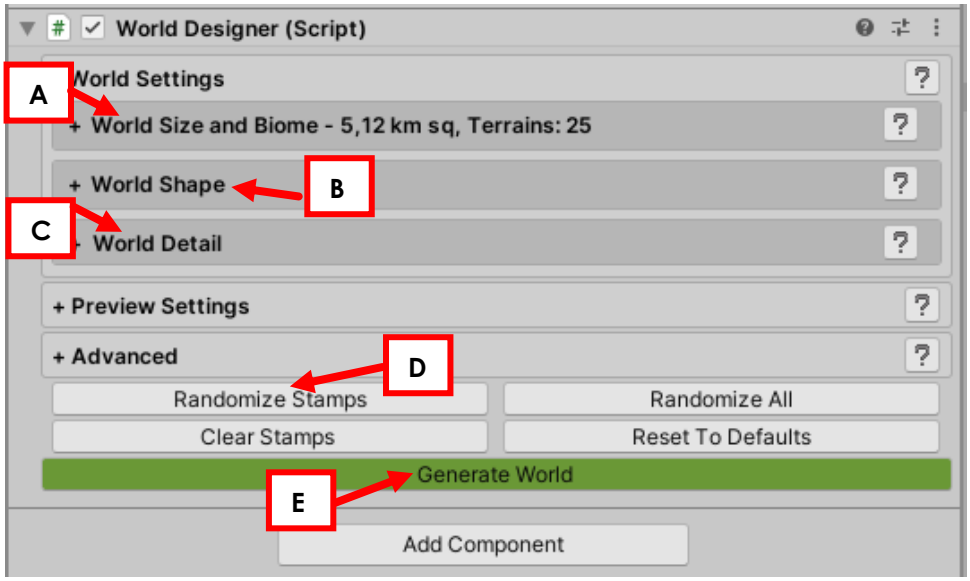


You should see now a mostly featureless terrain shape in the preview.



8. What you are seeing there is the so-called "Base Terrain". The world designer works by taking such a basic terrain shape as input and then enriching it by placing multiple stamps on it to create interesting shapes.

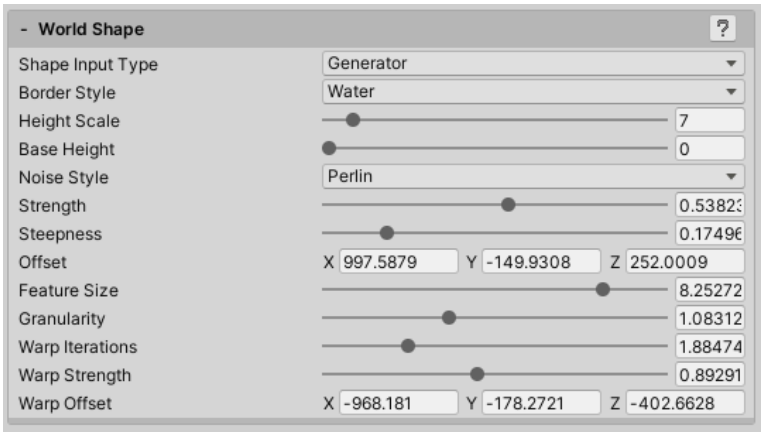
   So when not doing the full randomized approach via the "Randomize All!" button, the workflow in the World Designer is as follows:



A Set up your World Size (which is taken over from the Gaia Manager initially)
B Set up your World Shape / Base Terrain
C Set up settings for your World Details / Stamps
D Spawn random stamps on the base terrain
E When happy with the results, Generate the World and turn it into full unity terrain(s)

In the next steps we will follow this workflow to generate a terrain based on a certain base terrain shape.

9. Begin by opening the World Shape panel. For the sake of the tutorial select "Generator" and "Water" and adjust the settings there that all influence the base shape of the terrain:



The most important settings are:

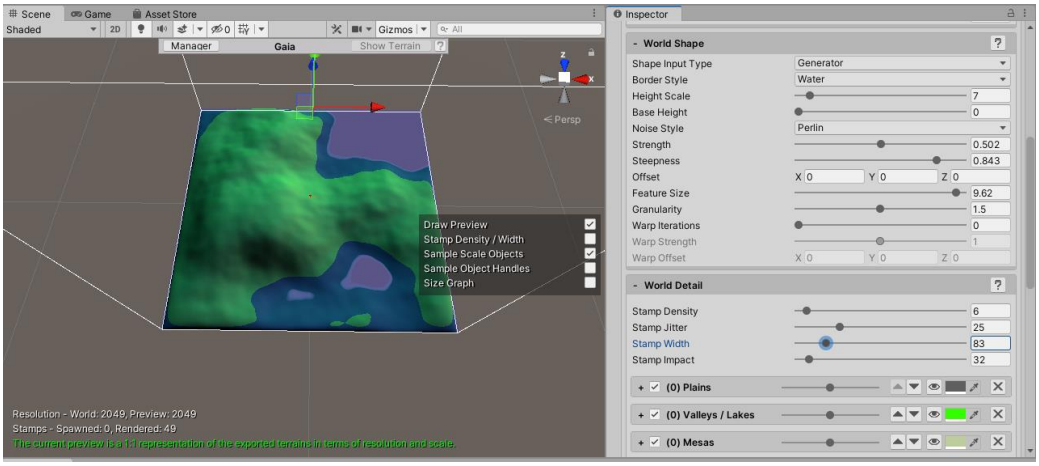
Shape Input type – Allows you to switch between generating a shape from Noise (Generator), using an input image or an already existing terrain.

Border Style – Allows you to force the borders of your world to be Water (to create islands), Mountains or nothing specific.

Height Scale – Influences the overall height of the base terrain but also of the stamps that are placed on it.

Base height – lifts the entire shape up on the y-axis.

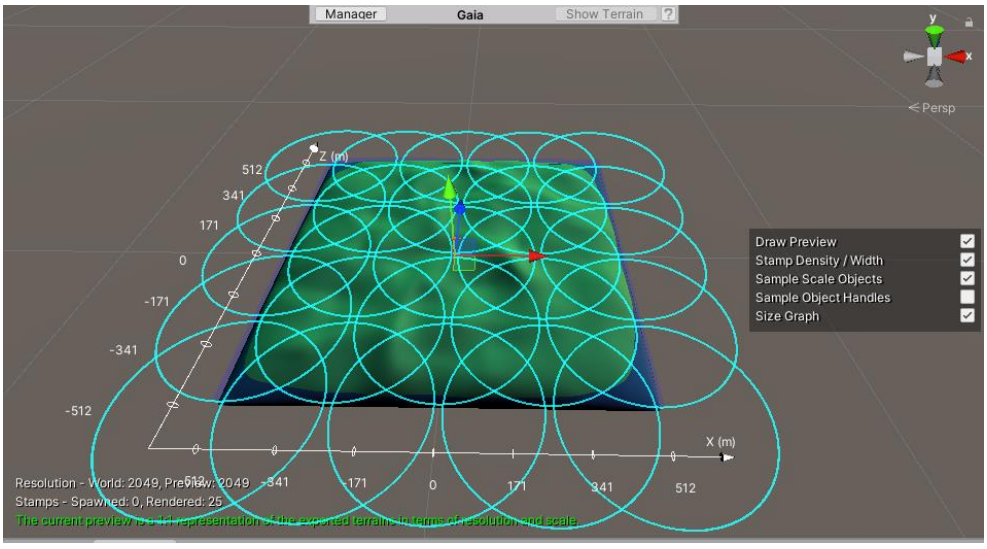
You can find more information about all the remaining settings by clicking the "?" icon in the World Shape Panel. Try to create a bit more interesting base terrain shape that would still be somewhat recognizable when the stamps are spawned, e.g.:



10. Next we can take a look at the World Detail settings which control the stamp spawning that will take place on the base terrain.

There are 4 general settings on the top that apply to the way the stamps are being spawned on the base terrain:

Stamp Density: Controls the number of stamps that will be placed on the terrain. You can drag the slider around to see a preview visualization of the stamp areas (each circle represents one stamp that will be placed). There is also a checkbox in the scene view panel to activate this visualization permanently.

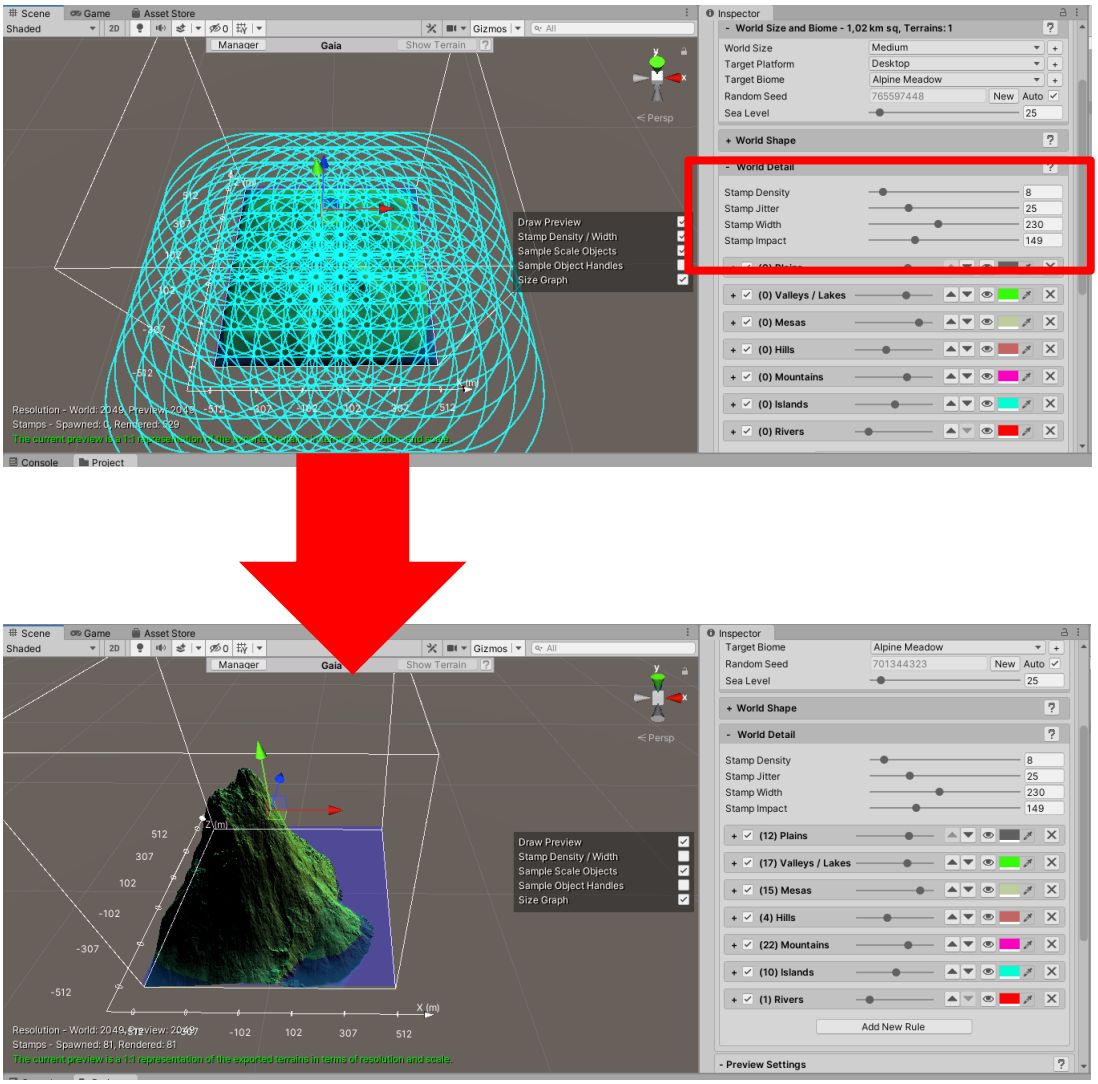


Stamp Jitter – controls the randomness in stamp placement – at a Jitter of 0 the stamps will be placed in a grid-like fashion, at 100 they are shuffled around in position to make that pattern less recognizable.

Stamp Width – controls the width of the stamps that are being placed. Again, the visualization in form of the blue circles pops in when you change the value here so you can review the stamp sizes and positioning.

Stamp Impact – Controls how much Impact on the base terrain shape the stamps will have – A high impact means that the imprint of a mountain will be rather high, and the imprint of a valley would be rather deep. High Impact means that the stamp features are more visible which can make the terrain more visually impressive, but it is also possible to overdo it so that the stamps become unnaturally distorted.

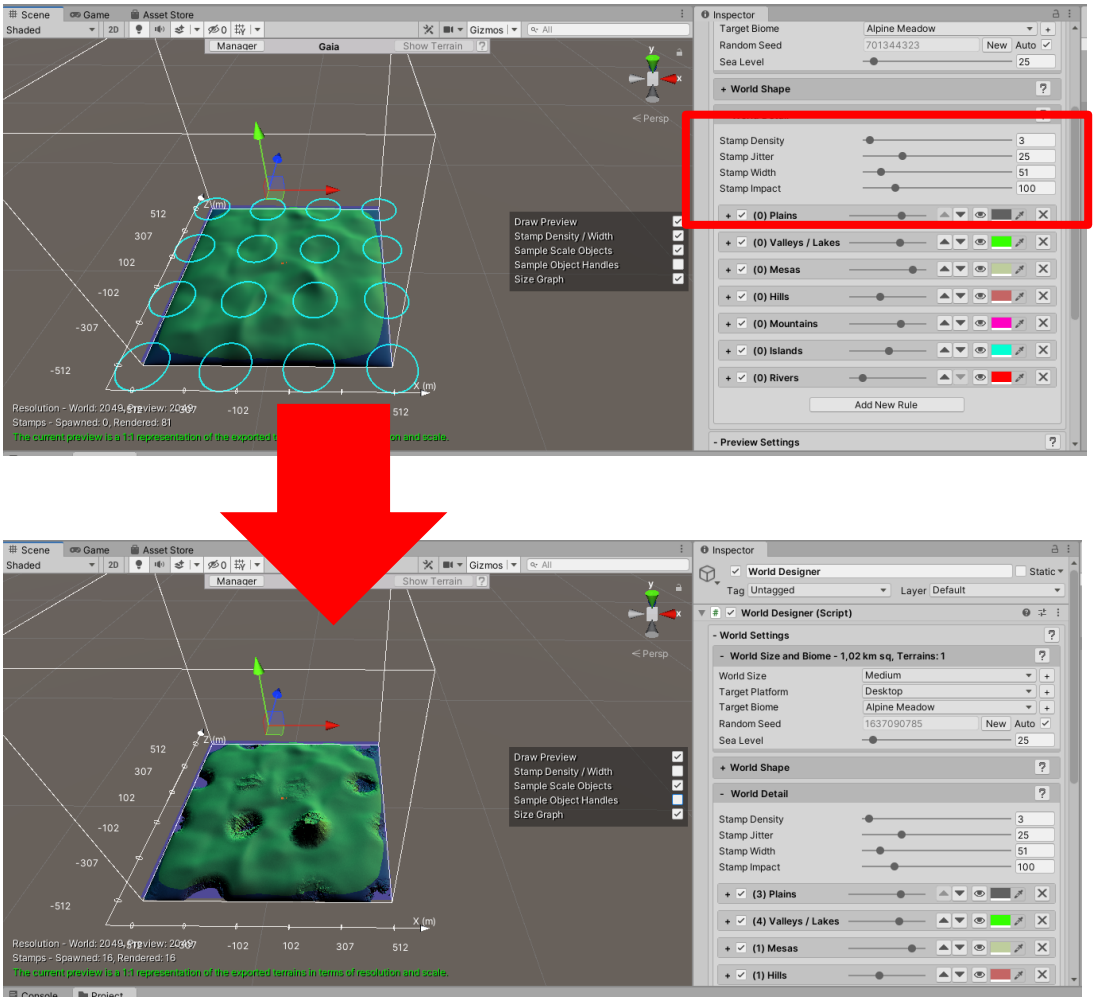
Please note: These settings can have a huge impact on your final result, and "more" does not necessarily mean "better" for these settings. For example, here is a generation result with high stamp density, high width and high impact:



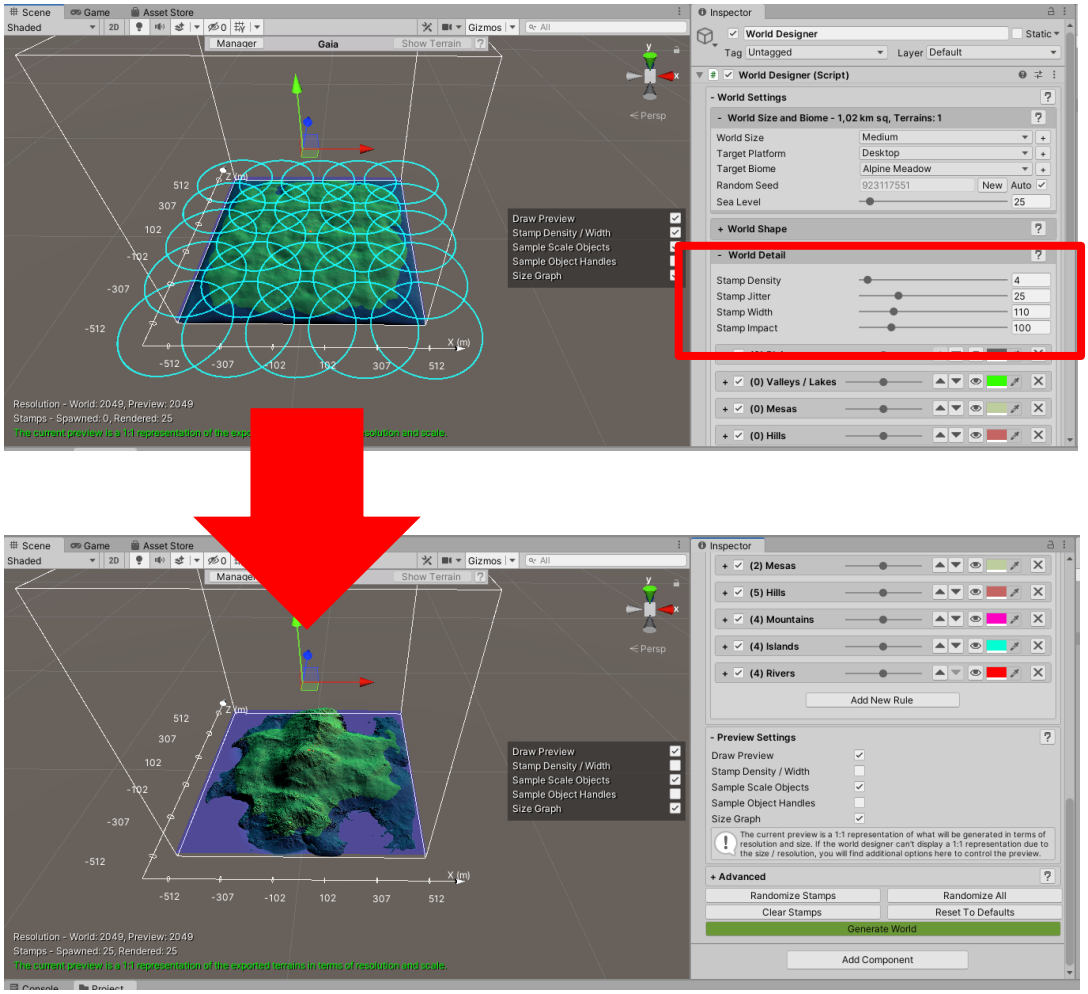
Not a very good result – this happens because too many stamps are placed on top of each other and all are overlapping each other multiple times. The

result is an unrealistic mountain with barely recognizable features left, it is mostly just noise remaining at that point.

The other extreme is too little, too small stamps that do not overlap with each other:



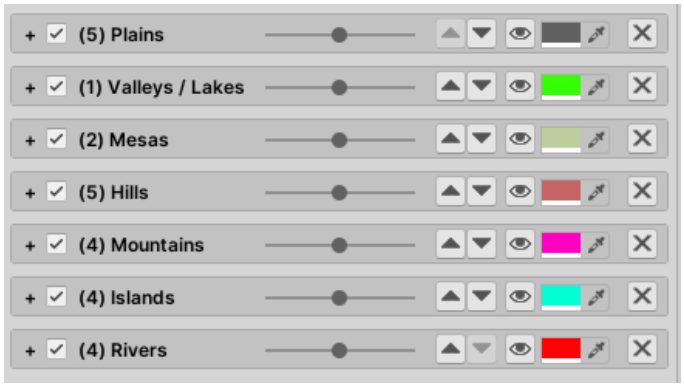
Again, not a good result – the featureless base terrain is mostly visible and the stamps are not connecting to a cohesive landscape. What you should aim for is that the stamps are overlapping a bit, but that the individual stamps have enough room to imprint their own features on the terrain:



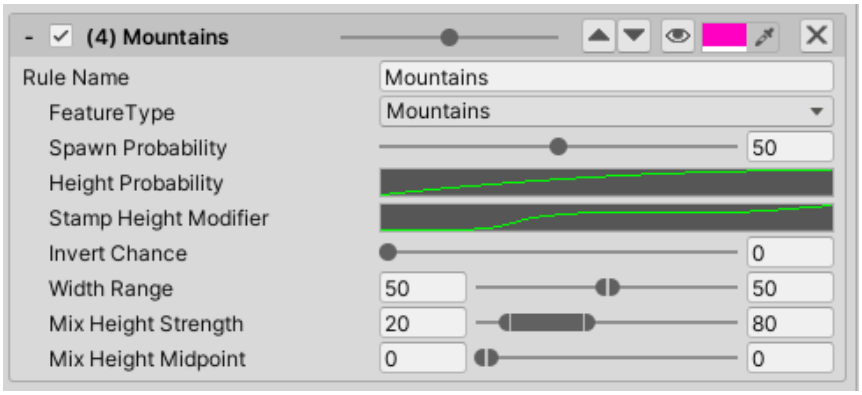
This is a better result – the individual stamps are connected but have still enough "breathing room" to display the actual features of the stamp.

The world size, the total available heightmap resolution and scale also play into this – if you are creating a multi-terrain scene with 10 x 10 terrains with 1024 x 1024 meters each, that is a lot more space and total heightmap resolution than just a single terrain. You would usually want to place more stamps to fill this space with multiple interesting features than you would on a single terrain.

11. Following the stamp spawning settings are the individual entries for the different stamps that the world designer can use during generation:



You can activate those features with the checkboxes, and you can change the distribution for those features with the sliders (left = less, right = more). Similar to the spawn rules in a regular Gaia Spawner, you can unfold each of these rules to display more settings for how and where these stamps will appear on the base terrain:



The feature type choses which kind of stamp will be chosen – note that this selection is linked up to the Gaia Stamps directory – this means you can add your own stamps by adding them to the appropriate directories. Note that you can also add additional spawn rules for new feature types at the end of the list.

The remaining settings are:

Spawn probability – This is the same slider as in the list display and influences the overall chance that a stamp of this feature type will be selected.

Height probability – how the height of the base terrain will influence the chance of the stamp to appear (left side of the curve = minimum height, right side = maximum height)

Stamp Height Modifier – controls how the underlying height of the base terrain at the spawn spot will influence the height of the spawned stamp. For example, if a mountain stamp would be drawn for spawning at a beach, it

should receive only reduced height to not fully destroy the underlying base terrain shape.

Invert Chance – Chance the stamp will spawn inverted (A valley instead of a mountain)

Width Range – the possible width for the stamp when spawning (100 = one full terrain wide)

Mix Height Strength – Stamps are spawned using the "Mix Height" operation to blend in well with the already existing stamps. This slider controls the minimum and maximum strength for this operation according to the Stamp Height Modifier above)

Mix Height Midpoint – another setting from the "Mix Height" operation. This setting controls whether the features found on the stamp should be elevated above the terrain, or rather should cut down into the terrain.
The more the slider range is to the left, the more this operation will use the stamp to elevate features above the terrain (Which you would want for mountain-like stamps) The more it is set to the left, the more it uses the features in the stamp to lower the terrain (Better for valleys, rivers, lakes).

12. With the base shape and the stamp spawning settings all set up, we can look at the controls for the World Designer that start the stamp spawning process:

"Randomize Stamps" **will keep your base shape** and will spawn stamps **according to the stamp probabilities you set up**. This is the button to use to generate a terrain that sticks to the base shape and where you can try out how it will look like e.g. if you decide to increase the mountain probability.

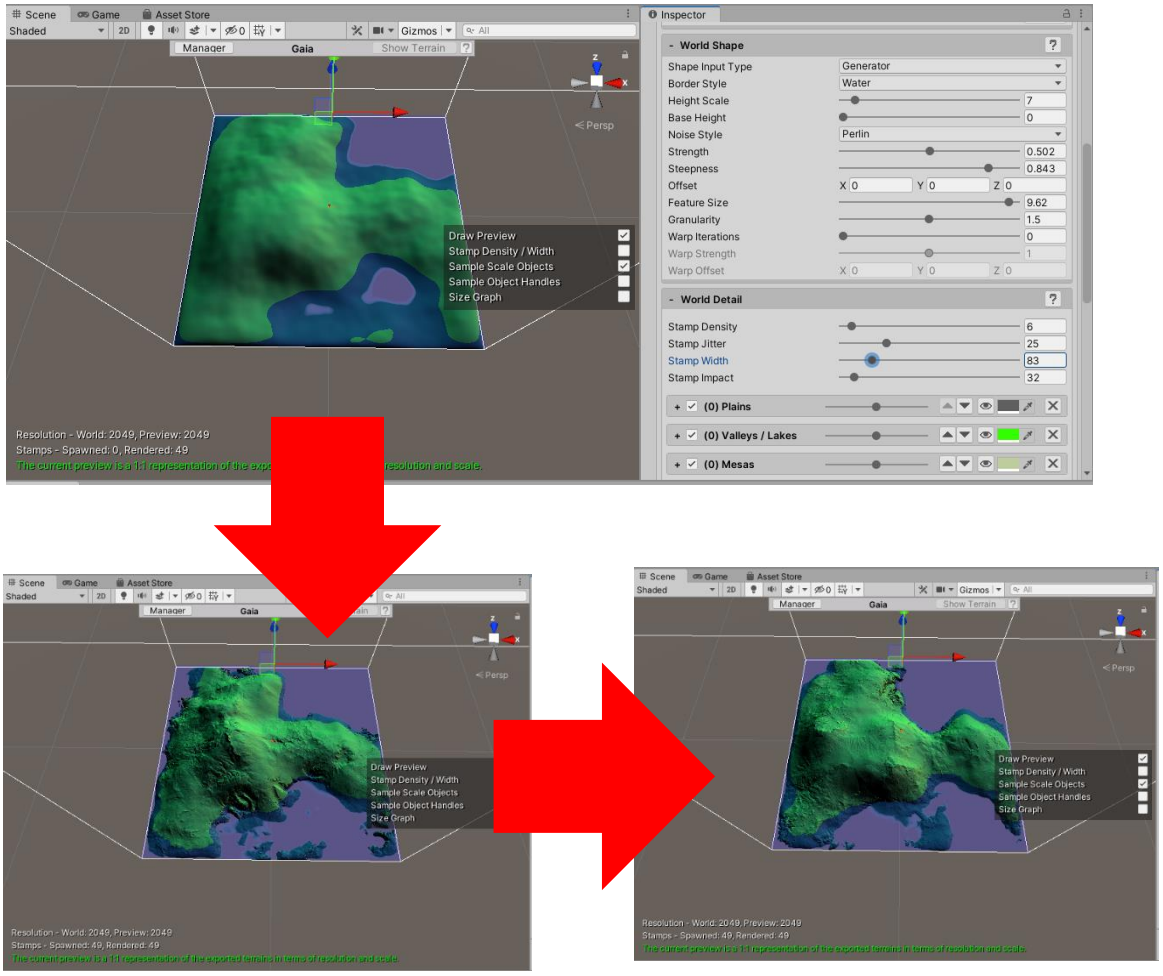
"Randomize All" will create a **random base shape** and will also **randomize the stamp probabilities.** This button is suitable if you want a mostly random terrain. (This is the button we used earlier in the guide to create the completely random terrain)

"Clear Stamps" will clear all spawned stamps so you can see the base terrain shape again.

"Reset To Defaults" will reset the Settings to sensible defaults according to your selected World size.

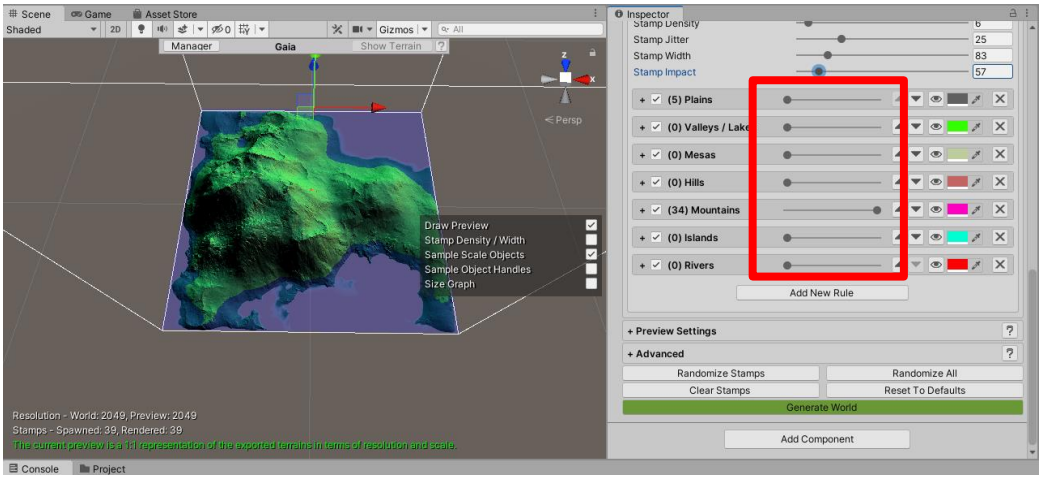
"Generate World" will turn the currently viewed preview into a real unity terrain. After the generation you can treat this terrain like a terrain that you shaped manually with the Gaia stamper and run (Biome) spawners on it and create the runtime setup for lighting, water, etc.

13. To complete your terrain generation on a base terrain, click the "Randomize Stamps" button. You should see stamps appear on the base terrain that you created initially.



If you continue clicking the "Randomize Stamps" button, you should get a different result, but it should still stick to the base terrain shape.

You can also alter the probabilities for the different stamp feature types to force a certain look, e.g. only using Mountain Stamps:



Please Note: Depending on your settings, the generation result can stick more or less to the original base terrain shape that you use as input in the world designer, up to the point where the original shape is not recognizable anymore at all. Depending on what you are trying to achieve, this can be no problem, but it can also quite counterproductive if you need the world generation to stick closely to the input. As a rule of thumb keep the following in check to get a result that sticks close to the base terrain size:

Rather more, smaller stamps than wider ones – Wide stamps tend to destroy the original shape more, because e.g. a mountain creates an island outside the original shape, or a wide valley destroys the original coastline of the base terrain.

Less Stamp Jitter – Due to the shuffled placement from jitter it is more likely that two stamps will intersect more to create an unexpected feature that did not exist in the original shape.

Less Stamp Impact – Stamp Impact makes the features of the stamps appear stronger on the base terrain, but that of course also alters the base terrain in the process. This is a trade-off situation – you want the impact of the stamps to be visible of course, but when you are overdoing it, it diverts too strong from the original shape as well.

When creating an island, avoid / reduce Rivers and Valleys – Those tend to dig into your original shape too much, so that it diverts more from the original shape.

14. The last thing to do when you found a terrain shape that you are happy with, is to click the Generate World button. Gaia will warn you that it will remove all existing terrains from the scene to export your new terrains. When you confirm that, the generation starts and your terrains will be created. Again as before you will be able to use your terrain just as if you had created it with the

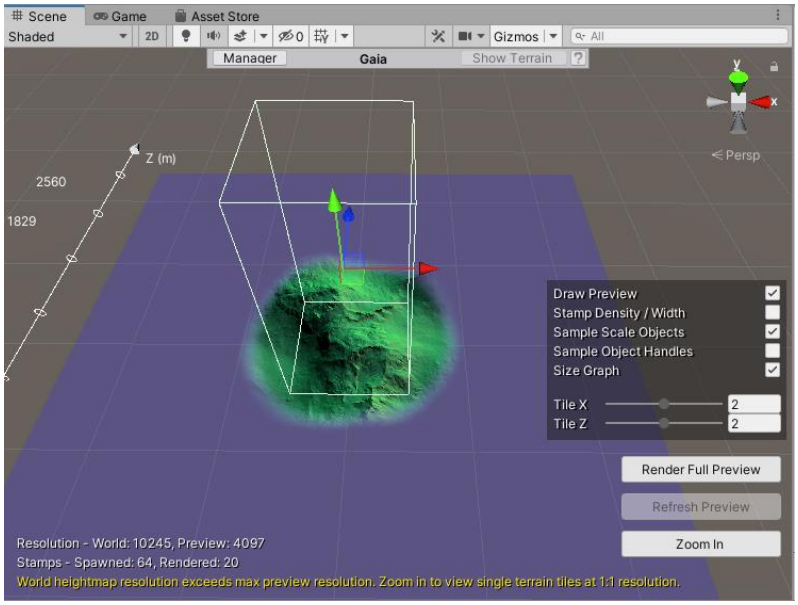
manual stamper workflow before. You can go back into the Designer anytime to start a new export if you are not happy with the result.

Pro Tip: The settings for the World Designer can be saved and loaded again via the "Advanced" Panel. In this way you can quickly apply the same generation settings in different scenes or projects.

Larger World Sizes / Multi - terrain in the World Designer

In theory there is no size limit in the world designer – if you increase the amount of terrain tiles in the world size settings you could generate very large worlds with it. To assist you better when creating large worlds, the world designer displays some extra controls in the scene view:

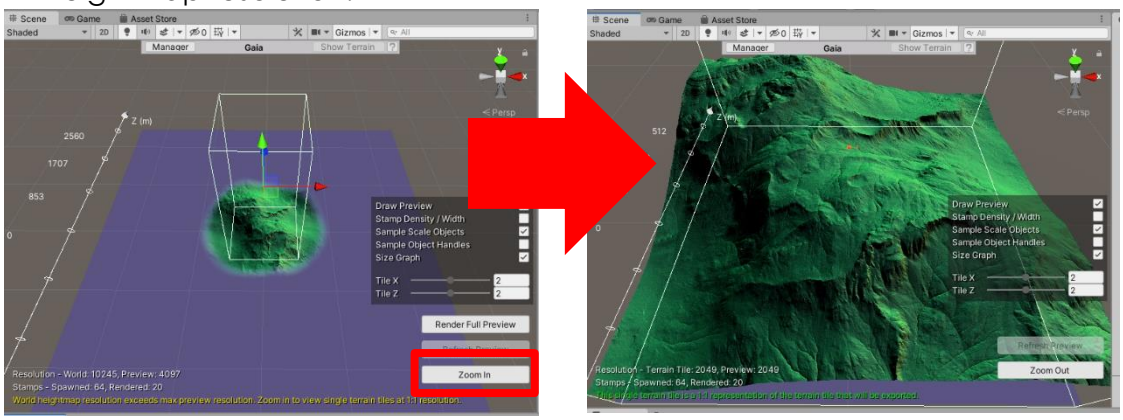
- When working with multiple terrains, initially the world designer will only display the stamp spawn result on a single terrain tile like so:



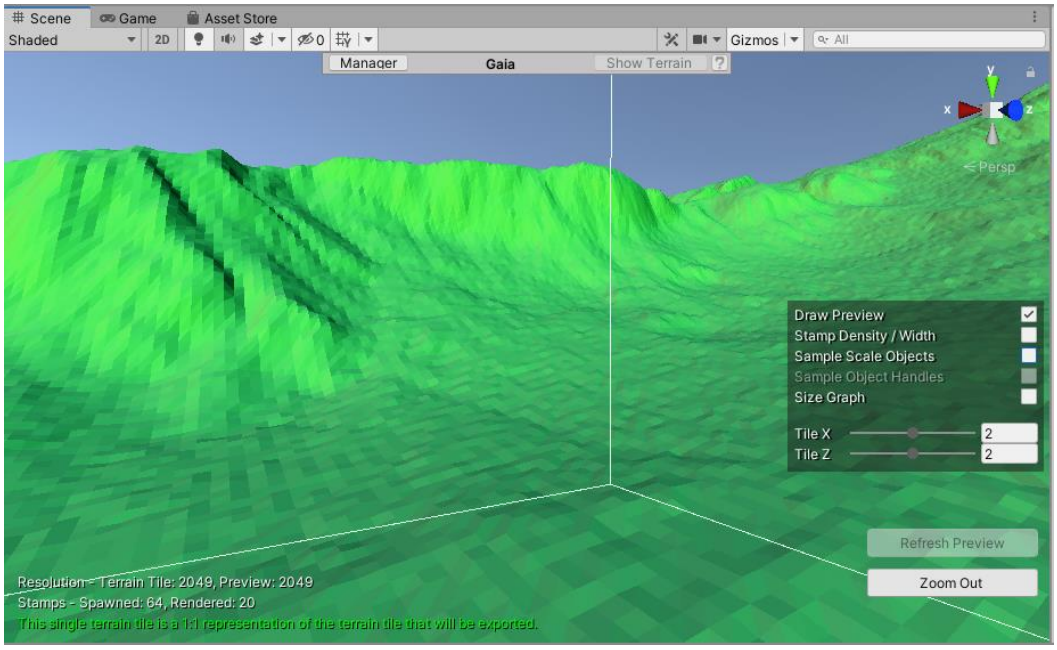
This is done to keep the preview of the resulting stamps somewhat responsive, when spawning 100s of stamps it can take a bit to calculate the full preview. You can preview other terrain tiles by changing the X/Z tile coordinate in the panel in the scene view, or by dragging the white box cursor around. The preview should update to the new spot automatically after 2 seconds. To see the full preview, you can click the "Render Full Preview" button. This can then take a bit, depending on the total amount of stamps, but will display a full preview of the terrain when finished.

- The preview can only display a total resolution of 4097 heightmap pixels for technical / performance reasons. This means that you can create a world that can have a much higher terrain heightmap resolution what is currently

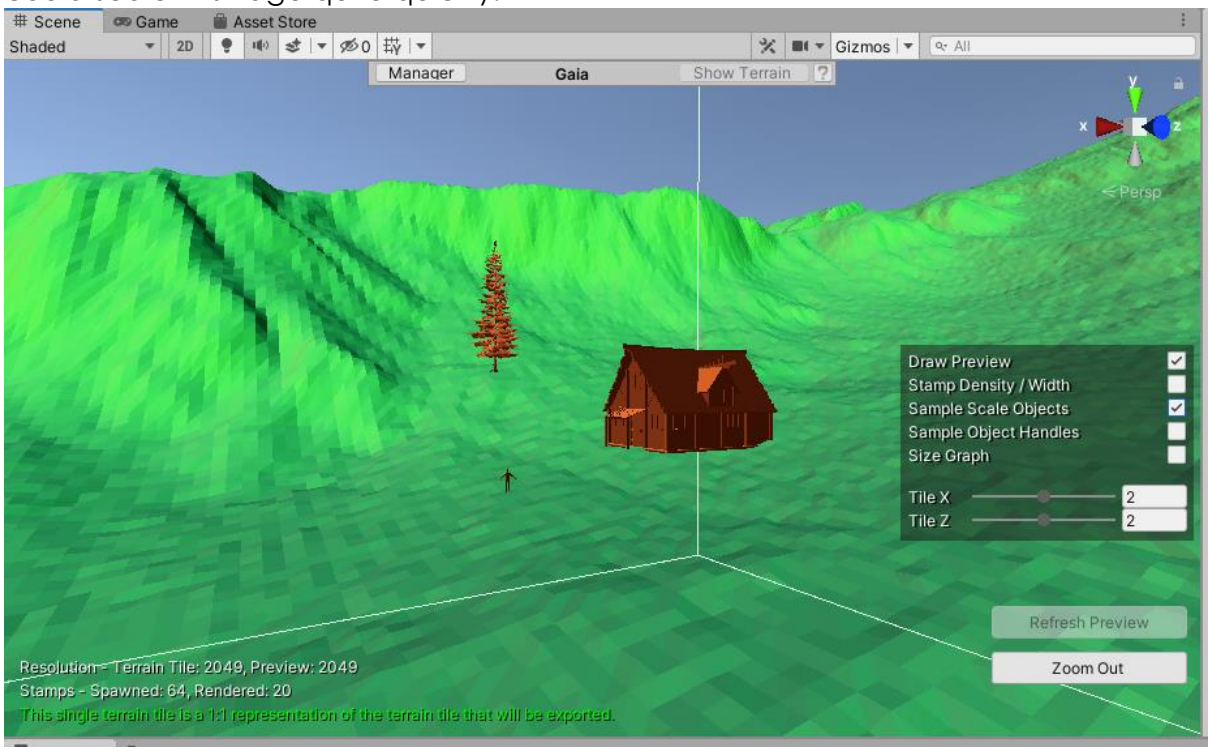
displayed in the preview. The scale and size of the preview will still match with what is generated, but you would not see every detail in the preview due to the lower resolution. If you want to take a look at the actual resolution of a single terrain tile, you can do so with the "Zoom In" button. This will Zoom in the preview to a single terrain tile which is then rendered at the correct heightmap resolution.



- When looking at the preview, it can be difficult to estimate the scale of the resulting terrain correctly. A small world can take in the same amount of screen space than a large world depending on how far you are zoomed in. Then when generating the world you suddenly discover that the world does offer too little / too much space or your mountains are much smaller than you expected from the perspective of the player. To combat this, the world designer features the size graph at the borders of the preview. The numbers printed on here are world space unity units / meters measured from the center of the world at X=0 / Z=0. This helps you to get an impression how much space there would be in a certain area.
- If you scroll in closer to the center of the preview, you will also notice that there are a few sample objects being rendered in the scene. These can help you to estimate the scale of the terrain features much better. This mountain ridge might seem massive at first glance:



With the sample scale objects – not so much anymore, the character up front could scale this ridge quite quickly:



You can activate handles for these objects in the scene view settings panel, this allows you to drag around these objects on the preview to test different locations for scaling.

This concludes the introduction for the world designer. You can learn more about the world designer in the built-in help features of Gaia, including the link to the online manual page for the World Designer.

Where to go from here – Next steps

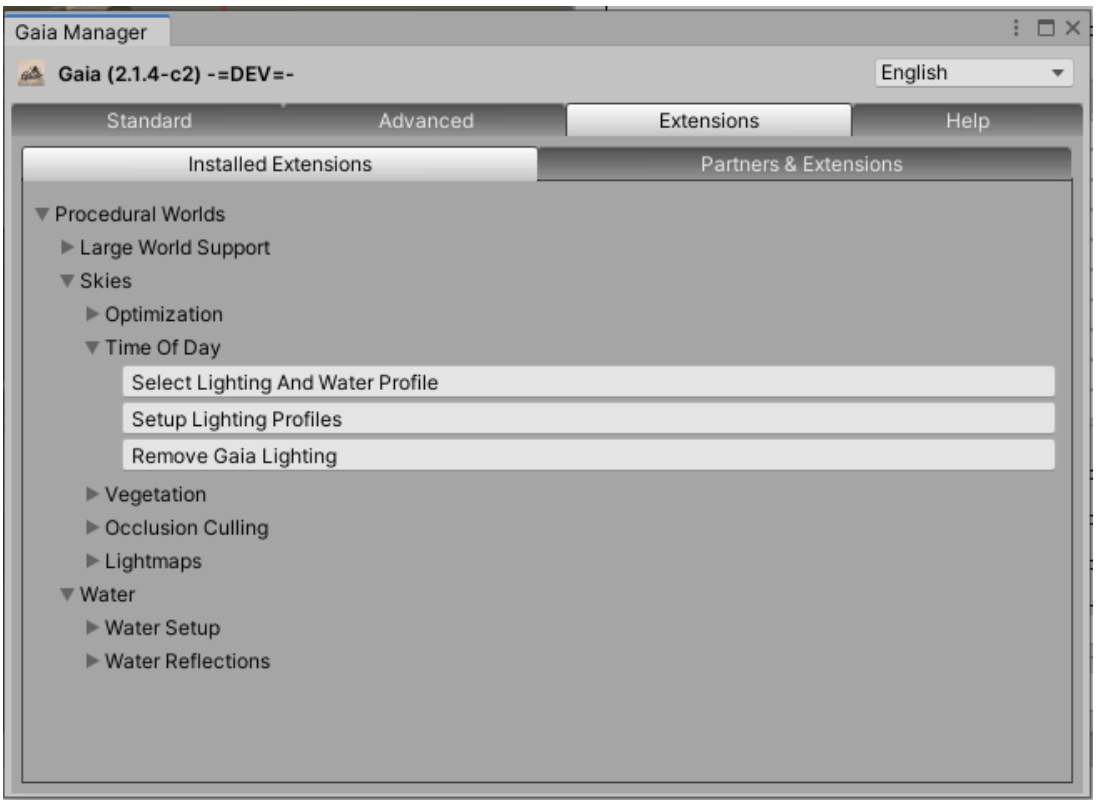
If you have worked your way through the quick start guide, it is recommended to start over, but this time around take a deeper look at the individual tools at hand and the features that they provide to flesh out your scene. **Remember that the question mark help button provides help directly in the application and links you to more detailed manual articles in our knowledge base where appropriate.** These here are the online help pages for the stamper and the spawner tool for example:
Stamper Online Help
Spawner Online Help
These pages far exceed the information covered in this quickstart guide.
If you want to follow more tutorials before experimenting on your own, you can visit the Tutorials Collection on the Procedural Worlds website. The Knowledge Base is also a good starting point when you want to read more about the individual Gaia Tools before continuing your journey.

Gaia GX - (G)aia e(X)tensions

The Gaia extensions system allows Gaia to be extended with other tools and quality assets.

We used the Gaia Extension system to include our own sky and water system so that you can change the sky and water setup and surrounding settings from this menu as well.

To access them, go to the **GX** tab in **Gaia Manager** and select Procedural Worlds, Skies and Water to modify your time of day, water and post processing settings.



When you select a sky the sun light will be reconfigured, fog colour, density will be changed and the skybox. Also, the post processing profile will be changed to the appropriate time of day to give the best experience.

You can also add and remove the water with also using a few of the preset configurations on the material settings. Lastly you can configure the post processing profiles to change them although these dynamically change when you select your time of day.

Adjusting the ambient audio volume

In the **Hierarchy** under **Gaia Lighting Environment** is the **Ambient Audio** game object. Click on that and then in the **Inspector** adjust the **Volume**.

About light baking

Lightmaps are very important as they store the information than the Unity GI system needs to light your scene properly.

If you are using a skybox and an ambient light source you will not see correct ambient lighting in your scene until your lighting is baked. Distance shadow masking for game objects and terrain won't be correct until you bake your scene lighting. Gaia offers the "Quick Bake" option in the Runtime tab which will populate only the basic lighting settings for the scene, so that the ambient light color in the scene will be correct.
You can have both baked and real time lightmapping in your scene also known as mixed lighting. Most large projects mix both baked and real time lighting. To learn more about light baking and lighting in general, please visit these links:

https://unity3d.com/de/learn/tutorials/topics/graphics/choosing-lighting-technique

https://blogs.unity3d.com/2018/03/09/spotlight-team-best-practices-making-believable-visuals-in-unity/

Pipeline Switching

If you need to switch rendering pipelines before starting a new project or during an existing project, you can do so via the "Setup" panel in the Gaia Manager window. Please see the installation information at the beginning of this guide for more information.