



# GAIA

By Procedural Worlds

## QUICK START GUIDE

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

Version 1.9.2

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# 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 quickly please follow this quick start guide. We also have a range of tutorials on our web site at <http://www.procedural-worlds.com/gaia/?section=tutorials>.

And finally, we have also created an awesome support network for you which you can access from the More tab in the Gaia interface.

## **PRO TIP:**

Did you know that we also have a range of other products to enhance your environments in Unity? For example, with SECTR you can now use Gaia to create and stream large multi tile worlds - with massive performance increases!

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

# About Procedural Worlds

**Powerful, simple, beautiful. Friendly tools, gorgeous games!**

Procedural Worlds empowers artists and developers to bring their vision to life by making it easy to create beautiful worlds. Leverage the latest procedural generation techniques to take the pain out of creating stunning environments and focus on creating amazing games.

**The only end to end environmental generation and delivery suite:**

**Gaia** - A world generation system for creating, texturing, planting and populating scenes from low poly mobile, VR and through to high end desktop.

<https://assetstore.unity.com/packages/tools/terrain/gaia-42618>

**CTS** - 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.

<https://assetstore.unity.com/packages/tools/terrain/cts-complete-terrain-shader-91938>

**CTS 2019** – CTS 2019 expands on CTS and introduces gpu instancing, LW and HD support from Unity 2018.3 onwards.

<https://assetstore.unity.com/packages/tools/terrain/cts-2019-complete-terrain-shader-140806>

**SECTR** - A suite of performance-enhancing tools that enable open world terrain streaming, massive mobile games and includes the latest techniques in audio occlusion and propagation. SECTR CORE is FREE, and can be used to cut your terrains up for streaming!

<https://assetstore.unity.com/packages/tools/utilities/sectr-complete-15356>

**GeNa 2** - A sophisticated localised level design tool that augments Gaia's broad-brush strokes, by working intuitively to give fine grained control.

<https://assetstore.unity.com/packages/tools/terrain/gena-2-127636>

**Path Painter** - A powerful path and river channel creation tool.

<https://assetstore.unity.com/packages/tools/terrain/path-painter-127506>

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

<https://assetstore.unity.com/packages/tools/animation/pegasus-65397>

Learn more at our website here: <http://www.procedural-worlds.com/>

## Tutorials, Chat, Ticketed Support

Thanks for purchasing Gaia!

It is a sophisticated tool with a lot of options, which can at times be a little overwhelming. To help you with this we have created an awesome support network for you. You can also get access to these links from the Gaia menu in Unity.

Tutorials: <http://www.procedural-worlds.com/gaia/?section=tutorials>

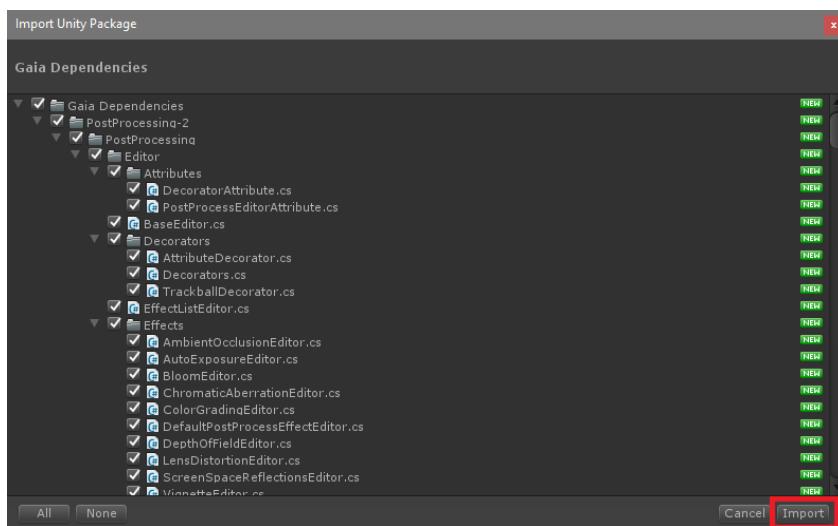
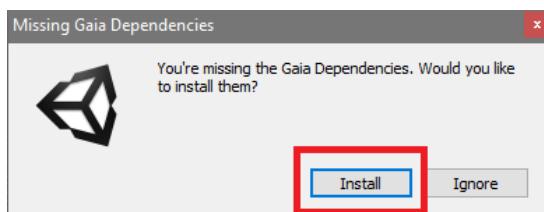
Have A Chat: <https://discord.gg/rtKn8rw>

Lodge a Support Request: <https://proceduralworlds.freshdesk.com/support/home>

## Setup - Do this for every project!

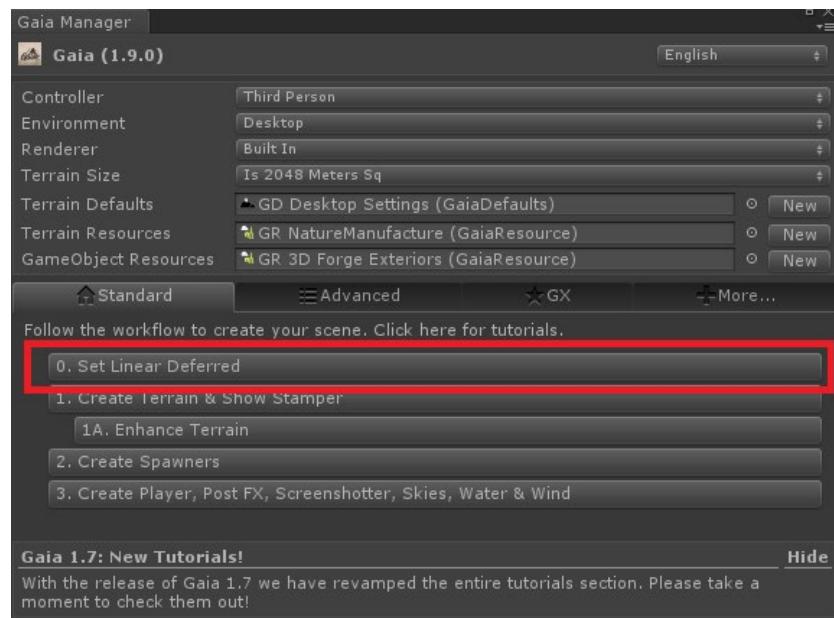
1. Create a new project and import Gaia.
2. When opening **Gaia Manager** you may get this popup "**Missing Gaia Dependencies**".

This will only show if you are missing the Standard Asset Speed Trees, Post Processing v2 or Character Controllers. When this shows be sure to click **Install** then **Import** to import all content required for Gaia. Ignoring this will still allow you to still use the Gaia Manager but you will need this if you want to get the full Gaia experience.



3. In **Gaia manager Standard Tab** if step 0 shows (**Set Linear Deferred**) click this to set your project's color 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.

**NOTE:** If you are targeting mobile you can ignore this step!

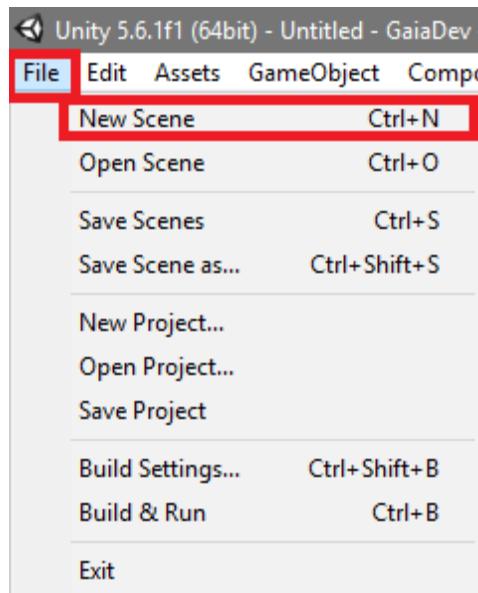


The Gaia setup process is now done.

## Option 1 - Random Terrain Generation!

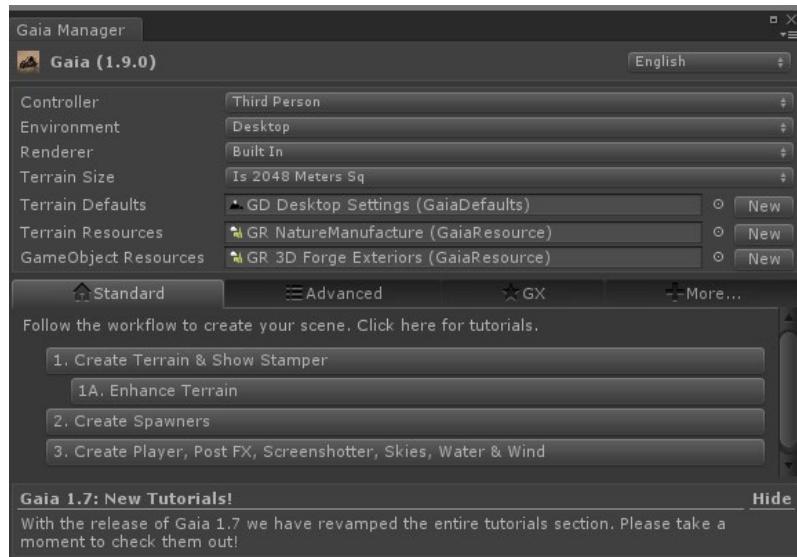
In this scenario we will use Gaia to randomly generate an entire new scene.

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

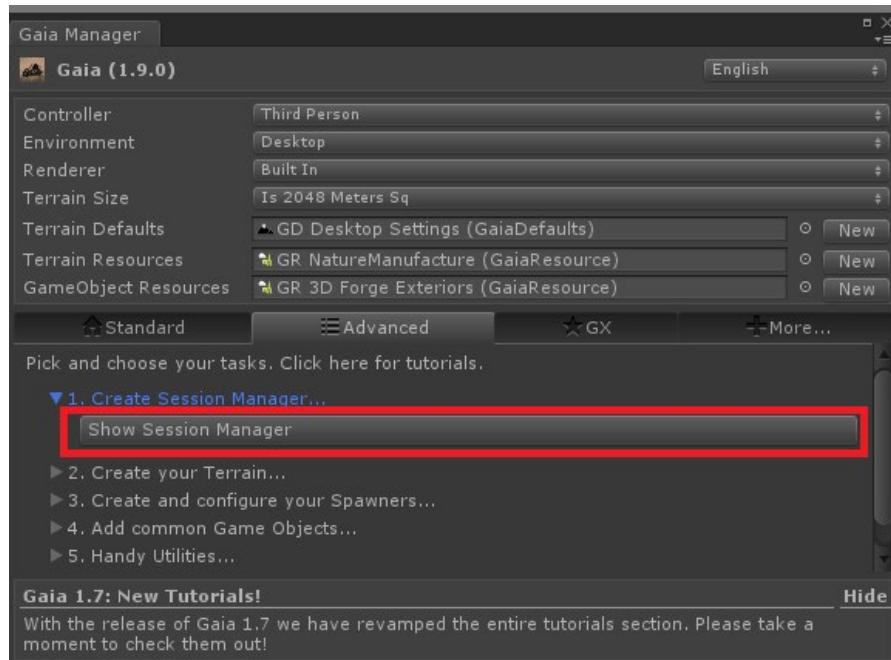


2. Open the **Gaia Manager** Ctrl + G or the Window / Procedural Worlds / Gaia / Show Gaia Manager... menu.

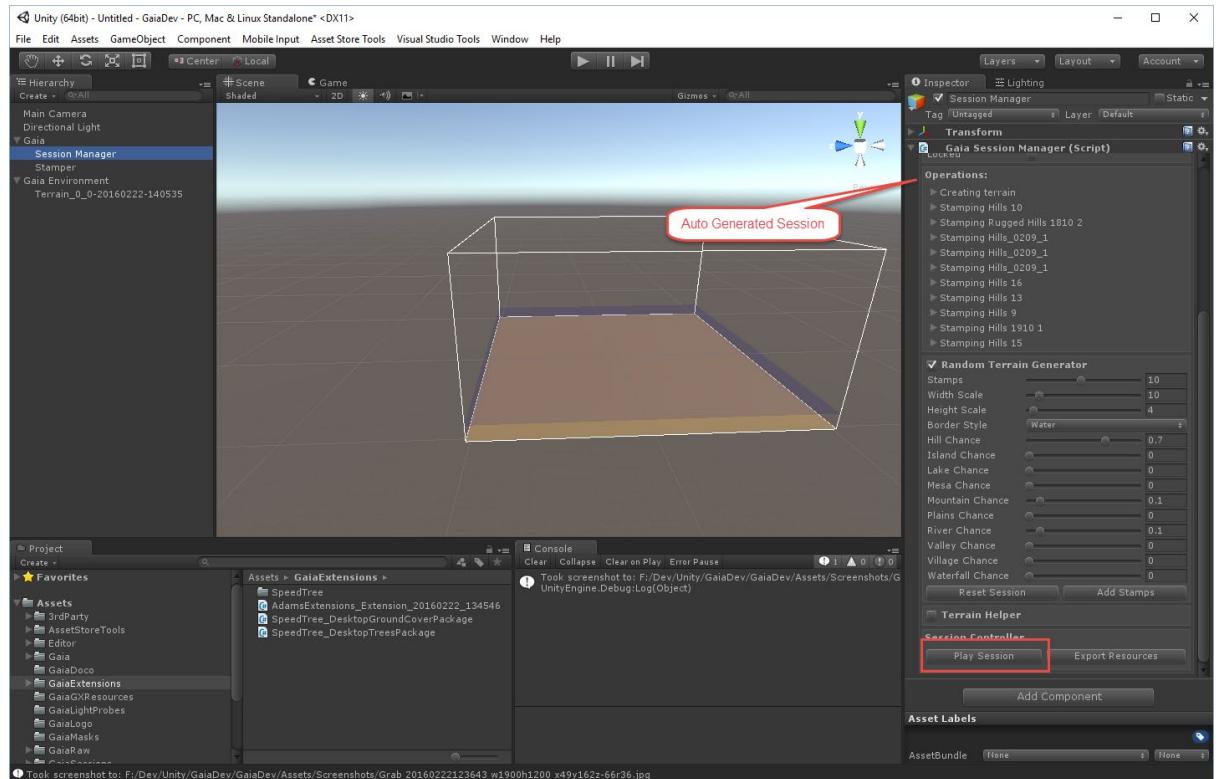
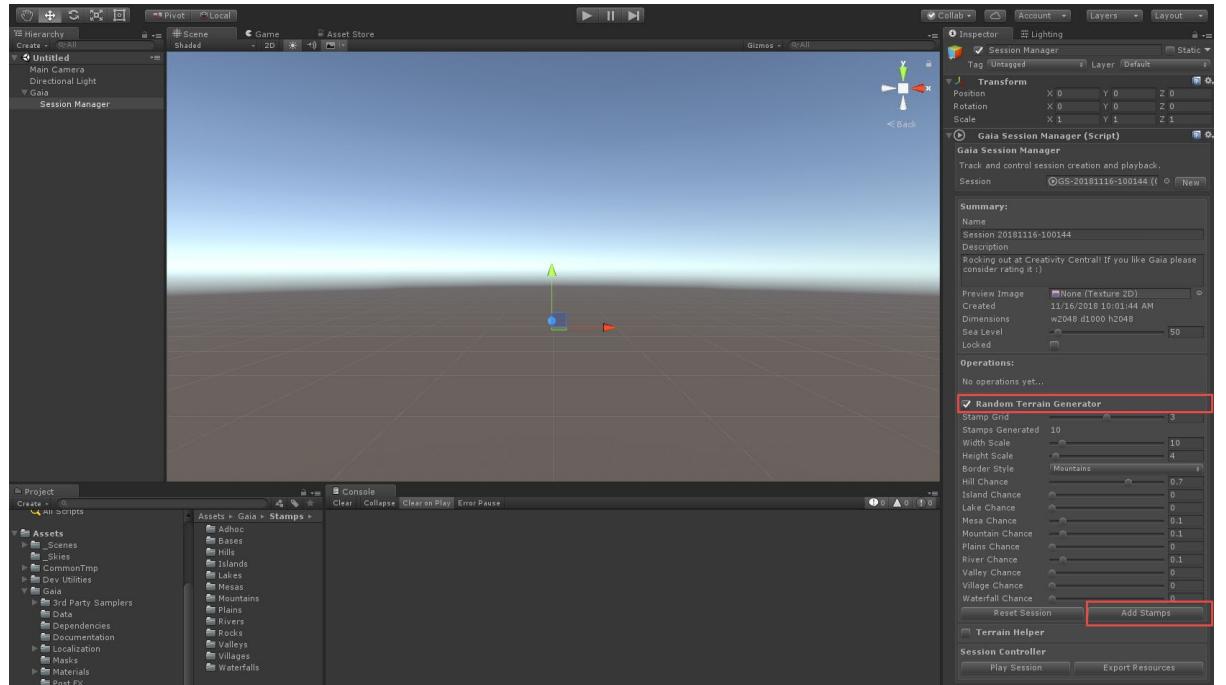
When starting it is best to stick with a smaller terrain so please select **Is 2048 Meters sq.**



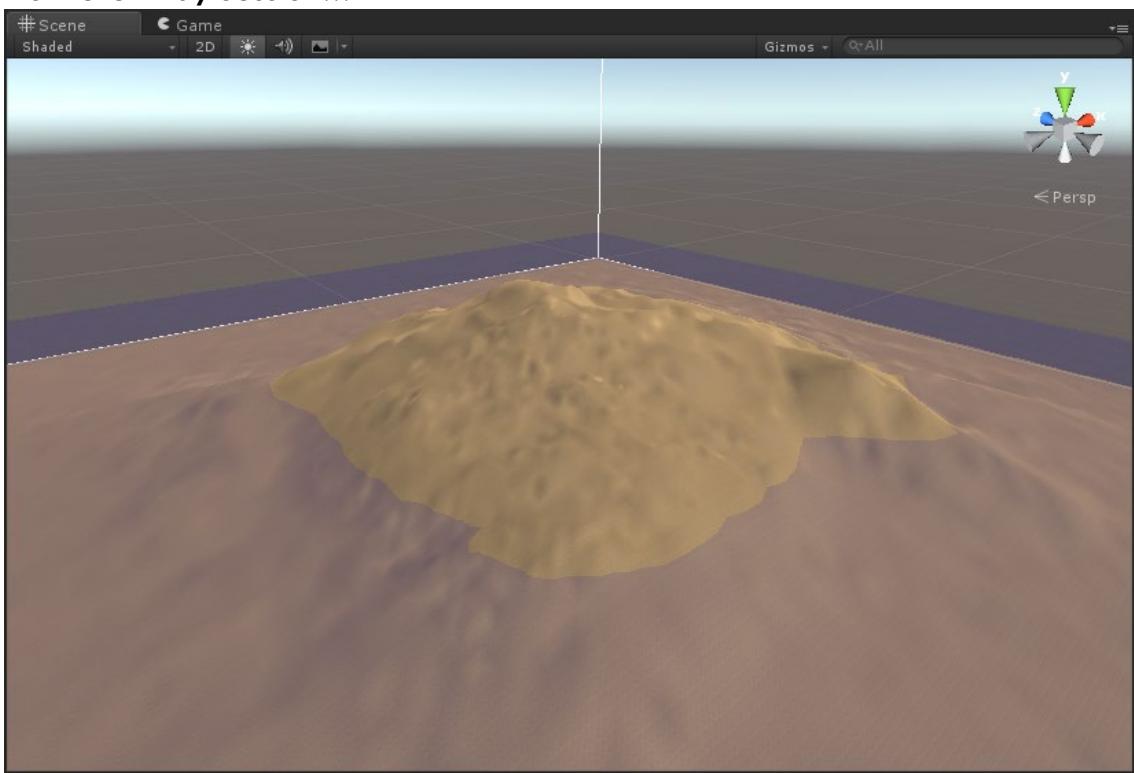
3. Select the **ADVANCED** tab and then click on Show **Session Manager...**



4. Check the **Random Terrain Generator** box to show it, and then click Add Stamps... NOTE: The stamps will be spread across the terrain in a pseudo random way based on the Stamp Grid size. Setting of 3 would generate one base stamp (for water or mountain borders), and then spread the next 9 stamps across the terrain in an approximate grid pattern. Increasing and decreasing this setting will influence the amount of detail in the generated terrain.

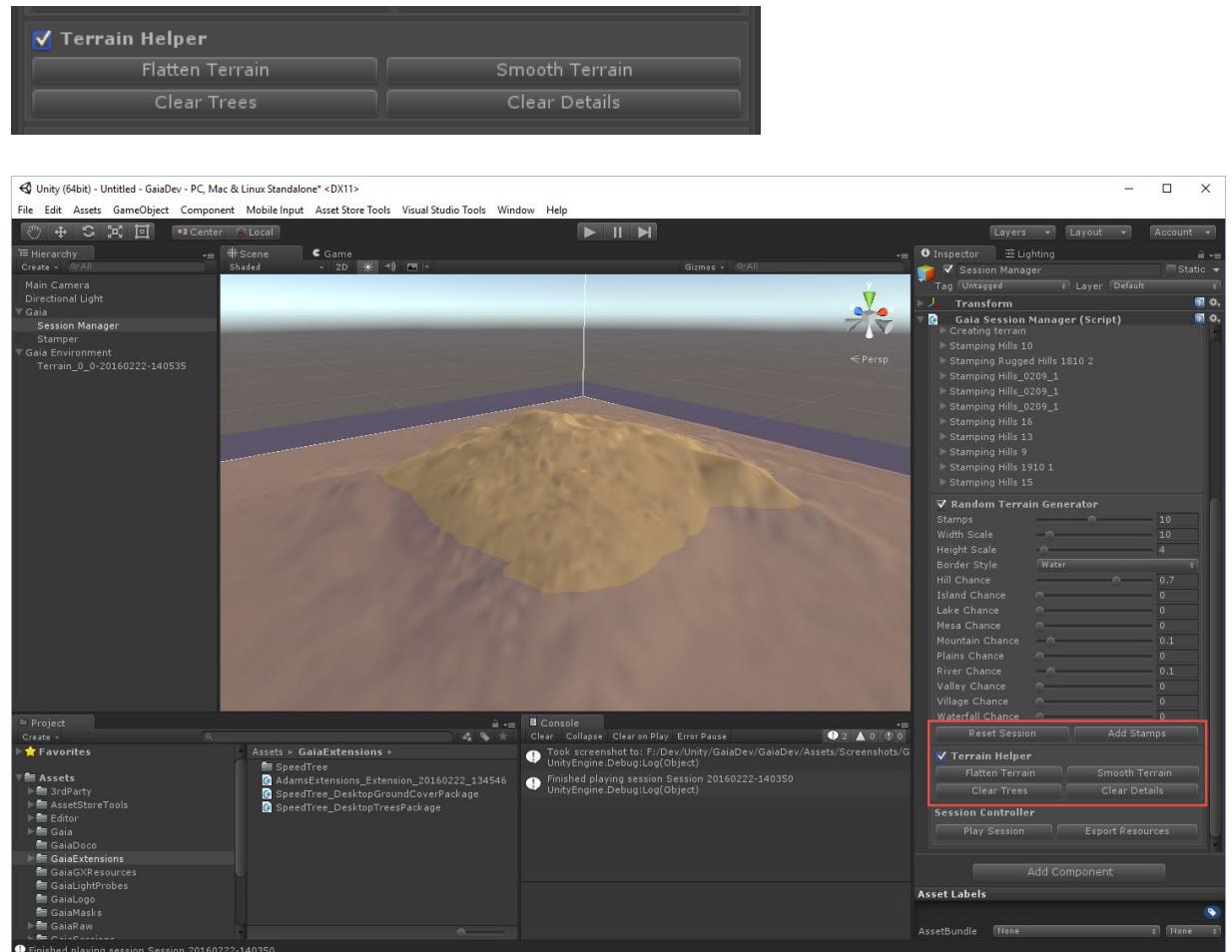


5. Now click **Play Session...**

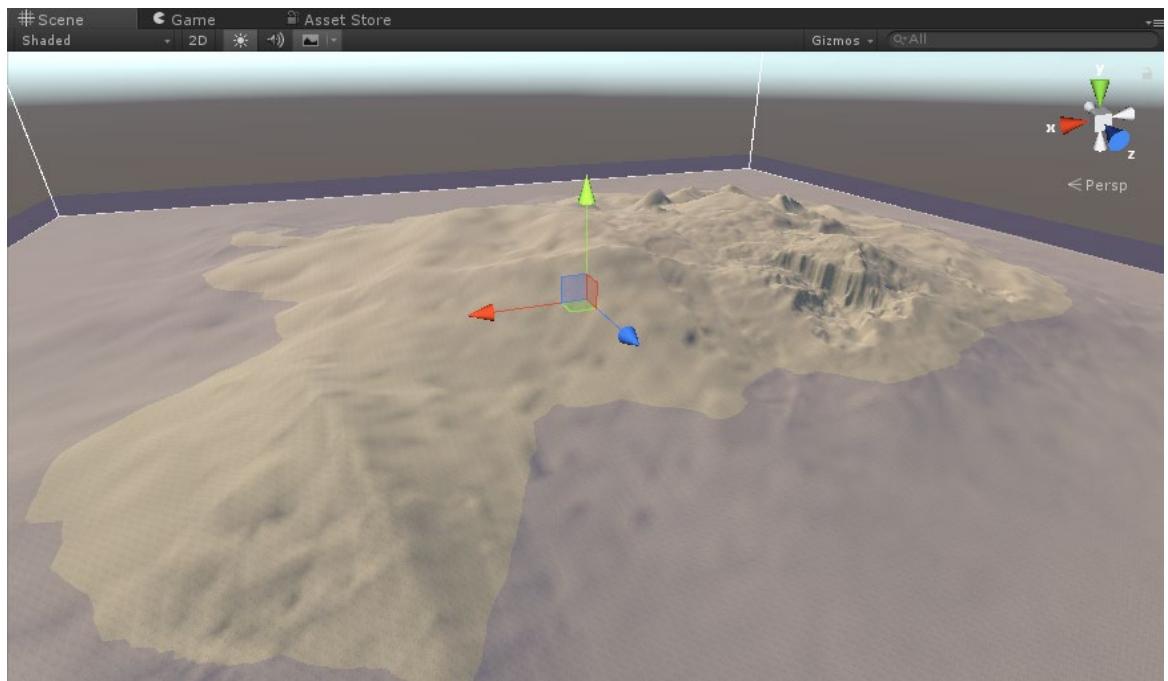


This one wasn't very interesting let's try again... (This is optional!!!)

6. [OPTIONAL] Check the **Terrain Helper** box to show the terrain helper and then click on **Flatten Terrain** and then click Reset Session and finally click **Add Stamps** and **Play Session** again.

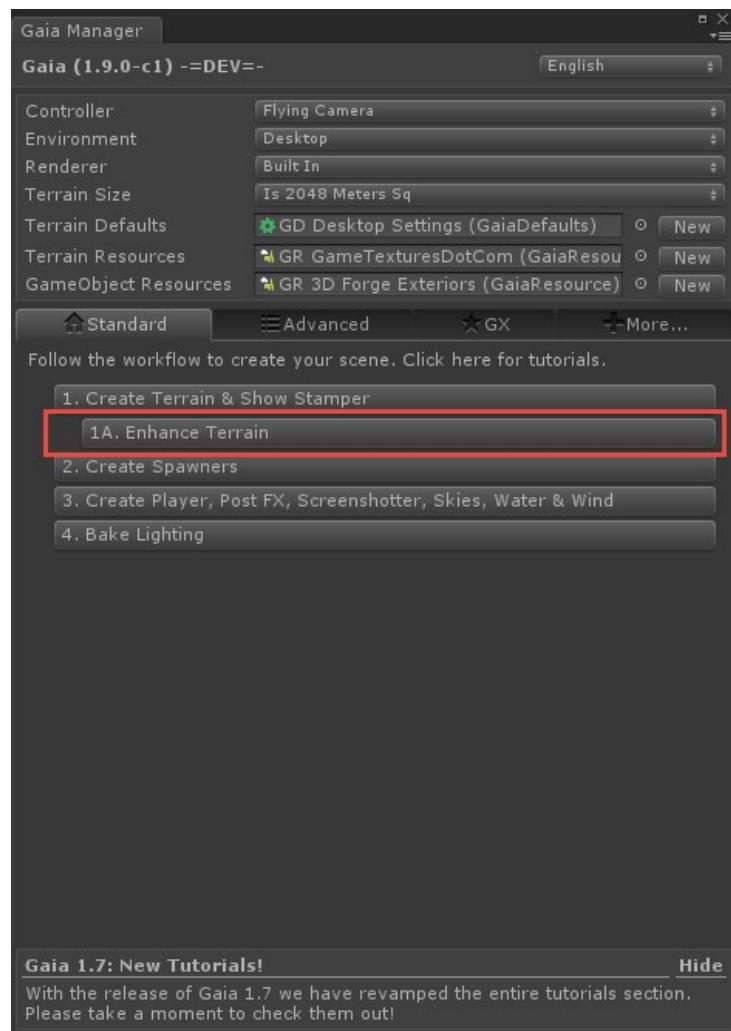


7. This one looks a little better... but don't be afraid to roll a few different sessions up...



8. **[OPTIONAL]** Now let's spice our terrain up by adding some more interesting features.

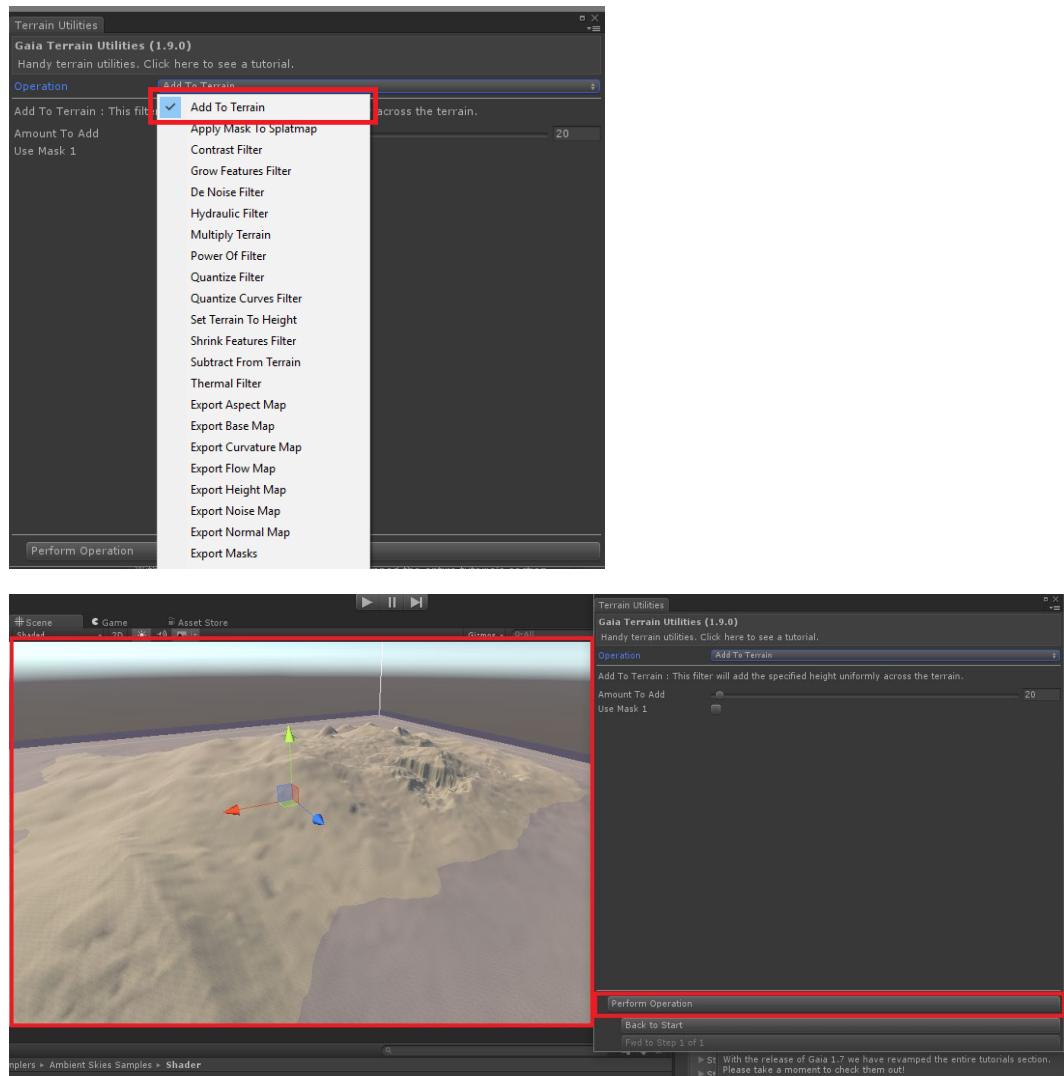
Open the **Gaia Manager** Ctrl + G or Window / Procedural Worlds / Gaia / Show Gaia Manager... Go to the **Standard Tab** and click **1.A Enhance Terrain**.



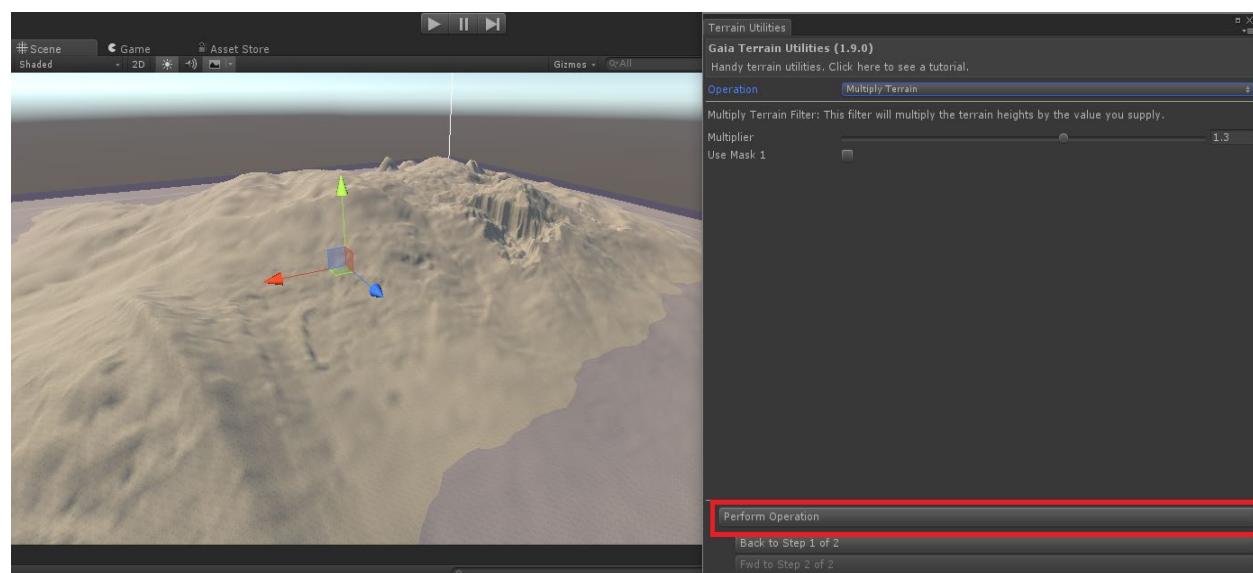
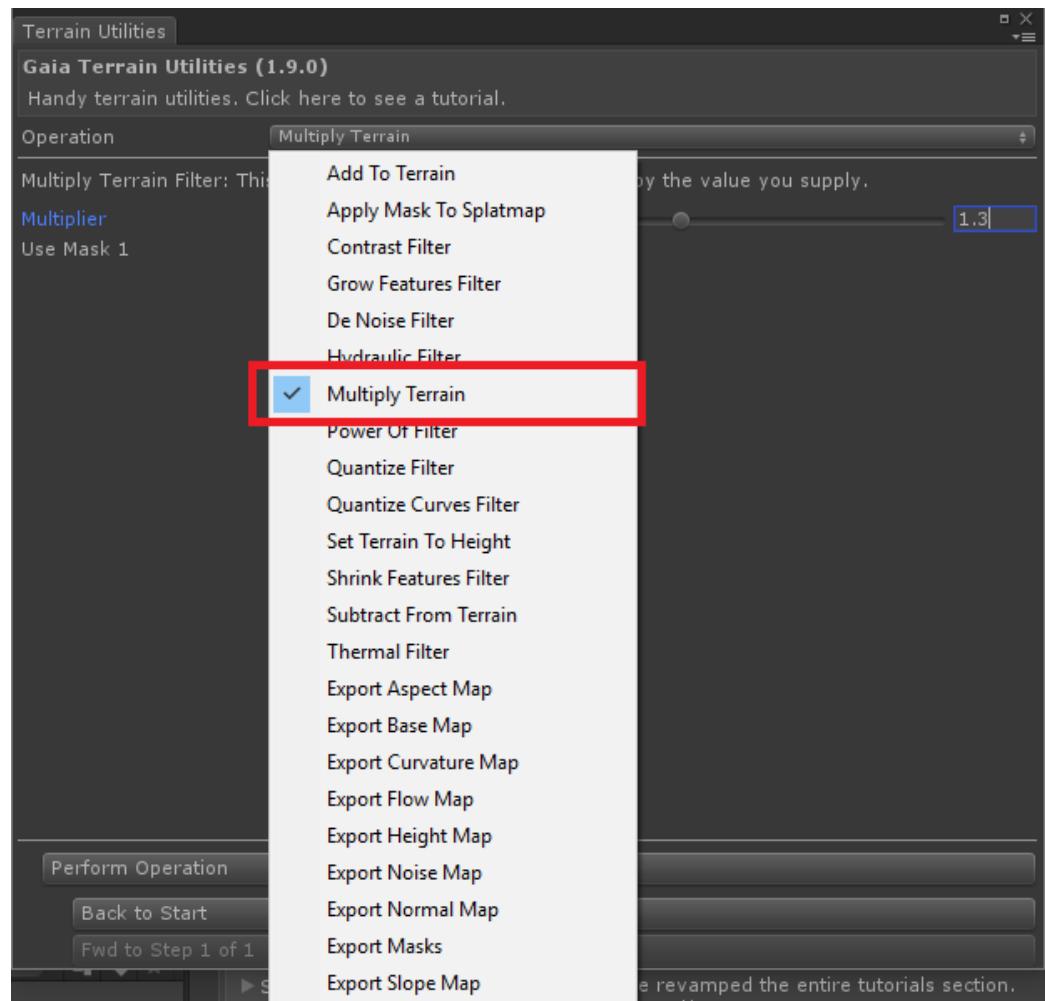
9. [OPTIONAL] In **Terrain Utilities** click the **Dropdown** and select **Add To Terrain**. The Add To Terrain option raises the entire terrain by the height selected.

Select a value and click **Perform Operation**. If you don't like it then hit the Back button.

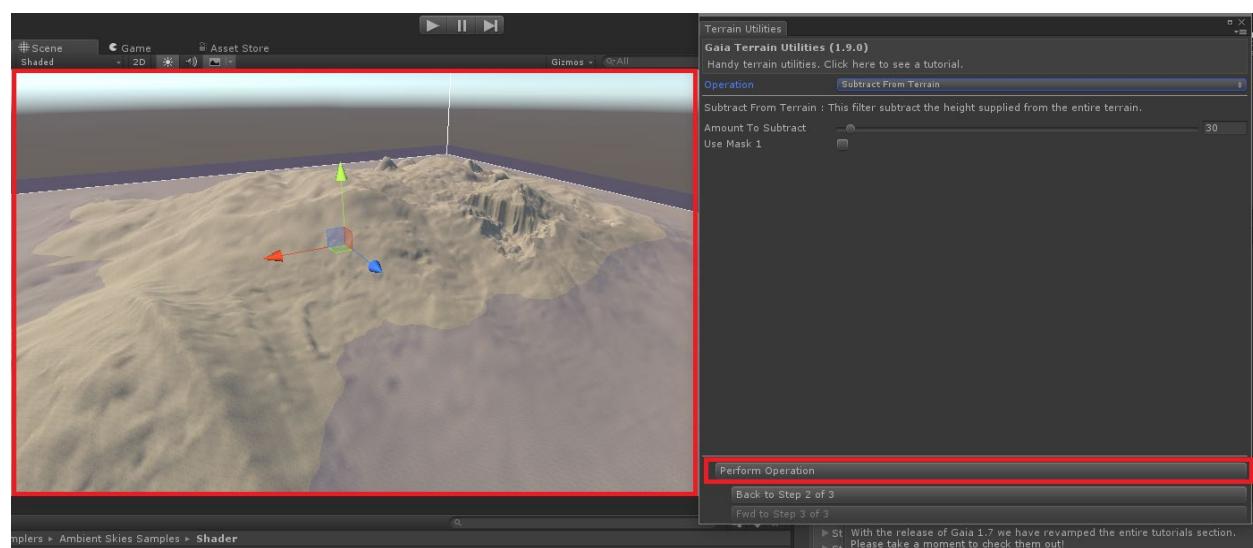
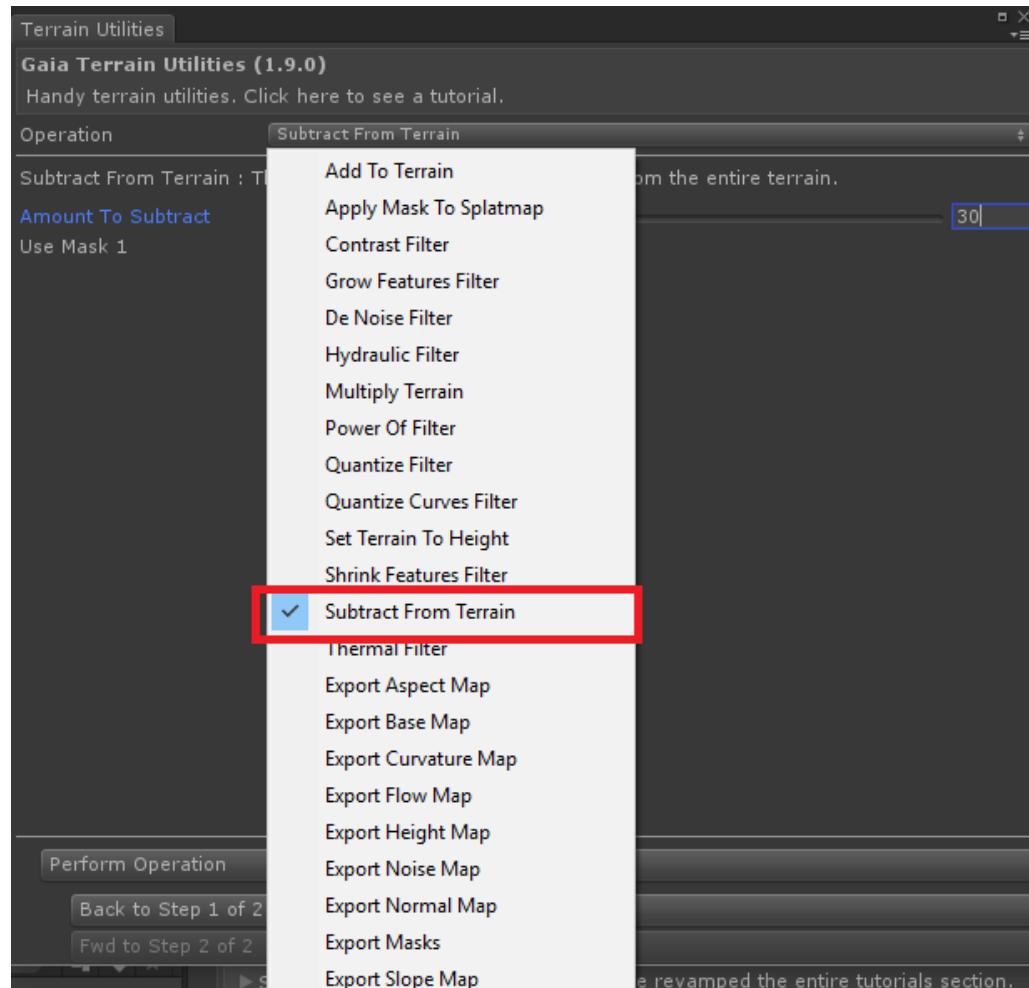
Note: If you are already happy with your terrain heightmap you can skip this step.



10. [OPTIONAL] In **Terrain Utilities** select **Multiply Terrain**. The Multiply Terrain operation multiplies the whole terrain by the value given - this will have effect of accentuating your mountains.

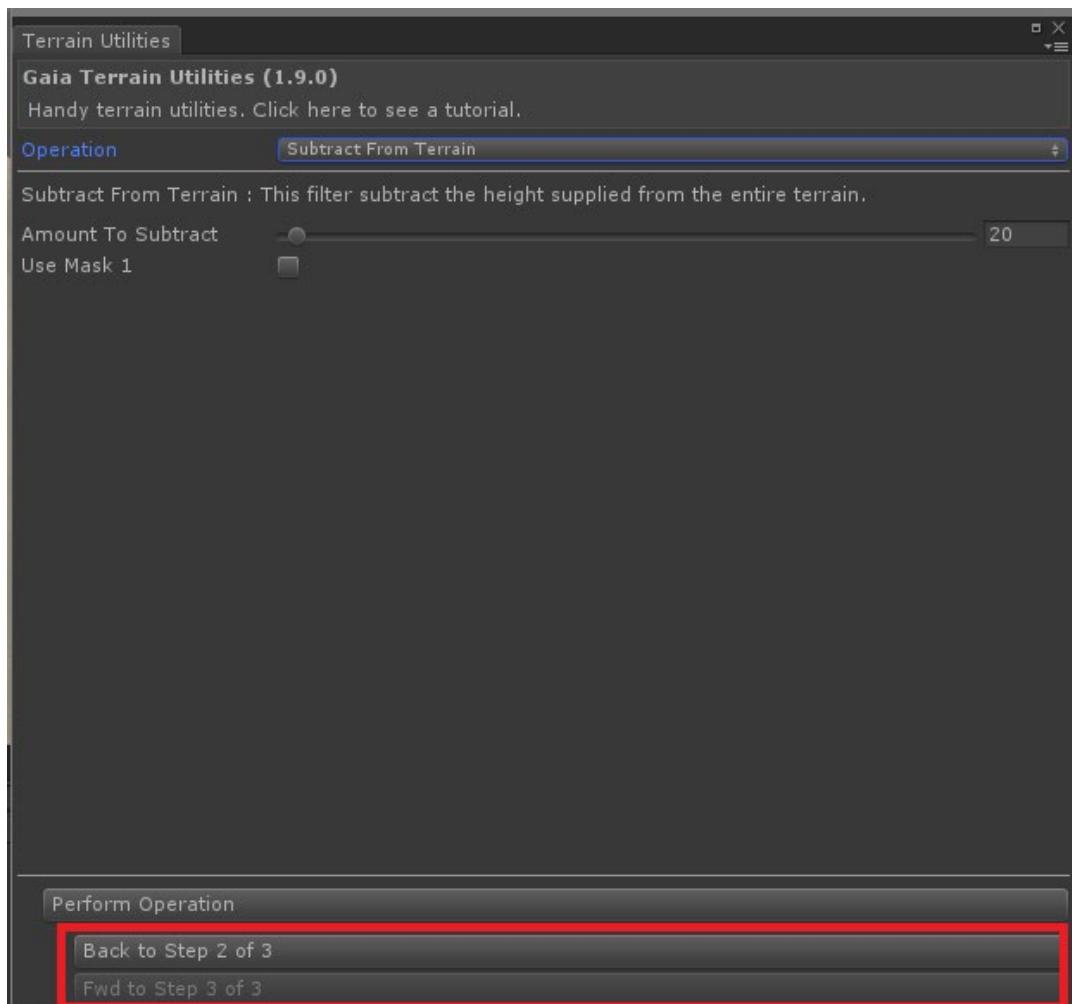


11. [OPTIONAL] In **Terrain Utilities** select **Subtract From Terrain**. The Subtract From Terrain option lowers the terrain by the height given.



12. Another fantastic filter to explore is the Quantize Curves filter. Select this and accept the defaults given. This will create nice terraces on your terrain, and these make great areas to create interesting game play.
13. If you're unhappy with any of these actions, you can easily undo them. To undo or redo an operation click on **Back To Step** or **Fwd To Step**.

Note: When you close the **Terrain Utilities** panel the undo and redo perform operations will no longer be available, and your changes will now be permanent. Also, please note that changes made by terrain utilities tool will not be stored in your session.



14. Go back to your **STANDARD** tab in **Gaia Manager** and click on **2. Create Spawners..** then step through each spawner and click "Spawn", you will need to wait a little they do their thing...

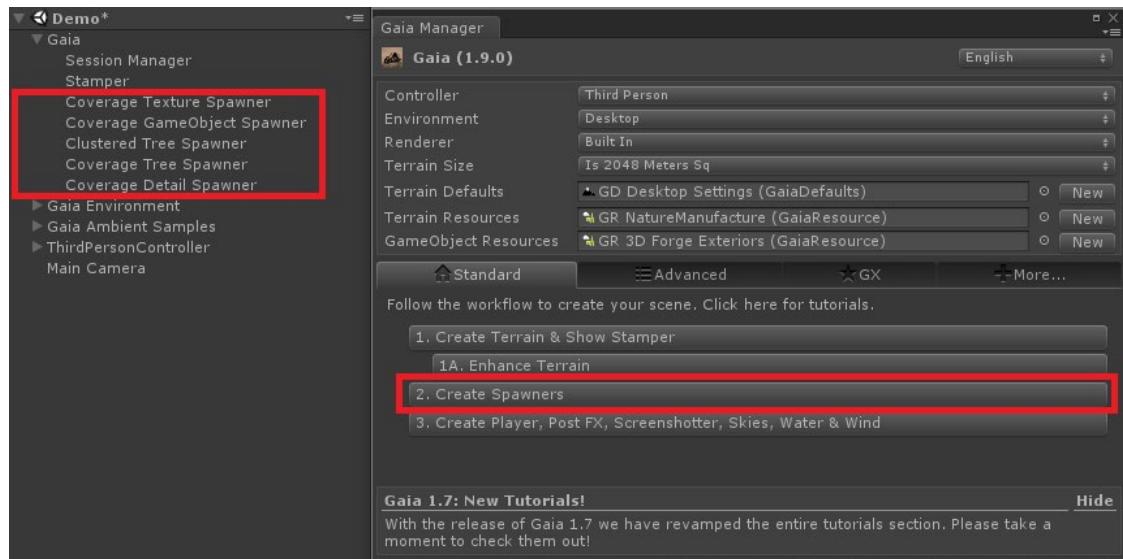
**Note:** The order of spawning is important! You should always spawn textures first - as subsequent steps can alter them. After textures the rule of thumb is 'Large To Small'.

The reason is that most objects check for collisions and only spawn if the location is clear. Larger objects like buildings need larger clear areas in which to spawn, and this then affects the spawning of smaller things.

For example - if a house is at a location - then when smaller things like trees and grass are spawned, they will avoid the location because it is already occupied.

Also, if you want more game objects or more trees, then click spawn multiple times before moving onto the next spawner.

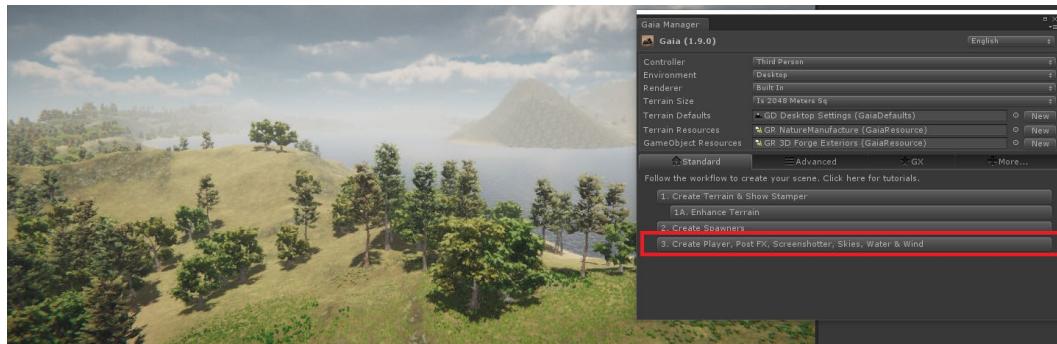
And finally, don't be alarmed if you do not get many farms. They will only spawn on flat locations, so make sure you have a terrain that has some flat areas for them.



15. So now let's finish this!

**Click 3. Create Player, Post FX, Screenshoter, Skies, Water and Wind.**

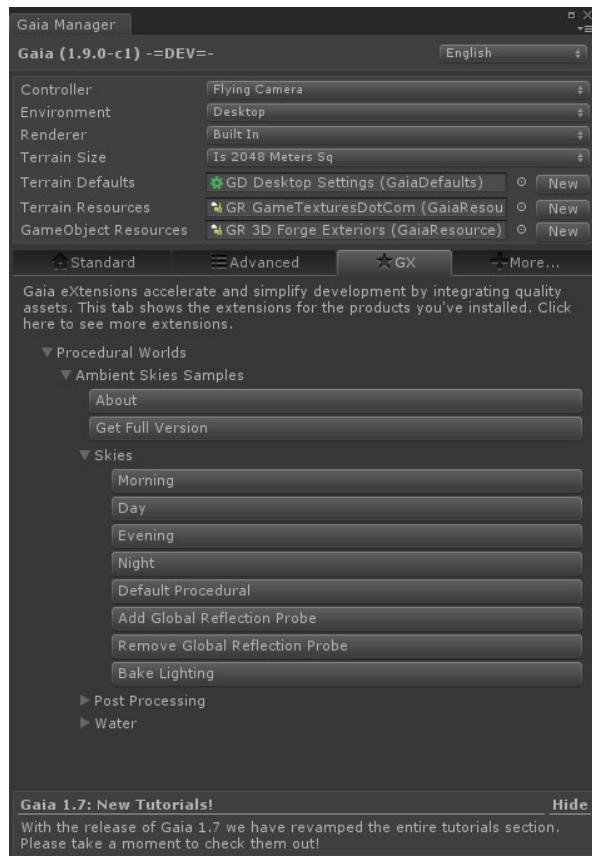
This will add the current controller type selected in the Gaia Manager, wind, a screen shotter (so you can take screen shots with the F12 key at runtime), and also a skybox, water and post fx sample from our up and coming and new Ambient Skies system into your scene.



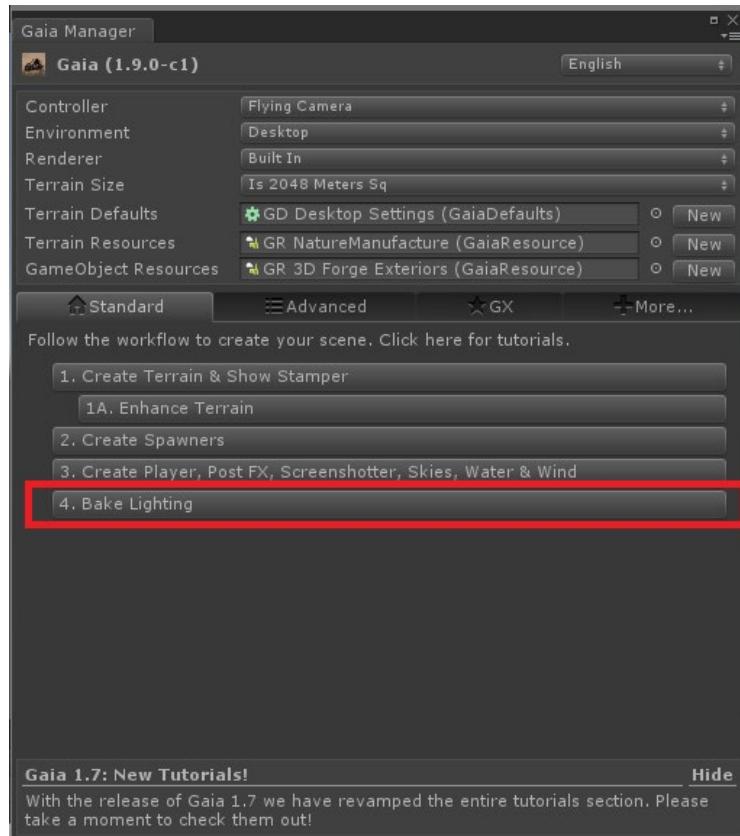
16. At this point your scene is now fully usable and you can click play to see it in action.

To spice things up a bit, why don't you check out the other goodies we have included from our Ambient Skies sampler.

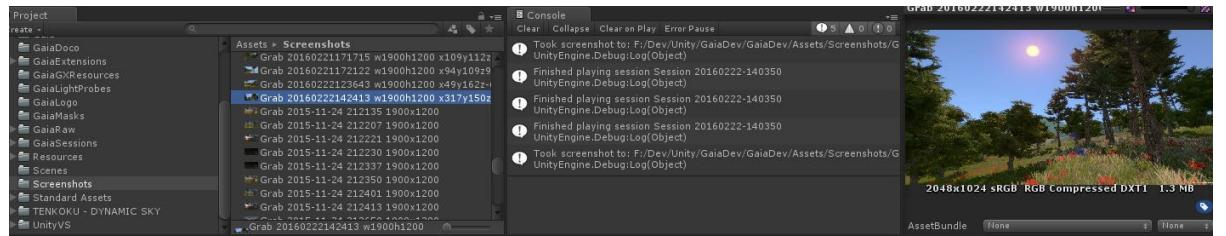
Select the GX tab, and then try out the different Sky, Water and Post Processing samples we have included.



17. Last thing. To get the best out of Unity you need to bake your lighting. To Bake your lighting open up the **Gaia Manager** Ctrl + G or Window / Procedural Worlds / Gaia / Show Gaia Manager... Then go to the **Standard Tab** and then click step 4 **Bake Lighting**, then click **Bake** on the popup window. This will take some time, but the improved visual fidelity is well worth it. You should bake light as the last step after any changes to your scene.



18. Then click **Play...** take a wander around hit **F12** when you find something cool! Then stop playing the scene when you have finished and look in the Screenshots folder.



19. And double click on the screen shot...



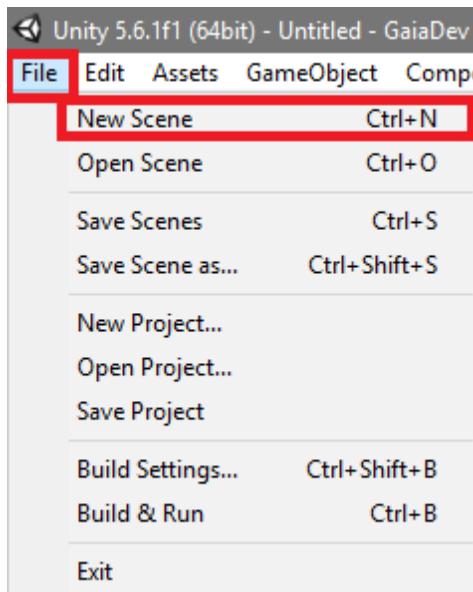
20. Now create a new scene and start it all again... a little hint. You will find more interesting things in flatter areas ☺

## Option 2 - Manual Generation!

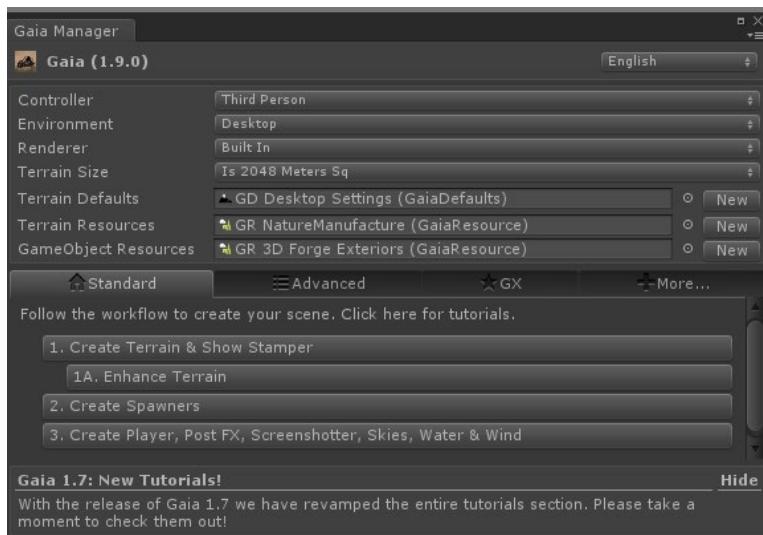
In this scenario we will control the creation of the terrain ourselves. What we are going to do is design the environment to suite the game play we want!

NOTE: Please review the automated generation section first as we have included tips there that have not been replicated here!

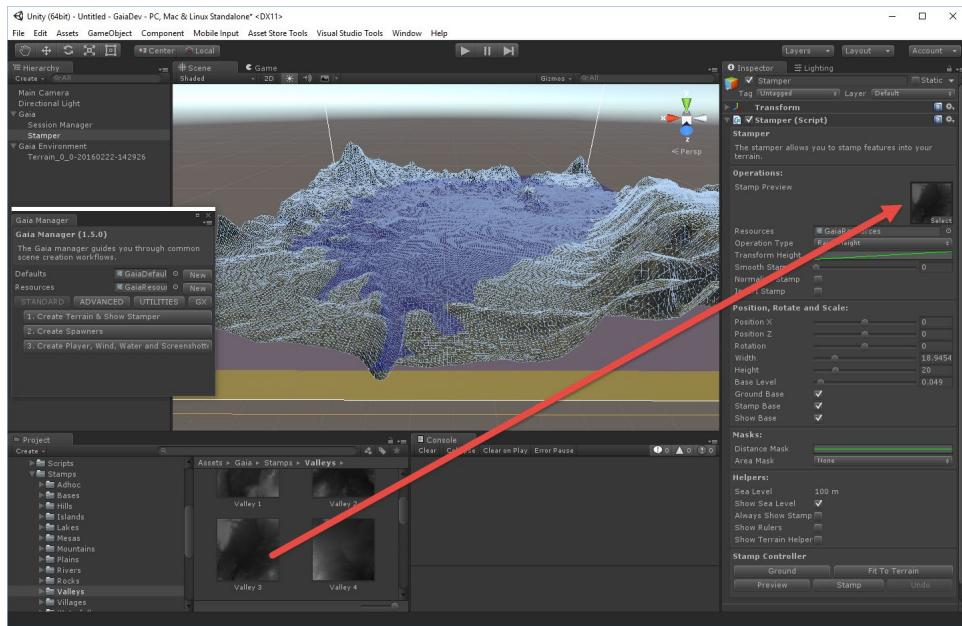
1. Create a new scene. To create a new scene go to **File -> New Scene** or **Ctrl + N**.



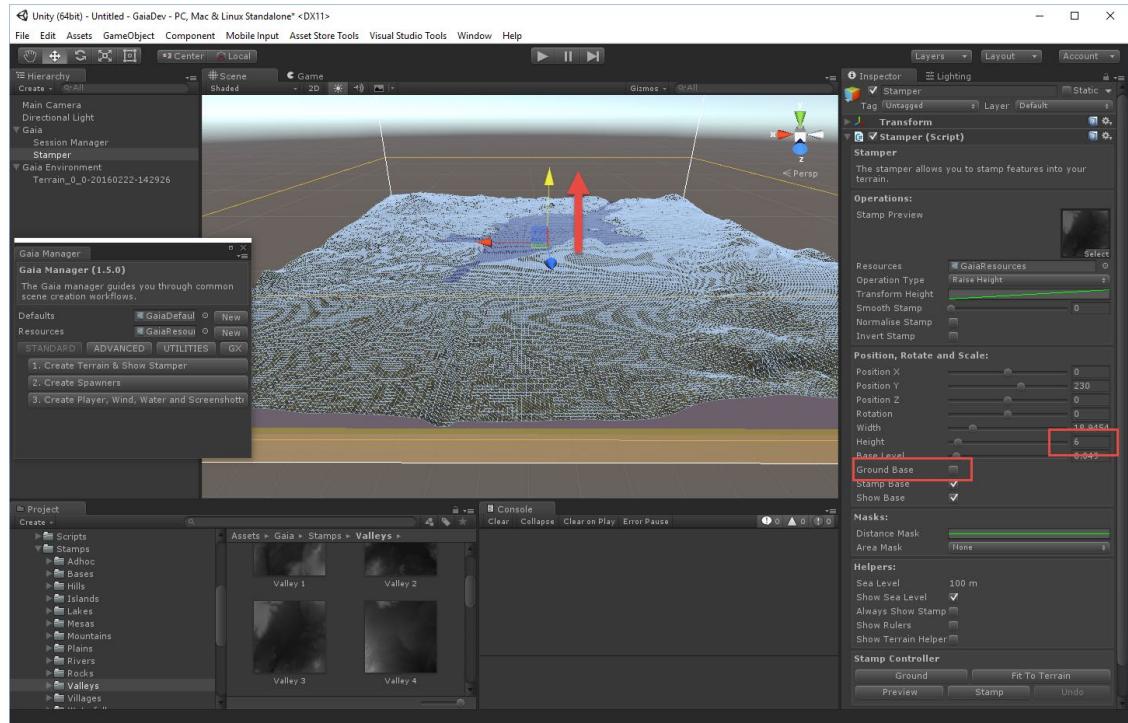
2. Open the **Gaia Manager** **Ctrl + G** or **Window / Procedural Worlds / Gaia / Show Gaia Manager...**



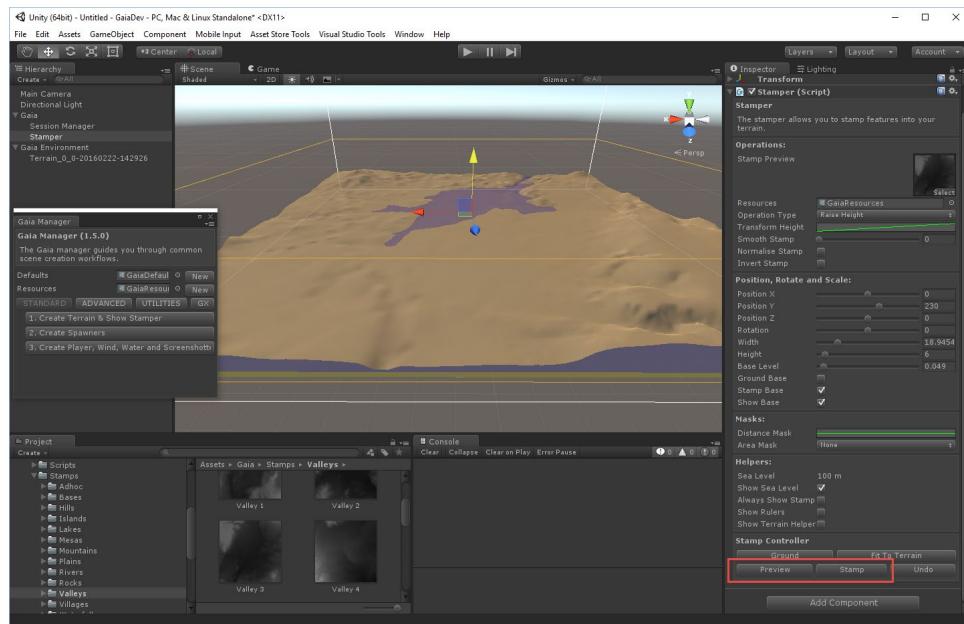
3. Click 1. **Create Terrain & Show Stamper...** then select Valley 3 in the Gaia / Stamps / Valleys directory and drag it onto the Stamper...



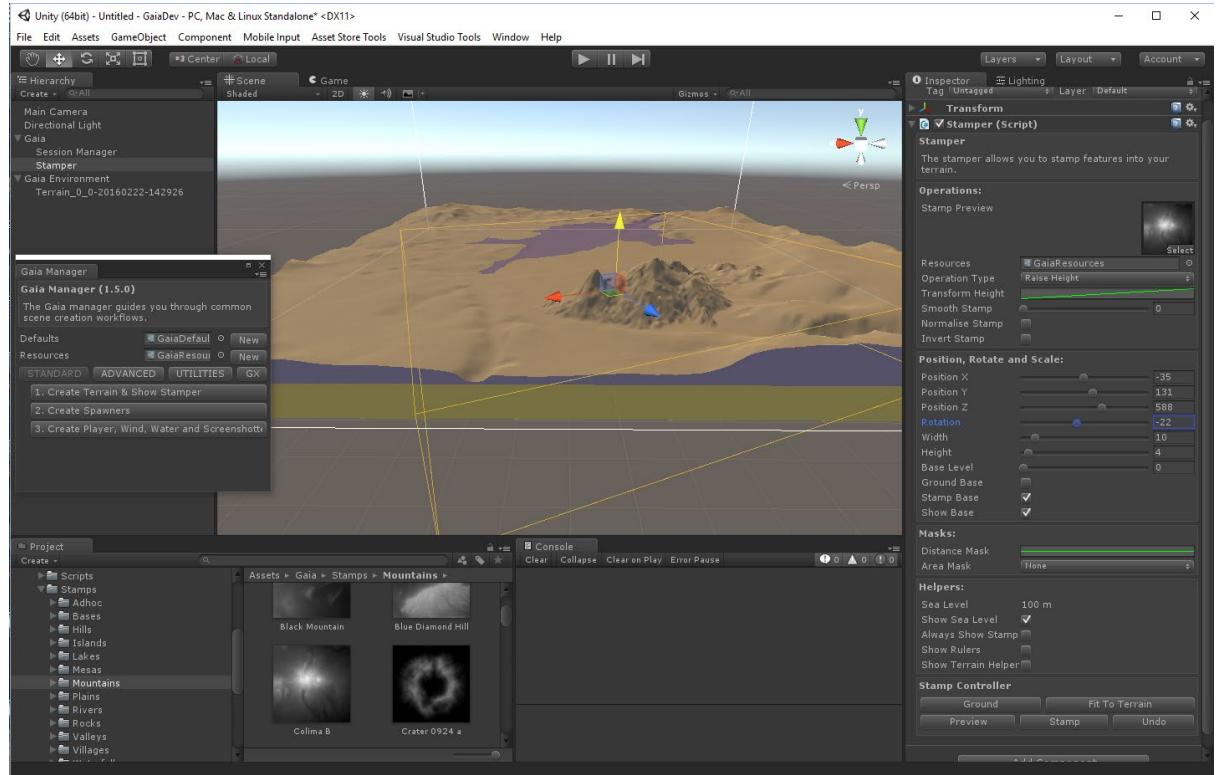
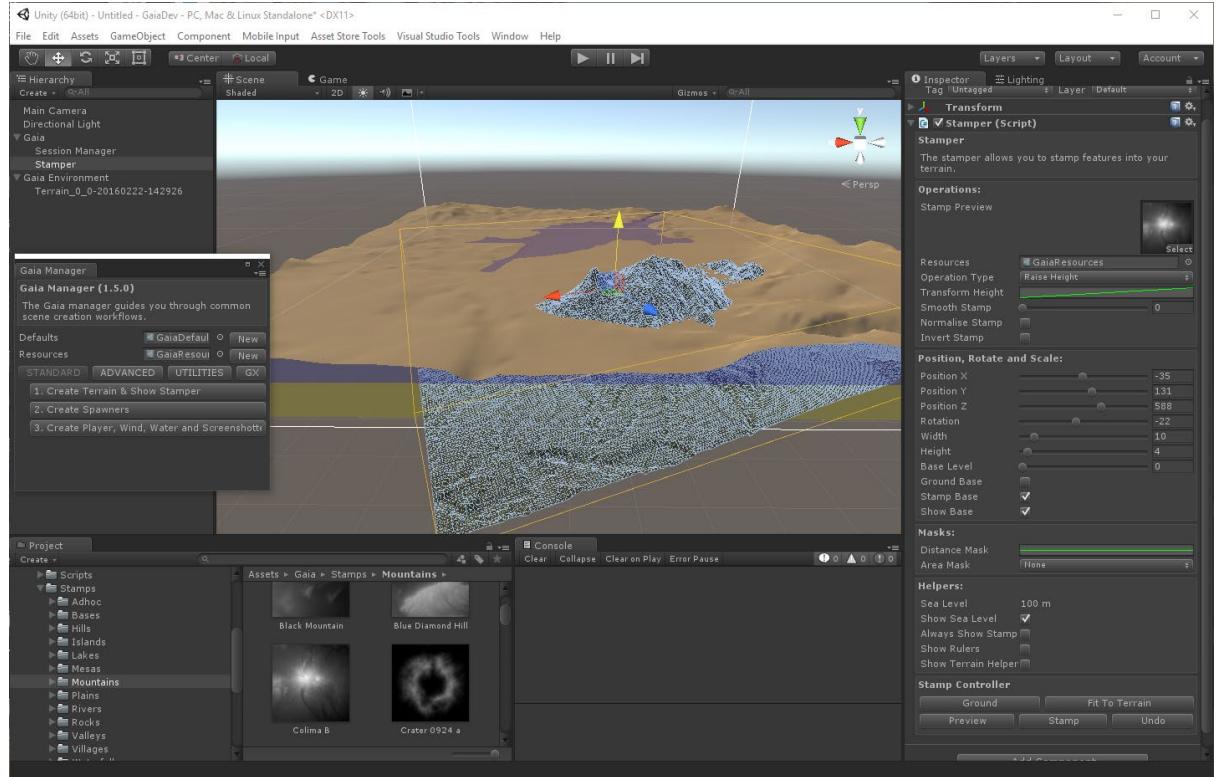
4. We want to raise and flatten this stamp so type in a height of 6, then **Uncheck Ground Base** and raise the stamp so that only a little bit of water (the blue plane) is visible...



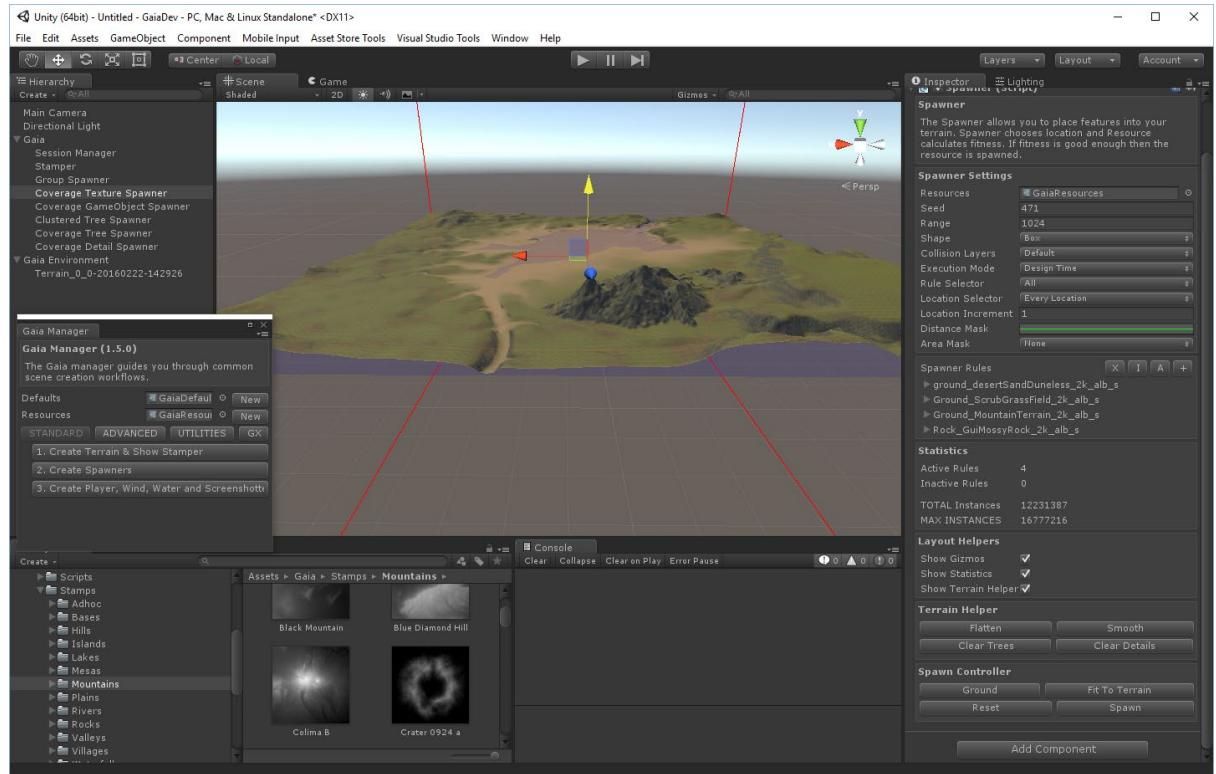
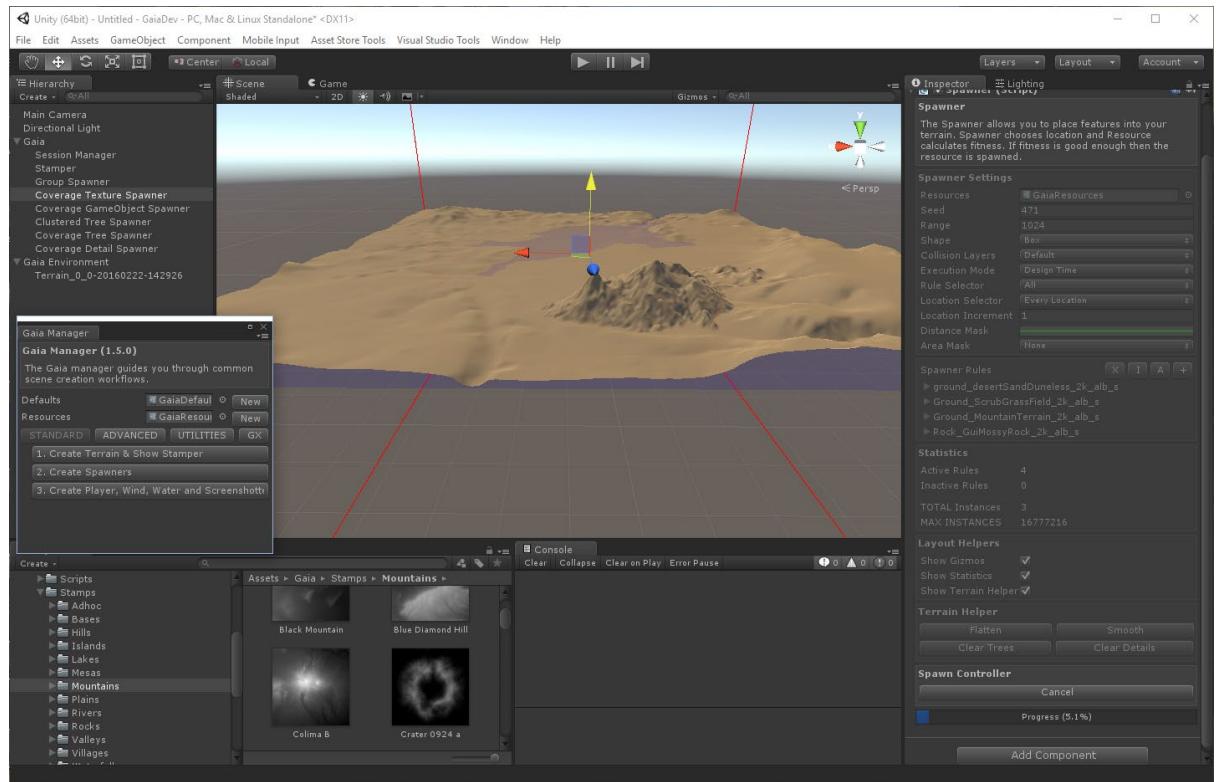
5. The click **Stamp** to apply the stamp to the terrain... after this click the **Preview** button to hide the preview mesh so we can get a good look...



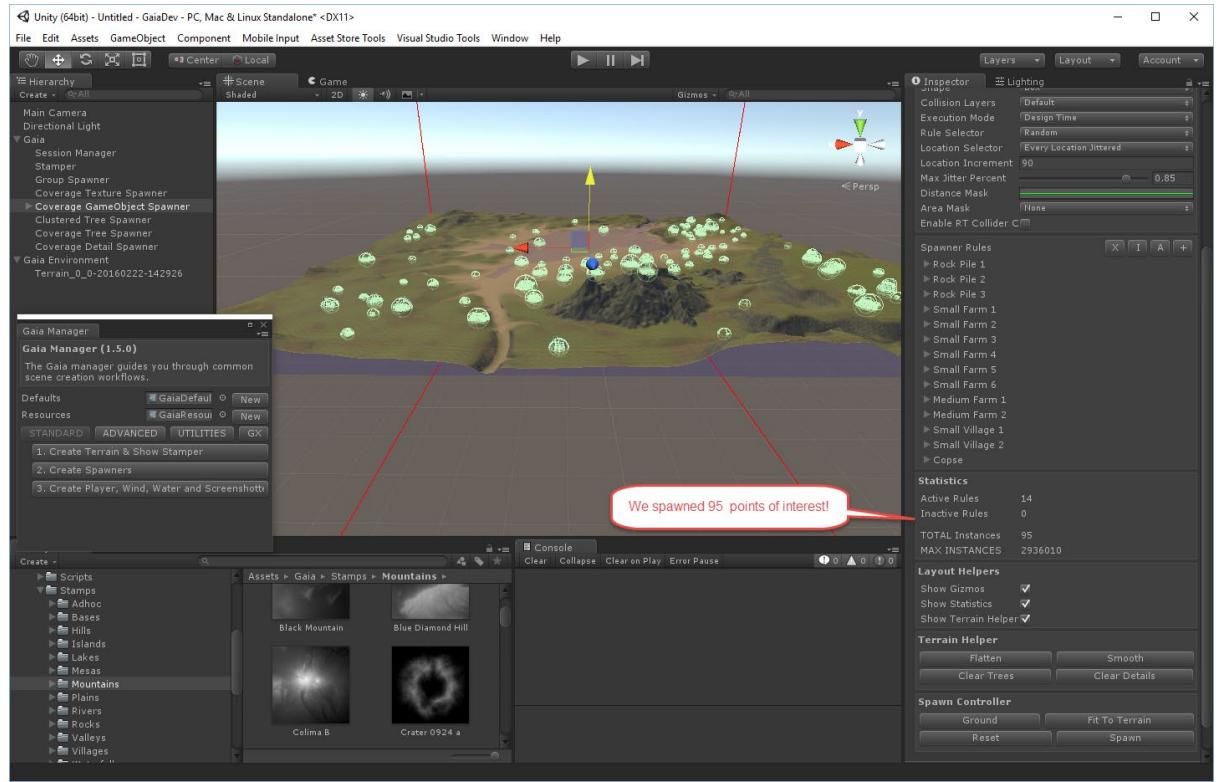
6. Looking good... now let's add a new feature... click the **Preview** button to show the mesh preview again then and drag **Colima B** from the mountains directory on the stamp preview - then let's resize, reposition and rotate the stamp to put it where we want it... finally press **Stamp** to apply it...



7. Ok time wrap this up... but this time we control the spawning manually...  
 click 2. **Create Spawners** from the **STANDARD Tab** of **Gaia Manager**... then  
 select the **Coverage Texture Spawner** and click **Spawn...**

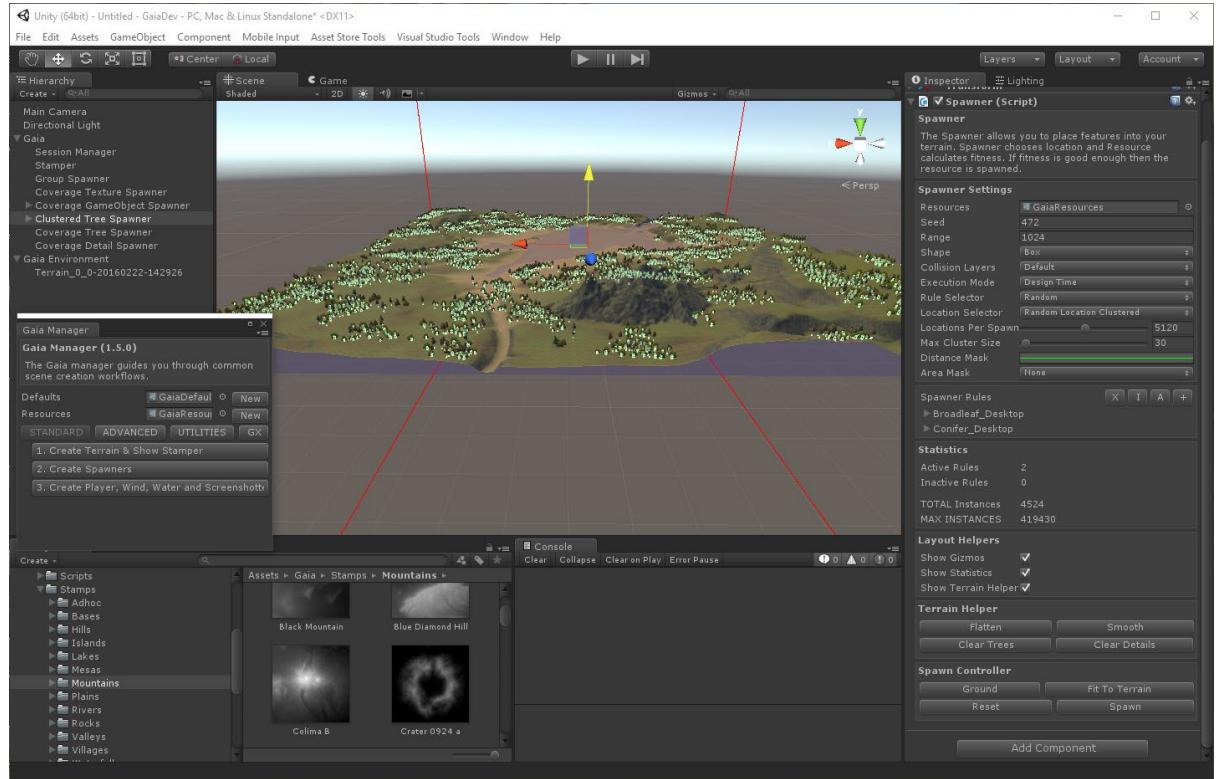


8. The select the **Coverage Game Object** Spawner and click **Spawn...**

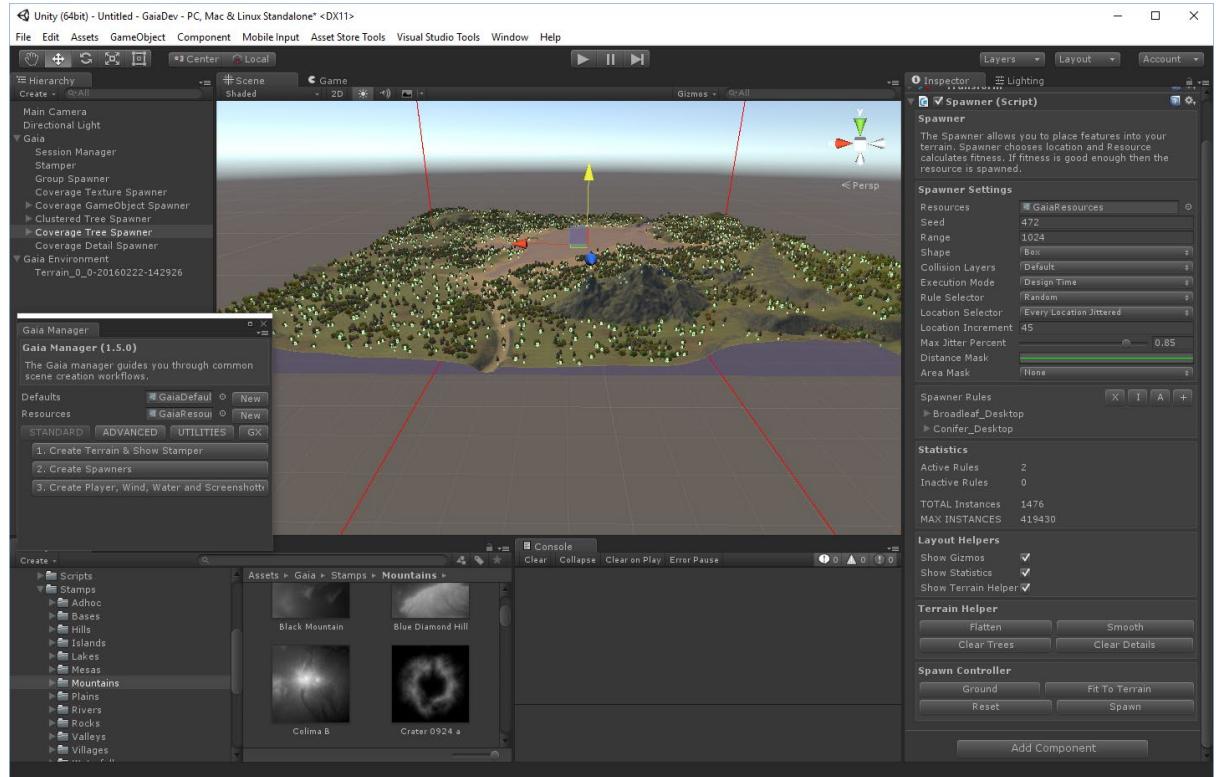


Notice we spawned a lot - I deliberately chose a relatively flat terrain so that it would be suitable for these points of interest... you will see why in a minute!

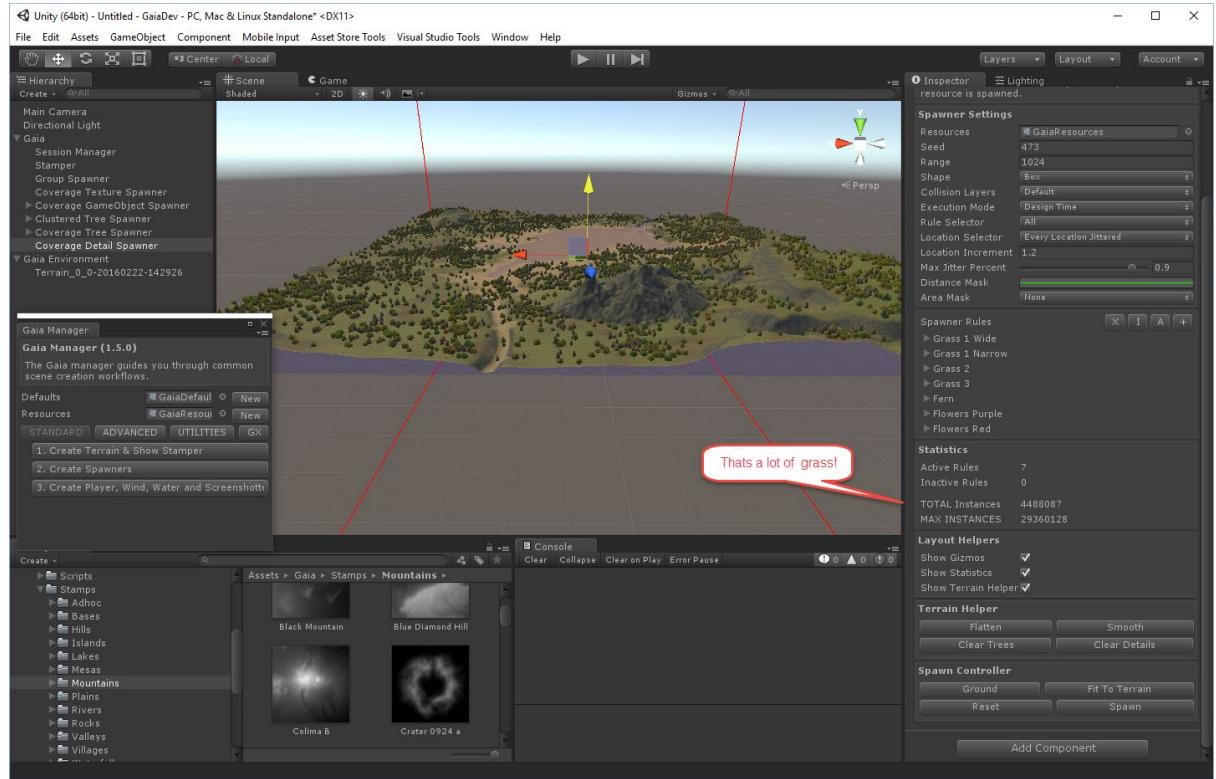
9. Then select the **Clustered Tree Spawner** and hit **Spawn..** when it's done if you think you want some more trees then hit spawn again... I did ☺



10. Then select the **Coverage Tree Spawner** and **Spawn** it twice...

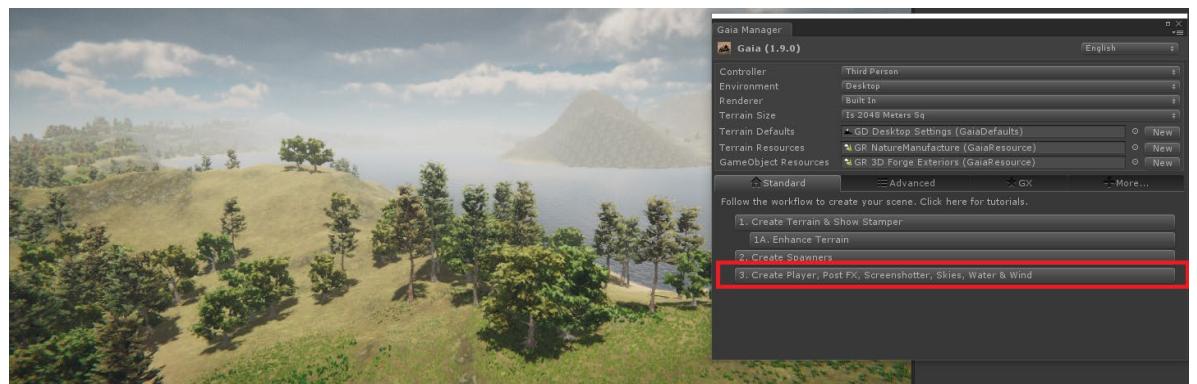


11. Now select the **Coverage Detail Spawner** and hit **Spawn...** check the instance count.. we placed a lot of grass...

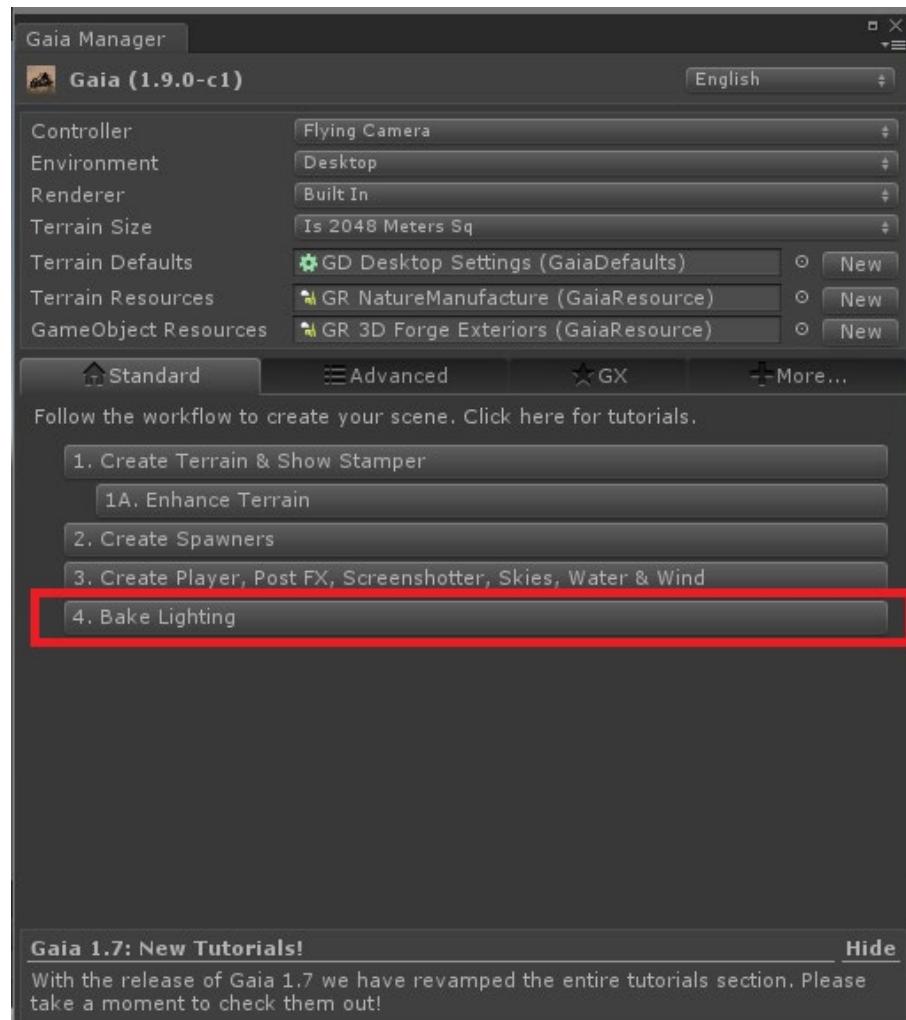


12. So now let's finish it off.. click **3. Create Player, Post FX, Screenshotter, Skies, Water and Wind.**

This will add the current controller type selected in the Gaia Manager, wind, a screen shotter (so you can take screen shots with the F12 key at runtime), and also a skybox, water and post fx sample from our up and coming and new Ambient Skies system into your scene.



13. Last thing before you can begin exploring is to bake your lighting data. To Bake your lighting data open up the **Gaia Manager** Ctrl + G or Window / Procedural Worlds / Gaia / Show Gaia Manager... Then go to the **Standard Tab** and then click step 4 **Bake Lighting**, then click **Bake** on the popup window. To know more about why you need to bake your lighting visit **Extra Information About Gaia** at the bottom of this document.



14. Press **Play**, explore and when you find some cool stuff - hit **F12** to take a screen shot... here's some of what I found...





15. I hope you enjoy Gaia. If you would like to add more cool things to make your environment look even better then check out the Gaia Extensions :  
<http://www.procedural-worlds.com/gaia/?section=gaia-extensions>

## Useful Information

### 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 samples from Ambient Skies so that you can create a range of different ambiances based on different times of day.

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

When you select a sky the sun light will be reconfigured, fog color, 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 Ambient Samples** is the **Ambient Audio** game object. Click on that and then in the **Inspector** adjust the **Volume**.

### Why you need to bake your lighting

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 any 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. 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.

## Pipeline Switching

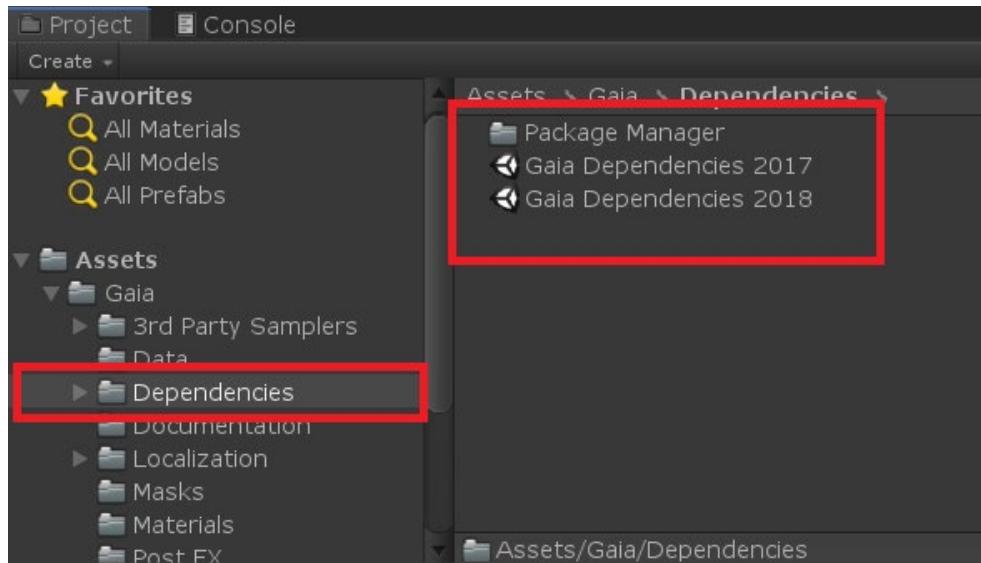
In Gaia, Pipeline switching enables you to easily switch between the Built In, Lightweight and High Definition render pipelines from Unity 2018.3 or higher.

This process will switch your pipeline, update your materials, and update your lighting and other settings so that you start working with the new pipeline.

This process should only be done at the beginning of your project and you should make a backup of your project first.

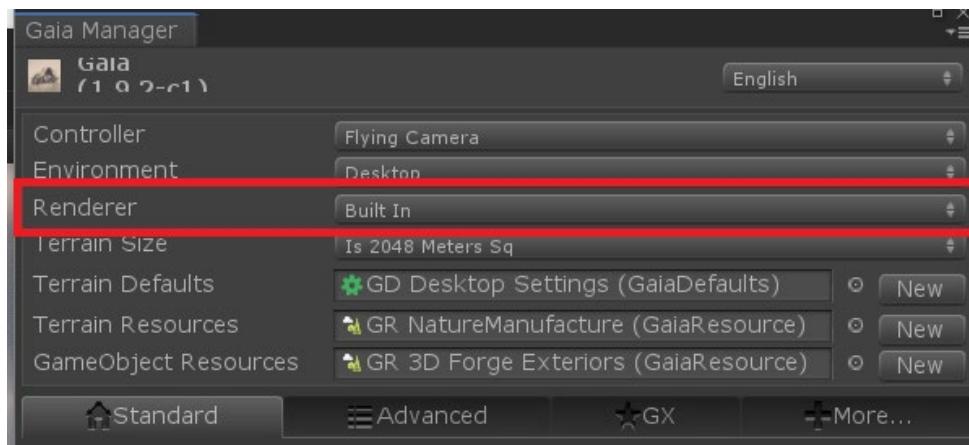
The pipeline installer currently supports Lightweight and High Definition versions 4.8 and Post Processing version 2.1.3. Using different versions may cause your project to have issues.

Pipeline and asset dependencies are located in Gaia/Dependencies. This folder should never be deleted or edited. Gaia depends on finding these files to perform dependency management.

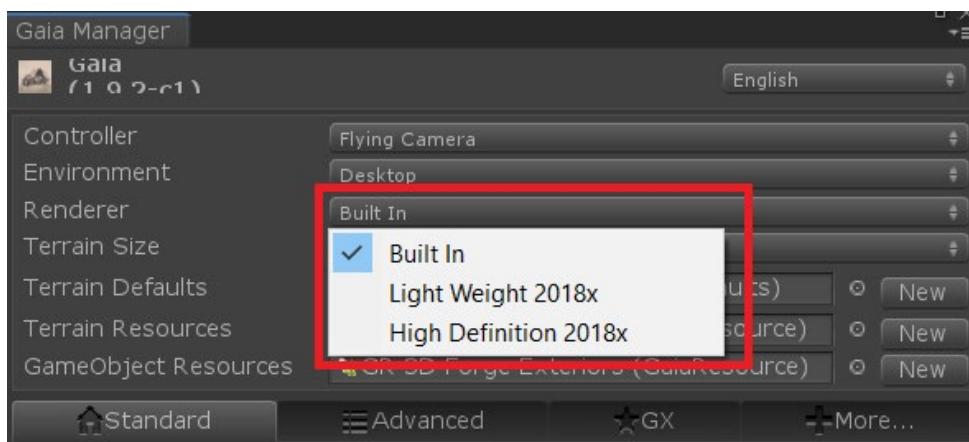


## Pipeline Switching Workflow

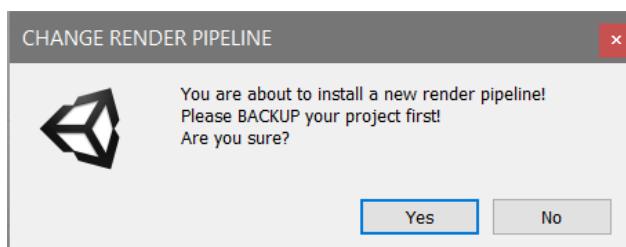
To start using the Pipeline Switching open the Gaia Manager Ctrl + G or the Window / Procedural Worlds / Gaia / Show Gaia Manager... menu.



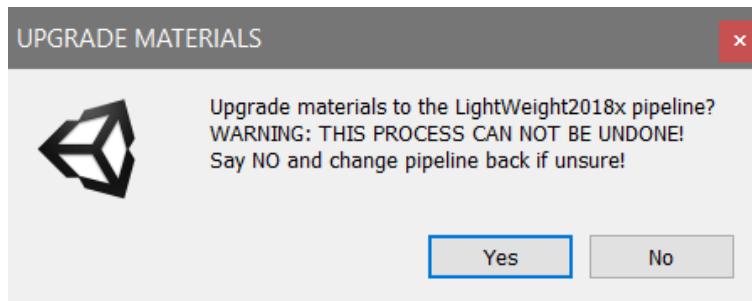
Choose the pipeline you wish to switch to by selecting it in the Renderer dropdown.



Switching pipelines will import the relevant packages, update your project settings and configure your scene.

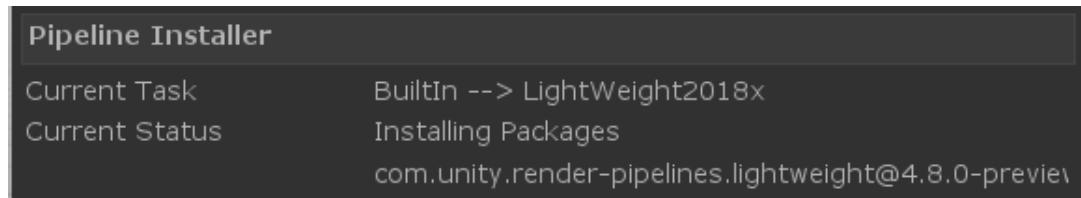


Once you have selected the new pipeline version a popup window will show asking you if you're sure to switch your pipeline. We highly recommend making a project backup before switching your pipeline in Gaia. Click Yes to proceed, or click No to exit without changing settings.



Next Gaia will ask you if you'd like to upgrade your materials. Note this process only finds built in shaders for Built-In/Lightweight and High Definition.

Custom shaders will not be upgraded and this process can't be undone.

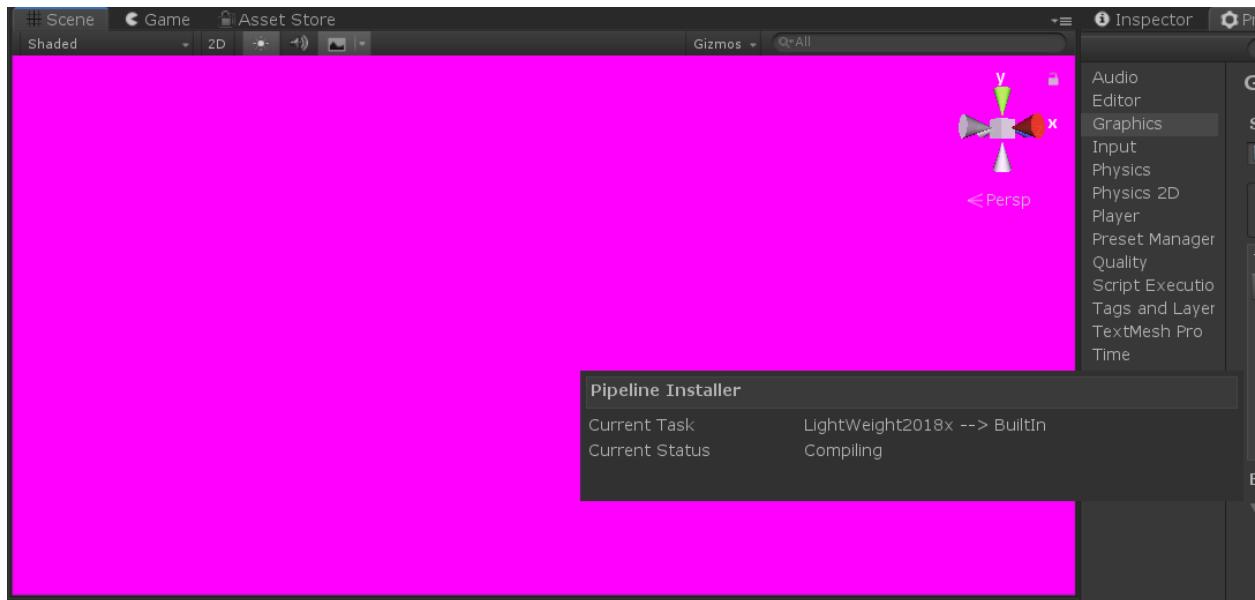


Next Gaia will show the Pipeline Installer window and update as the new pipeline is being installed. This is a lengthy process and you may see some errors. Ignore them.

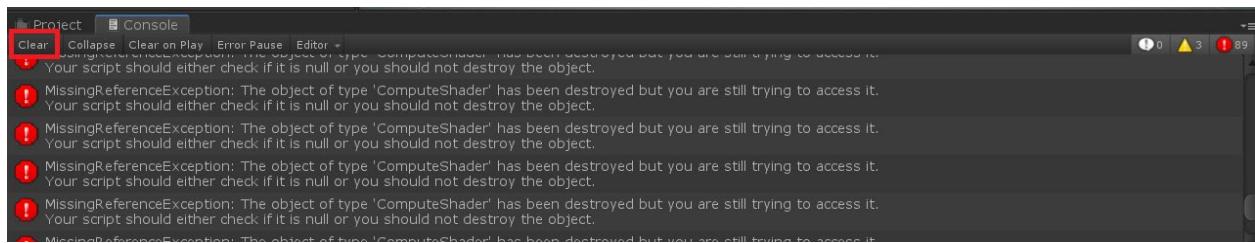
When pipeline switching is complete the pipeline installer window will close automatically and you can open up Gaia Manager and continue.

Do not open the Gaia Manager or do anything else until the pipeline installation process is complete.

## Pipeline Installation Notes



When switching from Lightweight or High Definition pipeline your scene view may go pink as displayed above. Note that this is normal and once the pipeline installer has finished it'll get updated and be fixed so do not be alarmed when this happens.



During the pipeline switching process you may get warning/errors in your console, this is normal and once the pipeline installer has finished and closed you can just clear the console to remove all the warnings/errors.

## Pipeline Installation Duration

Pipeline switching can take some time to complete the processes and finalize. Depending on your pc specifications switching can take anywhere from 5-15 minutes. Do not close Unity or do anything else while the pipeline installer is open as this could result in an incomplete process and cause issues with your project.