Distingo – Terrain in Detail

Version 1.2

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Overview

Distingo is a shader package that will give you more control over your terrain textures.

You will have dynamic access to a number of attributes for each texture used in your terrain.

There is a near and far UV multiplier to help reduce tiling in your terrain textures. This is also controlled by a master near and fat cut off giving you even more control. You can even have the terrain render the cut off values so you can see how they graduate over distance.

The ability to increase the power of the normal maps, this can result in stronger lighting effects on your terrain textures.

Directly alter the smoothness and metallic attributes of the textures too.

Future versions of Distingo are intended to utilize tessellation for even more detail for close up terrain textures.

In this version of Distingo, it now allows you to apply the Distingo lighting calculations to Mesh Terrains. You will need a splat map for this to work, but other than that, it will work just the same as the Distingo shaders applied to a Unity Terrain.

At the time of writing, the latest version of Gaia is able to export its terrains as Mesh's as well as export the corresponding splat maps for the terrain too.

Prerequisites

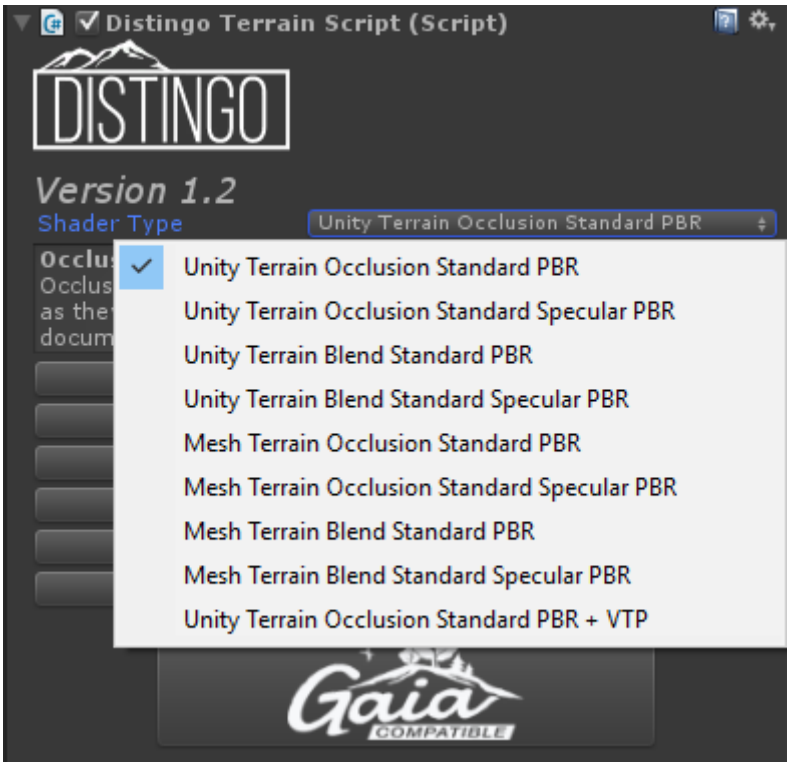
The shaders require shader model 4.0 as a minimum requirement, failing this Distingo should fall back to the Unity Terrain Shader.

Use

Simply create your terrain, and add the Distingo Terrain Script and you will be given an editor similar to this. Distningo can now also be used on any mesh.

Shader Type

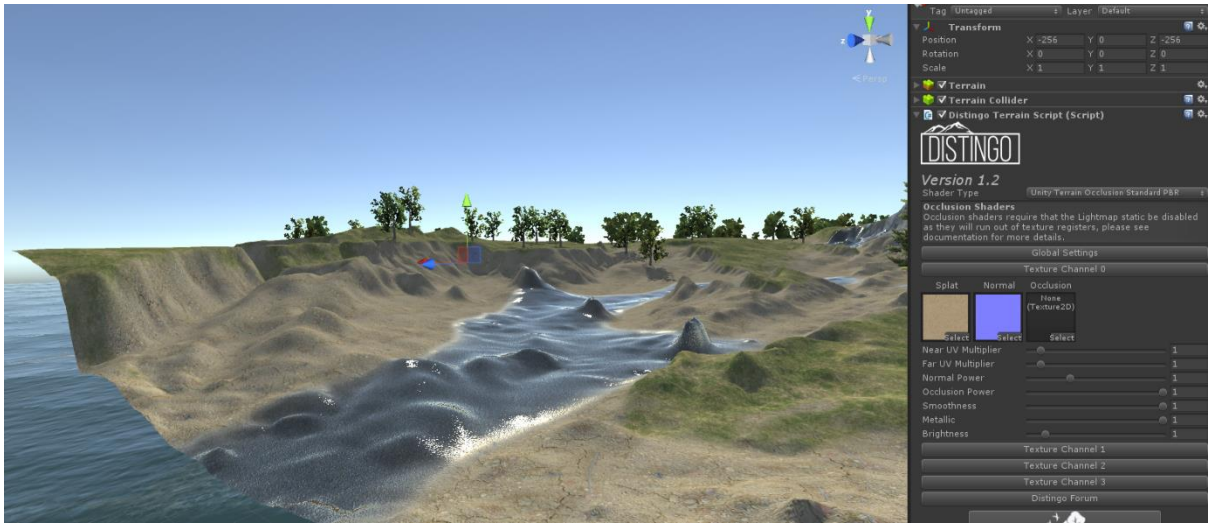
Select the Distingo shader you would like to use.



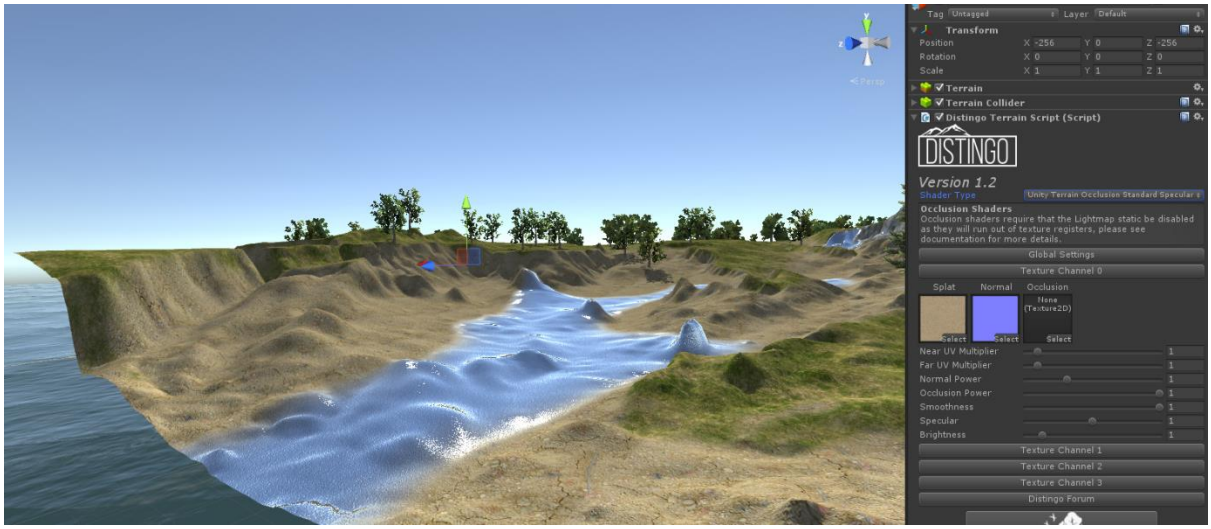
Standard PBR or Standard Specular PBR

Choose between the two Unity PBR shaders, Standard PBR gives you access to the Metallic parameter, whereas Standard Specular PBR gives access to the Specular sparamter.

Standard PBR Example

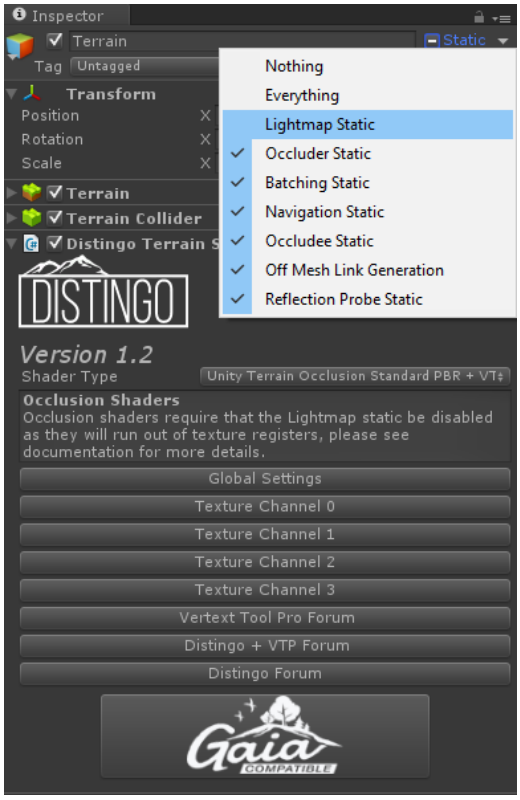


Standard Specular PBR

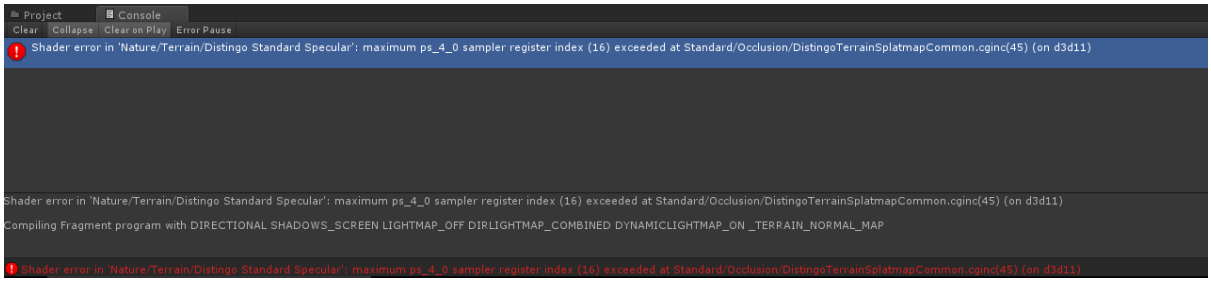


Occlusion Shaders

These shaders have an occlusion map per texture channel, if you are using one of the occlusion shaders, ensure that you have Lightmap static switched off and that there are no other Unity settings that are taking up a texture register.



Failure to do so may end with a broken render and an error message similar to this:



"Shader error in 'Nature/Terrain/Distingo Standard Specular': maximum ps_4_0 sampler register index (16) exceeded at Standard/Occlusion/DistingoTerrainSplatmapCommon.cginc(45) (on d3d11)

Compiling Fragment program with DIRECTIONAL SHADOWS_SCREEN LIGHTMAP_OFF DIRLIGHTMAP_COMBINED DYNAMICLIGHTMAP_ON _TERRAIN_NORMAL_MAP"

If this occurs, ensure your Lightmap static is off, as shown above, close and re open the scene.

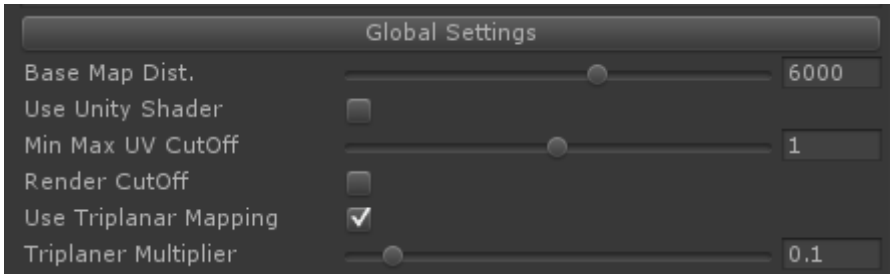
Blend Shaders

These shaders do not have an occlusion texture per channel, however, you can apply an occlusion map to the entire terrain, as well as a global blend texture. This could be used for roads, flow maps and the like. You should be able to have Lightmap static on with these shaders.

Global Settings

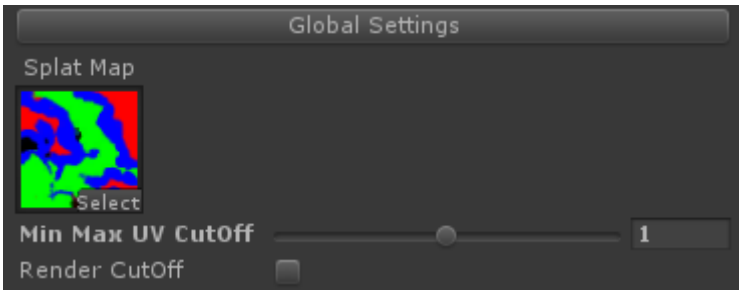
This section holds parameters that will have an impact across the whole terrain regardless of texture.

Unity Terrain Global Settings



With a Unity Terrain we can set the Base Map Distance (please see the Unity documentation for a detailed description of this.) from here as well as switch back to use calculations similar to the built in Unity Shader. There is also the ability to use tri-planar rendering for the textures, this will help reduce texture stretching.

Mesh Terrain Global Settings



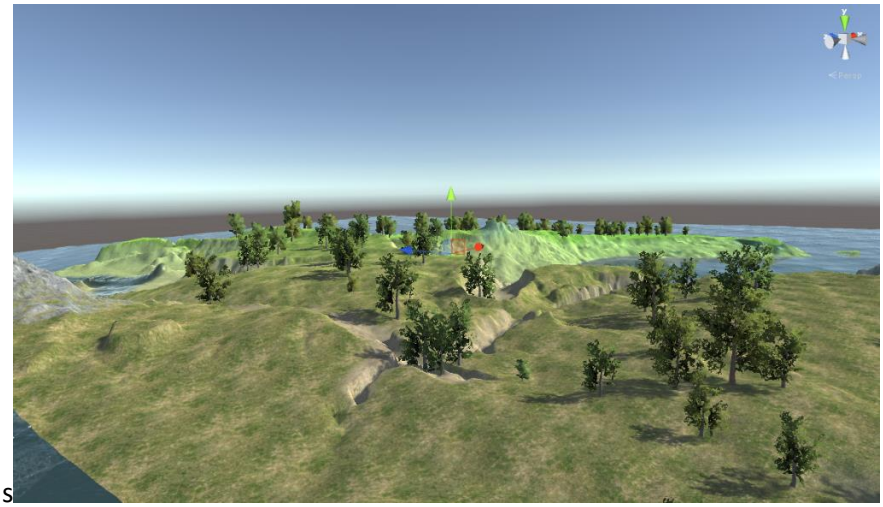
With a Mesh Terrain, we must supply a splat map.

Min Max UV CutOff

This is used to alter the strength of change between the near and far UV multipliers given in each texture channel.

Render CutOff

If you want to see how the near and far UV multipliers are being applied, then switch this on, you will see the terrain rendered with a green tint, the stronger the tint, the more far UV is used, the lower the tint the more near UV is used.



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Blend Global Settings

If a Blend shader is being used, there are some additional parameters that can be used

Blend Texture

This is the texture to be alpha blended over the terrain. You may want to apply a flow map to the terrain for example, this would be where you put the flow map texture. The blend is done with the following calculation:

Color = lerp(Color, Color * BlendColor, BlendColor.Alpha * BlendPower);

As you can see the textures alpha is also taken into account.

Occlusion Texture

An occlusion texture can be applied across the whole terrain. This is due to the blend texture option not having access to texture layer occlusion, so an overall occlusion map can be given here.

Blend Power

If a blend texture is given, you can alter the level at which this texture is blended with the terrain using this slider.

Occlusion Power

If an occlusion texture is given, you can later the level of occlusion that is applied with this slider.

Texture Channels

Selecting a Texture Channel will give you something like this **Note: Occlusion type is shown, with Blend, the occlusion map and Occlusion power will be absent.**

Standard PBR Texture Channel

Splat

This is the splat texture being used by the terrain in this channel. It cannot be edited here, and must be changed in the Terrain menu.

Normal

This is the normal map being used on this texture channel, as above it cannot be edited here.

Occlusion

This will apply an occlusion map to the texture channel.

Near UV Multiplier

You can also alter the Near UV Multiplier, this is the amount the textures uv is multiplied when it is close to the camera, adjust this to alter the tiling when close to the terrain.

Far UV Multiplier

Does the same as above, but for distant texture uv

Normal Power

This is used to alter the strength of the normal map applied. This can result in some strong lighting effects.

Occlusion Power

If an occlusion map is in use, this alters the amount of occlusion used.

Smoothness

Alters the PBR smoothness for this channel

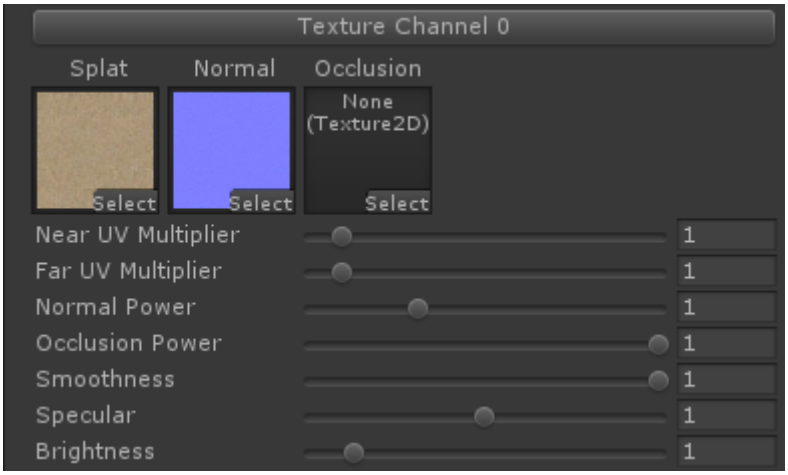
Metallic

Alters the PBR metallic value for this channel.

Brighness

This is used to increase or decrease the texture channel's brightness.

Standard Specular Texture Channel



All the parameters given above apply just the same in this shader type, with the exception of Metallic, this is replaced with:

Specular

Alters the PBR specular value for this channel.

Important Notes

The textures on terrain are organized into batches of 4, each set of 4 or less textures are rendered one after the other with separate splat maps, by Unity's terrain engine. Editing these data channels on textures will also affect the corresponding texture in the other groups of 4. So, say I have 8 textures, altering the values (not the textures) in Texture Channel 0 also changes them in Texture Channel 4, altering 3 will alter 7, conversely, altering 5 will also alter 1

Tested On

These shaders have only been tested on the PC Build in unity. On the forum I have been told that it runs on Mac's and on Android too, but in my own experience, I have only tested it using my PC.

Tri-Planar Mapping

This alters the UV parameters greatly, if switching from regular uv mapping to Tri-Planar then your UV mappings will have to totally change.

Disable/Remove Distingo

Should you no longer wish to use the Distingo shaders on a given terrain, then simply disable/remove the Distingo script, then simply change the material to the one you would like to use. For a mesh, you would do this my simply altering the material in the mesh renderer, with a Unity Terrain, click the cog on the Unity Terrain script and change the material from custom to Built In Standard.

Third Party Compatibility

Distingo is Gaia compatible, this means that if you have Gaia installed in your project you can use the Gaia Manager to install Distingo into your terrain(s).

~~Distingo can also be used in conjunction with Vertex Tools Pro. Again, if you have a copy of VTP you will be able to use it through Distingo on your terrain.~~

Due to technical difficulties this has not made it into this update, but once resolved will be included in an upcoming update.

Feedback

Questions, suggestions and support can be obtained for this component by emailing **support@Randomchaos.co.uk** or using the support forum.

I hope you enjoy this component and have as much fun using it as I had writing it

Charles Humphrey – Randomchaos Ltd