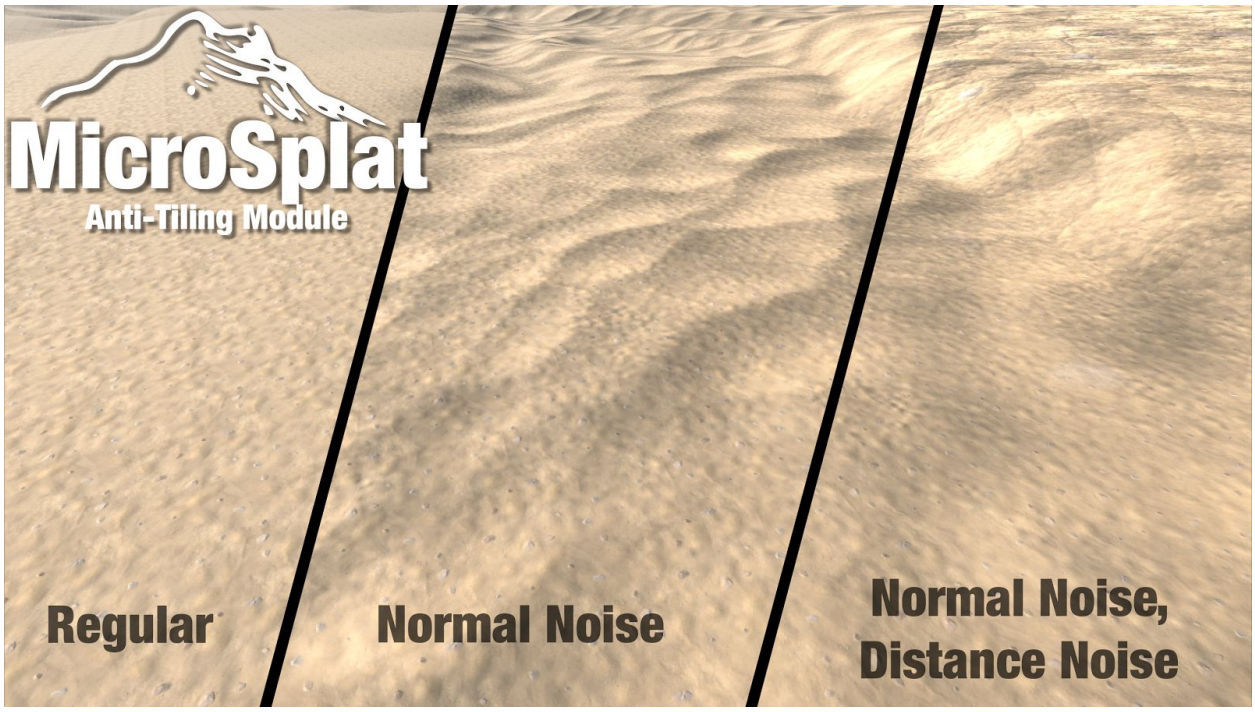
MicroSplat

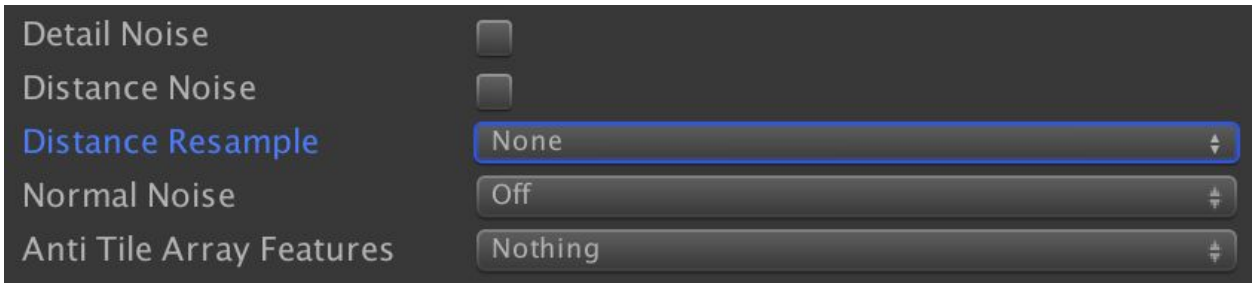
Anti-Tiling Module, Documentation



Overview

The Anti-Tiling module adds several techniques to the MicroSplat framework. These techniques can be used to greatly enhance the look of a scene, both preventing tiling, adding detail, and providing an overall more complex look to your terrain.

Shader Features

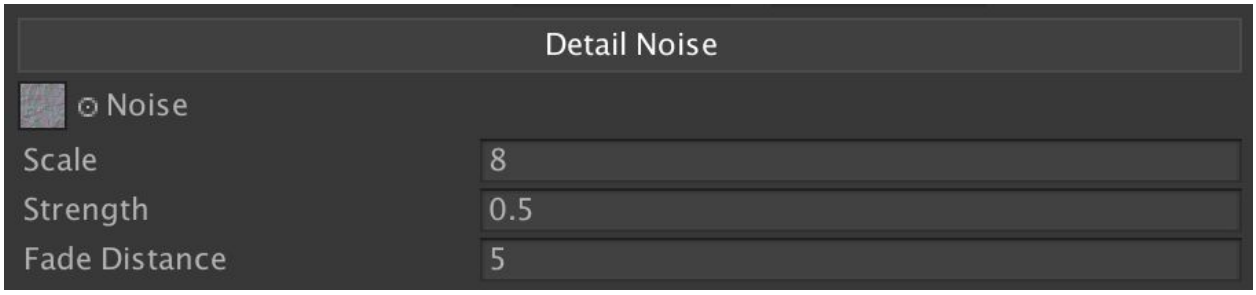


Once installed, several new features can be added to the shader. These are:

- Detail Noise
    - This is a detail texturing technique that blends in a special texture when the terrain is very close to the camera.
- Distance Noise
    - Distance noise is like detail noise, but is applied to things in the distance.
- Distance Resample
    - Distance Resampling will resample the textures at a different UV scale and cross fade the result over a distance. It has two modes, fast, which only resamples the top 2 most weighted albedo textures, or Full, which resamples the top 2 most weighted albedo and normal textures.
- Normal Noise
    - Up to 3 layers of normal noise are available. These are normal maps that are blended into the terrain at different UV scales.
- Anti-Tile Array Features
    - Added in 1.7, this lets you pack a normal noise, detail noise, and distance noise texture for each texture on your terrain, and enable or disable the features individually on the shader in this enumeration. See below for more info.

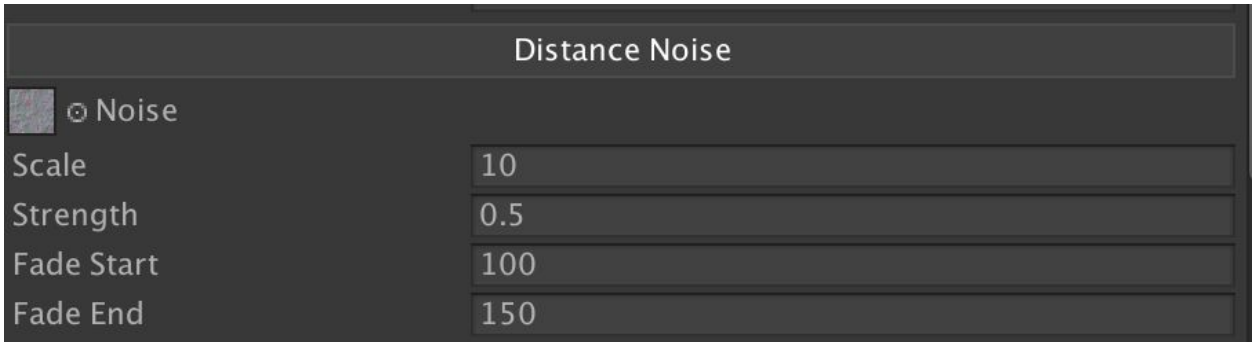
When any of these features is enabled, Per Texture properties become available in the Per Texture Property section of the shader, allowing you to control how much of each feature appears on each terrain.

Shader Parameters



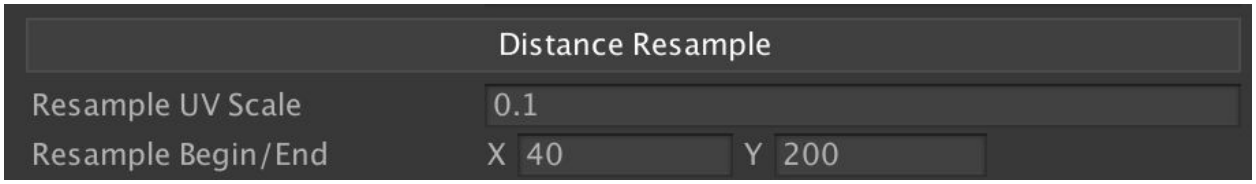
Detail noise uses a single texture which is scaled based on the terrain UVs. This texture contains a luminosity adjustment in the Red channel, with a normal adjustment in the G and B channels. A default one will be assigned for you.

Scale controls how many times the texture should tile within one of the terrain textures. Strength controls the amount of the effect. Fade distance controls when the effect starts fading out.

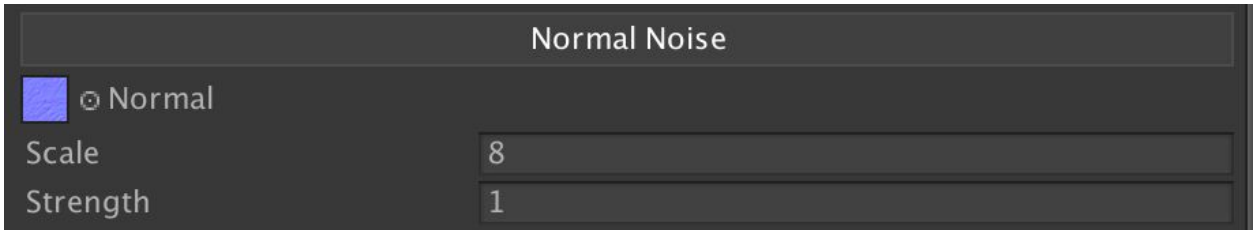


Distance noise uses a single texture which is scaled based on the terrain size. This texture contains a luminosity adjustment in the Red channel, with a normal adjustment in the G and B channels. A default one will be assigned for you.

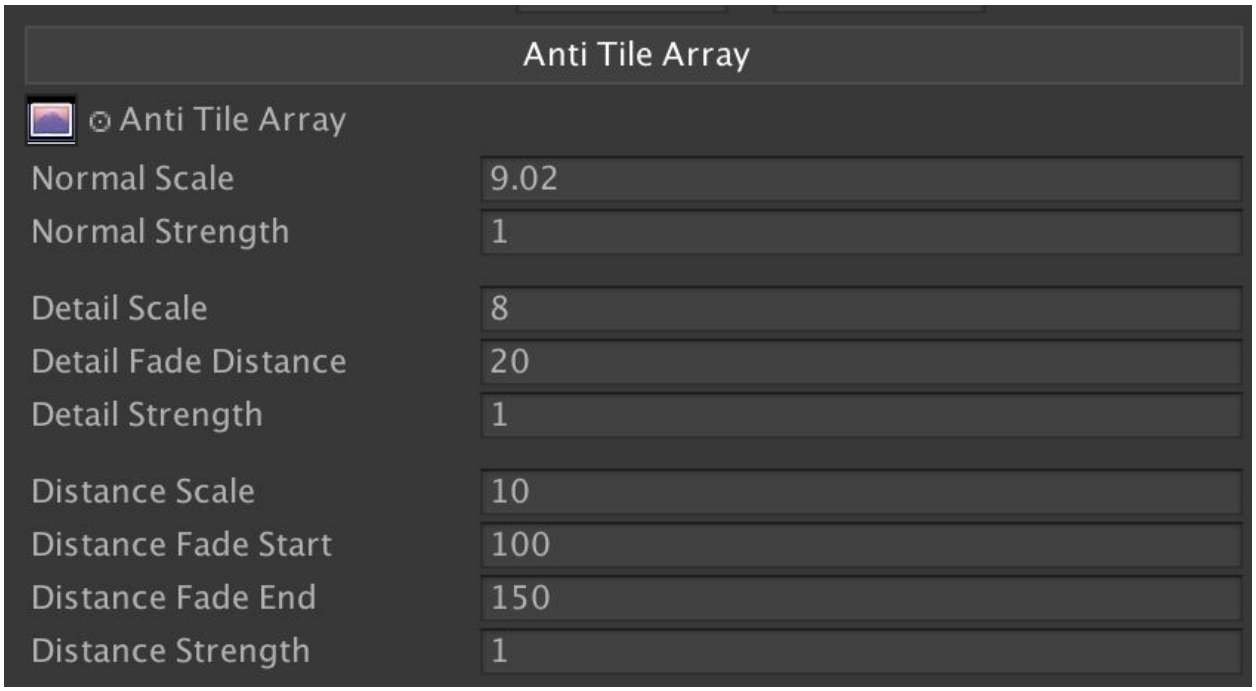
Scale controls how many times the texture should tile within the total terrain. Strength controls the amount of the effect. Fade start and end control when the distance noise starts to fade in, and when it should be completely faded in.



Resample UV scale controls the size of the texture vs. the original texture size. The Begin and End parameter control where the crossfade occurs.



You can have up to three normal noise textures, and control how much of each is applied to each terrain texture. These are standard normal maps, with a single UV scale setting each, and a global strength for the effect of each.



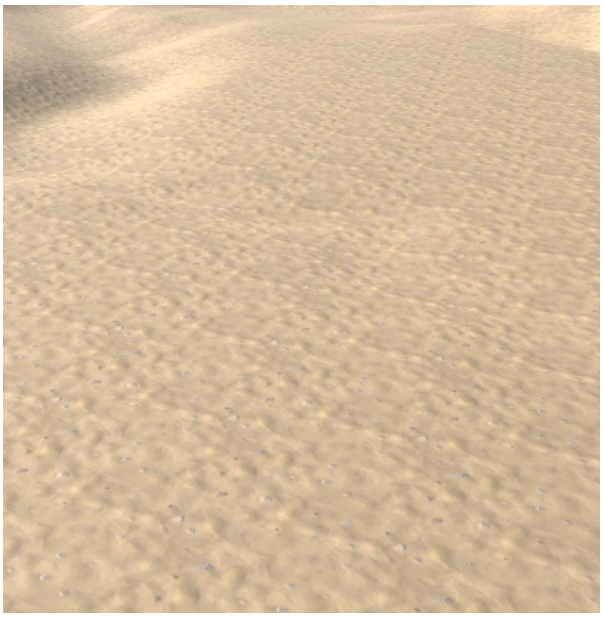
When the anti tile array is used, parameters for the three anti-tiling features show up in one control. (Note that you can use the anti-tile array and the regular features together if you want). These controls are the same as the ones above, just for this version of the feature.

Best Practices

Each effect in this package can be used in a number of ways, and all can be combined. Each effect is reasonably cheap as well, so using them in combination is a powerful way to enhance your scene.

Detail noise is a simple technique to add detail if your camera will get close to surfaces. When you consider the cost vs. something like doubling all the texture resolution of your textures, it's incredibly inexpensive.

Noise Normal is one of my favorite techniques, which is why I let you have 3 of them. You can create large signatures in a terrain with it, such as the dunes created by wind on sand, or rocks eroding under the moss of a terrain.

	
When viewed from far away, the sand not only tiles, but doesn't have large scale details that we expect to see in the desert.	With Noise Normal applied, we create the waves of sand you expect to see, yet retain highly detailed sand up close.

	
Without Noise Normal, our grass is uniform and featureless.	With a Noise Normal applied, we get the look of a larger subsurface, where grass and moss has grown over it.

In this example, 2 different textures were used, and using the Per Texture property for them, filtered such that the wavy sand normal was only used on the sand, and the rocky normal only used on the grass.

Anti-Tile Array

In 1.7, a new feature was added to the Anti-Tile package to allow you to pack an array with a Noise Normal, Detail Noise, and Distance Noise for each texture on your terrain, rather than having to share them across multiple textures. You may use either or both workflows together.

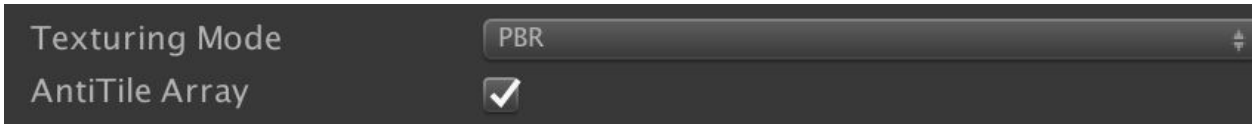
The main advantages to using the Anti-Tile Array are:

- You get a unique noise normal, detail and distance noise texture for every terrain texture, rather than sharing them
- You only use one texture sampler for all 3 effects, rather than 3-5 texture samplers with the traditional techniques (this may make a huge difference on OSX machines, where a 16 sampler limit is enforced)

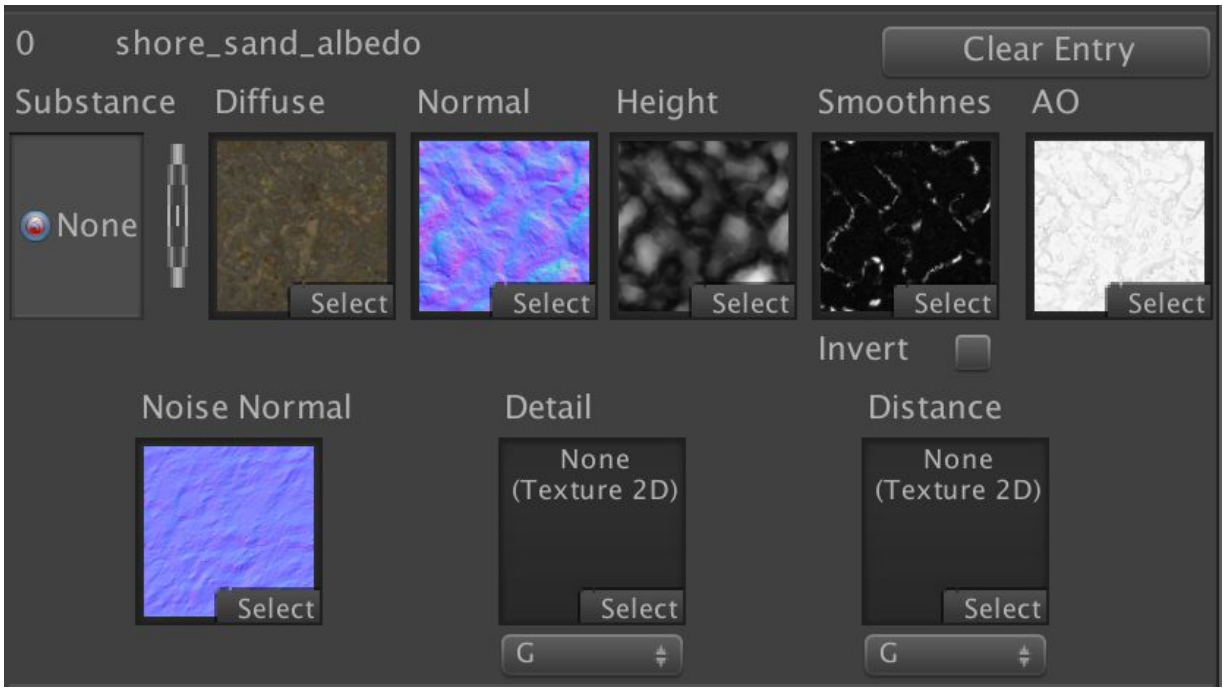
The main disadvantages to this technique are:

- You have to sample textures more times that in the traditional technique. If you are using “Best” Blend Quality settings, this means you sample the array 4 times for each feature. If all 3 features are enabled, that’s 12 samples per pixel, which can be more expensive than the separate versions of this feature.
- The extra textures can take quite a bit more memory
- The detail and distance noise only affect the albedo channel, which is a different look than the traditional technique, which affects the normal as well.

To enable this workflow, select your Texture Array Config in the MicroSplatData directly. At the top of the editor, you will find an option to enable the Anti-Tile Array feature:



Once enabled, additional texture slots will be enabled for each terrain texture:



Here you can supply a normal map, detail noise, and distance noise to pack into the array. Note that if you are not planning on using the detail and distance noise features, you can leave these textures blank, which will result in a higher quality compression for the normal map.

After adding your textures and updating the array, a new texture array will be produced with the anit-tile textures packed into it, with the _antitile_tarray suffix.

Next, select your terrain's material and turn on the features you want from the "Anti Tile Array Features" drop down. Once enabled, an Anti-Tile Rollout will appear in the material GUI below. Assign the Anti-Tile texture array to the Anti Tile Array property:

Per-Texture properties are available for each feature, but the distance and scale data is shared for all textures in the array.