MicroSplat

**Terrain Blending Module, Documentation**

Overview

The Terrain Blending module allows you to easily blend meshes with the terrain.

Quick Start

Setup couldn't be simpler.

1. Select your terrain and double click on the 'Template Material' on the MicroSplat Terrain component to bring up the shader properties.
2. Turn on "Terrain Blending" in the Shader Generator options.
3. Select your terrain, and press the "Update Terrain Desc"
4. Place an object on your terrain.
5. Add the "MicroSplat Blendable Object" component to your object
6. Adjust the parameters to control the blend
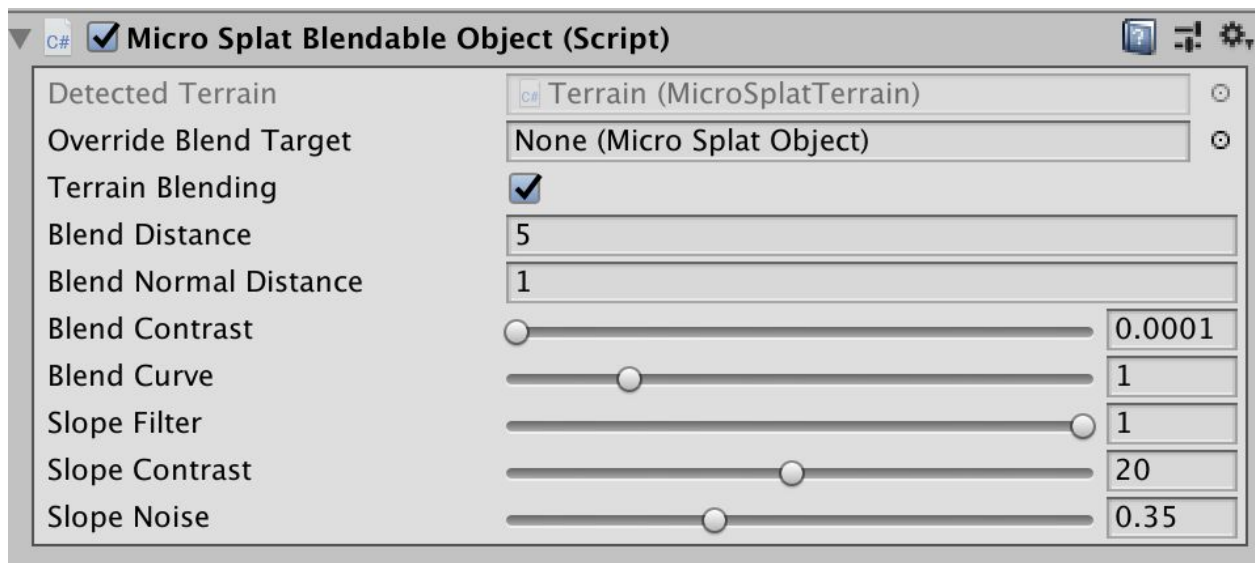
The Blendable Object component has two sections; one for Terrain Blending, and if you have the Snow module installed and turned on, one to put snow onto objects. You may turn either of these features on or off independently. The parameters are covered below:

## Terrain Shader Options

- Detected Terrain

- This shows the terrain that was automatically detected, if any. When the component is enabled, it ray casts down from the center point of the object it is on to find the nearest terrain or mesh terrain.
- Override Blend Target
  - This allows you to specify which terrain the blend should work with. Usually you can just use the autodetected one, but if for some reason the pivot of your object is outside of the terrain bounds, this can be useful.
- Object Normal Blending
  - When enabled, you can give each object a normal map to use when blending the normals
- Disable Alpha
  - By default, theh vertex color's alpha channel is used to adjust the blend. This allows you to use a vertex painting toolset to paint out areas of the terrain on meshes. You can even set the distancee so they entire object is textured like the terrain, then use a vertex painter to paint the areas where the original texture should come tthrough.
- Blend Noise
  - When enabled, a 3d noise of 1 or 3 octaves will be generated to modify the blend area.

Terrain Blending Object Properties

These options are adjusted on each object which blends with the terrain.

- Blend Distance
  - This is the distance over which to perform the blend with the terrain
- Normal Distance
  - This is the distance over which to blend the normals of the terrain and object. When using triplanar texturing, it's often desirable to blend the normal into the object normal faster.
- Blend Contrast

- This changes the blend from a linear blend (soft) to a height map based blend (hard)
- Blend Curve
    - This controls the midpoint of the blend between each surface. Values below 0 will pull the blend towards the ground, and values above one will push it over the object.
- Slope Filter
    - When values below 1 are used, the terrain texturing will get added to the top of objects. This allows you to have moss growing on the tops of rocks, etc.
- Slope Contrast
    - A contrast control for how sharp the transition is for the slope filter
- Slope Noise
    - Allows you to add a bit of noise to the slope transition area, which is derived from the terrain's normal map
- Blend Noise Scale
    - If Blend Noise is on, this will allow you to scale the size of the procedural noise used to break up the blending. This control does not show if Blend Noise is not enabled.
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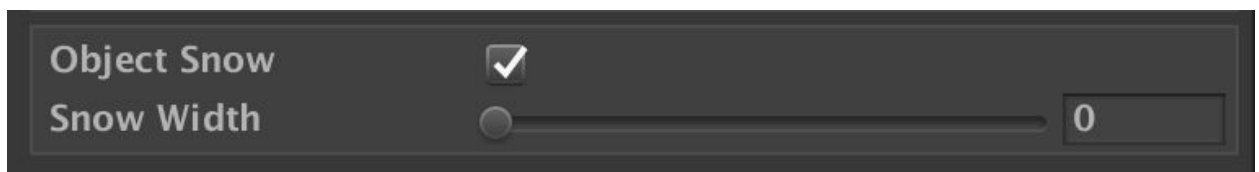
Snow
- Snow Width
    - This controls the amount of snow that appears on an object based on the normal of the surface.

Updating

If you modify the heights of your terrain, you will need to regenerate the terrain blending data on the terrain. Simple select the terrain and press "Update Terrain Blending Data" when you are done.

Objects will update automatically as you move them around.

Restrictions

Currently, Terrain Blending only supports a single mesh per object. If you object has multiple submeshes, Unity will only apply the blend to the first submesh of the object. It is recommended to break these objects into multiple meshes or combine the textures into a single texture page for better performance.

The blending data is named after your terrain object and placed in the MegaSplatData folder along with the other objects your terrains use. If you have multiple terrains sharing the same setup, you should make sure each terrain has a unique name.

You will notice that the component adds a second material to your mesh. Should you wish to remove the blending feature you will want to remove this second material as well. Note that it is best to only add the blending component to meshes which intersect the terrain, as you will pay an additional rendering cost for them.

Useful Info

The terrain blending feature generates a special shader to perform the blend with the terrain. This shader is recreated every time a feature is changed on the main shader, and any change to the shader properties done in the editor is also propagated to this shader via the MicroSplatTerrain Syncing mechanism (which can be called from code via MicroSplatTerrain.SyncAll();)

Blending with the terrain can create undesirable results. Wide blending areas can look amazing, but since you are blending both the texturing and lighting data, it can cause the backside of an object to appear brighter than you would expect, as it's blending to a surface which faces a completely different direction. In the above shot, the lighting data is interpolating between the ground (lit) and the back of the rock (unlit), which makes the back side of the rock look like it's illuminated when it shouldn't be. Tightening up the blend area can make this less pronounced, either by decreasing the blend size or adjusting the blend curve.

Additional Options

When the Anti-Tiling module is installed and Detail Noise, Distance Noise, or Distance Resampling are enabled, options are available under the Terrain Blending option to disable each of these features on the blending shader. This is primarily useful with Triplanar Texturing enabled, as these features use standard UV mapping, and may cause streaking issues when blending on vertical surfaces.

Hidden tricks

When Draw Instanced is enabled, the terrain blending system internally uses the instancing height and normal map to sample the terrain data instead of the terrain descriptor. This means that if your using something like Map Magic to dynamically generate your terrain, you can still use Terrain Blending on your objects. Note that it also means you can save the memory of the terrain descriptor if you are not using it for other features (like dynamic streams).