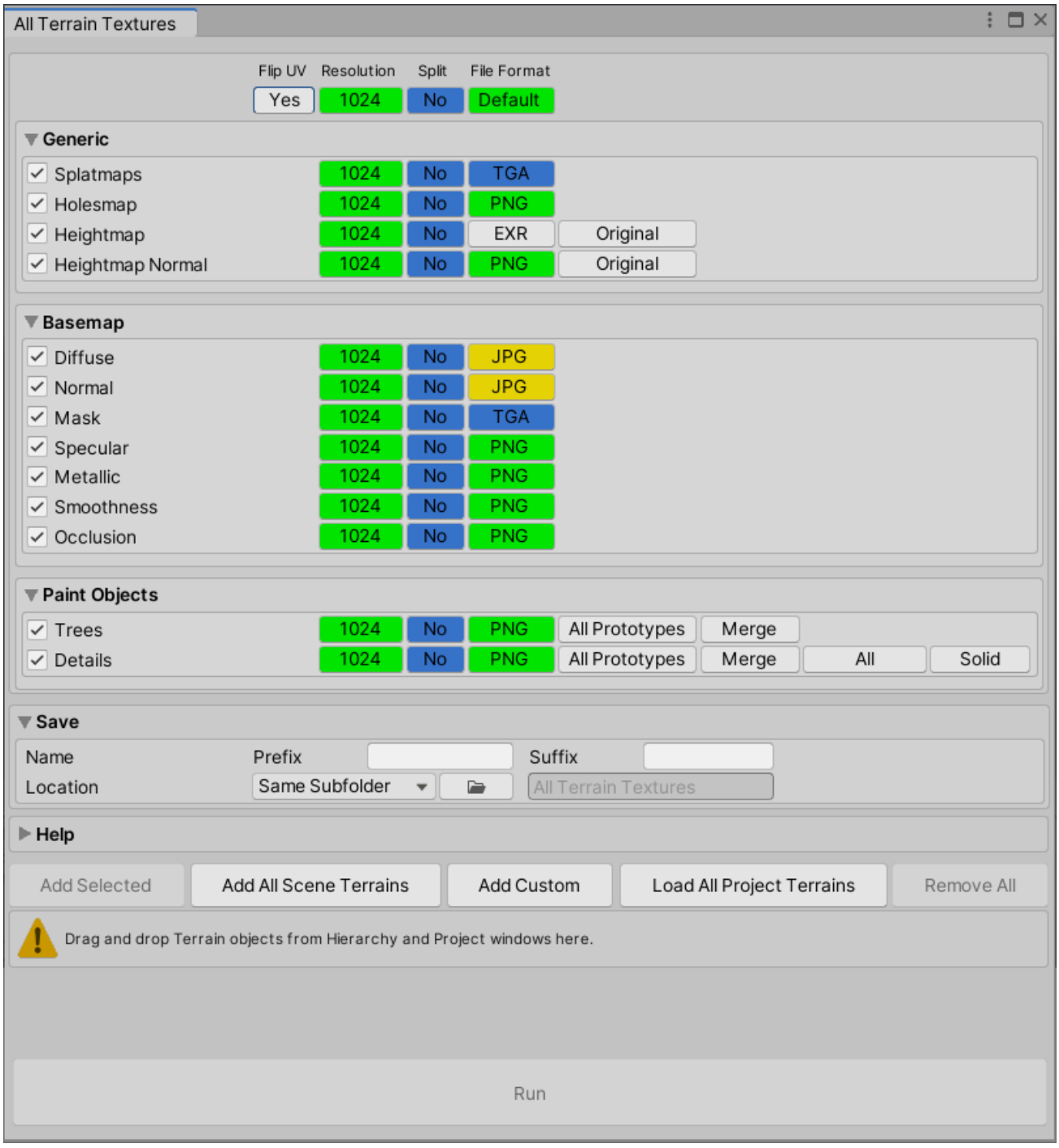
# All Terrain Textures


amazingassets.world

# Editor Window

**All Terrain Textures** editor window can be open from **Unity Main Menu** -> **Window** -> **Amazing Assets**. Target terrains can be selected using buttons available in the bottom side of the window or by simple drag & drop terrain objects from Hierarchy and Project windows here, including entire folders with terrain data.



**Flip UV** – Flips exported texture horizontally. This option is used by all textures.
UV coordinates of a Terrain is flipped horizontally inside Unity Engine and if exported textures are to be used by standard meshes then this option must be set to **Yes**.
**Resolution** – Controls exported texture size. By **Default** texture size is read directly from TerrainData.

Note: Precision and quality of the **Generic** and **Paint objects** textures do not increase if **Resolution** is bigger than they are defined in TerrainData object. For those maps, better use **Default** value.
However **Basemap** textures quality directly depend on this value.

**Split** – Splits texture in 2D grid. With the coordinate center in the left-bottom corner.

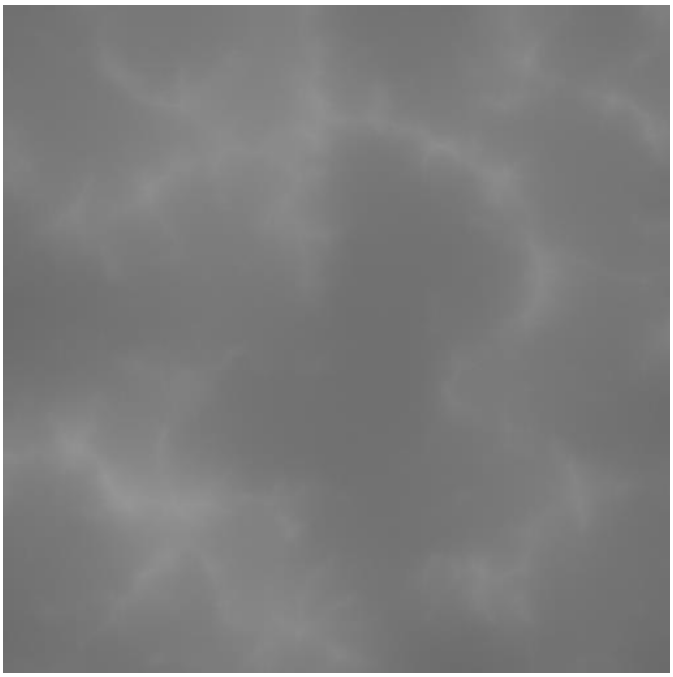

Note: When splitting **Basemep** textures, **Resolution** defines size of each generated piece of a texture. For **Generic** and **Paint Objects** textures it defines size of the entire atlas.
For example if **Resolution** is set to 1024 and **Split** to 4x4, then each generated **Basemap** texture will have 1024 in resolution, but **Generic** and **Paint Objects** textures - 256.

Note: Even **All Terrain Textures** splits textures precisely, importing low resolution textures grid in Unity may create visible edge seams because of Unity Bilinear filter.

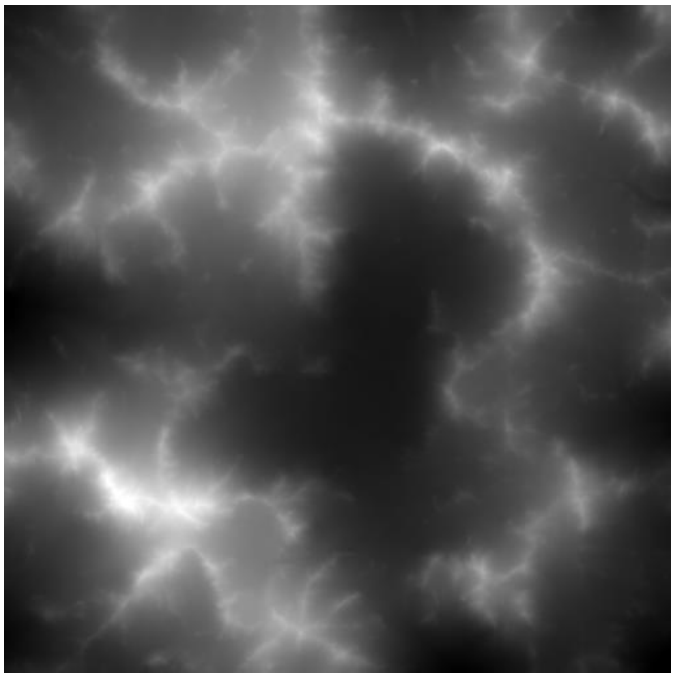
**File Format** – Generated texture file format: TGA, PNG, JPG and EXR.

| Note: Uncompressed 16 bit **Generic** Heighmap texture is saved only in EXR format. |
|---|

**Heightmap Remap** – Adjusts heightmap values in the way that minimal value is always 0 (zero) and maximum is 1.



(Original Heightmap)

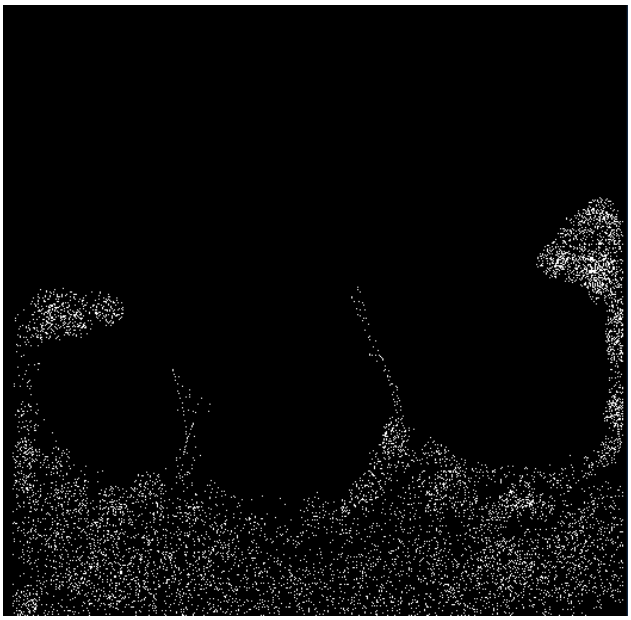


(Remapped Heightmap)

### Paint Objects

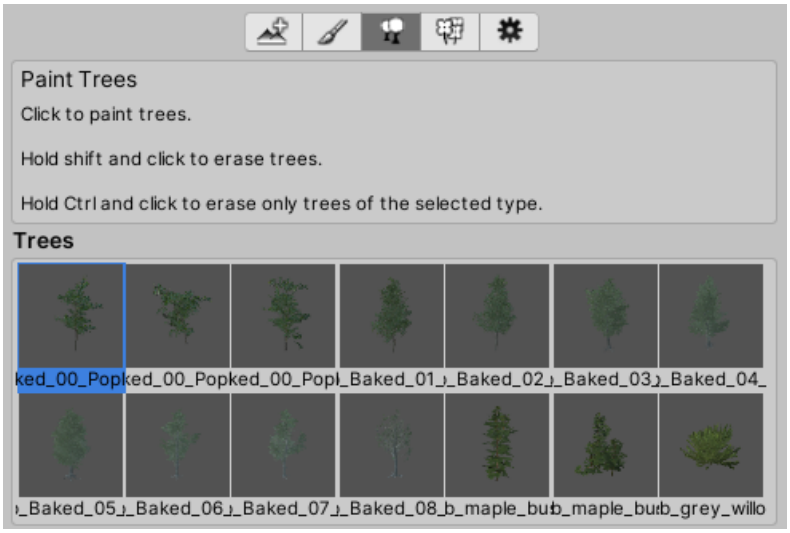
When exporting terrain paint objects, each pixel in the texture represents individual tree/grass/detail in the Terrain space.

(Tree distribution over the terrain)



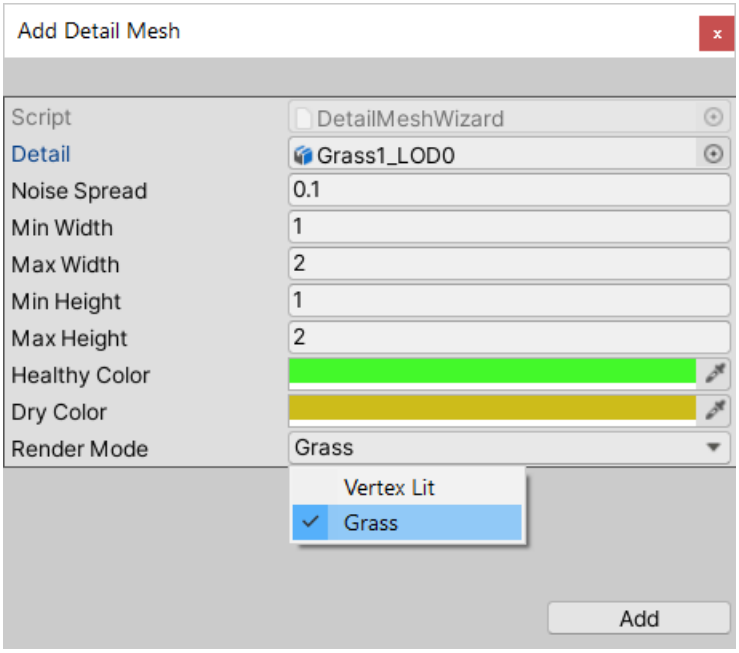
(Each pixel inside exported texture represents a tree)

**Prototypes** – Allows choosing exact tree/detail prototype by index or used prefab, defined inside TerrainData paint data array.




**Merge** – Exported textures can be merged together as one file or saved separately for each used prefab.

**Render Mode** – Exported detail type based on its render mode: Grass, Billboard Grass or Vertex Lit. Detail mesh render mode is defined when creating it in the terrain's Paint Details tab.



**Filter** – When exporting terrain detail meshes, each pixel inside texture represents terrain detail patch. Unity does not store position of each individual Grass or Detail mesh like it does with Trees. Instead in each patch it stores number (count) of the dynamically generated meshes. Those meshes later are placed and rendered by a terrain shader.
As in a texture it is not possible to represent count, each pixel of exported detail texture can be:

- **Solid** – Pixel is white if patch stores any number of detail meshes.
- **Normalized** – Same as **Solid**, but each pixel is divided by patch with maximum details count.

**Save Location** – By default generated texture are saved in the same folder as the source terrain, but inside All Terrain Textures (terrain name) subfolder.
When choosing **Custom Folder** make sure Unity has access permissions there.

# Run time API

**All Terrain Texture** extension methods can be brought into scope with this using directive:

C#

```
using AmazingAssets.AllTerrainTextures;
```

Unity TerrainData class now will have additional **`AllTerrainTextures`** method with three helper subclasses for exporting each group of the textures.

**Generic**

```
terrainData.AllTerrainTextures(…,…).Generic.Splatmaps(…);
terrainData.AllTerrainTextures(…,…).Generic.Holesmap(…);
terrainData.AllTerrainTextures(…,…).Generic.Heightmap(…);
terrainData.AllTerrainTextures(…,…).Generic.HeightmapNormal(…);
```

**Basemap**

```
terrainData.AllTerrainTextures(…,…).Basemap.Diffuse(…);
terrainData.AllTerrainTextures(…,…).Basemap.Normal(…);
terrainData.AllTerrainTextures(…,…).Basemap.Mask(…);
terrainData.AllTerrainTextures(…,…).Basemap.Specular(…);
terrainData.AllTerrainTextures(…,…).Basemap.Metallic(…);
terrainData.AllTerrainTextures(…,…).Basemap.Smoothness(…);
```

**PaintData**

```
terrainData.AllTerrainTextures(…,…).PaintData.Trees(…);
terrainData.AllTerrainTextures(…,…).PaintData.Details(…);
```

Each method has 2 additional overridden methods for extracting textures array by 2D grid or individual texture from 2D grid.

Note: **All Terrain Textures** extracts data only from Unity TerrainData. If terrain uses custom rendering shader or third-party object placement tools, make sure they save corresponding data inside Unity TerrainData object, otherwise **All Terrain Textures** cannot extract non-existing data.

Note: When using run-time API, make sure **AllTerrainTextures.shader** is included in the **Always-included Shaders** array of the Graphics Settings.

```
AllTerrainTextures(bool flipUVHorizontal, bool unpackData)
```

**flipUVHorizontal** – Flips texture UV horizontally.
**unpackData** – Unpacks texture data for saving it into a file (for editor use). If texture after extracting is directly used in material (like in the example scenes), then this value must be **false**.

```
Texture2D[] Splatmaps(int resolution)
```

**resolution** – Extracted texture resolution in the range of 32 - 8192. 0 for default resolution.

```
Texture2D[] Splatmaps(int resolution, int gridSizeX, int gridSizeY);
```

**resolution** – Extracted texture resolution in the range of 32 - 8192. 0 for default resolution.
**gridSizeX, gridSizeY** – Size of 2D grid for texture split.

```
Texture2D[] Splatmaps(int resolution, int gridSizeX, int gridSizeY, int positionX, int positionY);
```

**resolution** – Extracted texture resolution in the range of 32 - 8192. 0 for default resolution.
**gridSizeX, gridSizeY** – Size of 2D grid for texture split.
**positionX, positionY** – Extracted texture position on 2D grid.

Note: When splitting **Basemep** textures **resolution** defines size of each generated piece of a texture. For **Generic** and **Paint Objects** textures it defines size of the entire atlas.
For example if **resolution** is set to 1024 and split 2D grid size is 4x4, then each generated **Basemap** texture will have 1024 in size, but **Generic** and **Paint Objects** textures - 256.

Note: Even **All Terrain Textures** splits textures precisely, importing low resolution textures grid in Unity may create visible edge seams because of Unity Bilinear filter.

Note: Two last texture splitting methods are the same for all other texture extractors and will not be explained for each method individually below.

```
Texture2D Holesmap(int resolution)
```

**resolution** – Extracted texture resolution in the range of 32 - 8192. 0 for default resolution.

```
Texture2D Heightmap(int resolution, bool EXR, bool remap)
```

**resolution** – Extracted texture resolution in the range of 32 - 8192. 0 for default resolution.
**EXR** – Extracts uncompressed Heightmap data. Has effect only if texture is saving into a file. For run-time use is not necessary.
**remap** – Remaps Heightmap data in the way that minimal value is always 0 (zero) and maximum 1.

```
Texture2D HeightmapNormal(int resolution, bool remap)
```

**resolution** – Extracted texture resolution in the range of 32 - 8192. 0 for default resolution.
**remap** – Calculates Normalmap based on Heighmap's remapped value.

```
Texture2D Diffuse(int resolution)
```

```
Texture2D Normal(int resolution)
```

```
Texture2D Mask(int resolution)
```

```
Texture2D Specular(int resolution)
```

```
Texture2D Metallic(int resolution)
```

```
Texture2D Smoothness(int resolution)
```

**resolution** – Extracted texture resolution in the range of 32 - 8192. 0 for default resolution.
If texture is split, defines size of each piece of a texture.

Note: Scriptable render pipelines do not support **Specular**, **Metallic** and **Smoothness** properties for terrain rendering. Instead is used values from **Mask** Texture.

Note: By default **Diffuse**, **Specular** and **Metallic** textures Alpha channel contains Smoothness value.

```
Texture2D Trees(int resolution, int prototypeIndex)
```

**resolution** – Extracted texture resolution in the range of 32 - 8192. 0 for default resolution.
**prototypeIndex** – Extracted tree prototype index, defined in the TerrainData paint data array.

```
Texture2D Trees(int resolution, UnityEngine.Object prefab)
```

**resolution** – Extracted texture resolution in the range of 32 - 8192. 0 for default resolution.
**prefab** – Extracts trees that are using this prefab/gameobject only.

```
Texture2D[] Trees(int resolution, bool mergeTextures)
```

**resolution** – Extracted texture resolution in the range of 32 - 8192. 0 for default resolution.
**mergeTextures** – If enabled all trees are extracted in one texture, otherwise separately by index.

```
Texture2D Details(int resolution, int prototypeIndex, FILTER filter)
```

**resolution** – Extracted texture resolution in the range of 32 - 8192. 0 for default resolution.
**prototypeIndex** – Extracted detail prototype index, defined in the TerrainData paint data array.
**filter** – Extracted texture's pixel type:

- **Solid** – Pixel is white if **patch** stores any number of detail meshes.
- **Normalized** – Same as **Solid**, but each pixel is divided by **patch** with maximum details count.

```
Texture2D[] Details(int resolution, UnityEngine.Object prefab, DETAIL_RENDER_MODE detailRenderMode,
                    FILTER filter, bool mergeTextures)
```

**resolution** – Extracted texture resolution in the range of 32 - 8192. 0 for default resolution.
**prefab** – Extracts detail that are using this prefab/gameobject/texture only.
**detailRenderMode** – Extracted detail mesh type defined by its render mode: Grass, Billboard Grass, Vertex Lit or All.
**filter** – Extracted texture's pixel type:

- **Solid** – Pixel is white if **patch** stores any number of detail meshes.
- **Normalized** – Same as **Solid**, but each pixel is divided by **patch** with maximum details count.

**mergeTextures** – If enabled all details will be extracted as one texture, otherwise separately by index.

```
Texture2D[] Details(int resolution, DETAIL_RENDER_MODE detailRenderMode,
                    FILTER filter, bool mergeTextures)
```

**resolution** – Extracted texture resolution in the range of 32 - 8192. 0 for default resolution.
**detailRenderMode** – Extracted detail mesh type defined by its render mode: Grass, Billboard Grass, Vertex Lit or All.
**filter** – Extracted texture's pixel type:

- **Solid** – Pixel is white if **patch** stores any number of detail meshes.
- **Normalized** – Same as **Solid**, but each pixel is divided by **patch** with maximum details count.

**mergeTextures** – If enabled all details will be extracted as one texture, otherwise separately by index.