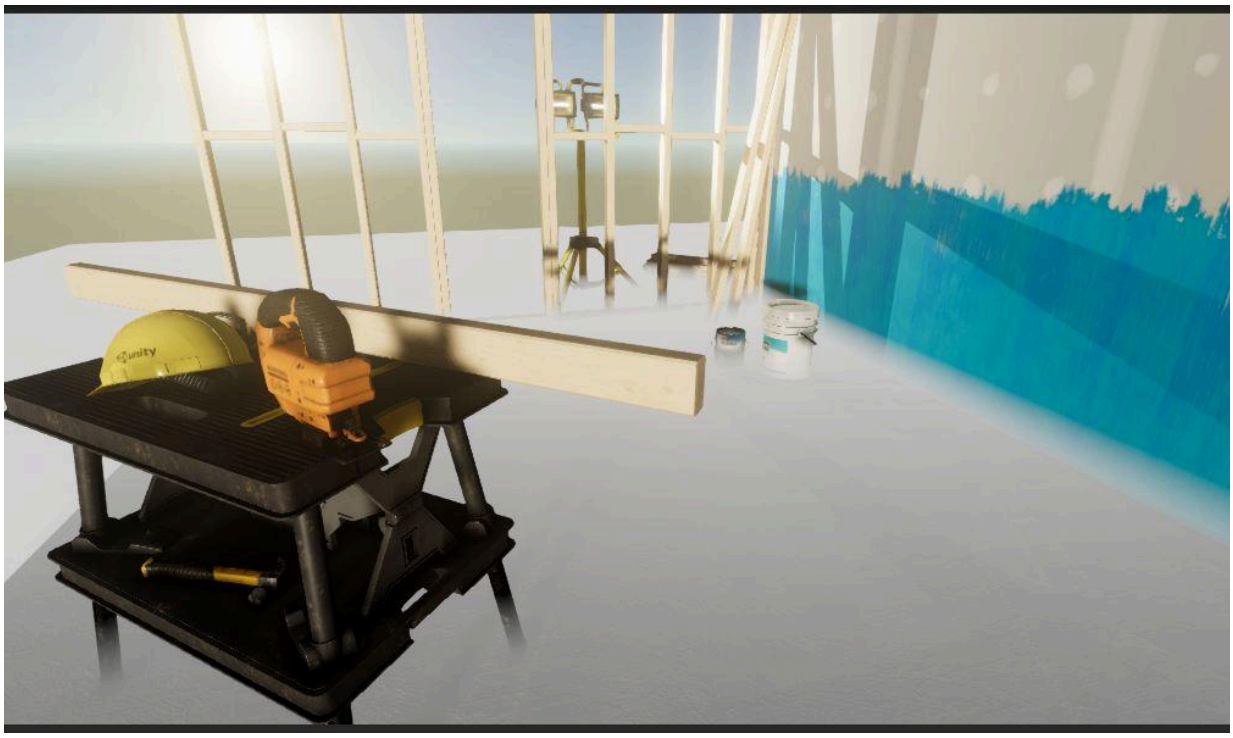

# Simple Height Fog Effect

By Joseph Y.

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## Overview

The simple height fog effect is a shader effect that simulates the look of a height based fog on a plane mesh. The package comes in two variants, one being a simple height fog (using Unity's built in particle unlit shader which can be used to re-create a height fog) and a two color height fog. It is designed to run on the Unity URP pipeline and Unity 6, but theoretically, it could run on Unity 2022 or older versions of unity and other pipelines but it is untested.

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## Installation

Before you begin:

1. Ensure you use the Universal Render Pipeline (URP) and Unity 6 (6000.0.25f1).
2. Ensure you have installed the necessary packages, such as Shader Graph.

The effect is contained in a Unity package you can import into Unity. To do this, navigate to Assets > Import Packages, select the Unity package, and open it. A popup will appear showing the contents of the package. Choose to import everything from the package and click OK. They will be imported into the Unity project under the Fog folder.
After importing, you should see several specific items, including 2 prefabs (one is the simple height fog and the other being the two color one), a noise texture, 2 material for the prefabs, and the two color height fog shader itself.
To apply the effect:

1. Create a new material from the shader, or use the provided one if you want to.
2. Drag the material onto a plane gameobject/mesh that you want to apply the effect on, or go to the object's inspector panel and change its material to the material with the 2 color height fog shader.
3. [Optional] If you want to use the simple fog one like the one I implemented, create a new material, go to Universal Render Pipeline > Particles > Unlit, then enable soft particles and ensure the material's surface type is on transparent instead of opaque.
4. Optionally, you can use one of the prefabs by clicking and dragging one of the prefabs into the scene.
    a. You can scale the plane to make the height fog area bigger or smaller.

You can adjust the effect by going to its material and changing its parameters.

## Using the simple height fog effect

In the simple height fog effect implementation, there are 2 values that you can adjust, the near and far attributes under soft particles. The main one you want to adjust is the far one. Adjusting the far one will change how the fog looks due to the far attribute controlling the far plane of the fog effect. The bigger the value on the far attribute, the less foggy it is for higher heights or overall in general.

To change the color of the fog, go to the base map, click on the color input to change its color.

## Using the two color height fog effect

To adjust the effect, go to the material you are using for the height fog to adjust it. Here are the details about the parameters:

1. **Primary Fog Color:** The primary color for the fog. The color's alpha has an effect on the fog.
2. **Secondary Fog Color:** The secondary color for the fog. The color's alpha has an effect on the fog.
3. **Fog Min Height:** Adjust the minimum height of the height fog. Recommended to leave it at 0.
4. **Fog Max Height:** Adjust the maximum height of the height fog. The higher it is, the more dense it looks and the lesser it will blend with its environment.
5. **Fog Opacity:** Adjusts the overall color alpha of the fog. The lower the values, the more transparent the fog will be.
6. **Fog Particle Fade Amount:** Affects the density and smoothness of the fog by adjusting the fade amount in the soft particles in the height fog. The higher the values, the more the fog fades out. At 0, the fog will not blend with its environment.
7. **Noise Texture:** The noise texture that we use to apply onto the fog for texture.
8. **Tiling:** Affects the tiling of the noise texture in the fog.
9. **Offset:** Affects the offset of the noise texture in the fog.
10. **Noise Scale:** Affects the scale of the noise texture in the fog.
11. **Noise Movement:** Affects the animation direction of the noise texture in the fog. Primary based on x and y cords dictating the direction of its animation.

12. **Noise Threshold:** Affects the influence of the secondary fog color on the noise texture. The higher it is, the more the secondary fog color influences the noise texture overall.
13. **Noise Edge Softness:** Affects the softness on the noise texture's edges (the intersection between black and white areas).

## Credits

Some parts of the code is adapted from Unity Technologies's Particles Unlit code, which is found from https://github.com/Unity-Technologies/Graphics/blob/master/Packages/com.unity.render-pipelines.universal/ShaderLibrary/Particles.hlsl

or in here, https://github.com/Unity-Technologies/Graphics/tree/master/Packages/com.unity.render-pipelines.universal within Shader or ShaderLibrary folder

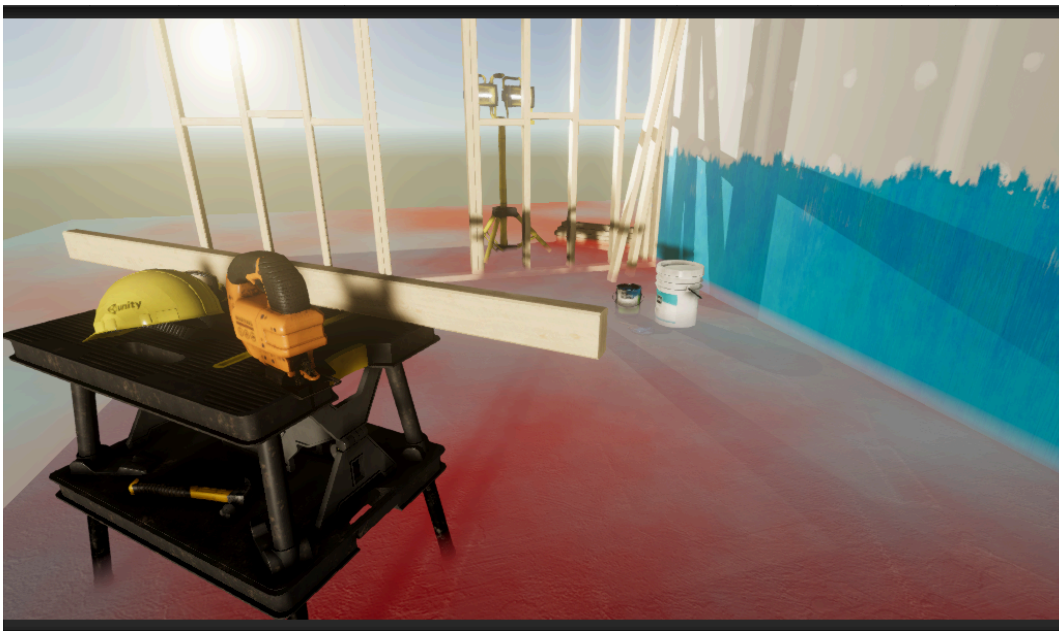
Some of the code is adapted from my other effects, like the Volumetric Spotlight Shader Graph and Gradient Fog Effect.

The method used to create the simple height fog effect is from this Youtube video by Vanmillion Studios, https://www.youtube.com/watch?v=-s7_l3TXWPM.

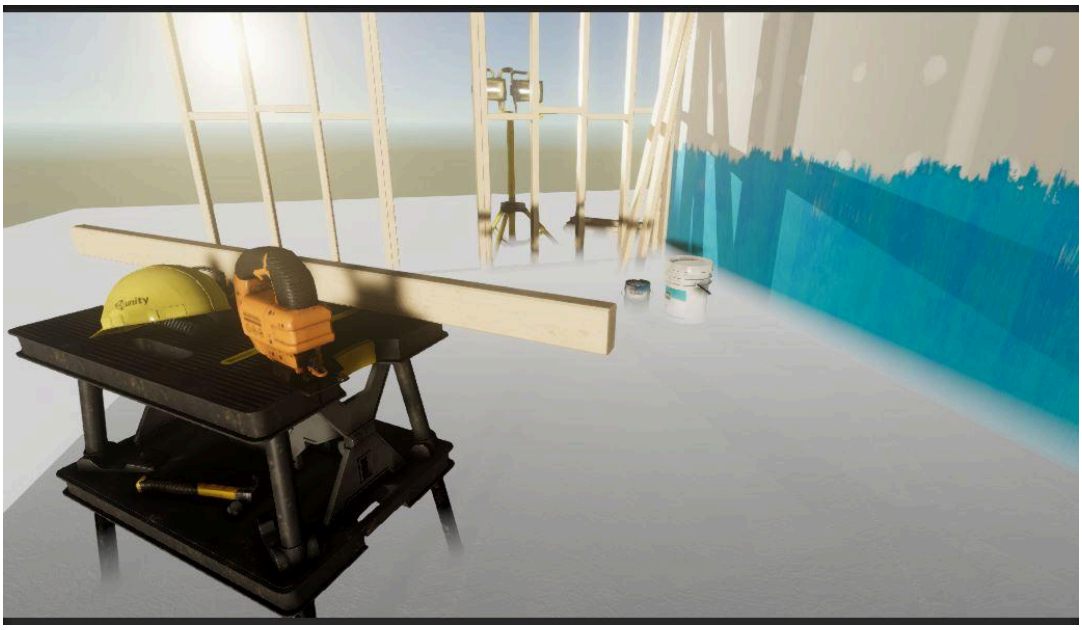
## Update Log

V0.9: The base implementation of the post processing.

## Example Screenshots



**What the two color height fog effect looks like with the effect on, the red and off-white color is just used for demonstration purposes only to make the fog more apparent.**



**What the simple height fog effect looks like with the effect on.**