
Fog Volume

Overview

Flexibility

Fog Volume can emulate any atmosphere you may imagine; a sunny day, a sand storm in the desert, a sunset in the beach... everything is possible.

Realism

Convincing atmospheres can be easily achieved with clouds, dust, fog and light effects.

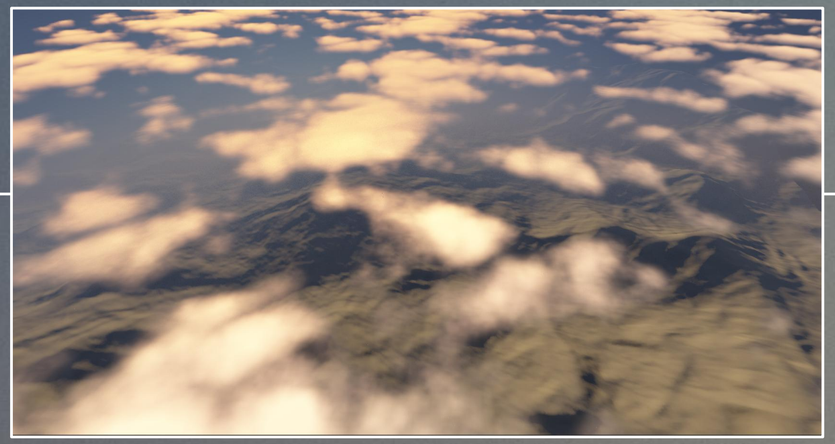
Overview

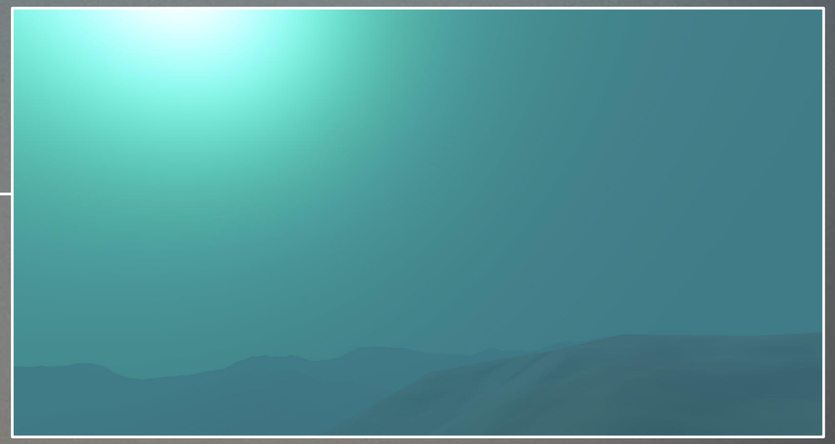
No post effect

See it in action in Scene view without having to play it in Game view

From stratosphere to underwater

Any ambient you may need can be done with Fog Volume



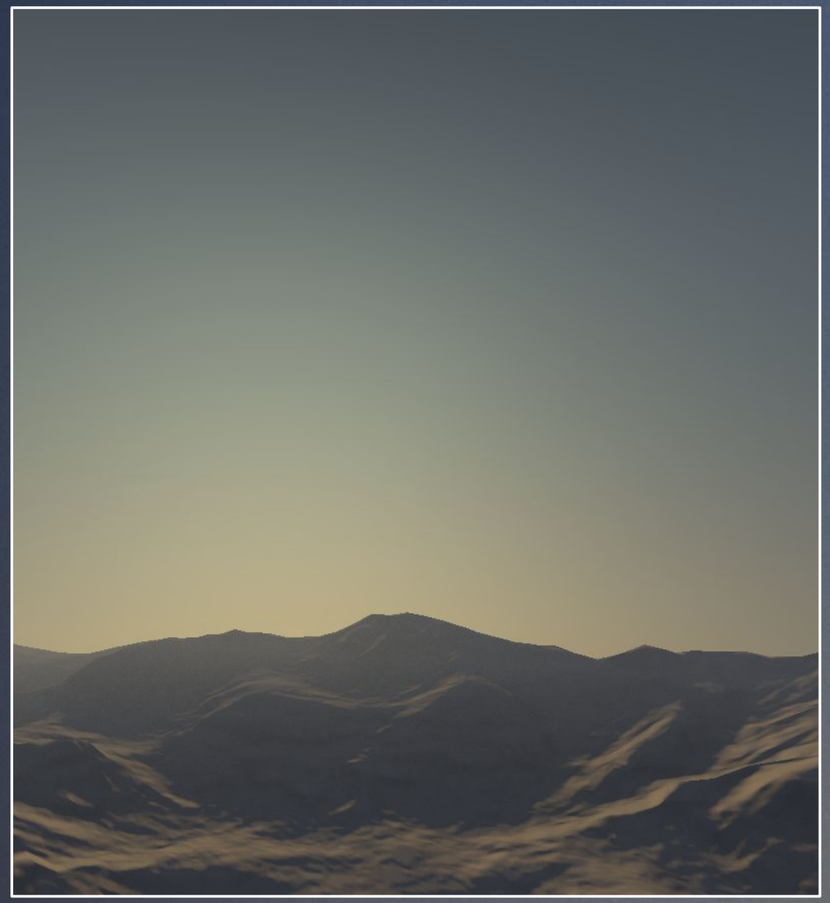


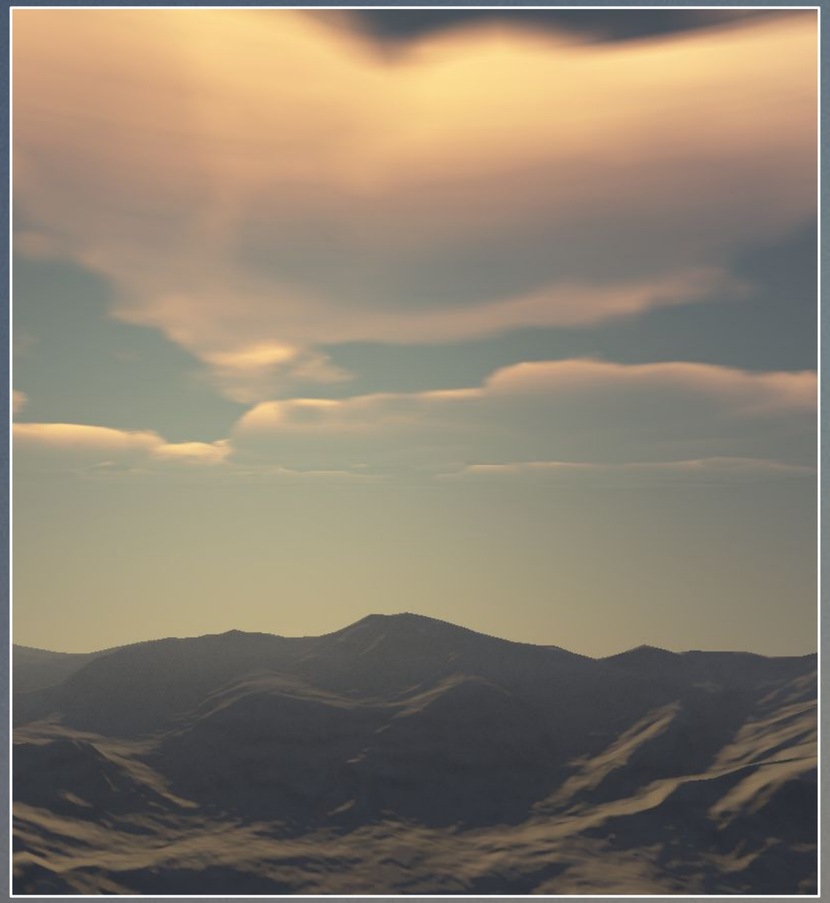
Fog types

Colored

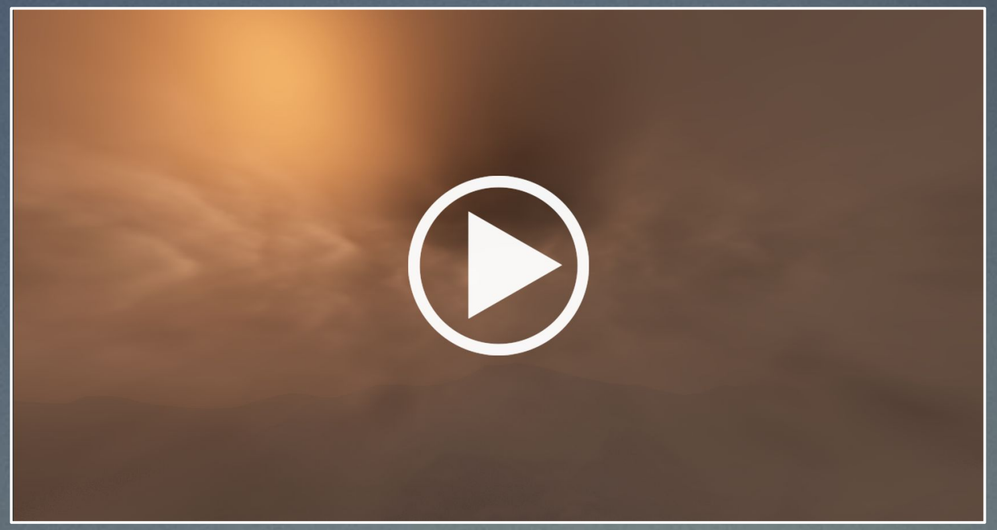
Volumetric

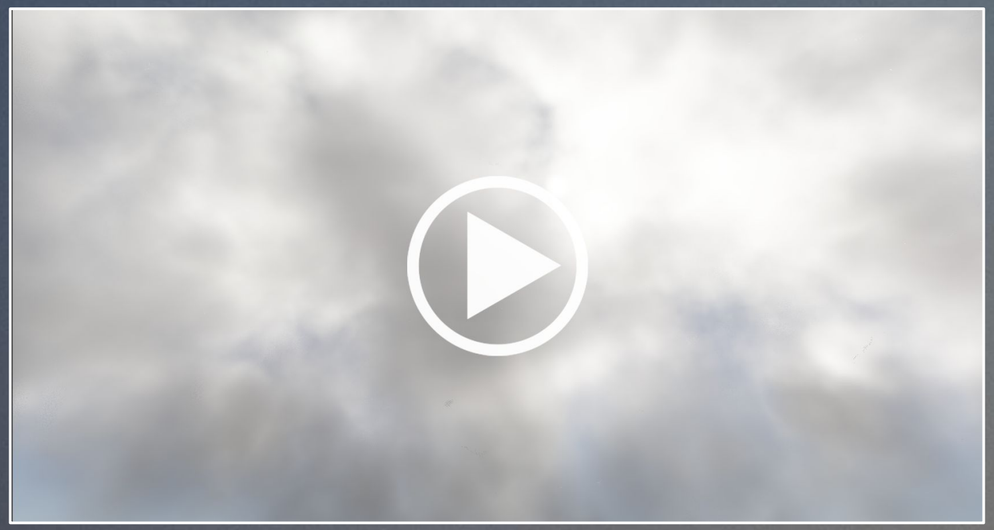
Homogeneous

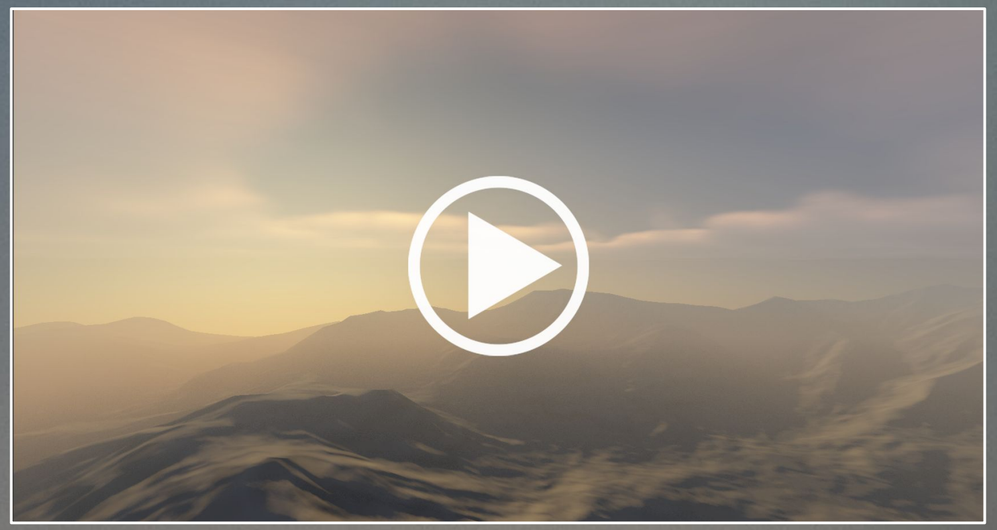




Demos

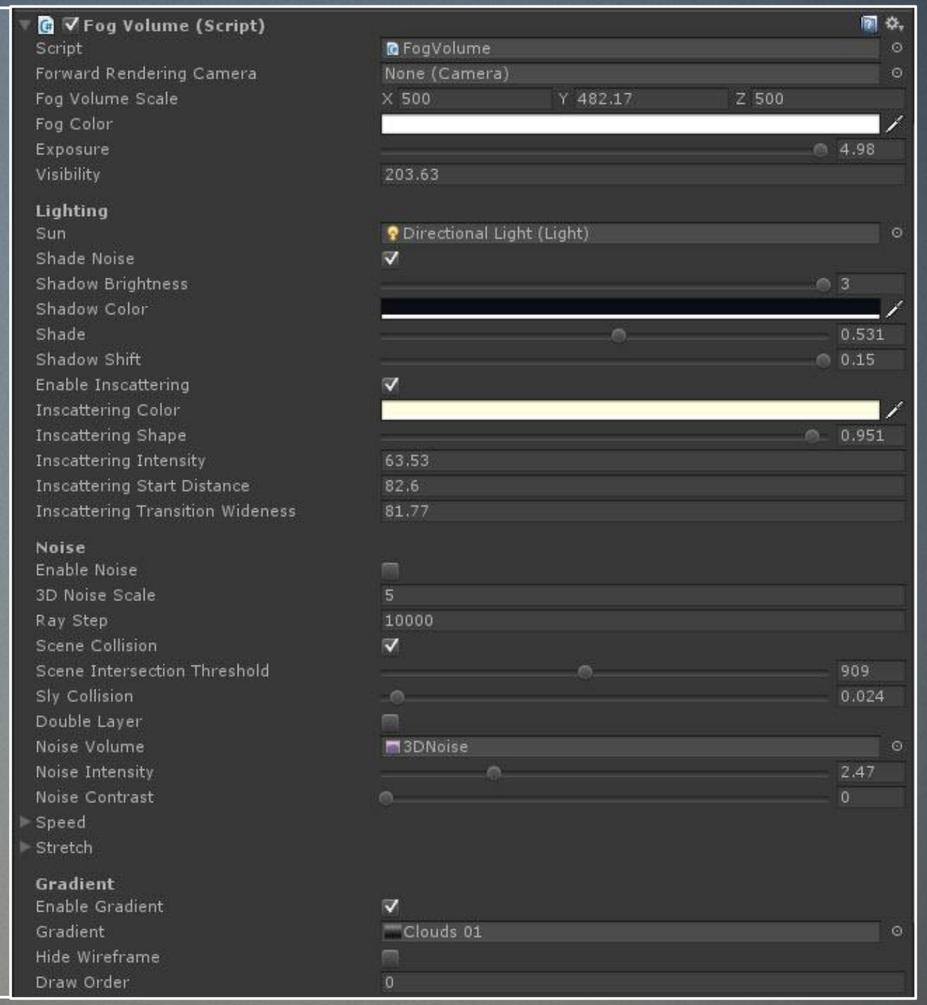






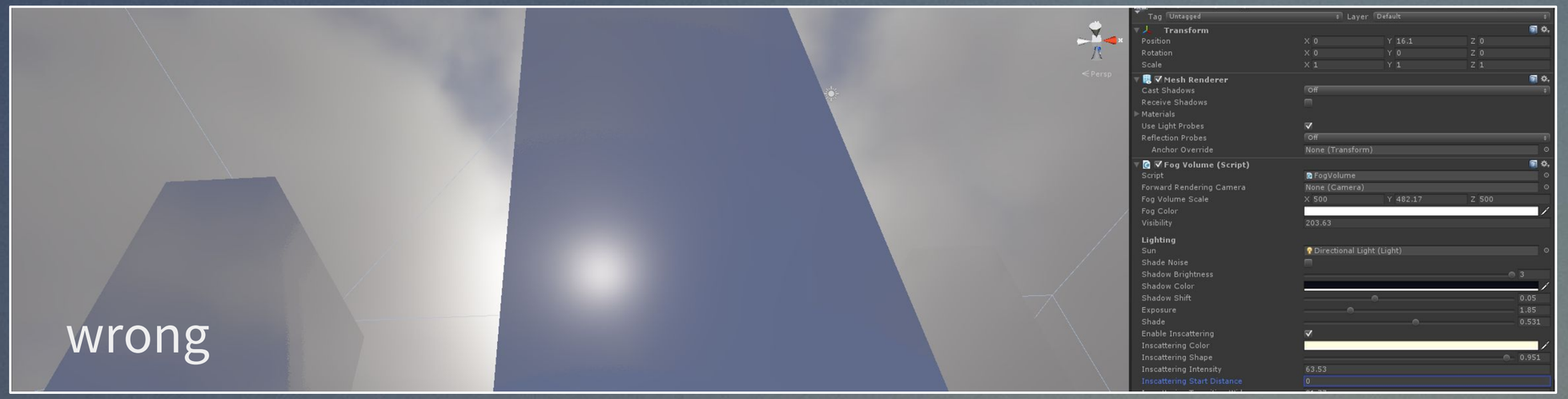
Parameters

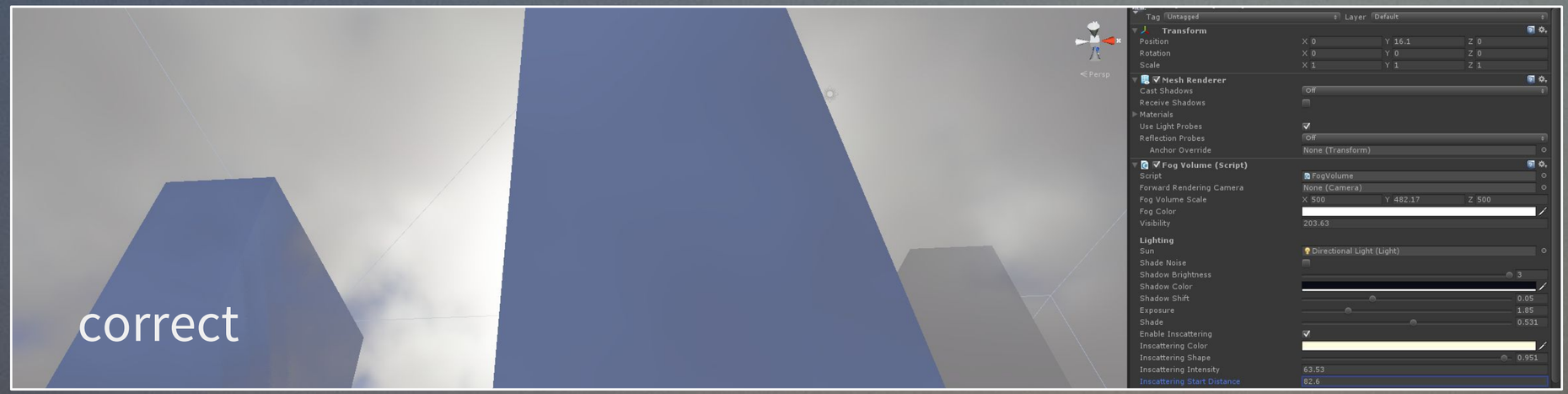
- Forward rendering camera: in case your game runs a forward camera or oculus vr, it is recommended to link the camera in this slot
- Fog Volume Scale: volume size
- Fog Color: global color, affects fog, noise and gradient.
- Exposure: overexposes the final color
- Visibility: fog density. Won’t affect noise.
- Sun: sun is used for lighting effects.
- Shade Noise (bool): naive shading method.
- Shadow Shift: Shadow direction follows Sun direction. This slider will control how displaced is the shadow.
- Enable In-scattering (bool): turn on or off in-scattering
- In-scattering Color: incident light color
- In-scattering shape: isotropy / anisotropy balance.
- In-scattering Intensity: overexpose effect



Parameters

- In-scattering start distance: you can make this effect to appear only beyond a given distance





Parameters

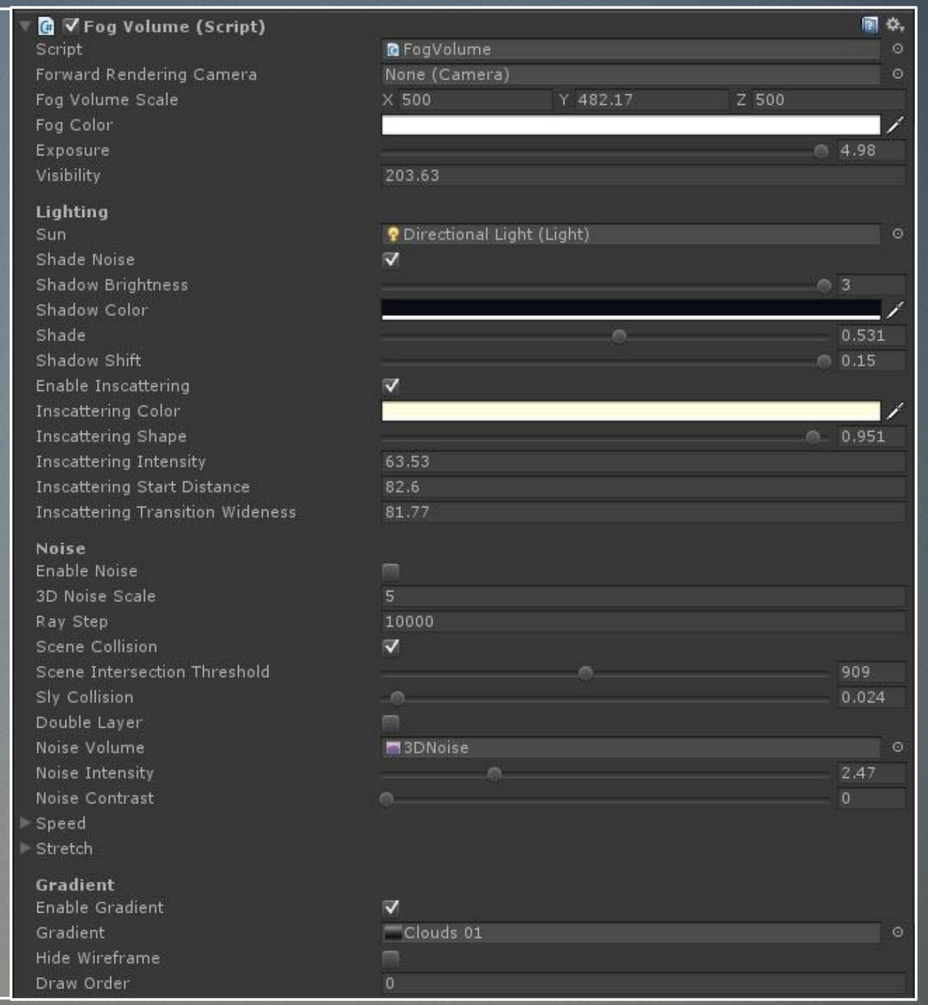
- In-scattering transition wideness: used to adjust the fade size, so it starts with a soft transition. Let's see how to tweak it:

Parameters

In an open landscape we can make it to start softly at 0

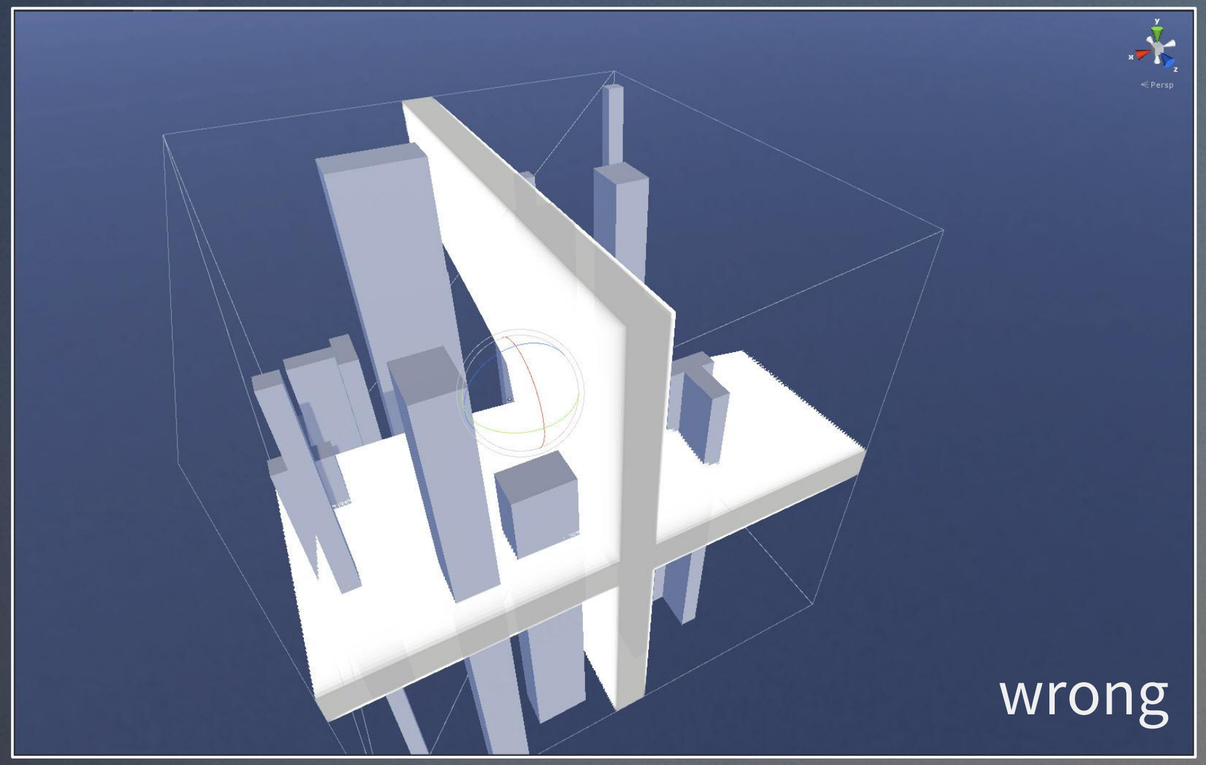
Parameters

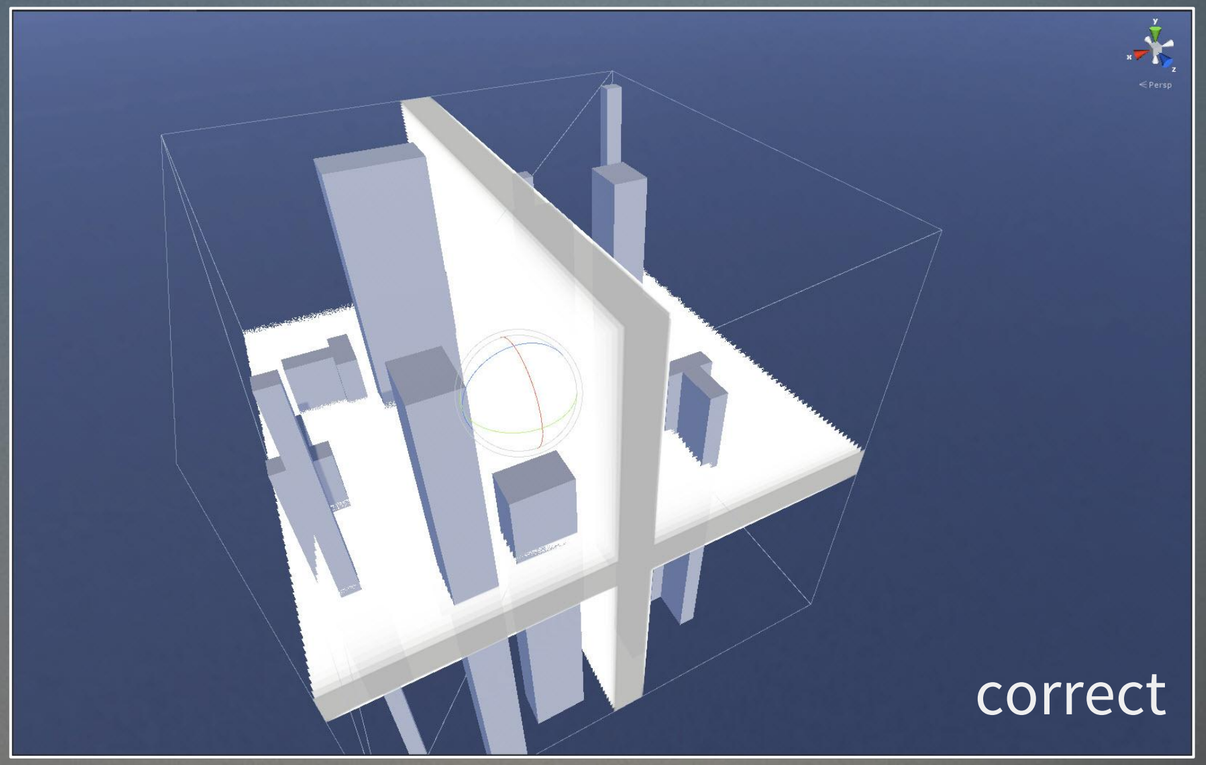
- Enable Noise (bool): volumetric noise
- 3D Noise scale: texture tile. Notice that cost increases with texture repetition.
- Ray step: texture coordinates are computed using raymarching. We have to set the ray stop position with this value. We will see this more in depth later.
- Scene collision: an important feature is scene collision. Having it set to ON helps performance because rays are killed earlier.
- Scene intersection threshold: we have to manually adjust the collision range



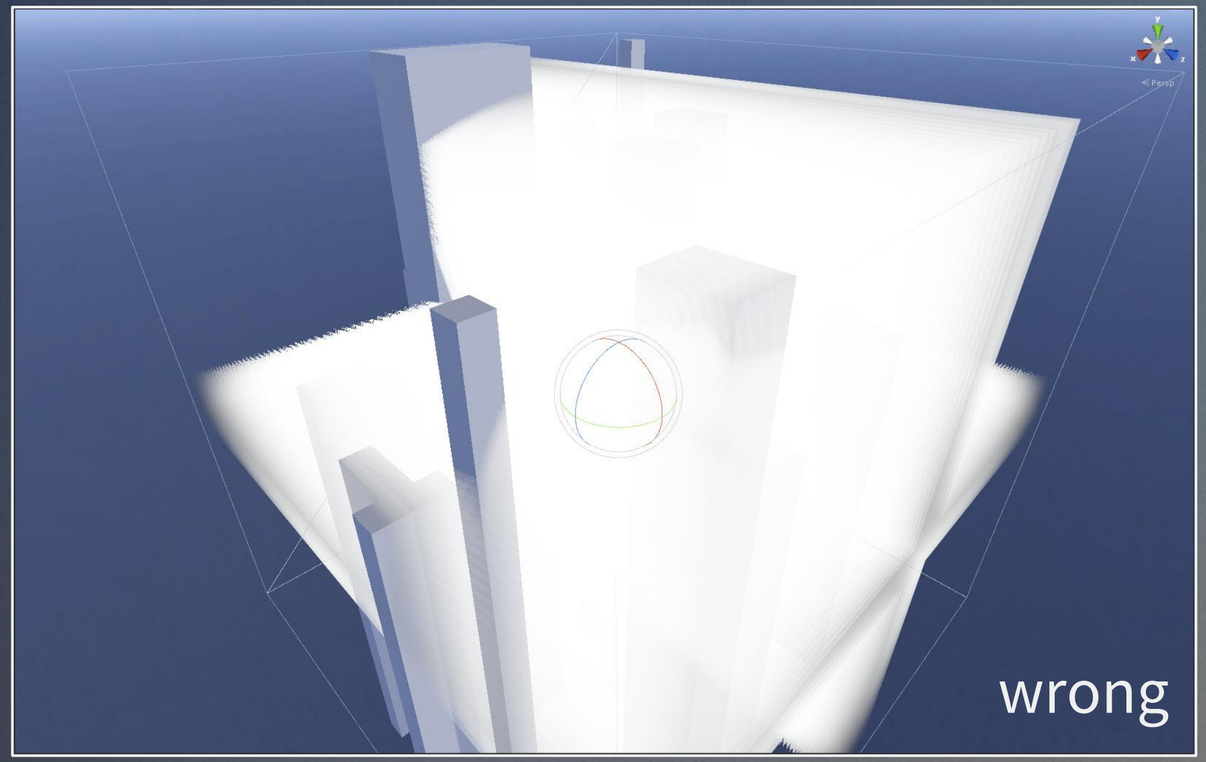
Handbook: Ray step

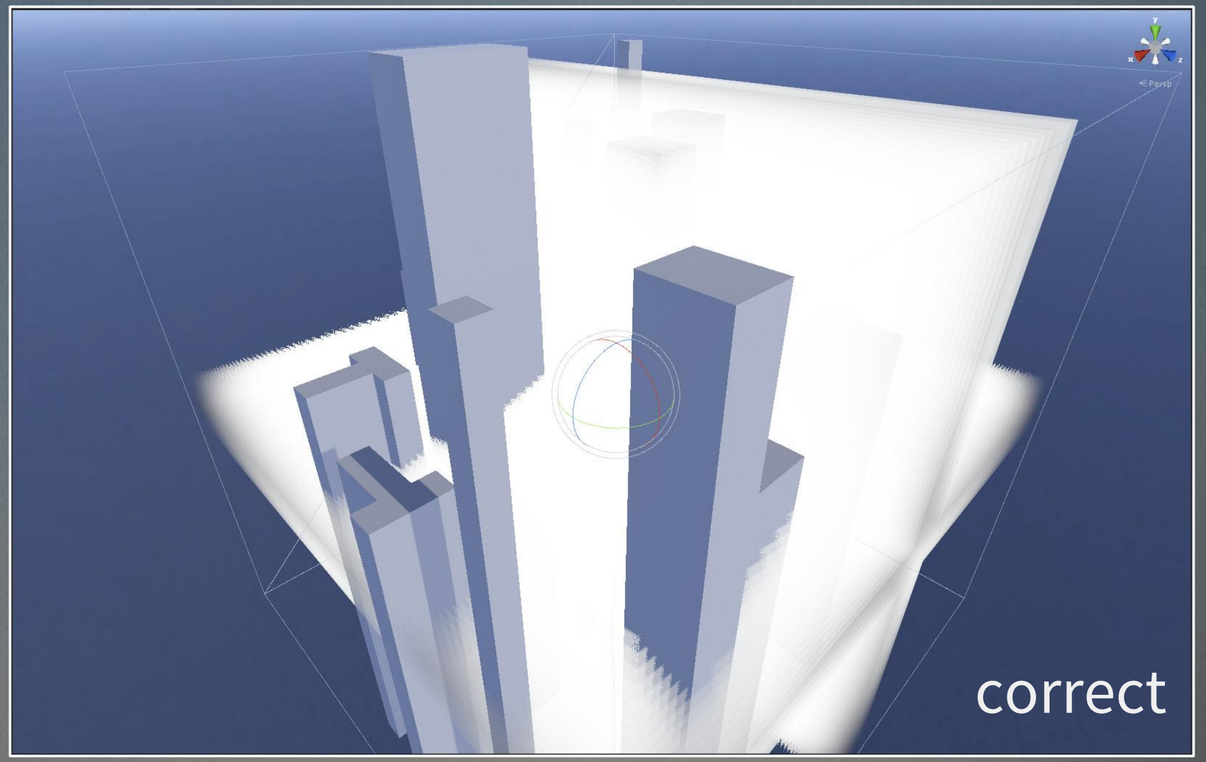
It’s important to set a big enough “Ray step” value. To make it easy, I recommend to disable noise and turn on Gradient. Now use a debug texture like “Cross”, located in /FogVolume/Gradients/. You should increase “Ray step” until the texture is in contact with every side of the volume. Now move around to check everything is fine.





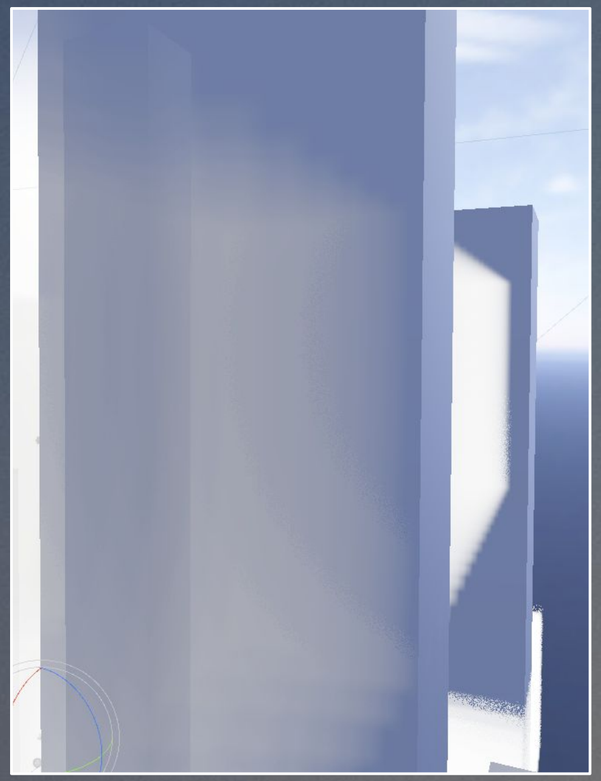
Finding the correct intersection value is a bit tricky. Stay using a gradient like “Cross” and play around with “Scene Intersection Threshold” from different distances and points of view until what you see makes sense.

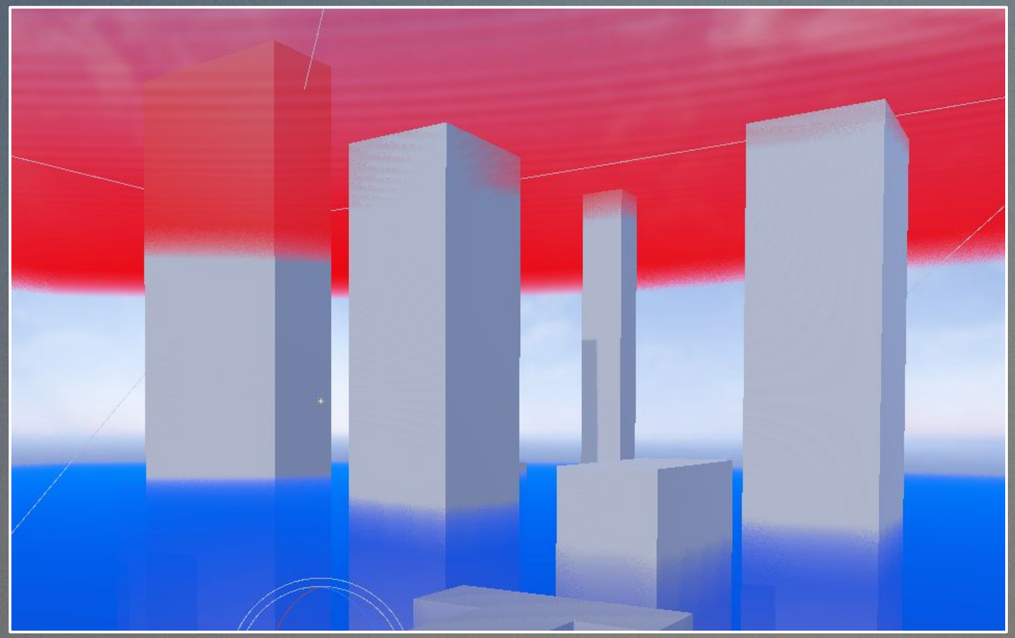




Handbook: Collision

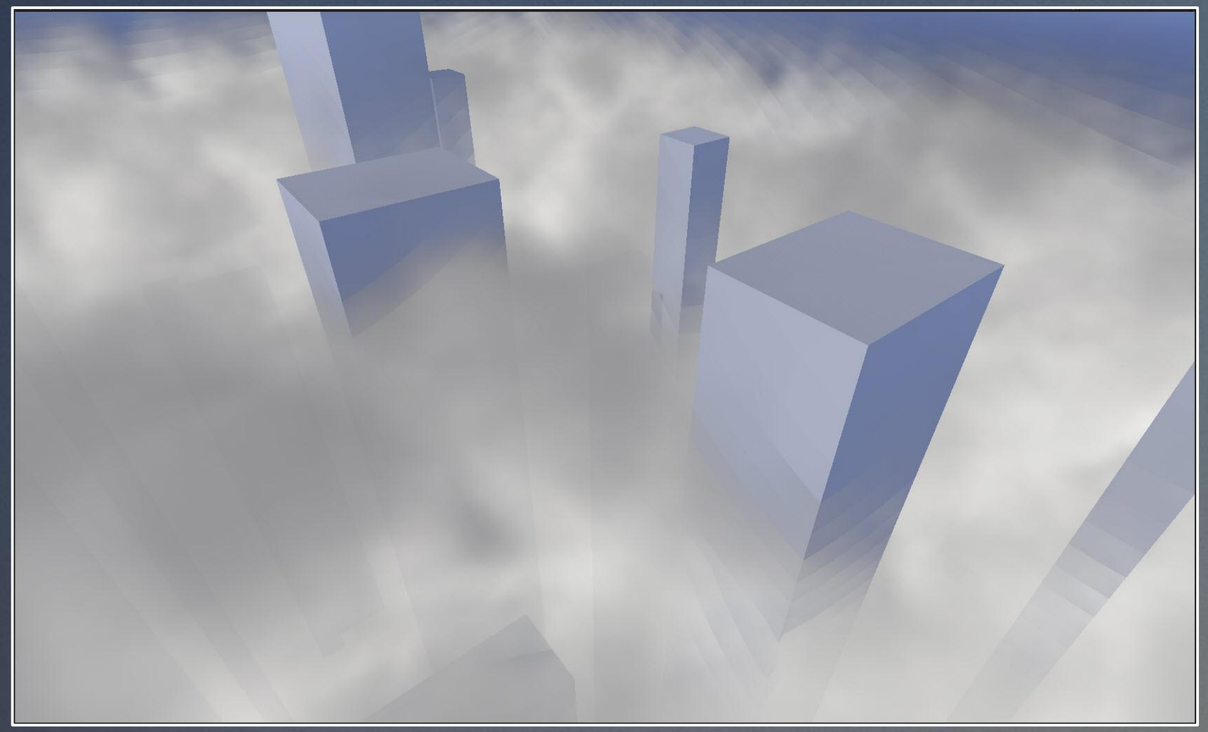
Now, use another gradient texture that contains easy patterns that you can recognize. Fly inside the volume and check the collisions.

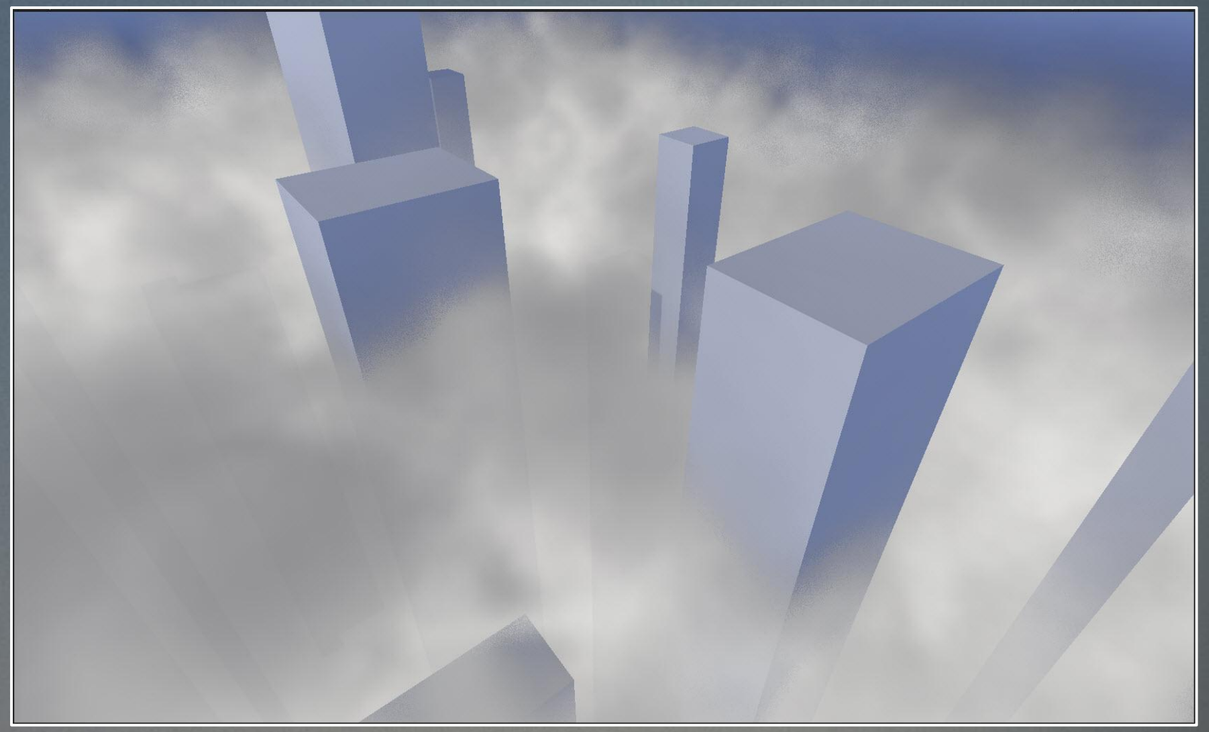




Parameters

- Sly collision: applies a dither effect to conceal ray stops

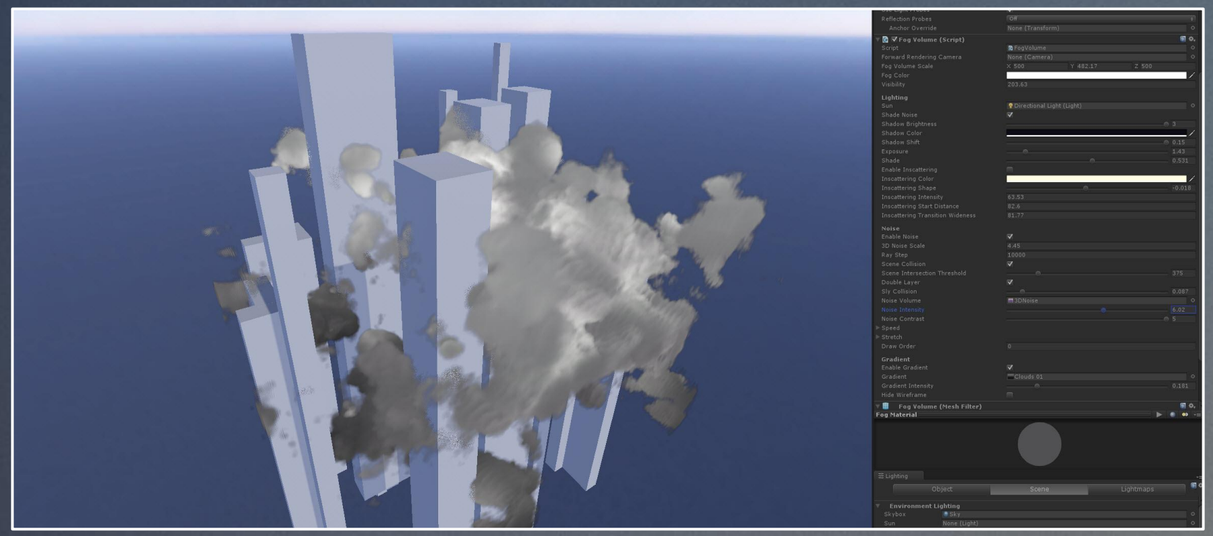


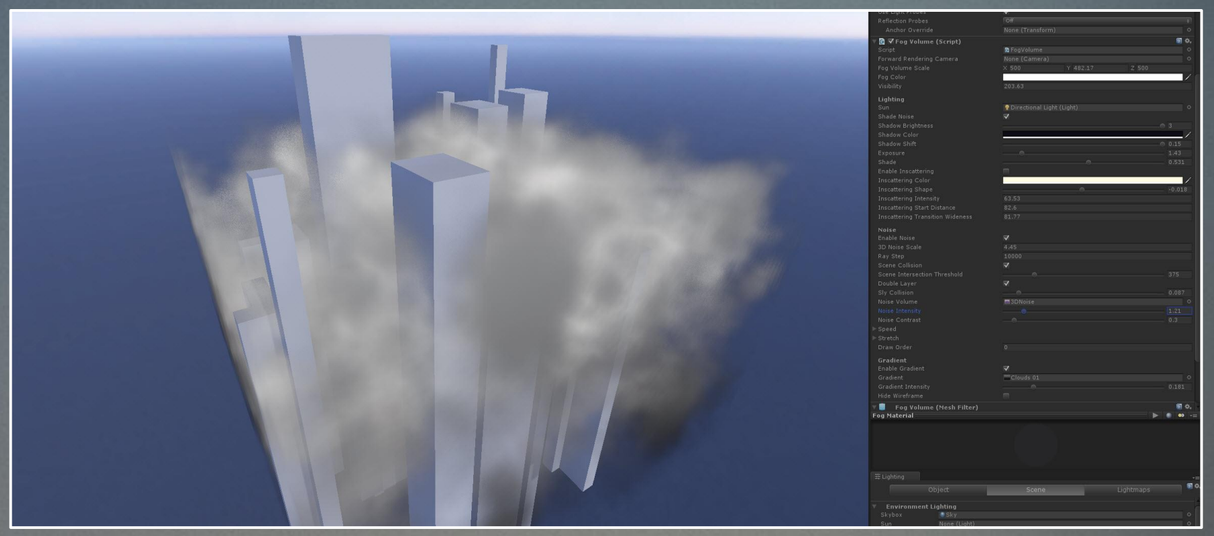


- Double layer: you can add a second noise layer. Notice that 2 layers worsens performance.

Parameters

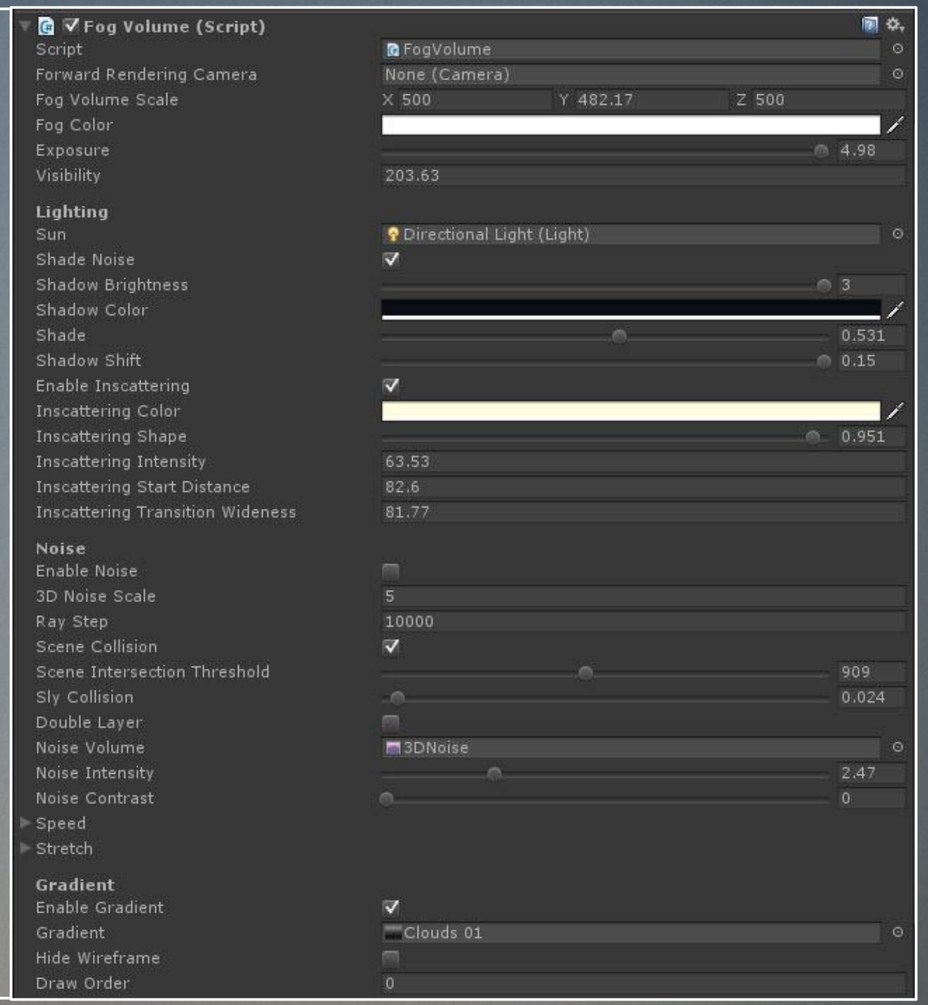
- Noise Volume: volumetric noise texture
- Noise intensity: overall noise intensity
- Fade distance: spherical fade distance
- Noise contrast: used to make noise more sharp





Parameters

- Speed & Stretch: used to scale the noise texture in every axys and animation.
- Enable Gradient (bool): gradient is a 2D texture that is sampled inside the volume. You can use it to tint and fade.
- Gradient: 2D texture; RGBA; color and transparency.
- Hide wireframe: disable wireframe drawing in scene view
- Draw order: fog volume is drawn as a transparent shader, thus we will have to sort them manually.



Performance

Fog Volume can be expensive in some situations. Here is a table containing the results of different configurations. The test has been done in *Fog Volume/Performance* in a GTX 970 at a resolution of 1920x1080

Game Object	milliseconds
Fog Volume [2 layer Noise + Shadows]	5.1
Fog Volume [single Noise + Shadows]	3.8
Fog Volume [single Noise]	1.4
Fog Volume [Gradient]	1.3
Fog Volume [Homogeneous]	0.2

Caveheats

Fog Volume has been only tested under directx.

Fog Volume will ignore transparent materials in the scene, as they don’t write depth information.

Questions?