Water Effect in U5

Documentation

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Important Shortcuts Used

Add Node = A + Left Click

Divide Node = D + Left Click

Multiply Node = M + Left Click

Param Node = S + Left Click

Color Node = 3 + Left Click

Lerp Node = L + Left Click

Constant Node = 1 + Left Click

Texture Node = T + Left Click

Panner Node = P +Left Click

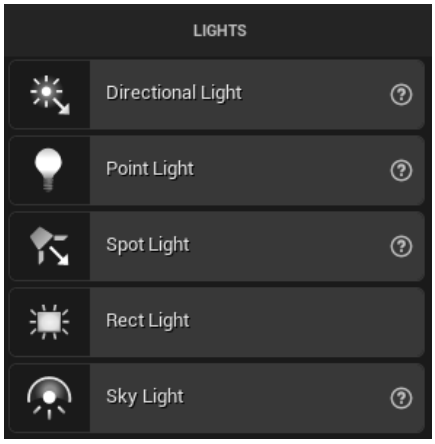
Textures

https://drive.google.com/drive/folders/1DjzY7H1pgrriDQuL7iv8zcg8V4z3fBg3?usp=sharing

Caustics

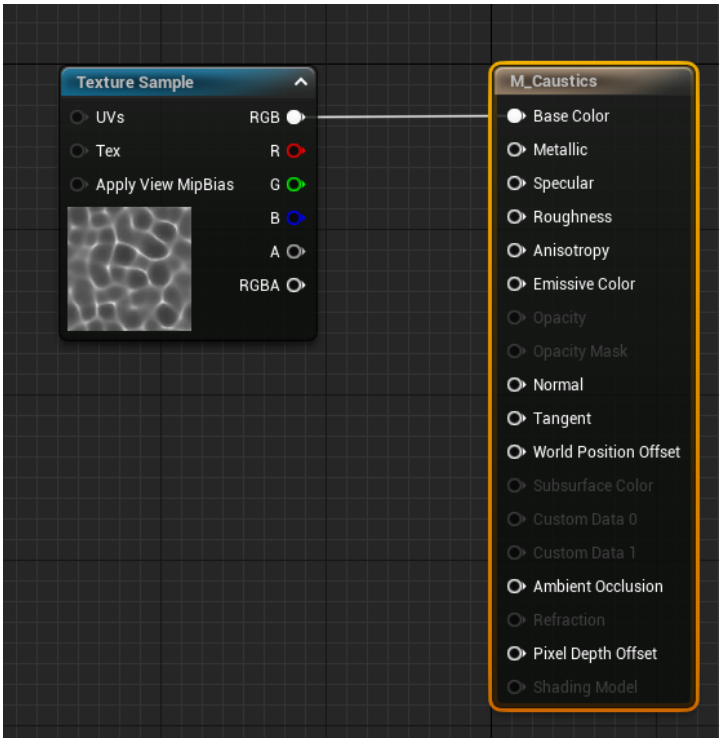
Description

The following way to implement caustics is attached to the light, that means that we can use any of the U5 light sources to get this done.

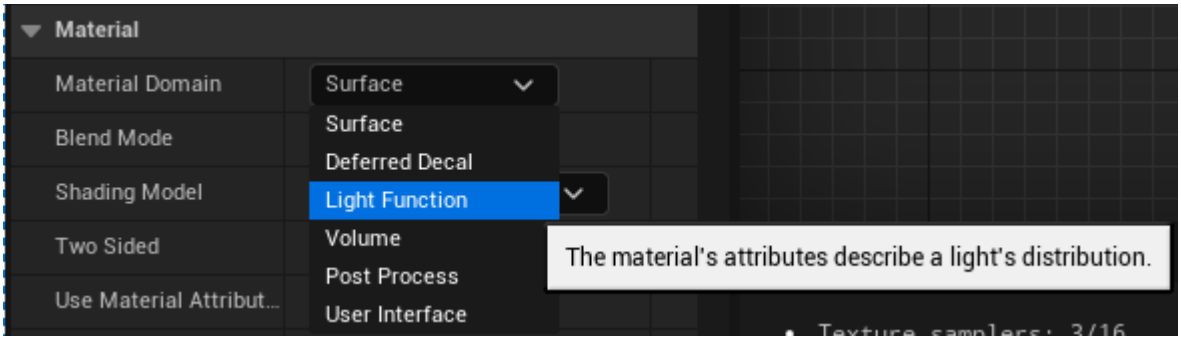


Steps

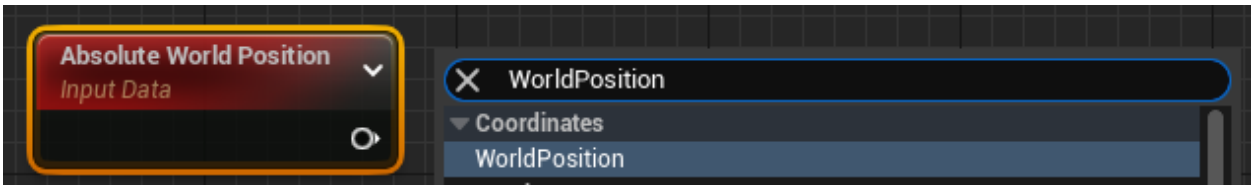
1. Import Caustics Texture
2. Create a new material called “M_Caustics”
3. Assign the caustics texture to the new material



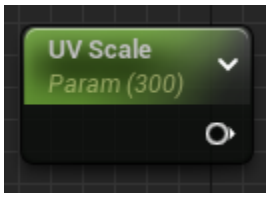
4. Selecting M_Caustics, Go to Details > Material
    a. Change the material domain for *Light Function*
        i. This let us plug the material to a light and it will project the texture assigned



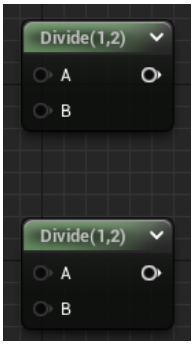
5. Add the *Absolute World Position* Node



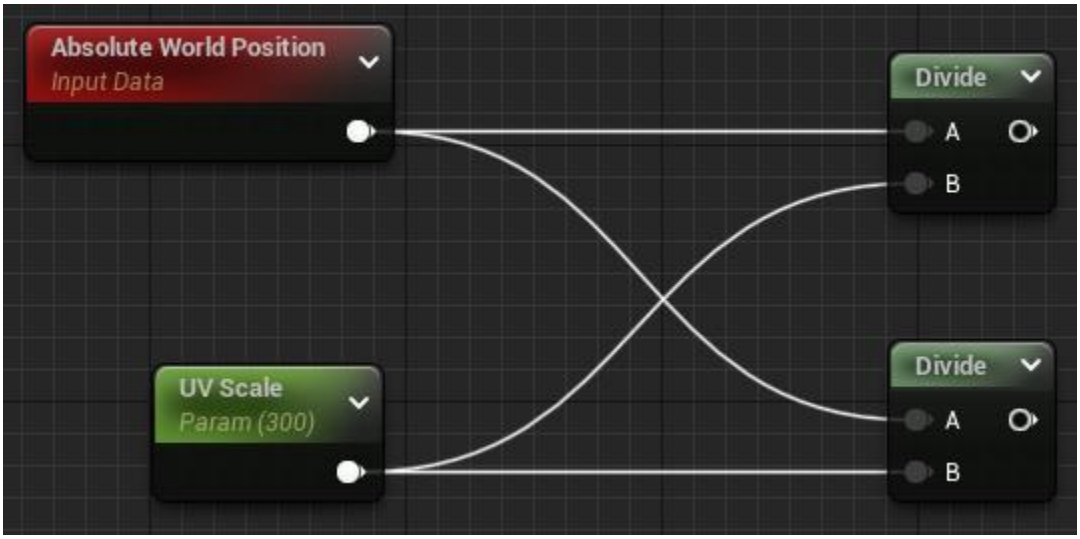
6. Create a param node called “UV Scale” with a default value of 300 (this depends on the size of your texture)



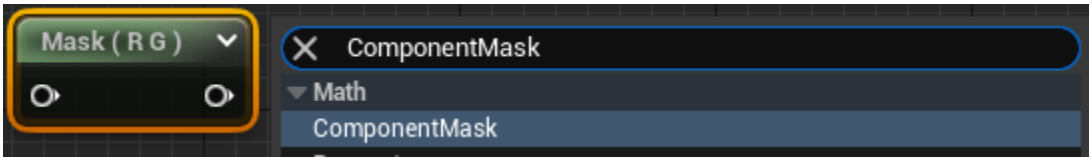
7. Create 2 *divide* nodes



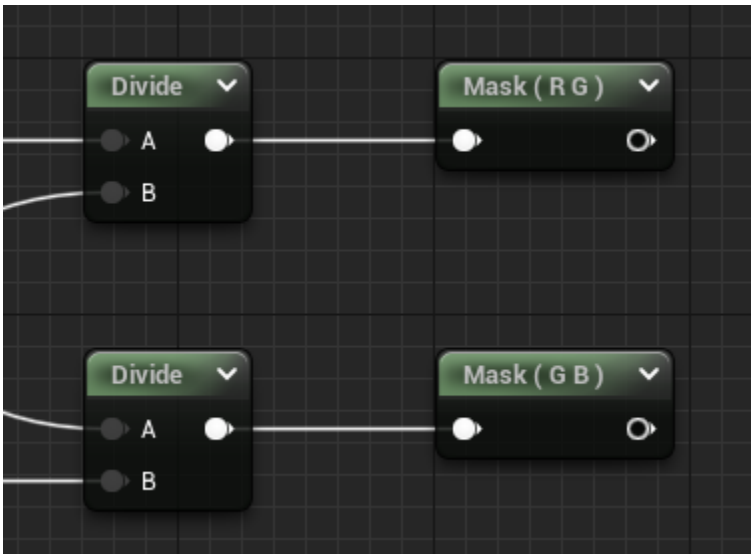
8. Connect the *UV Scale* to the *B* pin and the *Absolute World Position* to the *A* pin for each *divide* node



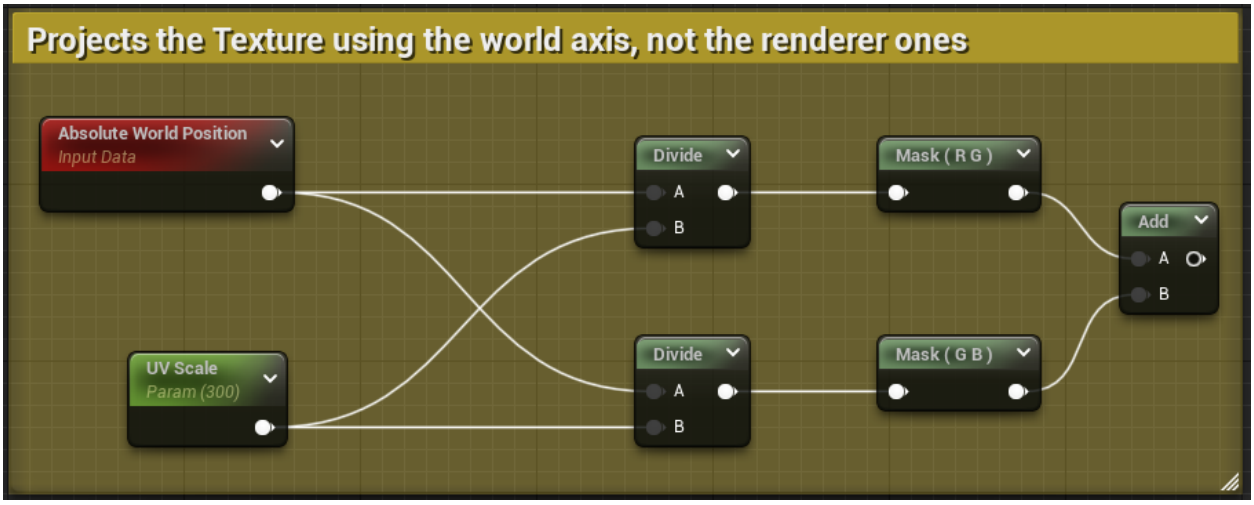
9. Create 2 ContextMask



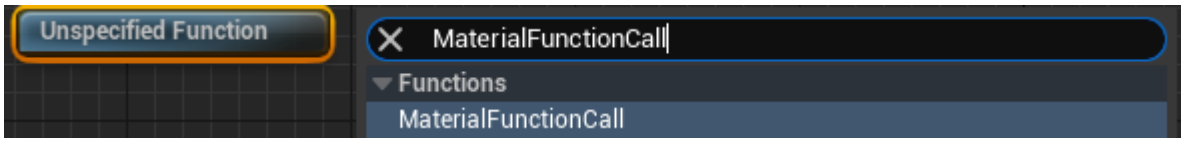
10. In the second one, mark only the channels G and B, unmark the rest of them
11. Connect the *divide* nodes to the *component masks*



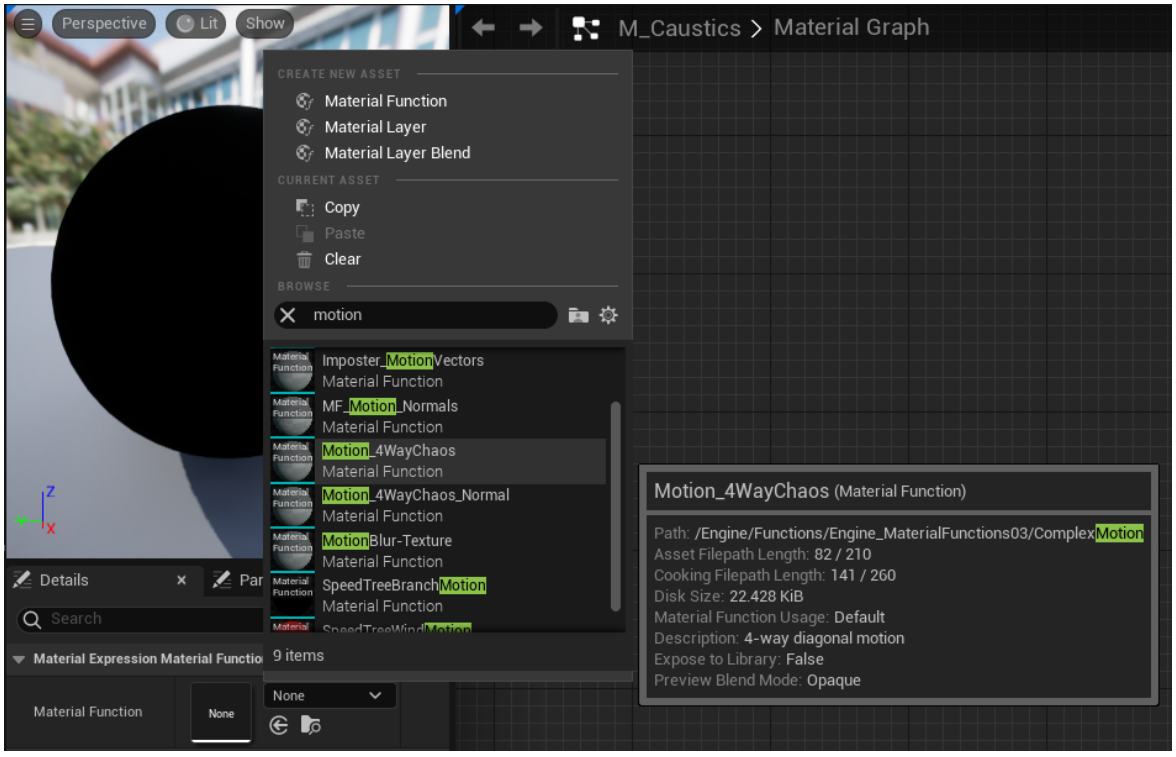
12. Create an Add node and connect the component masks results to this new node



13. Create a *Material Function Call* node

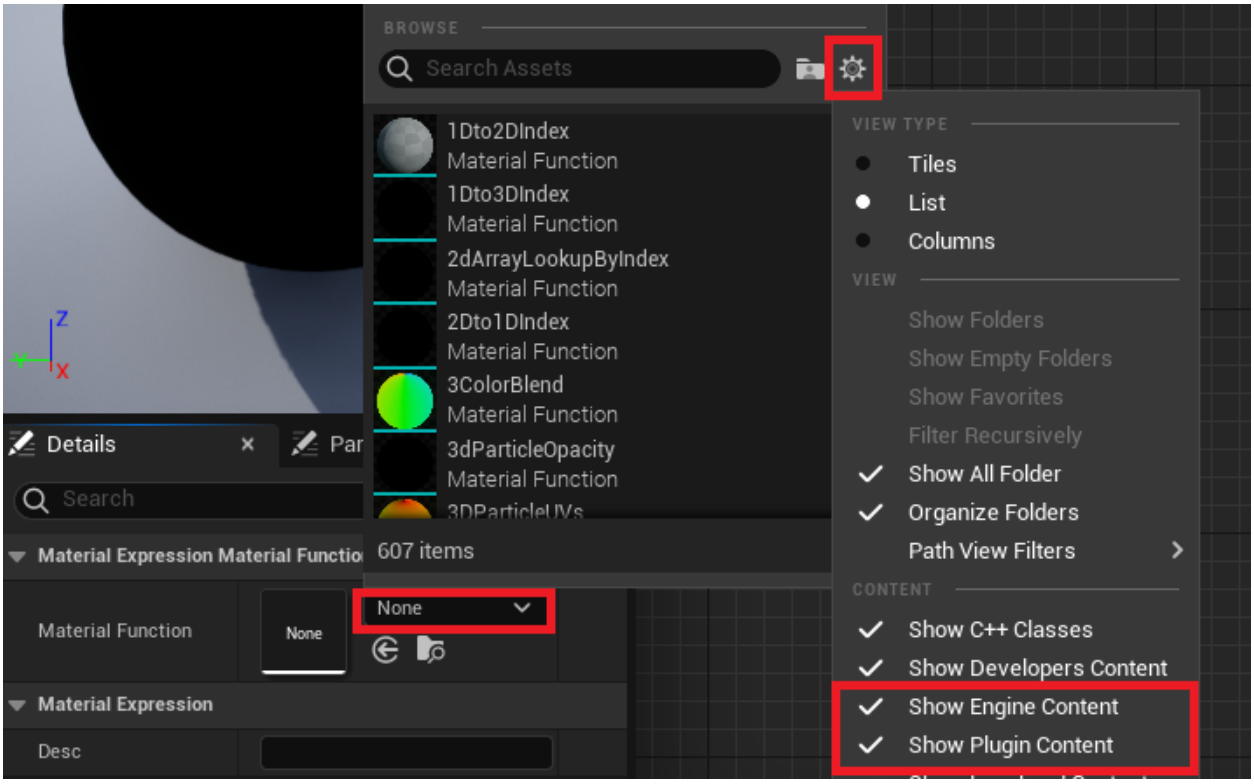


14. In Details > *Material Expression Material Function Call*
    a. Change the *Material Function* for *Motion_4WayChaos*

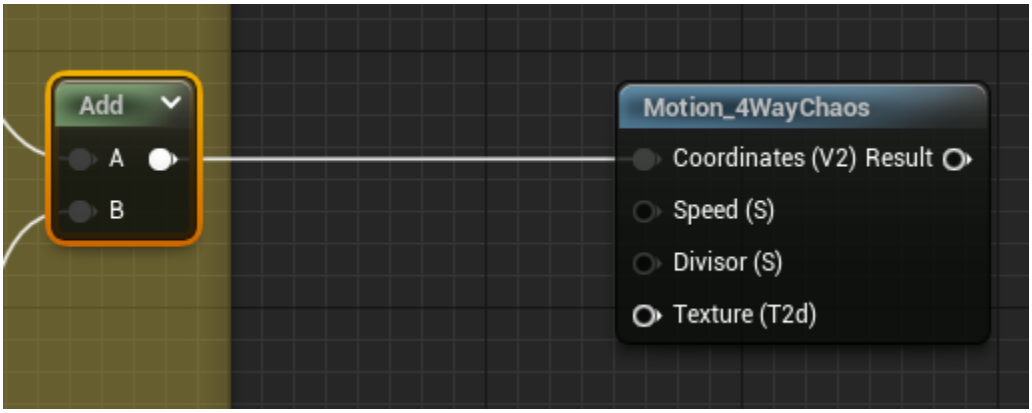


Important

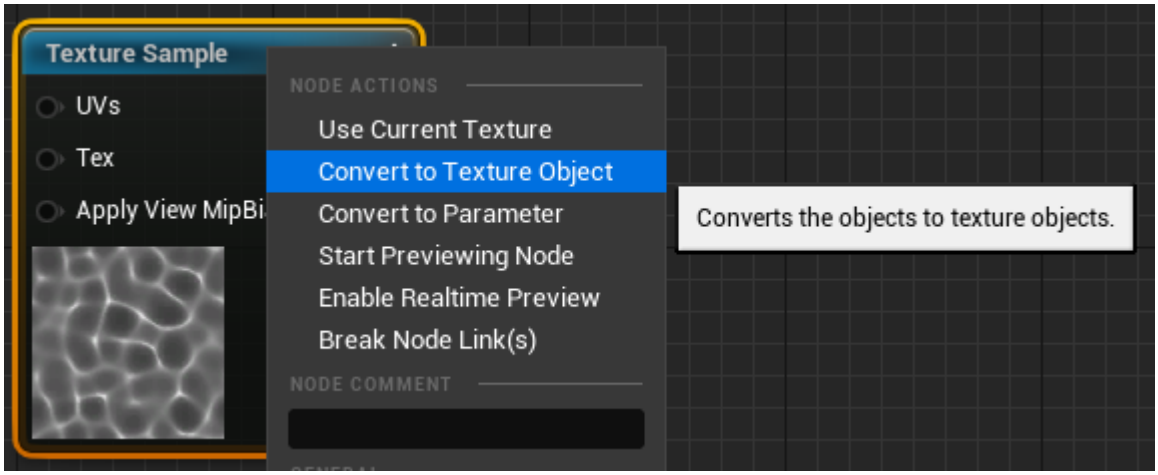
Make sure to have checked *Show Engine Content* and *Show Plugin Content*



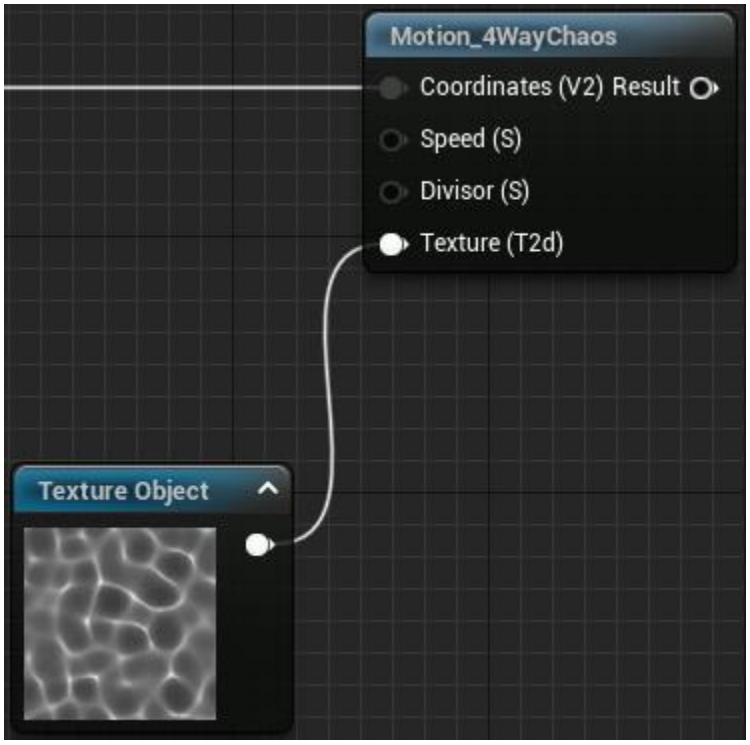
15. Plug the previous created *Add* node to the *Motion_4WayChaos* node in the coordinates pin



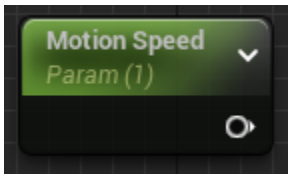
16. Convert the Texture to a *Texture Object*



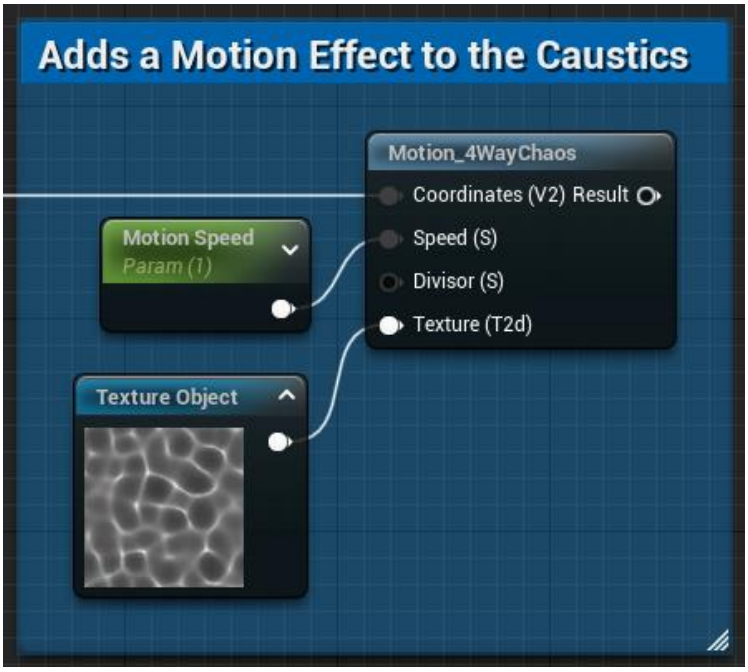
17. Connect the Texture to the *Motion_4WayChaos* in the *Texture* pin



18. Create a param node called “Motion Speed” and assign a default value of 1

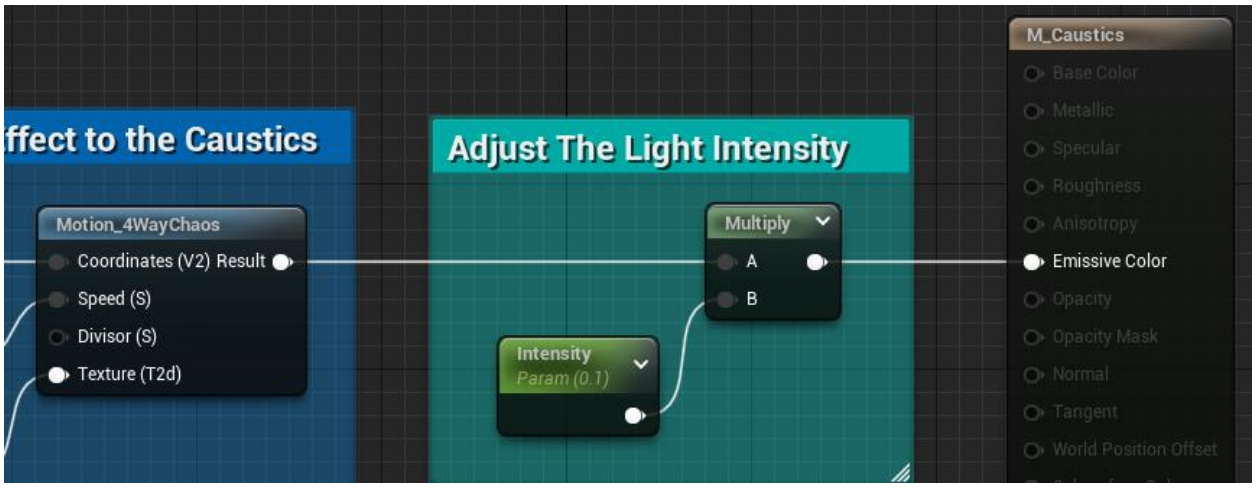


19. Connect it to the speed pin

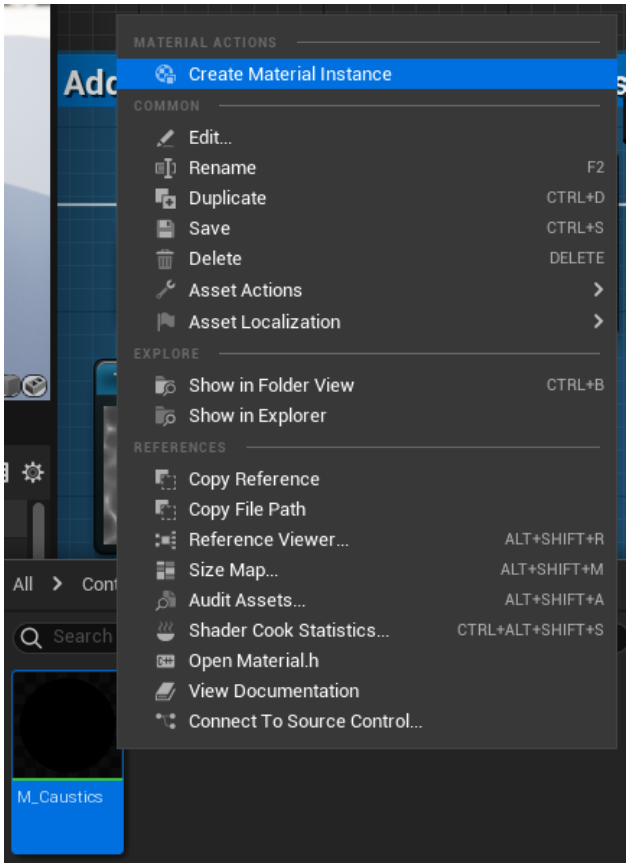


20. Create a param node called “Intensity”

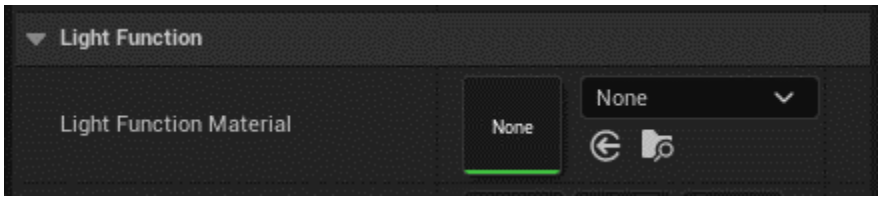
21. Create a multiply node and connect the *A* pin to the motion_4WayChaos, the B pin to the *Intensity,* and the result to emission



22. Create a light source in the scene
23. Create an Instance of the material and name it “M_Caustics_Intance”



24. Having the light source selected, in Details > Light Function, assign the material instance to the *Light Function Material*



25. In order to modify the values of the caustics, open the *M_Caustics_Instance, mark all the variable and then change the value to adjust the caustics.*

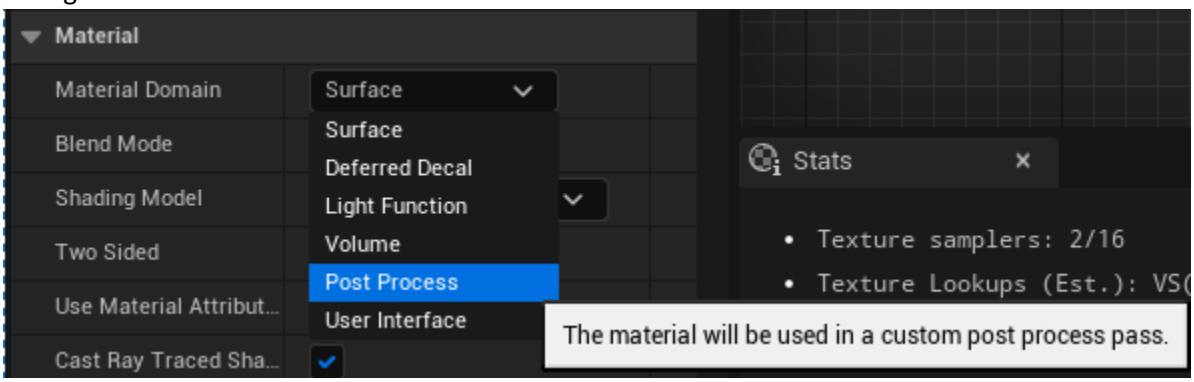
Colored Fog (Underwater Color)

Description

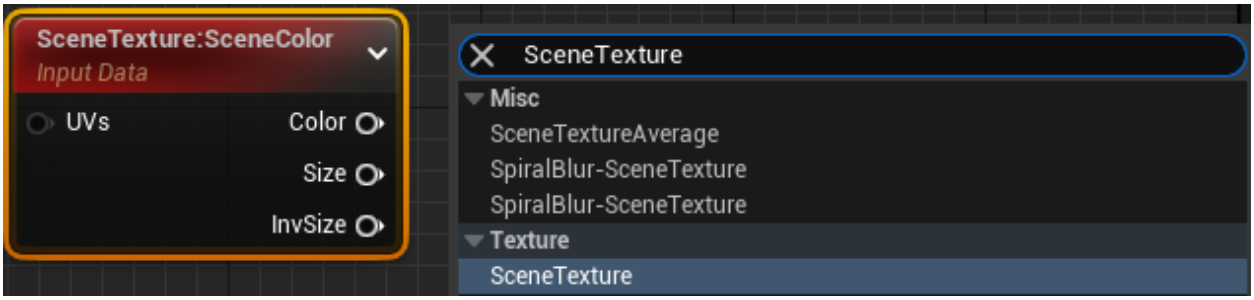
This is a post process material that will allow you to have a fog with three colors. This effect can be used not only to simulate the underwater colors, but also you can use it in other contexts like simulating a building on fire.

Steps

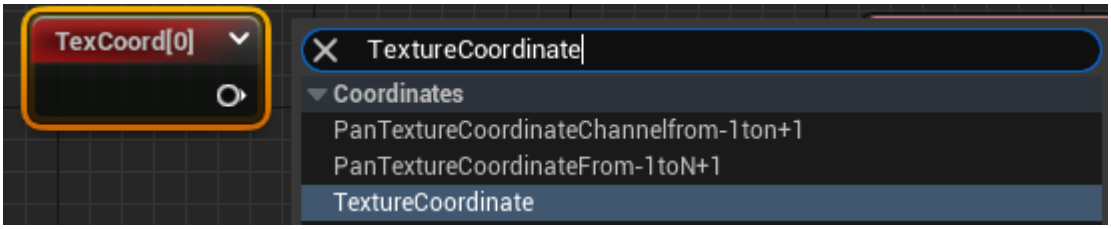
1. Create a new material called “M_Colored_Fog”
2. Change the material domain for “Post Process”



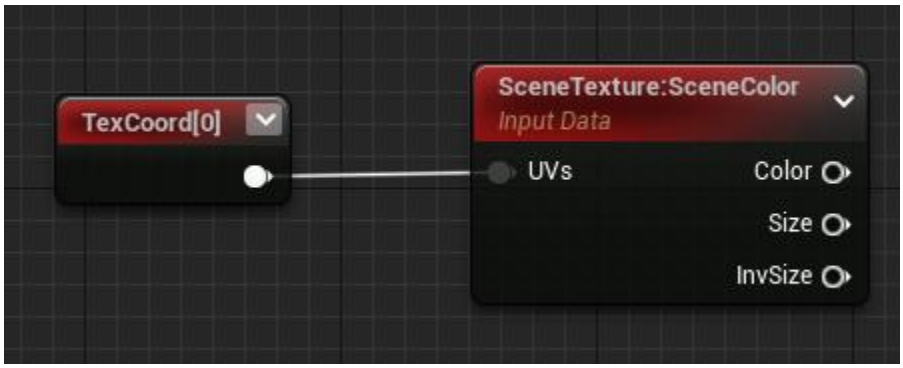
3. Create a *SceneTexture* node



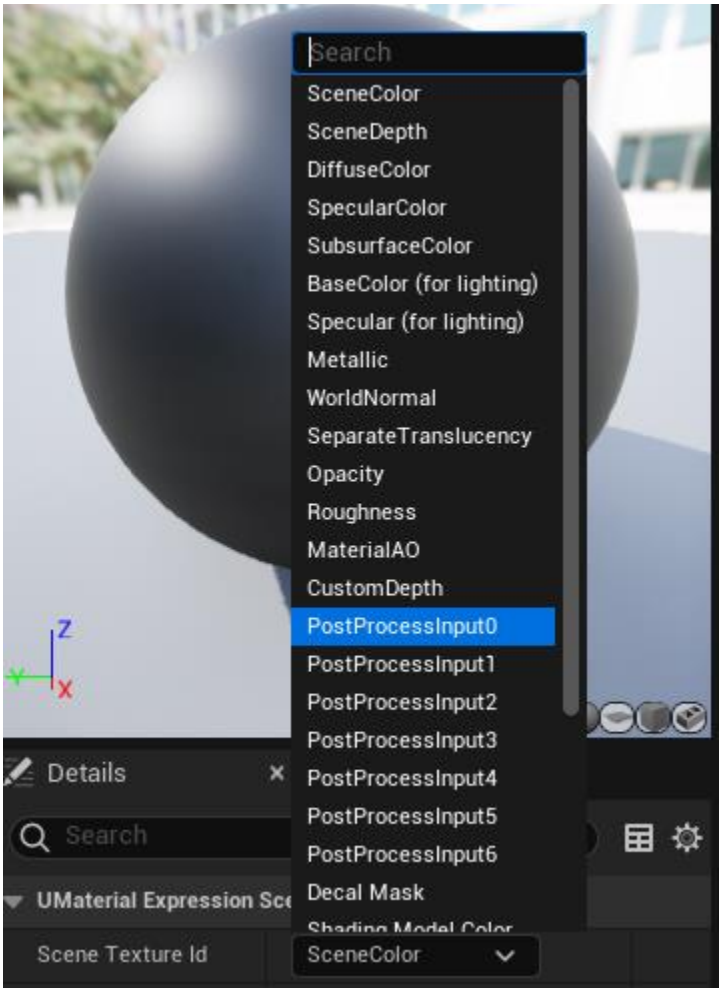
4. Create a *TextureCoordinate* node



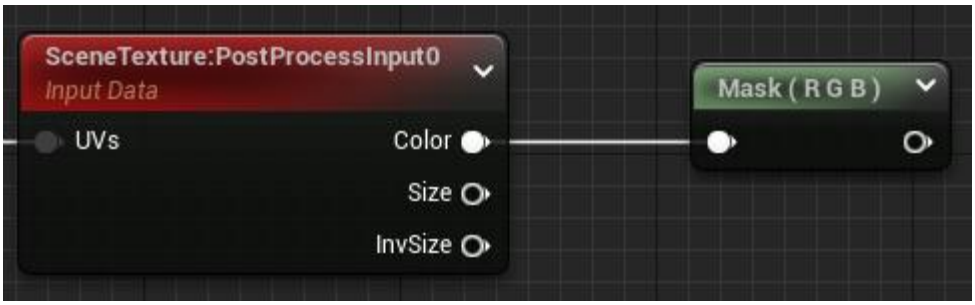
5. Connect them



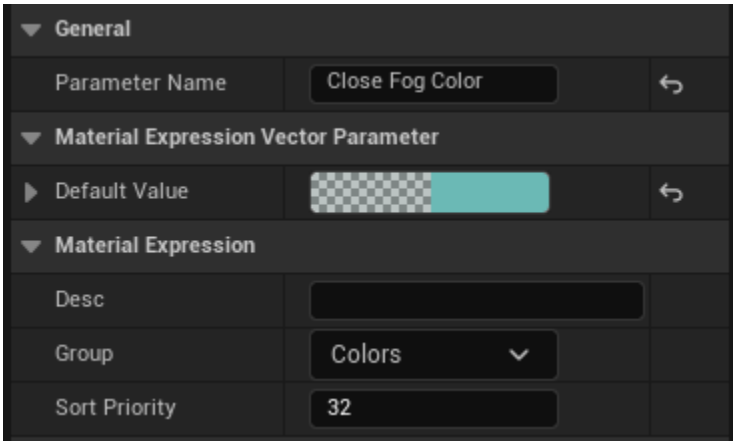
6. Change the *SceneTexture*'s Id for *PostProcessInput0*



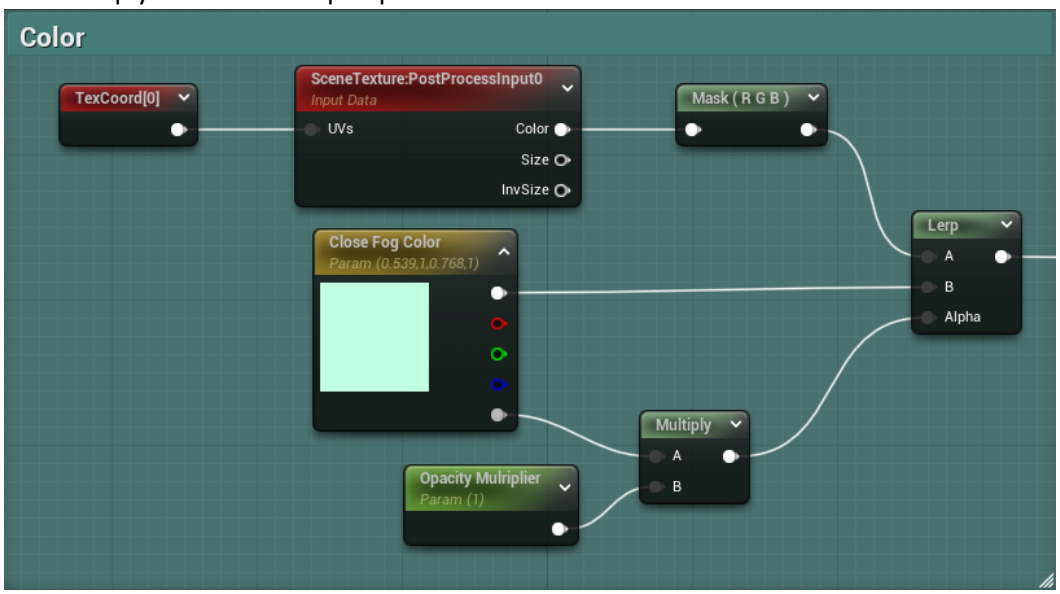
7. Create a ComponentMask
8. Connect it to the SceneTexture in the color pin
9. Mark only the channels RGB in the component mask



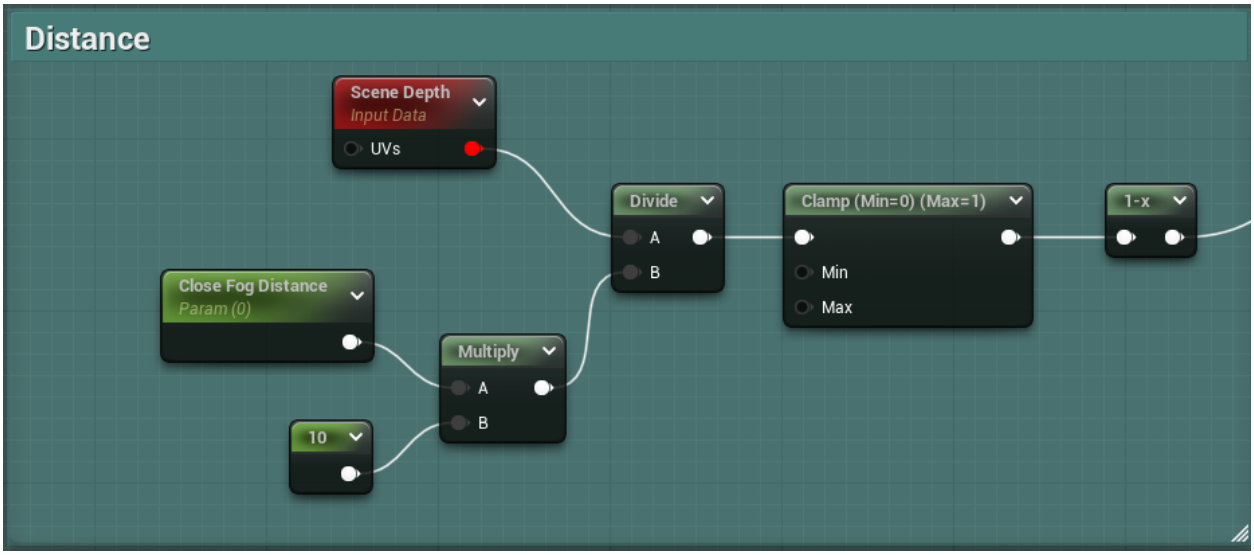
10. Create a color node and make it a parameter. Name it “Close Fog Color” and assign it to the group “Colors”.
    a. Hex Code: 6BB9B51A



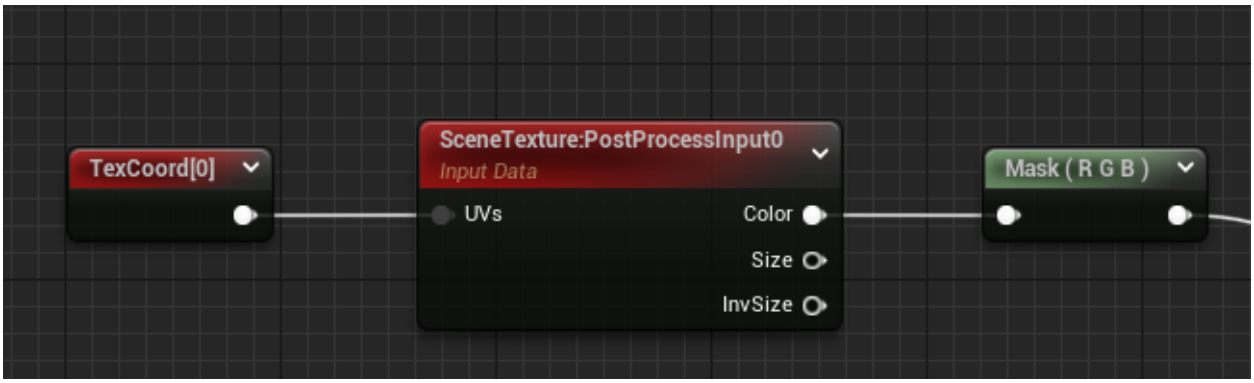
11. Create a param node called “Global Opacity” with value 1 (this value must be between 0 to 1)
12. Create a multiply node
13. Connect the alpha of the color and the global opacity to the multiply
14. Create a Lerp node. Connect the *Component Mask* in the A pin, the *Close Fog Color* in the *B* pin and the multiply result in the alpha pin



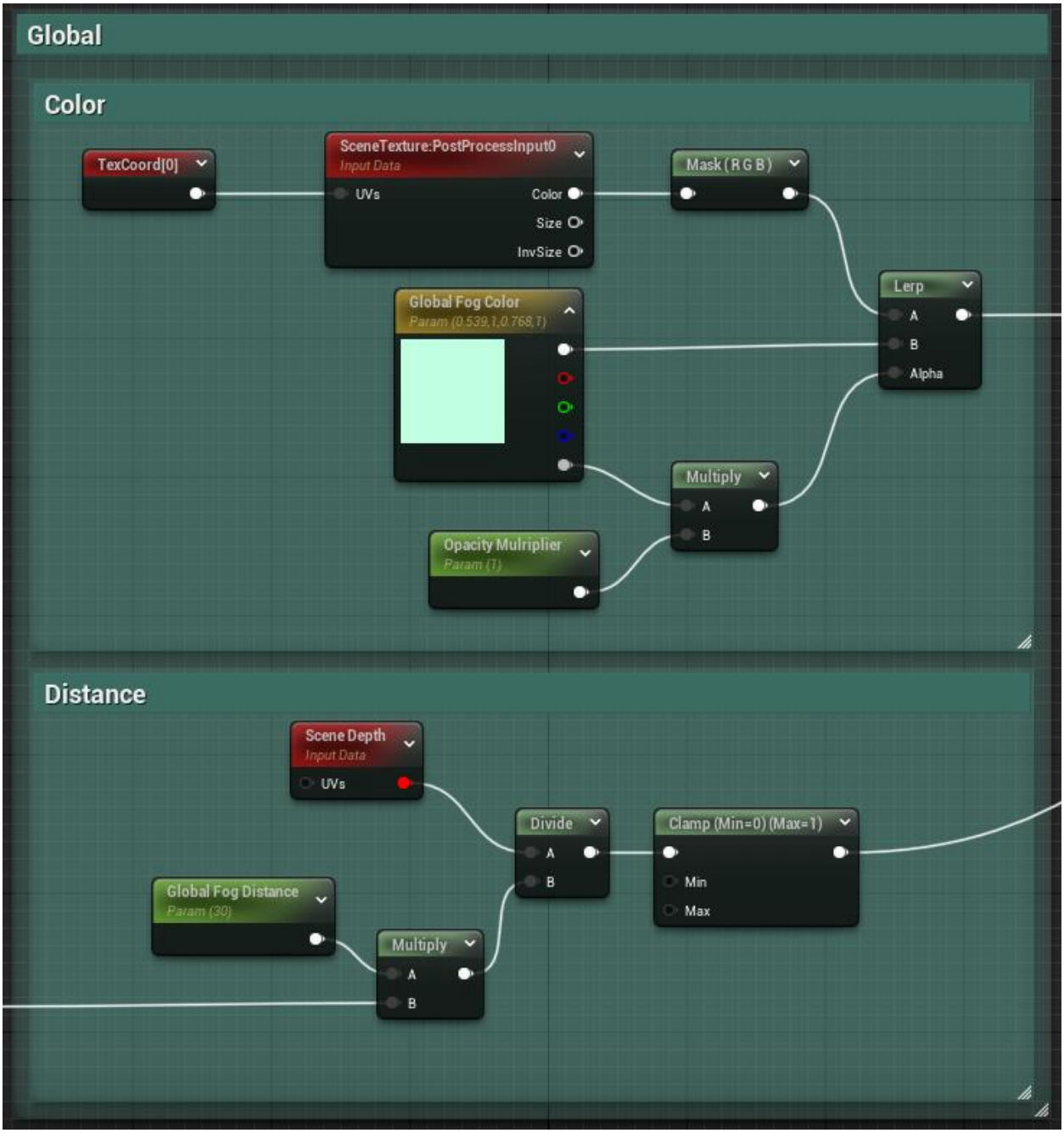
15. For the distance
    a. Create a scene depth node
    b. Create a param node called Close Fog Distance with value 10
    c. Create another param node called “Shift Color Value”
    d. Create a constant node with value 100
    e. Create a multiply and connect the Shift Color Value and the constant to the multiply
    f. Create another multiply node and connect the close fog distance and the result of the previous multiply
    g. Create a divide node and connect the multiply and the scene depth
    h. Clamp the result and invert it with the node OneMinus



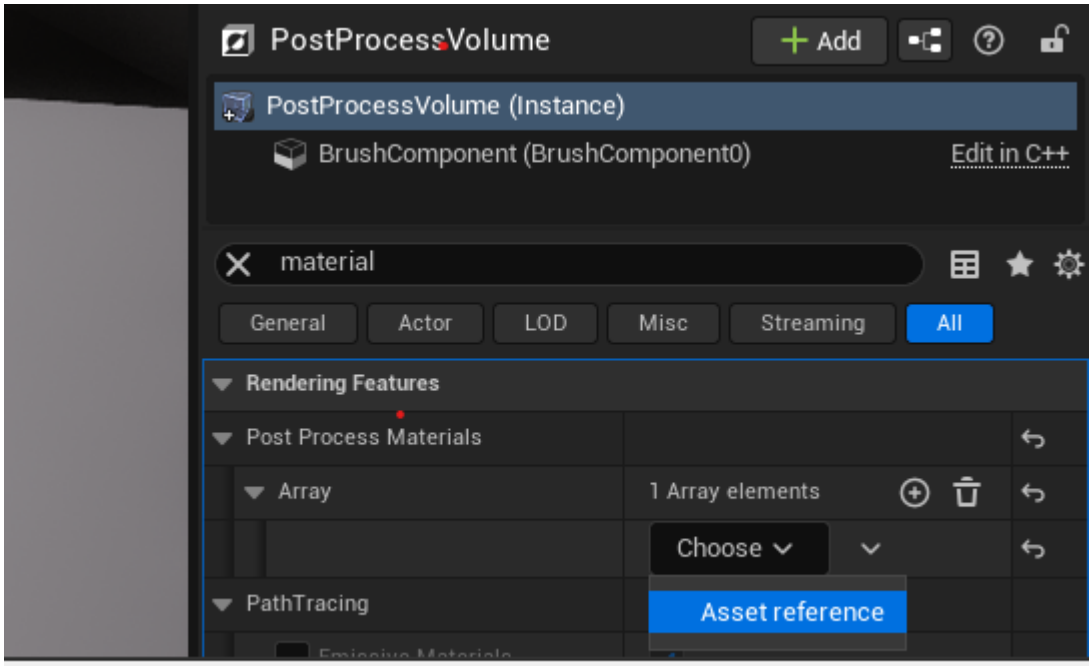
16. Copy and paste the whole group
17. Change the name of the fog distance to Mid Fog Distance and the value to 100
18. Change the color name for Mid Fog Color and change the color hex code to 479B8833
19. Copy and paste the whole group
20. Change the name of the fog distance to Long Fog Distance and the value to 1000
21. Change the color name for Mid Fog Color and change the color hex code to 528F9B66
22. Copy and paste the *SceneTexture* node, the *TextureCoordinate* node and the *component mask*



23. Create a lerp node connecting the result of the component masks with the result of the long-distance fog, the alpha channel uses the fog distance
24. Create a lerp node connecting the previous result with the next fog
25. Do the same process a third time connecting the result with the close distance fog
26. Copy and paste a fog group
27. Remove the node 1-X from the distance group
28. Change the name of the fog distance to Global Fog Distance and the value to 30
29. Change the color name for Global Fog Color and change the color hex code to 5DA293FF

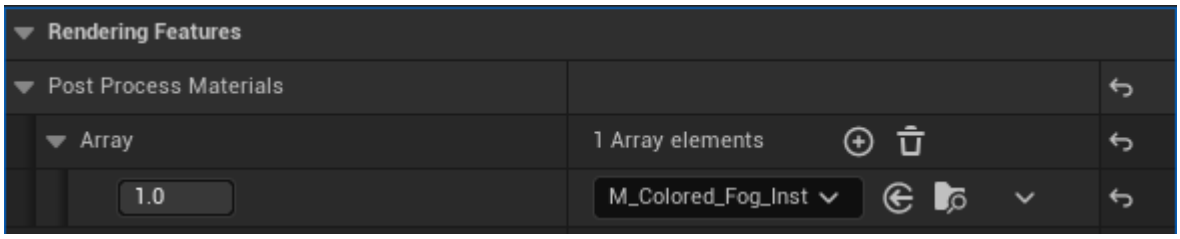


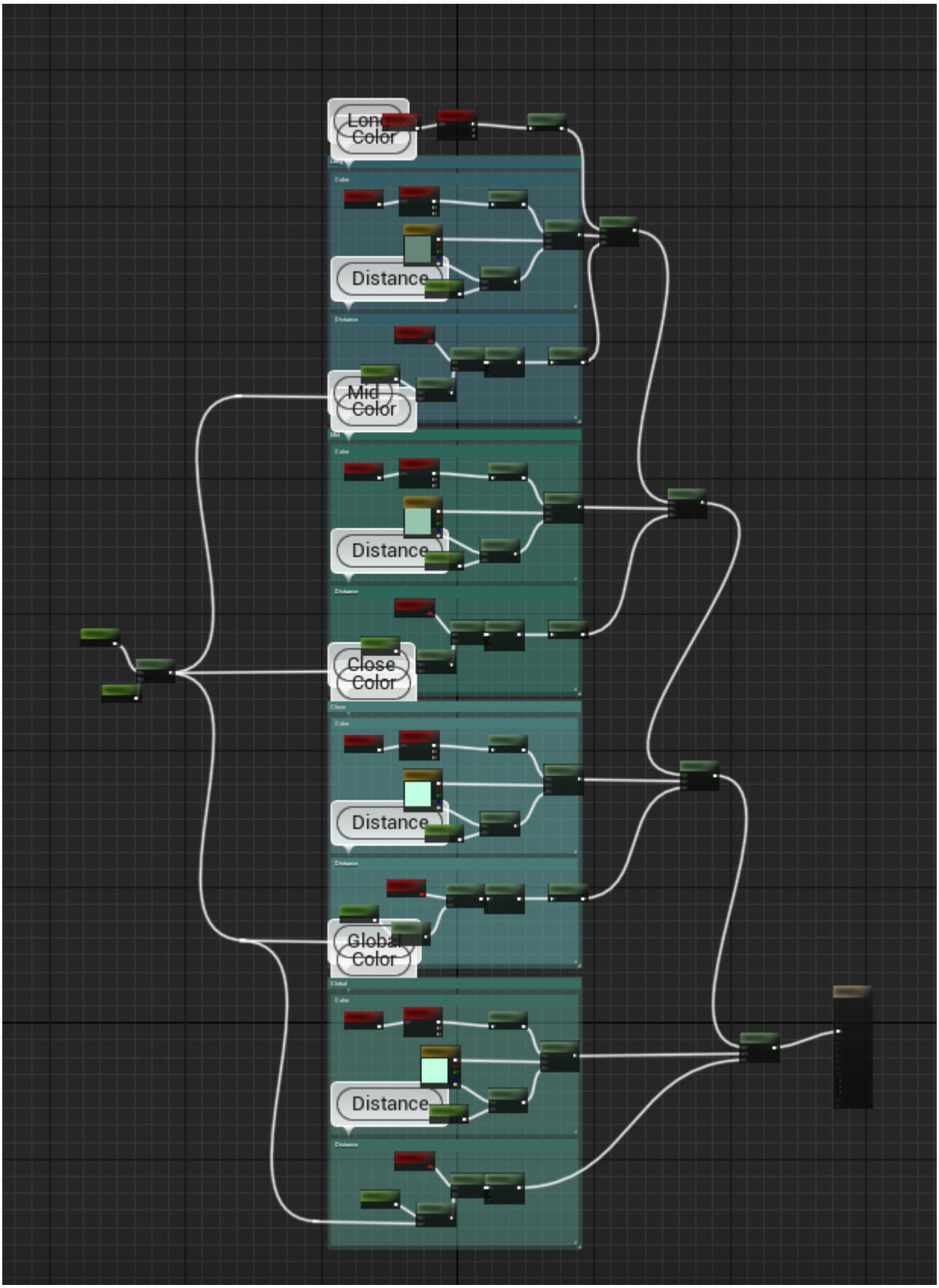
30. Create a lerp and connect the result of the last one with the global fog, just in the same way as before
31. Then connect the result to the emission channel of the material
32. Create a post process volume
33. Adjust the size to the place where you want to see the water effect
34. Create an instance of the colored fog material
35. Having selected the post processing volume
    a. Go to details > post process materials
    b. Add an element to the array
    c. In the drop-down menu select asset reference



reference a Blendable asset (owned by a content package), e.g. material with Post Process domain

    d. then drag the colored fog instance to that field.




Color
Distance
Mid Color
Distance
Close Color
Distance
Global Color
Distance

Wave Effect

Description

This is a post process material that let us integrate a texture similar to the caustics, but this time is not in the light but in the post process volume. This effect can be used to simulate heat waves, glass, and many other cool effects, it depends on the texture we use and the settings in the material instance.

Steps

1. Create a new material called “M_Wave_Effect”
2. In the material create a Texture Node and assign the normal map
3. Change the material domain for post processing
4. Create a texture coordinate
5. Create a multiply node and connect the texture coordinate to the A pin, and assign the value of B to 0.1
6. Create a panner node and connect the multiply result to the *coordinate* pin
7. Create a param node called “Panner Speed X”
8. Create a param node called “Panner Speed Y”
9. Create a append vector node and connect the previous created panner nodes (X -> A, Y -> B)
10. Connect the result to the speed pin in the panner
11. Create a param node called “Texture Multiplier”
12. Create a multiply node
13. Connect the R channel in the A pin of the multiply
14. Connect the Texture Multiplier to the B pin of the multiply
15. Create a Text Coordinate node
16. Create an add node
17. Connect the text coordinate and the multiply result to the add node
18. Create a Scene Texture
19. Change its ID for PostProcessInput0
20. Connect the result of the add node to the scene texture
21. Connect the scene texture to the emissive color
22. Create an instance of the wave material and add it to the post process volume materials