MANUAL FOR RAINDROPFX PRO HDRP

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THANK YOU FOR YOUR PURCHASE!

1 GETTING STARTED

1-1 Download RaindropFX to your project

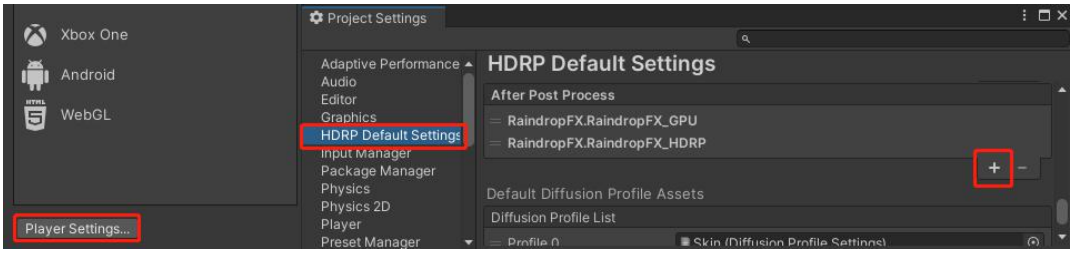
1. Please make sure your project is using high-definition rendering pipeline;

2. If you have any old version RaindropFX, delete it;

3. Then download and import new version RaindropFX HDRP package to your project.

1-2 Post processing stack setup

Go to 'File/Build Settings.../Player Settings.../HDRP Default Settings', then add 'RaindropFX_GPU' and 'RaindropFX_HDRP' to 'After Post Process':

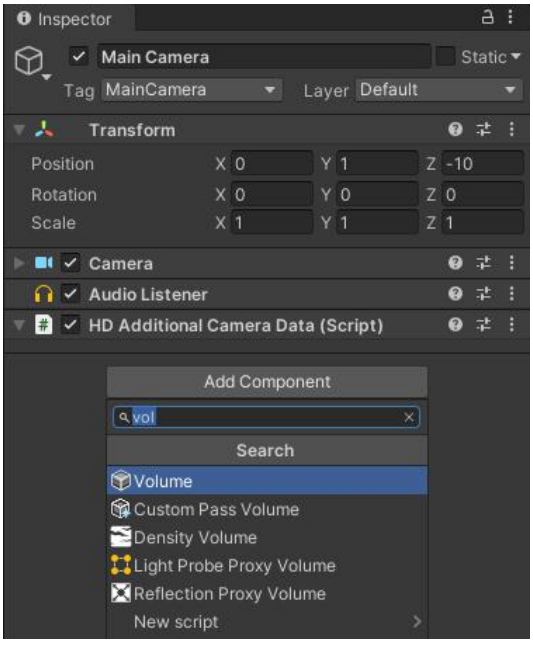


2 CPU RAINDROP SOLVER

2-1 Screen space version

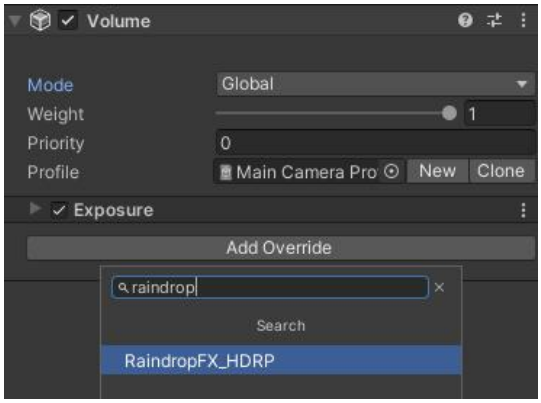
1. Volume setup

Select any object in your scene, and add a 'Volume' component.

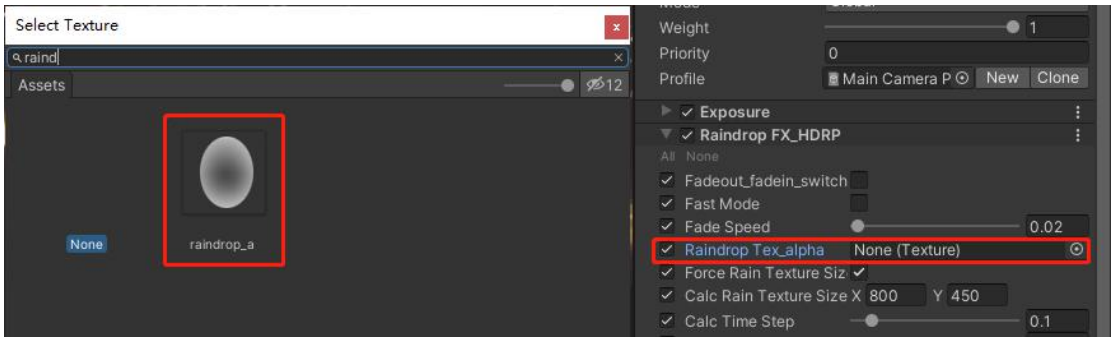


2. Raindrop effect setup

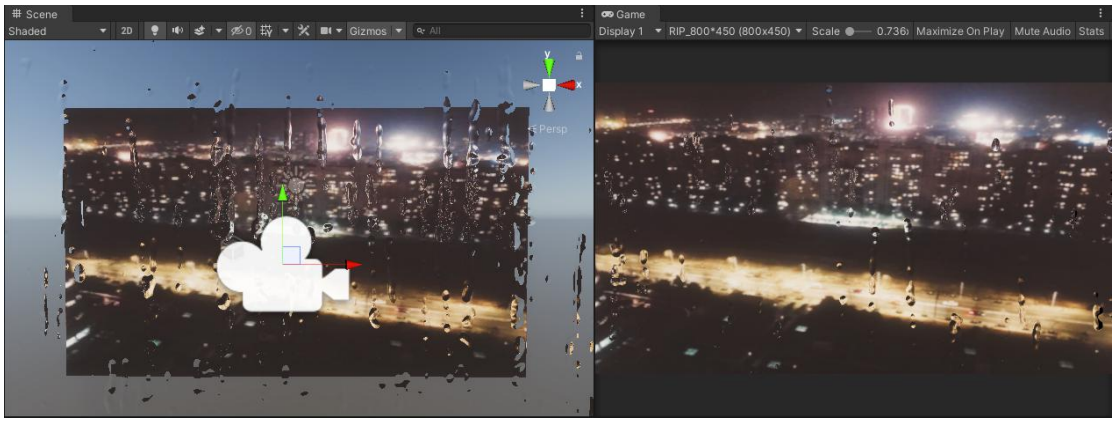
On the ‘Volume’ component, choose a profile in the profile field or create a new profile, then click ‘Add Override’, go to ‘Post-processing -> RaindropFX -> RaindropFX_HDRP’ to add the raindrop effect.



Raindrop texture must be set before you can use RaindropFX. Find the raindrop texture at ‘RaindropFX_HDRP/Resources/Textures/raindrop_a’. Or you can use your own raindrop texture.

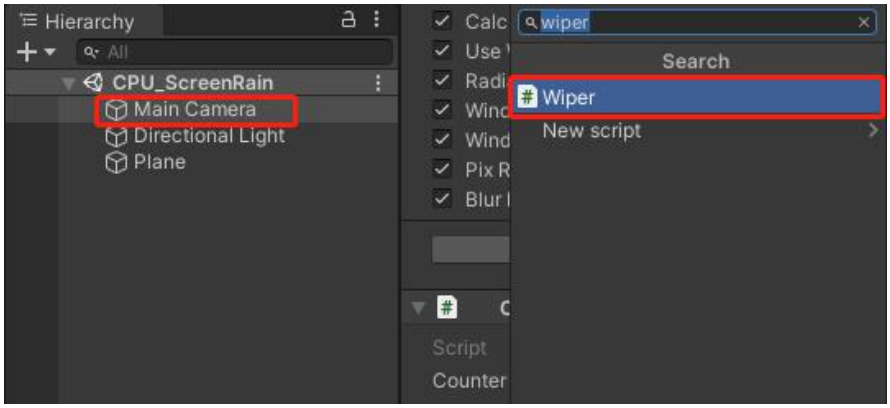


Now you can see the raindrop effect in your scene.



3. Setup wipe effect

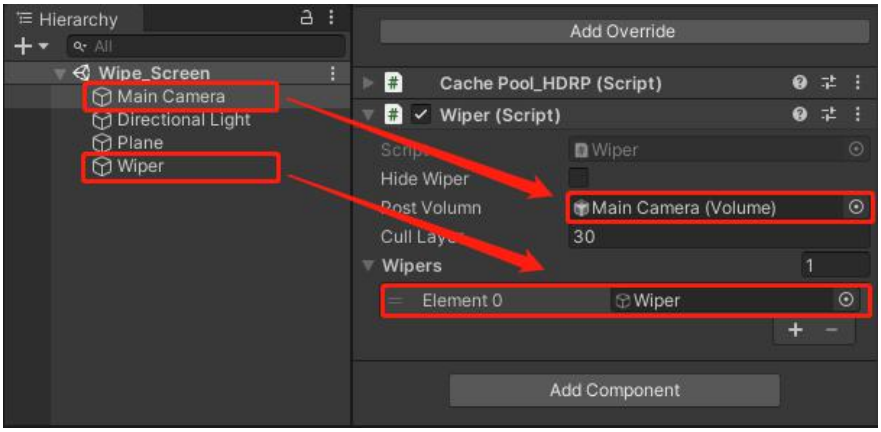
(1) If you want to enable wipe effect, first add 'Wiper' component to your main camera;



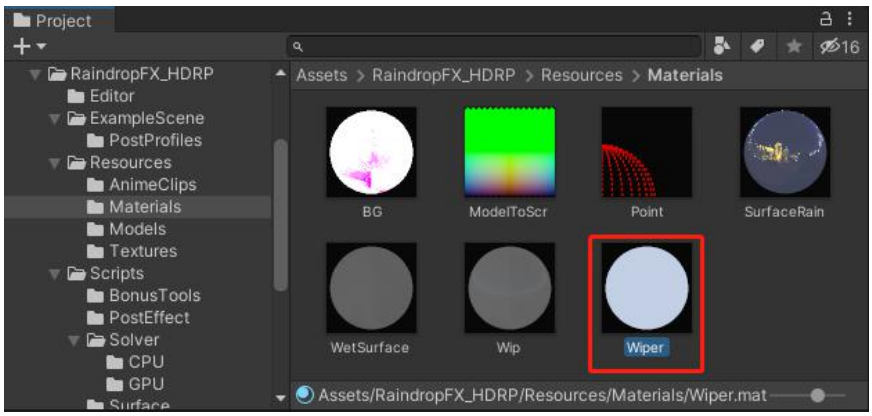
(2) Add your 'Volume' component to 'Post Volumn', then add all the wipers to 'Wipers' (you can set the size of the 'Wipers' to any number you like. For example, if you want to use two wipers, set it to 2, then drag and drop your wipers into the slots);

All wipers must be placed in a specific layer. You can directly enter a layer number that has never been used in the scene to the 'Cull Layer' slot, and then the script will automatically move all the wipers to this layer at the beginning of the game without manual setting;

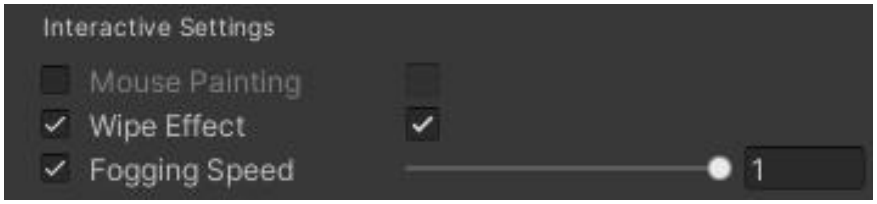
*NOTE: The script don't handle child objects. If your wiper contains child objects, please set layer of them manually.



(3) Assign 'Wiper' material (located at: RaindropFX_HDRP/Resources/Materials) to all of your wipers. Or you can use your own material. The color of wiper from black to white represents different wipe power, and white represents complete wipe. You can also use alpha texture to change the shape of your wiper;



(4) Then tick the 'Wipe Effect' in the 'Raindrop FX_HDRP' in the 'Volume' component;



(5) Finally, run your game and drag your wiper, you'll see the wipe effect. The wipe effect affects both water droplets and the screen fog.

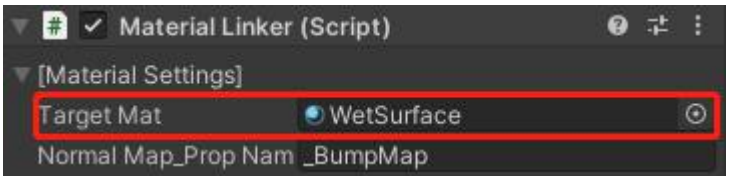
*NOTE: Once you run your game, 'Wiper' component will automatically create a LUT camera and attach it as a child object of your main camera, the LUT camera is used for rendering wipe mask and will be configured automatically by RaindropFX, so normally you just need to leave it here and don't touch it.

2-2 OBJECT SPACE VERSION

1. Setup material & solver

(1) Create a new material, change shader type to ‘Custom/RaindropFX/WetSurface_HDRP’;

(2) Add ‘Material Linker’ to your model object. ‘Material Linker’ will try to find the target material (main material of your model) automatically, if the component failed to get the correct material or if you changed the material of model after the script have been added, please reset ‘Target Mat’ manually.



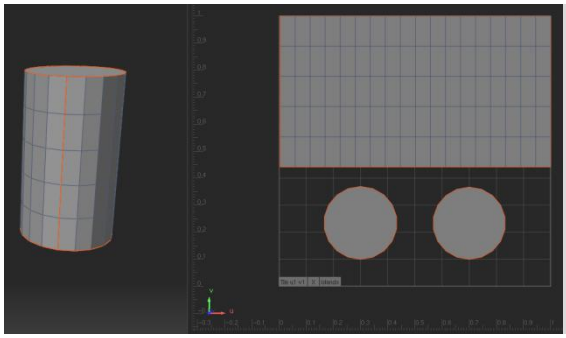
(3) Add a droplet texture to ‘Raindrop Tex_alpha’.

(4) Now you can see raindrops on your model surface.

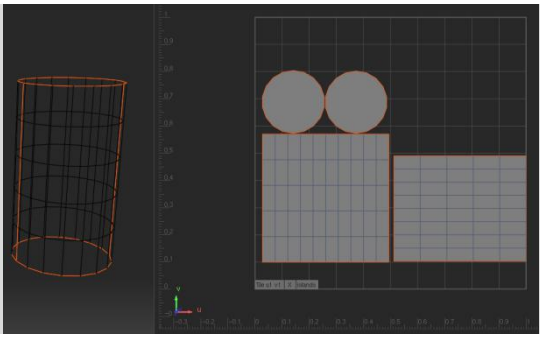
2. Default physical calculation (without using force LUT)

*NOTE: The default physical calculation of RaindropFX is based on the UV space, which means that if force LUT is not used, the water droplets will flow downward along the V-axis of the UV space, which water droplets' movement depends entirely on the way of UV division.

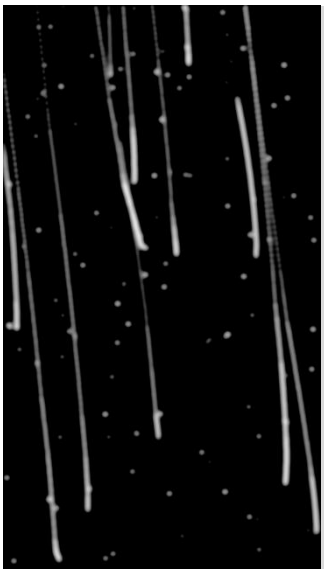
As shown in the figure below, there are two different UV division methods for the same cylinder model:

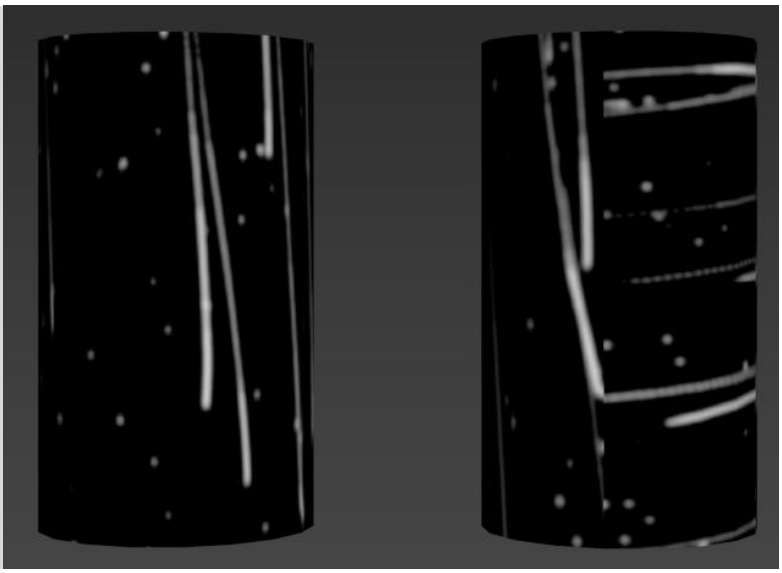


(a) The side of the cylinder is divided into single UV island



(b) The side of the cylinder is divided into two UV islands, with one of which is rotated 90 degrees



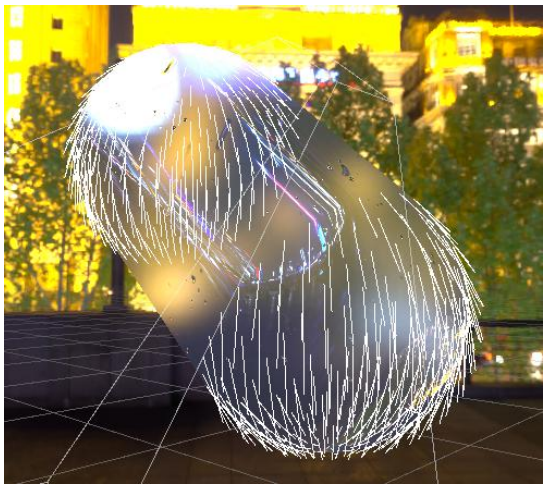


As the figure above shows, left side is the computed raindrop texture. Because of that the flow direction of raindrops is roughly along the v-axis of the UV space, so if we apply the texture to the middle cylinder (with UV division method (a)), the result will be correct; But if we apply the texture to the right cylinder (with UV division method (b)), the result will be wrong.

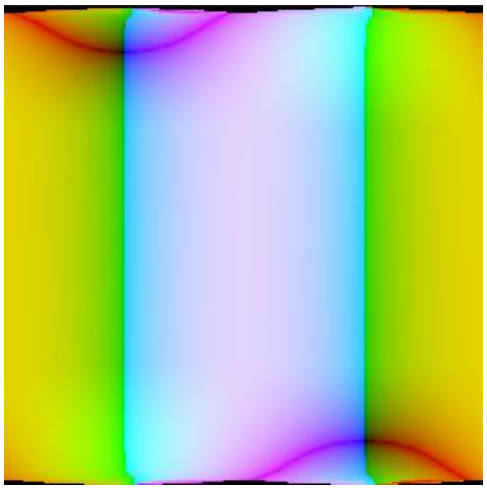
Therefore, in the process of UV division, please try to **keep the UV island orientation consistent** and try to **divide the UV into a whole piece of island**.

3. Setup force LUT

RaindropFX can automatically generate a force LUT for any custom mesh. Force LUT describes the external force at each position of the mesh surface under current transform:



(a) Debug gizmo in scene view



(b) Force LUT generated

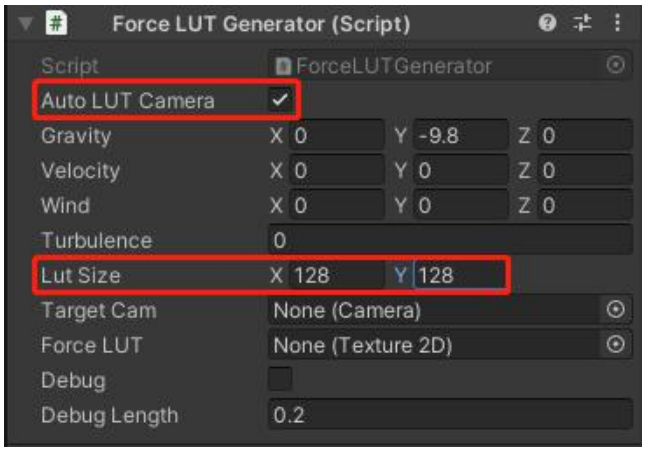
***NOTE:** Force LUT makes the physical calculation of raindrops no longer depend on UV space. Mesh can move, scale and rotate freely in the scene, but it will bring additional performance overhead.

(1) First add a 'Force LUT Generator' component to your object;

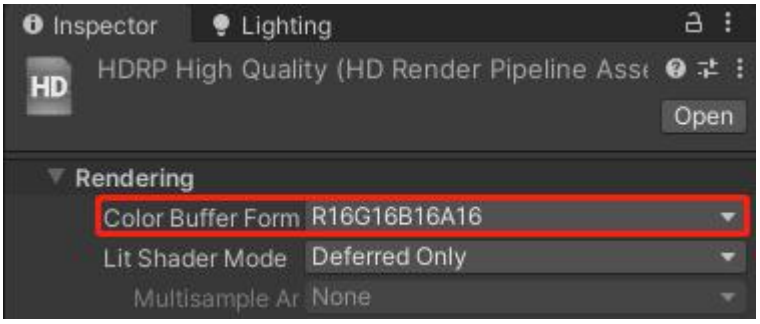
(2) Another camera is needed for generate force LUT, tick 'Auto LUT Camera' so that RaindropFX will generate a default LUT camera for you (it will be attached as a child object of your object);

(3) During the game is running, once the transform of the target object changes, LUT camera will bake a new force LUT. In order to improve the performance, it is suggested to set a smaller resolution for the force LUT, such as 128 x 128. But if you have a lot of details on the surface of the object and need higher fineness, please using a larger resolution.

***NOTE:** The object must be placed in a separate layer and kept within the visible range of LUT camera.



*NOTE: Force LUT needs to record force information in the alpha channel of the render texture, but the texture format used in the default setting of HDRP does not have alpha channel. Please modify the 'Color Buffer Format' setting in HDRP:



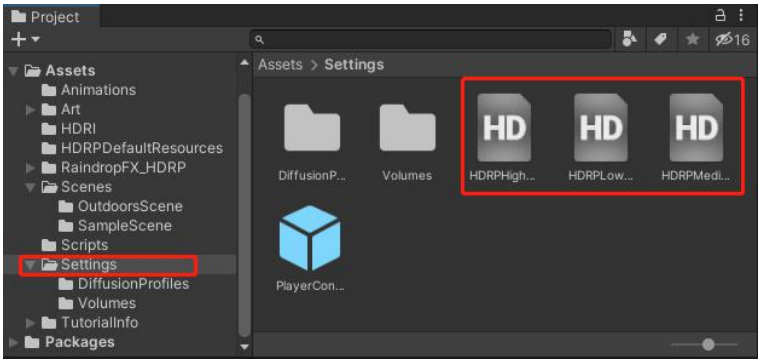
Default settings (HDRP 10.2.2) are located at:

'Assets/Settings/HDRPHighQuality';

'Assets/Settings/HDRPMediumQuality';

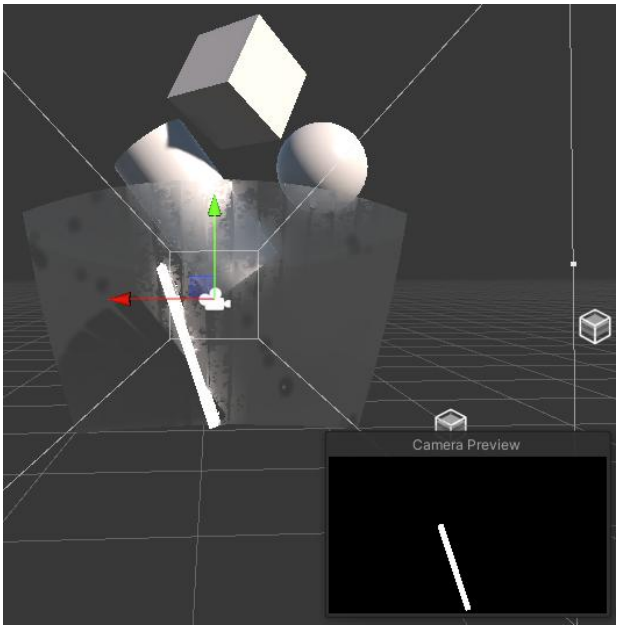
'Assets/Settings/HDRPLowQuality';

But if you are using your own custom settings file, or using another version of HDRP, they may not located here, please find them and modify the setting by yourself.



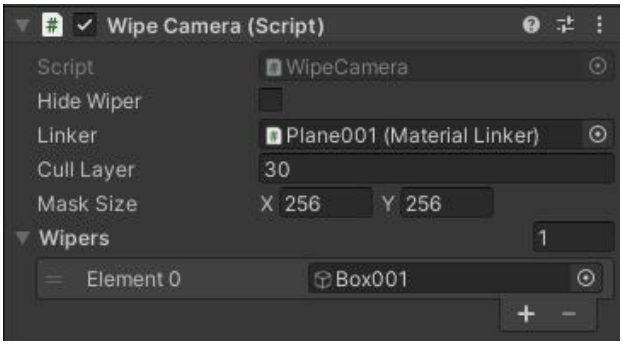
4. Setup wipe effect

(1) Similar with the screen space version, the object space version wipe effect also needs another camera to render a wipe mask. So first you need to create another camera, delete 'audio listener', then adjust the view of the camera to matching the wipe area:

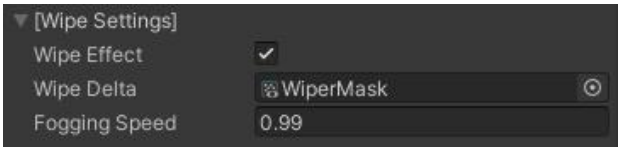


Please place the wipe mask camera according to the actual needs. For example, when rendering the windshield's wipe mask, it's better to set the camera as one of the child of the glass object;

(2) Then add a 'Wipe Camera' component to the wipe mask camera, drag and drop your glass object (with 'Material Linker' component attached) to 'Linker' slot, then set 'Cull Layer', 'Mask Size' and 'Wipers' by yourself. Wipers will be automatically moved to the specified cull layer at the beginning of the game. Note that the 'Mask Size' property will affects the aspect ratio of the wipe mask captured by the camera. For the sake of rendering performance, the resolution of the wipe mask does not need to be too high;



(3) Tick the 'Wipe Effect' in the 'Volume' component, then just run your game.



2-3 System options

Category	Parameter	Description
Basic Settings	Fadeout_fadein_switch	Waterdrops will fade in/out automatically if you disable/enable this.
	Fast mode	Works with 'Fadeout_fadein_switch'. Waterdrops will fadeout with higher frame rate but lower accuracy if you turn it on. *It will greatly affect the effect of screen fog.
	Fade speed	The speed of waterdrops fadeout. The bigger, the faster.
	Refresh rate	For example, if you set it to 2, the raindrop animation will calculate every two frames.
	Force rain texture size	When turn it on, raindropFX will always calculate the screen rain texture of the specified size(Calc Rain Texture Size) and then rescale it to the current screen resolution size. When your game resolution is very large, opening this option will improve performance.
	Calc rain texture size	
	Down Sampling	If you want to make the screen rain texture size follow the screen resolution automatically, turn off 'force rain texture size', then the rain texture size will equals screen resolution * DownSampling.
	Raindrop tex_alpha	Raindrop texture must be set before you can use RaindropFX. Find the raindrop texture at 'RaindropFXPro_PPV/Resources/Textures/raindrop_a'. Or you can use your own raindrop texture. *The calculation of the program is based on the alpha channel of the texture, so PNG format images with alpha channel are recommended.
Raindrop Settings	Generate trail	Controls whether the dynamic water droplets produce a tail when they slide. When the dynamic water droplets produce a static tail drop, itself loses a certain amount of mass, which will affect the results of the physical calculation.
	Max static raindrop number	Water droplets are divided into two categories: static and dynamic. Static water droplets are generated on the screen at random locations and cannot be moved. Dynamic water droplets are generated by the physical computing movement.
	Max dynamic raindrop	

	number	
	Raindrop size range	Calculate the size range of raindrops based on your raindrop texture.
Physical Settings	Calc time step	The time step of physical calculation.
	Use wind	Tick this if you want to use screen wind.
	Wind turbulence	Controls wind turbulence amount.
	Wind turb scale	Adjust scale of the wind turbulence.
	Wind	Wind power adjustment.
	Radial wind	Enable radial wind, mostly for driving simulation.
	Gravity	Gravity adjustment.
	Friction	Friction adjustment.
Special Post Effects	Rain Mask_grayscale	Controlling visible part of droplets based on a grayscale image.
	Pixelization	Enable/Disable droplet pixelization. This effect can be used in pixel style games.
	Pix Resolution	Specifies the pixel resolution. The lower the resolution, the more obvious the pixel of water droplets.
Interactive Settings	Mouse Painting	Enable this and you'll be able to painting raindrops on the screen using your mouse. (hold left mouse and drag your mouse)
	Wipe Effect	If you want to enable dynamic wipe effect, tick this. (Works with 'Wiper' component, please refer to chapter 2-1-3 to see how to setup)
	Fogging Speed	The speed at which the fog on the screen is restored after being wiped. The larger the value, the slower the recovery.
Rendering Settings	Tint color	Tint color for droplets.
	Tint Amount	The larger the value, the thicker the color.
	Distortion	Screen blend effect intensity. The larger the value, the stronger the distortion.
	In black	Color level parameters. Can be used to adjust the 'cutoff' effect of

	In white	waterdrop edge.
	Out white	
	Out black	
	Fusion	Fuse small droplets that are close together into a big one.
Fog Settings	Use fog	If you want to use screen fog, turn it on.
	Fog intensity	Screen fog effect intensity.
	Fog tint	Color of fog.
	Fog iteration	Controls the effect of water droplet wake on fog.
Depth of Field Settings	Droplet blur	Enable this to blur foreground waterdrops.
	Invert blur	Switch between background blur and foreground droplet blur.
	Focalize	Adjust focal length.
	Blur iteration	Adjust blur strength.
	Edge softness	Edge softness of depth effect.

3 GPU RAINDROP SOLVER (BETA)

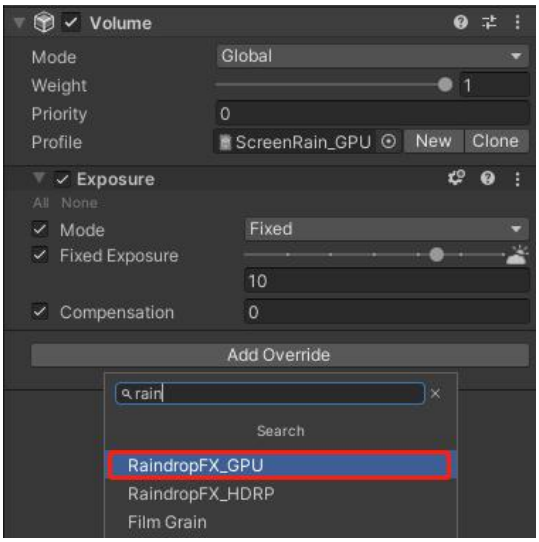
3-1 Screen space version

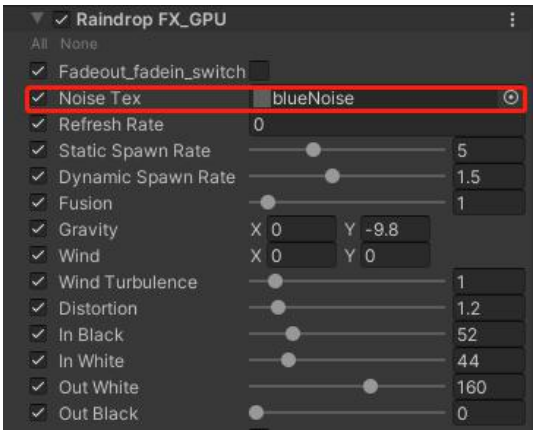
1. Volume setup

Select any object in your scene, and add a 'Volume' component.

2. Raindrop effect setup

On the 'Volume' component, choose a profile in the profile field or create a new profile, then click 'Add Override', go to 'Post-processing -> RaindropFX -> RaindropFX_GPU' to add the raindrop effect.



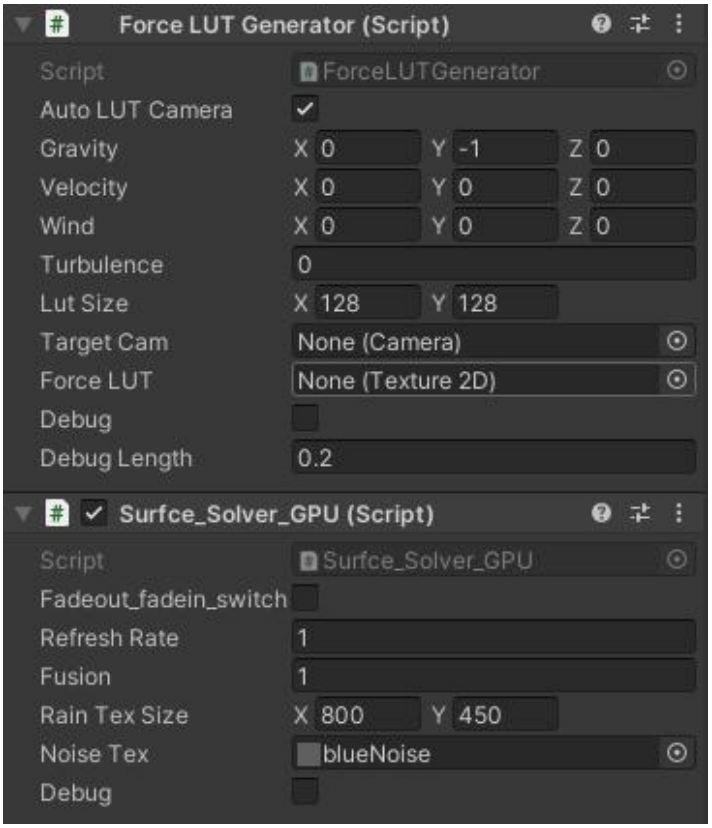


Noise texture must be set before you can use RaindropFX. Find the default blue noise texture at 'RaindropFX_HDRP/Resources/Textures/blueNoise'. Noise texture is used to specify the position of raindrops which are randomly generated, so you can use your own noise texture to change the distribution of raindrops.

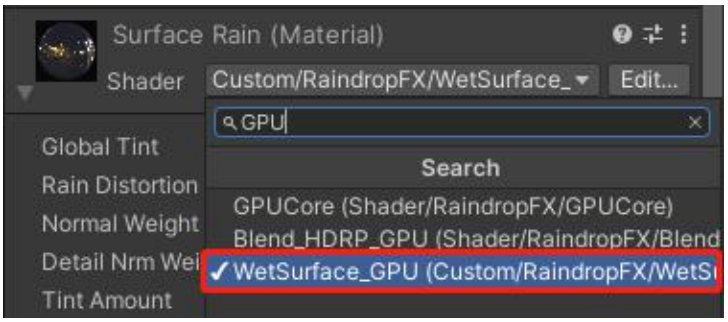
Now you can see the raindrop effect in your scene. Note that the GPU version of the simulation results are different from the CPU version, the water trail of GPU version is more continuous.

3-2 Object space version

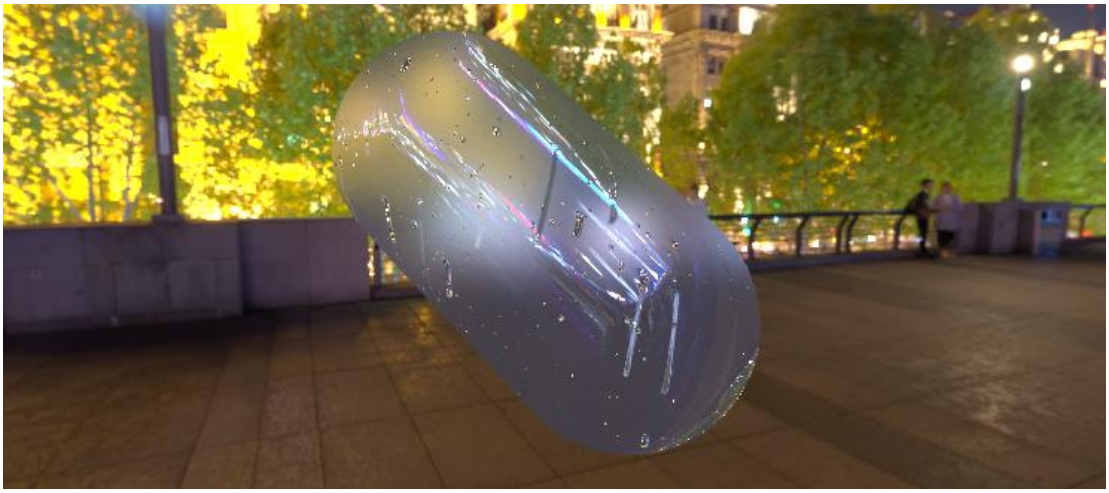
Select any object in your scene, add a 'Surface_Solver_GPU' component and a 'Force LUT Generator' to the object, then assign default 'blueNoise' texture to 'Noise Tex' slot (or any custom noise texture):



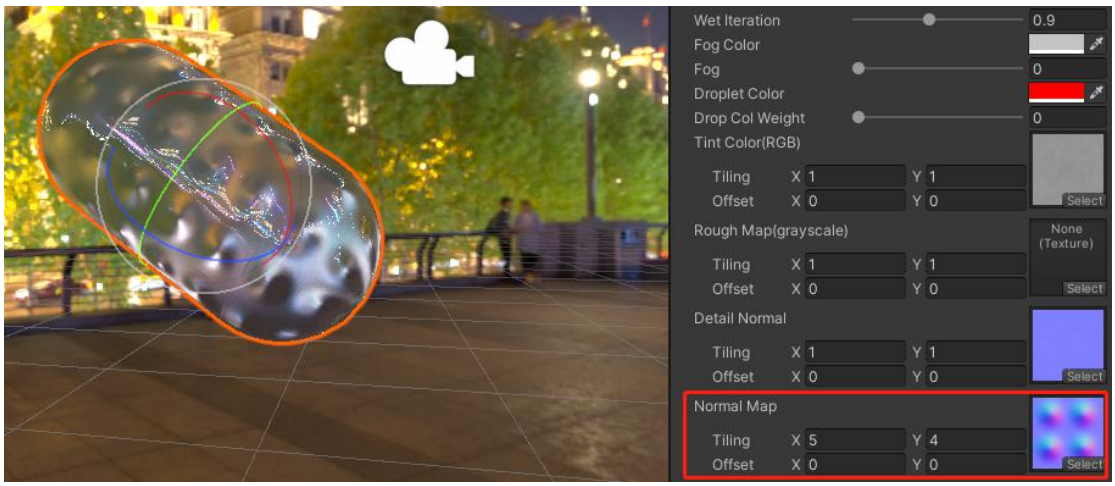
Just like the CPU version solver, you need to setup your force LUT. Please refer to section **2-2 3.Setup force LUT** for the steps. Then create a new material and change the shader type to 'Custom/RaindropFX/ WetSurface_GPU', assign it to your object:



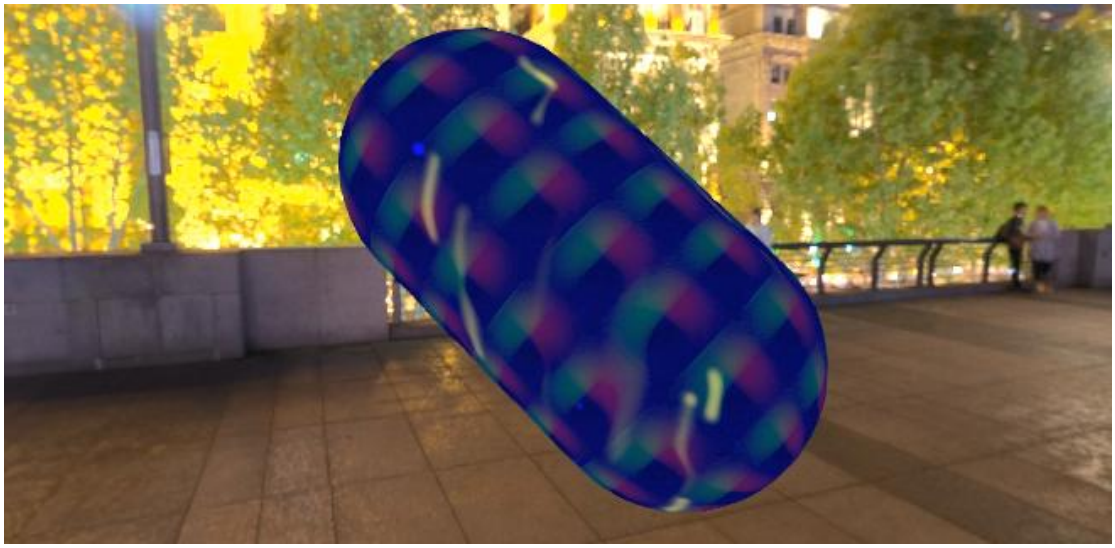
Now run your game and you will be able to see the raindrops on your object surface:



It’s possible to set an extra normal map for object surface and make raindrops interact with the surface normal in GPU solver. Just drag and drop you normal texture to ‘Normal Map’ slot, then tick ‘Use Normal Map’ in the ‘Force LUT Generator’ component and you will see the effect.

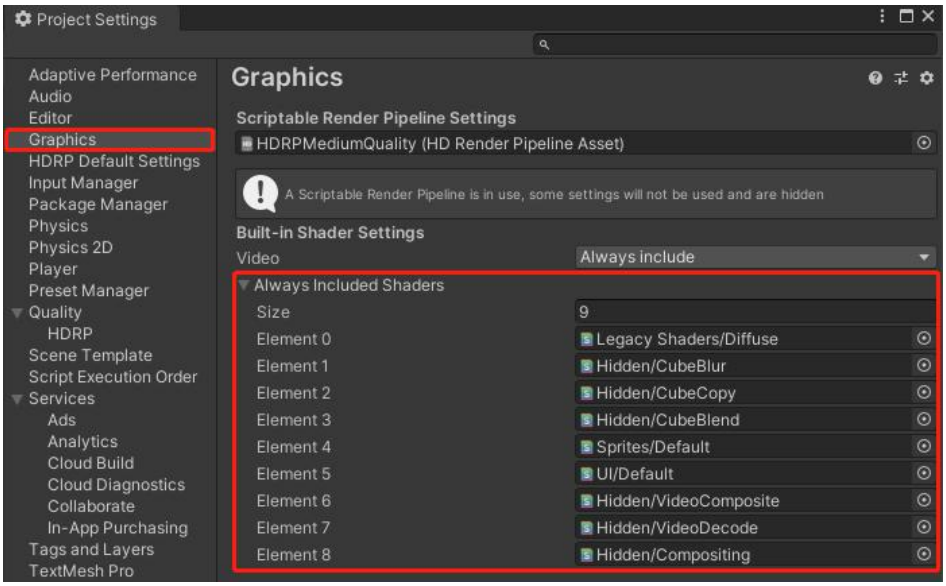


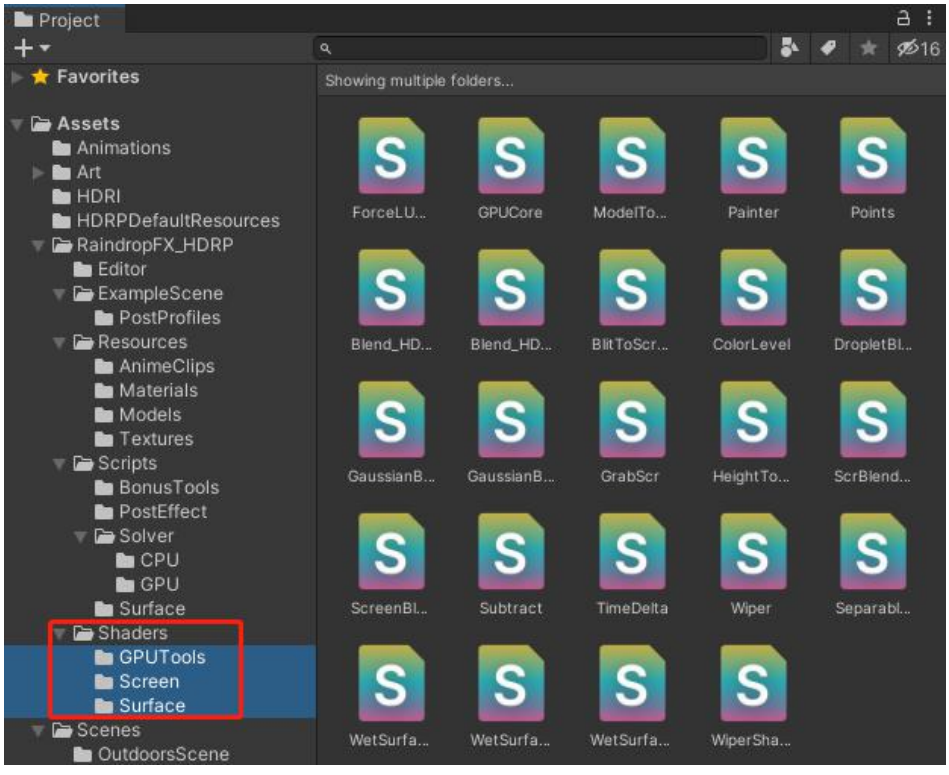
Moreover, tick ‘Debug’ option in ‘Surface_Solver_GPU’ component and you will see the effect more clearly, so that you can adjust your normal map easily.



4 TIPS

If you can see the raindrop effect in the editor in play mode but can not see it in a build, try to go to 'ProjectSettings->Graphics' in your Unity editor then add all the shaders of RaindropFX (located at : RaindropFX_HDRP/Shaders) to 'always included shaders', then rebuild your game and try it again.





THANK YOU FOR YOUR PURCHASE!

RaindropFX – Realistic Camera Lens Rain

Version 3.0.0 (HDRP)

Thank you for buying RaindropFX and supporting HU ANIME!

It's people like you that allow me to build and improve my indie games!

If you have any questions, comments, or requests for new features, please email me directly at: hztmailbox@gmail.com.