
Fast Ocean Manual Documentation

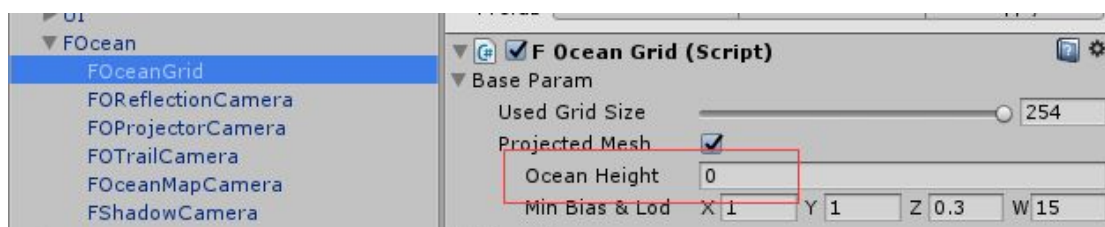
Version 1.1.6

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Scene Reference

When you create a scene, you should have following Steps to make FastOcean working:

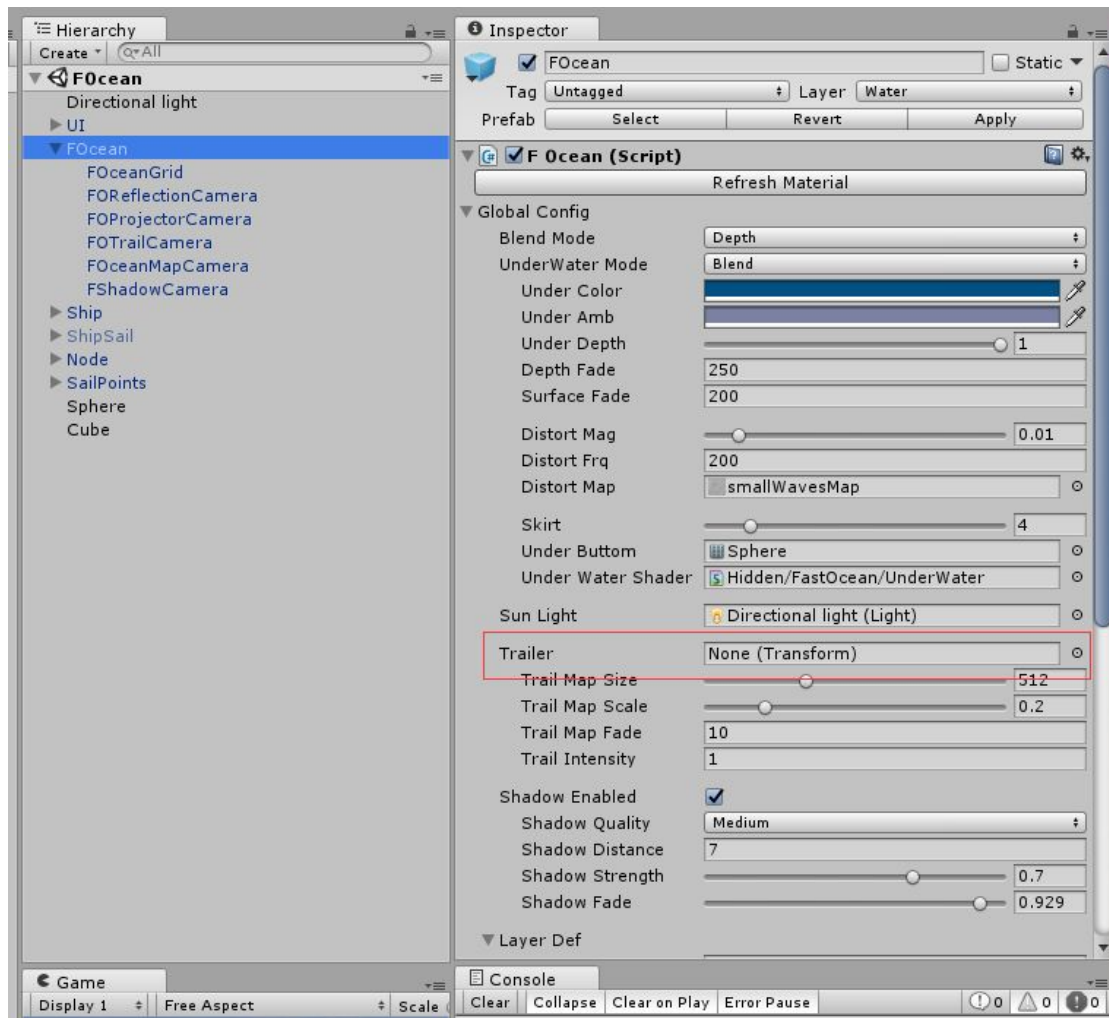
1. Drag the Node Prefab to the Hierarchy Panel, Node Prefab contains MainCamera and The Move Target Node. Remove the MainCamera which is outside the Node Object in the scene.
2. Drag the FOcean Prefab to Hierarchy Panel, this is the Core Prefab, it make the Sun and the other cameras automatically. FOceanGrid is inside, If you want to adjust the water level, then you can adjust **Ocean Height** or **Bounds** values, see below. Note: the Bounds value is for none projected Mesh, and If you have multi-FOceanGrids you need create a new material for it.



Now you get the Ocean.

3. Drag the Ship to the Hierarchy Panel, you get the ship on the Ocean surface, Drag the ShipSail to the Hierarchy Panel and remove

Node Object which contains the MainCamera in, Then also need to drag the ShipSail GameObject to the FOcean trailer, to make the trails follow the ShipSail trailer.



4.If you want modify params of Post Process effects (Glare, Sunshaft and Clouds), see the Components attached at MainCamera.

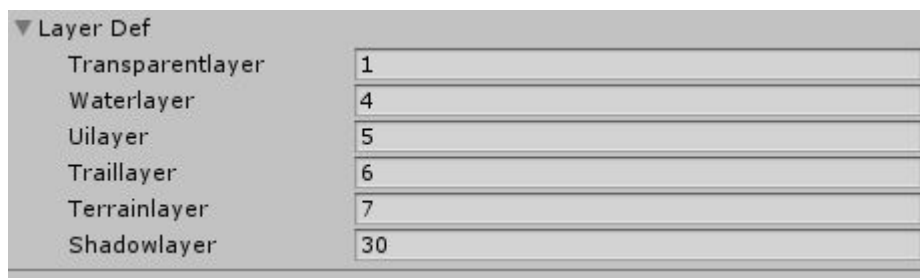
Note that: Underwater Component is hide, beside its order, its params was nested in FOcean script Inspector.

Script and Material Parameters Reference

FOcean Script

This script refers FOcean basic shaders and defines the layer numbers of the water, terrain, trails, shadows.

If there is a conflict with the definition of your game, please modify the number definition directly.



▼ Layer Def	
Transparentlayer	1
Waterlayer	4
Uilayer	5
Traillayer	6
Terrainlayer	7
Shadowlayer	30

This component is main controller of FOcean, the relationship of FOceanGrids as follow:

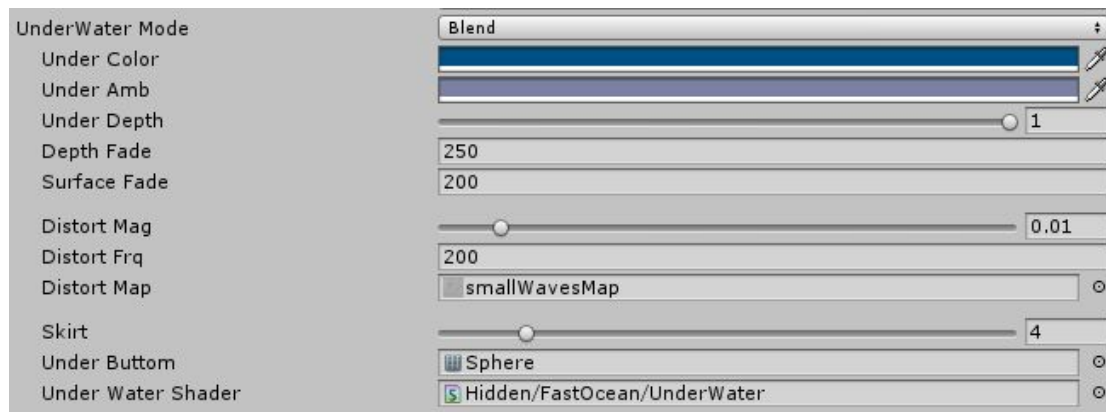


▼ FOcean
FOceanGrid
FOReflectionCamera
FOProjectorCamera
FOTrailCamera
FOceanMapCamera
FShadowCamera

Global Configure:

Blend Mode — If depth blend is enabled, ocean surface may blend with depth and GrabPass for refraction. On some mobile platform that not Support depth texture and half floating render texture, it will be turned to alpha blend. if alpha blend mode is enabled, ocean surface may blend with alpha only. Otherwise, use none blend mode for ocean surface rendering performance.

Underwater Mode — If under blend is enabled, will use a screen under water effect and “Skirt” Tech, the Skirt Params and blend Params also show in the inspector below.



If the platform support OpenGL ES 2.0 Only, will present a simplification for underwater. Simple under water will use fog and ambient for under water.

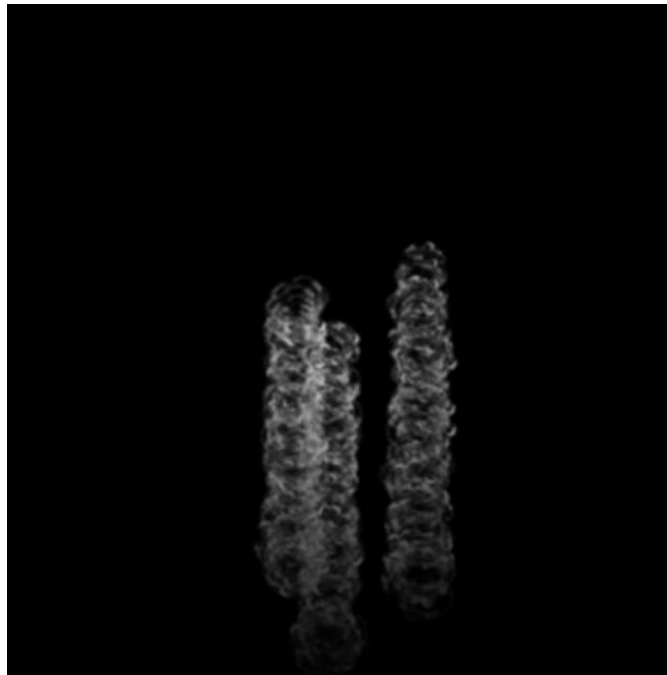
Note : In DEMO, let under color equal to base color, this can be customizable by the application.

Sun light — The main direction light of FastOcean.

Trailer — The center Transform of Trail Map which is used to render the white effects like trails and any other kinds foams on the water surface. if this Transform is null, then Trail Map rendering will be turned off by script.

Trail Mask Size — The value determines the mask size of projected trailmap, which render the effects like trails and any other kinds

foams to the water surface around the trailer GameObject. This value can affect the gpu performance, the smaller the better performance.



render trails effects to the mask

Trail Mask Scale — The value determines the world scale of trailmap mask, the larger the size, you will have more far view to the trailmap border and loss the trailmap detail.

Trail Mask Fade — To avoid the trail mask bound clipping, this value gives you a boundary over transition. value range is 5 to 10 would be better.

Trail Intensity — The value determines the intensity of trailmap color albedo on the ocean surface.

Note that : TrailCamera's cullingmask only for traillayer GameObject.

Shadow Enabled – Switch this option to enable ocean surface hard shadow by close fit sampling. To control the shadow of a GameObject need add the FObject or FBuoyancy Script to the GameObject and use CastShadow option.

Shadow Quality – Determine the size of Shadow Map resolution.

Shadow Distance – The value determines the max distance shadow receiving that towards the sun light.

Shadow Strength – The intensity of shadow that added to the ocean surface.

Shadow Distort – The intensity distort of the ocean shadow.

Shadow Fade – The shadow value use distance between ocean surface and GameObject Mesh to fade out shadow strength.

FOceanGrid Script

Base Parameters include :

Used Grid Size – The size of vertices you use for the Grid. This value can anti waves aliasing, at same time, affect the gpu performance, the smaller the better performance. Default Max value is 254, on mobile platform, Advised Value is 64.

Projected Mesh – When using Projected mesh for FOceanGrid, that controls the position of ocean mesh automatically by script. When

the Projected Mesh is turned off, you can adjust the xz components of ocean Mesh horizontally.

Ocean Height — This value indicates the water level , as refers to simulation plane height for the Grid to the 0 horizontal plane.

Min Bias & Lod — The x value is used to scale effects toward horizontal direction, y-z bias the FOceanGrid toward horizontal x-z direction, and w is Lod Factor that larger is avoid the surface far aliasing on the screen and smaller larger is avoid the surface near aliasing on the screen.

Bound Pos — The position of Simple Mesh Grid.

Bound Rot — The horizontal rotation of Simple Mesh Grid.

Bound Size — The size of Simple Mesh Grid and its bound.

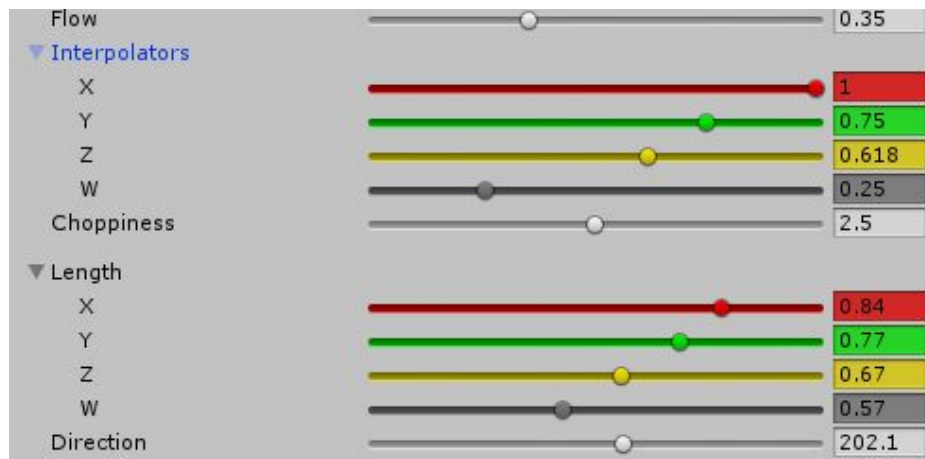
Wave Shape Parameters include :

Scale — It control the scale of the Gerstner waves and bump & foam tile of material, but not include buoyancy simulation params and surface size params.

Amplitude — The total height of the Gerstner waves.

Flow — Flow strength of the wave direction through, it indicates how the way directed Gerstner waves.

Choppiness — The perform value of distort peak Gerstner waves.



In the **Interplotors**(Flow direction) and **Length**(Wave Length) section of Gerstner Shape, you will see four values, X, Y, Z and W, you should see that it affects the flow and distance between wave peaks.

Direction — Angle of wave direction, is used to calculate for the Gerstner waves.

Speed — It scales the speed of the Gerstner waves.

Note: Angle Frequency is depend on Dispersion Relations.

Drift — It scales the drag force to drift FBuoyancy Object towards ocean wave direction.

Wave Detail Parameters include :

Quality Mode — Fast, High, FFT Respectively.

1. **Fast**, only bump texture small waves are obtained.

Normal Map — Normal map rendering the ocean small waves that is

related to Gerstner waves, Note that the texture is Normal Texture Setting Type required For Bumps. If you do not use the Generate MipMaps option, will provide better details, but the performance will be worse

Bump Tiling & Speed — It represents the bump small waves tiling and speed, it just scroll Normal Texture in the Gerstner waves direction, also need correct Normal Texture for waves direction.

2. **High**, tangent space computational capabilities and parallax textures are obtained.

Normal Map — as Fast Mode.

Bump Tiling & Speed — as Fast Mode.

Parallax Map — Parallax map texture only for Parallax shader.

Parallax Offset1 — Parallax map height for Bump slot 1 .

Parallax Offset2 — Parallax map height for Bump slot 2 .

3. **FFT** is used, tangent space computational capabilities and FFT procedure small waves are obtained. Compared to high and fast quality, this mode provide a good detail, easy to control small waves, but draw call is relatively high.

FFT Resolution — Procedure small waves quality.

Use MipMaps — Generate MipMaps to filter the small waves.

Wave Scale — The amount of Procedure small waves.

Wave Speed — The animate speed of Procedure small waves.

Reflection Parameters include :

This component always render scene for local reflection, if you want better performance, set the reflection mask to Nothing to render Sky or Background Color Only.

Quality — Determine the size of reflection buffer and blur iterations.

Reflection Mask — Set the Scene reflection masks.

Clip plane offset — The reflection clip height of the ocean plane.

Blur Enabled — The switch of blur reflection effect.

Blur Spread — The spread value of blur reflection effect.

FastOcean Material

FastOcean Material that named FOceanParallax is contained in .

Base Color — The base color of the ocean, the **alpha** is used for whole ocean **transparency** control.

Deep Color — The deep color of the ocean, the **alpha** is used for deep ocean **attention** control.

Snell — This parameter is the relationship between reflection and refraction on the surface of the water.

Ambient Factor — Value of ambient weight, is used to lerp between base color and ambient(indirect light) color.

Extinct Scale — The amount of Extinct Color.

Extinct Color — Tweak the extinction Color for different coloring that is using for some subsurface effect.

Distortions — Distortion value of refraction (depth blend Only), reflection, bump normal of waves, and sun specular of waves.

Fresnel Scale — The value is used to calculate the Fresnel normal.

Fade — The value is used to fade the waves height and fogs on pixels from far to near distance to the MainCamera.

Sun Mode — eSM_Phong, when sun through in the horizontal direction of water surface, specular effect will be significantly wide. On the contrary, eSM_BlinnPhong will be in a larger specular range than eSM_Phong in the vertical direction of water surface.

Sun Intensity — The sun light intensity adjustment value for specular reflection on the water surface, the default is 1. The value is for Sun, Glare or HDR Bloom.

Shininess — The value is used to control the specular lighting power value.

Shallow Color — The shallow water color beside the terrain and underwater mesh objects. When depth blend turned off completely,

the alpha is used for distance transparency from eyes.

Above Depth — The depth water value, which controlled the depth water around refraction of the terrain and other mesh objects. Only work for Above Water.

Shallow Depth — The shallow water value for beside the depth edge, which faded the shallow color to the base color of ocean water around the terrain and underwater mesh objects. Only when FastOcean DepthBlend option is turn on, this value is available.

Foam — Control the foam map blending in shader, foams in wave peak value, the global foams intensity, foam edge value to blend that water contact with the Objects, and distort the stretch of foams, just be careful the distort value.

Foam Tiling & Speed - It represents the foams tiling & speed.

Foam Blend Speed — The scroll speed of the blend distort foam maps.

Foam Texture — Base map rendering the foam by using depth buffer and offsetmap value to blend.

Foam Mask Scale — The scale of secondary foam tiling component the foam gradient map.

Foam Mask — Mask the foam detail map to blend, use foam tiling secondary component to modulate mask scale of the mask map.

Foam Gradient Scale — The size of the foam gradient map.

Foam Gradient Speed — The scroll speed of the foam gradient map.

Foam Gradient — Gradient map of the shallow foam edge.

FObject Script

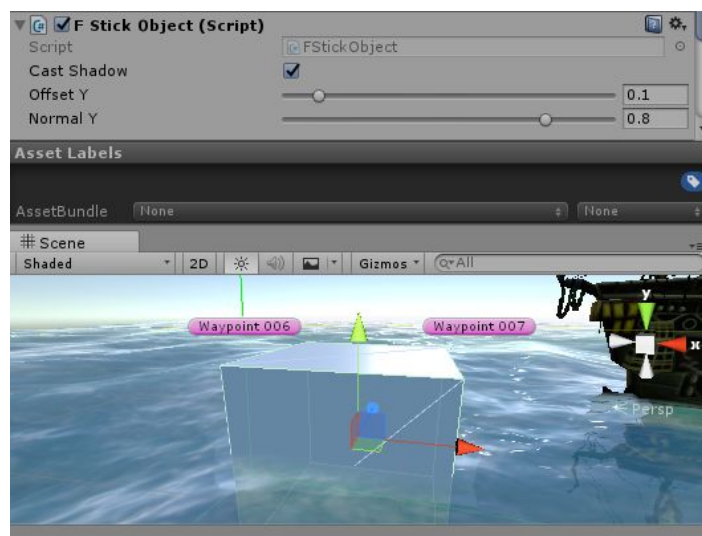
Cast Shadow — Whether the shadow is casted to the ocean surface, you need to add this script to the GameObject contains renderers to add shadows.

FStickObject Script

Derived from FObject Class, Design of a buoyancy object for Stick to ocean surface Position and Normal, no need rigidBody dynamics and easy to animate buoyancy object on the ocean surface .

Offset Y — The negative offset of Position towards Y axis.

Normal Y — The offset factor of transform upwards Y axis.



Just one script to animate buoyancy object

FBuoyancyBody Script

Derived from FObject Class, Design of a buoyancy object for FastOcean to be divided into two script components, that are FBuoyancyPart and FBuoyancyBody.

FBuoyancyBody act with a rigidbody, FBuoyancyPart act as a volume Force Probe. Other kinetic settings are followed by UNITY rigidbody component, such as mass.

Max Angular Velocity – The max angular setting to rigidbody.

Buoyancy – The array of FBuoyancyParts.

FBuoyancyPart Script

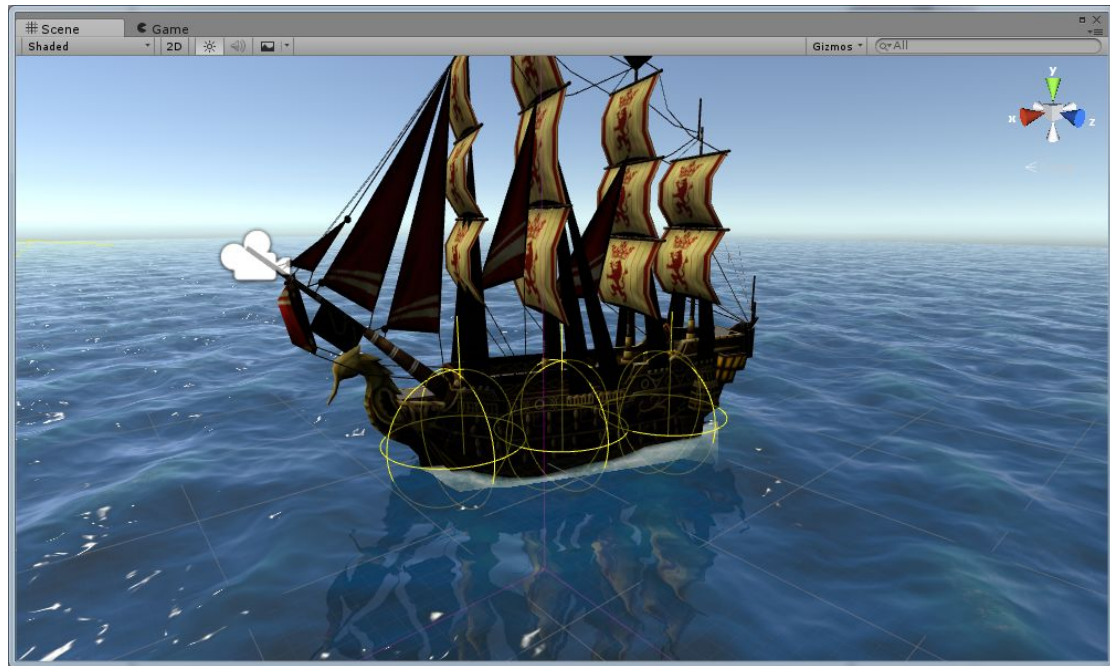
You can design the volume Force Probe when children gameObject attached FBuoyancyPart script, show as below.

Radius - The radius of volume Probe, one of determine param mass and force of rigidbody.

Stickness - The intensity of stickness force for drag rigidbody to the ocean surface.

Slope - The factor is used to generate torque rotation effect from the upvector of transform to ocean surface normal.

Drag - The intensity drag force for rigidbody to prevent translation towards its velocity and drift to ocean wave direction.



Buoyancy Part Gizmos (volume Probe and normal)