

Blue Ocean

video 1 : <https://www.youtube.com/watch?v=53C7WEtD83U>

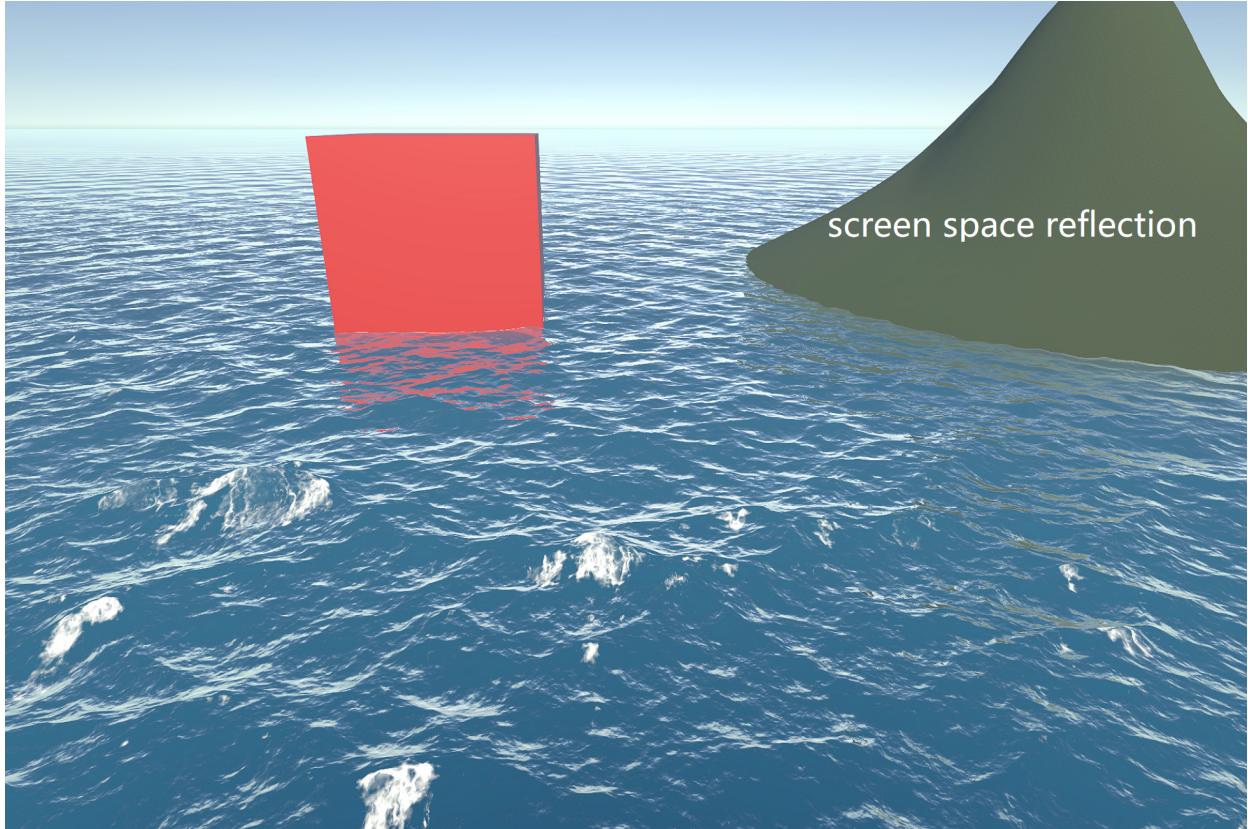
video 2 : https://www.youtube.com/watch?v=C9qG1w_6G1c

About

Blue Ocean is a infinite ocean simulation project which depends on universal rendering pipeline.

Blue Ocean need compute shader support, and optimised for **mobile!**





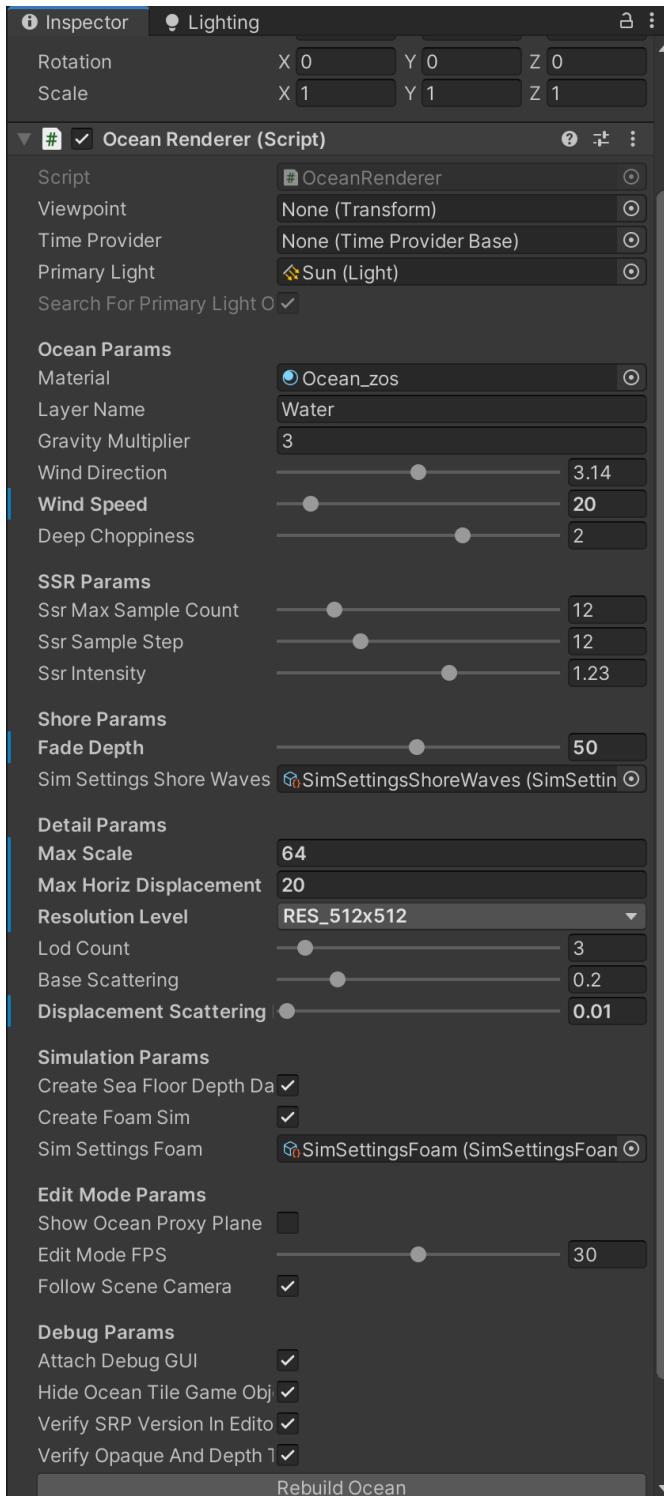
Features

- LOD geometry generation
- Multi-layer GPU FFT animation waves for depth water (3 layers is enough)
- Gerstner waves animation waves for shallow water
- Auto water depth cache at once on first frame
- Jacobian foam generation for depth water
- Custom wave input and foam input by texture (often used for shoreline controlled by artist)
- Screen space reflection

How To Use

1. Install URP, and turn on **Depth Texture** and **Opaque Texture**.
2. Create an **Ocean Render** gameobject, set a correct material which has ocean shader.
3. Create an **ShapeFFTBatch** gameobject.
4. If you want a island, you have to create a **Ocean Depth Cache** gameobject to cache depth.

MonoBehavior Parameters



- Wind Direction : radian in x-z plane to control wave flow direction
- Wind Speed : influence wave amplitude
- SSR Max Sample Count : raymarching loop counts
- SSR Sample Step : step length for every loop
- SSR Intensity : intensity to blend with IBL

- Fade Depth : depth edge to blend deep water FFT waves and shallow gerstner waves
- Max Scale : geometry scale for water mesh tile
- Max Horiz Displacement : the value to expand water tile bounding box for wave vertex displacement
- Resolution Level : three resolution mode for FFT grid
- Lod Count : layer count for combine the final wave

Suggestion : Max scale 32, Resolution Level 256, Lod Count 3 is enough for mobile

- Base Scattering : scattering value for calm ocean
- Displacement Scattering : extra scattering value by wave displacement

Example Scene

This package includes a sample scene which illustrates how the ocean works.

TODO

Simulate water buoyancy with displacement texture; which is used for calculating the shape of your waves.

You may also have to simulate underwater effect and dynamic waves.