



water volume
advanced buoyancy

QUICK START

Add WaterVolume and BoxCollider components to a GameObject. Any rigidbody with a box, sphere, mesh or capsule collider will float inside that box collider.

PURPOSE

Water Volume is the simplest way to objects float in any space you define as water. It's multi-threaded and memory efficient. Objects in the water need no special configuration, just a collider and a rigidbody. You have control over buoyancy, viscosity, flow and more. You can define a Water Volume area with a simple box collider or use multiple animated meshes (CPU deformations) to create dynamic surfaces.

Water Volume does not include or require specific water shaders. Any water effect on a flat surface or water effect with CPU mesh deformations will work together to not just look like water, but act like it.

PREFABS

There are two optional prefabs you can use as starting points for your setup in Plugins/WaterVolume/Prefabs:

Water Volume

- A GameObject with BoxCollider and WaterVolume components

Water Volume (Advanced)

- A GameObject with BoxCollider and WaterVolume components

- Four skinned mesh renderers with Unity's Standard Water₄ effect

- A blend shape driven water surface animation

- A "Splasher" that listens for water entry events and invokes a simple splash particles.

FEATURES

- Adjustable buoyancy
- Adjustable viscosity (drag)
- Multi-threaded, optionally automatically scaled to match CPU core count
- Enter and exit volume events
- Can use multiple meshes or multiple skinned meshes for animated surfaces. (CPU vertex displacement only, not GPU)
- Meshes can be added and removed from the simulation at runtime
- Buoyancy and drag affect only the underwater parts of objects
- Surface area and rotation aware viscosity
- Optional directional "flow" force
- Can activate/deactivate floating items based on the distance from an observer
- Exposes per floating item information like distance to surface and underwater center
- Items can be tracked in the water but not affected. For tracking how deep items are without floating them.
- Subscribable events for entering and exiting the water

DEMO SCENE

Check out the demo scene for examples of how to use:

Parameters

Waves

Splashing

Events

"Only Track"

Observer based activation management

Threading options

API

Broadcast messages

OnEnterWater(int guid)

Sent to GameObjects when they touch water

OnExitWater

Sent to GameObjects when they fully exit water

Events

OnItemEnteredWater

OnItemExitedWater

OnItemCenterEnteredWater

OnItemCenterExitedWater

All events use this delegate:

```
public delegate void ItemDelegate(ItemInWater item);
```

Example:

```
water.OnItemEnteredWater += MyOnItemEnteredWaterFunction;  
  
function MyOnItemEnteredWaterFunction(WaterVolume.ItemInWater item){  
  
    // My code here. See SplashExample.cs for more.  
  
}
```

WaterVolume.WaterVolume instance

Public properties are documented with mouse over text in the inspector.

```
public void AddMesh(GameObject obj)
```

Used at runtime to tell WaterVolume to find a mesh or skinned mesh component on obj to be used as a water surface. If the obj is later destroyed, WaterVolume will recognize that and silently stop trying to track it.

```
public ItemInWater GetItem(int guid)
```

Returns a WaterVolume.ItemInWater instance if an object with a matching guid is inside the WaterVolume. Guids can be found using gameObject.GetInstanceID(). Returns null if no matching object exists

public void OnlyTrack(GameObject go)

Tells WaterVolume not to alter the velocity of the specified GameObject. It will still receive broadcasts and respond to GetItem calls.

WaterVolume.ItemInWater

Reading properties of ItemInWater instances can be useful when responding to events like water entrance and exits. Many of ItemInWater's public methods and properties are only useful internally by WaterVolume.WaterVolume.

Some notes on the most useful:

float distanceToSurface

Vertical distance from the center of the item to the nearest surface vertex above the water

Vector3 underWaterCenter

The estimated center of the underwater portion of the item

WaterVolume water

Useful if you are using multiple water volumes and want to know which holds this item

Vector3 waterEventPoint

The world space position of the most recent water event such as water touched, exited, center entered water, center exited.

SUPPORT

Please email support@popcannibal.com with any questions, problems, suggestions and requests.