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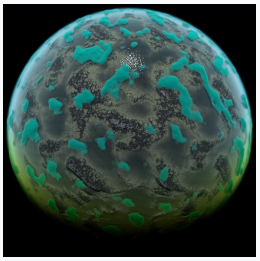
The ultimate planet rendering system.

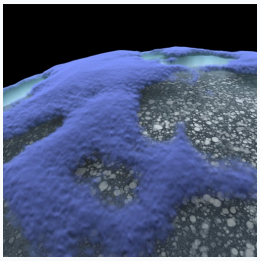
This asset is designed to work in Unity 2021 LTS, Unity 2022 LTS, Unity 2023, and Unity 6, with the Built-In Render Pipeline, URP, and HDRP.

This asset includes a custom planet LOD system with fully configurable biomes, a volumetric atmosphere and cloud system, and an ocean system with underwater effects.

All example scenes are in the **"Plugins/CW/Planet Forge/Scenes"** folder, which show you what fully configured planets look like.



Seamlessly Fly From Space



Through The Atmosphere

Through The Ocean

And Go Underwater

Required Packages

⚠ Your project must have the **Burst** and **Mathematics** and **Collections** packages installed.

> Package Installation Guide

Making Your Own Planet

To make your own planet from scratch, you can either:

- Right click in the **Hierarchy** tab, and select **“CW / Planet Forge / Planet (Radius = 500)”**.
- Go to the menu bar, and select **“GameObject / CW / Planet Forge / Planet (Radius = 500)”**.

> Larger Planets

When you create a planet, especially a larger one, it may spawn on top of the camera. If so, increase the planet's **Transform** component's **Position Z** value so you can see it.

This will create a new GameObject called **"Planet"** with 4 child GameObjects:

1. ## "Landscape"

   Has the SgtSphereLandscape component, which generates and renders the planet surface.

   Has a child GameObject called **"Biome"** with the SgtLandscapeBiome component, which applies color and layers of detail to the planet surface.

2. ## "Sky"

   Has the SgtSky component, which renders the atmosphere and clouds.

3. ## "Cloud"

   Has the SgtCloud component, which controls the cloud data.

   Has a child GameObject called **"Detail"** with the SgtCloudDetail component, which erodes the cloud layer to make holes.

4. ## "Ocean"

   Has the SgtOcean component, which generates and renders the ocean and underwater.

   Has the SgtOceanRays component, which generates and renders underwater light shafts.

Has the SgtOceanDebris component, which generates and renders underwater marine snow.

If your planet doesn't need an ocean/clouds/etc, then you can delete it. However, cloud rendering requires the sky (just like in real life).

You can hover the mouse over any inspector setting, and it will tell you what it does.

Landscape LOD

The planet surface LOD is driven by the **Detail** setting relative to the **Main Camera**'s position. If you want this to be based on a different object, or multiple objects, then you can drag and drop as many **Transforms** as you like into the **Observers** list.

The landscape is generated using height and color textures, which are defined in the **Bundle** setting. If you want to create your own bundle, then you can add the SgtLandscapeBundle component to your planet (or in a prefab), and drag and drop it into the **Bundle** setting. By default, the **"Example Bundle"** is used, which contains a few example textures.

If you have a large planet, then Unity may output warnings that there are large colliders in your scene, but there doesn't seem to be a way to disable this...

If you want the planet to be based on a pre-generated albedo or height texture, then you can set it in the **AlbedoTex** or **HeightTex** setting.

These must use cylindrical (equirectangular) projection, use the **Single Channel Red** format, and have **Read/Write** enabled.

Landscape Buttons

The SgtSphereLandscape component inspector has several useful buttons.

The **“Add Collider”** button will add the SgtLandscapeCollider component. This will generate colliders for the whole planet down to the specified **MinimumTriangleSize** in this component.

The **“Add Detail”** button will add a child GameObject with the SgtLandscapeDetail component. This can apply a layer of detail around the whole planet, or to a specific region.

The **“Add Flatten”** button will add a child GameObject with the SgtLandscapeFlatten component. This can flatten the landscape in specific regions.

The **“Add Color”** button will add a child GameObject with the SgtLandscapeColor component. This can color the whole planet based on height and slope data, or to a specific region.

The **“Add Biome”** button will add a child GameObject with the SgtLandscapeBiome component. This combines the features of SgtLandscapeDetail and SgtLandscapeColor into one component, simplifying configuration.

The **“Add Prefab Spawner”** button will add a child GameObject with the SgtLandscapePrefabSpawner component. This will spawn prefabs on the surface of your planet as you approach.

The **“Add Static Spawner”** button will add a child GameObject with the SgtLandscapeStaticSpawner component. This will spawn static meshes on the surface of your planet as you approach.

Sky

You can adjust the **UpperColor** and **LowerColor** settings to change its look.

The **InnerMeshRadius** setting should match the radius of your ocean, or your landscape radius if your planet doesn't have an ocean.

If you enable the **Lighting** setting, then the atmosphere can receive light from one **SgtLight** component.

> When you create a planet, the **SgtLight** component will automatically be added to the Sun or brightest light in your scene. Otherwise you must manually add this component.

Required Scene Components

> Your main scene light must have the **SgtLight** component to calculate lighting on the atmosphere and clouds. When you create a new planet, this will automatically be added.

> Your scene must have the **SgtVolumeManager** component to render the gas giants. When you create a new planet, this will automatically be added.

> Your main camera must have the **SgtVolumeCamera** component to render the gas giants. When you create a new planet, this will automatically be added.

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