Image Based Light with the Sky

The HDRI used for Image Based Light can also be rendered as backdrop and optionally even mixed with the Bryce Sky. Understanding the options helps to get the effect the artist is after.

Introduction

Making the best use of the options available to mix the sky with an HDRI background, it is very helpful to understand what a Bryce sky is, what it comprises and what it excludes.

The Sky

The sky is a huge sphere that contains several components that are mapped on this sphere: clouds, stars, comets, the moon and the sun (but not the light of it).

Haze, fog and rainbow are not on this sphere but take up the space between the scene and the sky sphere. Therefore, those atmospheric effects do not belong to the sky; neither do *Ambient* and *Sky Dome*.

The *Sky Color* accessible from the main workspace also belongs to the sky; it is the overall colour of the sphere.

The mosaic of the *Sky Lab* at right shows all the elements that are on the sky sphere.

The HDRI as Backdrop

If *Use as backdrop* is enabled, there are three options to select from: *Blend into background*, *Blend with sky* and *Add to sky*. The fourth option *Use sky color* can be toggled on and off for all three options.

With *Intensity* the brightness of the HDRI backdrop can be adjusted and with *Transparency* the ratio with which the sky and HDRI spheres are mixed.

The *IBL* tab of the *Sky Lab* shown at right identifies the relevant options and controls.

The Options and Controls

Under the *Sky & Fog* heading in the main workspace, there are four options for the *Sky Mode* (leftmost thumbnail). The first two, *Soft Sky* and *Darker Sky*, give the sky sphere a predefined colour. The third option *Custom Sky* permits setting the colour of the sky sphere and the last option *Atmosphere Off* also permits setting the colour but works differently with the blend options in the IBL tab.

Tone map

The HDRI cannot be directly shown on the screen because its dynamic range exceeds the specification of the display. Its dynamic range is squeezed into one the screen can handle. This is called linear tone-mapping and is the default. The resulting image is high contrast and often not suitable for photorealistic scenes, though it looks nice on a space scene. Clicking on *Tone map* subjects the HDRI to the Photographic tone-mapping operator and the result is often better suited for natural looking scenes.

An additional and often overlooked means to "tone-map" is to mix the HDRI with the sky. Tone-mapping does not change the light cast onto the scene by the HDRI — except when rendering with True Ambience and Ignore tone-mapping is disabled (see the document *Image Based Light with True Ambience* https://horo.ch/docs/mine/pdf/IBLwithTA.pdf).

Intensity

This controls the brightness of the background only. However, if the option *Apply to light source* is enabled (click on white arrow at right), *Intensity* also acts as an multiplier for the light: *HDRI Effect* and *Specularity*. If this boosted light is needed for lighting the scene, the backdrop will often get too bright. Some of this excess brightness can be compensated by how the backdrop is blended with the sky.

Transparency

This control is used to balance how much of the sky and how much of the HDRI backdrop is visible. It depends on which blend mode is used: *Blend into background* or *Blend with sky*. This control is disabled when *Add to sky* is used.

Blend into background

This is the default setting. The HDRI is blended into the background gradient, and then the sky is rendered over it. This means that the sky is always visible. If *Transparency* is 0, sky and HDRI are equally visible, if *Transparency* is 100, the HDRI is invisible. In this mode, you cannot have the HDRI only visible. The sky dominates.

If *Atmosphere Off* is enabled in the *Sky Options* (GUI), the HDRI is never visible, no matter how *Transparency* is set.

Blend with sky

First, the sky is rendered, and then the HDRI is blended in. If *Transparency* is 0, the HDRI is not transparent and it covers the sky completely. If *Transparency* is at 100, the HDRI is fully transparent and the sky looks as if there were no HDRI as backdrop at all. In this mode, you can have the HDRI only visible, without the sky. The HDRI dominates.

If *Atmosphere Off* is enabled in the *Sky Options* (GUI), the amount of HDRI visibility can be controlled by *Transparency*.

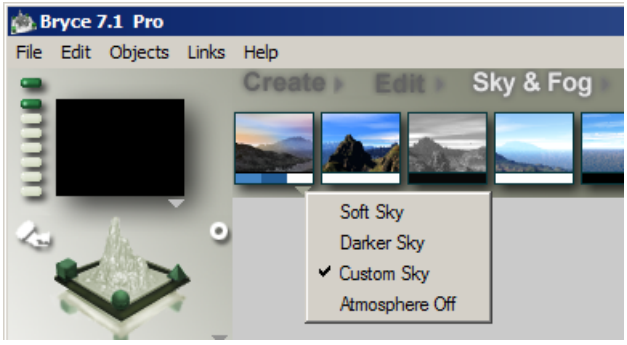
Add to sky

Sky and HDRI backdrop are added by equal amounts and the result gets brighter. The *Transparency* control is disabled. With *Intensity*, the influence of the HDRI over the sky can be adjusted.

If *Atmosphere Off* is enabled in the *Sky Options* (GUI), the HDRI is added to the *Background Hue*. When setting the *Background Hue* to black, only the HDRI is visible; other colours or grey shades can be used for effects.

Use sky color

The sky sphere is the base on which clouds and stars are put. It can be assigned a uniform colour. This colour can be set in the main workspace with the *Sky Options* (down arrow below the first thumbnail when *Sky & Fog* is selected).



There are four options. *Soft Sky* and *Darker Sky* set the sky sphere to a predefined colour. The colour swatch is disabled.

The most advanced option is *Custom Sky*. It permits to set three colours: *Sun Glow Color* (left), *Sky Color* (centre) and *Horizon Color* (right). *Sky Color* assigns the uniform colour hue to the sky sphere; it can be set with the centre swatch.

The fourth option is *Atmosphere Off* and the colour of the sky sphere can also be set.

If *Use as a backdrop* is selected in the IBL tab, the colour of the sky sphere is set to black for the options *Blend into background* and *Blend with sky*. Enabling *Use sky color* takes the colour hue set for the sky sphere into account. Adjusting *Transparency* does not fade the backdrop into a black sky anymore but into the sky as defined.

Add to sky works differently. The sky sphere is not set to black but to the colour set. *Use sky color* has no effect, it is always enabled.

For all three blend options, *Use sky color* has no effect, it is always on, if *Atmosphere Off* is enabled.

Each time another option is selected; *Use sky color* gets automatically deselected because this is the default setting.

Yaw, Pitch and Roll

These three controls rotate the HDRI on all three axes and the final position of the HDRI does not only affect the backdrop but also the light that illuminates the scene (see the document *Panoramic Background* (https://horo.ch/docs/mine/pdf/PanoBackdrop.pdf).

Atmosphere

All atmospheric effects are applied last, after the sky and HDRI are rendered. They modify how sky and HDRI look in the final render.

Wrap-up

There are very effective options to mix the sky with an HDRI backdrop. For natural looking scenes, *Blend with sky* together with *Use sky color* is probably the best combination.

Mixing the Bryce sky and an IBL backdrop opens many possibilities. Weird patterns can be made in the DTE that can be used as clouds.