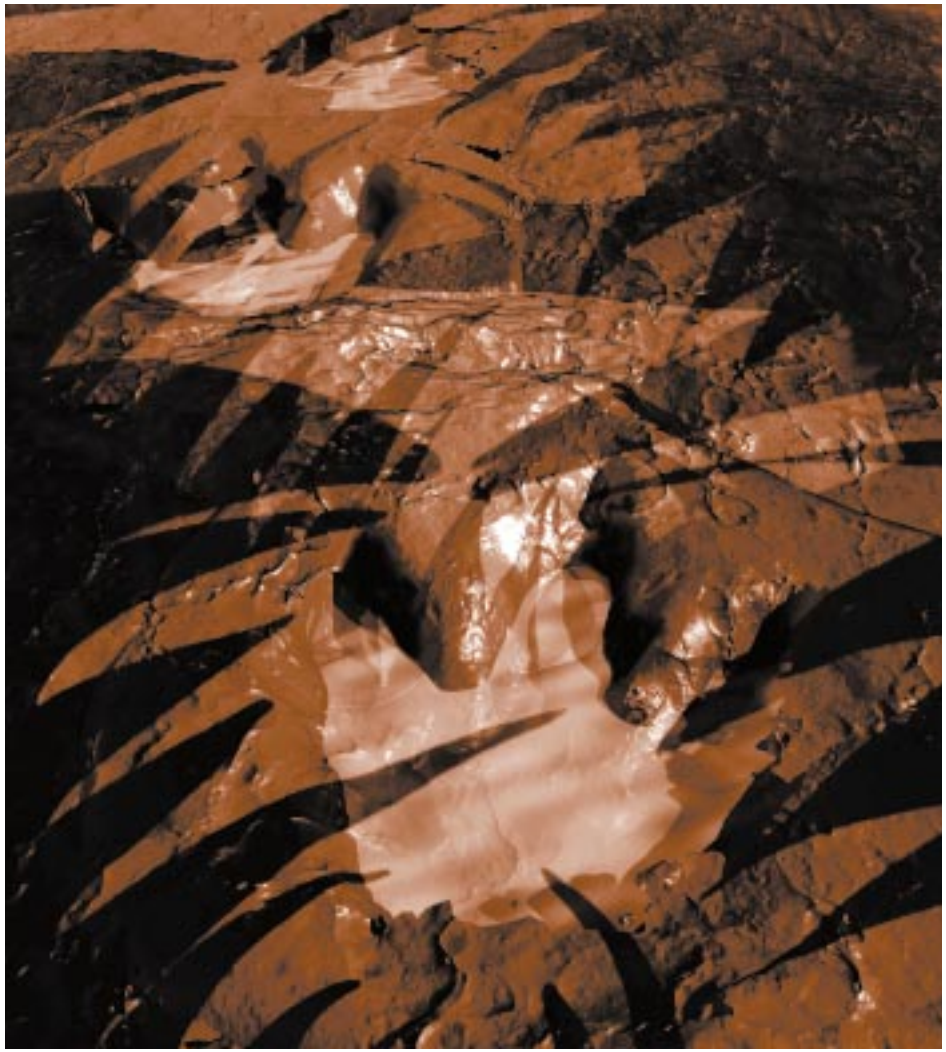


6

Creating Skies

Environments and Bryce 3D

A Bryce sky defines the virtual environment of your scene. Unlike many other 3D applications, Bryce's virtual environment is not merely a backdrop, it is an infinite 3D representation of natural environmental phenomena.

All the elements in your sky interact with each other just like the they would in the real world. Colors in your environment interact with everything in your scene just as they would in nature. For example, red sunlight is invisible until it strikes an object, then the object exhibits red highlights. If it's a blue object, it takes on a purple cast and so on.

The colors in the sky change depending on the position of the sun, and how much moisture (Haze, Fog) is present in the atmosphere. All this, plus natural reflection, refraction, and more make Bryce's Sky & Fog palette responsible for a great deal of the natural, or supernatural, look and feel of Bryce images.

The objects in your scene may look incredibly realistic on their own...

...but when you add a sky, the scene becomes a window looking out into a real world.

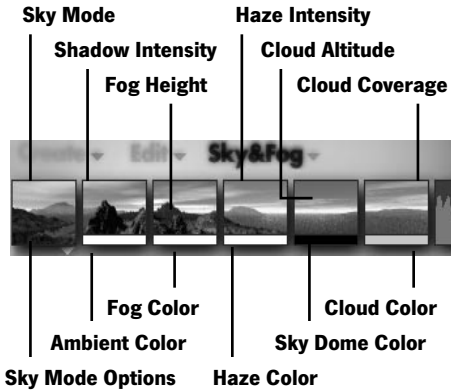
You can add even more realism to a sky by enabling one of the many environmental effects available for skies. Using these effects you can create night skies full of stars, or have a bright rainbow streaking across the roof of your world. One of the most spectacular effects is the Volumetric World effect. When this effect is enabled all the light in your scene appears as visible rays. This is similar to the effects of light shining through clouds on a hazy day.

The other-worldly look of this spaceship landing was created using Volumetric World.

Like any other scene setting, skies can be animated. Any property of a sky can be changed at different points along the animation timeline. When the animation plays, the sky property will appear to change over time. Using this technique, you can create a scene that changes from day to night, or from clear to cloudy. Refer to "Animating Skies" on page 389 for more on animating skies.

The Sky & Fog Palette

The Sky & Fog palette is where you'll set up the attributes of your environment. The palette uses visual controls in the form of thumbnails to help you see how changing the value of an attribute affects your sky.



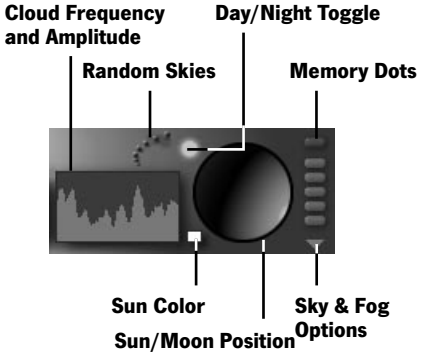
The Sky & Fog palette's thumbnails let you set values for sky attributes.

The name of the control you're adjusting appears in the Text Display area of the Control palette. You can also use this area to help guide you if you prefer numeric precision.

The Text Area displays the name of a Sky & Fog control as you pass the cursor over it. When you're adjusting the setting of a controls, this area displays its current value.

Each control has at least one color swatch along the bottom of the thumbnail. Theses swatches are used to set the color for a given sky attribute, like cloud color or fog color.

Next to the thumbnails are a series of controls that let you set the frequency and amplitude of clouds, the position of the sun or moon and store sky properties. There are no visual guides for these controls but you can see their effects in the Preview area.



The set of controls at the end of the palette does not have visual guides, but you can see their effects in the Preview area.

Environmental Attributes dialog

The Sky & Fog options button provides access to the Environmental Attributes dialog. This dialog contains controls for fine-tuning environmental effects like clouds, rainbows, and sun and moon rings.

The dialog contains three tabs:

- Sun & Moon contains controls for positioning the sun and moon as well as adding effects like rings and horizon illusions.

- Cloud Cover contains controls for editing cloud textures and setting up cloud animations.
- Atmosphere contains controls for rainbows, visible lights and color blending.

Working with the Sky & Fog palette

The Sky & Fog palette has several settings that you can use to control how the palette affects your scene and how the sun tracks your camera view. You can also use the palette's memory dots to store settings as you experiment with different environmental attributes.

Using the Control Thumbnails

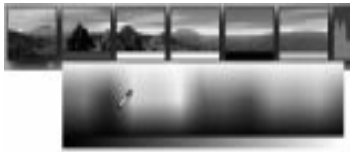
The thumbnails are visual guides, and they are also used to set the attributes of Sky & Fog effects.

To change the intensity of an effect:

- Drag to the left or right inside the thumbnail to change the intensity of the effect.

To pick a color for an effect:

- Click the color bar below the thumbnail. A color picker appears and your pointer changes to an eyedropper.



Click on the bar below the thumbnail to access the color picker.

While the eyedropper is active, you can select colors from anywhere in your scene, or even different parts of the interface.

For more control after picking with the color picker, try Option-click/Alt+click to get Bryce's second color editor, switch to HLS mode and adjust saturation or lightness (less saturated colors can make for more realistic fog and haze effects), or you can enter numeric values if you need to precisely match specific colors.

Setting Palette Options

The Sky & Fog palette options let you link the palette controls directly to your scene and link your sun to the camera.

To link Sky & Fog attributes directly to your scene:

- Click the triangle icon below the memory dots at the right edge of the palette and choose Choose Auto Update from the menu.

  When this option is enabled, every change you make to the Sky & Fog palette settings will start a render of your scene with the new sky settings.

  Note: Unless you have marqueed a small region to be updated, every change you make will begin a completely new render.

To reset Sky & Fog palette settings to their defaults:

- Click the triangle icon below the memory dots at the right edge of the palette and choose Reset Sky from the menu

Saving Sky & Fog settings

The memory dots in the Sky & Fog palette let you store your favorite Sky & Fog settings. Using these dots you can safely explore many Sky & Fog configurations without losing your favorite settings along the way. Memory Dots appear along the right side of the palette.

Use the Memory dots to store your favorite Sky & Fog settings.

To save Sky & Fog settings:

- In the Sky & Fog palette, click on an empty dot (empty dots are gray).

  All the current Sky & Fog palette settings are stored into the selected dot.

To switch to a saved Sky & Fog setting:

- Click on a full dot (full dots are turquoise.) The current settings are replaced with the settings stored in the dot.

  An active dot will be turquoise with a white point inside it.

To reset Sky & Fog settings to default:

- In the Sky & Fog palette, click the uppermost memory dot. This dot always appears full.

To delete a saved Sky & Fog setting:

- Option-click/Alt+click on a full Memory Dot.

  The uppermost dot cannot be cleared.

Memory Dots are not saved with the file, so be sure to save your favorite skies as presets before ending a Bryce session.

Randomizing Skies

Randomizing skies is a very powerful way of exploring possibilities you may never find any other way. When you randomize the sky all the settings in the palettes are replaced by randomly generated values.

Click the Randomize Sky button to randomly generate sky settings.

To randomize your sky:

- Click on the Randomize Sky Button.

  Remember, you can always return to the default settings by click on the top Memory Dot.

Working with Sky Modes

The Sky modes act as the base of your sky. The Sky modes control lets you set the base colors and light tones for your environment. There are four modes available: Soft Sky, Dark Sky, Custom Sky and Atmosphere Off.

As you switch between the modes, the thumbnail also changes to give you a preview of what the mode looks like.

The four Sky modes control the base colors and tones used to create your sky.

To select a sky mode:

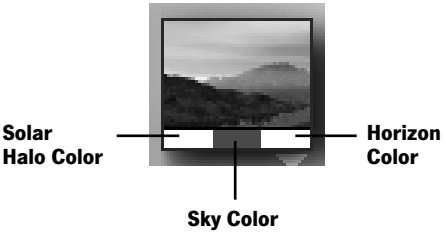
- Click the Sky mode thumbnail to cycle through the four modes, or
- Drag left or right inside the thumbnail to cycle through the modes, or
- Click the triangle icon next to the thumbnail and choose a mode from the menu.

Sky Modes

Soft Sky is the default state of the sky. It features softer shades of blue and lighter tones.

Darker Sky is a darker version of Soft Sky. It uses darker shades of color and tones. This mode is good for creating more brooding skies.

Custom Sky lets you choose your own colors for the sky; this way you can create some truly alien environments. When this mode is selected, the standard behavior of colors in the sky with respect to sun position is disabled.



In Custom Sky mode you can pick your own colors for the sky.

Atmosphere Off disables the standard sky color behaviors, relative to sun position, and uses a single color for the sky. This mode is useful when you need to render objects against a simple colored (or black or white) background. The Sun color still affects objects in this mode. If you have red sunlight, for instance, objects in your scene will reflect red light.

To set custom sky colors:

1. Click the triangle icon next to the Sky Mode thumbnail and choose Custom Sky from the menu. The thumbnail changes to the Custom Sky control.

2. Click the Sky Color swatch and choose a color from the color picker.

   The Sky Color is the main sky color in this mode, regardless of sun position.

3. Click the Solar Halo Color swatch and choose a color from the color picker.

   This is the color of the halo around the sun.

4. Click the Horizon Color swatch and choose a color from the color picker.

   This color will in certain cases affect your scene below ground level if you have a haze setting of greater than zero. It will also impact the color of Stratus clouds near the horizon.

   In most cases, this will be the least obviously used color in your scene; unless you are making outer space scenes, in which case this could be very useful for you.

To render objects against a plain background:

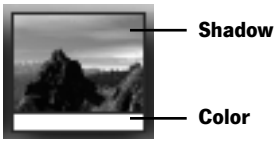
1. Click the triangle icon next to the Sky Mode thumbnail and choose Atmosphere Off from the menu. The thumbnail changes to the Atmosphere Off control.
2. Click the Atmosphere swatch and choose a color from the color picker.
3. Drag left inside the Haze control and set the value to 0. This setting eliminates the suggestion of a horizon.

Setting Sky Attributes

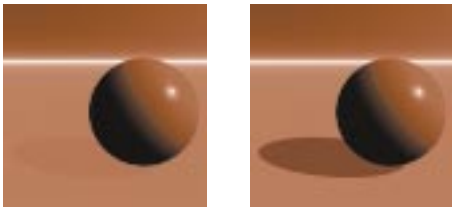
Once you've selected a Sky mode you have the basis for your virtual environment. All the other atmosphere effects you add later will interact with the base mode. There are two other attributes that affect how all the other effects will appear: Shadows and Ambient color.

Shadows in Your Scene

All the objects in your scene cast shadows. Using the Shadow control you can set the intensity and color of all the shadows in your scene.



Use the Shadows control to set the color and intensity of shadows in your scene.



Shadows=10 **Shadows=90**

As you change the value of the Shadow control, the brightness of shadows changes.

The shadow control is not the only control for shadows. The position of shadows is dependent on the position of the sun. Since the sky interacts directly with objects in the scene, the color of the sun also effects the color of shadows.

The object's material properties also effect the color of shadows. Semi-transparent or transparent objects

with a transparency color will change the color of the object's shadow. As well, volume materials can dramatically change the shape and color of shadows.

Use the Shadows control to set the color and intensity of shadows in your scene.

By default, the Clouds in Bryce do not cast shadows. If you want the cloud layer to cast shadows on the ground below, enable the Cloud Shadows option. Refer to "Cloud Coverage" on page 145 for more on this option.

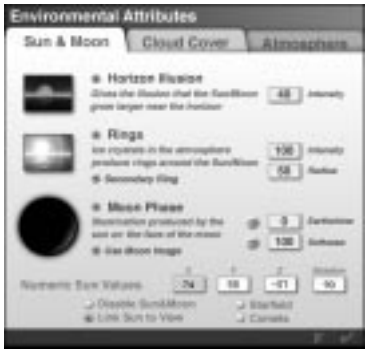
To set shadow intensity:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.
2. Drag left or right inside the Shadow control thumbnail. Dragging left decreases the intensity and dragging right increases it.

The cursor changes to a two headed arrow as you drag over the control.

To set shadow intensity numerically:

1. If it's not already visible, display the Sky & Fog palette by clicking the text item on the menu bar.
2. Click the triangle in the corner of the palette and choose Edit Sky & Fog. The Environmental Attributes dialog appears.



Use the Environmental Attributes dialog to set sky attributes numerically.

3. Enter a value into the Shadow field.This field governs the intensity of shadows rendered in your image. The range is 0 to 100%, and the default value is 100%.

Ambient Color

The Ambient Color is the color of all the light that surrounds the objects in your scene. Light from the sun interacts with ambient color to produce the color for both highlights and shadows.

Ambient Color is used as the source color for material Ambience. The Ambient Color tints the surfaces of all objects in your scene that have some level of ambience. Any other color you apply to the object's surface is mixed with the Ambient color to create the final surface color. For example, if the Ambient Color is red, any color you assign to an object's surface ambience is mixed with red.

Refer to "Ambience" on page 201 for more on material ambience.

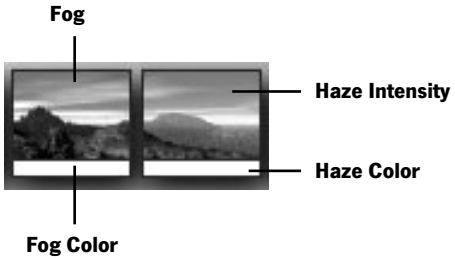
To set Ambient Color:

- Click the color swatch below the shadow control thumbnail and choose a color from the color picker.

  For realistic effects, at noon, or in the afternoon, ambient color should be a little blue to get nice blue-ish shadows. At dawn, you can set Ambient Color to red or pink, and at night you can set it to gray-blue.

Adding Fog and Haze

Fog and Haze are two atmospheric effects that can add realistic depth to your scene. Fog can make objects appear to disappear the farther they get from the camera. Haze can add the illusion of a distant horizon. The Fog and Haze controls in the Sky & Fog palette let you control the color and intensity of these effects.



Use the Fog and Haze controls to set the intensity and color of Fog and Haze effects.

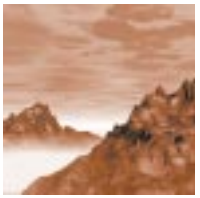
Fog

Fog can add an element of sensuality, mystery, and even realism to your scenes. It acts like a thin layer of cloud close to the ground. Using Fog you can create the illusion of depth without having to add distant objects.

Fog can create a sense of depth in your scene In this scene, the fog was used to add depth to the road as it moves away from the camera. Notice how the feeling of depth was created without the addition of background objects.

You can set intensity, height and color attributes for the fog.

Fog=10



Fog=90

For example, you can see how the fog changes in these skies as the Fog value changes.

The fog acts as a global layer covering the entire scene. Its color and intensity are the same through the scene.

To set the amount of Fog:

1. Display the Sky & Fog palette by clicking the Sky & Fog text button.
2. Drag horizontally inside the Fog thumbnail to increase or decrease the amount of fog in your rendered scene. Drag to the left to decrease the amount of fog and to the right to increase it.

To set Fog height:

1. Display the Sky & Fog palette by clicking the Sky & Fog text button.
2. Drag vertically inside the Fog control to increase or decrease the height of your fog. Drag up to increase the height and down to decrease it.

The height and amount values are displayed in the Text area of the Control palette as you drag.

To set Fog color:

1. Display the Sky & Fog palette by clicking the Sky & Fog text button.
2. Click the color swatch beneath the Fog thumbnail and choose a color from the color picker.

To set Fog attributes numerically:

1. If it's not already visible, display the Sky & Fog palette by clicking the text item on the menu bar.
2. Click the triangle in the corner of the palette and choose Edit Sky and Fog. The Environmental Attributes dialog appears.
3. Click the Atmosphere tab.
4. Enter a value in the Fog field. This field sets the amount of fog rendered in your image. The range is 0 to 100%, and the default value is 0%.
5. Enter a value in the Height field. This field sets the height of fog rendered into your scene, assuming there is a value greater than zero in the Fog field. The range is 0 to 100%, and the default value is 0%.

Blending the Fog Color

Since the fog remains constant throughout the scene, you may get some odd looking results when you're creating a sunset or sunrise. In these cases the sun is very close to the ground plane where the fog exists, so the fog should react to the sunlight. The Blend with Sun feature lets you create exactly this effect. As the sun approaches the Fog, the color and intensity of the fog changes to interact with the color of the sun.

In this example, the Fog is linked to the sun so you can see the changes in the fog color and intensity as the sun gets closer to the horizon.

To link Fog color to the Sun controls:

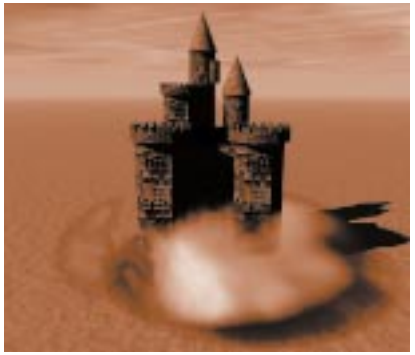
1. If it's not already visible, display the Sky & Fog palette by clicking the text item on the menu bar.

2. Click the triangle in the corner of the palette and choose Edit Sky and Fog. The Environmental Attributes dialog appears.
3. Click the Atmosphere tab.
4. Click the Blend with Sun button.
5. Make sure the Blend Fog button is enabled.
6. Enter a value in the Color field to set how much of the fog color is blended with the sun.
7. Enter a value in the Luminance field to set the intensity of the fog color when it's blended.

   To get the best effect, set both these fields to 100.

Localized Fog

There may be times when you want to create localized pockets of fog. For this type of effect you you'll need to use an object with a volume material applied to it; this way the object looks like fog. The area covered by the fog is then controlled by the size of the object. A flattened sphere usually makes a good fog volume.



In this example, fog only appears around the base of the castle. This effect was created by applying a volume material to a flattened sphere object.

This technique can also be used to create visible smoke, or gas.

To create localized fog:

1. Display the Create palette.
2. Click the Sphere tool. A sphere object appears in the scene.
3. Squash and stretch the sphere, until it is the desired shape. Refer to "Transforming Objects" on page 285 for more on transforming objects.
4. With the object selected, click the M icon that appears next to its bounding box. The Materials Lab appears.
5. Click the Volume button at the top of the lab.
6. Set up the values for channels in the material. Refer to "Building Materials" on page 232 for more on creating materials.
   - Choose a cloud-like texture from texture components. Stratus, Cumulus or one of the CloudBump textures work well.
   - Pay special attention to the Base Density channel as this sets the transparency of your fog.
   - You need to set a high value for the Edge Softness channel to blur the edges of the sphere object.
7. Click the OK icon to exit the lab.
8. In the Working window, move the object to the area where you want the fog to appear.

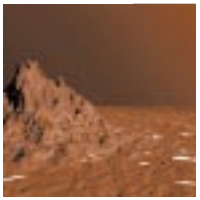
Haze

Haze is the natural effect you see when a plane (like the ocean) stretches out towards the horizon. At this distant point a different color appears over the horizon and light becomes fuzzy.

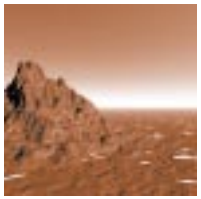
Haze creates the illusion of a distant horizons. In this scene, the haze is used to create the distinction between the water plane and the sky.

The Haze control lets you set the intensity and color of the Haze effect in your Bryce scene.

With haze set to zero, your horizon will have an unnaturally hard edge. Also note that the Cloud Altitude control will affect the height of this band of haze. The higher the altitude of the atmosphere, the wider the band of haze at the horizon.



Haze=0



Haze=90

You can see how the haze changes in these skies as the Haze value changes.

Haze is applied to the entire scene equally. The haze always appears at the horizon.

To set Haze intensity:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.
2. Drag horizontally inside the Haze thumbnail to increase or decrease the degree of haze in your scene. Drag to the left to decrease the amount of haze and to right to increase it.

To set Haze intensity numerically:

1. If it's not already visible, display the Sky & Fog palette by clicking the button at the top of the Bryce window.
2. Click the triangle in the corner of the palette and choose Edit Sky and Fog. The Environmental Attributes dialog appears.
3. Click the Atmosphere tab.
4. Enter a value in the Haze field. This field governs the amount of haze rendered into your scene. The range is 0 to 100%, and the default value is 4%.

To set Haze color:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.
2. Click the color swatch beneath the Haze thumbnail and choose a color from the color picker.

Fog and Haze colors should be the same, or almost the same. For realism, the haze should be a little brighter and bluer than the fog. At nighttime, you have less illumination, so an effective nocturnal haze color could be dark blue-gray.

Blending the Haze color with the Sun

Since the Haze always appears at the horizon it should change color as the sun sets or rises. The Blend with Sun feature lets you simulate this effect. When the two elements are linked, the haze color and brightness change depending on the position of the sun. This creates very realistic looking sunsets.

In this example, the haze is linked to the sun. You can see how the color of the horizon changes as it gets closer to the sun.

When you're using this feature to creates sunsets, you should choose the haze color carefully so as to create a natural-looking color scheme.

To link Haze to the Sun controls:

1. If it's not already visible, display the Sky & Fog palette by clicking the text item on the menu bar.
2. Click the triangle in the corner of the palette and choose Edit Sky and Fog. The Environmental Attributes dialog appears.
3. Click the Atmosphere tab.
4. Click the Blend with Sun button.
5. Make sure the Blend Haze button is enabled.
6. Enter a value in the Color field to set how much of the haze color is blended with the sun.
7. Enter a value in the Luminance field to set the intensity of the haze color when it's blended.
8. To get the best effect, set both these fields to 100.

Clouds in Bryce

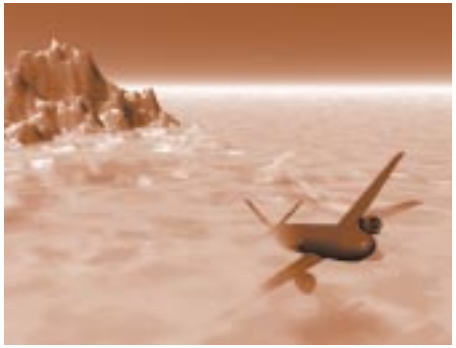
There two kinds of clouds in Bryce: clouds in the environment and cloud planes.

Clouds you add to your sky interact with the light in your scene. They can block out the light of the sun and change the color of the light that hits the objects in the scene. These clouds are infinitely distant so you cannot fly through the clouds in the sky. If you want to have this effect, use a cloud plane. Sky clouds can also cast shadows on the ground below.

The clouds in this scene were created using Cumulus clouds from the Sky and Fog palette.

You can change the look of the clouds by editing the texture used to create it. By changing the texture you can alter the shape and position of the clouds within the sky.

Cloud planes are infinite planes that act as objects in your scene. They cast shadows and can interact with other objects.



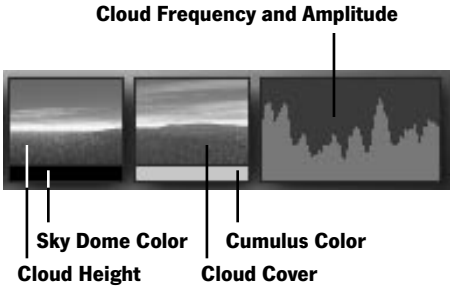
The clouds in this scene were created using an infinite cloud plane. Using this type of cloud, you can fly an airplane through the layer.

Both types of clouds can be animated. The clouds in the sky can be animated by changing their color, position or frequency, and cloud planes can be animated just like other objects. They can also be animated using the Cloud Motion controls. These controls let you set parameters for automatically animating clouds.

Refer to "Animating Couds" on page 391 for more on animating clouds.

Adding Clouds

The Sky & Fog palette provides several controls that set the attributes of clouds in your sky. The Cloud Coverage, Cloud Altitude and Cloud Frequency and Amplitude controls let you set the general appearance of your clouds. The Cloud Color sets the color of the clouds.



Use the cloud controls to set the attributes of the clouds in your scene.

You can add clouds to your scene in five easy steps:

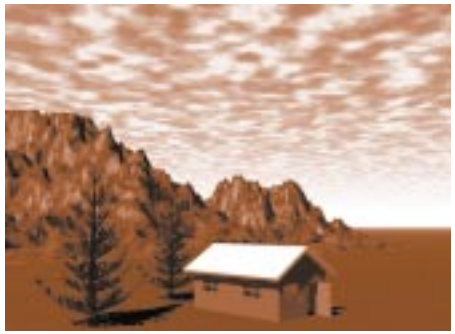
- Select the type of cloud
- Adjust the cloud texture
- Set the cloud coverage and color
- Set cloud altitude
- Set the frequency and amplitude of clouds

Cloud Types

There are two types of clouds you can add to your Bryce environment: Cumulus and Stratus. Cumulus clouds are generally found at lower altitudes and appear thicker and fluffier.

The sky in this scene uses Cumulus clouds.

The Stratus appear at higher altitudes and appear thinner and more wispy.



The sky in this scene uses Stratus clouds.

To add Cumulus clouds to a sky:

1. If it's not already visible, display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.
2. Click the triangle in the corner of the palette and choose Cumulus Clouds.

   Cumulus clouds are thicker, darker clouds at a lower altitude. These clouds will take on tinges of Sunlight color, Ambient color, or Cumulus color.

To add Stratus clouds to a sky:

1. If it's not already visible, display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.
2. Click the triangle in the corner of the palette and choose Stratus Clouds.

   Stratus clouds are bright white, thin, clean clouds that appear at high altitudes. These clouds are very responsive to Sunlight color and Sky Dome color, and less responsive to Cumulus color or Ambient color.

You can also choose both cloud types, or neither. Selecting neither cloud type creates a clear sky.

Editing Cloud Textures

Clouds in Bryce are created using a procedural texture with a cloud pattern. The color, position size, and pattern within the texture determines the final look of cloud in your sky. You can edit this texture using either the Environmental Attributes palette, or for more complex editing, you can use the Texture Editor.

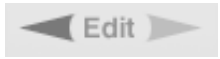
The texture used for a clouds can come from either the Bryce texture library or you can create your own.

To edit cloud texture in the Environmental Attributes dialog:

1. If it's not already visible, display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.
2. Click the triangle in the corner of the palette and choose Edit Sky & Fog. The Environmental Attributes palette appears.
3. Click the Cloud Cover tab.

The Cloud Cover tab provides controls that let you edit the textures that are used to create the clouds in your scene. As you change a texture, the texture preview updates.

4. Click the Arrow icon next to the type of clouds you want to edit.



The two edit arrows let you quickly choose which texture you want to edit.

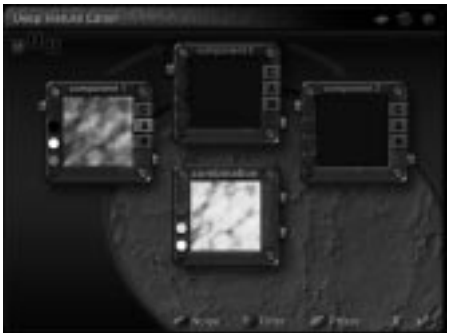
5. Click the + or - Turbulence buttons to increase or decrease the amount of noise in the texture.
   - Increasing the Turbulence creates a more dense pattern within the texture.
6. Click the + or - Complexity buttons to increase or decrease the amount of detail in the texture.
   - Increasing the Complexity increases the complexity of the patterns within the texture.
7. Click the Randomize button if you want to choose a randomly generated texture for your clouds.
8. Click the OK icon to apply your changes.

To edit cloud textures in the Deep Texture Editor:

1. If it's not already visible, display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.
2. Click the triangle in the corner of the palette and choose Edit Sky & Fog. The Environmental Attributes palette appears.
3. Click the Cloud Cover tab.
4. Click the Arrow icon next to the type of clouds you want to edit.
5. Click the Editor button. The Deep Texture Editor appears.

   The cloud texture and its components appear in the component windows.

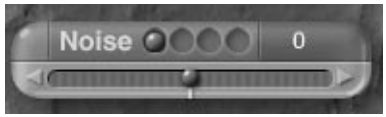
If you're not familiar with using the Deep Texture Editor you may get some very unpredictable results which may result in clouds that don't look much like clouds. Before you start editing the clouds texture you may want to refer to "Textures" on page 239 for more instruction on how to use the editor.



When you open a cloud texture in the texture editor, you can see its components in the various windows. You can use the editor's tools to completely redesign the texture or to alter the existing texture.

6. If you want to add additional turbulence to the cloud texture, adjust the texture's Noise:

- Click the Noise button at the bottom of the editor. The Noise control appears.



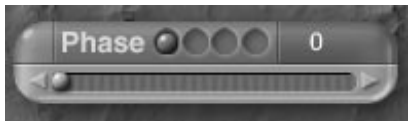
The Noise control lets you adjust the frequency of the noise in any of the texture's components.

- Move the component indicator at the top of the control to the component you want to edit.
- Adjust the Noise slider to increase/decrease the frequency of the noise in the texture.

7. If you want to change the colors of a component, click one of the color indicators in the component window and choose a new color.

8. If you want to add more complexity to the texture, adjust its Phase:

- Click the Phase button at the bottom of the editor. The Phase control appears.

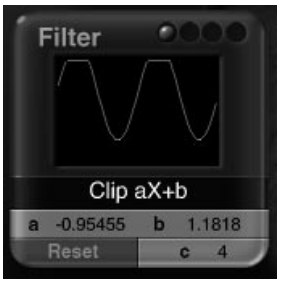


The Phase control lets you adjust the amplitude of the phase in any of the texture's components.

- Move the component indicator at the top of the control to the component you want to edit.
- Adjust the Phase slider to increase/decrease the amplitude of the phase.

9. If you want to change the pattern in the texture, apply a filter:

- Click the Filter button at the bottom of the editor. The Filtering control appears.



The Filtering control displays a graphical representation of the filter applied to your texture. By changing the equation of the filter to the value of the variables, you can change the patterns within the cloud texture.

- Move the component indicator at the top of the control to the component you want to edit.
- Change the filter equation and variable values to adjust the filter applied to your texture.

Filtering is a rather complex operation. Try experimenting with different equations and see what happens.

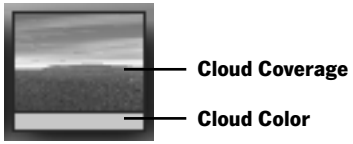
10. Click the OK icon to exit the editor.

Cloud Coverage

Cloud Coverage controls the quantity of clouds you can see in the sky. A high coverage means that there is a very dense cloud layer, and a low setting means that there are very few clouds in the sky.

Cloud coverage also indirectly controls the brightness of the environment. The more cloud coverage you have in a sky, the darker the environment, since less sunlight can pass through the clouds.

Adjusting cloud coverage changes the quantity of clouds but not the frequency. You can think of it as adjusting the volume on a radio without changing the station.



The Cloud Coverage control in the Sky & Fog palette lets you interactively set the quantity of clouds in the sky.

Cloud Coverage=10

Cloud Coverage=90

For example, you can see how the clouds change in these skies as the cloud coverage value changes.

To set cloud coverage:

1. If it's not already visible, display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.
2. Drag left or right inside the Cloud Coverage control thumbnail. Drag left to decrease coverage and right to increase it.

To set cloud coverage numerically:

1. If it's not already visible, display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.
2. Click the triangle in the corner of the palette and choose Edit Sky & Fog. The Environmental Attributes dialog appears.
3. Click the Cloud Cover tab.
4. Enter a value in the Density field at the bottom of the dialog.

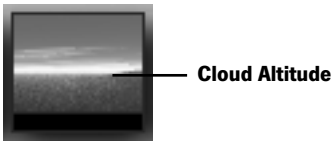
The Density field controls the amount of clouds in your scene. The range is 0 to 100%, and the default value is 20%.

To set cloud color:

1. Display the Sky & Fog palette by clicking the Sky & Fog button.
2. Click the color swatch beneath the Cloud Coverage thumbnail and choose a color from the color picker.

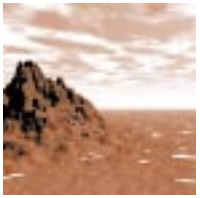
Cloud Altitude

The altitude of your clouds has a great effect on the personality of your sky. Higher altitudes will result in smaller, more distant cloud formations, as well as a thicker band of haze at the horizon. Lower altitudes result in larger, more languorous cloud formations and a thinner band of haze at the horizon.



The Cloud Altitude control in the Sky & Fog palette lets you interactively set the height of the cloud layer in the sky.

Cloud Altitude=10



Cloud Altitude=90

For example, you can see how the clouds change in these skies as the cloud altitude value changes.

There are two things to remember when working with this control. First, the Cloud Altitude will affect the size of your Haze band, if you have a haze setting greater than zero. The higher the altitude,

the wider the haze region will be on the horizon. You can use this interaction to your benefit.

Second, remember to lower your altitude setting if you are creating a nighttime scene. Since high altitudes increase the size of the horizon Haze region, the sky will be too unnaturally bright for realistic night scenes.

To set cloud altitude:

1. If it's not already visible, display the Sky & Fog palette by clicking the text item on the menu bar.
2. Drag horizontally inside the Cloud Altitude control thumbnail. Drag left to decrease altitude and right to increase it.

To set cloud altitude numerically:

1. Display the Sky & Fog palette by clicking the Sky & Fog text button.
2. Click the triangle in the corner of the palette and choose Edit Sky & Fog. The Environmental Attributes dialog appears.
3. Click the Cloud Cover tab.
4. Enter a value in the Height field at the bottom of the palette.

The Height field controls the height of the clouds in your scene. The range is 0 to 999, and the default value is 3.

Sky Dome Color

The Sky Dome color lets you create a color wash over your scenes, even if there is no sunlight present. This color simulates the natural effect that occurs when you have color in the sky even though the sun has set. Sky dome color is a great way of creating late afternoon or evening scenes.

The Sky Dome Color control in the Sky & Fog palette lets you choose a color from either the color picker or the color dialog.

For late afternoon and early evening realism, try using a touch of orange or yellow. This will create a cast of color over your entire scene, regardless of the position or color of the sun or moon.

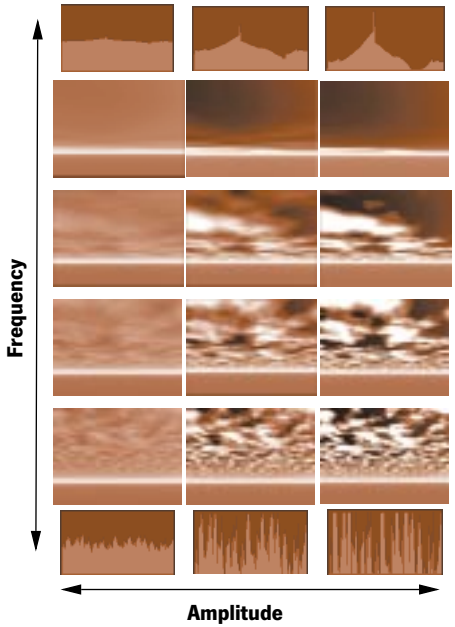
To set Sky Dome color:

1. If it's not already visible, display the Sky & Fog palette by clicking the text item on the menu bar.
2. Click the color bar beneath the Cloud Altitude control thumbnail and choose a color from the color picker.

Frequency and Amplitude

The Frequency and Amplitude control lets you set the types of cloud formation you'll see in your sky. By combining these two controls you can change your clouds from light and fluffy to dark and brooding.

Use Frequency and Amplitude to control the types of cloud formations in your scene.



This graph shows the effects of different Frequency and Amplitude settings on a sky. Frequency values range from 2 at the top to 150 at the bottom. The Amplitude values range from 50 at the left to 500 on the right.

To set Cloud Frequency and Amplitude:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.
2. In the Cloud Frequency and Amplitude control, drag horizontally to control the frequency of your cloud formations.

   Drag left, and the "spikes" will get closer together, resulting in smaller formations. Drag right for larger, more luxurious formations.

The Text Display area shows you the numerical value of the amplitude as you drag

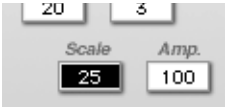
3. Drag vertically to control the amplitude of your cloud formations.

   Drag away from the horizontal center, and the spikes increase in height, resulting in formations with harder edges. Drag toward the horizontal center for softer-edged formations.

Note: It is possible to invert the spikes. This means that you can exchange positive and negative spaces in your sky. If you invert the amplitude, everything that was previously clear sky will be clouds, while everything that was cloud will be clear sky.

To set Frequency and Amplitude numerically:

1. If it's not already visible, display the Sky & Fog palette by clicking the text item on the menu bar.
2. Click the triangle in the corner of the palette and choose Edit Sky & Fog from the menu. The Environmental Attributes dialog appears.
3. Click the Cloud Cover tab.
4. Enter a value in the Scale field.



The Scale field controls the frequency (scale) of cloud formations in your scene. The range is -200 to +200, and the default value is 25.

5. Enter a value in the Amplitude field.

The Amplitude field controls the amplitude (edge softness) of clouds in your scene. The range is -500 to +500, and the default value is 100.

Linking Clouds to the Camera View

If you move the camera view during an animation, the clouds in your environment will appear to zoom by, creating a kind of time-lapsed effect. If you want the clouds to appear fixed as you move the camera, link the cloud in the sky to the camera view. This way, wherever the camera moves the clouds will follow, so that they seem to remain stationary.

To link clouds to view:

1. If it's not already visible, display the Sky & Fog palette by clicking the text item on the menu bar.
2. Click the triangle in the corner of the palette and choose Edit Sky & Fog from the menu. The Environmental Attributes dialog appears.
3. Click the Cloud Cover tab.
4. Click the Link Clouds to View button.

   Refer to "Animating Skies" on page 389 for more on animating skies.

Using a Fixed Cloud Plane

As you move higher up in a Bryce environment, the cloud pattern shifts, so that it appears as if you're getting closer to the clouds. If you want to counter this effect, you can use the Fix Cloud Plane option to freeze the cloud pattern so that it doesn't change as you move higher up in the environment.

To use a fixed cloud pattern in your sky:

1. If it's not already visible, display the Sky & Fog palette by clicking the text item on the menu bar.
2. Click the triangle in the corner of the palette and choose Edit Sky & Fog from the menu. The Environmental Attributes dialog appears.
3. Click the Cloud Cover tab.
4. Click the Fixed Cloud Plane button.

Working with the Sun

The sun is the source of all natural light in your scene. Its attributes have a profound effect on the look of your scene.

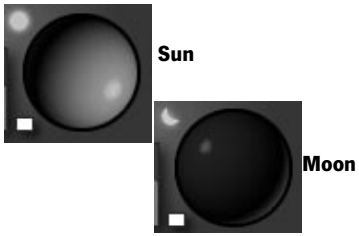
The color of the sun affects all the colors of all the object in the scene; Sunlight color tints all the other visible colors.

The position of the sun controls the time of day in your scene. If the sun is above the horizon, it is day; if it is below, it is night, and if it is at the horizon, it is sunrise or sunset.

The sun can be animated just like all the other elements of your Bryce scene. You can create time-elapsed effects by changing the position of the sun over the course of an animation. Refer to "Animating Sun or Moon Position" on page 392 for more on animating the Sun.

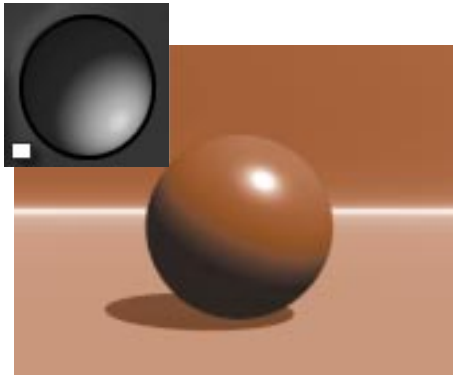
Positioning the Sun

The sun position control sets the direction your natural light is coming from whether it is sunlight or moonlight. The position can be set using the Sun control in the Sky & Fog palette. The control works like a trackball, with the sun at one end and the moon at the other.

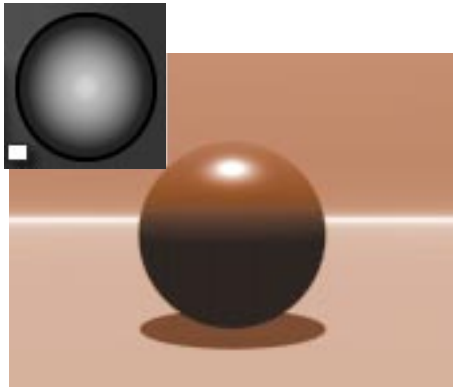


The control works like a trackball. As you drag over the control both elements move in the direction you drag.

You can think of the control as a compass: if the highlight on the Sun Control sphere is positioned at 12 o'clock, the light comes from the north, and so on.



As you change the position of the sun, the "time of day" changes. When the sun position is closer to the edges of the control, the sun appears closer to the horizon, making the scene darker.



When the sun is in the center of the control, the sun shines from directly above the sun, like it would at high noon.

The colors in your sky will change depending on the position of the Sun Control, or the "time of day..." just like in the real world.

The angle of the shadows changes as the sun changes. If your object is shiny, and there are no other light sources, the position of the sun controls where the highlight appears.

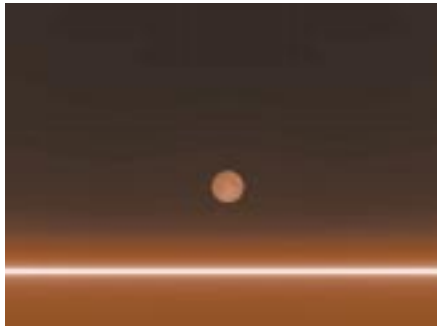
In this example, you can see the effects of the sun's position on several reflective and shiny objects.

Day and Night

Your sky always contains two heavenly bodies: the sun and the moon. There is always one body visible in your sky. At night it is the moon and in the day its the sun.

The two bodies are connected and always remain at opposite ends of the sky. As you move the sun you're also moving the moon. This means that when the sun dips below the horizon in front of you, the moon is rising behind you.

The link between the sun and the moon can be seen by positioning the sun at the horizon in front of the camera...



.if you turn the camera 180° you'll see the moon just rising over the horizon as well.

To switch between night and day:

1. Display the Sky & Fog palette.
2. Click the Day/Night toggle button in the top-left corner of the sun position controls.

Sunrise/Sunset

You can create a sunset or sunrise by positioning the sun or moon so that it is visible on your horizon.

Sunsets or sunrises can be created by moving the sun closer to the horizon.

The colors in the sky automatically change to create the illusion of the sunrise or sunset colors. You can also use the Sky Dome color to give your sunset/sunrise added color.

For a more realistic sunset you may want to link the fog and haze to the sun so that they react to the sun color as it approaches the horizon. Refer to "Blending the Fog Color" on page 138 and "Blending the Haze color with the Sun" on page 141 for more on this feature.

You may also want to enable the Horizon illusion for the sun. This feature makes the sun appear larger as it approaches the horizon. Refer to "Sun/Moon Horizon Illusion" on page 157 for more on this effect.

To position the sun manually:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at he top of the Bryce window.
2. Drag the larger highlight area in the Sun Position controls to the position where you want the light to originate.

You can position the sun, or the moon, on the horizon as you like by nudging the Sun Control until the light is visible in your scene.

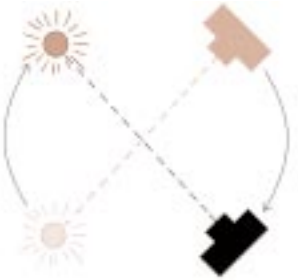
To position the sun numerically:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at he top of the Bryce window.
2. Click the triangle in the corner of the palette and choose Edit Sky & Fog. The Environmental Attributes palette appears
3. Click the Sun & Moon tab.
4. In the Numerical Sun Values fields, type a value into the X field. The X field controls the east-to-west position of the sun. The range is -99 to +99, and the default value is 60.
5. Enter a value in to the Y field. The Y field controls the height of the sun relative to your scene. The range is -99 to +99, and the default value is 20.
6. Enter a value in to the Z field. The Z field controls the north to south position of the sun. The range is -99 to +99, and the default value is zero.

Positive values are above the horizon, negative values below.

Linking the Sun to the Camera

Normally, you'd have to reposition the sun every time you changed the camera to maintain a certain effect or sunlight angle. However, if you apply the Link Sun to Camera, you're sun will track the camera. The position of the sun relative to the camera remains the same no matter where the camera is positioned. This way you can set up the sun position once and then not worry about losing the effect as you move the camera.



When the sun is linked to the camera, the sun moves relative to the Camera. Wherever the camera moves the sun follows. As it moves, the sun maintains a constant distance from the camera.

This feature can also be very useful when you're animating your scene. Refer to "Animating" on page 351 for more.

To link the sun to the camera:

1. Display the Sky & Fog palette by clicking the Sky & Fog text button.
2. Click the triangle in the corner of the palette and choose Edit Sky & Fog. The Environmental Attributes palette appears.
3. Click the Sun & Moon tab.
4. Click the Link Sun to View button.

   When this option is enabled, your sun will always remain in the same position relative to the camera. Wherever you move the camera the sun will follow. This is an easy way of seeing how a sunset will look against different skylines.

Sun Color

Light in nature is not usually visible until it strikes an object. When you're using normal light, a purple sunlight color will not paint your entire sky purple, but objects in your scene will reflect purple.

When you're using Visible World, choosing purple will paint your entire scene purple.

The grayscale bar at the bottom of the color palette lets you set the intensity of the sun. Black turns the sun off and white sets the sun to its brightest intensity.

You can also use the color palette to set the intensity of the sun. Black represents the lowest intensity and white the highest.

To set the Sun Color:

1. Display the Sky & Fog palette by clicking the Sky & Fog text button.
2. Click the Sun Color swatch and choose a color from the color picker.

Disabling the Sun

You can also remove the sun from the sky altogether, by disabling it. When the sun is disabled, the only light visible in your scene comes from individual light sources.

To disable the Sun:

1. Display the Sky & Fog palette by clicking the Sky & Fog text button.
2. Click the triangle in the corner of the palette and choose Edit Sky & Fog. The Environmental Attributes palette appears
3. Click the Sun & Moon tab.
4. Click the Disable Sun/Moon button.

Working with the Moon

The moon is the most prominent object in the night sky. In a night scene it provides all the natural light in the environment. Like the sun, the moon's attributes can greatly affect the final look of your scene.

Its position in the sky effects all the angles and intensities of all the shadows in the scene.

The brightness is affected by the illumination reflected of the earth. The brighter the earthshine, the brighter the moon appears.

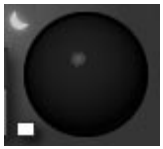
Unlike the sun, the moon has phases which simulate the effects of the earth's shadow passing over the face of the moon during a month.

The moon's position and phases can be animated using the Animation controls and the timeline. Refer to "Animating Sun or Moon Position" on page 392 for more on animating the moon.

Positioning the Moon

The moon is positioned at the same time as the Sun. The two are always at opposite ends of the sky, so wherever the sun is positioned, the moon is directly opposite.

In the Sun/Moon control on the Sky & Fog palette, the moon's position is represented by the smaller highlight portion of the Sun Position trackball.



The position of the moon is represented by the smaller highlight portion of the position control trackball. You can position the moon by either moving the smaller highlight or by dragging the sun. The moon is always opposite the sun.

To position the moon manually:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at he top of the Bryce window.
2. Drag the blue highlight area in the Sun/Moon Position controls to the position where you want the light to originate.

You can position the sun, or the moon, on the horizon as you like by nudging the Sun/Moon control until the light is visible in your scene.

To position the moon numerically:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at he top of the Bryce window.
2. Click the triangle in the corner of the palette and choose Edit Sky & Fog. The Environmental Attributes palette appears
3. Click the Sun & Moon tab.
4. In the Numerical Sun Values fields, type a value into the X field. The X field controls the east-to-west position of the sun/moon. The range is -99 to +99, and the default value is 60.

- The moon will be positioned exactly opposite these values, so you can invert them to position the moon numerically, or place the Sun behind the camera so that the moon appears in front of it.

5. Enter a value into the Y field. The Y field controls the height of the sun/moon relative to your scene. The range is -99 to +99, and the default value is 20.
6. Enter a value in to the Z field. The Z field controls the north to south position of the sun/moon. The range is -99 to +99, and the default value is zero.

Positive values are above the horizon, negative values below.

Moon Phases

The moon phases control simulates different aspects of the moon as it orbits the earth.

The change in the phases of the moon can indicate the passage of time.

The moon phase is a visual cue at to the time of the month. In an animation, you can use the moon phase to simulate the passage of a time. Refer to "Animating Sky & Fog settings" on page 390 for more.

The phase is controlled using the Moon Phase controls in the Environmental Attributes palette.

To set the moon's phase:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at he top of the Bryce window.
2. Click the triangle in the corner of the palette and choose Edit Sky & Fog from the menu. The Environmental Attributes dialog appears.
3. Click the Sun & Moon tab.
4. Drag over the Moon Phase control. The phase changes as you drag.

The Moon Phase control lets you set the phases of the moon.

5. Click the OK icon to exit the dialog.

Moon Brightness and Sharpness

The moon is directly affected by the light reflected from the earth. The brighter the reflection, the brighter the moon's shadow. In Bryce this effect is controlled by the Earthshine setting which makes the moon brighter or darker.

A realistic moon does not have sharp edges and may appear blurry on hazy nights. The Softness control lets you set the moon's edge softness to give a more realistic feel.

To set the brightness of the moon's shadow:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at he top of the Bryce window.
2. Click the triangle in the corner of the palette and choose Edit Sky & Fog from the menu. The Environmental Attributes dialog appears.
3. Click the Sun & Moon tab.
4. Drag over the Earthshine control. Drag left to increase the brightness and right to decrease it.

The Earthshine control lets you adjust the brightness of the moon.

- Enter a value in the Earthshine field to set Earthshine numerically.

5. Click the OK icon to exit the dialog.

To set the moon's edge softness:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at he top of the Bryce window.
2. Click the triangle in the corner of the palette and choose Edit Sky & Fog from the menu. The Environmental Attributes dialog appears.
3. Click the Sun & Moon tab.
4. Drag over the Softness control. Drag left to soften edges, or right to sharpen them.

The Softness control lets you set the edge softness of the moon.

   - Enter a value in the S field to set Softness numerically.

5. Click the OK icon to exit the palette.

Adding Environmental Effects

The elements in a sky aren't constant; it is always changing, reflecting weather patterns or the time of day. If it rains there's a rainbow. If its night, there's stars. If it's sunset, the sun looks bigger. If you look right at the sun on a hazy day you'll see rings around it. Sometimes, if its hazy enough you can even see the sunlight streaking out of the clouds. All these illusions are called environmental effects and Bryce's Environmental Attributes palette lets contains all the controls you'll need to the add them to your scene.

Sun/Moon Rings

If you look directly at the sun on a hazy day you'll be able so see rings surrounding it. These rings are created by the reflection off of ice particles in the air. In Bryce, you can use the Sun/Moon Rings to create this effect.

In this example, rings have been added to the sun to make the scene look like a sweltering desert.

This effect creates concentric circles around the image of the sun or moon. Using the Environmental Attributes palette, you can set the radius of the rings and add a secondary ring to increase the effect. The color of the rings is controlled by the color of the sun/moon.

To add Sun/Moon rings:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at he top of the Bryce window.
2. Click the triangle in the corner of the palette and choose Edit Sky & Fog from the menu. The Environmental Attributes dialog appears.
3. Click the Sun & Moon tab.
4. Click the Rings button.
5. In the Rings area, enter a value in the Intensity field to set the brightness of the ring.

The Intensity field next to the rings preview sets the brightness of the rings.

6. Enter a value in the Radius field to set the radius of the ring.

The Radius field next to the Rings preview sets the radius of the ring.

To add a secondary Sun/Moon ring:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at he top of the Bryce window.
2. Click the triangle in the corner of the palette and choose Edit Sky & Fog from the menu. The Environmental Attributes palette appears.
3. Click the Sun & Moon tab.
4. Click the Secondary Ring button in the Rings area.

Sun/Moon Horizon Illusion

If you've ever watched a sunset, you probably noticed that the sun appeared to get larger as it approached the horizon. The same is true for the moon. At certain times of the month it appears huge. This illusion can be simulated using the Horizon illusion.

The spooky look of this night scene was created by applying a Horizon Illusion to the moon.

When the illusion is active, the sun or moon will appear to grow larger as it approaches the horizon.

To add a secondary Sun/Moon ring:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at he top of the Bryce window.
2. Click the triangle in the corner of the palette and choose Edit Sky & Fog from the menu. The Environmental Attributes palette appears.
3. Click the Sun & Moon tab.
4. Click the Horizon Illusion button at the top of the dialog.
5. In the Horizon Illusion area, enter a value in the Intensity field to set the brightness of the sun/moon illusion.

The Intensity field next to the Rings preview sets the width of the illusion.

Rainbows

In the real world rainbows appear after rainstorms as arcs of light displaying all the color in the spectrum. In Bryce a rainbow is an atmospheric effect that can be added to any sky.

A rainbow is only visible if the sun is visible, meaning you can't have a rainbow at night. As well, you can add a secondary rainbow to create the illusion of reflection.

Rainbows are linked to the sun so that as the color or intensity of the sun changes, so does the rainbow.

Rainbows are infinitely distant. You can't approach them by moving the camera, so the pot of gold is always just out of reach.

To add a rainbow to your sky:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at he top of the Bryce window.
2. Click the triangle in the corner of the palette and choose Edit Sky & Fog from the menu. The Environmental Attributes dialog appears.
3. Click the Atmosphere tab.

The Atmosphere tab of the Environmental Attributes dialog contains all the controls you'll need to create rainbows.

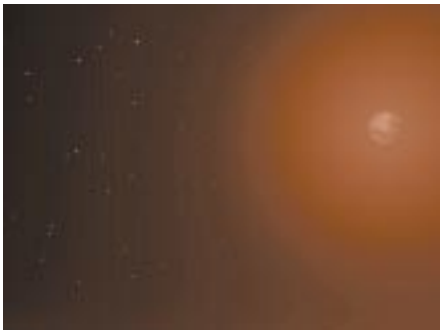
4. Click the Rainbows button to activate the rainbow controls.
5. Enter a value in Radius field in the Rainbow area. This value sets the width of the rainbow.
6. Enter a value in the Opacity field. This controls the rainbow's transparency.

To add a secondary rainbow to your sky:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at he top of the Bryce window.
2. Click the triangle in the corner of the palette and choose Edit Sky & Fog from the menu. The Environmental Attributes palette appears.
3. Click the Atmosphere tab.
4. Click the Secondary Rainbow button.
5. Enter a value in Intensity field in the Rainbow area. This value sets the width of the secondary rainbow.

Star Fields

Stars in Bryce are randomly generated star maps. They are infinitely distant so they do not get closer as you move the camera. Star Fields are affected by the moon's brightness and color.



In this example you can see how the moon affects the color and intensity of the stars around it.

You can also add comets to your Star Fields. Comets appear at random positions. You'll usually only get one or two comets per starfield.

To add a Star Field:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.

2. Click the triangle in the corner of the palette and choose Edit Sky & Fog from the menu. The Environmental Attributes palette appears.
3. Click the Sun & Moon tab.
4. Click the Starfield button at the bottom of the palette.

To add comets to a Star Field:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at he top of the Bryce window.
2. Click the triangle in the corner of the palette and choose Edit Sky & Fog from the menu. The Environmental Attributes palette appears.
3. Click the Sun & Moon tab.
4. Click the Comets button at the bottom of the palette.

Volumetric World

The Volumetric World effect simulates the effects of particles in the air being illuminated by light sources. In Bryce this effect turns all the light sources in your scene into visible light sources. Sunlight also becomes visible, so that any color you applied to the sun appears everywhere in the scene.

Normal Environment

Volumetric World

In this example you can see how the Volumetric World effect transforms a scene.

Visible sunlight is volumetric, meaning that it is affected by all the objects within it.

Although Volumetric World is a very beautiful effect, its also a time consuming one. It will add a considerably to your scene's rendering time.

To add visible sunlight to your scene:

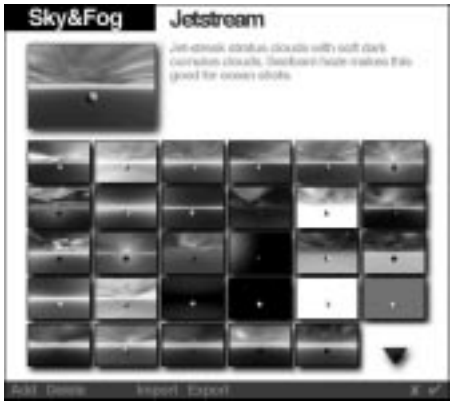
1. Display the Sky & Fog palette by clicking the Sky & Fog button at he top of the Bryce window.
2. Click the triangle in the corner of the palette and choose Edit Sky & Fog from the menu. The Environmental Attributes palette appears.
3. Click the Atmosphere tab.
4. Click either the Rough or Fine button in the Visible Light area. This option controls the quality of the light.

Using the Preset Skies Library

The Preset Skies Library contains all the preset skies available in Bryce. You can place them in your scene and edit them just as you would another object.

To add a sky from the Preset Skies library to your scene:

1. Click the triangle icon next to the Sky & Fog text button at the top of the Bryce window. The Preset Skies Library appears.



Use the Preset Skies Library to add pre-made skies to your scene.

2. Click on the preset thumbnails to view preset names and descriptions.
3. Click the OK icon to add the selected sky to your scene.

The Sky & Fog palette does not need to be active for you to access the Preset Skies Library.

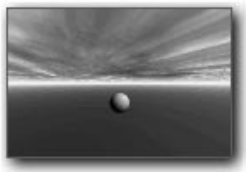
You can select presets in one motion by dragging directly to the desired preset, and releasing the mouse button. You can also drag over the category names to change categories, into the category's presets, and then release mouse button.

Adding and Deleting Preset Skies

You can add the sky from any open scene to the Preset Skies Library. This is a good way of saving your favorite skies.

To add a sky to the preset library:

1. Click the triangle icon next to the Sky & Fog text button at the top of the Bryce environment. The sky from your scene appears in the preview area of The Preset Skies Library dialog.



The preview area displays the sky from your scene.

2. Click the Add button at the bottom of the dialog. The Add Object dialog appears.
3. Enter a name for the new preset in the Preset Name field.
4. Enter a description of the preset in the Description field and click the OK icon.

This name and description will appear beneath the object preview whenever the preset is accessed.

You can edit the name and description of any preset at any time simply by pressing the Tab key, or clicking on the name or description.

5. Click the OK icon. Your preset will be added to the first available space within the current category.

To delete an object preset:

1. Click the triangle icon next to the Sky & Fog text button at the top of the Bryce environment. The Preset Skies Library appears.
2. Click on the preset you want to delete, or hold down Shift and select a continuous series of presets, or hold down Command/Ctrl and select a discontinuous set of presets.
3. Click the Delete button at the bottom of the Preset Skies Library dialog.

Importing and Exporting Preset Skies

Importing and exporting presets is a handy way to exchange custom presets with other users.

To import a preset sky file:

1. Click the triangle icon next to the Sky & Fog text button at the top of the Bryce environment. The Preset Skies Library appears.
2. Click the Import button at the bottom of the Preset Skies Library dialog. The file open dialog appears.
3. Locate the file which you would like to import and click Import.

   The contents of the file are placed into the first available space in the current category.

To export a preset sky file:

1. Click the triangle icon next to the Sky & Fog text button at the top of the Bryce environment. The Preset Skies Library appears.
2. Select the preset or presets you wish to export.
3. Click the Export button at the bottom of the Preset Skies Library dialog. The save file dialog appears.
4. Enter a name and location for the file and click Save.