Aurora Sky®

A Plug-in for Adobe After Effects, Final Cut Pro, and compatible applications.

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Section VI: Cloud Layer (cont.)

Introduction

Aurora Sky

Aurora was originally done for Photoshop and creates beautiful skies and water for that platform. Since we already make a great water tool called Psunami, it was decided that we should aim to make a plug-in that did for skies, what Psunami did for water.

We wanted to create a tool that gave you something more powerful than simple fractal clouds. Something that would let you twist and bend the clouds to your desires, giving designers the sort of tool that was only usually found in 3D programs. We think we've done a pretty good job of it and we look forward to hearing if you think so as well. Please feel free to send any love, hate, or suggestion email to us at support@digi-element.com.

Support and Stuff

We hope that you find Aurora Sky to give you all the control you could want, while simple enough that you can set everything up in a few minutes. It's our desire to make sure you're satisfied with your purchase, and if you have any questions, comments, or whatever, we'd love to hear them.

If there's anything you'd like to see added to any of the filters, perhaps a completely different effect that you'd like to see a plug-in for, or would just like to say hello…definitely send an email to us at support@digi-element.com.

If you have any technical problems or questions related to the filters, please send an email to support@digi-element.com. Or, you can contact us at 510-601-7351.

Installation

Macintosh (After Effects)

If you have bought the packaged version, access the CD and copy file AuroraSky.sit from the Mac directory on a CD to a temporary directory on your hard drive. If you have the downloadable version, go to the directory you downloaded the software to.

Double-click on AuroraSky.sit. When the archive is unpacked move 'AuroraSky' folder to the directory where plug-ins for Adobe After Effects are located ('After Effects\plug-in' if you chose standard pathways for installing Adobe After Effects).

Macintosh (Final Cut Pro)

This step is slightly different for users of Final Cut Pro under OS X. You'll need to find the Final Cut plug-ins folder in your Shared Library or User Preferences folder, and put the plug-ins in there.

If you're installing to the shared resources, your path will be something like this: Hard Drive> Library> Application Support> Final Cut Pro System Support> Plugins. Or, if you're installing for a particular user, the path will read: Hard Drive> Users> [User Name]> Library> Preferences> Final Cut Pro User Data> Plugins.

Windows (After Effects)

Launch the Aurora Sky installer and follow the installation instructions. Your serial number is on the back of the CD case or was sent to you in an e-mail. Enter the serial number during the installation procedure.

Select the appropriate version of Adobe After Effects. If you don't select appropriate version, the plug-in may crash or not perform as expected.

After selecting the version, you are ready to install.

Click the 'Next' button to begin installation.

Registration

The registration process is the same on both Mac and PCs.

When you make your purchase, you will receive a serial number. When you first apply Aurora, it will pop up a dialog box asking you to register. Make sure you are connected to the internet, and click the register button. This will take you to a web page, where you will enter in your serial number and get a license key.

You will then need to go back to the registration dialog box and enter in both the serial number and license key. To get back to the registration dialog, go to Options>About and you'll see a Register button. Click that, enter in your codes and you're off and flying!

Overview

Aurora allows you to create photorealistic three-dimensional skies in Adobe After Effects. With Aurora, you can create sun, clouds, stars, haze, volumetric light, and any other sky related image that you can innovate.

Yep, we all know that After Effects now has 3D space, which is accessible by flipping the 3D switch in your Timeline window, and it's a great space to work in. Well, Aurora is a bit different. It simulates its own 3D environment without you having to flip that 3D switch. You do want to have some understanding of 3D space, but if you don't this manual will help fill in those gaps.

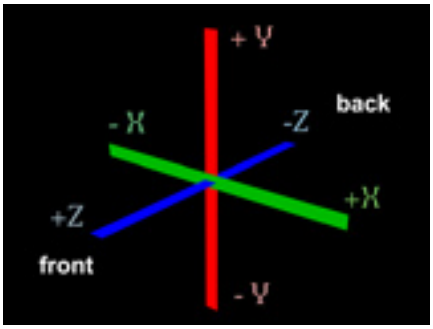
That said, if you are comfortable with AE's 3D space, you can use the AE Camera to move around the Aurora scene and integrate it with the other 3D elements in your scene.

Aurora is great if you want to create photorealistic skies and clouds in your After Effects composition, but don't have the time to build them from scratch in a 3D program. It also keeps you safely tucked into AE's production pipeline without having to deal with render and import issues. We see Aurora as a practical and creative plug-in for landscape and traditional architects, game developers, web designers, CG artists, and basically anyone with a hankerin' for gorgeous skies.

Basic Concepts

Aurora Sky's 3D Space

Aurora follows pretty standard nomenclature inside it's 3D space. It's the same Cartesian coordinate system you're used to seeing in most 3D programs and in AE itself.



This means the Y axis goes up and down, the X axis goes left and right, and the Z axis goes backwards and forwards. This is the way the Aurora 'world' is set and assuming your camera is facing the front of the scene, this is what you will see.

You can turn the camera around and upside down and make it look like something traveling along the Z axis is going up, but it really isn't. Just as if you were to lay on a table, and someone rolled a ball in front of you, just because the ball is going from your toes to your head doesn't mean it's going 'up'. It's going up relative to the way you are laying, but anyone that is standing normally in the room, sees the ball going sideways.

Yes, we know… you don't care what other people see. It's your artistic right to have things going 'up' the Z axis! Out the In door! Look Ma! I can defy gravity! That's all well and fine, and we applaud your artistic integrity, but if you want to understand how Aurora works, just stick with the normal Cartesian Coordinates.

As with most systems, Aurora has 0,0,0 as the center of world space. Moving in a positive direction from this point will take you up the Y axis, to the right along the X axis, and forward along the Z axis. Of course, you don't need to move on all the axes at the same time. You might only want to move forward along the Z axis, or down along the Y axis (you'd be moving in the negative direction).

AE's 3D Space

If you use the AE camera things change around a little bit. AE uses the upper left corner as the center of it's world. This is because traditionally, AE has been a 2D app and it made sense to make this 0,0. When the AE team added 3D, this point became 0,0,0. This produces an odd situation (at least to users of most 3D programs) where if you go positively along the Y axis, you actually move down.

There are plenty of books on AE that go into this, so we won't spend much time here on it, but we wanted to make sure you were aware of it.

Dials

Aurora, like lots of AE filters, uses dials for some controls. Espicially some of the 3D controls, like cameras. By using a dial, it allows you to rotate the camera around and around again very easily. If you want to create the Exorcist spinning head effect, just rotate the camera around and around the Y axis. Exorcisms are fun to do! Grab AE and do one yourself!

Options

The Options dialog box offers a lot of controls that we couldn't fit in the main Effect window, weren't animatable, or we figured they would be adjusted so infrequently that it didn't make sense cluttering the Effect Window up with them.

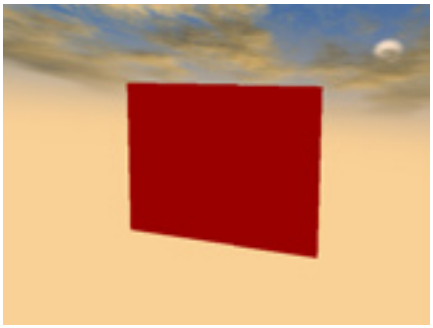
We believe that users should have access to as many parameters as possible, so we put all these in the Options dialog.

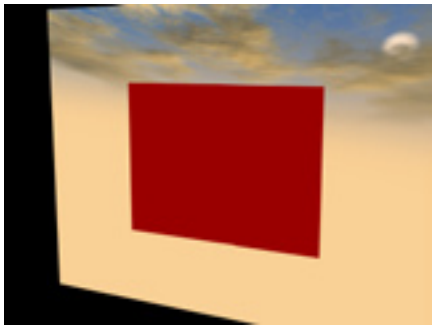
We'll talk about the Options for each section as we come to the chapter for that section. Look at the end of the chapter for the Options parameters. However, there are a few Options that affect the plug-in overall, and those we will discuss here.

Use AE Camera

This will allow you to use the AE Camera instead of the camera controls built-in to Aurora.

Important! When using AE's 3D camera, do not make the layer that Aurora is applied into a 3D layer! Aurora, in this case, will serve as a background plate and needs to remain 2D. As you move the camera around, Aurora will update appropriately. If you make the Aurora layer 3D, as you turn your camera, the whole layer will turn.





Notice that when Aurora is a 2D layer, as you move the camera, the Aurora layer updates but still covers the entire background. As a 3D layer, the layer moves when the camera moves, breaking the illusion of Aurora as a background.

Render Quality

This can increase the calculations that Aurora does, which usually result in a better image. Usually the improvement is small and not worth the extra rendering time. In most cases, you should just leave this at it's default. However if you're not getting the quality you expected, you may want to try and adjust this.

Render Modes

Aurora provides you with different types of rendering modes for different situations.

Normal

This is what you'll use most of the time. It'll give you the normal render with beautiful skies and clouds.

Sun Tracker

Extremely useful if you want to add in a lens flare from something like Knoll Light Factory. Aurora renders out the sun position as a white dot on a black background. Knoll Light Factory can use this to control the position of the lens flare.

Aurora gives you a sun with a lens flare effect, but it's by no means as powerful as a filter that's dedicated to creating lighting effects. If you want a truly realistic looking sun, Light Factory can do them extremely well and the Sun Tracker mode will allow you to effortlessly composite them in your scene.

Cloud Alpha

This renders out the alpha of the clouds. It can be useful for compositing in other elements, as a source for a Light Burst filter to create pseudo-volumetric light beams, or many other things.

Depth

This renders out the clouds with a gradient applied to them. Lighter clouds are closer, darker clouds are farther away. This can be useful in some compositing situations.

Light Beam Source

Originally designed for use with Light Burst filters to create volumetric lighting. It turns out that Cloud Alpha and Depth are more useful for this. Since it was already done, we figured someone might find a use for it, and left it in.

Presets Category

Really, who DOESN'T need premade Alien environments? There are many types of presets, and you can make your own with the Preset Manager Load/Save functions. There are also over 40 that we've included with Aurora Sky. Check them out and see how we put our skies together.

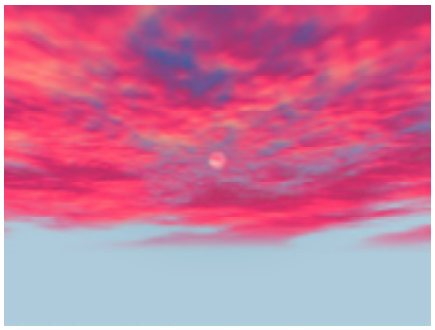
Ambient Color

Ambient Color is basically the color that lurks in places which are not lit by direct sunlight. It's created by the natural light that surrounds all objects in the sky by bouncing off other objects.

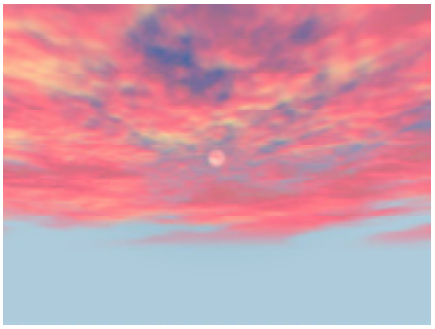
More technically, Ambient Color is the color calculation that occurs in 3D space as the result of illumination on surfaces that envelope a scene (like clouds). Ambient Color is not the hue of those surfaces but rather the hue that's added based on non-point light surfaces. Light uniformly hits and is bounced off of all the objects in the sky. This refraction takes into account factors like the sun's position and a celestial object's orientation.

So, Ambient Color is pretty important in that it tints the surfaces of all objects in the sky to a degree. The color that you choose will also affect the general brightness of your sky. This affects the overall mood and look of your composition. In the real world, Ambient Color is mostly a reflection of the sky color.

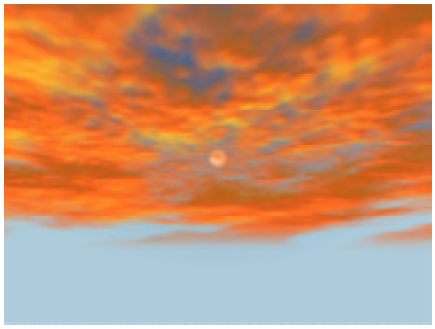
In a realistic sky scene, Ambient Color tends to be blue during the day; red/pink/orange at sunrise or sunset; and a grayish-blue at night. In an alien scene, well, the sky's the limit. (yes, it's true… we not only make fine software, but bad puns as well!)



Ambient = medium purple

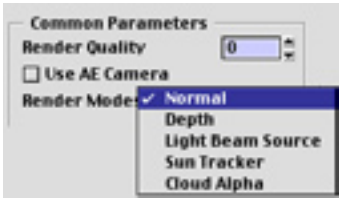


Ambient = white



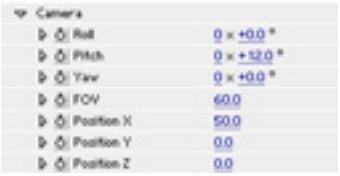
Ambient = light green

The Camera



Camera: AE vs. Aurora

You can turn off the Aurora camera and use AE's camera. This can be very convenient when you have 3D elements in your scene and you want Aurora to function as a background plate. As the AE camera moves around AE's 3D space, Aurora will update to reflect the camera turns and movements.



The Camera is the point of view from which the scene is looked at. In Aurora you can move and rotate the camera around the three axes. This usually creates the viewing angle and position that the scene is viewed from.

It's very important that you pay attention to these settings, otherwise you may get 'lost' in your scene and animations won't behave as you would expect them to. You should play around with the camera to get a feel for it, before attempting to use Aurora on a project for a deadline. Sure if you just want some clouds drifting around in the background, there's no need to concern yourself with the camera. It's pretty easy.

However, for more complex things, like cloud fly-throughs, you'll want to have a good understanding of the camera and how it moves.

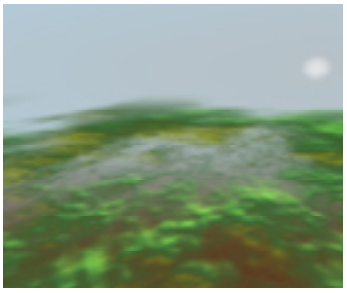
Roll

Sets the rotation of the camera along the Z-axis. Best way to imagine Roll is if the camera were a person, it (she? he?) would be tilting her head from side to side.

90 degrees will turn the camera perpendicular to your scene, as if your head was lying on a pillow.

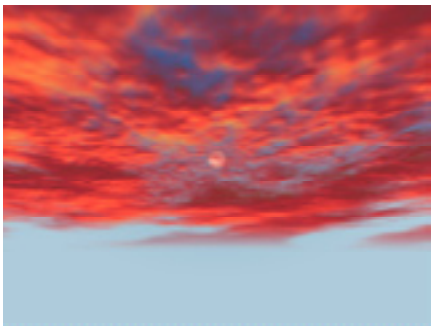
A rotation of 180 will completely turn the camera's viewfinder upside down. So will –180. At 0 value, the top and bottom edges of the camera's window are parallel to the "horizon" or surface plane.

By setting keyframes for this you can roll your camera around, again and again. When you pass 360 degrees, the camera has fully rotated on its Z-axis once. Dial to 360 again and you've rotated the camera twice. Standard AE and 3D attributes.

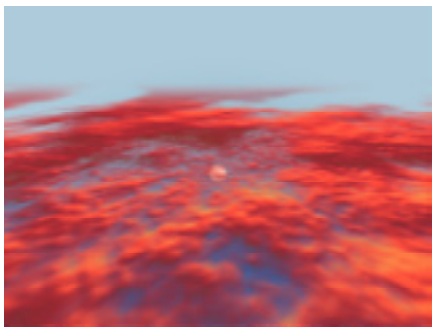


Turning Clouds into Land

We've taken Roll a bit further by setting it to 180 degrees, and tweaking the composition so the sky is now the earth and sea stretching into the distance. Ramp Horizon Color is now brown, the cloud colors are set to green, and Bumping has been pushed up to 100 for greater contrast.



Roll at 0 degrees.



Roll at 180 degrees. This makes the clouds look like a land mass, great for quick still planets or land fly-overs.

Boiling Clouds

It's not always obvious what the Distance parameter does. It's usually pretty obvious what the cloud altitude does.

Let's use both of them below.

In the Options, set Planet Radius to 0.7, creating a very small planet.

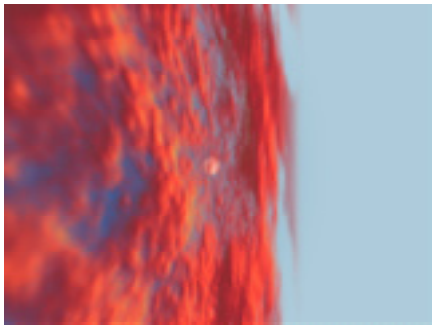
Distance sets how far into the distance you can see your clouds. If you have a very small Planet Radius, you can actually see the clouds wrap around the virtual planet. If we set our Distance to 35 we will completely wrap around the planet. Interesting...but useful?

See what happens if we turn our Distance Opacity up to 100%. Notice how the bottom of the screen becomes the cloud color. Turn your clouds an orange-red, evil, toxic cloud color.

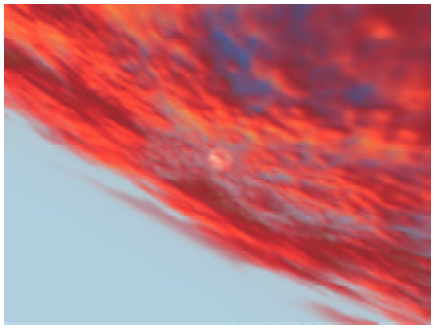
Now set the Cloud Layer Altitude to 500. Notice how this gives us a wall of clouds coming out of a flat color.

If you now animate Shift X going in a positive direction, you have some very 'Dr. Evil' boiling clouds.

Experiment with some of these settings and see what happens. Find this project file in the folder where you installed Aurora Sky.



Roll at 90 degrees.



Roll at -30 degrees.

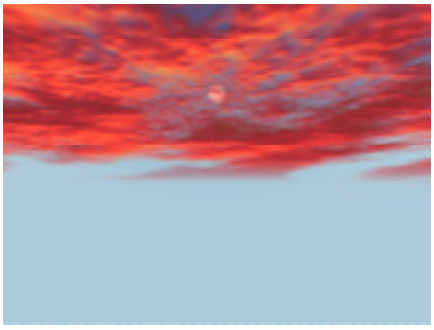
Roll allows you to bank the camera, much as if you were flying a plane. It makes for more realistic turns. If you try to turn the camera without animating Roll, it will remain level with the scene and appear to be 'skating' or sliding around on a sheet of ice.

Pitch

Sets the rotation of the camera around the X-axis. If the camera was a person, Pitch would be the measurement of him nodding his head up and down.

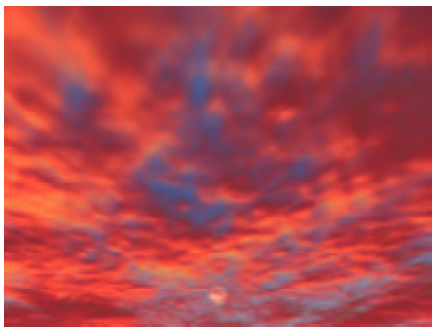
Set to 90, the camera will look directly above your scene, to the highest point of the sky from where it stands, called its 'zenith.' Set to –90, the camera looks directly below its standing point, called the 'nadir.'

Pitch has the same rotation values as Roll, except you dial along the X-axis.

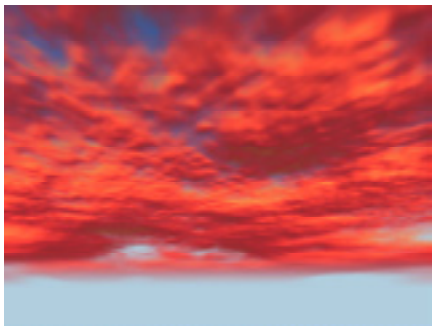


Pitch at 0 degrees

Pitch at -20 degrees. The sun is above us, and we are looking downwards.



Pitch at 30 degrees. Now the camera is gazing upwards into the clouds.



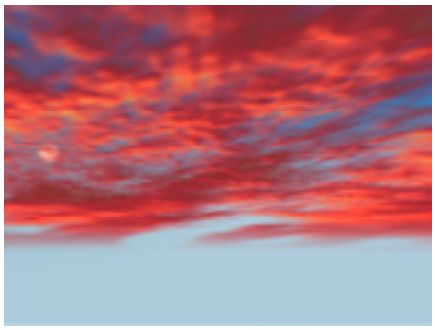
Pitch at 165 degrees. Now the sun is behind us, as we have passed the zenith of the sky.

Yaw

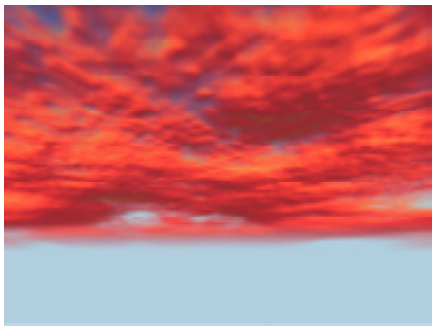
Sets the rotation of the camera around the Y-axis. Final anthropomorphic example, if the camera was a person, this time he'd be turning his head left and right.

When you set Yaw to negative numbers, like –90, you will get the effect of the camera's viewfinder turning to the left. Positive numbers like 90 will rotate the camera view to the right side of the composition.

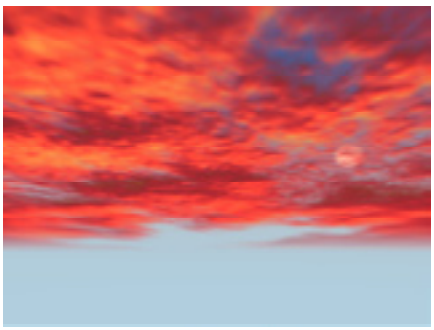
Dialing the rotation values will cause the camera to swivel around. This gives you the Exorcist effect we discussed in detail earlier. Of course, this will also cause the camera to look at the opposite horizon, turning from the sunset to sunrise. However, this isn't anywhere near as exciting as performing an exorcism.



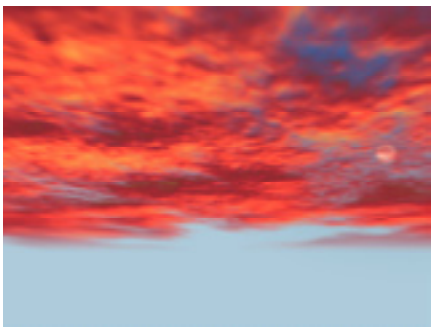
Yaw at 20 degrees.



Yaw at 180 degrees. The camera has swiveled so the sun is behind its view.



Yaw at 340 degrees. The head spinning has done almost a full revolution.



Yaw at -20. This looks suspiciously like Yaw at 240. That's because the camera has swiveled the opposite direction to arrive at the same point.

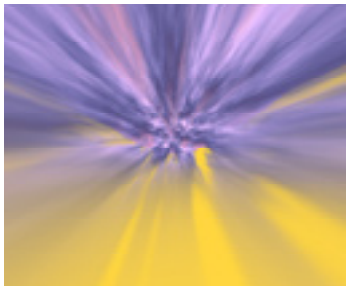
FOV

Stands for Field of View. This is the amount of the scene that's visible through the camera lens.

When FOV is set to around 60, the image is a respectable distance from the camera. Decreasing the FOV gives the impression of the image moving towards the camera. At its lowest setting of 0 there is no discernable image because the image is so close to the camera.

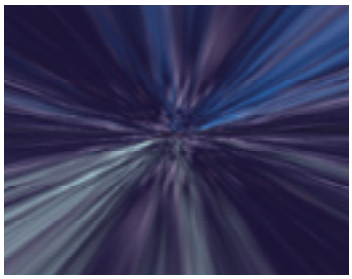
Pattern One

FOV at 4. At low settings, the image is zoomed in, and details are lost. Clouds animated at this view create, for instance, a foggy 'pea-soup' atmosphere.



Pattern Two

FOV at 179. The Pitch is 93, which means we're looking up to the sky zeneith. The effect here is of a 'hole' in the heavens.

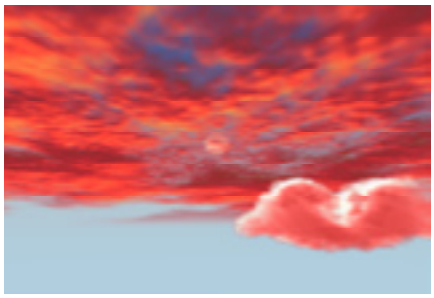


Pattern Three

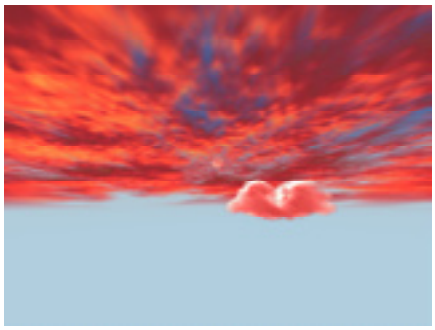
Two layers with FOV at 170. One layer is rotated at 180 Roll, and its Ramp is dropped out in Options. This simultates a 'vortex' in the sky.

Conversely, increasing the FOV gives the impression of moving the composition away from the camera. This means that you're cramming more of the sky into the camera's view, as if you've opened a camera aperature without introducing edge distortion. By 140 the image begins to get pretty striated and distorted. Which creates pretty funky effects, though not exactly a photorealistic sky.

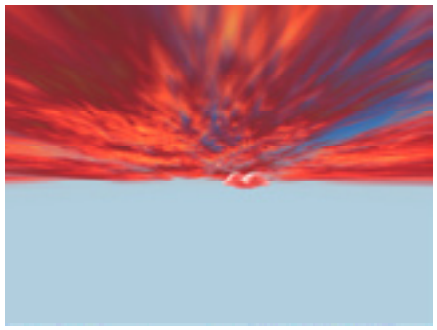
FOV at 20. The sky is close to the caera lens; so is the sun.



FOV at 60. Now the camera has pulld back to reveal a 3D cloud in the comp.



FOV at 100. The sun and 3D cloud look farther away, and the clouds appear to have more mass but aren't distorted.



FOV at 140. The distortion begins as the view pulls out, and clouds begin to look like a striped pattern.

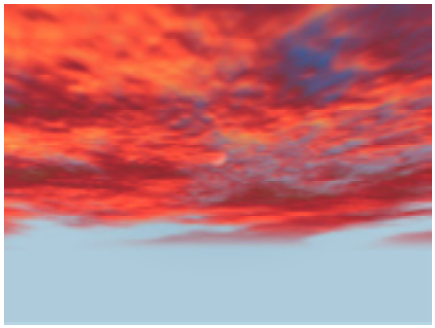
Position X

The camera position along the X-axis, a left-to-right movement. At 0 value you are at the center of the sky within your composition – this is a theoretical location of course, as the sky is really infinite.

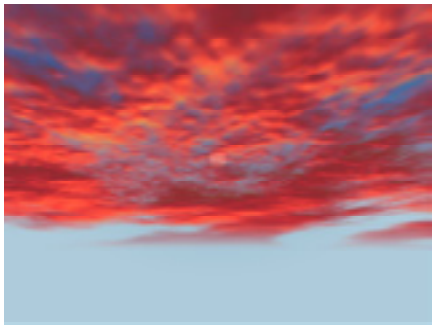
Increasing the numbers moves the camera to the right, decreasing the numbers moves the camera to the left. In either case you're panning the scene.

The sun stays at the center of your composition, instead of moving in relation to the camera. Technically, the sun is so far away that moving a few units on the Earth surface doesn't affect it's position when you move the camera. Since Aurora isn't replicating entire universes, this simplified model of the sun relative to the camera works pretty well.

Usually, on Earth, the position of the sun's position changes due to a change in rotation of the viewer. So if you rotate the camera in Aurora, the sun's position will change, but simply moving it along a given axis will not affect where the sun is at.



Position X at 400.



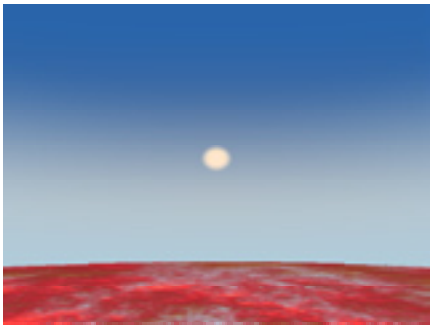
Position X at –400. Note that the sun is in the same place, but the clouds have drifted into a new formation.

Position Y

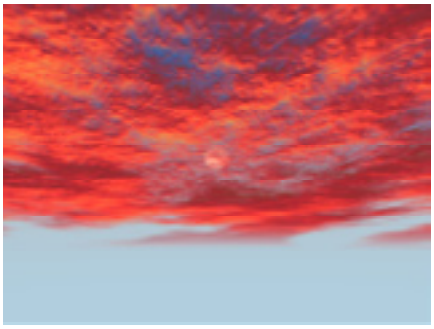
The camera position moves along the Y-axis, a top-to-bottom movement. Measured from –250,000 to 250,000 degrees, so for all intents and purposes its along an infinite plane. The default is typically between 10 and 50, which puts the camera at a comfortable slightly upwards tilt.

Usually you won't need to use anywhere near that range, since slight changes are significant. But should you wish to go to infinity and beyond, we're here for you.

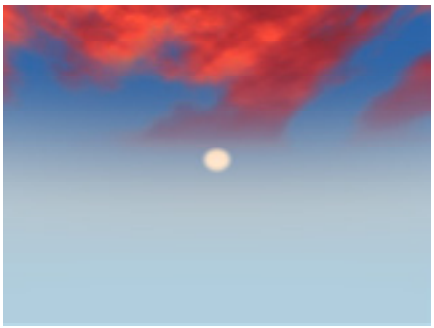
Decreasing the numbers moves the camera towards the top of the composition, until it moves above the cloud layer. Increasing the numbers moves the camera towards the bottom of the composition, eventually sitting below the cloud layer.



Position Y at 800. The camera is above the clouds.



Position Y at 50. A slightly elevated viewpoint.



Position Y at -3000 degrees. Now the camera is below the clouds.

While negative numbers creating an upwards movement and positive numbers creating a downward movement may seem counter-intuitive, keep in mind that this is how space in After Effects has always worked. AE measures its zero/zero point form the top left corner of a composition. So, 'up' counts in negative numbers and 'down' in positive numbers.

This has always been an acceptable mental model in 2D space. It just gets a wee bit confusing initially when adjusting to 3D space, or our simulation thereof in Aurora.

On to the final camera setting…

3D Bubbles and Trouble

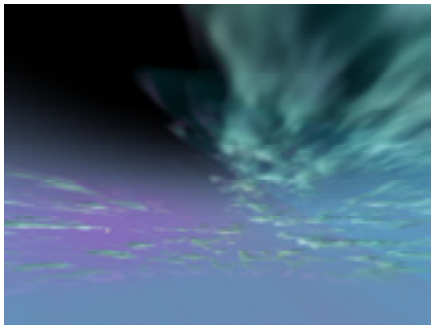
If you're going to animate the 3D Clouds 'Evolution' parameter, make sure you have a lot of spheres. The more spheres that the 3D cloud is made up of, the smoother the animation will be. If you have few spheres, the movement of the spheres will be pretty obvious creating the effect of popping pop corn or bubbles.

Of course, more spheres mean longer rendering times. In the case of the 3D Clouds this can mean REALLY long rendering times. So select the setting for Spheres carefully.

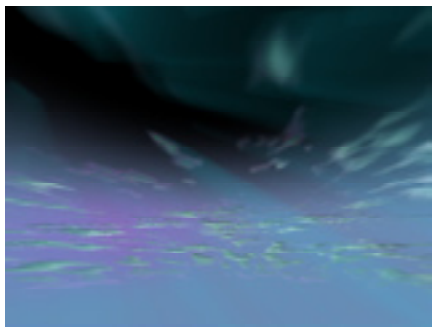
Position Z

The camera position moves along the Z-axis, an in-and-out, towards-and-away movement. Like Position Y, its measured from –250,000 to 250,000 degrees. At high numbers, the camera is flying into the clouds. At lower values, the camera is pulling out of the 3D environment.

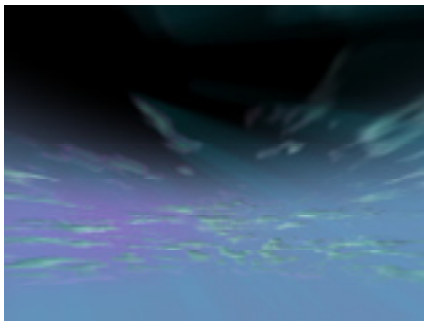
Unlike FOV, there is no distortion to the sky at high Position Z values. This is because you are not trying to fit more (or less) of the sky into the camera's viewfiender. Instead you are dollying the camera in and out of the scene.



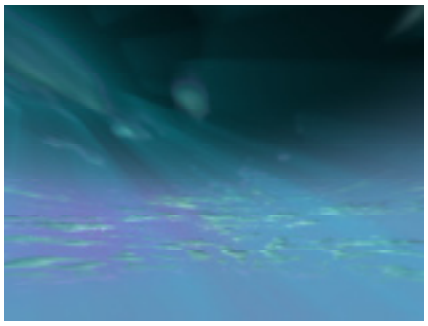
Position Z = -10,000. Flying far away.



Position Z = 0



Position Z = 200. Closer in.



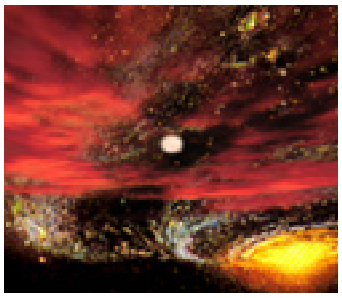
Position Z = 1000. Light overtakes the scene as it pulls you inside.

Ramp

These three parameters allow you to set the color of the sky. The sky can take on two colors that appear as a vertical linear gradient. Ramp also lets you determine how these colors blend. Pretty basic stuff, except we're talking about skies, so we get to use cool aerospace terms like 'zenith.'

Zenith Color

Sets the top-most color of the sky gradient. This is the only color you would see if you rotated the camera's Pitch to 90 degrees, because the camera would be looking directly upwards into the sky.



Removing The Ramp

Like all other parameters, Ramp can be turned off in the Options box. The area is left transparent, which means that any graphics you put behind it will be visible. Like this image of the solar system, which is easily seen. See Ramp Options later in this document for more details.

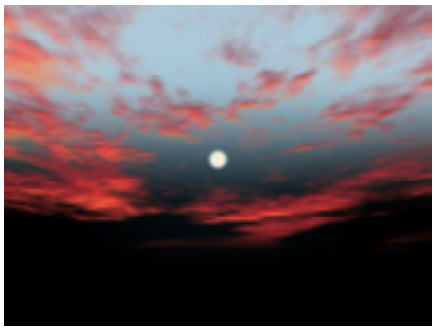
Actually, you can turn any of the sections on and off. The Suns, Clouds, 3D Clouds... whatever.

This option makes it easy to isolate one element, which can be beneficial when compositing other elements into the scene.

Horizon Color

Sets the color below the horizon line. Typically this color will fill more of your composition than the Zenith Color does. However, you can adjust the Horizon Angle in the Options dialog box. If you move the Horizon Angle up, the Horizon Color will tend to dominate the scene.

Zenith Color set to black, with Horizon Color at light blue.



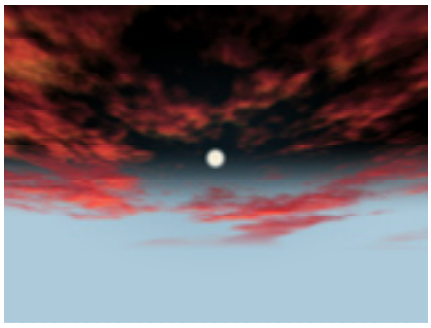
Horizon Color set to black, with Zenith Color at light blue.

Gradient Depth

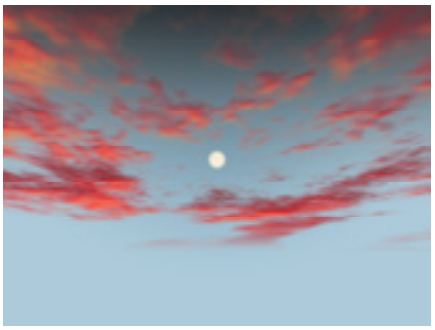
Controls how much of the gradient colors blend. The value set is actually a percentage of the distance between the horizon and the very top of your sky dome.

After the end of the gradient is reached, the Horizon Color will be uniformly applied to fill the bottom area.

High values increase the Horizon Color so it covers the entire sky. In this case, you wouldn't see the Zenith Color unless you pitched the camera straight up. Low values compress the gradient onto the horizon, so most of your sky will appear as a solid Zenith Color. Set Color Depth to 0 value, and the Gradient colors just appear as two solid bands.



Gradient Depth at 20 degrees.



Gradient Depth at 80 degrees.

Notice that at higher Depth values, not only does the Zenith Color color spread, but the change between the two colors is more diffused. At lower values, the gradation looks more abrupt.

Options for Ramp

Use Ramp

This option needs to be checked in order for Ramp to be recognized in the render and the document window. If unchecked, the graphics will disappear from your Timeline. When you turn the option back on, any settings you had created previously will return intact.

Linear Ramp

Normally smooth interpolation is applied between the ends of the Ramp gradient. This smoothes out the gradient and especially the ends. Turning on Linear Ramp makes the interpolation linear, which results in a linear gradient between the two colors, much like you'd see with the Ramp filters.

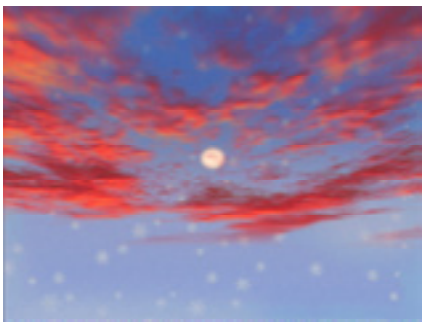
This means the gradient tends to get banding at every tonal shift, and you will see a hard 'line' at each end of the gradient. We don't really recommend that you turn this on for typical sky simulation, but if it suits your nefarious purposes, please knock yourself out.

Opacity

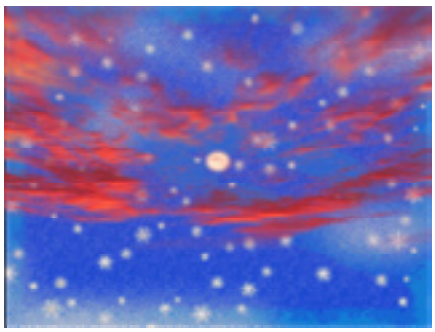
Very cool option. You can turn down or fully off the sky gradient so that any image that you place behind the Aurora layer will show through. This allows you to make use of features like the clouds, suns and stars, while substituting in a sky that is more organic, artistic, or customized.

The lower the value, the more see-through the Ramp becomes. At 100, the Ramp is fully opaque; at 0 its completely transparent. In the examples below, we've placed a bitmap sky as a layer beneath Aurora.

Opacity affects the alpha channel of the layer.



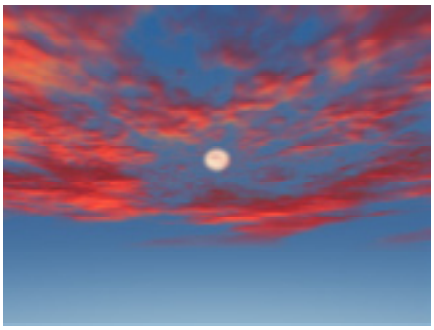
Ramp Opacity at 80



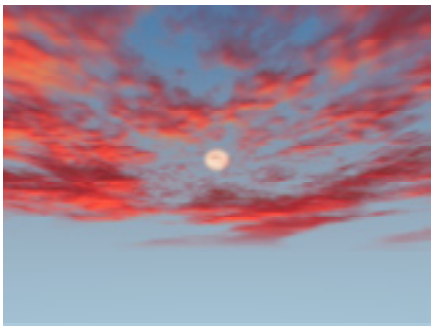
Ramp Opacity at 0

Horizon Angle

This sets the start point for the spread of the Ramp. It has the effect of moving your horizon up or down. At 0 your gradient will start exactly at the center of the scene. At negative numbers, the horizon is moved down. At positive numbers, the horizon is moved upwards.



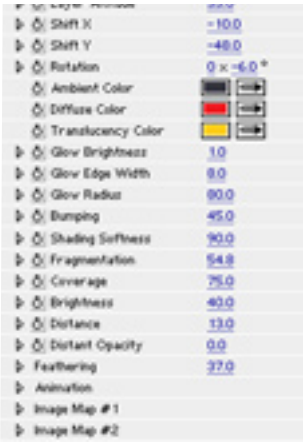
Ramp Horizon Angle = –30
Gradient Depth = 30



Ramp Horizon Angle =t –30
Gradient Depth = 100

Clouds Layer

Clouds can be controlled very precisely and dynamically, allowing anything from a soft mist to a thick layer of gray clouds. Clouds reflect sun direction and camera angle accurately, just as real clouds do, this allows you create clouds that look real even when animated.



The clouds are generally the key component in setting the mood of your scene. It's unlikely that the default values will match what you had in mind. The Color Components of the clouds will be the best place to look to set a custom look to your clouds. The interaction of the sun and camera all affect how the colors play out across the consistency of the clouds.

Defining the Cloud Plane

The cloud layer is essentially a flat plane. If you move the camera up through the clouds, you'll see this. One frame you're below the clouds, the next you're above them. This produces photorealistic clouds in most cases. If you want to do a cloud 'fly-through', you should turn on the 3D clouds. The 3D clouds actually have cloudy 'matter' in all directions, so you can move in and around them.

The normal plane of the cloud layer is not rendered perfectly flat. Depending on some other options, particularly the Planet Radius parameter in the Options dialog box, it is rendered curved. This imitates the curvature of the Earth (or whatever planet you happen to be on). As you would expect, there is not a lot of curvature, just enough to further the realism of the clouds.

Layer Altitude

This adjusts the height of the cloud plane in Aurora's 3D space. Since everything is viewed through the camera, how altitude adjustments appear is dependant on where the camera is. If the cloud altitude and camera height are at the same level, your clouds will look similar regardless of whether they are at 0 or 2000.

Matching The Camera and The Cloud Altitude

If you want to set the camera and clouds to the same height you can use this simple formula:

Camera Height = Cloud Altitude * 10

So, if the Cloud Altitude is 55, and you want to set the camera at the same height, just multiply 55 by 10, which results in 550, and set Camera Height to 550.

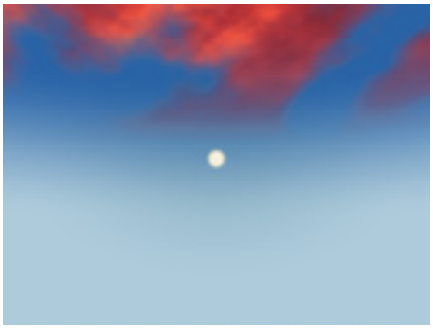
One thing to keep in mind about the clouds and the camera is that they use slightly different scales. Setting the Cloud Altitude to 50 is the equivalent of setting the camera to 500. If you set both the camera and altitude to 50, the clouds will be significantly higher than the camera.

If you set the clouds considerably higher or lower than the camera, they may move out of view. This is partially affected by the Field Of View of your camera. The wider the FOV, the further away your clouds can be while still staying in view.

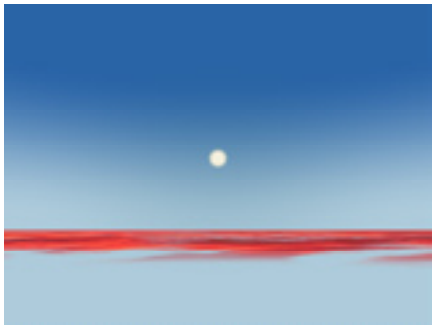
Moving the clouds downwards can have the effect of making the curvature due to the Planet Radius parameter very apparent. This can create a very cool effect, as if you're high above a planet's surface. In some cases this setup can also result in artifacts along the edge of the clouds. The artifacts are more pronounced with higher coverage values.

No such problem occurs if you are moving the clouds upward. Eventually they will just move out of view.

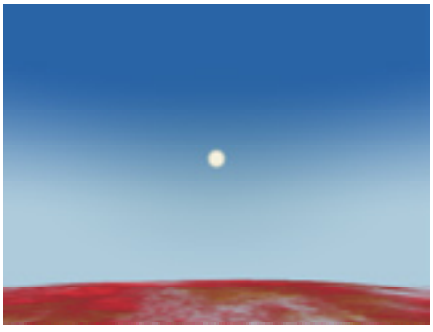
Layer Altitude = 55, Camera Pitch = 10
FOV = 60



Layer Altitude = 400. The clouds move upwards.



Layer Altitude = 5. The cloud layer is almost sitting vertically.



Layer Altitude = –50 degrees

Best Quality vs. Draft Quality

There really isn't any difference between the Best and Draft Quality modes that you set in the Timeline.

All the quality settings for Aurora Sky is in the plug-in itself and most of those are in the Options dialog box.

In the Options dialog you can: set the Render Quality of the plug-in overall, you can turn various components like 3D Clouds on and off, set the resolution of the 3D Clouds, and turn on the sun spikes.

One of the best ways to increase the render speed is to set everything up in half or quarter resolution. Clouds have the nice attribute of looking very similar at low res as they do at high res. Because of this, you can do most of your set up in quarter resolution, only changing to higher resolution occasionally to check on things and then to do your final render.

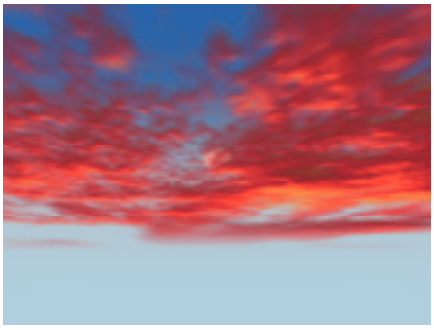
Shift X and Shift Y

Shift X offsets the position of the cloud layer from left to right. This gives the effect of the clouds panning in either direction. Positive values move the clouds to the right, negative moves to the left.

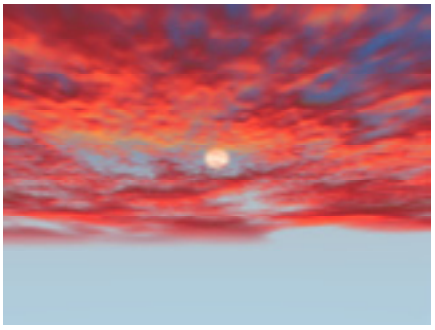
Shift Y moves the cloud layer forwards and backwards in space. This gives the effect of the clouds coming towards the camera or moving away from the camera. Positive values move the clouds forward, negative moves them into the distance.

For both parameters, the possible value goes from 250,000 to –250,000 degrees – to infinity and beyond. Keyframing this value is a way of creating simple cloud animation, like a time-lapse effect.

You can cause a similar effect by using the controls in the Animation section. But, in some ways just animating this parameter is much easier than using the Animation controls. If you just want the clouds to move across the sky, Shift X and Y will do it quickly and easily.



Shift X = -2000, Shift Y = -11,000.
The camera stays fixed; so does the sun.



Shift X = 60, Shift Y = 150,000

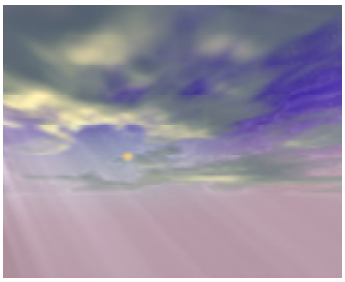
Rotation

How surprising – this value rotates the cloud layer. The effect may seem similar to tweaking the Shift X parameter, in that the clouds appear to be moving from left to right, but its actually different.

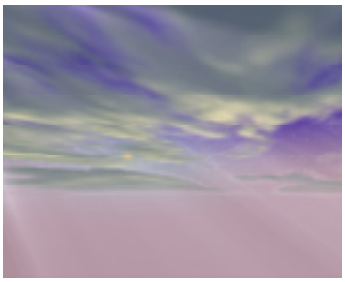
Remember that the cloud layer is a flat plane wrapped around a sky dome. Rotation actually swivels the clouds around this dome, like a top spinning on its point. This is why the parameter has a 0 to 360 degree dial to animate the rotation number.

Rotation

Rotation can cause some distortion in the clouds. So if you have Rotation set to increments of 45, you'll see the clouds start to look stretched.

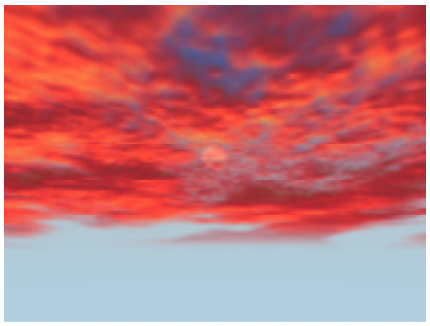


Rotation = 0

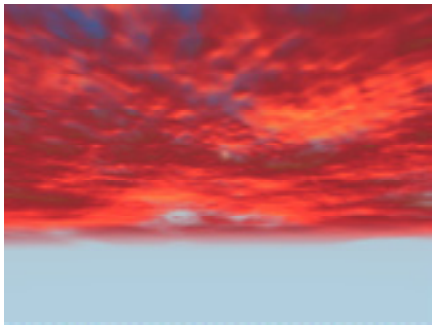


Rotation = 40

Rotation = 200



Rotation = 0



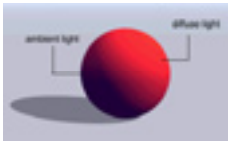
Rotation = 180

The Color Light Components

The color and shading of Aurora's clouds is controlled by three parameters: Ambient, Diffuse, and Translucency. Each color is applied in the context of a 3D lighting model.

The color of a cloud is determined by how light hits its surface and reflects back information to your eye. Therefore, Aurora's lighting model takes into account "physical" factors like sun position, surface location, and surface roughness.

Since we're dealing with a natural color model, none of the cloud colors operate in a vacuum. They all interact with each other, as well as with the Sun colors and the overall Ambient Color, which is sometimes referred to as the sky color (see the first section of this manual).



Defining the Colors

A cloud has many semi-transparent areas. Light passes through these areas in different ways. The colors, Diffuse, Ambient, and Translucent, all tend to blend together depending on the situation.

So in the case of our ball example (above), we might have set Ambient Color to blue, Diffuse Color to red, and that combination in conjunction with the lighting results in the backside of the ball becoming purple. Or we may just have a very strong purple Ambient Color.

To understand each color value, you can imagine that the clouds are irregular slabs of semi-translucent matter. Sort of like semi-clear jelly.

Presets vs. Favorites

There is a Preset Manager in Aurora Sky, in the Options dialog box. This is a convenient way to save and load settings you've created. It's also where all of the presets that ship with the product are saved.

After Effects has it's own way of saving presets, however. They are called 'Favorites' and if you're not familiar with them you should be! Aurora's work the same way as the built-in presets, but with a few advantages.

First off, you can save keyframes with Favorites. Unfortunately the built-in Preset Manager doesn't do this, but Favorites do it easily.

Secondly, you can save filters in groups. For example, if you apply Aurora Sky, then apply a Blur, and then apply Hue & Saturation on top of that, you can save the whole lot with just one Favorite.

You'll find Favorites in AE's Effect menu. You'll see options for Save Favorite (you must have a filter selected in the Effects Control Window for it to be active), Load Favorite, and Recent Favorite. Read up on them and use them with all your filters, not just Aurora Sky.

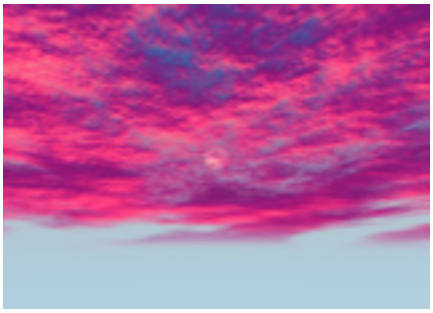
The thicker the space occupied by a component color, the less you will be able to see the others through it. For example, if you were to set the Translucency Brightness to extremely high numbers, the result would be so bright that it would "burn" through the darkness of Ambient areas, and your clouds might not show dark areas any longer.

In the same way, Translucency Component zones in the cloud mass set to be very dark will make the Ambient Component areas look even darker.

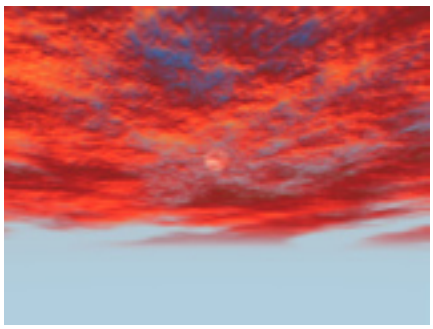
Ambient Color

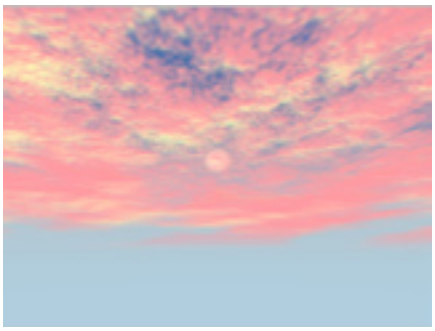
Ambient Color is the color that appears on the unlit side of the clouds, in the shadows. Where no Translucent Color dares to tread. Or shine. Or whatever.

Going with our jelly analogy, imagine that it's thick jelly and light can't pass through it. On the unlit side, where there's no light, this is our Ambient color. You can see in the ball example (previous page) the shadow side is a purplish color. The purple is your Ambient Color.



Ambient Color = blue





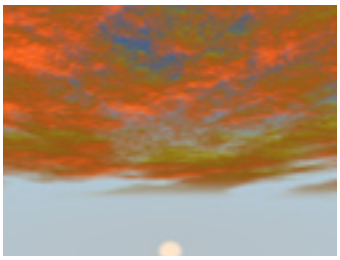
Ambient Color = dark grey

Ambient Color = white

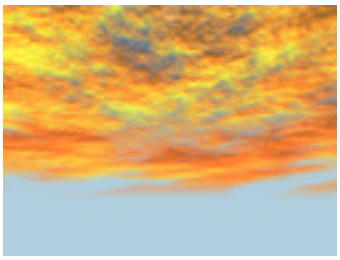
Here Comes the Sun

When the sun sets or rises or moves otherwise, the primary light source has moved. Notice the different impact the same Ambient Color has when the sun is high or low.

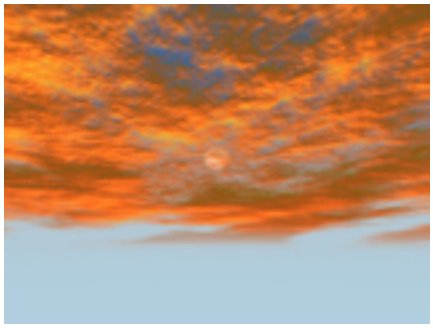
Sun Disk Pitch = 11



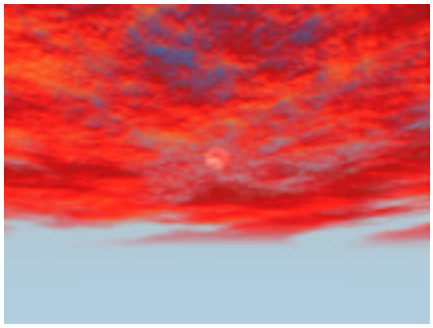
Sun Disk Pitch = -12



Sun Disk Pitch = 32 (hidden)



Ambient Color = green

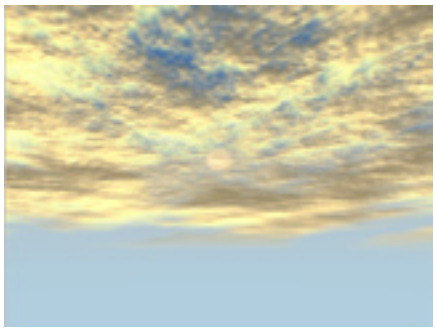


Ambient Color = maroon

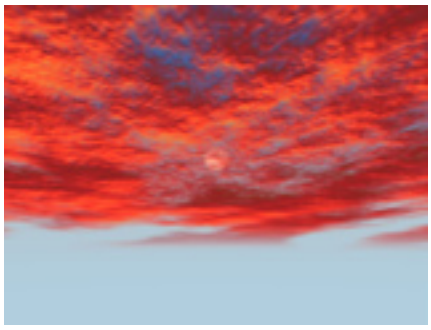
Diffuse Color

Now imagine that light which is directly hitting the cloud mass is making those areas brighter and more saturated. Diffuse Color is the color of the object wherever there are highlights. You observe it on the sides of the clouds that have the light source and on the lighted, red area of our ball example.

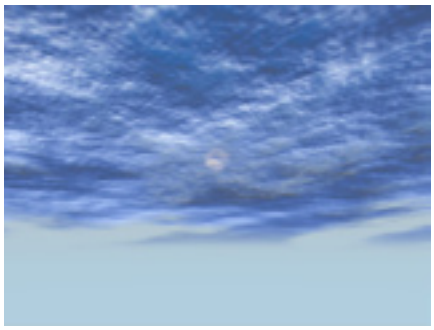
In most 3D programs, the Diffuse color generally becomes the object's color. Since it's the color that appears when the object is lit, it'll seem to have the most dominant component. In Aurora, it'll seem to have the most effect on the coloration of your clouds, as the other color components don't affect it greatly.



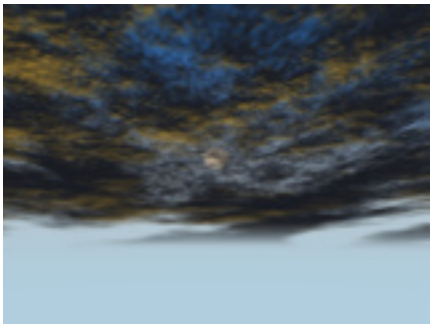
Diffuse Color = light yellow



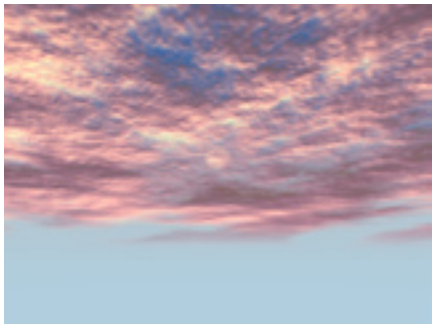
Diffuse Color = red



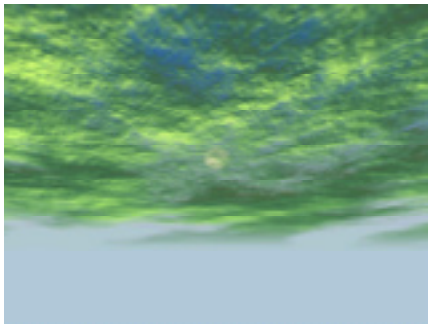
Diffuse Color = blue



Diffuse Color = black



Diffuse Color = pale pink



Diffuse Color = green

Translucency Color

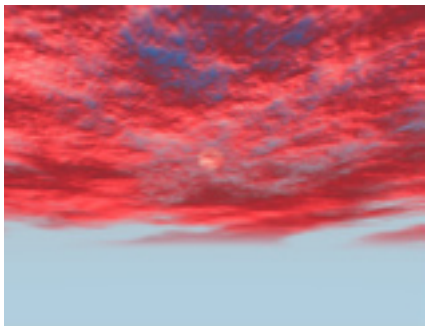
Despite their mass, clouds let a lot of light through. However, this light gets weakened and color-filtered by having to pass through the cloud mass, so it winds up being essentailly a pale tint.

This is the Translucency Color. It's the color that appears as the result of light shining through the cloud's non-opaque areas. It is typically along the non-shadow areas of the clouds.

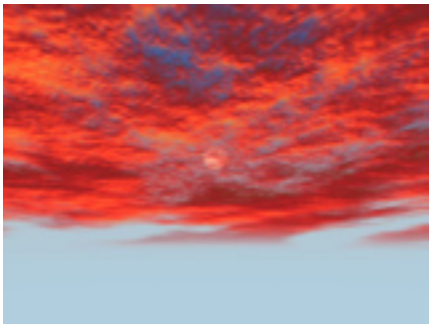
Using our jelly analogy, the translucency color is the color you'd see in the shadow cast by the jelly. This is light that has passed through the object and come out the other side. A bit like the color on the inside of the jelly. It's affected by both the Diffuse and Ambient components, but anywhere the clouds are transparent to any degree you'll see this color.

You'll notice that there is less distinctiveness in the Translucency Color changes. This is because it acts like a tint over the highlight areas.

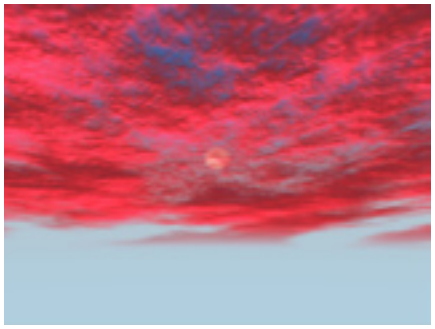
Use the Transparency Coefficient in the Options box to change this parameter's impact on the clouds.



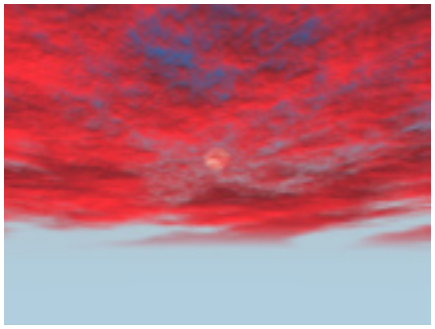
Translucency Color = white



Translucency Color = yellow



Translucency Color = purple



Translucency Color = black

Lighting Tips and Tricks

Ok, so now you understand how the colors apply to jelly and red balls and 3D and god knows what else, but what does that all mean to clouds?

The truth is, you can throw most of the above stuff out the window because we're dealing with a complex natural model. The above explanations explain what happens in simple situations and they're good to understand as they will help you make some sense of what Aurora is doing when lighting the clouds.

The problem is, clouds are semi-transparent clumps that respond to the light and position of the sun, the position of the camera, and the overall color of the sky. This means there are millions of possible combinations and predicting exactly how the colors will interact isn't really possible.

Following are some good rules of thumb.

TIP 1

Which colors will dominate your scene depend heavily on where the sun is located, relative to the camera. Assuming the camera is below the clouds and pointed at the horizon, and Shading Softness is set to a high value:

- If the sun is on the horizon (the sun's pitch is 0 or 180), the Ambient and Diffuse colors will dominate. Translucency has very little effect in this case.
- If the sun is directly above the scene (pitch = 90), the Diffuse and Translucency colors dominate. The Ambient color will mix with the Translucency color, sometimes resulting in a color that is between the two. However, the Ambient color will show up only a little in this situation, so you won't usually see much of that color.
- In between these pitch values, the various colors all play a role in determining the final look. The Translucency and Ambient colors tend to combine and then mix with the Diffuse color. Adjusting Translucency can affect the strength of the Ambient Color and vice versa.
- Where the camera is pointed matters! The colors of the clouds won't change much as the camera moves, but the angle the light from the sun hits the clouds will. So if the Sun is on the horizon and the camera is pointed upwards at the noon position, the camera will see a different arrangements of colors than if it was pointed at the horizon and at Sun.

TIP 2

Since Ambient color is usually the color you'll find on the back side of the clouds in the shadows, it's best to keep it to a darker color.

TIP 3

Both Diffuse and Translucency colors tend to blow out to white very quickly. Keeping them at a middle luminance will help keep the colors saturated instead of having them turn to white. Middle luminance is 120 or 127.

TIP 4

Translucency can often go a long way to setting the overall brightness of the scene. If it's a lighter color (a high luminance value such as 190) the scene will be bright and pleasant looking, a darker color (low luminance around 60) will create a dark, stormy scene.

TIP 5 If you're animating the Sun, most likely you will need to animate the cloud colors and the ramp color to create a realistic scene. Quite often, the colors that work really well for one situation, don't work well when you adjust the sun. If you were to animate the sun from noon to sunset, you usually want different colors.

– For example, some good sunset (Sun pitch = 8) colors are setting Ambient to a dark red, Diffuse to orange-red color with a medium luminance, and Translucency to a light, bright yellow. If you then set Sun pitch to 90, all the clouds turn bright yellow. Obviously, that's not a very realistic noon-time scene. Setting Translucency to white, and Diffuse to light blue will get you a better noon-time look. Animating between the two will give you a pretty nice time lapse sunset.

TIP 6 Shading Softness plays a big role in the final look. It controls how much the three colors blend. Setting Shading Softness to a high value will result in a lot of blending and will cause the Diffuse component to be dominant. At lower values, the other colors are more pronounced and may even override the Diffuse color completely.

The Glow Parameters

The next three parameters deal with the diffusion of the sun's glow and other atmospheric light around the perimeter of the clouds. This adds another color component to the edge of the clouds, which is essentially the Sun color.

Know Your Glow

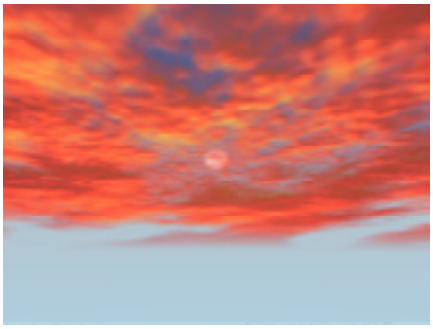
The three Glow parameters are closely tied together and work in conjunction with one another. Because of their inter-relationship, there are numerous combinations that range from subtle to quite noticeable visual differences.

However, Glow values are not the Halo that creates the glow around the sun usually. Glow is the effect of the Sun on the clouds, and only occurs within a defined distance from the Sun.

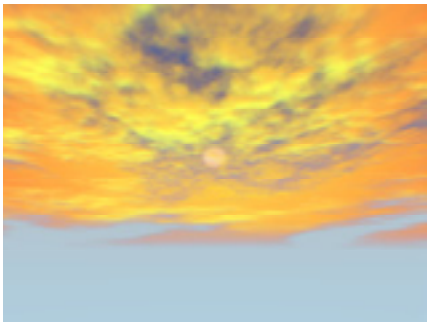
Glow Brightness

Glow Brightness (GB) is the brightness of the overall glow. If Glow Brightness is turned off (set to 0), then the other two Glow values have virtually no visual effect.

Set to 1 or higher, the Glow Brightness allows an overall diffusion of the glow throughout the entire cloud layer. Eventually, at fairly low values actually, this flattens out the clouds in terms of a difference between dark shadows and highlights.



Glow Brightness = 1



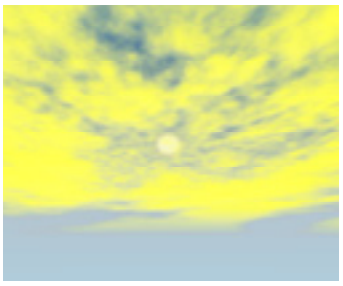
Glow Brightness = 5

Glow Edge Width

Glow Edge Width (GEW) is the width of the glow 'lining.' As with Glow Brightness, you'll probably wind up keeping the values low.

In fact, Glow Edge Width (GEW) has a great impact on Glow Brightness (GB). If the GEW is set between 0–2, there is virtually no effect caused by GB. With GEW set at 3–10, then GB is increasingly apparent as a glow around the edges of the cloud. Once GEW goes above 10, then GB completely overtakes the clouds as a brightness that blows away any other colors (from Ambient, Diffuse, Translucency).

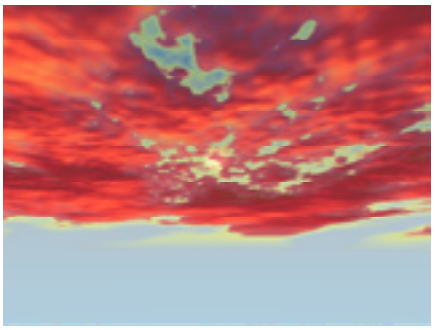
When GEW values are animated in ascending values, depending upon the other Glow settings, you can easily create the impression of sunlight breaking through the clouds.



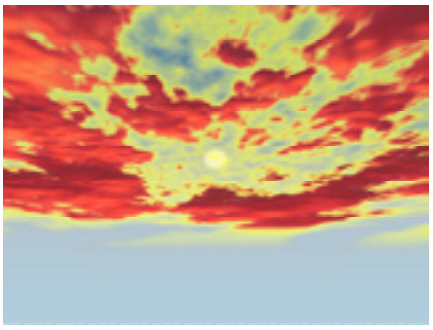
Experimental Colors

By the time these clouds get to a GEW of 12, the Ambient and Diffuse colors are totally blown out.

It's important to experiment with the different colors to see how they interact. It can be a bit confusing at first but there is some rhyme and reason to it all.



Glow Edge Width = 6



Glow Edge Width = 9

Glow Radius

Glow Radius determines how close to the sun the clouds must be in order to glow from its light. The glow essentially spreads out as a gradient, brightest where the camera looks directly at the sun, and fading off the further away clouds are from that spot.

One of the more interesting features of this setting is what happens when you crank the Radius all the way down. At low values, like 1–6, the light creates a halo around the sun disk. The GB needs to be set around 10 and the GEW around 15 to have the proper impact. Its just a haloing effect that appears as the 'gradient' that the glow disburses increases its span. But it looks really cool.

Integrating Aurora Sky With Psunami

Psunami creates beautiful, photorealistic water surfaces. Unfortunately, its skies leave something to be desired. That gap is now filled with Aurora Sky.

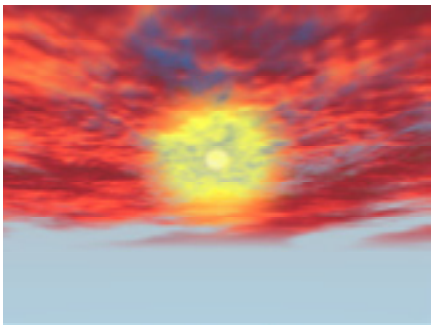
How to integrate the two is not immediately obvious. The key here is to render only the water in Psunami, and then use the Aurora Sky layer as a Texture Map for the water.

Once you have your sky layer looking like you want it, you'll need to pre-comp it. After that, apply Psunami to a layer in front of your sky pre-comp.

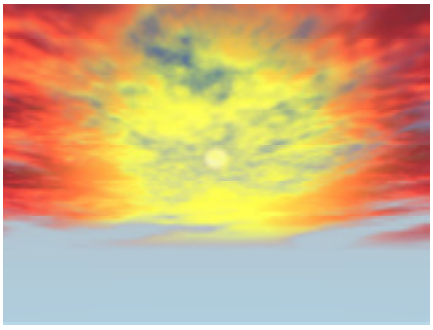
In the Render Options, select 'Water Only'. Then adjust the pitch of the Psunami camera to move the horizon line so it matches the horizon line in Aurora Sky.

Now go to Image Map #1 in Psunami and select the Sky pre-comp as the Map. Change the type of map to Texture On Surface. This will make the Sky pre-comp a texture map. You'll need to scale up the map, so change X and Y Scale to 4. Now in the Layout pop-up select Tile. This will cover the ocean surface completely, but the tiling shouldn't be noticable.

Take a look at the Psunami-Aurora project that's in the folder where you installed Aurora Sky.



Glow Radius = 3



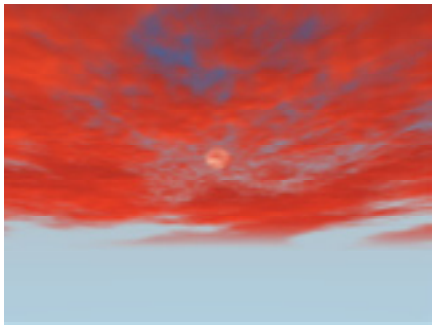
Glow Radius = 15

Bumping

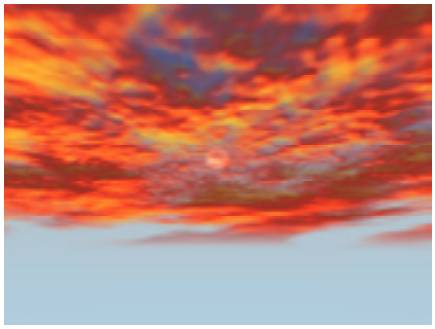
The thickness of the clouds is called 'Bumping' because clouds can be looked at as 3D lumps of semi-transparent mass. Yes, the jelly again. The level of Bumping controls how dramatically different the thinner and thicker parts of your clouds will be. For realism in your skies, you'll typically keep a mid-range value.

Setting your Bumping very high, say 90, means that thicker regions will be really thick, and thinner regions will be razor-thin. This creates a high-contrast look which simulates a more 3D look and puffy clouds.

Setting it really low, like 10, means that your clouds will be close to a medium thickness almost everywhere, with very little three-dimensional feeling. Kind of pea soup-ish and flat.



Bumping = 10



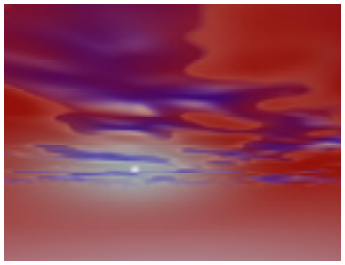
Bumping = 90

If you're at all familiar with using bump maps, then this process should be very familiar. Basically, a grayscale pattern is being applied to the Aurora layer to give the inference of clouds. White/light areas get raised; black/dark stays flat; the gray values run the gamut inbetween.

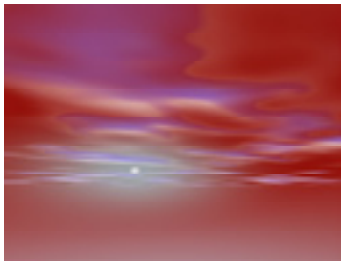
Shading Softness

Tie-Dye Sky

Set the Shading Softness low to create more ethereal effects of the sky colors clashing. Of course, if you have an alien skyscape to begin with…



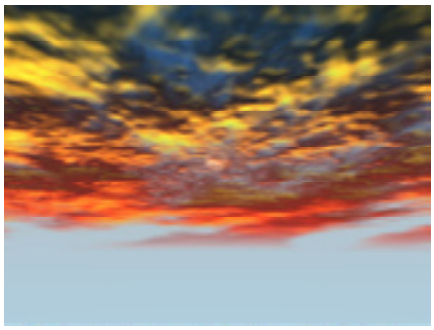
Shading Softness = 100



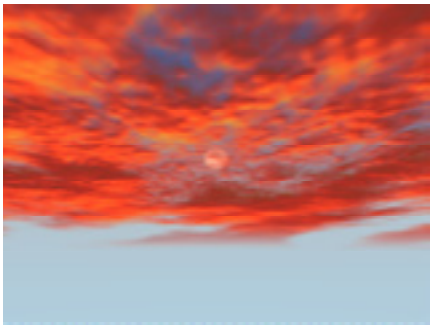
Shading Softness = 1
Colors seemed to have sharper definition, as if their shape edges are aliased.

Shading Softness determines the smoothness between the three Color Light Components (Diffuse, Ambient and Translucency). Much of the cloud 'dome' will be a mix of at least two of these colors at any given location. So, Shading Softness controls how sharply one cloud will transition into the next.

A setting around 90 will generally create a smooth, continuous tonal gradation, which appears the way the sky does in real life, with clouds blending into each other against the sky.



Shading Softness = 10

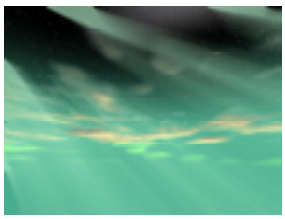


Shading Softness = 90

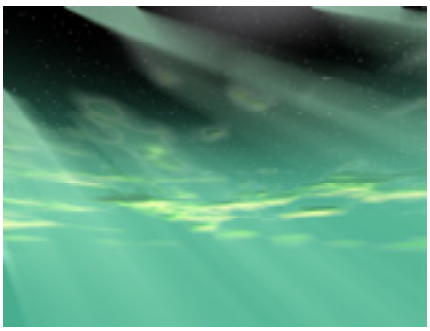
Shading Softness has the effect of decreasing the strength of either the Ambient or Translucent values, depending on where the Sun is. As the colors blend more (higher values), the Diffuse component takes over. At lower values, the other colors are less blended and more prominent.

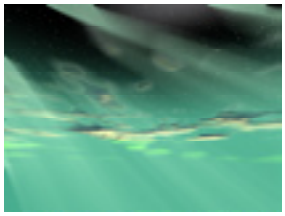
Case Study:
Shading and Bumping

The subtlety of this sky is in part due to the soft rendering of cloud depth. Bumping is cranked to 100, which creates a high contrast between light Tanslucency and dark Ambient colors. With Shading Softness also at 100, the transition between highlights and shadows is smooth and gentle.

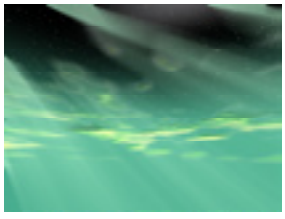


Softness = 1
Bumping = 20
Lights wash out shadows.



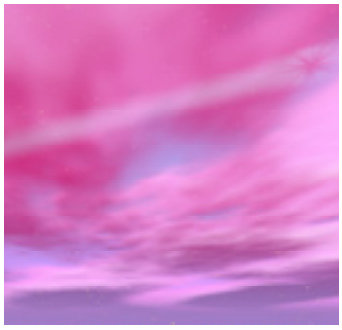


Softness = 1
Bumping = 100.
Darks too pronounced.

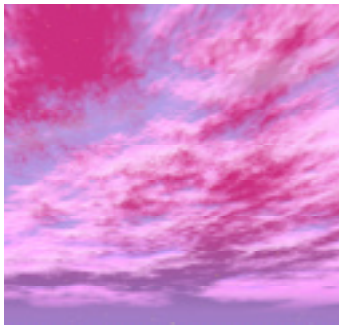


Softness = 100
Bumping = 100
Porridge is just right!

Pretty in Pink



This abstract sky benefits from hazy amorphous clouds at a low Fragmentation of 37.



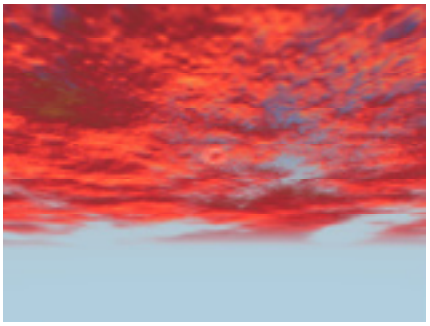
With Fragmentation raised to 90, interesting details like the top-right star are lost in the puffed clouds.

Fragmentation

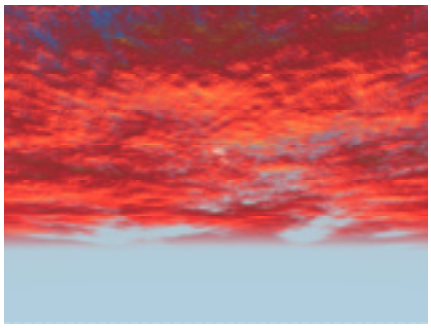
Fragmentation determines how dispersed the clouds appear. You're adding or subtracting 'noise' from the composition. Setting it around 50 will give you a pretty normal chunky appearance.

High fragmentation means the clouds are more scattered and in smaller pieces, which gives a powdery look to the cloud edges. Low values make the clouds appear almost milky and wispy because they are not broken apart.

Fragmentation = 30



Fragmentation = 70



Fragmentation = 100

Fragmentation = 0

Coverage

The percentage of sky coverage by clouds. The higher the value, the more clouds in the sky. At its lowest settings, it results in no clouds at all, clearing the sky out. Pretty simple.

As you raise the Coverage value, increasing the clouds, the clouds will start to form in the gaps of the existing clouds. The existing clouds will maintain their shading and position.

The exception, sort of, is that as the gaps fill in, clouds that were just isolated clumps, will become part of larger cloud masses.

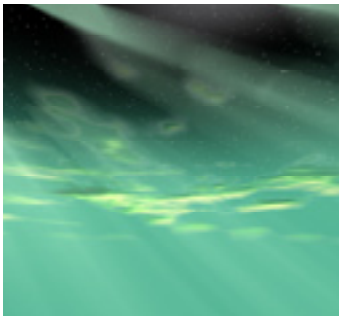
Shifting Clouds

Changing Coverage doesn't actually change the cloud pattern. It simply starts filling in the holes.

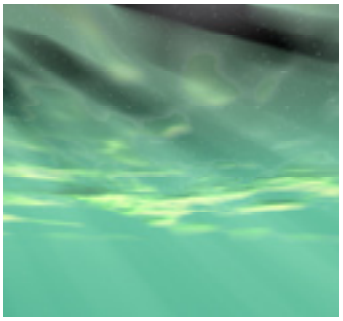
If you want the pattern to change over time as well, take a look at the Turbulance parameter in the Animation section.

That will cause the clouds to actually change shape, much like undulating waves. Coverage will just look like the clouds are fading away or filling in. Which can be a great effect, but if you're looking for something a bit more interesting, try Turbulance.

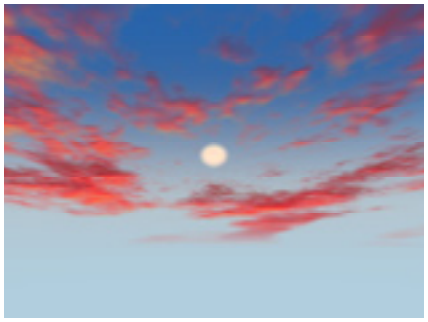
Remember: You need to animate the Evolution parameter for anything to happen.



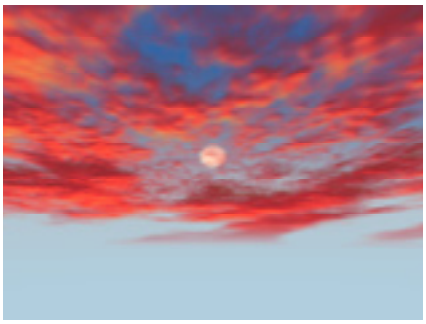
Coverage = 40



Coverage = 45

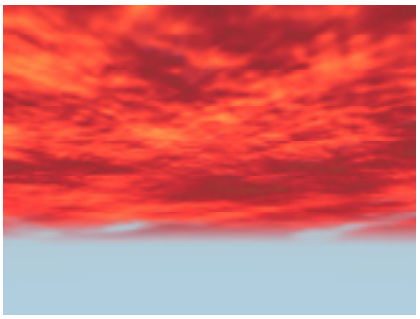


Coverage = 50



Coverage = 65

Coverage = 75



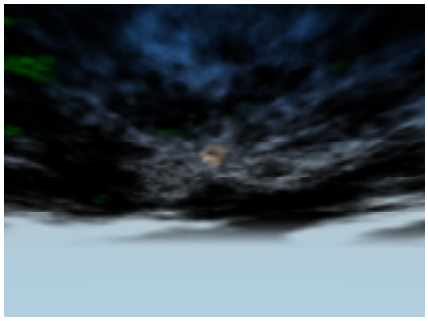
Coverage = 100

Brightness

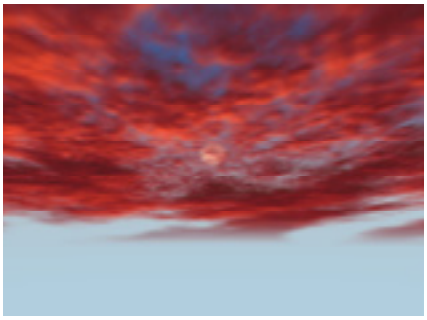
Brightness multiplies the existing brightness levels found in the clouds, which have been determined by the Color Light and Glow parameters. Little change will occur in black regions, primarily where you are tweaking the mid- and light tones.

Because of this, Brightness works better for darkening the clouds. It's limited in how much it can brighten the clouds, since it doesn't brighten dark areas. However, it can darken the lighter areas, so you can use this to turn all the clouds black, if you're in a particularly witchy mood.

These tonal changes are usually fairly subtle. High values will make the cloud colors brighten overall, and may add a bit of contrast. Low values darken the clouds, canceling out all light tones and occasionally shifting hues.



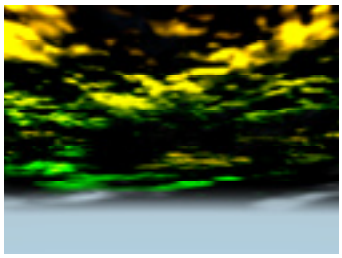
Brightness = 0



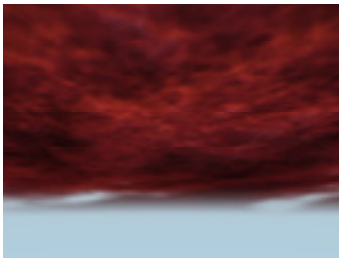
Brightness = 10

Xtreme Clouds

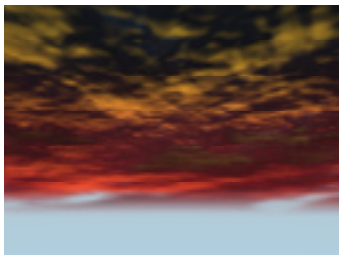
To get interesting results from Brightness, you'll want to play around in conjunction with other 'contrast' parameters like Shading Softness and Bumping.



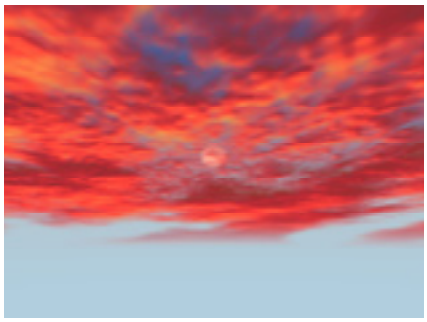
Brightness = 1
Bumping = 100
Shading Softness = 10



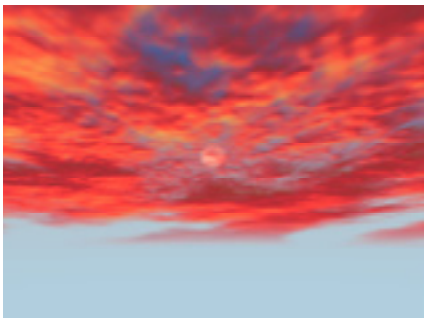
Brightness = 6
Bumping = 80
Shading Softness = 40



Brightness = 10
Bumping = 90
Shading Softness = 8



Brightness = 50



Brightness = 100

Distance

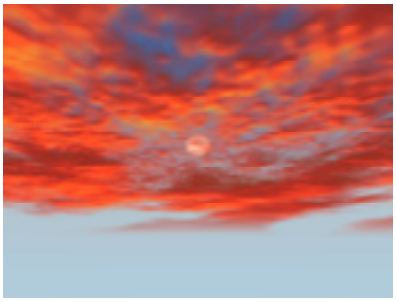
This parameter sets the distance from the camera at which clouds begin to taper off and fade. This mostly affects how clouds that are far away from the camera, and therefore probably close to the horizon, will appear. Overall, this parameter is used to simulate the blurring and blockage that air masses and horizon haze can cause.

Lower numbers allow the clouds to end without necessarily creating a feeling of depth. Higher values will either keep the clouds from looking as if they end abruptly at the horizon, and/or inference the vastness and spread of the environment. You'll use the higher range for animating fly-throughs, so the sky will appear continuous, as it should be.

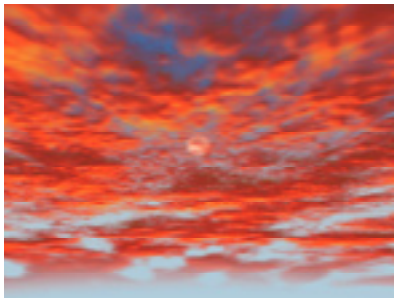
Distance works in conjunction with Distance Opacity, Distance Fading (Options), and Planet Radius (Options).

Planet Radius

Planet Radius can have a serious effect on this parameter. At low Radius values, if you start increasing the Distance value, the clouds can actually start wrapping around the virtual planet. This creates the effect of the clouds going off into the distance at the top of the screen, then hitting the horizon and turning back. So you have clouds that look close at the top and bottom of the screen. If you run into this, just increase the Planet Radius value in the Options dialog box.



Distance = 13



Distance = 30
The clouds at the bottom seem to be coming back towards you because of a small Planet Radius.

Speeding Up 3D Clouds

There's really only one way of speeding up the 3D Clouds. That's to decrease the number of spheres that make up the clouds. The 3D Clouds are composed of a number of spheres, which then make up the volumetric nature of the clouds. The more spheres, the higher the resolution and detail the clouds will have.

If you're just trying to set up the 3D Clouds, you can set the Spheres down to some low number like 10 and you'll be able to position and scale it pretty well.

When you're ready to render, crank up the number of spheres, and render it out. If you're at full resolution, you'll probably want to go to sleep, as it'll take awhile.

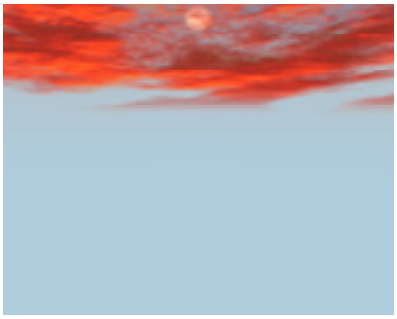
You can set the Spheres parameter in the Options dialog box.

Also, remember that you can loop the clouds with the Cycle parameter. That way you may only need to render a few seconds and then import the QT movie and repeat it several times.

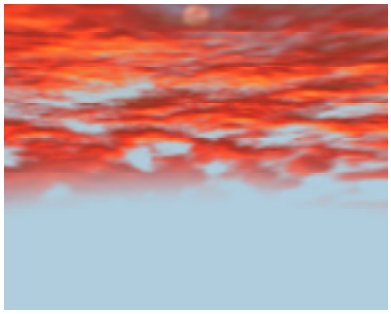
See the section on Spheres for images and more detailed explanation.

Adding Perspective

Perspective parameters can affect how much Distance needs to be added. With the cloud Layer Altitude set to positive values, or the camera Pitch or Position Y set to negative numbers, you're looking up at the clouds. This means that more distance is needed to create the feeling of clouds receeding.



Distance = 13
Pitch = –10
Note sun's repositioning from Pitch.



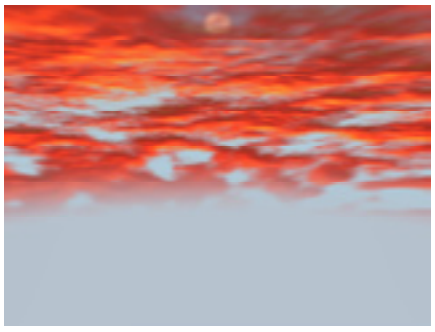
Distance = 45
Pitch = -10

Distance Opacity

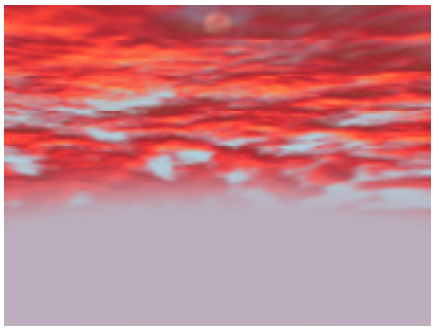
Distance Opacity sets how transparent the ends of the clouds will continue to be beyond the end of the Distance parameter. Opacity behaves like a flat semi-opaque texture coming from the extensible area of the cloud layer. As you can imagine, tweaking the Distance along with the Distance Opacity is important.

Higher Distance Opacity values will cover the sky in a more unnatural tint. Depending upon the sky's other-worldly quality, this may be valuable.

You'll notice that in this example, the sky has a red tint that extends from the bottom edge of the clouds. This tint adds an atmospheric haze that works best at a low faint value to keep realism in this particular composition.



Distance Opacity = 8
Distance = 45
Pitch = –10



Distance Opacity = 20
Distance = 45
Pitch = –10

Feathering

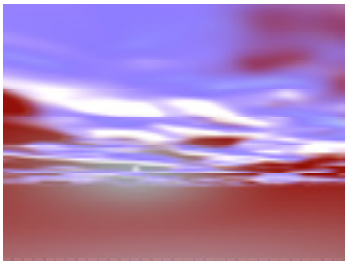
Tar and Feather

In this alien skyscape, changes to Feathering and the soft edges of the clouds bring out the Ambient versus Diffuse and Translucency colors.

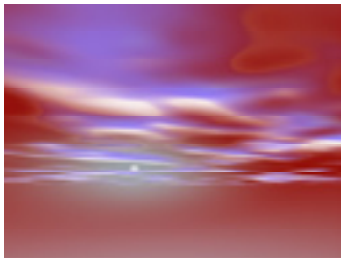
Feathering softens the transition between the clouds and the sky. Thinner cloud areas will start to dissipate as this is increased. This creates nice soft edges for your clouds. The mid-values behave most realistically, giving you soft edges while maintaining a sense of depth and substance in the thicker parts of the clouds.

At low Feathering, the gradation of the clouds is very little, which means the cloud edges are hard and abrupt. At high Feathering, the dissipation of the clouds is softer and, well, feathery.

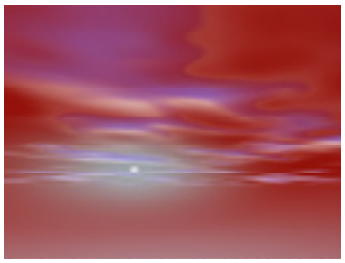
The side effect of Feathering is that cloud coverage is reduced, along with average thickness. When Feathering is set low, the effect can almost seem as if Coverage is set high. Keep in mind, though, that the Coverage parameter adds or subtracts clouds, while Feathering softens (or doesn't soften) their edges. Their numbers almost work in reverse.



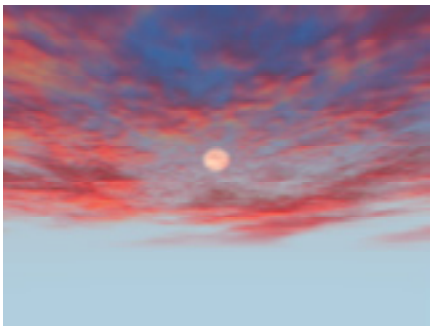
Feather = 20



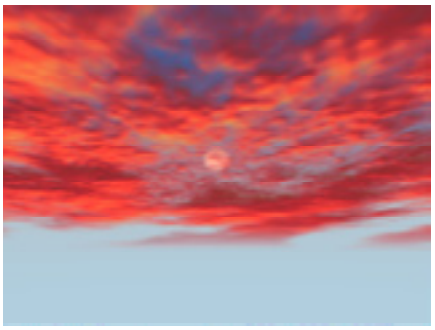
Feather = 50



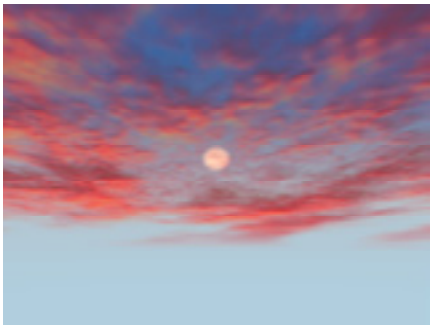
Feather = 80



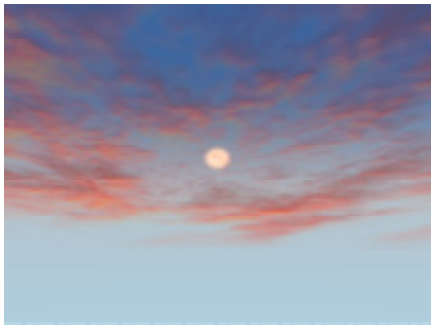
Feather = 10



Feather = 30



Feather = 70

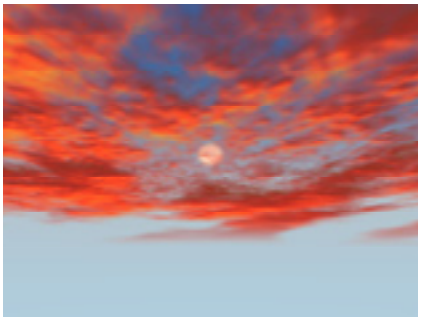


Feather = 100

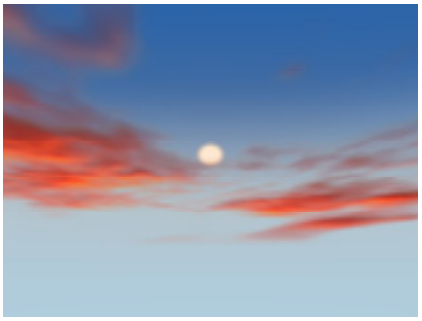
Cloud Tips and Tricks

You can make Cloud parameters like Feathering, Fragmentation, and Coverage work together to manipulate the cloud shapes. Of course, other factors like cloud angle, camera angle, and coloration will affect your composition.

In general, the sweet spot for all of these parameters is between 50 – 70. Take some time to figure out how they interact, as this will be particularly important to achieving good looking clouds. Or ugly clouds. Or whatever type of clouds you're looking for.



Puffy clouds.
Shading Softness = 100
Fragmentation = 55
Coverage = 70

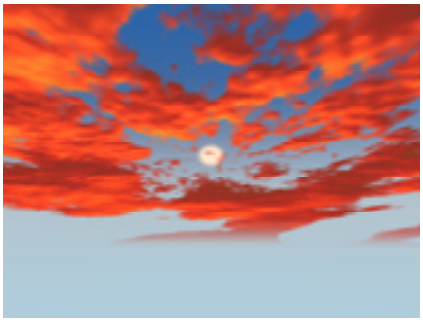


Long thin clouds.
Shading Softness = 40
Fragmentation = 35
Coverage = 60

Multiple parameters work together to create the weight and sense of mass of clouds. Oftentimes reducing one number will impact the size of another parameter.

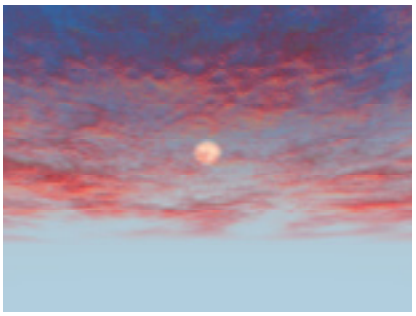
Fragmentation is reduced to make the fade-out transition more subtle and believable.

Hazy sky.
Feather = 55
Coverage = 75

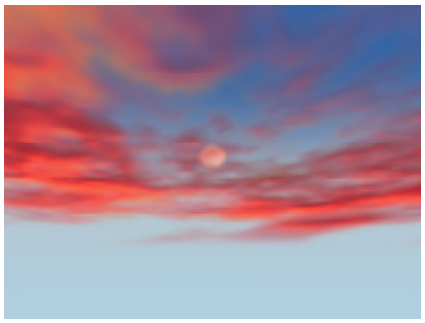


Stormy sky.
Feather = 10
Coverage = 60

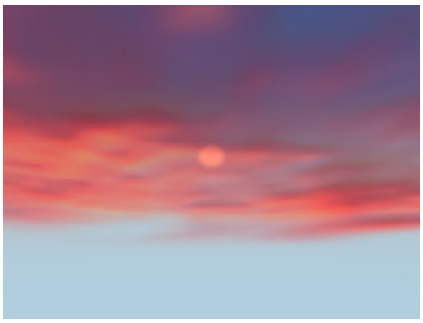
Toggling the parameters Coverage and Feathering can create some subtleties in the cloud formation, like a slight appearance of haze or a stormy sky. Their numbers almost work in reverse.



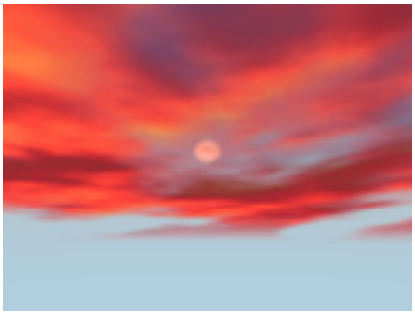
Feather = 10
Fragmentation = 20
Coverage = 40



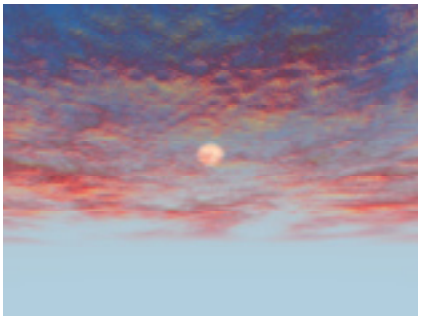
Feather = 50
Fragmentation = 40
Coverage = 70



Feather = 100
Fragmentation = 3
Coverage = 100

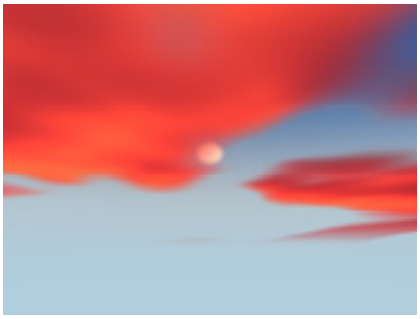


Feather = 100
Fragmentation = 100
Coverage = 80
Bumping = 45
Shading Softness = 90
Brightness = 40

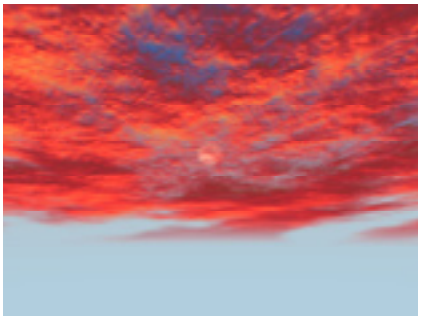


Feather = 100
Fragmentation = 100
Coverage = 80
Bumping = 70
Shading Softness = 40
Brightness = 80

Once you've tweaked their mass and shape, play around with the contrast parameters, like Bumping and Shading Softness, to add or subtract weight and definition to the clouds.



Obertone = 100
Obertone Weight = 10



Obertone = 100
Obertone Weight = 100

The Obertone controls are in the Options dialog, but that doesn't mean they aren't important. Obertones have a huge effect on the look of the clouds. They can't be animated, but they can set the overall look of the clouds. It's important to become familiar with these controls and how they work. See the section of Cloud Layer Options a bit further down in the manual.

Most of the time you can just leave Obertones set to 100 and adjust Obertone Weight. This will create most of the looks that these two parameters are capable of.

Animation

The animation controls work a bit differently than what you'll find in most filters. Everything is controlled by the Evolution parameter. For any of the Animation controls to have any effect, the Evolution parameter MUST be animated.

When you animated the Evolution parameter, Turbulence and Wind Direction/Speed (Options dialog box) are activated. The speed that you animate Evolution combined with the values set for Turbulence and Wind Direction/Speed will determine how much and how fast the animation occurs.

Animating Evolution from 0 to 180 will result in a slower animation than if you were to animate it from 0 to 360.

Turbulence

Turbulance causes the clouds to change shape. Animate this to create boiling, undulating clouds. Turbulence won't actually move the clouds. So if you want to have the clouds move as they change shape, it's best to either make sure there's a Wind Speed set or you're animating Shift X/Y in the regular Cloud Layer controls.

This usually works better at lower values, even values in between 0 and 1. If the change is moving too fast it starts looking very unrealistic.

Evolution

As noted, this sets the amount of animation. It's a dial so you can animate it as much as you'd like. Again, since the amount you animate this in a given time period affects how much Turbulence and Wind Direction/Speed animate, you want to be careful about animating it too quickly.

Animating anything too quickly can easily result in clouds that don't look realistic, even if they're supposed to be time lapsed.

Cycle Evolution (Looping) and Cycle

Cycle Evolution turns on looping. In conjunction with the Cycle parameter, it sets the number of revolutions that the clouds will loop over.

Example of Evolution

Each revolution equals 360 degrees. So two revolutions would be 720. Of course, Evolution is a dial, so as you spin it past 360, it'll start counting the revolutions for you.

Notice that Evolution has been set to 2 revolutions plus 122 degrees.

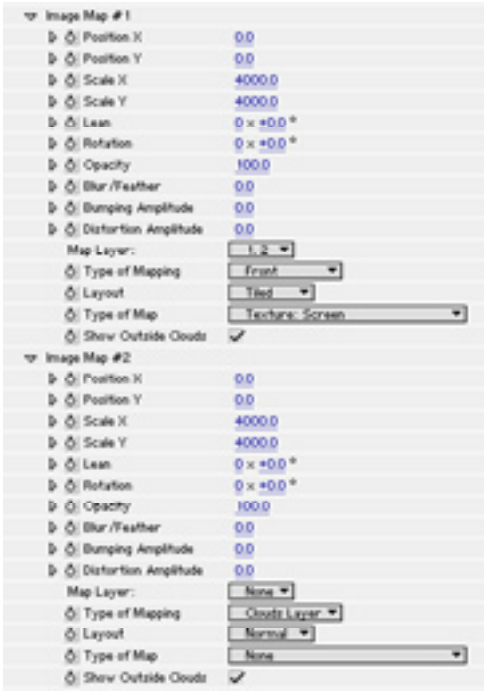
For example, if Cycle Evolution is turned on and Cycle is set to 2, with every 2 revolutions of Evolution the clouds will look exactly the same. So if you animate Cycle Evolution from 0 to 1440, at 0, 720, and 1440 the clouds will look exactly alike.

This is an extremely important concept as it lets you set up animations that repeat. You can render out a few seconds of footage, import the rendered movie and use that in your composition, repeating it as many times as necessary. Very useful for cutting down on render times.

If you're using Aurora as a background plate, why render out 30 seconds of of the same footage, when you can render out 5 seconds and just repeat it 6 times?

Image Maps

Image maps can be used for two purposes: One, for adding a texture map, such as a logo, to your clouds. Two, to shape your clouds. These uses appear as options in the Map Layer section.

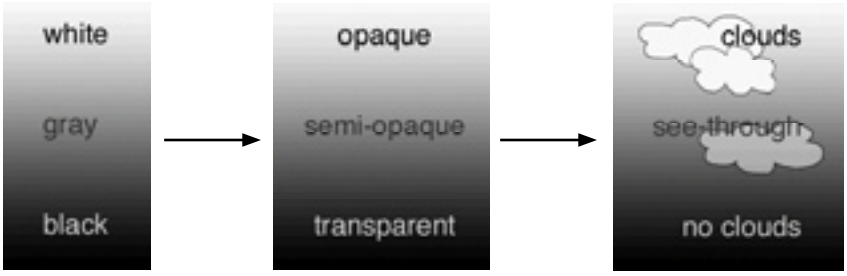


Texture Mapping Option

This option applies an image to the surface of your clouds. The image can be any type of file that After Effects can import, both still and video. If you're familiar with 3D programs, the acceptable formats should be well known to you. Otherwise, check AE's Help menu under 'File Formats.'

Texture Maps in Aurora function the same as they do in a 3D program. The initial Cloud Layer is simply a flat plane, so textures are applied to that plane and appear flat initially.

You can use bump mapping to add highlights and shadows to your texture to give it an appearance of depth. 'Bump mapping' refers to the recognition of white as a raised area, black as a flat area, and gray tones as all levels inbetween.



Cloud Shaping Option

This is a particularly cool feature of Aurora. You can use a grayscale map to control the shape of the clouds and create some very interesting effects, like skywriting or a logo forming out of cloudy matter.

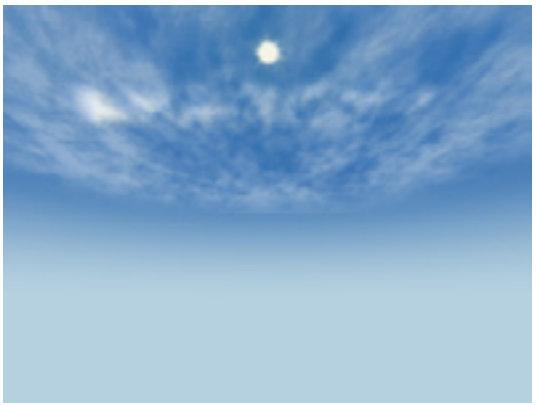
What's a 'graymap'? A graymap is a grayscale image that uses shades of gray to produce an effect. For instance if you use one as a Track Matte in After Effects, wherever the matte is black the image will be transparent; wherever it's white the image will be completely opaque; and it will be transparent wherever there are shades of gray. The darker the shades of gray, the more transparent the image will be.

If you used a gradient ramp going from white at the top to black at the bottom, the image affected by the Track Matte would be fully visible at the top, slowly fading out towards the bottom, where it would be completely transparent.

Aurora Cloud Shaping works the same way. Wherever the image is white there will be clouds, wherever it's black there are none. Shades of gray will show through semi-transparent clouds. The fewer gray tones, the sharper your image will look.

An example of black and white:

An example of grayscale:



The image with no image map applied to it:

Two Maps

Two Image Maps can be applied to your Aurora layer. They are called #1 and #2. Either of these maps can be cloud shaping maps or texture maps.

You can use both at the same time for the same purpose, or use them for different things, or whatever makes you happy. It's all about making YOU happy. Or at the very least not making you want to throw the computer out your window.

Image Map Parameters

Position X and Position Y

These parameters move the Image Map across the face of the clouds. Moving along the X axis will move the image to the right and left. Moving along the Y axis will move the image forward and backward. Pretty simple stuff. You need to be able to position your texture within 3D space, and these parameters allow you to do so.

Scale X and Scale Y

This allows you to scale your image up within the filter. It would be fairly annoying if you had to keep jumping out to After Effects to tweak and scale your image up. By putting the controls into the filter you're saved that headache. Just like Position, scaling along the X-axis scales the image to the right and left, and scaling along the Y-axis will scale the image towards and away from you.

Rotation

As you might guess, this rotates the image. Since the image is essentially on a flat surface, it's like rotating a picture on a tabletop. If you rotate in a positive direction you'll rotate the image clockwise. In a negative direction it'll rotate counter-clockwise. The dial allows you to easily animate the rotations.

Again, this parameter is extremely useful for tweaking the Image map. Like Scale, it prevents you from having to go out to your original layer or go into a pre-comp to make changes. You can do it all in Aurora.

Opacity

This sets the opacity of the image. Allowing you to fade it up and down and blend it in better with the clouds. Like Scale and Rotation, this is primarily provided so you don't have to go out to AE and change the Opacity there.

Lean

Lean rotates the Image Map around the X axis. This is like taking a piece of paper and standing it upright along a tabletop. If you rotate in a positive direction you'll rotate the image clockwise. In a negative direction it'll rotate counter-clockwise.

Where the Rotation parameter rotates the image like you're rotating a placemat on a table, this rotates it like flipping a open/closed sign in a window. As the image turns it will appear to have depth going up towards the sky.

Keep in mind that the more upright you make an image, the less it will seem to be realistically within the 3D environment.

Blur/Feather

Blur/Feather is particularly useful if you're cloud shaping. This will blur your image, which allows you to fade the edges out. If you're using a black and white image with hard edges, by blurring it, you can achieve softer edges. You can start off with a sharp grayscale image and slowly tweak it until it looks perfect.

This accessibility is pretty important since softening a graymap is necessary to really get the look of clouds. If your clouds have too hard an edge, they aren't going to look very realistic since clouds always have puffy, semi-transparent edges.

It's still better to blur your images before using them in Aurora. If your graymap has hard edges it probably won't look good, especially if you want to use the Bumping control.

Bumping Amplitude

This sets the amount of bump mapping that is applied to the Image Map. The higher this is set the sharper the highlights and shadows will be. This is important for Cloud Shaping because this is what fakes the 3D-ness. It makes it look like the cut out clouds have depth. If this is turned off, it'll just look like you used a cookie cutter to cut the clouds out.

The really useful values for this are between 0 and 4. You can use decimal values, so something like 0.5 or 1.2 will work fine. At higher values, the bumping starts to wrap and you end up with all sorts of unusual effects. This can be very cool, but more often than not, it looks unrealistic and not what you're after.

No Bumping

Bumping = 3

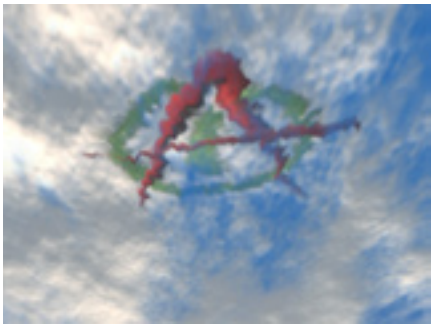
Bumping = 15

Distortion Amplitude

This causes the image to be displaced by the clouds. Having a texture mapped on to the clouds is all well and good, but it doesn't look very realistic if the clouds to cause ripples in the images surface.

That's what Distortion Amplitude does. It sets the amount that the image will be distorted by. The higher you set this, the more dramatically the texture will be twisted and turned by the underlying clouds. This works very similar to Displacement Mapping. It's just like taking the clouds and using them as a displacement map.

No Distortion



Distortion = 40

The bump map

Map Layer

This selects the layer in your timeline that you want to use as an Image Map. It can be pretty much any kind of graphic: a pre-comp, a QuickTime movie, an Illustrator file, still image, whatever. If AE can import it, you can use it.

Type of Mapping

There are two ways to apply your Image Map. 'Clouds Layer' is the option you'll be using most of the time. This applies the Image Map to the Cloud Layer.

Front uses the camera as a projector. The image is projected on the clouds wherever the camera is pointed at. If there are no clouds in the camera view, then the image will not appear. Move the Camera Pitch until clouds are in view and the image will show up.

Layout

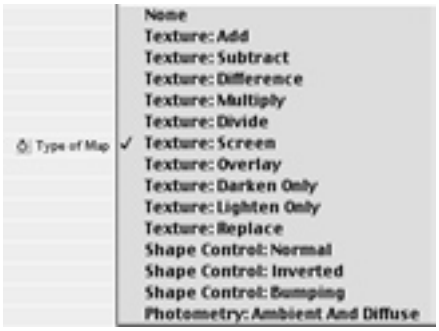
There are three options for positioning the Image Map.

– 'Normal' places the image map just once at its normal scale. You can make adjustments to it, but it's the equivalent of placing a single placemat on a tabletop.

– 'Tiled' will tile the image map infinitely… as far back as the eye can see.

– 'Clamped' repeats the edge pixels of the image. This stretch-to-fit sometimes works well, sometimes not. It depends on the image and how closely you're looking at it. You should have your image scaled way up for this to really work. It's designed to take images that cover most of the 'infinite' sky plane, and repeat the edge pixels the last little way to the horizon.

Type of Map



This is where you select what you want to do with the map. Cloud Shaping or Texture Map.

– Under Texture Map, you have a variety of different ways you can composite the map onto the clouds. These use transfer modes that you should be familiar with from After Effects. Stuff like Overlay, Multiply, Screen and others. These can be very important when trying to get your image to look just right.

  As with most situations where you're using Transfer Modes, you can never be quite sure which one will work best. Using Multiply and setting the opacity down a bit to about 60-70 seems to usually give a good look. It will depend on the image though, so experiement.

– Under Shape Control there's two options, one for using the map as is, and one for inverting it.

  If 'normal' is selected everything works as you might expect. Where the image is black there's no clouds, where it's white there are clouds, just as explained earlier under 'graymaps'. See that section if you're unclear on how it all works.

  'Inverted' is just the opposite. Where it's white there aren't clouds, where it's black there are.

– Photometry: Ambient and Diffuse uses the image to replace the clouds Diffuse and Ambient colors. This functions a bit like a transfer mode.

Show Outside Clouds

This prevents the clouds that aren't affected by the image map from rendering. If this is selected the clouds outside your image map will be rendered, potentially creating a 'crease' in the sky.

At left is a good example of the problems you can run into if clouds outside of the map are showing.

At right, if the 'Show Outside Clouds' checkbox is selected, the clouds outside the square area won't be shown.

Problems can be avoided if your map has soft edges, but usually it's best not to show the outside clouds. A better strategy is to render your image map clouds on one layer and render background clouds on a second Aurora layer.

Options for Clouds Layer

Use Clouds Layer

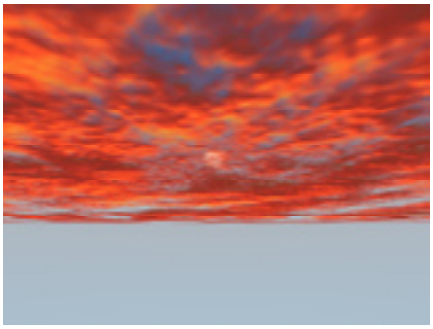
This option needs to be checked in order for Clouds to be recognized in the render and the document window. If unchecked, the graphics will disappear from your Timeline. When you turn the option back on, any settings you had created previously will return intact.

Planet Radius

Sets the radius, or distance across, of the planet that the cloud layer wraps around. The clouds are a flat object, but the world they wrap around is curved. This is indicated by the clouds curving down into the horizon.

Higher settings make the world, and therefore the cloud, less curved; lower settings make the world more curved. The Planet Radius will affect certain settings like Distance (illustrations below) and Layer Altitude, basically, any parameter that increases the appearance of clouds moving backwards through the Z-plane.

You'll notice that at low Radius values, increasing the Distance parameter will actually cause the clouds to 'wrap' around. See the section on 'Distance' for a further explanation.



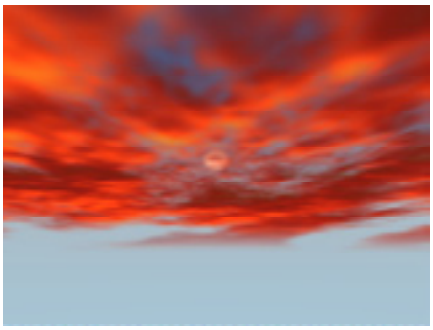
Planet Radius s= 100
Distance parameter = 30

Planet Radius s= 1
Distance parameter = 30
Notice how much further into the horizon the clouds stretch.

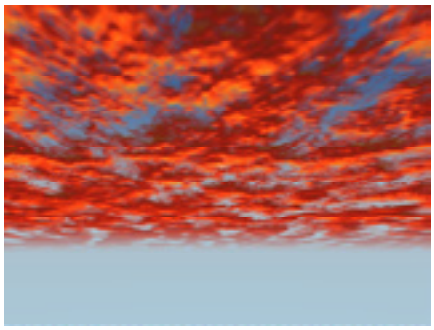
Tiling X and Tiling Y

These options stretch and repeat the cloud pattern along, repsectively, the X-axis or Y-axis. Each 'tile' has its own separate pattern rendered so no repetition will be evident, even at extreme values. Set to high values for more repeat.

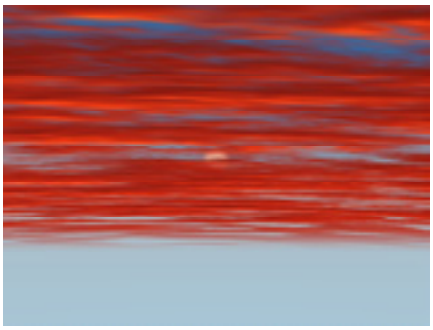
Set both Tiling X and Y to high proportionate values to make the clouds smaller. Setting X to high numbers (disproportionate to Y) will compress the clouds so that they look like horizontal lines, a kind of stylized moonlight mist. Setting Y disproportionately higher gives an interesting effect of elongated scalloped clouds, as seen along the quiet seashore.



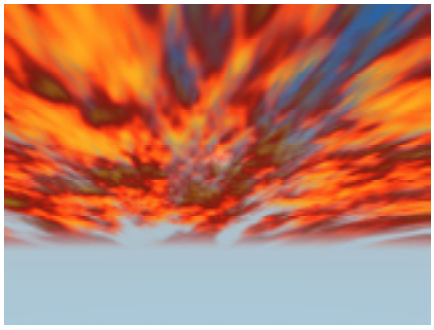
Our defaults: Tiling X = 1, Tiling Y = 2.



Proportionately higher values:
Tiling X = 6, Tiling Y = 12.



Disporportionate:
Tiling X = 10, Tiling Y = 2.

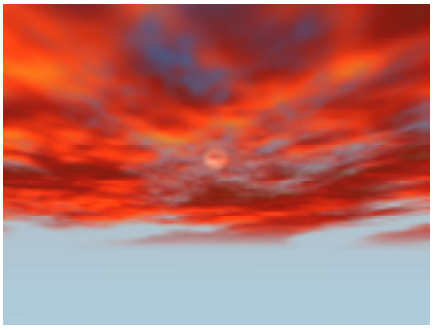


Disporportionate:
Tiling X at 1, Tiling Y at 6.

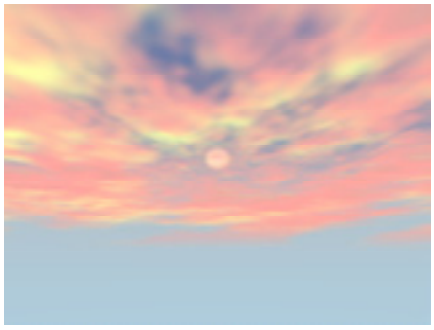
Ambient Coefficient

This is the number that serves as the factor for computing the effect of Ambient Color. It sets the brightness of the Ambient Color. You can usually get the same effect by just lightening the color in the Cloud Layer parameters.

The Coefficients are useful for getting some extreme, surreal type of effects, but usually you'll just want to leave them as is and adjust the color chips themselves.



Ambient Coefficient = 1,
Ambient Color = dark gray.



Ambient Coefficient = 10, Ambient Color = dark gray.
The color is almost totally blow away at this value,
which washes out the composition.

Diffuse Coefficient and Transparency Coefficient

Same as Ambient Coefficient, but for Diffuse Color and Translucency Color, respectively.

Noise

Noise is applied to the clouds to break them up and give them an organic feel. This is similar to how the 'Fractal Noise' filter in After Effects is used to add texture or create more organic looking animations.

Multiple levels of noise are used to create the amount of detail in the clouds. You can reduce the complexity of some of these levels to create soft, wispy clouds. See the Obertones section later in this manual. This will allow you to control how much the secondary levels of noise affect the clouds.

(Noise) Random Seed

Since Noise creates random values, it needs a value to generate the initial value. This initial value serves as a 'seed'. Imagine a tree. Every tree is different. It may be similar to another of the same type, but each tree grows a different number of branches, the branches go out at different angles, they grow to different heights, and so on.

The Random Seed acts as the seed for our 'cloud trees'. Each seed value produces a different pattern of clouds. A given seed value will always generate the same pattern, but a slightly different seed value will generate a completely different, but similar, pattern.

A Random Seed value of 5 will always produce the same pattern. But change it to 4 or 6 and you'll get a different pattern. Of course, they will still look like clouds, so there will definitely be similarities, but the pattern will be different.

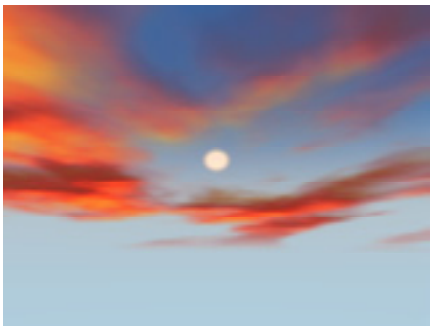
(Noise) Details Fading

This controls the transparency of the Obertones Level noise. (Again, for clouds beyond the Distance Setting.) If you leave this at '99', then it means that the ragged details around your cloud puffs will be 99% transparent (almost invisible). How high to set this really depends on what type of clouds are present.

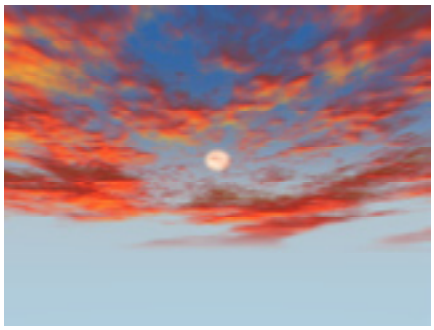
A good rule of thumb for Obertones is to set Fading and Obertones to 100 and then use Obertone Weight to vary the look. You can create virtually all of the possible Obertone looks by varying the Weight.

Obertones

Sets the number of extra levels of noise which will be added to make the edges of the cloud ragged. The higher the value, the more levels there are, and therefore the more complex your cloud patterns will be. Very high numbers may create patterns which are very tiny and ragged. While this level of detail may sometimes be necessary, clouds with too much detail around the edges will look unnatural. At lower values the clouds get very wispy, as the levels of noise are reduced and the level of detail is correspondingly reduced.



Obertone = 10



Obertone = 90

Obertones Weight

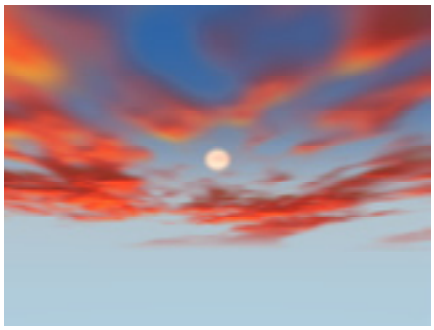
Sets the visual predominance of the Obertones. High values will allow the Obertones Level noises to dig deeply into the Main Level puffs, greatly altering their shape, and giving them a very ragged appearance.

Since you use this to set the intensity of the Obertones, by varying this one parameter you can get most of the possible Obertone looks. Simply set Obertones and Detail Fading to 100 and vary Obertones Weight.

Are you familiar with the Fractal Noise plug-in in After Effects? Or Noise Turbulent in Cult Effects or Turbulator in Atomic Power's Evolution plug-in set, or any of the other fractal noise generators out there… including the Clouds filter in Photoshop. Increasing the weight of the obertones is like scaling down the fractal noise. As the noise gets scaled down, it appears to get increasingly complex. This is because more repetitions are added making it appear more dense.

As you increase the Weight, the Obertone noise level is being scaled down, increasing the apparent complexity. Its noise becomes more dense, resulting in cloud edges that are rougher and more detailed.

Obertone Weight = 10, Obertone = 50



Obertone Weight = 90, Obertone = 50

Animation

For a full explanation of Animation, see that section under Cloud Layer.

Wind Direction

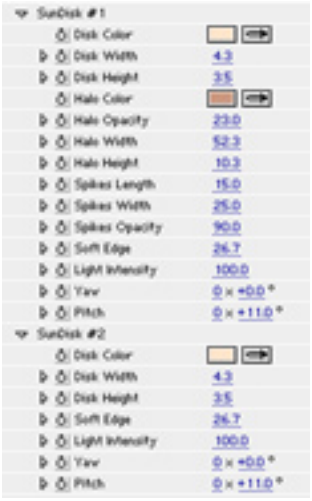
This sets the direction of the wind that will be driving the clouds. This is only a factor if Wind Speed is set to a positive value and the Evolution parameter in the Cloud Layer section is animated (see the section about Animation in this manual).

Wind Speed

Sets the speed of the wind that drives the clouds. The direction the clouds will move is set by Wind Direction. For any animation to occur the Evolution parameter in the Cloud Layer section is animated (see the section about Animation in this manual).

Neither Wind Speed, Wind Direction, or Turbulence (see Cloud Layer section in the manual) will have any effect if Evolution is not animated. If Evolution remains a static value all of the above parameters will do their calculations with that static value and produce the same result, regardless of their settings.

Sun Disk



The sun is essentially two components. One is the sun's ball, called the Disk. The second is the hazy glow, called the Halo, that appears around the Disk. Together the Disk and Halo create a lens flare-like effect, in which you see a sun ball with a hazy glow encircling it.

Additionally, there are Spikes and Light Beams that can be turned on and off, though not always animated. These options add to the three-dimentional qualities of the sun effect, though they are not meant to replace a true volumentric light effect.

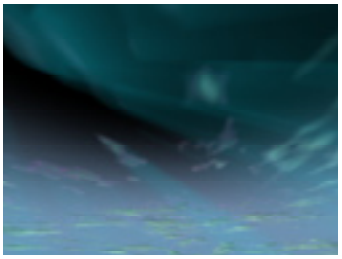
Various aspects of the Aurora plug-in can be saved out in order to work directly with other such third-party effects.

There are actually two suns that can be applied to the Aurora layer, called Sun Disk #1 and #2. The following parameter information applies to both. If you're going to use only one sun, it's better to use Sun Disk #1 because it has additional parameters.

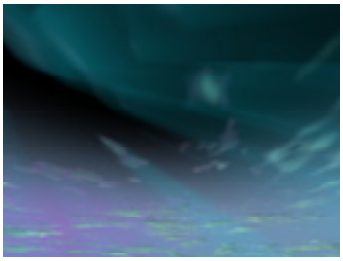
The second sun can be used to create a non-Earth environment. It can also operate as another celestial body, like a planet, simply to add to the composition.

Disk Color

The color of the sun ball. The reflective quality of this color will substantially affect the hue of the Cloud Layer. Of course, other environmental factors like the global Ambient Color and the three Color Light components wlll affect its appearance as well.



Size Does Matter
With its Disk Width and Height set to 0, the sun is completely obscured. This gives the composition a sense of being in deep space. However some of the sun properties are lost, like Halo Color and Opacity, which takes away intensity.



Here, setting the Sun Disk to Width and Height of 1 takes advantage of all the sun's properties while still hiding the sun from prominant view. (Its the white speck at botom left, blending into the clouds.) The Halo properties and the Disk's Light Intensity are now fully expressed.

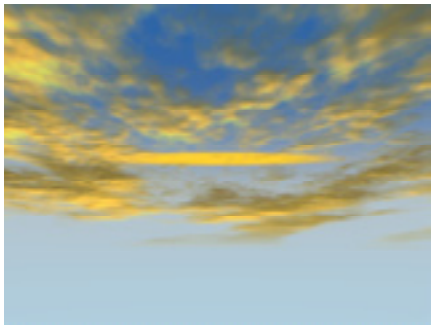
This is particularly important when using a Glow around your cloud layer. The Glow color comes from the Disk Color. This combines with the color components of the Cloud Layer to create the final look of your clouds. Glow is set to a low value by default, so isn't very noticeable initially. However, if you increase the value, this is where it will get it's color from.

Disk Width

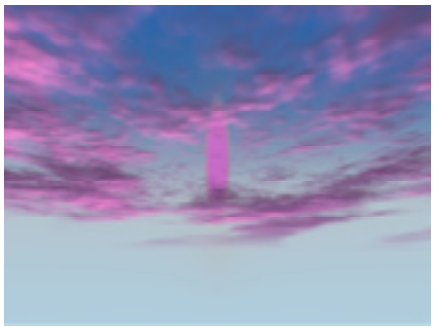
Sets the width of the sun ball. The higher the value, the wider the Disk.

Disk Height

Sets the height of the sun ball. As to be expected, the higher the value, the more height the Disk has.



Disk Color = gold, Width = 40, Height = 2



Disk Color = purple, Width = 20, Height = 4

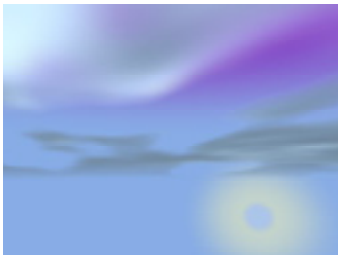
Halo Color

The color of the sun's Halo. Unlike Disk Color, setting this color will shift the hue and brightness of the sky's gradient Ramp. This is because the Halo is a bit like a diffuse ball of light that surrounds the sun. As such, it lays on top of the Ramp causing a color shift to the background.

Halo Opacity

The overall opacity of the Halo around the Disk. Opacity gradually fades to 0 as the Halo gets further from the edge of the Disk. Since the Halo lays on top of the Ramp, how much the Halo affects the Ramp colors is mostly dependant on this parameter.

At lower Opacities, the Halo is just a hazy fog of color. At higher values, it becomes bright, opaque sphere of color that can completely knockout the background.



Hello Halo

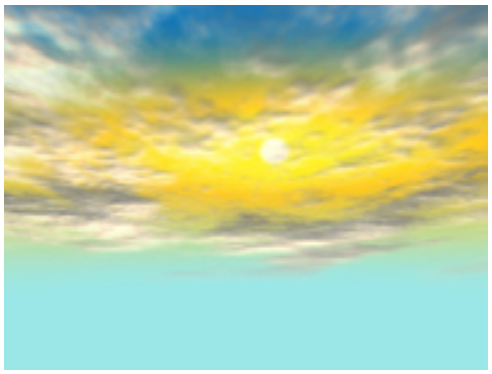
Here we've set the Sun Disk Color to a blue shade slightly lighter than the sky's Horizon Color. The Halo is yellow, the same Width and Height, and 60% Opacity, This combination makes the celestial object more unusual and striking.

The Halo can be used to create many ethereal or surreal effects. In a normal scene, the Halo will generally be a hazy wisp of color adding a slight enhancement. However, increasing it's prominence can create a wide variety of interesting and cool effects, although most will be unrealistic. At least, for this planet, anyways. If you're on some other planet and want Aurora to help illustrate what you're seeing, more power to ya and send us the footage!

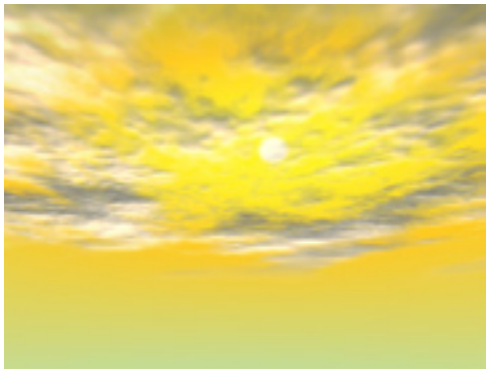
Yes, it's true… when you're at Burning Man in the middle of the night, in the middle of the desert, and you've just seen the best sunrise over the ocean ever, we have the tools to help you! ;-)

Halo Width and Height

Like Disk Width and Height, these parameters set the width of the sun Halo. The higher the value, the wider the Halo, or the more height the Halo has.



Halo Opacity = 30, Width = 50, Height = 10



Halo Opacity = 30, Width = 70, Height = 25

Overview of Spikes

Spikes are the lines of light that protrude from the sun Disk. It's essentially a mini-lens flare effect. They can be turned on and off in the Options dialog box, along with another object called Light Beams. Spikes and Light Beams add to the volumetric, three-dimensional quality of the sky overall.

The spikes are tied to the Sun Disk, rather than the Halo. So, changing the size of the Disk will impact the appearance of the Spikes. Changing the size of the Halo will not. For more information about Spikes and Light Beams, go to the Options Section of this object.

While we wanted to give you the ability to create a good looking sun, nothing beats a dedicated lens flare editor for creating amazing lighting effects. The Knoll Light Factory plug-in from Pinnacle Systems (www.pinnaclesys.com) works great for this. In fact, the Light Tracking render mode of Aurora was designed specifically to work with this filter.

More Fun With Two Suns

There are all sorts of interesting ways to make use of two suns.

In this composition, Sun Disk #2 (at right) has been enlarged and its Disk darkened so the sun looks like a black hole.

Spikes Length

This sets the length of the sun spikes. Higher numbers make the spikes longer.

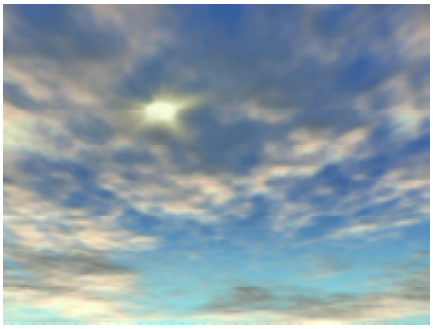
Spikes Width

This sets the width of the sun spikes. Higher numbers make the spikes wider.

Spikes Opacity

This sets the opacity of the sun spikes. Higher numbers make the spikes more opaque.

Spikes Length = 100, Width = 50, Opacity = 70. The Sun Disk is 12 x 10.



Spikes Length = 20, Width = 80, Opacity = 100. The Sun Disk is 3.5 x 2.

Soft Edge

The size of the slightly blurred edge around the Sun Disk. In a sense, this is a first (and generally sharper) falloff transition zone, before getting to the Halo.

Higher numbers increase the softness of the Disk edges, while lower numbers make the Disk edges sharp. At a 0 value the Disk looks aliased, so you'll want to keep at least a setting of 1.

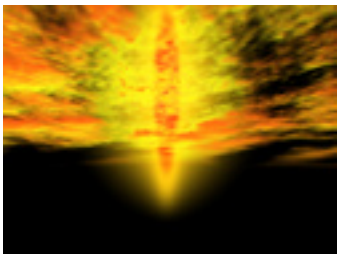
Soft Edge = 1

Soft Edge = 10

Eye Of Mordor

Halos and Suns can be used to create all sorts of unusual effects.

For example, if you remember Sauron's great flaming eye in Lord of the Rings, you can create a similar sort of thing in Aurora. Ok... so it's not really close, but it's a good excuse to examine some of the off the wall things you can do with the Sun Disks. Whadda ya want for a budget of $200?



The trick to this is to create thin, elongated Suns. Use one sun as the outer color and the other as the inner color. Then use the halos of each sun to create another color surronding them.

Notice how how high and thin each sun is. The second sun is slightly smaller than the first creating a 'cat's eye' effect.

There's a decent sized Halo around the first sun creating a glow around the cat's eye.

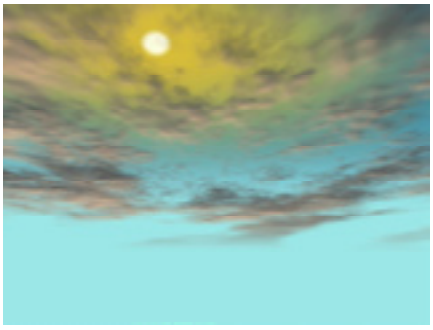
The second suns Halo is very tight around it and has a similar color. If you want to try and get tricky, try changing this halo to black. This creates an interesting interior outline.

Look for this project file in the tutorials folder that was installed where you installed Aurora Skies.

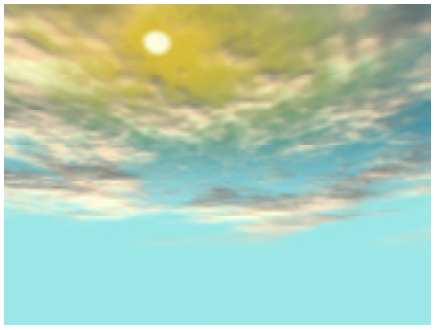
Light Intensity

Sets the intensity of the light source, which is associated with the sun. This parameter doesn't directly affect the Sun itself, but rather the rendered view of the clouds and sky Ramp. The higher the Light Intensity, the brighter the surrounding objects will be.

It's a terrific parameter for setting the mood of the sky. For instance, a gloomy overcast day would have the Light Instensity set low. A high Light Intensity can give the feeling of a spiritual rays-from-heaven scene.



Light Intensity = 50



Light Intensity = 90

Yaw

Sets the position of the sun along the Y-axis. Positive values move the sun to the right of your composition, negative numbers move the sun to the left. Use the dial to animate the position and movement of the sun horizontally. Of course, positional parameters for the Camera and Clouds Layer will affect this parameter and the sun Pitch.

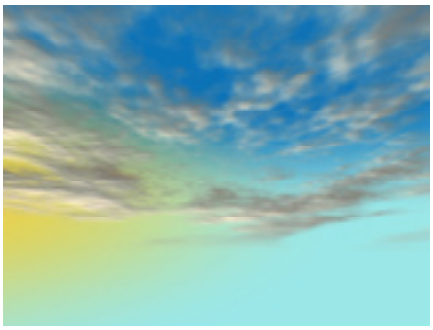
FWIW, Yaw sets the 'azimuth' angle of the sun, which refers to a celestial body's plane in relationship to the meridian of the planet.

Pitch

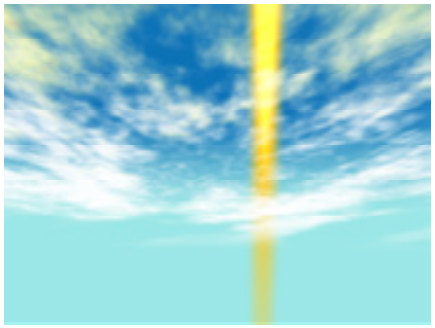
Sets the elevation angle, or Pitch, of the sun. Positive values set the sun higher. The direction that you animate from, either high to low numbers, or low to high, will affect where the sun appears as if its rising or falling from. Use the Pitch dial to animate the sunset, for instance, or a plumenting ball of fire.

You'll generally think about Pitch in terms of where the sun is relationship to the horizon. This is because the elevation of the sun has to do with time of day, and time of day dictates other visual factors like brightness of the sky and shape or coverage of clouds.

So, thinking about the sun's Pitch is simple but strategic for the believability of your Aurora environment. Note that for both Yaw and Pitch, even if the sun is off-camera, it still acts as a source of light for the clouds and any other celestial bodies (like a second sun). Just as in real life.

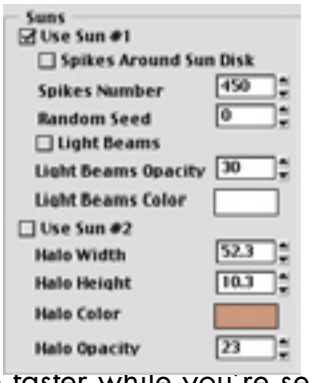


Yaw = 320, Pitch = 5. The sun is setting in the West.



Yaw = 275, Pitch = 92. Woo hoo, a light beam! With Halo Opacity = 70, Halo Width = 75, and Halo Height = 2.

Options for Suns



Use Sun #1 and Use Sun #2

To turn either Sun Disk on or off, checkmark the appropriate box.

Spikes Around Sun Disk

Turn off Spikes Around Sun Disk if you want the testing renders to be faster while you're setting up and tweaking your scene. This will cut down the 'lens flare' effect, but you can turn Spikes back on before the final render.

Spikes Number

Hmmm…Could this be the number of Spikes that will appear around the Sun Disk? Yes! Other Spikes characteristics, like Opacity and Size, are set in the regular parameters panel.

The higher this is set the more of an effect this will have on rendering. If you think that having Spikes turned on is slowing things down dramatically, try reducing this to less than 100.

Random Seed

Every time Spikes appear around the sun, their layout is determined by Random Seed. That is, where the spikes sit around the Disk, and to what degree of the set length each is. Every Random Seed number is a pattern (patterns 20-22 are shown below), and each pattern shifts based on the number of spikes that are set. (See Random Seed under the Noise section for more info on how Random Seeds work)

Random Seed = 2o
Spikes Number = 12

Random Seed = 21
Spikes Number = 12

Random Seed = 22
Spikes Number = 12

Light Beams

This parameter turns on Light Beams, which are are connical rays of light that add to the volumetric feeling of light in the Aurora sky. Light Beams are not directly tied to any other sun object (like Spikes are affected by Disk). But the state of other light attributes certainly contribute to how the Beams affect a composition overall.

Light Beams Opacity

This sets how opaque the beams are, but really, it's more about how much of the sky is covered semi-opaquely.

Light Beams Color

The color of the Light Beams. This color certainly affects the transparent quality of the beam coverage.

Light Beams Opacity = 40
Color = pale yellow.
Spikes = on
Light Intensity = 20

Light Beams Opacity = 70
Color = light pink
Spikes = off
Light Intensity = 50

3D Clouds

As you should know by now, the normal Cloud Layer in Aurora is simply a flat plane with clouds applied to it. While this works great for many shots, it doesn't work very well if you want to actually fly through the clouds. For this, you need volumetric clouds that have substance in 3D space.

That's what 3D Clouds give you.

Overview of 3D Clouds

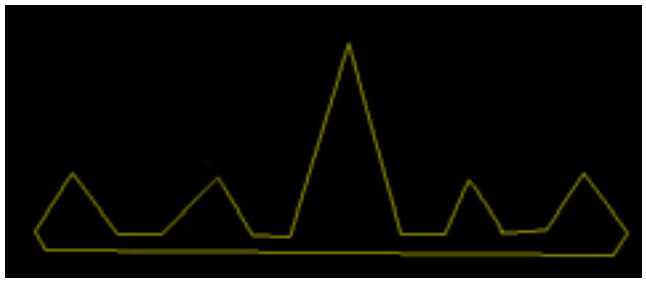
The 3D Clouds are made up of spheres that are then rendered with volumetric noise. When these spheres are joined together, it creates the effect of a thick Cumulus cloud. If you go inside the 3D cloud, you'll be able to look around in all directions and see cloudy matter. This gives you the ability to create cloud fly-throughs and other environmental effects.

This ability comes with a price, however. Since Aurora has to do calculations in all directions for all those 3D spheres, the 3D Clouds are much slower than regular clouds and can increase your rendering times dramatically. That's why they are turned off by default. Keep them off until you really need them. For most scenes, the normal Cloud Layer will create beautiful imagery with the clouds high above.

If you want a bird's eye view, however, then you'll probably want the 3D Clouds turned on, so you can swoop in and out of the clouds. Giving you a realistic view of the insides and edges of the clouds.

Creating Cloud Shapes Using Masks

With 3D Clouds, you can use paths to loosely define the shape of the clouds. The path becomes the profile of the clouds if you're looking at them directly from the front. Essentially, the path is extruded to form a container for the clouds. The clouds then form in the container, roughly taking on the shape of the container.



A spire of clouds, or perhaps an example of God's Wrath. This is a well formed shape path.

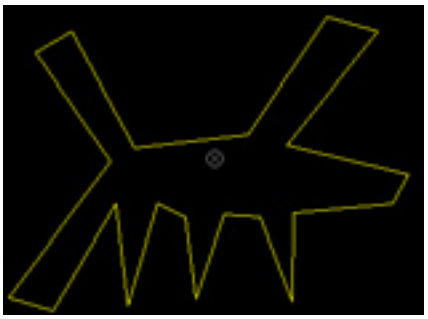
Since the clouds are wispy bits of random matter, they don't entirely take on the shape of the container. It's used as a guide and the clouds more or less fill it up.

Limitations Mask Shaping

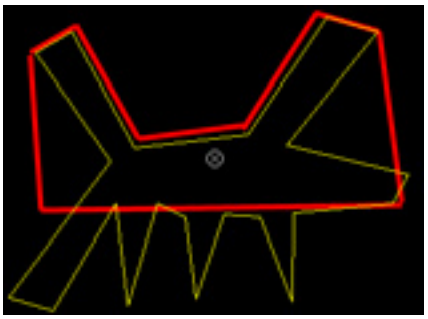
There are some limitations to the paths that can be used:

1. The bottom of the path should be flat. Clouds in nature will always have a relatively flat bottom, so even if you create a path with a complex bottom area, it will be ignored. The top portion of the path will still be used, but any points along the bottom will be ignored.

3D Cloud formed by a path.



The path drawn.

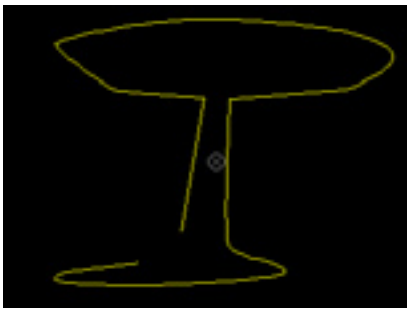


The portion of the path that's used.

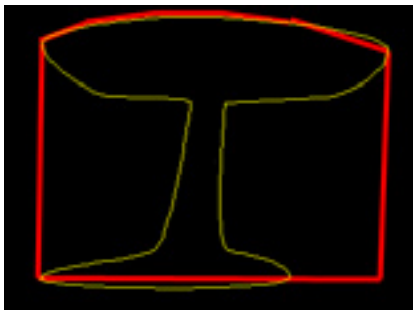
   The red outline shows the path that is really used. The bottom spikes are completely ignored, and the cloud bottom is formed by the bottom-most spheres. Since the spheres are random, there is some shape to the bottom but it's not defined by the path. The sides are solid because of rule #3 below.

2. You can't use compound paths. If you take something like the letter 'A' and use it as the shaping path, you'll end up with a pyramid of clouds. Aurora won't recognize the bottom gap between the legs, or the hole that's in the center of the capital 'A'.

3. Make sure your path is closed. Open paths don't work. If there are any gaps in your path it's an open path and you need to connect the end point with the beginning point.



An open path.



3D Cloud and the path it follows.

4. Points can't overlap. For example you can't use a mushroom shape as a cloud. The mushroom part will just merge with the bottom, creating a cylinder shaped cloud.

   Again, the red outline shows the path that is really used.

A good example of a well-formed path is the Spire path on the previous page. There are no overlapping points, and the bottom is flat. The clouds will take on that shape pretty well. You can use the silhouette of a mountain range or a city skyline, since there are usually no overlapping points.

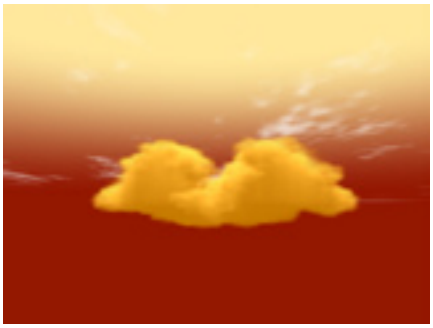
Avoid points that cause the curve to move back over other points. Outlines of things like trees, a face, or a lamppost won't work. Remember that the path always has a bottom, so most overhanging objects will simply become merged with the bottom, creating a wall (just as in our mushroom example…look at the right side of it).

Position Controls

The X, Y, and Z controls simply position the 3D cloud in Aurora's 3D space.

Size Controls

Size scales the cloud up in a given direction. This does not add resolution to the cloud. It simply scales it up, stretching the spheres that make up the cloud.



Y Size = 8

Y Size = 30

Cloud Color

This sets the color of the clouds when they are being lit by the sunlight. This is basically the Diffuse and Translucent Color of the 3D clouds. Wherever the sun is hitting the clouds, including if it's passed through the cloud matter, this is the color that will appear.

Shadow Color

This is essentially the Ambient Color. This color will appear on the backsides of the clouds, where the sun doesn't hit the clouds.

Which color dominates will depend on the position of the camera relative to the sun. If the sun is in front of the camera, then the Shadow Color will be more dominant since most of the clouds you'll see are not getting direct sunlight.

Likewise if the sun is behind the camera, the Clouds that are in view will be lit by the sun and the Cloud Color will be more apparent.

Opacity

Determines how transparent the clouds are. At low settings, the background clouds and sun will be easy to see through them. For the 3D Clouds, which simulate thick Cumulus clouds, you don't want them to be too transparent. Setting this too high will result in the clouds looking thick and solid and not very cloud-like. Keeping this set between 10 and 30 is usually a good range.

Intensity

Determines the brightness of the clouds. Makes it look like the clouds are glowing from the inside. This should be named something like 'Sun Intensity' since it increases the highlights caused by the Sun and tends to blow the clouds out towards the Cloud Color.

Low Intensity

High Intensity. Almost like x-ray vision.

Evolution Speed

This causes the clouds to animating, roiling and boiling. For this to work well, you should animate the value a large distance. Animating it from 0 to 250 or so over a second will get you decent results.

Since the Cloud is made up of spheres, Evolution Speed moves the position of the spheres. Occasionally this produces very odd looks, with Spheres bubbling throughout the cloud shape. Higher resolution clouds respond better to being animated. So increase the number of spheres in your clouds if you're going to be animating them extensively.

3D Clouds Options

Use 3D Clouds

Turns the 3D Clouds on. This is off by default since 3D Clouds are not always needed and can add significantly to your render times.

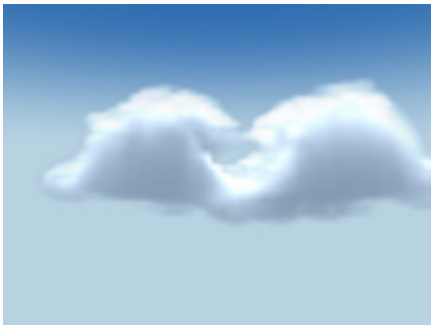
Spheres

Sets the number of spheres that make up the cloud. This acts as the resolution for the clouds. The higher this is set the more dense and detailed the clouds will be. At lower values the clouds will look smoother.

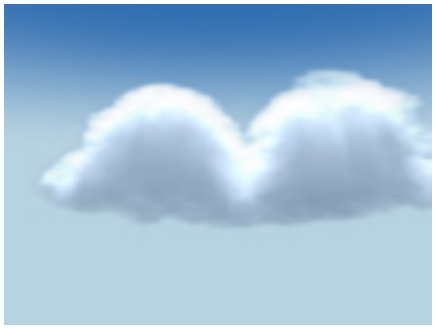
The number of spheres can seriously impact your render time! At low values, like 50, the render times aren't too bad and give decent looking 3D Clouds. If you're just doing a simple fly-through this works pretty well. If you're trying to animate the shape or use the Evolution Speed parameter, you're better off with a higher number of spheres. You'll just have to pay the price in rendering time.

It's important to know how these work, because when you do start animating the 3D Clouds you can get some very odd looks at the spheres animated around. The clouds will appear to 'bubble' instead of smoothly animate.

Spheres = 20



Spheres = 60



Spheres = 300

Random Seed

This sets the seed the clouds use to generate their random look. Each seed results in a slightly different variation of the clouds. To get more info on how this works, see the Random Seed parameter for the Cloud Layer earlier in this manual.

Asymmetry

Increases the edge brightness and refraction within the clouds. Creates a very similar effect to what happens when you adjust Intensity. In some edge cases a different result can be achieved but usually you'll just want to adjust Intensity.

Stars

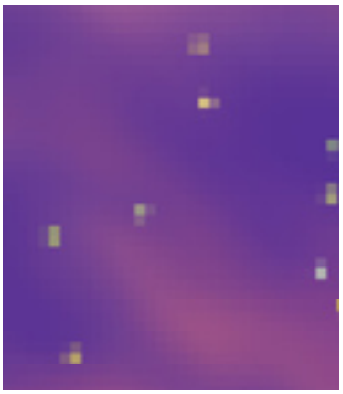
Overview of Stars

'Course, we all know what stars are, but it's important to point out a few workflow issues.

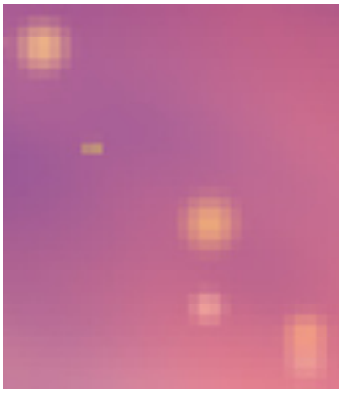
An issue with Stars is that when they are animated, there can be sampling problems because of their small size. This means a small star in motion may fall 'in between' pixels. A single pixel will travel from one location to another, but not a far enough distance to move a whole pixel. This can happen, for example, due to camera angle or FOV.

Star Cosmetics, Not Cosmology

The pixel measurement of each star is randomly set. The smallest size is one pixel, of course. Max Star Size is the largest pixel size that each star can be. If inspected at a closer view, you can see that the stars are anti-aliased in order to take on organic varied shapes.



Max Star Size = 100
Star Opacity = 100
Camera FOV = 60
At 1600% view



Max Star Size = 100
Opacity = 100
Camera FOV = 30
At 1600% view

Similar to looking through a stronger telescope in real life. With the camera set closer into the image, more detailing of the stars can be seen.

In this situation, the star isn't rendered, or it is rendered much lighter than it was in the previous frame. This change in rendering produces a flickering effect known as Temporal Noise. Sometimes it will produce a twinkling effect which may be desirable. But usually it's not.

You can help avoid Temporal Noise by keeping the Max Star Size fairly large and Opacity set somewhere around 50%. It's also much more obvious when the stars are slowly moving. Temporal Noise can't be avoided entirely in some cases, but with a little tweaking you should be able to minimize it.

Another note to make is that its easiest to accurately judge how stars look with AE's composition window set to Full Resolution and, preferably, 100% size as well. This is because stars are so small, oftentimes just one pixel in diameter, that a Half or Quarter resolution cannot display accurately.

Parameters that affect camera zoom have a definite impact on the display of stars. At a greater zoom, more stars are apparent, and the star size will cover a greater number of pixels.

A final 'starry night' tip is to use Aurora's Sky Rotation parameters along with the After Effects Echo filter (Effects>Time) filter to produce time lapse stars.

Max Star Size

Sets the maximum visible size of the stars. This is only the maximum. Since the size of stars vary in the real world, this simply sets how big the biggest star can be. Other stars will be smaller, and in some cases much smaller.

This reflects what you'd normally see, since stars are at varying distances and sizes from a camera viewpoint.

Setting Max Star Size to zero will not turn the stars off. Instead, they will become very tiny and potentially more susceptible to Temporal Noise.

Opacity

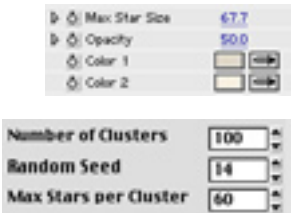
This will turn the stars off if you set it to zero. If you want the stars to slowly fade out, animate this value down to zero.

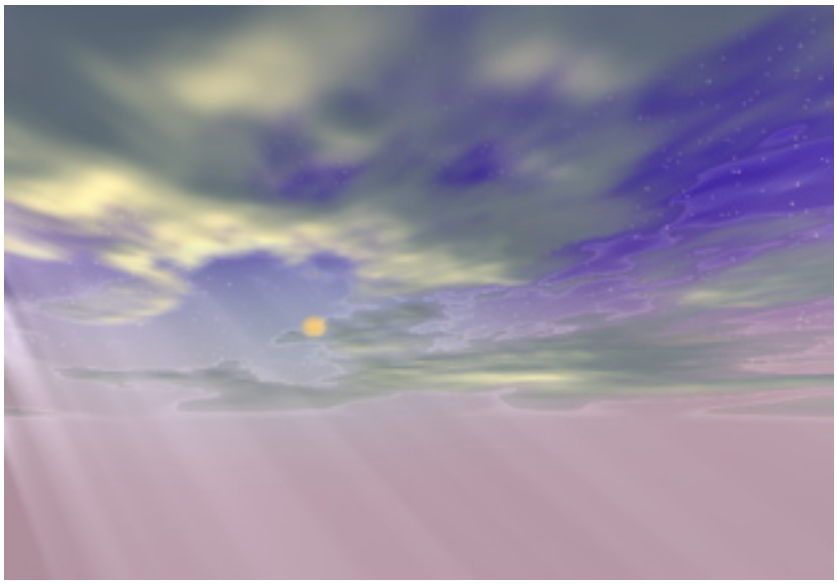
The lower the Opacity, the more transparent the stars will be, and the more the Ramp and other background elements will fade out. If you don't have Ramp turned on, the stars will composite nicely over whatever is on the layer below Aurora in your timeline.

Setting this to mid-level can also help remove the Temporal Noise.

Color 1 and 2

You can set two different colors for your stars. Usually these are two slightly different shades, just to add a little variety to the sky. You can set them to wildly different shades and get some interesting effects. If you're going for realism though, stick to the defaults.



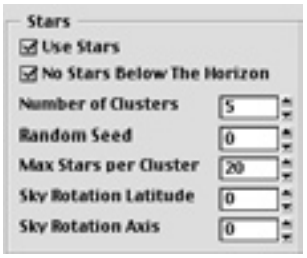


Sky Rotation

Allows you to animate your stars across the sky. This rotates the 'star dome' around the axis set in the Options Dialog box.

This creates the effect of lying in a field at night watching the stars with a time lapse camera. If you want to get the true time lapse, use AE's Echo filter to produce the bands of light that you usually see in star photography.

Options for Stars



Use Stars

Turns the stars on and off. If turned off Aurora Sky doesn't pay any attention to them and they have no effect on rendering speed.

No Stars Below The Horizon

Pretty much does what it says. If this is checked, no stars will appear below the horizon line. If you're unsure where this is, in the Ramp section, set Gradient Depth to 0. This will produce a hard horizon line.

Number of Clusters and Max Stars Per Cluster

This combined with the Max Stars Per Cluster parameter control how many stars you'll see in the sky. Since stars tend to appear in clusters, resulting in constellations and whatnot, this sets the number of overall clusters.

How dense each cluster is with stars is then set by Max Stars Per Cluster. Max Stars is really what controls how many stars there are. The Number of Clusters controls how they're distributed across the sky.

Random Seed

Sets the initial seed for the placement of the stars. See Random Seed under the Cloud Layer to get a better idea of exactly how this works.

Sky Rotation Latitude and Sky Rotation Axis

These parameters set how the stars are positioned in the sky. They affect how the Sky Rotation rotates the stars. Sky Rotation Axis will adjust the angle of the axis the sky rotates around. Sky Rotation Latitude will adjust how it rotates around that axis, relative to the camera.