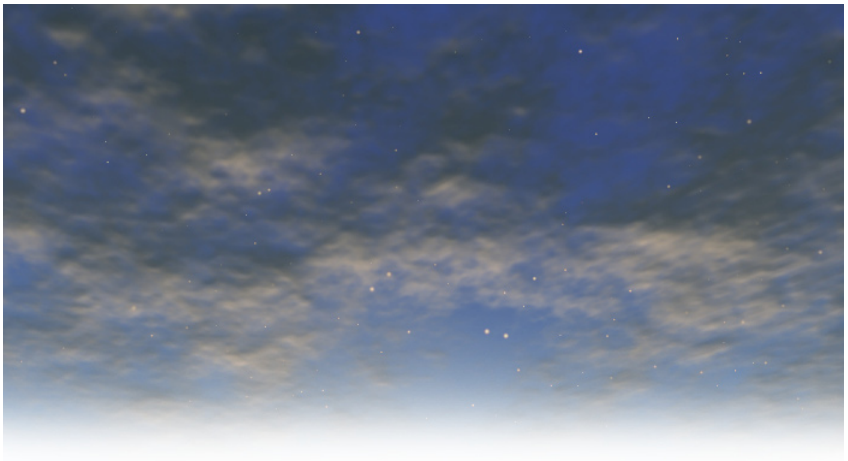
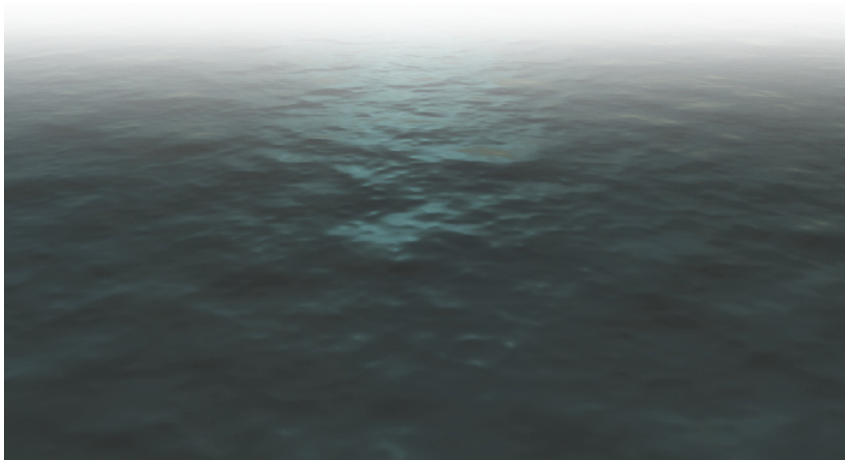


Aurora

Version 2.04

User Guide



Contents

Overview

Aurora – The Natural Plug-in allows you to create 3D environments in Photoshop without having to deal with 3D software packages. With Aurora, you can create:

- Sun
- Clouds
- Stars
- Water Surface
- Haze
- Volumetric Light effects

Aurora 2 now incorporates some exciting and useful new features, including:

- **Underwater 'God' Rays** (similar to Aurora's Light Beams feature)
- **Nimbus Clouds**
- **Sun/Moon** options
- **Stratus/Cirrus** option for Cloud types
- **'Sun Spike'** controls

You can add these as elements into an outdoor picture or use Aurora to create an environment to place your images in.

The *Aurora* plug-in is useful for landscape and traditional architects, game developers, web, CG artists, and creative services. Although some of the interface does resemble 3D software, almost no understanding of 3D software techniques is required.

The power of the *Aurora* plug-in comes from analysis of the 2D layers and advanced 3D manipulations of those layers. This complex work is by-and-large invisible to the user, though an advanced set of controls are offered on virtually every screen that allow you to fine-tune procedures.

Aurora also comes with very user-friendly and creative random content generators. The Variator™ allows users to create random cloud patterns as well as other random content. You can use these tools for brainstorming new ideas and experimenting with this tool often times creates totally unique and interesting effects.

Aurora becomes an effective production tool with the refinement and saving/loading of various parameters. The defaults work in a variety of situations, but every scene is unique and can probably benefit from fine-tuning.

Setting Up

Aurora is easy to install. Regardless of the version you have purchased, two steps are involved: (1) Installing the software and (2) Registering the product. Follow the instructions below, depending on the version you have purchased.

Installing the PC Version

Aurora runs on PhotoShop 6 or better and works best with any system that meets the recommended requirements for PhotoShop 6.0.

If you have purchased a CD, insert it into the drive and the program should auto-load. If it does not start automatically, then go to menu Start\Run... and type in

X:\Windows\setup.exe,

where **X** is your CD-ROM drive letter. If you have purchased the downloaded version, go to the directory you downloaded it into and double-click on *InstallAurora.exe*.

After you click on *InstallAurora.exe* an installation dialog should appear. Follow the installation instructions. Your serial number is on the back of the CD case if you purchased the retail version or was sent to you via e-mail if you purchased the downloaded version. Enter the serial number, including the dash, during the installation procedure.

If you chose standard pathways for installing Adobe Photoshop, then choose the plug-in directory as you target directory. For Photoshop 6, that would default to:

Program Files\Adobe\PhotoShop 6.0\plug-in.

If you have a custom path to Photoshop, then make sure you install in the Plug-in directory under PhotoShop. The installer will create a 'Digital Element' folder and within it an 'Aurora' folder.

Installing the Macintosh Version

If you have bought the packaged version, access the CD and copy file *Aurora.hqx* 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 *Aurora.hqx*. When the archive is unpacked a folder named 'Digital Element' will appear in addition to *AuroraUnpack.sea* file. Move the 'Digital Element' folder to the directory where plug-ins for Adobe Photoshop are located (PhotoShop 6.0\plug-in if you chose standard pathways for installing Adobe Photoshop). Remove *AuroraUnpack.sea*.

Starting Aurora / Online Registration

If you have purchased the CD and inadvertently double-clicked on *Aurora.hqx*, you can click OK for the error message and manually select the installation directory.
After installation *Aurora* needs to be authorized. Note that if *Aurora* is not authorized some features will be disabled. In order to authorize *Aurora* proceed with the following steps:

1. Start Adobe Photoshop and create a new project.
2. Go to menu Filter > Digital Element > Aurora.
3. Aurora will display a dialog for entering the serial number and the authorization code - enter the serial number and the authorization code.

If you have purchased a CD version of *Aurora*, the serial number and the authorization code is located on a label inside a CD case. If you have a downloadable version of *Aurora* then you need to register online at

http://www.digi-element.com/aurora_register.shtml.

If you have any questions, please contact us at support@digi-element.com

Aurora adds 3D graphics to the habitual 2D surroundings of Photoshop. Some of the controls for the plug-in will be familiar to 3D artists. The interface of the plug-in is straightforward, and in most cases it remains within the framework of Photoshop's standards.

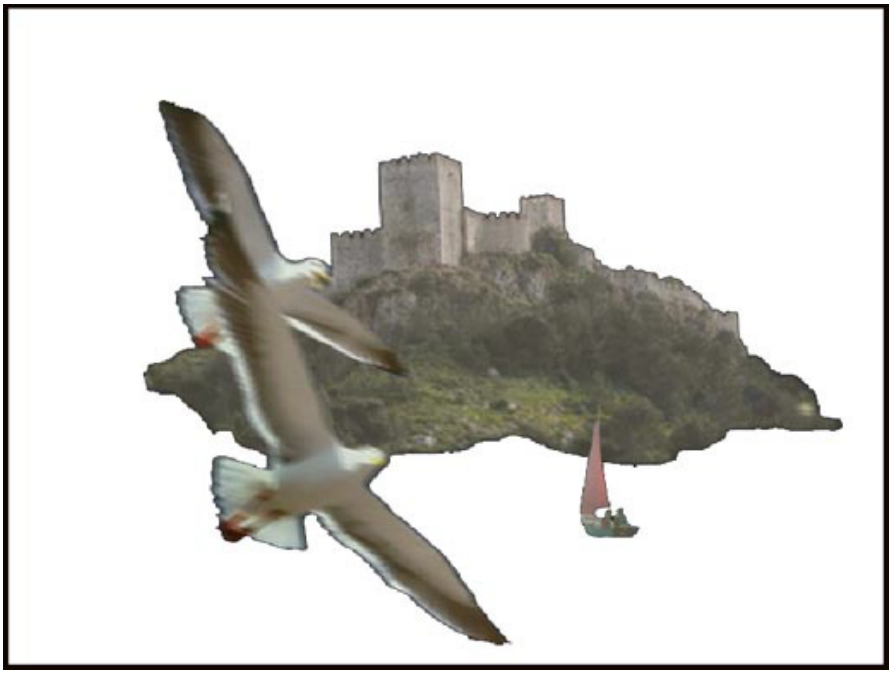
Aurora was developed using the Photoshop technology Automate. In contrast to usual Photoshop filters dealing with a single layer, Aurora can work with a number of layers – treating them as flat images located at different 'distances' from one other.

Since Photoshop is a 2D software package and we are creating 3D effects and entire environments, we need to introduce some concepts in order to create good-looking images.

The Camera

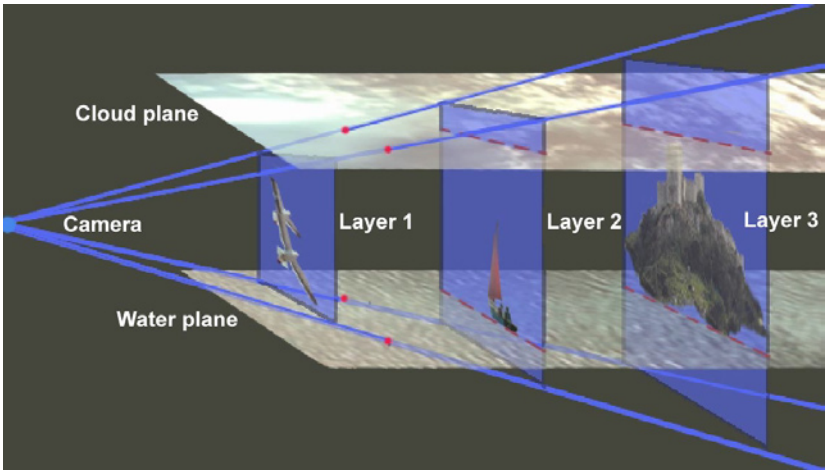
The Camera is the point from which the scene is viewed. All of the layers in a scene (in the picture below, for example) have a particular camera point – or point of view – from which the picture appears to have been taken. Each element within the image that looks like it is a distinct distance from the camera should be separated onto a different Photoshop layer so that Aurora can treat those images differently and create natural-looking 3D effects.

Later, we will show you how to set different depths to different layers to get a kind of 3D 'space'. Aurora places clouds, water surface, and other simulated objects into this space, each element on its own layer. Each layer is modified according to its user-defined distance from the Camera.



Here is an example of Aurora's camera concept :

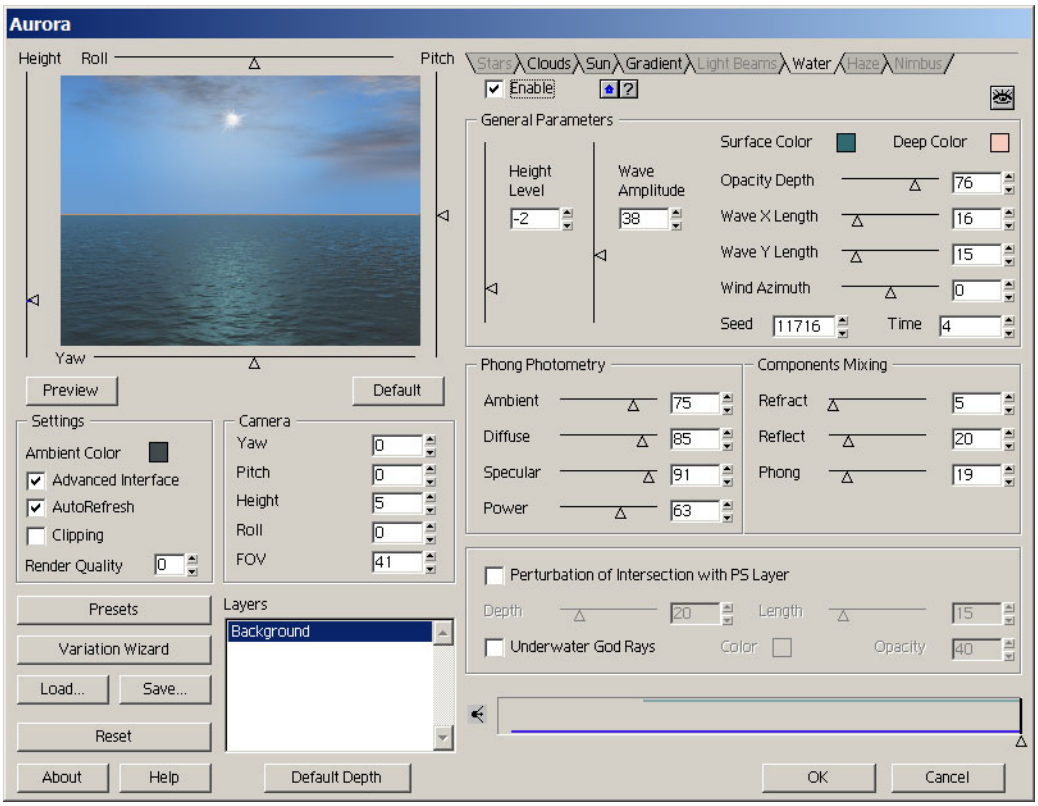
Suppose you have a composition consisting of 3 layers: two birds on the foreground (layer 1), a sail in the middle (layer 2) and an island with a castle (layer 3). Each element that is a distinct distance from the camera is on a different layer, with the layers closest to the camera being above the other layers.



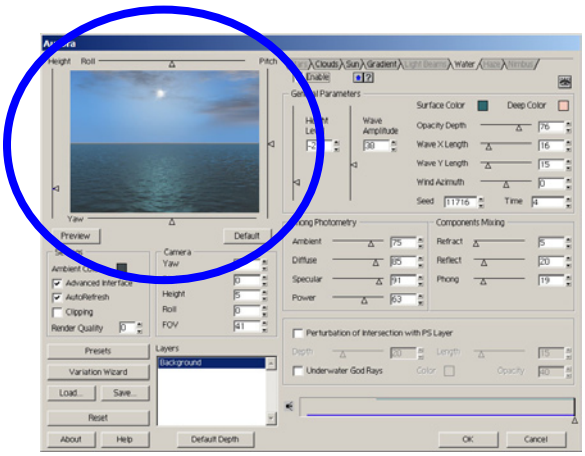
Once you set up the distance of each layer from the Camera, Aurora will interpret this configuration in the following way:

By setting the layers at the correct distance, Aurora creates clouds and water surfaces and superimposes them over the original images. After adjusting the clouds and the water surfaces, the resulting image rendered from the camera should look like this: The original bitmaps (birds, island and boat) look like real three-dimensional objects in

a three-dimensional environment, with physically correct illumination and reflections. All accomplished within the 2D Photoshop working environment!



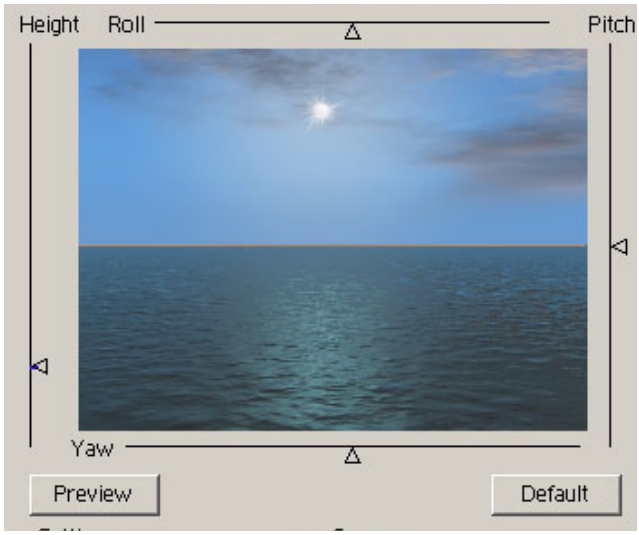
Camera Controls



Start Photoshop and load any bitmap (or create a new one). From the main menu, choose **Filter > Digital Element >**

Aurora. The main Aurora window appears:

The interface consists of several main parts. These are Camera Controls, Settings Group, Saving & Loading, Layer Controls, and Tabs. The Camera Controls are located in the upper-left corner of the window.



Preview - Use the Preview Button to get a quick, low-resolution representation of the resulting image.

Yaw - Sets the azimuth angle of the view direction with respect to most 3D coordinate systems. In most cases you can keep this default value as you work.

Pitch - Sets the elevation angle of the view direction with respect to the 'horizon', or water surface plane. Measured in degrees, ranging from –90 degrees to 90 degrees. If you set Pitch to 90 degrees, the camera will point straight up (at the zenith).

Height - Determines the placement of the camera above Aurora's virtual 'ground level'. Any value lower than 0 places the camera below ground or water level.

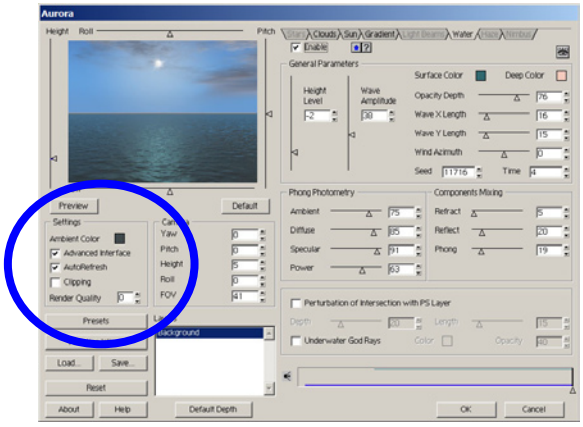
Roll - Sets the rotation of the camera around the view direction. Measured in degrees ranging from –90 degrees to 90 degrees. The default value of this equal to zero means that the top and bottom edges of the camera's window are parallel to the 'horizon' (water surface plane).

FOV - Field of View. Increase this to get the impression of moving the images out of camera range. Conversely, if you want to move the image into camera range, decrease this value.

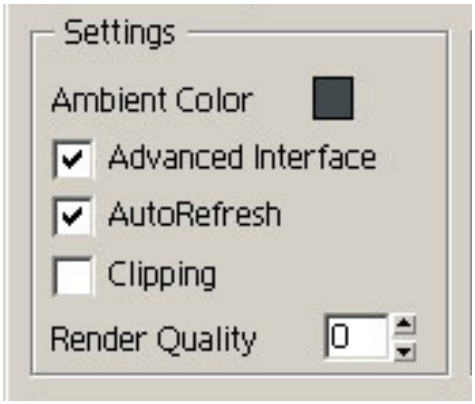
IMPORTANT: *When you*

General Settings

change the camera position or orientation, the layers do not move. The displacement of the camera will



take place with respect to the effects (water plane, clouds, sun position etc) only.
The General Settings section is located in the lower-left hand corner of the interface.



The settings are a series of 4 key decisions that affect the overall feel for the picture; the level of detail you want to work with in manipulating the picture, the style of previewing your work, and the size and time the software will spend in processing your work.

Of these settings, Ambient Color affects the look of the picture the most. Ambient color adds a hue to the non-point light sources in the image. It will interact with the sky gradient colors and can very effectively change the mood of the entire image.

Ambient Color - This term is taken from a common 3D graphics paradigm. It is used for color calculations in clouds and water surfaces. Colors of such objects are never set directly in Aurora but result from illumination. This takes into account the sun's position and the object orientation. Roughly speaking, Ambient Color is the color in those places that are not lit by direct sunlight.

Advanced Interface - Gives access to a more sophisticated interface of the effects.

Auto Refresh - If this is checked, the preview window will be refreshed automatically when any control of any effect has been changed (otherwise you need to click the Preview button to refresh the preview window).

Clipping - If this is checked, Aurora will only apply effects to the visible part of the picture – no effects behind opaque layers. This action will speed up the rendering process, but may have unforeseen effects on any underlying layers.

Render Quality - This integer parameter can be equal to 0, 1, and 2 and is, in fact, the anti-aliasing level. Higher values mean higher quality of the resulting image, but need more calculation time.

Saving and Loading

Aurora has a large number of parameters that can be changed that are potentially specific to every picture. Because of this, saving combinations of parameters that you like is essential to saving time.

You can store combinations of saved parameters that meet your specific needs and load them later. You can also draw from a large number of preset combinations that work well in common situations.

The Variation wizard is a system for creating and previewing random combinations of variables. Using the Variator is simple. How to use it is described in another chapter.

Presets - Starts the Presets Library containing a lot of examples of various Aurora effects.

Variation Wizard - Initiates the Variation Wizard dialog, which allows you to randomize parameters of any desirable effect (or a group of effects). **About**: Learn about Digital Element and register your copy of Aurora.

Load - Allows you to load the previously saved plug-in settings, including settings for all effects. When you click this button the standard Load File dialog appears. Choose the proper *.dls file name and all the plug-in settings will be loaded.

Save - Allows you to save the current plug-in settings including settings for all effects. When you click this button the standard Save File dialog appears. Choose a filename and all of the current plug-in settings will be saved as a *.dls file.

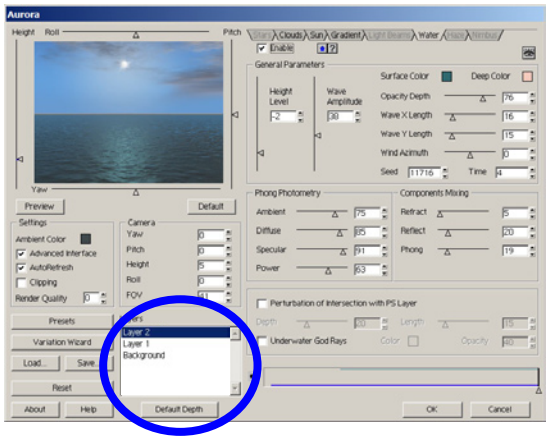
Reset - Sets the default values to parameters of all the effects.

About - Displays Version number and team member information, as well a link to Register your copy of Aurora 2.

Help - Opens the Aurora online manual.

Layer Controls

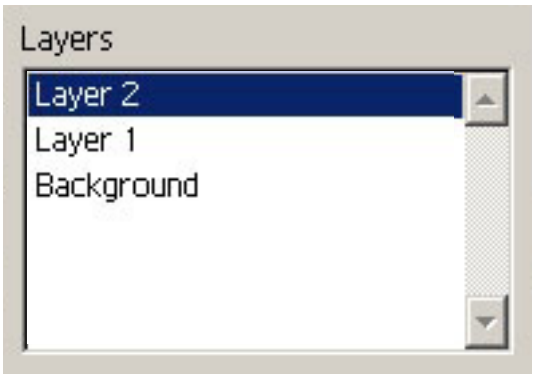
Layer Controls are located at the bottom-middle of the main screen.



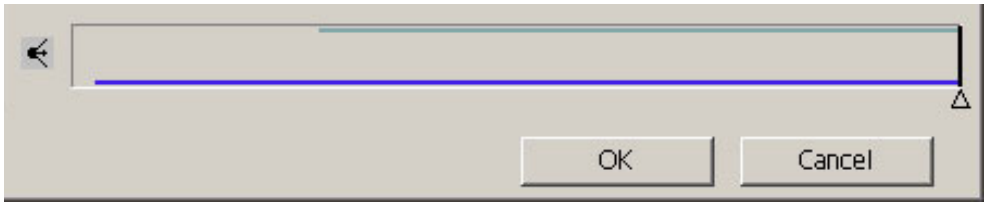
This is the main element of 'three-dimensionality' in Aurora. Each layer is assigned a distance from the camera. That distance determines the extent of each effect and defines the distance from one to another. Layers need to be pre-scaled – changing the distance of a layer does not scale the layer itself – it tells the software how far to away to consider it.

Layers Pull-Down - Defines what layer an effect will be applied to.

Layers List - Use this control to select any layer.



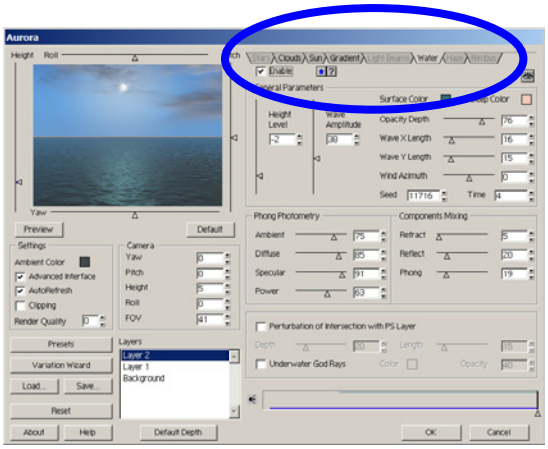
Distance from Camera - Changes the distance of the layer from the camera. Note that the order of layers always remains the same.



Tabs

Tabs are located in the upper-right portion of the interface.

Tabs allow you to switch between interfaces of different effects. When you select any tab on the upper part of the main plug-in window, the interface of the related effect appears and you just get access to the effect's controls.



Interface Common to All Tabs

If you switch between tabs you will notice that the following interface consisting of a check box and a small toolbar () will be the same for almost each tab:

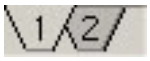
Enable - Use this check box to turn the effect ON/OFF.

Reset Instance - Sets the default parameters of the current effect.

Help - Provides help on the selected effect.

Add Instance - Adds an effect of the selected type. Each time you click this button, you will have one effect of the type chosen in the final image. These are called instances of an effect. An additional Select Instance tab will appear to the right. Selecting these sub-tab items allows you to switch between instances of the same effect.

Delete Instance - Removes the selected instance from the scene.



Select Instance - Switches between the instances of the same effect. Each time the Add Instance button is pressed, a new tab item (marked by a digit, in our case "2") appears in the right-hand part of the small toolbar. Instances are sorted in the same order they were created.

NOTE: *Some effects such as Stars, Ramp Layer, Water Surface, and Haze can only have one instance. The small toolbar for these effects contains only Reset Instance.*

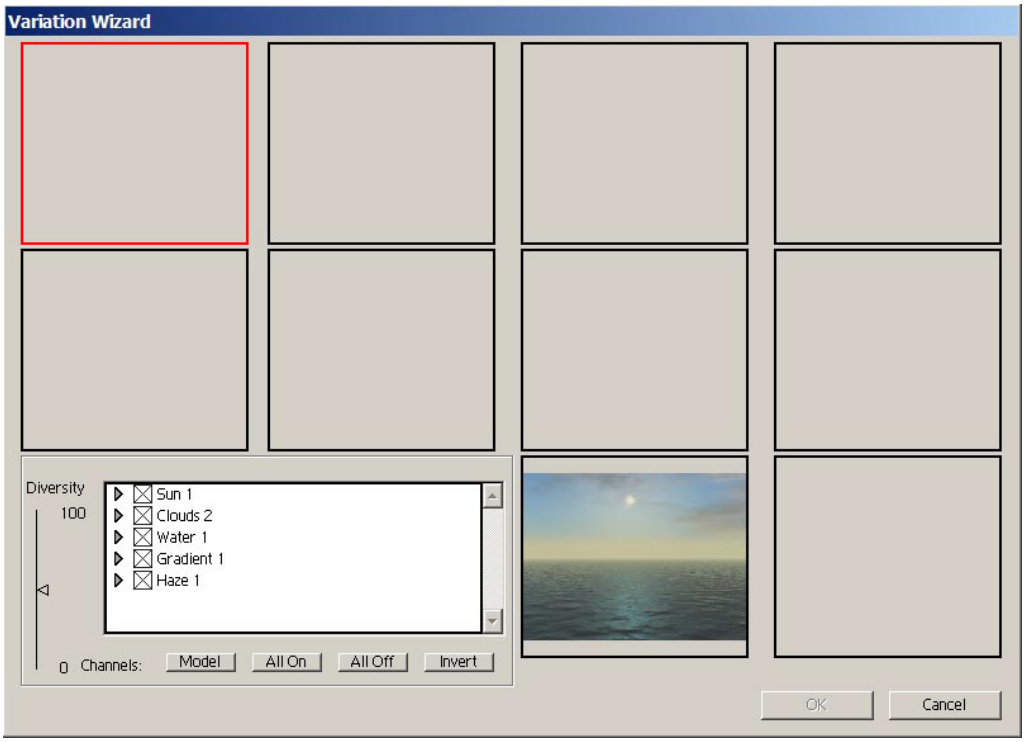
The Variator - Variations Wizard

The Variator works with a number of the effects in Aurora and lets you generate original content graphically and dynamically. The Variator can be used as a springboard for creating finished content or, by being careful about what you check to be randomized, allows you to make production-ready content.

Using the Variator is extremely easy:

1. Make sure that at least one of the following Aurora effects: Stars, Sun, Clouds, Ramp Layer, Water Surface is ON.

2. Click at the “Variation Wizard” button, which is on the left-bottom part of the main Aurora window.



3. A pop-up interface will appear.

4. Double-click on any frame containing an image.

5. The double-clicked image from the frame will be copied to the right bottom window.

6. Each frame, starting from the top-left will be filled with a random variation of your original frame. You can still see the rendered image of your original frame at all times, as it is always displayed in the bottom-right frame.

7. You can use any of the new random mutations now appearing in the eight windows as the new starting point for further randomization. Just double click on it.

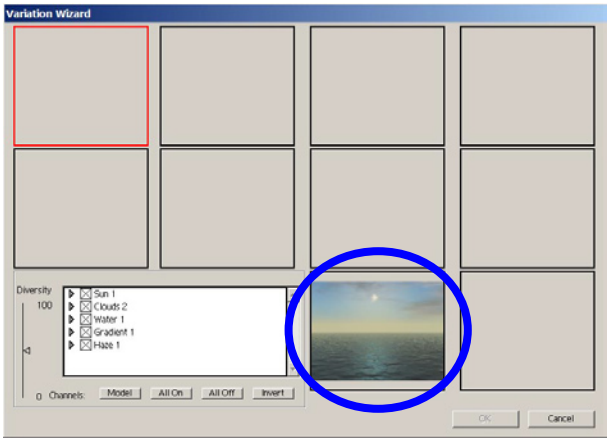
8. Whenever you see any of the windows displaying something you like, simply select it (by a single click), press OK, and these will be new settings of your effects.

In the picture above you can see an example of Variator work.

Variation Wizard Interface

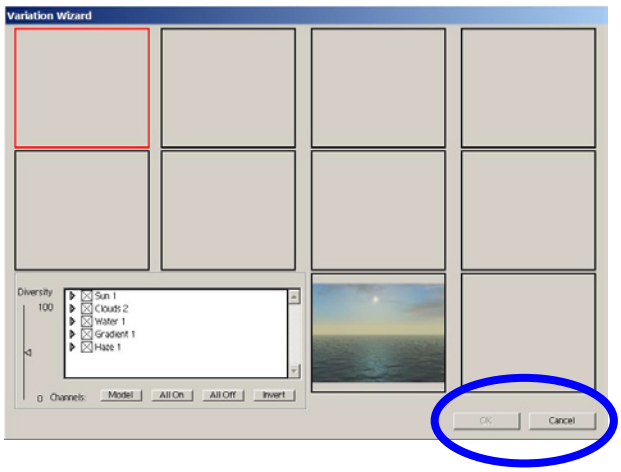
Getting some quick effects from the Variator is very easy, as is getting the effects you want – once you understand the Variator's interface.

Sample Frame



The Variator interface includes some decision boxes and a lot of frames. When first loaded, one frame (Sample Frame) contains elements of all of the randomizable variations that are marked in the Randomization Selection Boxes.

OK and Cancel Buttons



OK - Sets the parameters of the selected (surrounded by red square) variation to your effects and closes the Variator window.

Cancel - Closes the Variator window without changing parameters of your effects.

Diversity Slider and Channel Selection

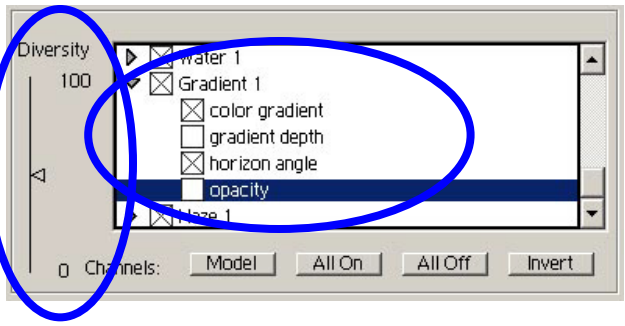
Each listed element can be randomized to varying degrees. The intensity of randomization is called Diversity. The higher the Diversity, the greater the range of variation. Lower numbers will provide recognizable variations, whereas very high numbers will create really different variations.

On the bottom-left of the Variator Wizard window there is a control panel, which consists of the Diversity Slider and Randomization Selection Boxes.

In the Variator, each effect: sun, clouds, etc. is called a Channel. Each Channel can be variated to a different degree and breaks down into Sub Channels. Each Sub-Channel represents one unique characteristic of the effect (such as Color Gradient for Ramp), which can be randomized.

Different sub-channels have different value ranges. For example, some sub-channels range between 1 and 100 while others are fractions between 0 and 1. The higher the range, the greater the possible diversity. If a sub-channel has a range of 0 and 1, that means that the Variator has the option of varying the look of that effect in a very small range. You can, of course, set the number anywhere between 0 and 1 to either minimize or maximize the variation.

The Variator



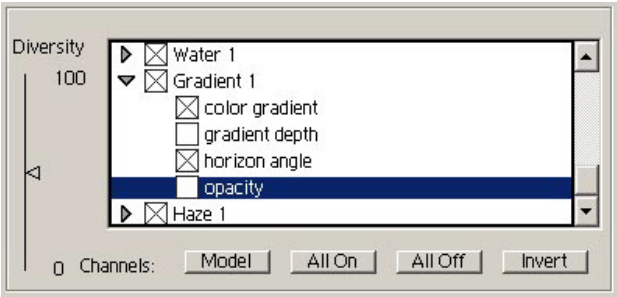
Diversity Slider - Determines how far the new content can vary from its original. Since the Wizard is based on randomization, this actually controls how far the wildest variations can go - some frames may end up still showing only subtle change.

IMPORTANT: *0 = No Variation at all. 100 = Maximum possible variation. The default value is 50.*

Randomization Channel Selection Boxes - Only those parameters that are selected will be randomized. Others will be locked down. Clicking the check box just beside the effect name turns ON / OFF randomization of all the parameters of the effect.

Sub Channels - Click on the triangle next to a Channel to list all of its Sub-Channels. You can select various characteristics to be randomized or locked down. Each sub-channel works just like a channel, in terms of the Diversity Slider.

Example: Setting Channels and Diversity

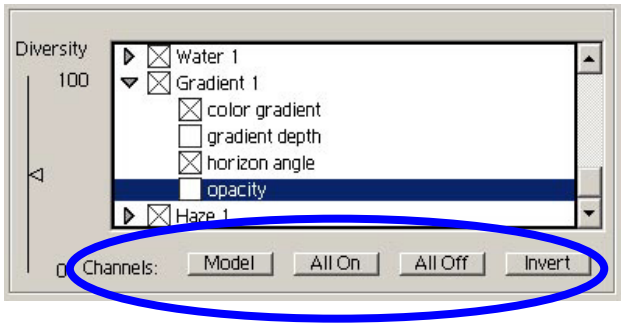


In the example above there are 2 channels ON, with ALL parameters of Sun 1 to be randomized, NONE of the parameters of Clouds Layer 1 to be randomized, and only Color Gradient and Horizon Angle of Ramp Layer 1 to be randomized.

Global Channel Buttons

There are additional buttons that affect all of the check boxes globally:

Model - Turns on all of the parameters of the Sample Frame for Randomization, making all others off. If the current effect was disabled then the button is grayed out (just as in the illustration above).



All ON - Checks on all Channels for Randomization.

All OFF - Turns off all of the parameters for Randomization.

Invert - Deselects all parameters previously selected for Randomization, and selects all parameters previously deselected.

Techniques With The Variator

If things have started getting too weird, you can return to where you started when you loaded up the program double-clicking at the bottom-left window. In many cases, decreasing the Diversity leads to more stable randomization pattern. In general, the closer the image to what you would like to see the smaller diversity must be.

If your session with the Variator didn't create anything you like and you want to leave your settings as they were, simply press Cancel. The Variation Wizard window will disappear without any changes in your effects.

IMPORTANT NOTE:
In practice, the randomization process never accidentally creates the same effect twice. That means you hardly get exactly the same variation once again even though you start from one and the same initial state.

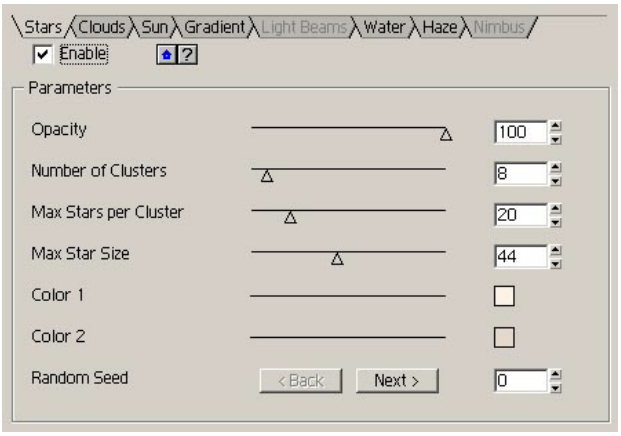
Stars

The Stars effect allows you to simulate the stars on the dark night sky. The Stars interface consists of General Interface and Advanced Interface. Use the **Settings** > **Advanced Interface** check box to switch between them.

Adding Stars Into a Scene

1. Select Stars tab.
2. Check Enable Effect button.
3. Preview with default parameters
4. Either manually change parameters or use the Variator until you get the effect you like.
5. Save the parameters for later reference

Basic Interface



Opacity - Sets how opaque the stars themselves will be in the Layer. The rest of a Random Stars Layer is always fully transparent. 100 = Fully Opaque, and 0 = fully transparent (invisible).

Number of Clusters - This sets the total number of star formations will be visible across your entire sky dome.

Max Stars per Cluster - Each Cluster will contain a random number of stars, between 0 (no stars) and what you set here.

Max Star Size - Each star will have a random size, between 1 rendered pixel and the number of pixels you set here. This is based on an 'average' level of camera zoom. If you zoom in further, the size appears to cover a greater number of pixels, with a soft border around them.

Color 1 and Color 2 - This sets two colors that will each be randomly assigned to about half of the stars.

Random Seed - Keeping the same number means the effect will always look the same, given that nothing else has been changed.

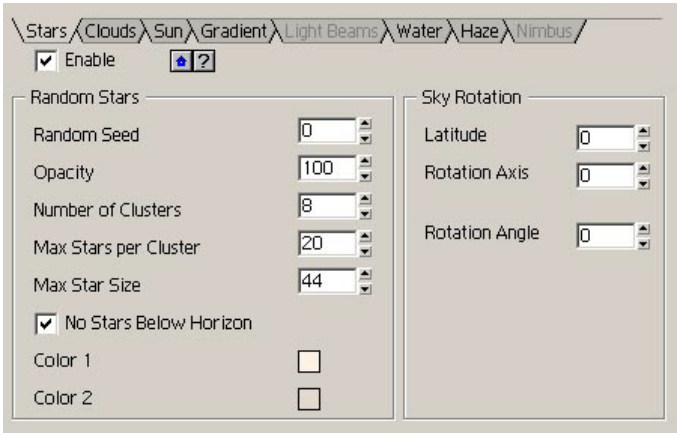
Examples of Opacity

Opacity = 100

Opacity = 50

Advanced Interface

This includes everything in the basic interface, as well as a few more features. Slider bars are removed.



No stars below horizon - In real life, you can't see any stars close to the horizon, as at that level you are looking through atmosphere, which is just too thick for the stars to be able to show through. Turning this off will render stars all the way down the very horizon line. Leaving it on keeps stars a certain distance above the horizon.

Sky Rotation Parameters - This group of parameters allows you to simulate the sky rotation around the polar axis. In practice, these parameters result in more variety in the stars distribution pattern.

Rotation Axis - This is the axis around which your sky will be spinning.

Rotation Angle - How many degrees, at any point, your Layers are rotated. Keyframing this will create rotation motion.

Latitude - Sets the rotation of your Layer around the axis perpendicular to what you set in "Rotation Axis". If you camera is looking in the same direction as the Rotation Axis, then keyframing this parameter will make your Layer appear to move up and down the horizon.

Clouds

The Clouds effect is extremely powerful – it's a tool that creates dynamic new images on the fly. It can be controlled very precisely, allowing anything from soft mist to big thunderstorm cumulonimbus. Considering clouds correctly reflect sun direction and camera angle, you have a stellar addition to Aurora's arsenal of nature-emulation tools.

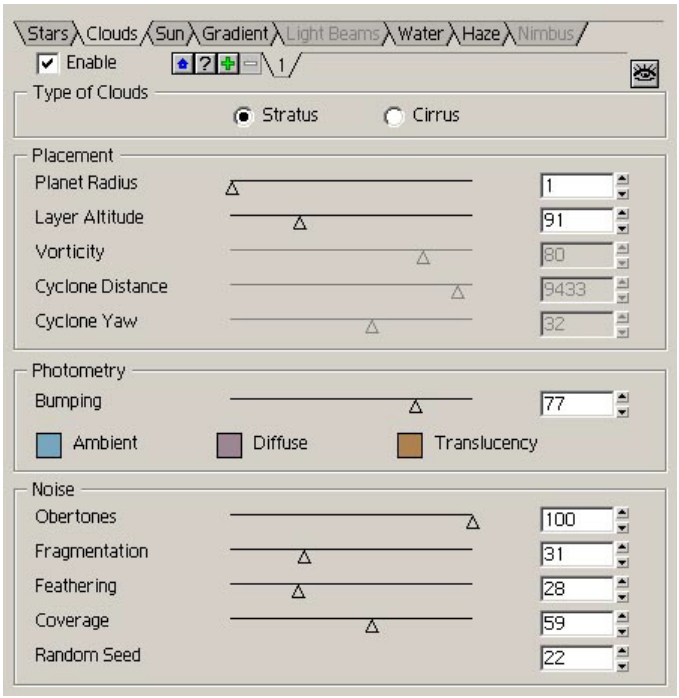
The default values rarely fit the particular mood of a scene, so understanding how the parameters work is very important.

When you select the Cloud Tab and check enable box, three sets of parameters appear: Placement, Photometry, and Noise. The Clouds Interface has both basic and advanced features, which can be chosen with the Advanced Interface check box in the Settings area.

Adding Clouds Into a Scene

1. Select Clouds tab.
2. Check the Enable box.
3. The default clouds layer is added to the Scene.
4. To add one more layer press a little green plus located to the right of the Enable box.
5. You can add any number of layers getting a very great variety of your sky.
6. Either manually change parameters or use the Variator until you get the effect you like.
7. Save the parameters for later reference

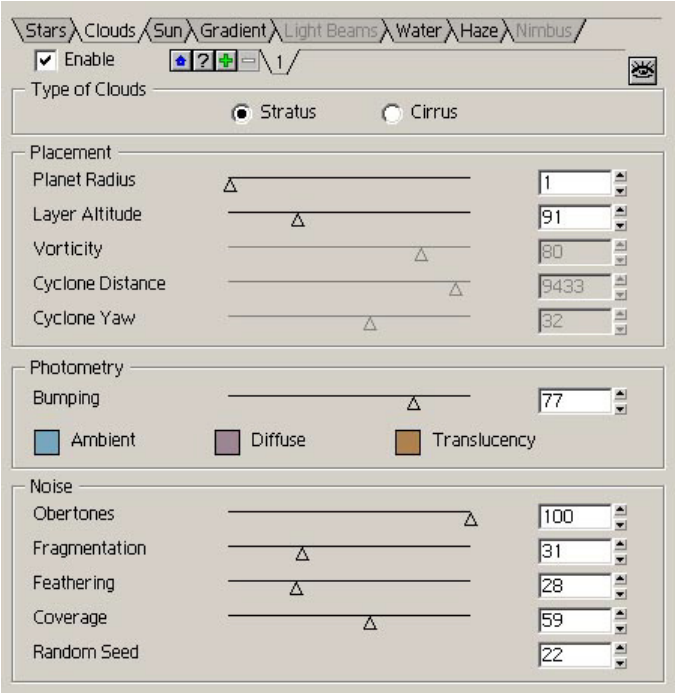
Interface



You can use either the Basic or advanced interface to define cloud effects. The Basic Interface offers slider bars and a little less control, whereas the Advanced Interface provides a lot more control, but requires a more in-depth understanding to use successfully. The Basic Interface (as shown above) is the default.

Placement

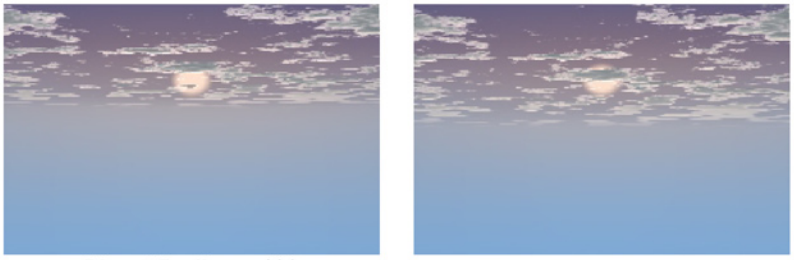
The controls of this group affect the general scaling and orientation of your clouds, as well as the shape of the separate sky dome they are applied to.



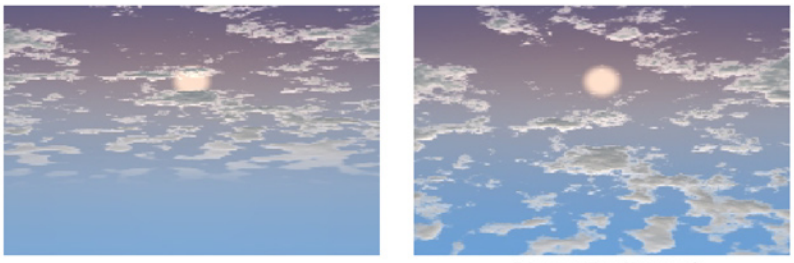
Planet Radius - Sets the radius of the 'sky dome.' The clouds that are mapped onto 3D scenes are flat, but the earth is curved. Your clouds simulate this by curving down into the horizon (like real clouds do). How much to set here greatly depends on the size of your scene in World Coordinates. Render testing is always the best way to really figure it out for sure. Decreasing this value makes your clouds more curved. In the illustration below this parameter changes from 100 (top-left) to 2 (bottom-right).

Layer Altitude - This sets the height of the 'clouds dome' directly above the camera. Distant points are somewhat curved down toward the horizon. How much they curve, of course, depends on how small you set the Planet Radius parameter.

Examples of Planet Radii

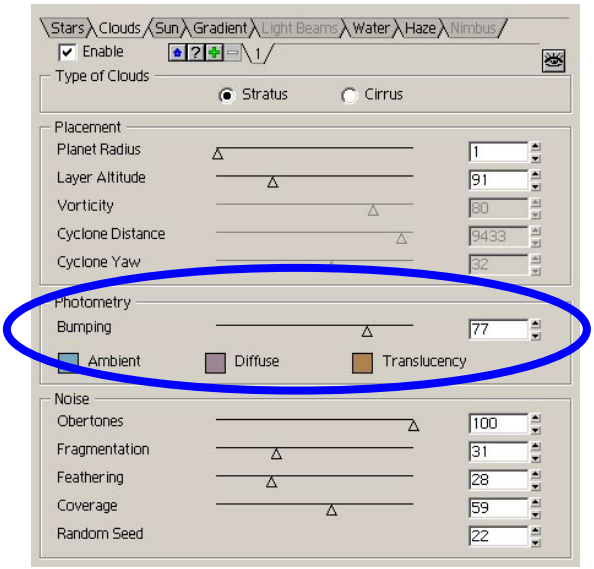


Planet Radius = 100



Planet Radius = 2

Photometry



This term is taken from a standard 3D graphics paradigm. The colors you set are not directly applied to a pixel but used in a lighting model, taking into account the position of the Sun, location of the surface, its roughness, etc. The shading of Aurora's clouds is controlled by the color and brightness of three components: **Ambient**, **Translucency** and **Diffuse**.

Describing Photometry Characteristics

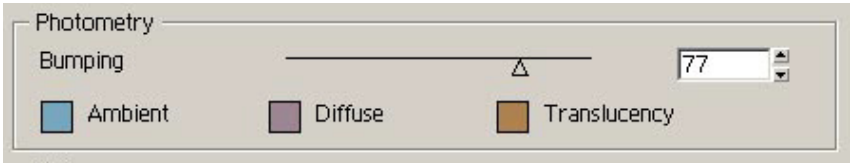
Imagine an irregular slab of semi-translucent matter, like a thick piece of jelly. If you shine a light through this, and observe the result from the other side, you will see that some light makes its way through. This is the same the **Translucency Component** in Aurora's Clouds.

Now (in your imagination) move to the same side of the jelly as the light source. This side is brighter and less saturated by the jelly 's inner colors, as the light is hitting it directly, and does not get weakened and color-filtered by having to pass through the jelly mass. The color you observed here is the same as the **Diffuse Component**.

Now move back to the unlit side of your jelly, and imagine that certain portions of the slab are extremely thick, so thick, in fact, that they do not let any Translucency Light pass through at all. The color you would observe in these parts of your jelly is the same as the **Ambient Component**.

The thickness of the clouds (3D lumps of semi-transparent mass – i.e. Jelly) is called Bumping. Setting it very high means that thicker regions will be really thick, and thinner regions will be razor-thin, creating a high-contrast look. Setting it really low means that your clouds will be close to a medium thickness almost everywhere.

Interface Components



Ambient Button - Sets the color of the Ambient Component, using a Color Picker.

Diffuse Color Button - Sets the color of the Diffuse Component, using a Color Picker.

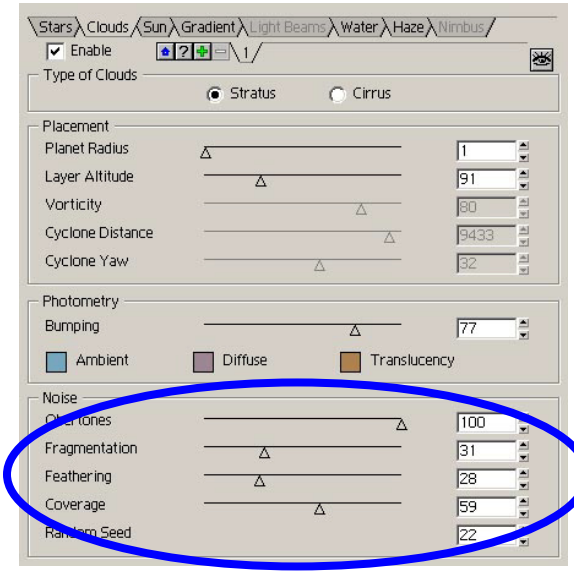
Translucency Color Button - Sets the color of the Translucency Component, using a standard World Builder Color Picker.

Bumping - This controls how dramatically different in thickness the thinner and thicker parts of your clouds will be.

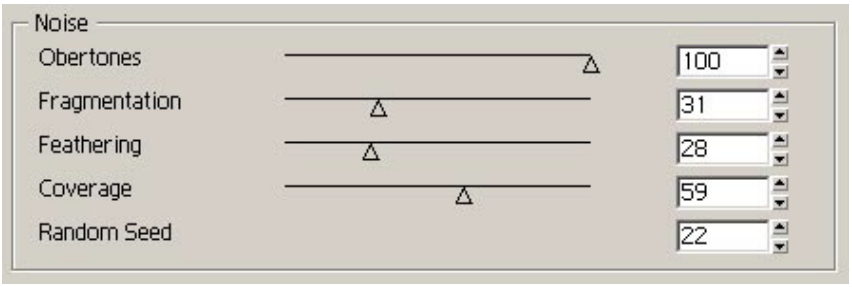
Noise

The fractal noise used to create clouds consists of two 'levels'. The Main Level is what draws the shape of the primary puffs. The Obertones Level creates the ragged details around these Main Level puffs.

In the basic interface, each noise characteristic can be set with either the slider or by typing in a number.



Interface Components



Obertones - Sets the number of extra levels of detail-noise that will be added to make the edges of the Main Level cloud puffs ragged. The higher the number, the more different levels will be added and the more complex your cloud patterns will be. Very high numbers will create patterns, which are sometimes very tiny.

Fragmentation - Sets the size of the Obertones Level noises, relative to the size of the Main Level puffs (as determined by the Placement group of controls). High fragmentation means smaller details, and a more "powdered" look to the cloud edges. Be aware that this setting is very 'touchy', and that small value changes can make a very big difference. In the illustration below this parameter changes from 0 (top-left) to 100 (bottom-right).

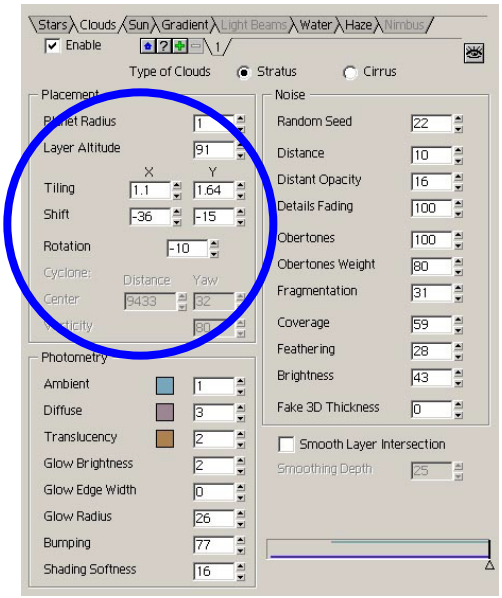
Feathering - The feathering algorithm looks at your existing clouds, and then softens transitions between thicker (darker) and thinner (lighter) regions, making your clouds look softer and less 'dramatic' or 'stormy'.

Coverage - Basically a percentage of sky coverage by clouds, where 0 = 0%, 0.5 = 50%, 1 = 100% etc. However, high Feathering can make actual rendered cloud cover percentage seem like less than what is set here. If you want a lot of sky coverage by thin clouds, with few dark areas, turn-up Feathering and Coverage together.

Random Seed - Keeping the same number means the effect will always look the same, given that nothing else has been changed.

Advanced Features and Techniques

Placement



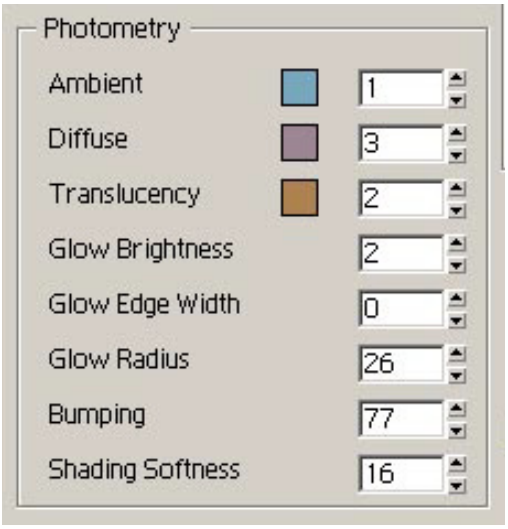
The Placement interface still appears in the upper-left portion of the Clouds tab interface.

Tiling X & Y - Works exactly the same way as standard UV map tiling does. For example, setting X to very higher numbers will squeeze the clouds pattern on X (so that it looks more like thin squiggly lines running in the Y direction). Setting both X and Y to higher values will just make the clouds look smaller.

Rotation - If rotation is 0, then X is across in the Top Viewport and Y is up and down in the Top Viewport. Increasing this value to 5 means that the clouds will be rotated 5 degrees, clockwise, around the Top Viewport's plane.

Shift X & Y - Offsets the position of clouds pattern. Keyframing this value provides a way of creating simplistic cloud animation.

Advanced Interface



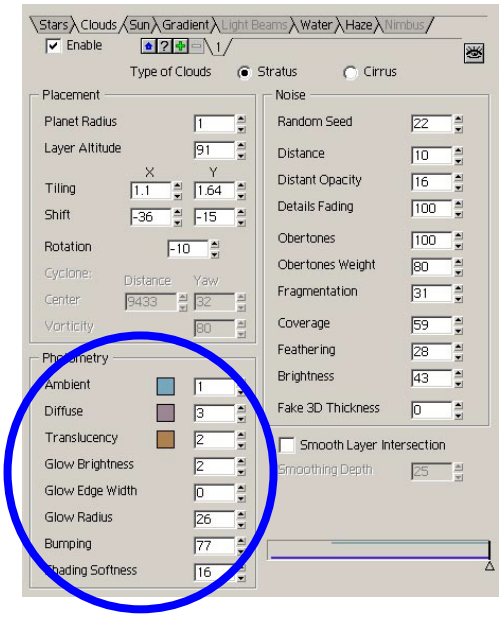
IMPORTANT NOTE: *Each "tile" (unlike a bitmap tiles) will have its own, separate pattern rendered, so you will not see any repetition, even if you set the tiling to high numbers.*

TIP: *Setting Y Tiling to be much larger than X Tiling is a great way to create elongated scalloped clouds, like those seen on quiet days near the seashore.*

Advanced Photometry

Photometry is an essential principle to master if you want to achieve a realistic look and feel. In Clouds, there are a huge number of factors that affect final color decisions.

In the Advanced Interface, the Photometry section is in the lower-left corner of the Tab window.



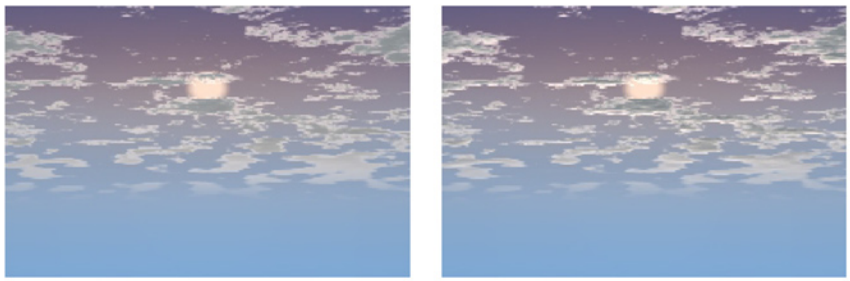
What you set in the **Settings > Ambient Color**, multiplies the Ambient Light value. If your Ambient Light Setting is pure black, then there is nothing to shine on the Ambient Component of your clouds, and no matter what you set here the sections of your clouds affected by the Ambient Light Component will be black.

The Sun
The color of the Sun (see Sun section of this manual) affects the final rendered color of the Diffuse Component. The Translucency Component is also affected by the color of your Sun, but it tends to favor its own color (as set here) to a greater degree.

Cloud Edge Glow
This glow affects only the perimeter of the clouds - not the glow seen around the sun itself. To create a glow around the sun itself, add Sun to your project. The color of the Cloud Edge Glow is always the same as the color of the Sun shining on the clouds. Other aspects of the glow are controlled by...

Cloud Transparency
Since the mass of 'cloud matter' is semi-transparent, you will be able to see a bit of one Component through the other. The thicker the space occupied by a Component, obviously, the less you will be able to see 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 any longer show any dark areas at all. 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.

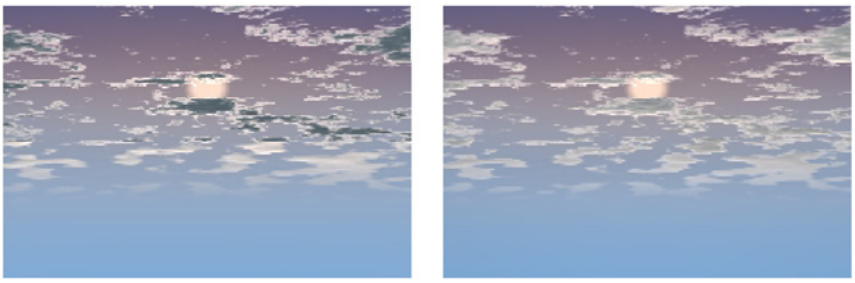
Bumping
If you use high Bumping values, Aurora simulates thicker cloud clumps, and thus you will see more of the Ambient Component, as these thicker clumps will to a greater degree block the Translucency Light from getting through. In the illustration below this parameter changes from 0 (left) to 100 (right).



Shading Softness

Much of your cloudscape will be a partial mix of at least two of the three Light Components (Diffuse, Ambient and Translucency). Shading Softness determines the smoothness of that transition.

Shading Softness will be particularly evident if your sun is near sunset, and Aurora is doing a lot of selection between what will be Diffuse and what will be Translucent in your clouds. In the illustration below this parameter changes from 0 (left) to 100 (right).



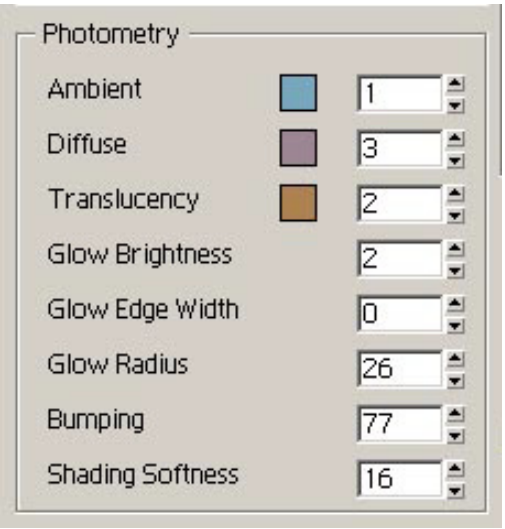
General Tips

If your camera is looking straight up at the sun, you won't see much of the Diffuse Component. Mostly Ambient and Translucency. The Diffuse Component will be hidden on the other side, where your light source is (of course, unless you decide to point your light source up, which is unlikely).

You WILL see a lot of the Diffuse Component if your Camera is looking toward the horizon, as in this case the Camera is looking at the bumped balls of 'cloud matter' from the side, where they may be receiving some direct exposure to the lights source above. If your light source is behind the Camera in this circumstance, then you will see even more of the Diffuse Component.

If your Light source is in a sunset position, the light rays are traveling at a diagonal through the clouds, or maybe even parallel to them. Thus, each light ray has a longer journey through cloud mass than is the case when it is noon, and the rays are at a perfect perpendicular. Since the rays must cross thicker mass, they are much more likely to get weakened, and thus you are much more likely to see a lot of Ambient Light Component in your clouds.

Advanced Features



Ambient Parameter - Sets the brightness of the Ambient Component.

Diffuse Brightness - Sets the brightness of the Diffuse Component.

Translucency Brightness - Sets the brightness of the Translucency Component.

Glow Brightness - How bright the glow will be. Colors are added to those found in Layers behind the clouds.

Glow Edge Width - How wide the glow 'lining' will be around cloud edges. This of course tapers off softly with distance from this edge.

Glow Radius - In nature, regions of clouds very far away from where the sun is located in the sky do not show any glowing. This sets how far away from the location of your sun (as seen in the Camera's view) your Clouds will continue to glow. The Cloud Edge glow's brightness works as a descending gradient: it is brightest in the place where your camera is looking directly at the sun, and then fades off the further away clouds are from that spot.

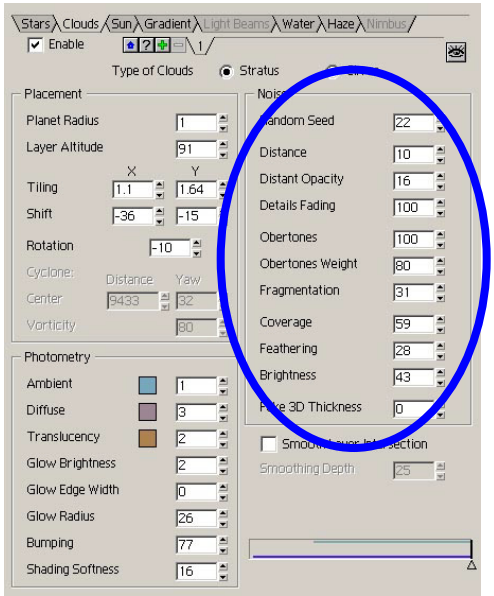
Shading Softness - This parameter controls how sharply one cloud will transition into the other. High values mean sharper, higher contrast clouds, almost as though you had turned up Bumping (but not quite). Lower values will give you a softer, smoother look.

Noise

Noise as applied to Clouds makes the clouds pattern more fragmented. Thus its action is quite similar to that of a usual PS noise, when applied to, say, textures.

In the Advanced Interface, the Noise features encompass the entire right side of the Clouds Tab.

The size of the Main Level noise puffs is controlled via the Placement group of controls, whereas the relative size and appearance of the Obertones Level noise is controlled here.



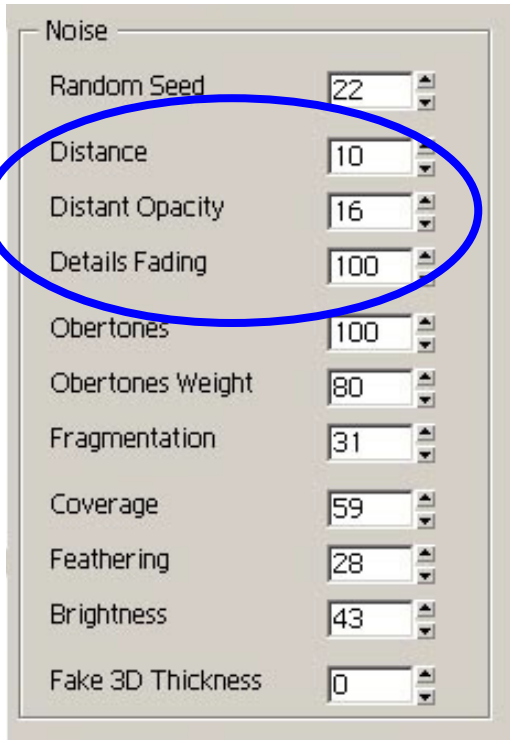
Fading in Distance

These Parameters affect how clouds that are very far away from the camera (generally close to the horizon) will look. Their most common purpose is to help you simulate the blurring and occlusion which horizon haze can cause.

Distance - Sets the distance from the camera, in World Coordinates, at which clouds begin to fade. If your clouds seem to end abruptly on the far horizon, you might try increasing this number.

Distant Opacity - This sets how relatively transparent the Main Noise Level cloud puffs located beyond the Distance you set will look. The default 20 means that clouds further away from the Camera than the Distance setting will only be 20% as opaque as clouds closer than the Distance Setting (In other words, areas that were opaque will become 80% transparent).

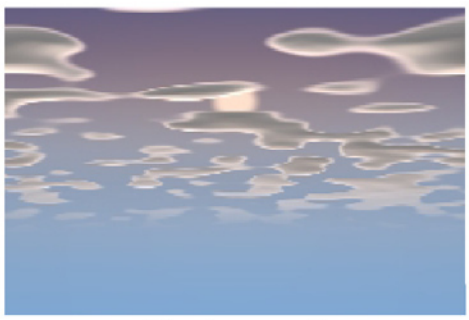
Details Fading - This controls the transparency of the Obertones Level noise (again, for clouds beyond the Distance Setting). If you leave this at '99', then it means that the ragged details around your cloud puffs will be 99% transparent (almost invisible). How high to set this really depends on what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



IMPORTANT: *You can also greatly affect how the clouds near the horizon will look by changing the Planet Radius parameter in the Placement group of controls. A smaller planet makes the clouds curve down on the horizon.*

Obertones

Obertones determine how many levels from the center of the cloud the wisps and protrusions will venture. High numbers also have a similar effect as increasing Obertones Weight, in that the 'raggedness' of your clouds will seem more visually predominant.

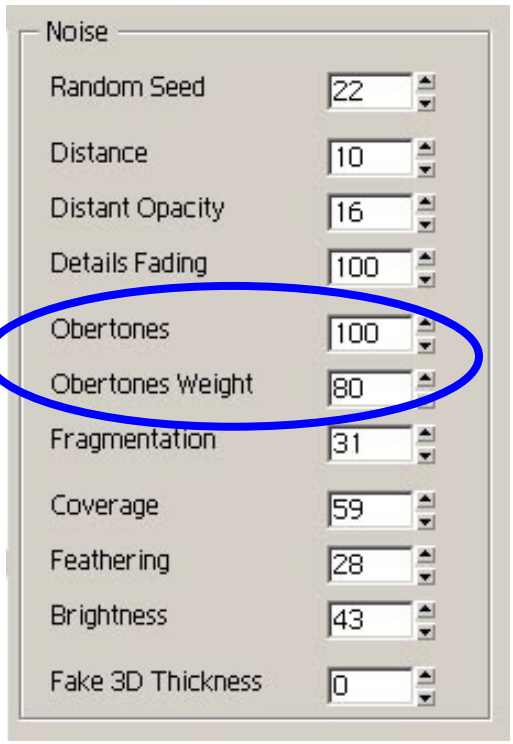


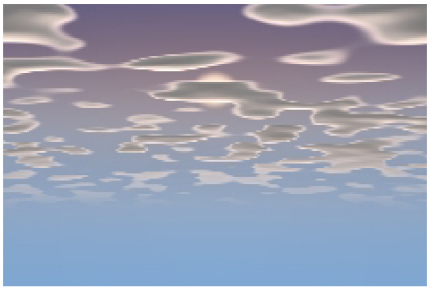
Obertones = 0

Obertones = 100

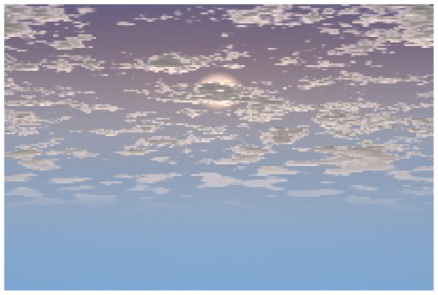
Note: *The advanced feature offers an additional 'weight' of the Obertones.*

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. In the illustration below this parameter changes from zero (left) to 100 (right).





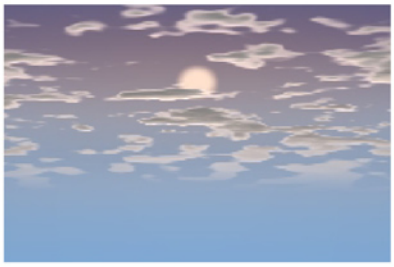
Obertones Weight = 0



Obertones Weight = 100

Examples of Fragmentation

Fragmentation determines generally how disperse the clouds are. The higher the level of Fragmentation, the more dispersed they are.



Fragmentation Level 0

Fragmentation Level 100

Examples of Coverage

Notice how high feathering and high coverage lets you see about the same amount of sky as low feathering and lower coverage, but with softer shaped clouds.

Feathering = 100 Coverage = 65

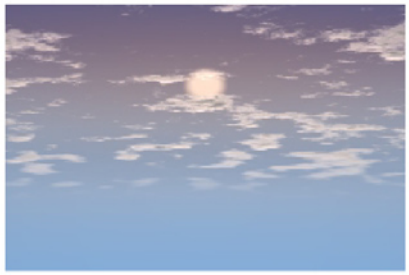
Feathering = 20 Coverage = 65

Feathering = 100 Coverage = 90

Examples of Feathering

Feathering softens the transition between the thicknesses of clouds, making them appear less stormy. Since this 'transition zone' is created inside the clouds (rather than spread out into the previously empty sky) high Feathering has the side effect of reducing cloud coverage, and reducing average thickness as well.

Feathering Level = 0



Feathering Level = 100

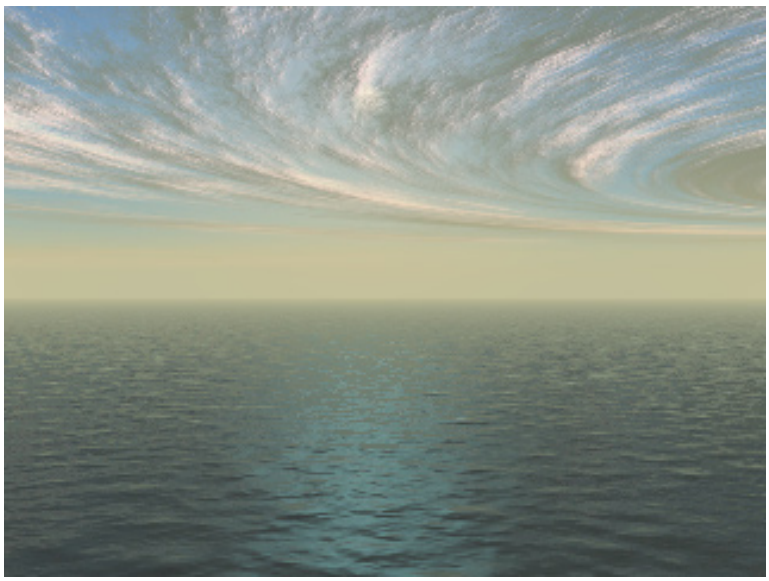
Brightness

Multiplies existing brightness levels found in the clouds, as already determined by what you set in the Photometry group of controls. Since zero multiplied by any number is still zero, the black regions of your clouds will not brighten. High values tend to not only increase brightness, but contrast as well.

New Cloud Types

Aurora allows you to select between Stratus and Cirrus cloud formations.

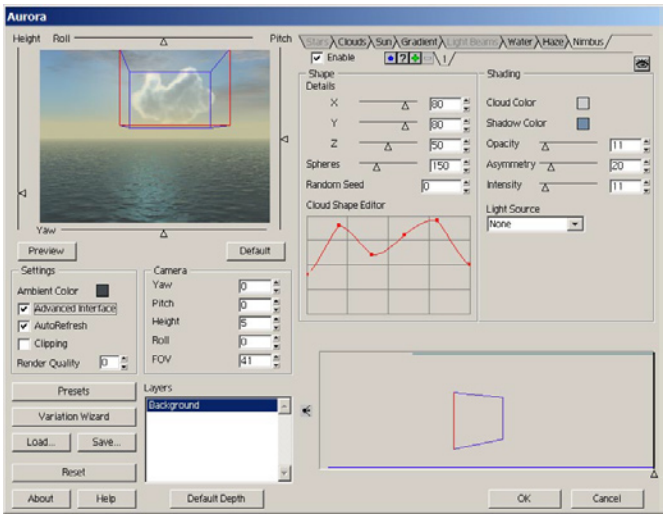
Stratus Clouds



Cirrus Clouds

Nimbus

This is a new Aurora cloud feature. It allows you to render realistic 3D clouds, usually referred to as *Cumulonimbus*, but shortened for our purposes to just 'Nimbus'.

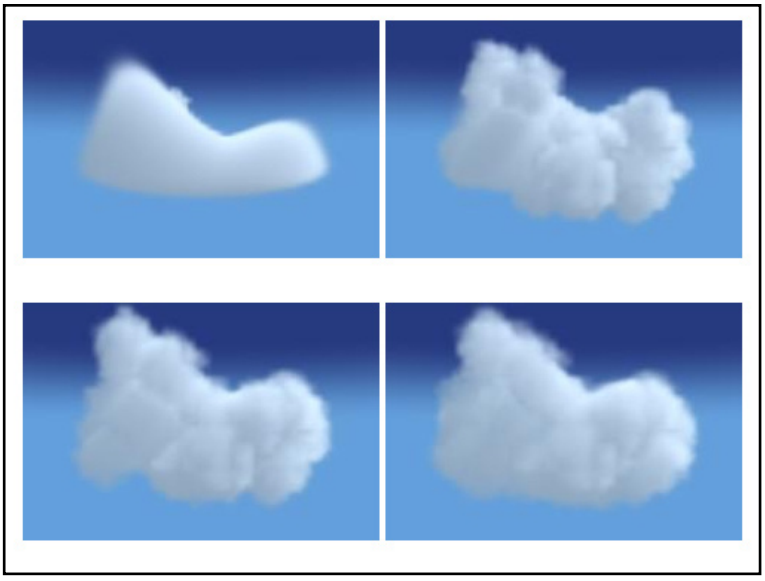


Shape

Details

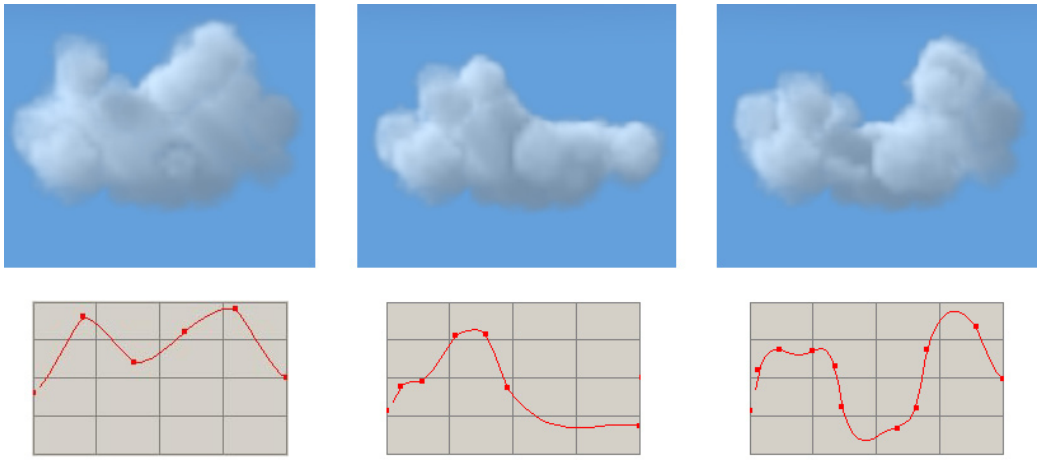
X, Y and Z - These are the spatial dimensions of the Nimbus cloud, where X = depth, Y = width and Z = Height.

Spheres - This sets the number of spheres that contribute to the Nimbus cloud's 'density of detail'; a low Spheres value makes a very smooth cloud, while a higher Spheres value produces more 'puffy' details in the cloud.



Random Seed - Varies the distribution of the cloudy Spheres throughout the Nimbus cloud's volume.

Cloud Shape - This is a graphical interface for editing your Nimbus cloud's profile, represented here as a spline curve with movable points. Click and drag on the points to alter the cloud's shape. Shift+click to add a new point to the profile curve; Ctrl+click to delete a point.



Shading

Cloud Color - Selects a color for the part of the cloud that is recieving illumination from a light source.

Shadow Color - Selects a color for the part of the cloud that is in shadow.

Opacity - This value sets the overall opacity of the cloud. Small values make the cloud almost transparent, while high values result in a very dense, opaque cloud.

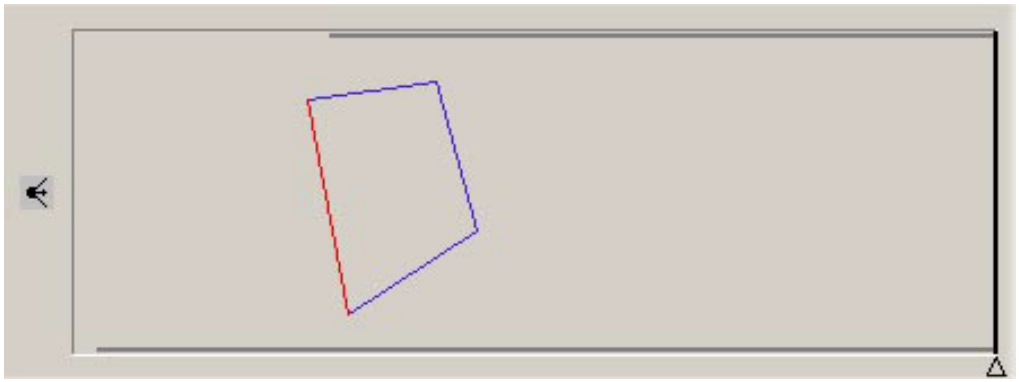
Asymmetry - Controls the amount of 'light scattering' within the Nimbus cloud. A low value will emphasize the contrast between the illuminated and the shadowed areas in the cloud, while a high value will tend to 'flatten' the cloud's appearance.

Intensity - Sets the sensitivity of the cloud to a given light source.

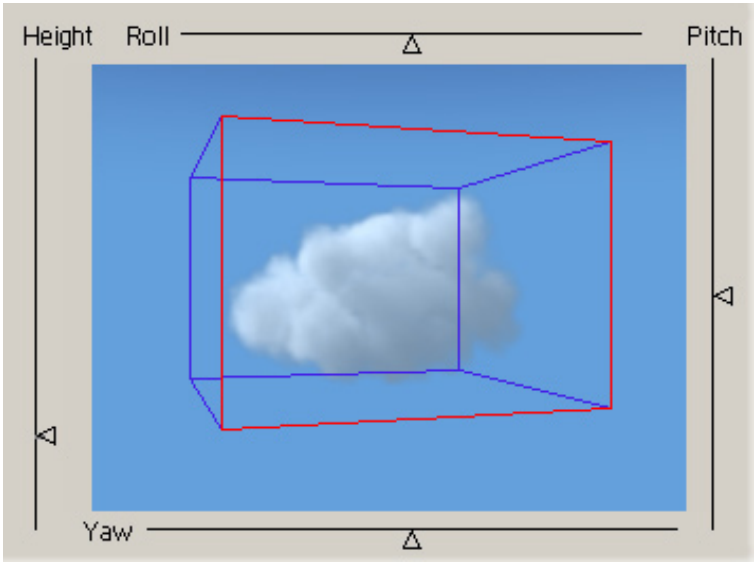
Light Source - Selects a single light source from the available Sun or Moon elements in the Aurora scene. Defaults to a preset light if no source is selected.

Top View

Use this view in conjunction with your camera view to set your Nimbus cloud's postion within the scene.



Notice the bounding box that encloses the Nimbus cloud in the top and camera views. Click between the lines and drag to move the cloud forward/backward, left/right or up/down; click on the lines to rescale the cloud by dragging the mouse; click on the corners and drag to rotate the cloud.



Sun

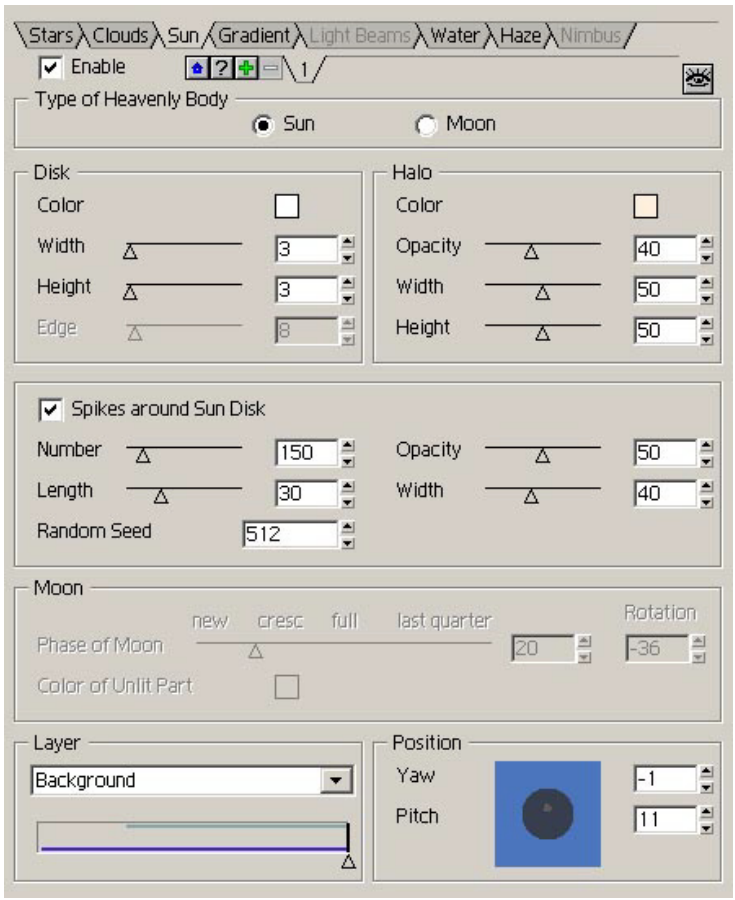
The Sun (Sun Disk with Halo) is a lens-flare like effect, which allows you to see a sun ball with a nice hazy glow around it. The effect automatically gradually changes between two different 'States' depending on which direction your Sun is pointing. If it is pointing straight down, it will be fully in its 'Noon State'. If it is pointing in a more horizontal way (like a setting sun) it will transit to its 'Sunset State'.

The effect is also divided into two components: The **Disk** itself (the sun's 'ball') and the hazy **Halo** around it. You can set the color and the radius / shape of the effect separately for each of these States, and for each Component.

The Sun interface of consists of General Interface and Advanced Interface. Use **Settings > Advanced Interface** check box to switch between them.

Adding a Sun Into a Scene

1. Press the Sun Tab in the Tab Controls. The following interface will appear
2. Click on the Enable Effect button.
3. Sun is added into the Scene.
4. To add an additional Sun to the Scene press a little green plus.
   A new Sun with default parameters is added.
5. You can add as many 'suns' as you like, creating fantastic skies.

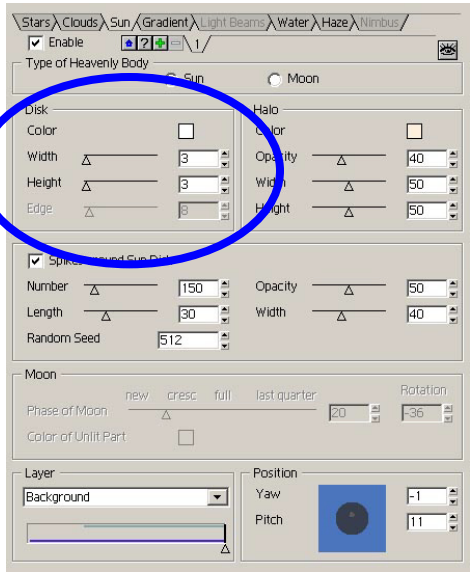


Basic User Interface

The Basic User Interface is divided into Four Sections: Disk, Halo, Intensity, and Placement. Disk defines everything about the sun's ball itself. The Halo covers the aura around the sun. The Light Intensity determines how bright the sun is, and with Position, you determine the sun's location in relation to the camera.

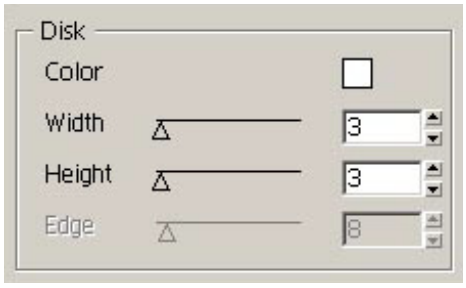
Disk Controls

The Disk controls define the attributes of the center of the sun – the ball itself. With these controls, you determine the width of the sun, its height from the camera, and its base color.



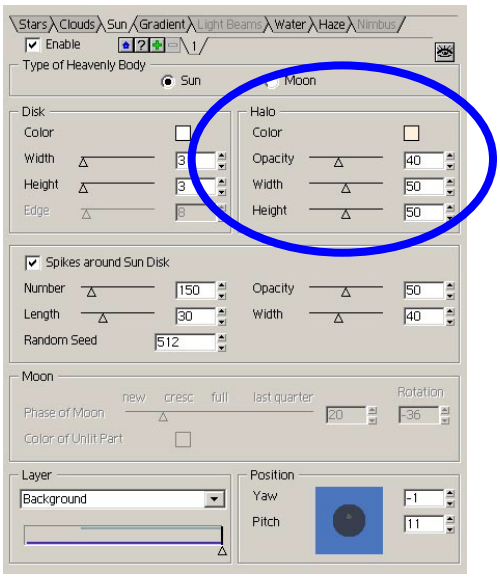
Sun Disk Noon Color Button - Sets the color of the Sun Disk when the Sun is pointing straight down, and the effect is in its Noon State.

Sun Disk Noon Height and Width - Sets the height and width of the sun ball you will see, when the effect is in its Noon State.



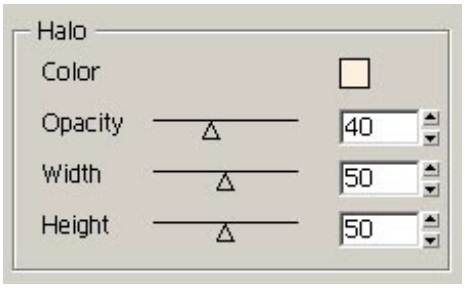
Halo

We often times perceive a Halo effect around the sun. The following controls determine that effect.

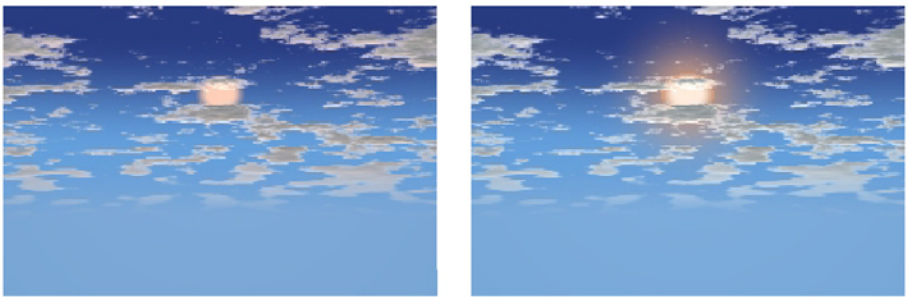


Halo Color Button - Sets the color of the Halo when the Sun is in zenith, and the effect is in its Noon State.

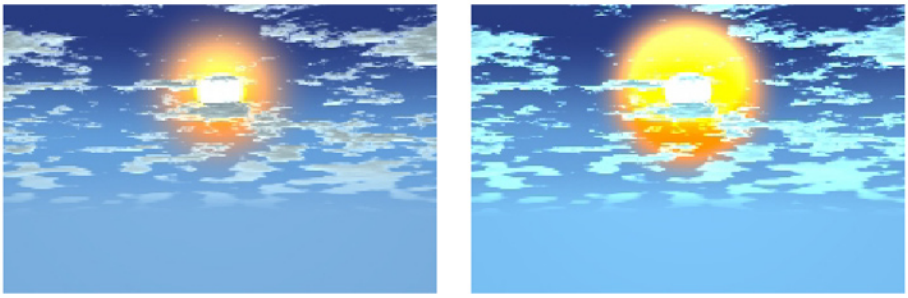
Halo Opacity - The opacity of the Halo around the Sun Disk gradually approaches zero as we get further from the edge of the Sun Disk.



Halo Height and Width - Sets the size of the Halo, when the effect is in its Noon State. If you make the Halo smaller than the Sun Disk, you won't see it at all.



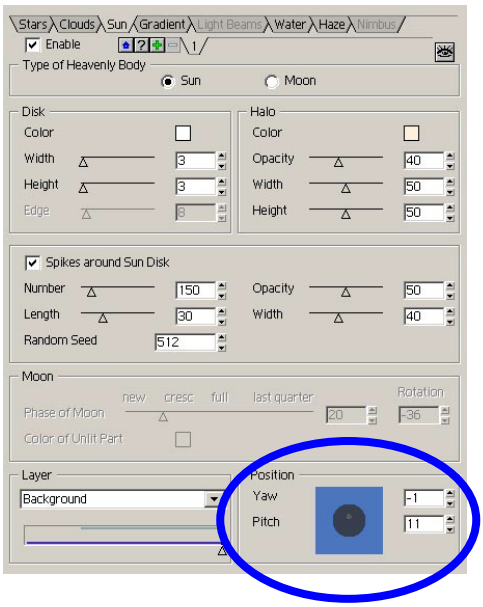
Halo Opacity = 0



Halo Opacity = 10

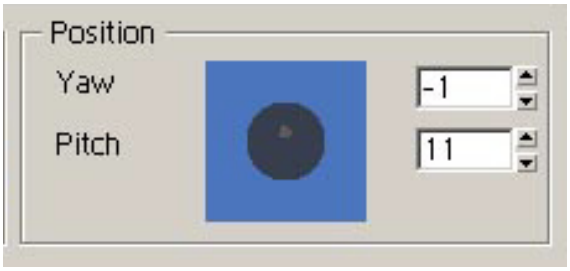
Sun Position Controls

These two controls allow you to change the Sun position on the sky.

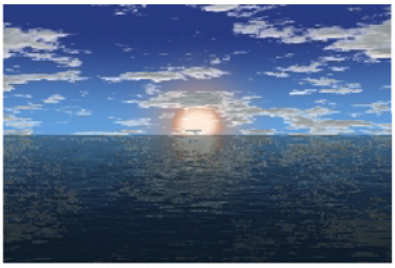


Pitch - Sets the pitch (elevation) angle of the sun over the horizon. Note that even though the Sun disk is not seen in the camera view, the Sun works as a source of light for such effects as Clouds and Water Surface. For example, we can see the reflection of the sun being the sun itself invisible.

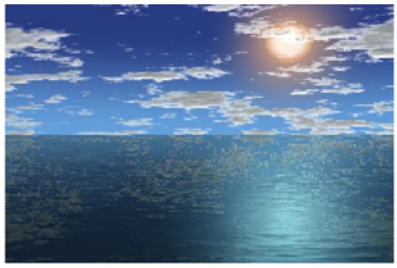
Yaw - Sets the azimuth angle of the sun. When the default sun azimuth is set the sun appears right at the center of the screen. Negative angles deflect the sun disk to the left, while positive deflect it to the right.



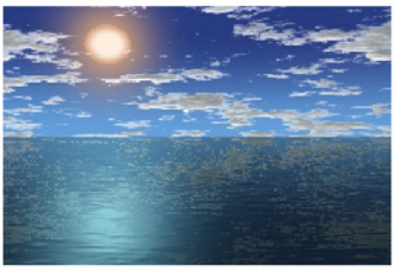
The following images illustrate how the sun position affects various objects.



Pitch = 1.0 Yaw = 0.0



Pitch = 1.0 Yaw = 10.0



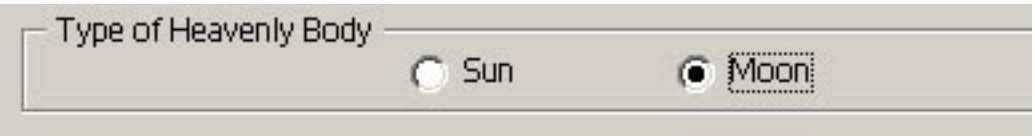
Pitch = 10.0 Yaw = -10.0

Pitch = 18.0 Yaw = -10.0

Sun

One of Aurora's newer features allows you to change your Sun element to a Moon.

This feature is accessed by clicking on the Moon button in the Sun tab, under **Type of Heavenly Body**.



Disk

Color - Sets the color for the moon surface.

Width - Controls the lateral dimension of the moon.

Height - Controls the vertical dimension of the moon.

Edge - Softens the outer edge of the moon, when set to a higher value. To see a sharp moon image, set this value to 1.

NOTE: *You may want to increase these values well above the default settings of 3, otherwise your moon may appear to small.*

Halo

Color - Sets the color of the halo.

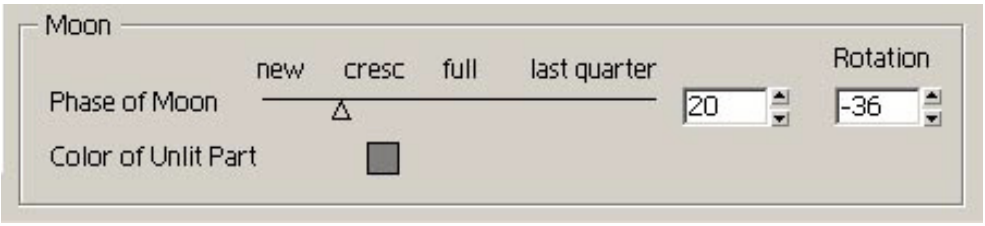
Opacity - Controls the intensity of the halo.

Width - Controls the lateral dimension of the halo.

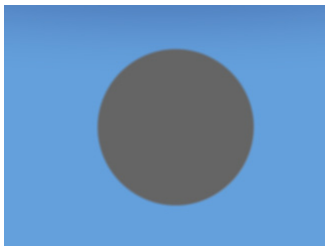
Height - Controls the vertical dimension of the halo.

NOTE: *When used in conjunction with the **Moon > Phase** controls, this feature can produce a reasonable image of the 'corona' that appears around the moon during a solar eclipse.*

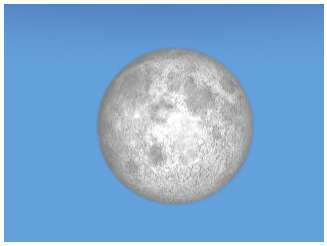
Phase of Moon



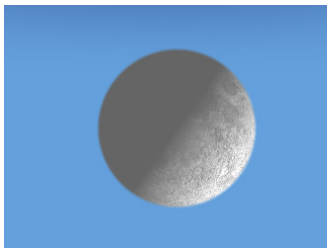
Allows you to control the degree of illumination the moon recieves.
This can be set with the slider or entered numerically.



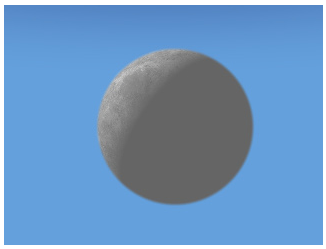
New Moon



Crescent Moon



Full Moon



Last Quarter Moon

Rotation - Sets the angle from which the moon recieves its illumination.

Color of Unlit Part - Sets a color for the shadowed part of the moon.

Sun Spikes

Aurora now gives you more options for fine-tuning your Sun elements.

Sun Spikes simulates the optical phenomenon that occurs when a very bright light source is directly at a camera lens: an array of ‘spikes’ that appear to originate from inside the light source.

In **Sun > Spikes Around Sun Disk**, be sure to enable the feature by clicking on it.

Number - Sets the number of Sun Spikes.

Length - Determines extent from the center of the sunb, to which the spikes will radiate.

Random Seed - Controls the density and distribution of spikes, by means of a special randomizing integer.

Opacity - Controls the intensity and transparency of the Sun Spike effect.

Width - Sets the width of each sun spike.

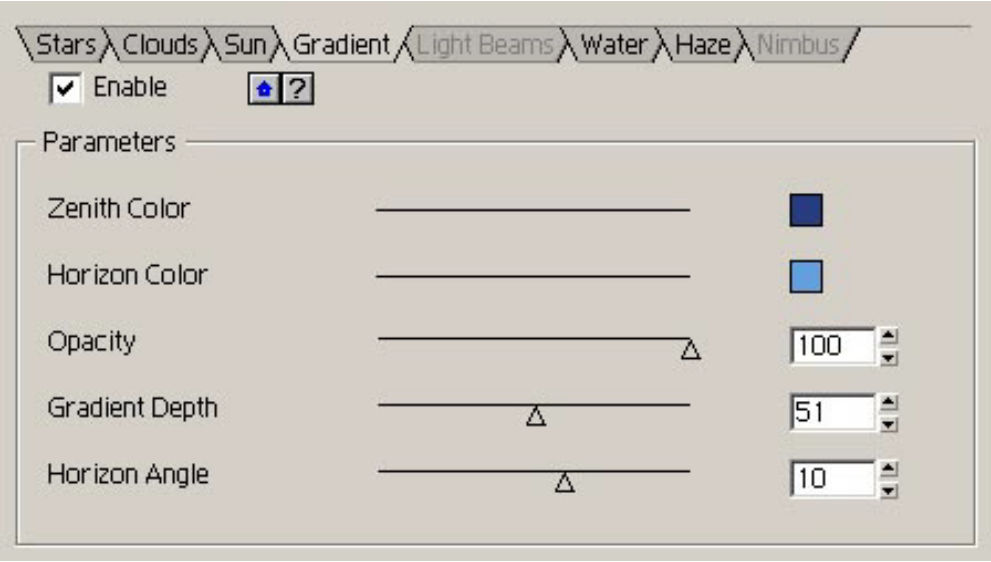
Gradient

This effect allows you to set the sky color gradient. The interface of Ramp Layer consists of General Interface and Advanced Interface. Use **Settings > Advanced Interface** check box to switch between them.

Adding a Ramp Layer

1. Select Ramp Layer in the Tabs Line
2. Check Enable Effect button (checked ON by default)
3. Ramp Layer is added into the Scene

Basic Interface



Zenith Color - Sets the 'top-most' color of the sky gradient, e.g. the color you would see if you set the camera's pitch angle to 90 degrees.

Horizon Color - Sets the color below the horizon line.

Opacity - If less than 100 (full), then Layers with further Depth will be able to show through the Gradient, including, if you so wish, other Gradients with, for example, other Bank Angle (see below) settings. If there is nothing behind the Gradient, then setting this to less than one simply darkens the color of the Gradient.

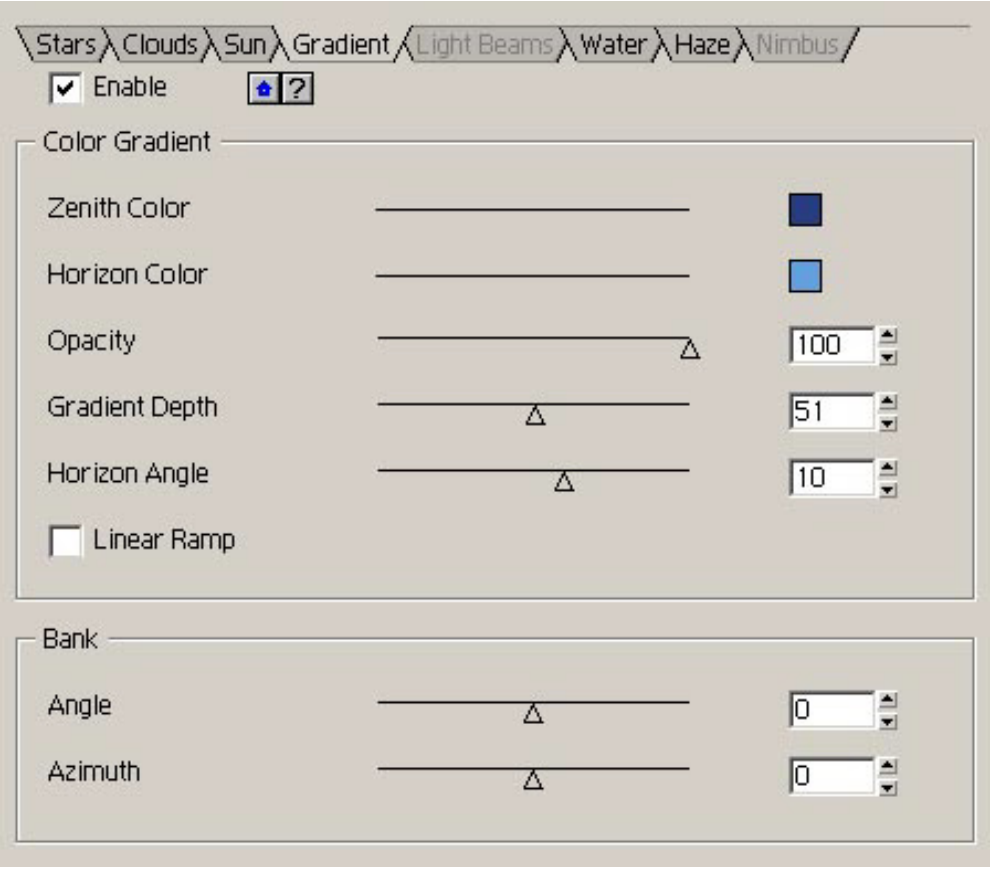
Gradient Depth - Controls how much space the gradient describes in this interface will take up in your sky. After the end of the gradient is reached, the bottom-most color (Horizon) will be uniformly applied. High values stretch the gradient out to cover the entire sky (so you will almost never get to see the Zenith Color except if you point the camera straight up) and low values compress the gradient onto the horizon, so most of your sky will be a solid Zenith color.

Horizon Angle - Like Gradient Size, this is expressed as a percentage of the total height of your sky dome. The higher the number, the higher you gradient will be pushed up the horizon.

Tip: *You can use a semi-transparent Color Gradient to tint other Layers behind it (in other words, other Layers which have greater Depth setting than it does.)*

Advanced Interface

The Advanced Interface has all of the elements of the Basic Interface, along with a few additional parameters that offer the user more control.



Linear Ramp - Normally smooth interpolation is applied between the 'keyframes' in the gradient. Turning this one makes the interpolation linear (so you will see a hard 'line' at each keyframe).

Bank Angle - Often, just before a sunrise and just after a sunset, the brightness of the horizon is skewed to one side. This parameter allows you to turn your Gradient to a diagonal.

Azimuth - This sets the angle on which your sky dome will be rotated around the vertical axis (seen only if you set Bank Angle to more or less than '0').

Tip: *By using many Color Gradients, each with a different Bank Angle but all using the same Azimuth, and with those closer in Depth having Opacity set to less than '1', you can create a 'light peak' on the horizon (rather than just a diagonal).*

Gradient Techniques

The number here is actually a percentage of the distance between the horizon and the very top of your sky dome, so 18 means that 18% of your dome will be covered by sky, and the rest (upper regions) will just be the Horizon color.

Note that in most scenes, unless you are looking up at the tops of trees, the camera never actually sees the top of the sky dome. In the illustration below this parameter changes from 10 (left) to 40 (right). Note that in the last case the transition between zenith and horizon colors is very smooth.

Gradient = 10

Gradient = 40

Horizon Angle Techniques

Values above zero will use the horizon color (uniformly) at heights below the (then higher) beginning of the gradient. '0' means that your gradient will start exactly at the horizon.

Note that in contrast to the previous example the transition from zenith to horizon color is the same in the left and right images.

Horizon Angle = -25

Horizon Angle = 0

Bank Angle

Use this parameter if you like to incline the gradient with respect to the horizon. Bank Angle is measured in degrees. '0' means that the gradient will be exactly parallel to the horizon, no matter what you set in Azimuth.

Water

The Water surface channel allows you to simulate photo-realistically shaded water surfaces with reflection and refraction phenomena. In addition to creating reflections from other effects inherent to Aurora such as Sun and Clouds, the Water Surface is able to build reflections from bitmaps 'immersed in water'.

Water is added to a scene in the same way that sky is – it is like a floor, whereas the sky is like a ceiling. In order to have water not be in a specific area, the other layers need to be modified such that their 'height' rises above the water.

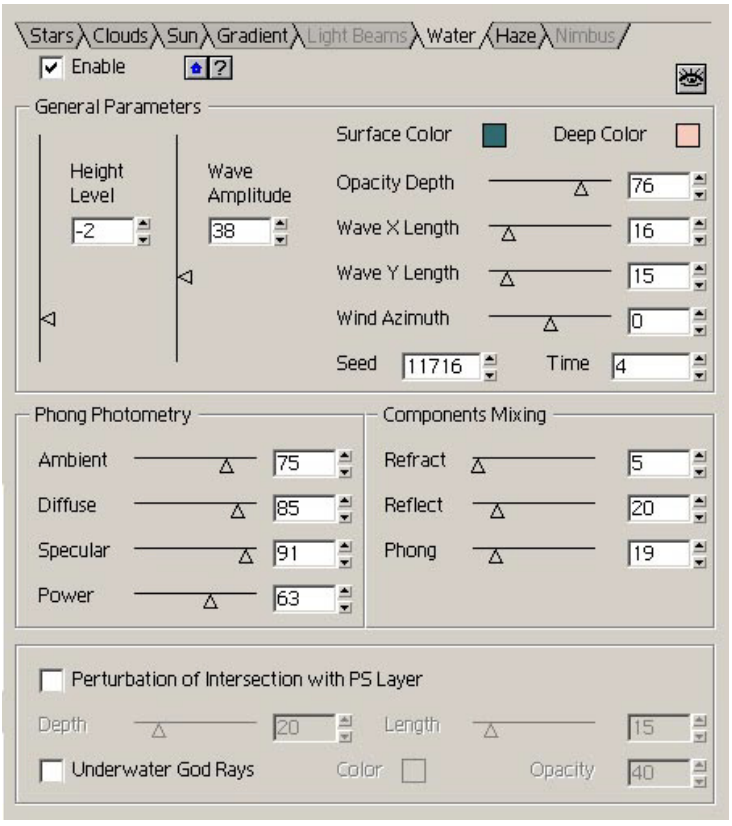
You can place a Photoshop layer with an image on it in front of the Aurora camera, enable the Water surface effect and see both reflection of the image and the water. Fine procedural ripples make the final picture very natural.

Adding a Water Surface

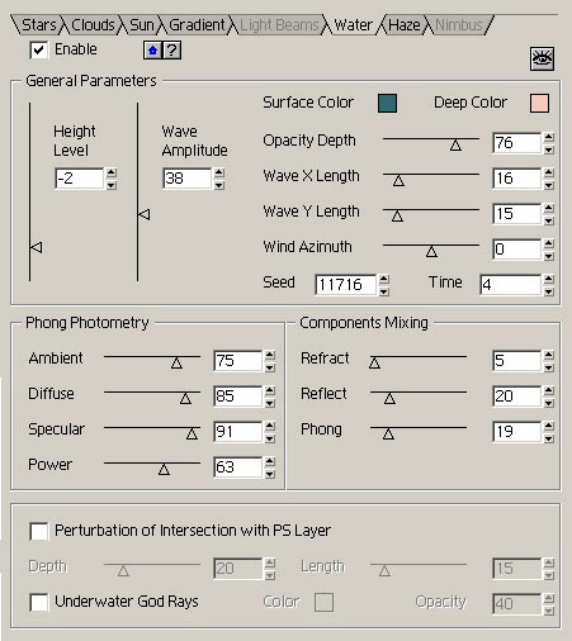
1. Select Water Surface tab in the main tab line.
2. Check the Enable Effect button
3. Water Surface is added to the Scene.

Water Surface Interface

Unlike the other interface screens, there is no delineation between basic and advanced interface for the water surface.



Water Parameters



Height Level - Allows you to adjust the water level vertically. Currently, placing the camera underwater is not supported. This value should be greater than Height of the camera.

Color - The color used for shallow water. You can change this color by clicking the color sample to display a Color Picker dialog box.

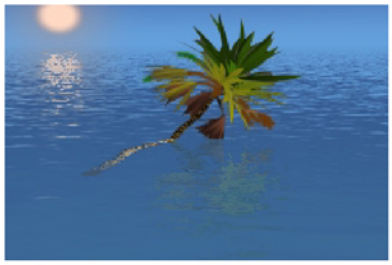
Deep Color - The color used for deep water. You can change this color by clicking the color sample to display a Color Picker dialog box.

Opacity Depth - The depth at which the deep color dominates. At lesser depths the color is a blend between the shallow color and the deep color. Below this depth the water's color is entirely the deep color.

Opacity Depth Techniques

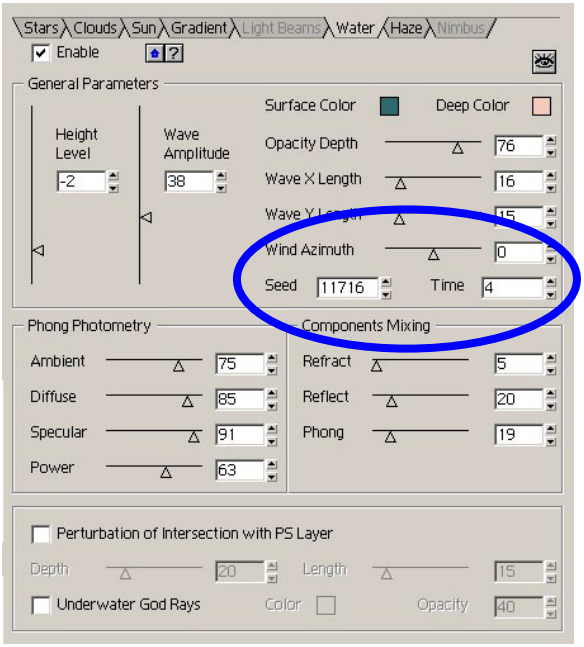
In addition, this parameter controls the opacity of the water - the greater the opacity depth, the more transparent the water. In the illustration below this parameter changes from 20 (left-top, the 'underwater' part of the palm is very obscure) to 100 (bottom, the 'underwater' part is well seen).

Opacity Depth = 20



Opacity Depth = 100

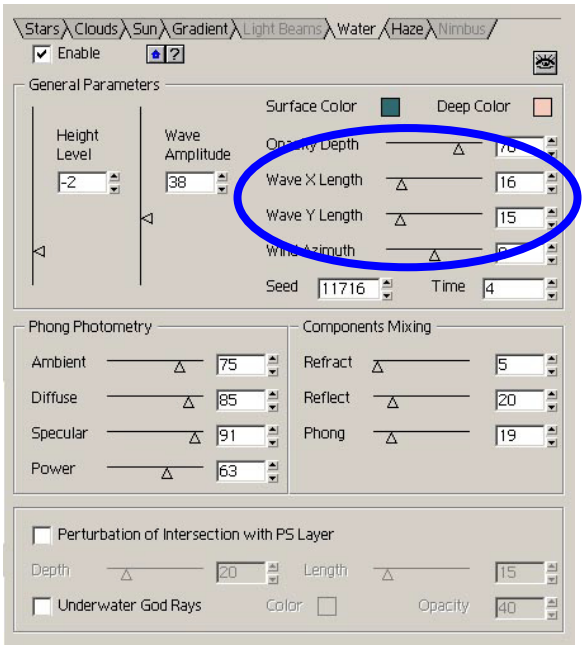
Key Time and Random Seed



Random Seed - Keeping the same number means the ripples will always look the same, given that nothing else has been changed.

Time - Simulates the keyframe animation of the wind-driven ripples. Increasing this parameter uniformly and making an image every time you can get the series of frames with animated ripples on the water surface.

Wave Parameters



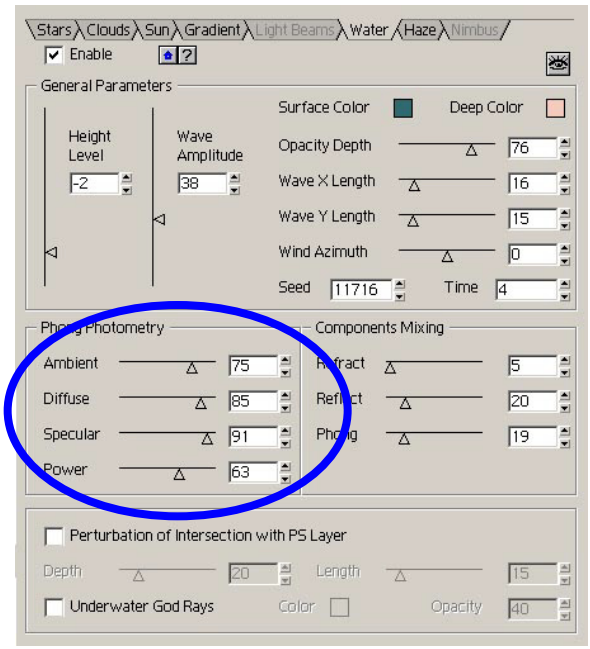
Wave Amplitude - This controls the height of the waves. Setting this value to zero will result in absolutely flat, mirror-like water surface.

Wave X Length - Waves tend to be oblong, being wider in the direction perpendicular to the wind (which pushes them forward). This sets the dimension of waves in the direction parallel to the wind (or in other words, parallel to the direction you set in Azimuth).

Wave Y Length - This sets the dimension of the wave perpendicular to the wind direction you set in Azimuth. In real life this tends to be about one half, to two thirds of the Along Wind length. Strong, stormy days compress waves more, and thus would make this parameter an even smaller value.

Water Photometry

This term is taken from a common 3D graphics paradigm. Like Photometry in general, it is used to emphasize that the colors you set are not directly applied to a pixel but used in some more or less sophisticated illumination model taking into account position of the Sun, location of the surface, its roughness, etc.



Ambient - Amount of ambient light reflected by the surface. (Ambient light is set in the Settings > Ambient Light). Lower Ambient settings lead to higher contrast in surface shading. Because water is translucent, light can easily reach the 'unlit sides' of waves, and thus ambient is often turned-up pretty high for water. Generally, the murkier you want your water to look, the more you would turn this down to value close to or lower than *Diffuse.*

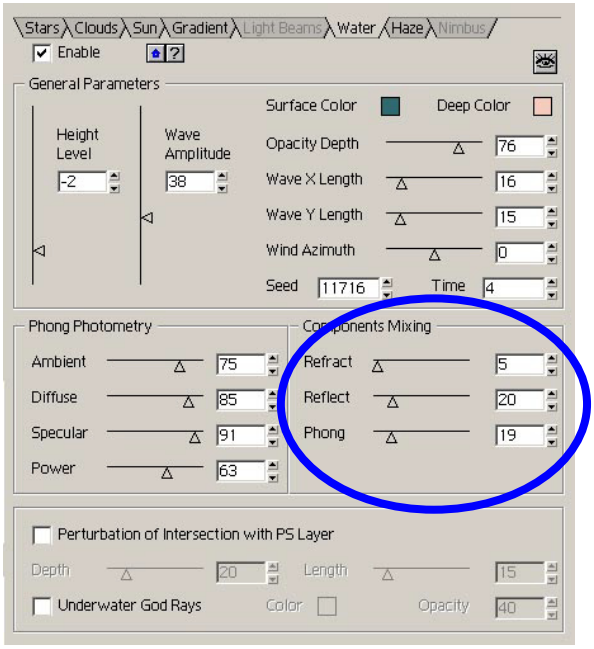
Diffuse - Amount of light scattered by the surface in all directions due to its roughness. Diffuse component is usually rather small for the water surface because the water generally directly reflects the light like a mirror (see Reflect control).

Specular - Controls specular strength.
(Specular is the generally white, 'shiny spots' on a water surface).

Power - Controls the tightness of Specular highlights. Other programs call this parameter Glossiness or Shininess. Higher values produce a water surface with small, tight specular highlights.

Advanced Photometry

This group of controls is added to the interface to increase your ability to control the shading the water surface. Although the illumination model mentioned above computes all three coefficients below using physical relationships you can correct the model achieving the desirable results.



Refract: This sets how strong the refracted component of the visible water surface color will be. Note that the refracted light in real life is the light outgoing from under the water surface. By increasing this value you make the underwater parts of the immersed object (bitmap) more visible.

Reflect: This sets how strong visible reflections will be, as, again, compared to other components of the water shader. Setting it very high will make the reflections seem very bright and intense. This would also make the water seem more opaque, because the contribution of Refracted Light (which sets how all underwater objects will look) would be comparatively lower.

Phong: This sets how close the water surface look is to that of a rough surface without ability to refract and reflect light. The first picture of the illustration above demonstrates how the water surface looks like when only Phong part of the illumination works.

More on Refraction

The default positions of Aurora's camera and water surface generally don't allow you to see the refracted component well. That is why this value is zero by default. To see how your water refracts the rays, you may need to point your camera a little downward (in the picture below the camera's pitch was –10).

Refraction = 0

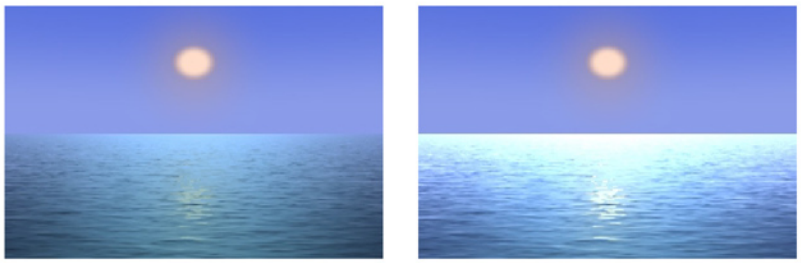
Refraction = 100

We can see that the 'underwater' part of the palm is gradually getting more distinct when the value of refraction increases from 0 (left-top) to 100 (right-bottom).

More on Reflection

Setting this to zero would make reflections disappear. In the illustration below this parameter changes from 0 (left-top) to 50 (right-bottom).

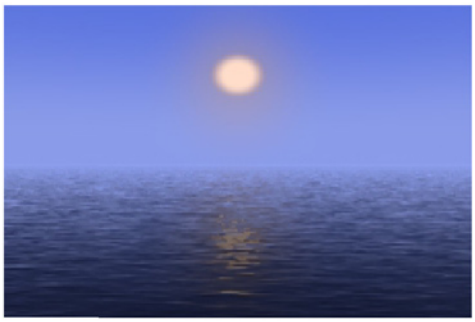
Reflection = 0



Reflection = 100

Examples of Phong Shading

In the illustration below, this parameter changes from 0 (left) to 20 (right). Generally the water looks better when this parameter is smaller than refraction or reflection.

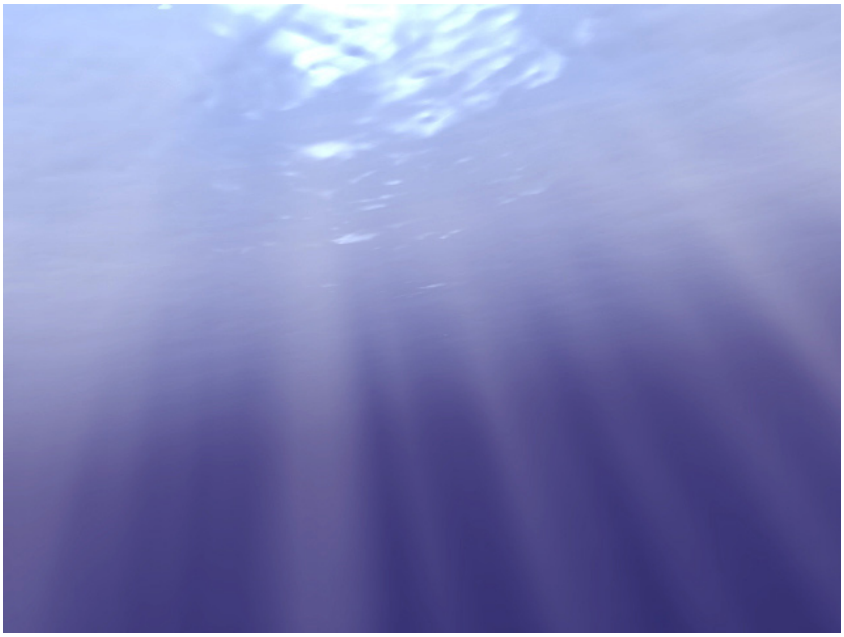


Phong = 0

Phong = 20

Underwater God Rays

This is a new Aurora feature. It allows you to render dramatic underwater scenes complete with volumetric beams of light - or 'God Rays'- projecting from above.



Underwater God Rays - Clicking the check box enables / disables the feature.

Color - Changes the color of the rays.

Opacity - Affects the degree to which the light rays will obscure the background.

Underwater God Rays is best used in conjunction with other Water settings defined earlier in this User Guide.

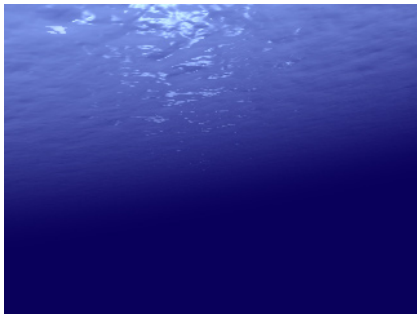
To add Underwater God Rays to a scene:

1. In the **Water tab > General Parameters**, raise the Height Level above its default value. Note: When creating this kind of underwater scene it's better to raise the ocean instead of lowering the camera; this is due to the specialised requirements of Aurora's 3D rendering environment.

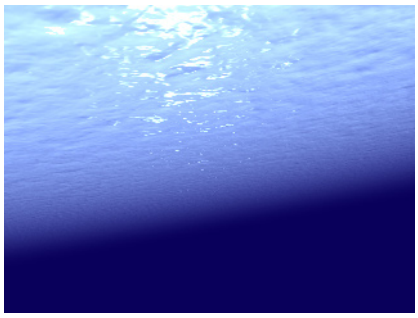
Now change your camera's pitch angle so that it is pointing up toward the water's surface.

2. Next, adjust the Surface Color to be lighter, and Deep Color to be darker. This will better simulate underwater lighting conditions, and will also make the God Rays easier to see.

3. Set Opacity Depth at a roughly middle value. Higher settings lighten the scene, and sharpen the boundary between the Surface and Deep colors; lower settings make the scene darker, and the color boundary is softened.

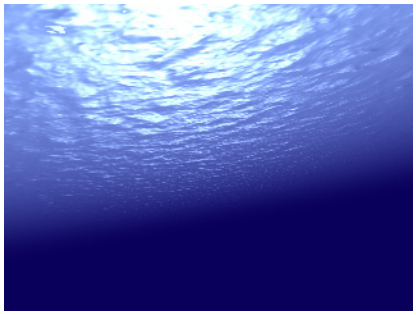


Opacity Depth = 62

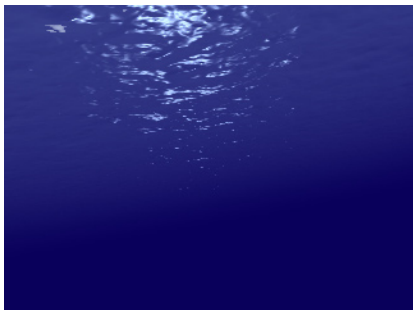


Opacity Depth = 80

4. You may want to try some variations with the Phong Photometry controls. Generally, higher Ambient and Diffuse settings will brighten your scene; Specular determines the water surface's ability to display a relfected or refracted highlight; Power governs the size of that highlight.



Ambient:	**75**
Diffuse:	**30**
Specular:	**95**
Power:	**10**



Ambient:	**25**
Diffuse:	**15**
Specular:	**95**
Power:	**75**

5. Enable Underwater God Rays by clicking its check box.

If you can't see the rays, try changing the position of your Sun light source so that it is pointed toward your camera's position.

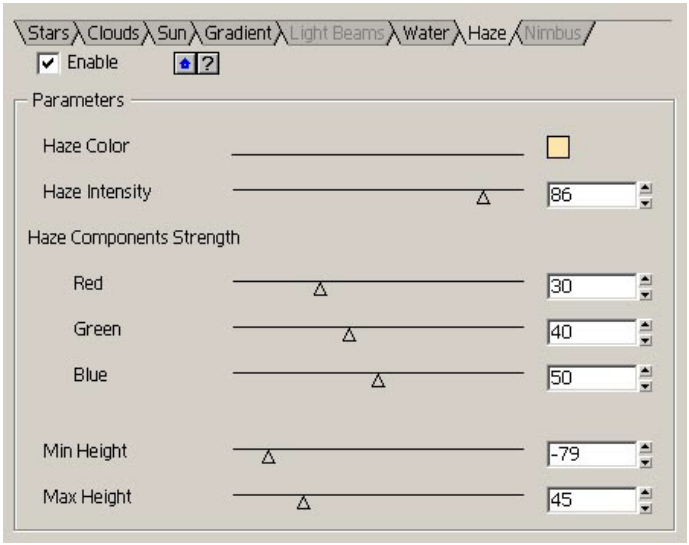
Haze

This creates a general Haze that is limited to a specific altitude range in the scene. Its limit in height is determined by Min Height and Max Height, which you set. The Haze has only one color component, but three different half-decay distances for red, green and blue color light beams (named strengths). The density of the Haze has maximum in the middle of the layer and diminishes to zero at the elevation boundaries.

Adding Haze into the Scene

1. Select Haze in the main tabs line. The following interface appears:
2. Check the Enable Effect box.
3. Haze is added into the Scene

Interface



Haze Color - The resulting color in a particular point is a ratio of the original pixel's color and the haze color. The ratio depends on how far from the camera the point is located. The farther from the camera the more the haze color affects the overall color.

Note - *There can be only one Haze effect in a scene.*

Haze Intensity - Equivalent to Value component of the Haze Color in terms of its HSV (Hue, Saturation, Value). Zero means a black haze color – regardless of what color was chosen by the Haze Color control. 100 means the original Haze Color. In the examples below this parameter changes from 100 (left) to 50 (right).

Intensity = 100

Intensity = 50

Haze Components Strength - Allows you to make the transparency of your haze different for different color components. For example, setting red component remarkably greater than the other two makes the resulting haze color reddish.

Min and Max Heights - Sets the height range, within which the haze is present. In the example below the maximal height changes from 10 (left-top) to 300 (right-bottom)


Haze Max Height = 10


Haze Max Height = 300

Examples of the Haze effect used with distant objects

In the examples below the distance from the camera to the palm increases from the minimal possible (left-top) to the maximal possible (right-bottom) value. Remember that the distance slider sets the distance of the image layer.


Minimal distance from camera

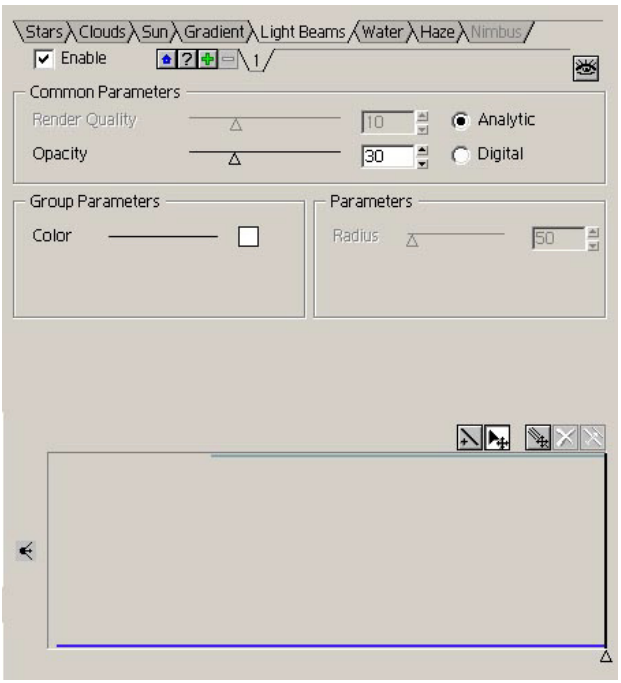

Maximal distance from camera

Light Beams

The Light Beams feature allows you to simulate the rays of light, which can be seen, for example, in a misty air in a shaded forest on a bright summer day. This effect is fully based on the 3D representation of your initially 2D multi-layered image.

Adding Light Beams into the Scene

1. Select 'Light Beams' in the main tabs line.
2. Check Enable Effect box.
3. Using Top View Toolbar (see below) create one or more rays, within which the Light Beams will be confined. The rays created on one and the same tab form a group.
4. You can add additional groups of rays pressing a little green plus.
5. For each light, use movement tool to set the origin of the ray and the direction the light moves out.

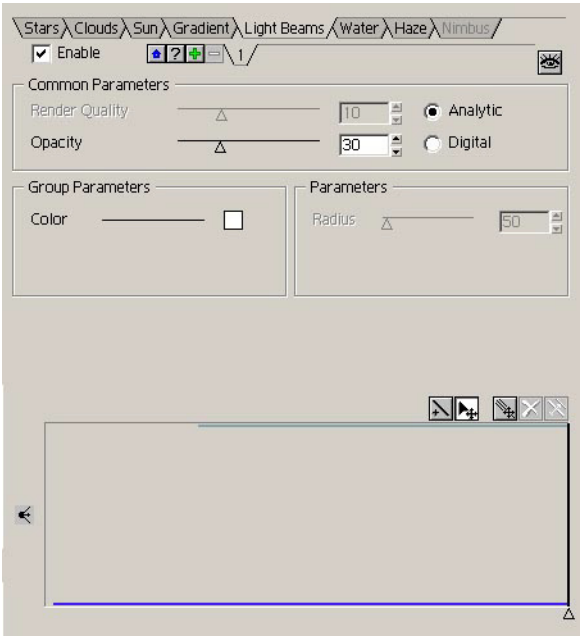


When you select 'Light Beams' in the main tabs line the following interface appears:

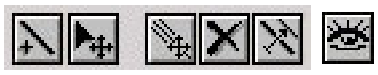
To add the effect to the Scene you have to create one or more bounds of the light beams in addition to checking Enable Effect box. The bounds of the light beams are cylinders, stretching from the start points of the light beams to their ends.

To locate a 3D ray in a virtual space you need at least two views controlling its position. Those views are the Camera Window and the Top View.

Top View Interface



Top View is located at the bottom part of the Light Beams interface. In fact, it is the enhanced layer position control.



The top view is supplied with a toolbar, which allows you to perform the following operations:

Use this button to add a ray. When pressed, activates the ray creation tool. Locate the mouse cursor over a point you want the ray to start from and press the left mouse button. The ray origin is set. Without releasing the button draw a line in the direction of the ray. Release the button over a point you want the ray to end. The ray is added to the Scene. Note that the ray appeared in both Camera and Top views. An arrow marks the direction of the ray.

Use this button to move a ray. When pressed, activates the ray-moving tool. You can either rotate the ray or shift it keeping parallel to itself. To rotate the ray, press the left mouse button at one of the ray's ends. The end point is captured and the ray will change its direction and length following your mouse cursor. Release the mouse button to stop rotation. To shift the ray press the left mouse button anywhere at the line connecting the end points and move the mouse cursor without releasing the button. The ray will follow the cursor. Release the left button to stop moving the ray.

Use this button if you want to move (shift or rotate) all the rays simultaneously. The Group Move tool works exactly as that for a single ray.

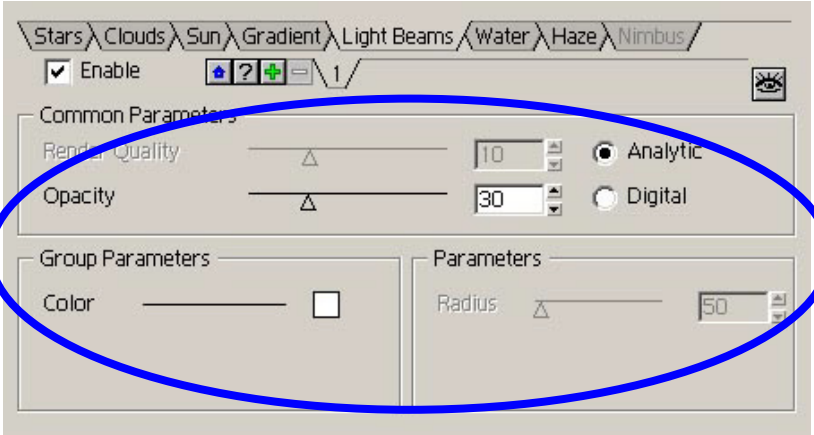
Use this button to delete a ray. When pressed, activates the Delete Ray tool. Locate the mouse cursor over a ray to be deleted and left click at it. The ray is deleted.

Use this button to make a copy of a ray. When pressed, activates the Clone Ray tool. Locate the mouse cursor over a ray to be copied and left click at it. The ray is cloned. Note that the copied ray is located at the same place as the original ray. Use Move Ray button to change the position of the ray clone.

Use this button to temporary hide outlines of the rays in the Camera view (the shaded ray images in the Camera view will still remain).

Common Parameters

Common parameters refer to all the rays regardless on which tab the rays were created. So if you have added two or more groups of rays, changes of these parameters made in any group will automatically be reflected in the other groups.



Opacity - Sets the overall opacity of the effect. Zero opacity makes the effect invisible, while opacity equal to 100 results in very sharp ray boundaries.

Analytic Method - When this is chosen, all the rays will be mere 'cylinders of light'. They will not 'feel' the variations of the opacity in the bitmap layers they intersect.

Digital Method - Although a little bit slower than the Analytic, this method takes into account the opacity variations of the bitmap, which the rays intersect. Use this method to create more complicated rays pattern.

Render Quality - Use this to increase (or decrease) the sensitivity of the rays to the opacity variations of the bitmap they intersect. High values lead to very fine rays pattern although need more computation time.

Group and Ray Parameters

The group parameters refer to a given group of rays and can change from group to group. The Ray Parameters are for each individual ray.

Color - Sets the color of the group of rays.

Radius - Sets the radius of the selected ray.

Light Beam Example

Suppose you have a bitmap with a cloudy sky image. The sun seems to be somewhere behind the clouds at the right top part of the image. We want to add rays of sun shining through the bright breaks in the clouds.

Outside of the plug-in, in Photoshop, let's duplicate the layer. We will call the new layer 'Layer 2'. Make sure Layer 2 is drawn on top of the original layer.

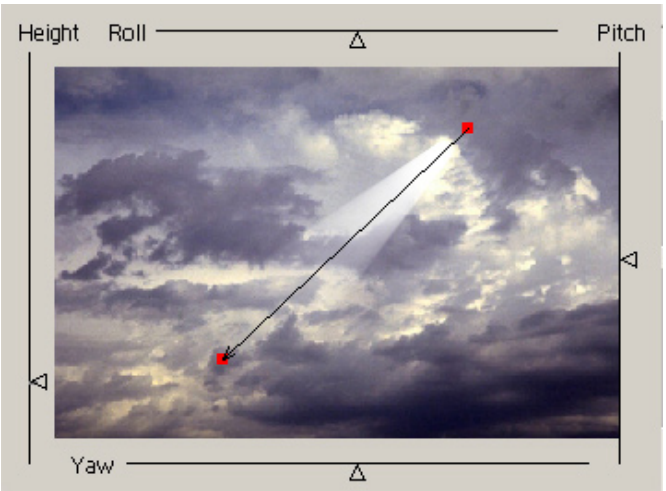
On the Layer 2, we delete the image in those bright places where the clouds seem to be the thinnest. You can do it using, say, the Magic Wand Tool or perform it manually. Then start the Aurora with both the layer and the copy turned ON. Turn OFF all effects.

Select Volume Light tab and check the Enable Effect button. Thus, Volume Light is the only effect, which is now ON.

On the Top View Toolbar press Add Ray button.

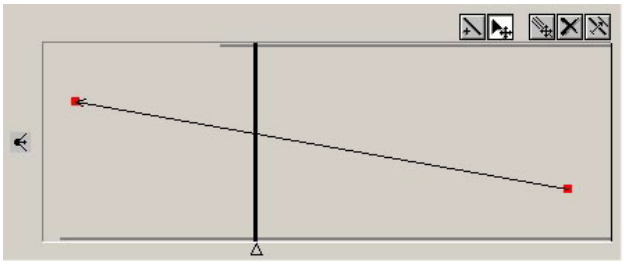
In the Camera View, locate the mouse cursor in the top right part of the image (the sun needs to be) and press the left mouse button.

Draw the line in the direction to the bottom-left as shown in the figure above. Release the button. The ray is created.



Now we have to position the ray using the Top View making it intersect the plane of the layer's copy. Make sure that the Move Ray Tool is active.

In the Top View locate the mouse cursor over the end of the ray (a vertex which the arrow points to) and press the left mouse button.



Move the end of the ray in the direction to the Camera (to the left). Manipulate the end point and origin point of the ray to make it cross the layer's copy (thick vertical line in the middle of the Top View) as shown in the figure above. The ray is located.

Next steps:

1. Set the ray radius to 800 to comprise the essential part of the image.
2. Set the Calculation Method to Digital.
3. Set the ray Opacity to 10.
4. Set the Render Quality to 15.
5. Press the Preview button. The following image will appear in the Camera view:

You can see that the single ray has been broken into several rays as if it is really shaded by irregularities in clouds density. You can easily modify this effect setting different ray parameters or creating different patterns of 'holes' in the layer copy image.

Note that although we have created a cylinder ray, the rays on the resulting image are divergent. This takes place because the Camera View is perspective. The perspective view distorts the real geometry, but it creates more natural images.

Presets

The presets library is a very powerful tool allowing you to make Aurora scenes from scratch with only a few clicks. The library is useful both for experts and beginners. In addition to giving you an introduction to how the effects work, it allows you to learn the reasonable values of different parameters.

You can make presets for the whole scenes or for various effects separately. You can add new scenes into the library, delete or replace the existing ones.

To start the presets library click at 'Presets' button located on the left bottom side of the main Aurora's window. Just the following pop-up window appears:

Interface Elements

Tabs

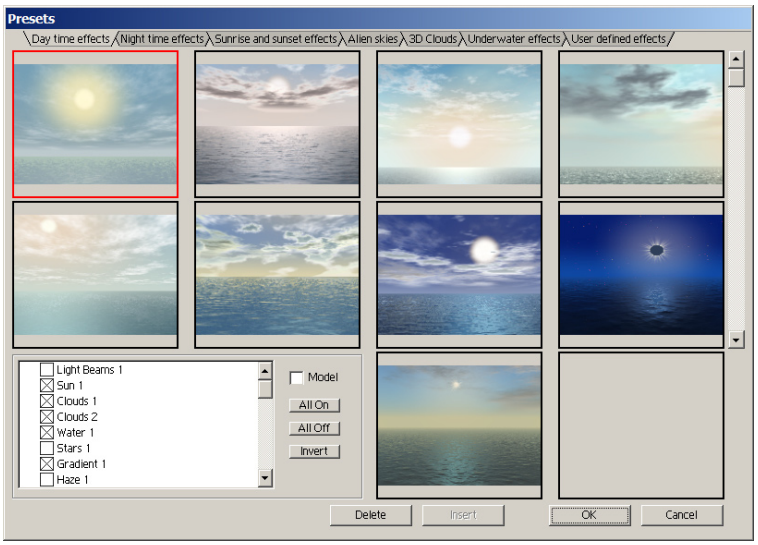
The main library window contains a line with tabs, which is very similar to Aurora's Effects interface. The tabs are organized by what kind of scene they contain.

To switch between tubs simply select a proper tab in the tab line. The title of the selected tab is shown by white color.

Preview Windows

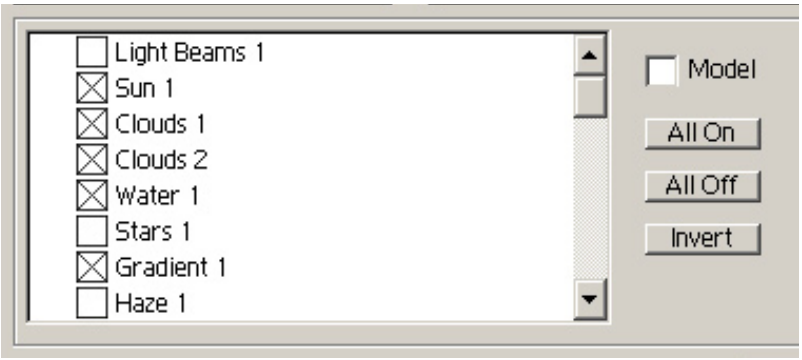
Each tab window consists of ten frames, eight of which represent the library data and two at the bottom are for reference. In the left-bottom frame you can see your original scene rendered. The bottom-right frame is for preview.

There are vertical scroll-bars in those windows that contain more than eight data sets. Like the Variator Interface, each frame is a thumbnail from the camera point of view. You can select any frame and it will be highlighted in red.



Control Panel

The control panel of the presets library is located on the bottom-left side of the main presets window:



Model Check Box - If unchecked (default condition) the library scene will fully replace your original scene (on OK click). When this is checked, only that effect in your original scene will be replaced, which was current at the moment when you started the presets library.

List of Check Boxes - The list of check boxes allows you to choose what effects of the scene in the selected sub-window you can take.

All On, All Off and Invert Buttons - Use these buttons to quickly manipulate with the check boxes in the list.

OK and Cancel Buttons

OK: Click it to move the effects chosen to your scene and close the library window.

Cancel: Click it to return to your original scene without any changes in it.

Working with Presets

Replace Scene

1. To replace your current scene by the scene stored in the library, make sure that
2. Model check box is UNCHECKED.
3. Select the frame you like and press OK.
4. The library window closes and the scene from the library replaces your previous scene.

Note that the new scene contains only the effects that have been checked in the list of check boxes in the Control Panel.

Replace an Effect

To change parameters of one Effect in your original scene, you have to start the library when the effect to be changed is active. That is to say, you should be working with that effect in *Aurora* when you go to the preset page

1. Before you go to presets, go to the screen where the effect you want to work with is normally modified.
2. Check the Model button (at the bottom part of the Control Panel).
3. Make sure in the list of check boxes you can select (deselect) only those effects, which are of the same type with the current effect.
4. In the list of check boxes select the desirable effect (all the other effects of the same type, if any, will be automatically deselected).
5. Click OK. The current effect has been changed.

IMPORTANT: *If the library window is already open and you are not sure that the needed effect was current when you started the library, click Cancel to close the library window. Then select the effect to be changed and start the library again.*

Save Your Scene to the Library

Start the library, select the bottom-left frame of the main library window and make a double click at it. Your scene is saved to the library.

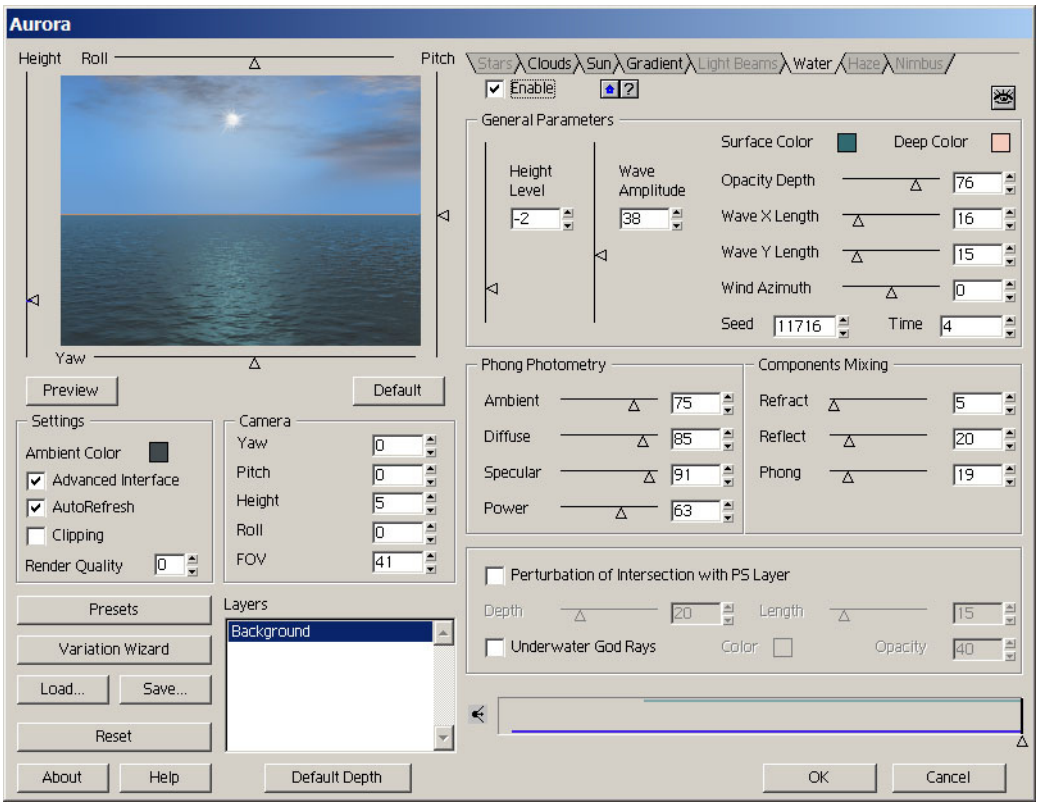
Preview the Effects Chosen

Double click the appropriate frame. The scene will be rendered in the bottom-right frame.

Tip: *The use of presets scenes in the Variator can be very productive. Remember that variations do not repeat so that you may need to save the intermediate promising results. On the other hand, variations of the scenes stored in the library will give you innumerable amount of new versions some of which may be quite far from the original scene and thus might be worth to be saved as a new library item.*

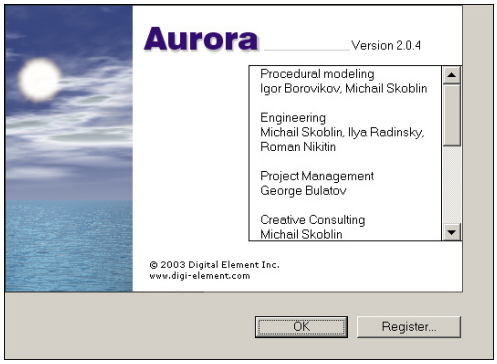
To make your copy of

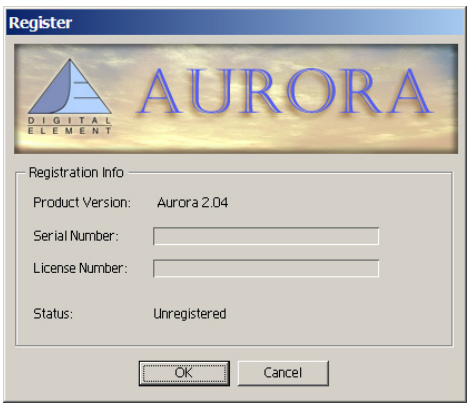
Aurora fully functional you have to type both Serial Number and License Number into the Registration Dialog. When you start Aurora, the main Aurora Interface appears:



In the bottom-left part of the interface, find the 'About' button and click on it. The following dialog appears:

If you click at the Registry button, you will see the Registration dialog:





Type the Serial Number and the License Number into the proper fields and click OK. Your copy is registered.

Registration

Getting the Serial Number and the License Number

You can get your unique Serial Number and License Number in two ways.

First, if you purchased the boxed version, the serial number is included with the package.

Second, if you have downloaded Aurora from Digital-Element site, go to the on-line registration page on the site and follow the directions of the page.

NOTE: *In the About and Registration windows, the AURORA picture are the hot-line link to digi-element.com site.*

Restrictions of Functionality

Demo Version

1. Load/Save function is disabled
2. Adding custom presets is disabled
3. Any rendered image has a red cross added to it.
4. Cannot be registered
5. Reduced set of presets
6. Tutorials are excluded

Unregistered Version

1. Advanced interface is disabled
2. Load/Save functions are disabled
3. 'Reset' button on effects' page is disabled
4. 'Add' button on effects' page is disabled

Aurora was developed and is distributed by Digital Element, Inc. Digital Element is located at 554 56th Street in Oakland, California USA 94609. Digital Element's main

phone line is 510-601-7878.
We can also be reached via e-mail at contact@digi-element.com.

Programming Credits:

Lead Programmer
George Bulatov

Programmers
Michail Skoblin
Ilya Radinsky
Roman Nikitin
Mikhail Makharov

Clouds Programming
Igor Borovikov

Management Credits:

Moscow Director
Dmitri Tolkachev

Project Manager
George Bulatov

President and CEO
Don McClure

Special Thanks:
John Ray

Legal Notices

Notes