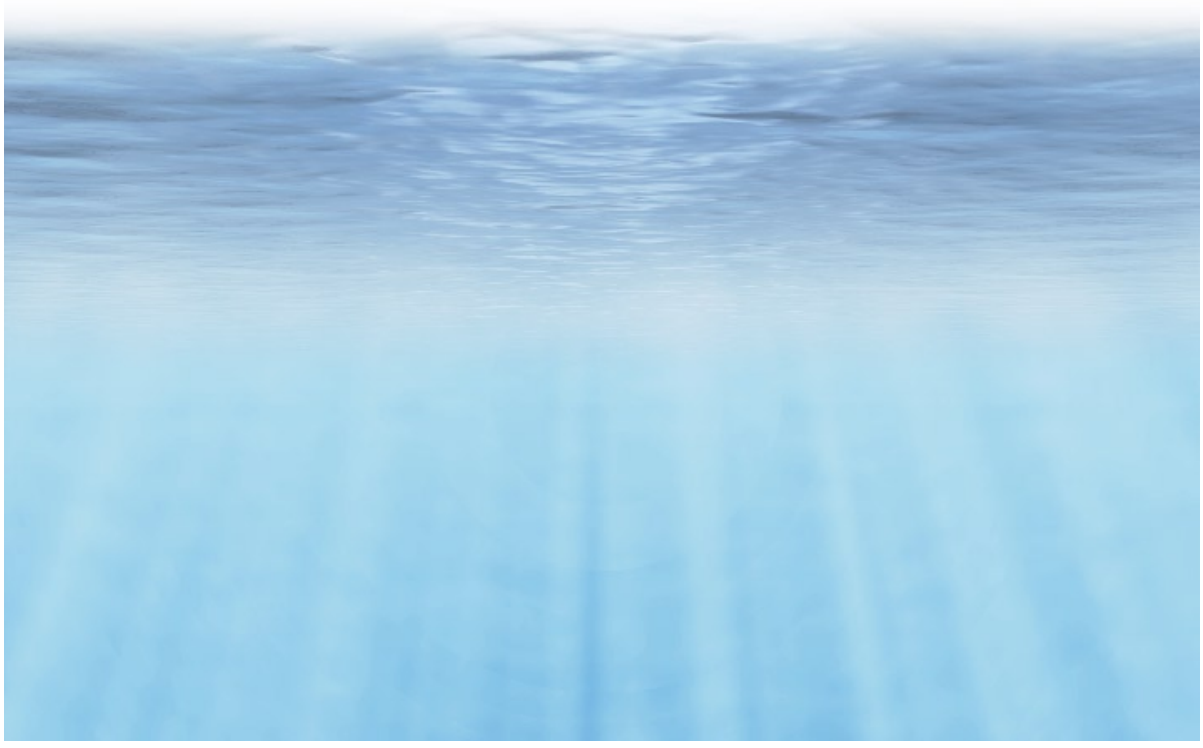
Aurora Water 1.0

User Guide



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Credits

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Welcome to the world of Aurora Water!

Digital Element Aurora Water™ is a revolutionary new plug-in for After Effects, which gives you the power to create photorealistic real 3D environments without the complexities normally associated with 3D graphics programs. When used in conjunction with After Effect's animation tools, Aurora Water offers a high degree of creative power for even the novice After Effects user.

Installation

Setting Up

Aurora Water 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

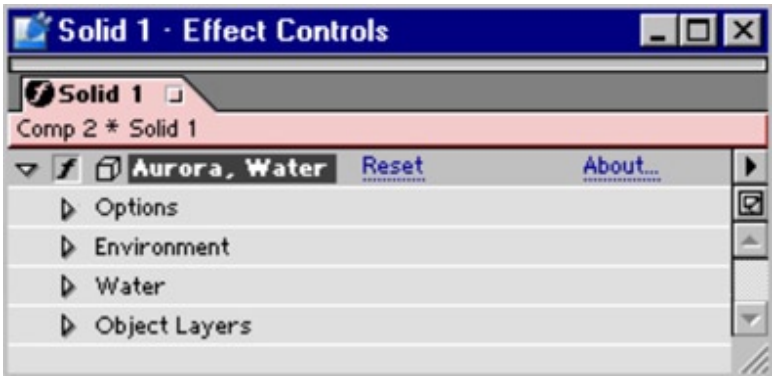
Aurora Water runs on Adobe After Effects 5.0 or later, and works best with any system that meets the recommended requirements for After Effects 5.0. If you have purchased a CD, insert it into the drive and the program should auto-load. If it does not start automatically, then go to menu Start\Run... 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 *InstallAuroraWater.exe*.

After you click on *InstallAuroraWater.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 in an 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 After Effects, then choose the plug-in directory as you target directory. For After Effects, that would default to: Program Files\Adobe\After Effects\plug-in. If you have a custom path to After Effects, then make sure you install in the Plug-in directory under After Effects. The installer will create a DE folder and within it an Aurora Water folder.

Installing the Macintosh Version

If you have bought the packaged version, access the CD and copy file *AuroraWater.sit* from the Mac directory on a CD to a temporary directory on your hard drive. If you have the downloadable version, go to the directory you downloaded the software to. Double-click on *AuroraWater.sit*. Move "AuroraWater" folder to the directory where plug-ins for Adobe After Effects are located (After Effects\plug-in if you chose standard pathways for installing Adobe After Effects).

Aurora Water has a standard After Effects interface. You can access Aurora Water in either the *Timeline* panel or the *Effect Controls* panel.

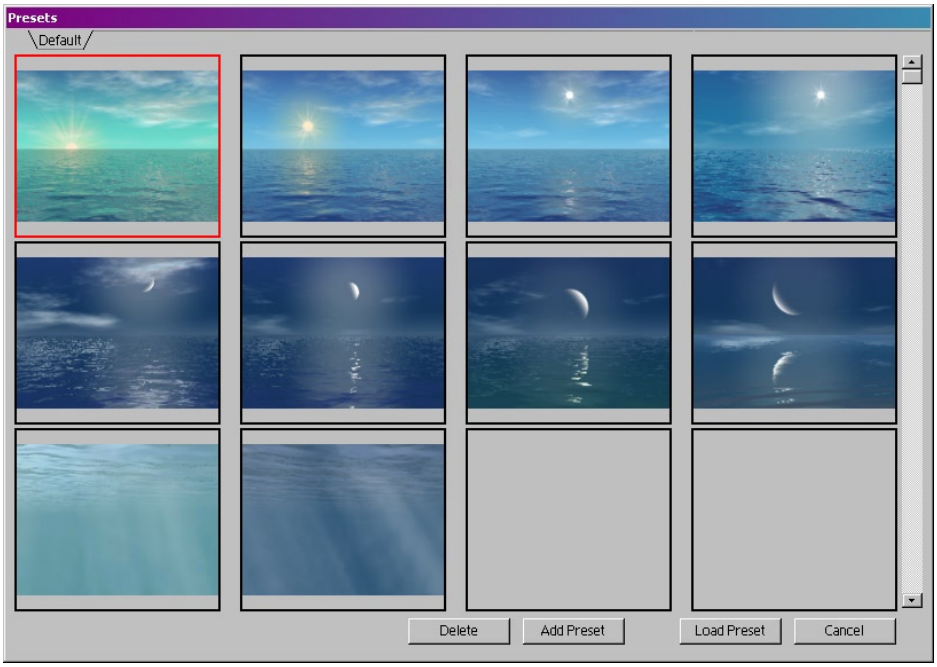


Options

There are three buttons in this group of controls. Use them to refresh the image in the main composition window, to open Presets and to Load Sky elements using **Aurora Sky** output files.

Refresh – This button redraws or 'refreshes' the Aurora Water image. This can be useful if you have made changes in the Timeline but haven't yet created a new RAM Preview.

Presets – Opens a number of pre-made Aurora Water scenes. These can be used to modify an existing scene, or they can be examined and studied for a better understanding of Aurora Water's features.



Load Sky – This feature allows you to load a pre-made sky element created in the **Aurora Sky** plug-in. These files are saved out of Aurora Sky in the ***.dla** file format.

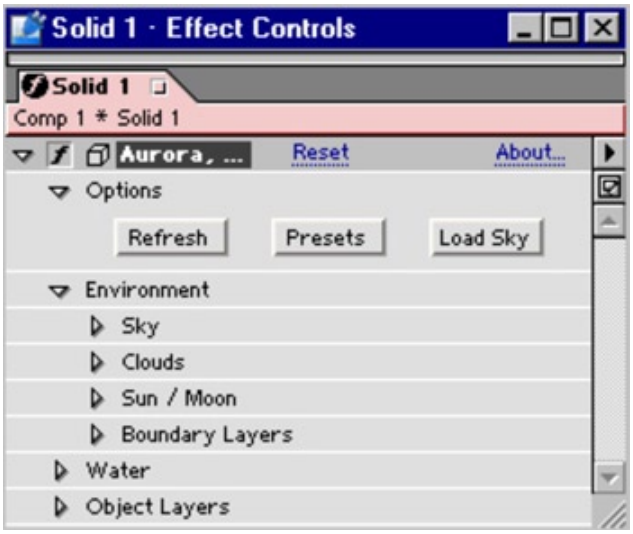
When you click on the *Load Sky* button the standard *Select File* dialog appears. Select any of *.dla files and click *Open*. The file is imported and the scene is automatically refreshed.

To delete an imported sky element, click again on the Load Sky button. When the file requestor opens, click on the *Cancel* button. This will restore Aurora Water's default sky settings.

Note: *Animated sky elements created in Aurora Sky are <u>not</u> saved in the *.dla file. In order to animate the imported sky elements, you'll need to use Aurora Water's animation controls.*

*Additionally, Camera data is not saved in the imported *.dla file. This may cause a sky created in Aurora Sky to appear different when imported into Aurora water. To avoid these potential inconsistencies, manually record the Aurora Sky camera settings (if possible) and recreate them in Aurora Water.*

Environment



The real external world is illuminated by two main sources: the bright, direct light of the sun (or moon), and the softer, more diffuse light from the sky and clouds.

Aurora Water recreates this lighting scheme by building a virtual 'sky dome' over a cubic 3D space. The controls for these virtual spaces are detailed below.

Sky

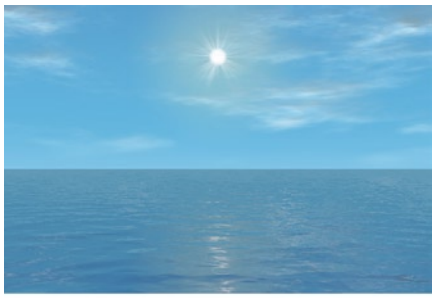
This feature defines the gradual color shift (or *Gradient*) that occurs between the highest and lowest areas of the sky dome. All Sky controls can be keyframed.

Zenith Color – Sets the sky color at a point directly 'overhead'. Click on the Color Picker button to select a color, or use the Eyedropper tool to 'pick up' the desired color directly.

Horizon Color – Sets the sky color below the horizon line. Color can be selected in the Color Picker or with the Eyedropper tool.

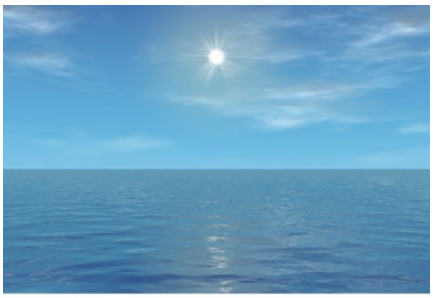
Gradient Softness – Controls the transition between the Zenith and Horizon colors. A low value produces a very sharp transition, while a higher value yields a more gradual color shift.

Sky Gradient 10

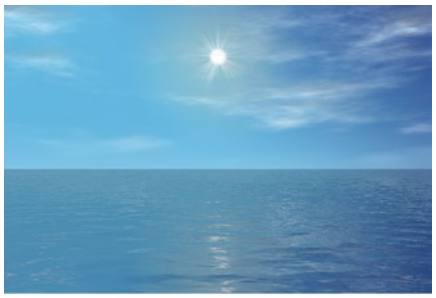


Sky Gradient 90

Roll – Defines the angle (measured in degrees) of the sky dome rotation around its local Z-axis (the default view direction).

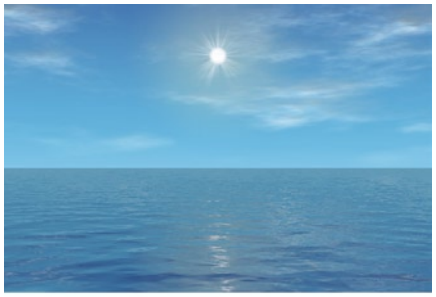


Sky Roll 0°

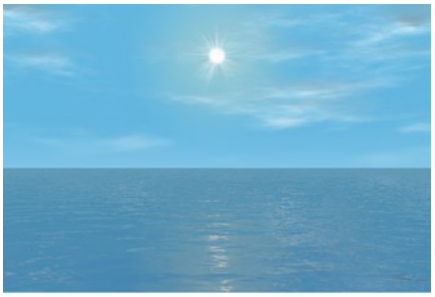


Sky Roll 45°

Pitch – Defines the angle of the sky dome rotation around its local X-axis.

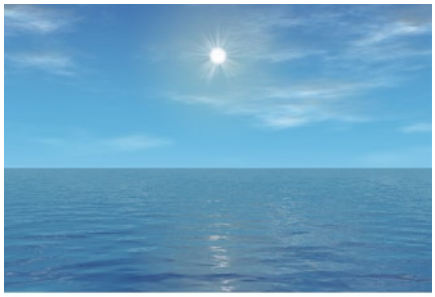


Sky Pitch 0°

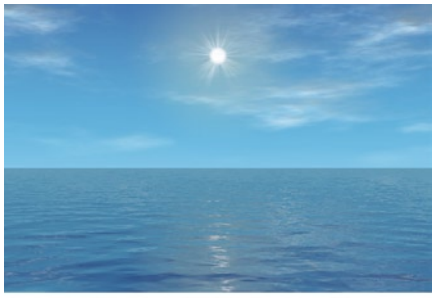


Sky Pitch 45°

Yaw – Defines the angle of the sky dome rotation around its local (vertical) Y-axis.



Sky Yaw 0°



Sky Yaw 45°

Clouds

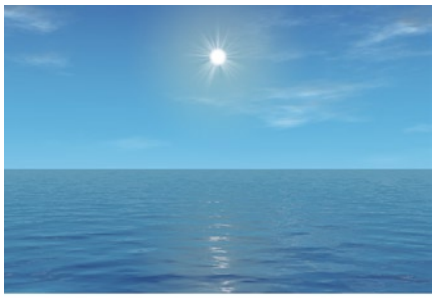
These are basic animation controls for a simple cloud model. More sophisticated clouds can be created in Aurora Sky. Aurora Sky clouds can also be imported into Aurora Water.

Shift X – Defines the depth shift (front to back) of the cloud pattern. The wider the range between the first and last keyframed values, the faster the clouds will move in the final rendered animation.

Shift Y – Defines the horizontal shift (side to side) of the cloud pattern.

Evolution – When keyframed, this feature produces a nice vortex-like cloud 'flow'.

Coverage – Controls the percentage of the sky dome that is covered by clouds. A value of zero will make the clouds vanish entirely. A maximum value of 100 results in a very dense cloud layer, which covers the sky dome almost completely.



Cloud Cover 25

Cloud Cover 75

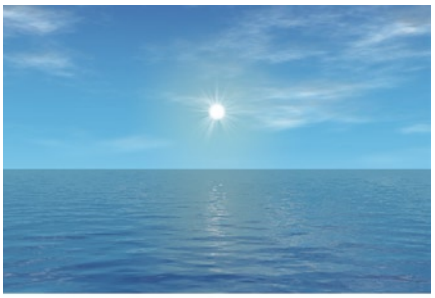
Sun / Moon

This group of parameters allows you to set and control the sun and moon models.

Type of Heavenly Body – This pull-down menu allows you to choose from three Heavenly Body variables:

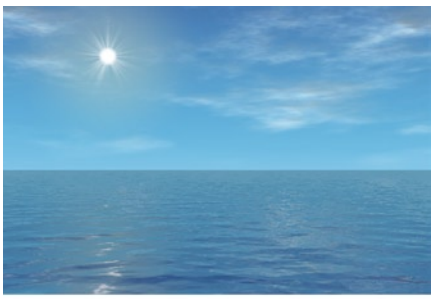
None turns off the model completely.
Sun generates a sun disk with halo and rays.
Moon simulates the moon with variable phases.

Pitch – Sets the elevation angle of the sun (or moon) in the sky. A pitch value of zero makes the heavenly body appear just at the horizon, while a setting of 25 or higher will cause it to appear near the top of the frame or above it.


Sun Pitch 5

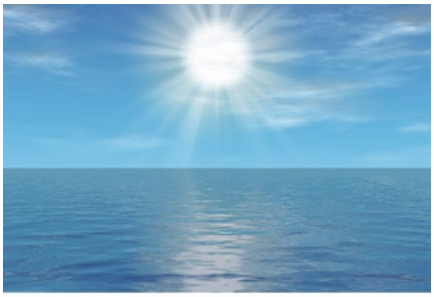

Sun Pitch 20

Yaw – Sets the azimuth angle of the sun (or moon) in the sky.
A zero Yaw setting will make the heavenly body appear just at the center of the frame. A value of 35 or higher will cause it to go out of frame at the left or right (depending on whether the value is negative of positive).


Sun Yaw 10


Sun Yaw 20

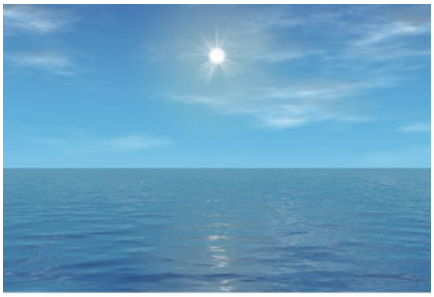
Radius – Defines the size of the heavenly body as it appears in the frame.



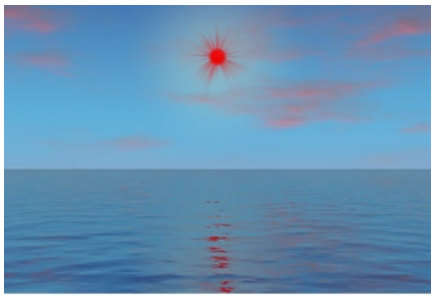
Sun Radius 10

Sun Radius 40

Color – Sets the color of the sun or moon. The color can be set with the Color Picker, or selected directly with the Eyedropper tool. The color can even be keyframed to shift over time. Once a new color is set, its illumination effect on clouds and water will also be updated.



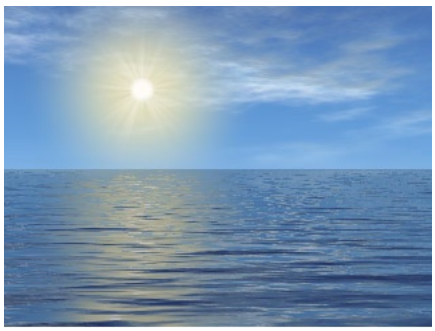
Color White



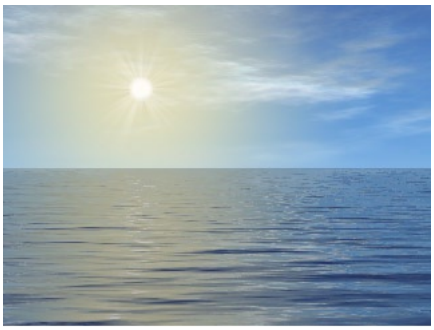
Color Red

Halo – This group of controls allows you to change halo parameters around the disk of the heavenly body:

Radius – Sets the size of the glow around the sun or moon, measured from its center.

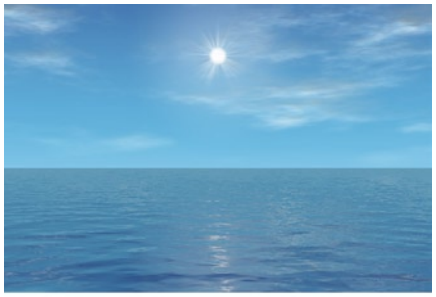


Halo Radius 30

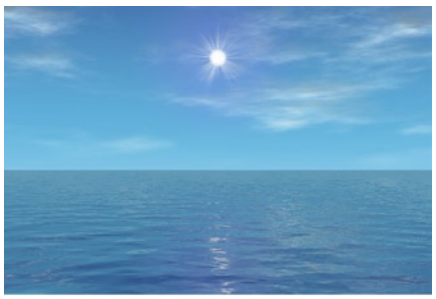


Halo Radius 60

Color – Use the Color Picker or Eyedropper tool to select a separate color for the Halo.

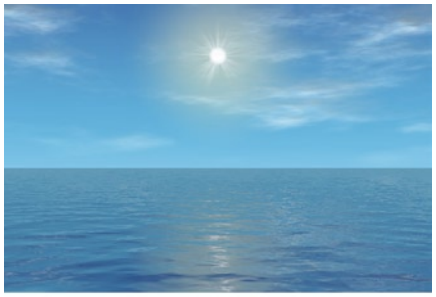


Halo White



Halo Blue

Opacity – Controls the transparency of the Halo.

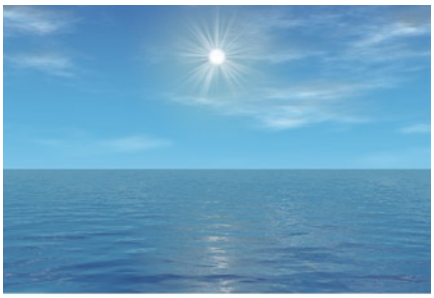


Halo Opacity 50

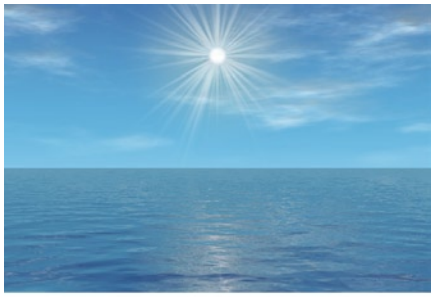
Halo Opacity 100

Rays Around Sun – This control group simulates a lens flare effect for the sun disk. This control is disabled when the Type of Heavenly Body is set to *Moon* or *None*.

Radius – Sets the length of the 'rays' extending from the Sun disk, measured from its center.



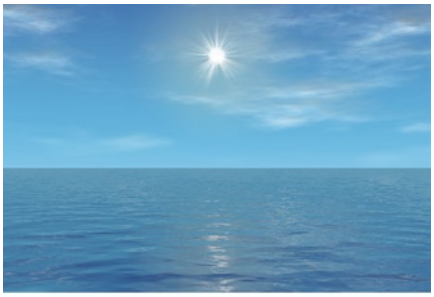
Rays Around Sun Radius 10



Rays Around Sun Radius 20

Opacity – Sets the transparency of the rays.

Rays Around Sun Opacity 40



Rays Around Sun Opacity 90

Moon

These controls are only available when *Type of Heavenly Body* is set to *Moon*.

Phase – Determines the phase of the moon, by percentage of visibility. A setting of zero will show a 'new moon' phase, with no moon visible at all; a setting of 10 to 20 will show a crescent moon; a setting of 25 to 30 will show a half moon; 30 to 40 will show a gibbous (waxing) moon, and 40 to 50 will produce a full moon; values above 50 will show the 'waning' phase, from full moon back to new moon.

Moon Phase 20

Moon Phase 30

Moon Phase 50

Rotation – Changes the moon's angle around its depth axis (the axis pointing directly into the camera view).

Rotation 0

Rotation 45

Rotation 90

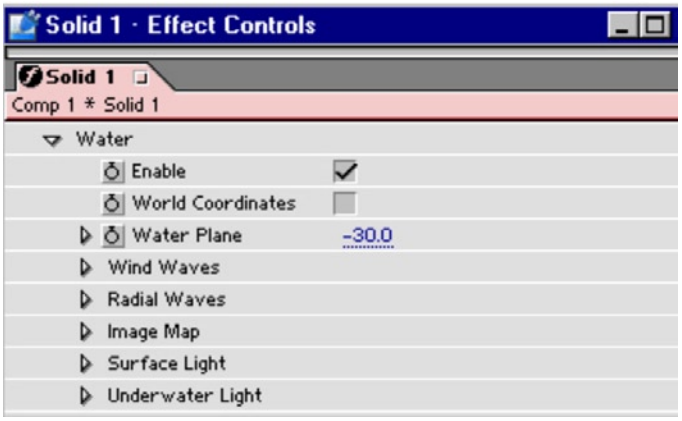
Image – Allows you to import an image onto the moon's surface.

Boundary Layers

Top, Bottom, Left, Right, Front and Back Layers. This feature allows you to assign image maps to the corresponding sides of the Environment Cube. You can set any image to the virtual environment using the Cubic Environment Map. Full definition of the Map requires six layers to be set. However, if you need only a part of the environment, some sides of the cube can remain unassigned.

Note: *By mapping images to the Boundary Layers, a seamless sky dome will not be generated automatically. Setting proper boundary maps is the responsibility of the user.*

Water



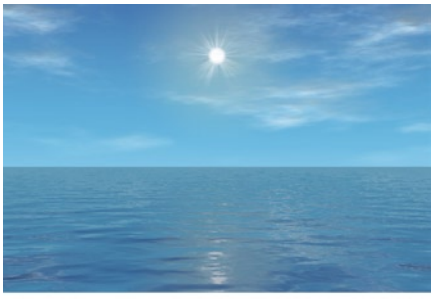
This group of controls allows you to edit parameters of the water surface model.

Enable – When checked, this enables the water to be visible and to be rendered in the scene.

World Coordinates – When this control is set to OFF, the Water Plane is placed at the center of the composition window. When set to ON, the Water Plane is offset positively (upwards) on After Effects' World Coordinate Y-Axis.

Water Planes – This control sets the water level in the composition window. A positive value places the water 'higher', as if it were overhead. A negative value lowers the water level (as if one were flying over it).

Water Plane -10



Water Plane -20

Wind Waves – This group of parameters controls the irregular waves on the water surface, as well as their intensity and animation.

Wind Direction – This control sets the azimuth of the 'wind', causing the waves to move in this direction. A Wind Direction azimuth of zero will direct the waves along the Z-axis of the world After Effects coordinate system (straight 'toward' the composition window).

Wind Direction -55°

Wind Direction -90°

Amplitude – Determines the strength or apparent 'height' of the waves. Lower settings will produce a calmer, smoother water surface, while higher settings will simulate rougher, choppier water.

Wind Amplitude 5

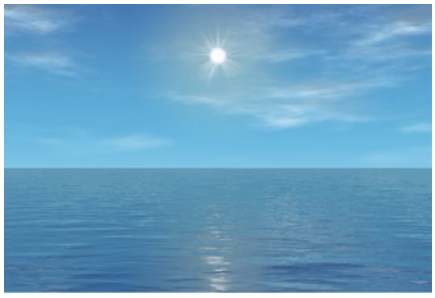
Wind Amplitude 80

Wavelength – Set the distance between waves, along the direction of the wind.

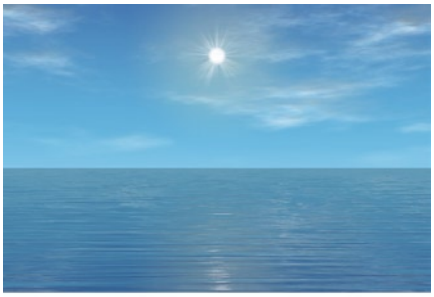
Wavelength 20

Wavelength 60

Cross-Wave Width – Controls average wave width, perpendicular to wind direction.



Cross Wave Width 20



Cross Wave Width 50

Animation Time – Sets the Wind motion variables for the waves over time.

Random Seed – Sets the initial wave pattern on the water surface by means of a random number generator. **Note**: *this variable cannot be keyframed*.

Radial Waves

Aurora Water allows you to simulate interaction of the water surface with other elements in the virtual scene (*see also 'Object Layers'*). If a layer's position is animated and its Anchor Point intersects the water surface, radial waves (ripples) are automatically generated from the intersection point. The following parameters control the intensity, size and speed of propagation for these waves.

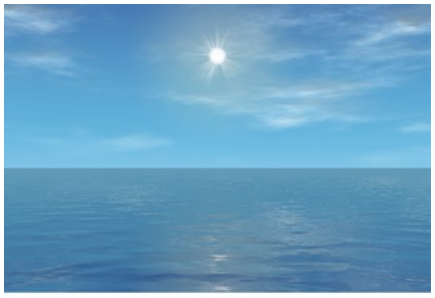
Wave Source – This pull-down menu allows you to select from three source options:

None - Disables Radial Waves.

Stochastic (Rain) - Produces a wave simulation of the type caused by falling rain droplets bombarding the water surface.
Note: *the droplets themselves are not visible*.

Object Layers - Makes the water surface sensitive to the Object Layer, where the layer's Anchor Point intersects the water plane.

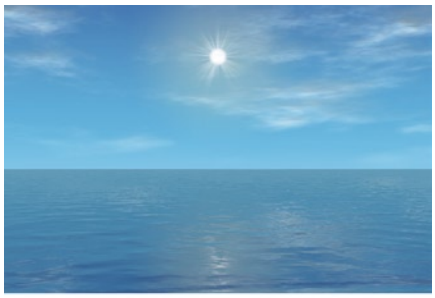
Amplitude – Defines the visual height of the radial waves, with the height of radial waves decreasing as the wave propagates away from its source.



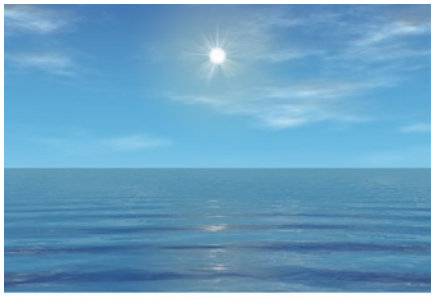
Radial Wave Amplitude 5

Radial Wave Amplitude 80

Wavelength – Sets the distance between the sequential wave crests.



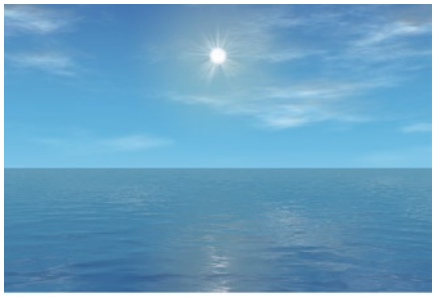
Radial Wave Wavelength 20



Radial Wave Wavelength 70

Period – Controls the time span between sequential waves.

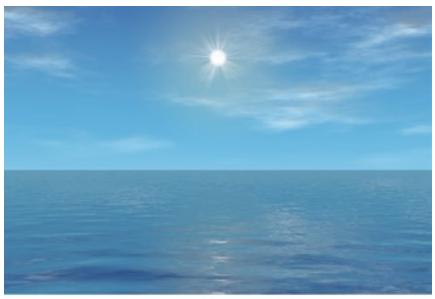
Number of Waves – Determines the number of sequential waves radiating from each rain droplet or Object Layer intersection.



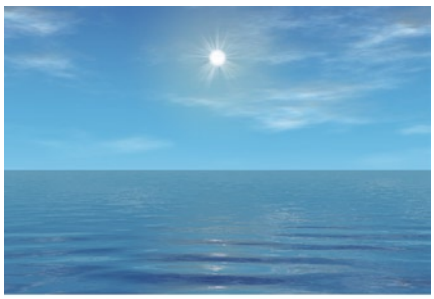
Number of Radial Waves 1

Number of Radial Waves 5

Rain Density – Sets the number of rain drops per second falling onto the Water Plane. A zero value produces almost no rainfall, while a maximum setting of 100 will simulate a downpour.



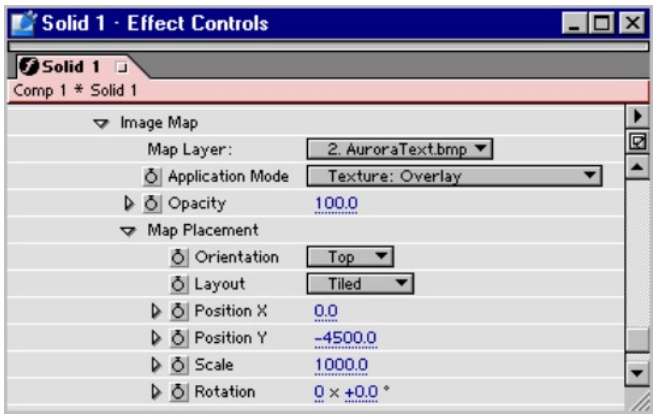
Rain Density 10



Rain Density 50

Note: *This feature is only enabled when the Stochastic (Rain) option is selected.*

Image Map

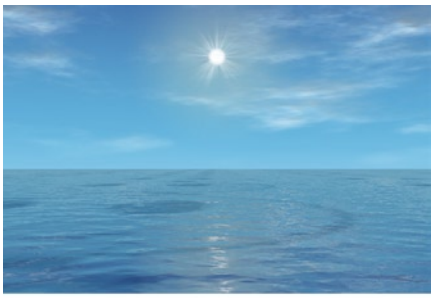


This feature allows you to project any pixel-based image onto the water surface. The parameters listed here include controls for image placement, scaling, rotation and tiling.

Map Layer – This pull down menu lets you select from any image imported into the Composition window or Timeline.

Application Mode – Controls the way in which the Image Map will interact with the layer of surface beneath it. Similar to the *Blending Mode* in Adobe Photoshop.

Opacity – Sets the overall transparency of the Image Map.



Water Image Map Opacity 25

Water Image Map Opacity 100

Map Placement – Controls the position, size and rotation of the Image Map.

Layout – Can be *Normal*, *Tiled* or *Clamped*.

Normal – Places a single copy of the Image, covering a part of the Water Plane.

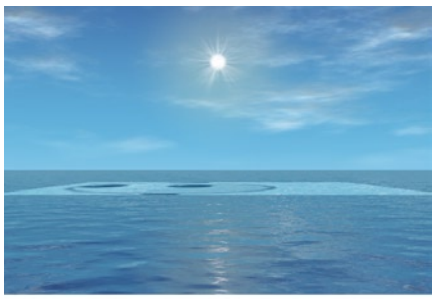


Image Map Layout - Normal

Tiled – Causes the Image to repeat horizontally and vertically, effectively covering the entire Water Plane.

Image Map Layout - Tiled

Clamped – Places a single copy of the Image, but imposes an invisible ‘ boundary line’ around it. This area is equal to the Image’s original size and proportion, so if it is re-positioned, re-scaled or rotated, it will not appear past this boundary.

Image Map Layout - Clamped

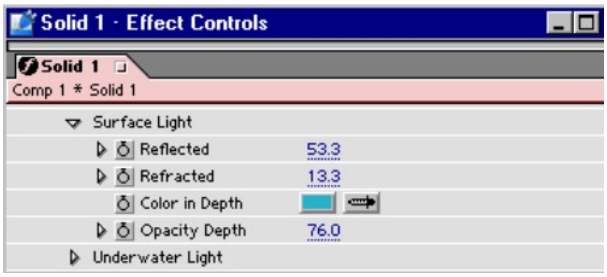
Position X – Defines the image’s local horizontal position (side-to-side) on the Water Plane.

Position Y – Defines the image’s local depth position (front-to-back) on the Water Plane.

Scale – Controls the size of the Image Map on the Water Plane.

Rotation – Changes the angle of the Image Map, which is rotated around Aurora Water's vertical axis.

Surface Light – These parameters control surface shading for the Water Plane. The Water Plane *surface* does not have its own 'native' color. Rather, its apparent color is actually a combination of two different factors: reflected light *(from above)* and refracted light *(from below)*. In nature, the physical laws that govern the interaction between light and water are fixed. In Aurora Water offers you more control over these properties.



Reflected – Controls the amount of light reflected from the water surface. A lower value will reduce the amount of reflected light, resulting in a darker water surface. A higher value will make the water surface appear almost mirror-like.


Surface Light Reflection 20


Surface Light Reflection 80

Refracted – Controls the amount of light that penetrates the water surface before returning to the camera. This light is visible in the shadowed (non-reflecting) parts of the water surface. A lower value diminishes this effect, while a higher value enhances it.


Surface Light Refraction 0


Surface Light Refraction 80

Color in Depth – If a light ray travels a sufficient distance underwater, its color data can be 'overridden' with a user-defined color. The **Color in Depth** setting allows you to determine this color, either with the Color Picker or with the Eyedropper tool.

Color in Depth - Default

Color in Depth - Red

Opacity Depth – This controls the distance a refracted light ray must travel, before its color is overridden by the **Color in Depth** setting.

Opacity Depth 20

Opacity Depth 80

Note: *This setting is not expressed as a distance unit (i.e. meters, feet, etc.), but as a percentage of a fixed mathematical value.*

Underwater Light

When light rays penetrate the water surface from above, they illuminate the dense particulate matter (dirt, salt, microscopic organisms, etc.) common to the underwater environment. The **God Rays** sub-feature simulates this phenomenon.

God Rays Opacity – Defines the transparency of the God Rays, with a high value filling the frame with rays, and a zero value effectively turning them off.

God Rays Opacity 30

God Rays Opacity 80

Note: *Because God Rays are produced by wave action on the water surface, be sure to use an appropriate* ***Wave Amplitude*** *setting; approximately 80 to 100 is a good place to start. To animate the rays, create starting and ending keyframes for* ***Animation Time*** *and use different values for each keyframe.*

Another underwater phenomenon is *caustics*. This occurs when light rays are bent by the water surface, and shifting patterns of light bands appear below (like at the bottom of a swimming pool). The Caustics sub-features recreate this real-world optical effect.

Note: *In order for the Caustics efffect to be visible, you will need to place an active Object Layer below the Water Plane (see also:* ***Object Layers****)*.

Caustic Opacity – Sets the transparency of the Caustics effect projected onto the underlying Object Layer.

Caustic Opacity 40

Caustic Opacity 100

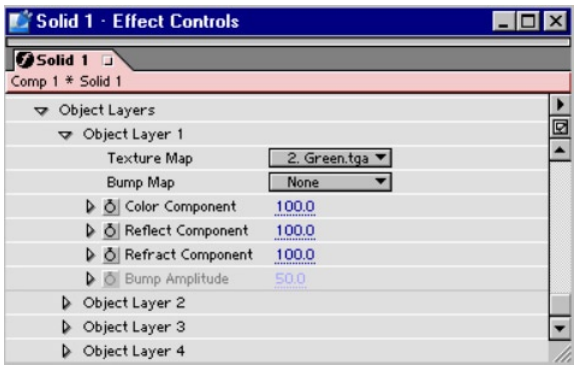
Caustic Width – Controls the width of the 'light bands' in the Caustics pattern.

Caustic Width 10

Caustic Width 90

Color – Sets the color of both the God Rays, as well as the Caustics effect.

Object Layers



You can add non-water elements to Aurora Water by using the **Object Layers** feature. Once enabled, these layers can be animated and otherwise modified in the scene. The layers will cast reflections on the water, and will generally be more believably integrated into your Aurora Water environment.

To enable an Object Layer, you will need to add a new Solid/Layer to your timeline, and then define it with the '3D' modifier in After Effects' Layers pull-down menu.

Texture Map – In order to be visible, an Object Layer needs a texture map assigned to it. This process is similar to the Image Map feature discussed earlier in this manual. The pull-down menu will offer a choice of image files available in your composition.

Additional Texture Map notes:

- The size of the Texture Map (as well as the Object Layer) will be determined by the size of the new 3D layer

*- Your Texture Map image file will need an **Alpha Channel**, otherwise it will appear as a flat rectangular card. For more information about alpha channels, see your Adobe Help file.*

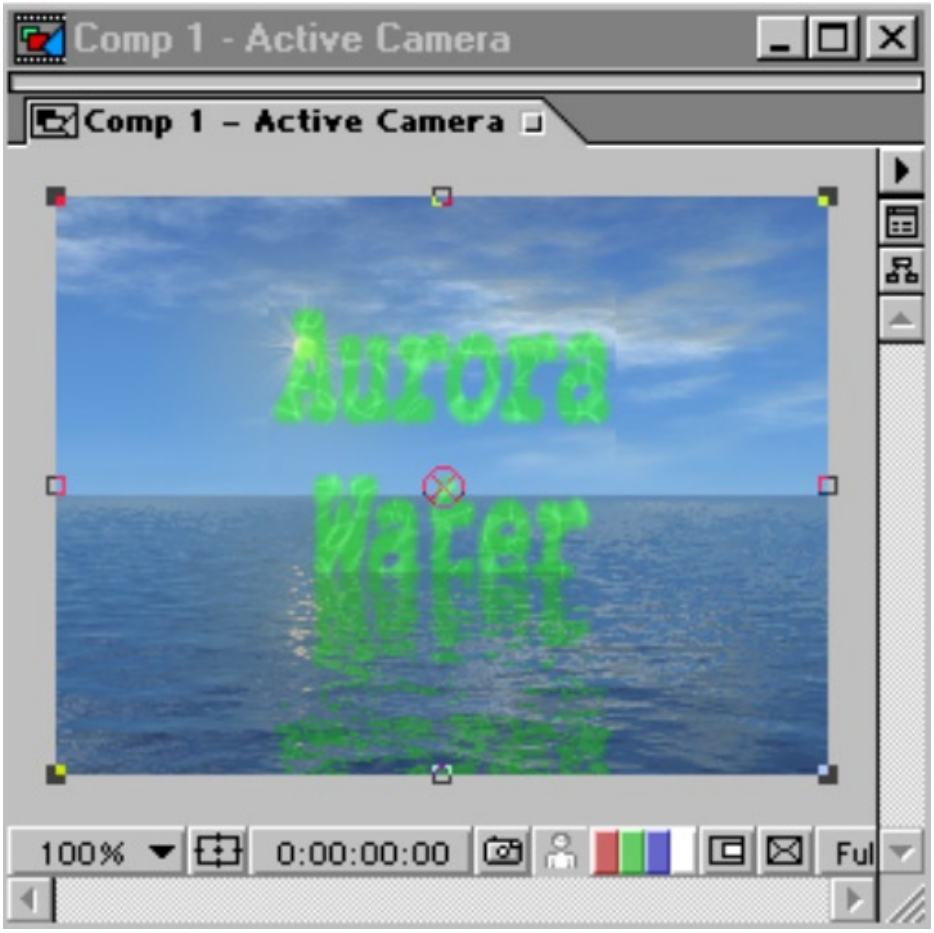
Bump Map – Although your Object Layer is a 3D element, its Texture Map is a 2D element. It is possible to simulate a small amount of 3D surface depth by assigning a Bump Map.

Color Component – Controls the Texture Map's original color.

Reflect Component – Controls the Object Layer's ability to reflect light from within the Aurora Water environment.

Refract Component – Controls the Object Layer's ability to refract light from within the Aurora Water environment.

Bump Amplitude – This parameter allows you to control the strength of the bump. A zero setting will result in the flat image, while a value of 100 will provide the maximum possible bump relief.



To better familiarize ourselves with the tools and features in Aurora Water, let's run through a quick exercise.

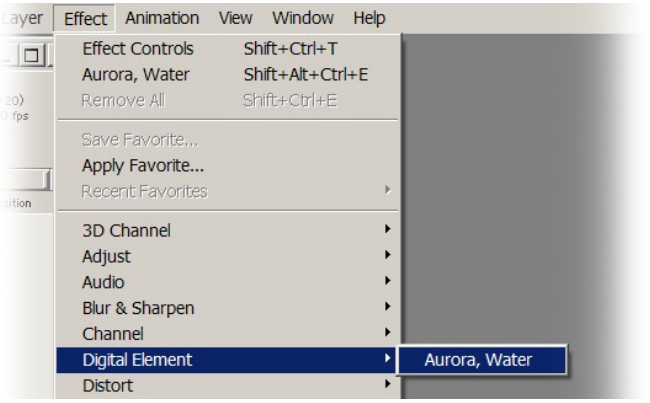
Note:
This tutorial assumes the reader has a basic working knowledge of After Effects 5.0 or later.

1. In After Effects, create a *New Project* and a *New Composition*.

2. In the *Composition Settings* window, use the **Medium**, **320x240 preset**, and change resolution from **Full** to **Half**. Leave the other settings at their default values. Click OK.

3. In the *Timeline*, Add a new Solid layer. In the *Solid Settings* panel, click on **Make Comp Size** and click OK.

4. Click on the *Effect* pull-down menu and select **Digital Element > Aurora Water** to open the *Effect Controls* panel.



The default Aurora Water scene is applied to the **Solid 1** layer.

5. Add a new Camera, and set the Composition window to display its view.

6. When producing any kind of animation, it is essential to start with a plan. Our plan is to use Aurora Water's default settings as a sort of 'end state' representing mid-day; then we'll work backwards to the 'beginning state' and modify the default settings to produce a pre-dawn appearance. The finished result should look like a sunrise viewed at time-lapse speed.

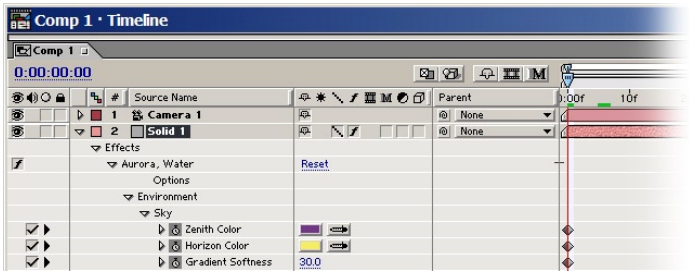
7. Move the Time Marker to frame **0:00:04:29** (the last frame in our scene).

8. In the Effect Controls panel, click on the *Environment* expand-arrow to access its control sets. Click on *Sky*'s expand/ collapse arrow to access its controls.

9. Click once on *Zenith Color's* 'stopwatch' icon to set a keyframe. This will 'freeze' its values at this point in the Timeline.

Note:
Be sure to click the icon once; if it is clicked twice the keyframe will be deleted.

10. While we're still at frame **0:00:04:29**, set keyframes for *Horizon Color* and *Gradient Softness*.



11. Now move the Time Marker to frame **0:00:00:00**. Click on *Zenith Color's* color picker and select a purple hue. A keyframe will be generated automatically for this new color setting, at this frame. To view and access the keyframes for this control (or any other), go to the Timeline and use the Effects expand/collapse arrows for the Solid 1 layer.

12. Set Horizon Color to a bright orange-yellow hue, and set Gradient Softness to **30**.

13. If you want to watch the color shift in your Sky, press the Space Bar to generate a RAM preview in the Composition window.

14. Let's continue by modifying the **Sun / Moon** object. Make sure *Type of Heavenly Body* is set to **Sun**. Increase the Sun's *Radius* value to **5.0**. No keyframe is necessary for this value, as it will remain constant.

15. Return the Time Marker to **0:00:04:29** and set *Pitch* to **25**; set *Yaw* to **–13**. Keyframe the value for both of these controls.

16. At frame **0:00:00:00**, set *Pitch* to **–3** and *Yaw* to **15**.

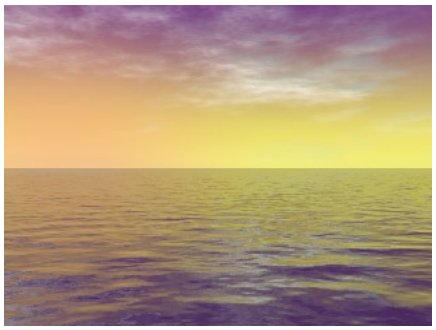
17. Return the Time Marker to **0:00:04:29**. Under *Sun* > *Halo*, set keyframes for the default values of *Radius*, *Color* and *Opacity*.

18. At **0:00:00:00**, set *Radius* to **60**, change *Color* to a reddish-orange hue, and increase *Opacity* to **72**.

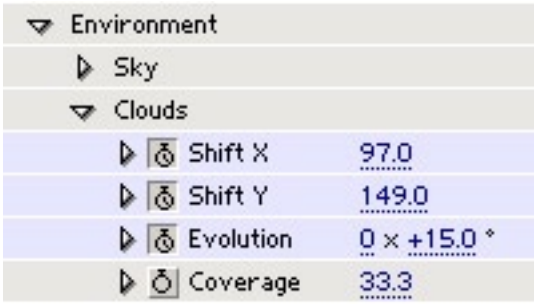
19. For an added touch, set some keyframes for the *Rays Around Sun* controls:

At **0:00:00:00**, set both *Radius* and *Opacity* to **0**;
at **0:00:04:29**, set *Radius* to **13**, and *Opacity* to **62**.

20. Make another RAM preview to check your work.



21. Now that our Sun is rising properly, let's set our clouds in motion.
Expand the *Clouds* set, and keyframe the following controls at **0:00:00:00:**

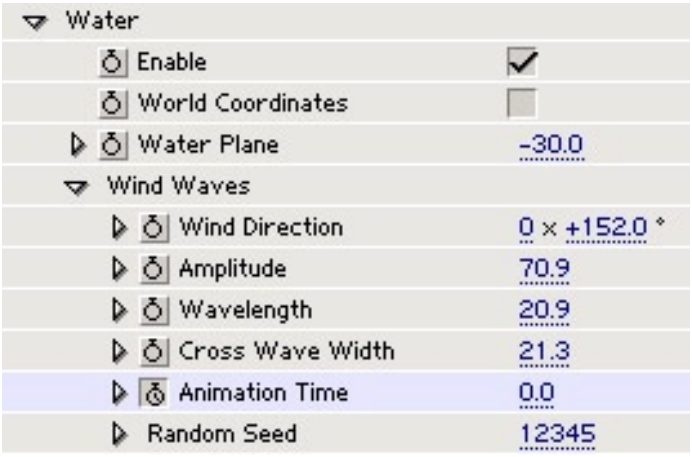


Shift X= **97;** *Shift Y*= **149;** *Evolution*= **15.**
Set *Coverage* to **33**, but don't keyframe it.

22. At **0:00:04:29**, set the following values:

Shift X= **97;** *Shift Y*= **149;** *Evolution*= **15.**

23. Now would be a good time to save your After Effects project file.

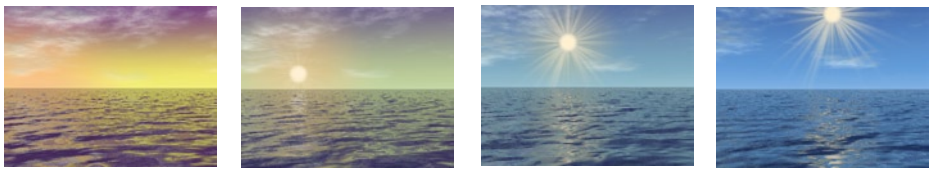


24. Good. Our clouds are moving across the sky. We need to make the water move as well. Let's make some adjustments to our water controls (these changes will not be keyframed):

Wind Direction = **152**; *Amplitude* = **70**; *Wavelength* = **20**; *Cross Wave Width* = **21**.

25. For *Animation Time*, keyframe a value of **0** at frame **0:00:00:00**, and **100** at **0:00:04:29**.

26. Let's make a new RAM preview of our scene. If you are happy with the way the sky and water elements are moving, export the scene as an animation for later viewing.



27. For the last part of our exercise, we will keyframe our camera so that it descends beneath the water surface. Select *Camera 1* and its *Position* control. Because we'll only be moving the camera vertically, we will only change the Y-axis variable (this is the 'middle' number in the control).

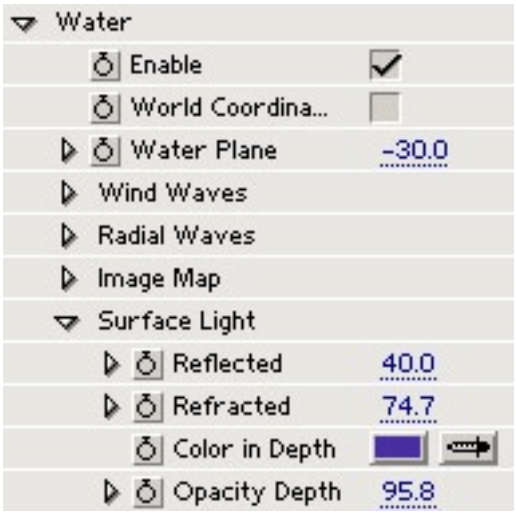
28. At **0:00:00:00**, set *Position (Y)* to **120**. At **0:00:04:29**, set it to **162**.

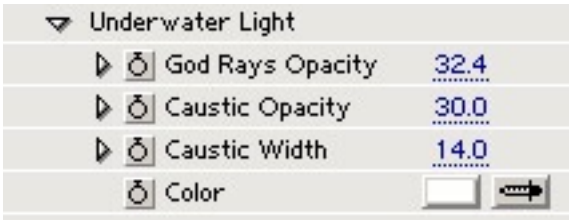
29. Change Camera 1's *Speed: Position* setting to **17.64 pixels/second**. This will 'smooth' its rate of descent.

30. Now that our view is 'submerged' toward the end of our animation, let's adjust some of the scene's underwater characteristics. Reselect the **Solid 1** layer, if necessary. In the Effect Controls panel, select and expand the *Water* controls group.

31. In the *Surface Light* controls group, make the following adjustments (it will not be necessary to keyframe them):

Reflected = **40**
Refracted = **74.7**
Color in Depth: pick a deep blue color
Opacity Depth = **95.8**.

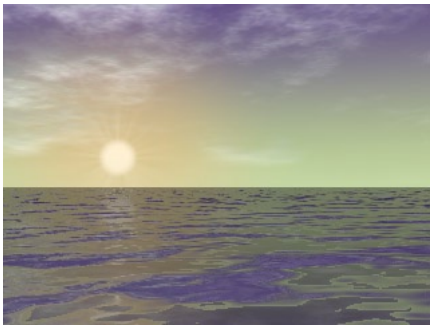


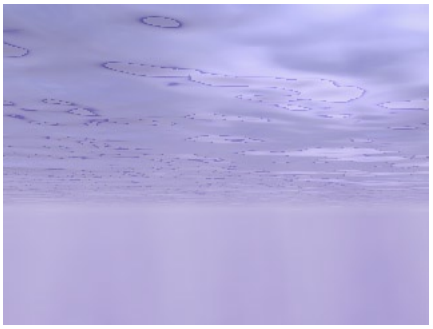


32. In the *Underwater Light* controls group, set *God Rays Opacity* to **32.4** (do not keyframe this value).

33. Make a new RAM preview. In order to conserve memory resources, and to render more quickly, you may need to lower resolution in the Composition window from **Half** to **Quarter**.

If you are satisfied with the results of your preview, save your project again and export it as an animation.



Congratulations! You've just created your first scene with Aurora Water. This QuickStart exercise is only a brief introduction to the power and versatility of Aurora. Watch Digital Element 's website for more Aurora Water tutorials.

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