Caustics and Underwater Scenes in Vue

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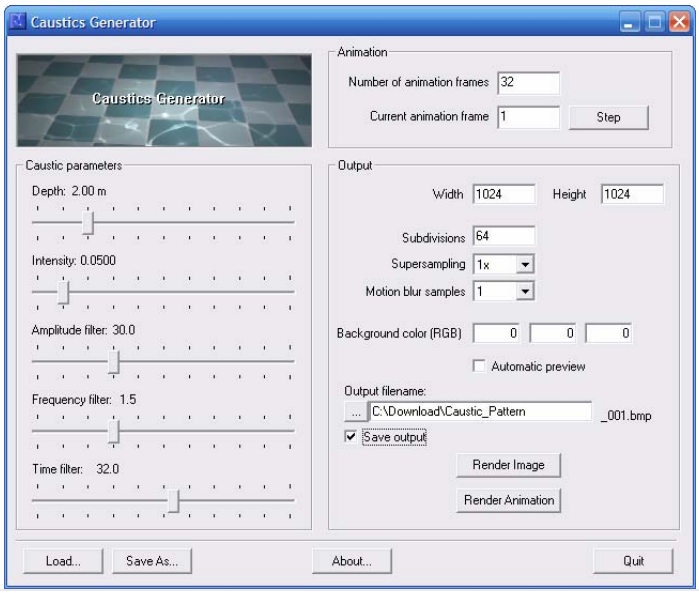
Caustics are formed by a light source shining or being reflected through a curved surface(s). The light pattern cast onto the bottom of a pool is an example of caustics. Vue can not generate “true” caustics; we need to use a light gel in order to create the caustic pattern. This tutorial will help in creating the caustic pattern and applying it to a light source.



First we will need a good caustic pattern – preferably 1024x1024. You can use any black and white image or you can create your own.

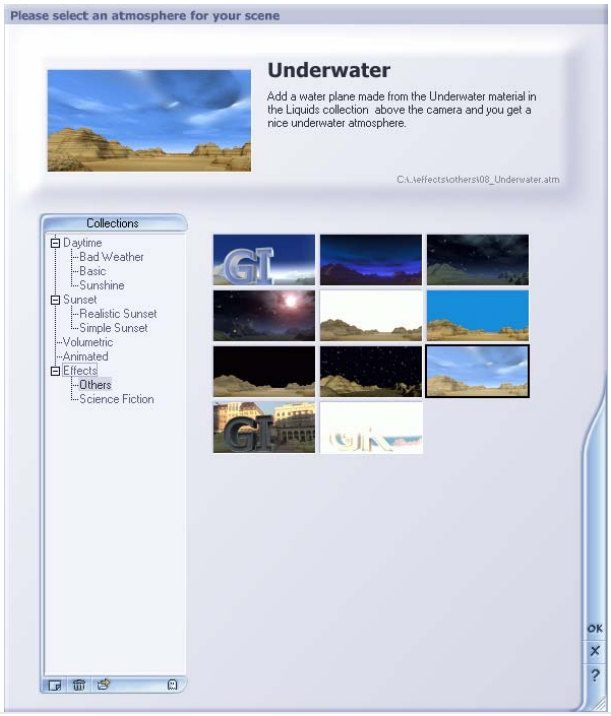
Use the Caustics Generator program available from http://www.lysator.liu.se/~kand/caustics/ to generate a 1024x1024 caustic pattern.

Set the **Width** and **Height** to 1024.

Set the **background color (RGB)** to 0.

Select the **Output filename** and location.

Select the **Save output** box and press **Render Image** once you have a pattern you like.

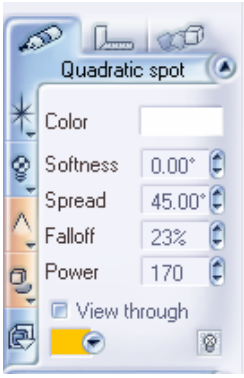


Start Vue and load the atmosphere called **Underwater** from the **Effects**, **Others** atmospheres. This provides a good starting point for our atmosphere.

Create a sphere and move it just above the ground plane. This will help us set up the shadows.

Now create a water plane and move it up above the camera and ground plane.

Make the water plane Eco friendly by clicking the small icon that looks like a plant. This makes it possible to use an eco system that will populate while under the water plane.

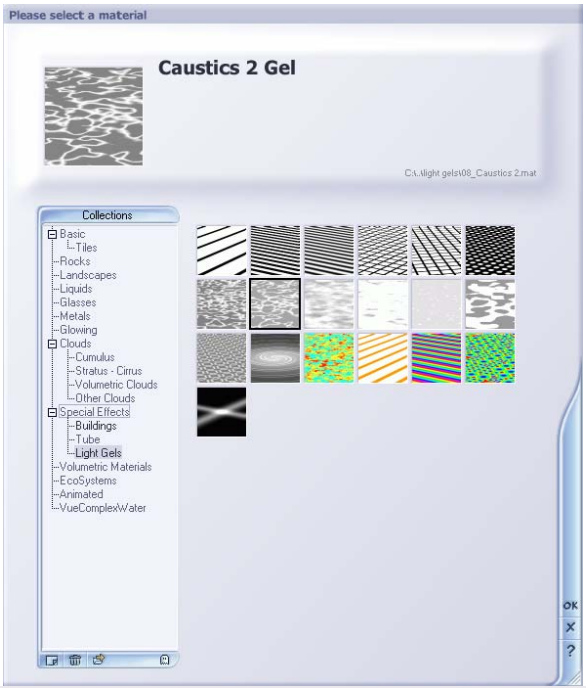


Create a Quadratic spotlight and place it above the water plane. Angle the light so it shines onto the sphere.

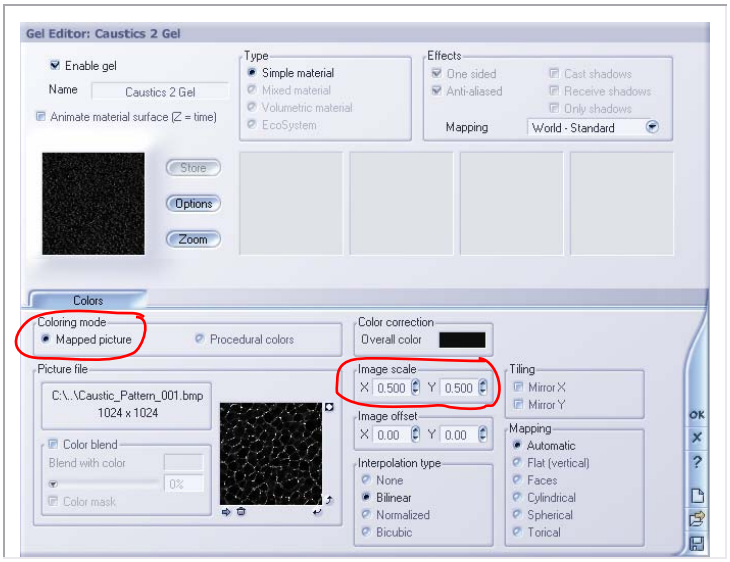
Remove the Lens Flare.

Make the spotlight **Volumetric**.

Adjust the **Power**, **Spread**, and **Falloff** to get a very bright light pattern. Don't worry that it is too bright; the light gel will reduce the light significantly…



Click the **Light Gel** icon to add a gel to the spotlight. Choose any of the light gel patterns or a simple texture (not a mixed material – they can't be used as a light gel). We won't be using this pattern, but we just need to select one so we can modify it in the next step.

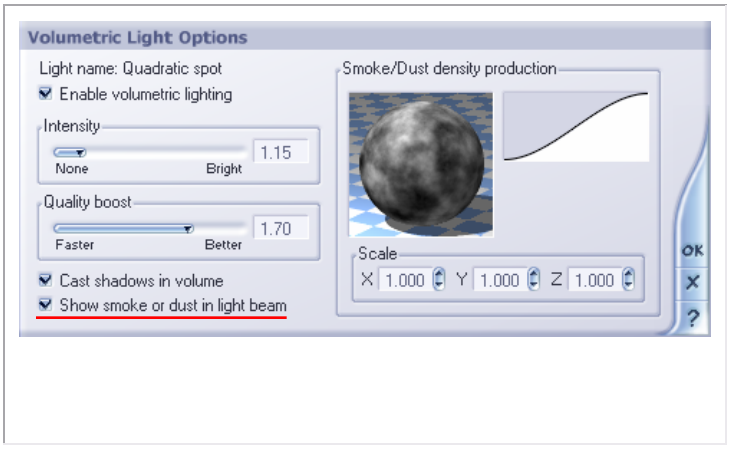


Right-click on the light gel icon and select **Edit Gel**.

Change the **Coloring mode** from **Procedural** to **Mapped Picture**.

Load in the image you created with the Caustics Generator or another caustic pattern you have.

Change the **Image scale** x and y values as needed if the caustics don't show.



For dramatic light beams, right-click the Volumetric icon and select **Edit volumetric settings**.

Check **Show smoke or dust in light beam**…

You can increase the **Intensity** of the light beams if needed.

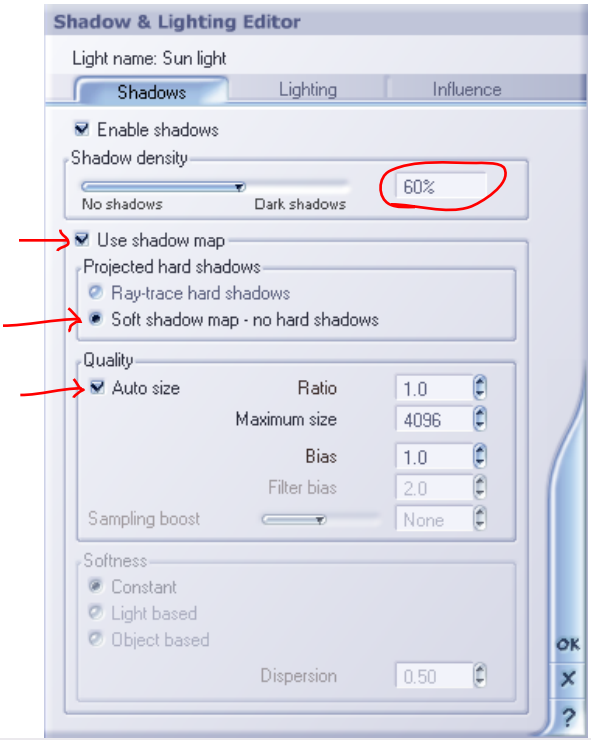
You may need to bump up the **Quality boost** setting if test renders show graininess in the light beams… Be careful; this increases the render times!

Adjust the Sunlight…

Adjust the sun position to match the angle of the spotlight.

I turn off the **Lens Flare** and uncheck **Point at camera**.

Don't adjust the **Softness** setting for the sunlight to make soft shadows; this will slow down the render! See the next step…



Right-click on the shadow icon and select **Edit shadow and lighting**.

Adjust the **Shadow density** so they are not so dark.

Make the shadows soft by selecting **Soft shadow map – no hard shadows**.

Under **Quality**, select **Auto size**.

NOTE: If you are rendering a large image, it may be better to un-check **Auto size** and type in a minimum size of 2046 (the **Ratio** will change to **Minimum size** if **Auto size** is un-checked).

Adjust the Render Settings

For the final render, use the **User Settings** (see my website for a tutorial on render settings).

Uncheck **Optimize volumetric lights** box. This will increase the render time, but give better light rays.

If the rays are still a bit grainy, adjust the **Quality boost** on the **Volumetric Light Options** screen to between 1 and 2. This will really increase the render time, so only bump it up enough to reduce the grain. Do lots of test renders before increasing this!

Things to remember…

- Caustics show up best on light colored surfaces.
- The “deeper” the water, the less caustics are visible.