

# Vue Render Settings

Wouldn't it be nice if there was one render setting and one atmosphere that would work for all pictures? Well, in some ways that's true; they are called the preset settings... But in order to get a GREAT render, you are going to have to create your own render and atmosphere settings!

The time it takes to render that great picture in Vue depends on many things: number and complexity of objects, complexity and size of materials used, type of atmosphere, fog and haze settings, number and type of lights, etc... For most of the tips here, I am using an outdoor scene with lots of vegetation, trees, terrains, and some water. For indoor renders, that's a whole 'nother story, and won't be covered by this tutorial.

## Render Options

To get to the **Render Options** screen, right-click on the render button on the top toolbar. Another way to open this screen is to use the **Picture** menu and click **Render Options**. The really quick way to open the render options screen is to click **Control+F9**.

## Preset Settings

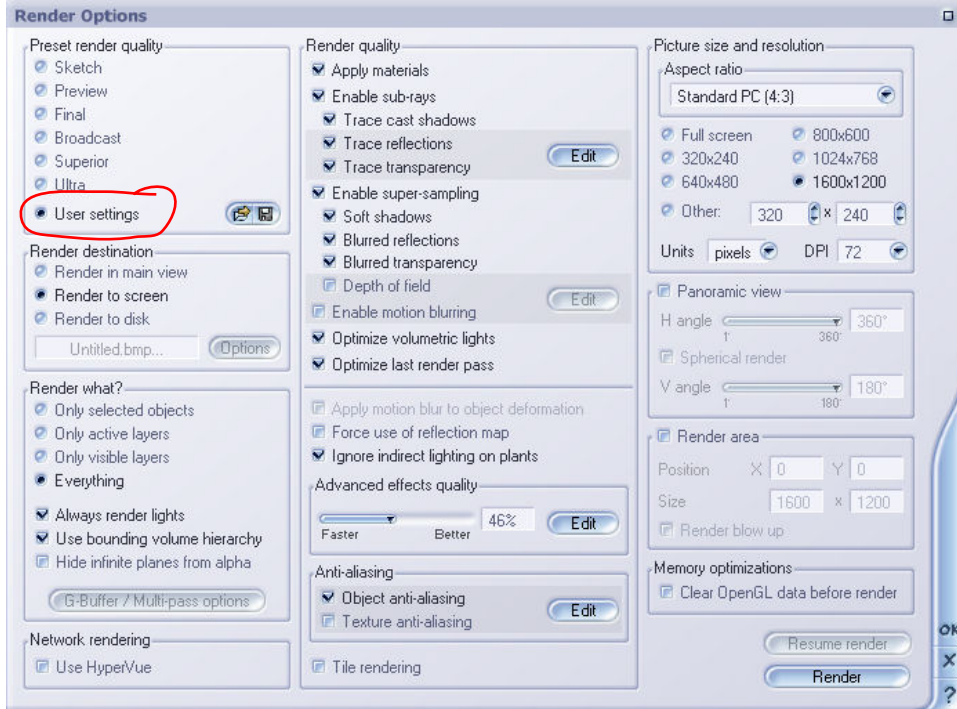
First of all, there is nothing wrong with using the preset settings. They can produce great renders! The only problem with them is they may have too much greatness in one aspect, and not enough greatness in another way. Again, there is no magic setting that works for every render! Another problem with the preset settings is that they can increase the render time to painful lengths without really giving you better results.

To get an idea of what settings change with a selected preset, click each one and see what settings are selected.

- Use the **Sketch** and **Preview** settings to get your placement and overall idea of what the scene should look like. They are quick, but very grainy. When you select either of these settings, notice how the middle section of the **Render Options** screen is grayed out and most of the boxes are unchecked.
- Now select the **Final** settings and notice what boxes are checked and the jump in the **Advanced effects quality** slider. It goes from 16% in **Preview** to 46% in **Final**.
- The difference between **Final** and **Broadcast** are more subtle, but the render time is increased significantly! It turned on **Motion Blurring** and **Texture Anti-aliasing** and increased the anti-aliasing settings. Notice that the **Advanced effects quality** slider is still set to 46%.
- Switching to the **Superior** setting will increase the **Advanced effects quality** slider to 59%. It also increases the anti-aliasing settings.
- Going all the way up to the **Ultra** setting makes the **Advanced effects quality** slider go to 77% and turns off **Optimize volumetric lights**. This setting is aptly named, as your render time will be ultra long! The anti-aliasing settings are also increased – way too high...

We are going to set our own render settings, so let's get started!

# Making Your Own Settings

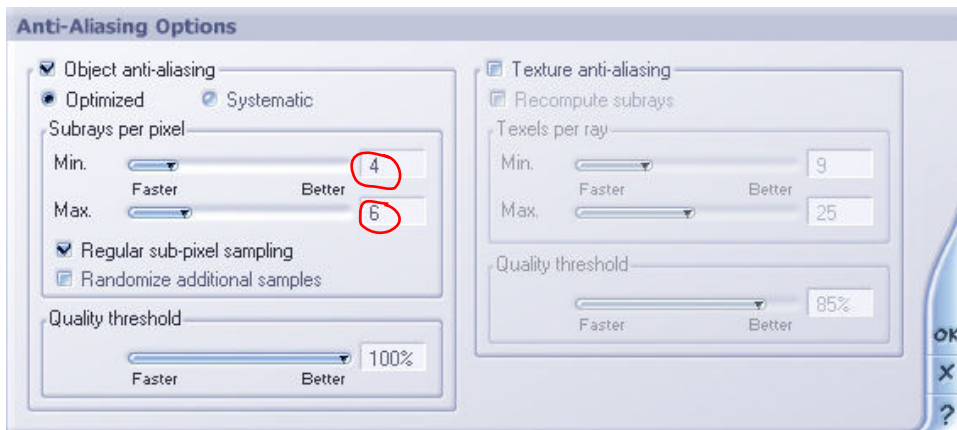


First of all, in the **Preset render quality** section, choose **User settings**. After all, that's the whole point of this tutorial! The screen shot is the setting I start with.

## Anti-aliasing Settings

Setting the anti-aliasing setting properly will save you the most time and make the greatest difference in how your render appears! In the **Anti-aliasing** section, select the **Object-anti-aliasing** box and then click the **Edit** button to get to the **Anti-aliasing Options** screen.

The Anti-aliasing setting screen is split into three parts; one side for objects, the other side for textures, and the third section defines the overall quality.



## Object Anti-Aliasing

Make sure the **Object anti-aliasing** box is selected and select **Optimized**. Don't use the Systematic method - it will increase the render time while not necessarily increasing the quality of the render.

Select the **Regular sub-pixel sampling** box for best results. If you have a water plane or repeating texture stretching to the horizon, you may want to un-check this if you notice artifacts close to the horizon.

Check the **Randomize additional samples** box only if you notice interference patterns on water planes or repeating textures.

## Subrays per pixel

This setting depends on what you are rendering, what size picture you are rendering, and the size of the objects. The minimum setting controls the number of rays sent first. If the render engine decides that more anti-aliasing rays are required, it keeps sending more rays until the total number of rays sent for that pixel reaches the maximum setting.

- As a rule, start with lower settings for the Min/Max and increase as needed. A good starting point is 4 minimum and 6 maximum passes.
- Shadows depend directly on the **Subrays per pixel** value. Do a test render of an area with shadows - if the shadow edges are jagged, increase the Max level.
- Increase both the Min/Max levels for smaller renders (800x600 or less) since they tend to render quicker and their small size makes post-work corrections difficult. Renders above 3200x2400 can get away with lower settings.
- Very small objects like bushes, weeds, and grass need more anti-aliasing. Increase the Maximum value to between 8 and 16; the rendering time will stay reasonably low.
- Trans-mapped objects need more anti-aliasing and therefore will slow down the render. Increase the anti-aliasing to Min 8, Max 12 and do several test renders - you may need to go as high as 12/36 for fine details.

## Texture Anti-Aliasing

Texture anti-aliasing is most important when using bitmap or procedural textures on water planes or a pattern that repeats to the horizon. For example, using a water plane and low camera angle so that the water extends to the horizon can cause graininess to appear near the horizon line.

- If you don't need it, keep it off.
- If you get artifacts, dots, or smears on a texture, turn on texture anti-aliasing. Start with lower settings for the Min/Max and increase as needed.
- If the bumps on an object are complicated, increase the texture anti-aliasing Min/Max levels.
- Camera positions set very close to a procedural terrain should select texture anti-aliasing.
- Select the **Recompute subrays** option if there are a lot of reflection or refraction patterns with strong bump mapping. This will slow the anti-aliasing process down significantly.

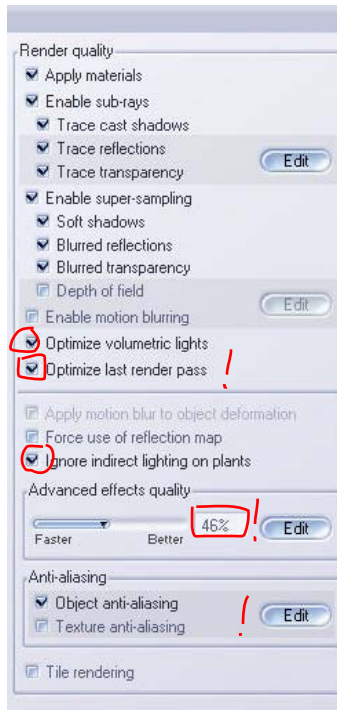
## Quality Threshold

The **Quality threshold** setting controls how the render engine decides whether or not more rays are required; obviously, the higher the settings, the better the quality, but the longer the render time...

- As a guideline, increase the **Quality threshold** setting to between 65 and 100% and adjust the Min/Max settings for the **Subrays per pixel**. More subrays, decrease the quality threshold, less subrays, increase the quality...

## Render quality settings

For the most part, all of the boxes under **Render quality** should be selected, except for a few items...



Unselect the **Depth of field** and **Enable motion blurring** boxes unless you are using them. Please note that memory requirements and render time increase considerably if either of these options are used.

Select the **Optimize volumetric lights** box to help render volumetric lights much more rapidly without any noticeable drop in picture quality. Leave this option selected unless a test render shows some volumetric lights appearing blurry.

**Optimize last render pass:** selecting this will optimize the last render pass, making the render up to three times faster, but can decrease the quality of the render. You may notice some smudginess or blurriness on high detail areas because the anti-aliasing is reduced.

Select the **Ignore indirect lighting on plants** box to disable the computation of indirect lighting on plants altogether. Rendering indirect lighting on plants will slow down the render while not necessarily producing noticeably better results.

Keep the **advanced effects quality** slider at 46%. This is the same level as used in the **Broadcast** preset setting. Even slight increases in this setting will significantly increase the render time. If you find that you still have artifacts (noise, splotches...) in the render, first try to increase the anti-aliasing settings. You can boost the quality of each effect independently by clicking the **Edit** button. This will over-ride the **advanced effects quality** slider, so expect a longer render time. Read the Vue Reference Manual, page 141 for more details on these controls. I tend to leave them alone...

Make sure **Tile Rendering** is not selected. Tile rendering renders the picture slower and requires larger amounts of memory.

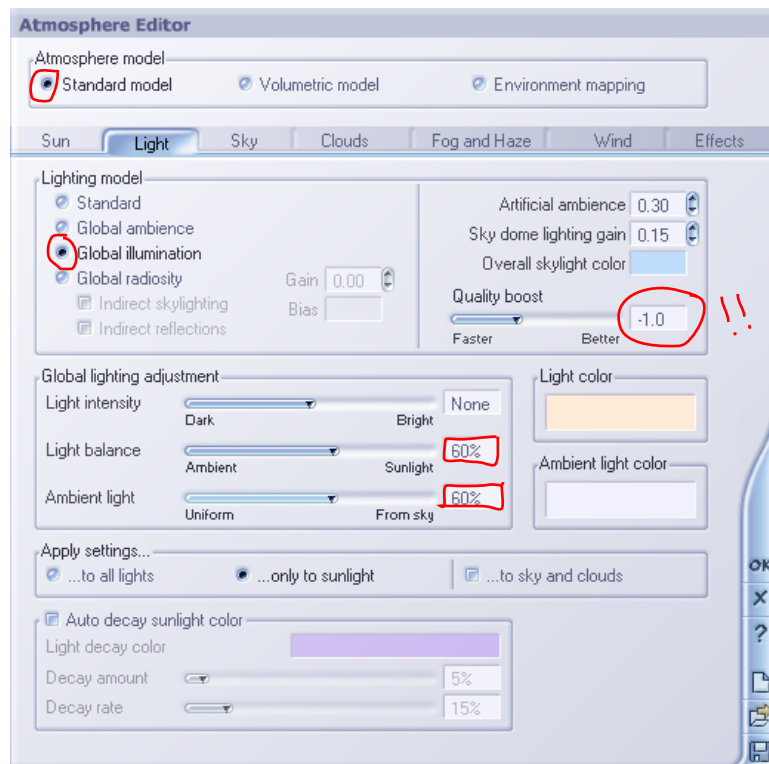
# Atmosphere Editor

The next most important thing to help you get the best render is the type of atmosphere used. You can choose and load any of the preset atmospheres and modify the setting to your liking. Don't worry if one of the presets is using higher or lower setting than you want - you can change that easily! I tend to select preset atmospheres based on the clouds and sky color – the rest I adjust to my liking. To open the Atmosphere Editor, press **F4** or use the **Atmosphere** menu and click **Atmosphere Editor**.

At the top of the Atmosphere Editor you should see three modes for the **Atmosphere model**. Make sure **Standard model** is selected. Using the **Volumetric model** will greatly increase the render time. So far I have no experience with the **Environment mapping** – it's the next thing I want to learn about...

Click on the **Light** tab; there are four **Lighting models** available:

- **Standard** – Most basic and quickest to render
- **Global ambience (GA)** – Better, only slightly slower render. You need to increase the proportion of ambient light in the scene to get good results.
- **Global illumination (GI)** – Really nice but need to setup carefully to avoid long render times.
- **Global radiosity (GR)** – Use for indoor scenes only– you won't notice an improvement over Global illumination for outdoor scenes and will significantly increase the render time.



For the best results, use Global Illumination for outdoor scenes. GI spreads shadows in a far more realistic way than standard lighting, especially on plants. The shadows will also take a nice bluish color if you use a sunny atmosphere, just like in the real world.

If you change the lighting model from Standard to GI, you will notice that the scene gets darker. We'll need to make some adjustments in the **Global Lighting adjustment** section to make the scene brighter.

There are three sliders on the **Global lighting adjustment** – changing these setting won't slow down the render time – but can help reduce graininess in the render.

- **Light intensity** – Adjust as needed to make the scene darker or brighter.
- **Light balance** lets you adjust the balance between light from the sun and light from the environment (ambient light). Scenes with a bright sky will have lots of ambient light, whereas sunset scenes should have little. Graininess in the render can be caused by too much ambient light. Start with the slider set to 60% (more sunlight rather than ambient light). If test renders show graininess is still a problem, adjust it higher.
- **Ambient light balance** lets you further customize ambient light by deciding how it is shared between light coming from the sky, and light coming from everywhere (uniform light). Start with the slider set to 60% for scenes with a bright sky. If the scene uses fog, move the slider more toward uniform ambient light (less than 50%).

The **Quality boost** setting should be set to -1.0 or even as low as -1.5. This will reduce your rendering time significantly and you should barely notice the difference on outdoor scenes. Only increase the **Quality boost** setting if you notice that there are imperfections in the quality of the lighting in the test render. Even then, do not increase the setting to more than 0.

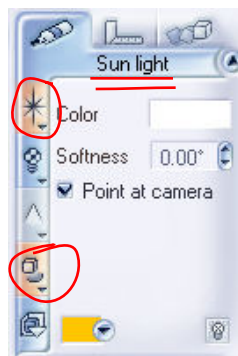
Click on the **Fog and Haze** tab. Fog and haze are important for giving the sense of distance. If your scene does not require them, turn them down to zero! Too much haze in the atmosphere can cause graininess.

## Changing the Sunlight

There are a few more things that can be changed to help reduce graininess...

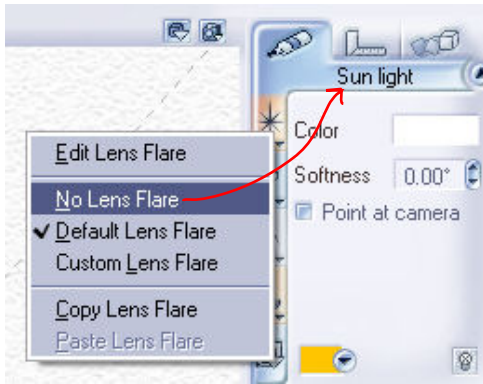
**Lens Flare** – right-click to turn off or edit

**Shadow** – right-click to edit



Two options for the sunlight that can cause graininess are **Lens Flare** and **Shadows**; Make sure the Sunlight is selected and right-click these to edit the settings.



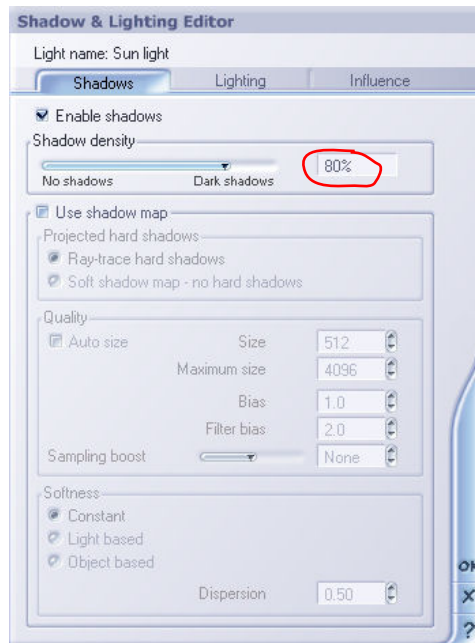


For the sun – unless the sun is visible in the sky and you really want this effect, turn off the lens flare. It adds graininess to the scene! Lens flares are something to avoid in real life, so why they are on by default is beyond me...

Right-click the top icon and click **No Lens Flare**.



Right-click the **Shadows** icon and click **Edit Shadow and Lighting**.



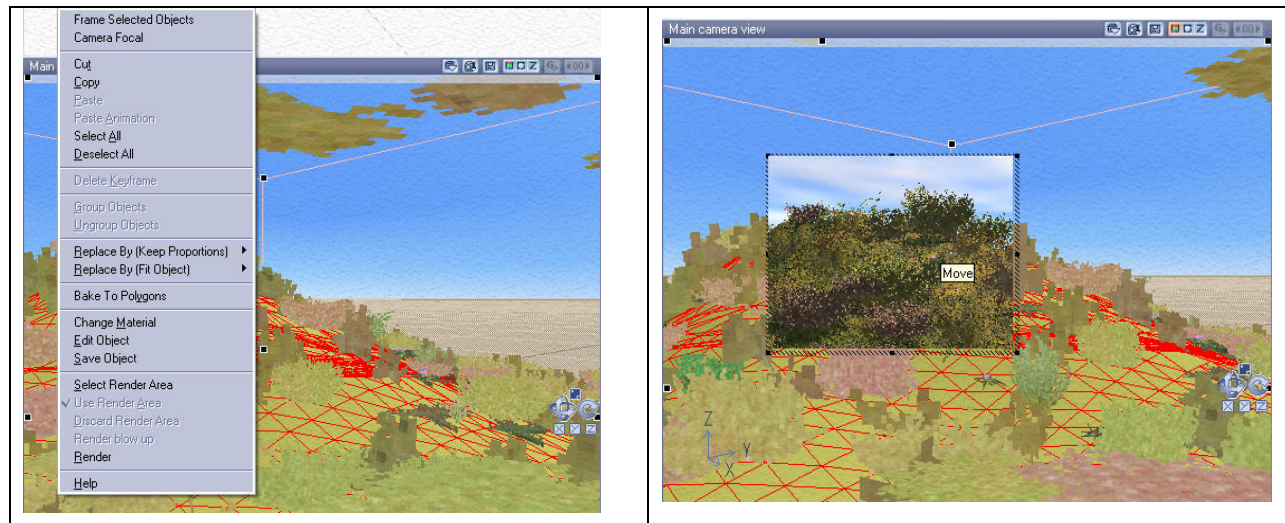
Edit the **Shadow density** to lighten the shadows and help reduce the graininess of the shadows. Set the sun's shadow to less than 80% so the scene is less dark (100% shadows are not realistic).

## Test Renders

For testing the render and atmosphere settings, use a fairly large render size (1024x768 or 1600x1200) and select **Render to screen** – we will only be rendering small portions of the picture, so they should take only a few minutes to complete. Render an area that you know may have “problems”. Render areas with lots of shadows to test your atmosphere setting and then areas with lots of vegetation or fine details to help set your Anti-aliasing settings.

Right-click in the main camera screen and click **Select Render Area**. Now click the render button (or right-click again and click **Render**). Vue will only render the selected area using your render settings.

To move the **Render Area**, move the cursor over the edges of the render area box until it changes to a four-way arrow. Now you can drag it around. If you click on a corner, you can make it bigger/smaller as needed. To get rid of the **Render Area**, right-click again in the main camera screen and click **Discard Render Area**.



## Overview of the Settings

Here is a quick overview on how to cut down on the overall render time and getting a GREAT render...

- Keep the **Advanced effects quality** slider at 46%.
- Select **Optimize Last Render Pass**
- Set your **Anti Aliasing** setting based on what you are rendering and how big you are rendering
- Use **Global Illumination** and set the **Quality Boost** slider to -1
- Adjust the **light balance** 60% toward sunlight
- Turn off **lens flare** for the sun
- Reduce the **shadows** for the sun to 80%

## References

<http://www.deepdarkdigital.com/docs/index.php?n=Main.CuttingRenderTimes#toc4#toc4>

<http://www.lynescreations.com/vue5help.htm>

[www.renderosity.com](http://www.renderosity.com) (Vue forum)