

# *TerraRay*

## **Quick Start Guide**

**Thanks for purchasing TerraRay!**

If you have questions or suggestions, feel free to contact us at  
[support@avisnocturna.com](mailto:support@avisnocturna.com)

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# Introduction

TerraRay is an application that allows you to render natural landscape imagery. A scene is defined by a elevation map („height map“) from which the terrain is created, materials for the terrain, water, clouds, fog, lighting, plants and rocks.

Each of these scenery elements can be edited from the function pane list to the left by simply selecting the item. A live preview is located directly below the list. Whenever you change any parameter of the scenery, the preview is updated so you get a first glance on how the final render will look like.

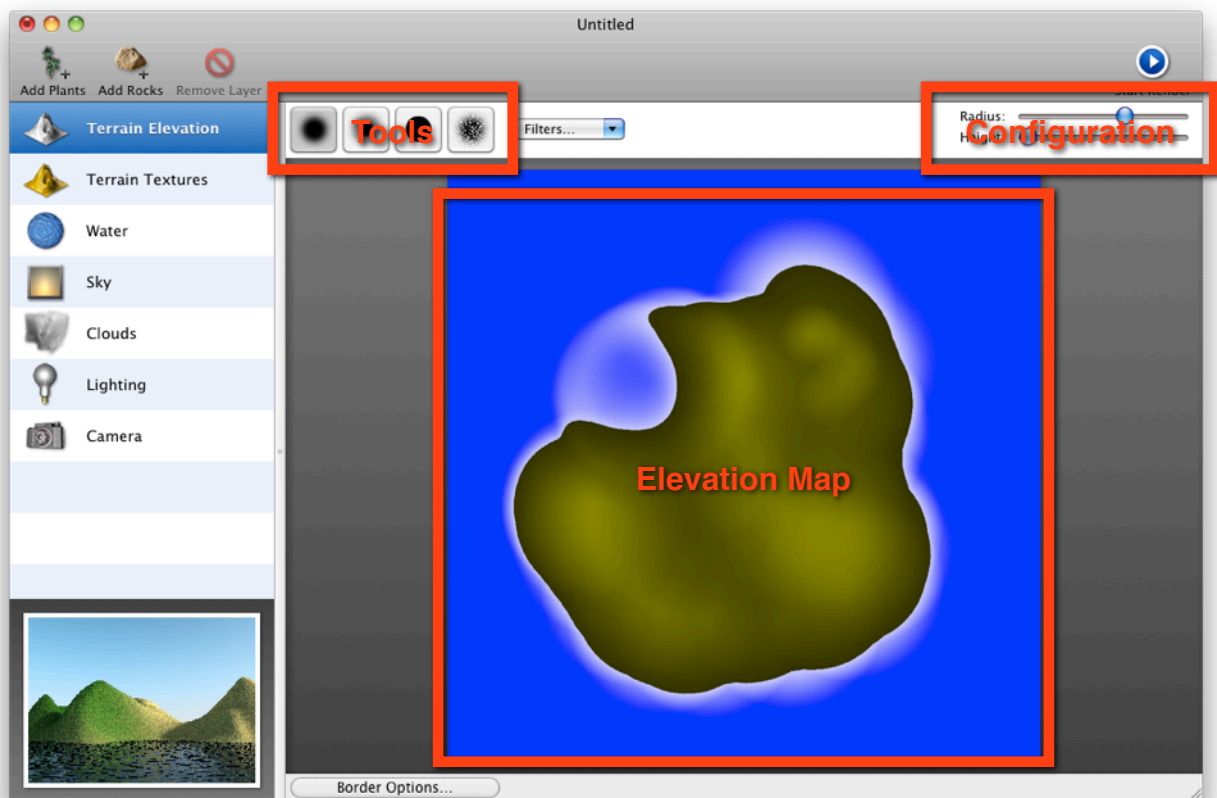
TerraRay was written with performance in mind. On modern Macs, renders with medium quality settings will be completed in 5 to 15 minutes.

# Creating the Scenery

## Terrain Elevation

The Terrain Elevation item in the left function list allows you to edit the elevation map of the terrain. Select a tool over the map area to edit the map. You can configure each tool with the sliders located to the right of the tools.

The map area displays two different color shades: Blue means that the area is located below the current water height level, yellow if the elevation is above the water level. The brighter the colors are, the higher the terrain will be.

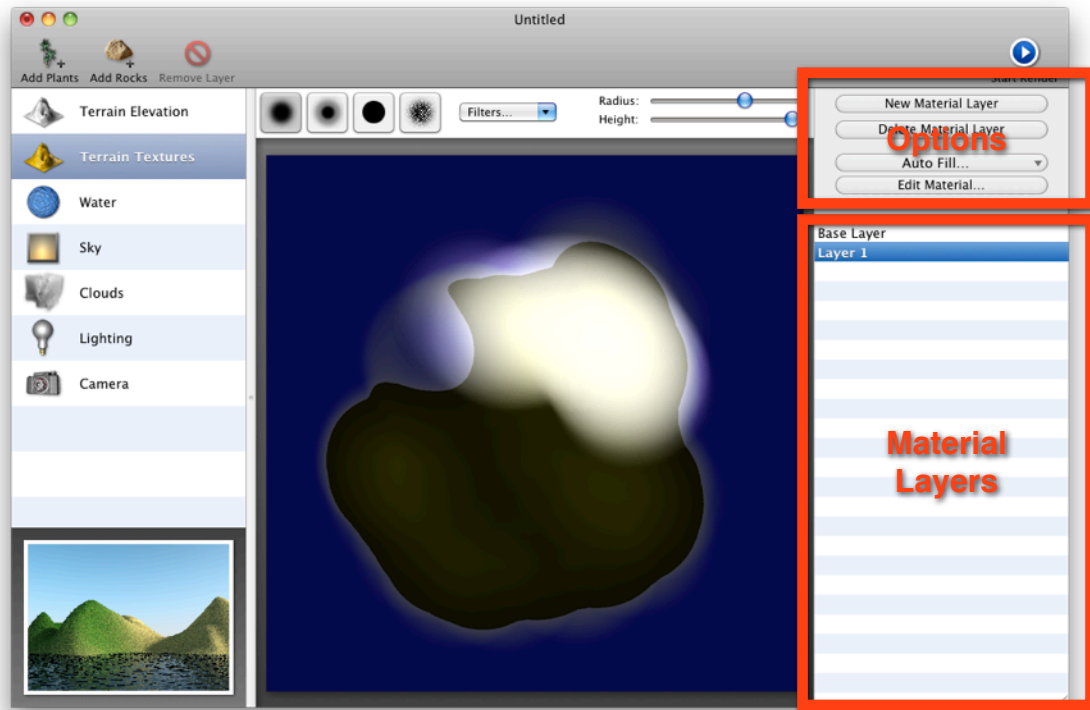


Use the filters popup menu at the right side of the tools to apply several filters like Noise, Clamp or Equalize to the current elevation map.

You can alter the size of the whole terrain by using the button „Scene Size“ below the elevation map.

## Terrain Materials

TerraRay allows you to apply different materials to different parts of the terrain. Select „Terrain Materials“ from the functions list to the left to open the pane.



At the right, you'll see a list of available material layers and several buttons above. Click on the „Add Material Layer“ button to add a new layer above the base layer. Afterwards, you can use the same tools you know from editing the terrain elevation on the new texture layer. Each material layer stacks on the one below. The base layer cannot be edited in the map area because the material will be applied on the whole map.

The Auto Fill button allows you to either fill the texture map at a specific height or at a specific steepness for different effects.

Use the Edit Material Button to specify the colors, bump map and reflection of a material (see Materials section).

## Water

The Water function allows you to edit the height of the water present in the scenery. Furthermore, it allows you precise control of the absorption of the water, the absorption color, wave size and height as well as the reflection color to achieve unique effects.

## Sky

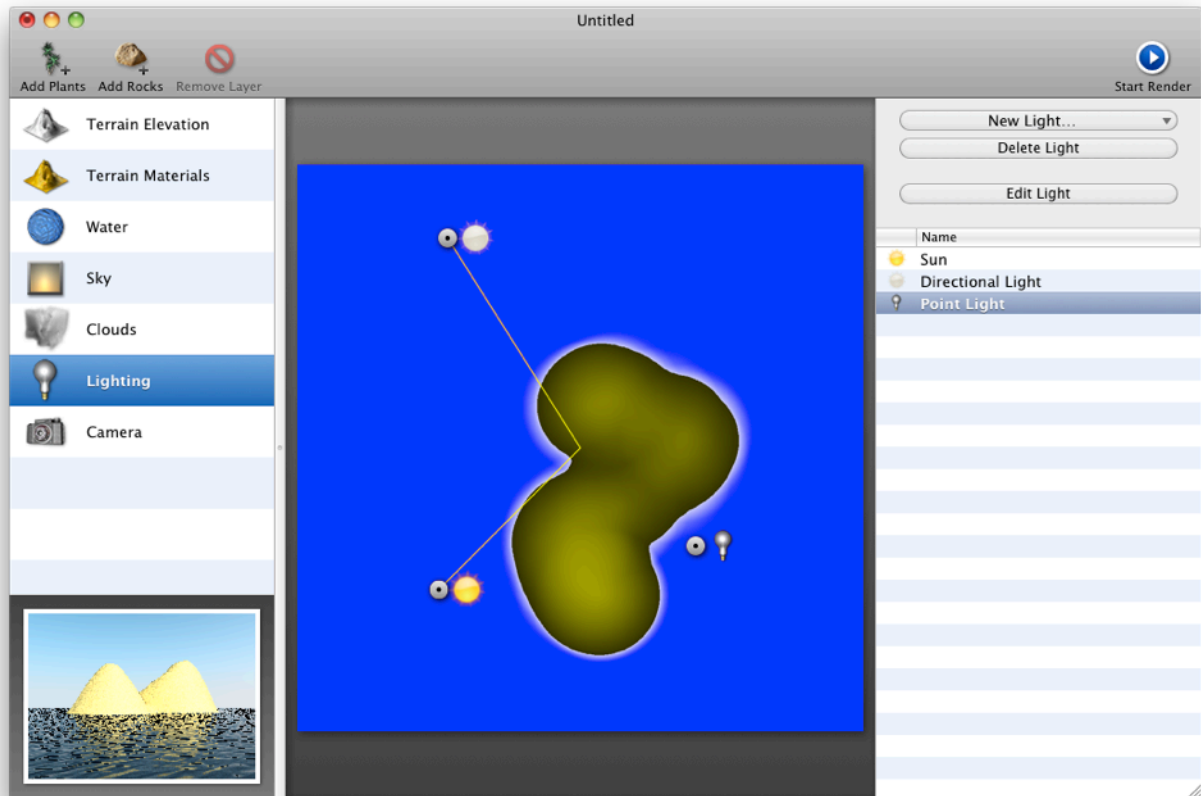
Use the Sky function pane to control different parameters for the sky: Turbidity, Horizontal Luminance and Brightness as well as the Backscattered Light. Furthermore, you can control the brightness and width of the sun.

Keep in mind that the sky directly affects the lighting of your complete scenery.

## Clouds

TerraRay offers volumetric clouds that you can activate in this function pane. You can control the density, the cloud cover, the height, sharpness and the size.

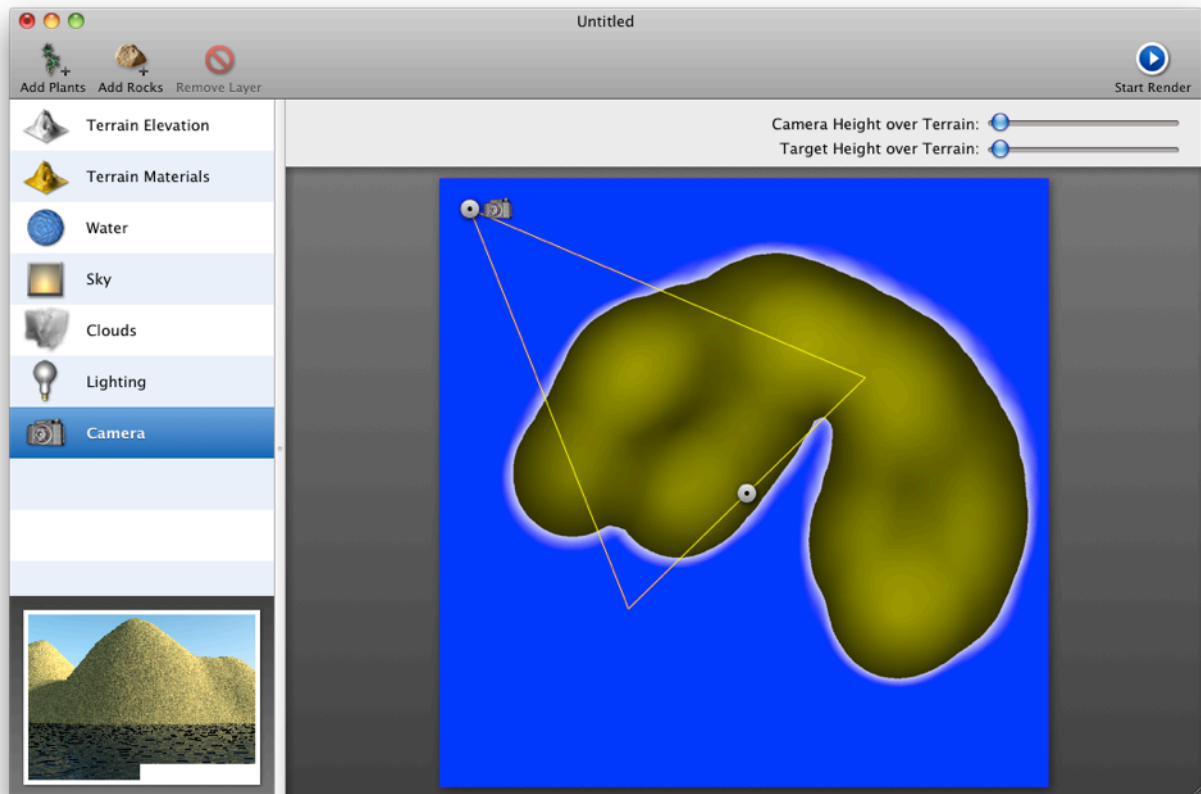
## Lighting



TerraRay allows you to create different light sources other than the sun, which is the default light. You can create additional directional or point lights for better illumination. In the Map Area, you can specify the direction or position of the light source. Simply drag the handle to change the position or direction.

By clicking on the „New Light“-Button you can add as many light sources as you wish to the scene. The edit button allows you to configure the color, power and shadow parameters of the currently selected light source.

## Camera



Use camera function pane to set the position of the virtual camera in the scene and the target point which should be focused. The sliders above the map area control the height of the camera or the height of the target point above the terrain or water.

## Objects

TerraRay allows you to add custom objects to your scenery. By clicking on the „Add Objects“ button in the toolbar, a new item in the function list appears.

Clicking on the Add button in the objects list to the right allows you to either add objects from the build-in library or to import a custom 3DS file format. Most 3d applications support exporting 3DS files which can be imported into TerraRay. Also, you can look at different internet sites which offer a rich collection of free 3DS models which you can use in your scenery.

Use the list on the right side to select the object you want to edit. Handles for the selected object appear that allows you to rotate and resize the model. By dragging the object itself, you can change the position. The object is normally placed on the ground. If you want to change the height of the object above the terrain, click the „Further Settings“-button above the list.

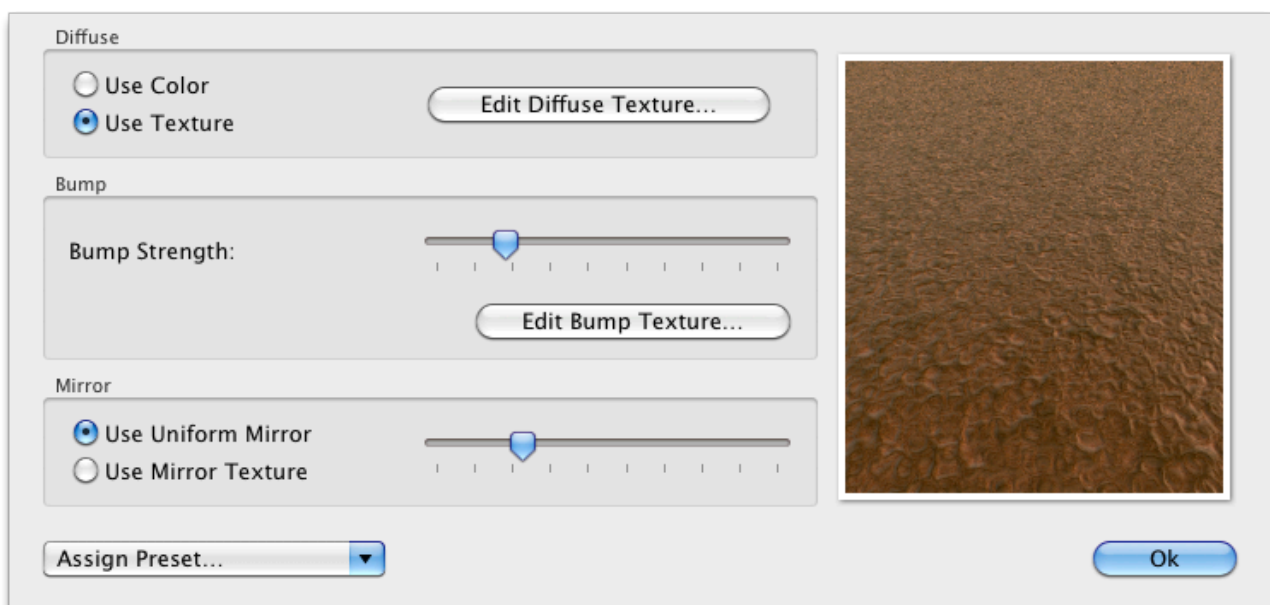
## Plants & Rocks

By clicking on the „Add Plants“ or „Add Rocks“ Button above the function list a new item is added to the list.

Plants & Rocks work like the Terrain Material function pane. Use the tools above the map area to specify where plants or rocks should be placed. In the list to the right you can specify which plants or rocks you would like to use.

You can add as many plants or rocks to the scenery as you like. Keep in mind that rendering times can increase when you add many plants or rocks to a scene.

## Materials



TerraRay has a flexible material system which allows you to create a variety of different materials. Furthermore, TerraRay comes with many preset materials you can assign with the „Assign Preset“ button at the lower left side of the materials dialog.

At the right side of the dialog you see a preview of the texture how it will appear in your scenery. The preview is updated each time you change a parameter.

### Diffuse

The diffuse component of the material can be understood as the color of the material. You can either use a single color for the material or a texture (see section „Textures“ below).

### Bump

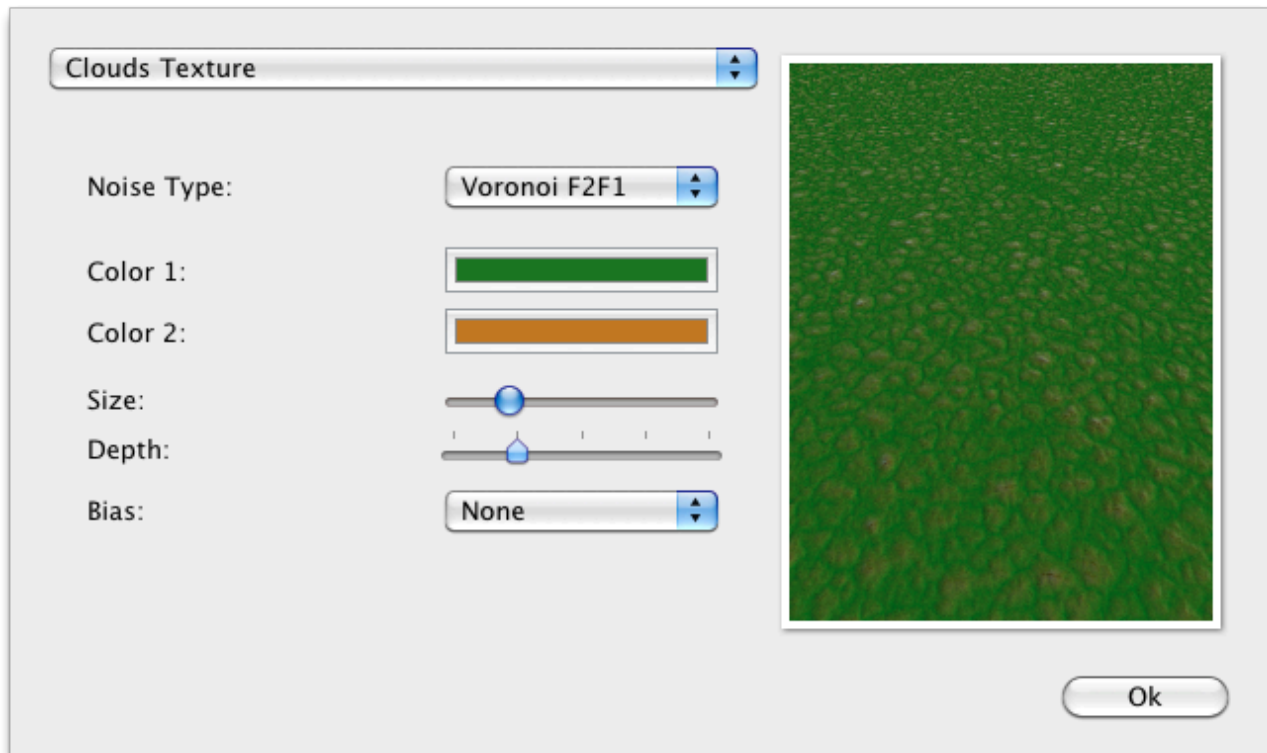
You can assign a texture as a bump map to a material to add a structure. The slider „Bump Strength“ controls the strength of the bumps applied when rendered. Use the „Edit Bump Texture“ button to edit the bump map texture (see section „Textures“ below).



## Mirror

Some materials need to be reflective in order to look realistic, ice for example. You can either make the whole material reflective or just a part of the material by using a mirror texture (see section „Textures“ below).

## Textures



The texture dialog allows you to specify how a texture looks. Five texture types exist: Clouds, Distorted Noise, Wood, Marble and Musgrave. Each of the texture types have different settings, like for example a noise type, the size and a set of colors. To the right, the texture is previewed how it will appear in the final scenery.

## Render

Click on the Start Render button in the very upper right to the start rendering. TerraRay will use the default configuration the first time you click on the render button. Afterwards, TerraRay will start calculating your image.

You can alter the rendering settings using the button in the upper left. Different options can increase or decrease rendering speed as a tradeoff for image quality.

## Output Size

You can specify the resolution of the final image here. Increasing the image size will increase rendering time.

## **Path Tracing Samples**

Increasing Path Tracing Samples results in less noisy pictures but increases rendering time. This can add a lot to the realism of the final pictures.

## **Anti-Aliasing Samples & Passes**

Anti-Aliasing is used to reduce jags at hard edges. Increasing Anti-Aliasing Samples from 1 to 2 means that for every pixel, two pixels are rendered and merged together. Setting this from 1 to 2 doubles the rendering time but increases the quality of the resulting image.

Anti-Aliasing Passes are separate rendering passes. In the first pass, the complete image is rendered. In the second pass, all pixels at hard edges are resampled for better images quality while moderately increasing rendering time.

## **Clouds Step Size**

The step size controls the quality of clouds rendering. Increasing it will lead to longer rendering times but less artifacts and smoother clouds.