Tutorial #1: Dead Sea

Version 1.0

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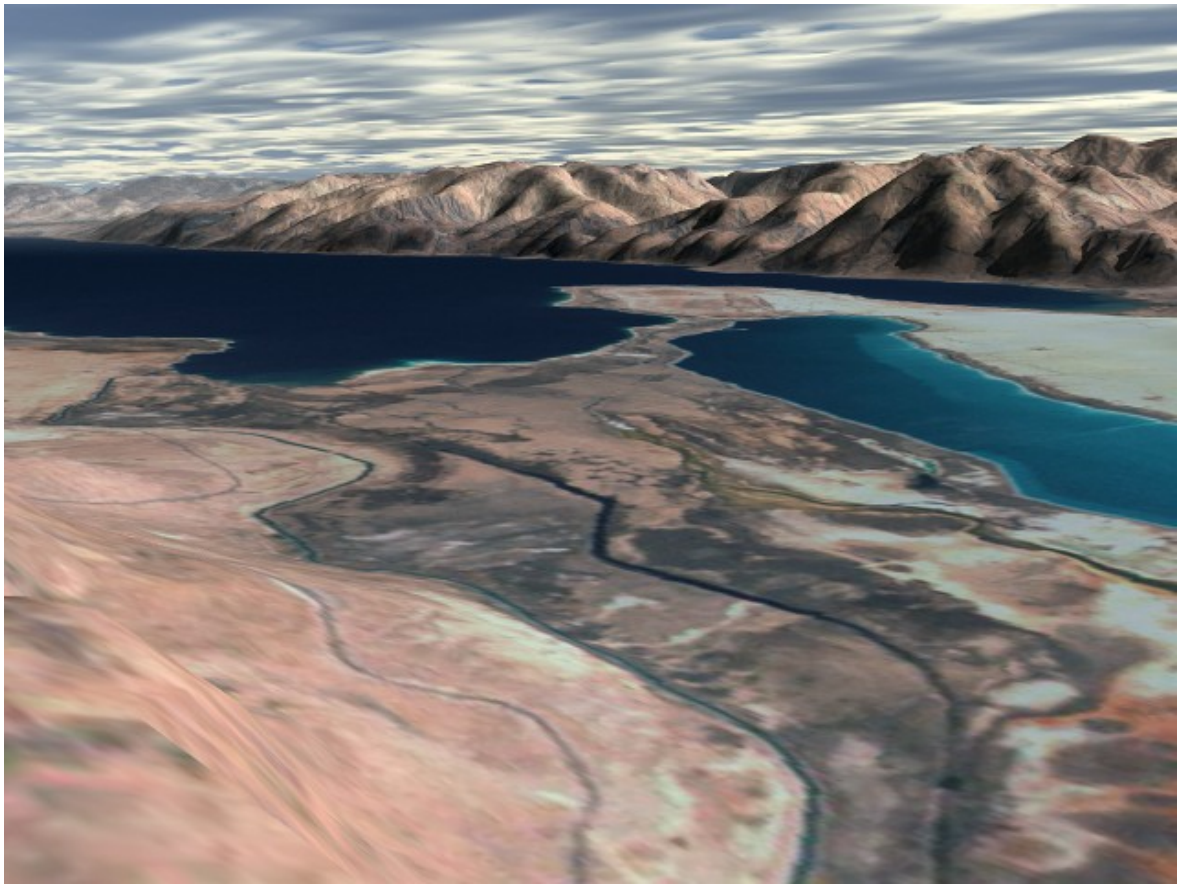

This tutorials will show you how to use the infiniMap Pro plugin to use huge images in your LightWave3D projects.

We assume that you know the basics of LightWave3D, such as navigating the user interface, basic modelling, using the surface editor, rendering...

We would would like to thank East View Cartographic for allowing us to include their beautiful geodata of the dead sea with this tutorial.

We recommend you to contact them for your commercial geodata needs.

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Dead Sea Tutorial

In this tutorial we will create and render a planar Landscape.

We would like to take this opportunity to once more thank East View Cartographic for making the included geodata available to use for inclusion in this tutorial.

You can use the unregistered version of infiniMap Pro for this tutorial.

Obtaining the Images

We are going to use the images shown on the right in this tutorial.

DeadSea_LandSat_15m.ecw Is a LandSat image of the area surrounding the dead sea with a resolution of 15m per pixel.

deadsea_8bit_1785m.tif Is the matching elevation at 8 bits per pixel. The maximum elevation in this image is 1785 metres (thus the image file name).

We will use the elevation data to displace a plane and will then map the satellite image onto the displaced plane.

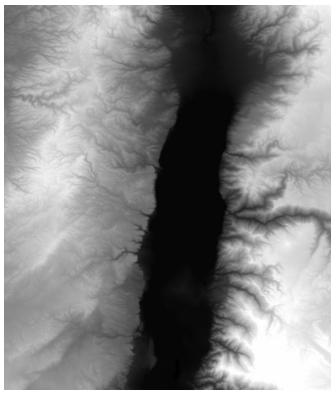
DeadSea_LandSat_15m.ecw

Preparing the Images

Only the LandSat image would need to be compressed in this case, we recommend the ECW/JPEG2000 compressor from ERMapper (www.ermapper.com) for imagery of a raw size of 500MB or less.

infiniMap Pro has been designed to replace the image texturing functions available within LightWave. In the case of displacement maps this does not work as expected since the displacement in LightWave does not pass on enough information to infiniMap for it to work effectively.

However, currently LightWave will hit a polygon limit for huge displacement maps, thus you gain no advantage using infiniMap Pro for displacement maps[1].



deadsea_8bit_1785m.tif

Modelling

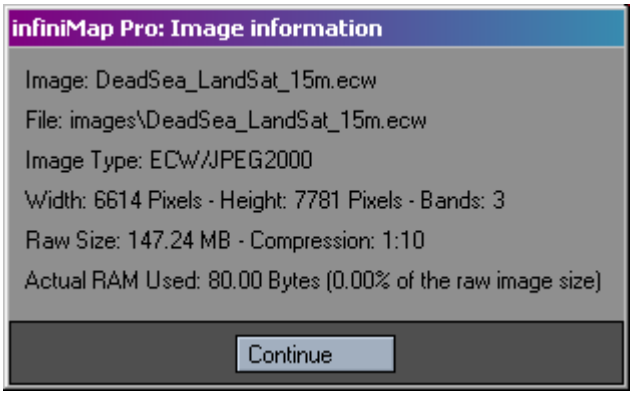
Before we start modelling out landscape we need to find out how large it should actually be.

Since we know the size of a pixel of the LandSat Image, we can use that to define the size of our landscape.

1 This is likely to change in LightWave 9, and we will make sure to support the new technology once it is available.

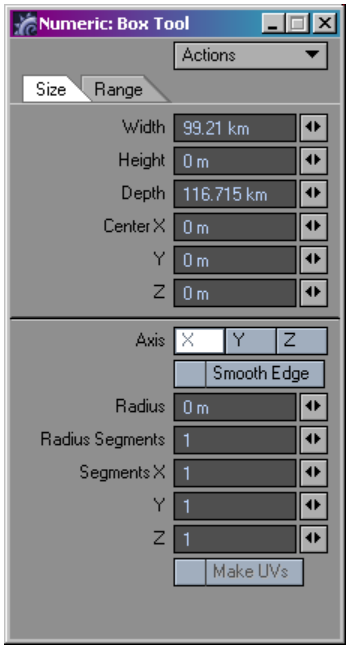
So, start up the **infiniMap Browser** in Layout and load the **DeadSea_LandSat_15m.ecw** using the **Image** pop-up.

Press the **Image Information** button to have a look at the size of the image.



6614 x 7781 pixels it is. At 15 metres per pixel our landscape will be 6614x15m on the X axis, and 7781x15 metres on the Y Axis. (We could multiply this right now and get 99.210 km by 116.715 km ... but we can also be lazy and let Modeler do the math).

So, start up Modeler and press '**shift-x**' (**Create->Box**) to activate the **Box** tool. Hit '**n**' to open the numeric panel (or press the **Numeric** button at the bottom of Modeler**)**.



Enter the following values:

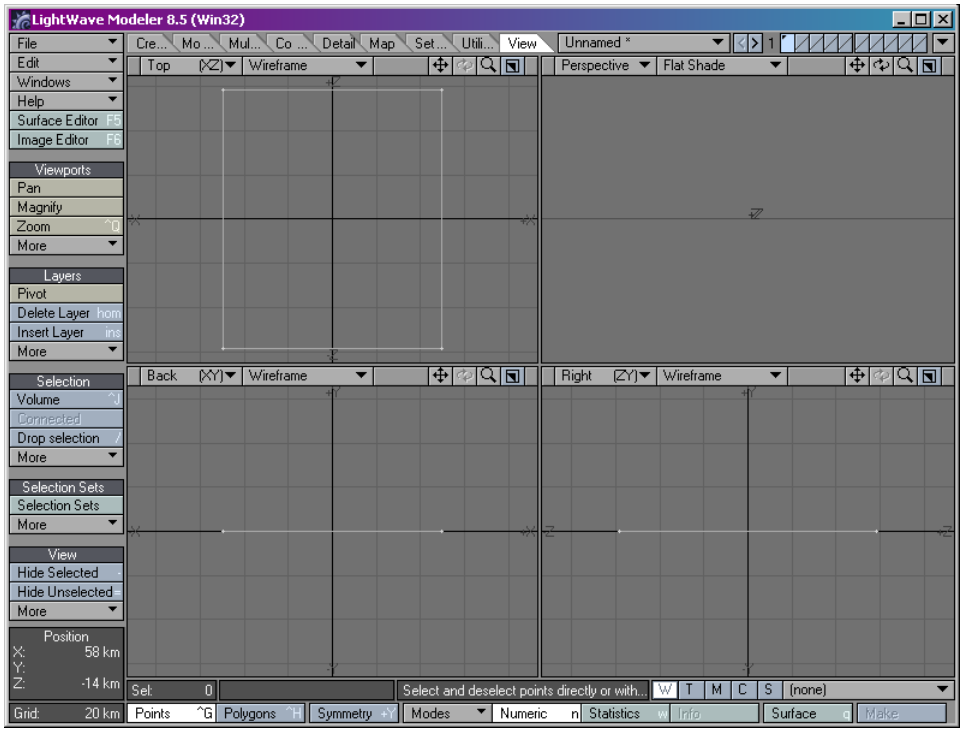
Width: 6614 * 15
I told you I'm lazy, if you press tab to get to the next input field, LightWave will calculate this small formula for you and set the Width to 99.21 km ... as we expected.

Height: 0 m

Depth: 7781 * 15 – this will be replaced with 116.715 km by LightWave.

Leave all other values as they are and press **Make** or **Return** to create the plane.

You'll notice there isn't much to see right now. That is because the object is so huge. Press '**a**' (**View->Viewports->Fit All Items in Views**) to zoom out to see our lovely plane.



Still not much to look at.

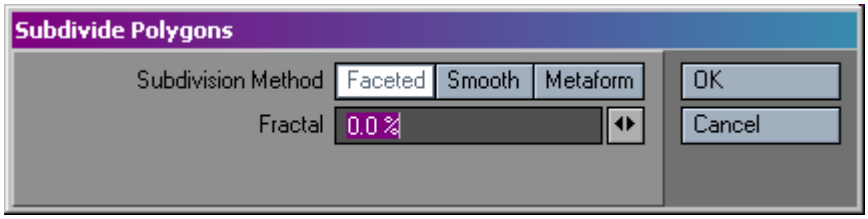
Preparing the Mesh for Displacement

Since we want to displace this plane later on, we need lots of points and polygons for LightWave to be able to do so. One way would be to subdivide the polygon until we reach hundreds of thousands of polygons. This would result in one huge mesh that would be a pain to load into Layout and handle there.

Instead we will use SubPatches. This gives us the advantage of being able to change the resolution of the mesh later on in Layout without having to remodel.

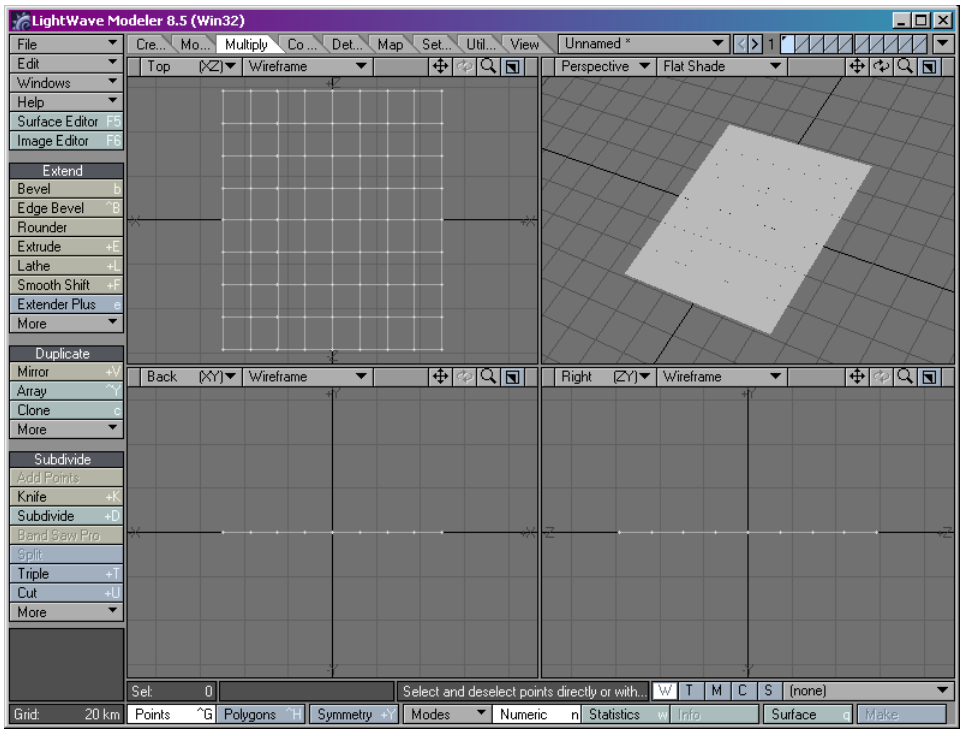
If you press **Tab** right now to change the mesh to SubPatches you will notice one disadvantage... SubPatches make the mesh much rounder. To counter that we subdivide the mesh a little bit and add some weights. Press **Tab** again to convert the SubPatches back to regular polygons for the time being.

First things first, let's subdivide the mesh. Press '**shift-d**' **(Multiply-Subdivide->Subdivide)** [2] to bring up Subdivide Polygons and hit **Return** or press **OK** straight away. Do this three times.



2 I'm sorry for using keyboard shortcuts all the time, I'm just so used to them... But I do try to hunt down the respective menu items (even though I have a hard time finding them sometimes ;)).

Your mesh should no look something like this.



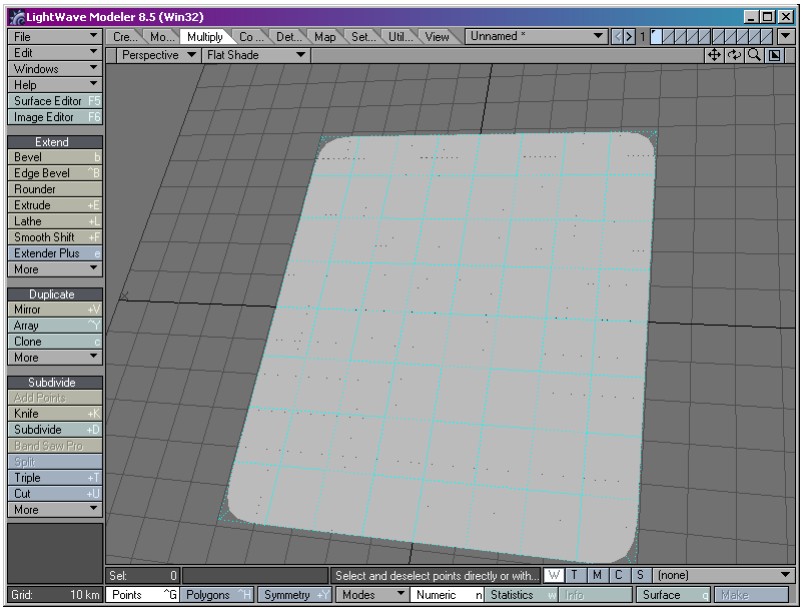
To finish off we triple the mesh, since quads can produce some nasty rendering errors when subdivided. So go ahead, press '**shift-T**' (**Multiply->Subdivide->Triple**).

Let's press **Tab** again to activate SubPatches for the polygons.

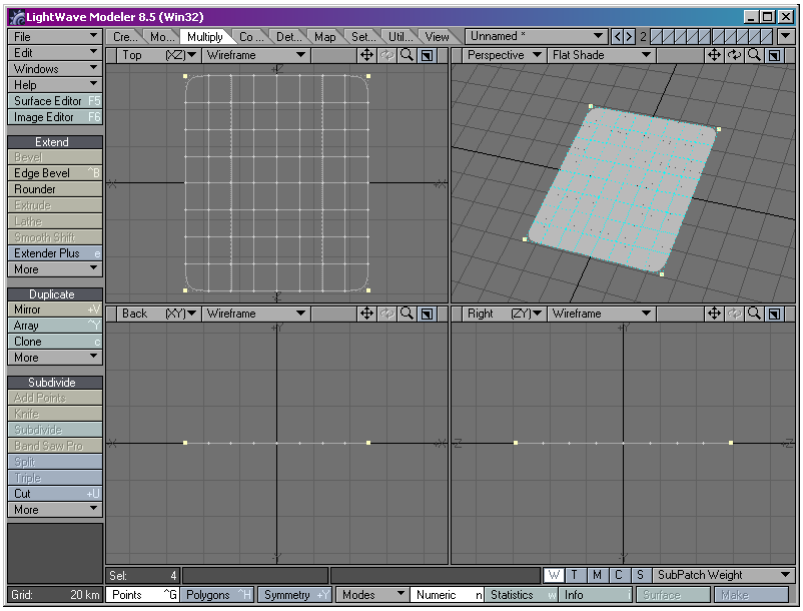
You'll notice that the corner polygons now have smooth corners.

This is not what we want, so we must apply a SubPatch Weight Map on the corner points to get the edges sharp again.

Select the **S** on the lower right of Modeler, and navigate to the Pop-up to the right of it.

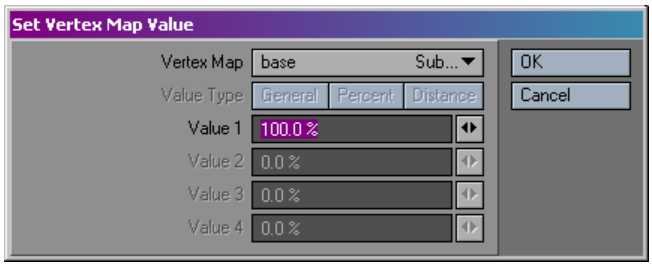


Select **SubPatchWeight.**



Now enter into point selection mode and select the four corner points of our terrain.

After you have done that, open the **Set Vertex Map Value** panel (**Map-General->Set Map Value**), set **Value 1** to 100% and press **OK**.

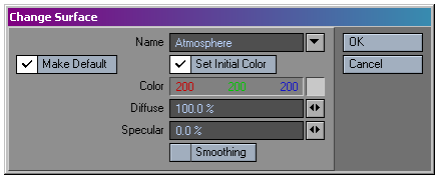


You will see that we now have sharp edges at the corner of the plane again.

This pretty much is all the modelling needed.

All we need to do is apply a surface name to the mesh and save it.

Press '**shift-q**' to open the change surface window and enter a nice descriptive name for the surface, like '*DeadSea*'.

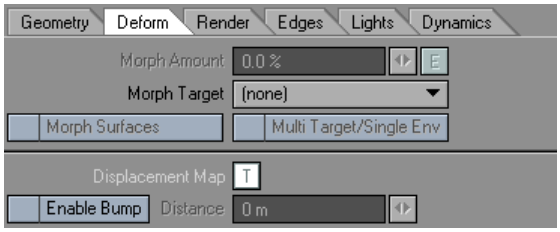


Now save the object (giving it an equally descriptive name, like *DeadSea.lwo*) and exit Modeler.

Layout

Launch Layout and load the *DeadSea.lwo* object.

As a start let's displace the mesh. Press '**p**' on your keyboard (or press the **Properties** button on the lower part of the Layout window.



Select the **Deform** Tab and select the **[T]** behind it to open up the **Texture Editor** for the **Displacement Map.** Now load the included **deadsea_8bit_1785m.tif image** into the image layer and enter the following settings:

Projection: Planar

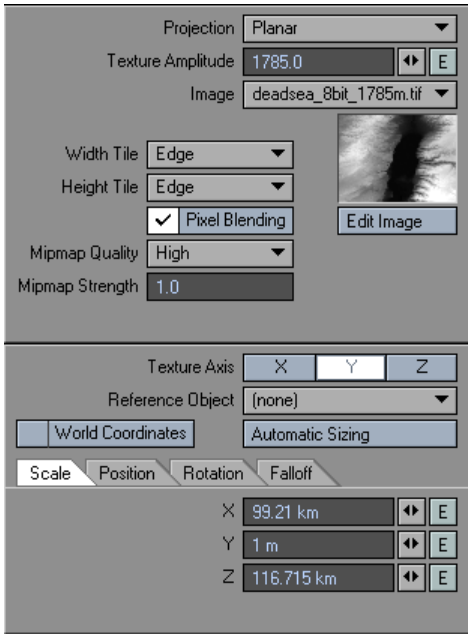
Texture Amplitude: 1785

Width Tile: Edge

Height Tile: Edge

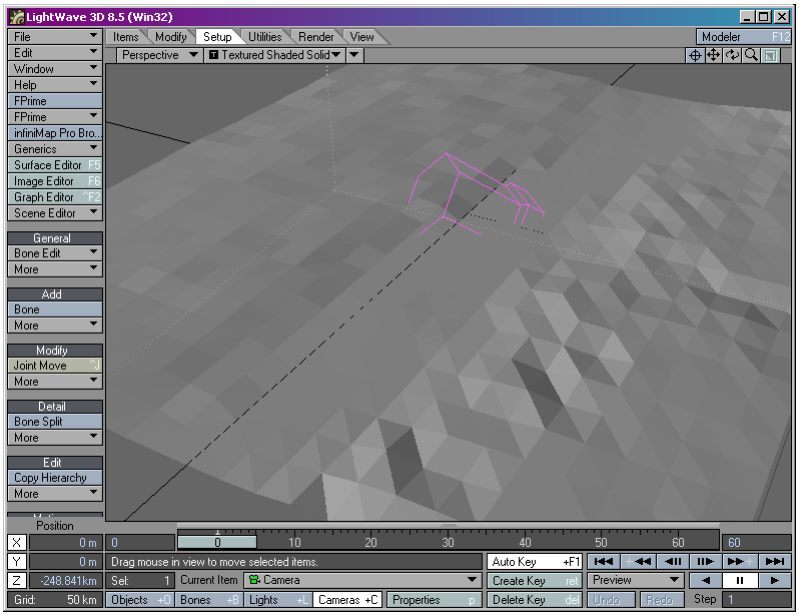
Texture Axis: Y

...and press **Automatic Sizing** to fit the image to the object.



Notice that we entered the elevation covered by the image into the **Texture Amplitude** which basically takes its value in metres.

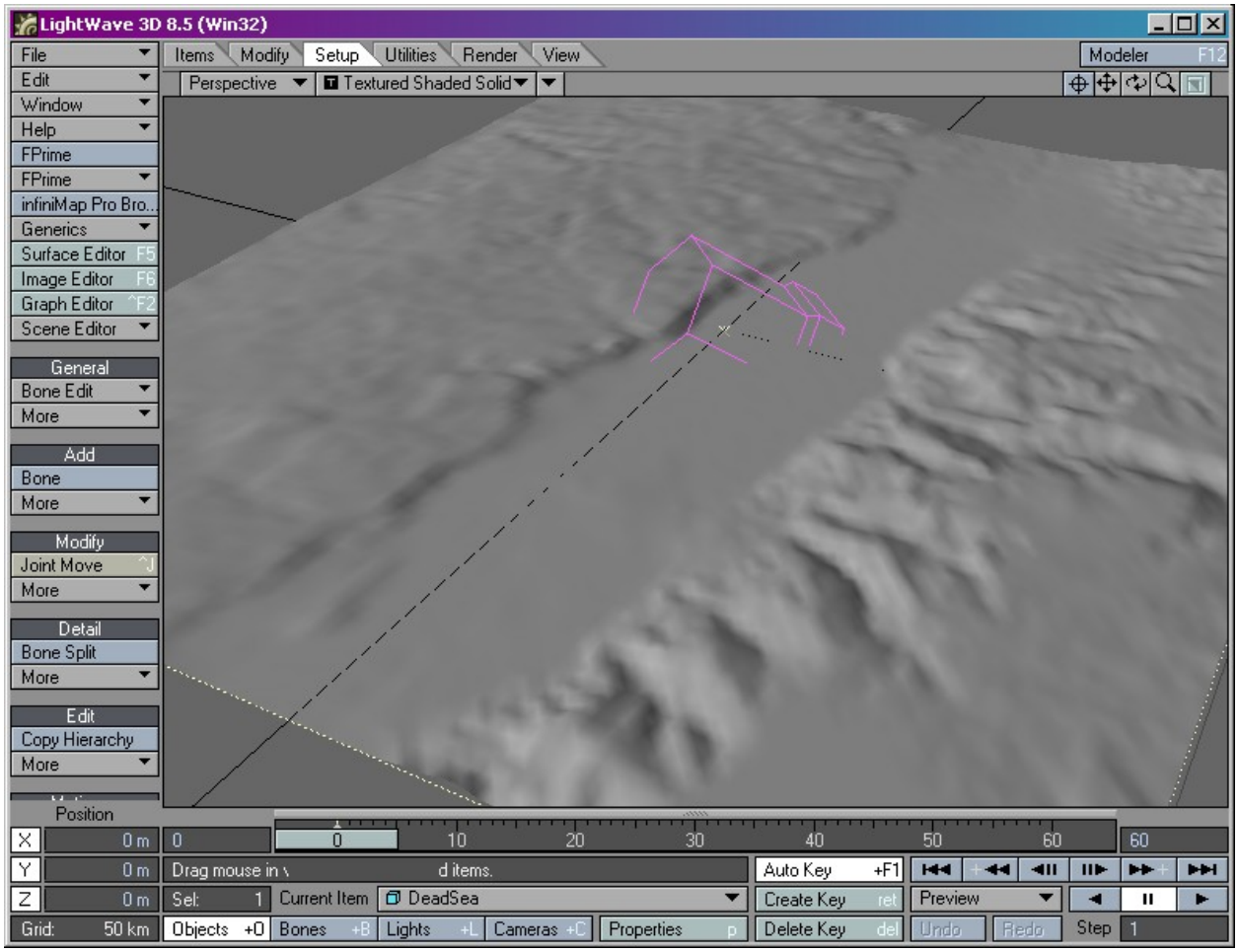
Exit the **Texture Editor** and navigate close to the terrain. It should look like this:



Two things we can do to improve this... First of all go to the **Geometry** tab in the **Object Properties** panel and change the **Display SubPatch Level** to something like 15. While we're here we might as well change the **Render SubPatch Level** to a high amount such as 100 (depending on the amount of RAM you have you can increase this later on).

Now open the **Surface Editor** and activate **Smoothing** for the DeadSea surface.

Your viewport should look like this now:



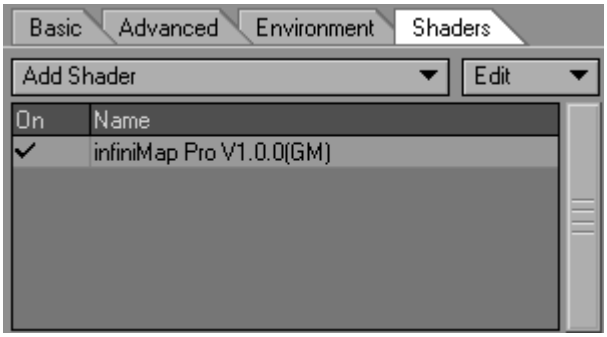
This looks a lot more like terrain now. On to the next step.

Applying infiniMap to the Surface

We are going to apply the **DeadSea_LandSat_15m.ecw** using the infiniMap Pro shader, so that users of the unregistered version of infiniMap Pro may follow the tutorial as well.

Registered users may just as well apply the image using the Procedural plugin in the **Color** channel of the surface.

Since we're still in the **Surface Editor**, go to the **Shaders** Tab and add the infiniMap Pro shader.



Double click on the Shader to open the interface.

Use the **Image** Pop-up to load **DeadSea_LandSat_15m.ecw** into infiniMap Pro.

Now enter the following values into infiniMap Pro:

Projection: Planar

This is the default option, and the only option available for unregistered users

Channel: RGB

Width Tile: Edge

Height Tile: Edge

Texture Axis: Y

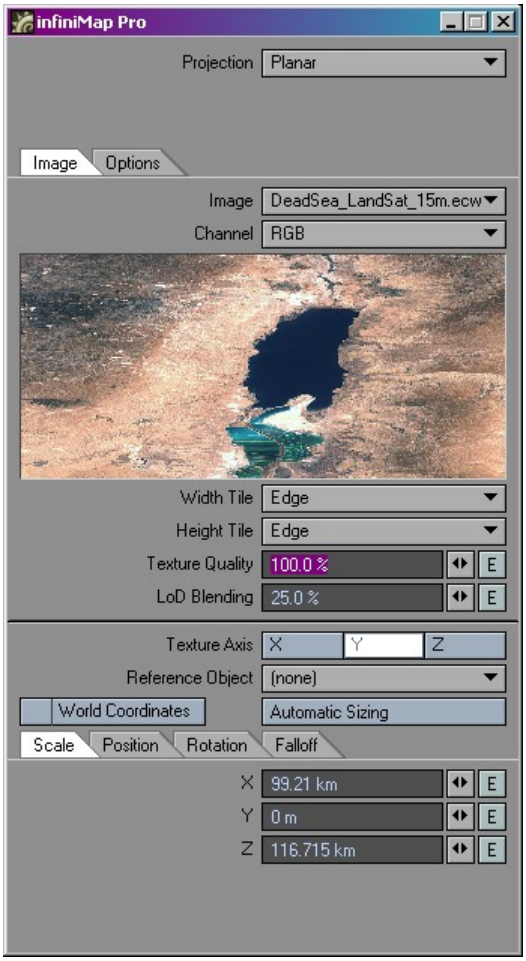
...and press **Automatic Sizing** to adapt the texture size to the size of the object.[3]

That's it, done. You can now render the scene and experiment with the settings.

We've included a scene with some fog to hide the edge of the terrain for you to dissect.

For example, In some cases, you may want to exaggerate the elevation of the terrain .

If you have any questions or suggestions feel free to mail us at support@infinimap.com



3 As you can see we've taken great care in making infiniMap Pro as similar to LightWave 3Ds image texturing as possible.