

WHAT YOU NEED:

- knowledge of my workflow tutorial (http://www.thomashess.net/exchange/tutorial_maya_hl2_workflow.pdf) to set up your Maya
- knowledge of basic tools in photoshop (brushes, layers, color selection)
- a few photos of clouds
- some lighting references
- knowledge of Maya's pivot system

1. MOTIVATION

I think all of you already took a look at terragen skies which are pretty easy to render but often don't look like you want them to be. Especially the clouds are some kind of flat particles/sprites. Then you dig a screenshot of a AAA game title and see superb photorealistic skies which maybe were made with expensive equipment you wouldn't be able to afford.

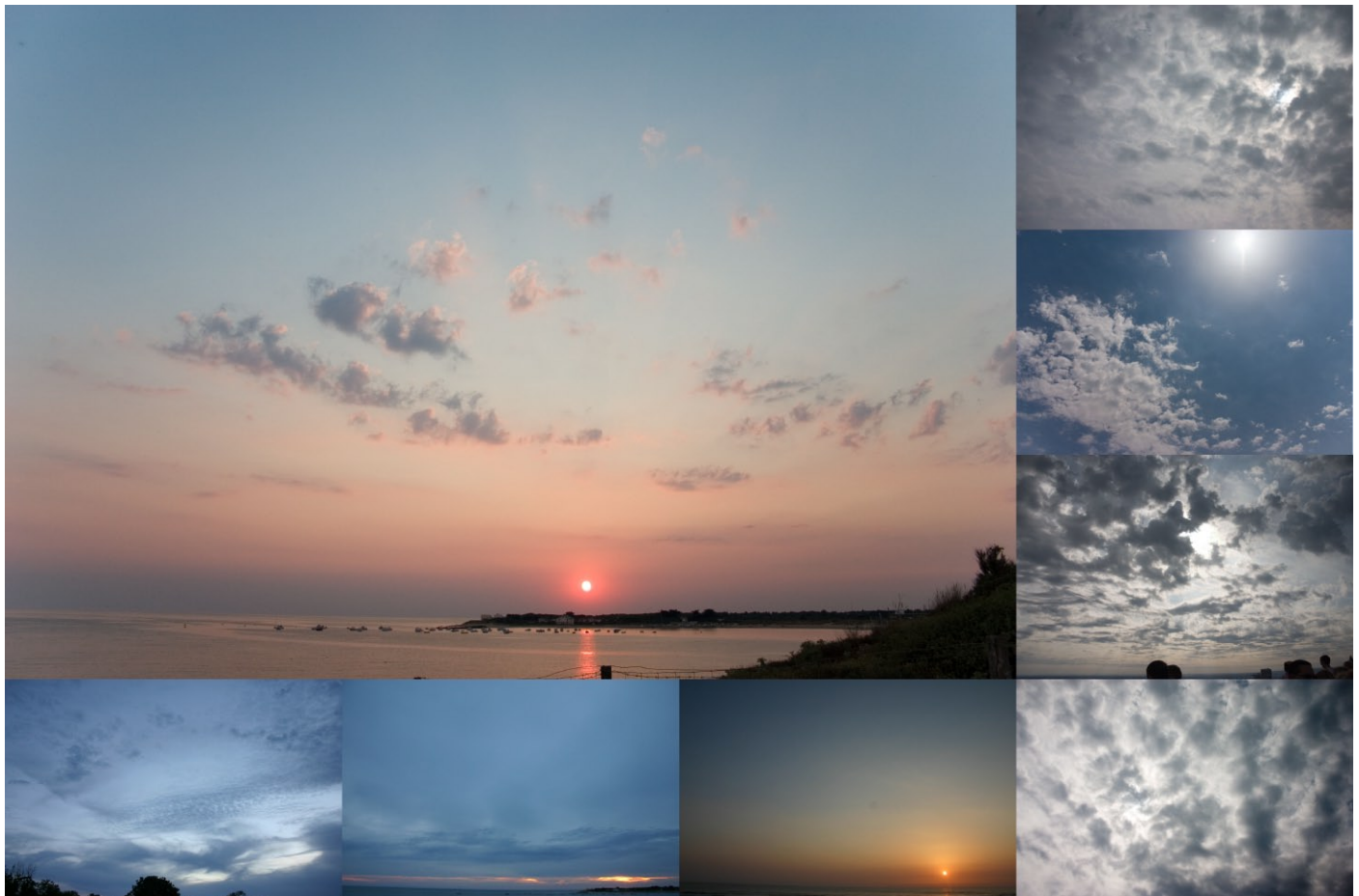
So this tutorial will help you to create a pretty realistic environment texture for a sky with a common camera you can get for around 100\$.

2. PICKING THE RIGHT SKY

There are several different sky lighting situations in reality: sunny cloudy day, sunset, morning sun, fog, rainy daylight, night, ...

The most easy one will be a sunny day with a few clouds, because you will have a simple blue sky color and all clouds will be nearly 100% white.

In this tutorial i've chosen a sunset sky to show you where you might get problems while placing clouds. More on this in the following descriptions.

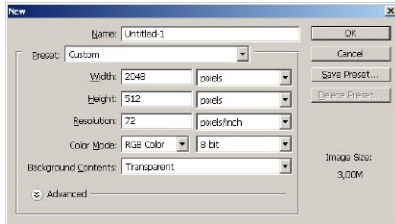




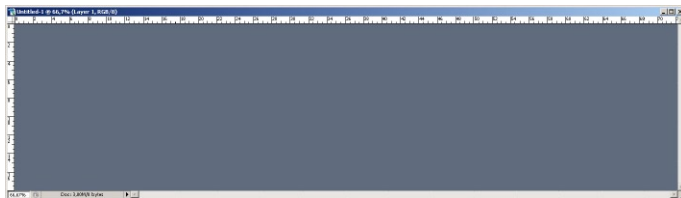
3. PREPARING TEXTURES IN PHOTOSHOP

I took this sky ambience as my goal. You can see there are several elements in it we have to transfer to maya or any other 3d software:

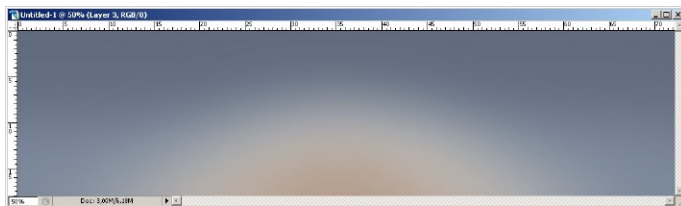
1. blueish sky color
2. sun
3. sun glow
4. clouds



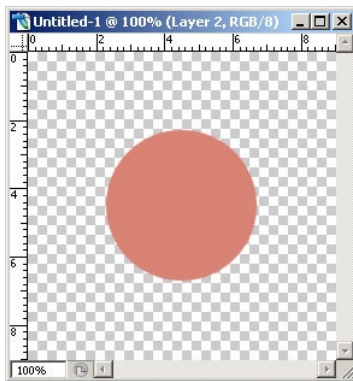
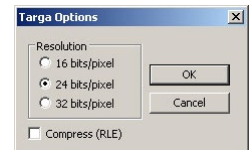
Open up photoshop and create a 4:1 scale image like 2048x512. Fill the default layer with your skie's main color. I recommend picking colors from your reference photos.



Skies aren't just single colored so add a color gradient at the bottom that matches your lighting reference. For example a brighter blue or as in this case a soft yellow.

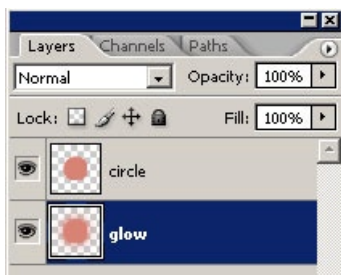


Save this image as skycolor.tga in 24bit.

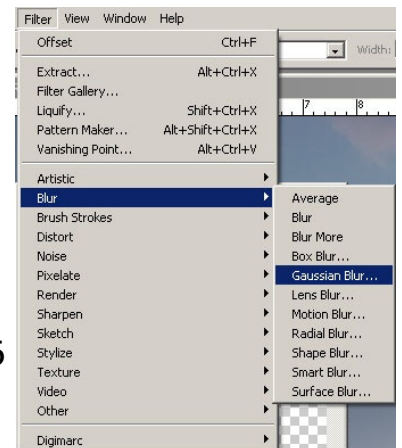
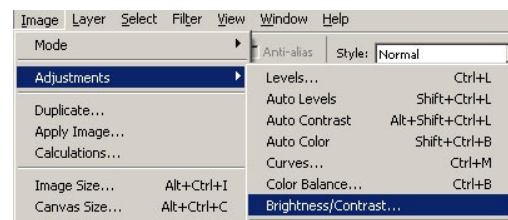


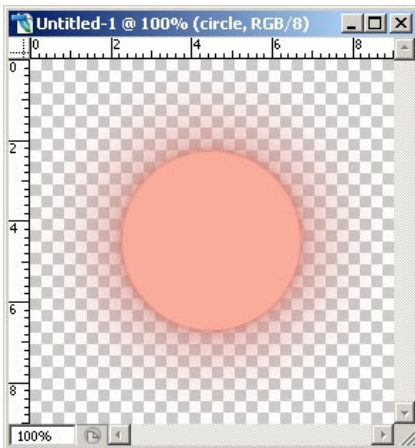
Create a new 256x256 image. Pick a bright yellow (or in this case orange) and paint a 128px circle in the middle.

Duplicate this circle (by duplicating the layer it is on. drag and drop the layer on the „new layer“ button in the layer window) and gaussian blur it with 2px. Duplicate the blurred circle and gaussian blur it with 4px. Duplicate the 2nd blurred circle and gaussian blur it with 32px.



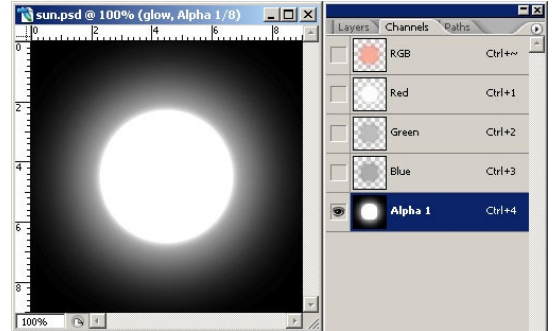
Merge all blurred circles to a single layer and sort them under the circle from step 6. Increase the brightness for the circle of step 6 to make our sun shiny.



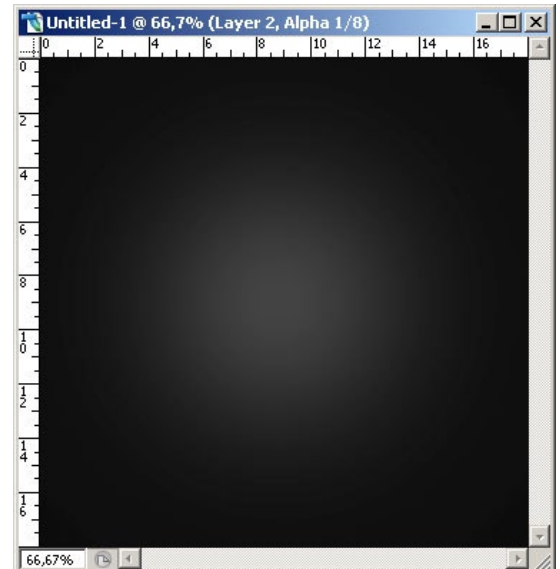


Merge all layers and fill a new background layer with your color from step 6.
ctrl + click the top layer (the one with transparency) to load it's selection.

Create an alpha channel and fill the selection with white.
Save this image as 32bit sun.tga



Create a new 512x512 image and fill it with a single soft big brush in your sunlight color.
Create a new layer and fill it completely with the sunlight color.
ctrl + click on the transparent layer and create a new alpha channel which you fill it with a dark grey.
Save this image as 32bit sunglow.tga

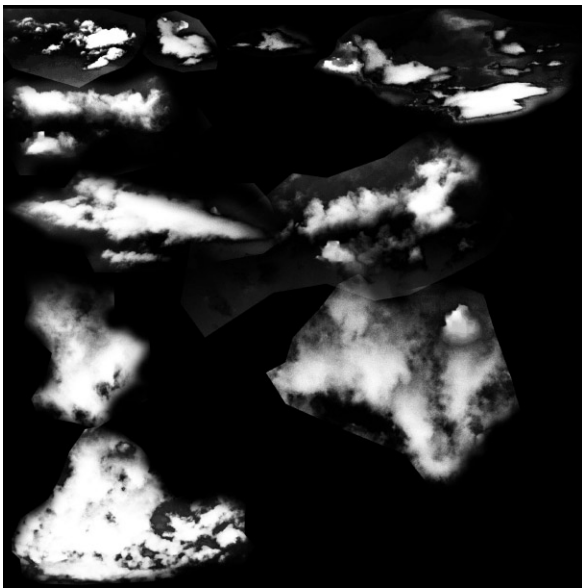


Create a new 2048x2048 or 4096x4096 image. Open your cloud photos and use the polygon lasso to roughly select a group of clouds.

Use colorselection to remove the sky color and separate the clouds. Paste this selection into our 2k or 4k texture where you remove hard borders the colorselection didn't get of your cloud with a soft eraser.

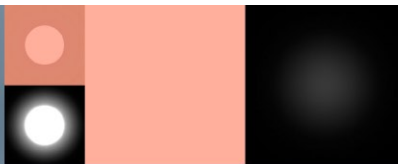
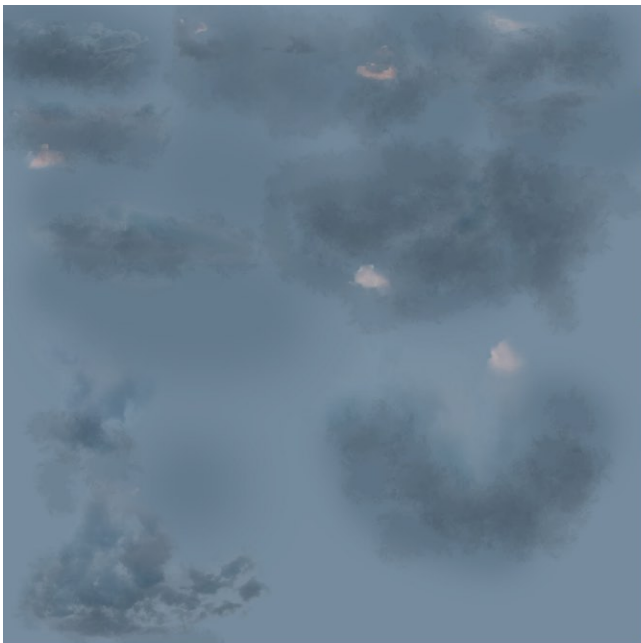
Fill your texture with more clouds

and adjust their colors using ctrl + b (colorbalance) if necessary.

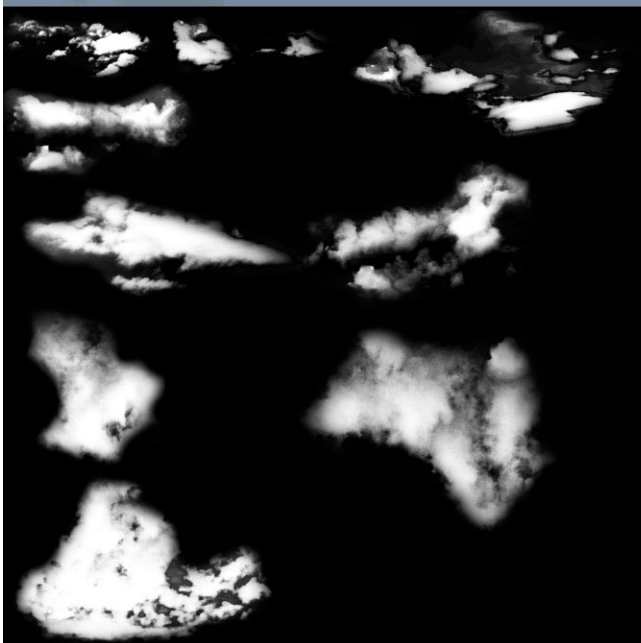


Now merge all cloud layers to a single layer and use my hessi_blur action to blur out your clouds correctly (you can find a tutorial on this in my tree texture video at www.thomashess.net).

ctrl + click on the cloud transparent layer and fill a new alphachannel with white. Maybe you will notice some hard edges. Remove those with a black soft brush. After you finished that save this image as 32bit clouds.tga



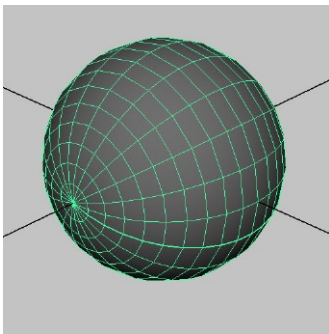
These are all the textures we recently „painted“ including their alpha masks if exist.



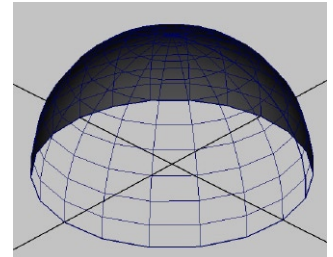


4. MODELLING THE SKY IN MAYA

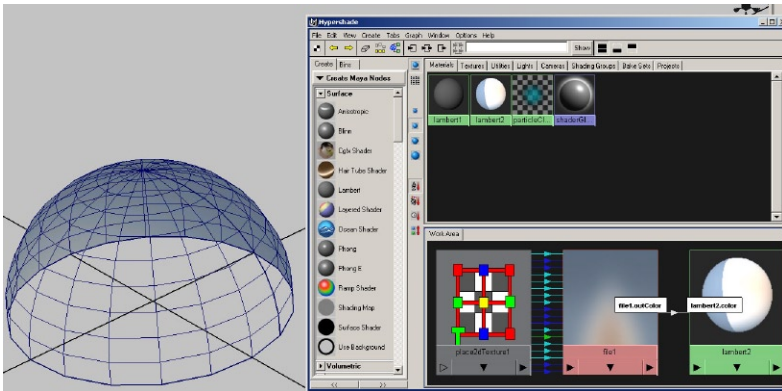
Now you need to compose all those elements in Maya or any other 3D software. There are no 3d package specific features used. This tutorial is based on fundamental features every software has.



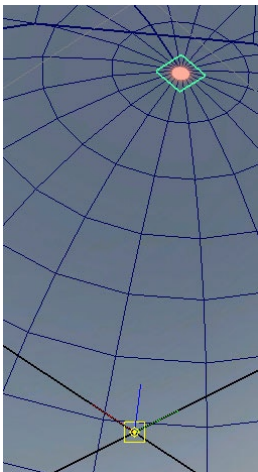
Create a sphere with a medium high tessalation level. Rotate it that the „poles“ are vertically aligned and flip the normals to make sure all polygons will point to the scene origin. Remove the lower half of your sphere to cut off everything that is not sky.



Open Hypershade and create a new lambert. Assign the skycolor.tga to the color node. Increase the ambient color to the maximum.

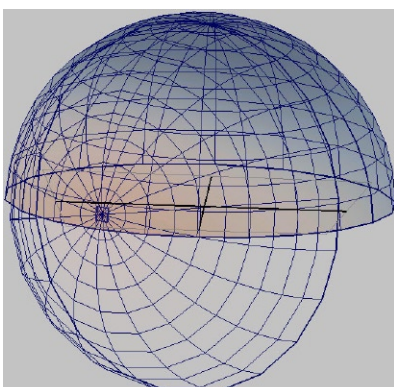
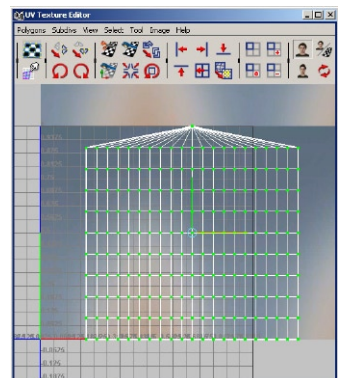
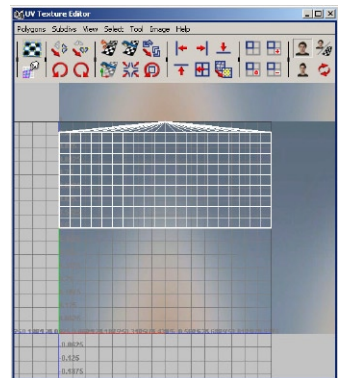


If you take a look at the default uv map from maya you will notice that it only uses half of the texture. Vertically scale the uv's that they fit in the 0-1 uv range. If you want to move the prepainted sun-glow you can horizontally move the uv's (they will always tile 100% if you don't scale on u axis) to change the sun angle.

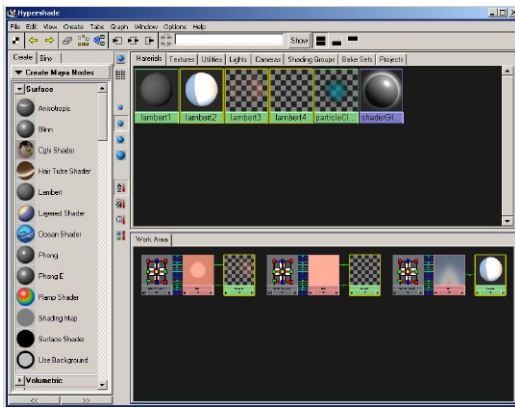


Now create a simple polygon plane and rotate it that it is flat on the ground. Freeze all transfroms on this object. now move its only polygon straight upwards that it gets close to the skycolor sphere. Make sure your pivot stays at the scene origin. You can change the pivots position later too, but doing it this way will prevent this.

Assign a new lambert with the sun.tga in color and transparency node onto the plane object. Maximize the ambient value to 1.



Duplicate the half sphere with the skycolor material. Set ambient color to 1 (fullbright). Scale it a bit smaller so that you can rotate it as you want without cutting the skycolor sphere. Assign a new lambert to the new object with the sunglow.tga in the color and transparency node.



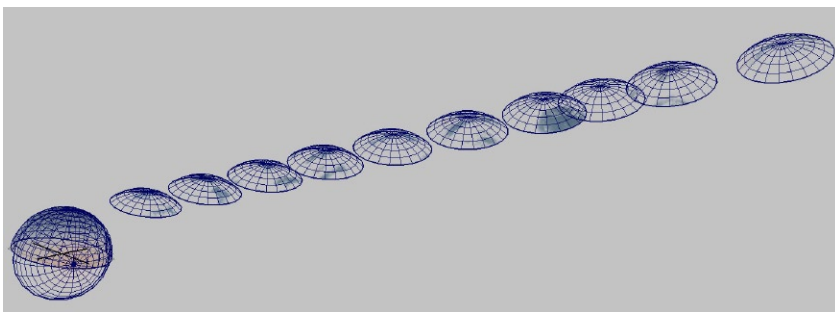
This is how your hypershade and all graphs of your lamberts should look like now.

Now create a new lambert with full ambient color and your clouds.tga as in the steps before. Duplicate the sphere of your sky and move it outside the origin to separate it from the other objects. Assign your clouds lambert on it.

To correctly map your clouds onto the sphere you should delete again another half of the half sphere so it gets thinner.

Now use a planar uv projection from above (mine is z axis. maya default is y if not set to an other value) to map your cloud texture. Open the uv editor and move the uv shell centered on a cloud group in your texture. Don't care if it cuts into other clouds. We will fix that later.

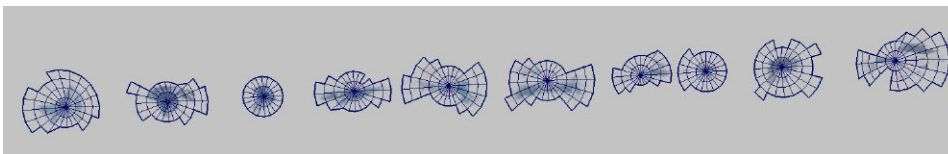
Duplicate this first cloud object and center the uv's on an other cloud group. Redo this until you did this for every cloud in your texture.



Now you will have a lot of objects with not 100% fitting textures. Open the uv editor and select the first cloud's faces in the uv editor. While holding ctrl you deselect all polygons you won't need for this cloud object (yes, deselect!). Now you have all your required polygons selected. Switch to the perspective view where you will

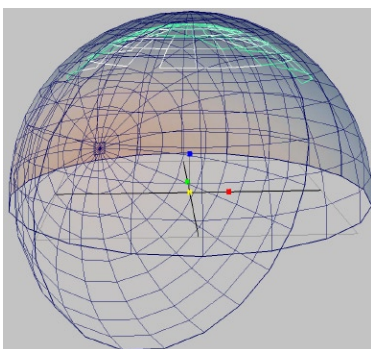
invert this selection by holding shift while selecting the whole object's polygons (a little weird explained. just invert the selection somehow. :) Hit delete.

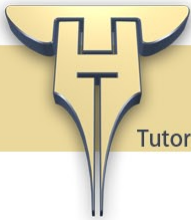
Redo this for all cloud objects.



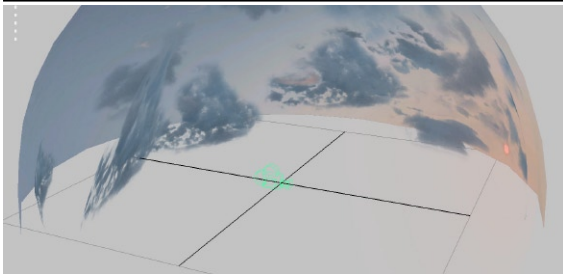
After you finished you can set all translation values of your cloud objects back to 0 to move them back to the scene origin.

with the rotating tool you can now place your clouds easily in the sky. Experiment with scaling to get bigger or closer clouds.

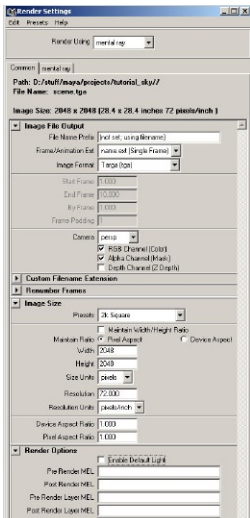
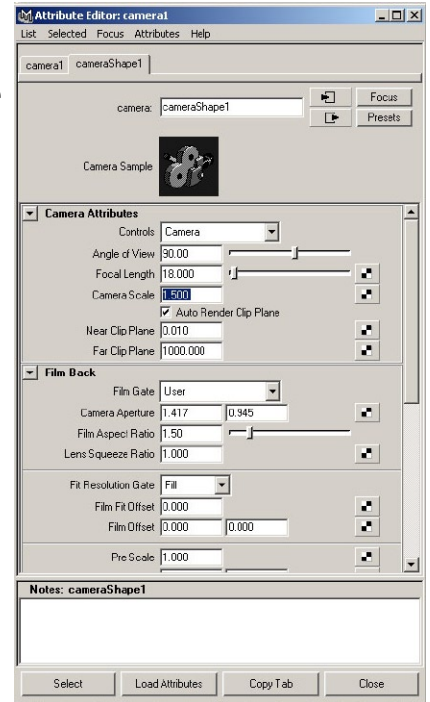




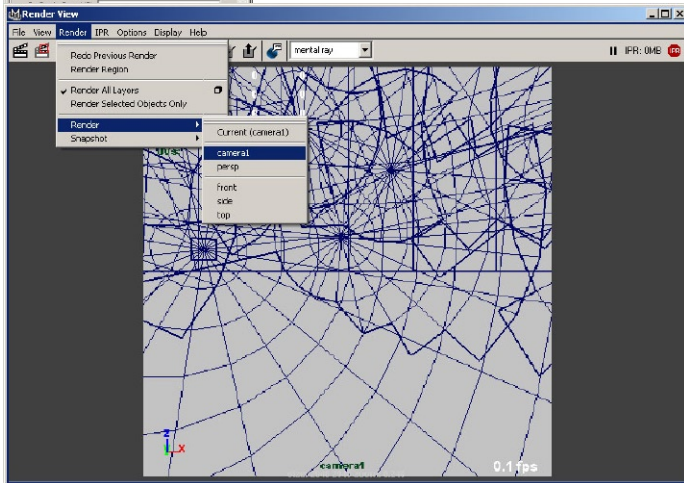
5. RENDERING THE TEXTURES FOR THE CUBEMAP



Create a new camera object in the scene. Open the attribute editor and change FOV to 90 and the camera scale to 1.5.

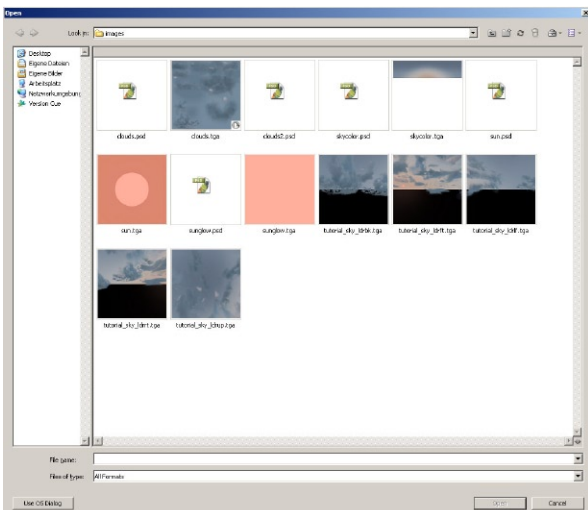


Open the rendersettings window and disable default lighting. Set the rendering resolution to 1k or 2k (I prefer bigger resolutions to not lose quality while rendering).



Open the Renderview and render the camera1 camera. You will get the first part of your cube-map.

Now rotate the camera stepwise with 90° to get all views. I think you could figure that out now :P



At the end you have 6 textures: front, left, back, right, up, down.



If you are not that satisfied with the rendering result don't panic. You can now move all rendering into a big file in photoshop and tweak it by hand using basic painting techniques. For example to adjust some colors or add light on the clouds.

This is the result i got by writing this tutorial:

I hope you enjoyed.

