

Creating mountains and other terrains in Photoshop

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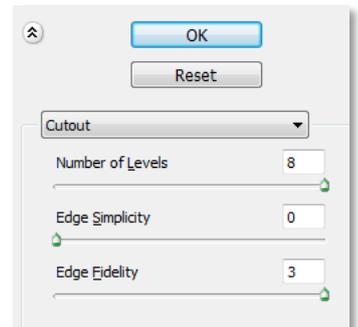
PREWORD and PREWORK

I have to say that I'm not an expert in Photoshop and most likely some of the steps I'm presented here could be done easier or better. I'm currently using Photoshop CS4, but I will make this tutorial compatible at least with CS3 (in other words I'm not going to use all the shortcuts and specialties I have in CS4). I will explain each step in detail, so that beginners could follow it up as well, but later sections when I'm using the same techniques as earlier I will not explain them anymore. So in case you encounter a technique you don't know how to perform, please refer backwards to find the paragraph where it was originally explained.

I will start by making few things we need later in the tutorial; the ground, forest, mountain and rough textures. It is not absolutely necessary to make these textures and you can create good looking landscapes just by painting with solid colors, but having pre made textures saves time and many times gives better result that just drawing (this of course depend on your artistic skill and I'm just saying it on my own behalf).

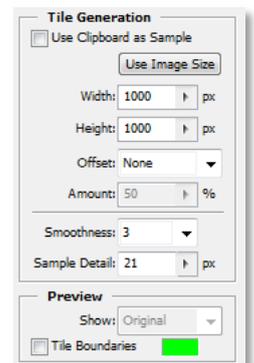
Preparing the ground texture

I have selected relatively simple ground texture. It was originally a grassland picture with yellow and green shades. I want to lower the amount of detail though and make it more peaceful with fewer colors. One fun way to do it is to use filter "cutout" (Filters -> Artistic -> Cutout).

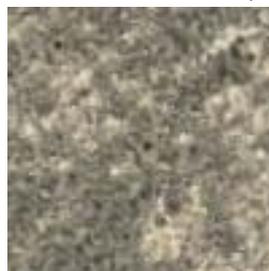
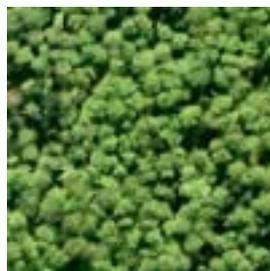


Making seamless textures

In order to have a good looking background I either have to have the texture at least same size as my document or I have to make the texture seamless. To make the texture seamless I used Pattern maker -function (Filter -> Pattern maker) and here is the result (please note that this is just a small piece of the full texture and is therefore not seamless).



Next thing is to create textures for mountains, forests, rough terrain, and rivers. In all cases I already had a suitable texture and I just wanted to make them seamless. Here are the examples of the textures I'm going to us:



Enhancing the forest texture

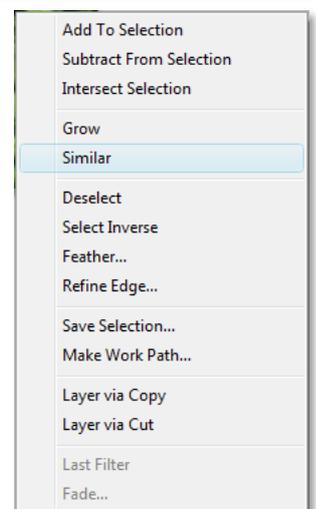
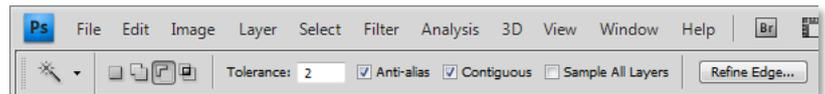
Next thing I'm going to do is really optional and you could use basic and solid forest texture and get a good looking result. But I want my forest here to have a "see through" effect where parts of the underlying ground can be seen through the forest. In this small example you can see what I mean and it will have spice up the final map.

I don't want to make my forest transparent, so I'm not going to lower the opacity at all. Instead I'm going to make really small random holes to the texture to see through.

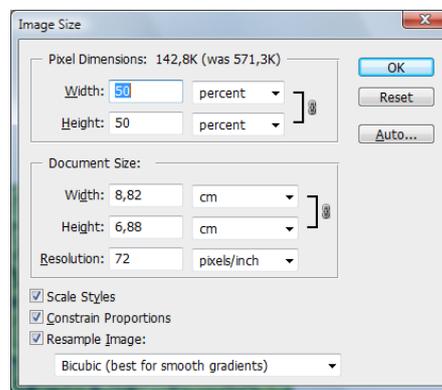


I will open my forest texture for edition and take the magic wand tool. I'm going to select

the dark / black areas from my texture, so I set the tolerance to really low (2) as I don't want to select all that is black. I start by selecting something that is black and right-click the selection to bring up the selection menu and select "similar". Then you should have a lot of black / dark areas selected and you can press "delete" to make the holes.



The forest pattern I have has too big trees, so I'm going to reduce the size of it to half of the original.

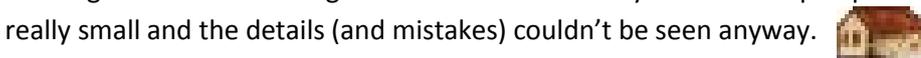


Creating a town texture

I'm going to create my towns as a mixture between symbolic and real looking towns. I started by drawing simple buildings from different angles. I didn't have to worry about exact perspective or details as the final picture would be really small and the details (and mistakes) couldn't be seen anyway.

Then I just copy pasted the buildings to another document and filled the gaps between the houses. Finally I changed the image size as small as possible where I still could recognize the buildings.

I couldn't make this a seamless texture in the same way as before. I made it manually by coloring the opposite edges and checking once in a while by copy pasting the texture side by side into larger area.



Defining patterns

Last step is to make patterns from our newly created textures by using the “define pattern” -feature (Edit -> Define pattern). By defining patterns we can select them later for layer styles and we can use the pattern as a brush etc.

THE REAL DEAL

In this part we start first by making the ground texture and then continue with creating the mountain range. Last but not least we will add forest over the mountains and see how we can get it to follow the “height” of the mountains.

BACKGROUND

Creating a new document

Make a new document of any size you like. I'll make it 700x500px as it fits nicely into my working area, but still is big enough for this mountain range I'm going to create here. Make sure the new document is 8-bit RGB.

Adding Clouds -layer

Add a new layer and render some clouds to it (Filter -> render -> clouds). Remember to reset your foreground and background colors by pressing “D” before rendering clouds. By doing this reset we make sure that we get the clouds in correct color.

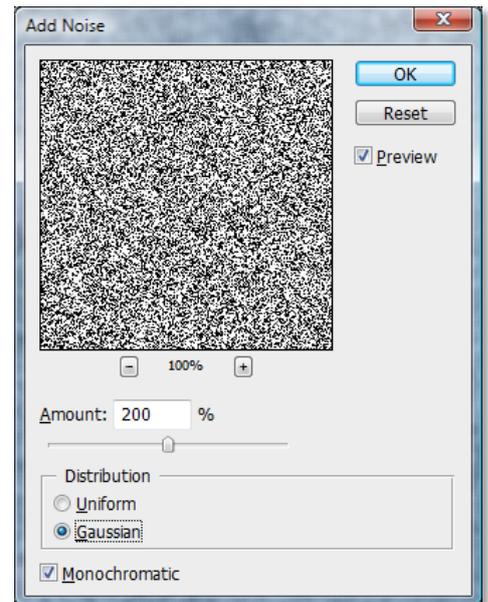
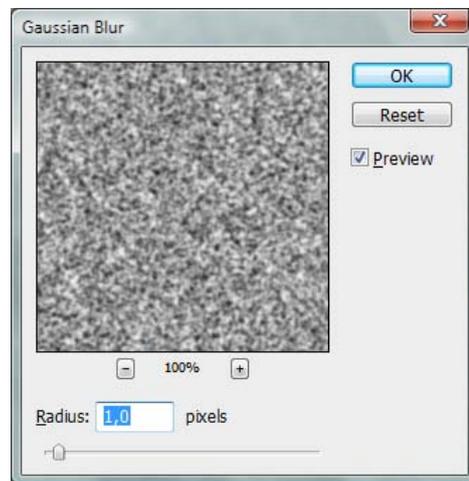


This layer is responsible for the bumpiness of the background, so if you want to have more highs and lows then you can create a temporary document with higher resolution and make the clouds there. Then just resize the clouds to fit you primary work document and paste the clouds there. That is just what I will do here, so I create a temporary document of 1400x1000px and render the clouds there. Then resize it to 700x500px and copy/paste it to my primary WIP.

Adding Noise -layer

Next step is to add a new layer on top and fill it with white color. Then create some black and white noise to it (Filter -> noise -> add noise). You get black and white noise by clicking “monochromatic” tab at the bottom. Together with the Clouds -layer, noise is responsible for making the ground layer more realistic looking.

And not to get too granular with the final result, we need to do some Gaussian blur to the noise (Filter -> Blur -> Gaussian blur). I will set the radius to 1,0 pixels (the bigger the radius the softer you get).

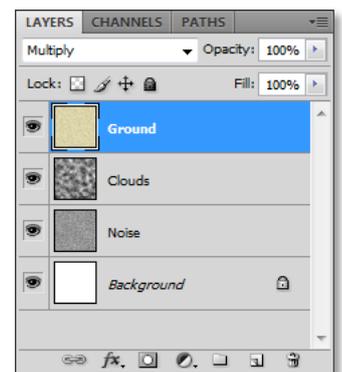


Adding the Ground layer

Adding 3rd layer to the top and filling it with ground texture created in the pre work phase. Then we need to change that layer type to “multiply”.

Making the ground layer visible

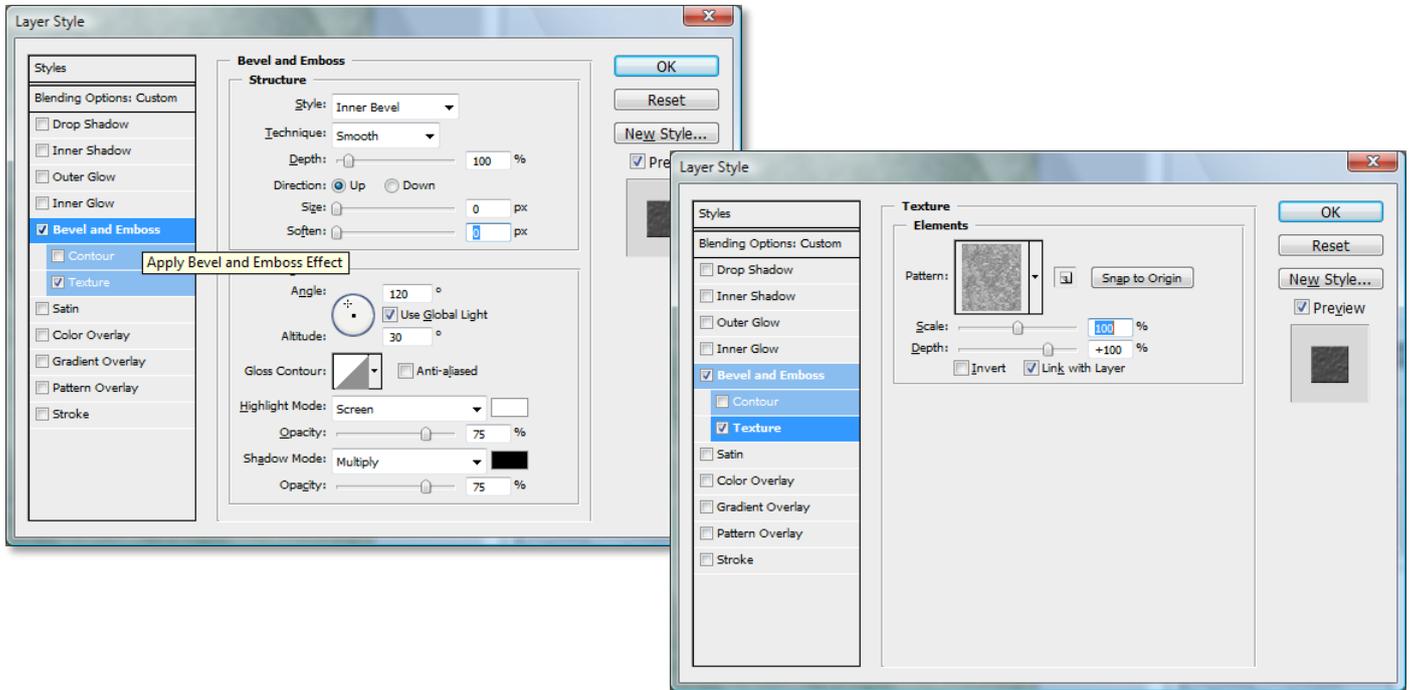
Next step is to lower the opacity of the clouds and noise layers to get the ground layer visible. This can be done by selecting each layer and lowering the opacity percentage. I going to reduce mine to 20% in both Clouds and Noise layers, but the values depend on your own liking and the ground layer texture.



Roughing up the ground

Now that we have the Ground layer visible, we can add effect to it to give it a bit of a rough look. The effect can be added by double clicking the Ground layer and selecting the desired effect. From the new Layer Style -window, I'm going to select the styles "Bevel and Emboss" and "Texture"

I put the Bevel size to 0 as I don't want to have any bevel in background, but under texture -style I choose the rough pattern introduced in the pre work point. I don't make any changes to the settings, but the scale and depth can be changed depending on the chosen texture.



Finalizing the background

Quite often the ground looks a bit too dark, so we want to lighten it up a bit. I will add a new adjustment layer (Layer -> Add New Adjustment -> Brightness/Contrast) and I'm going to leave the brightness intact and correct only the Contrast by 40.

At this point you can also play with the opacity of the Clouds and Noise layers to find the best combination.

Here you see the finalized background and for comparison the ground texture we started from.



Adjustment layers can be added to an image to apply color and tonal adjustments without permanently changing the pixel values in the image. For example, if you add a Color Balance adjustment layer to an image, you can experiment with different colors repeatedly, because the change occurs only on the adjustment layer. If you decide to return to the original pixel values, you can hide or delete the adjustment layer.



MOUNTAINS

We create the mountains in 3 different layers. In one layer we are going to have the lowest parts of the mountains, in the second we have the middle parts and in the top layer we will have the mountain peaks. The benefit of this technique is that you will be able to have different styles and effects on each layer making the mountains to really pop out.

Setting up the mountain layers

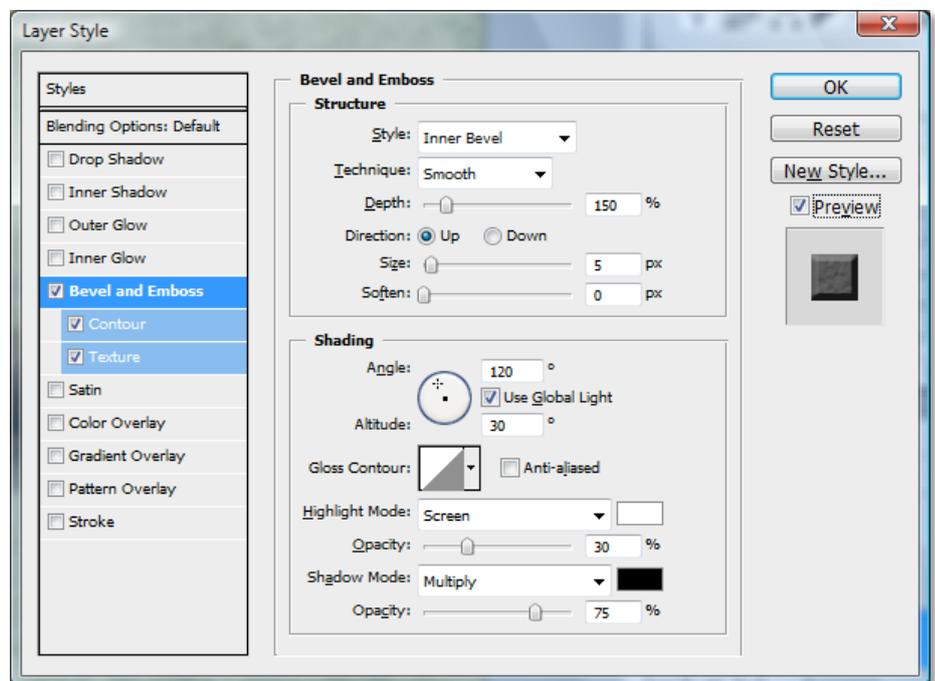
Let's start by adding 3 new layers; mountains low, -med and -high. On each layer we add effects to it (Bevel and emboss, Contour and Texture) to get a desired look. There are no exactly right settings to use and you should experiment to find the best values for your mountains. You can even create different mountain types by creating another set of mountain layers with different settings and drawing some of your mountains to it.

Low mountains -layer

I will add few effects the same way as when we were roughing up the background to the "mountains low" -layer. I select the Bevel and Emboss, Contour and Texture effects.

Bevel size should be set to low because high bevel would create too steep mountains. Instead of very steep mountains I want mine to build up gently and to blend well with the surrounding ground. I'll use depth 150%, size 5 and soften 0.

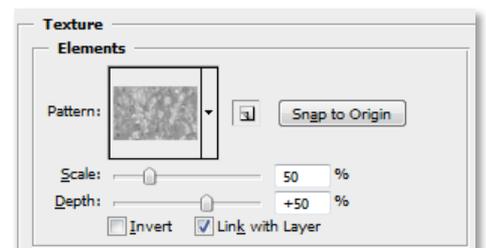
I will also lower the opacity of the highlight mode to 30%. This will reduce the glare of mountains.



Then I set the Contour range to 30% (you get steeper and sharper pointed mountains by decreasing the contour). You can also select different contour type from the drop down menu, but I have used here the default linear contour.



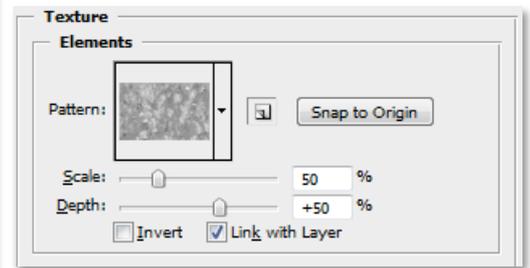
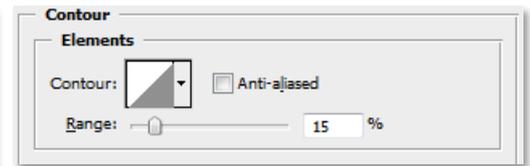
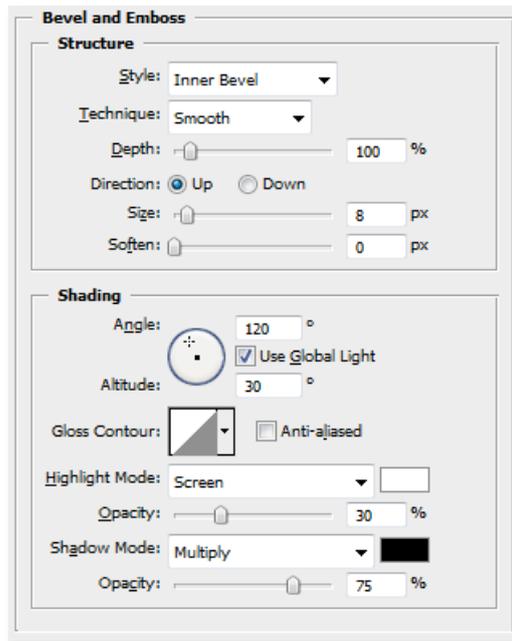
Next step is to select a texture for the mountains from the patterns I introduced in the pre work section. I will reduce the scale of the texture to 50% as the pattern was too big for the mountains and didn't look good. I will also reduce the depth of the pattern to 50% as other vice I would get too rough mountains.



Medium mountains –layer

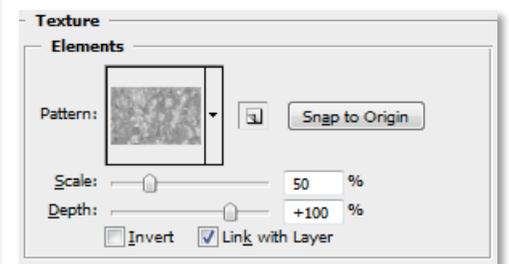
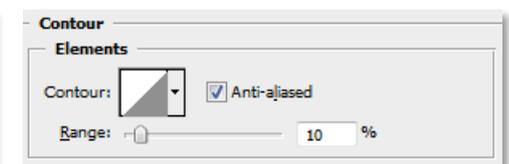
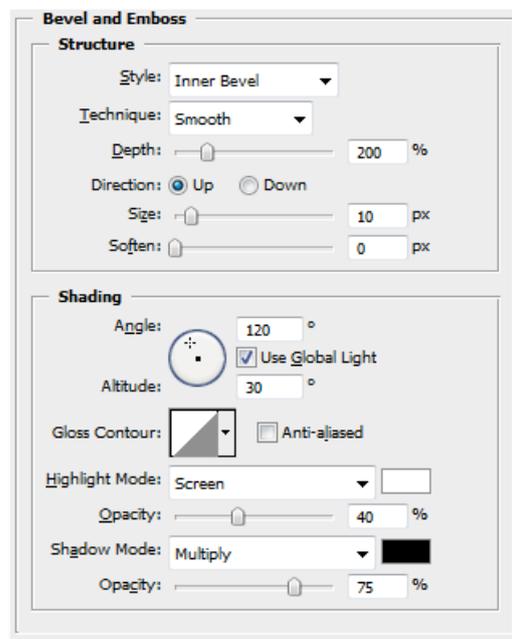
In the medium mountain layer I'm going to leave the depth to 100% and have a higher bevel size (7 or 8)

I will also reduce the contour to 15% and for the texture; I will use the same settings as with low mountains.



High mountains –layer

I will set the effects for the mountain tops as well and here you can see the values I used.

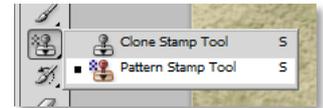


You can (and should) play with these settings and here we have two examples where the picture in left used the settings described above and in the right one I just changed the middle layer bevel depth to 200% and increased the Contour to 30%. Basically the only difference is that I get a bit rougher looking mountain, but kept the same shadow balance. The change is not big, but when this is applied to the whole mountain range it sure changes the feeling.



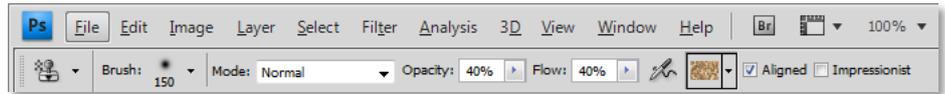
Raising the mountains

We have just set the 3 mountain layers ready and now we start painting the mountains on them. We will paint with the pattern stamp tool and I will use the mountain pattern



we created in the pre work phase.

On the low level mountains layer you paint with large and very soft (100 – 200px) brush with 30-50% opacity and flow. In this layer you only roughly paint the area of your mountains.



Then reduce the brush size to around 65px, increase the opacity to around 50% and paint to the medium mountains layer. The intention here is to paint the body of the mountains and you can select smaller and bigger brush sizes.



Finally take even smaller and a bit harder brush and increase the opacity to 50-60%. Then paint the mountain peaks to the high mountains layer and one good way is to paint in the direction of the slopes.

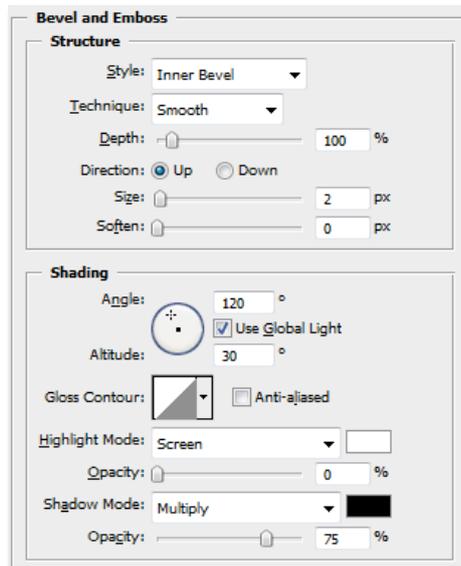
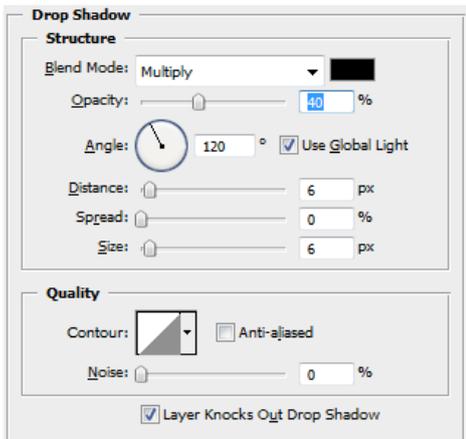


By painting many times over some parts and only once over some, you get great looking highs and slopes.

FOREST

Adding the forest is a really simple thing and you get the forest following the height of the mountains automatically.

First thing I will do is to add a new layer on top and name it to "Forest". I'll change the forest layer to multiply in order to get the forest to grow above the below ground. Then I put few effects (drop shadow and bevel) to the layer and we are good to go.



Note that I have put the bevel shading highlight mode to 0%, because I don't want my forest to have any highlight, only shadow. You can test what it does to add highlight and you will why I lowered it to 0.

Planting forest

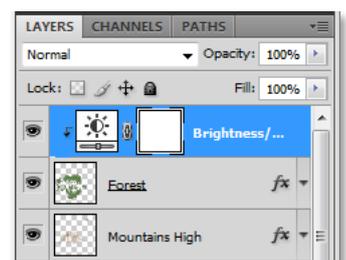
Go to that new forest layer and select the pattern stamp tool with your forest as pattern. I choose a bit soft brush and set the opacity and flow to max (100%). While drawing I will change the brush size so that I can paint larger areas and small details.

Here I have 2 samples. The first one just demonstrates how well the forest follows the height of the mountains and the second one is the actual forest I draw.



Finalizing the forest

In case you want to adjust your forest colors or make it brighter or something, just add suitable adjustment layer and create a clipping mask with forest layer. You can set the adjustment layer to clipping mask by right clicking the layer and selecting "create clipping mask" from the pop-up menu.



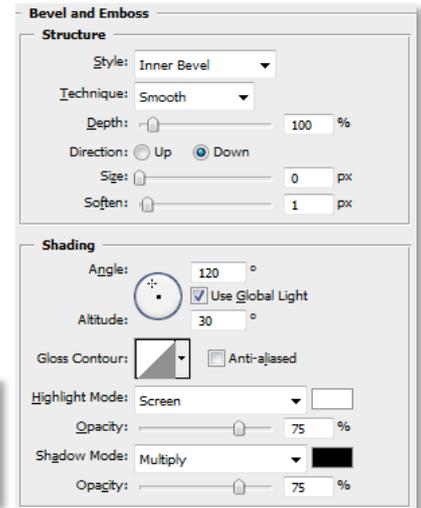
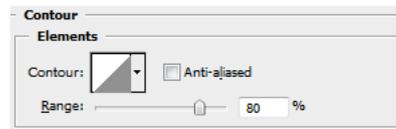
RIVERS AND LAKES

Of course we need to have water in our world. The texture I introduced in pre work section is suitable for rivers and small lakes, but is not good enough for large water areas. So in case you plan to have large waters as well, remember to try out your textures in large areas in advance.

Setting up the river layers

I'll add two layers for the rivers, one for the actual rivers and another one for river enhancements (adding current etc).

I'll add few effects (bevel and contour) to the Rivers –layer as well. I'll change the direction of the bevel to "down" as I want the river to run lower than the surrounding ground. But then I put the bevel size to 0 and soften to 1 to keep the effect minimal. I'll add contour to spice it up a bit.



Painting the river

I select the pattern stamp –tool and select the river pattern. I select small (3px) brush for the smaller rivers and start painting. I paint with full opacity as I'll add some effects to it later and will not play with opacity at this point. I have two small rivers coming together making the river wider, so I'll use 5px brush for the wider part.



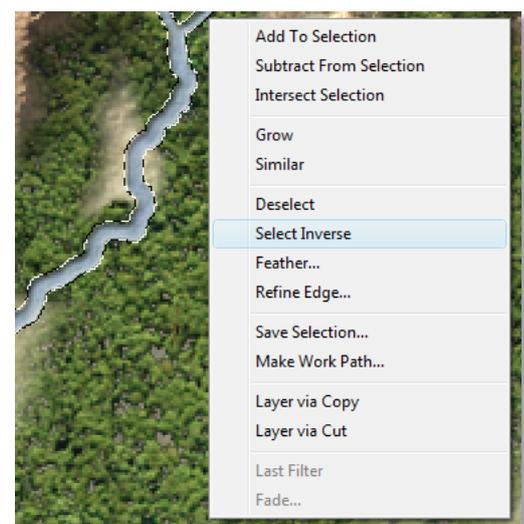
I will draw also a small lake with two small islands in it. I do the islands by first drawing the lake and then I'll just remove small pieces of the lake with eraser tool and voila!

As you paint you see that the river seem to flow over the forest, so we have to do something about that. There are two things I'm going to do. First I'll remove the forest below the river. To do that I'll go to the rivers layer and take the magic wand tool. Then I'll select any area outside river and it now has selected everything else but the river. Right click your selection and from the pop-up menu choose "Select Inverse" and now you have the river selected. Then go to the forest layer and press "delete" to delete the forest under the river.

Then we have to change the order of the river layer. I move the river layers above the mountain layers, but below the forest layer. The



reason for this is that I want the rivers to be on top of the mountains, but I want the forest shadows to be cast over the river (if you remember we enabled the drop shadows while setting the forest layer).



Final touch on the rivers

The river starting point is too “strong” and it appears from nowhere, so I need to fade it. I do that simply by going to rivers layer and using eraser tool. I set the opacity of the eraser to about 30% and start erasing the river starting point until it blends nicely.



The final thing I’m going to do to my rivers is to add some running river feeling to them. I’ll do that with brush tool and white color (and with dark blue or even black). I set the brush opacity to about 30% and paint the final touches to the river enhancement –layer. By painting to a separate layer I don’t ruin my river by accident.

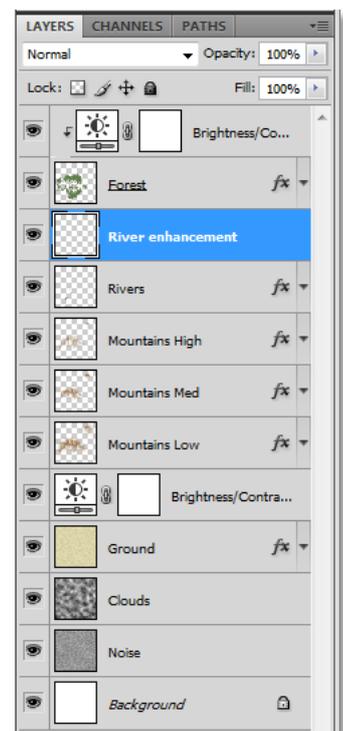
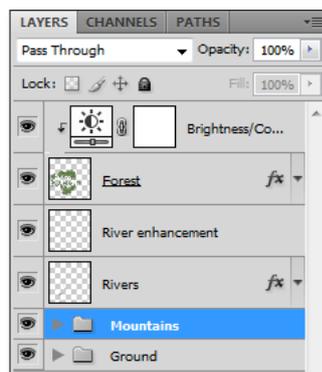


...And here we have the final result...

Managing layers

As you can see we start to have quite many layers and to keep it more manageable I’ll group some layers. To group the layers I simply select all the layers I want to group and go to Layer -> New -> Group from Layers... Then you can close or open the groups as you need.

I’m going to add groups for my background and for my mountains at this point and name them as “Ground” and “Mountains”.



Lakes and seas

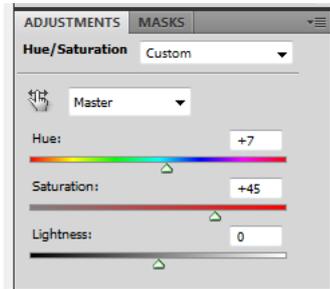
The lakes are done in the same way as the rivers by painting with the pattern stamp tool. To get a rough costal line I use “Rough Round Bristle” brush varying the brush size. But because the pattern I use is quite small it starts repeating itself annoyingly. To overcome that I copy the Clouds –

layer I used while making the ground and paste it above the river layer.

Then I change the opacity of that second cloud –layer to 30% and create clipping mask from it (so that it effects only to the rivers layer).

The sea still looks a bit too pale, so

I’ll add a new adjustment layer (hue and saturation) and make it clipping mask too.

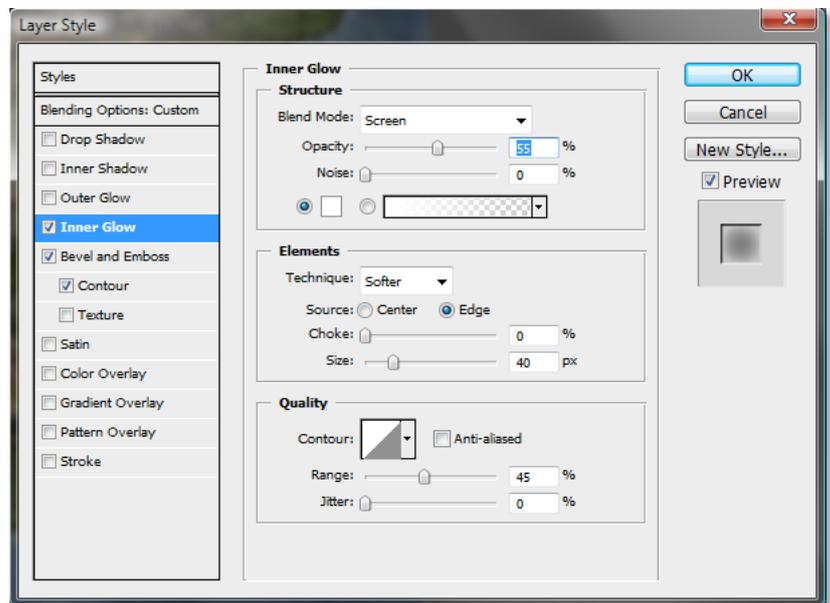


Coast line

There are many ways to create coast line and the one I’m using here is really simple. I just add new layer style to the sea layer called “inner glow”.

If you have your rivers and sea in the same layer this will make the rivers quite white. To get rid of that annoyance you have 2 options.

- 1) Make the rivers in separate layer.
- 2) Add another layer on top of the sea and lower its opacity to around 50%. Then go to the sea layer and use magic wand to select all the sea and rivers. Go to the river corrections layer again and paint the rivers again with the sea texture.

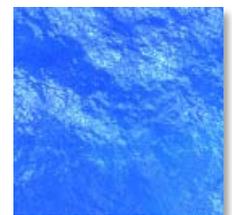


Alternative sea texture

There are some really good looking water textures in the internet you can use. It is not always certain if the best looking texture is really the best as different map styles requires different textures. Anyway here is one alternative texture I tried and it actually gave a good look, but I had to make some small alterations to the settings. As the texture is so strong I lowered the river layer opacity to 90% and increased the clouds layer opacity to 70%. Coastal line was now

too invisible, so I increased its opacity to

60%. Finally I changed the adjustment layer properties (Hue:+2, Saturation:-1 and Lightness:+20).



ROADS, TOWNS AND FIELDS

There are not too many tricks to do in the roads so it becomes important to make the roads to follow the natural paths of your world. In short it means that make the roads go the easiest reasonable path and not over the highest mountain.

Setting up the roads layers

Roads will be built into their own layer as usual and the layer should be above the mountains and rivers, but below the forest. I will have my roads layer set to multiply and no special effects. As the layer is set to multiply, the roads will get "texture" from the underlying ground. But in case you have smaller scale map with wider roads, you might need to add a texture to your roads.

Painting the roads

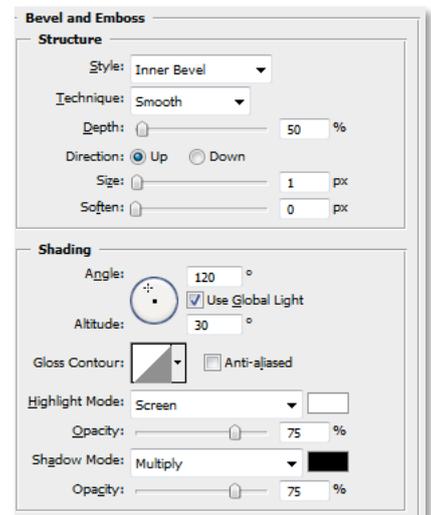
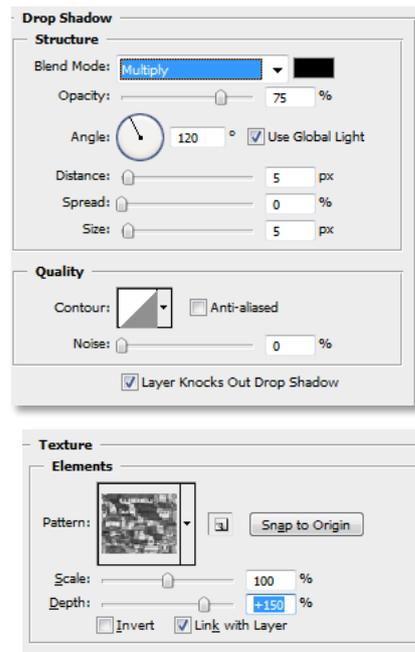
There is nothing special in painting the roads. I just select a basic brush 3px wide and let it go. You can choose either brown or gray roads whatever suits best for your map.

You should do the same thing with roads as you did with water by deleting the forest under the roads. Then you need bridges and one simple way is to draw the bridge outlines with dark color.

Setting up the towns layers

I'm going to have my towns as a mixture between symbolic and real looking towns. The scale of my map is so big that it would be hard to draw the towns in real size and look anyway. I will have my towns in own layer (as usual) and just above the roads layer.

I want to spice up the towns and add a bit more 3D-look. So I'll add a drop shadow and to get the individual houses to pop up I will select the town pattern and set the depth to 150%. The town became a bit too dark, so I also added an adjustment layer above the town layer and made it a clipping mask with town layer.



Painting the town

I paint the town just by selecting pattern stamp tool and selecting town pattern. I set moderately hard brush as I don't want any blending effect.

When the town is in place you can create fortifications around it if you like. One easy way is to use magic wand and select everything else but the town and then select -> modify -> border (with border value 2). Now I have 2 px wide border selection around my city and I can paint my walls without going overboard. When done I add few towers just by painting few blocks to the wall with 5px wide brush.



Fields

It is not necessary to add fields near the town and it depends also your scale if fields should be added. But I'll add them here as a nice detail.

Creating the fields texture

I create the field texture just by drawing vertical and horizontal squares in yellow, brown and grey into a separate small document. Then I'll use the pattern maker tool to make the texture seamless. It now requires manual improvements in the center of the fields as the pattern maker tool didn't do the work optimally (but don't touch the document edges as they are now made seamless).



Then I'll add few adjustment layers (contrast and hue/saturation) and adjust the right balance. Because I used brush to draw the fields it is a bit blurry, so I want to sharpen the texture a bit (Filter -> Sharpen -> Sharpen).

Last thing is to make a pattern out from our new fields texture the same way as before.

Setting up the fields layer

I will add a new layer and call it "fields" and put it right below the towns -layer. I will not add any special effect here

Drawing the fields

I draw the fields using pattern stamp tool and the newly created pattern. I use small brush 5-13px and draw with full opacity and flow.

The fields seem to be still a bit too light, so I'll add a new adjustment layer (brightness and contrast) and make it clip with the Fields -layer. Then I decrease the brightness and add contrast to get desired result.

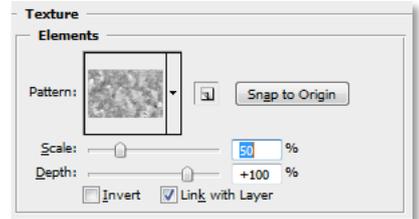
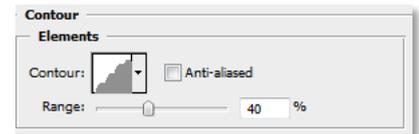
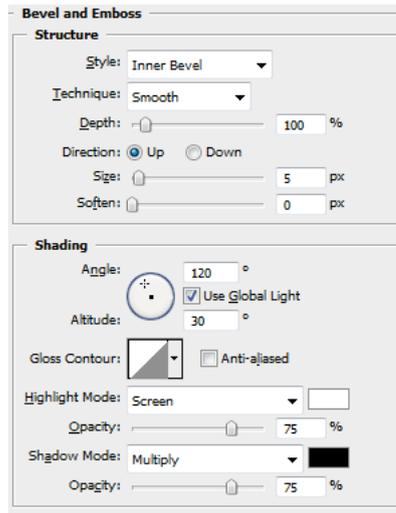


FINAL TOUCH

The final thing I'm going to do is to add some handmade hills. First I add a new layer below the ground layer and name it to Hills.

Then I set few effects as per screenshots (using the same texture as with the mountains) and start painting with quite small brush (5-20px). I choose tan brown and set the opacity to 30, but you can get more rocky feeling with grayish color.

Here you can see that it really gives a good look to this.



And remember to draw the rough terrain under the forest too to prevent the forest from looking flat.



I will also add some grass and some additional variations to spice things up a bit more. So I add two more layers above the ground layer (Grass and Harsh) but these are not necessarily needed if your ground texture has enough variation. I will not have any special effects on these new layers as I just use them to add color variation, but I set the layer type to multiply. I do these on separate layers as its non destructive way and you can easily click the layers on and off to decide if you like it or not.

For the harsh ground I will use pattern stamp tool with the rough terrain texture introduced in the pre work section. Then I set the opacity and fill to about 35% and start painting. I paint over some hills with smaller brush and some ground areas with larger brush to get kind of barren feeling to it. And of course when painting many times over the same area will increase the effect.

For the grass I use 5-35px wide soft brush and 30% opacity/fill. Then I just select some dark green and start painting the grass.

Original



Harsh texture added



Grass added



If you don't want to paint your grass manually and you are willing to give up the control of placing the grass exactly where you want, you can use some suitable additional texture and paint with that. In order to get the grass looking got I will add a new layer on top of the ground layer and set its type to "hard light". The effect is a bit too hard, so I lower the flow to 75%.

I will use the following texture and the outcome is really nice.



Before:



After:



LABELING

There are thousands of different fonts and choosing one can be hard and the outcome to the general feeling of the map can be huge. So I'm not going to say what font to use as there is no right answer, but there are some tricks to make the text more readable and better looking.

At first I have to say that Photoshop is not the best software to use for labeling, but I'm going to stick with just one software in this tutorial.

Black is usually the best color to use, but other colors could be used of course. Usually bright colors should be avoided as they are generally hard to read and often they go overboard when considering the overall coloring scheme of the map. You should also stick with only one font and other fonts should be used only when showing something different like country names or political factors. Even all this said these are just my opinions and you should use your own judgment on this matter.

In this example I use only black font and couple of layer styles to make them more eye appealing and readable. I use drop shadow layer style on each label and outer glow in the ones in need of improved readability.

Drop shadow only



Drop shadow + outer glow

