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Saturation, Hue & Color Maps

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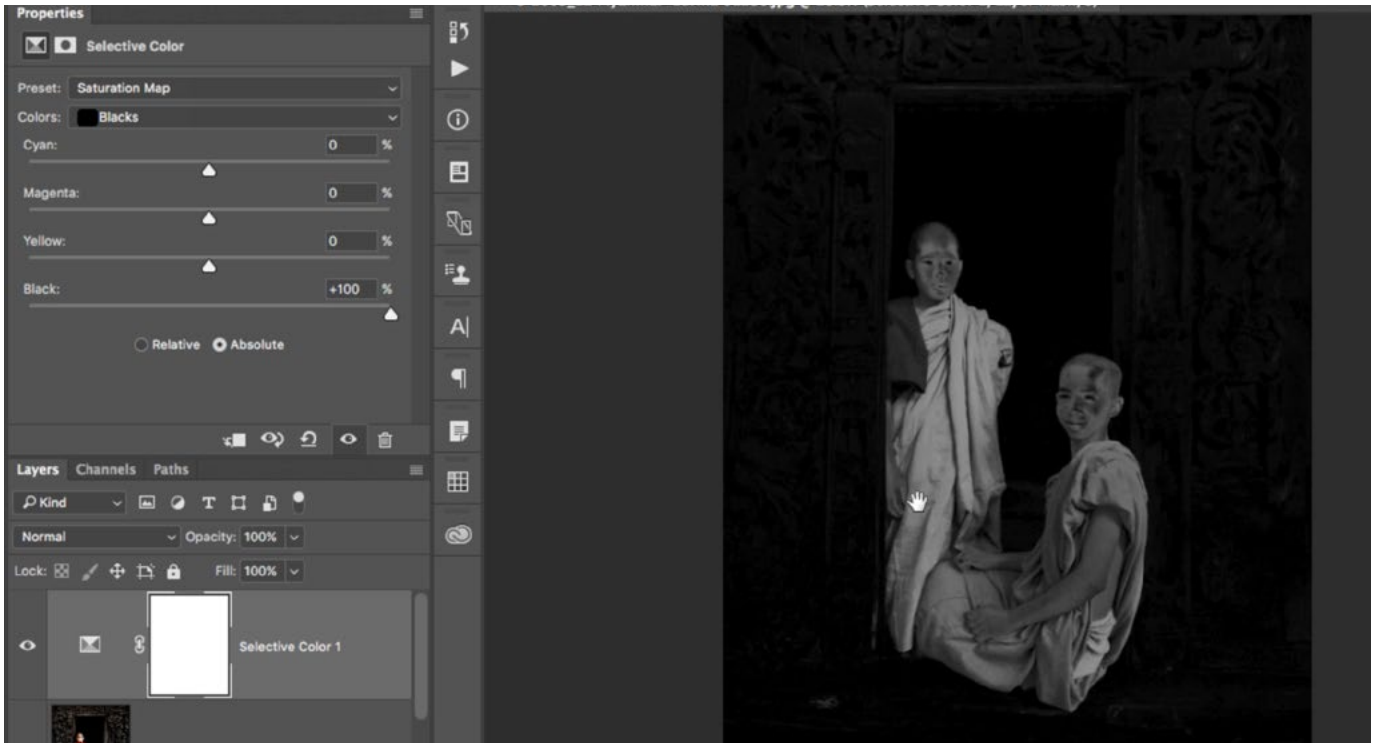
The topic of this lesson will be saturation maps, hue maps and color maps. A saturation map will show you what areas within your image are the most colorful and what areas are the least colorful. A hue map will show you every color that's in an image, regardless of how subtle it's applied. A color map will show you how strongly the present colors are applied.

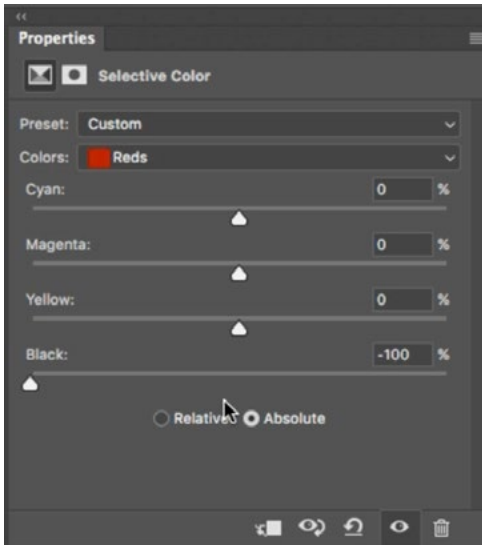
Saturation Maps

How a saturation map works When looking at a saturation map of your image, any area that contains no color in the image will be solid black. The more colorful an area is, the brighter it will appear in the map. In the example image, we can tell that the monks' robes are the most colorful things in the image because they appear the brightest. We can also tell that there is almost no color around the edges of the image because the edges are almost black.



Here, we are viewing a saturation map of the image. The black areas of the map represent areas that have no color in the image. The bright areas of the map represent the parts of the image that have a lot of color.

Creating a saturation map With an image open, create a new adjustment layer by clicking on the adjustment layer icon at the bottom of the Layers panel and choosing Selective Color. In the Properties panel, we need to make sure the setting below the sliders is set to Absolute. Then, we'll work with the Colors dropdown menu, which lists all the different colors, whites, neutrals and blacks. We want to take each of the colors and make any area containing these colors to be very bright. We want to make any areas containing the whites, neutrals and blacks to be very dark. To do this, we'll click through each of the colors in this menu and move the Blacks slider for each individual color all the way down (to -100%). Then, we'll move through the menu listings for whites, blacks and neutrals, setting the Blacks slider all the way up (to 100%).

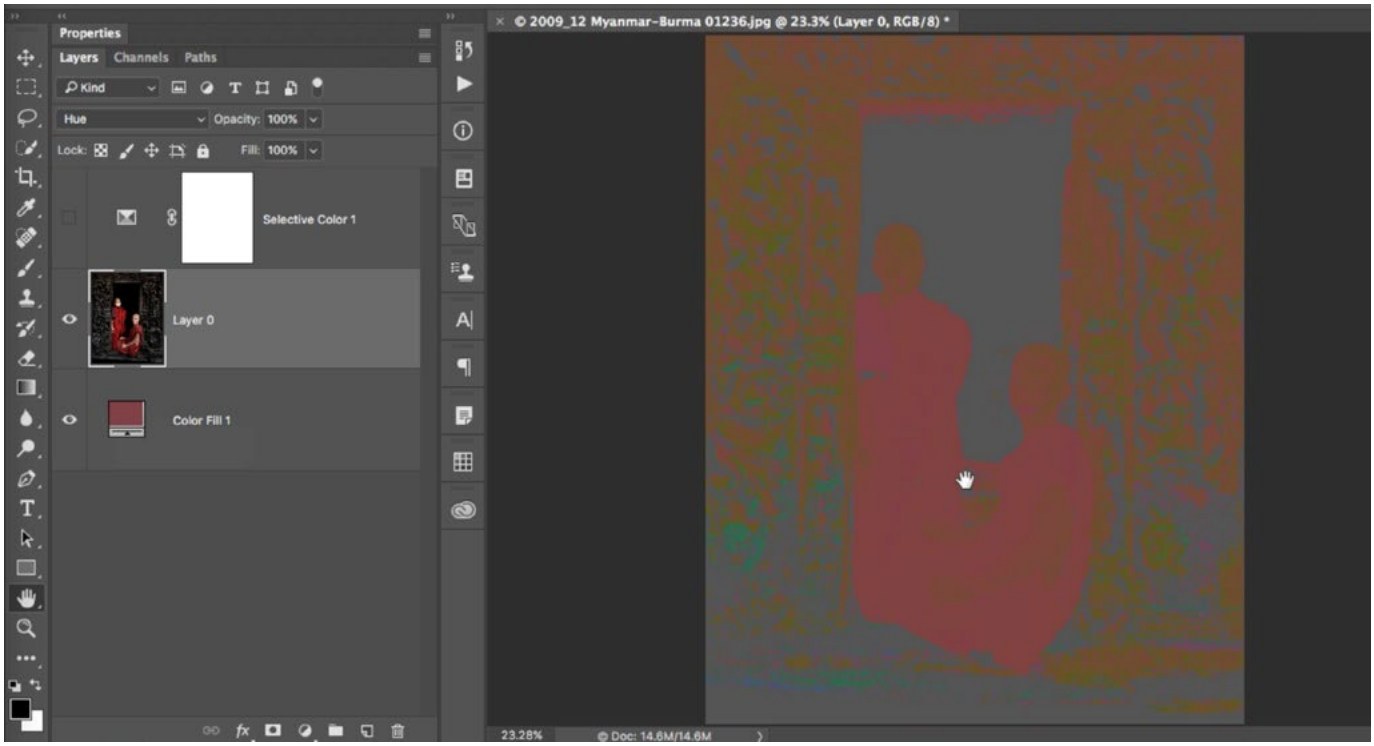


To create a saturation map, we are moving the Black slider within the Selective Color panel to -100% for all of the colors in the menu.

After you've set up this adjustment layer to display a saturation map, you can save the settings as a preset so that you don't have to do it again in the future. Click on the little menu in the top right corner of the Selective Color Properties panel and choose "Save Selective Color Preset." You'll be prompted to give the preset a name (I used the name "Saturation Map") and click Save. Now, whenever you create a Selective Color adjustment layer, the preset will be available to you in the Presets menu within the Properties panel.

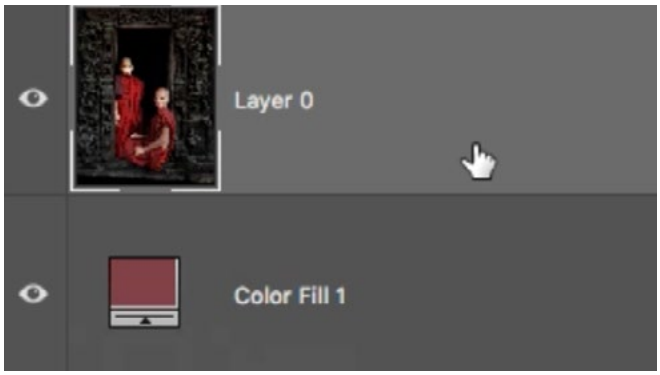
Hue Maps

How a hue map works When looking at the hue map for an image, you will only be seeing the basic colors contained in that image and you will be seeing them at a saturation and brightness of 50%. If there is a red area in your photograph, the hue map will display that color of red but it will not tell us how bright or saturated that red is.



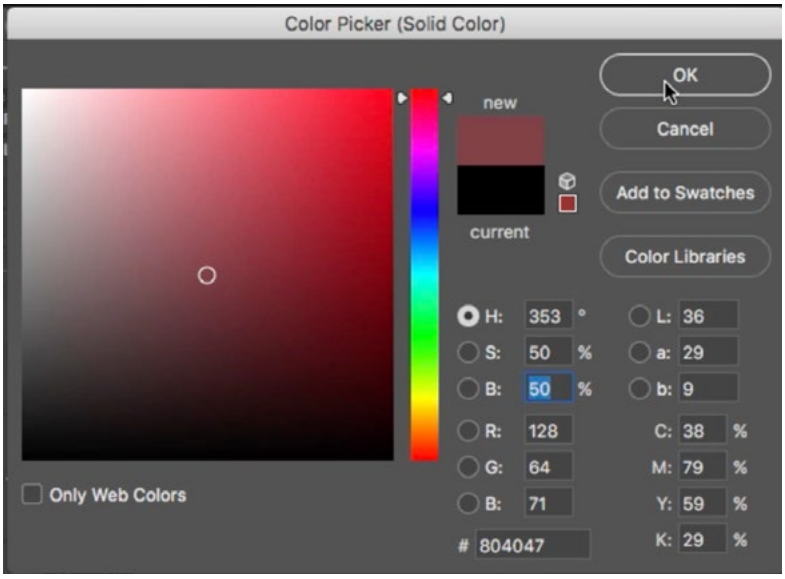
A hue map shows the basic colors in the image, but displays them at 50% brightness and 50% saturation.

Creating a hue map When you open an image in Photoshop, the image will be on the background layer by default. The background layer is always locked, and we will need to unlock it. In order to create a hue map, we will need to place a solid color adjustment layer below the image layer and we won't be allowed to do that if the layer is locked. You can unlock the layer simply by double-clicking on it. The name will change from Background to Layer 0. Now, we can click on the Adjustment Layer icon at the bottom of the Layers panel and choose Solid Color from the menu that pops up. The Color Picker will appear, and we will



To create a hue map, the Color Fill adjustment layer will need to be placed below the image layer.

set the S setting to 50% and the B setting to 50%. The H setting is not going to matter here. Then we'll click OK. In the Layers panel, we'll move this Color Fill layer below the image layer. You may also discard the layer mask for the color fill layer, as we won't be using it.



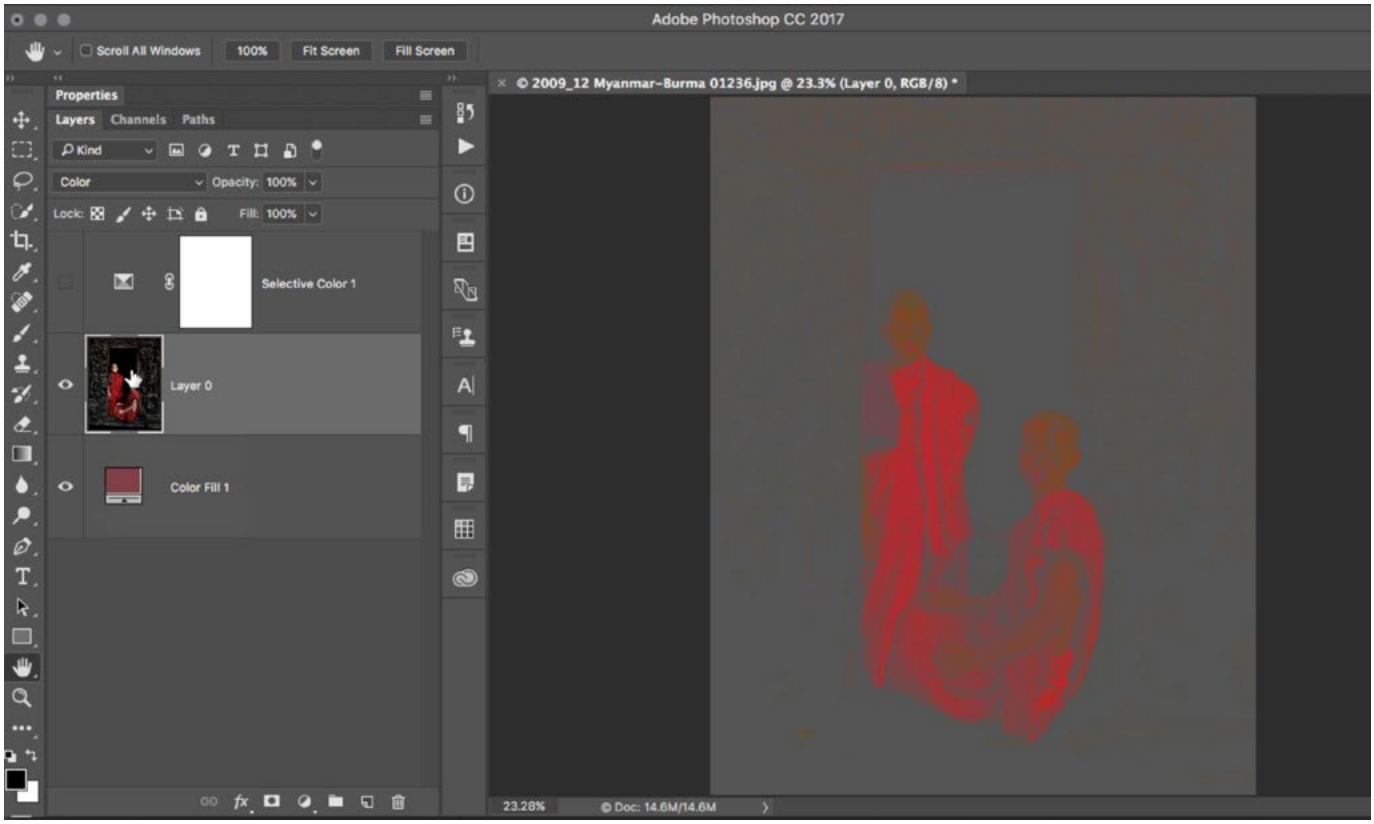
To create a hue map, the S and B settings within the Color Picker for the Color Fill adjustment layer will need to be set at 50.

Activate the image layer and use the Blending Mode menu at the top of the Layers panel to change the blending mode of the layer to Hue. This will cause the image to only think about color and not about brightness or saturation. It will take the hues in the image and apply them to the brightness and saturation from the underlying color fill layer. The brightness and saturation were each set to 50% in that underlying layer. The resulting view will show us all of the colors that are in the image. In the example image, it was easy to see that the monks' robes were red, but it was hard to tell what colors were in the outer edges of the image. In the hue map we created, we can see that there are orange, yellow and even some blue hues.

Color Maps

How a color map works A color map will show you not only what colors are in different areas of your image, but also how strong or saturated the colors are.

Creating a color map To create a color map, we will create the same Color Fill layer that we did for the hue map, setting the S and B settings to 50% and then moving the Color Fill layer beneath the image layer in the Layers panel. Then, we will change the blending mode of the image layer to Color. The result will take the colors from the image layer and apply them to the brightness that's underneath.

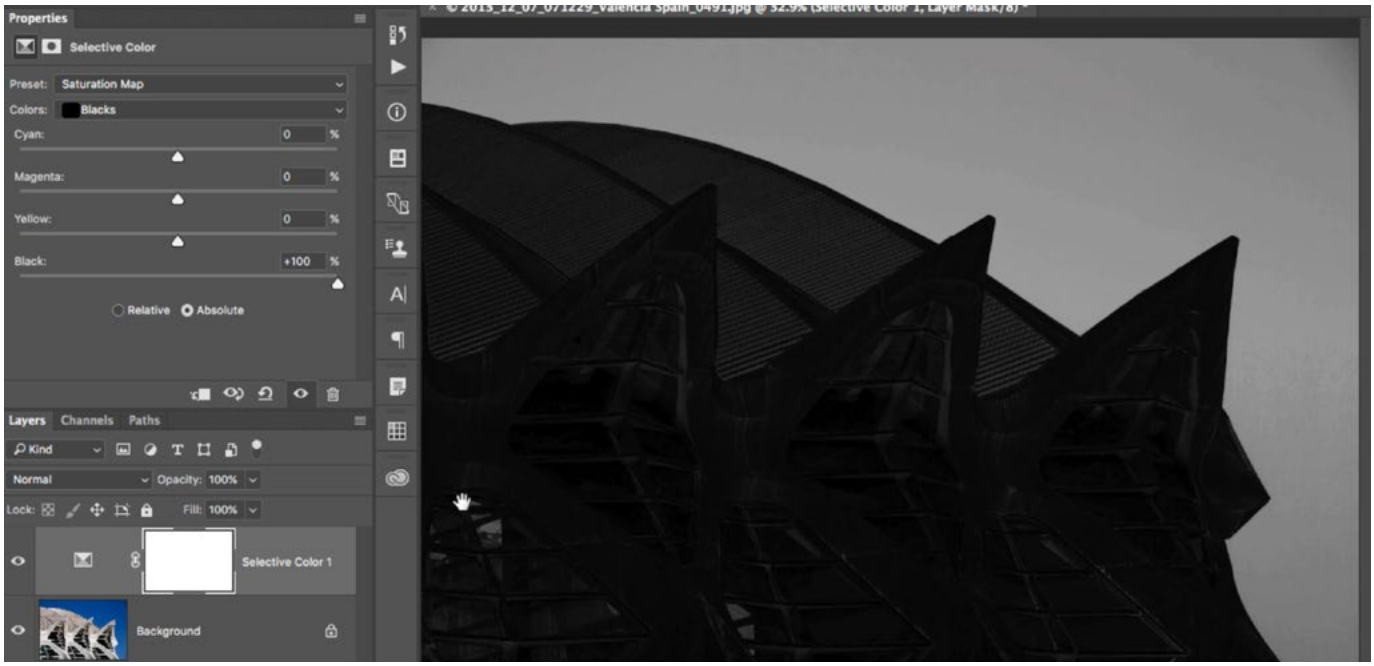


In this color map, we can see how saturated the different colors in the image are.

Evaluating an image Let's look at how we can evaluate our photographs using these types of image maps. In the example image, it's obvious that the sky is a vibrant blue, but there visibly doesn't seem to be much color in the area where the building is. To check for color, I'll create a saturation map by adding a Selective Color adjustment layer and using the Saturation Map preset I previously created. Looking at the saturation map, I can

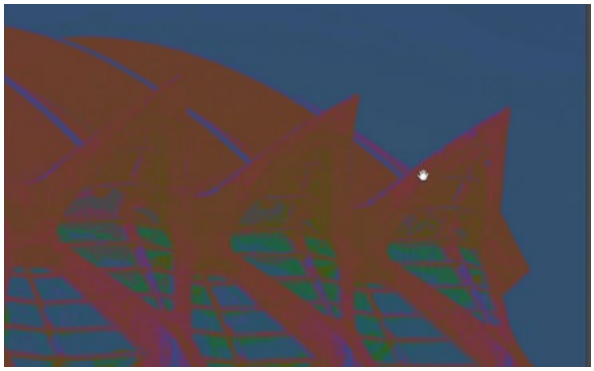
In this image, it's obvious that the sky is a vibrant blue. We are going to use hue, saturation and color maps to discover the less-obvious colors in the image.

tell that there actually are some areas of color in the building. In the map, areas of color will show up lighter than black. (The lighter the tone, the more colorful the area.)



The saturation map shows that there are some colors in the building and bottom left corner.

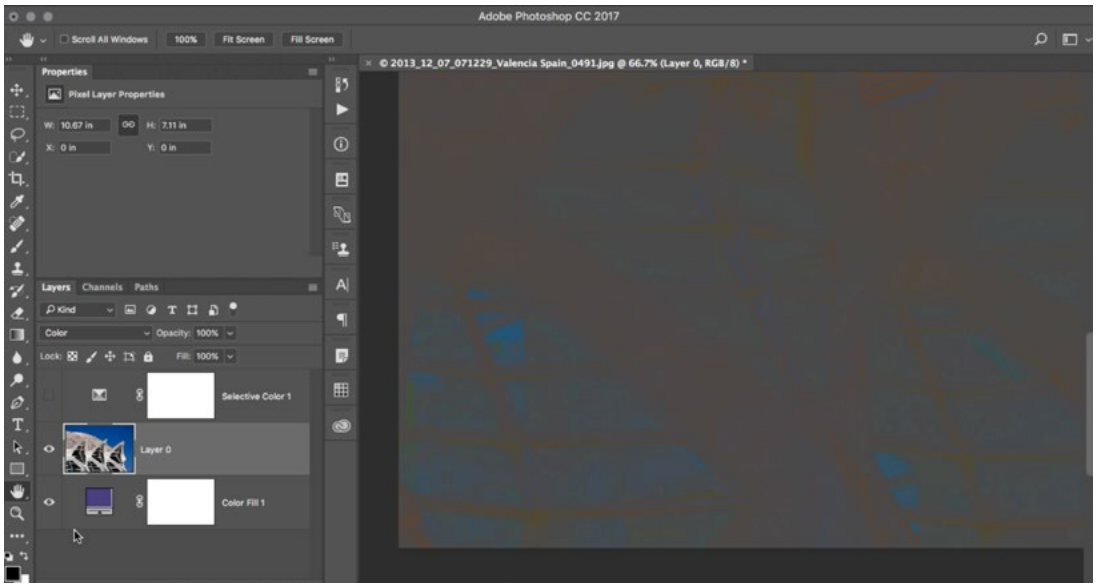
Now I'd like to see what colors are in those areas so I will create a hue map. To create the hue map, I'll create a Color Fill adjustment layer, set the S and B settings within the Color Picker to 50 and click OK. I'll move that Color Fill layer below the image layer. (If the image layer is still the background layer, you'll need to double-click on it to unlock it.) Then, I will change the blending mode of the image layer to Hue.



The Hue map shows the colors in the image, at 50% brightness & saturation.

Looking at this view, we can see that there are several unexpected colors in this image that were not visible to me at first glance. There are some greens and blues in the window area of the building, and the building itself has a brownish/orange color. This view, displayed by the hue map, is showing all of the colors at 50% brightness and 50% saturation. The actual colors will likely be less

colorful, and we can see exactly how colorful they are by changing the blending mode of the image layer to Color. This will give us a color map. In the color map, we can see the green and blue areas in the bottom left corner of the image.



The Color map shows how colorful the different hues in the image are.

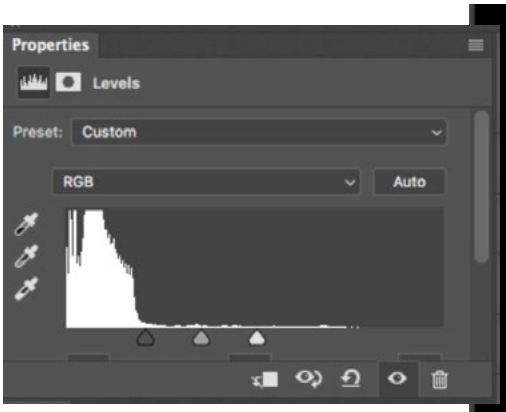
Saturation Maps for making Selections

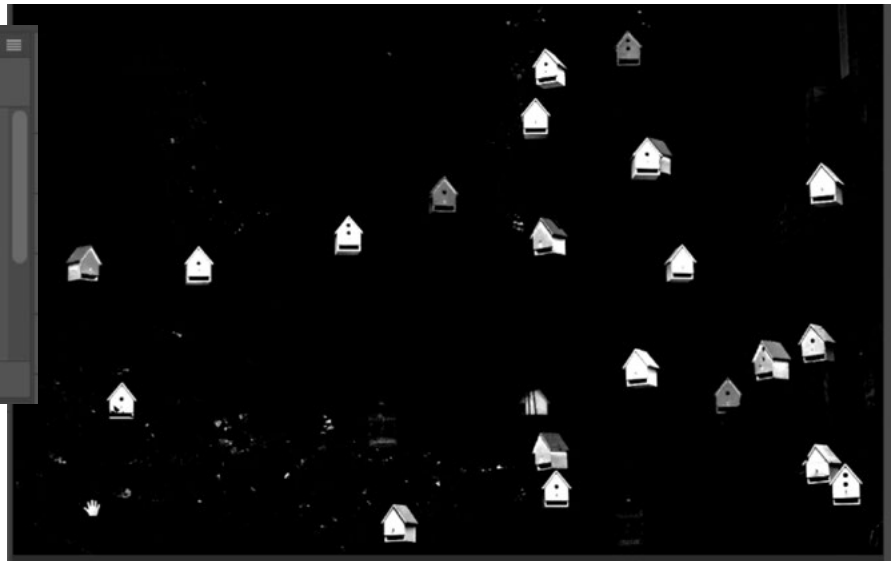
Sometimes, a hue, saturation or color map will cause me to change the way I work on my image. In this example, I want to make a selection based on saturation and I can do this with a saturation map. The saturation map shows what I expected to see: mostly dark with bright areas of color where the bird cages are. I'm going to use a technique that will result in all of the white areas selected and all of the black areas unselected, so we'll need to adjust this view so that the birdhouses become white and the background becomes black. I'll create a Levels adjustment layer above the Selective Color adjustment layer and I will

The original image. We're going to make a selection based on saturation.

The saturation map shows what we expected. The bird houses are bright (because they are colorful) and the background is dark (because it's less colorful).

use the sliders in the Levels properties panel to force more areas to white and black. Dragging the white slider beneath the chart to the left will force more areas to white, so I will move this slider until the bird cages appear white. Then I will move the black slider (at the left of the levels chart) to the right, forcing more areas to black. This will get us close, but there are still some colorful areas that are appearing as white specks and we'll have to clean these up.





A Levels adjustment layer was created to push the dark areas to black and the light areas to white.

You can load the brightness of your picture as a selection by opening the Channels panel, hovering your mouse over the RGB channel, holding down the Command key (Ctrl on Win) and clicking on the thumbnail. This will create a selection based on the brightness of the picture where areas that are white will be selected, areas that are black will not be selected and areas that are gray will be partially selected.

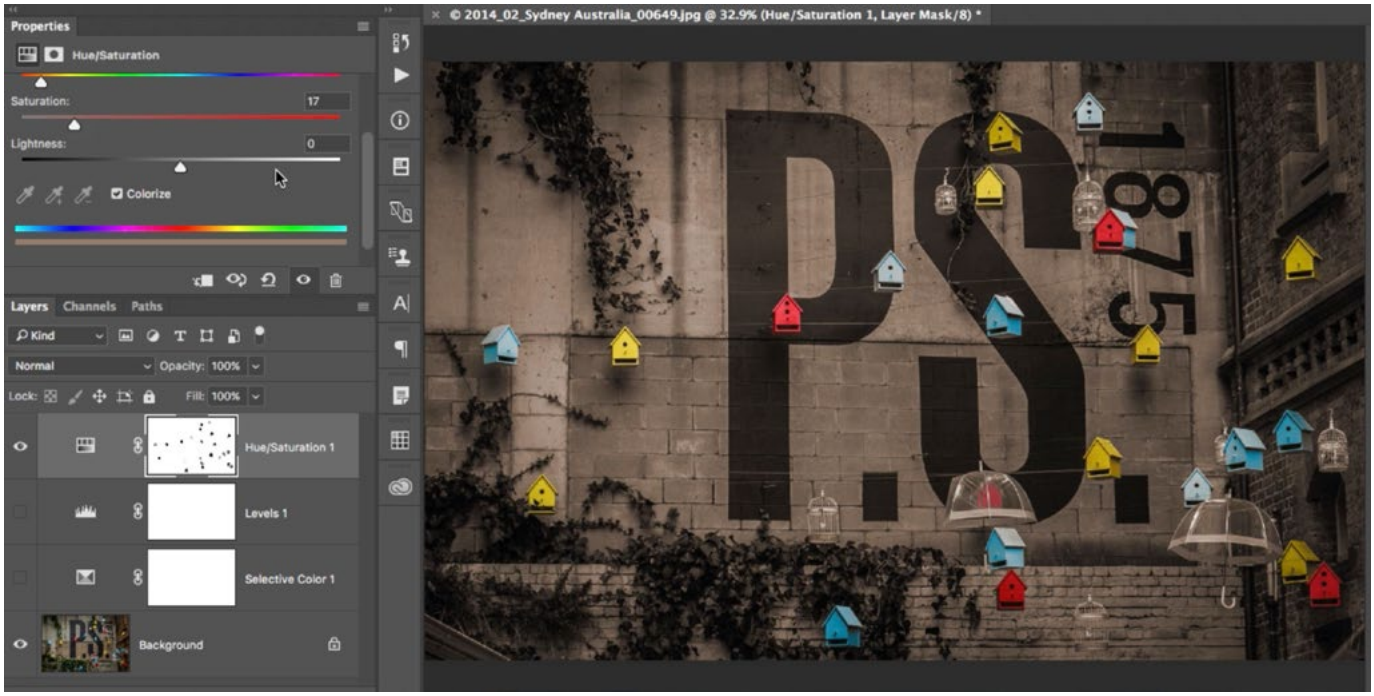
I will now go back to the Layers panel and turn off the visibility of the adjustment layers. The birdhouses are selected, but I want to see the selection better so I will view it in Quick Mask Mode. This mode transforms the selection into a red overlay, where areas that are red are not selected and areas that are not red are selected. You can toggle Quick Mask Mode by hitting the Q key on your keyboard. In Quick Mask mode, I can see some areas in the vines that are selected and I would like to deselect them. You can modify a selection while in Quick Mask Mode by painting with black in areas you don't want selected and painting with white in areas you do want selected. I'll paint with black over the vines to make sure that none of them are selected and then hit the Q key to exit Quick Mask Mode.

We are viewing the selection in Quick Mask Mode and painting on the mask to modify the selection.

Now I have a selection of the birdhouses. I like the way the birdhouses look, and I instead want to work on the rest of the image so I will go to the main menu and choose Select > Inverse. Then I will create a Hue/Saturation adjustment layer by clicking on the adjustment layer icon at the bottom of the Layers panel and choosing Hue/Saturation. Any time you have a selection active when you create an adjustment layer, the selection will be converted into the mask that is attached to that adjustment layer. The areas that were selected will be white and the ar-

eas that were not selected will be black. I can now use the Saturation slider in the Properties panel to make the selected areas less colorful. Once you have this mask, it's a personal preference as to how you'd like to treat the image. The main thing is that I was able to create a mask based on saturation and you can do this by creating a saturation map, adjusting it with a levels adjustment layer, creating a selection of the RGB channel and then turning that selection into a mask. I would use this technique any time there is one or several areas that are very saturated in an otherwise muted image (or vise versa).

With the selection active, I created a Hue/Saturation adjustment layer and the selection was automatically applied to the layer mask.



Here, we are adjusting the settings for the Hue/Saturation adjustment layer to desaturate and add a sepia effect to the background.

Saturation Map for a Black & White Conversion

You can also use a saturation map to convert an image to black and white. When you create a saturation map, you automatically get a black and white version of your image. You'll just need to adjust it as necessary. This technique works well for images that don't vary a lot in color.

Here, we are viewing the saturation map for the image.

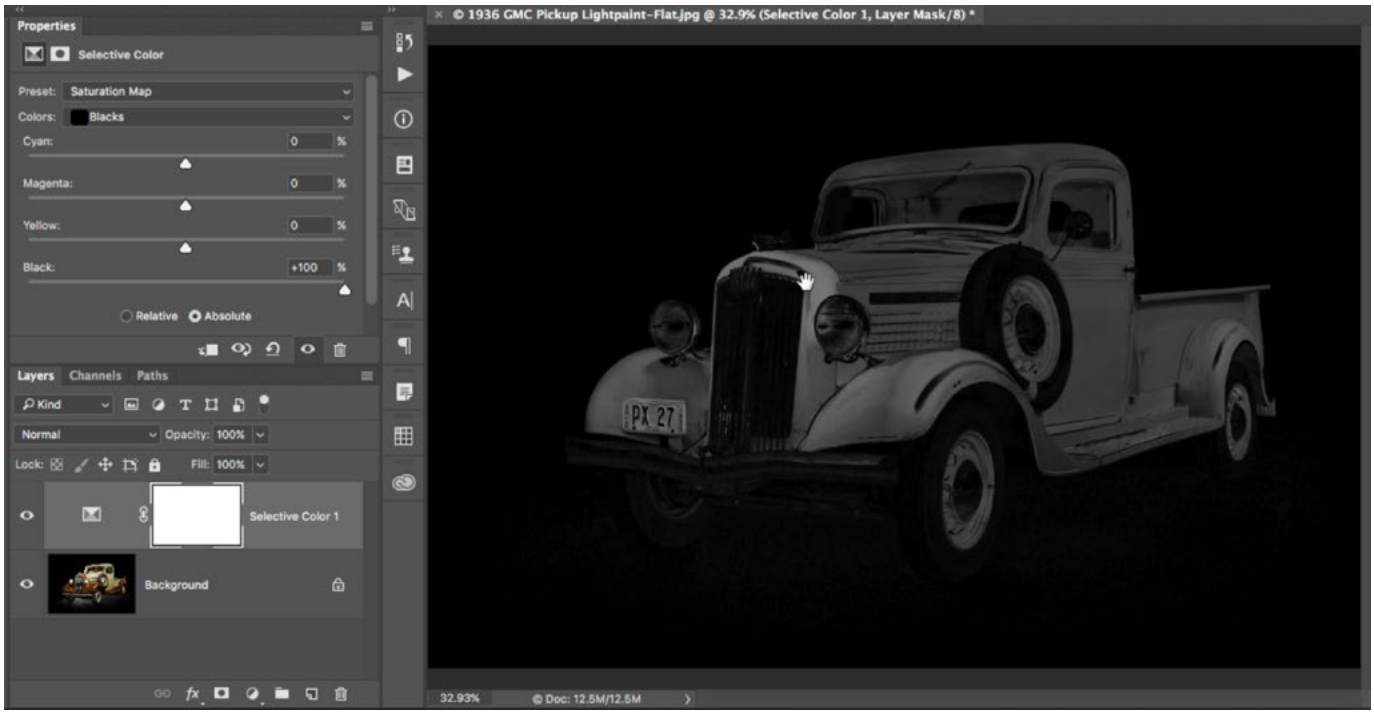
In this example, we created a saturation map for the image and we are going to adjust it by creating a Levels adjustment layer. This will go above the Selective Color adjustment layer in the Layers panel. In the Properties panel for the levels adjustment, I'll move the white slider to the left, forcing more areas to white. I will drag the slider just far enough that the tiniest amount of white appears in the image. You can tell what areas are becoming white by holding down the Option key (Alt on Win) while moving the slider. When you do this, the view of your image will change, showing you what areas are becoming white. I will do the same thing with the black slider, slowly moving it to the right, introducing the slightest amount of black in the image. Without a black point, the image could look a bit dull. Again, I will hold down the Option key (Alt on Win) to get a view of the image that shows me exactly where the blacks are. I'll then use the middle slider to control the overall brightness of the end result.

A Levels adjustment layer was added and the sliders were moved to ensure there was a black point and a white point in the image. The center slider was used to fine-tune the end result.

Using a Saturation Map to Evaluate your image

The original image, after processing.

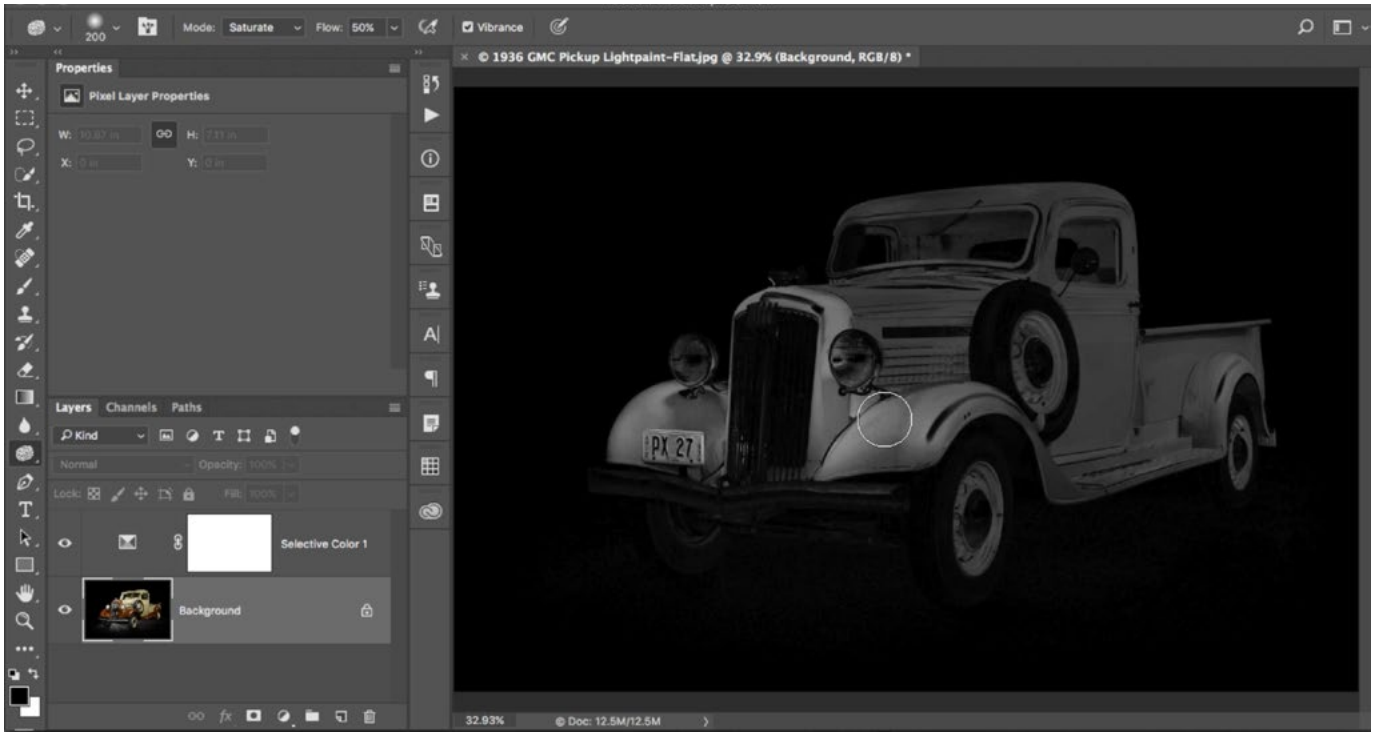
Sometimes, I want a different way of looking at an image that I just spent a lot of time processing. I like to see if it's truly done or if there's more that could be adjusted. I will use a saturation map to do this. In the example with the car image, I evaluated the image by using a saturation map and was surprised to see that the most saturated part of the image was the top of the radiator on the front. To me, it appeared to be the same saturation as the rest of the brown areas. Thinking about this, I wondered how the image would look if I made the rest of those brown areas the same saturation as that colorful part on top of the radiator.



A saturation map was added and we can see that the most colorful area is the part of the car above the radiator.

To accomplish this, I activated the Sponge Tool, which is hidden behind the Dodge Tool in the Tool Bar on the left side of the interface. When you paint with the Sponge Tool, it will either make the image more or less colorful, depending on what mode the tool is set to. The Mode setting can be found in the Options Bar above the image window when the Sponge Tool is active. You will have to choose between Saturate and Desaturate. In this case, I will choose Saturate. The Flow setting (to the right of the Mode menu) will determine how aggressive the change will be, and I will leave this at 50%.

Working on the image layer, I'll then use the Sponge Tool to paint on the areas of the image I would like to make more saturated. I will keep the visibility of the Selective Color adjustment layer turned on so that I can tell when the saturation matches that of the most colorful area on the top of the radiator.



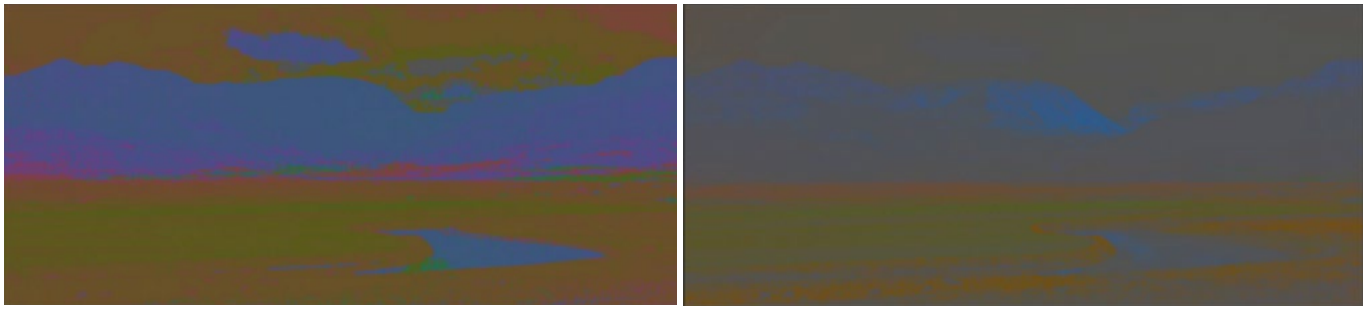
The Sponge Tool is being used, set to the Saturate Mode, to paint over the areas I want to make more colorful.

Finally, I can turn off the visibility of the Selective Color layer to see how I like the result. I may decide the image looked better before the added saturation, but the main point is that the saturation map gave me a different way of evaluating the image before confirming that it was done.

Here is the view of the image after we painted in more saturation in the brown areas of the car. I can now compare this version with the previous version to see if the saturation boost helped the image.

In this image of Iceland, I would initially say that the image is made up of mostly greens and browns. The top half of the image looks mostly black and white to me. To truly evaluate the image, I created a saturation map and was surprised to find that the mountains were bright, indicating a saturated color in that area. To see exactly what colors are in the image, I created a hue map. In the hue map, I

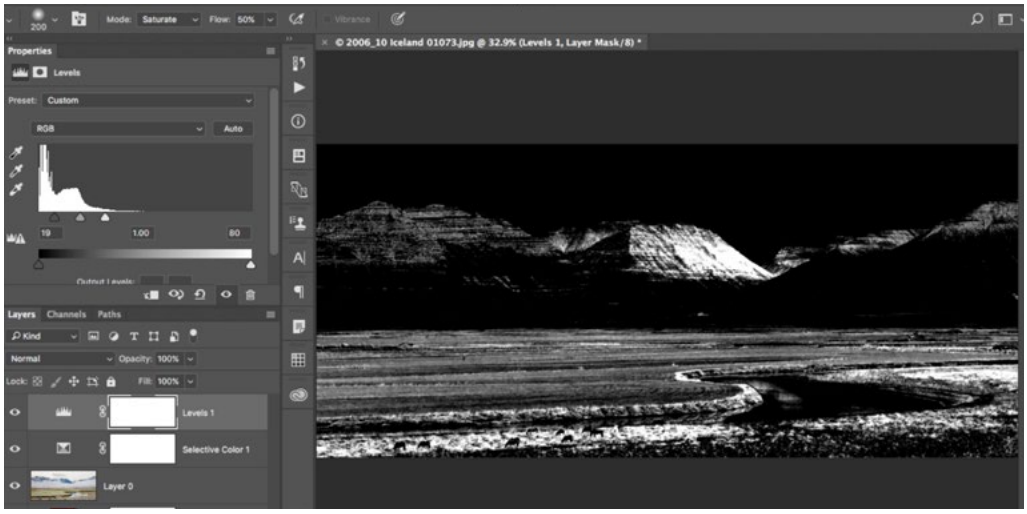
Left: The original image, after processing. Right: The saturation map for the image shows that there is a lot of color in the mountains.



Left: The hue map for the image shows that the mountain area is actually filled with a lot of blue. Right: The color map shows that the blues in the mountain area are very colorful.

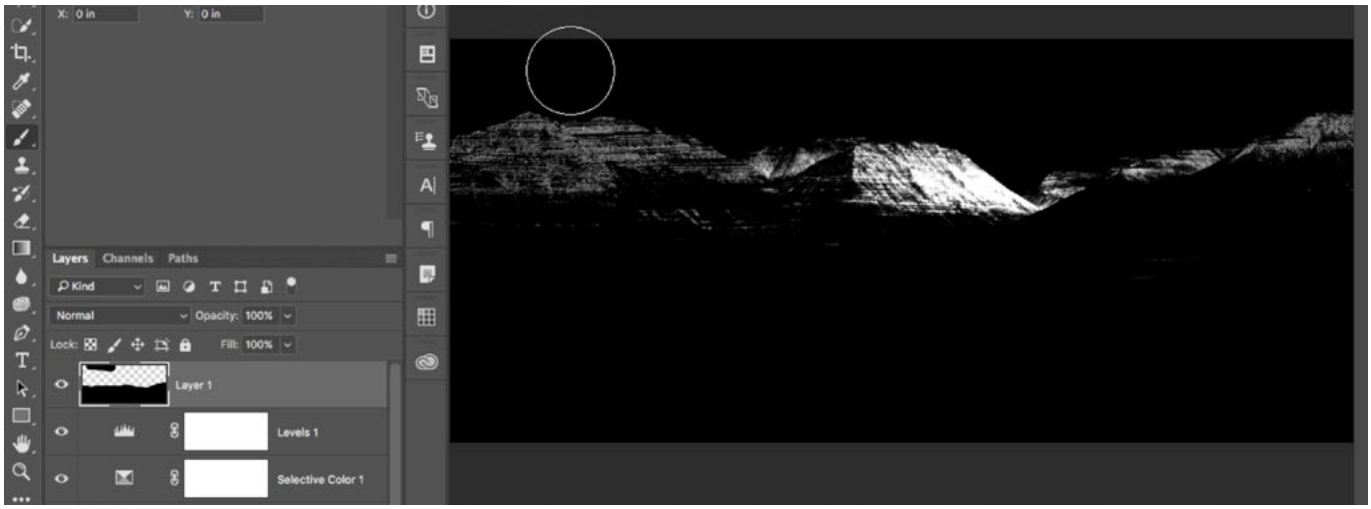
could see that the mountain area was mostly blue and the sky and foreground were mostly a brownish color. To see how strong the colors were, I created a color map. The color map indicated that the blues in the mountains were very strong and that the browns in the sky were stronger than I would have expected.

Looking at the saturation, color and hue maps for this image, I can better decide how to go about further processing. I'd like to tone down the blue cast in the mountain area, and in order to do that, I will first have to isolate that area with a selection. To create a selection, I will turn on the visibility of the saturation map and create a Levels adjustment layer on top of it. In the Levels Properties panel, I'll then move the white slider to the left, forcing more areas to white, and I'll move the black slider to the right, forcing more areas to black. I'm trying to isolate the mountains, making them as white as possible while the rest of the image remains as black as possible.



A Levels adjustment layer is being used to adjust the appearance of the saturation map so that the mountains are as white as possible and the rest of the image is as dark as possible.

I wasn't able to get the foreground completely black, so I created a new, empty layer at the top of the Layers panel and I painted with black on this layer to hide any white areas that were not in the mountains.



The Levels adjustment left some white areas outside of the mountains and in order to clean those up, I am painting with black on an empty layer at the top of the layer stack.

In order to turn this black and white view of our image into a selection, I opened the Channels panel, held down the Command key (Ctrl on Win) and clicked on the thumbnail for the RGB channel. This creates a selection based on brightness. I then went back to the Layers panel and discarded the layers with the Levels adjustment and the black paint. I kept the Selective Color layer (for the saturation map) still visible at the top of the layer stack. With the selection still active, I created a Hue/Saturation adjustment layer directly above the image layer. The selection was automatically applied to the layer mask. I then moved the Saturation slider down until the mountains became almost black, indicating that they no longer had a lot of color in them. Finally, I turned off the visibility of the Selective Color layer to see the result. The mountains are now much less blue than when we started.

In the result, the mountains are now mostly colorless, compared to the blue cast they started with.