

Color Spaces

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originating question from FourThirdsPhoto Forum see [link](#)
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"An interesting conversation came up in the photo section that I need assistance with clarification from others more advance with their photography than I. I have been shooting mostly in RAW with my Color setting in A-rgb, post processing in A-rgb, Printing in A-rgb & Posting in A-rgb without knowing or realizing the color difference others would see in my posted pictures as they are what I see on my monitor. My question is, is it better for to shoot in SRGB and keep all of my post processing/printing in like manner for more vibrant colors? "

- If you are capturing raw format exposures, the colorspace setting in the camera is irrelevant. The colorspace settings in the camera applies only to the image processing settings with which it processes JPEG images. Colorspace is used during raw conversion processing to establish the color model for the converted RGB data.

- There are three device independent color spaces in broad use within the photographic community today:

Small RGB (sRGB) - this color space was designed to model the average, limited capabilities of computer display devices with a contrast basis of 2.2 gamma and eight bits per component channel capabilities. sRGB has been variously specified by several standards, the one in most pervasive use today is "sRGB IEC61966-2.1". This is what Adobe Photoshop and Lightroom use. sRGB is the de facto standard for web images and works best across a broad range of uncalibrated display devices.

Adobe RGB (1998) - this is a color space designed to model the gamut capabilities of a web press for volume printing systems. It is a larger gamut than sRGB since these devices can print a broader range of colors than can be displayed in an 8bit component computer display, on

average. It can be used with both 2.2 and 1.8 gamma contrast settings and 16 bit per component images as well.

ProPhoto RGB - this color space was designed to model the much greater color capabilities of current imager sensors by Kodak. It is designed to be used in 16bit per component systems for editing, minimizing clipping and round-off errors in the image editing process. Both Adobe RGB and sRGB are proper subsets of ProPhoto RGB so promotion of either to ProPhoto RGB is lossless. However, conversion to ProPhoto RGB can display conversion errors if the component bit depth is not first increased to 16bits, so be advised to do that first.

So what should you do?

For capturing in-camera JPEGs, set your camera to Adobe RGB if you intend to edit the photos after the fact. It supplies a larger color space to work in without clipping. In the editing process, whether you promote the original capture to 8-bit or 16-bit determines whether to use Adobe RGB or ProPhoto RGB for editing. Once your editing is completed and saved, first convert the color space to sRGB and then be sure to set the component depth to 8bit before saving copies for web output image products.

Choose sRGB in the camera if you intend to use your images directly from the camera for printing, web or email.

For a raw workflow, set the raw converter for 16bit per channel and use ProPhoto RGB for editing. If you are constrained by your tools to 8bit, use Adobe RGB. Once editing is completed and saved, convert to sRGB and 8bit per component as above, then save to your web output image products.

For a printing workflow, well, that depends on what applications you use and how you want to print them, as well as the specific papers and inks you use and the specific print driver you are working with ...

How do I set up my editing environment?

I use Lightroom and Photoshop.

- Before using either, I use an Eye One Display 2 colorimeter to calibrate and profile my display for the targets 120 Luminance, 1.8 gamma, and 5500K white point. Some may prefer the steeper contrast afforded by 2.2 gamma, and the punchier color of 6500K white point, but these targets work well for my printing needs. I make sure that profile is selected using the operating system utilities.

- Lightroom has no color settings ... it is designed specifically for photography, so when you are editing in Lightroom it has automatically promoted the original images to 16bits per component and uses a colorspace called "Melissa", which is ProPhoto RGB with a 2.2 gamma contrast setting. In the "External Editing" preferences, I set the Edit In Photoshop parameters to TIFF, 16 bit, with Zip compression and ProPhoto RGB colorspace.

- Photoshop is designed to handle graphics of a wildly broader range than photography, so it has tons of color settings. For Photographic use, and best interaction with Lightroom, go to Edit->Color Settings. From the topmost popup menu, pick the "North American Prepress 2" color settings bundle. Then customize the "Working colorspace" RGB setting to be ProPhoto RGB.

This nets lossless and high fidelity transfer of images between the two applications in the editing process, to the greatest extent possible.