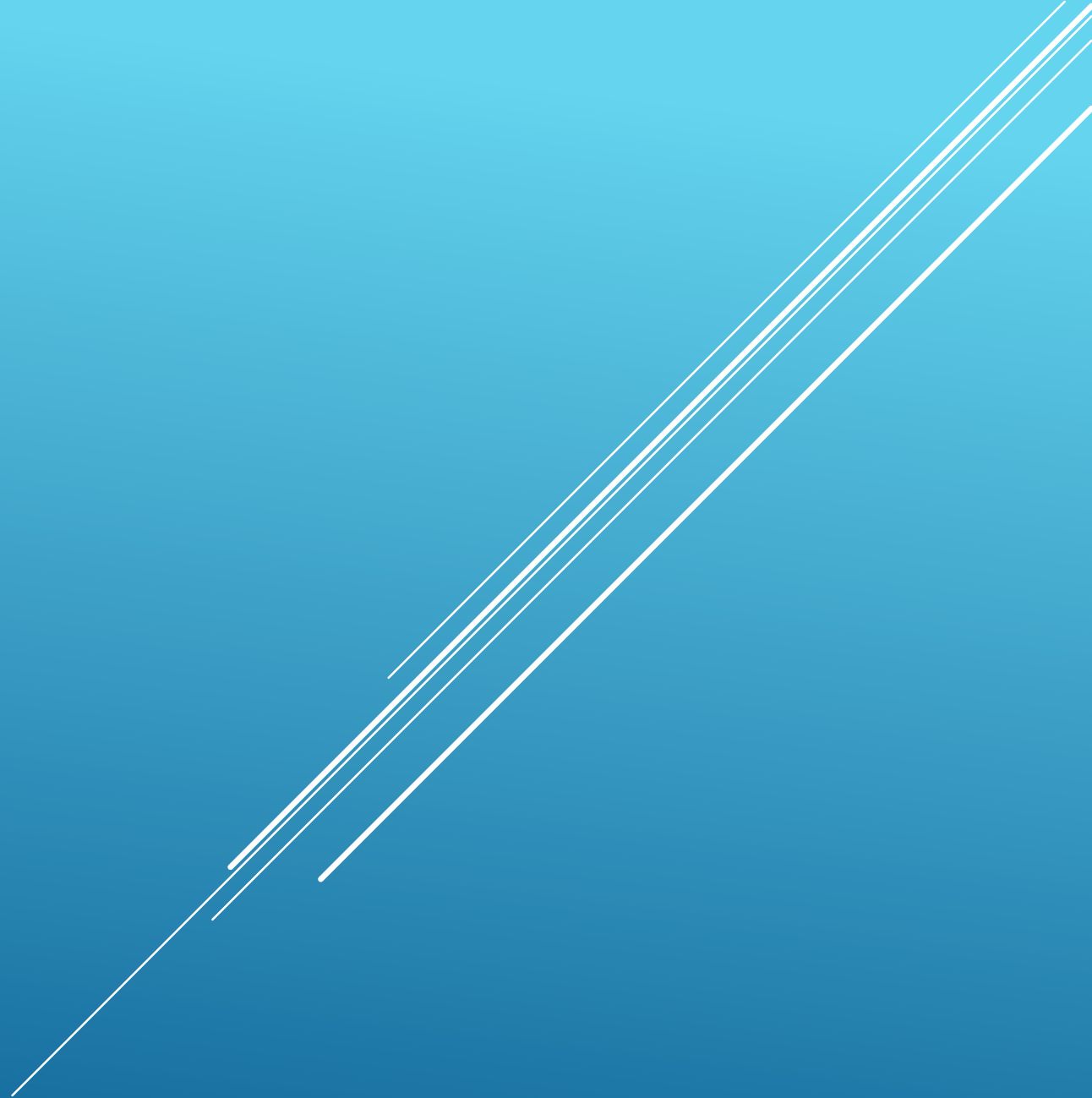


# RAW AND JPEG



# JPEG v RAW

20/24 Mp Sensor



Bayer Interpolation

White Balance  
Contrast  
Exposure  
Saturation  
Sharpness etc...  
+ 'In Camera' Effects

JPEG Conversion with 'Lossy' Compression



6Mb JPEG File

Append EXIF Data

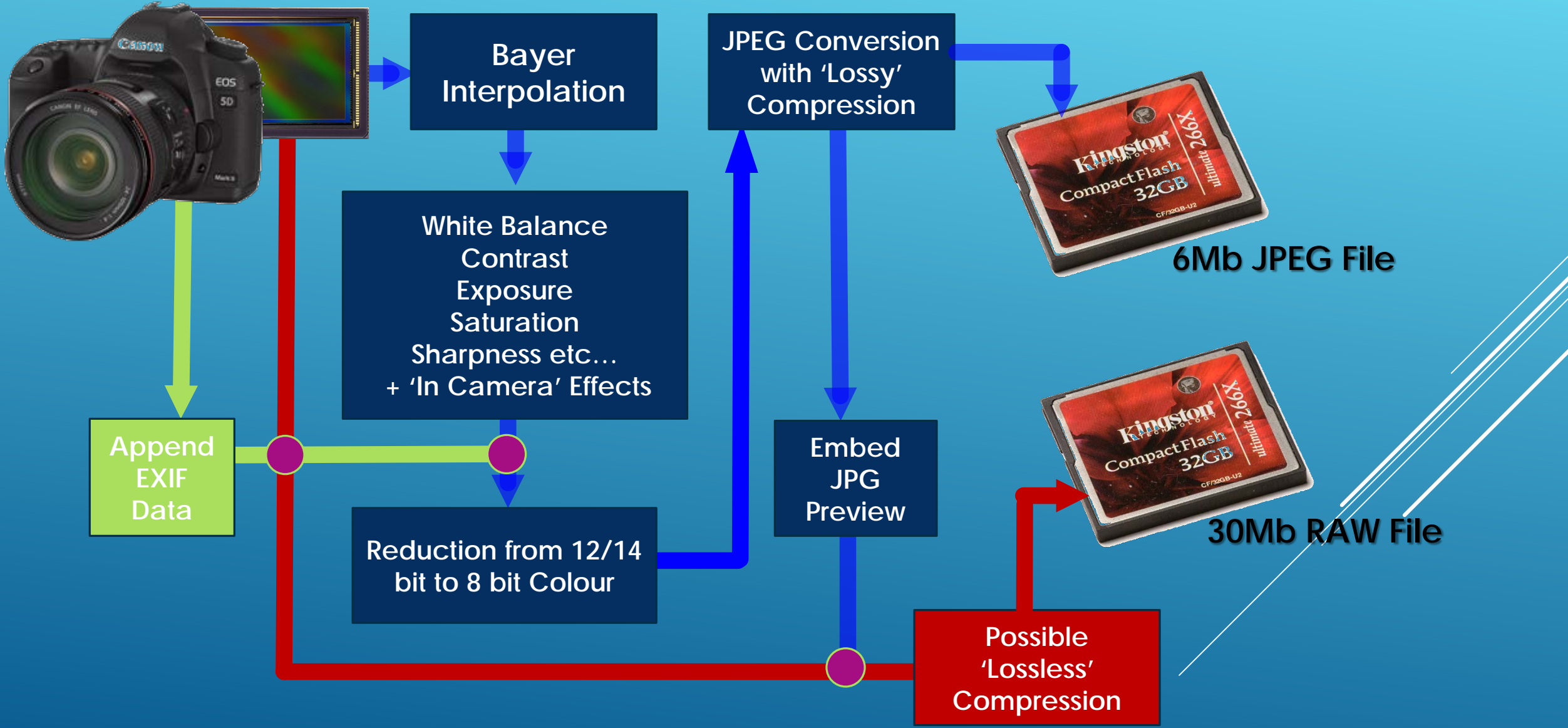
Reduction from 12/14 bit to 8 bit Colour

Embed JPG Preview



30Mb RAW File

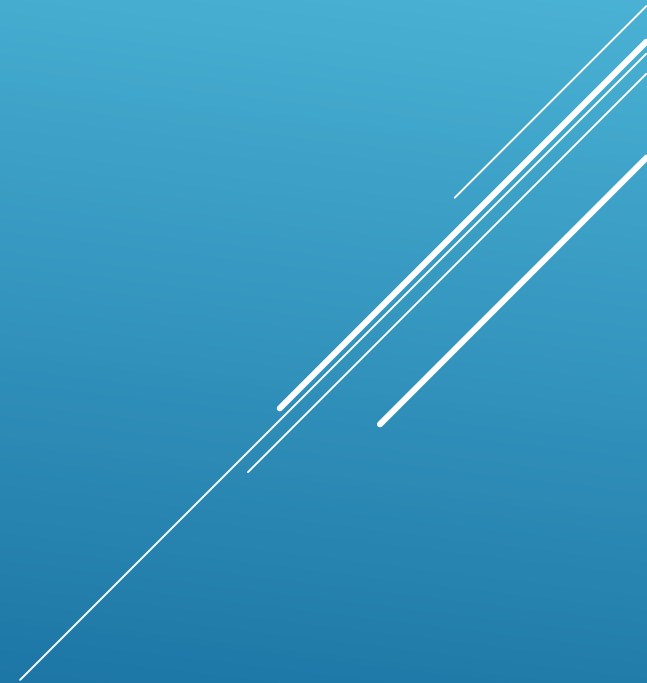
Possible 'Lossless' Compression



# BAYER INTERPOLATION

A Bayer interpolation algorithm is then used to create separate R, G and B values for every pixel location. Before this interpolation happens that each pixel has only a R or G or B value; not a R value and a G value and a B value.


The Bayer algorithm creates values for each of the three colours at every pixel by smearing (interpolating) each set of partial R, G and B values to create values at every pixel.



# JPEG

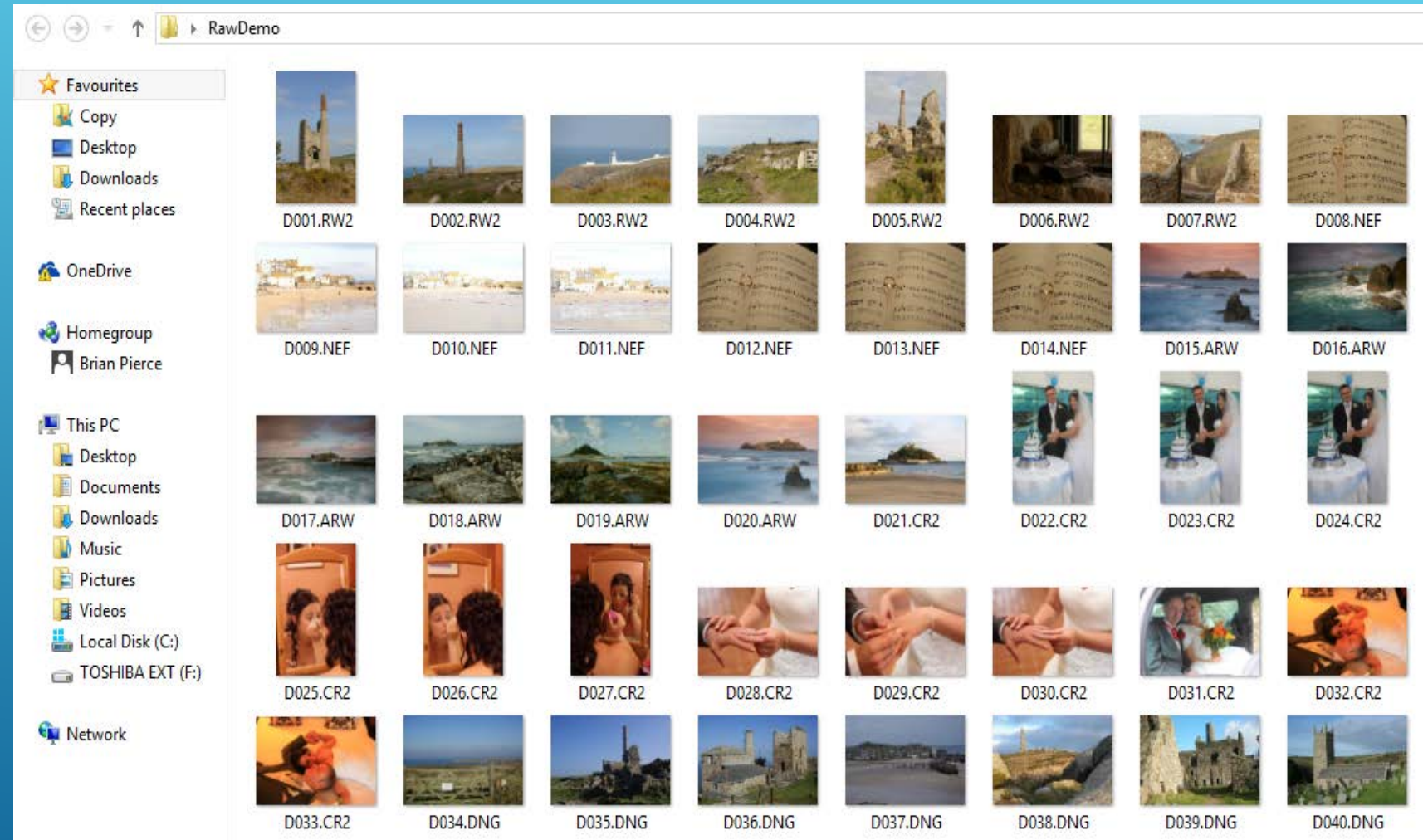
- ▶ Universal format, can be read/written by all photo-editing software
- ▶ 8 bit colour depth
- ▶ 'Lossy' compression
- ▶ Amount of 'lossiness' and compression can be varied to a degree
- ▶ Re-compressed and more data lost each time jpeg is edited and saved
- ▶ Normally preferred for 'final image', but not for 'heavy' or repeated editing.

# RAW

- ▶ **Manufacturer/Camera Specific**
  - ▶ **Need specialist software to edit**
  - ▶ **12 or 14 bit colour depth**
  - ▶ **Uncompressed or Lossless compression**
  - ▶ **Original RAW file data a never changed by editing (edits stored in a 'sidecar' file or catalogue.**
  - ▶ **Full detail always preserved**
- 

# WORKING WITH RAW

- ▶ In Windows JPGs can always appear as thumbnail images
- ▶ Viewing RAW files in Windows may require a codec
- ▶ RAWs can be viewed in Bridge/Lightroom etc



# DNG, PSD, TIFF

## ▶ DNG – Adobe Digital Negative

- ▶ an Adobe Standard 'RAW' format
- ▶ Lossless compression

## ▶ TIFF – Tagged Image File Format

- ▶ Universal format – in theory BUT, many manufacturer's have their own proprietary version
- ▶ Lossless (by default no compression, compression not universally supported)
- ▶ Retains Layers

## ▶ PSD – PhotoShop Document - Photoshop native format

- ▶ Lossless compression
- ▶ Retains Layers masks, transparency, spot colours, clipping paths and various colour spaces
- ▶ Optionally retains history (even beyond a save)
- ▶ Max Size 30000 x 30000 pixels or 2Gb (PSB format can support 300000 x 30000 and up to 4Eb)

# RAW EDITING

- ▶ **Manufacturer's proprietary software**
- ▶ **Adobe Camera RAW, (Photoshop and Photoshop Elements)**
- ▶ **Adobe Lightroom**
- ▶ ~~Adobe Aperture (Discontinued)~~
- ▶ **DxO Optics**
- ▶ **Capture One Pro**
- ▶ **Corel Aftershot**
- ▶ **Adobe DNG Converter (FREE)**
- ▶ **GIMP (FREE – requires plug in)**
- ▶ **RAW software may need to be updated as new cameras are released**



# CAMERA RAW BASIC CONTROLS

Clipping Indicators

Camera Raw 8.8 - Nikon D300S

R: --- f/10 1/400 s  
G: --- ISO 1000 80-400@80 mm  
B: ---

Basic

White Balance: As Shot

Temperature 5500

Tint +11

Auto Default

Exposure -1.50

Contrast +6

Highlights 0

Shadows 0

Whites +21

Blacks -24

Clarity +24

Vibrance 0

Saturation 0

19.4% D009.NEF

Save Image... Adobe RGB (1998); 8 bit; 4288 by 2848 (12.2MP); 300 dpi Open Image Cancel Done

# SLIDERS

## WHITE BALANCE DROP-DOWN

At the top resides the White Balance settings with a dropdown menu.

In general, the most useful setting in the dropdown menu is *As Shot*. When you select *As Shot* you allow Camera Raw to attempt to decode the white balance data stored when your camera captured the image.


Camera Raw may not exactly match the camera's numbers or its rendering of that white balance, but it does a pretty good job of accessing most cameras' white balance metadata.

# SLIDERS

## AUTO

Camera Raw has a single Auto control, which does its work evaluating the statistics of the image's histogram and attempts to produce an optimal values for the settings throughout the image.

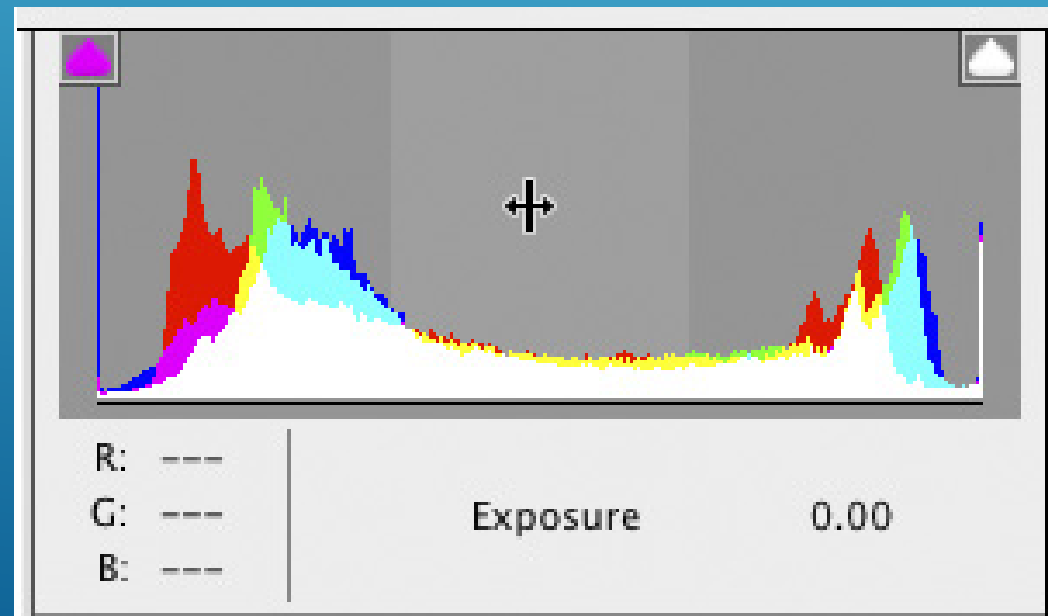
Can it be wrong? Yes—and it often is – but it may make a good starting point.

A decorative graphic consisting of several parallel white lines of varying lengths, slanted diagonally from the bottom right towards the top right, located in the lower right quadrant of the slide.

# SLIDERS

## THE EXPOSURE SLIDER

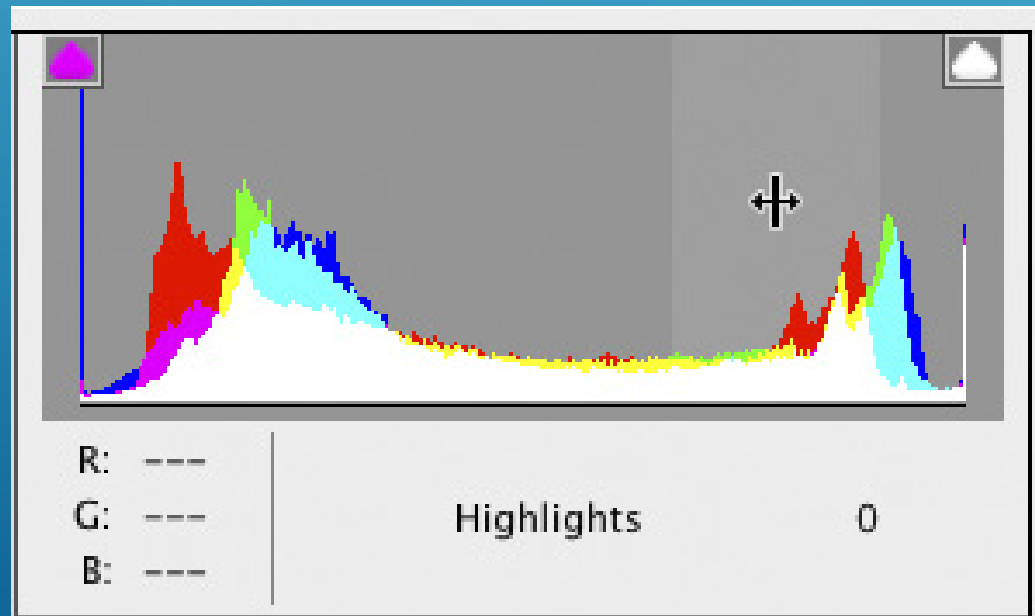
The Exposure slider controls the biggest part of the histogram: the midtones and the lower part of the highlights (and perhaps the upper part of the shadows). This slider is well named because it really does control the overall exposure of your image, so if the image is too light or too dark, start here first



# SLIDERS

## THE HIGHLIGHTS SLIDER

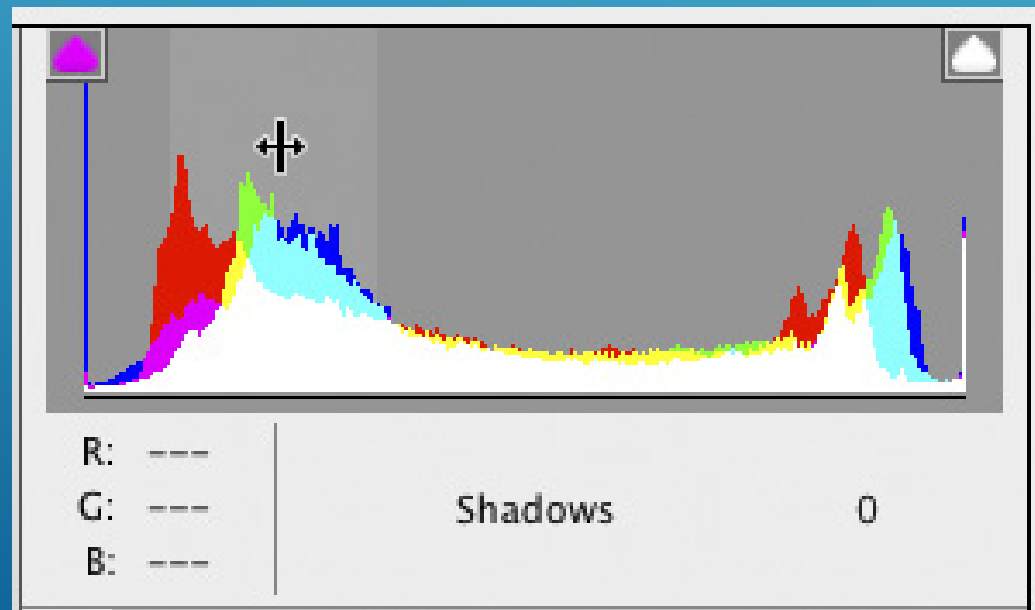
If you look at the histogram below, you'll see that the Highlights slider controls the (wait for it—wait for it—) highlights. BUT it doesn't control the very brightest highlights. Take a look at the histogram and you'll see it stops before the very brightest tones, so it controls the meat of the highlights but not the extreme brightest highlights. Drag the Highlights slider to the left to bring back any clipped highlights, or bring detail back to things such as puffy white clouds. Drag it to the right to create those blown-out highlight looks.



# SLIDERS

## THE SHADOWS SLIDER

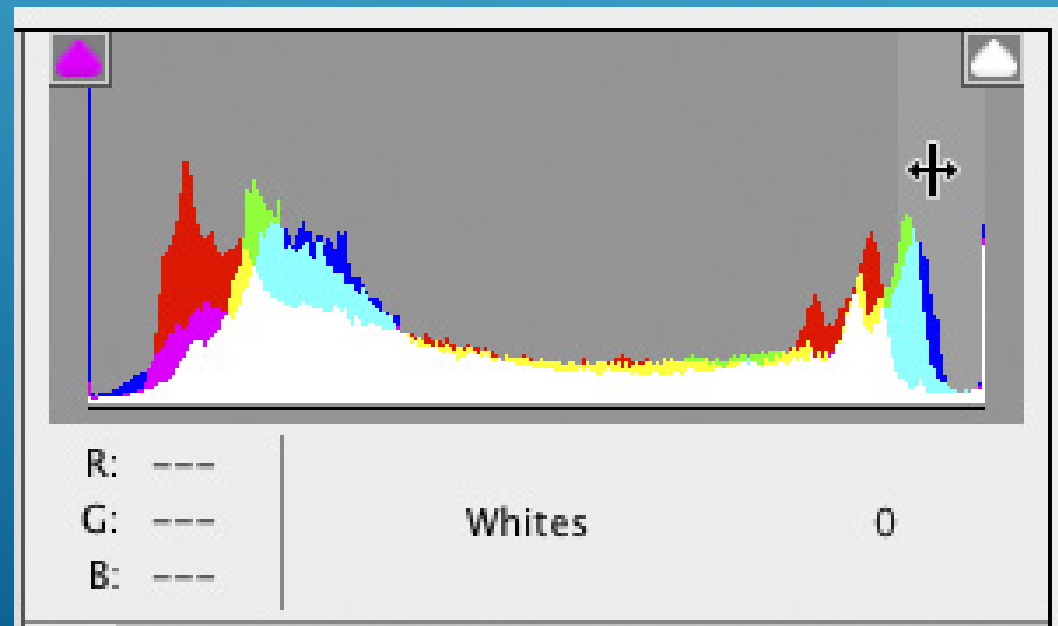
The Shadows slider is a very close cousin to the Highlights slider in the fact that it controls a lot of the shadow areas, but not the very darkest shadows. This is an incredibly handy slider since it has the power to bring out hidden detail in the shadow areas. Dragging the Shadows slider to the right opens up anything in shadows, so it's perfect for situations when your subject is backlit. Dragging this slider to the left darkens the shadow area.



# SLIDERS

## THE WHITES SLIDER

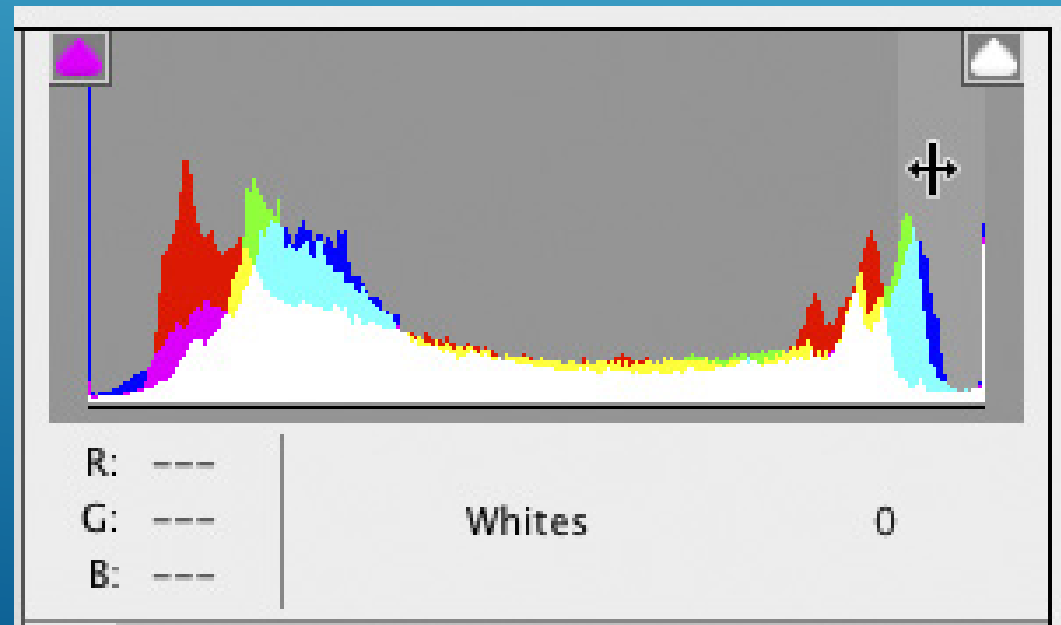
The Whites slider controls the very brightest part of your image, as seen in the histogram here—even brighter than what the Highlights slider controls. Use this for fine-tuning the whites in an image and setting the white point (Like you do with Levels in Photoshop). Dragging the Whites slider to the right brightens the whites in your photo, You can drag it to the left to help when the Highlights slider alone can't pull back clipped highlights, but most of the time you won't have to resort to that.



# SLIDERS

## THE BLACKS SLIDER

The Blacks slider controls the very darkest shadow areas of your image with the benefit of being able to open up the shadows and make them lighter. Dragging the Blacks slider to the left makes the blacks richer and darker and saturates the colour more, if an image looks washed out, dragging it to the left usually fixes that problem in a jiffy. You'll probably find that the effect is more subtle than the Shadows slider, even when dragging it to +100, and therefore somewhat less useful. But if you're in a pinch to brighten your shadows, at least you now have another place to go.





# SLIDERS

## CLARITY SLIDER

If you have Photoshop CS5 or later, you're using the latest version of Clarity, which totally rocks. (If you're using CS4 or earlier, its crap and will create a black halo around the edges of pretty much everything).

Clarity actually adds midtone contrast to your image, and it makes your image look sharper, even though it doesn't actually add sharpening. It does have its own look, which is more like an effect, and if you're trying to create a tonal contrast look, this slider is pretty much all you need (well, opening up the shadows with the Shadows slider goes really well with Contrast for that tonal contrast look). Using Clarity is a no-brainer because all you do is drag it to the right—the farther you drag, the more midtone contrast effect it adds.

If you were to drag the Clarity slider to the left, you'd get a softening effect. In fact, you can use it to do simple skin softening in portrait retouching.

# SLIDERS

## SATURATION SLIDER

There is a simple rule that's often quoted:

Use Saturation for removing colour - never to add it.

Saturation makes every colour in the image more colourful, so if something was already colourful enough, now it's too colourful.

A decorative graphic consisting of several parallel white lines of varying lengths, slanted diagonally from the bottom right towards the top right, located in the lower right quadrant of the slide.

# SLIDERS

## VIBRANCE SLIDER

Vibrance is a sort of 'Smart Saturation'

What Vibrance does is very clever.

When you drag it to the right, it only makes dull colours in the image more vibrant and colourful. It senses which colours are already vibrant and it affects these less than the dull colours.

It also has a special mathematical algorithm that avoids increasing any flesh tone colours, so you can use Vibrance in photos that have people in them without making them look like they've just escaped from TOWIE.

# SLIDERS

## TEMPERATURE SLIDER

The Temperature control lets you specify the colour temperature of the lighting in degrees Kelvin, thereby setting the blue-yellow colour balance.

Lowering the colour temperature makes the image more blue to compensate for yellower light; raising the colour temperature makes the image more yellow to compensate for the bluer light.

## TINT SLIDER

The Tint control lets you fine-tune the colour balance along the axis that's perpendicular to the one controlled by the Temperature slider—in practice, it's closer to a green—magenta control than anything else. Negative values add green; positive ones add magenta.

