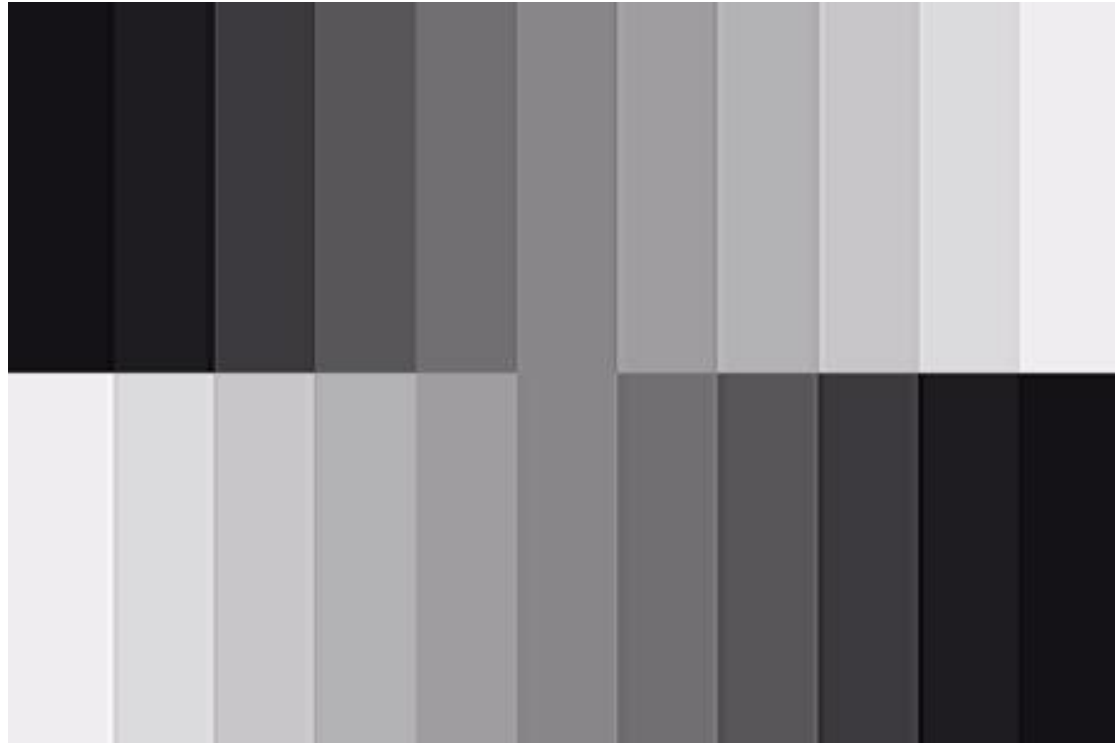


HDR

High Dynamic Range Photograph



HDR



This is a properly exposed image.

HDR



This is a properly
exposed image -
if I meter off the
mountain side.

HDR



If it's properly exposed, why can't I see details in the clouds and valley?

HDR

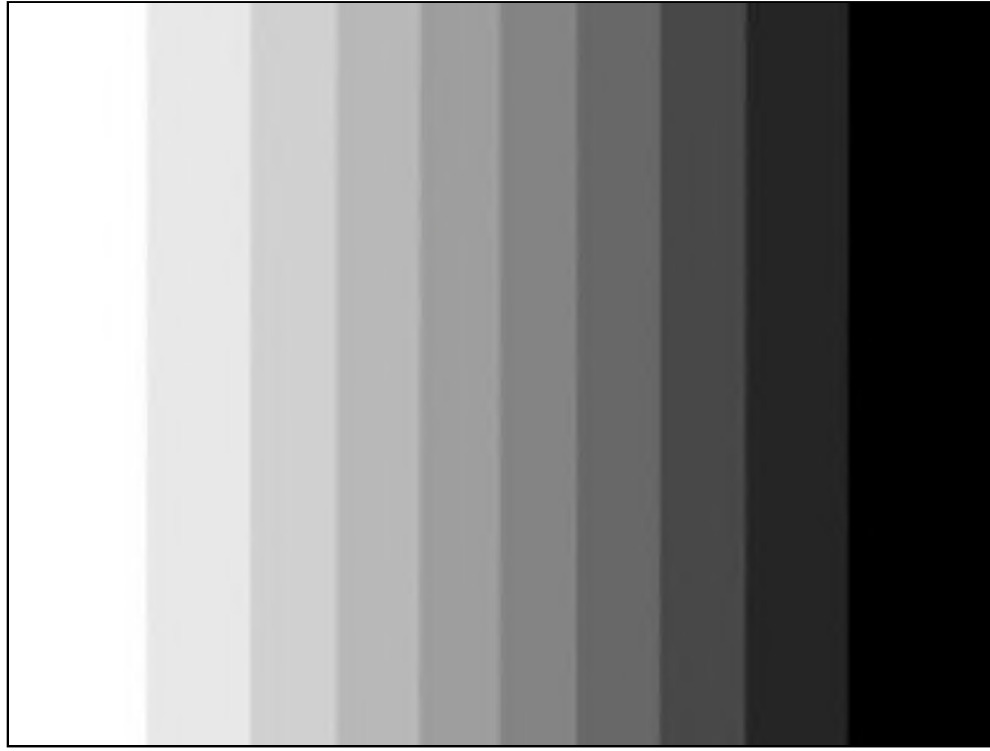


Because the range of light intensity (light to dark) in the scene exceeds the range of light intensity the camera is capable of capturing.

HDR

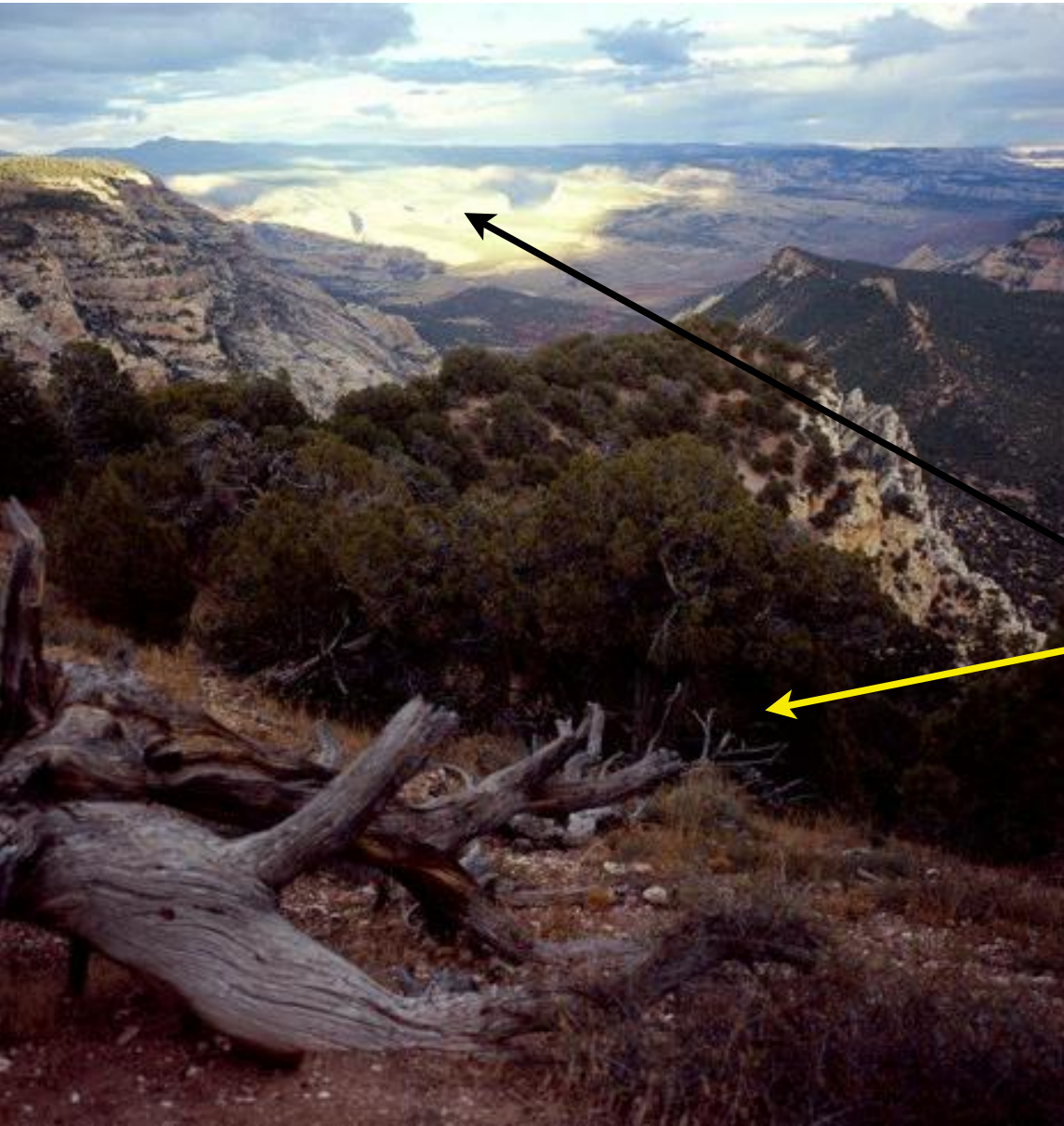


The ratio of the maximum to minimum light intensities is called the Dynamic Range.



This is a dynamic range from black to white. If used to set exposure the pure black would show no details in shadows and the pure white would show no details in highlights.

HDR



Our eye can see details in a scene over a much wider dynamic range than our cameras can.

Standing here it was easy to see details in the shadows as well as in the brightly lit canyon.

HDR



But this slide film has much narrower dynamic range, so details in the highlight and shadows are lost

HDR

- HDR photography is a tool used to create images that are closer to what our eye sees.
- HDR photography is also an artistic tool to create images our eyes would never see.



HDR helps landscape photographers make images that are a closer match with what the eye would see at that location and under that lighting.



Other visual artists may take a different approach, showing details we would not usually expect in a scene.

So if my camera can't cover the dynamic range of my eyes, yet HDR images look similar to what I see (or beyond) how are HDR images made?

HDR

- You use multiple images and combine them, taking the “right” exposure from each one to build up a final image that will fit within the dynamic range you want to show.

These are five images made to create a HDR image, each with a different exposure ranging from details in highlights to details in shadows.



1/40 sec.
f/10

1/60 sec.
f/10

1/100 sec.
f/10

1/160 sec.
f/10

1/250 sec.
f/10



+ 0.7
stop

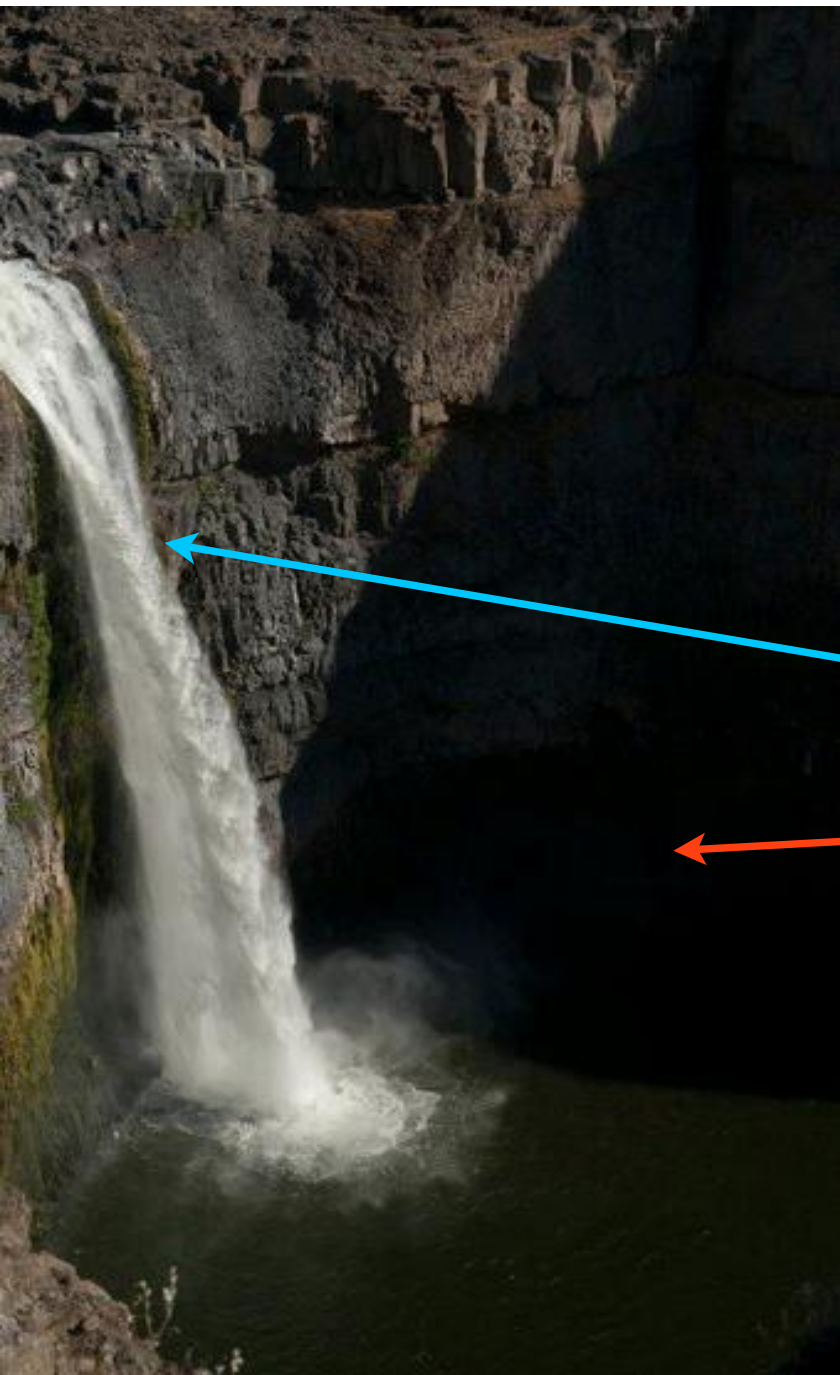
+ 0.7
stop

- 0.7
stop

- 0.7
stop

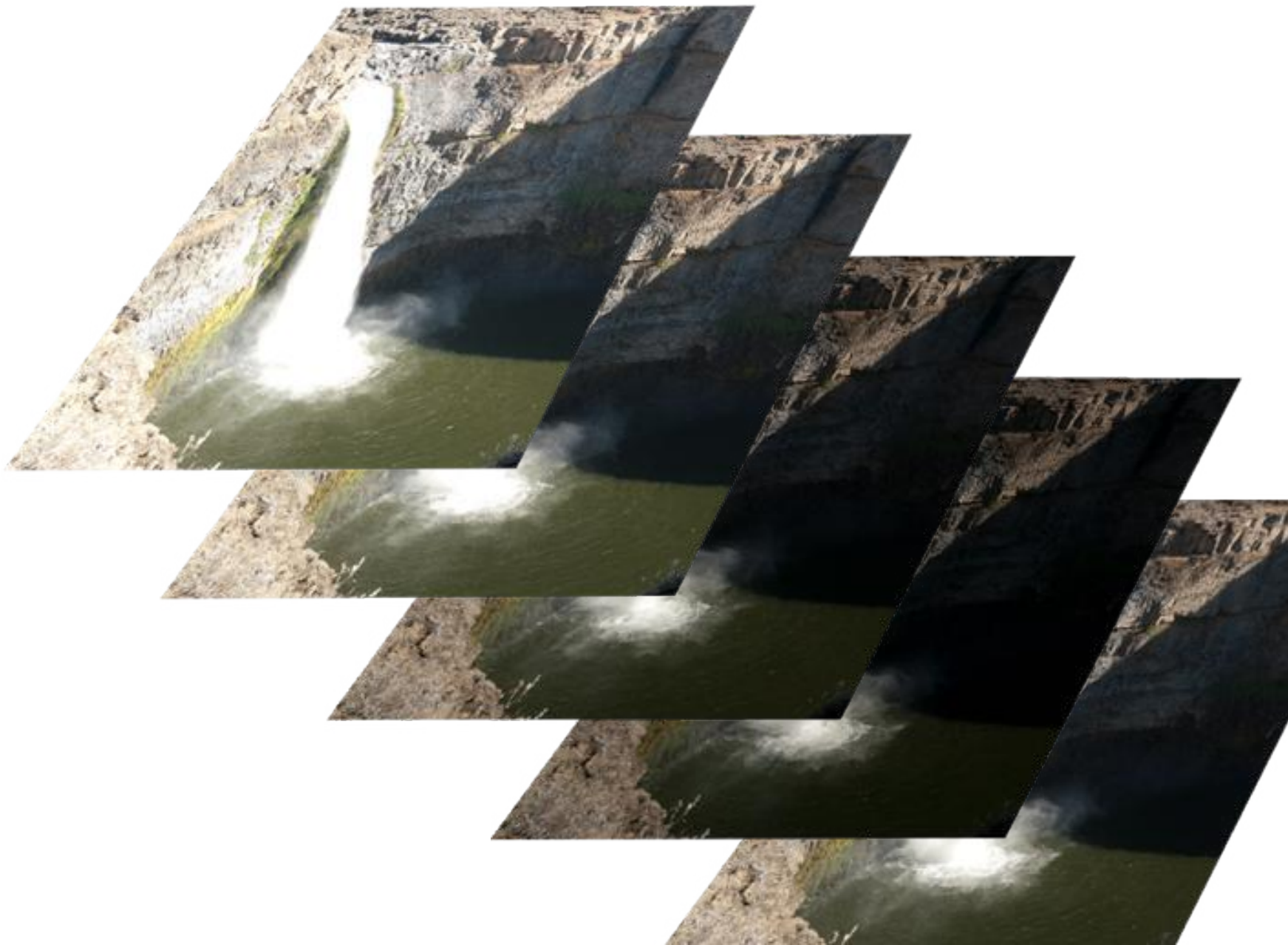


This was exposed to reveal details in the **shadows**, knowing any details in the **highlights** would be lost.



This was exposed to reveal details in the **highlights**, knowing any details in the **shadows** would be lost.

the software that is required to make digital HDR images does what mini photographers do - stacks the images, aligns them so all the details line up and then merges the images into a final image, selecting the “proper” exposures from each image to show details in highlights, shadows and all areas in between.





The final image now shows the full dynamic range of the scene, as the eye would have perceived it.



“Normal”



HDR



Sometimes only three

The “HDR effect”
can be used to
create a more
natural look...



...or pushed to more
extreme levels to
create a unique look
to your image.

HDR Technique

Most effective for static compositions - moving objects create ghosts and other artifacts in the final image

Most effective when images are made using a tripod to minimize alignment issues later

Most effective where changes in exposure from image to image are kept low (less than 1 stop)

Camera Set-up

Check to see if your camera supports Auto-Exposure Bracketing and learn what the settings are:

- Exposure steps between images ($\frac{1}{3}$ stop, $\frac{1}{2}$ stop, full stop)
- Number of images to bracket (3, 5 or 7)



Select Auto Exposure Bracketing in menu



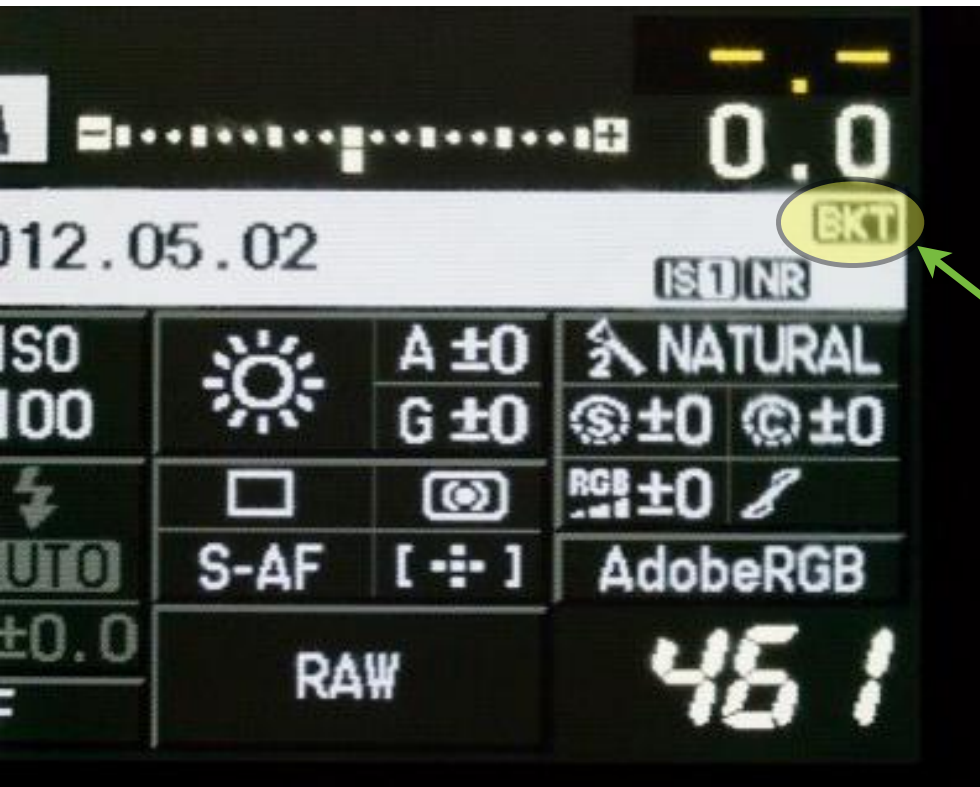
Select number of image (3 here) and exposure change between each (0.7 stops here)



Set shutter to multiple exposures ("motor drive")

- Remember to turn off the bracketing after you've made your HDR images!

“Why are my exposures so inconsistent?”



See if your camera menu has a reminder to alert you that you still bracketing

Camera Settings

If your camera doesn't support Auto-Exposure Bracketing, you can do it manually.

- In Aperture priority, use the Exposure Compensation control to increase and decrease the exposure for each image.



Camera Settings

- In Manual priority, set the Aperture and change the Shutter Speed to increase and decrease the exposure for each image.

Doubling the Shutter Speed (shooting twice as fast) is equal to -1 stop; e.g., 1/100 sec --> 1/200 sec

Halving the Shutter Speed (shooting half as fast) is equal to +1 stop; e.g., 1/100 sec --> 1/50 sec

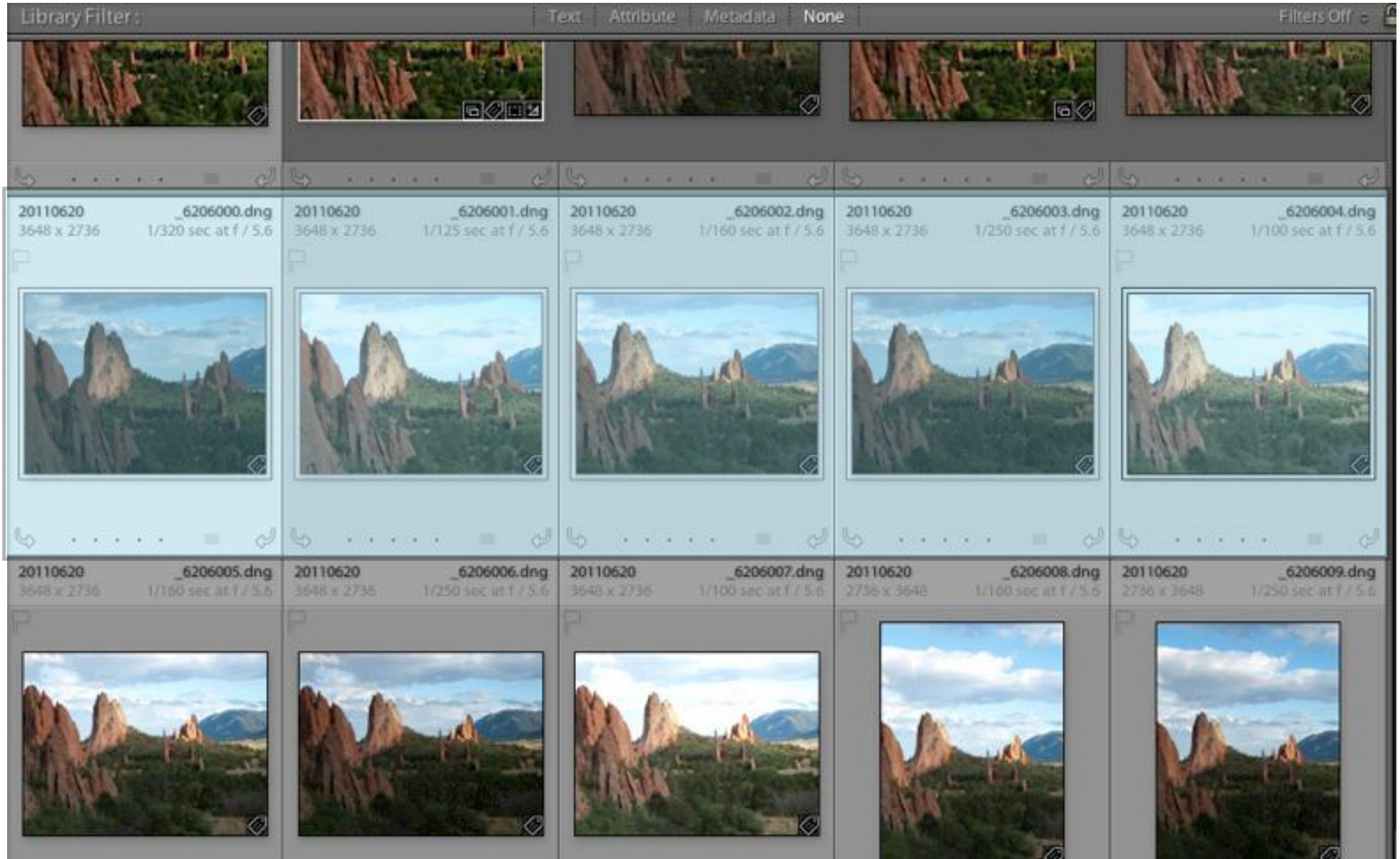
Most digital cameras are set to change by increments of 1/2 stop (2 clicks = 1 stop) or 1/3 stop (3 clicks = 1 stop).

HDR Software

- Photoshop (www.adobe.com)
- Photomatix (www.hdrsoft.com)
- NIK (www.niksoftware.com)
- Picturenaut 3 (www.hdrlabs.com)
- Essential HDR (www.imagingluminary.com)

Processing

Select images to be used for HDR



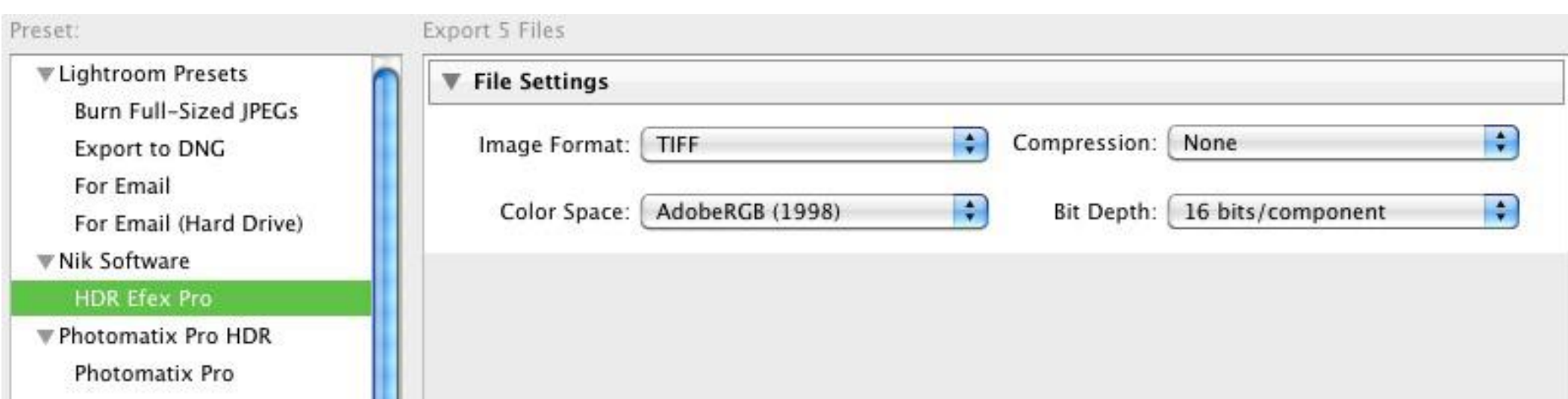
Processing

Send to HDR software (if not selecting from within the software)



Processing

Software will usually convert images into file type needed



Processing

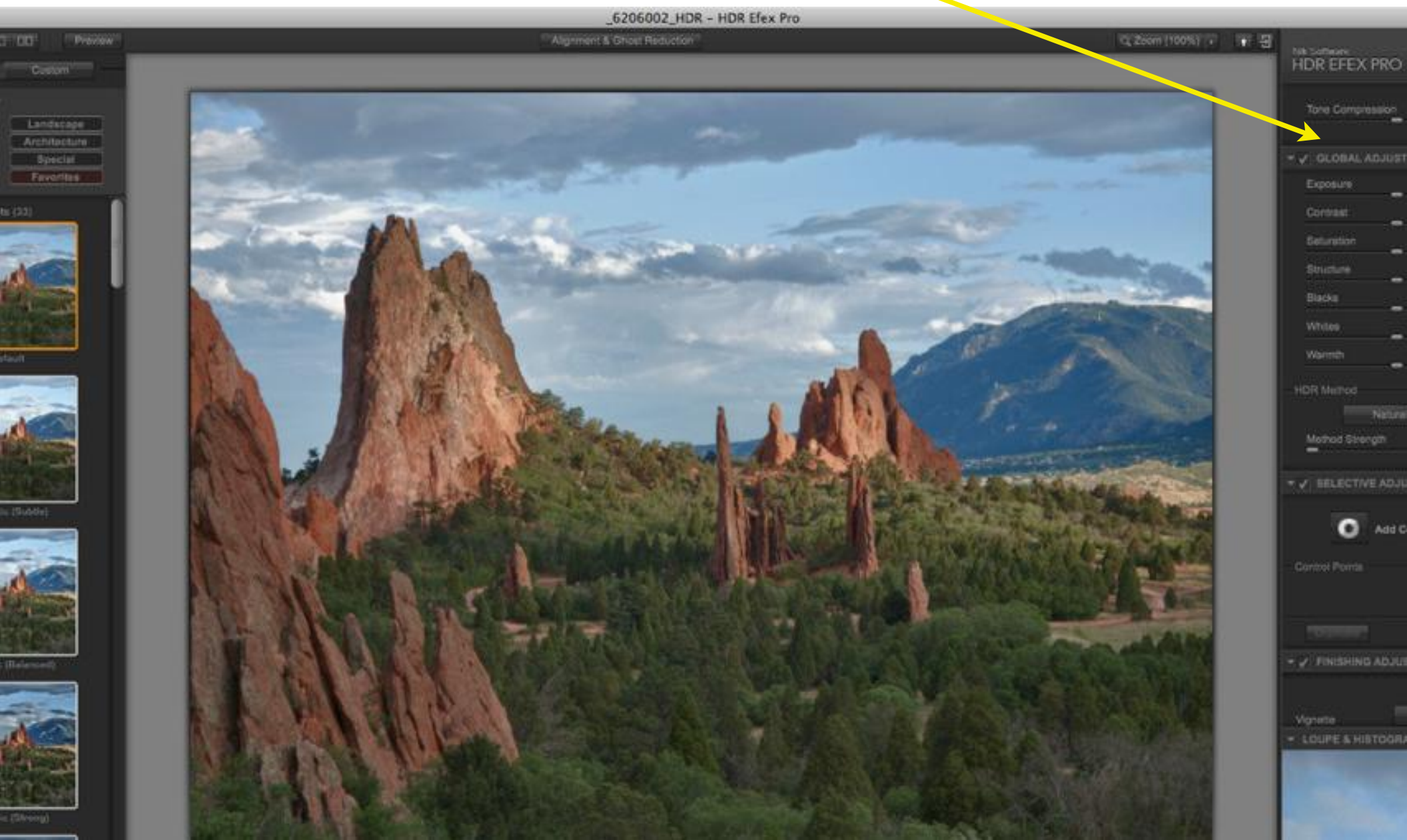
When the software is finished processing check for ghosts - some software is better than others at aligning images that are slightly “off”.



Processing

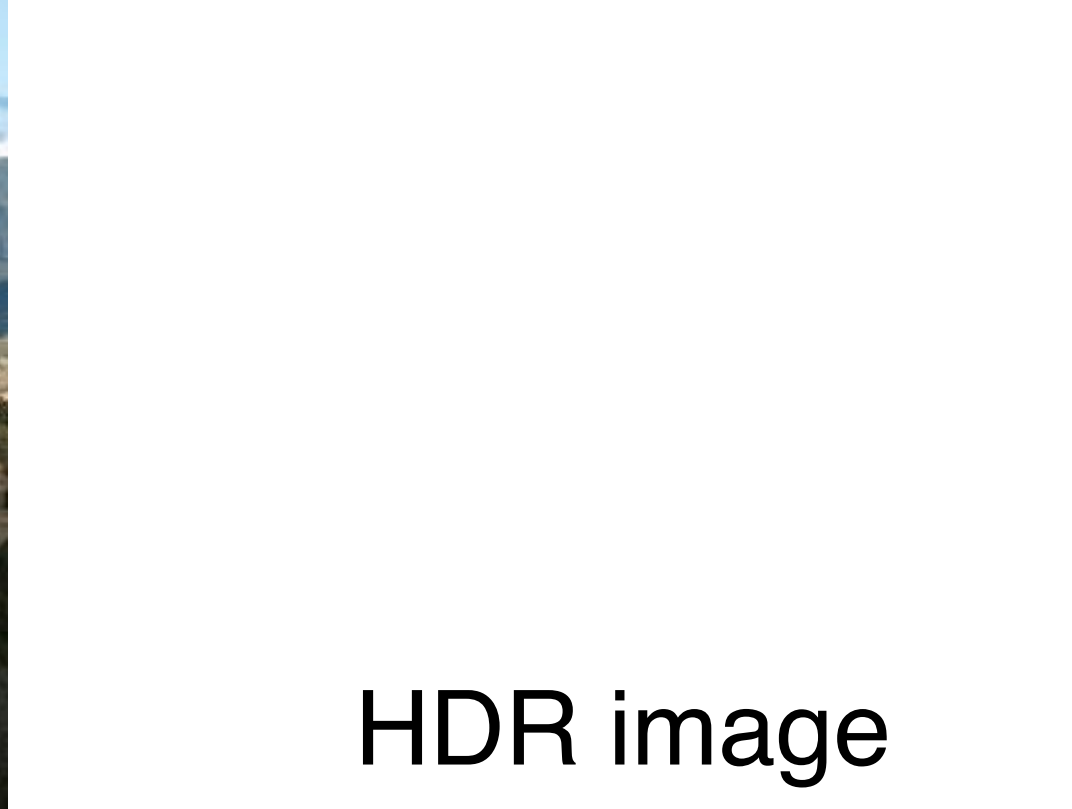
If the default image looks good then save it and you're done.

adjustments to the default can be made to enhance colors, detail, dynamic range, etc., giving you the final image you want.





Single image



HDR image





HDR can be used to
make hyper-real images
highlighting intense
colors, a myriad of detail
or simply a unique
lighting condition.





In general, HDR is a way to deal with tough lighting situations so you can make images of what you are seeing

Questions?

