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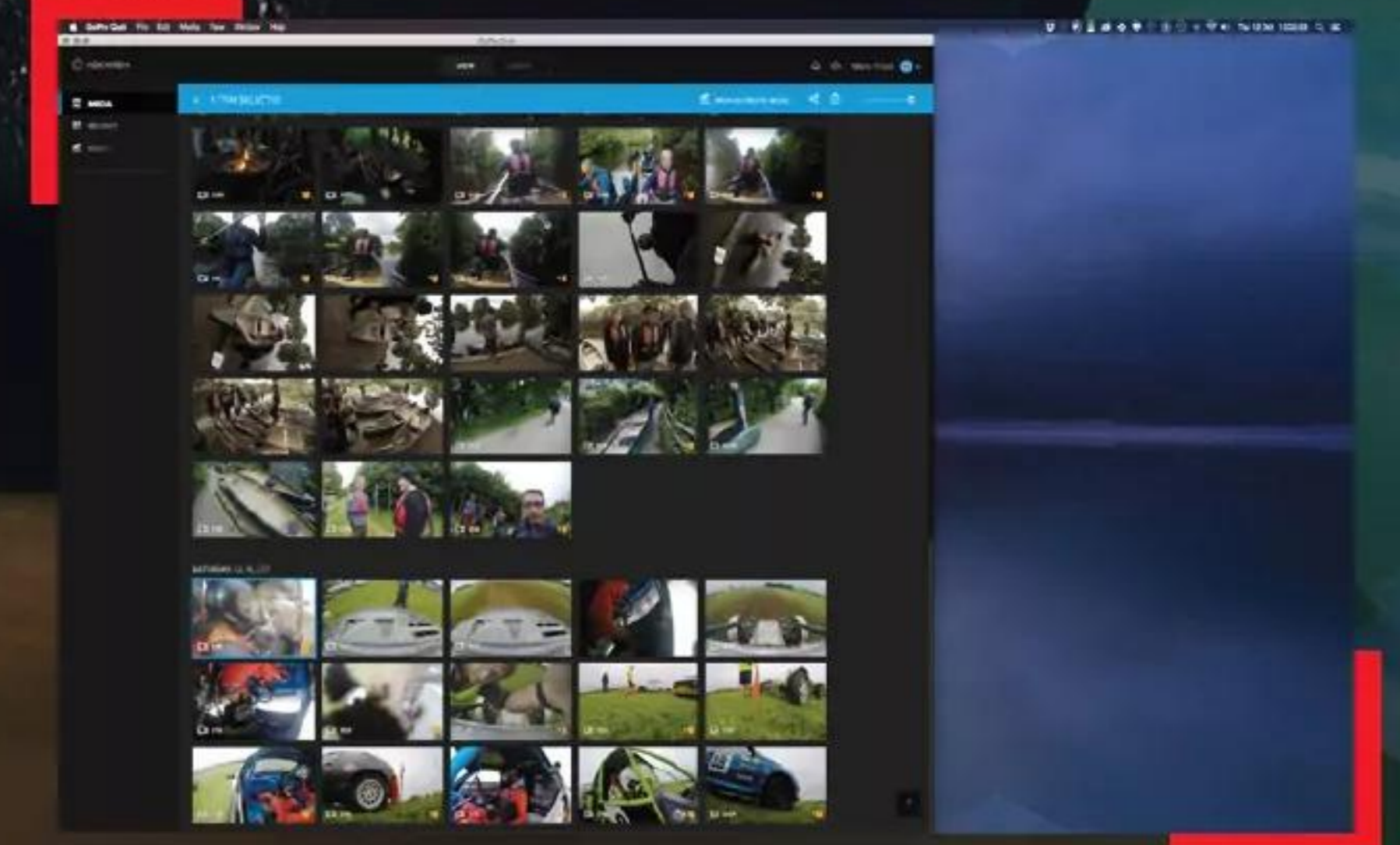
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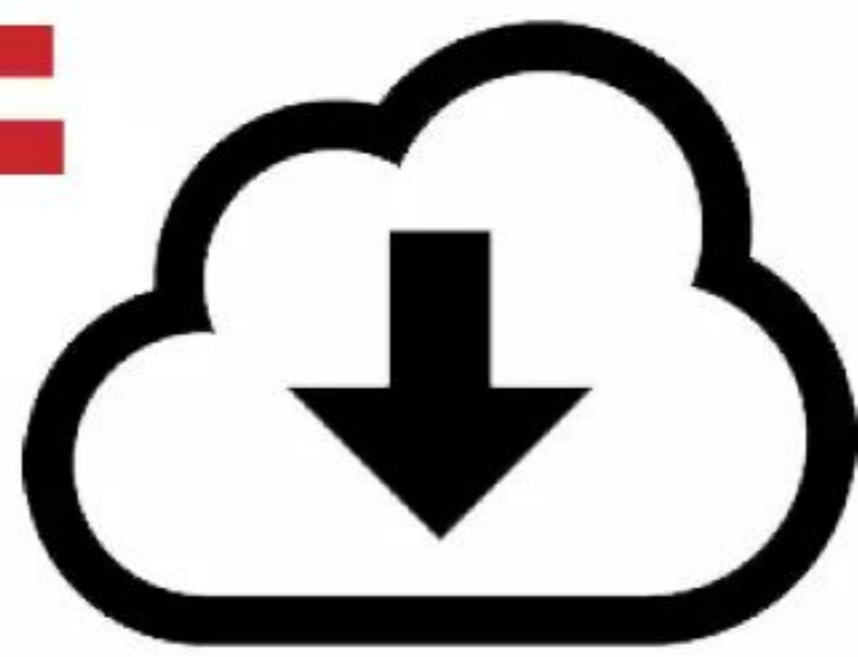
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Digital Camera User is the perfect digital publication for the user that wants to take their skill set to the next level. Do you want to enhance your user experience? Or wish to gain insider knowledge? Do you want to learn directly from experts in their field? Learn the numerous short cuts that the professionals use? Over the pages of the new advanced user guide you will learn everything you will need to know to become a more confident, better skilled and experienced owner. A user that will make the absolute most of their use and ultimately their GoPro itself. An achievement you can earn by simply enabling us to exclusively help and teach you the abilities we have gained over our decades of experience. ■

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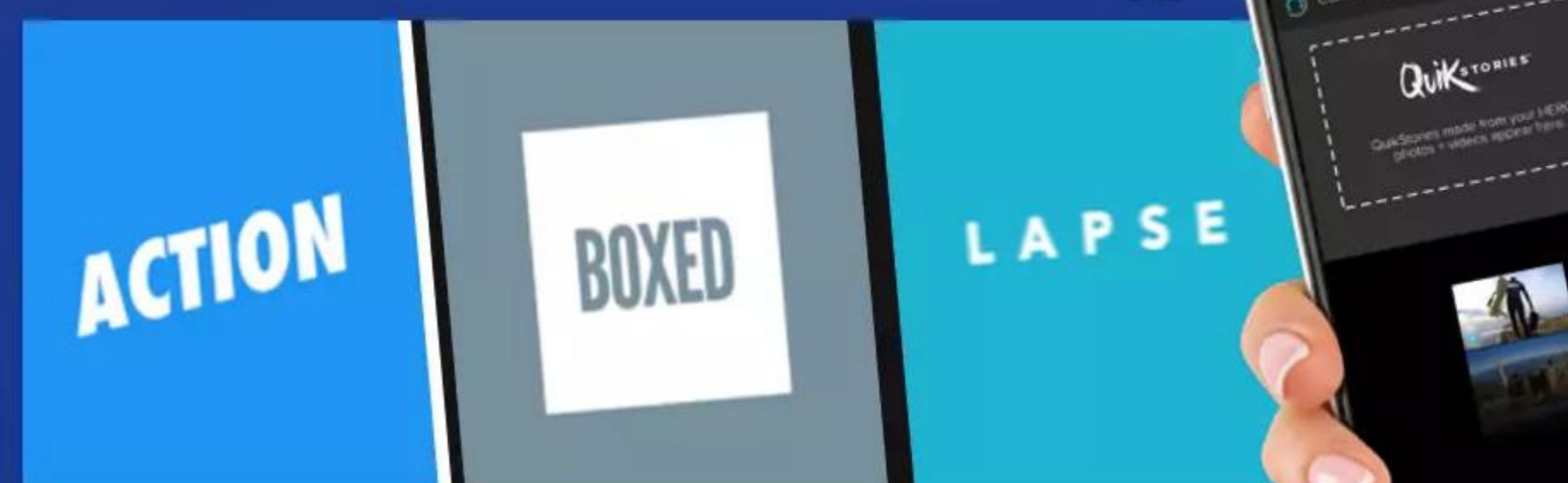
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“...the GoPro range is as versatile as it is rugged. It has been well established with the surf and snowboarding community for some time but there is more to it than that...”



“Suddenly the quality of the images is good enough to consider having it as another option in your camera bag, for those tricky shots where a DSLR is just not able to go.”



GoPro PHOTO MODES

You have some cool options when shooting stills

It can be argued that the GoPro range of cameras are video capture devices first and stills photography devices second. That could certainly be seen as the case with the range up to, and including, the HERO4 Black. The quality of stills images were considered on a par with cameraphones. It was a useful feature but for many it was never going to match DSLR quality. In fact many were happy to only shoot video and grab stills off the video footage instead, since they were only likely to be shared on social media where resolution and quality were not so important. Now though, with the advent of the GoPro HERO5 Black and the new HERO6 Black, the quality of stills capture has taken an important step forward with its ability to shoot stills in Raw format. Raw format is a data readout off the camera sensor with no compression and processing applied. It gives you its maximum image quality and a fair amount of leeway when it comes to working with the images in programs like Lightroom or other Raw editing programs. Suddenly the quality of the images is good enough to consider having it as another option in your camera bag, for those tricky shots where a DSLR is just not able to go. With that in mind, let's go and take a look at the options available and also pass on some tips on how to use your GoPro like a pro photographer. ■



Photo and time lapse modes

Your options for capturing stills and image sequences

Photo modes is broken down into three capture options: Photo, Night and Burst modes. The three modes each have their own settings which can be altered. On older models of camera, the various modes and field of view settings often meant a drop in maximum resolution from 12MP to 7MP or even 5MP. The HERO5 Black and HERO6 Black shoot everything in its maximum resolution of 12MP (4000x3000 pixels). ■

The image above was taken by a HERO5 Black from a suction cup attached to the passenger window. Night Photo was used with a 2s exposure to get the traffic trails outside the windscreen.

“The three modes each have their own settings which can be altered. On older models of camera, the various modes and field of view settings often meant a drop in maximum resolution from 12MP to 7MP or even 5MP.”



Photo Mode

This mode allows you to capture stills as a single shot or continuous capture. Press the shutter button once to take a single still or hold the shutter button down to capture up to 30 photos at 4 photos per second. Like its video counterpart, Photo mode has a number of field of view options (FOV). Wide is its largest FOV, behaving a bit like a fisheye lens. You also have Medium, Linear and Narrow FOV options just like in Video mode. Photo mode has the option to use the following advanced settings: FOV, Wide Dynamic Range (WDR), Raw Format and Protune. Some settings are only available in certain FOVs and Raw Format and WDR cannot be used at the same time.



Night Photo

This mode enables the capture of images in low light conditions from dusk to night. As in conventional DSLR photography, the shutter is left open for longer durations to gather more light on the sensor. Given the long exposures required, mounting your camera on a tripod is recommended. Handheld shots are going to be very blurry due to unwanted camera shake. The choice of settings is: FOV, Shutter, Raw Format and Protune. Some settings are only available in certain FOVs.



Burst mode is great for capturing a sequence of shots where something happens very rapidly such as a water balloon popping. 30 shots were taken over a 1s duration to capture the decisive moment.



Burst Mode

The Burst capture mode is great for capturing fast action events. It works a little like the burst mode on a DSLR. You can capture at a rate of up to 30 photos in one second and this is its default setting but you can alter settings for: FOV, Rate and Protune. Some settings are only available in certain FOVs and Frame Rates.



Time Lapse Modes

The Time Lapse modes are also broken down into three options: Time Lapse Video, Time Lapse Photo and Night Lapse Photo. A time lapse is an event that is captured over a period of time at a specific rate. For instance, you could shoot a time lapse sequence of the sunrise where you take one still photo every 30 seconds for an hour. You can pick out favourite stills or combine them to make a high-speed motion video of the sunrise. Just like the Photo modes, the Time Lapse modes have their own settings.



Time Lapse Video

This mode captures stills at a default rate of one still every 0.5 seconds. These are then combined and converted into a video file at the default resolution of 4K. You can alter settings for: Video Resolution, FOV and Interval.



Time Lapse Photo

Like the Video option, Time Lapse Photo captures a series of stills at specified intervals. This can be used to capture an activity or event over a period of time. You can pick out your favourite shots or you can manually combine them to make a time lapse video, using video editing software such as GoPro Studio or Premiere Pro. Editable settings for Time Lapse Mode are: Interval, Raw Format, FOV and Protune. Options like Raw Format are settings dependent.



Night Lapse Photo

In this mode, it behaves similar to Time Lapse Photo but the shutter remains open for longer in order to capture more light in dark environments. The editable settings for Night Lapse Photo are: Shutter, Raw Format FOV and Protune. Options like Raw Format are settings dependent.

Photo mode options

Here's a quick breakdown of the settings available



This sunrise harbour image was shot using the GoPro HERO5 Black in Wide Dynamic Range mode (WDR). More tonal detail is maintained in highlights and shadows for higher contrast shots.



Field Of View (FOV) Options

There are several FOV options available to you.

Wide

Good for action shots to capture as much as possible within the frame. Does have the look of a fisheye lens but can be corrected in post-production. Captured at 12MP.

Medium

A form of digital zoom that enlarges the view to fill the frame slightly more. Creates a mid-range field of view. Captured at 12MP.

Linear

The same as Medium FOV but corrects any fisheye distortion. Good for shots where there are strong vertical or horizontal lines and you want to remove the curved distortion. Captured at 12MP.

Narrow

The narrowest field of view with minimal distortion. Good for bringing more distant subjects closer to the viewer. Zooms into the centre of the shot. Captured at 12MP.



RATE

The Rate settings apply to the Burst mode and controls how many shots are taken over a specific period of time.

| | |
|------|-------------------------------|
| 30/1 | Shoots 30 stills in 1 second |
| 30/2 | Shoots 30 stills in 2 seconds |
| 30/3 | Shoots 30 stills in 3 seconds |
| 30/6 | Shoots 30 stills in 6 seconds |
| 10/1 | Shoots 10 stills in 1 second |
| 10/2 | Shoots 10 stills in 2 seconds |
| 10/3 | Shoots 10 stills in 3 seconds |
| 5/1 | Shoots 5 stills in 1 second |
| 3/1 | Shoots 3 stills in 1 second |



Advanced: Wide Dynamic Range (WDR)

WDR allows for a greater level of tonal detail to be captured. It retains detail in the brighter highlights and darker shadows of a high contrast image. Available

only in the Photo mode, it cannot be used in conjunction with Raw mode, which will have to be turned off to enable its use.



Advanced: Raw Format (RAW)

When this option is enabled, images are captured in 12MP in the GPR format which is a version of Adobe's DNG format. A JPG file is also created at the same time to allow immediate viewing on your camera. The GPR files can be opened and post-worked in Adobe Camera Raw (ACR) v9.7 onwards and Lightroom 6.7 onwards. Raw format is available in certain Photo modes in Wide FOV and Time Lapse Photo mode where the interval is set 5 seconds or longer. If Raw is enabled, WDR cannot be turned on. Raw is not available when shooting continuous photos.



Advanced: Protune (PT)

When turned on, Protune enables you to access more manual control of certain settings, to optimise your images.



Colour

Allows you to access and alter the colour profile of your captures. You can choose either the GoPro Colour default or Flat which keeps all colours neutral and captures more detail particularly in the shadow areas.



White Balance

Change the colour temperature of your video and photos. Lower values such as 3000K will give your shots a much warmer tone. Higher values like 6500K will give cooler tones.



ISO

This determines how sensitive your camera is to light. It allows you to shoot high ISO in darker situations with greater image noise, or with low ISO in brighter areas with less image noise. In video the range is ISO 400-6400, for Photo modes it is ISO100-1600. In Photo mode you can specify a maximum and minimum ISO used by the camera.



Shutter

This allows you to manually choose a shutter speed from the available list. Values such as 1/30 for video and 1/125 for photos mean the shutter is open for longer than values such as 1/240 for video and 1/2000 for photos.



Exposure Compensation (EV Comp)

This affects the brightest of your video or photo. The default EV Comp is 0 EV but you can make negative adjustments down to -2.0 to make the image darker, or up to +2.0 to make the image brighter.



Sharpness

Sharpness is set to High by default, but you can change it to Low or Medium. This adds pre-sharpening to your photos or video and can control the sharpness of details in the scene. If you are keen to edit your photos in post-production, then it is better to keep the value set at Low.



Top tips for shooting stills

Getting the most out of your GoPro's photo mode

01

Near or far?

As we've mentioned, the lens on a GoPro camera behaves a lot like a fisheye lens with a lot of distortion making horizons curve and straight verticals appear to bend outwards. It also means that its wide field of view makes objects appear small in the frame. If you are shooting a large landscape and want to get as much detail in as possible, this is not such a concern; but if you have a subject that is your point of interest in the shot, then unless you get in close, they will appear very small and insignificant in the final composition. That's when you need to get in closer to your subject. Even from a short distance, you'll be surprised just how much background you can still get in the shot.



02

Use the GoPro app

Good photography is all about framing and composition. If you are using an older Hero3 Black or Hero4 Black, then you won't have an LCD screen that you can use as an aid to composing your shot. Just pointing roughly in the direction you're trying to capture is likely to result in badly framed shots. This is where the GoPro app comes in very handy. It lets you tether your camera to your phone via a Bluetooth connection and can show you a live view of what the camera sees. This is invaluable to nailing that shot and not chopping the top of your subject's head off or missing them entirely.



03

LCD touch display

Whilst we are talking about framing and composition, there may be situations where tethering your phone to your camera may prove tricky. If you are scaling a steep hill and want to take some shots or you're on your surfboard without your phone etc. That's where having a LCD display on your GoPro is a bonus. The Hero5 Black comes with a touch screen built in as standard, as does the older Hero4 Silver. Other models like the Hero3 and Hero4 Black do not have one, but you can purchase a touch display that will let you see what the camera sees and frame your shots with confidence. You can even review and play back photos and videos. Adjusting camera settings is also a lot easier using the screen interface.



04

Battery life again

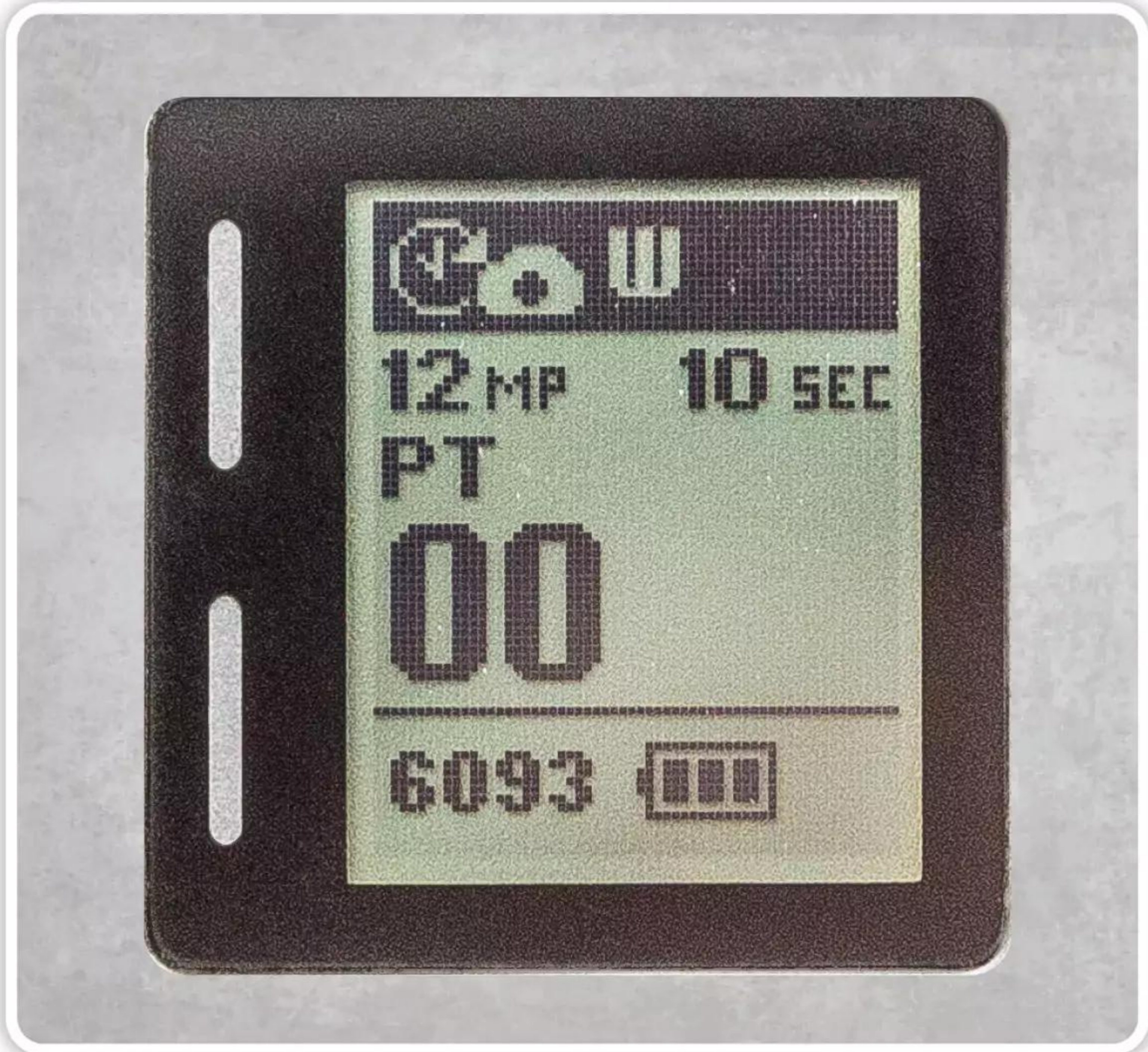
At the risk of repeating ourselves, we're going to mention battery life again seeing as we've just mentioned the GoPro app, Bluetooth connections and LCD touchscreen. All these features and tools will make the framing and composition of your shots so much easier, but it will place a higher drain on your battery. Given that battery life is a bit of an Achilles heel for the camera, you need to shoot smart to avoid running out of juice at a key moment. Keep checking your battery indicator to see how it's doing and always turn the camera off when you're not using it. If you are using a touch screen rather than the GoPro app, make sure the wireless connection is switched off.



05

Highest quality

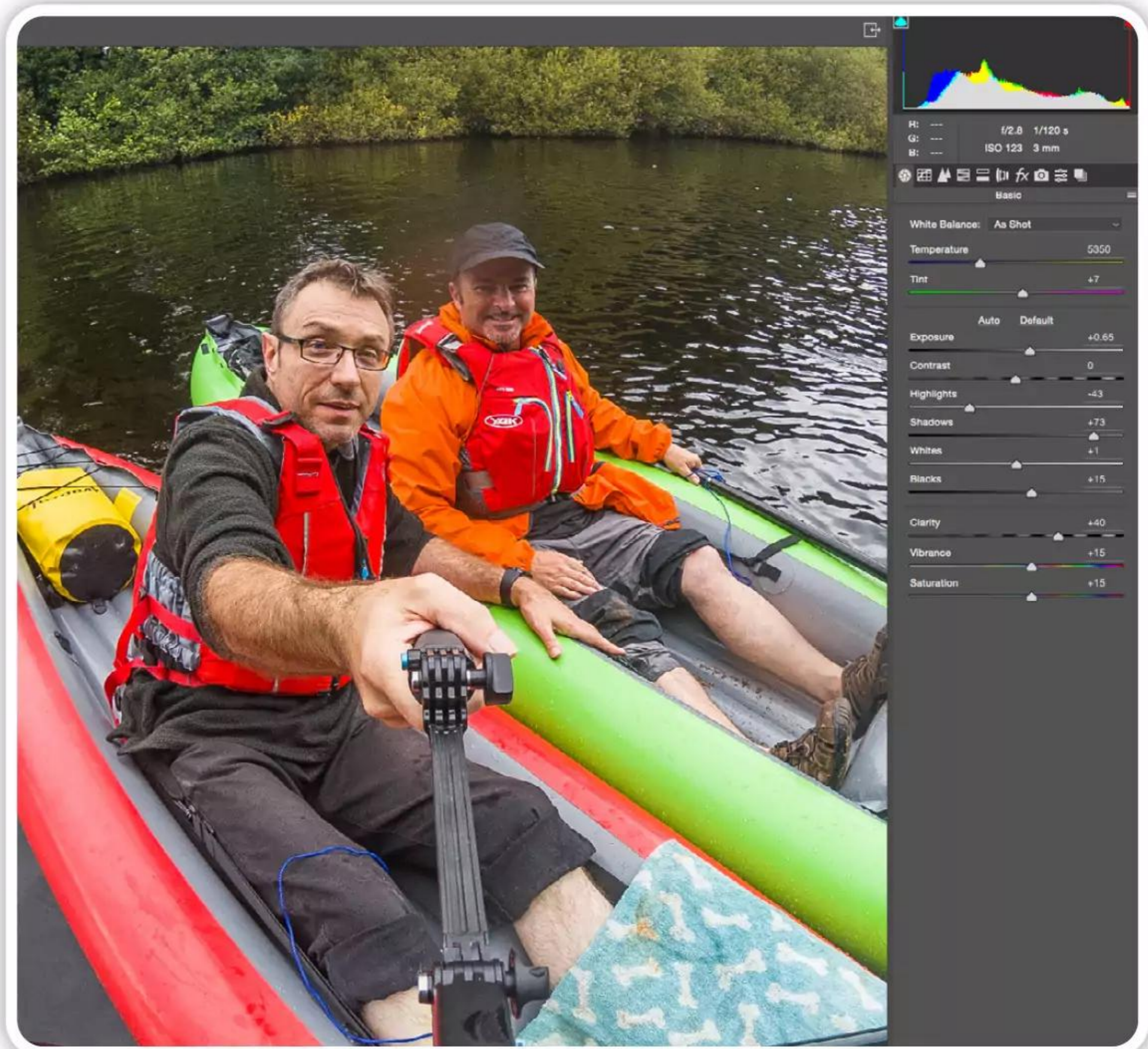
When shooting stills, keep in mind how they will eventually be used. This can dictate what settings you use for the camera's Photo mode. If you are only going to be sharing at low resolutions on social media sites, then the camera's default Photo mode settings will be perfect. If you want more control and the highest possible image quality for post work and editing back on your computer, then depending on your model of camera you have some options. On the Hero4 model, you have the Protune option that lets you control settings such as white balance, ISO limit, sharpness and exposure compensation. It also means your jpeg files will have less compression on them. Try to avoid FOV options that limit your megapixel size and always shoot at the maximum 12MP.



06

Raw mode

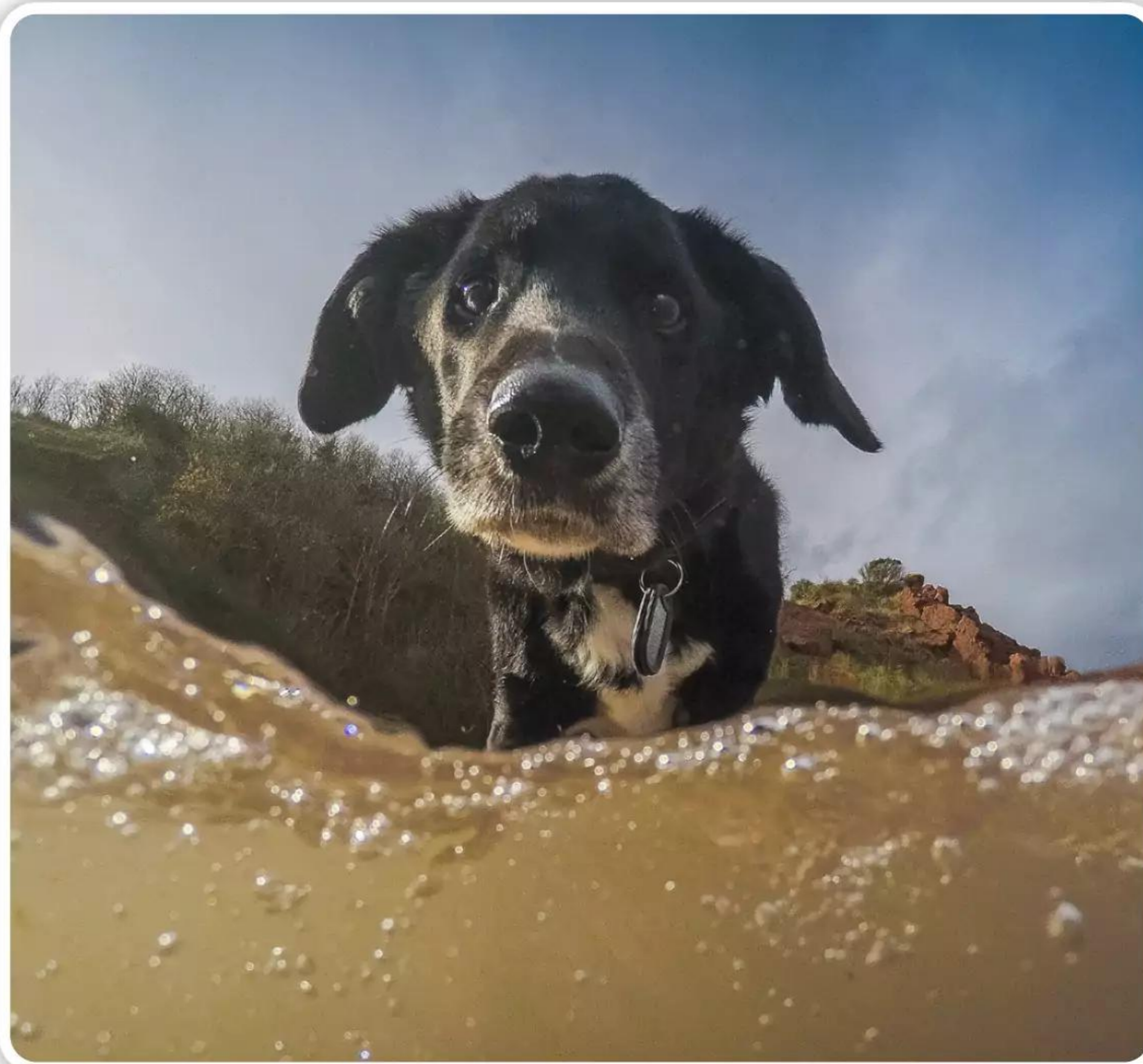
The GoPro Hero5 Black and HERO6 Black also uses Protune to let you access and customise your Photo capture settings. In addition, it also lets you shoot in Raw mode. This is a big deal as it lets you capture data straight off the camera's sensor with no compression or processing done to the image. DSLR photographers have had this option for a long time and now you have it on your Hero5 Black too. Raw mode is for those a bit more serious about editing their photos to get as much detail out of them as possible, using programs such as Adobe Camera Raw and Lightroom. Raw files contain more data and give you the chance to recover detail in the bright highlights and dark shadows of your shots.



07

A new angle

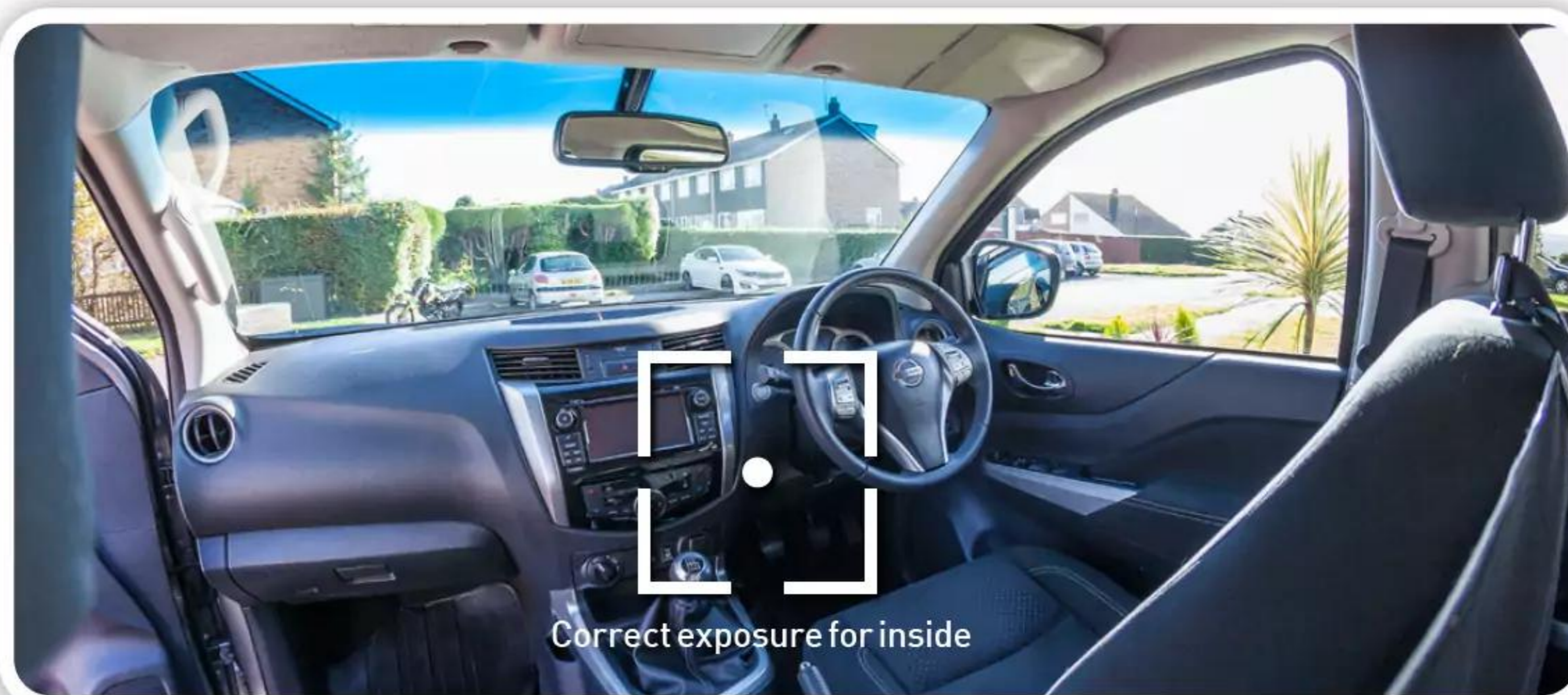
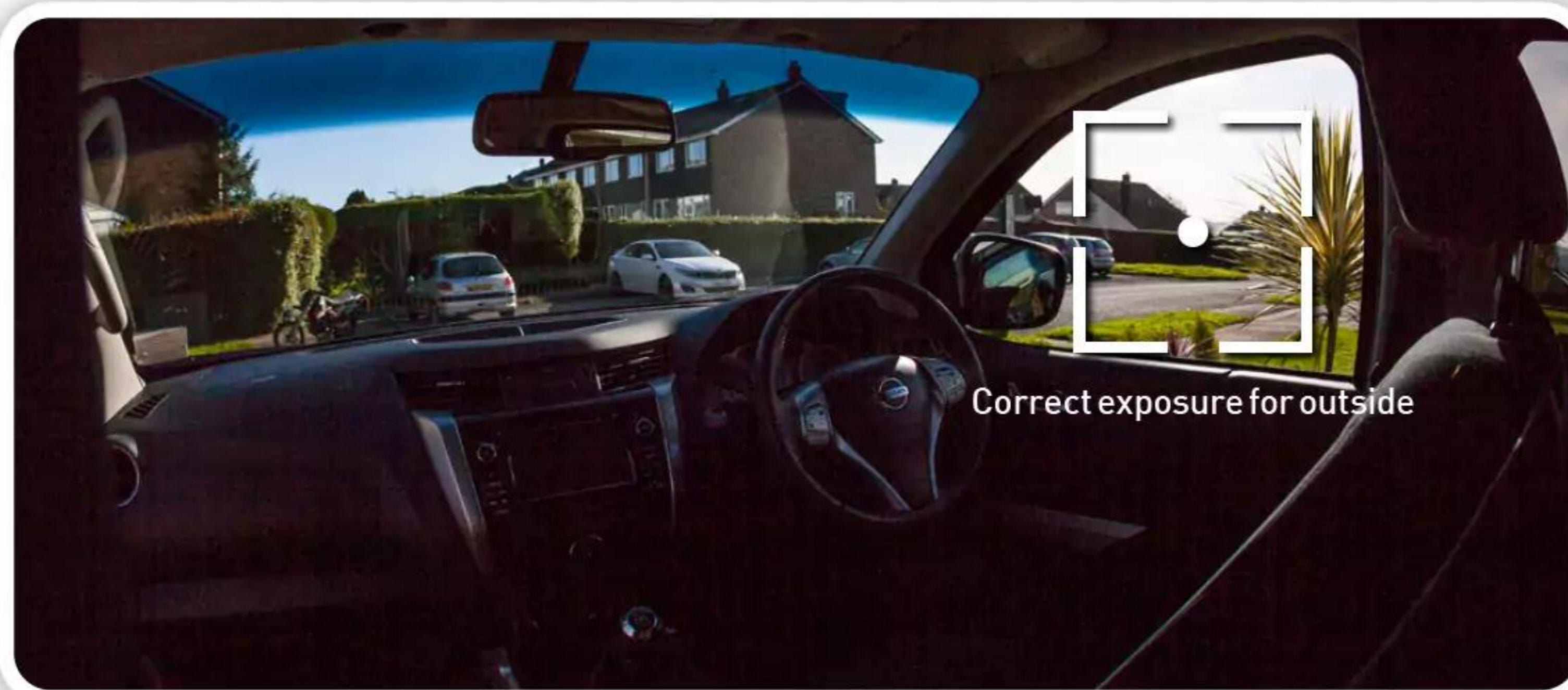
The size of the GoPro means it has an edge over larger, bulkier, DSLR cameras in that it can fit in places that its larger DSLR cousins can't. This opens up a whole new set of creative possibilities. The GoPro is small enough and light enough to be placed or mounted at some extreme angles to get perspectives that you couldn't match with anything else. Rather than shooting from the usual eye level, get the camera down low or up high to change up the viewing angle a little. From the end of your ski pole as you glide down powdered slopes, getting an unusual angle of your dog, to the headstock of your guitar as you chock out some power chords at a local gig, the GoPro assists you in new and interesting ways.



08

Exposure control

For the most part, your GoPro camera can automatically meter the scene and come up with the correct exposure so your shots are bright and well exposed. There may be times however, when you need a little more control. This is where exposure control comes in. Press and hold the screen and the exposure control reticule will appear as a small white box. Whatever part of your scene is under this box is what the camera will use to attain a meter reading. As an example, if you are shooting inside a car and want the outside to be correctly exposed, move the move to a part of the image containing the view outside. If you want the inside of the car to be correctly exposed, then move the box over an area that is inside the car and it will meter that area and adjust the exposure so the interior is correctly lit.



09

Using filters

As the GoPro has rocketed in popularity, third party manufacturers have been busy creating various photographic accessories that give you some creative options when shooting your stills and videos. Using filters to affect the nature of the light falling on the camera sensor has been employed by DSLR photographers for a long time. Now, you can do the same. You can use neutral density filters that block the light and let you use slower shutter speeds in bright conditions, as well as graduated neutral density filters that can help balance the overexposure issues of a bright sky and a darker foreground. The filter is dark at the top and fades to transparent near the middle so the sky is darkened, but your foreground remains unaffected.



10

Exposure compensation

On very bright days, you need to be aware that the GoPro can easily be overwhelmed and overexpose images to the point of being rendered useless. If the scene is evenly lit from the sun behind you, this is less of a problem, but if you are shooting and the sun is either in the frame or very close, you are likely to blow all detail in the sky. To keep the sky properly exposed, use the Flat colour mode and Exposure Compensation in the Protune settings of your camera and dial in at least -1.0 EV to darken the shot overall. Be aware that your foreground will be darker too but the Flat colour mode helps prevent it from being solid black.



11

Tripod trick

It might look a little silly attaching your tiny GoPro to a large tripod but if you want to try and shoot some rock steady photos, then a tripod is essential. It also gives you a chance to explore some very creative options like HDR photography. Using the Exposure Compensation option from the Protune menu, you can shoot a 1 or 2 stop underexposed image, a 1 or 2 stop overexposed image and one middle exposure, and blend them in Photoshop or HDR program to produce an image that has a much great range of tones than if you'd just shot one photo on its own.



12

Sunrise, sunset

Most photographers will tell you that the best times to take photos are around sunrise (the golden hour) or sunset (the blue hour), when the sun is obviously less intense; long shadows reveal detail in the land that is lost when the sun is high in the sky and the colours can be amazing. One of the easiest things you can do to improve your photos, is to shoot during these times. Keep the previous tip in mind though and make sure you either have some solid mounting options for those slower shutter speeds or use a tripod to avoid shaky photos. One tip if you are shooting wide landscapes is to put the horizon in the middle of the frame to avoid the pronounced fisheye curvature and then crop it using your favourite editing program to adhere to the rule of thirds as mentioned previously.



“...footage was not as smooth as that available to the HERO4 Black and the HERO5 Black which can capture 4K at 30FPS, with the HERO6 Black able to shoot at 60FPS.”



VIDEO AND PHOTO MODES

Here are the various capture modes available to you

The GoPro range has come a long way in its lifetime. This popular action camera is now in its 6th generation. The HERO6 Black, the HERO5 Black and its compact sibling, the HERO5 Session still share a lot of DNA with their older counterparts; chief among which is the option for capturing video or stills, or indeed both at the same time. The HERO3 Black could shoot 4K ultra HD video but it could only manage 15 frames per second (FPS) which meant footage was not as smooth as that available to the HERO4 Black and the HERO5 Black which can capture 4K at 30FPS, with the HERO6 Black able to shoot at 60FPS. On the stills capture front, the HERO3, 4 could capture photos at a maximum resolution of 12MP depending on the field of view (FOV) you were using. The HERO5 Black and HERO6 Black can now shoot stills at 12MP at any FOV, and it can also shoot in Raw format in certain modes. Raw format is essentially a data readout, straight from the camera's sensor with no processing applied, giving maximum image quality when it comes to processing your shots in image editing software such as Lightroom or Photoshop. The HERO3 and 4 are only able to shoot in jpeg format but you can still use settings that will give you as much image data as possible, if you wish to process the images further once shot. With that in mind, let's delve a little more into the various modes available to you. ■

Video and photo resolution

A little cheat sheet to get you up to speed



2.7K 16:9 2704 x 2028

1440p 1920 x 1440

960p 1280 x 960

1080p 1920 x 1080

720p 1280 x 720

480p 848 x 480

When you start using your GoPro to shoot video or take stills, you will become aware that there are a lot of references to either 'megapixels' (MP) or things like '4K' or '720p'. These are various units of measurement that describe how large a frame of video or a photo is in lines of pixels. As an example, a frame of 720p video measures 1280 pixels wide by 720 lines deep. This equates to a total of 921,600 pixels or 0.9 megapixels. The latest GoPro HERO5 Black and HERO6 Black can shoot in a number of video resolutions as well as capturing 12MP still photos. If you've never encountered certain video and stills terminology before, you might wonder what it's all about. To help you sort out your megapixels from your 4Ks, we've put together a little reference cheat sheet to show you how the various resolutions available on the HERO5 black compare to each other. ■

12MP 4000 x 3000

4K 3840 x 2160 (2160p)

2.7K 4:3 2704 x 1520

“If you've never encountered certain video and stills terminology before, you might wonder what it's all about.”

The p that you see in resolutions such as 1080p or 1440p stands for progressive scan. This means that if you are shooting a video in 1080p resolution for example, all of the 1080 lines of pixels are captured/ displayed at the same time. This differs to 1080i where only the odd numbered lines are displayed first, then the even numbered lines; and they are interlaced very quickly to fool your eye into believing you're seeing an entire picture in one go.

You might also be aware that there are two broadcast video standards available to you. You have the choice of PAL or NTSC video. PAL is the main standard used where 25 frames are displayed each second. NTSC, used predominantly in the USA, displays 30 frames of video during each second.

In addition to all the resolutions and video standards on offer, you also have the choice to shoot in different aspect ratios. The aspect ratio is simply the proportional relationship between the width and the height of an image. Modern televisions display images in widescreen format 16:9 and you can capture video in the same aspect ratio and in various resolutions. You can also capture images and video in 4:3 format which is 33% taller than a 16:9 ratio. Video is often captured in this aspect ratio as it provides greater scope for cropping or applying image stabilisation during the editing process before being output to the more common 16:9 broadcast format. ■

Video resolution and settings

A rundown of video modes and settings

The GoPro's ability to shoot great quality video has always been one of its strengths and although 4K video capture was possible on the HERO3 Black, it was only at 15 frames per second (fps), which made for quite choppy video if there was anything moving quickly in the frame. The HERO4 Black was the first action camera from GoPro to give us the ability to shoot up to 4K resolution at a much more acceptable 30fps. The HERO5 Black continued the trend and now the HERO6 Black with its

new GP1 image processing chip, allows the capture of 4K video at a frame rate of 60fps. All the cameras in the GoPro range allow you the choice of using multiple resolutions. We list some of the common uses for the various resolutions below. There is also a handy guide so you know what frame rate/shutter speeds are available when you opt to take the camera out of Auto and use Protune to take more control of your shutter speeds. ■

Resolution

Best Use

| | |
|-----------|---|
| 4K | High-resolution, low-light performance. 8MP stills from video. |
| 2.7K 16:9 | Video can be scaled down for cinema quality results. |
| 2.7K 4:3 | For body-mounted, ski-mounted or surfboard-mounted shots. Larger vertical viewing area. |
| 1440p | 4:3 captures larger vertical viewing area. High frame rate. Great for social media. |
| 1080p | Popular and widely used. High resolution and high frame rates. Available in all FOVs. |
| 960p | Good for slow motion. 4:3 ratio provides a large viewing area. |
| 720p | Good for handheld shots. 240fps for super slow motion. Only in Narrow FOV. |
| 480p | Standard definition for super slow motion and Wide FOV. |

Frame rate

Shutter speed multiples available

| | |
|--------|--|
| 24fps | Auto, 1/24th, 1/48th, 1/96th, 1/192th. |
| 30fps | Auto, 1/30th, 1/60th, 1/120th, 1/240th. |
| 48fps | Auto, 1/48th, 1/96th, 1/192th. |
| 60fps | Auto, 1/60th, 1/120th, 1/240th, 1/480th. |
| 80fps | Auto, 1/80th, 1/160th, 1/320th, 1/640th. |
| 90fps | Auto, 1/90th, 1/180th, 1/360th, 1/720th. |
| 100fps | Auto, 1/100th, 1/200th, 1/400th, 1/800th. |
| 120fps | Auto, 1/120th, 1/240th, 1/480th, 1/960th. |
| 240fps | Auto, 1/240th, 1/480th, 1/960th, 1/1920th. |



Video

Each mode can be broken down into additional capture modes. Video is for conventional video capture. When you use it for the first time, the camera will use a default setting of 1080p resolution shooting at 60 frames per second with the Wide FOV set. Video Stabilisation and its Auto Low Light feature are turned on.



Video + Photo

This allows you to shoot video but also capture a set of stills whilst you are filming at an interval you can set. The default settings for Video and Photo are 1080p at 30 frames per second with a Wide FOV. The stills are captured at 12MP with a photo taken every 5 seconds.



Looping

Looping lets you continuously capture video but only save the footage that you want. Looping defaults are 1080p at 60 frames per second with a Wide FOV. The video will record in 5 minute intervals over each previous 5 minute capture and saves the last 5 minute segment when you press the shutter button to stop the current recording.



Auto Low Light

This feature allows you to shoot in low light conditions by automatically adjusting frame rates and shutter speeds for the best exposure.



Video Stabilisation

Video Stabilisation adjusts the footage being captured to account for motion present during the recording. The image is shifted to counter the motion of the camera to reduce camera shake in the captured footage. Extreme movement cannot be reduced effectively but smaller movements can be evened out by turning this feature on.



What is Protune?

Protune gives you more control over your video. It decreases the compression used on your video, giving you the chance to capture higher quality footage. You can also adjust white balance, ISO and Exposure Compensation. The images are also more neutral allowing you to capture more detail in the highlight and

shadow areas of the scene. If you're keen to edit your stills and video, then turning Protune on is the way to go. If you are more interested in just shooting and sharing, then keep Protune turned off.



Manual Audio Control

The default setting for this is off and it can automatically switch between stereo audio capture and wind noise filtering to attain the best balance of sound. You can choose Stereo Only if you are not out on a windy day and the stereo audio is of a consistent nature. If you are out in windy conditions, you can select Wind Only to filter out as much wind noise as possible.



RAW Audio

A video only option, this allows you to create a separate audio file in WAV in addition to the default MP4 audio track on the video. You can choose from Low, Medium or High processing of the audio. Keep the value at Low if you are going to edit your audio track in post-production and need the highest quality.

“The HERO4 Black was the first action camera from GoPro to give us the ability to shoot up to 4K resolution at a much more acceptable 30fps.”



Take control of your video capture options by enabling Protune. This lets you get more hands on with the major settings such as Shutter Speed, ISO, Colour and White Balance.

Field of view (FOV) options

Control how much scene is visible to your camera



FOV refers to how much of the scene you are shooting can be seen by the camera via the lens. FOV is measured in degrees. The greater the angle in degrees, the wider the view and hence more of the scene is captured. Your FOV options are based upon what resolution and frames per second video settings you are using. ■

SuperView

This offers the widest view possible. It shoots a 4:3 format wide shot and dynamically compresses it vertically to fit the standard widescreen format. You can be shooting in cramped conditions, but you'll still be able to see a lot of the scene. The downside is that you will see the fisheye distortion effect. SuperView is available in most resolutions and a range of frame rates depending on model.



Wide

Probably the most used FOV setting for a lot of people. It offers a large field of view and is great for capturing close up action whilst still having a lot of the scene on view. The fisheye effect is also quite apparent in Wide FOV, being the most pronounced at the edges of the frame. Wide is a popular choice, not least because it is available in all resolutions and most frame rates.



Medium

The Medium FOV setting is equivalent to zooming in slightly with a normal lens on a DSLR to fill the frame more with whatever is in the centre of the shot. In this case though, the zoom is done digitally as the camera's lens is fixed. Medium is available in 2.7K, 1080p and 720p in frame rates ranging from 120fps down to 24fps depending on resolution.



Linear

This option takes the Medium FOV and applies distortion reduction to remove the fisheye effect seen in the Wide FOV. This is very effective for aerial or high perspectives to cancel out the ballooning effect of the horizon or the strong uprights of buildings and other structures. Linear is available in 2.7K and 1080p at most frame rates.



Narrow

Is a more pronounced zoom effect than the Medium setting with less fisheye distortion. It is available at 1080p or lower resolutions with frame rates ranging from 120fps down to 25fps.



Top tips for shooting video

Here's how to up your game when shooting video with a GoPro

01

The selfie stick

The selfie has become something of an online phenomenon and the advent of the selfie stick has taken them to new heights. Love it or hate it, the arrival of the selfie stick does offer some useful filming opportunities over and above a simple shot of you and your grinning buddies. When used in conjunction with your camera it allows you to get great perspectives of yourself; or can be flipped around to get shots of others whilst you ski down a slope or just walk along a favourite clifftop path. The length of the selfie stick also acts as a damper to smooth out your video, because you are holding the stick, your own muscles actually work a little bit like a Steadicam.



02

Spare batteries

It's always been an issue that GoPro Hero cameras do like to chew through their batteries at an alarming rate so always make sure you carry a couple of spares with you. There can be nothing worse than arriving at some picture-perfect location and having your only battery discharge in less than an hour. Cold conditions are particularly tough on battery life; keep your spare batteries on you so they stay warm through your body heat, otherwise you may find that your spares last even shorter durations than your main one. Another option is to take a portable power pack with you that can recharge your GoPro camera up to four times.



03

Smooth video

If you are shooting video but without the need for any fancy post-production and editing, then you can keep your video frame rates down to 24 or 30 frames per second. This will still produce good quality footage but it will keep the file size of your videos down if memory card storage is a factor. However, if you are looking to possibly do some slow motion video editing when you get back to your computer, then you will need to be shooting at 60-120 frames per second. This means that if you play back a 60fps video at 30fps, it will appear to be going at half the speed of the original. 120fps footage played at 30fps will appear to be four times slower than the original but still play back smoothly without stuttering.



04

Different angles

If you've ever had to sit through someone's old holiday videos, your abiding memory may well be that it is always shot from the same perspective and drags on for way too long and does not hold your interest. When you shoot your video, keep that in mind. Shorter duration shots edited together with different angles and perspectives, interspersed within the narrative make for a much more interesting video for your viewers. Endless selfie closeup shots of your grinning face can be replaced with close, medium and wide shots of the action and the surroundings. You may not be the next Steven Spielberg but your friends and family will thank you for the variety in your footage.



05

Sound issues

To be fair, the microphone built into the GoPro is never going to be able to rival the quality of a good external one. This issue is exacerbated if the camera is in its protective housing, which effectively muffles the recording to the point of not being recognisable. If you want to capture good quality audio that you can then sync up with your footage during the post-production phase, then it's worth investing in a good quality external mic and a protective housing that is designed to be microphone friendly so you can connect the two. To protect your gear still further, microphone manufacturer Sennheiser have taken that a step further with the MKE 2 Elements, which is actually waterproof and comes with a bespoke backdoor that can attach to your current waterproof camera housing.



06

Get close

The GoPro range has a fixed focal length lens that behaves a lot like a fisheye lens. It has a very wide angle of view, which is great for capturing expansive views of big environments but is not so great if you are filming subjects at long range. They will appear tiny in the frame and that won't make for compelling video. You will need to get in close to your subjects so they fill the frame as much as possible. Bear in mind that if you get too close (around 200mm) the subjects will start to go out of focus. If you really want some extreme closeups, then you'll need to invest in a macro lens attachment that alters the minimum focusing distance and brings close objects into sharp focus and blurs the background.



07

Helmet mounted footage

The helmet mount is a great asset if you want to film a scene from your own point of view and your hands are not free to hold the camera. The problem with this is that the footage that is captured is going to be shaky as vibrations travel through your body; and every time you turn your head to look this way and that as you move, it creates very disorienting video. This can actually be uncomfortable for the people watching and can even make some feel motion sick. The new GoPro 5 and 6 has built in electronic image stabilisation that can even out some of the less extreme lumps and bumps but be aware that head cam footage of any great duration might be uncomfortable for some to watch.



08

Keep it clean

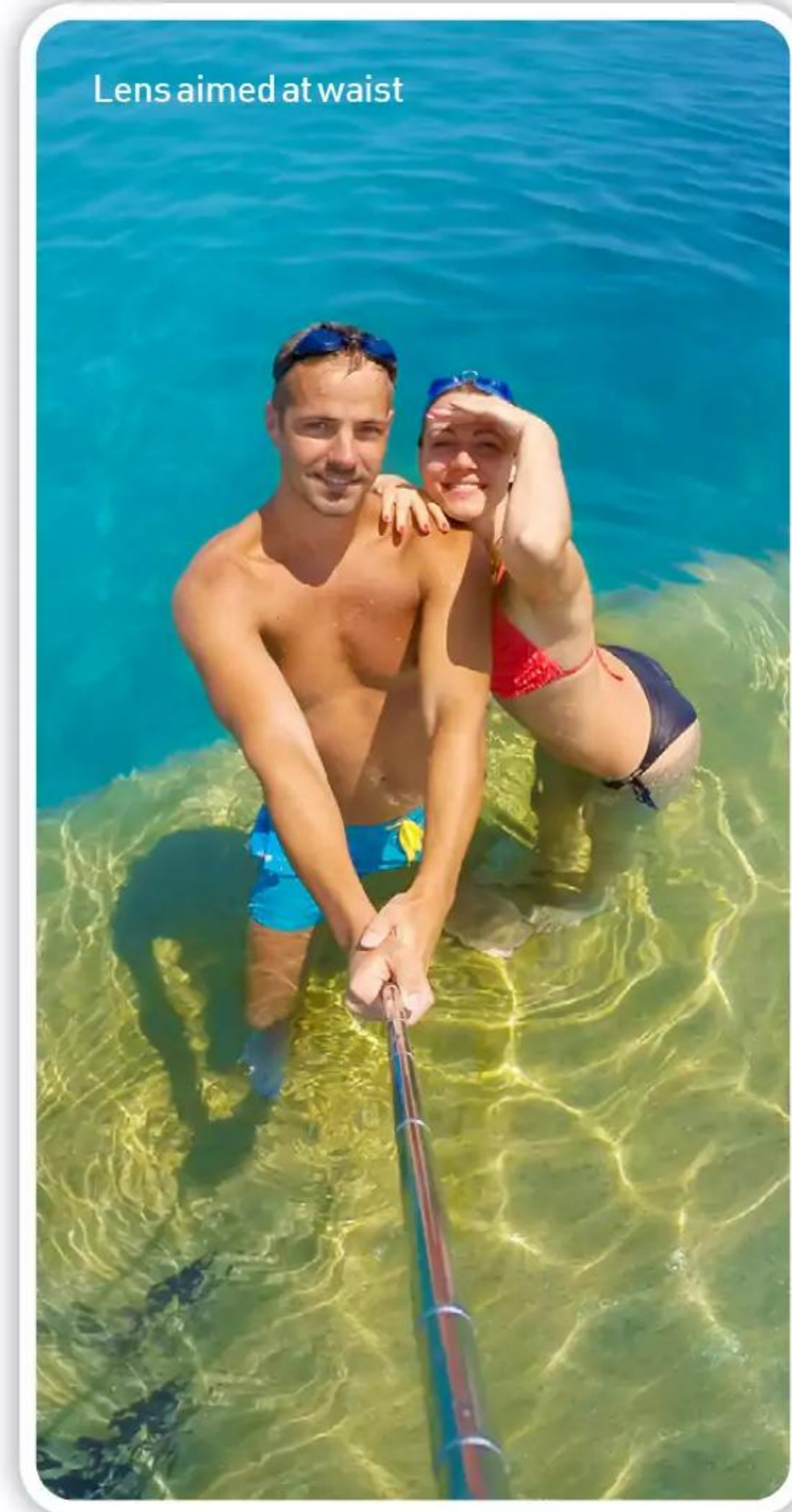
This one might sound a little obvious but one issue with video capture is if there is dirt on the lens and the entire segment you've shot is ruined because of a big spot of dirt in the middle of the frame. If it were a still, you could Photoshop the offending dirt out of the picture, but with video, that becomes an issue. Keep a clean microfibre cloth with you and always check the lens in between shots, particularly if you are shooting in wet or dirty environments. If you are shooting in snow and take a tumble, then check the lens after every spill and if you are quickly transitioning from very cold places to warmer ones, check for condensation on the lens or on its protective housing and any filters you might be using.



09

Composition

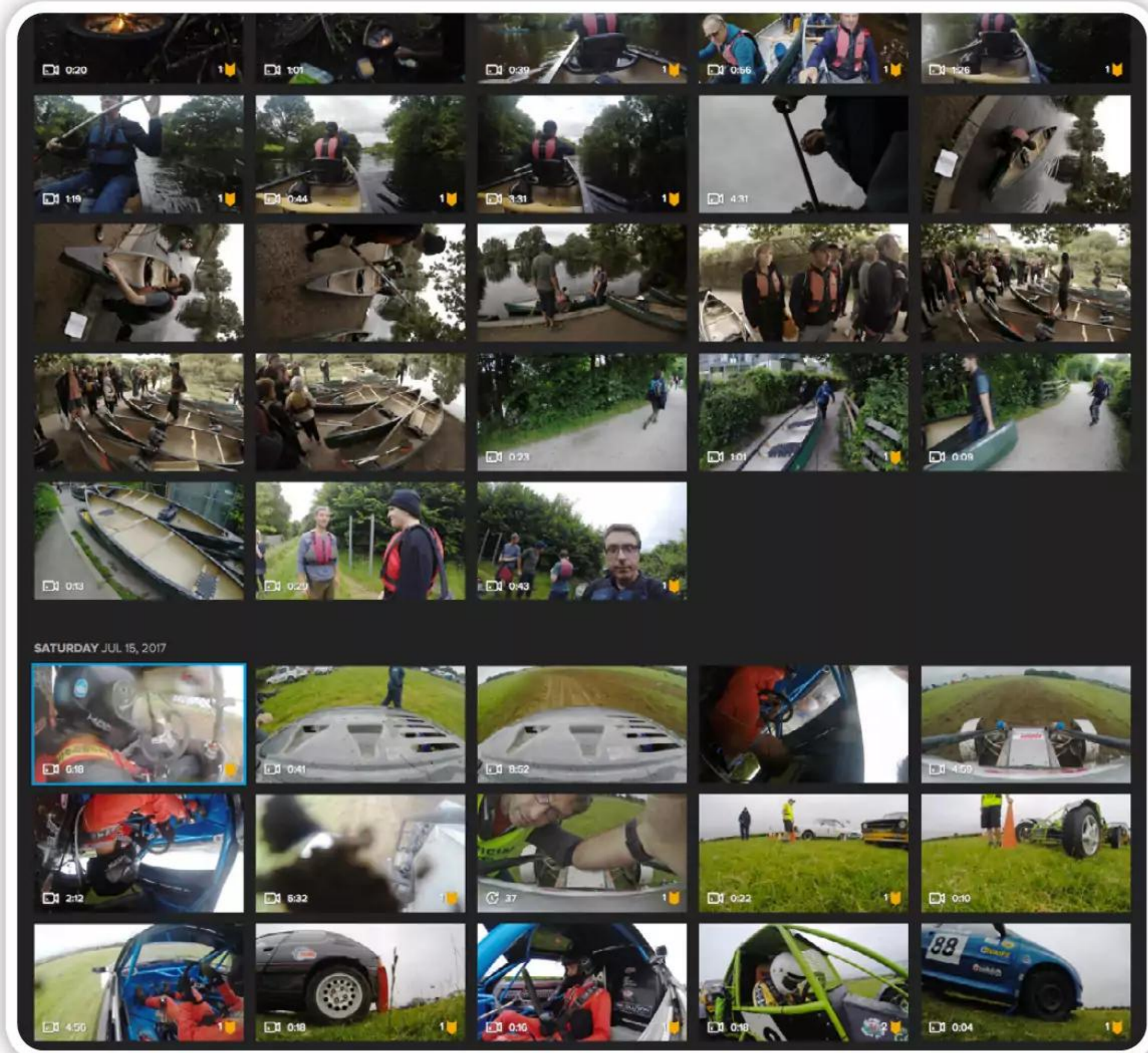
As mentioned elsewhere, the GoPro fixed focal length lens acts like an extremely wide angle fisheye lens on conventional DSLR cameras. This can sometimes make framing your shots a little more challenging, particularly if you are using an older model that doesn't have an LCD screen. When tracking a subject and wanting them to be captured full body, the urge may be to aim the lens at their head. The extreme wide angle of view will result in a large amount of sky to be visible in the shot and you run the risk of your subject's feet not being in shot. Aim your camera lens at your subject's waist rather than their head and you will capture more of your subject centred in the frame.



10

Be selective

When shooting your videos, try to avoid overly long capture durations. You may have the urge to just turn the camera on and let it run in one long sequence. This will result in a massive video file to trawl through in order to find the exact bit you want for your edit. You're better off shooting more frequent segments but of much shorter durations. When capturing a sequence, hold the shot and let it run on a few more seconds before you stop the video capture. This gives you some buffer space when you are editing segments together and time to do transitions from one segment to another without a single frame jump-cut.



11

Shutter speed and fps

The frame rate (number of frames captured in a second) and its corresponding shutter speed dictates how crisp or blurry your action footage will be. With the auto shutter speed settings, action captured at 30fps may look 'mushy' due to motion blur because the shutter speed can be as slow as 1/30th of a second depending on light levels. If you want sharper video, then you can opt to choose settings that give you video captured at 60fps minimum; this means that the shutter speed can never be slower than 1/60th of a second. You can also use the Protune settings to dial in an inverse multiple of the frame rate. At 30fps for example, you can use shutter speeds of 1/30th, 1/60th, 1/120th and 1/240th of a second.



12

Protune

If you are after the best video quality you can get from your GoPro, then the first thing you'll want to do is turn on the Protune option. Protune unlocks certain advanced features within the camera. Even if you don't necessarily want to explore the advanced features, the first thing Protune does is increase the bitrate of the video, whereby the video file has less compression applied and offers greater image quality. If you want to though, you can alter the major settings such as white balance, ISO, colour profile, exposure compensation and sharpness. It also offers Flat Mode where the shadows and midtones are brightened, revealing more detail. Be aware that the highlights are not altered and you'll need to dial in some negative exposure compensation to darken the image and retain detail in the highlights.



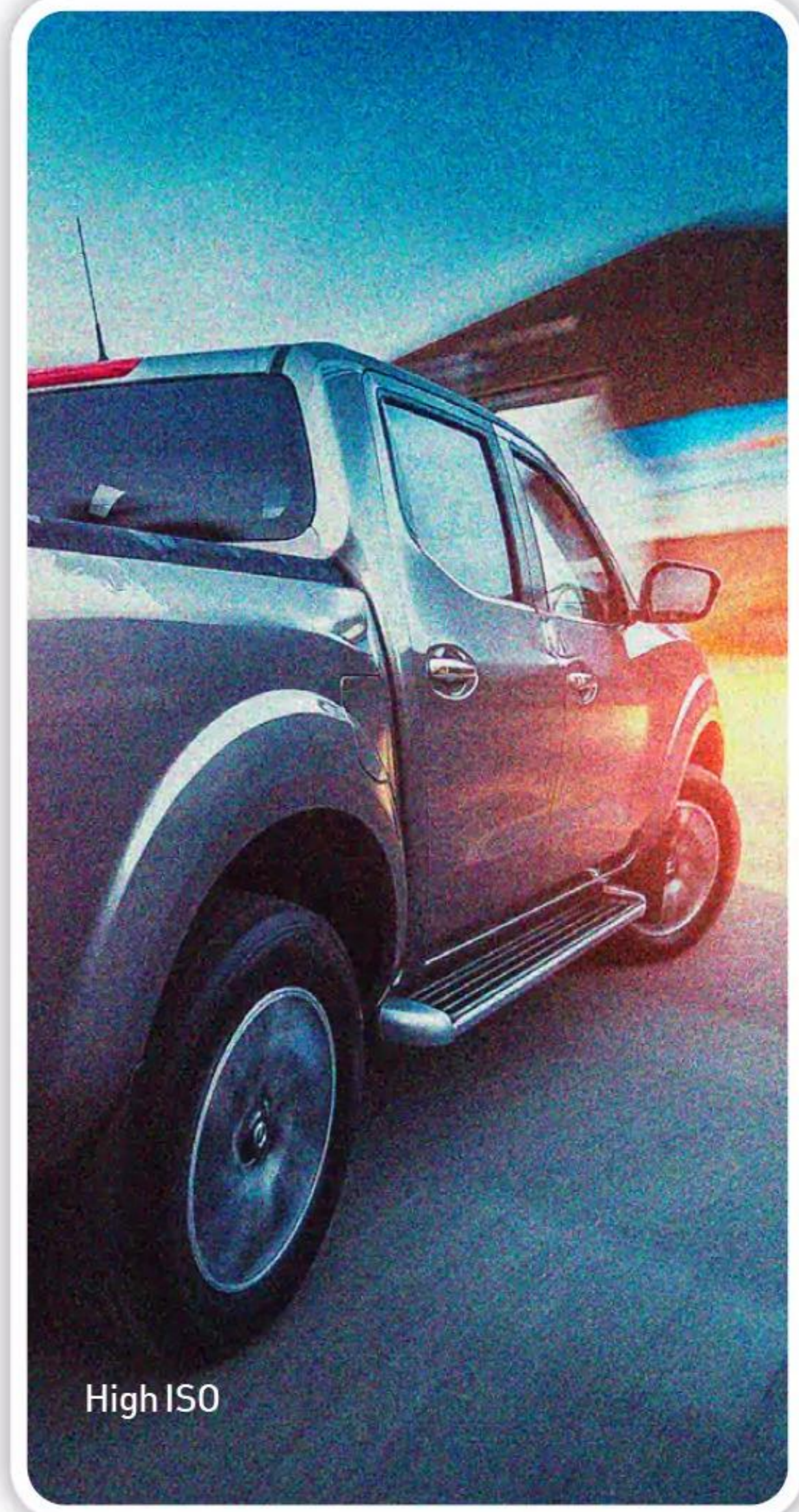
13

ISO and noise

If you are shooting your video out in bright daytime conditions and are looking for a good quality capture, then it might be worth setting your ISO limit so it never exceeds the minimum. ISO is a measure of how sensitive your camera sensor is to light. The smaller the ISO number, the less sensitive it is to light and the cleaner the image will be. As you increase the ISO value to make it more sensitive to light, the video will start to become grainy due to sensor noise. You can shoot in low light conditions and attain brighter images but this is offset by image degradation. In video mode, the minimum ISO value is 400. Set this as your minimum and it will keep your footage crisp and clean.



Low ISO



High ISO

14

Why not 4K?

You would imagine that shooting your videos at the maximum resolution would be a no-brainer. Whilst the ultra-high resolution is certainly appealing, it does have some drawbacks that are worth noting. First and foremost, you are going to be dealing with extremely large video files. A 64GB memory card can hold about 3 hours of video shot at 1080p/30fps. Switch to 4K/30fps and you will only get about 2 hours of video on the same 64GB card. It's also worth noting that at 30fps, your 4K video might start looking a bit 'choppy' if there is any fast action going on in the frame. You would need the 60fps ability of the new HERO6 Black. You're better off dropping down to 2.7K/60fps for smoother action sequences. In 4K, a number of FOV features are not available such as Medium and Linear FOV modes.



15

Be flexible

If you are looking to edit and export your video and make it available on social media or other video streaming sites, you are likely to be creating videos in 1080p format (1920x1080 pixels). If you shoot your raw footage in the larger 2.7K 4:3 format (2704 x 2028 pixels), this actually gives you the flexibility to crop your video if needed to enlarge areas of the frame. It also enables you to add image stabilisation during post-production without the loss of resolution that you would get if you tried to stabilise the 1080p footage. Certain programs enlarge the footage slightly to be able to offset any movement in the footage. If you're starting with higher resolution footage, then this is not a problem. The 4:3 format also means you have more image area top and bottom of frame to play with, within the 1920x1080 pixel frame of your final resolution.



16

Underwater

If you are shooting underwater, there are a couple of tips to help you get the best footage. The first one is to keep the sun at your back when you shoot, this helps illuminate your subjects and make the most of the underwater colours. Try also to get down to the level of your subjects rather than shooting from above them. If you are shooting underwater with slow or static subjects and there is less light available, drop your frame rate down to 24/30 frames per second; the shutter speed will be slower, allowing more light to hit the sensor. In brighter conditions with faster moving subjects, use higher frame rates such as 60 frames per second for smoother action. Make sure you have the latest firmware on your Hero 5 or 6 as it lets you alter settings underwater, whilst it is in its dive housing, by pressing the Mode and Record buttons.





“The video files created by your GoPro are saved in MP4 format and these can be used in any number of video editing programs...”



EDITING YOUR VIDEOS

A quick guide to editing

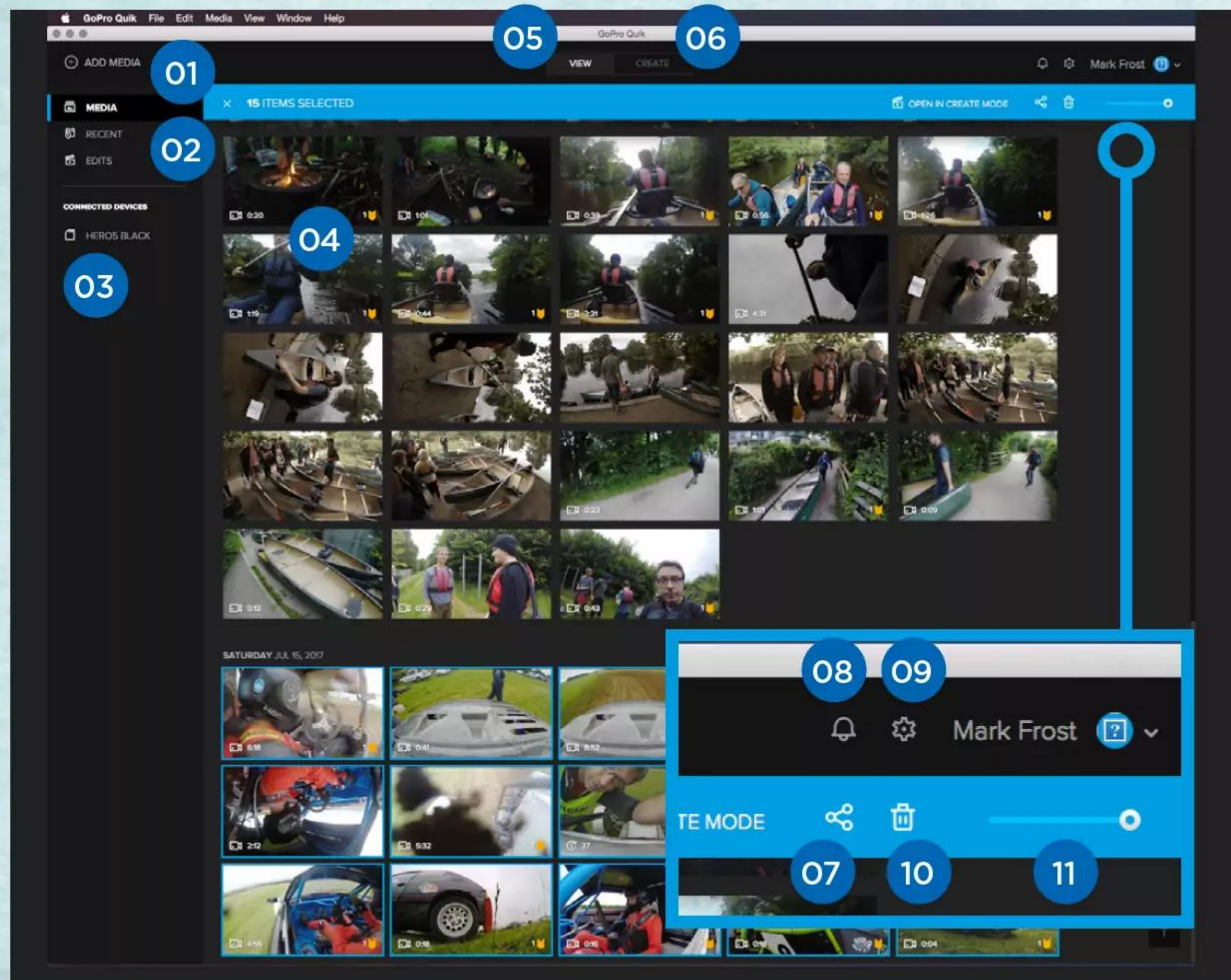
If you fancy yourself as the next Stephen Spielberg or just want to have a go at assembling your video footage into a more concise and cohesive story, then you have a few options to enable you to turn your assortment of video clips into something altogether more interesting for the end viewer. The video files created by your GoPro are saved in MP4 format and these can be used in any number of video editing programs such as Final Cut Pro, Adobe Premiere Pro, Corel VideoStudio and Cyberlink PowerDirector to name a few. Whilst the more top end programs like Final Cut and Premiere offer a host of powerful editing possibilities, they are not free. If you want to dip your toe into the world of video editing, then GoPro offer some choices free of charge. Originally, GoPro offered GoPro Studio for your computer which is a video editing package that lets you import your files and edit them together, add effects and music and then export the finished result. Now you can also use a more automated editor called Quik. Quik lets you import and organise your files and then select a few that can be automatically turned into a ready-made video with edits and music. There is also a mobile based version called Quik Stories that operates in the same way and lets you upload your video from your GoPro camera to your mobile device and assemble it into a short, ready to go sequence with little input needed from you (more on that later). These can be uploaded directly to social media sites from your phone or tablet. It is pretty simple to use but we'll show you the GoPro Quik and GoPro Studio options, that are your desktop-based solution, letting you get a little more hands on with your footage. ■

The Quik desktop app

The GoPro Quik application views

The application has been designed to be as intuitive and as simple to use as possible. It can import your files from your GoPro camera automatically as soon as you plug in the memory card and it can scan your hard drive for any GoPro media from a GoPro device and list it all as a series of thumbnails. You can then move to the Create window where you can mark a number of your clips with a blue highlight dot that tells Quik to use the marked spots as part of its automatically edited video sequence. ■

The Media view



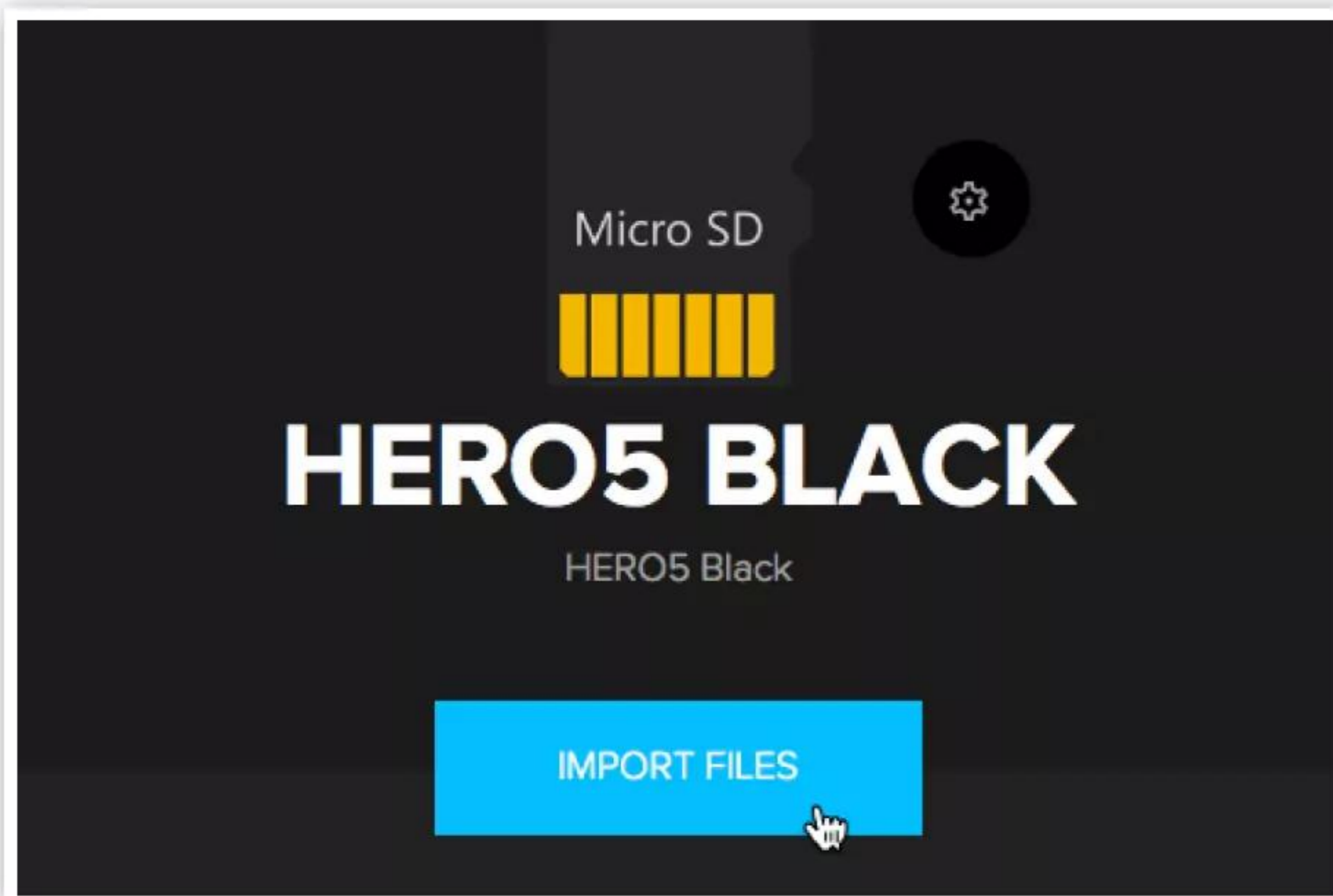
- 01 Add new media tab
- 02 Media, Recent and Edits windows
- 03 Connected device
- 04 Media listings
- 05 Media view indicator
- 06 Create Mode button options
- 07 Share media button
- 08 Notifications
- 09 Settings
- 10 Delete media
- 11 Thumbnail scale slider

The Create view

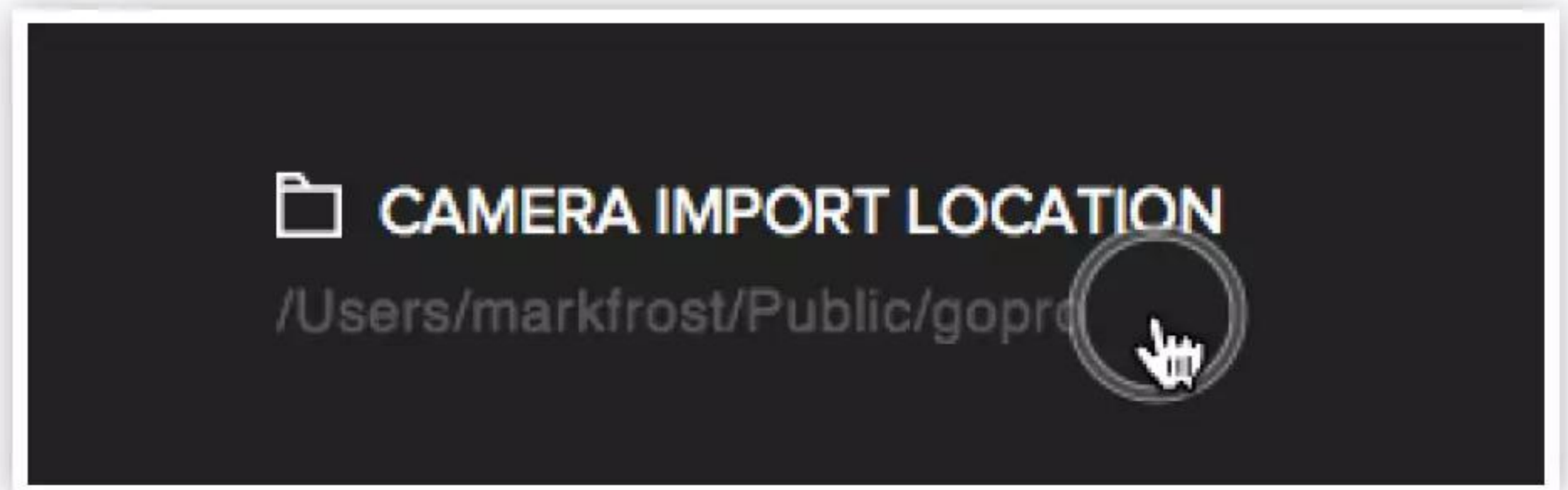


- 01 Chosen media display thumbnails
- 02 Clip highlight markers
- 03 Music currently selected
- 04 Quik highlight sequence timeline
- 05 Music and edit timing markers
- 06 Outro sequence
- 07 Main preview window
- 08 Pause and play button
- 09 Individual movable sequences
- 10 Change music button
- 11 Select Outro

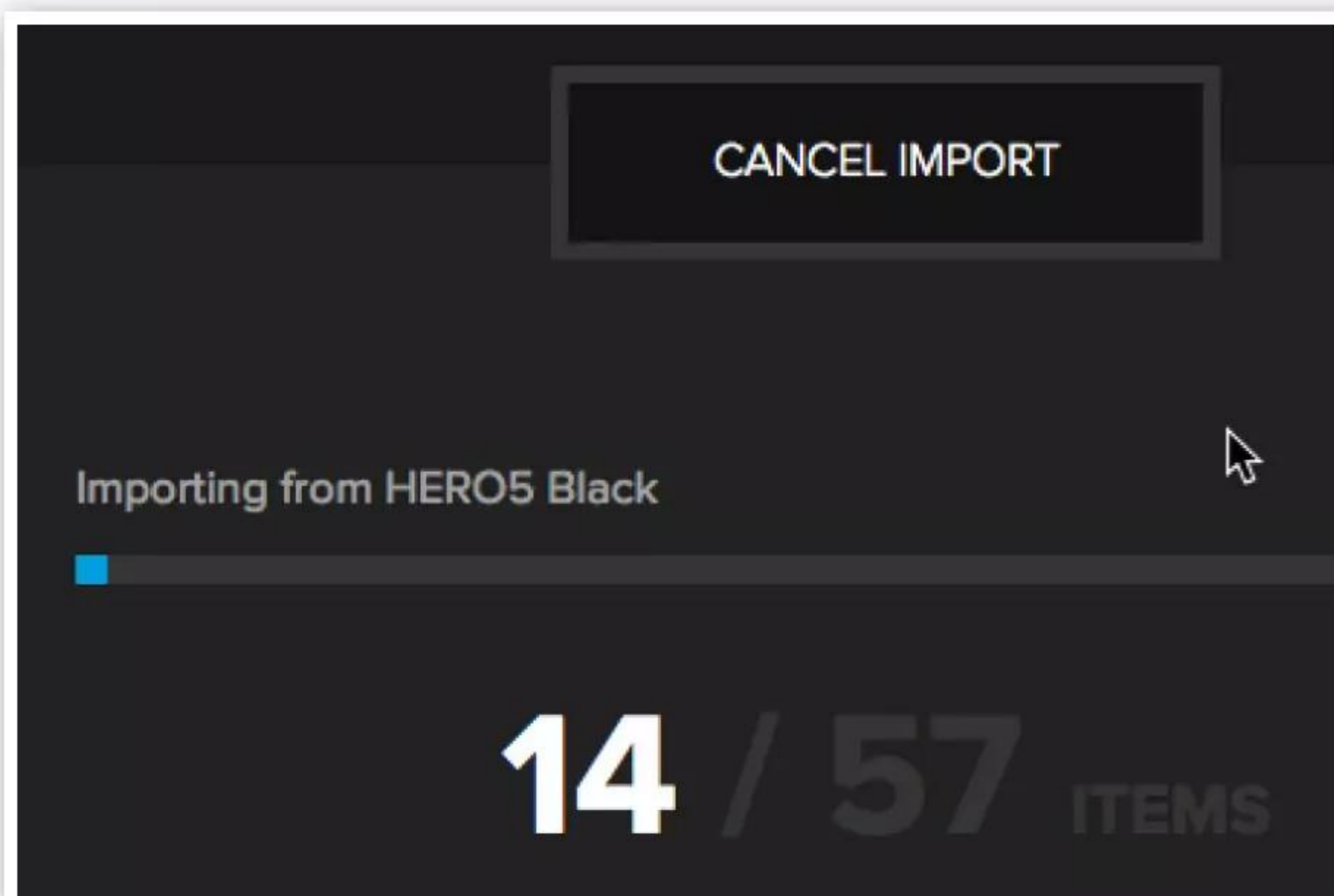
Using Quik desktop



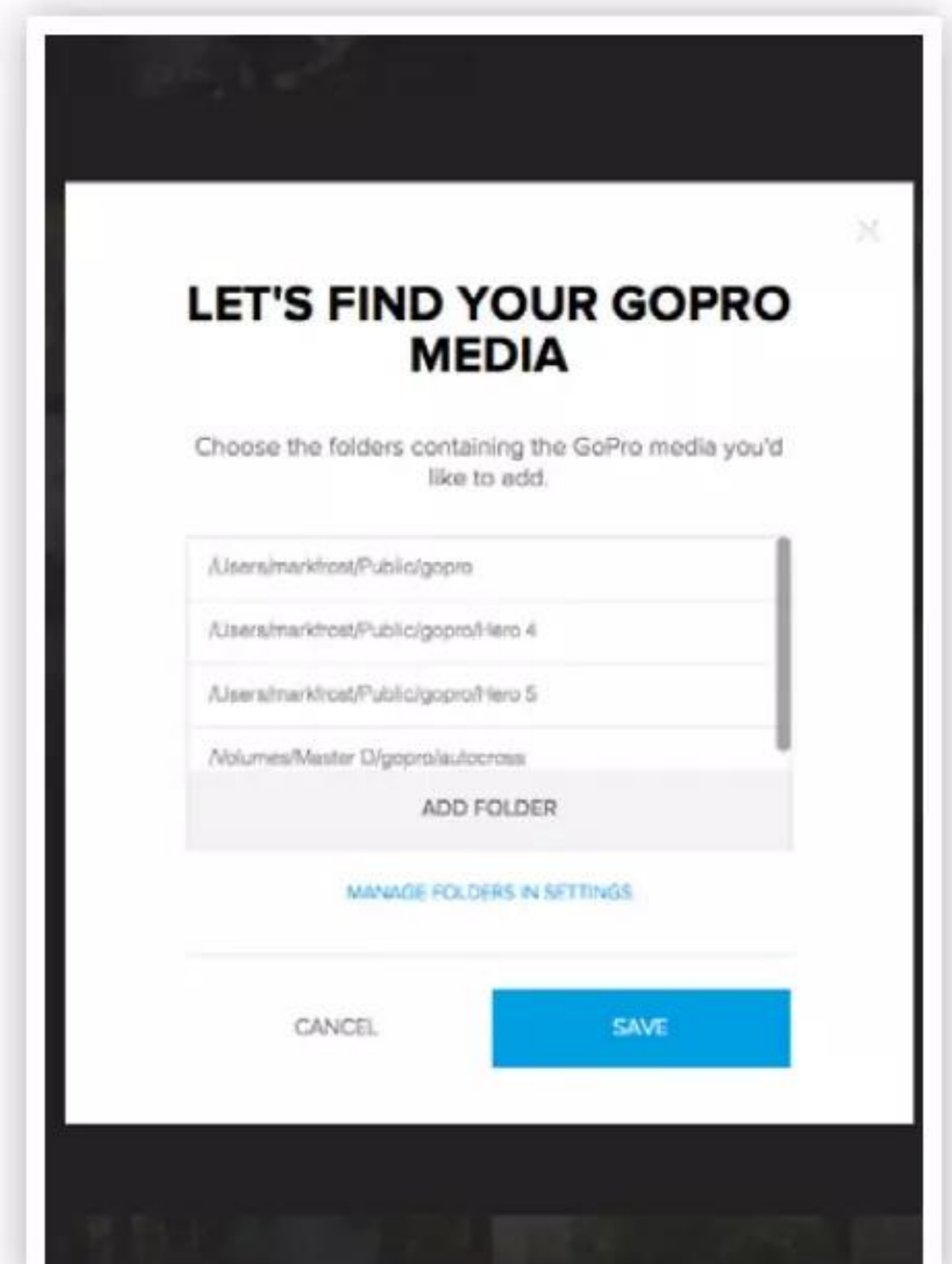
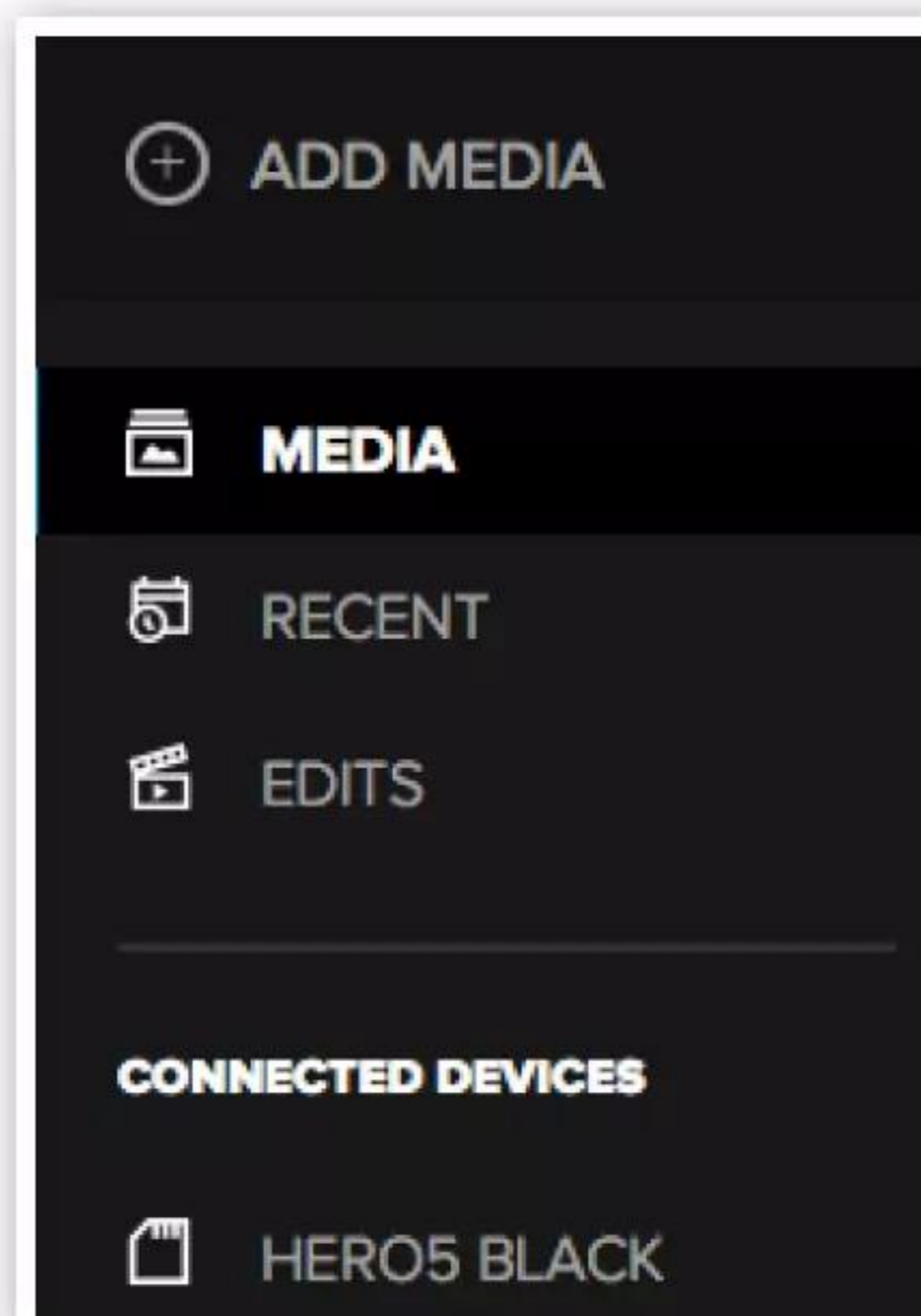
01 Insert your memory card into a card reader on your computer. The installed Quik app will open when it detects GoPro media. A screen will appear where you can import your files to a directory on your computer. We have a number of scenes to choose.



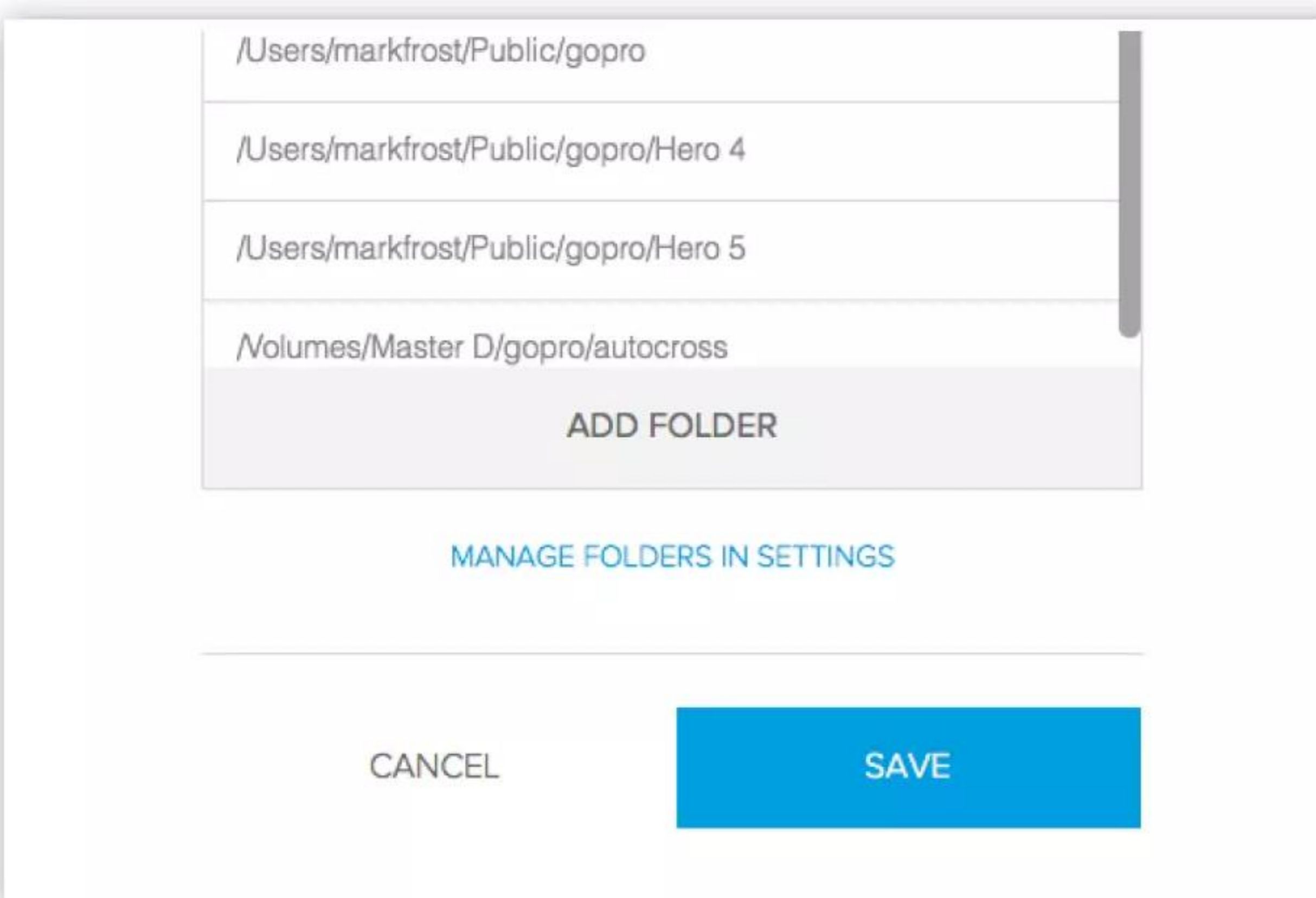
02 You can specify a new directory if you wish as the destination for your media. You can simply click on the Camera Import Location tab and specify a new location and folder name. Click Import Files to begin transferring files to your preferred destination.



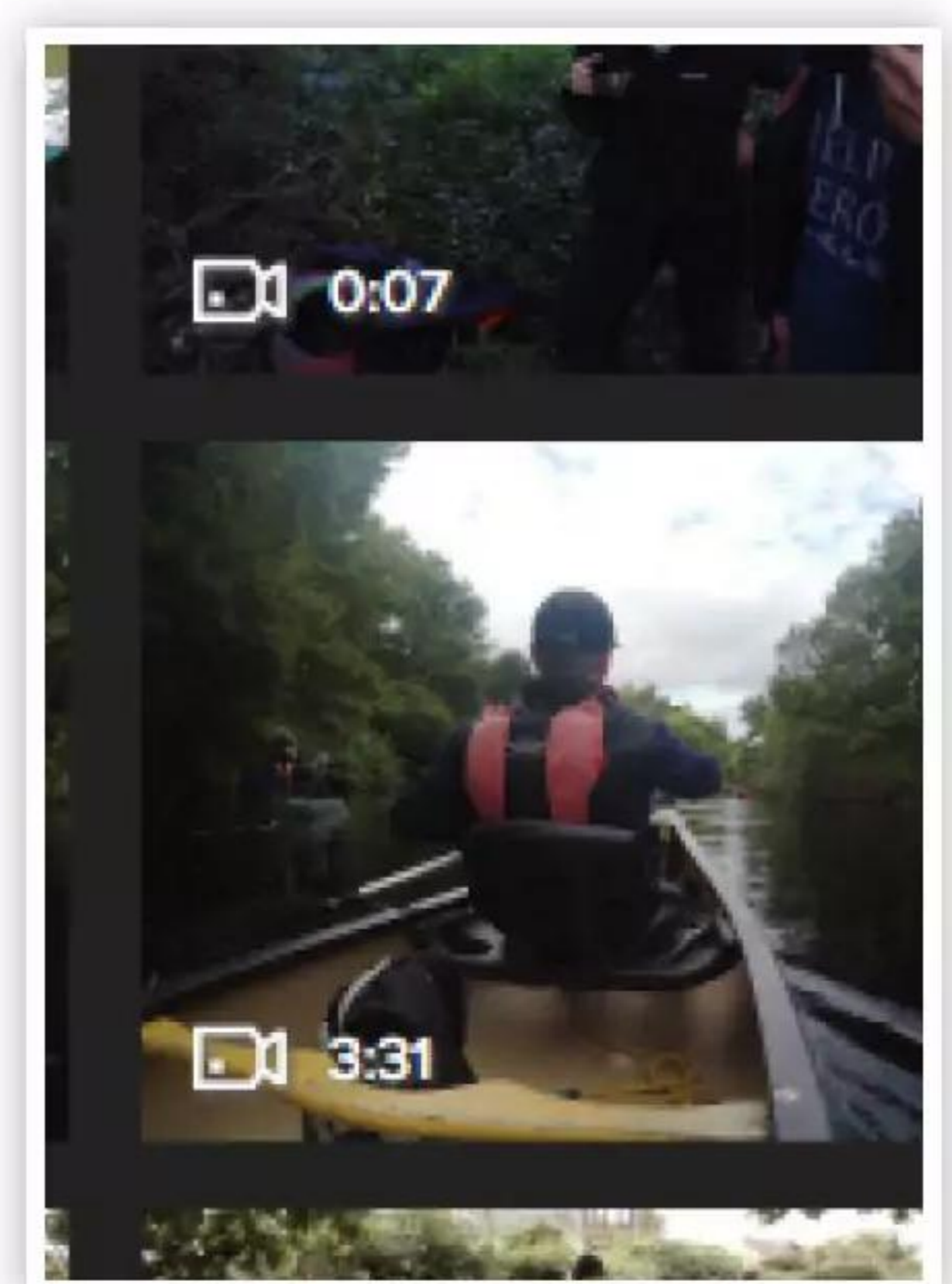
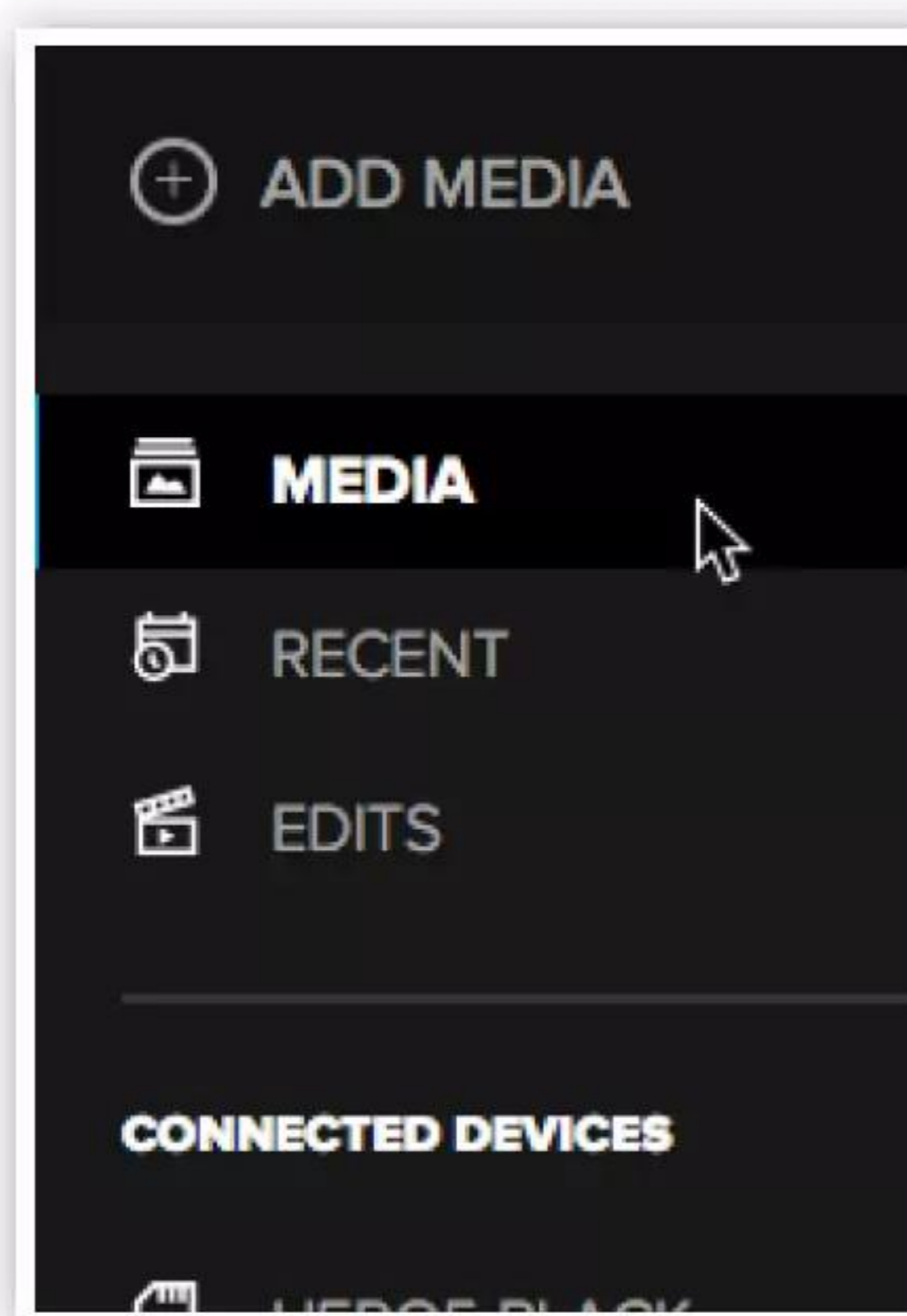
03 The files on your GoPro's memory card will begin to transfer. Depending on the quantity and size of files, this can take some time. The process of the import will be displayed on the screen. It will inform you when the import is complete.



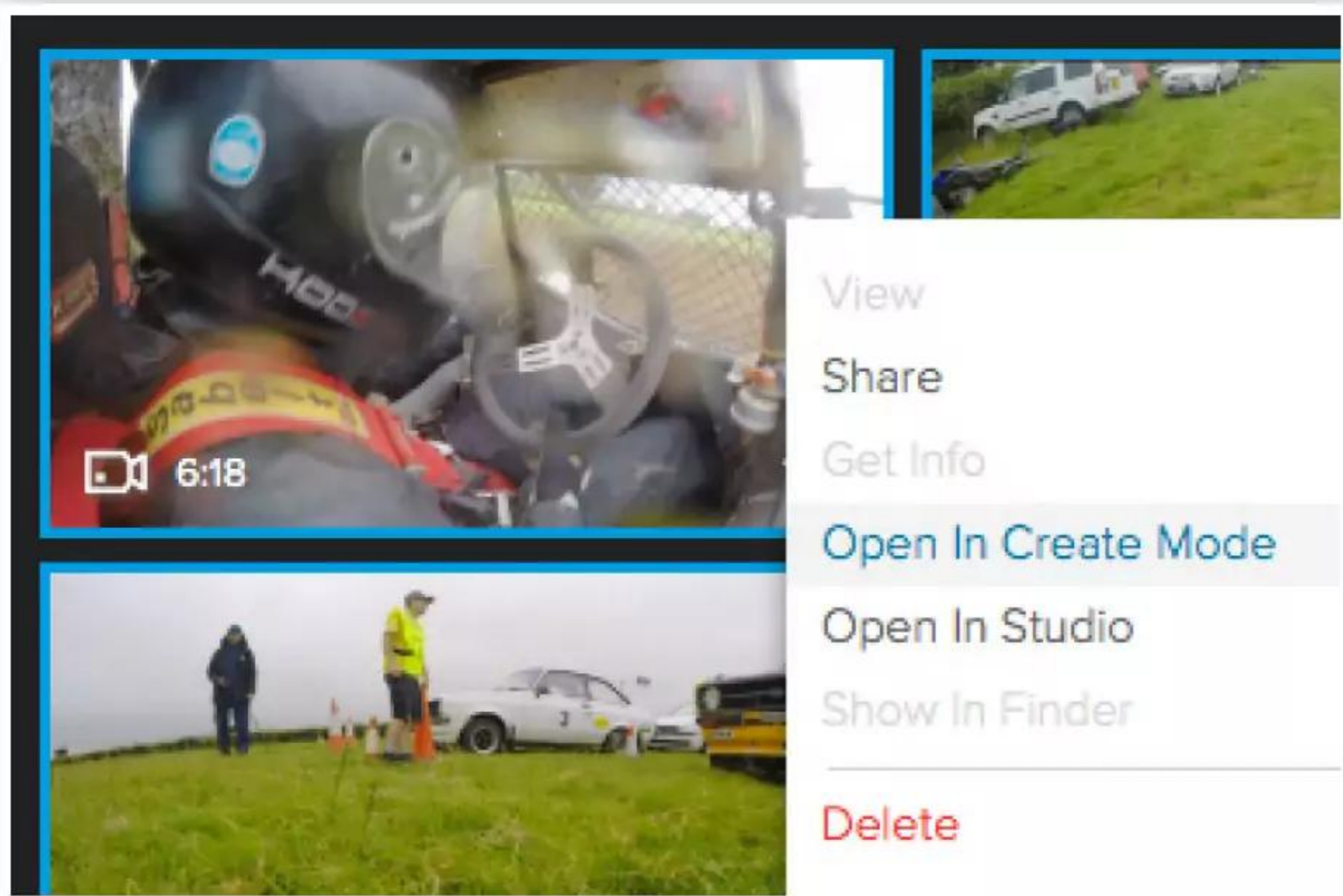
04 If you already have video files stored somewhere on your computer, you can also specify folders for the Quik app to look in and find additional files. Click Add Media to start the process.



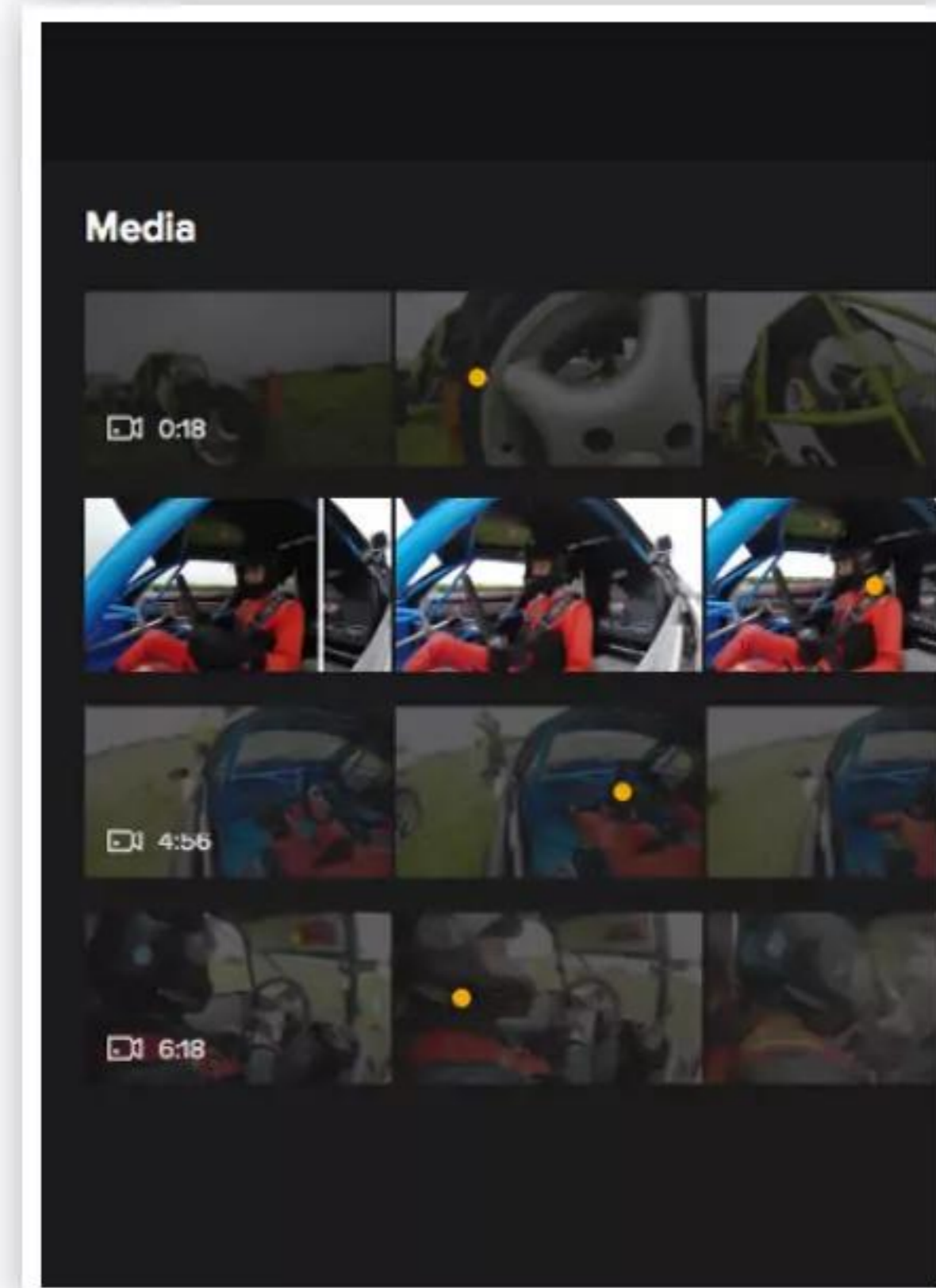
05 You can now browse video clips and other media and click Open to add that folder to the list where it knows GoPro media is kept. When you click Save, any new media will be added to the Media View window. The new videos are a of motorsport event.



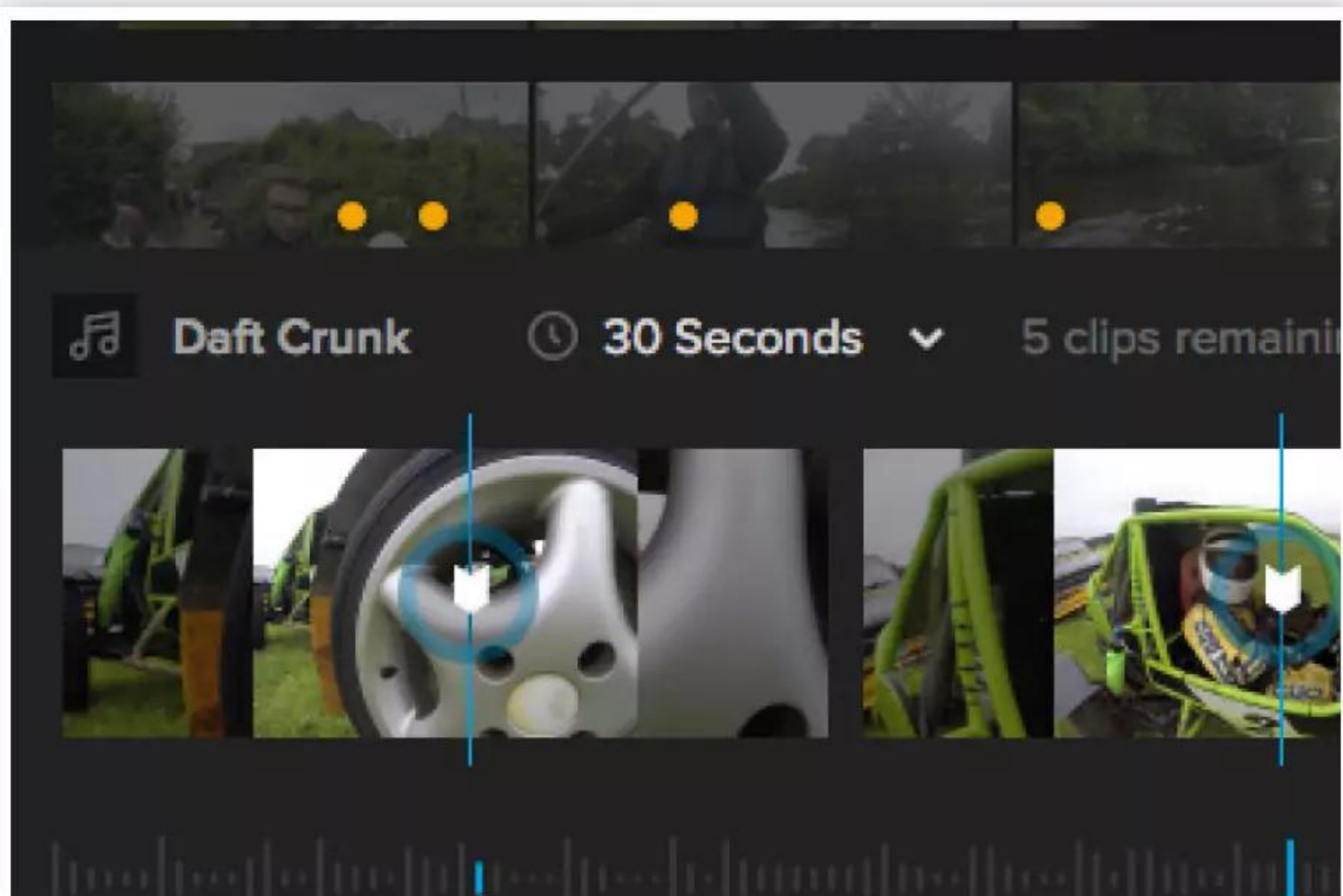
06 If you click on the Media tab in the top left of the screen, it will display the media currently loaded on your computer. If it's a video, it will have a small video camera icon and the running time of the clip displayed in the bottom left corner.



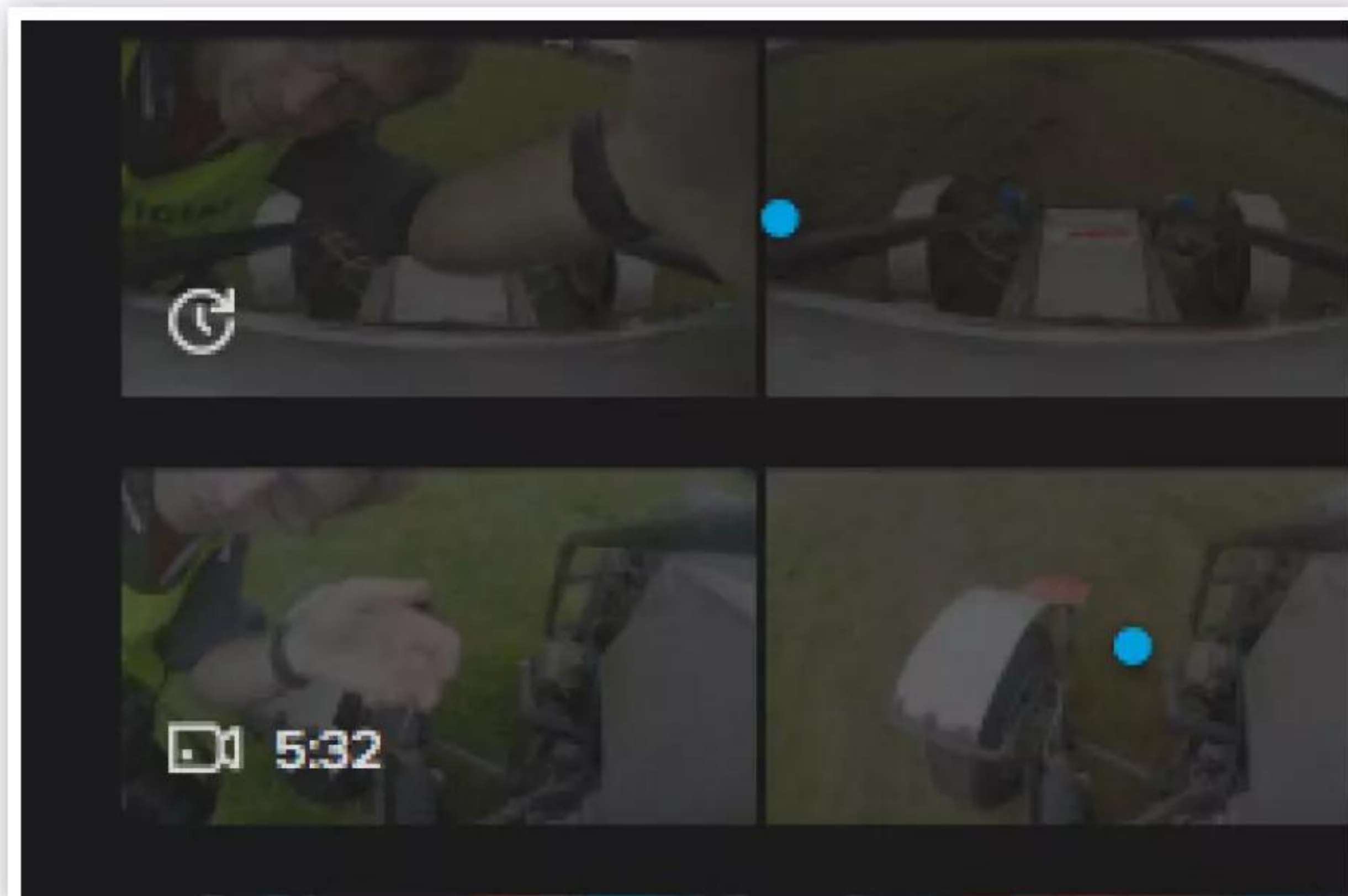
07 You can choose which editing method you are going to use. You can either highlight your preferred files, then right-click on the media and choose Open In Studio or choose Open In Create Mode. We will deal with Create Mode, which is the simpler of the two.



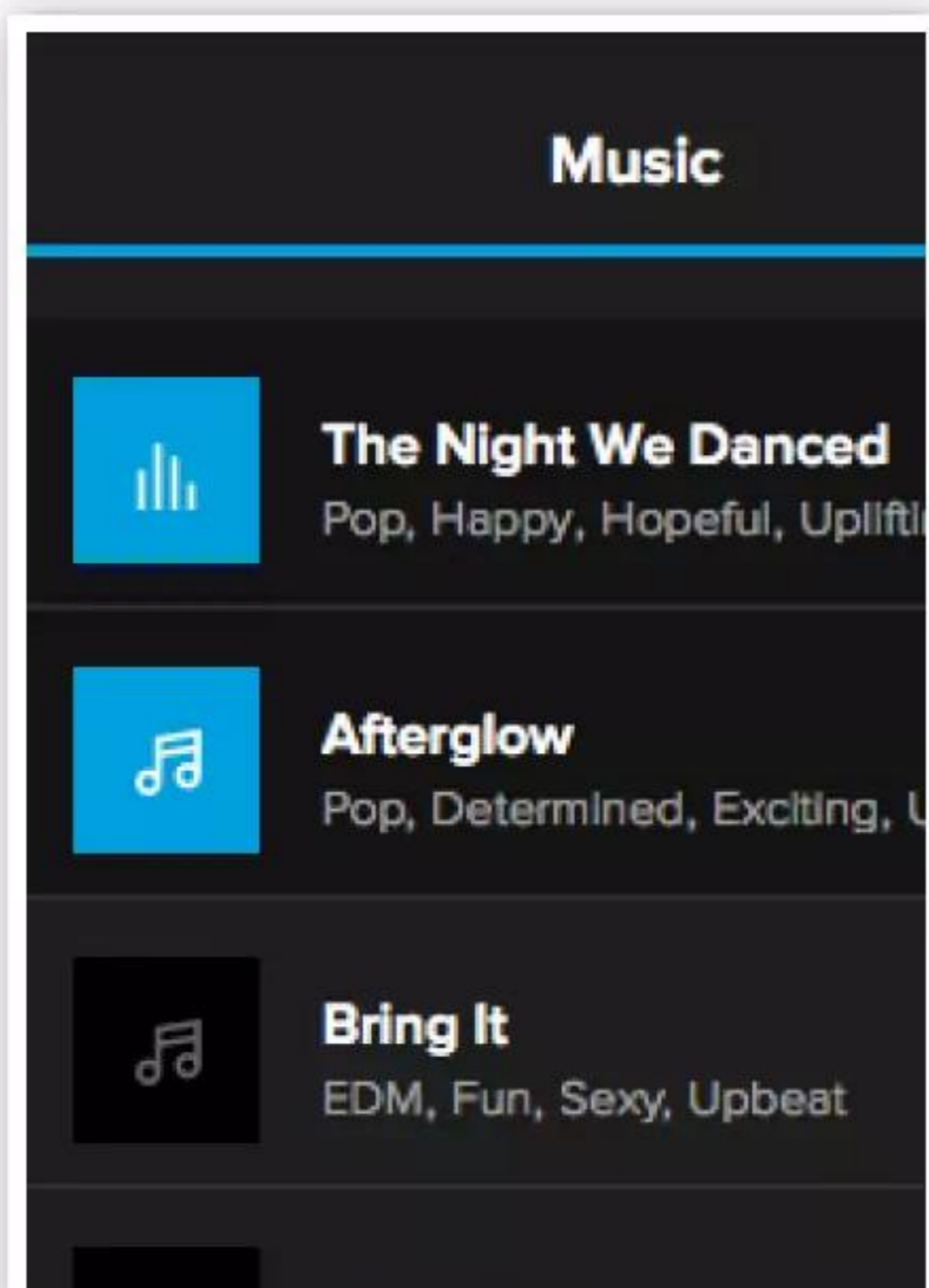
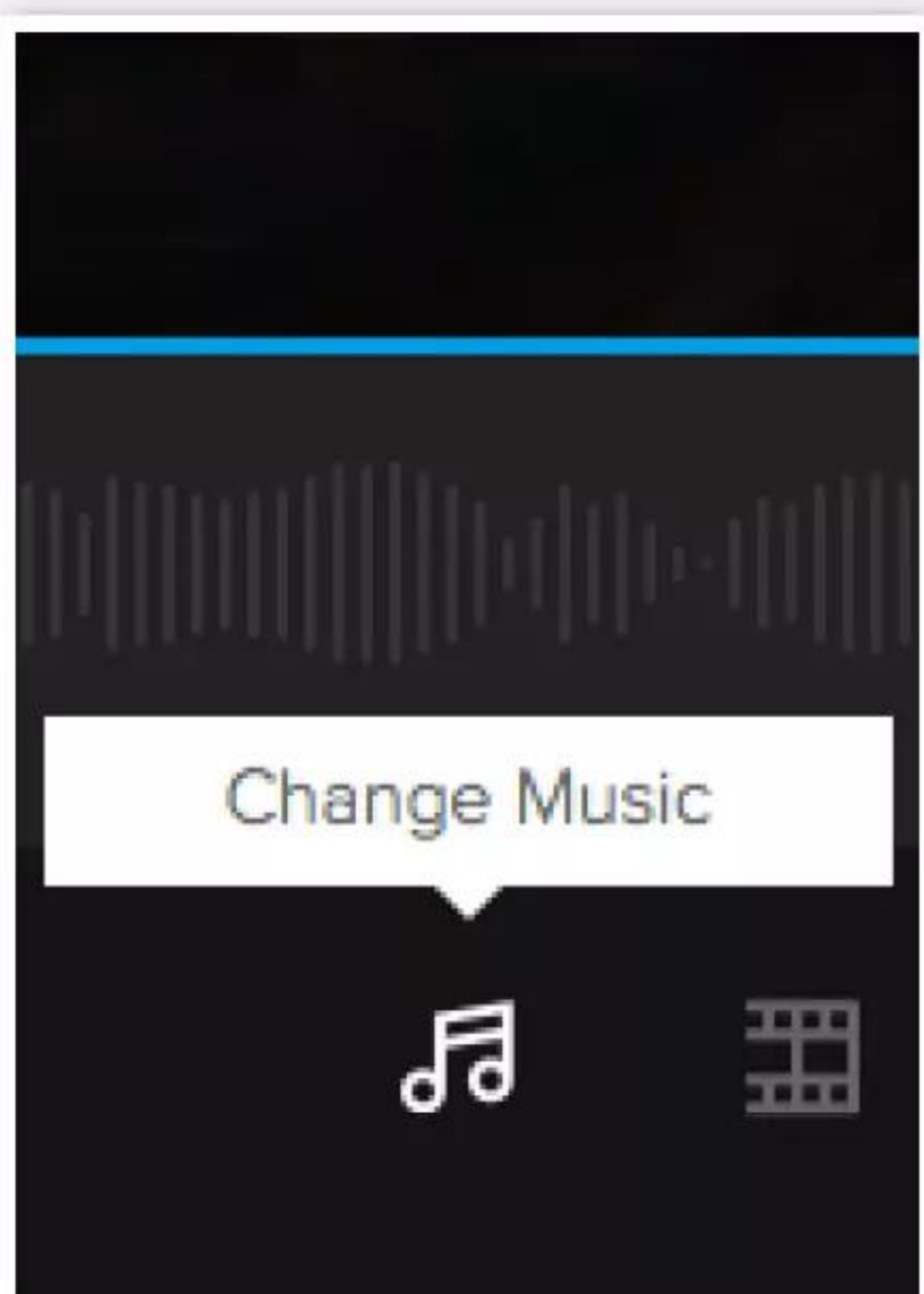
08 When you open the Create Mode, the media will be added to the Create view as a series of clip thumbnails ranged on the left side that you can run your cursor over to shuttle playback of the clip back and forth.



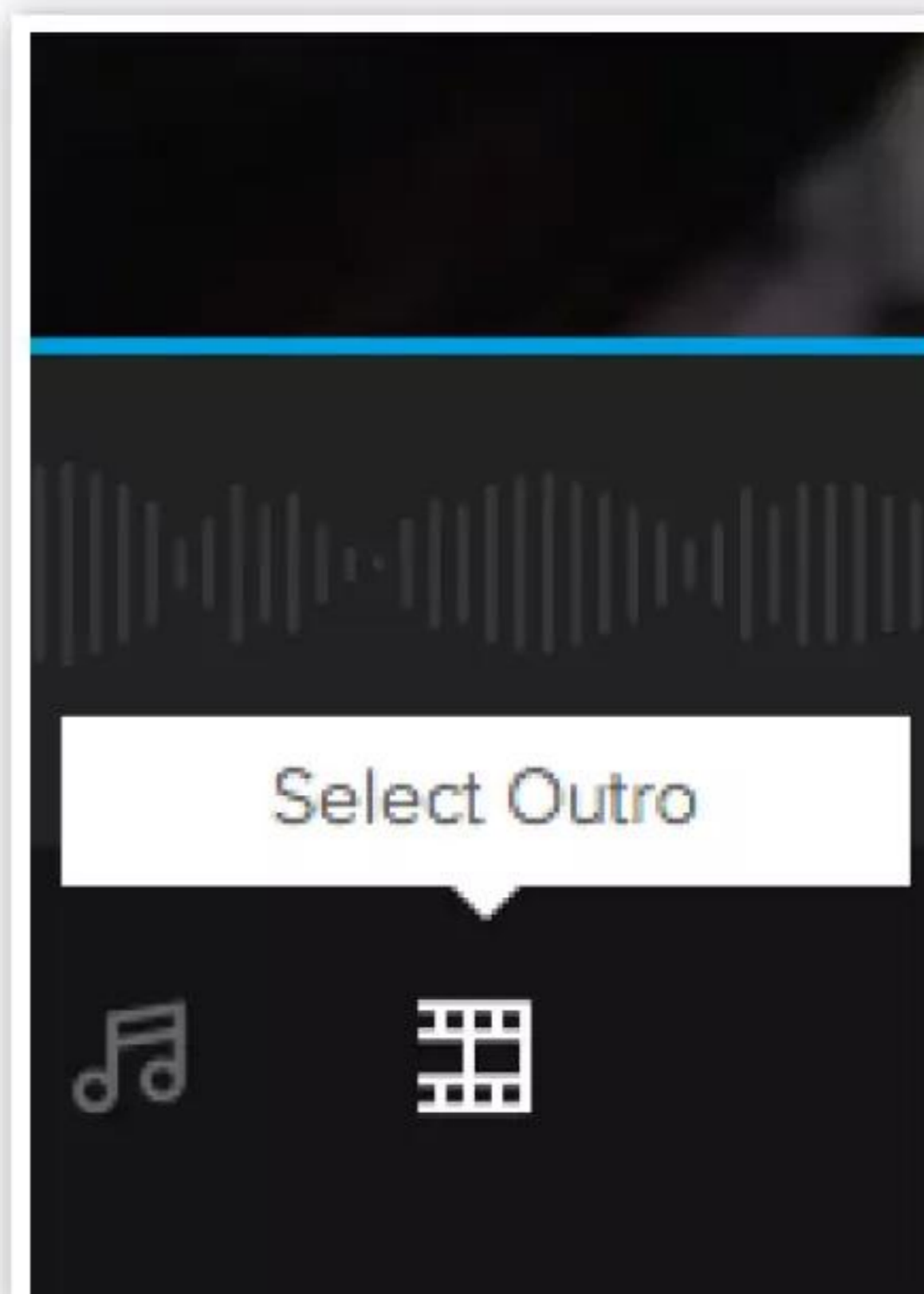
09 At the bottom of the screen is the Highlights Media Timeline. This is where you can make a 15s video of 6 clips, a 30s video of 10 clips or a 60s video of 20 automatically edited video clips.



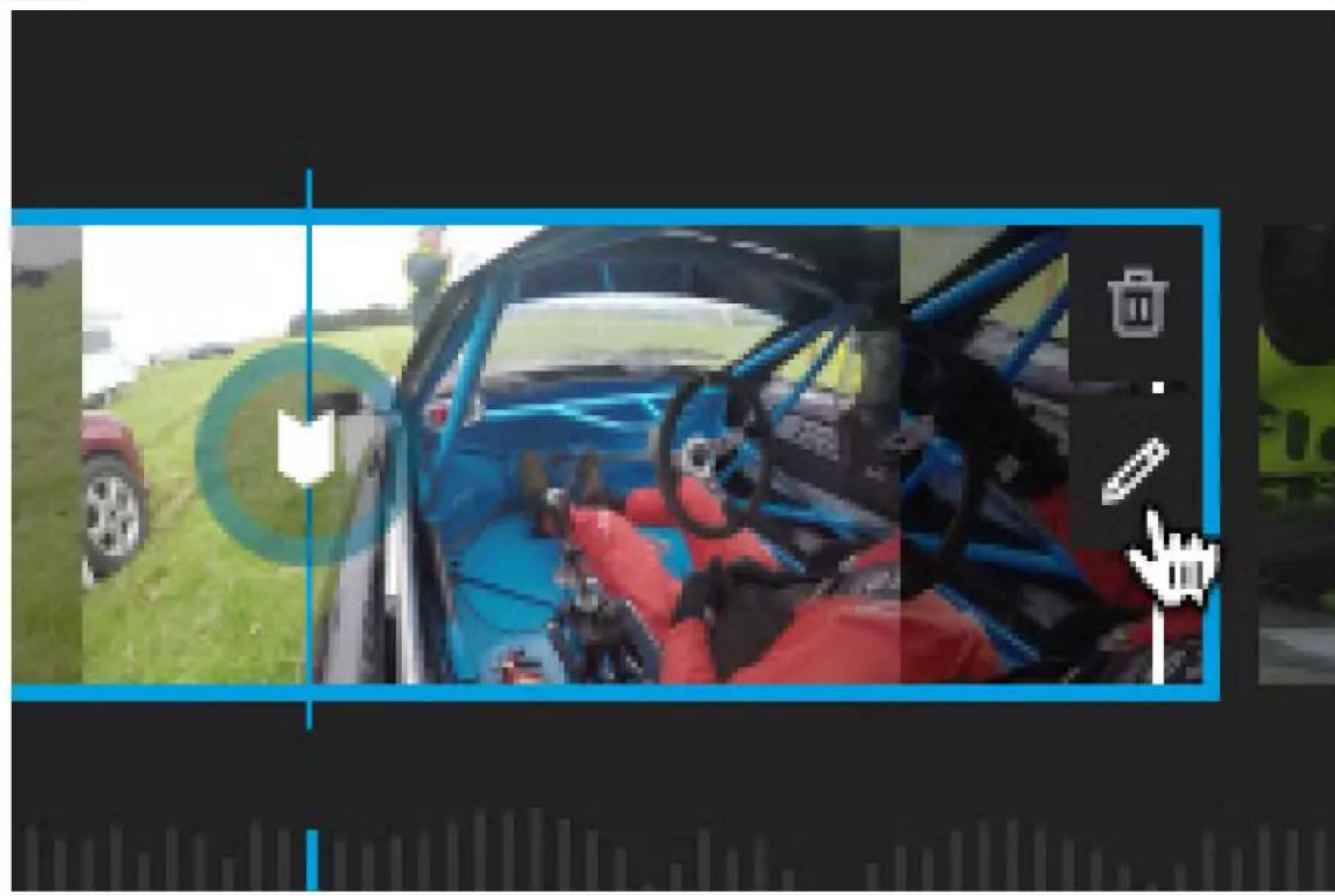
10 You simply click on the timeline of each clip you want to use at the point you want the edit to show. Each time you click, a blue dot shows the selection you've made and how many clips are left to populate the sequence.



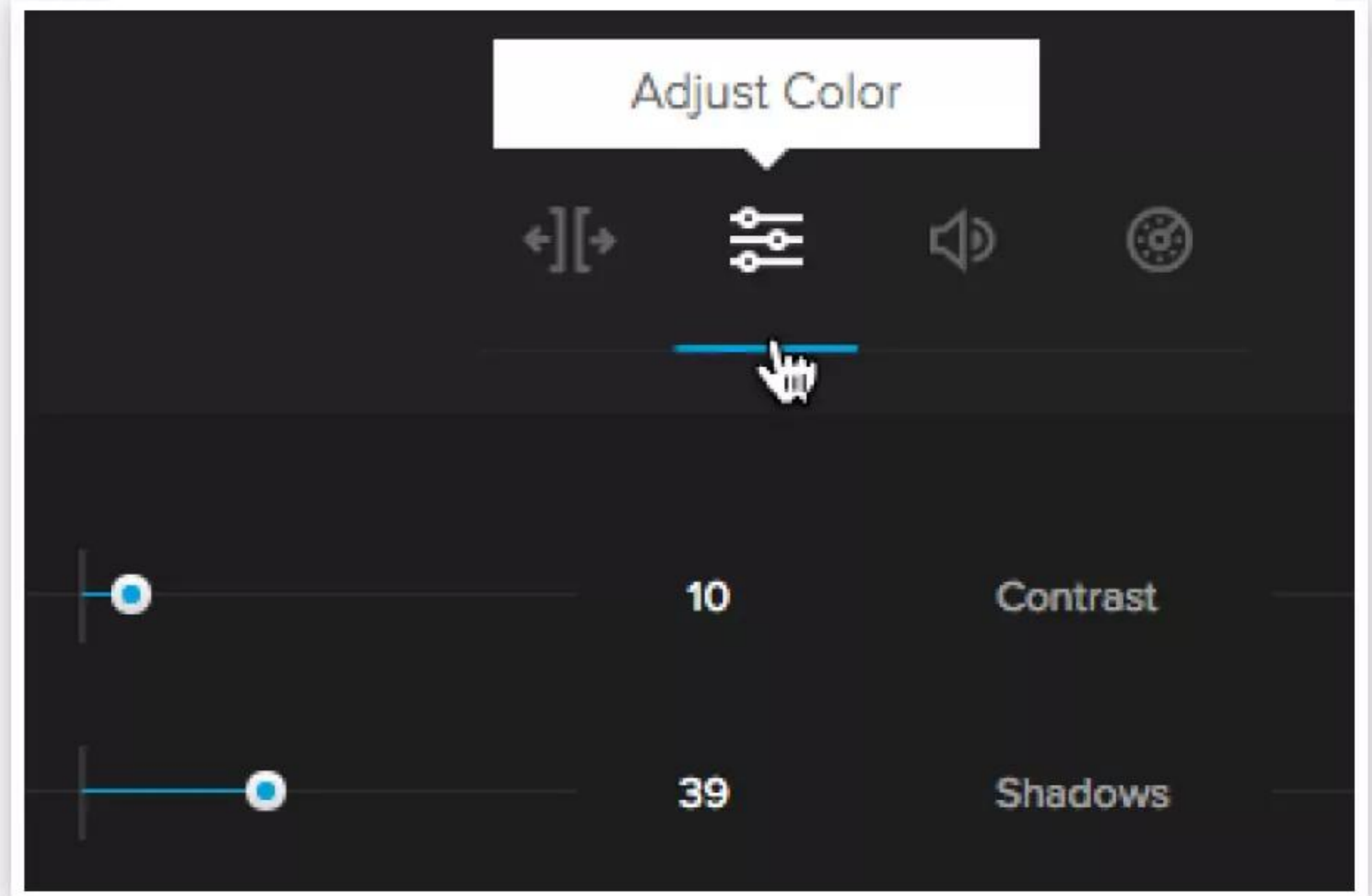
11 Once in place, you can add some music. Click the music icon and select an audio file appropriate for your content. Click a sample and it plays the audio and shows your video so you can compare. Click Add To Video when ready.



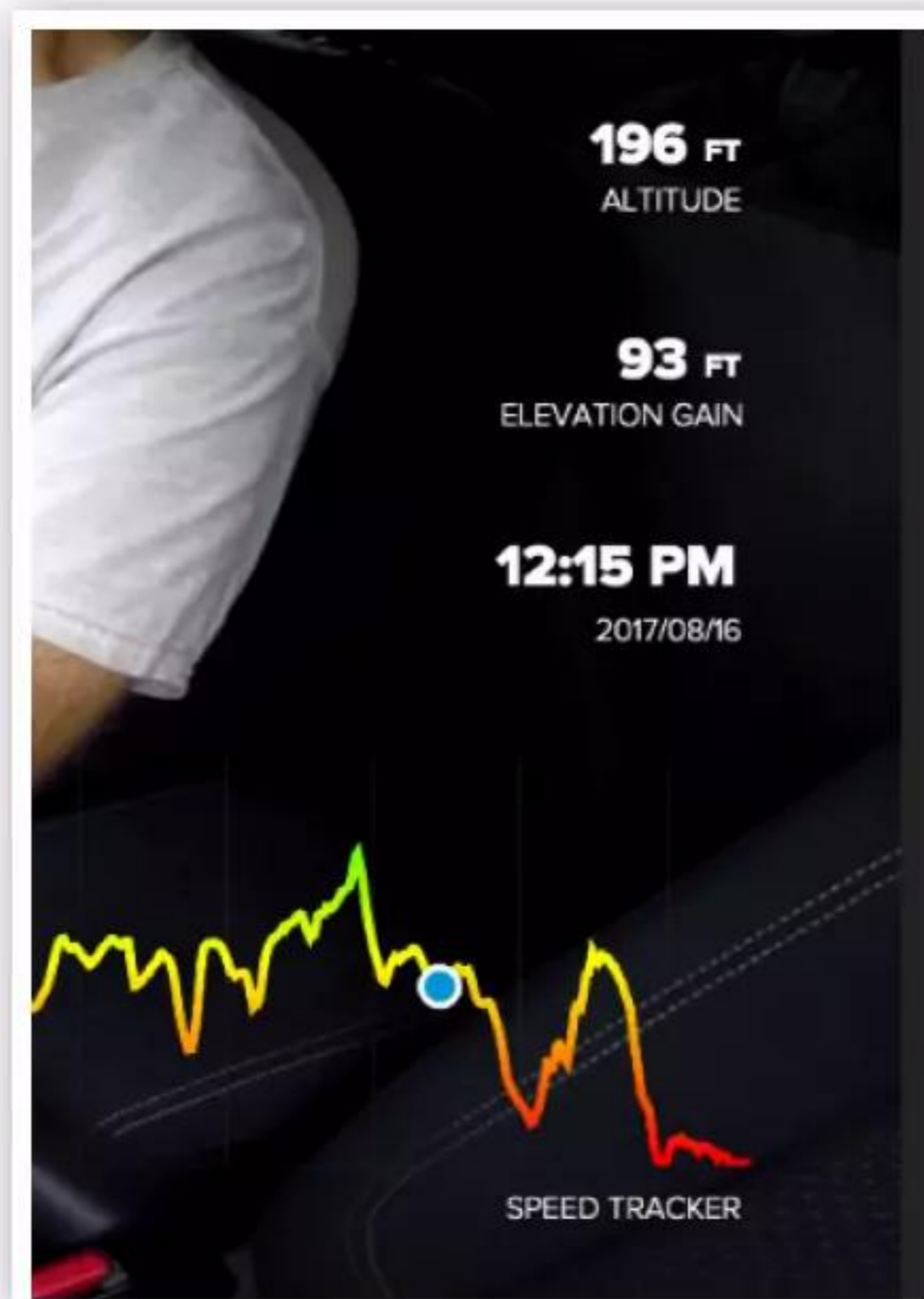
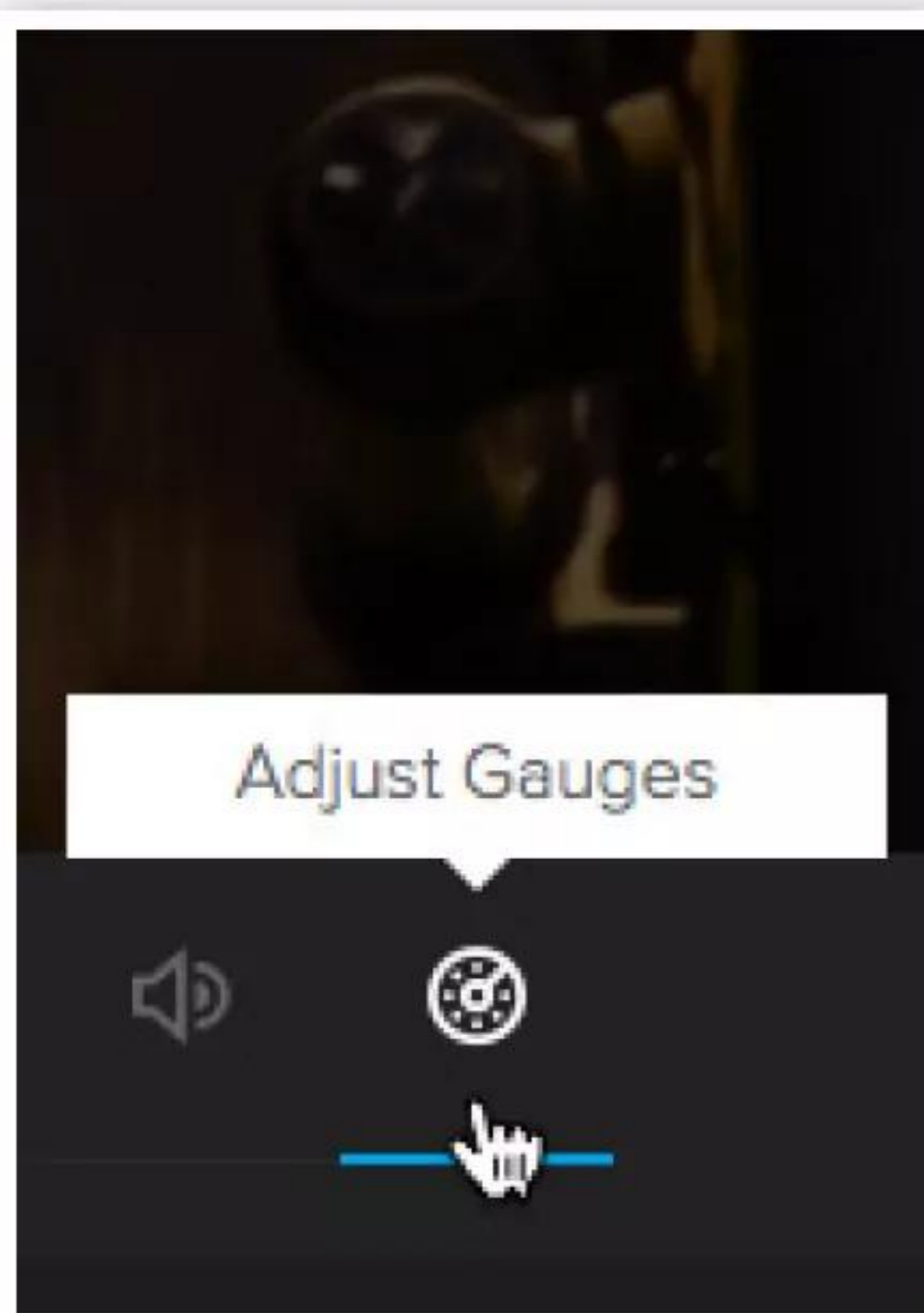
12 You can also add an Outro, which is a final end sequence that concludes the video. In this case, it is the GoPro Quik logo in a short animation.



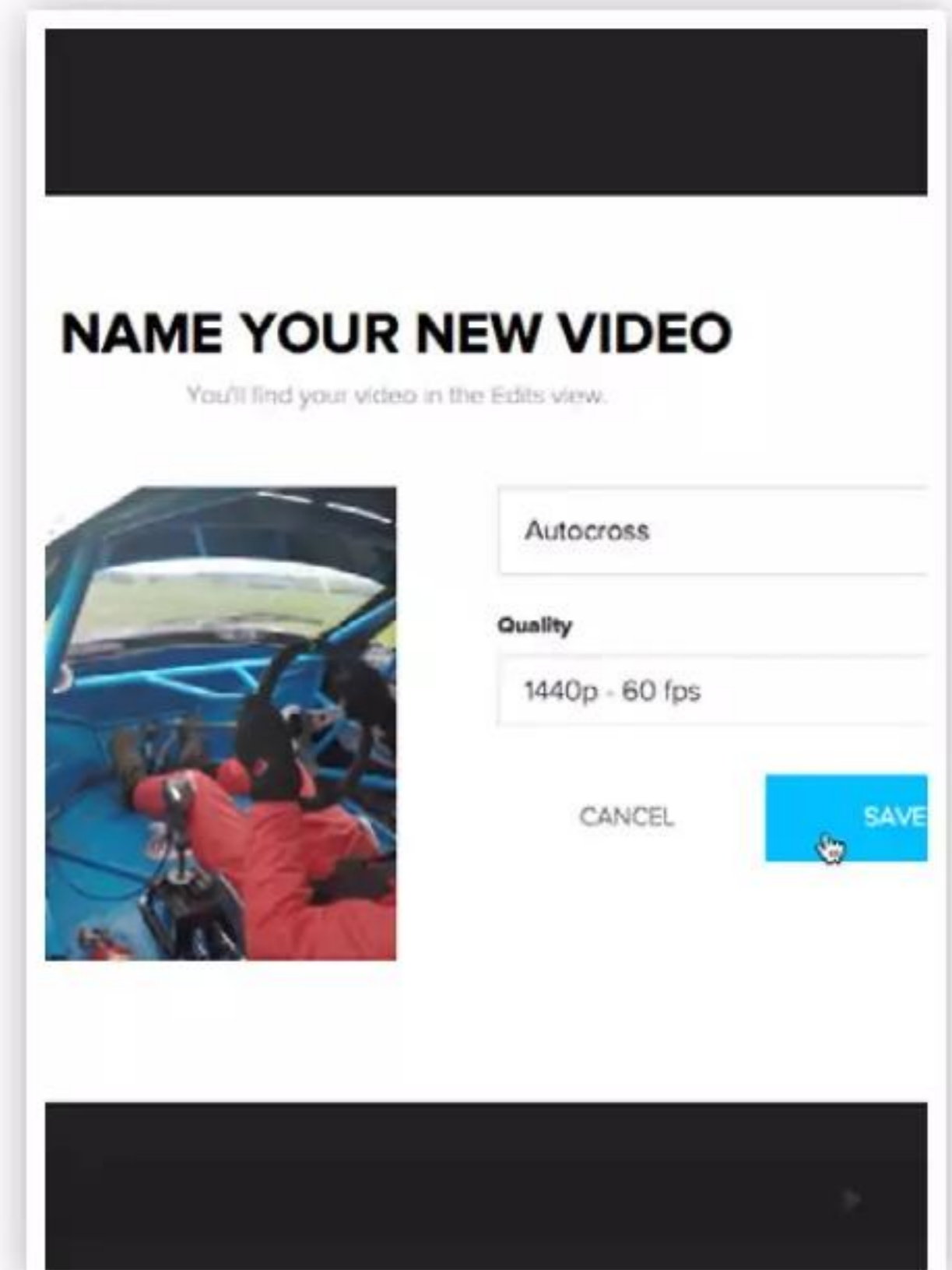
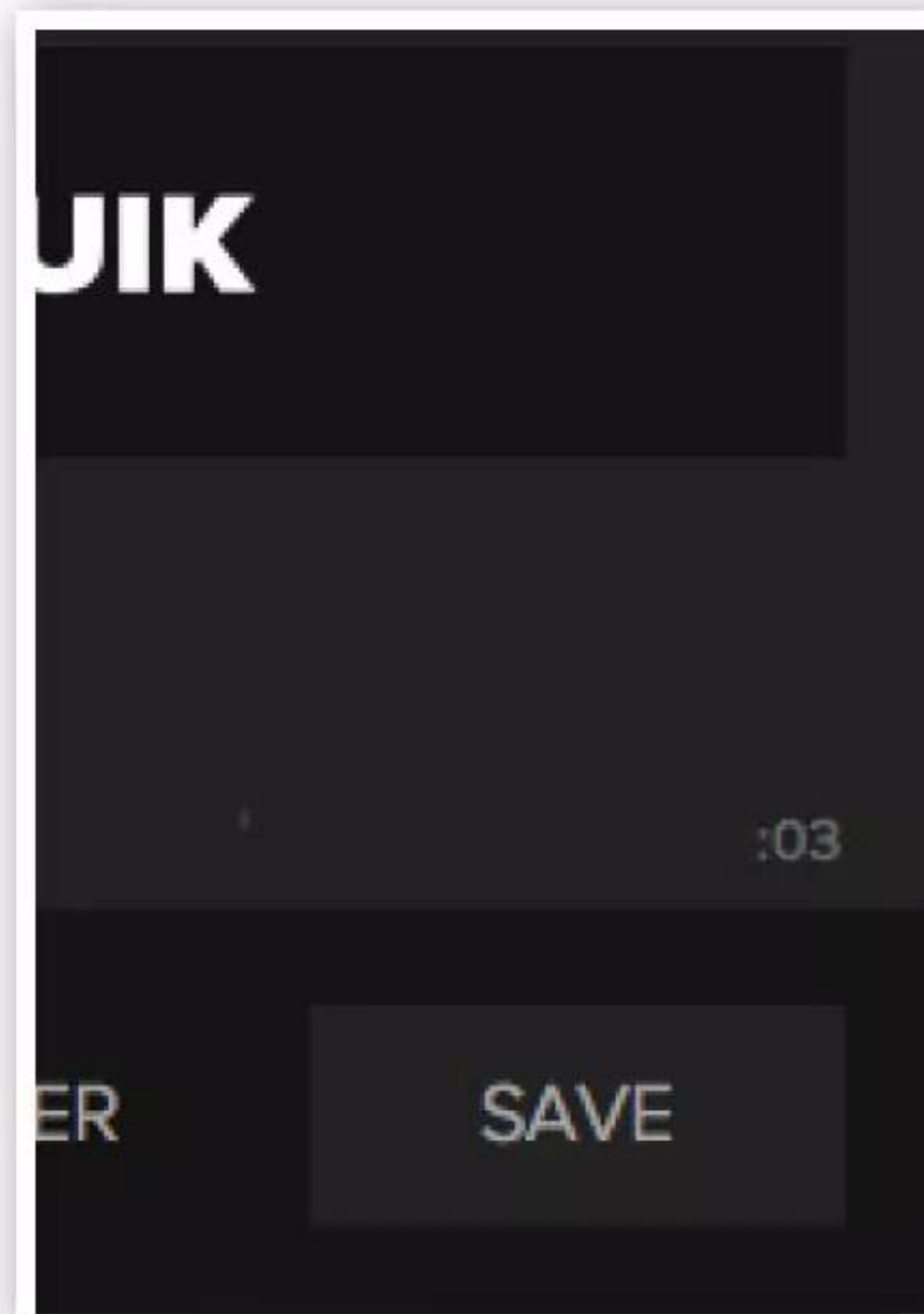
13 You also have the option to edit the clips on your Quik timeline. Click the edit button shaped like a pencil and you can add a number of adjustments to your clips. You can reposition the clip so it plays a different part of that sequence.



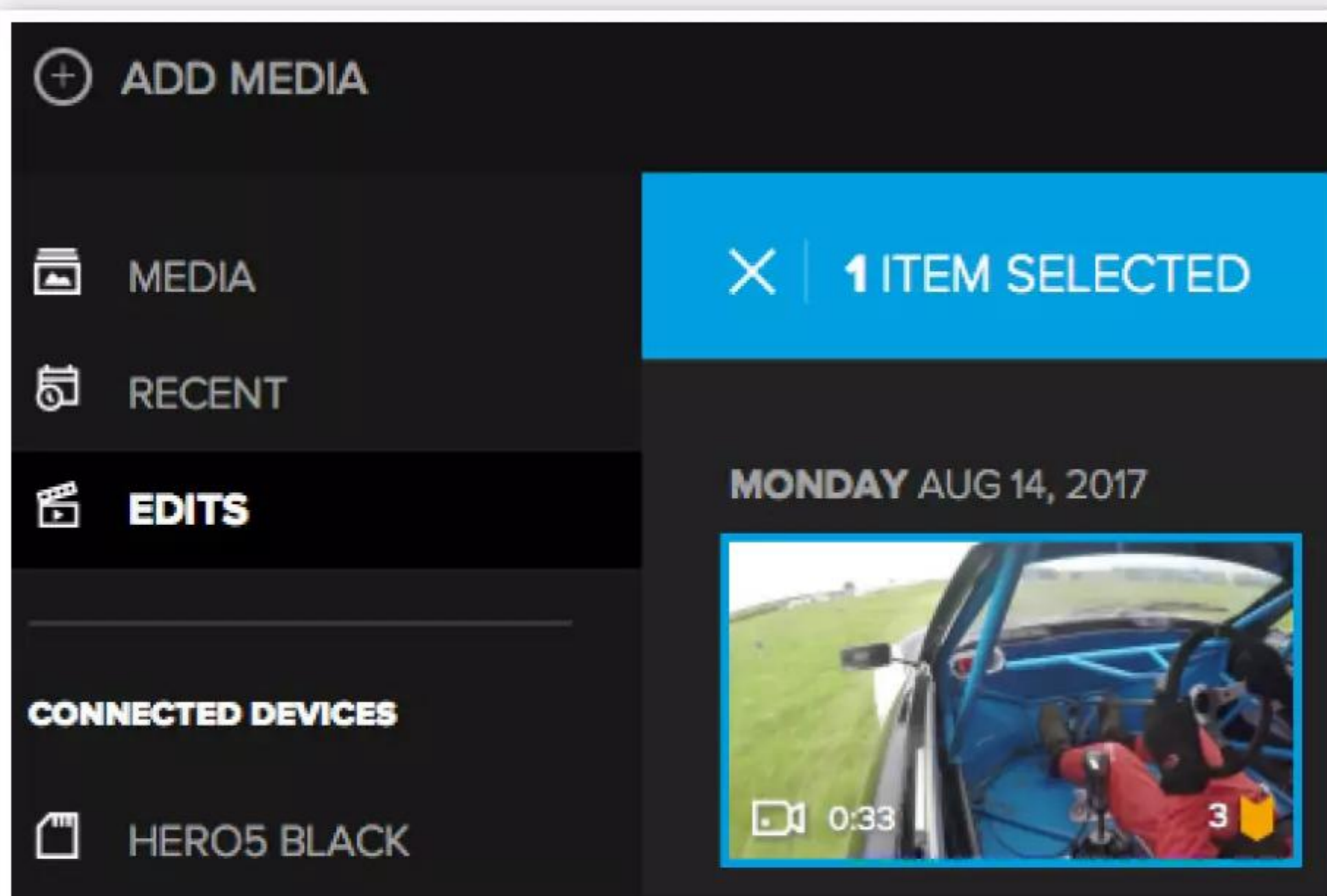
14 You can adjust the colour of your video. Click on the Adjust Colour icon to alter brightness, saturation, contrast, warmth and shadows by moving the sliders. Click the Adjust Volume icon to alter the music and source volume.



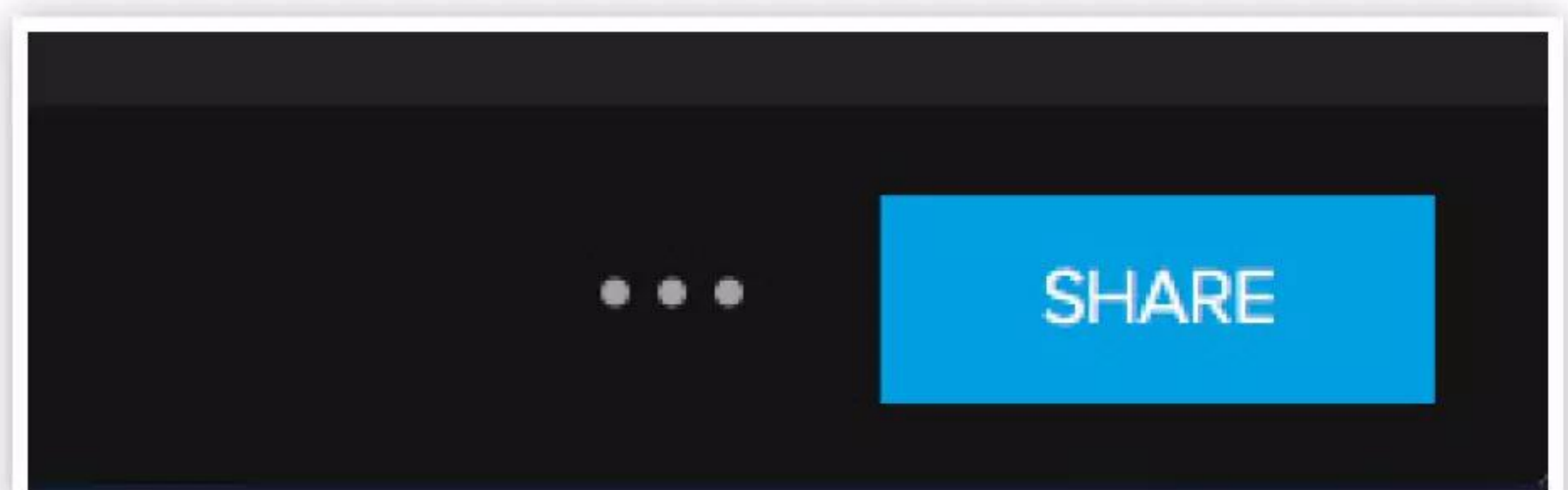
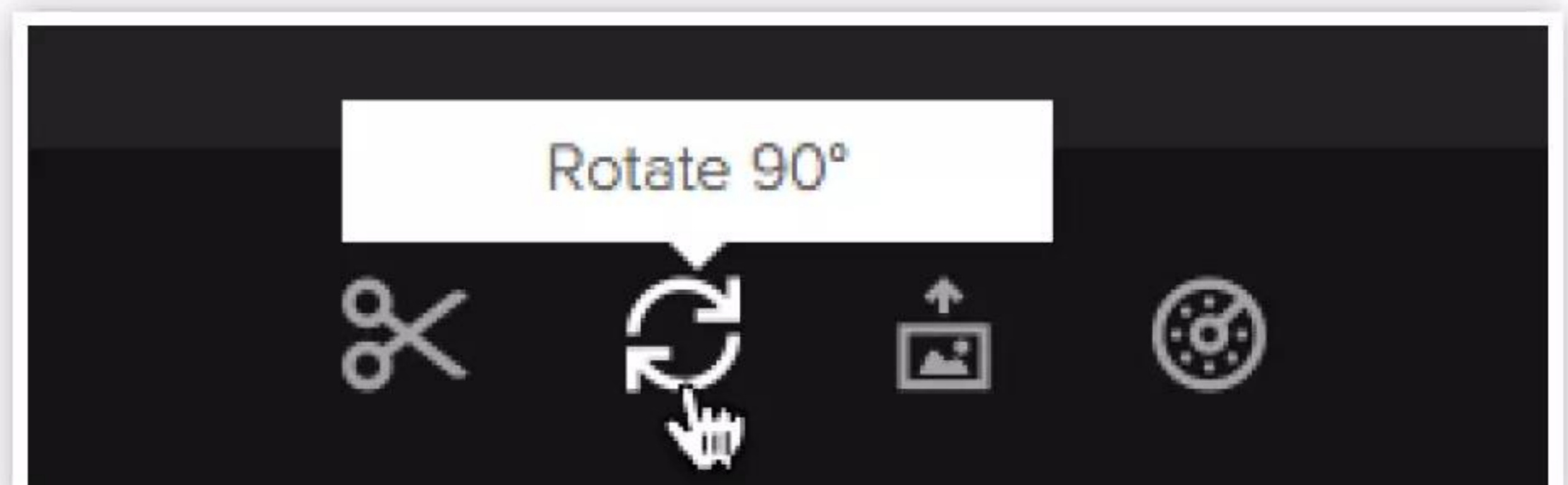
15 If your GoPro Hero 5 Black was used with the GPS turned on, it can also display a number of gauges on screen including speed, GPS position and g-force. It can also show you a display cluster with Altitude, Distance travelled and Elevation Gain.



16 When you are happy with your preview, you can choose the Save button and begin the process of exporting the Quik video sequence. It will ask you to name the clip and choose the Quality of the video. When ready, press Save.



17 The sequence will be saved with the parameters you set. When complete, it will appear in the Edits section of your Quik application. From here you can edit it again if you wish or make some adjustments to the clip as it stands, by double-clicking it.



18 You can save a selected portion of your clip, rotate it through 90° at a time, capture a still photo from the sequence or adjust the gauges, if any, on the clip. You can then click Share to upload it to social media.

The GoPro Studio video editor

Make your own epic video productions

GoPro Studio is a more traditional video editor in that it relies on more of your input to choose, trim, edit and colour grade the sequences you want to use as part of your final clip. There is little that is automated and it does require some skill to learn. The editing process is broken down

The screenshot displays the GoPro Studio interface with the following elements:

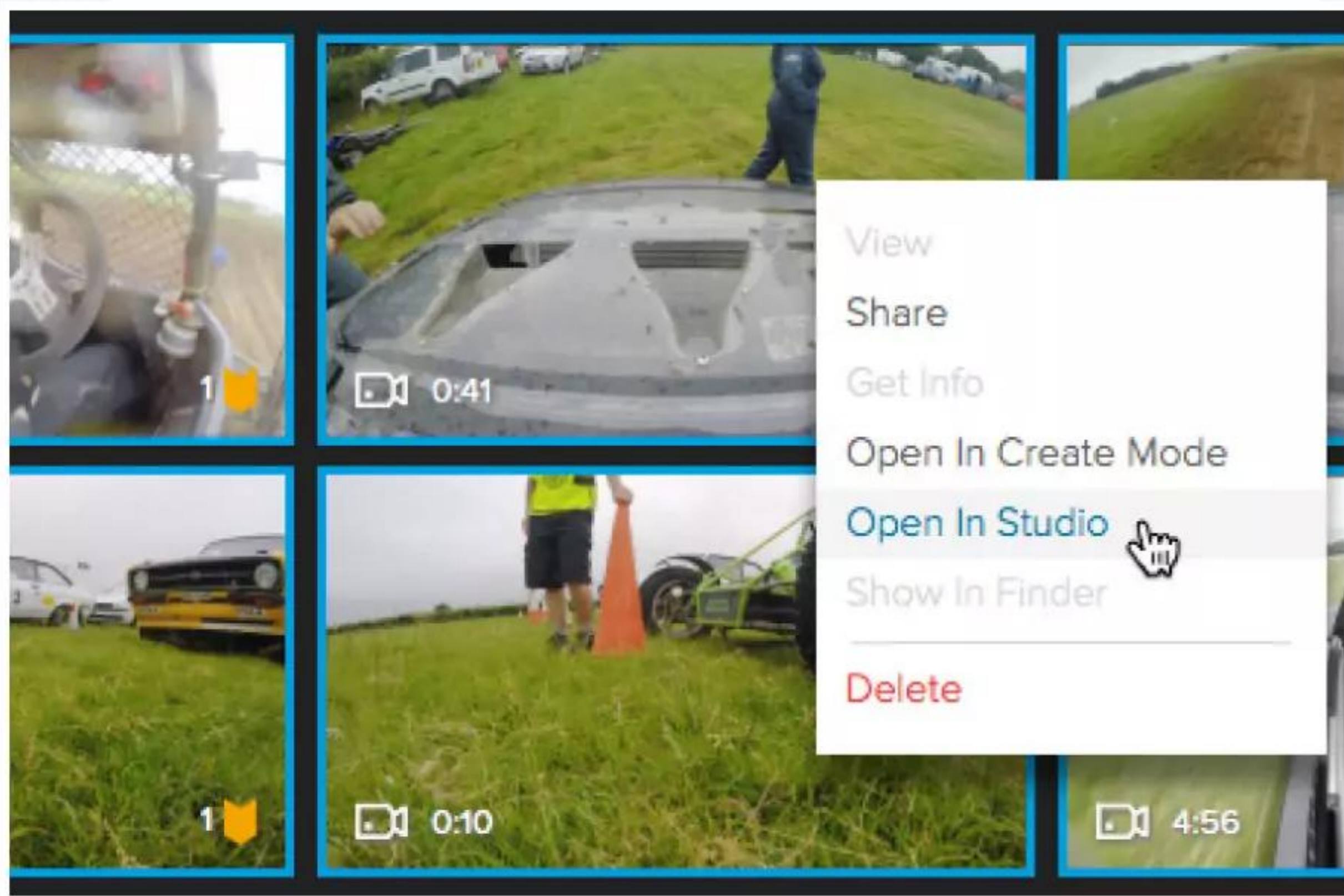
- Top Bar:** 'STEP 1 VIEW & TRIM' (05) and 'STEP 2 EDIT' (06).
- Media Library (01, 02, 03):** Lists assets including video files (e.g., GOPR5542.mov, GOPR3883_5.mov) and an audio file (About The Look.mp3).
- Main Preview Window (05, 08):** Shows a first-person view from a blue kart on a grassy field.
- Timeline (04, 09-13, 15-17):** Displays a sequence of clips with a playhead at 00:00:21:47. Includes controls for 'REMOVE CLIP' and 'CLEAR ALL'.
- Bottom Controls:** Includes a playhead and various editing tools.

into three stages. Stage 1 is where you pick your images and convert them ready for final editing. Stage 2 is where the main editing is done on a simple audio and video timeline. You can add effects and alter video, framing and image parameters. Stage 3 is where you export the final assembled video sequence.

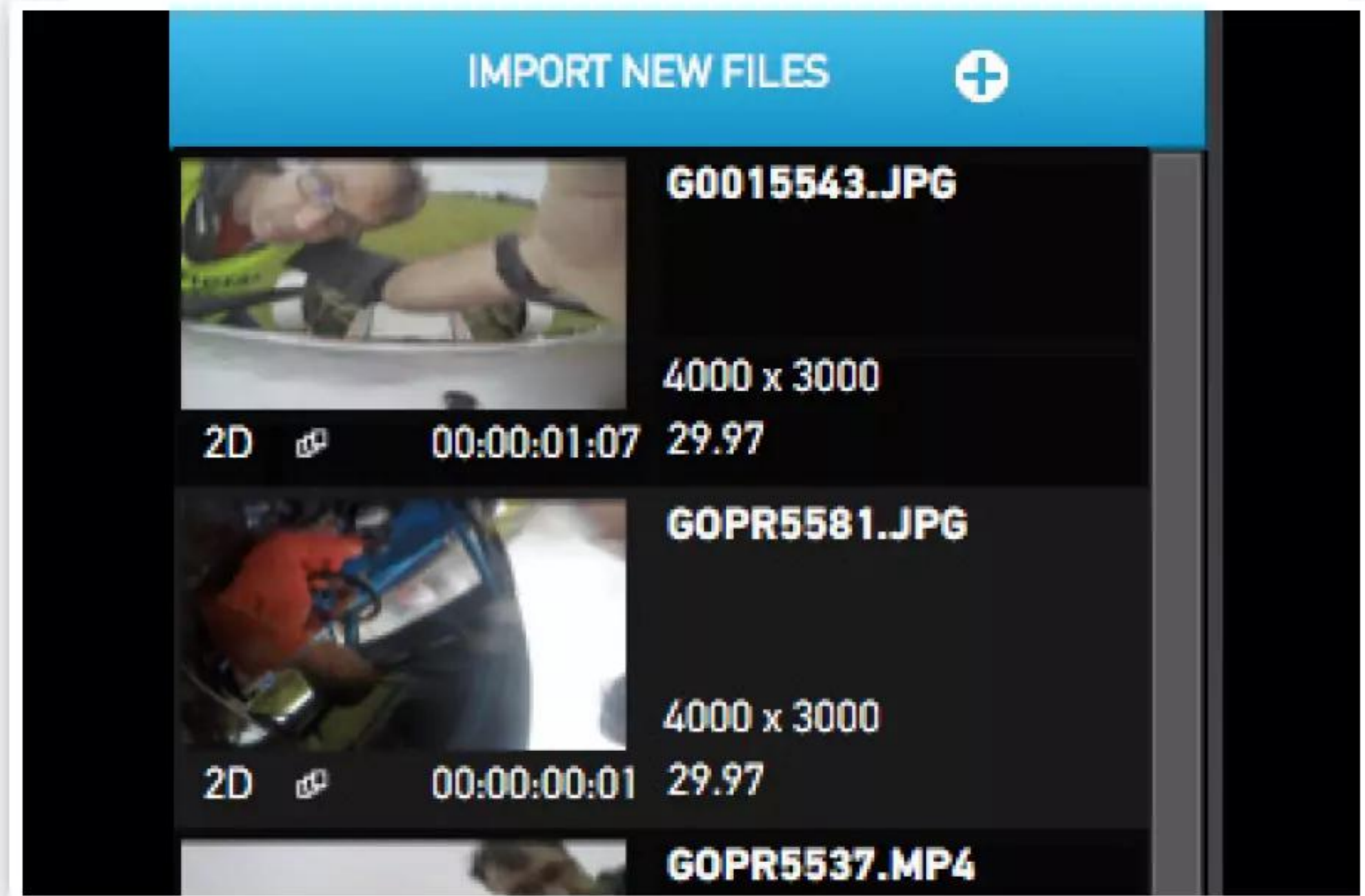
- 01 Add Media button
- 02 Generate Title button
- 03 Selected Media list
- 04 Remove Clip or Clear All
- 05 View and Trim panel
- 06 Main Edit panel
- 07 Export video options
- 08 Main preview window
- 09 Clip split tool
- 10 Jump to previous edit point
- 11 Jump to next edit point
- 12 Mark In point
- 13 Mark Out point
- 14 Rewind, Play, Fast forward
- 15 Video clip timeline
- 16 Title timeline
- 17 Audio timeline
- 18 Video adjustment panel
- 19 Effects presets panel



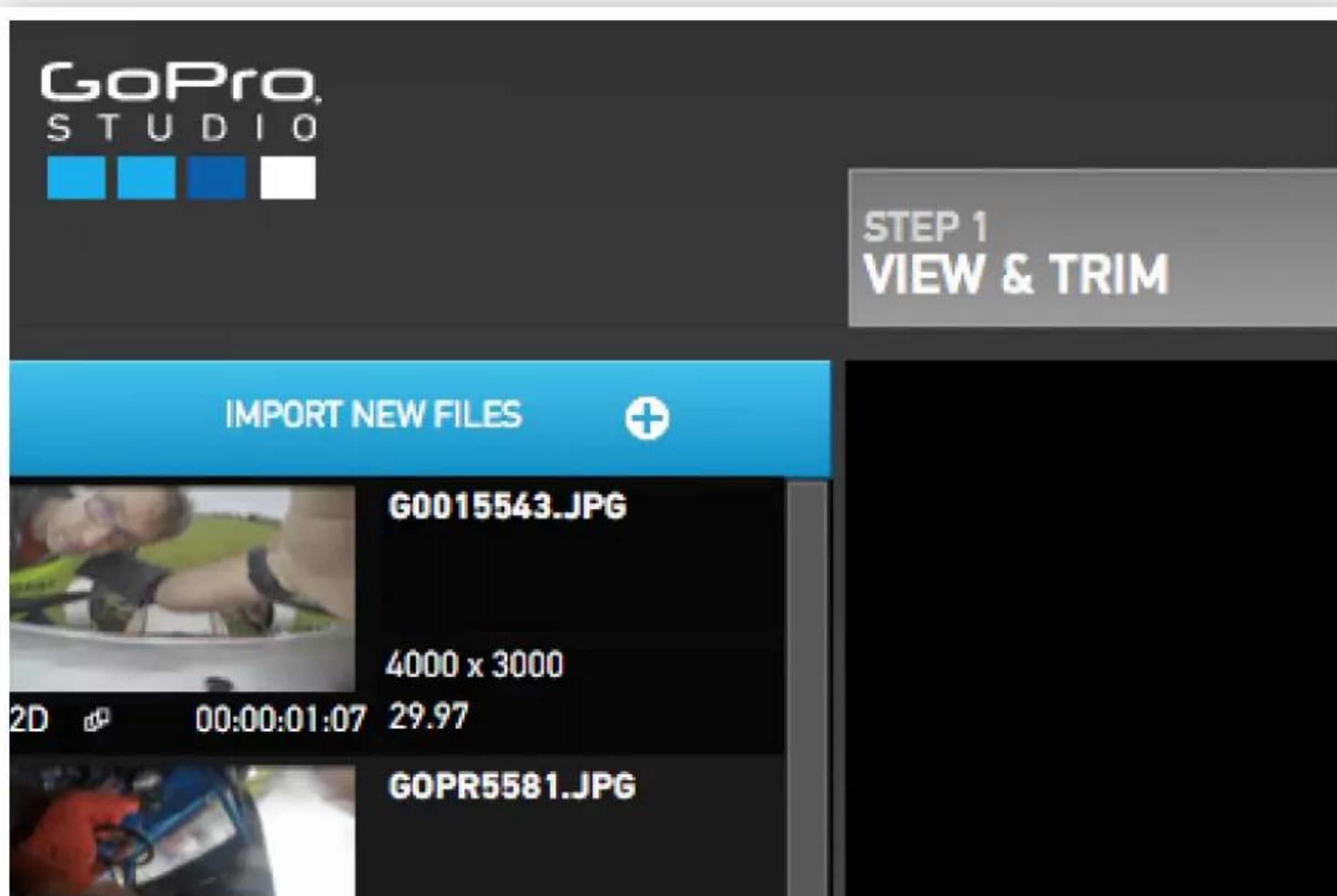
Using GoPro Studio



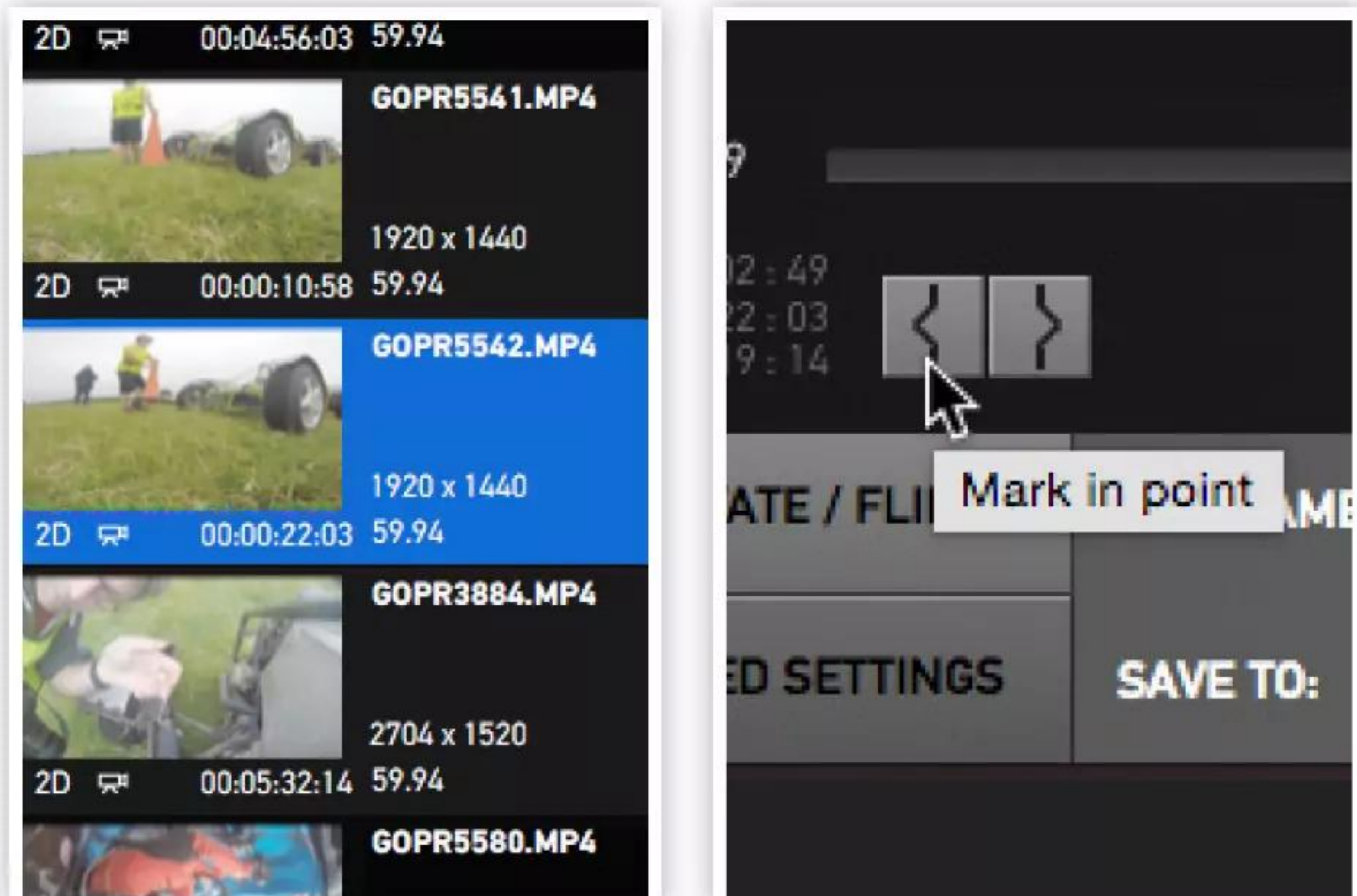
01 In the Quik Media view, select the video and other media you want to consider to use as part of your final clip. Highlight all the elements you're going to need and then right-click their thumbnail and choose Open In Studio from the menu that appears.



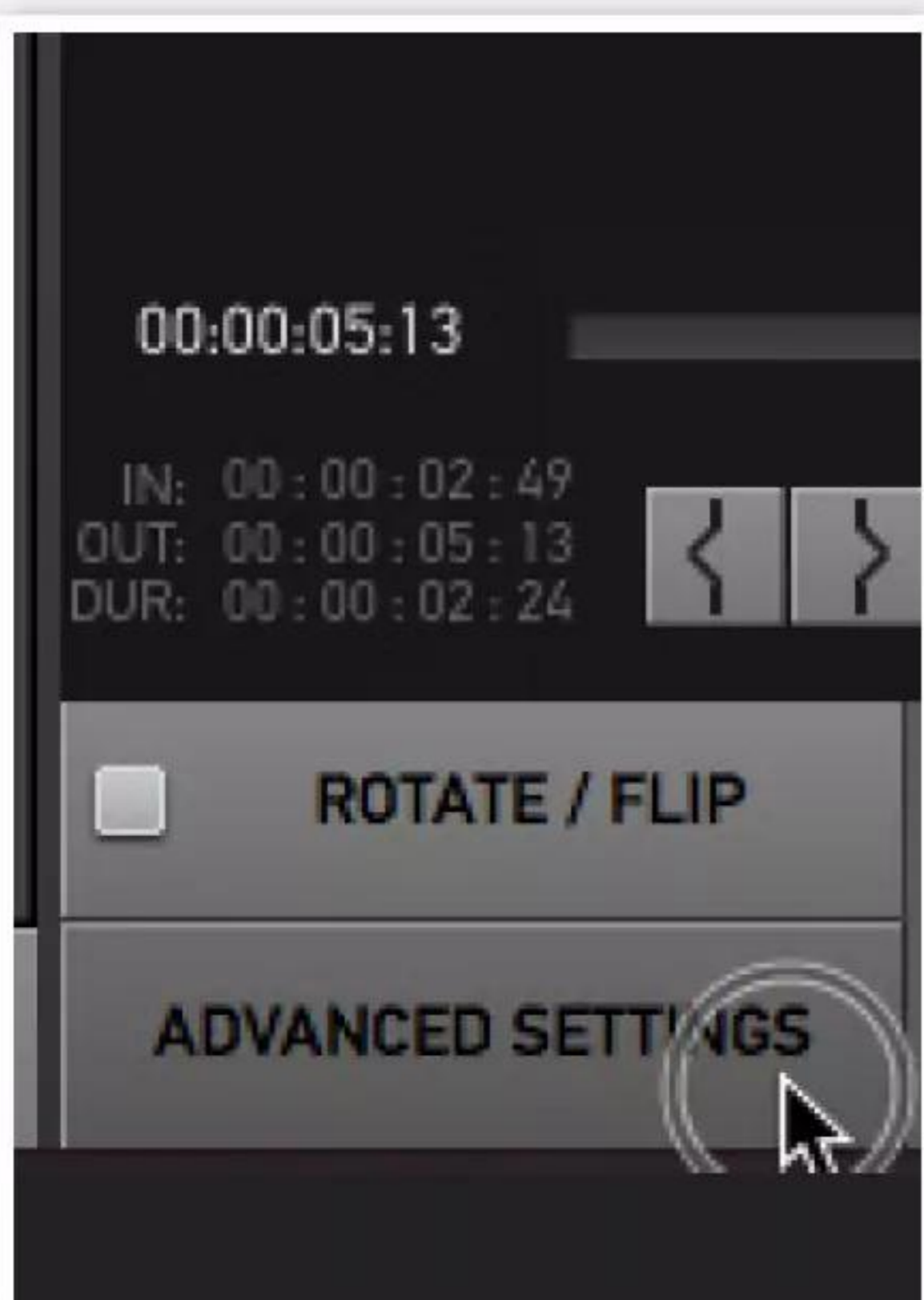
02 Your selected files will be loaded into GoPro Studio and they will all be displayed in the media import panel on the left of the screen.



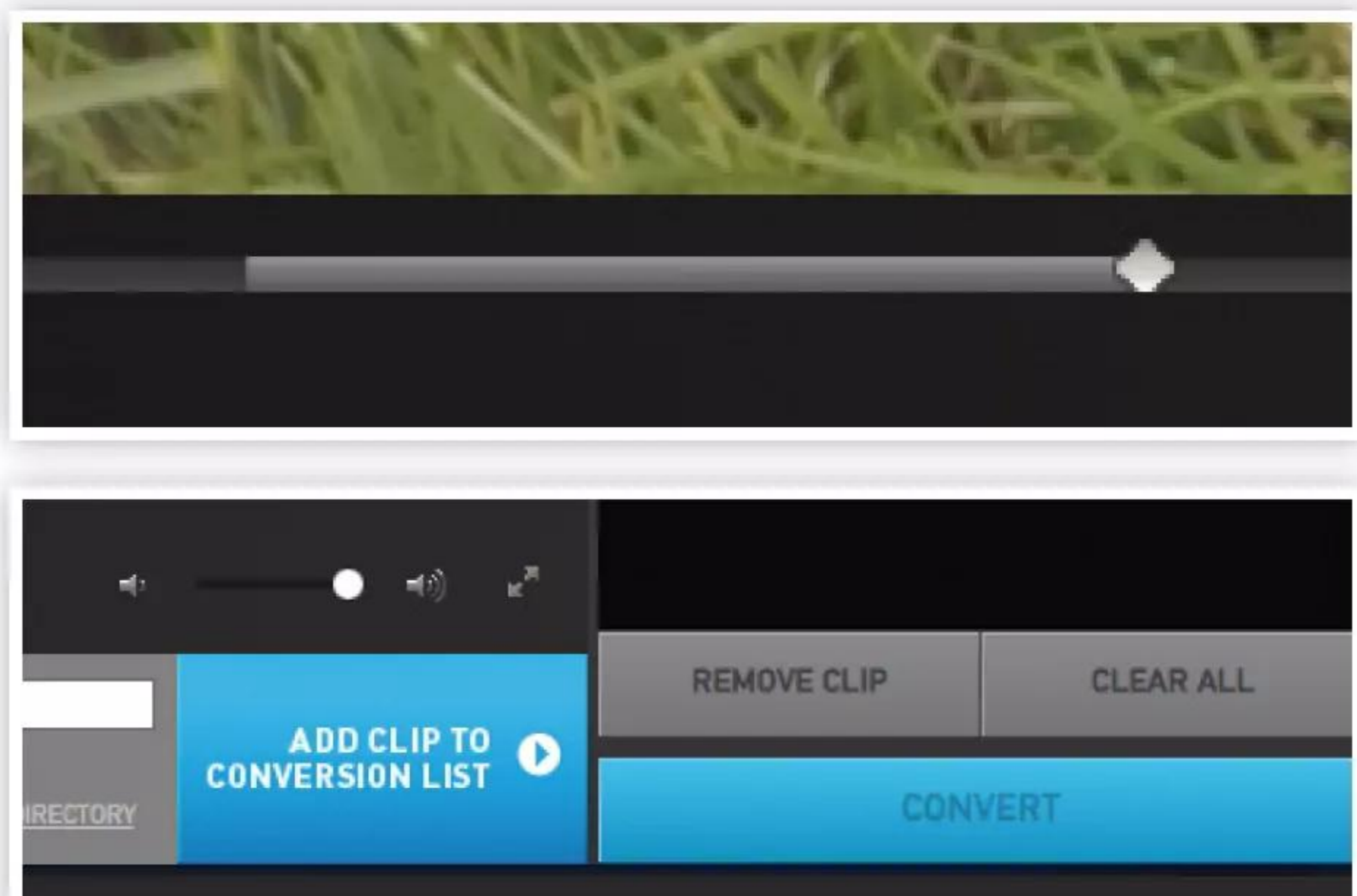
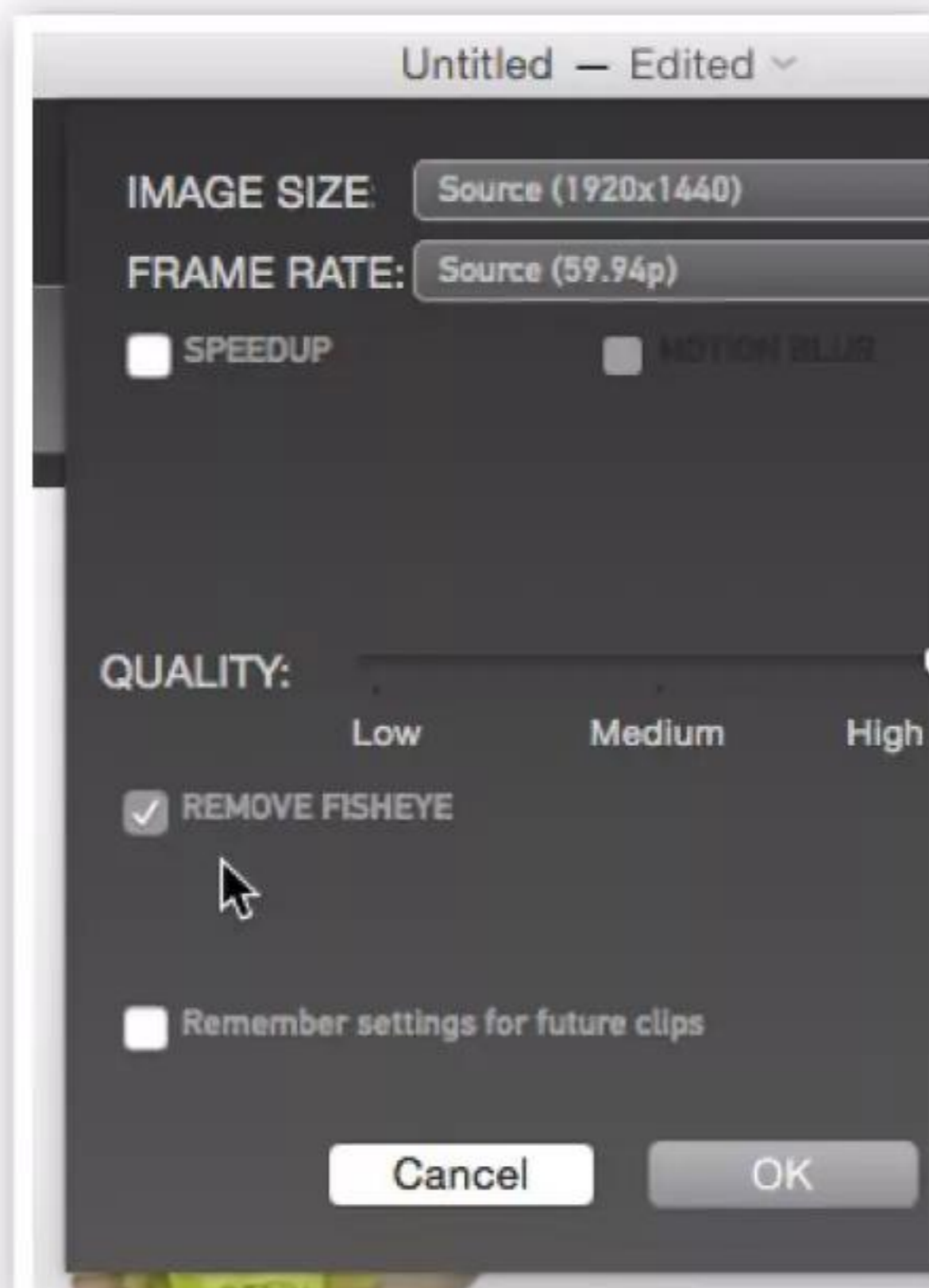
03 At the top of the screen, you will see that currently, the app is in its Step 1 View & Trim mode. This section allows you to sort through your clips and pick out the ones you want to put into your final edited sequence.



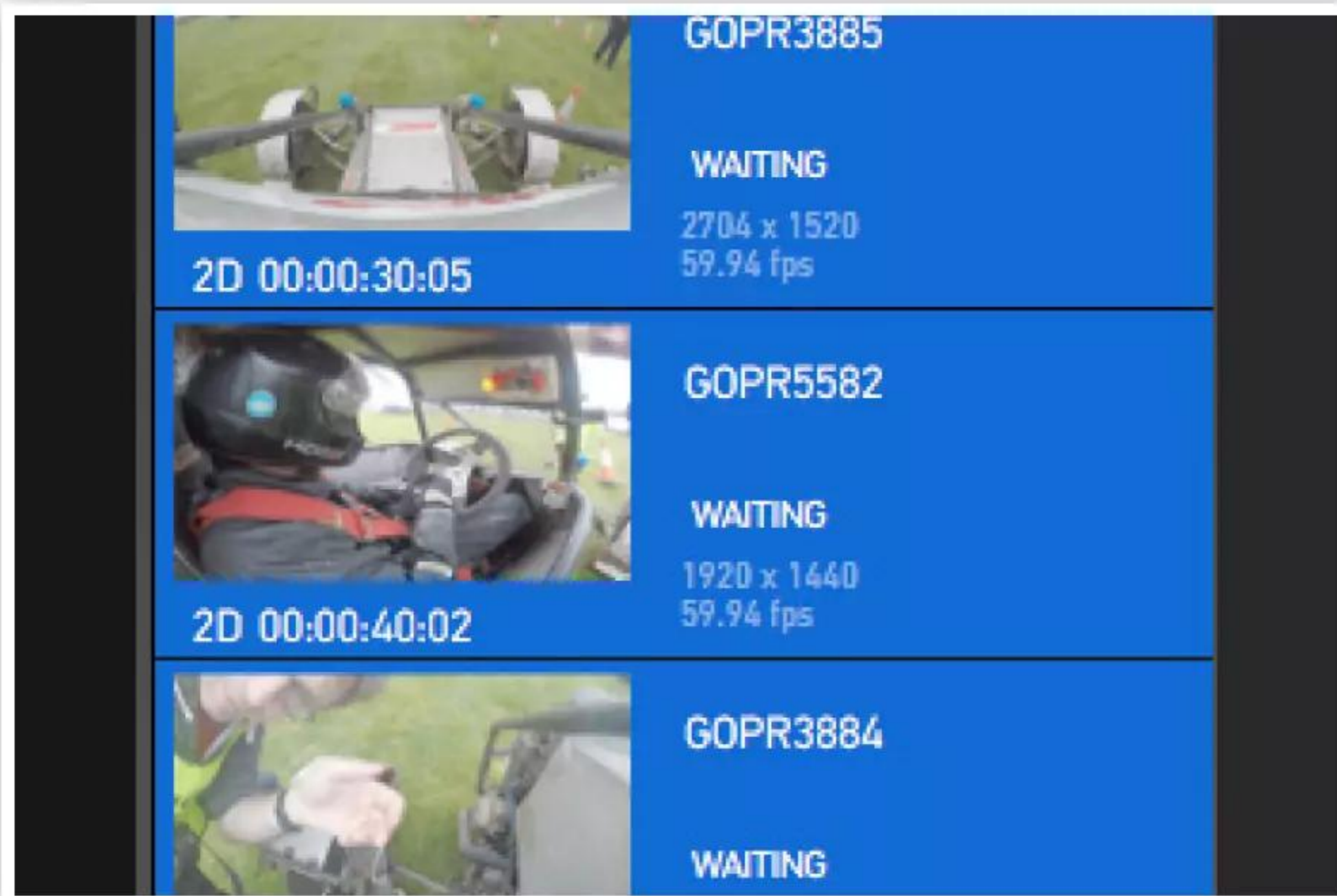
04 Click on any of your clips and it will be previewed in the main window. Here you can trim the clip by using Mark In and Mark Out points to create a custom edit with start and end points defined by you.



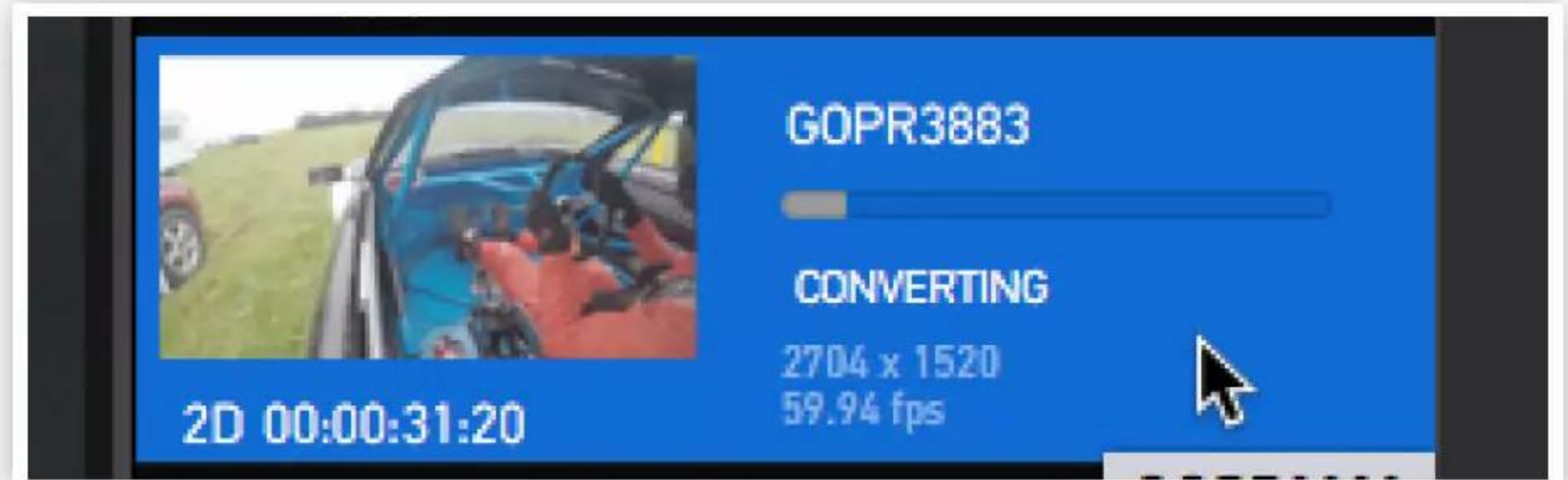
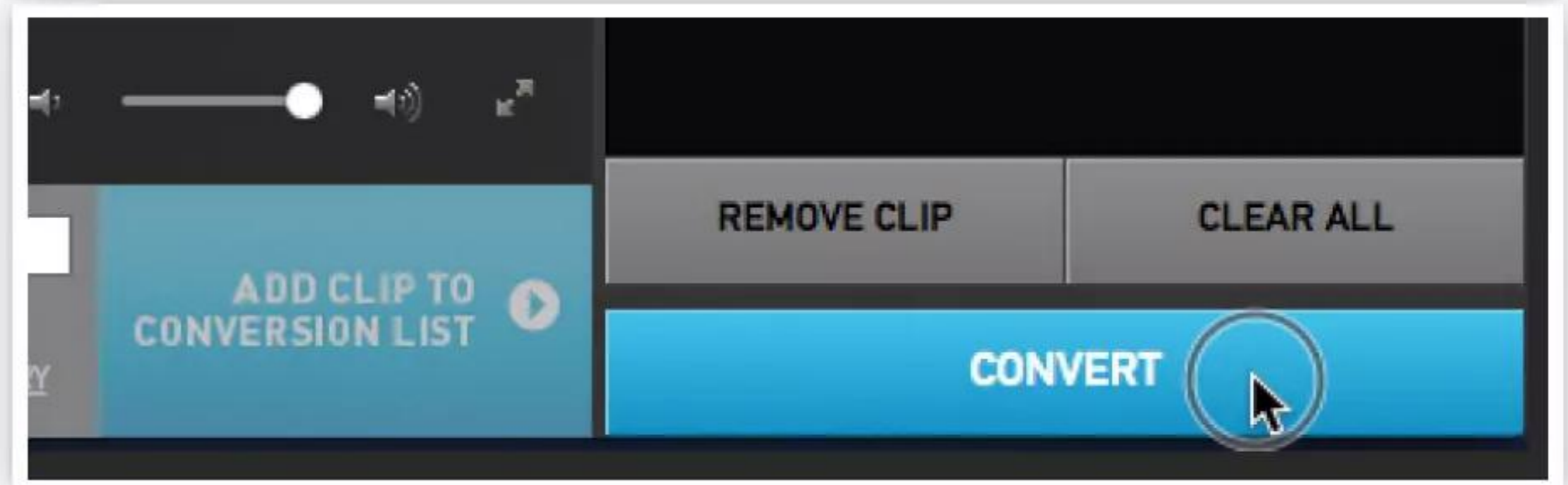
05 If your clip was shot using the Wide FOV, then it will have the pronounced fisheye effect. If you click on the Advanced Settings button, you can choose the Remove Fisheye option. Click OK to apply the preference.



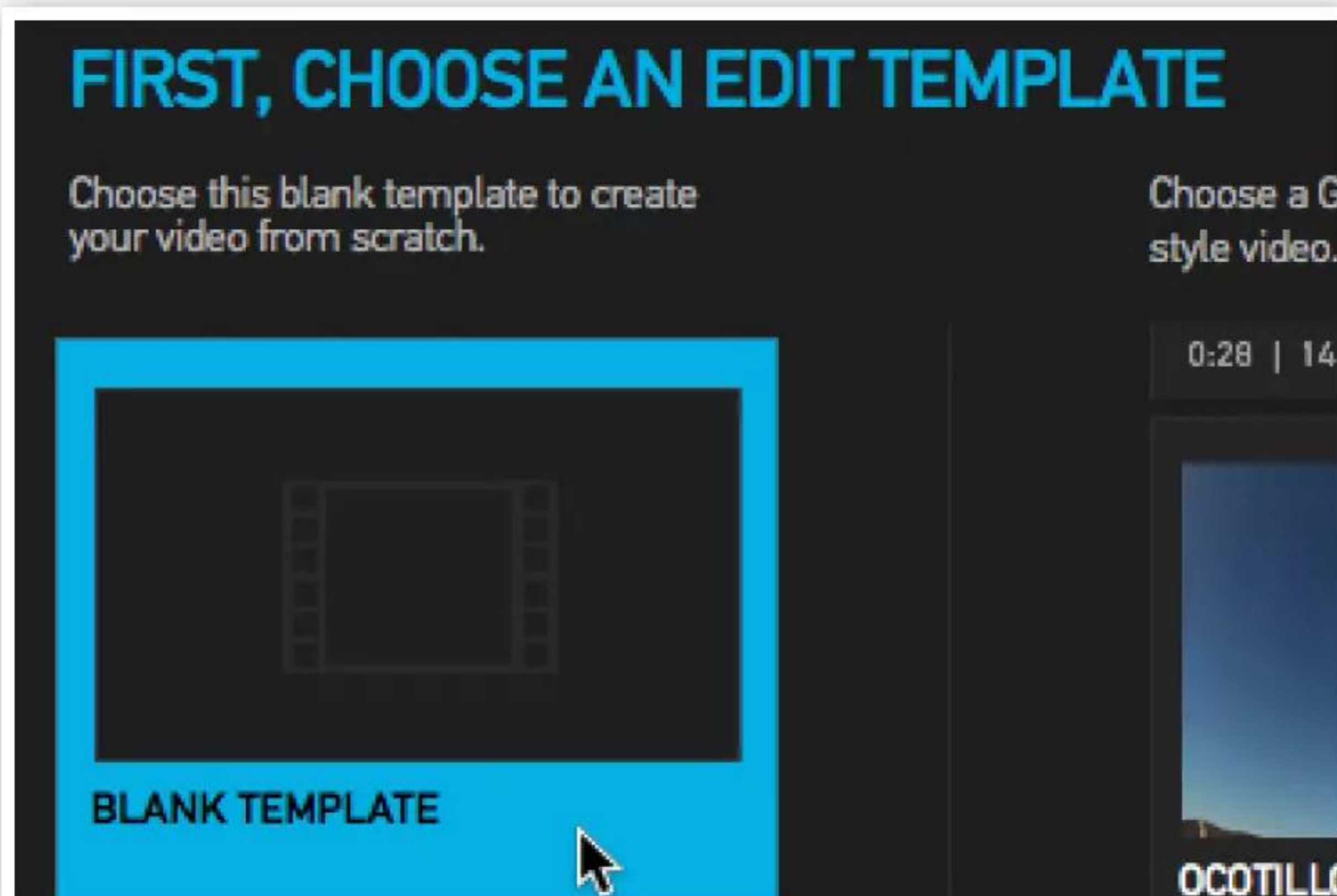
06 Once you have the clip trimmed with Mark In and Mark Out points, so you have the duration as you want it, click on the Add Clip to Conversion List button. This will put a copy in the conversion list on the right panel.



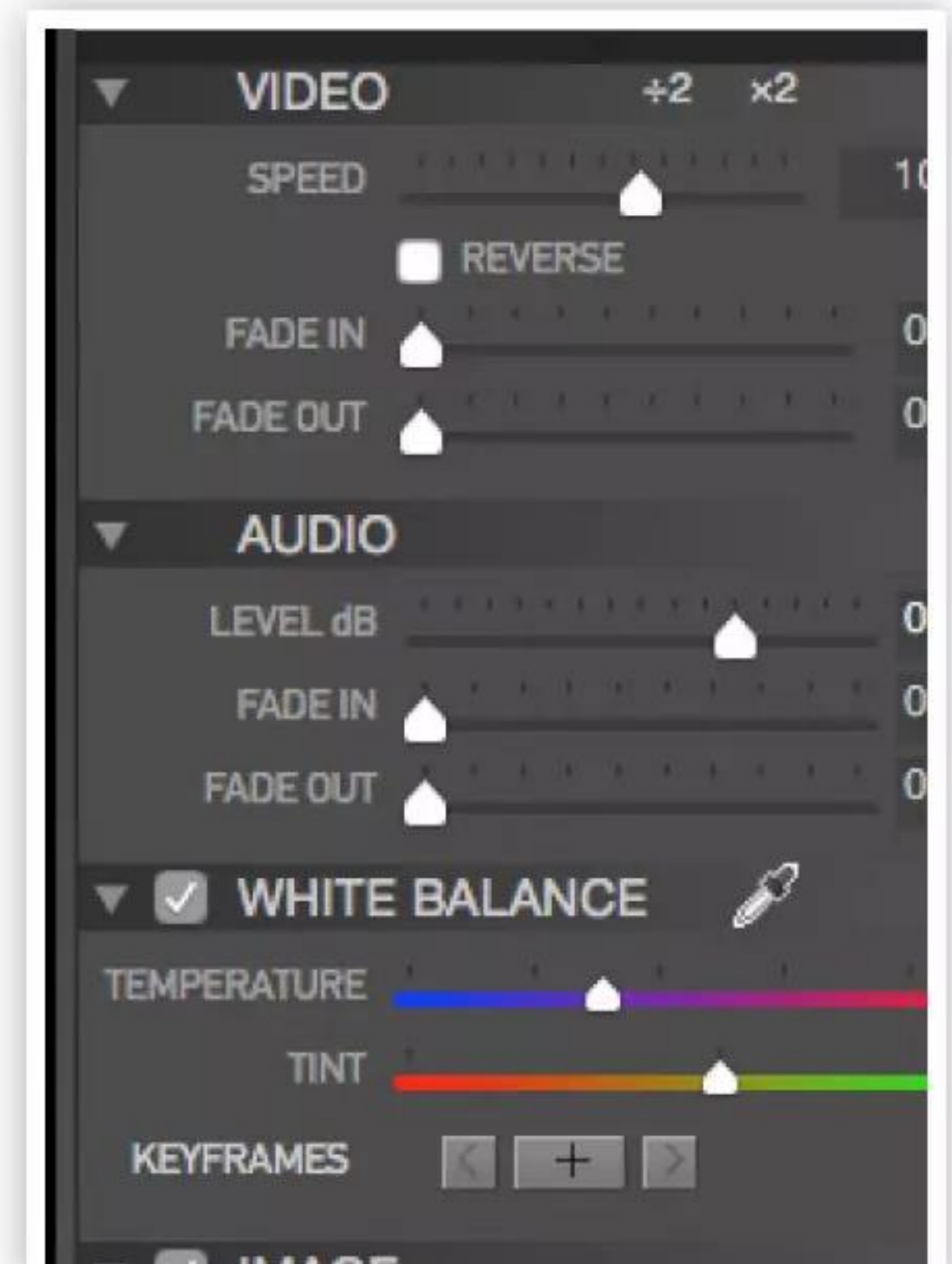
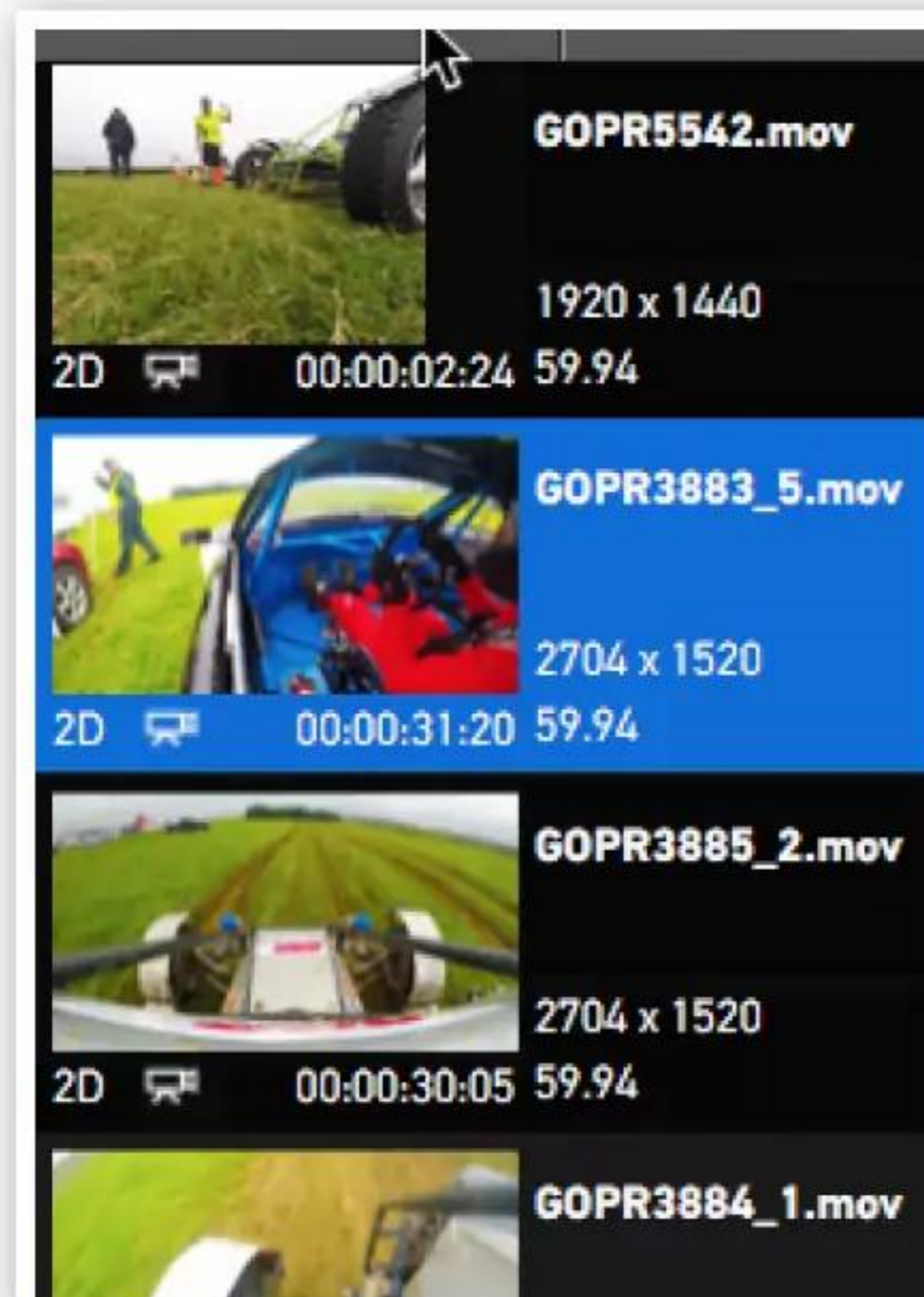
07 Go back and choose how ever many clips you want to trim down to alter their duration. For each one you choose, add the clip to the Conversion List on the right as you did with the first one.



08 At the bottom right, there is a Convert button. When you click this, each item of trimmed footage in the list will be converted. A small progress bar in each clip shows you how the conversion is doing. When done, you can proceed to the Edit window.



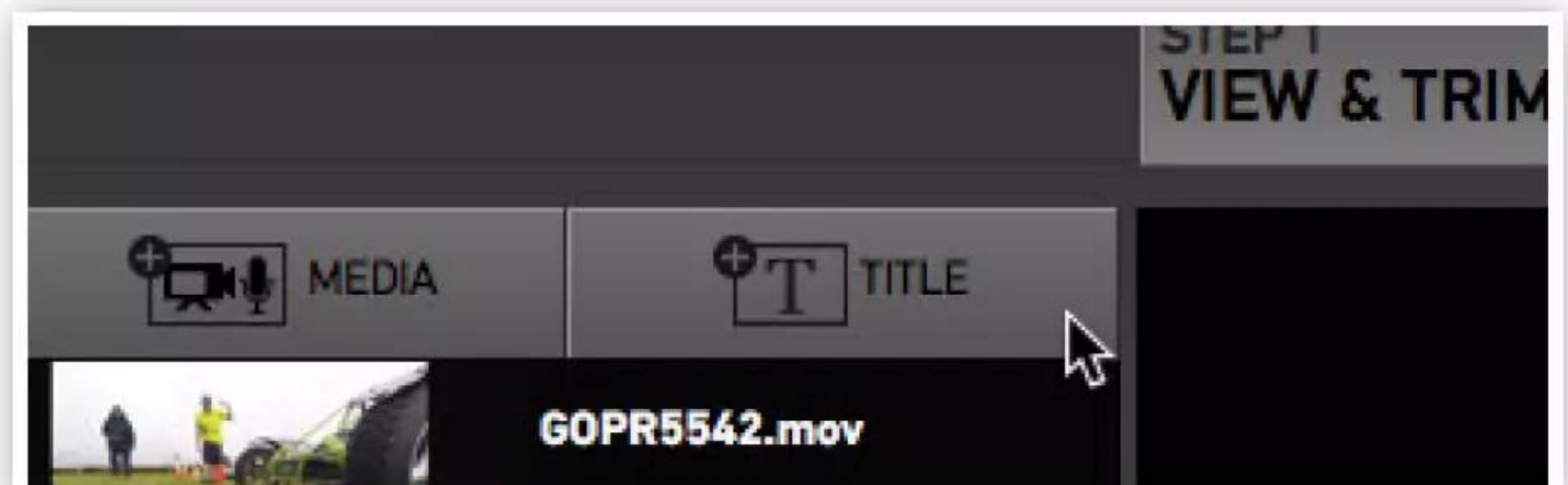
09 Firstly, you will be asked to choose an edit template. You can pick a preset or download more examples of GoPro Edit Templates. We've chosen Blank Template so we have a completely clean starting point. Click Create to start.



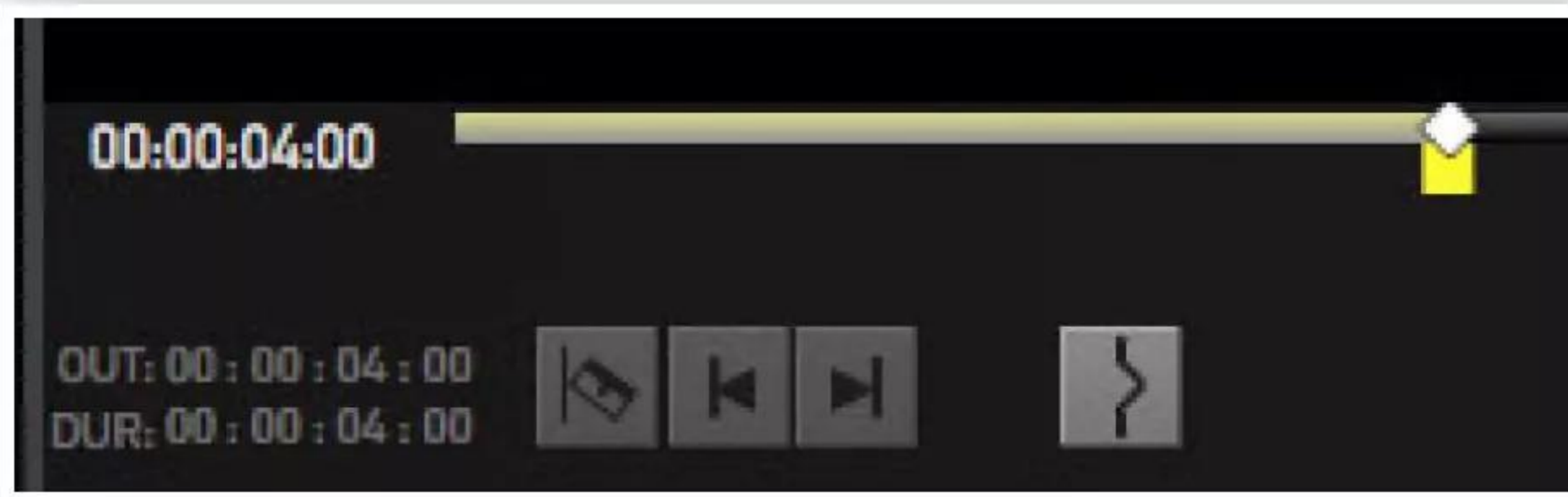
10 Now that you are in the Edit window, clicking on each clip allows you to make adjustments to the clip. On the right of the screen are a number of adjustment options for Video, Audio, White Balance, Image and Framing. These can be altered at any time.



11 There are also a number of effects presets that apply a particular look to your clips. Clicking on Candy Colour for instance, will add a lot of saturation to your clip. Click on any preset to change it or click None to remove it.

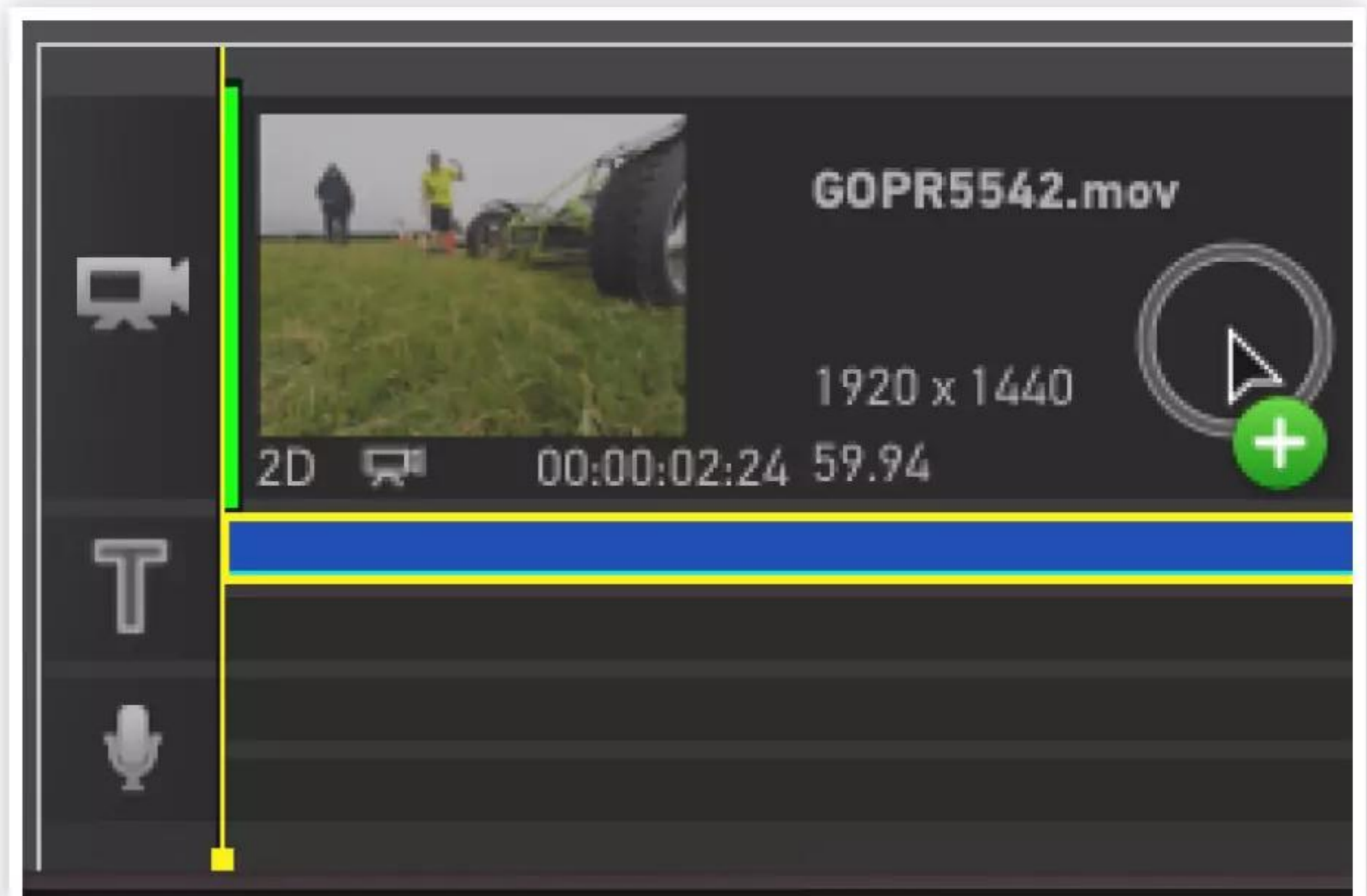
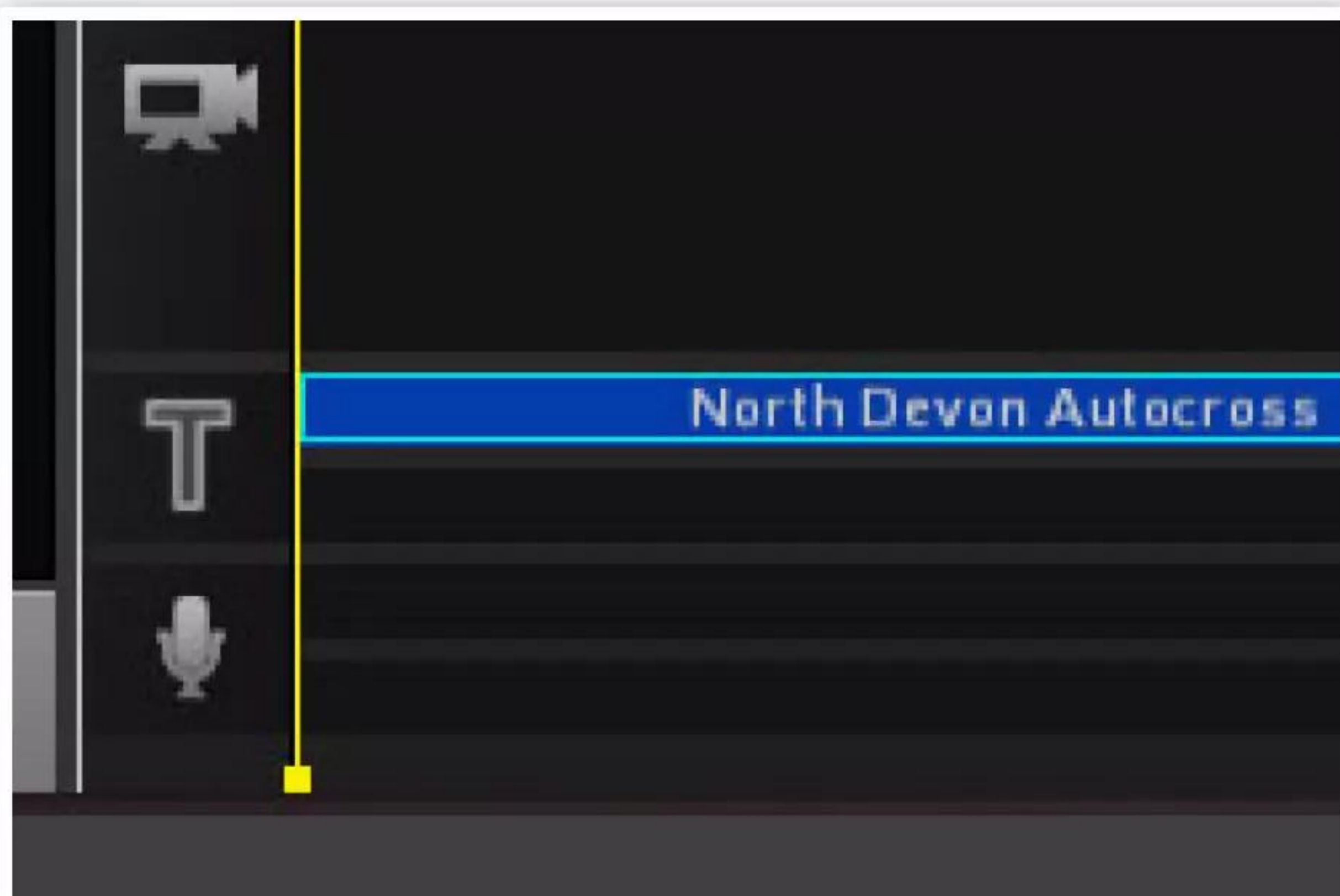


12 If you click on the Title button, you can generate your own titles to appear in your clip. You can type in the text you want and alter the font style as well as things like its opacity and making it fade in and out over a specified duration.



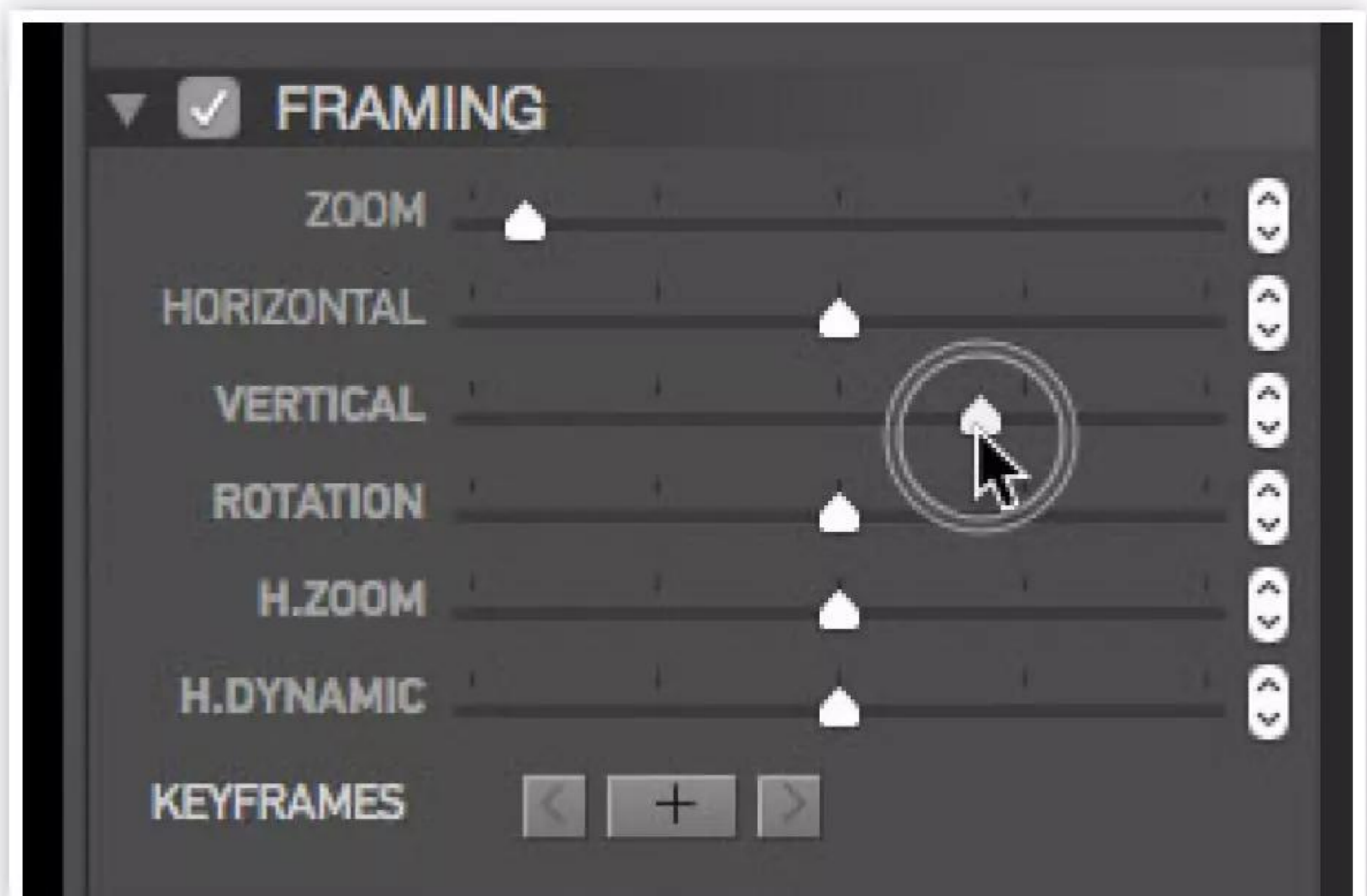
13 Here we've kept the Opacity at 100 per cent and made a 1s Fade In and 1s Fade Out. The duration of the clip is to 4s in total by using the slider bar beneath the title preview window. The title will also appear in the listing on the left of the screen.

14 We've also added an MP3 music file which we can use as our background music. Just click on the Media button and browse to where your music files are kept and choose one to add to your clip. Now you can begin to assemble the video.



15 You can start by clicking and dragging the title onto the Title timeline. A blue band will appear on the timeline to show you have a title positioned there.

16 Drag one of your clips onto the Video timeline, denoted by the small video camera icon. When placed, the clip will be displayed as a thumbnail so you can identify which clips you've used. The clip filename will also be displayed along with its size and duration.



17 Our 4s title and 3s video clip are now in place. If you click on the yellow play bar, you can drag it back and forth over your timeline to view how it's looking at the moment.

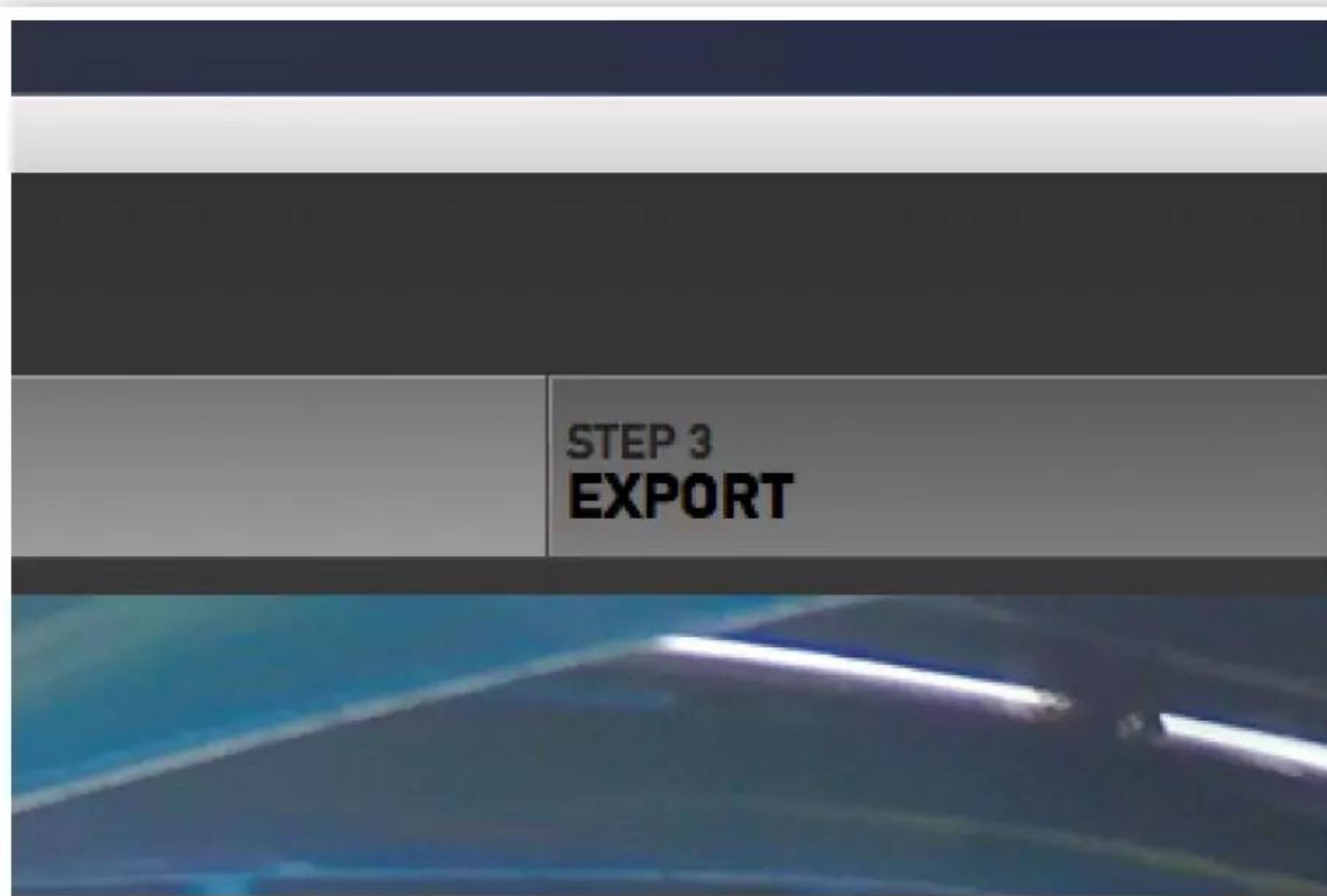
18 Click on the clip in the video timeline to highlight it. You can make adjustments by altering various parameters on the right of the screen. We've adjusted the Framing of the larger 4:3 clip to sit lower in the narrower 16:9 video clip we created.



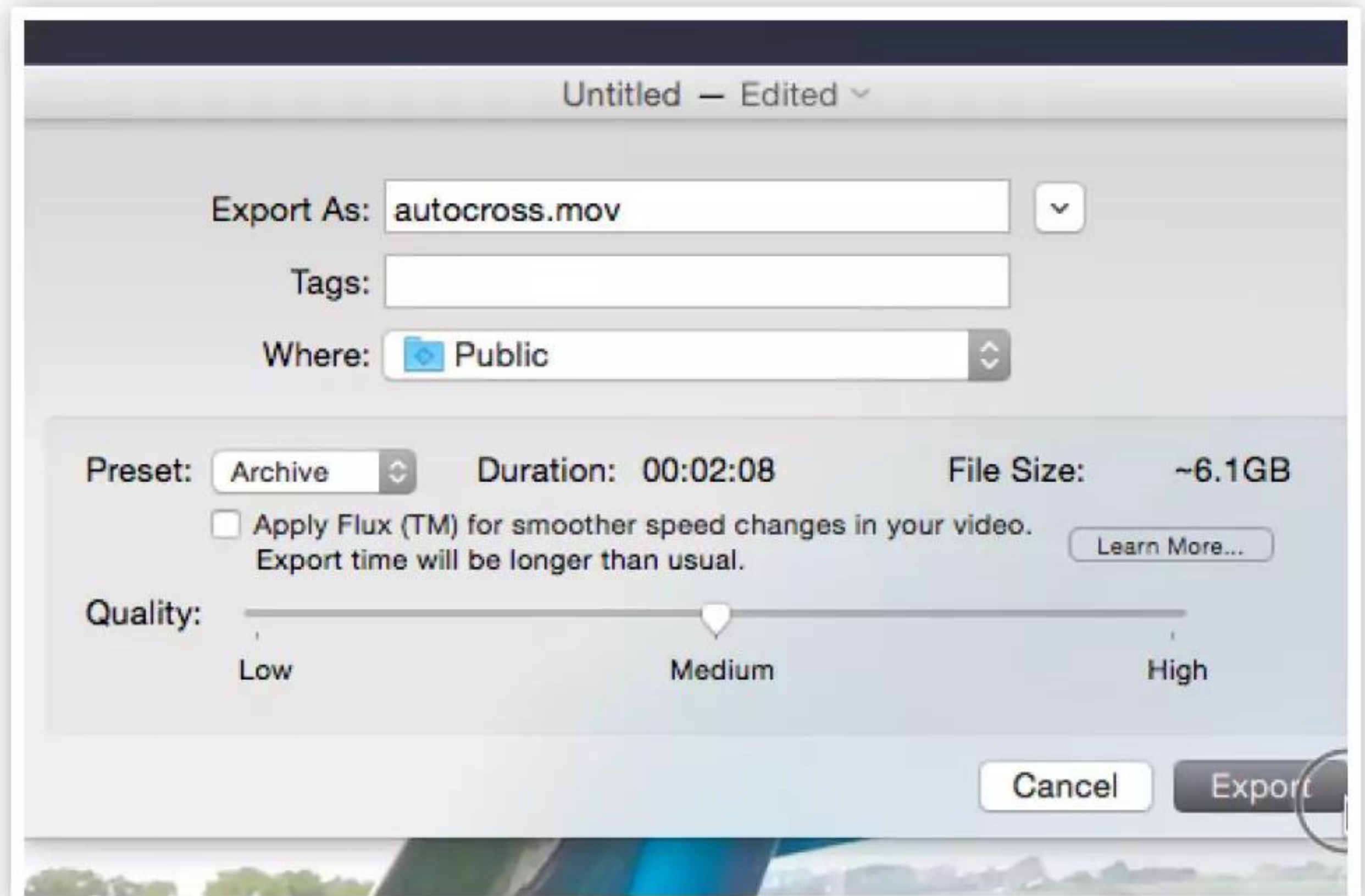
19 You can continue to add your clips to the video timeline to create your edited video. Each clip's adjustment parameters can be altered at any time to get the look you want. We've added 5 clips of a motorsport event.



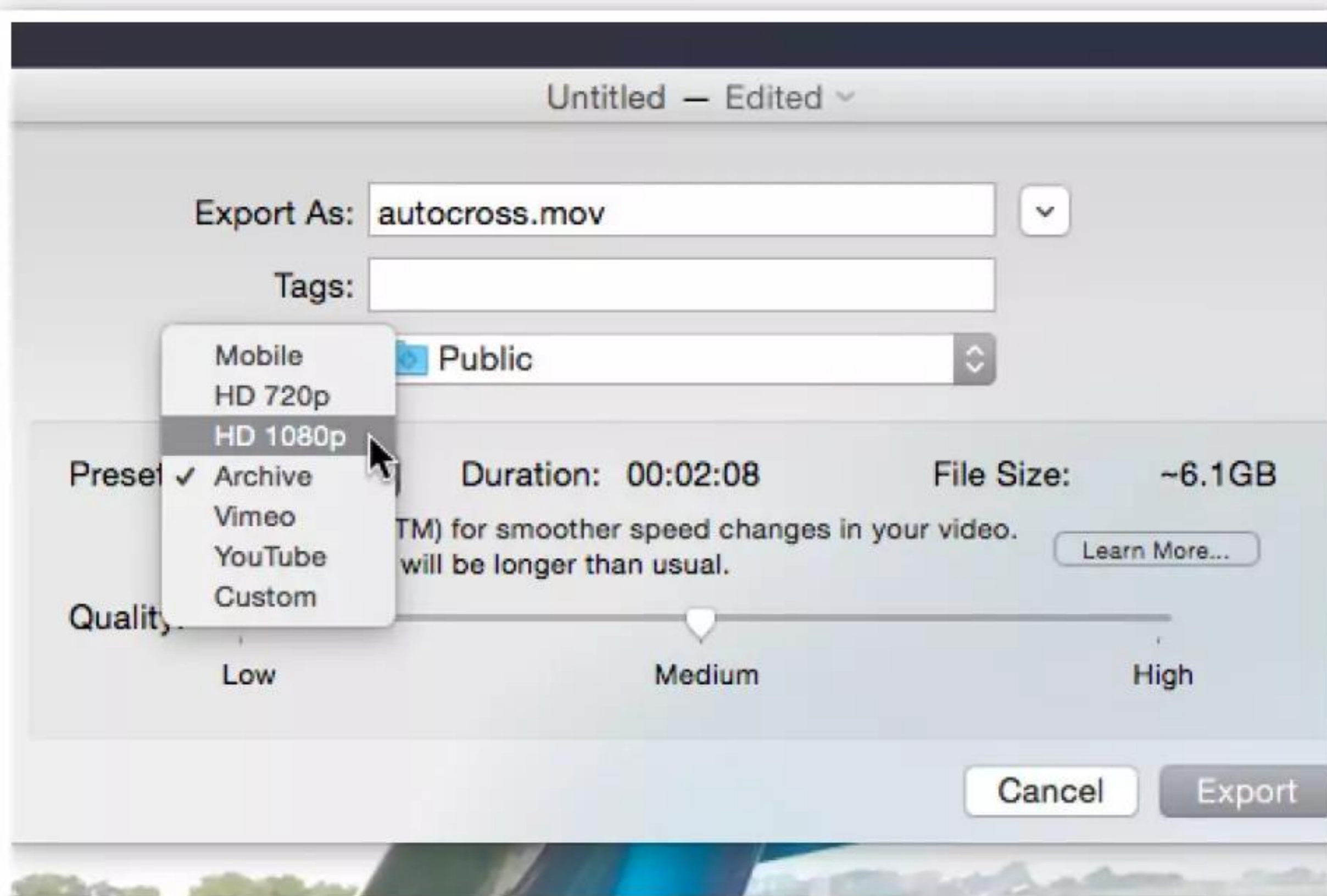
20 We've also added the MP3 music track to the Audio timeline. You can adjust the music parameters to change the volume and to add Fade In and Fade Out points so the music blends in at the beginning and fades at the end.



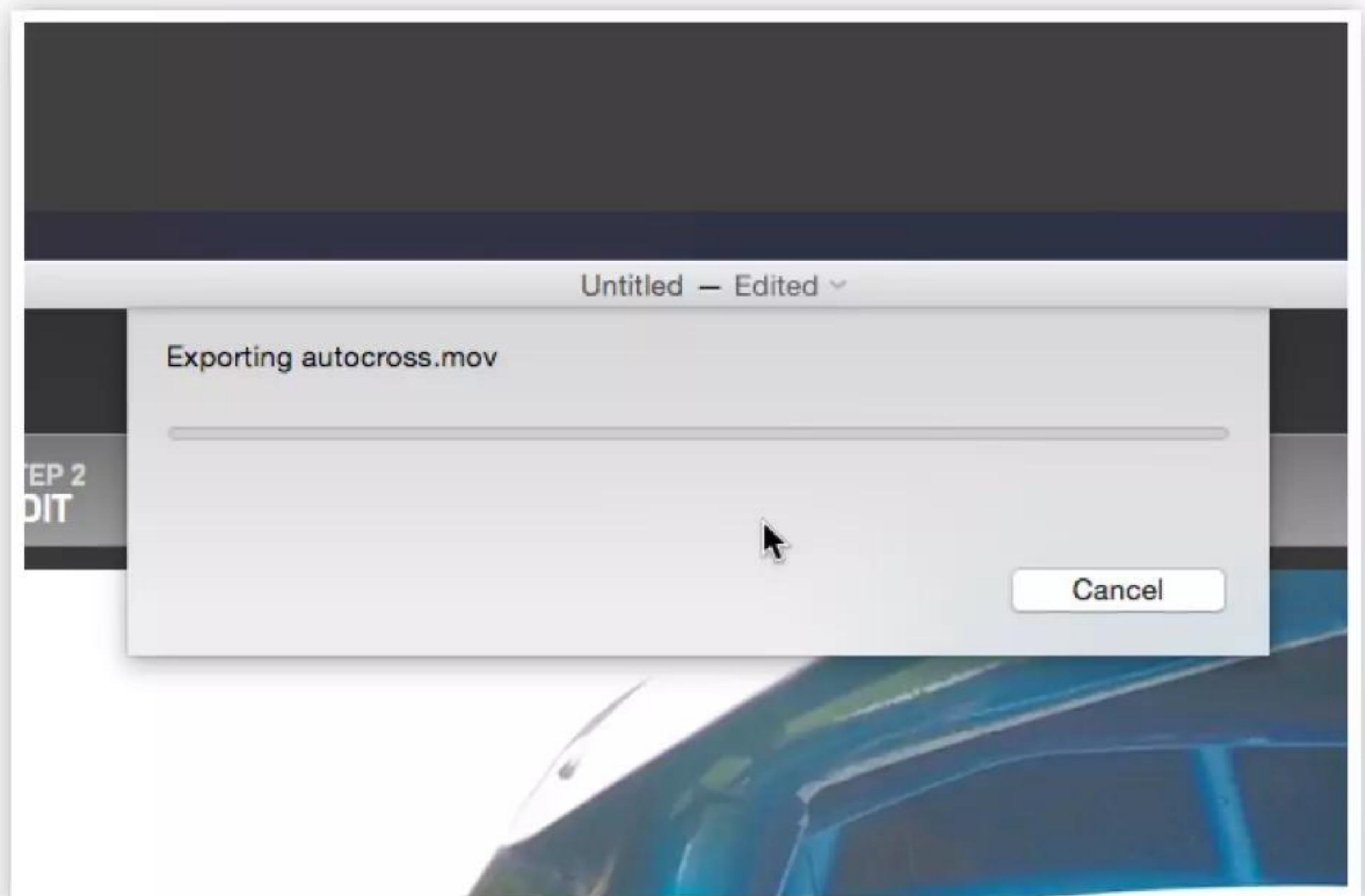
21 When you're happy you have the video, the title and the music as you want it, it's time to think about exporting it. Click on the Export button at the top of the screen and it will provide you with some export options.



22 The Export panel will prompt you to name your exported clip. It exports movies in MOV format. MOV is an MPEG-4 video file and common multimedia format that was developed by Apple.



23 Click on the Preset tab and you can choose from a number of options that affect the size and quality of your video. You can go for small, compressed video for Mobile devices or use a higher quality option such as HD 1080p.



24 When you click Export, the video will be saved to the destination you specified and is ready for its grand premiere.





A diver in a black wetsuit and mask is underwater, holding a GoPro camera on a selfie stick. The diver is surrounded by a large school of colorful fish, including many orange and yellow ones. The background is a clear blue ocean.

“One thing the GoPro has going for it, is that it can take the visually ordinary things we take for granted in our everyday life and elevate them into something more special.”

GO OUT AND BE A HERO

Having fun with the GoPro

What can you do with a GoPro? Perhaps the question should be: what can't you do? The action camera for anyone who enjoys outdoor activities is tough enough to go anywhere with you and record those moments as stills or video. As we've pointed out before, it can go where DSLRs fear to tread and because it is so versatile, we thought we should compile a little list of some of the many ways you can use your GoPro outdoors. We'll show you some great ideas on how to use it on land, in water and in the air. One thing the GoPro has going for it, is that it can take the visually ordinary things we take for granted in our everyday life and elevate them into something more special. This is done by just by being able to alter the perspective from which it's shot. ■



Having fun shooting on land

This is where the action cam is right at home

From snowy slopes, vertiginous cliff faces and muddy woodland bike trails to just taking the dog for a walk on the beach, the GoPro is at home in any of these environments. For day to day outdoor capture of video and stills, the GoPro range is unparalleled. Their portability, weight and the range of accessories that you can use to put your camera in places and achieve compositions, means that you can get the most visual impact from almost any land-based activity you can think of. It's certain that if you wanted a riders point of view on a mountain bike caroming down a hill, you're going to want something light and tough but with good enough quality to get great shots for sharing later. Moreover, if you want stunning 4K video, the GoPro action camera delivers and in a package that weighs a substantial amount less than a DSLR. In any outdoor activity where you need a camera to hand, a DSLR has the quality that's for sure but the GoPro is built for action and makes it your perfect partner for your adventures. ■

“Their portability, weight and the range of accessories that you can use to put your camera in places and achieve compositions, means that you can get the most visual impact from almost any land-based activity you can think of.”





There are plenty of bicycle mounting options to get your GoPro capturing your mountain bike adventures. A simple seat post or handlebar mount attaches quickly to the bike. An extension arm gets the camera out over the rear mudguard.



On your bike

Probably one of the staples of GoPro photo and video are shots captured while the camera is attached to a bike. Whether it is your mountain bike and you are plunging down some muddy slope or dashing in between trees or it is your motorcycle and you are powering along your favourite stretch of road, it's not a problem. The various mounting options available give you so many choices as to where to place your camera. One of the most common is to mount it on the handlebars, either looking forward over the front tyre, or back up at the



You can create impressive car rig shots (above) that emulate the cool automotive advertising images you see in glossy magazines. Using a GoPro out on a boom arm or just attached via a suction cup and set to shoot at a 2 second shutter speed. The car only moves at walking pace but the result is the illusion of high speed motion blur. Unless you have some very dark neutral density filters for your GoPro, you'll need to do this at dusk with low light levels.

Record the world from your dog's point of view (right) with a canine harness mount. You can attach it for an above the head view or suspend it from their chest for your very own 'dog cam'.



rider. You can also mount it on your cycling helmet for a full-on rider's point of view. Beyond that, you can mount the camera low on the front forks so the camera has a very low down perspective, with just the front wheel perhaps appearing in one side of the shot to give it some scale and sense of speed with the wheel spinning. You could mount one on the back of the frame looking forward for another cool perspective. You could mount one on your motorcycle and go for a ride at dusk, the low light setting will mean you're using longer shutter speeds and if the camera is solidly mounted, the

bike will remain sharp but the world around you will transform into light trails and motion blur for an extra sense of speed. Of course, you can also do something similar either inside or outside your car. There is a suction cup mount that can hold your camera in place while you drive around. If you're worried it will fall off, they are apparently rated to remain stuck on your car up to speeds of 150 MPH.

Dog's eye view

If you have a canine friend who is medium build or larger, you can use the GoPro

Fetch mount and get a particularly 'doggy' view of the world. The harness will fit quite comfortably over your dog and not give them any discomfort. It's a bit like the chest mount harness version for humans. The camera can be mounted on the top of the harness for an 'over the shoulder' look at the world of your dog or you can mount it across their chest, for a lower forward-looking view. This one is particularly interesting if your dog is in a group of other canines and they are all having a social moment; perhaps your dog is gnawing on his favourite bone or just doing what dogs do, digging their way



Did you know?
You can turn to page 136 for a Photoshop tutorial that shows you how this image was created.



A Hero5 Black, mounted on a tripod, takes a burst sequence of 30 shots over 6 seconds. The results can be combined in Photoshop to create a burst mode photo.



to some secret dog treat or just heading for the earth's core. The top-mounted option is great for capturing running, jumping and fetching of a favourite ball, stick, or Frisbee. The harness is waterproof and the camera is too, so jumping into rivers and the sea is no problem. For another perspective, why not try mounting the camera to a stick and see your dog from the stick's point of view. This is the great thing with a camera this small and light. It can go anywhere.

Horsing around

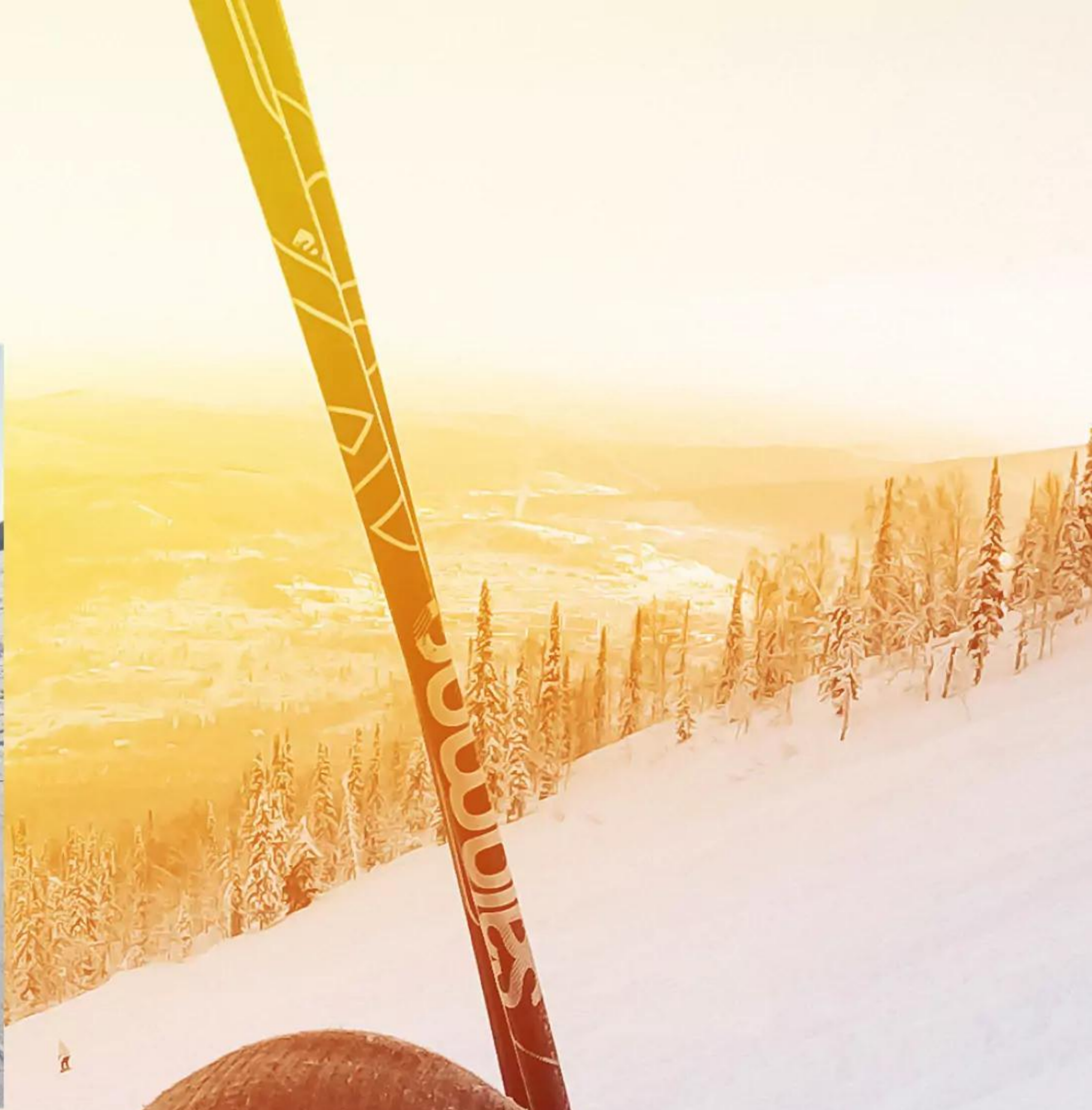
Mounting a GoPro to your riding helmet and taking stills and video whilst cantering over some beautiful moorland terrain can result in some amazing riders point of view shots. You could also set your camera up on a tripod, put it in Burst Mode to take 30 shots over 1, 2 or 3 seconds and capture a sequence of shots as the horse gallops by. Later you can edit these in Photoshop to create a single combined Burst Mode shot.

Setting up a camera low down and looking up at a horse jumping a fence can give an amazing perspective as the horse clears the obstacle. Burst Mode is such a great choice to use in action photography as it ensures you never miss the shot. You can pick out the best image from the sequence and because of the rapid-fire ability of the Burst Mode setting, you'll have plenty to choose from so you always get the shot you want.

Bursting with ideas

The Burst Mode feature can also be employed as a kind of slow motion capture device. Set your camera up to capture 30 frames in 1 second and point it at a balloon full of water. If you time it just right, you can fire the GoPro and start the 30 frame capture and pop the balloon at the same time. Do it in bright conditions to ensure a decently fast shutter speed and you will stand an excellent chance of catching the elusive moment as the latex of the balloon bursts and leaves the liquid inside suspended for the briefest of moments before gravity wins over. Many high speed sequences can be shot like this. You could try a classic egg drop onto concrete and nab the glorious spatter of egg yolk.





World of sports

If you live in a cold country, one that gets regular snowfall, then you have lots of opportunities to capture snow-based sporting activities. The basic premise is the same as warm weather sport. Skiing, snow-boarding, sledding, snowmobiling. They can all be documented in more exciting ways, and points of view, than could be done with a DSLR. With skiing, you can mount the camera to one of your ski poles, either facing up at you or at the ground. If snowboarding is more your thing, mount it to the tip of your board and either face it forward for a very low perspective or turn it round and angle it up at you for the ultimate, action selfie. The same goes for sledding. Track and field sports can also be captured in close up detail thanks to the small size of the camera. In a similar manner to the horse jumping a fence, you can mount a camera to a hurdle and capture the moment as the athlete jumps over.



Making music

If you are shooting stills or video of your favourite local band, why not consider getting up close and personal with your GoPro. Because of its small size and weight, it can easily be attached to the headstock of a guitar with a set of jaws or suction cup and positioned to look down the fretboard. This produces a very distinctive perspective and can create some lovely candid shots of the musician as they play. If you are working in low light conditions, the resulting motion blur as the guitarist moves can also create some memorable shots. Because the camera is attached directly to the guitar, it always stays sharp, whilst the world around it swirls and twists.



A jaw clamp (left) or a suction cup (right) gets your GoPro into the heart of the gig for great new perspectives.



Street photography

This is where the camera's small size and all those mounting options come in handy once more. Street photography is a particular genre where you capture life on the streets. It's all about culture, humanity

and most importantly, it is a candid snapshot of the people around you. The GoPro is so small, that if you had it strapped to your chest with a chest mount or perhaps on your wrist, it's small dimensions mean it could go unnoticed as you walk through a crowd of people, merrily snapping away. The

very wide field of view is quite handy here, especially if you hold the camera down low and angle it up slightly for some cool shots.

Tip of the iceberg

These are only a few suggestions as to how you can enjoy using a GoPro outdoors. There are so many things you can do, it boggles the mind, but now that we've covered some things to do on land, let's turn our attention to the water. ■

Waves, surf and going underwater

We dip our toe into water-based action

Whether you are having fun at the water's edge, at a swimming pool, mucking around in a stream or doing some serious sport on or below the water's surface, then you know you have a camera that can follow you every step of the way. Older HERO3 and HERO4 models are not waterproof but they did come with a protective

housing that meant they could be taken to depths of 196ft (60m). The new HERO5 and HERO6 don't need a housing. They are waterproof right out of the box to a depth of 33ft (10m). If you are feeling adventurous and want to go deeper with it, there is the HERO5 and 6 compatible Super Suit dive Housing to get your camera safely down to 196ft (60m). If

you trace the origins of the GoPro range, water-based sports is where it all started. Nick Woodman, the creator of GoPro, was a keen surfer and it was his desire to get an affordable camera, that was small and lightweight into the thick of the action, that brings us to where we are now. ■



“Older HERO3 and HERO4 models are not waterproof but they did come with a protective housing that meant they could be taken to depths of 196ft (60m).”





Whether you are above the waves, on its surface or in its depths, the GoPro can handle it all. Amazing water-based footage and stills are yours for the taking.





In their waterproof housings, the cameras are capable of reaching depths of 196ft (60m). This makes them not only perfect for surface water sports but at scuba diving depths too.



Surf's up

Take a casual glance through Pinterest or Flickr on the subject of surfing and you will see a huge variety of shots taken of surfers doing their thing. A large percentage of them will no doubt have been taken with a GoPro camera. Once again, their size, weight and waterproofing, allow them to ride along with the surfer, either mounted to themselves or to their board for intense close up action shots. There are also third person views taken by another camera person who was in the water with them and taking shots as they sped through the waves. Then, because of the water capabilities, there are also some amazing shots taken beneath the waves, looking up as the board goes by, leaving a sparkling wake.

Wave action

That amazing surf and crashing of waves is often captured on its own without people around. A lot of people will forego shooting actual stills with a GoPro and instead opt to shoot 4K video at 30fps (frames per second) and extract stills from the video footage. A still extracted from a 4K frame of video is equivalent to about 8MP, which still makes it quite usable for a lot of applications. There are also photographers who will mount two cameras together, one will shoot 4K video as mentioned above and the other will shoot Burst Mode stills at either 15fps (30 frames across 2 seconds) or 30fps. If the weather is bright and sunny, you can keep the ISO at its lowest setting of 100 and still get fast shutter speeds. If

the weather is more overcast, then you might need to bump the ISO up to 400-800. Generally speaking, settings such as White Balance can be kept on Auto because it actually does a really good job. Turning on the Protune option will let you capture the highest quality possible from your camera.

Deeper still

The ability to take the camera down to 196ft means that it is a perfect companion for anyone who scuba dives. To take a DSLR down to those depths would mean purchasing a pressure housing, with costs that can run into the thousands. The deeper you go, the darker it will get, so unless you are filming in the crystal clear seas of the Caribbean you may want to make sure





Protune is turned on and that your ISO limit is set to its max limit, in case you need it to maintain a decent shutter speed. On the latest HERO5 and HERO 6, keeping your Manual Exposure setting above 1/120, will ensure that the images do not contain motion blur. This is further helped by turning on the Electronic Image Stabiliser.

Wet dog

Not everyone is a surfer but that doesn't mean there aren't other photo opportunities nearer the shore, a pool, or just in a local pond in the park. We love our canine friends and using the GoPro means we can capture some very unique perspectives of our dogs and other animals in water. The use of a waterproof camera enables us to submerge it in a stream and get very cool shots of dogs dipping their heads underwater to fetch a ball or stick that has just landed in the stream. You could use an extension arm and mount your camera to the end of that and run with your dog through the water,

skimming the camera just above the surface in front of your dog as it splashes through the water. If you're at your local pond or beach area, and your dog happens to be one of those that loves to jump into the water, you can get yourself in position, submerge the camera just below the surface looking up and catch that moment as the dog plunges in.

At the beach

The GoPro is also an excellent method to document your day at the beach with the kids. Now, you can take the camera into the water and capture them as they play in the surf. You can actually set your camera to record video and take stills at the same time, so you have video of the event and access to 12MP stills if you need them. A bonus of using the camera in its



If you find you are keen to explore underwater filming in more detail, it is a good idea to invest in a set of colour filters to correct the colour cast encountered at depths between 15ft and 70ft.

dive housing is that it stays protected from the salt water and also the sand. If you scratch the dive housing lens panel, it can be replaced.



The dome port can create some very fascinating images. Obviously the clearer the water, the better the shots will be. Compare a lake in the UK (above), with a tropical sea (below).



Over and under

There is one form of water photography that is very popular and also one of the most visually pleasing kinds of image you can capture: the over and under shot. Over and under shots show half the frame as seen above the waterline and the other half shows the scene underwater. There's no camera trickery involved, it's just a case of getting the camera into position to get the waterline through the middle of the shot.



Even if you are only using the GoPro above the water's surface, it's nice to know that if you drop it, there's no chance of damage from water ingress. Just make sure it has a buoyancy aid attached.



The dome port comes in a number of models that can accommodate the form factor of the HERO5 and HERO6 Black, as well as older models like the HERO3+ and HERO4 Black.

Be aware though, that a standard GoPro in its dive housing cannot produce the shot you are looking for. You will need what is called a Dome Port. It is essentially an acrylic hemispherical dome, usually around 6" across that your GoPro slots onto. There is an aperture on the flat side of the dome for the lens of the camera to look through. Think of it as a domed diving helmet for your camera. The dome gives you more surface area for the water line to interact with and makes the split shot easier to manage; set your camera up to Wide. Bright conditions, with the sun either high in the sky or at your back is preferable, just so the darker water is as well-lit as it can be. Clarity of water will also be a factor. Once you get used to shooting with a dome, the images you capture will have definite wow factor.

Out for a paddle

Rather than hitting the surf, if you are more at home in a canoe and happy just to

paddle upstream on a sunny evening, then why not take a GoPro with you to record the event. With a simple jaw clamp, you can attach your camera to the hull of the canoe and record either yourself as you row your canoe or you can face the way you're going and capture some footage of your friend at the bow as you glide through the water to your destination. Even if you are using the HERO5 or HERO6 Black, it might be wise to put it in a waterproof housing to be on the safe side, even though they waterproof to 3m without their SuperSuit housing. You never know. Putting the camera on a selfie stick is a great way to capture yourselves and friends in a small canoe huddle from a more elevated perspective. You can also drop the camera low to the water and get a lovely perspective of the paddle cutting into the water as it propels you along.

Moving on

Now that we've covered land and sea, there is one more place to go. Let's move on and consider GoPro photography that is a little more vertical, as we look up and take to the skies. ■

Taking to the skies

Get your GoPro airborne for a unique view of the world

For many years, if you wanted to indulge in aerial photography, you had no choice but hire an aircraft of some description to get you, and your expensive camera gear, aloft. Helicopters or fixed-wing aircraft are hideously expensive to hire. There are also all the complex and time-consuming issues of permissions, flight plans, regulations, safety, weather and certification. Only the most highly-trained, well-paid professionals with a big budget client were able to explore this unique area of photography. Essentially, aerial photography was strictly off-limits to your average casual photographer. This was a shame, as aerial work provides such a rare view of the landscape. With the advent of very small, lightweight cameras like the GoPro range, getting your own camera airborne has become a much easier prospect. There are a number of ways to get your camera aloft, and we can show you how. With altitudes ranging from just a few feet above your head to 400ft, you can get some unique perspectives on the world. Here are some options you can explore. ■

“With the advent of very small, lightweight cameras like the GoPro range, getting your own camera airborne has become a much easier prospect. There are a number of ways to get your camera aloft...”





The selfie stick

Love it or loathe it, the selfie stick has become synonymous with camera phones and action cameras. Simply mount your GoPro to one end and hold it by the handle at the other. You can have the camera positioned so it's looking back down at you, or you can simply use the stick to elevate it above a crowd, or capture a slightly higher point of view. The issue here becomes one of how you frame your shots. Even with the new HERO5 and its LCD monitor on the back, is of no help when it is at the end of a pole 4 or 5ft away from you. Luckily, you have the option to pair your GoPro via a Wi-Fi connection to your phone and use the GoPro app as a live view monitor and also be





Mounted safe inside the AER's frame, your GoPro can capture some lovely aerial perspectives once thrown in the air.



The line mount is a simple and stable method of getting a GoPro attached to your kitesurfing rig for some amazing birds-eye views.

able to fire the camera when you choose. Otherwise you'll have to set your camera to Continuous shooting mode and you'll have to hope you can frame the shot required while it's taking photos. Some prefer just to shoot 4K video and later review the footage and take 'grabs' of frames where the composition suits their needs.

Just throw it!


Okay, that may sound like a daft thing to do. Why would you risk your shiny new GoPro camera by just throwing it in the air and hoping to catch a couple of good shots as it tumbles through the sky. Well, there is actually a product available that requires you to do exactly that in order to

get your aerial shots. AER is essentially a large foam dart with your GoPro mounted inside its protective casing that still leaves the camera's wide angle view unobstructed. It is very stable and yet lightweight enough to be thrown over a good distance. It is very easy to put together and has the benefit of being crash proof and it also floats. For the ultimate aerial selfie, set your GoPro to Burst Mode and just throw it vertically in the air, and as it rolls over at its zenith and returns to you, you have some great shots being captured.

Kites and balloons

Using a kite, particularly a controllable stunt kite is a cheap method to get your

camera airborne. You can also achieve some good height with it too. You could suspend the camera beneath the kite but it will be extremely unstable unless you use what is known as a picavet. This is a cradle that keeps the camera steady. Better to mount it securely to the kite's frame or use a line mount. You can also use helium balloons. These are not the kid's party variety. For a quality balloon lifting system that could carry a GoPro, you would need a latex balloon up to 6 feet in diameter, filled with helium and secured with a strong tether to keep your rig from heading for the stratosphere and becoming a menace to aircraft. A fishing reel with very strong monofilament is a good way to keep your balloon under control.



The DJI Phantom is one of the most popular aerial vehicles used for getting GoPros in the air. Their 3-axis gimbal stabilises the motion of the camera to produce silky smooth video.

Flying high

Next up, and probably one of the most popular choices for getting your GoPro airborne are the quadcopters. The market for radio controlled quadcopters has exploded over the past few years and ready-to-fly models are in abundance. The DJI Phantom 2 is one such model and it was designed with the use of a GoPro HERO 3 or HERO4 in mind. You can purchase a version which has a 3-axis stabilised cradle slung beneath into which the GoPro neatly slots. With a flight time of around 25min, you are assured plenty of time to shoot your airborne outdoor sessions. The Phantom is ultra stable and very easy to fly. It even has a 'return home' function that, at the touch of



The Karma is GoPro's own aerial vehicle that can carry a HERO5 or HERO6. The stabilising unit can be taken out and used hand-held if required. There are also adapters to use older HERO models

a button, will fly itself back to base and land for you. The GoPro isn't directly controllable when it is in flight, you absolutely must keep its Wi-Fi function disabled because it can interfere with the signal from the controller. You can use a 5.8Ghz transmitter to relay pictures of what the camera is seeing to a monitor attached to your controller. That way you can jockey the drone into the perfect position for the shot you want.

Karma

Seeing the potential in the aerial image capture market, GoPro themselves developed a drone of their own called the Karma. It was aimed squarely at those people who already owned GoPro

equipment and wanted to extend their shooting and capture capabilities by adding airborne footage to the roster. The Karma is a quadcopter with a couple of great selling points. It is not as feature rich as the Phantom range of quadcopters but is a very capable quad for getting your GoPro aloft and shooting great new perspectives. The whole ethos of GoPro has been its simplicity and portability and that has been carried over into the Karma. For one thing, the Karma can actually fold away, so it easily fits in a small backpack. The interesting aspect of the Karma is its stabilisation system. Rather than using a 3-axis gimbal slung beneath the craft, it uses a standalone device that just slots into the Karma whilst

in use. When you are finished, you can actually take the stabiliser out and use it as a handheld camera stabiliser instead. The range of the quad is limited by the fact it uses a Wi-Fi signal to control it and stream video, but you can still reach altitudes of 200ft. The Karma's controller is a game-style control system with a flip up screen so you can monitor the action. You can even tell the craft to perform preset movements such as orbiting a point of interest.

Going solo

The Solo, made by 3DR is one of a number of drones made specifically for professional aerial camerawork and photography using the GoPro. The Solo can stream full HD





There are now a number of quadcopters on the market that can lift a GoPro. The 3DR Solo is a solid performer and easy to fly. It's not in production but still worth a look for a bargain price. There are also any number of cheap alternatives that may prove an easy way to try out aerial filming.

video to your tablet or phone. It does not require additional kit to transmit the video signal back to you and it boasts long flight times and advanced flight features that make it an aerial cinematographer's dream. Production of the Solo has ended but there is plenty of stock out there and bargains to be had.

Going into freefall

Not many of us are certified skydiving enthusiasts but if you are doing a charity tandem jump or just taking a trip in a hot air balloon, keep a GoPro with you. You could hold your camera out over the edge of the balloon's basket on a selfie stick for some heart-stopping aerial perspectives. You could even just press your camera up against an aircraft window and get some great shots of the wing and the terrain far below. A skydive is even more memorable if you can capture images of the entire dive from going out the aircraft's hatch, the thrill of freefall, hanging beneath the canopy when it deploys, to final touchdown.

Go outside and GoPro

So there you have it. If you are on land, sea or air, the GoPro action camera is a serious option for capturing those moments that might defy a DSLR. To be honest, you're never going to use a GoPro for a serious portrait shoot or detailed HDR landscape shots but the action camera deserves a place in your kit bag. Its go anywhere, do anything, mount to everything capability, makes it worthy of being called indispensable. ■

Helmet mounts are readily available for all aspects of sport. In fact, many helmet manufacturers produce models with GoPro mounting brackets built in. Otherwise there are some very durable adhesive pad mounting options too.





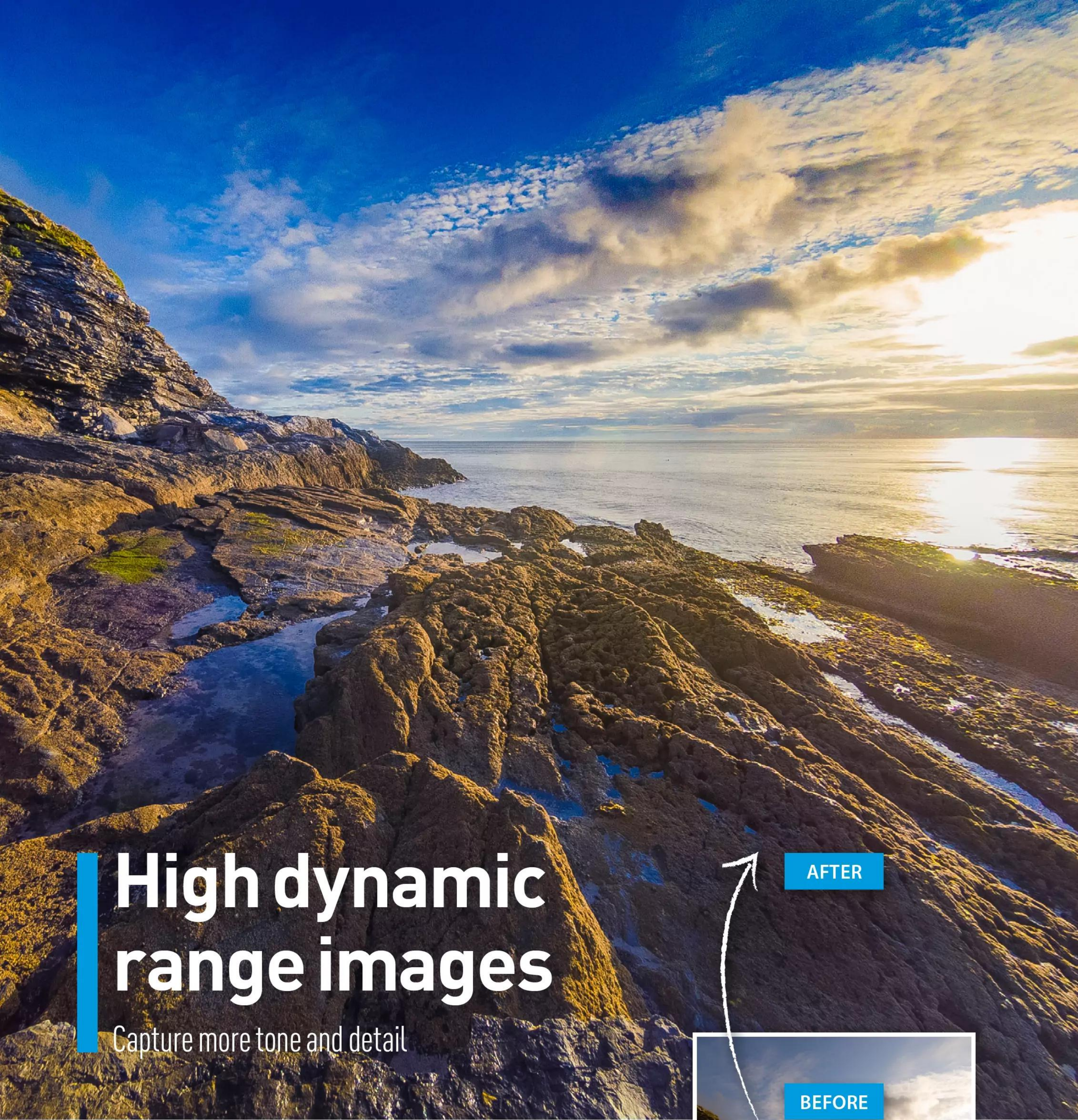


IMAGE EDITING

Learn how to get the most from your stills

We've covered video editing already, so now it's time to have a look at image editing. We've mentioned a number of times that the GoPro HERO5 and 6 Black can now shoot stills in Raw mode. We think that's actually a big deal, since it means there is much greater image quality. When used in your favourite Raw editing software, the possibilities in bringing out detail and recovering parts of the image lost to shadow or highlight are very much improved. We thought we'd show you a couple of techniques to get the most out of your GoPro HERO stills and hopefully elevate them from simple snaps, to images that just took a step closer to emulating a dedicated digital camera. ■

3281 (8.6MP); 300 ppi



High dynamic range images

Capture more tone and detail



AFTER

BEFORE

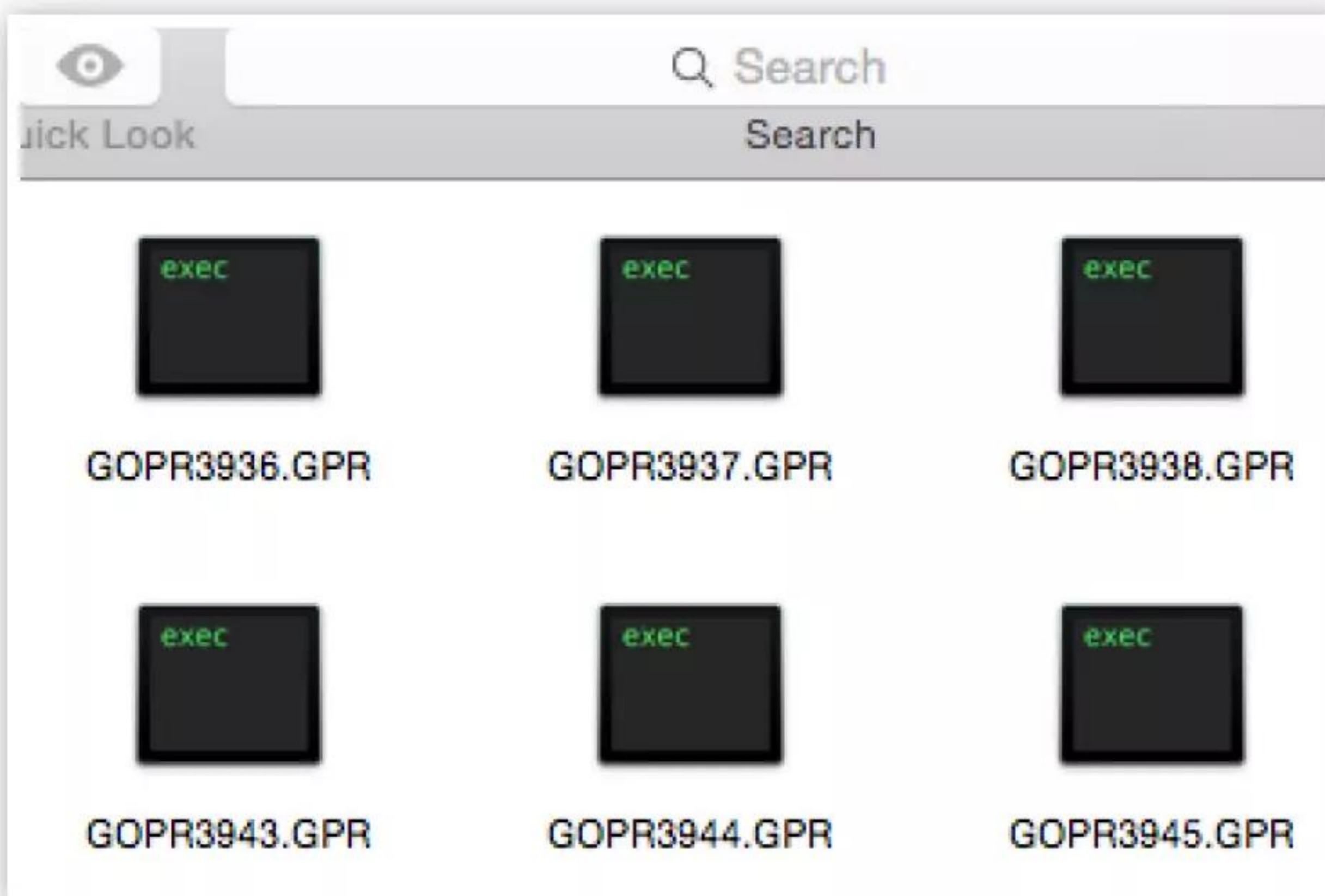
The capture of stills in Raw format is great news if you want to use your GoPro more as a camera rather than a video capture device but there will always be occasions when the lighting conditions are too extreme for even the best digital cameras. That's where High Dynamic Range, or HDR, comes in. Essentially, it requires the capture of several frames where the exposure has been altered on each one. There is one base exposure, and then you shoot a frame that is underexposed to keep the bright highlights from blowing out, and another that is overexposed to make sure you can see detail in the darkest shadows. These three different exposures are then merged to create an image that contains more tonal data than one on its own. You can then process that file to reveal more detail and tonal range than you could with just one shot. ■



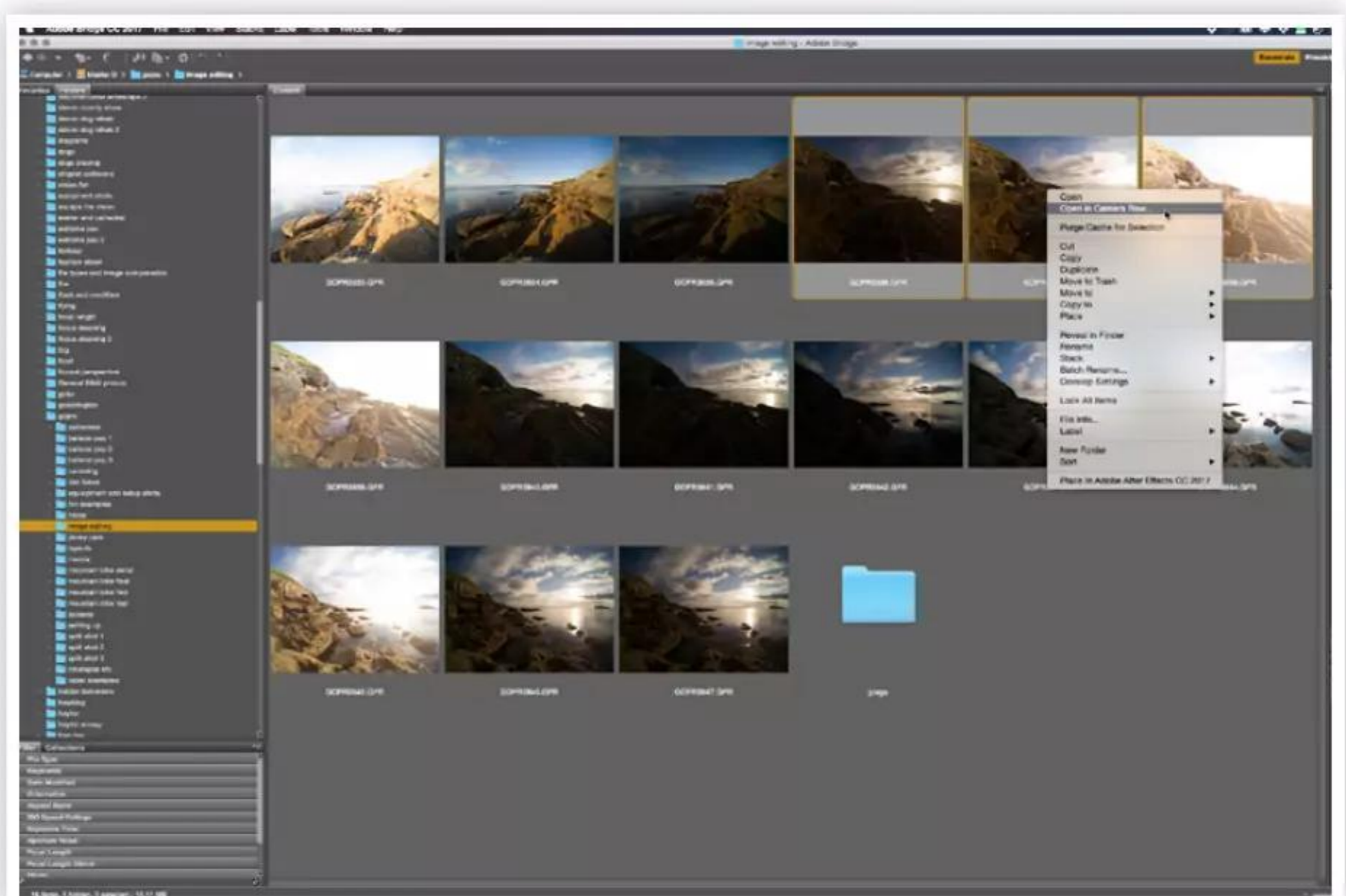
01 Out on location, we shot an example that could benefit from being turned into an HDR image. This sunrise has a lot of tonal variation that would be difficult to shoot without the use of fancy filters.



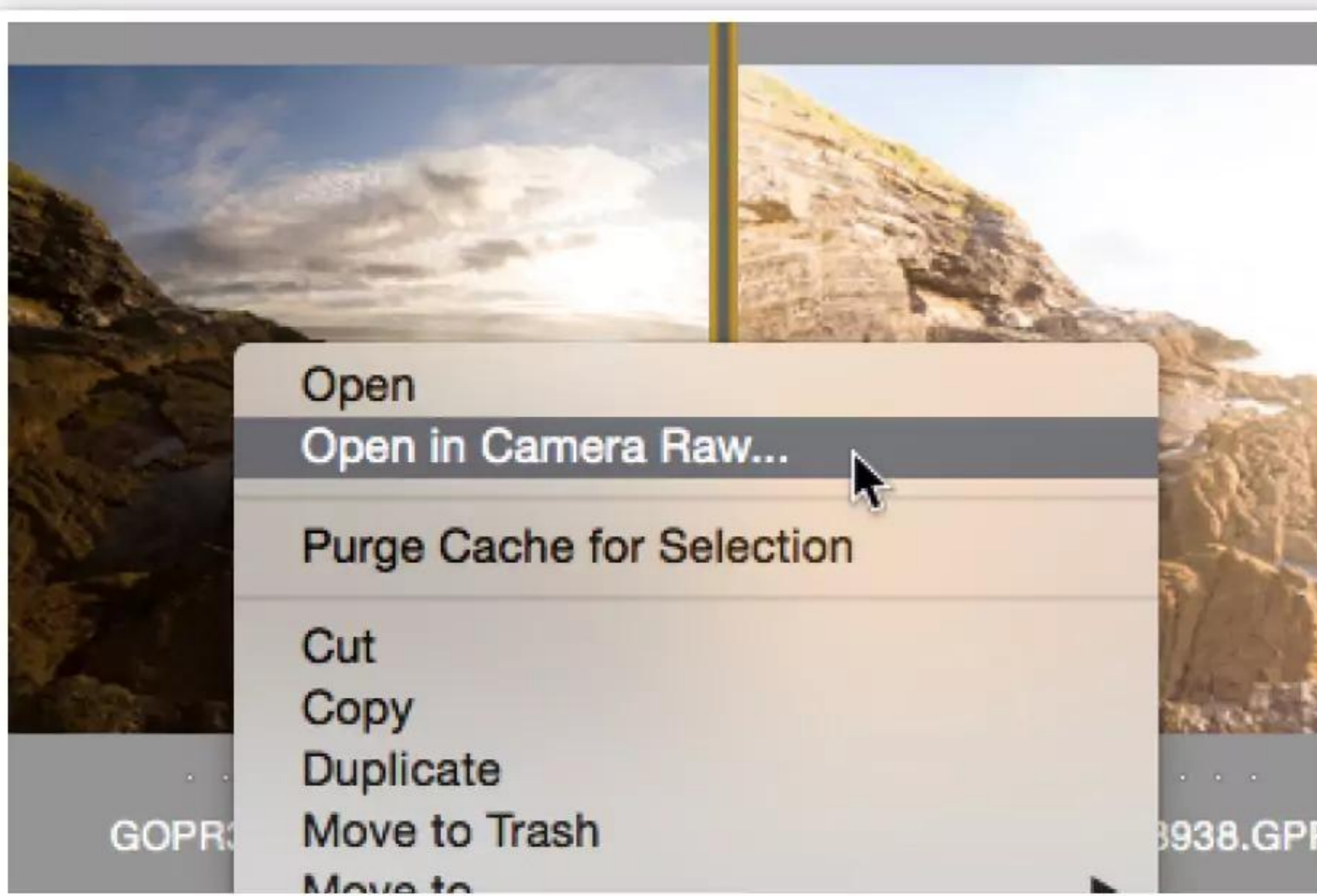
02 The camera was placed on a tripod and a base exposure was taken. Then under the Protune settings, the EV Compensation was reduced to -2.0 to underexpose the scene and the next shot taken. Then it was set to +2.0 to overexpose the scene.



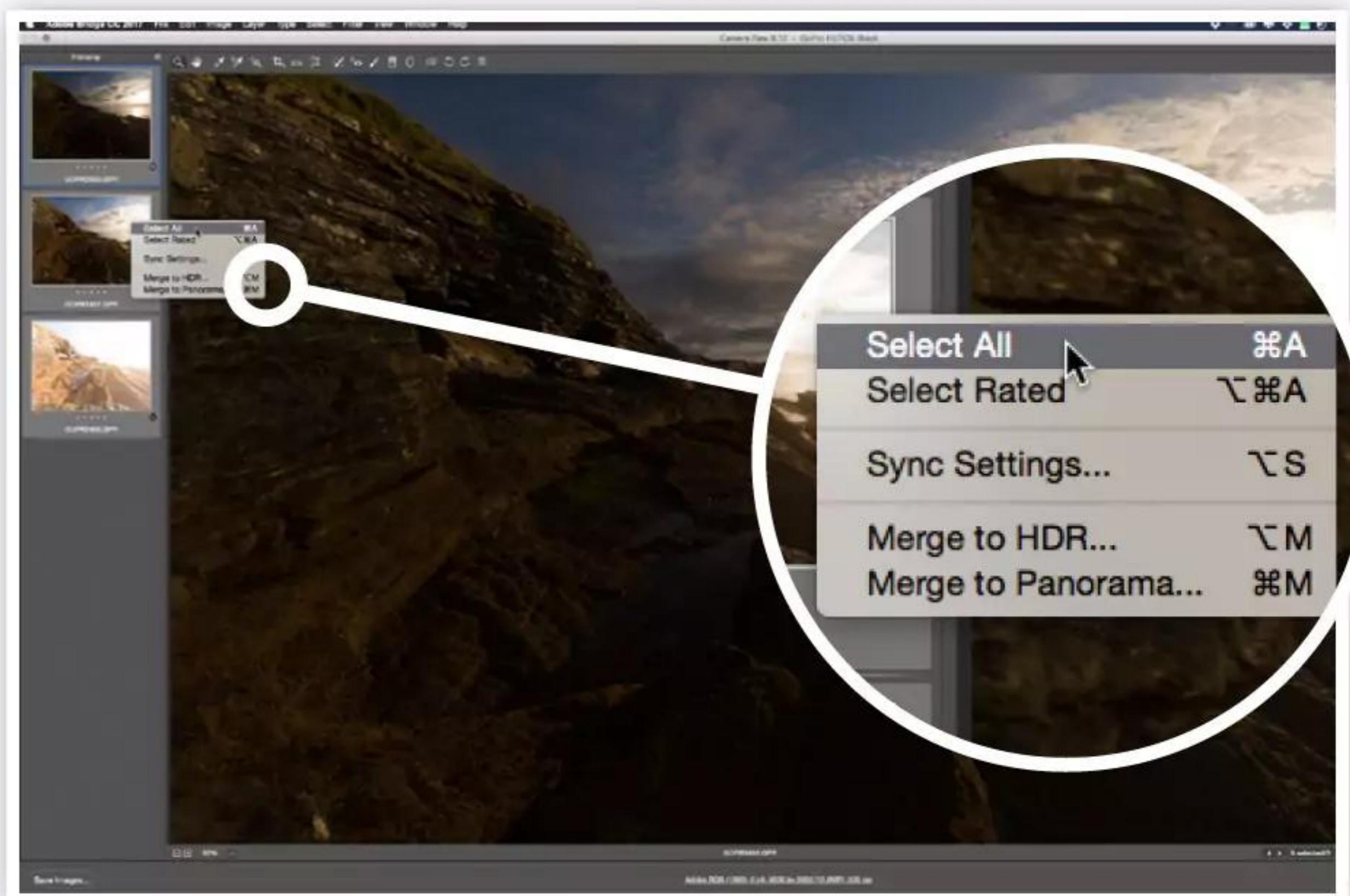
03 This gave us three 12MP Raw files that in combination would reveal more tones than one shot on its own. This is the basic concept behind how HDR works. Now the shots needed to be back on the computer.



04 With your shots downloaded you are able to review them using Adobe Bridge CC 2017. Pick out the shot you want to work on and click the three different exposures that were taken of the same scene and highlight them.



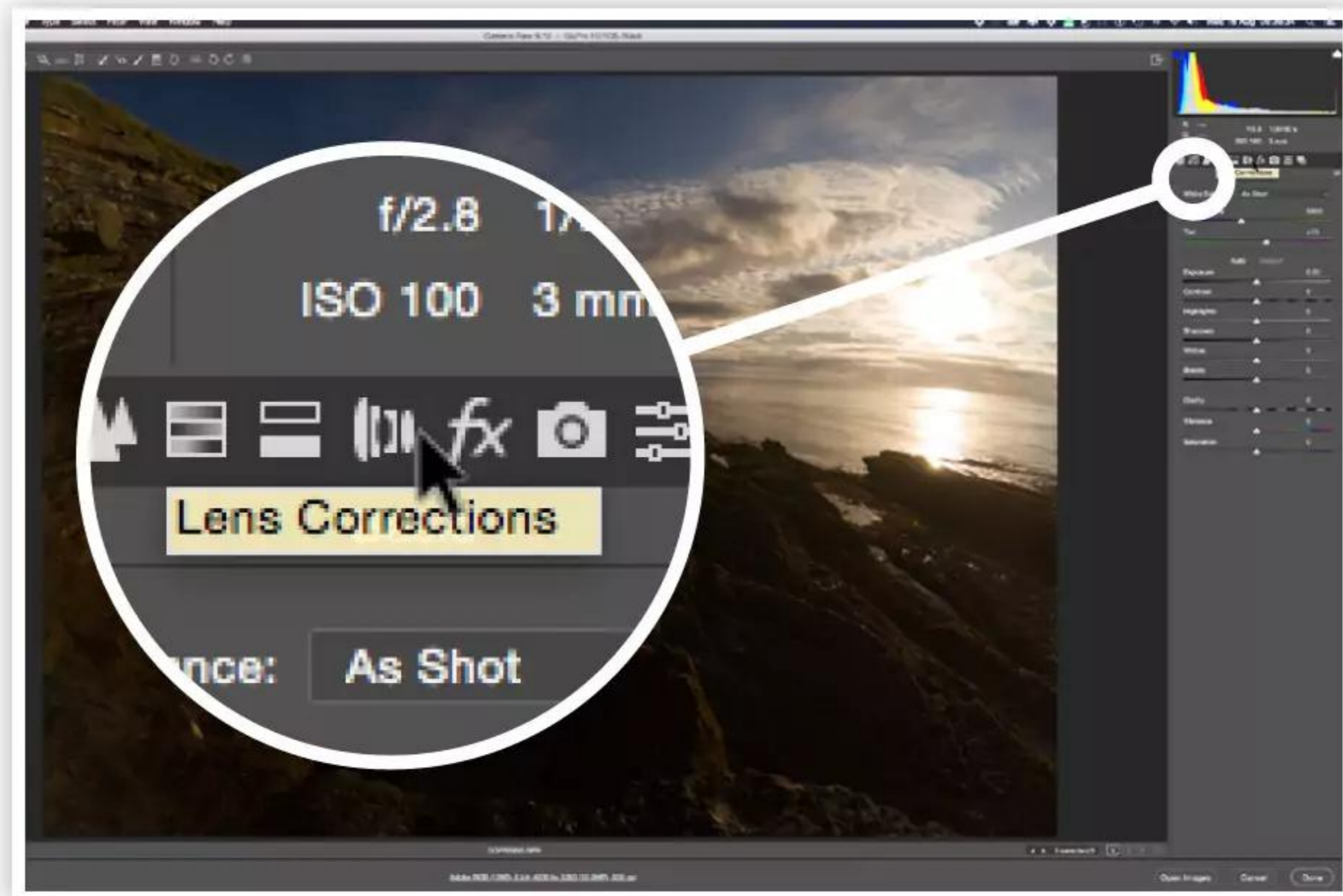
05 With the three exposures highlighted, a right-click on their thumbnails opens a sub menu where you can choose the option to Open In Camera Raw. Clicking this commands Adobe Camera Raw (ACR) to open the three files.



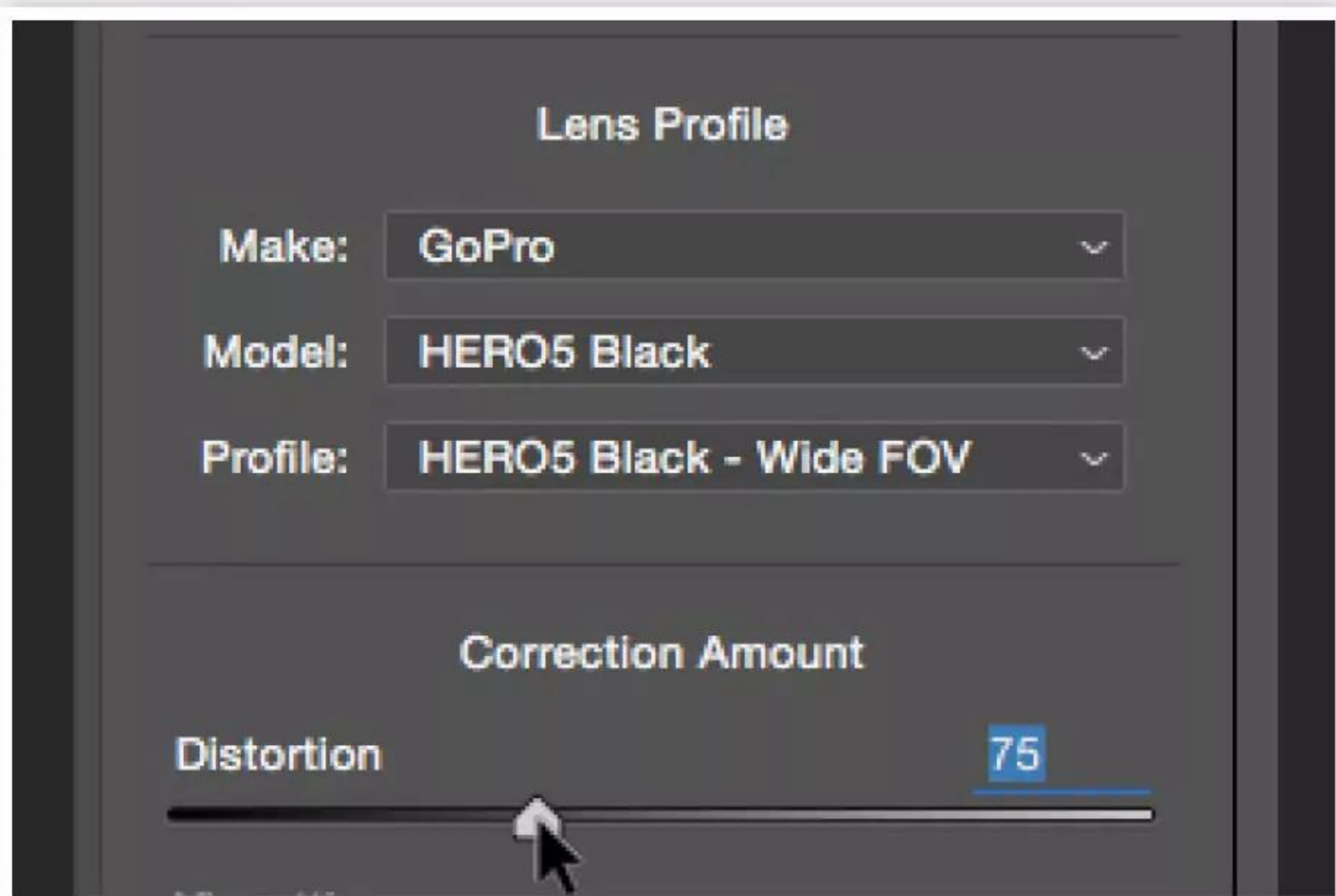
06 ACR will open and display the images in the filmstrip on the left of the screen. Click one to highlight it; then if you right-click, you can choose Select All to highlight all three images.



07 You want all three processed at the same time. This is important as you want to apply the same adjustments, some of which affect the distortion in the images, so they don't misalign when you merge them later.



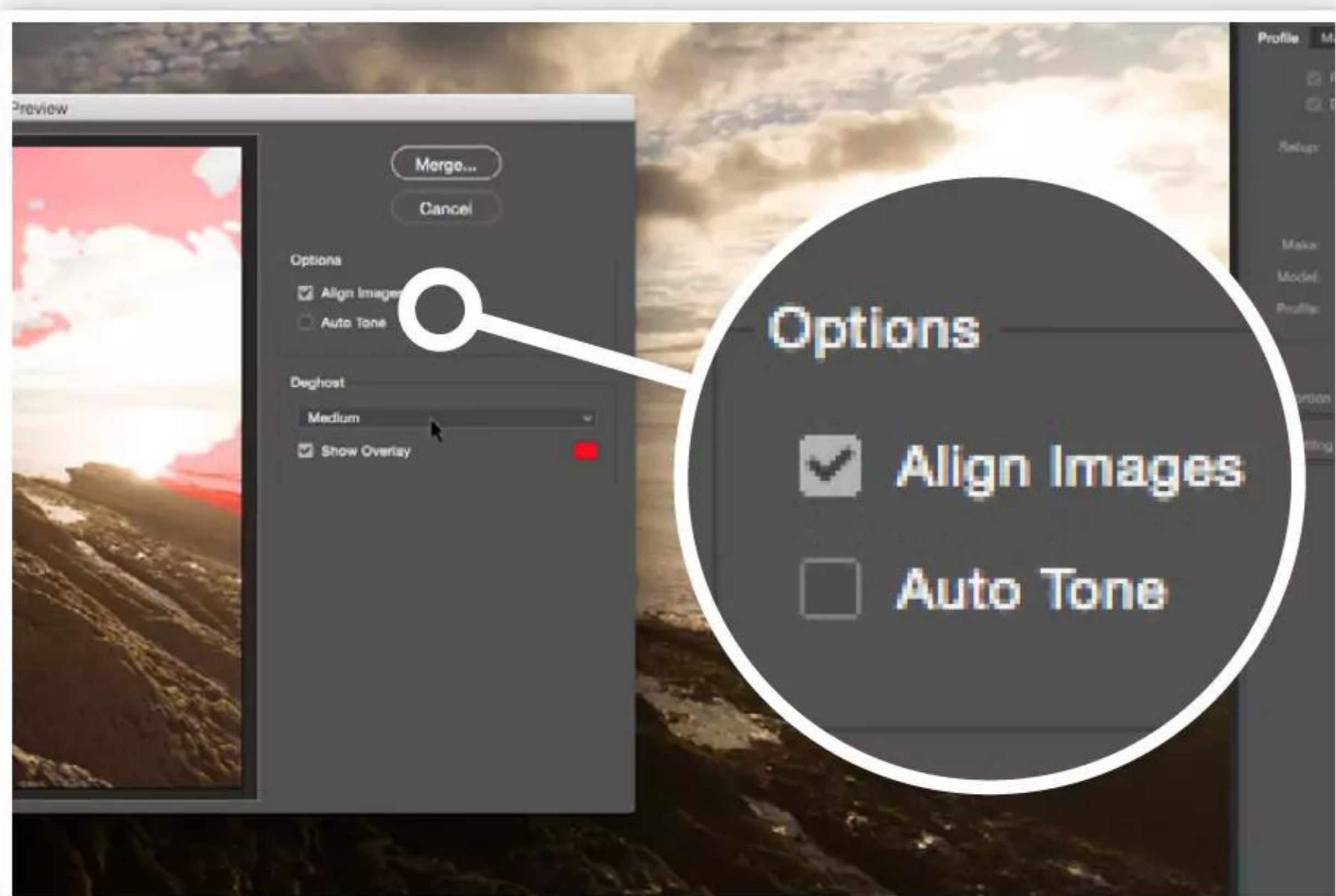
08 With all three raw files highlighted, go to the Lens Corrections tab at the top right of the screen. Here you can enable Profile Corrections to remove some or all of the distortion created by the GoPro wide angle lens.



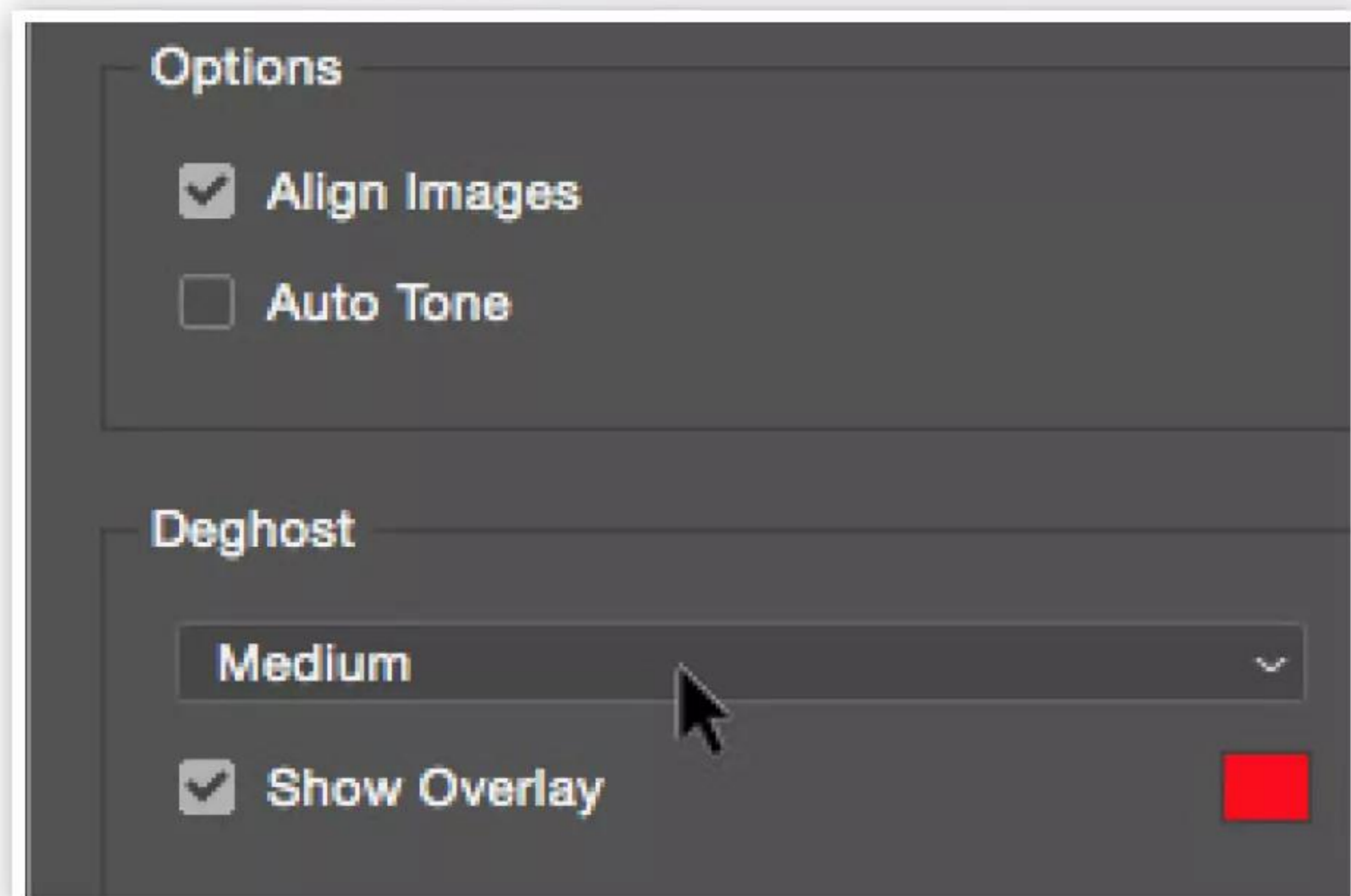
09 By default, ACR will remove all fisheye distortion but it will stretch the image somewhat as it does so. If you want, you can alter the Correction Amount and dial it back from 100 to about 75, or until it looks how you want it.



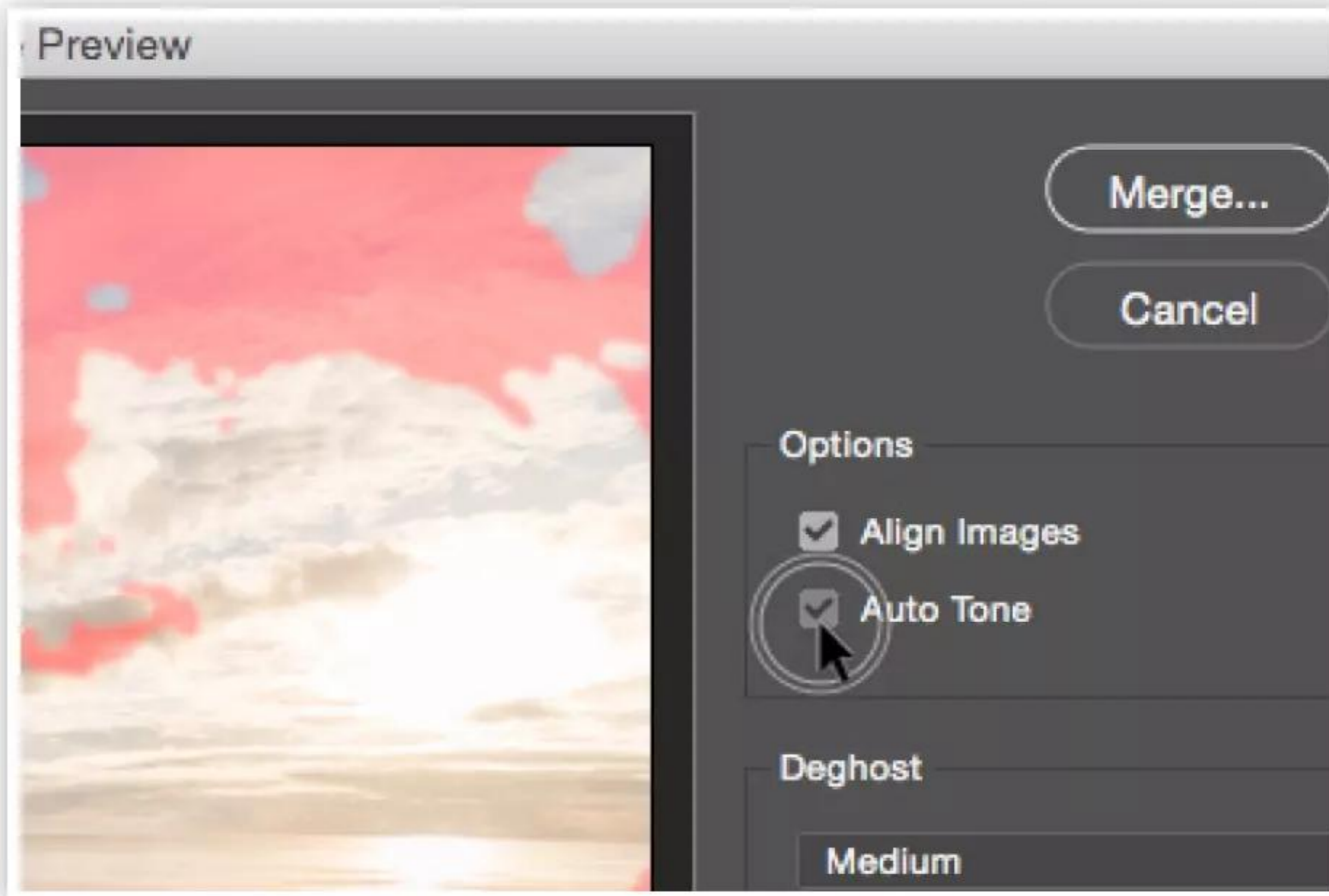
10 Next comes the merging process. With the three files still highlighted, right-click them and choose Merge To HDR from the list.



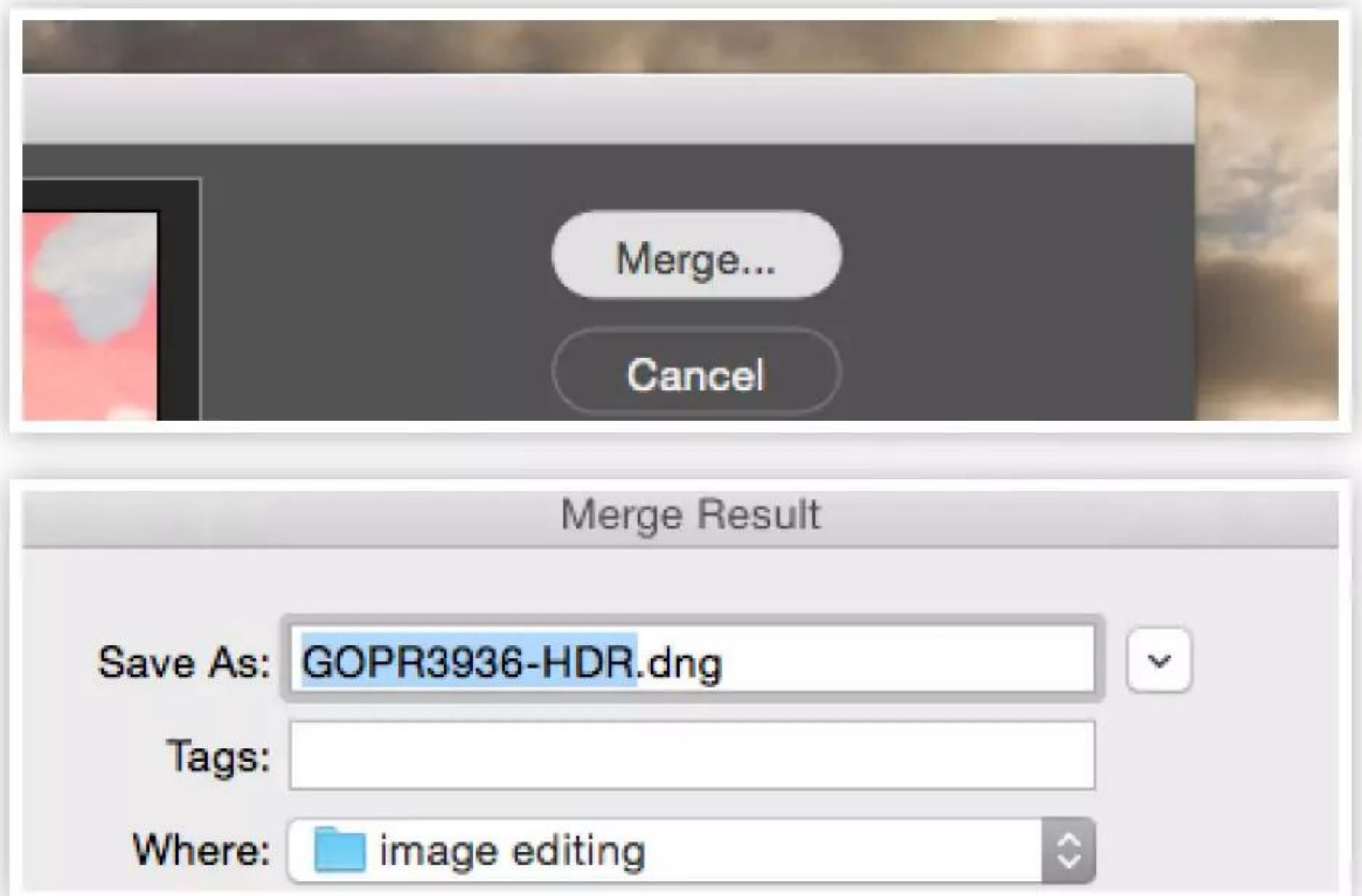
11 This will bring up the HDR Merge Preview panel. Under Options, make sure Align Images is ticked. Even if shot on a tripod, they could still move a tiny amount; this makes sure they are as well aligned as possible.



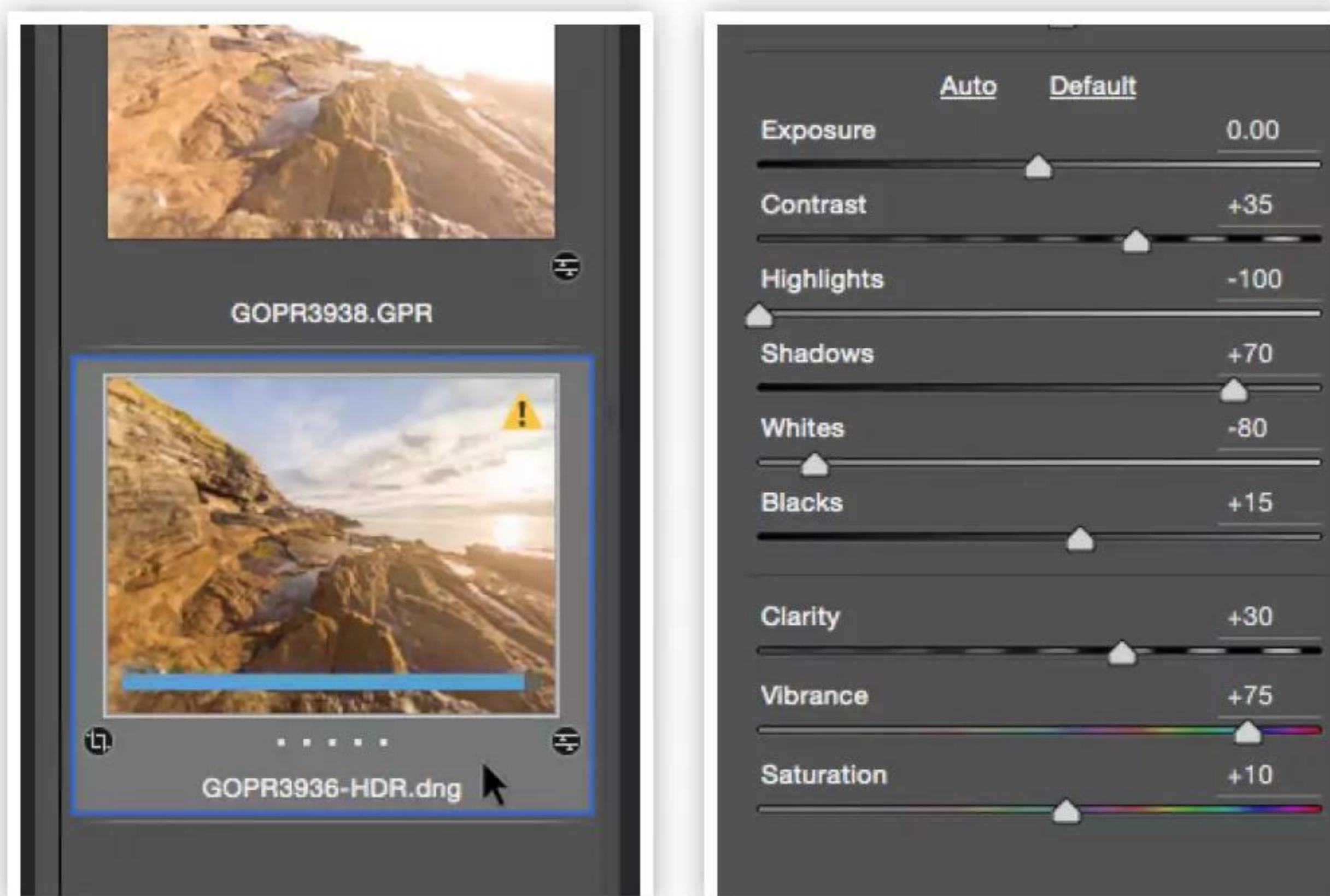
12 The clouds have moved between each exposure, so clicking on the Deghost option will eliminate a lot of the ghosting you might see when they are finally combined. The Show Overlay button reveals which areas require you to apply the most deghosting.



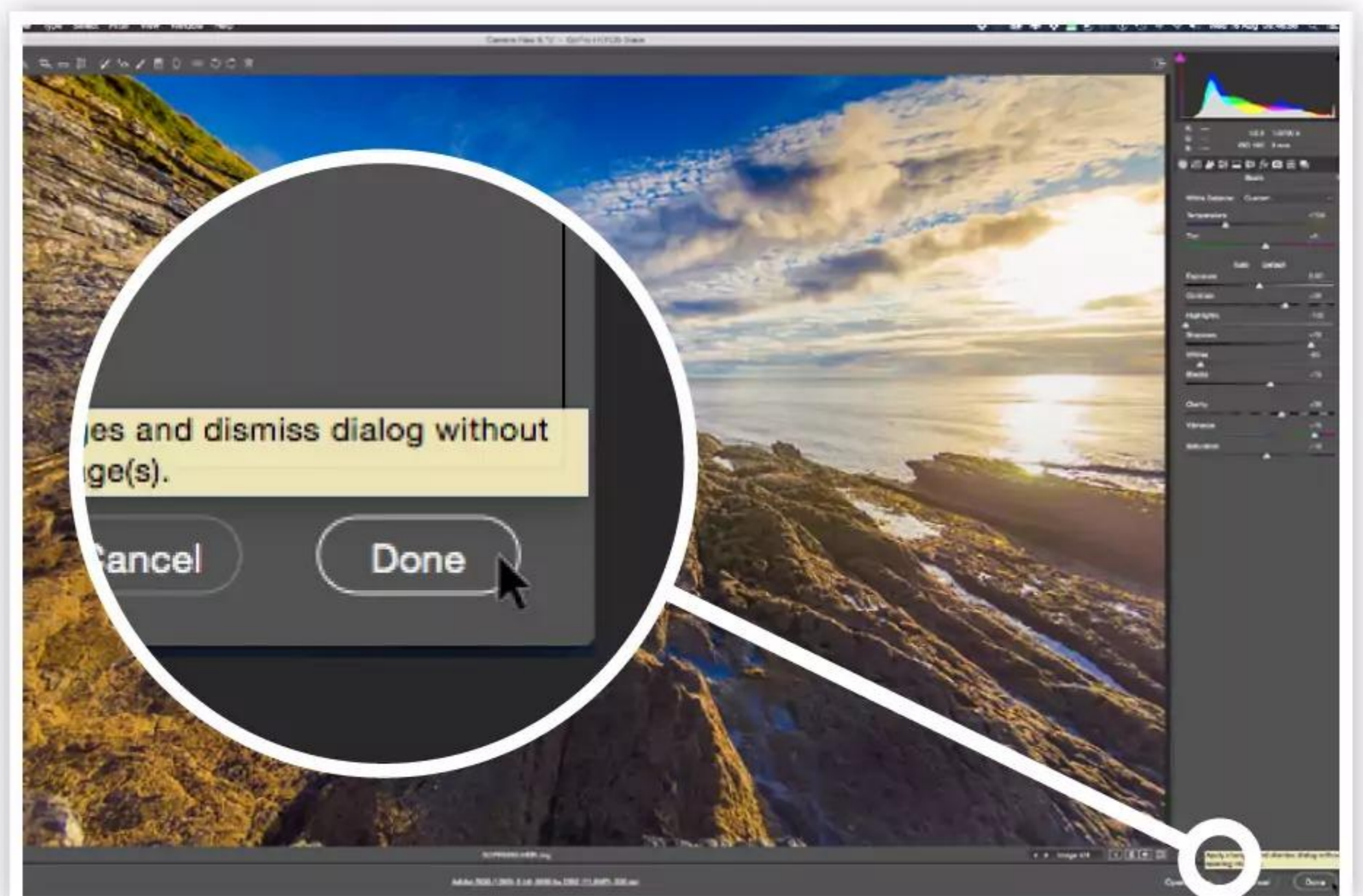
13 The Auto Tone button is down to personal taste. Clicking this will apply a basic set of tonal adjustments to get you started. You can leave it unchecked so you can work on your image adjustments from scratch.



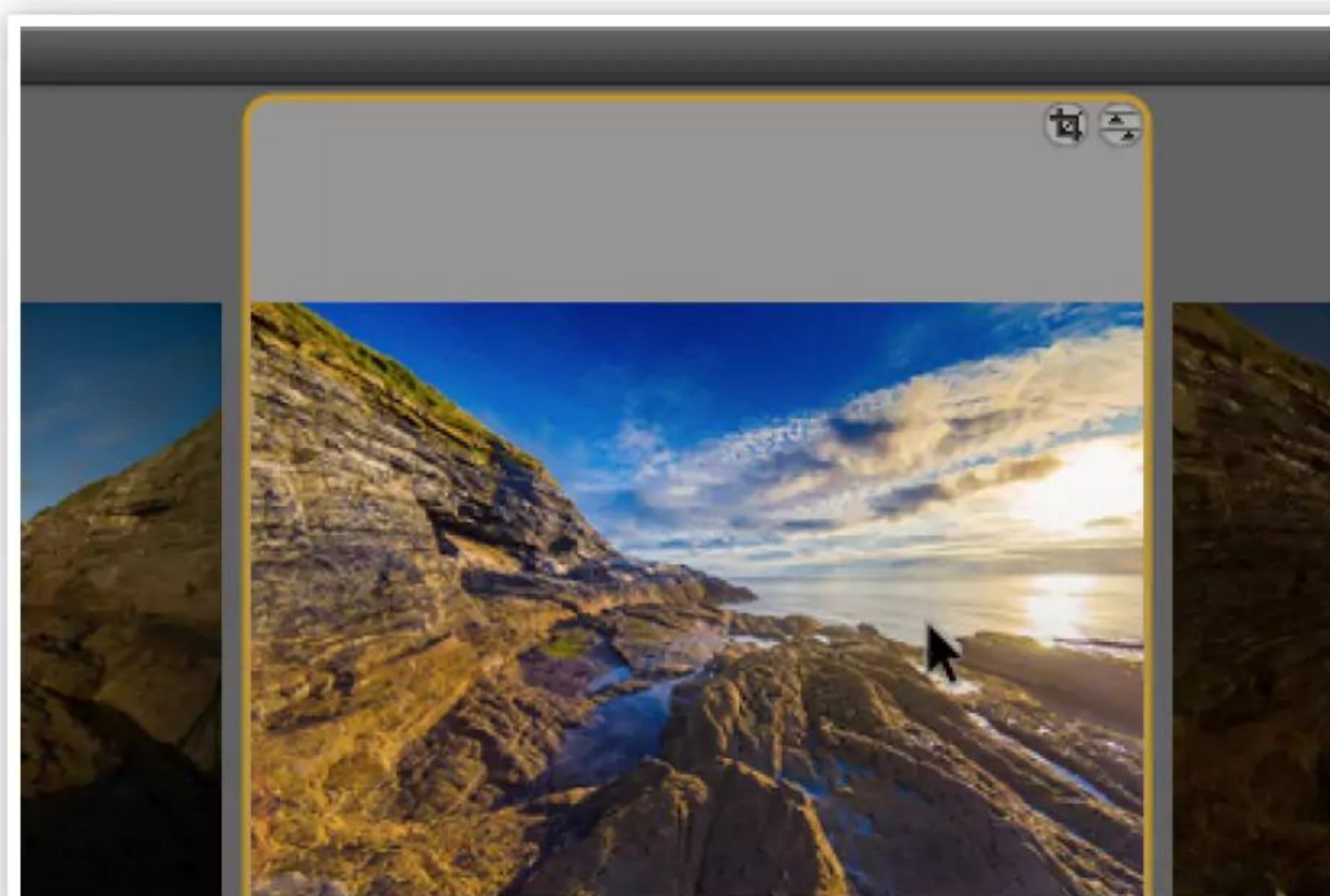
14 Click Merge to begin the process. It will ask for a Merge Result filename and then you can Save the result. It will then merge the shots and create a new DNG file which appears in the filmstrip below your original shots.



15 Now you can work on the DNG file and add whatever adjustments you want to get the most out of the image. We tweaked Contrast, Highlights and Shadows as well as boosting Clarity (midtone contrast) and saturation.



16 When you have the DNG looking how you want it, you can click Done to apply the adjustments non-destructively and return to Adobe Bridge.



17 Here you will see the new DNG file with all the adjustments in place. You can reopen it in ACR for further editing if you wish. Note, there are small icons in the top right of the thumbnail indicating that edits have been applied.

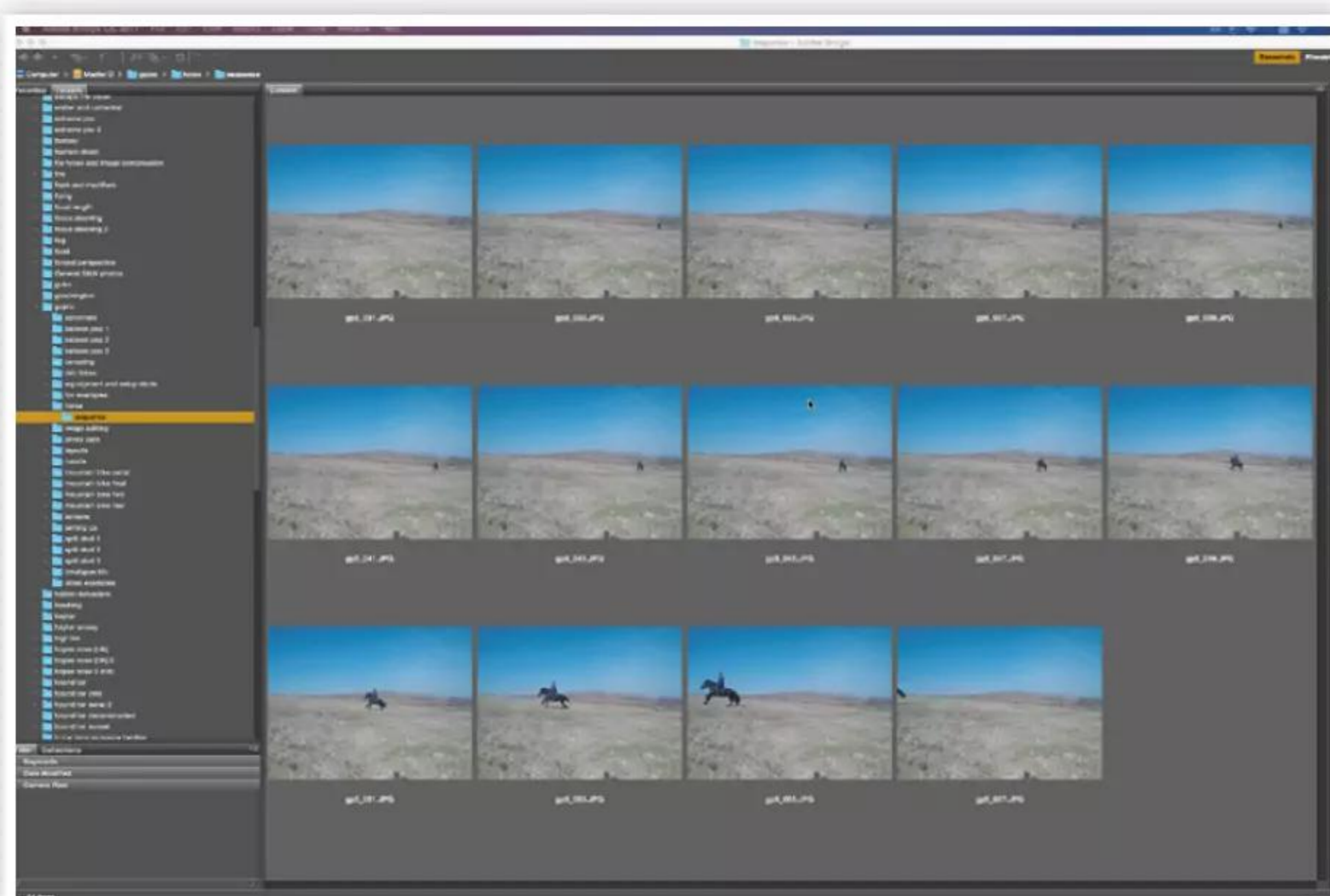
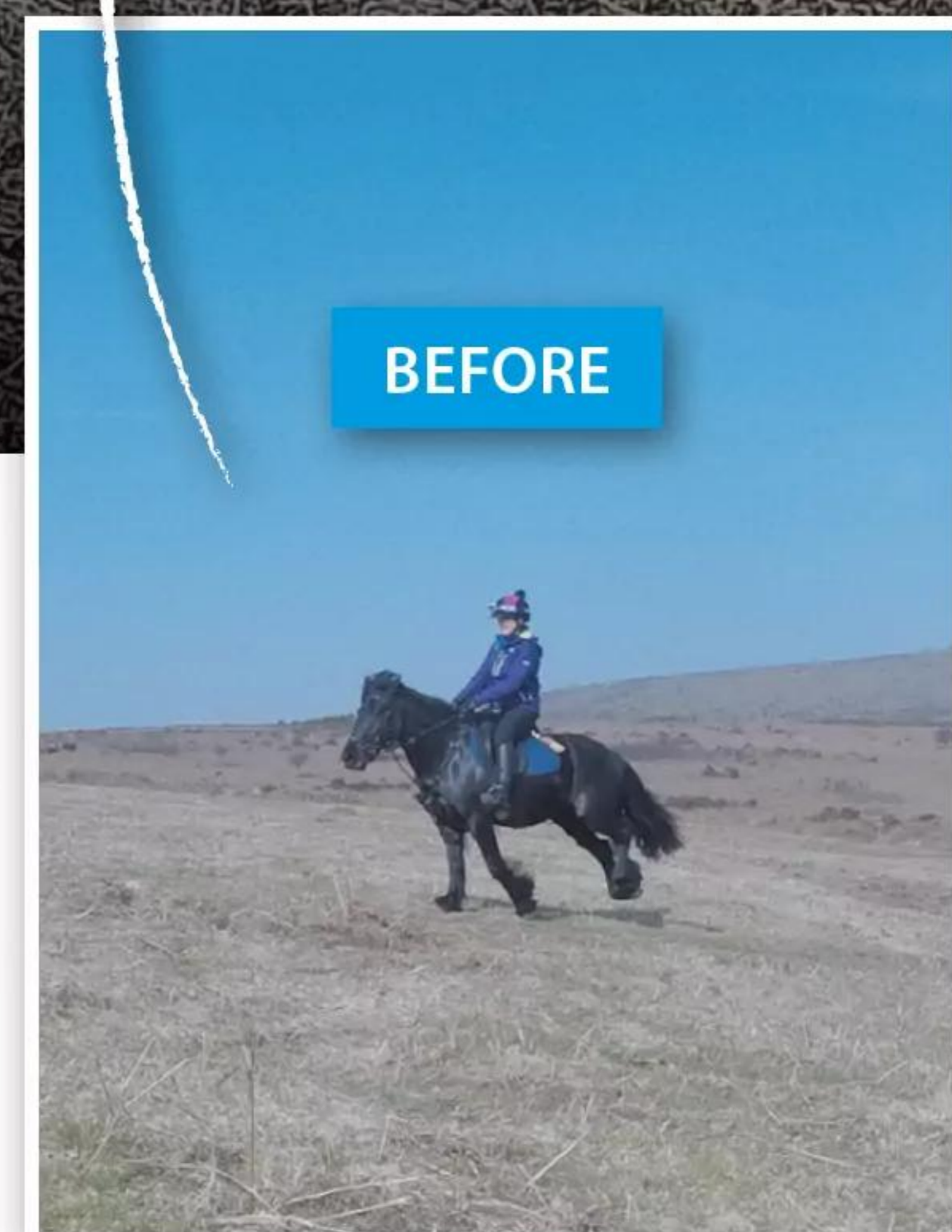


18 You can also open it into Photoshop and make any further pixel-based manipulations as you require. You can then save the final image as a high quality Jpeg or Tiff and call your HDR project complete.

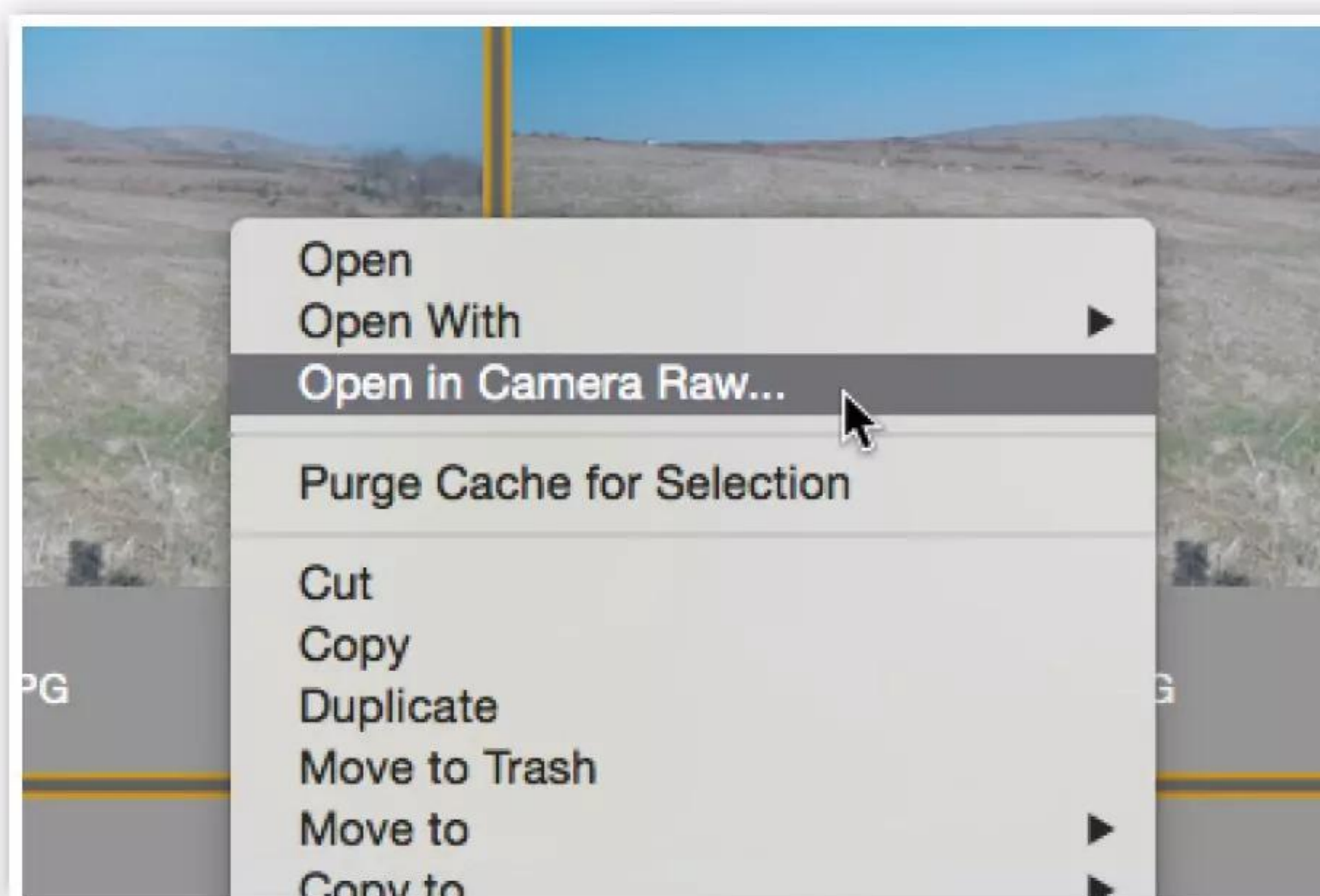
Burst mode composites

Combine an action sequence into one cool image

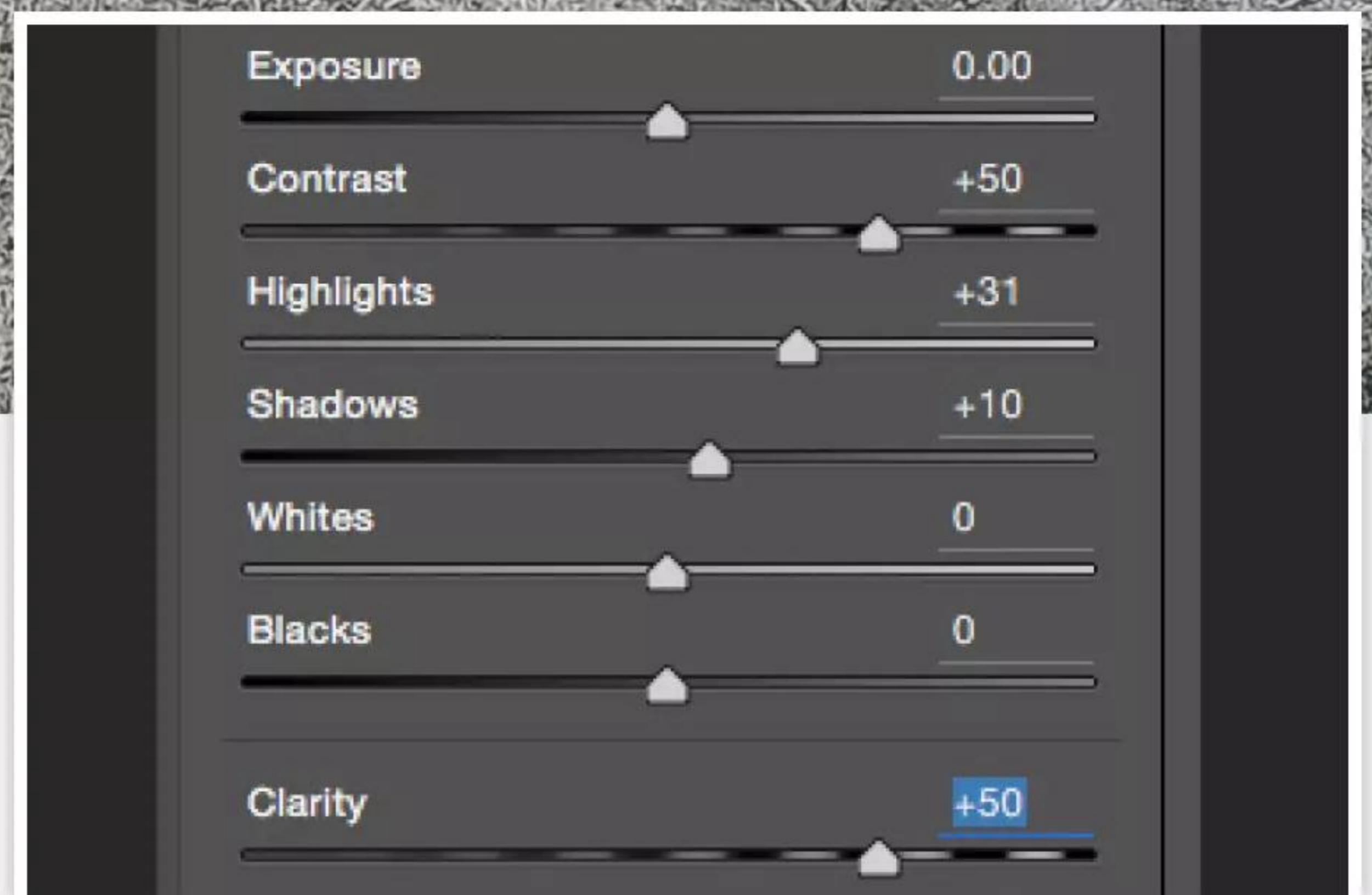
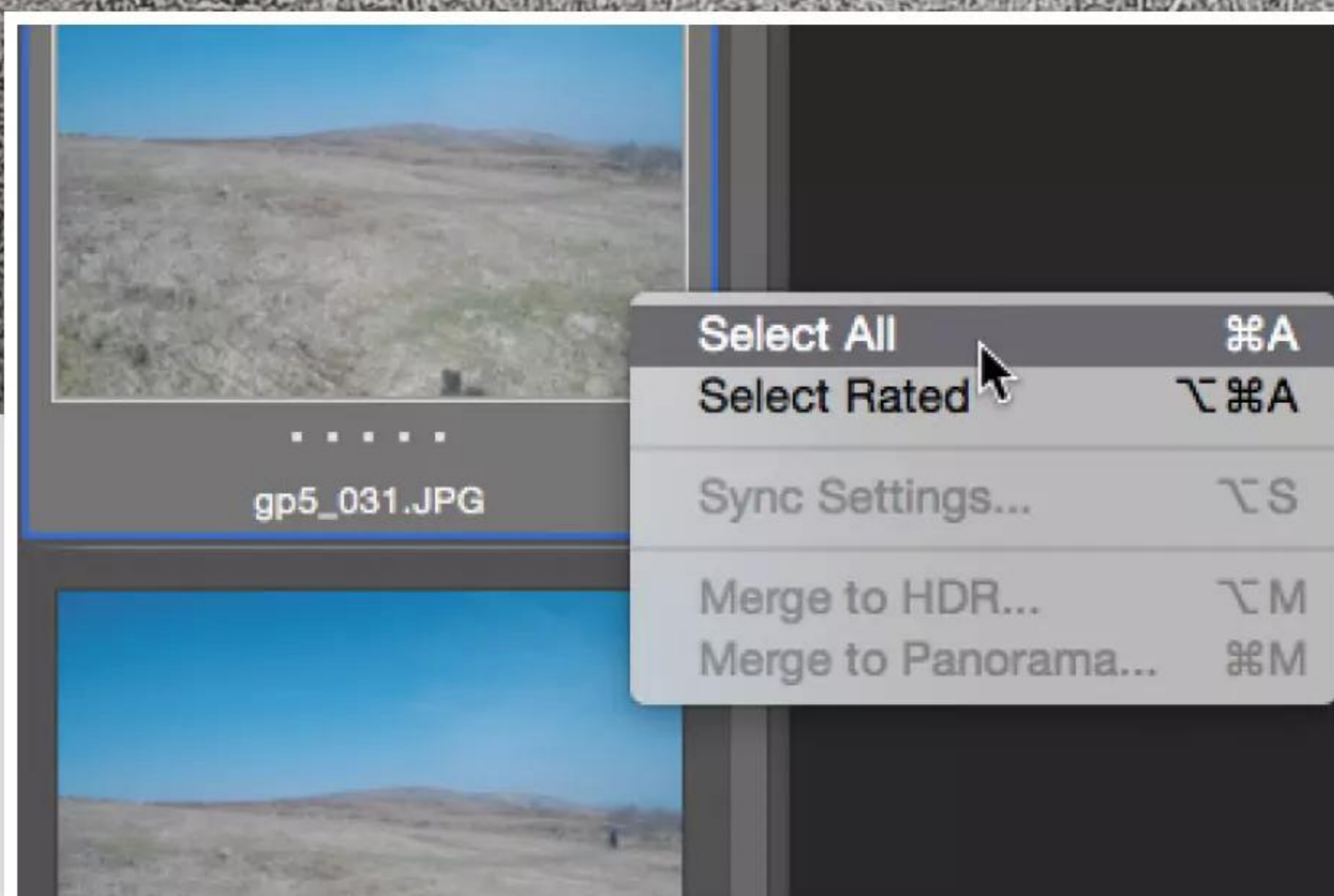
With its ability to capture stills at up to 30 frames per second, shooting an action sequence and firing off a burst means you are more likely to get that one frame where the action is perfect for your needs. Before you decide to throw the rest of the sequence away, why not combine all the shots in that sequence into one image. It is a great way to show action and movement over time. We have a sequence of a horse riding by. It was shot in burst mode at a rate of 30 frames over 6 seconds. The camera was mounted on a tripod to keep it stationary during the capture. Back on the computer, we then picked out the best shots and were ready to make our finished composite. ■



01 In Adobe Bridge, you can see the 14 shots that will comprise your burst mode composite. One shot is just an empty reference shot with no horse and rider in it.

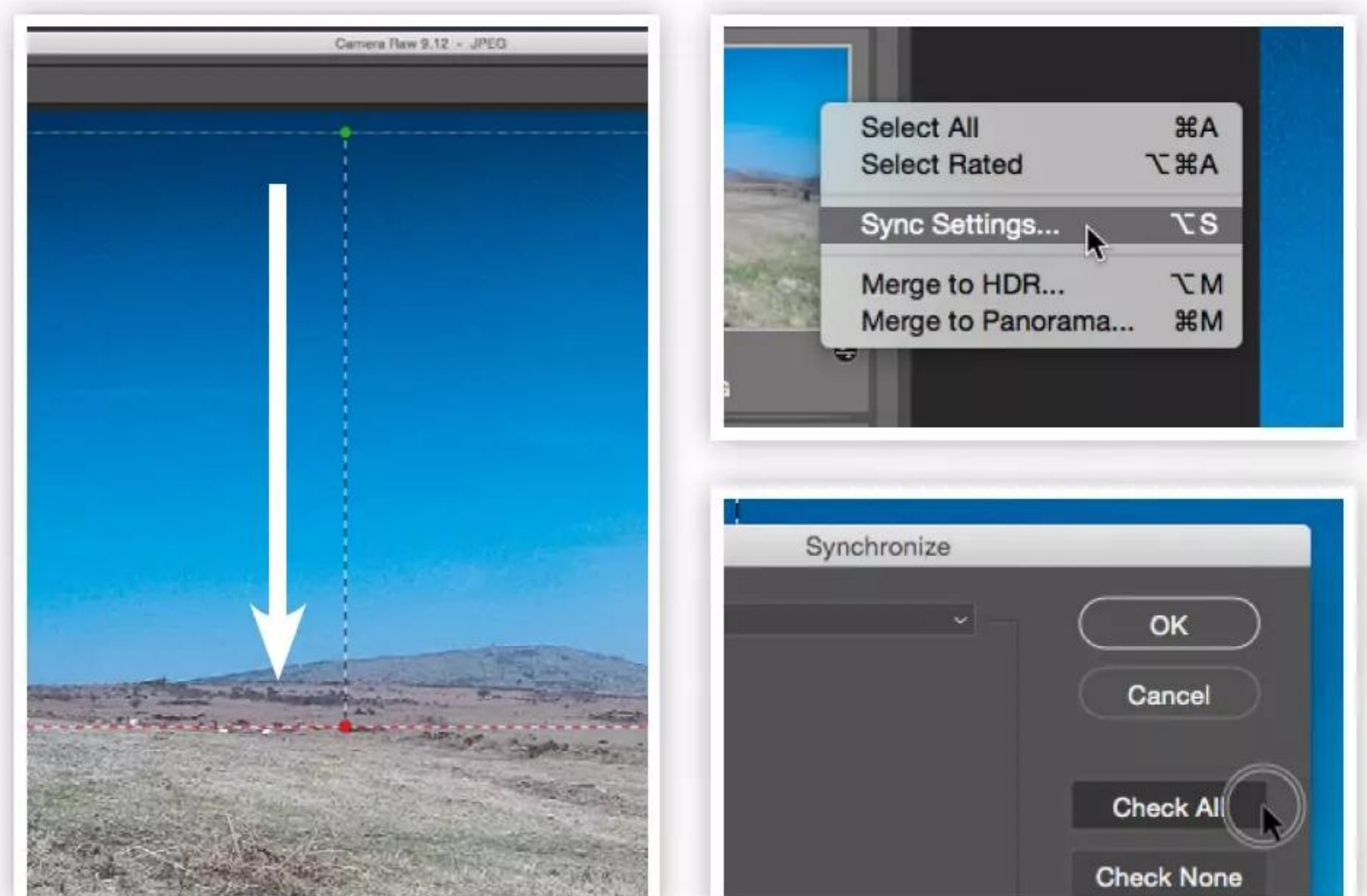


02 Even though these are Jpeg files, you can still open them in Adobe Camera Raw (ACR) and process them a little to improve the contrast and colour. Select all the shots and right-click them and choose Open In Camera Raw to start.



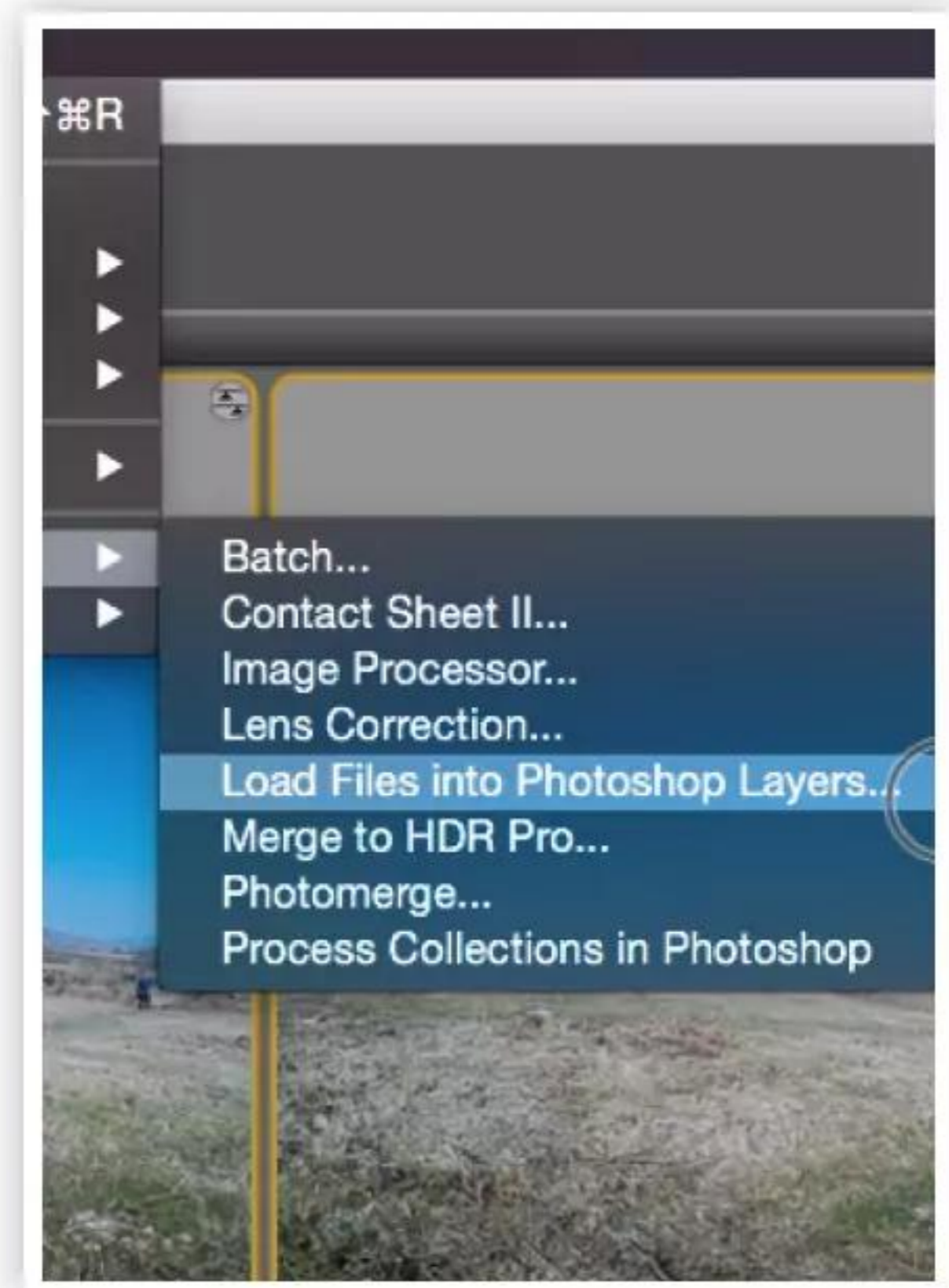
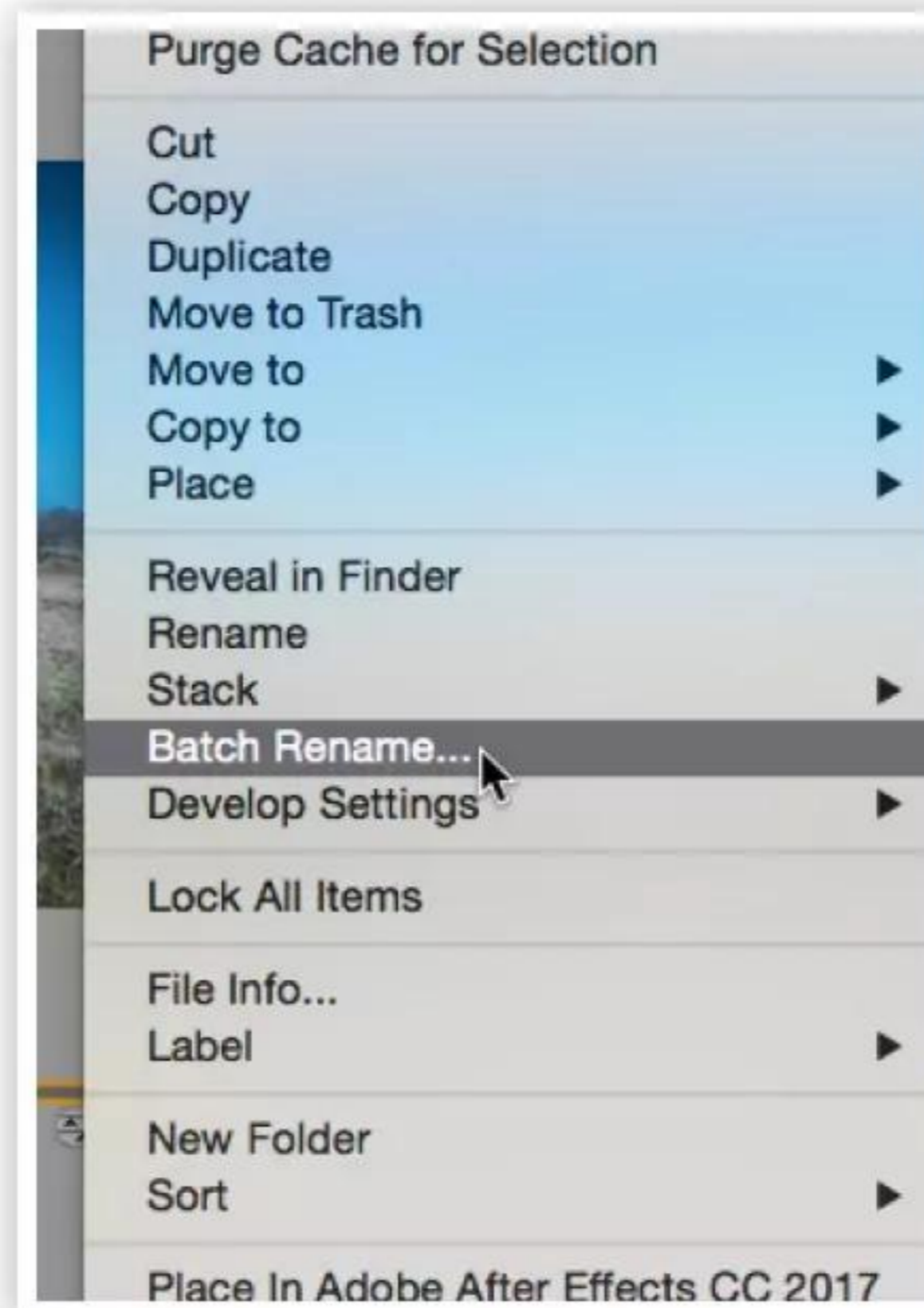
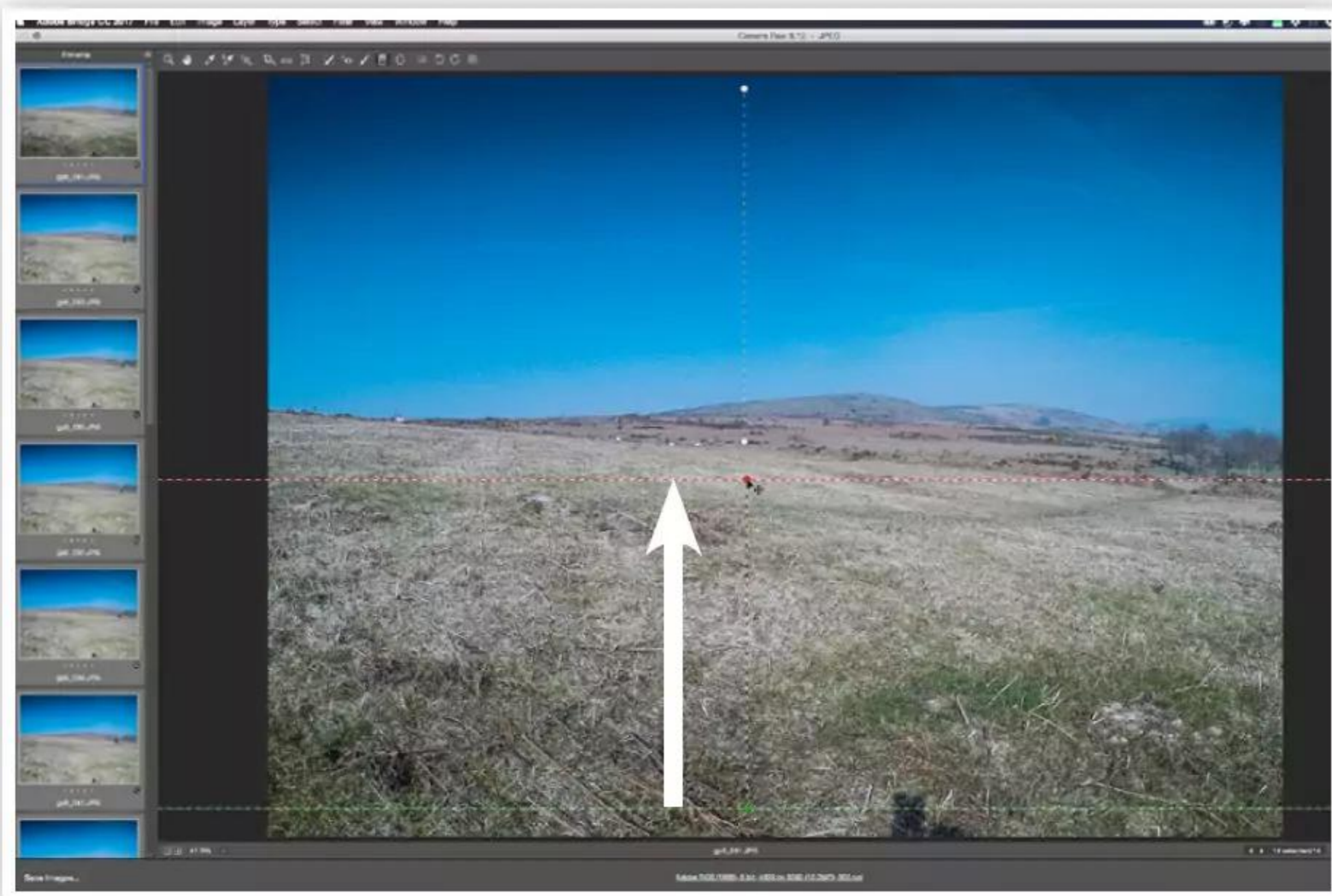
03 All the photos will open in ACR. The first thing to do is right-click the top thumbnail and choose Select All from the menu. All the shots will be highlighted and you can apply all amends collectively, so they all look the same.

04 Under the Basic adjustments tab, we boosted Contrast and Highlights. We also increased Clarity, which is midtone contrast. Vibrance and Saturation have also been boosted to add more density of colour to the shots.



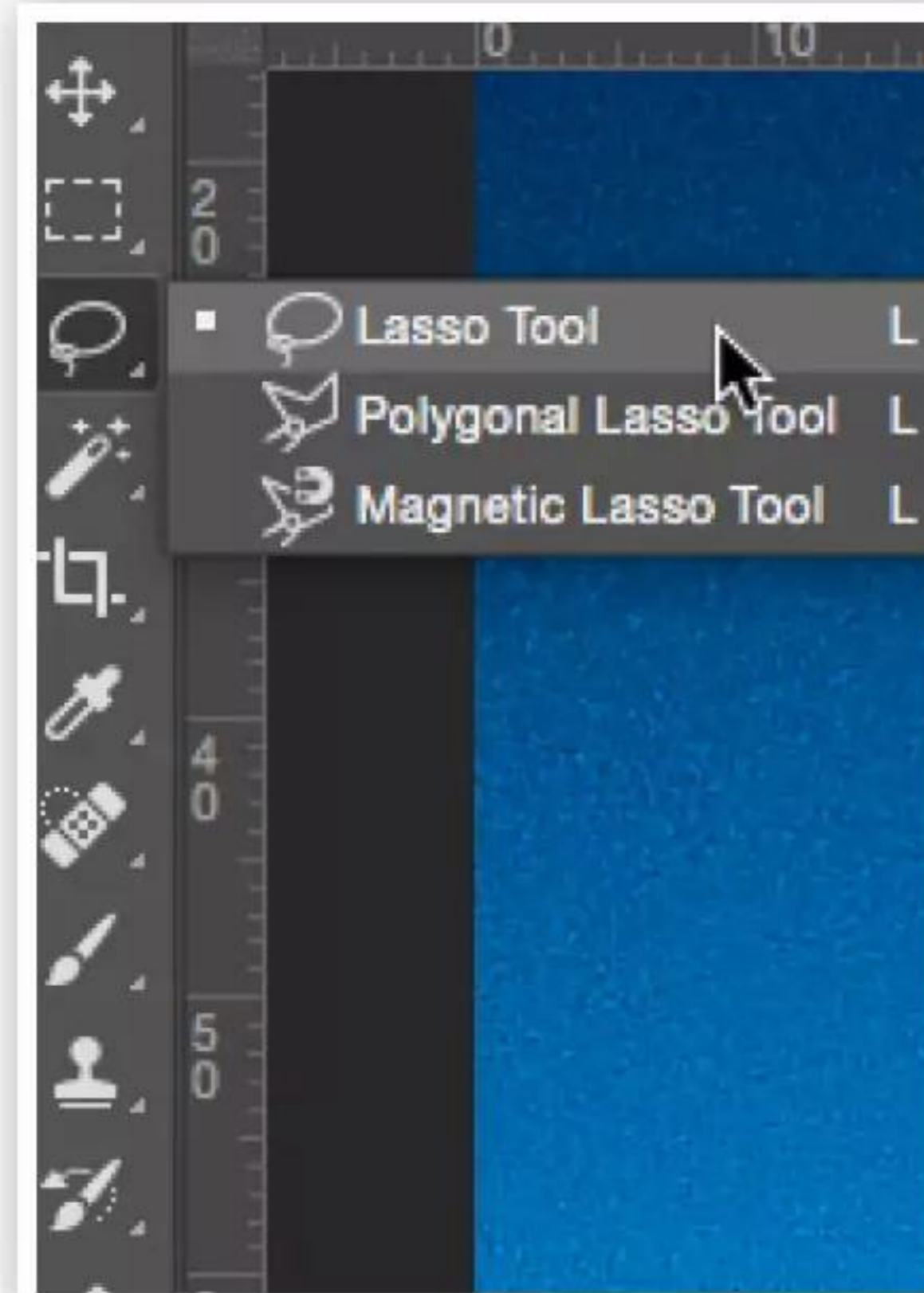
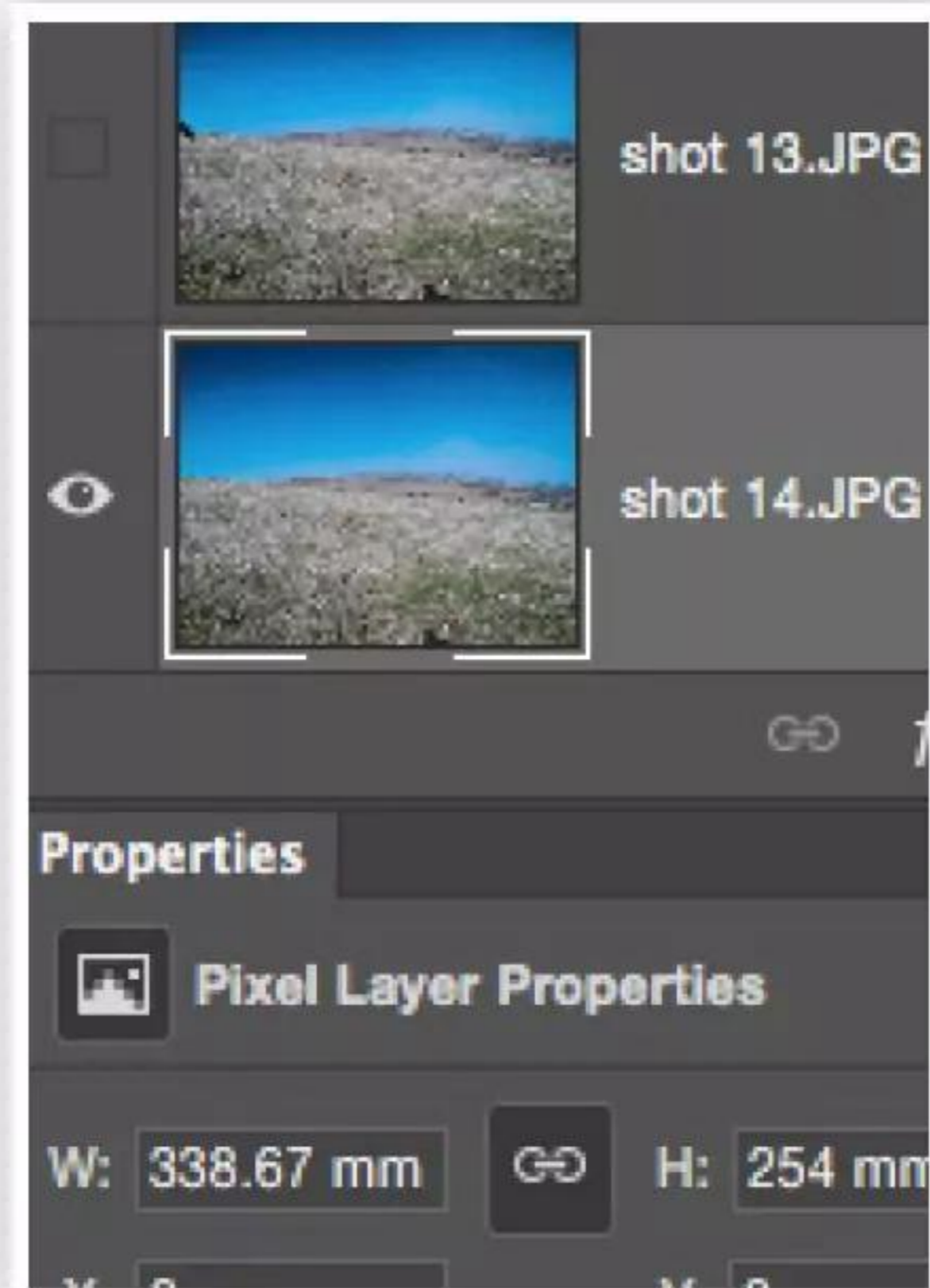
05 Next, we're going to darken the sky. Go to Graduated Filter in the top menu bar. The properties for the Graduated Filter can be altered in the panel on the right. Exposure is -1, Contrast is +25 and Clarity +20.

06 Click and drag from the top of the screen down to the horizon. The Graduated Filter effect will darken the sky. Right-click your highlighted thumbnails and choose Sync Settings. Click Check All and hit OK to apply this grad to all your images.



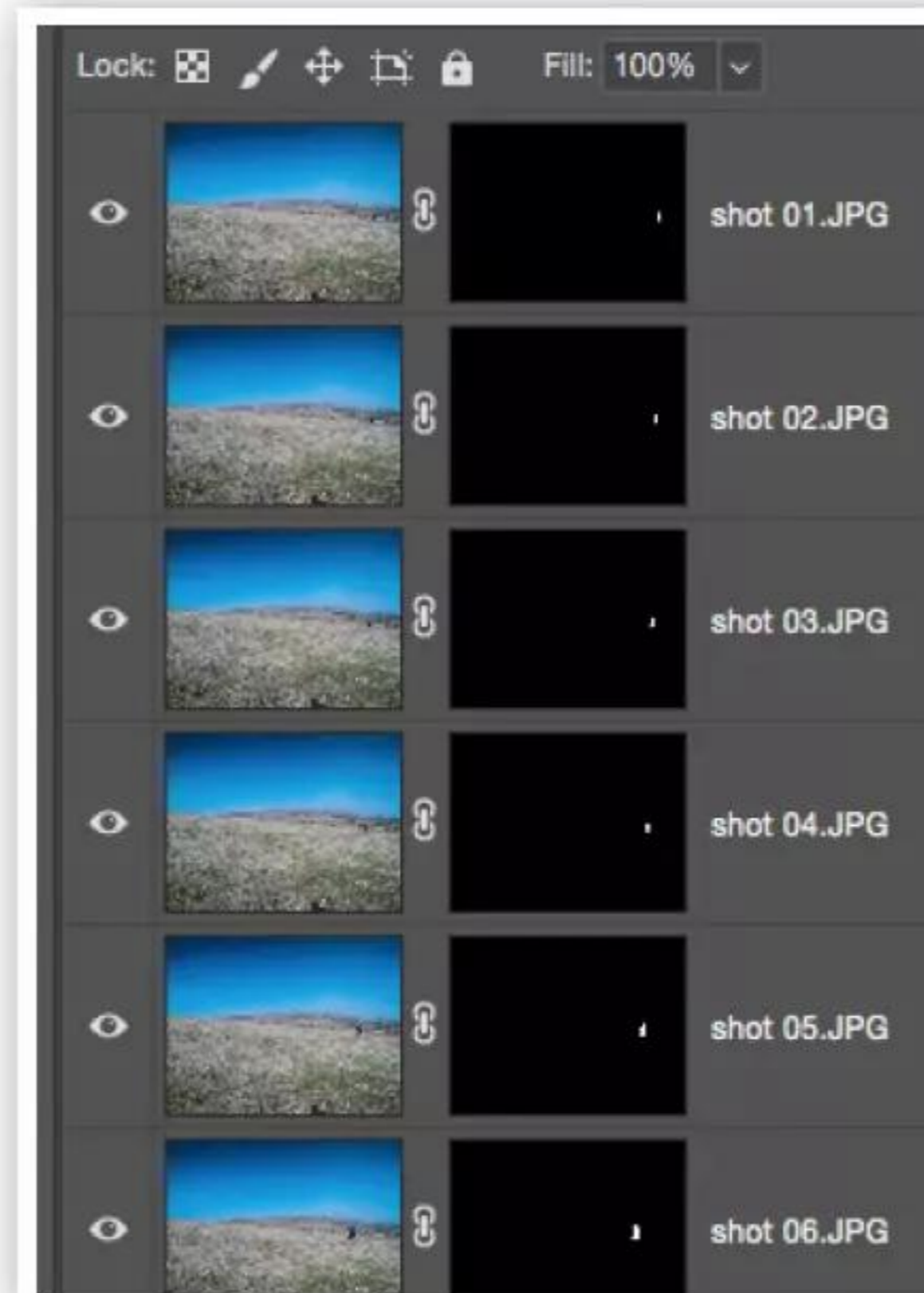
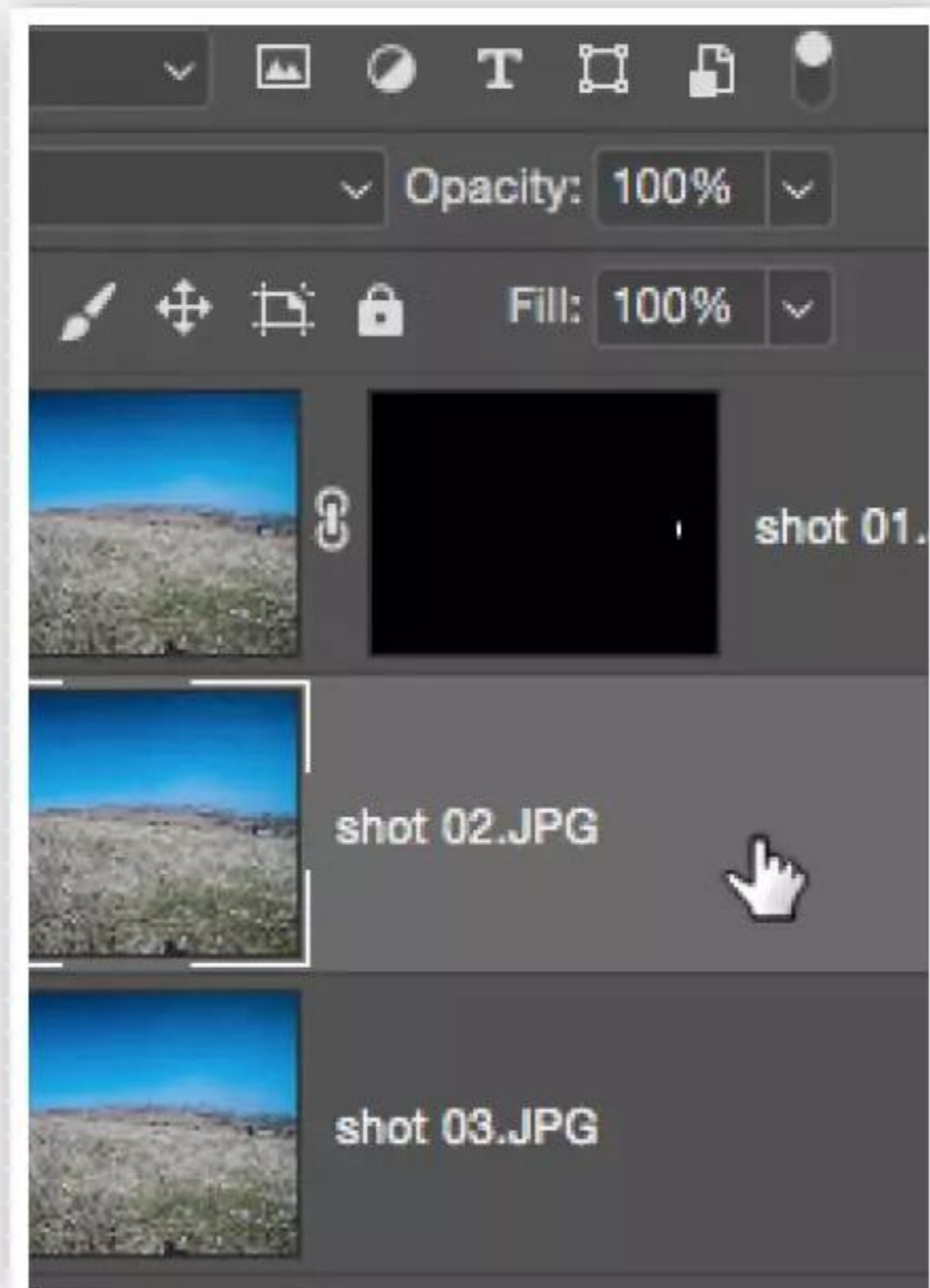
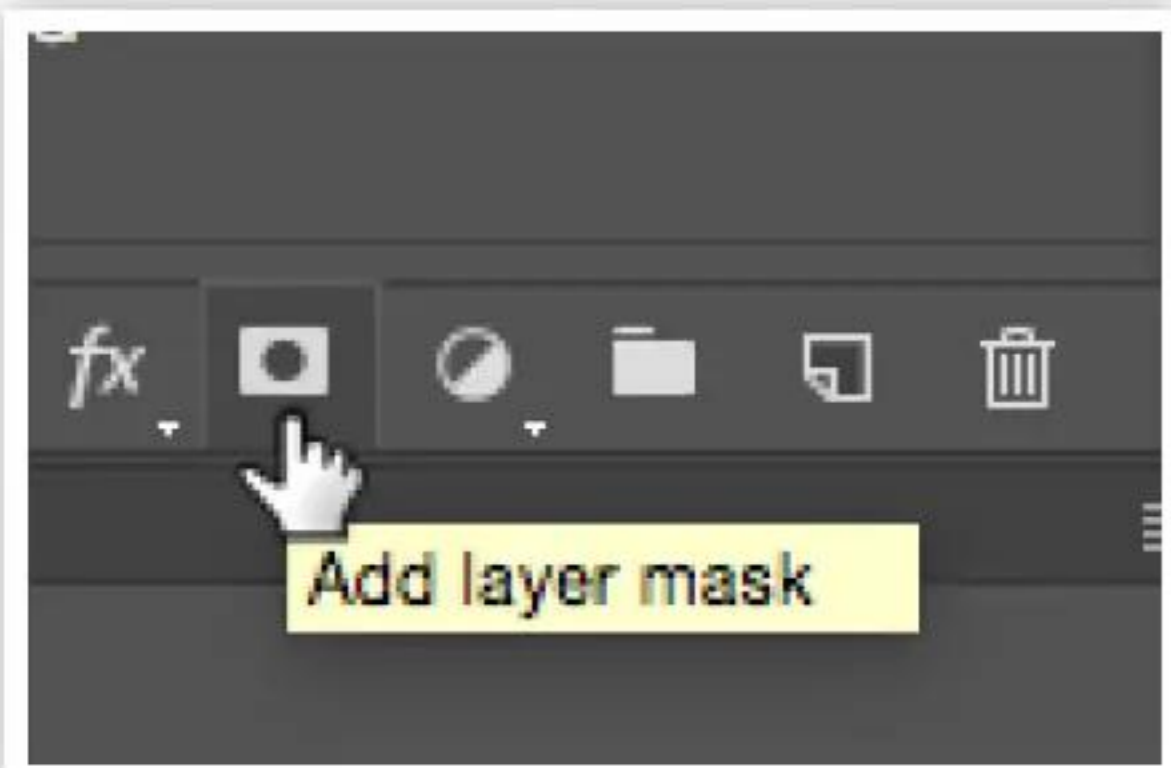
07 If you want, you can add another Graduated Filter coming from the ground up, to make the foreground a little darker and Sync All to apply that to all shots. When you're ready, click Done in the bottom right to proceed.

08 Your images are now much more punchy. You can also do a Batch Rename to make their filenames run in sequence. Now you can go to Tools > Photoshop > Load Files Into Photoshop Layers. This will open your sequence in a Photoshop document.



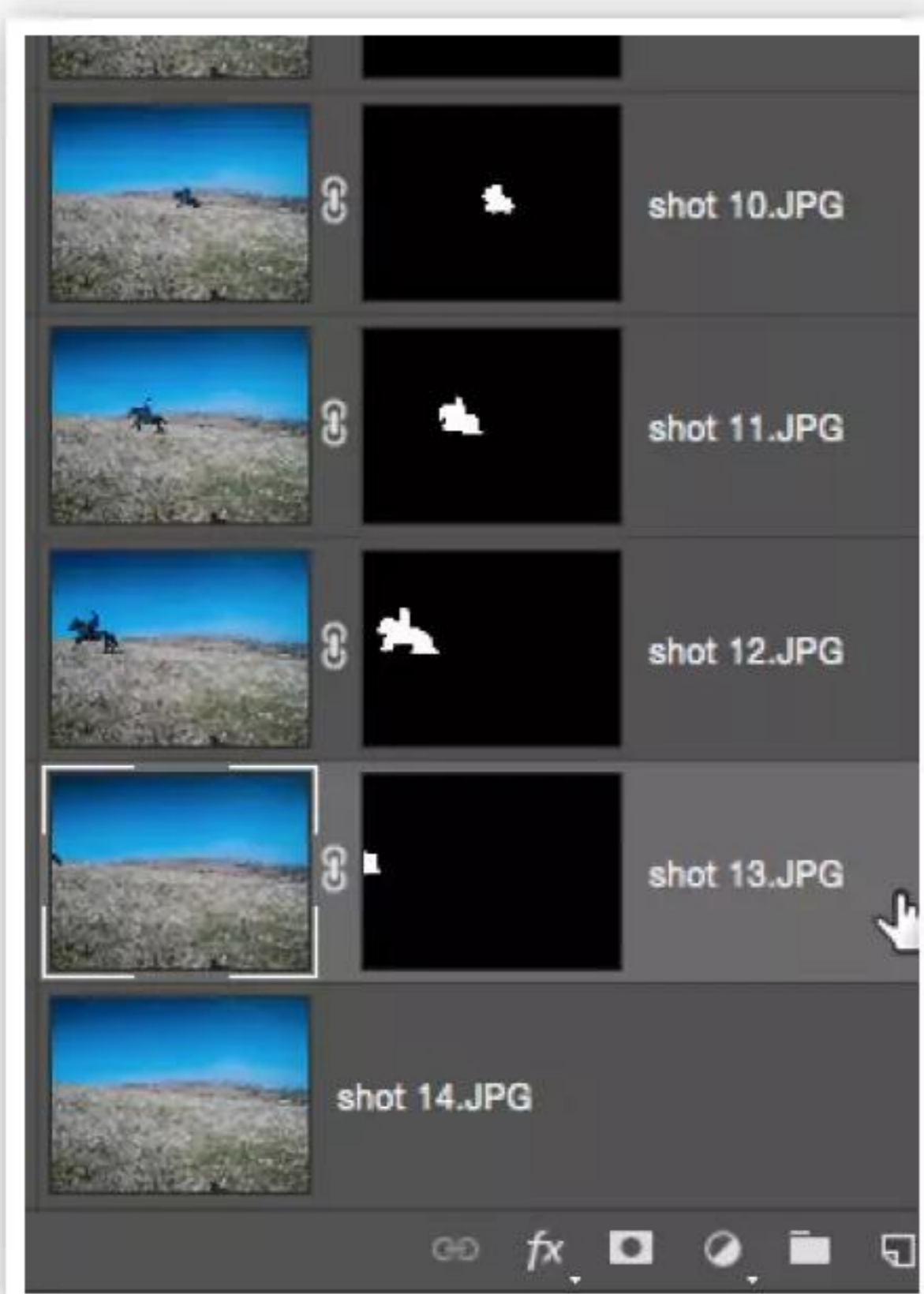
09 You have your shots in one layered document with 'shot 01' at the top. 'Shot 14' at the bottom of the stack is the empty reference layer which will become useful as we proceed. Make sure all the layers are visible.

10 Click 'shot 01' to make it active and go to the toolbar and select the Lasso Tool (L). Click and drag to draw carefully around the outline of the distant horse and rider when you join back up to the start point you drew and let go, a selection will be created.



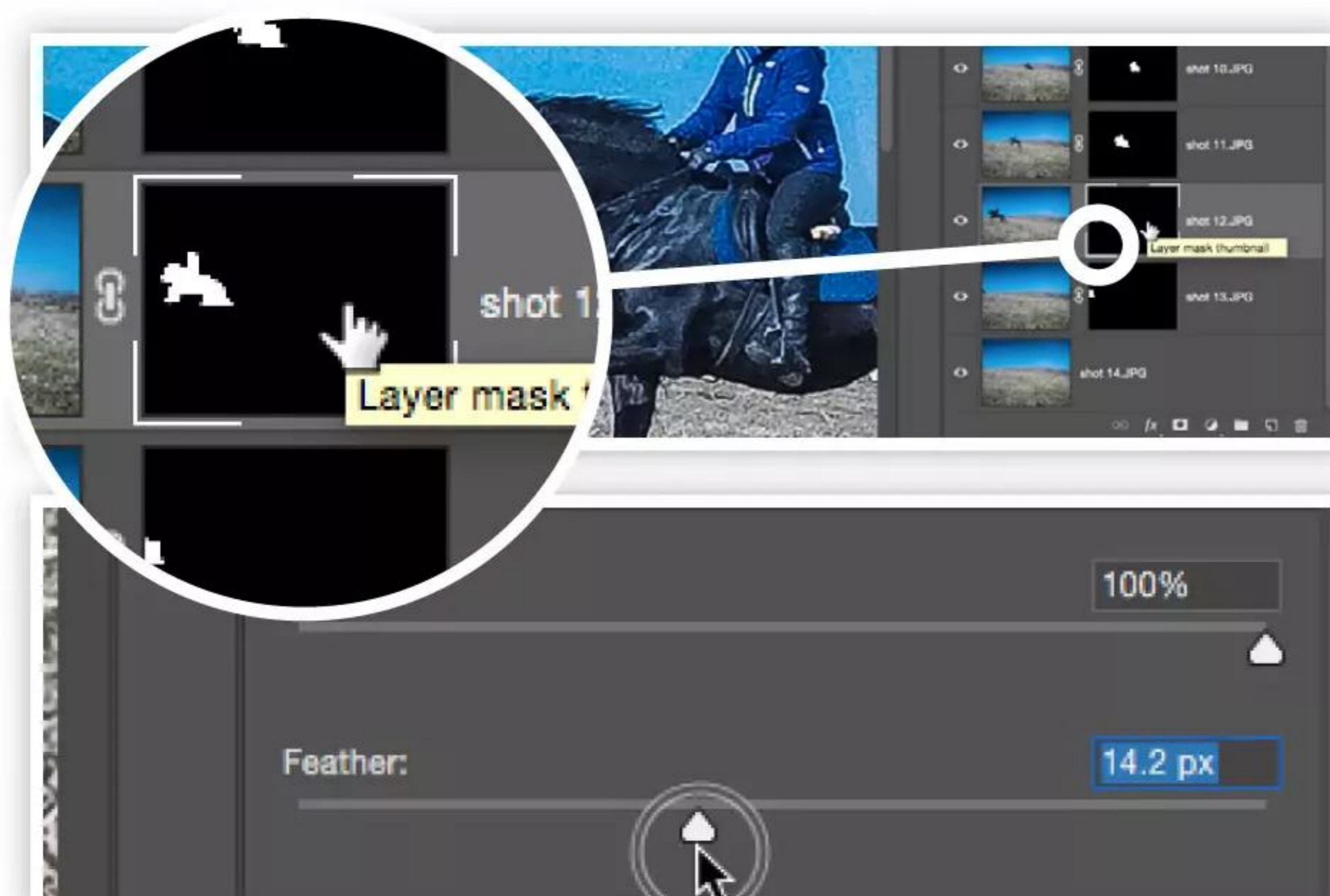
11 With the selection active, click on the Add Layer Mask icon under your layers palette. The mask will isolate the horse and rider on the 'shot 01' layer. 'Shot 02' will also now be visible. Make this layer active and repeat the process started in step 10.

12 Click on each layer and draw around the horse and rider and add a layer mask to each one. You will see that you are progressing across the screen with each one being revealed in sequence.



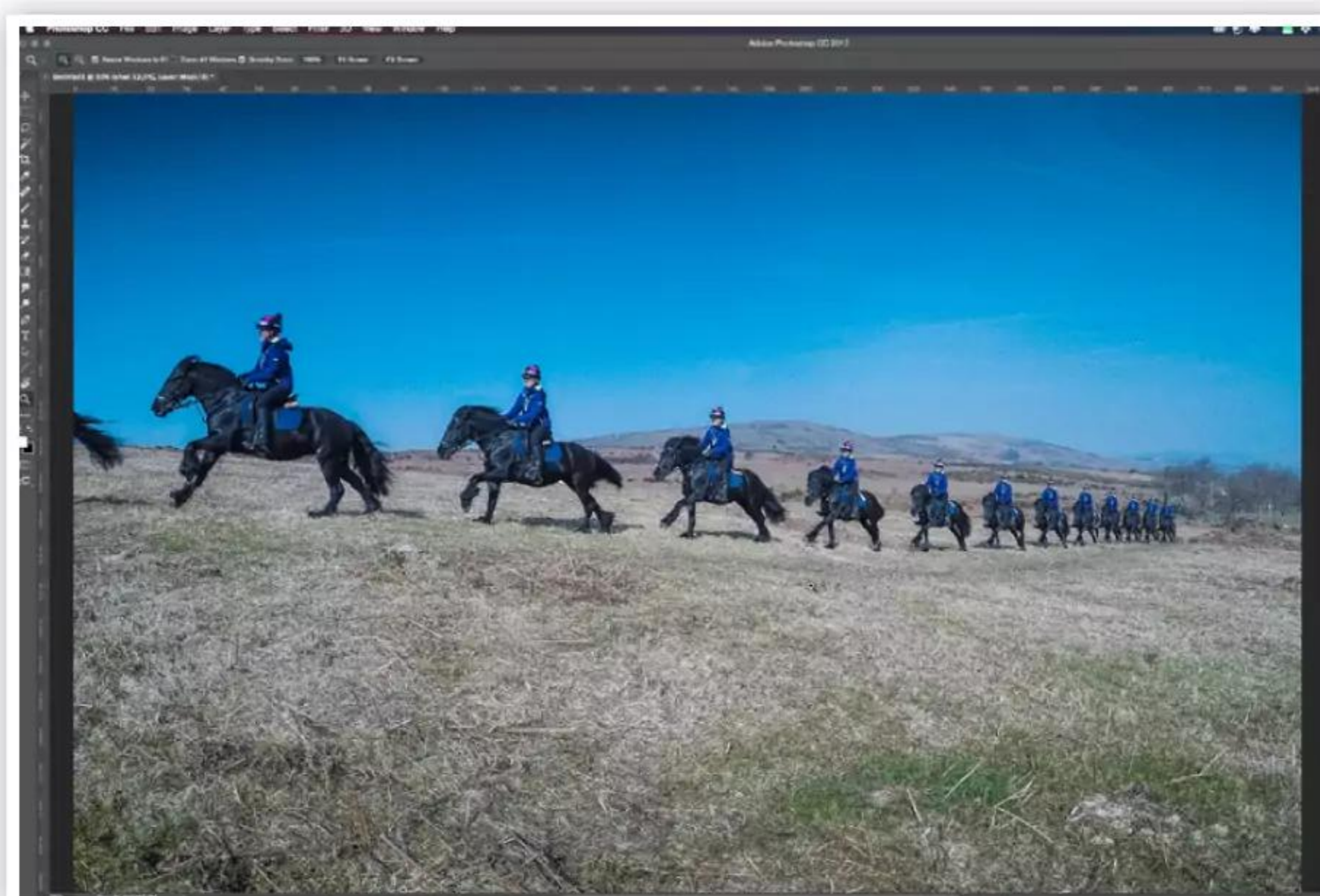
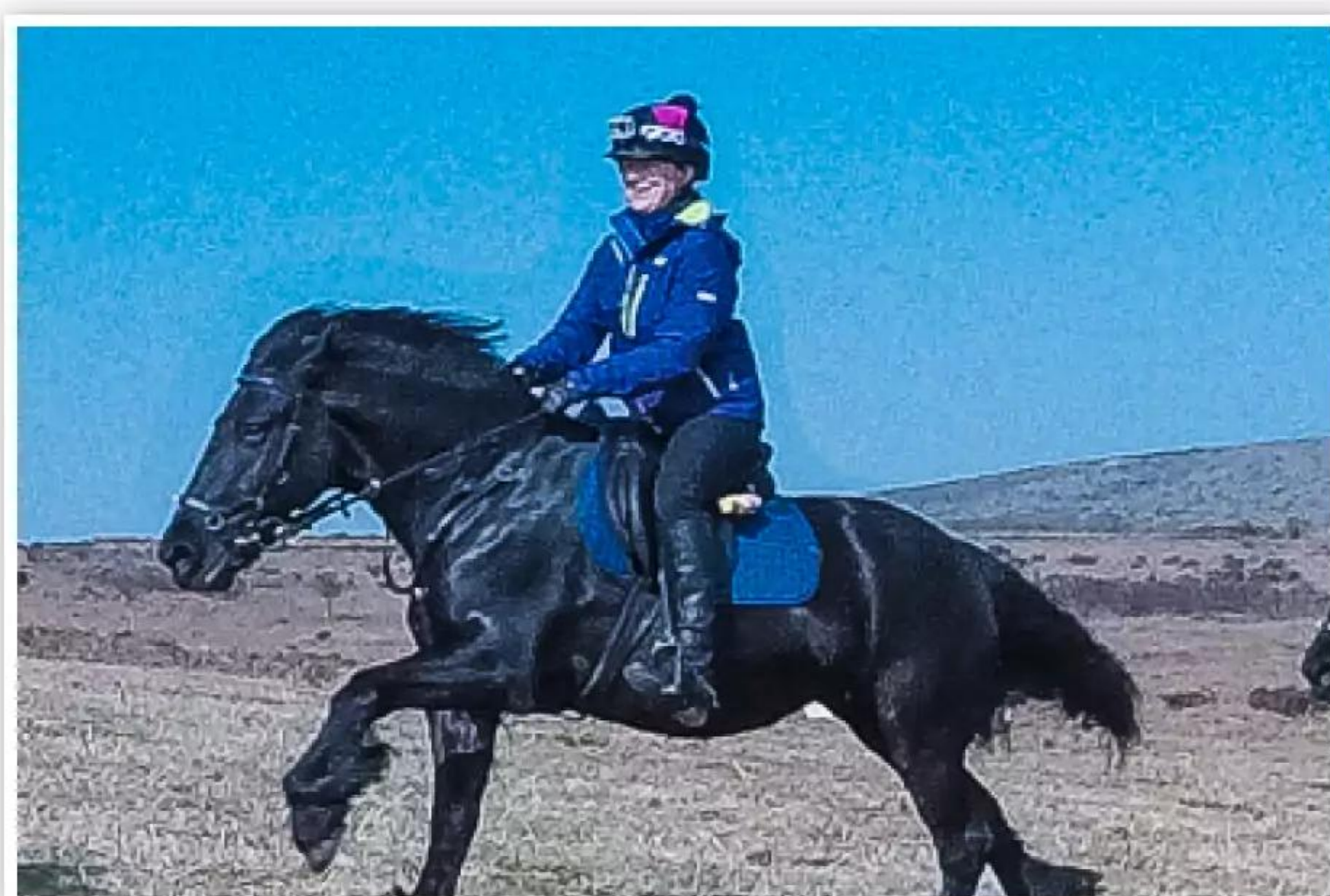
13 Once you get to 'shot 12' and 'shot 13', where the horses' tail is disappearing off to the left, each layer will have a mask on it. Only 'shot 14' doesn't need one as there is no horse and rider. All the masked layers have 'shot 14' as their background.

14 If you look closely, you will notice that 'shot 12' has a visible edge to it. The colour is very slightly different and it shows up. You can eliminate the hard edge of the mask quite easily.



15 Click on the 'shot 12' layer mask to activate it and then from its Properties panel adjust the Feather value to about 14 pixels.

16 This softens and blurs the mask by a small amount and therefore softens the transition of the masked image on the 'shot 12' layer above 'shot 14' background layer.



17 You can do the same to any of the masks where you feel there is a hard edge visible and where the colour or exposure doesn't quite match between that layer and the empty 'shot 14' reference layer at the bottom of the stack.

18 With that, you are done. You can save the layered document as a PSD file and then Save As to either a Jpeg or Tiff, whichever is your preference.

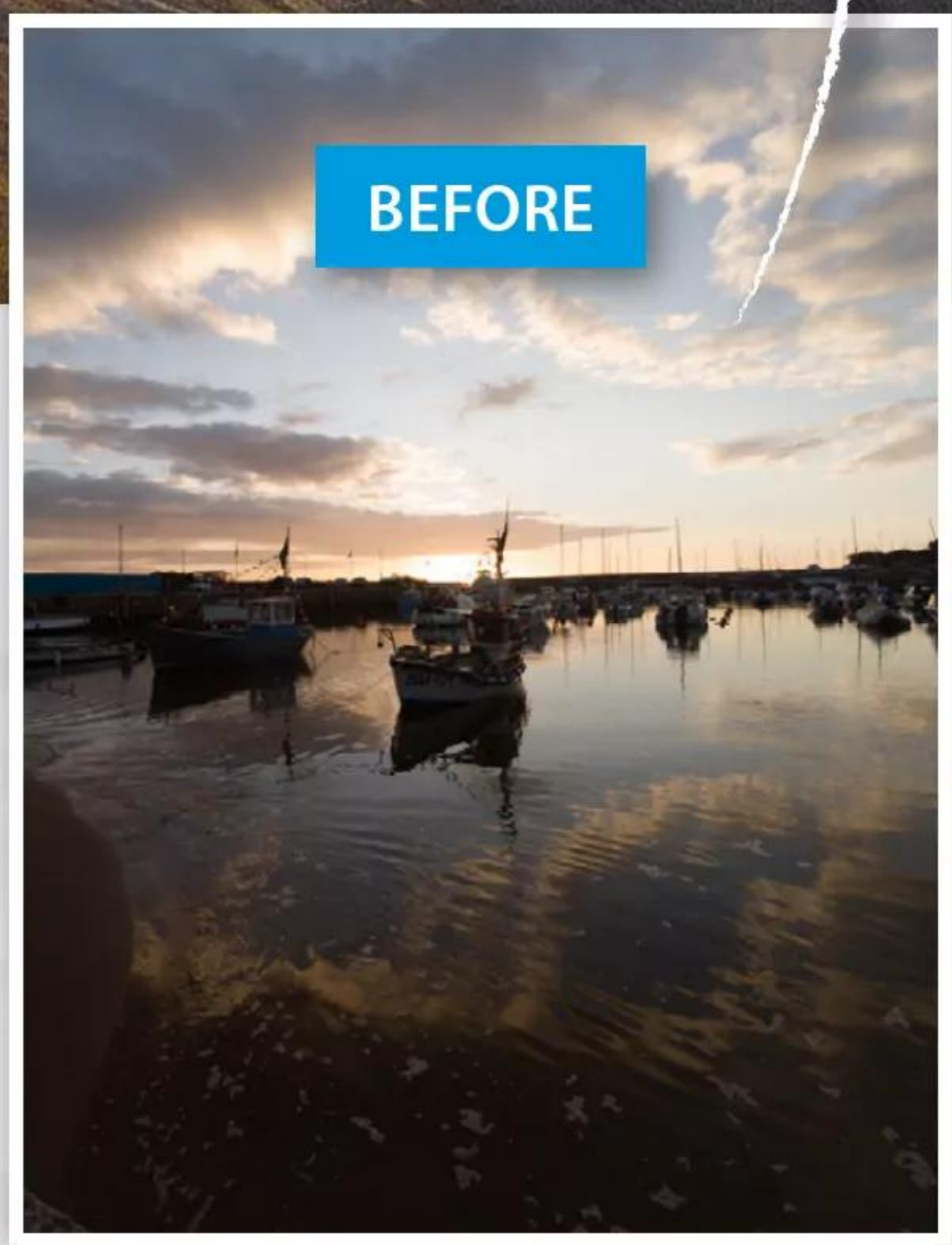


Processing GoPro Raw files

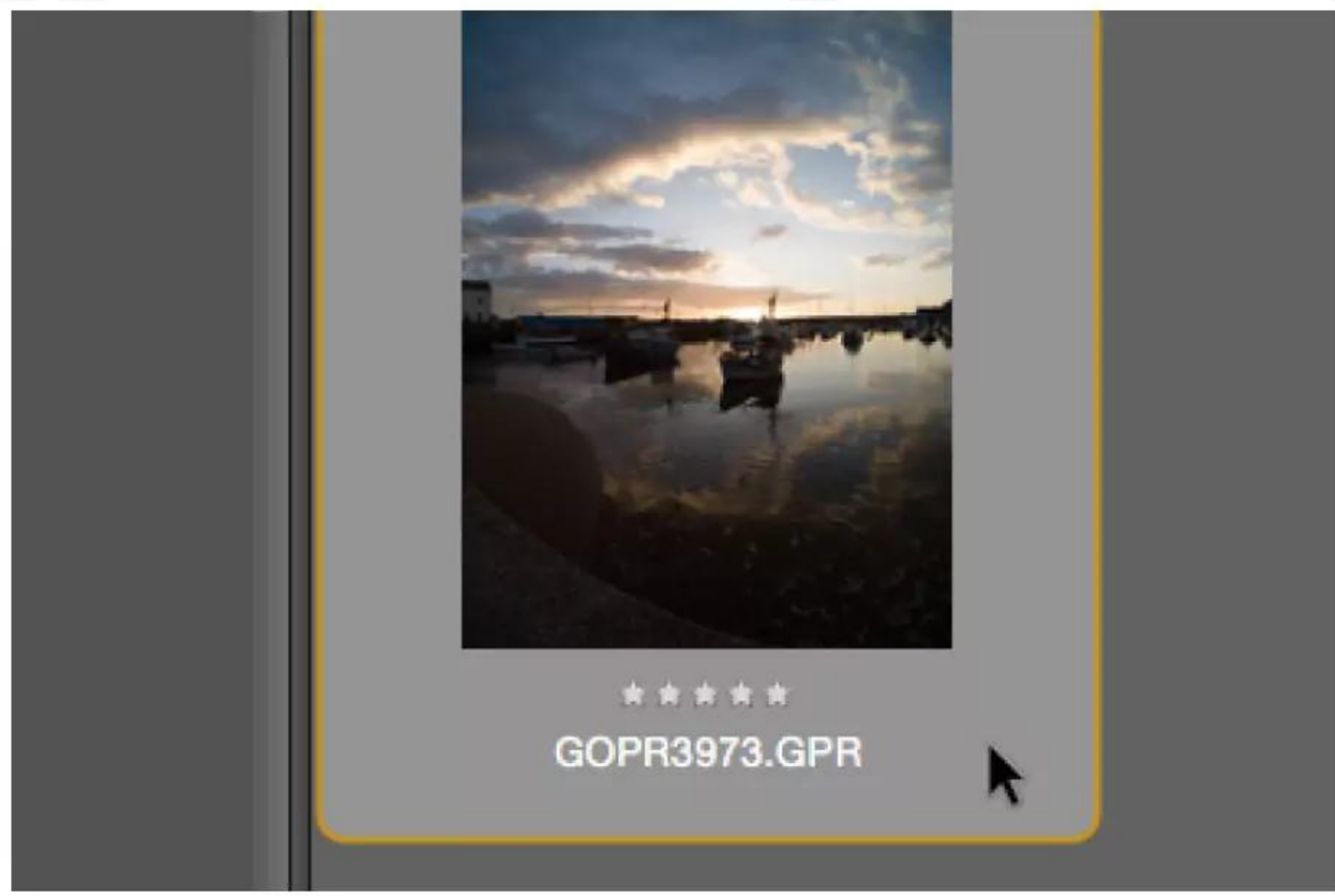
Get the most from your GoPro images

AFTER

BEFORE



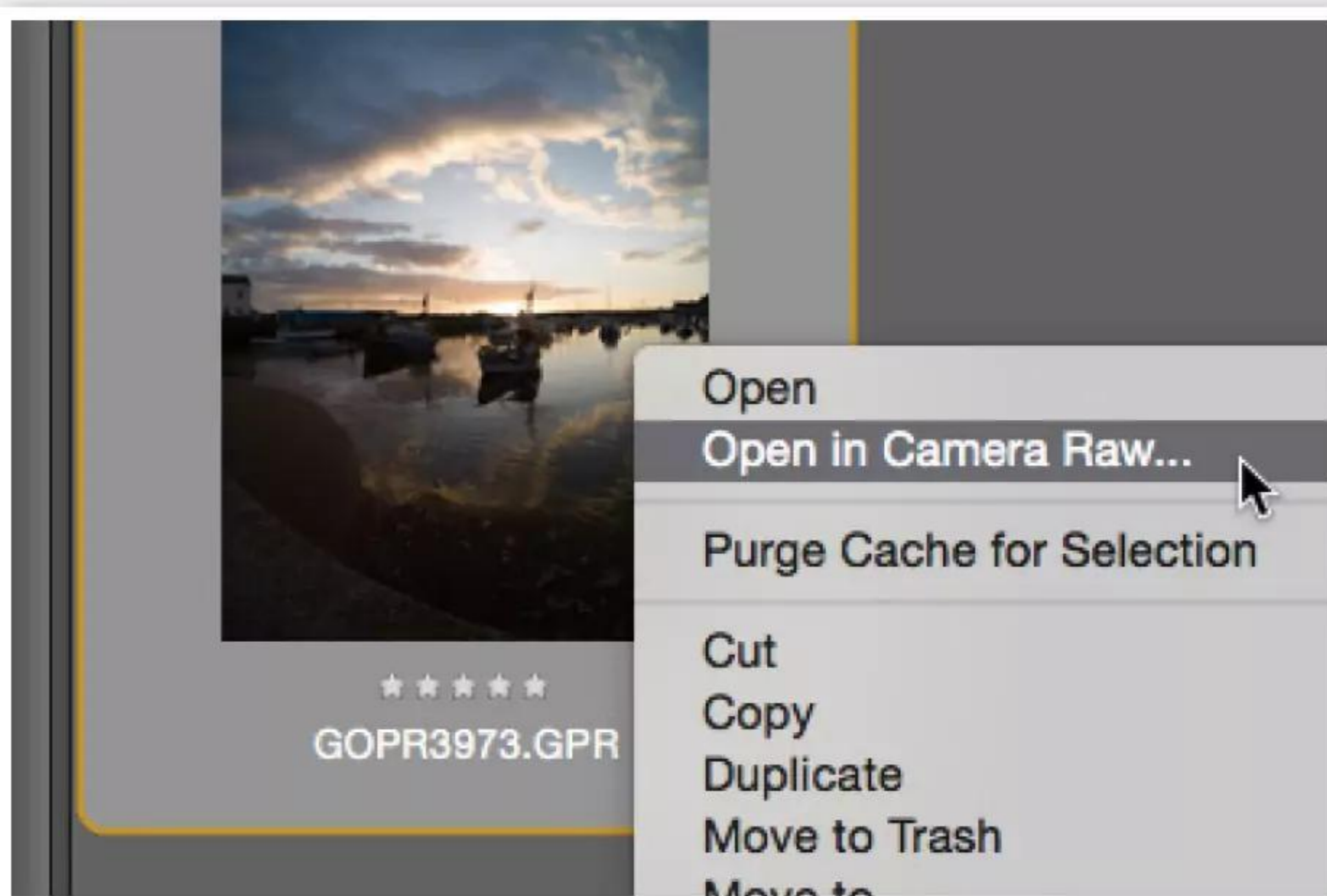
Up until the release of the HERO5 Black, any still images you captured were in Jpeg format. You could shoot some decent photos if the light was good but as soon as the light conditions became tricky, then the images would soon start to show their weaknesses relative to the kind of shots you'd get from a DSLR. The HERO5 has changed that with its ability to shoot in Raw format, which is a data readout of the sensor with no processing applied to it. You can squeeze more image data from a Raw file than you can from an already processed Jpeg file. This means that suddenly, you can shoot in more demanding situations and have a chance of recovering more data and having a usable image. We have such an example to show you next. It outlines how much you can recover an image with a non-destructive workflow. ■



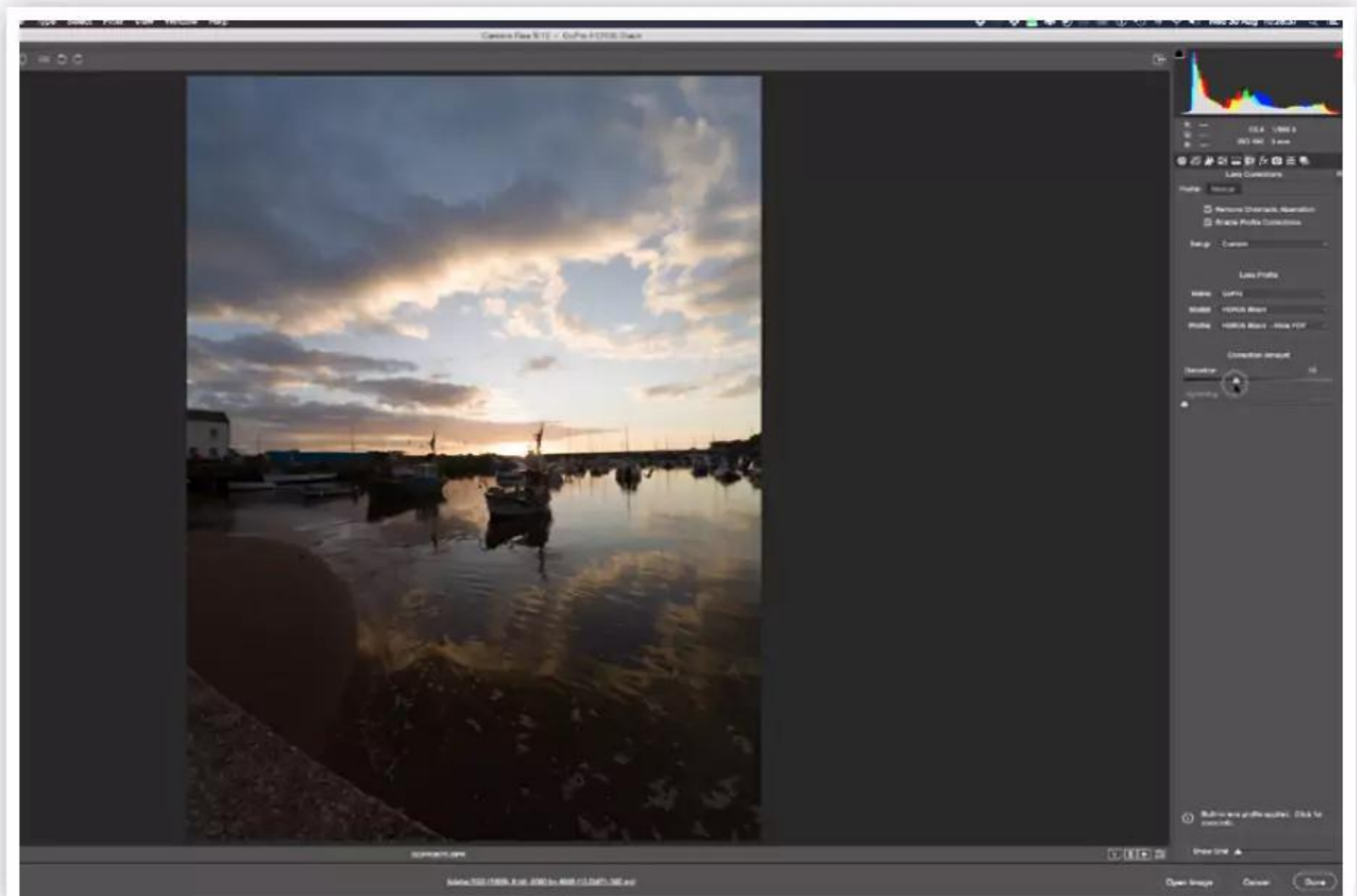
01 We have an image of a harbour sunrise that was shot on a HERO5 Black in Raw format. The file it creates is given a .GPR file extension. A GPR file is based on Adobe's Digital Negative lossless image format.



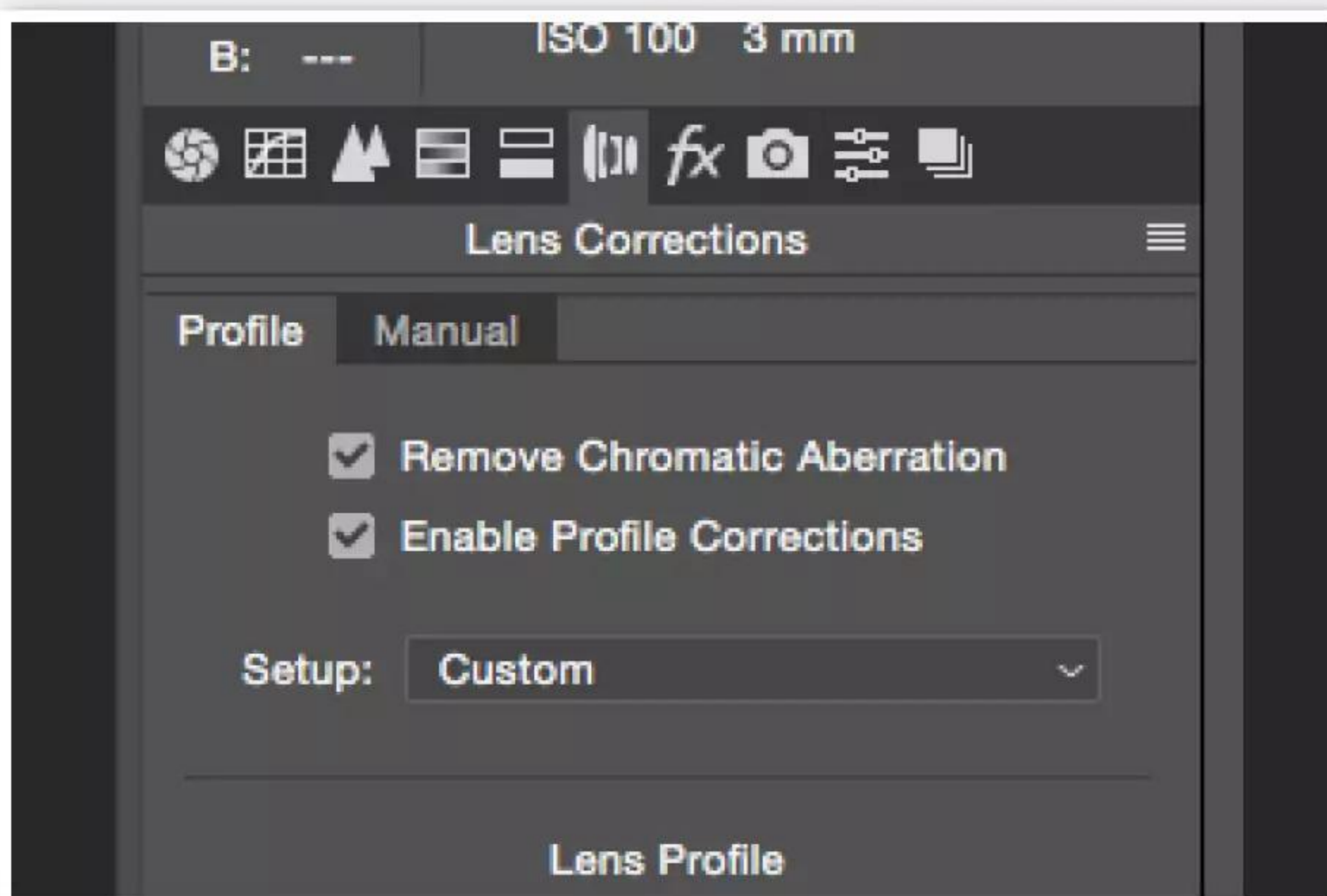
02 We are viewing the file in Adobe Bridge. The foreground is quite underexposed but the bright sky has come out reasonably well. We just need to be able to balance the tones out a little better.



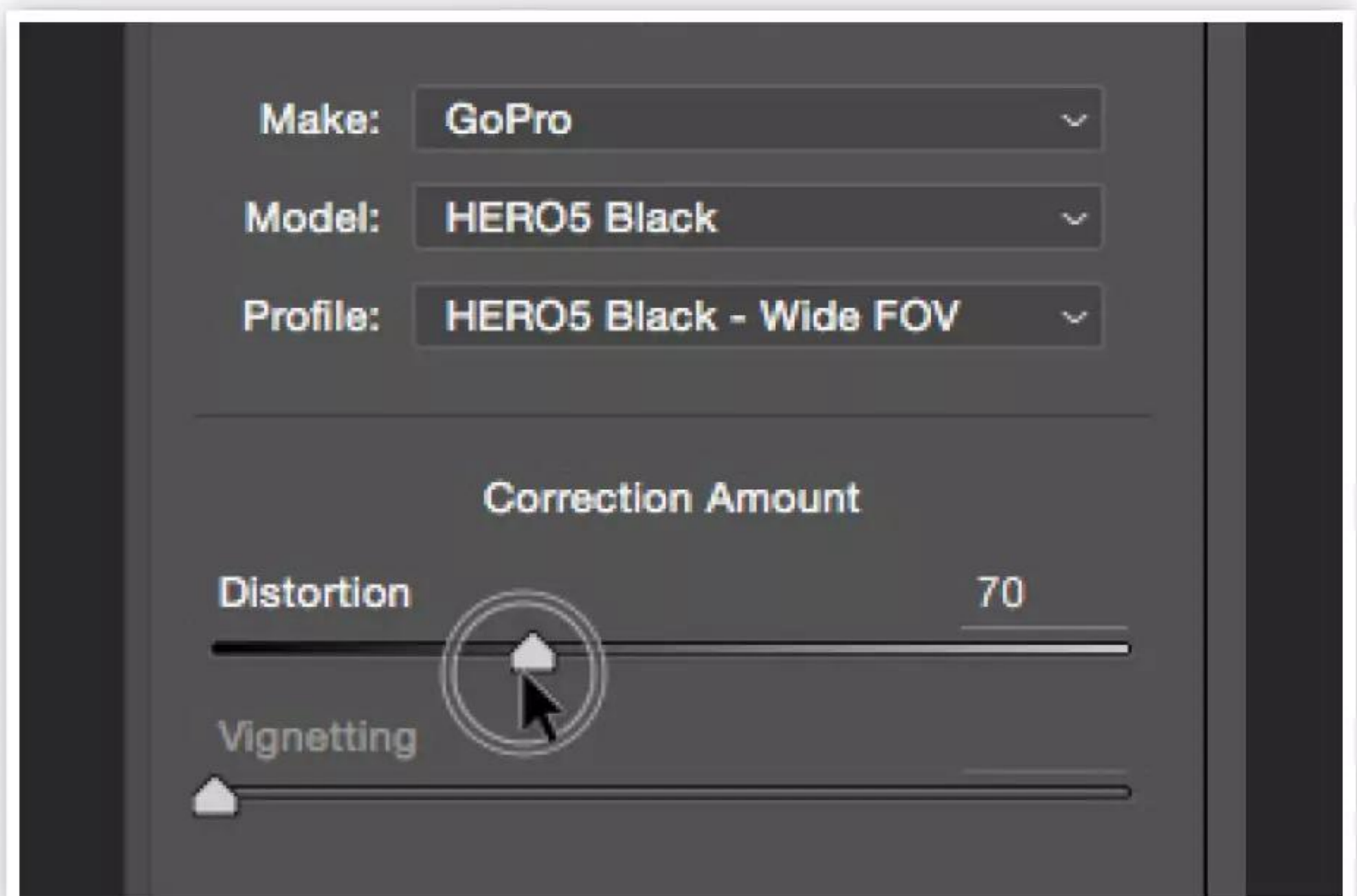
03 If you right-click on the image, a menu will appear. Choose Open In Camera Raw and it will open Adobe Camera Raw (ACR) which comes with Photoshop. You'll need to make sure you have an up to date version that can read GPR files.



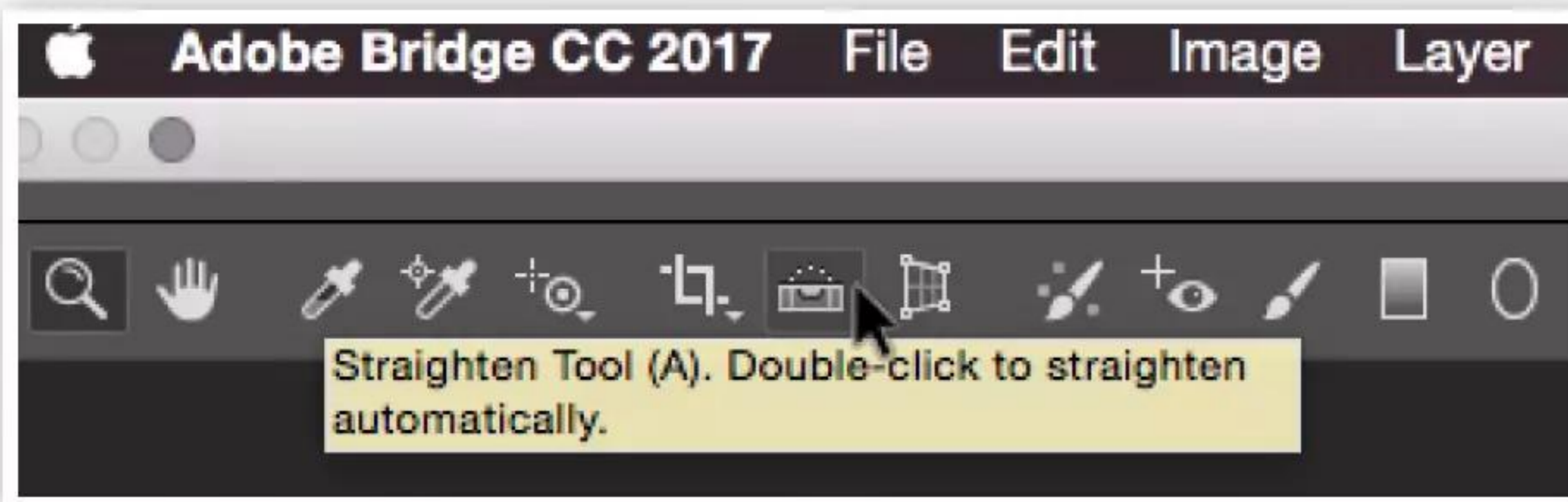
04 You can use other Raw processing software such as Lightroom which has a lot of similarities with ACR. The basic adjustments you need to make are common to most of the mainstream Raw editing packages.



05 The first thing to do is to click on the Lens Corrections tab on the right of the screen. This allows you to tick the Remove Chromatic Aberration and Enable Profile Correction buttons that will remove any unwanted fisheye distortion.



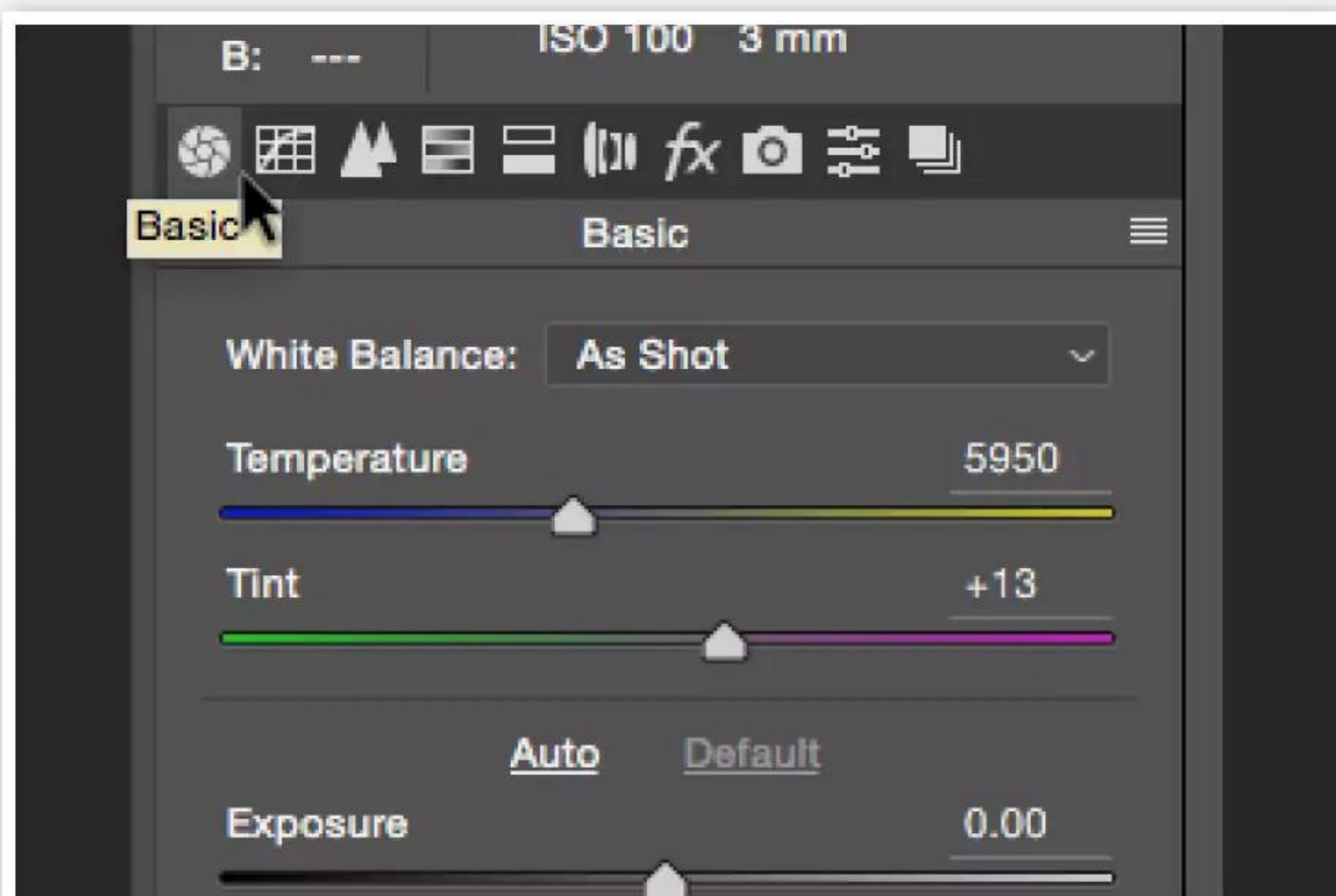
06 You can control how much of the distortion is removed by moving the Distortion slider between 0 and 100, until you have it how you want it.



07 Next you can click on the Straighten Tool (A) and drag your cursor over a part of the shot you know you want to be level. In this case, we've dragged a line across the harbour wall on the right of the scene.



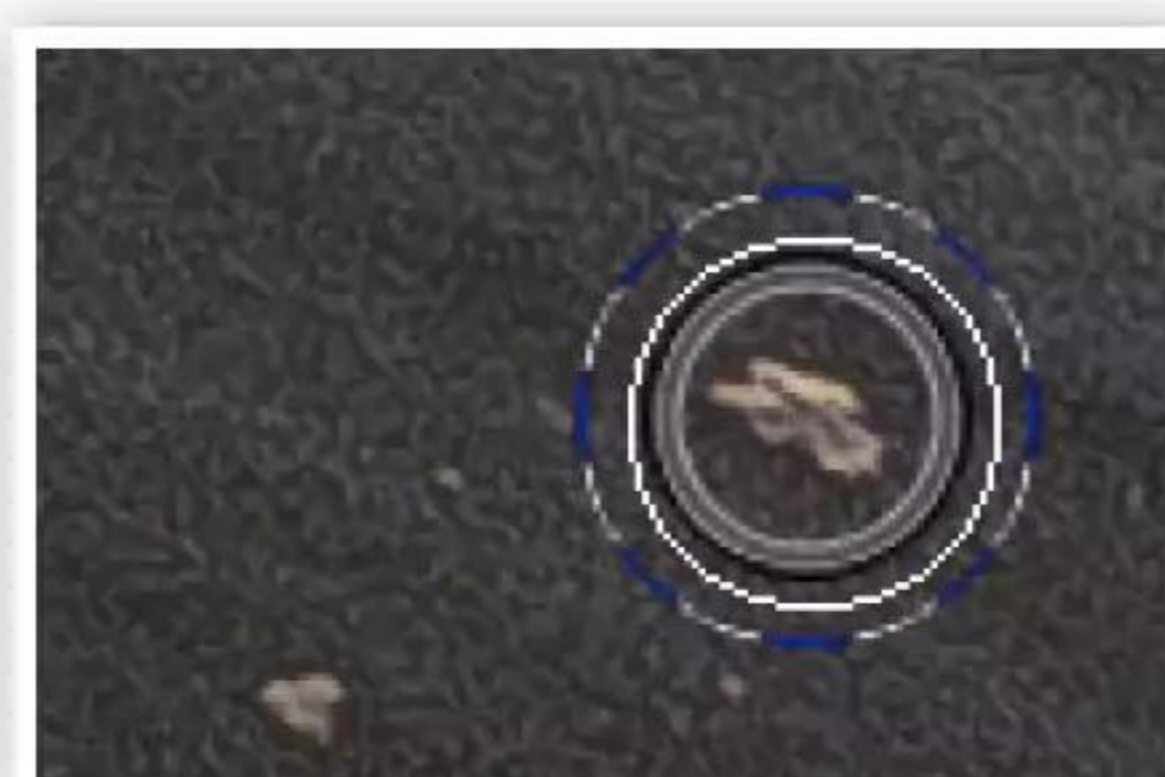
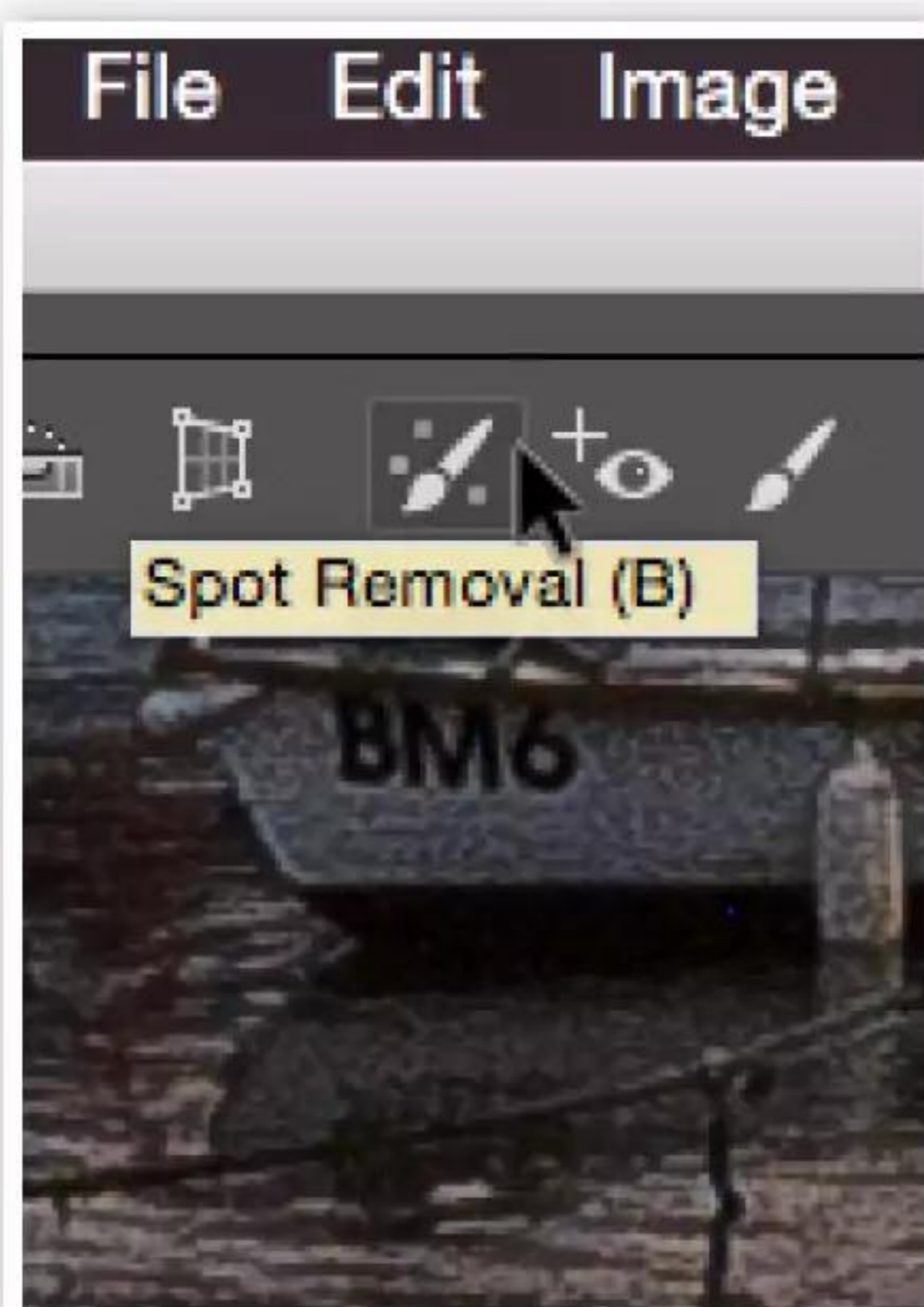
08 This will crop the image in such a way as to make that harbour wall level. You can drag the corner control points of the crop in order to crop more of the image if you should wish. We've cropped out some empty foreground.



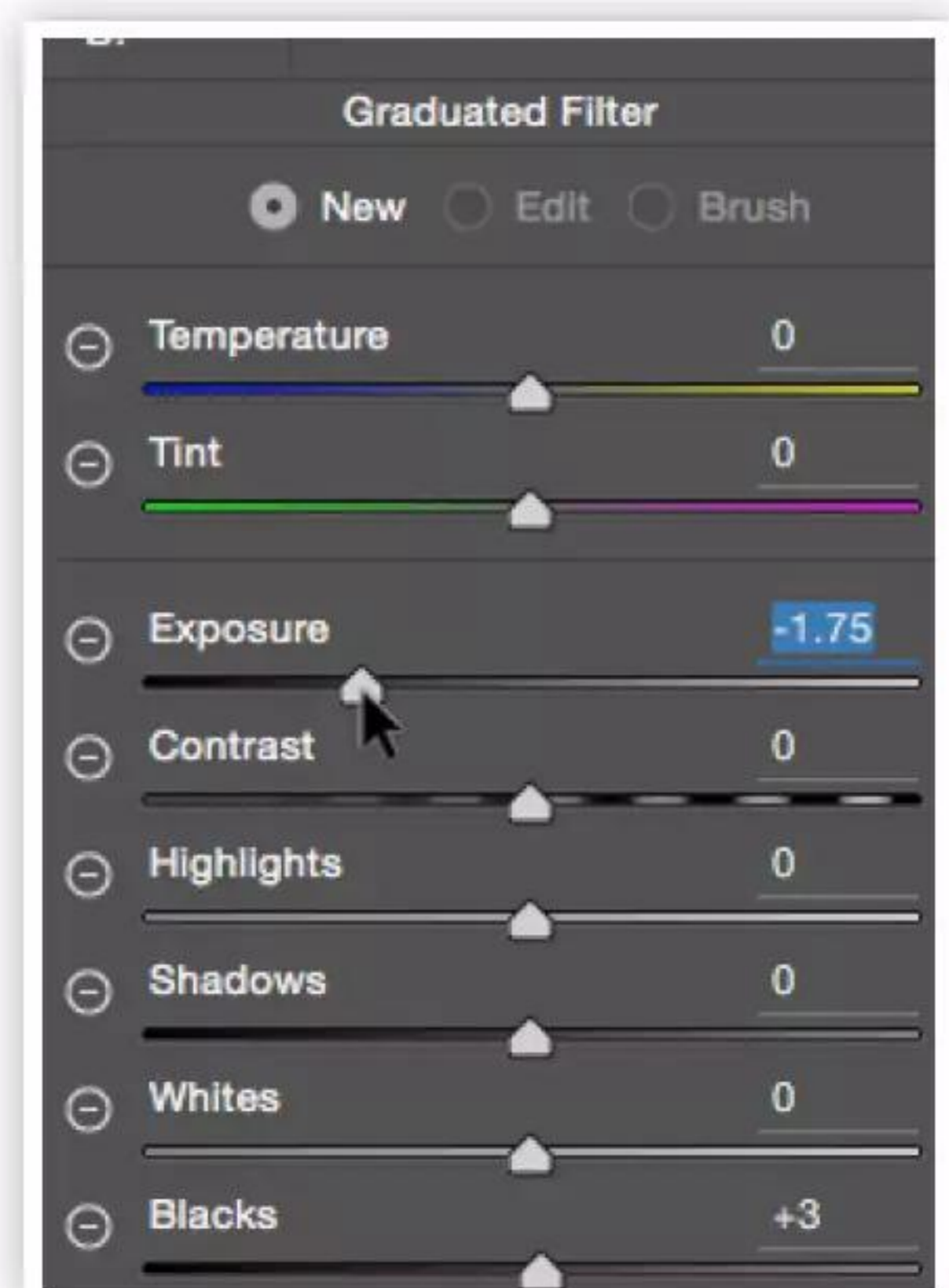
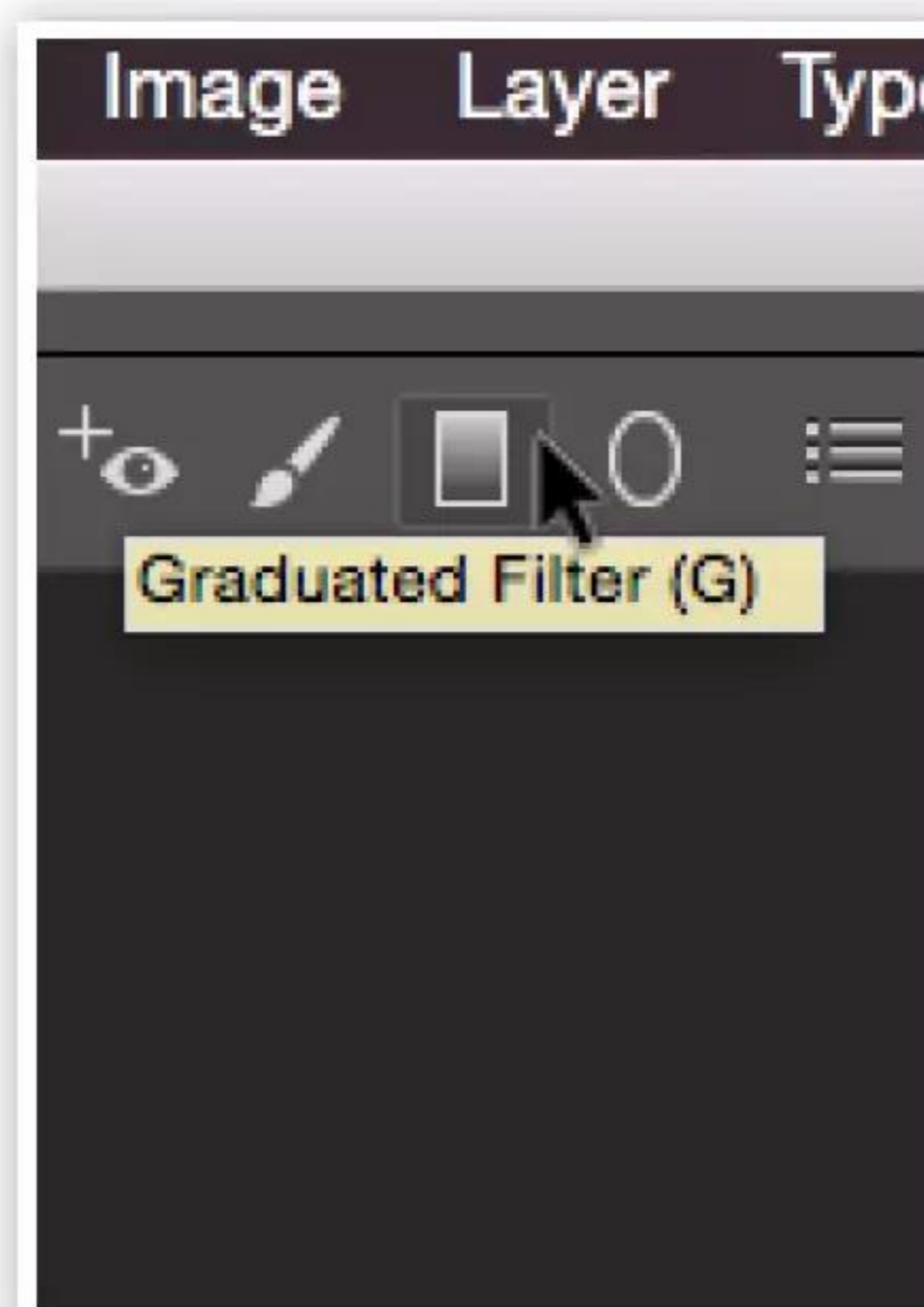
09 Click on the Basics tab and here you can start to adjust parameters such as Exposure, Contrast, Shadows and Highlights to begin to get the image more tonally balanced.



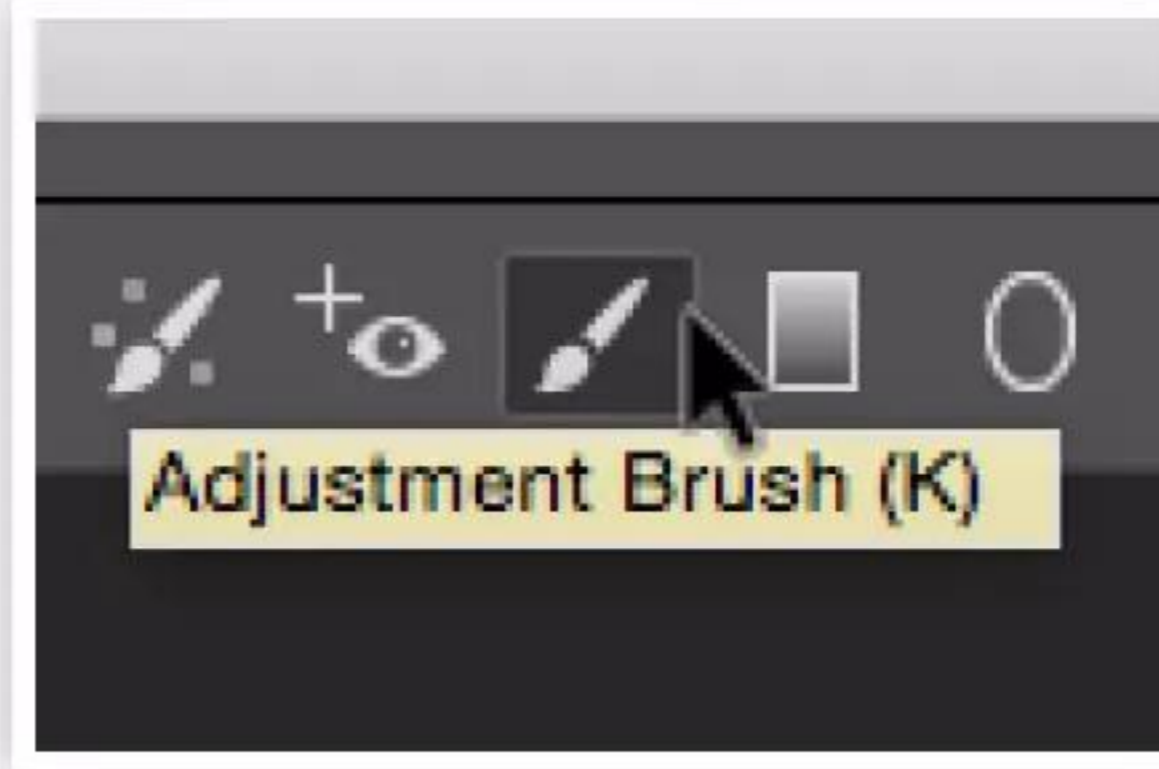
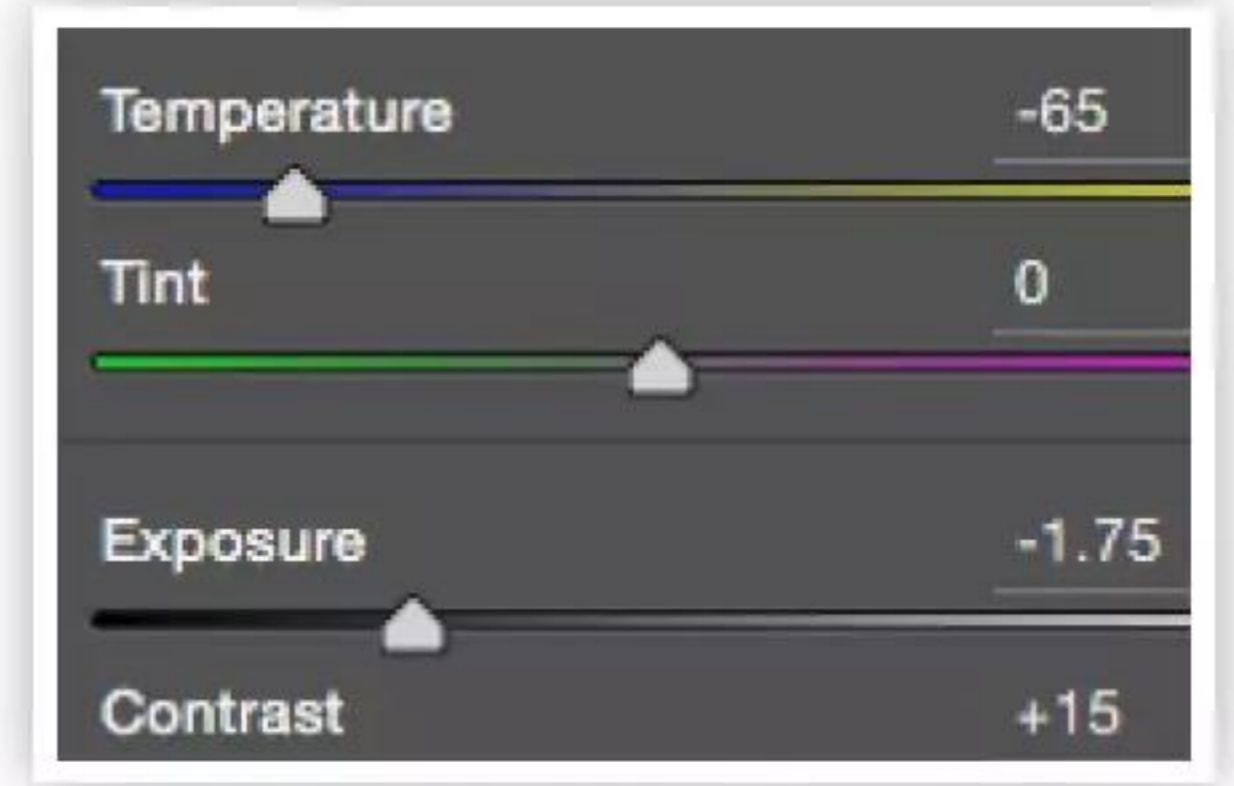
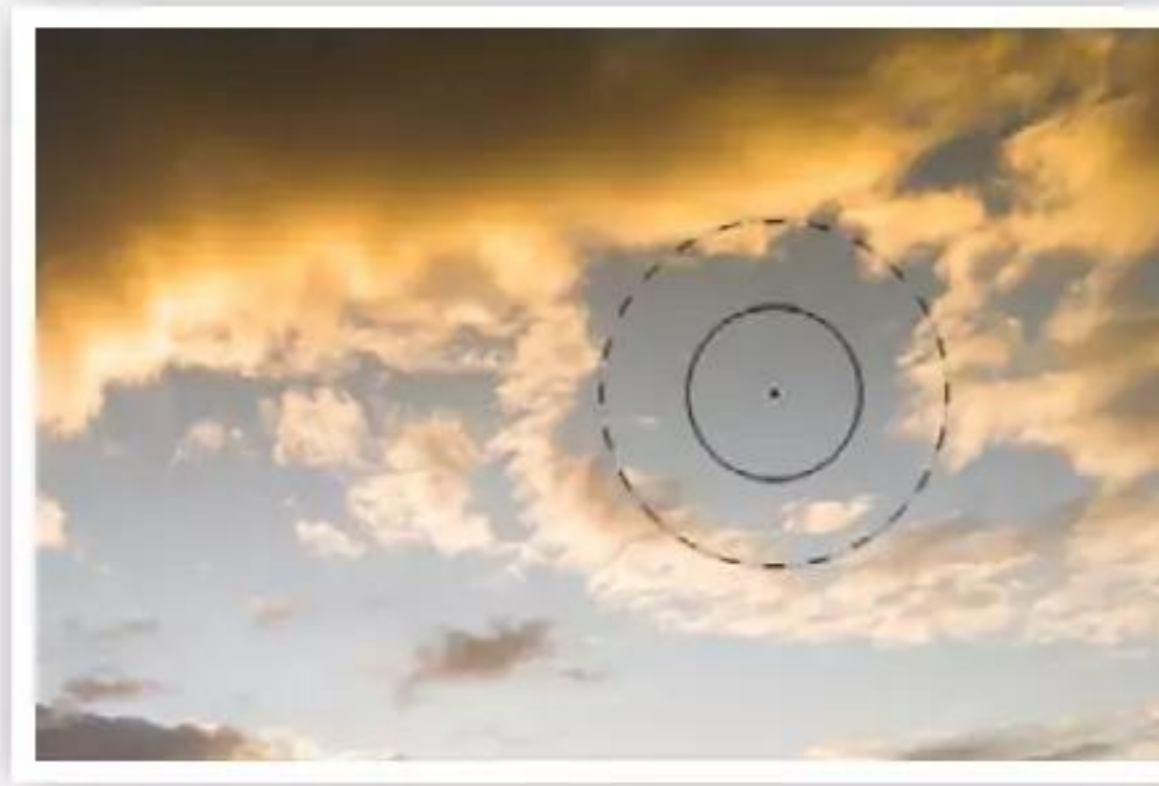
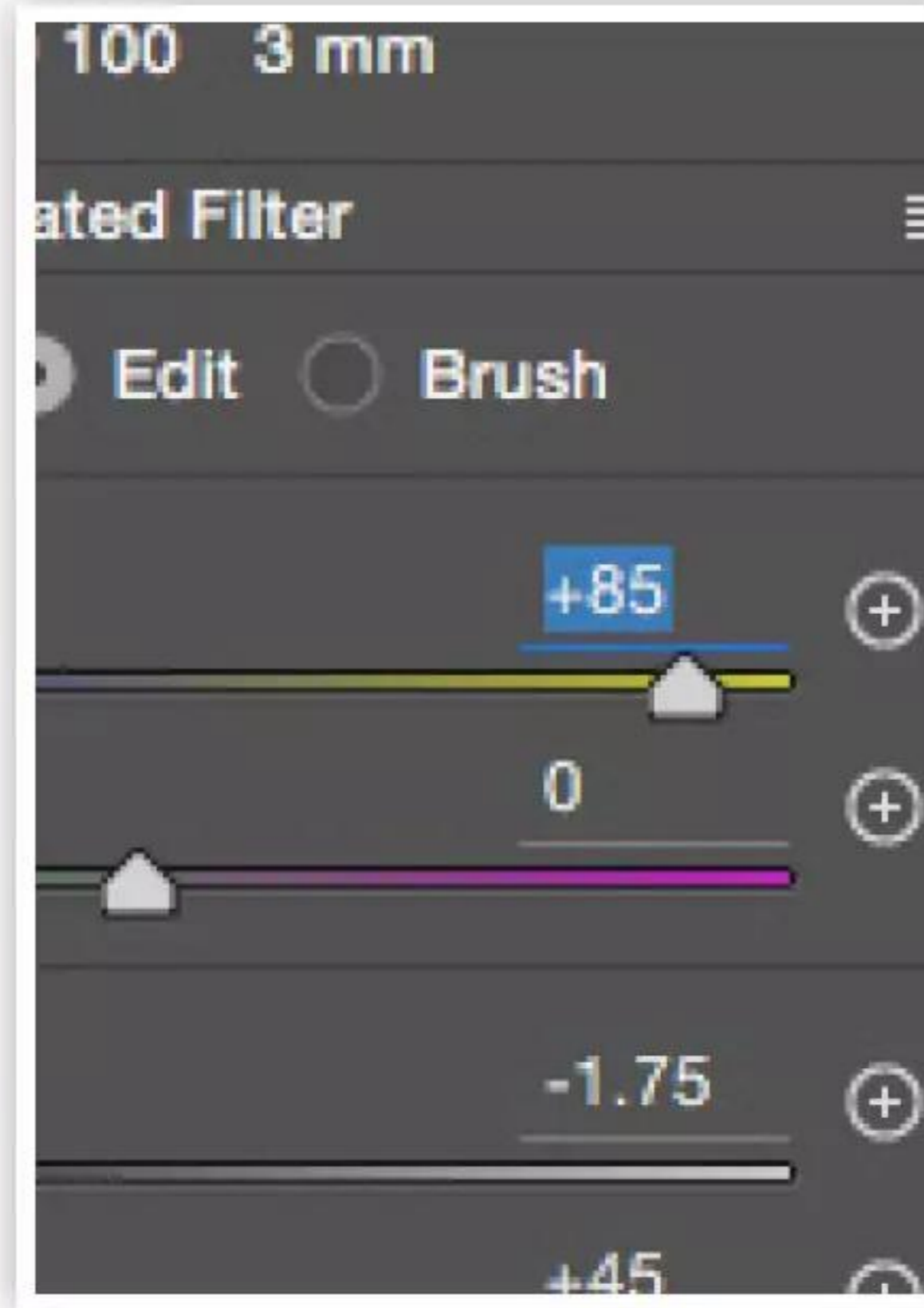
10 We lightened the shadows in the shot by a large margin as well as boosting Vibrance and Saturation. Now the image is starting to look much better already. One thing you may want to do is clean up the water in the foreground.



11 Zoom in on the foreground and click on the Spot Removal button (B). This gives you a virtual brush that lets you clone out unwanted blemishes. Click on an area you want to remove and it will fill it with a nearby area of water.

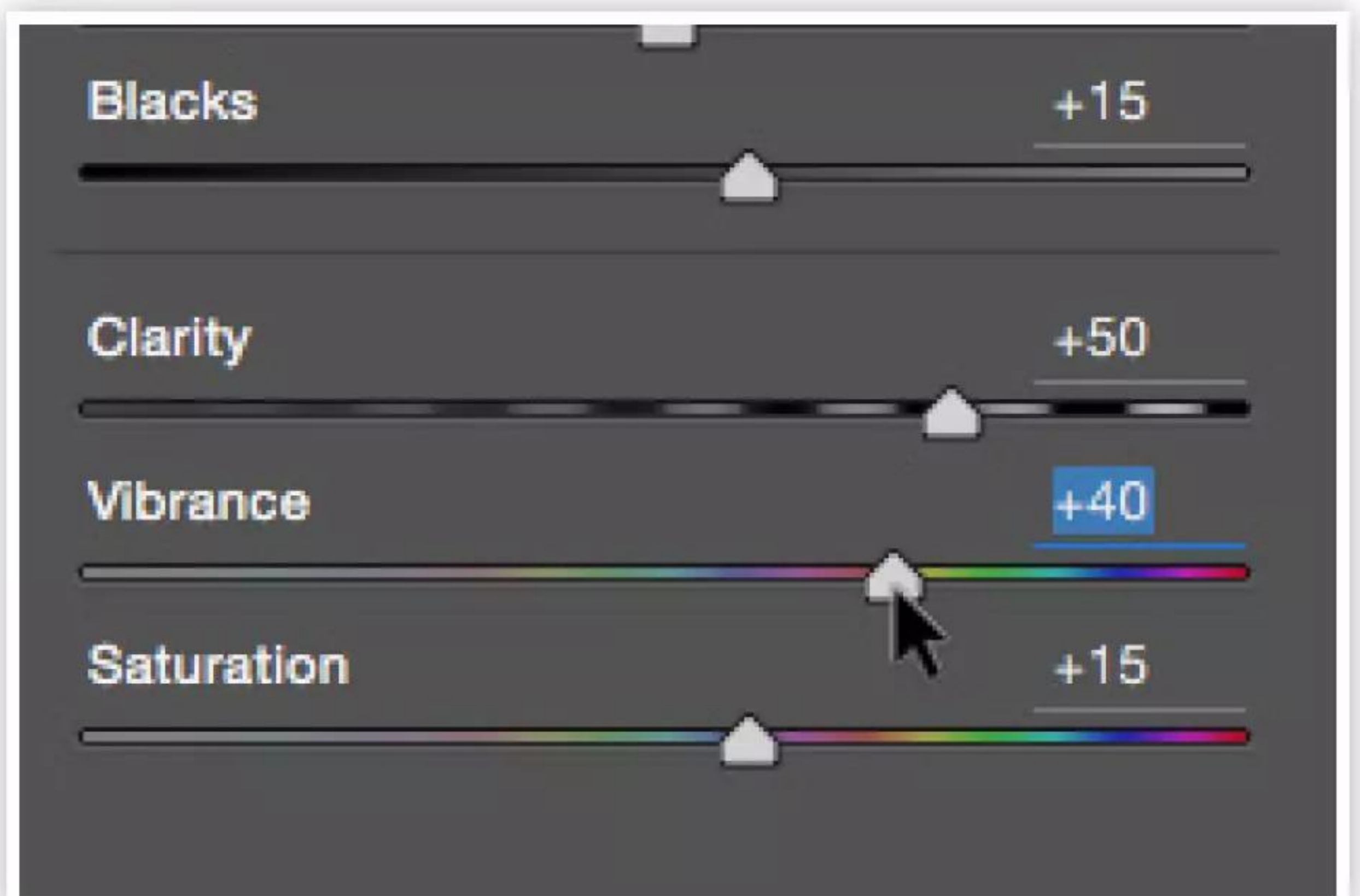
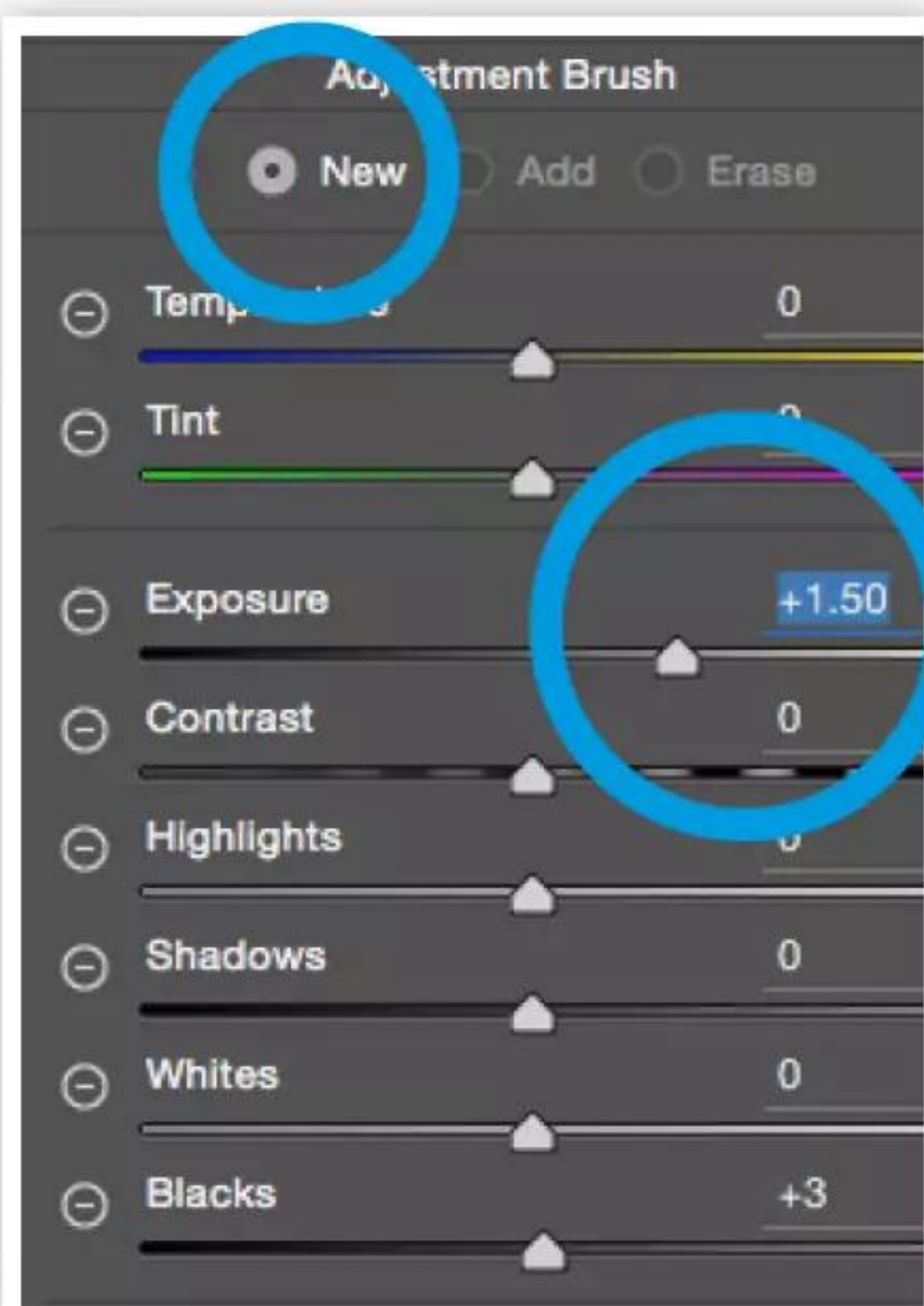


12 Next, click on the Graduated Filter button (G). You are going to use it to create a digital version of a filter that darkens the sky. Set the filters properties to underexpose the image by -1.75.



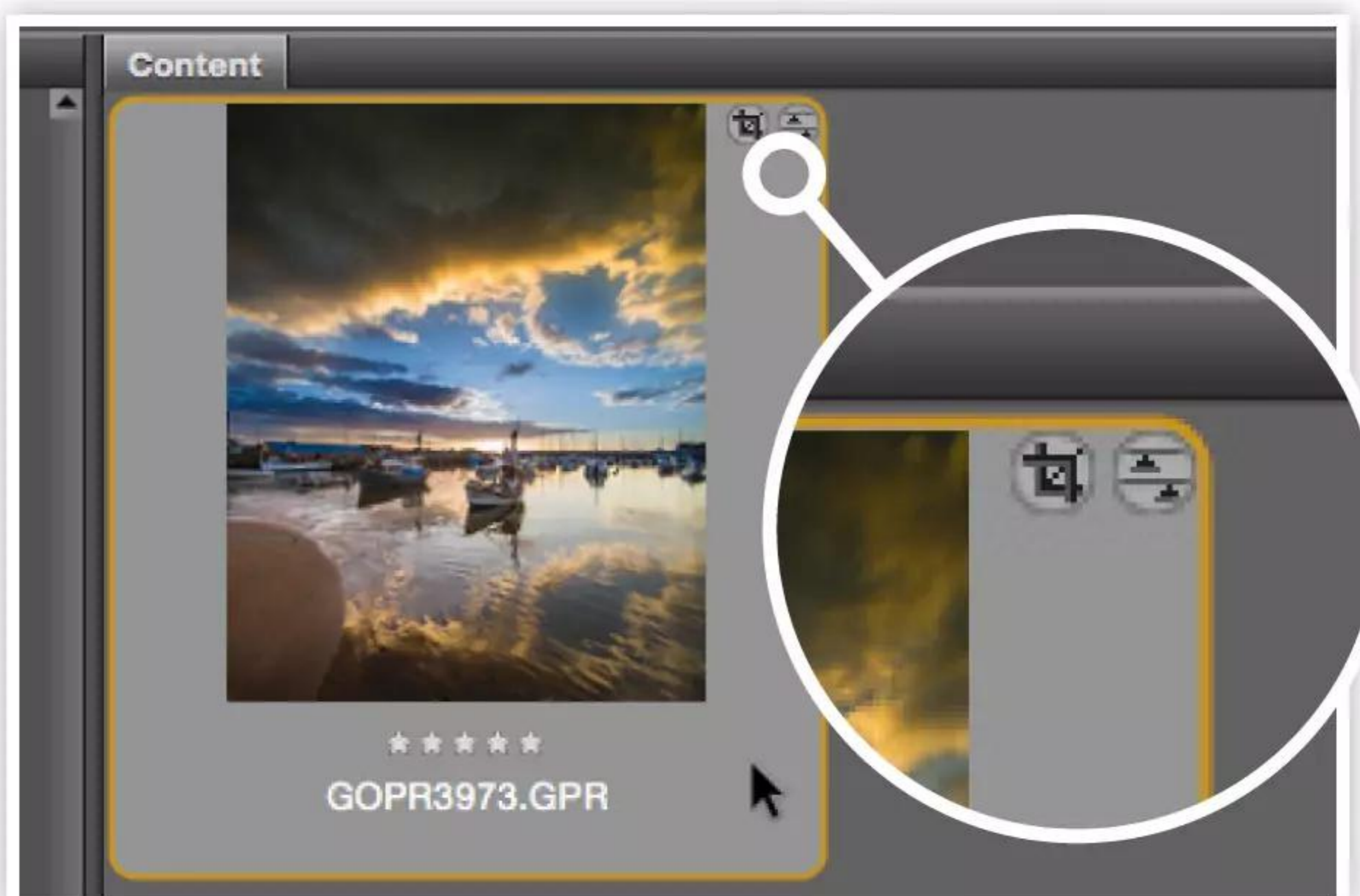
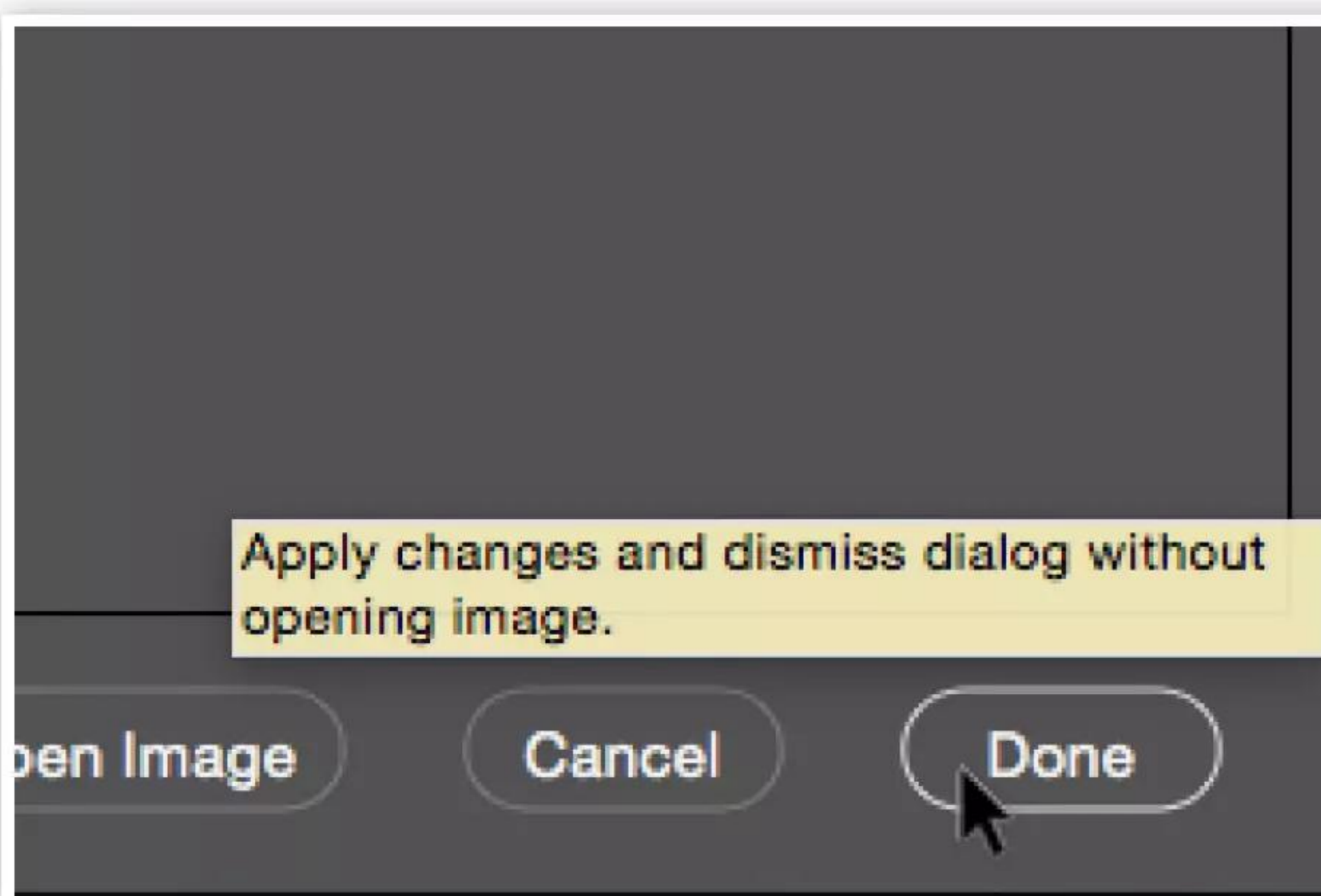
13 Click and drag on the top of the image down to the horizon. The sky will become darker. If you alter the Temperature of the filter's properties, you can make the warmth of the clouds really stand out.

14 You're also going to make a more targeted adjustment using an Adjustment Brush (K). This should also be set to underexpose and to be a much cooler Temperature. By brushing the blue sky only, you can make it darker and more saturated.



15 Finally, you're going to add a new adjustment brush which is set to overexposure by +1.50. Now you can make the foreground boats and water a little brighter so they stand out.

16 Back in the Basic tab, we made a few more tweaks to make it more vibrant by boosting Exposure slightly and increasing the Vibrance.



17 When you are happy with your adjustments, you can click on the Done button at the bottom right of the screen. All the adjustments you've added will be saved with the image and you can come back and alter them at any time.

18 Your GPR file is now amended with your adjustments. The top right of the thumbnail indicates you have made adjustments. You can open this in Photoshop and work on it further if you wish or just save it as a Jpeg or Tiff straight from ACR.

The GoPro Glossary

A list of some terms you may encounter

.GPR file

A raw file format based on the Adobe DNG format. HERO5 Black cameras can shoot stills in this format.

.LRV file

This stands for Low Resolution Video which is created for use in the GoPro app

1080p

Refers to 1920x1080 resolution used in "Full HD" images and footage.

16:9

An aspect ratio for widescreen format. Most GoPro video formats shoot in this aspect ratio.

2.7k

Refers to an ultra-high resolution video mode that is 2716x1440

4:3

A more square aspect ratio. GoPro stills and certain video modes shoot in this aspect ratio.

4k

Refers to the UHD resolution video mode that is 3840x2160.

720p

Refers to 1280x720 resolution. The base standard of High Definition by YouTube.

Anamorphic

When black bars are added to videos to help achieve a cinematic look.

Anti-Fog inserts

Small strips of material that absorb moisture to prevent condensation.

BacPac

An attachment that fits onto the back of a GoPro camera such as an LCD screen or battery.

Body Mount

GoPro mounts that attach to you directly, such as a helmet or chest mount

Burst Mode

A stills capture mode that allows for up to 30 shots to be taken in 1 second.

Codec

A computer program that can encode or decode a stream of digital data such as a video file.

Drone

The name given to unmanned aerial vehicles capable of lifting a GoPro aloft.

Export

An edited video sequence can be exported as a single file suitable for playback on computer or video based players.

Evaluative Metering

The entire frame of the image is analysed to calculate the best exposure.

File Chapter

The splitting of large video files.

Fish-eye

Seen in very wide-angle lenses. It is a spherical distortion often called barrel distortion.

FPS

Refers to how many frames are captured in one second in either video or stills mode.

FOV

Stands for Field Of View. FOV is a measure of how much of a scene is visible in a shot.

Floaty

A floatation device to keep your GoPro afloat if dropped in water.

Gimbal

An electronic device used on handheld equipment or UAV's to stabilise the camera's movement.

GoPro Studio

A video editing program for GoPro video footage.

Housing

A waterproof acrylic shell used to protect the camera when diving.

HiLight Tag

This is where you mark a key moment in a video clip.

KAP

Refers to Kite Aerial Photography. Using kites to lift cameras aloft.

LCD BacPac

An LCD monitor screen that attaches to the back of a GoPro to preview shots and play back files.

Loop Mode

Automatically and continuously records for a set time, then records over it until you press the stop button.





MicroSD

A very small memory card form factor used by GoPro cameras.

MP

Stands for Megapixels. This is the standard measure for the size of a video or photo in pixels.

Protune

A method of optimising your footage and stills for further editing on a computer.

Quadcopter

A type of radio controlled helicopter with four rotors such as the DJI Phantom.

Quik

Lets you quickly import, edit and share your footage. There are desktop and mobile device versions.

Resolution

Resolution refers to how large an image or video is. Higher resolution means bigger files but increased detail is visible.

Spot Meter

Using a single point in the centre of the frame to measure exposure.

SuperView

Footage captured in 4:3 ratio is dynamically manipulated to fit the widescreen 16:9 format.

Skeleton

A camera housing that has open sides for access to USB and HDMI ports.

Timelapse

The capture of multiple images over a long period of time which when played back shows an accelerated passage of time.

Wasabi

A third party manufacturer of GoPro batteries.

GPS

Global Positioning System. The method used by many devices to receive data from satellites to triangulate their position on the globe to within a few metres.

NTSC

The North American television display frame rate. Selecting the correct frame rate can eliminate flicker when played back on a TV in this region.

PAL

The television display frame rate for most televisions outside of North America. Selecting the correct frame rate can eliminate flicker when played back on a TV in these regions.

Raw

When applied to either images or audio, Raw is a minimally processed file that maintains maximum quality.

NTSC

The North American television display frame rate. Selecting the correct frame rate can eliminate flicker when played back on a TV in this region.

EV Compensation

Adjusting this setting on your GoPro allows you to either underexpose or overexpose your stills and video to accommodate lighting conditions.

ISO

ISO determines how sensitive the camera is to light. Low ISO values are less sensitive and give better image quality. High ISO values make the camera more sensitive in

low light conditions at the cost of increased image noise.

White Balance

This lets you adjust the colour balance of your stills and video. Measured in Kelvins, lower values are warmer in tone. Higher values are colder in tone.

WDR

Stands for Wide Dynamic Range. This setting is useful when trying to capture images with a wide range of bright and dark tones. It is a Photo Mode only option and cannot be used when Raw is turned on.

ACR

A shortened term for Adobe Camera Raw. ACR is a Raw processing application that comes as part of Photoshop. It can be used to process GoPro Raw files.

Karma

The name given to the unmanned aerial vehicle developed at GoPro. It is capable of lifting a GoPro HERO5 or 6 aloft for amazing aerial footage. There are cage adapters for the HERO4 Black too.

Dome Port

An acrylic dome with an aperture in its centre that can house a GoPro camera. It can be used to shoot underwater images and video as well as over and under split shots at the surface.

Super Suit

The name given to the underwater dive housing for the GoPro HERO5 and 6. It protects the cameras down to a depth of 60m (196ft).



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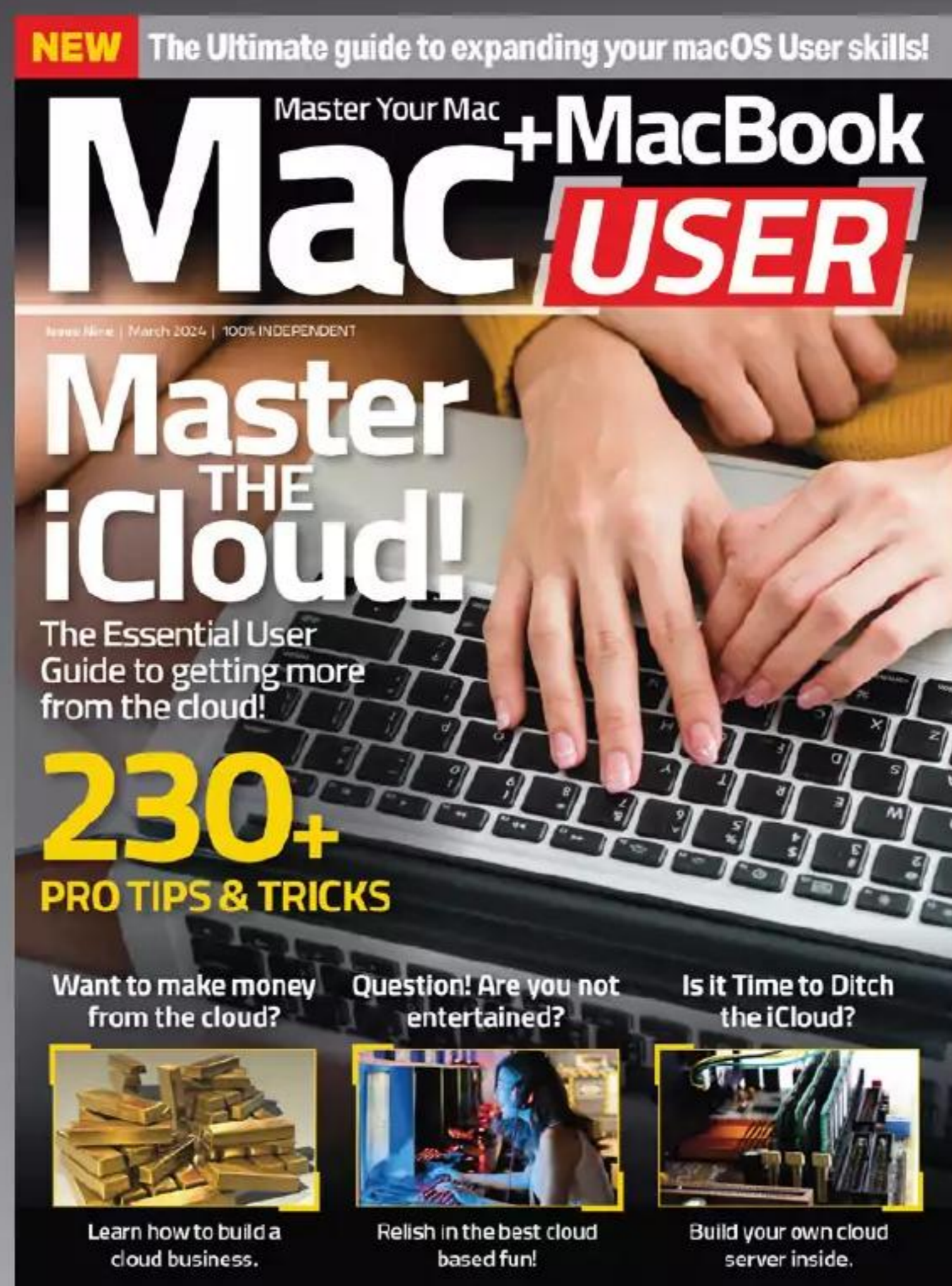
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