Get started with aerial photography

Take to the skies and capture new perspectives with this introductory guide

Dynamic viewpoint
An aerial perspective is a guaranteed way to bring a subject into a new light. In this image, a tractor cross-tills the soil of an agricultural field, exposing moisture gradations

AERIAL SHARING

Joining a dedicated site for aerial imaging, such as SkyPixel or Dronestagram, is a great way to share your work and seek inspiration from other photographers.

© Alex MacLean

Since the dawn of civilisation, people have dreamed of soaring from place to place and conquering the sky's expanse. It's no surprise then, that aerial photography is a tantalising genre for most image-makers, yet traditionally it's one that hasn't been over-saturated because of the logistics and expense needed to leave the ground. The subject is re-emerging with a fresh, new and exciting perspective thanks in part to the development of affordable drones and small action cameras, such as the GoPro.

In this genre, the sky literally is the limit, so follow the advice on the next few pages to get started. We'll cover the equipment you need to get started when shooting from planes and helicopters, as well as the settings to dial in to get the most from your shoot while you're up there. Take inspiration from our pro interview, and master your composition for striking results. Last but not least, turn to page 56 for one photographer's step-by-step tutorial for shooting stills with a drone.

Your first major objective will be finding a way to gain altitude – traditionally aeroplanes and helicopters have provided the perfect way to do this. However, using a drone enables you to become your own pilot, while keeping two feet firmly on the ground. You should choose your method carefully depending on how much you want to spend, as well as your chosen subject.

AFFORDABLE FLYING

If you're nervous about the expense of aerial photography, getting airborne in a microlight aircraft can be a cost-effective option. Look for introductory, trial or training flights.

In general, the slower you fly, the more opportunity you have to set up your images, which makes helicopters a popular platform because they can hover. They do have a major drawback though because their high levels of vibration can make it incredibly hard to take sharp photos. It's a good bet to start your flying mission close to home, booking a sightseeing tour or searching for commercial pilots in your surrounding area. Experience days can also be another affordable way to get up in the air.

When you've found a willing pilot and booked your shoot, it's time to think about the kit you're going to need, both specialist and general. Use a camera that you're familiar with, because quick movements and short flight times will demand you to dial in settings and compose efficiently. Always use a telephoto lens with a flexible focal range, such as a 70-200mm, simply because it's much easier to reframe a composition with the zoom feature than it is to reposition the aircraft.

On land, the solution to avoiding camera shake is to use a tripod, but when shooting from a helicopter this obviously won't work. You still need to minimise the vibrations from the rotors, however, to ensure you get a steady shot. The ideal solution is to mount the camera on a gyro-stabilising platform and use a cable release.

When you add up the bits of kit you'll need, as well as the cost of flight hire, the genre starts to sound less like an expensive hobby, and more like an unrealistic luxury. Always bear in mind, though, that you can hire specialist kit, such as the gyroscopic stabiliser, rather than investing in owning one.

Up in the skies the main light source that you'll be working with is the Sun, and how you use it makes all the difference to your end result. As with any worthy endeavour, practice will make perfect. It's important to remember that every trip will be different, and knowing your camera will pay dividends when you're faced with rapidly changing weather conditions and terrain. As you're capturing a fairly wide expanse of Earth, evaluative metering mode (referred to as Matrix metering on Nikon systems) is generally the most effective to use, as the camera will meter the light information coming from the entire scene.

Unlike ground-based photography, you'll probably be focusing your lens to infinity, or at least very near it, so depth of field becomes less important. As a general rule, set your aperture at the maximum sharpness setting for your lens.

What is important, however, is to shoot on the fastest shutter speed possible, not only to eliminate vibrations from flying, but to freeze the speed at which you're passing over the ground below. Use Shutter Priority, start with at least 1/1,000sec and go from there, depending on the light that's available to you. Modern DSLRs are capable of handling high ISOs with exceptionally low noise, so don't be afraid to push your ISO to at least 1000.

Of course for high-quality aerial shots, it's ideal to be shooting out of an open window, but this isn't always possible, and you may find yourself shooting through glass. One common mistake to avoid is positioning your lens right up against the glass of the window in the hope that it will help cut down on reflections.

Above
Taking flight
The photographer used a 300mm lens to photograph this large flock of flamingoes on Venice Lagoon, as they prepared to take flight

Opposite-top
Carlsbad, California
Aerial photography is nothing new; this colourful overhead image of cut flower fields was taken in 1989. However, advancing technology is making it easier and cheaper to try the genre yourself

Opposite-middle
Pine forest
These tree tops in a pine forest on the island of O'ahu, Hawaii, were shot from a plane with a Canon EOS 5D

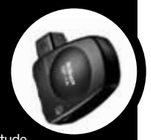
Opposite-bottom
Tilling tracks
Paths left from tractors after tilling the soil of an agricultural field, taken in Monon, Indiana

© Alex MacLean

Ideal aerial shooting gear

The sky is the limit with professional kit

GPS unit
www.nikon.com
£243 / $312
By plugging in a GPS unit into your DSLR, the location data will embed directly in the file. This GP-1A from Nikon records the latitude, longitude and altitude of all the images taken while it's plugged in.



Camera stabiliser
www.freeflysystems.com
£6,142 / $7,995
A hand-held gyroscopic stabilising mount such as the Freefly MOVI M10 will reduce vibrations. It's designed to support the weight of a professional DSLR.

Fast zoom lens
www.nikon.com
£1,579 / $2,400
A versatile telephoto lens with a wide maximum aperture, such as this Nikon f2.8 70-200mm, will facilitate speedy shooting. The vibration-reduction feature will also help with image sharpness.

Understanding perspective

Consider the effect that different focal lengths have when photographing in the air

© Mark Richardson

WIDE-ANGLE
Cameras typically used with drones produce images with a very wide, fisheye view. Any lens distortion can easily be corrected in post-processing. Ultra-wide focal lengths, such as 14mm, create an extremely immersive view, but can lack a distinct point of interest.

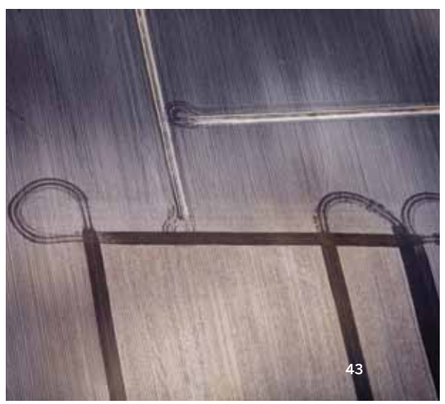
© Wim Swyzen (photo.com/wim.swyzen)

STANDARD
Focal lengths of around 35-50mm produce an angle of view that's similar to what the human eye can focus on, creating a natural perspective. They won't provide a high enough magnification factor when they are used at very high altitudes, however.

© Alex MacLean

TELEPHOTO
Flexible telephoto lenses, such as a 70mm and longer, are a popular choice for aerial photography. Good for abstract shots, they allow you to zoom in on areas of interest at high altitudes, and eliminate distracting elements from the frame.

2x © Alex MacLean



Master of the skyline


© Alex MacLean

Alex MacLean shares his insights on a career spent up in the air

www.alexmaclean.com
Bio: Alex MacLean is a professional aerial photographer, with an impressive career that spans over 40 years. Trained originally as an architect, he's flown over great expanses of the United States, documenting a landscape that is both timeless and ever changing. His work has been exhibited widely in the United States, Canada, Europe and Asia.

How did you get into aerial photography?
I was interested in photography as a child, but became more serious while studying architecture. I overheard one of my professors talking about aerial photography, and this piqued my curiosity, particularly as I had a good friend whose uncle ran the biggest flight school in America. I ended up working nearby as a counsellor for a kid's camp, which meant I could train at the school and get my pilot's licence.

Flying a plane while taking pictures must be challenging. What do you think about when composing a shot?
First, you must set yourself up for the light. As you circle your subject, the light will obviously change, and this is something to take advantage of. Backlighting can be great on grass, for example, while totally black, unlit water can look dramatic too. You must also think about scale. Scenes obviously look different at 500 feet than they do at two to three thousand feet.

What bits of kit do you typically use for an aerial shoot?
My favourite DSLR is the Canon EOS 5D Mark III, which seems to have more reliable focusing than the Mark II. Lens-wise, I favour the Canon 70-200mm L series lens, along with the 24-105mm lens and a 135mm lens. My favourite planes are the high-wing Cessna 150-182 range and light-sport craft.

Is shutter speed your main priority when you're in the air?
I use Shutter Priority mode rather than manual or Aperture Priority. I tend to shoot at least at 1/1,000th of a second on automatic ISO.

Your images are wonderfully graphic in nature. Does this stem from your architectural past?
I obviously think a lot about shapes, and how they work with colour, but I also think about landscapes in 4D – the fourth dimension is time, and the effect it's had on the landscapes.


© Alex MacLean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Above
Sunbathers
Beach goers sunning on rocky coastline in northwest Italy, taken using a 70-200mm lens

Left
Over ramps
This birds-eye view compresses the multiple levels of vertical separation in a high-speed interchange

Pro insight

Discover MacLean's top tips for aerial photography

- **Rapid exposures** For good aerial shots, you need to be using high shutter speeds, realistically 1/1,000sec.
- **Avoid noise** [Aim to] keep the ISO between 200 to 400, so you get faster shutter speeds but little noise.
- **Position yourself** Sit in the left seat of the plane if you can. It's much easier to look over your shoulder and shoot.
- **Change your perspective** Explore different altitudes. Go higher and lower, but be careful of airsickness; it can be a nightmare.

Generally this technique will only increase camera shake due to the vibrations of the aircraft. A better strategy is to attach a hood to your lens and get in as close as you can to the window without actually touching it, or alternatively use your free hand to cup around the lens to shield it from reflections.

Another difficulty you might encounter is using your lens' autofocus feature, particularly if the terrain is flat and featureless. For landscapes such as large bodies of water or deserts, there is little for the mechanism to latch onto, so the focusing motor will hunt. Use autofocus to lock onto a point in the viewfinder and engage the focus lock. Alternatively you can go manual and focus to infinity.

STAY SHARP
Because of the reduced contrast of scenes seen from the skies, autofocus doesn't always work effectively. Switching to manual focus and setting the distance to infinity can overcome this problem.

Prolonged periods of looking through the viewfinder can sometimes induce airsickness. In these instances, take some time to enjoy the scenery and plan your next photo opportunity. If airsickness is something you suffer with, or you want a more flexible way to photograph from the air, then the alternative of using a drone might appeal to you.

Also known as multicopters, quadcopters, or unmanned aerial vehicles (UAVs), drones are being used more and more in aerial photography. With manufacturers such as DJI (**www.dji.com**) offering GoPro-capable models starting from around £350 / $580, it's easy to see why. If you have no previous radio-controlled aircraft experience, it's certainly worth practising your flying skills with an inexpensive, camera-less quadcopter, as you don't want to splash out on an expensive model only to crash it on the first go.

The important thing to remember is that as fun as drones are, they're still capable of causing damage if they are not used properly. When flying a drone, you must always bear in mind the basic safety precautions and read up on any legal requirements to ensure that you don't end up in a sticky situation. As a general rule, never fly your unmanned aircraft within 50 metres of a person, vehicle, building, structure, or overhead groups of people at any height. When you've got your shots, think carefully about what you do with them, as you may be unknowingly breaching privacy laws. This doesn't matter so much if you're just getting started out in the genre and taking photos for fun, but if you intend to use an unmanned aircraft for any kind of commercial activity, you must get permission from the Civil Aviation Authority beforehand (**www.caa.co.uk/uas**).

There's nothing to stop anyone with a camera taking great aerial photos, and whether you're shooting a rooftop view at 30 feet or a tropical paradise at 1,000 feet, with a bit of know-how, the results can be sublime. You've read the tips here, but nothing beats experience in the field, so get started and take to the skies. DP

Mark your tracks

Use a GPS logger to see where your images were captured

When you're thousands of feet in the air, it can be hard to determine precisely where your images were taken. Though many new cameras and drones come with GPS units built-in, some don't, and more importantly, you probably won't want to purchase a new camera for this feature alone. Attaching a GPS unit to your DSLR offers the ability to geotag your images, but again these accessories are only compatible with certain camera models.

A relatively easy way to mark your aerial photos with the co-ordinates of where they were captured is to use a GPS logger. Using satellites and signals, these devices have no screen to display the co-ordinates, but are simple and accurate as a receiving device.

Ensure that your camera clock is set correctly, because the GPS software will use the time stamp in each image's EXIF data to work out where it was captured. After your shoot, export both the image files and the recorded points from the data logger to a computer. Using free software, such as GeoSetter (**www.geosetter.de/en**), you can display your flight route on a Google Map, with each image marked by a pointer.

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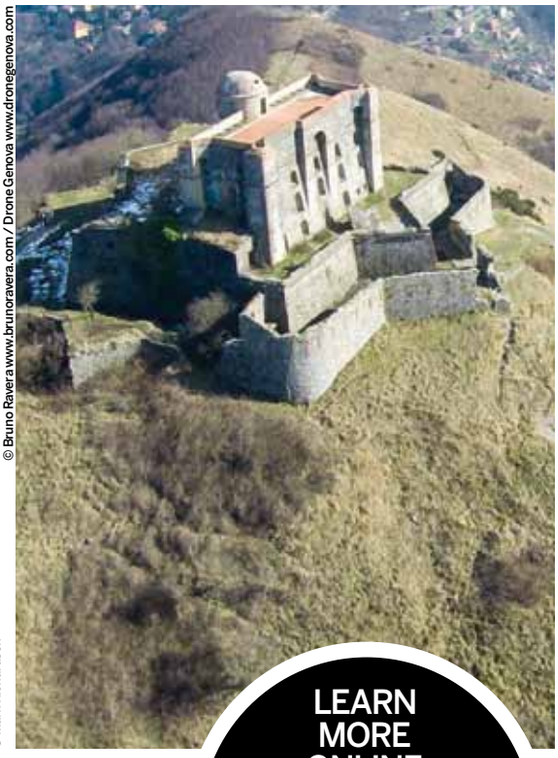

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How to use a drone

Pro photographer Mark Richardson shares his method for aerial shooting

Full-time photographer and videographer Mark Richardson has travelled to many different countries, using quadcopters to capture stunning aerial imagery for use in corporate and commercial productions. His main kit of choice, as demonstrated here, is the DJI Phantom 2 drone, and GoPro Hero3+ camera, chosen for their ease of use and compact travel size. Here he shares his tips for successful aerial shooting using a drone.

LEARN MORE ONLINE

Want to get up to speed with your aerial photography? Get a 50% discount off Mark Richardson's online drone course at http://bit.ly/16SACnl.

Above
Fort Diamante
This image of one of Genoa's fortresses was taken with a GoPro HERO4 Black mounted on a customised DJI Phantom

Above-left
Prague rooftops
Camera drones are incredibly fun to fly and will add a whole new dimension to your work. This image was edited to remove lens distortion and to increase the contrast

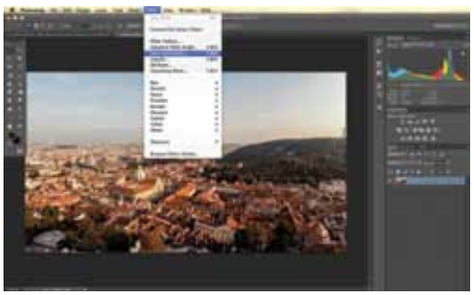
1 Set the camera Insert a battery and Micro SD into the GoPro. Turn on Time-lapse mode and choose around five seconds. Shoot in wide mode and switch Protune on if you have it.

2 Secure the device Seat the GoPro on the gimbal and connect it. Angle the camera, then secure the holding brace with the two screws and make sure they're snug.

3 Get ready to fly Power on the transmitter, GoPro and drone – in that order. Check the area you are flying in is clear of obstacles. Follow the local laws for flying UAVs.

4 Take off Activate the GoPro's Time-lapse mode just before takeoff by pressing the top button. Take off, position the drone and compose to get your shot.

5 View your shot To receive a video signal from the GoPro while you're flying, you'll need to use goggles like Fatshark FPV goggles. Some models allow live view via a mobile app.



6 Post-production Open your shots in Photoshop. Remove the fisheye lens distortion using the Lens Correction tool in the Filter menu, and select the lens profile.