

Photography



From Above

All About Drones and How to Make Beautiful Images Using One

by Pete Scifres,
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By maneuvering my drone over the south dyke of Shiprock Rock I created a leading line.

Are you looking for a new way to make original, impactful images? Then consider drone photography. While there are challenges and a learning curve, rapid improvements in technology have put this in reach of most of us. I'm going to discuss the whys, whats, wheres, and hows of drone photography and hopefully get readers to consider this.

Rainbow Basin is mostly impassable and invisible from the ground but brilliant from a drone.



In this abstract of a hot spring in Leirhnjúkur, Iceland, the drone camera was aimed straight down.



This location is about 10 miles east of Badlands National Park, drone legal, and has the same beautiful colors and textures.

Why Drone Photography?

Outdoor spaces can be a struggle to compose effectively especially if the subject is large and you are forced to look up too sharply. With a drone you may be able to move “eye” level to a more even plane with the subject for a better presentation. Or perhaps the subject is a bit too far away for a wide lens. With a drone you would be able to quickly get closer to your subject. The direction you shoot from is very flexible and can be quickly adjusted. Consider the image from Valley of the Gods (pg. 16) National Monument. By maneuvering my drone, I created a leading line using the rising ridgeline and at the same time putting sidelight on my subject. Being higher showed more of the formation.

Some of the most interesting aspects of land formations just can't be seen well from the ground. By rotating your camera straight down you may be able to make compelling abstract images impossible to make from the ground. See the images of a crater

and a hot spring in the Leirhnjukur area of Iceland. Using a drone for photography is something new, different, and exciting. It can be an excuse to revisit locations. And you can continue to spend money on photography equipment!

What Drone Should I Use?

Because DJI sells most of the consumer drones in the USA I am going to focus this discussion on their product line especially on three drone models that may be most relevant for still photography. They are the:

DJI Mini 2 and 3
DJI Air 2S
DJI Mavic 3

DJI Mini 2 and 3 –

Both use a cell phone size sensor, either 12MP or 48MP. Fixed f/2.8 aperture and 24mm focal length. These drones come in a few flavors and, depending on the flavor, cost \$600 to \$1100 including the combo kit. Some have collision avoidance capability. Very small and portable.



DJI Air 2S controller and screen

DJI Air 2S – Uses a 20 MP 1-inch size sensor. Fixed f/2.8 aperture and 24mm focal length. \$1300 with the combo kit. Has some collision avoidance capability.

DJI Mavic 3 – Is for the photographer who has everything and doesn't mind flying a \$2000 item over water or impassable terrain! Uses a micro 4/3 size sensor and has a second camera for some telephoto capability. Variable aperture. \$2850 with the combo kit. Collision avoidance capability. DJI recently began shipping a version of the Mavic 3 with reduced features – but the same sensor – for lower cost.

Another new product from DJI is the RC Controller which they are shipping as a standalone item for about \$300. It is compatible with the Mini, the Air 2S and the Mavic 3. It comes with a built-in screen that is noticeably brighter than a tablet/cell phone screen, and boots and mates to your drone in a few seconds.

A good way to think about these choices is to realize the models are, in concept, similar in many ways and you are basically trading off cost vs. size/portability vs. image quality. As in all cameras, sensor size is a big issue because of noise and dynamic range performance, and I would be skeptical about the quality of images created from, for example, 48mp cell phone size sensors.

Let's move on to how and where you can fly a drone.

Hrafnabjargafoss in North Iceland



Vindbelgjarfjall Mountain in north Iceland. The area around the crater is flat and much of the beautiful fall color would be invisible without some altitude..



Flying over the Amboy Crater in the Mojave Desert enabled a peek inside.





A pretty sunrise over California's Alabama Hills



Lake Tahoe Shoreline



Heavy snow covers a forest in the Eastern Sierras

What are the Relevant FAA Rules?

Drone users are required by law to follow these rules. They can be read in detail at https://www.faa.gov/uas/recreational_fliers/ but here are a few of the key ones.

Fly no higher than 400 feet over the ground

Register (if over 250 grams in weight) and label your drone

Take and pass the TRUST test and keep a copy with you when flying

Maintain “line of sight” between pilot and drone
In addition to following FAA rules, operators should use common sense and not fly near crowds, over houses, near emergency operations, etc.

Many of the products, laws, and rules about drones are still changing rapidly so it's very important that readers seek out the most current information if they do happen to take the plunge.

Where Can I Fly My Drone?

I think it is easier to approach this important question by first looking at where you cannot fly your drone. You cannot takeoff from and fly them in national

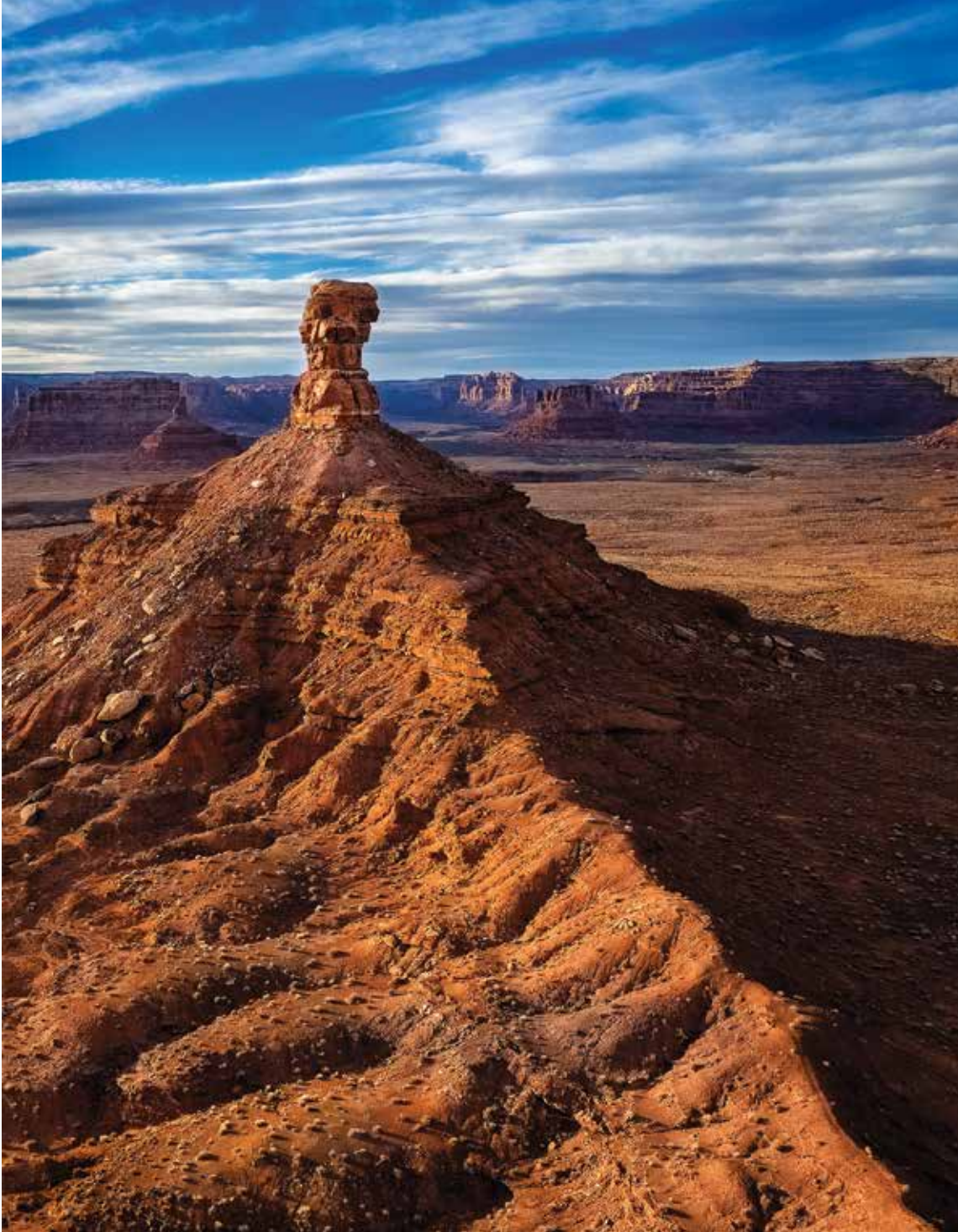
parks; in most state parks; in wilderness areas; in FAA restricted areas, e.g., Glenn Canyon Dam; within five miles of airports; or in other land use entities where drones are restricted.

That is a lot of restrictions! But you can fly them in national monuments (again excluding wilderness areas); national forests (also excluding wilderness areas); and where it's not specifically restricted. Fortunately, that is a lot of places. And near off limits locations there may be beautiful land formations where you can fly your drone such as the colorful cliffs about ten miles east of Badlands National Park. Good friends for keeping all this straightened out are two apps – B4UFLY and AirMap – so put these on your phone and use them.

Flying Your Drone

The first thing you will do in most cases is download the DJI Fly app onto your phone or tablet (a few models come with a controller with a built-in screen). Mount your phone on the bracket on the

Any mention of products or services in this article or anywhere else in the *PSA Journal* does not constitute an endorsement or approval of those items.



Hen Butte, Valley of the Gods, Utah



(L) Aldeyjarfoss, North Iceland
(R) Alabama Hills, California



The east (ocean) side of Hvítserkur, Iceland, is the most interesting and it can't be seen from the land.

controller and plug it into the controller. Turn on the controller and the drone itself. Now look at the picture of the Air 2S controller and screen. This will be a little daunting at first but initially note the two sticks that move the drone up and down; move it sideways; move it forwards and backwards; and rotate it. Then see the camera set up information in the lower right. Also see the drone altitude and distance information in the lower left. And finally – perhaps most important – see the number of minutes of remaining battery life in the upper right.

This screen is to some extent customizable. For example, you can display a live histogram of what the camera is seeing.

There is a lot of automation built into DJI drones. For example, once in flight if you take your thumbs off the sticks, the drone just hovers in place and you can stop hyperventilating. To land it just press the Return To Home (RTH, see middle left of the controller) button. All without pilot intervention the drone will gain altitude to be sure it clears obstacles; fly to a point directly over its takeoff spot; and then lower itself to the ground.

Safety routines built into the DJI software will prevent you from flying in a wind that is too high, and bring the drone back to its takeoff point if it loses contact with the controller or if the battery gets too low.

Now takeoff, but only after you have become thoroughly familiar with the menus and are comfortable changing camera and flight parameters while flying.

Making Images from a Drone

You have a drone; have practiced using it; know your menus and can change them comfortably in flight; and have an idea for a photo at a spot where you can fly. My suggested camera set up is as follows:

- Set your phone or tablet to maximum brightness
- Clip a glare shield onto your phone and/or get into shade if possible
- Make sure the highlight warning function is turned on
- ISO 100 or 200 (need to keep noise down on the small sensors)
- Consider underexposing a little
- Turn on Automatic Exposure Bracketing (five exposures 0.7 stops apart on the Air 2S)
- Tap wherever you want to focus (similar to using a cell phone camera)
- Take the shot!

Use the internet to get ideas for images. PSA has a dedicated drone study group (DD85). You can participate and get lots of help and inspiration for drone photography.

Using a drone is just a different way to make an image. So, if you can, hold out for good light and interesting skies. Look for strong decisive subjects. Use the drone's maneuverability to get into positions that create compelling patterns, leading lines, or other compositional elements. Try putting people, cars, boats, etc. into your drone images. Photography from a drone may help put a new and original spin on your images. I really enjoy it and encourage you to try it.



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Peter's main photography interest is landscapes (with a minor in wildlife!) and he has photographed throughout the American southwest as well as the Olympic Peninsula, Big Bend NP, the Eastern Sierras and several foreign countries including Iceland and Patagonia. Landscape Astrophotography is a particular specialization. He likes combining his photography efforts with hiking and backpacking. He has taught at a local senior center, and conducted workshops/webinars at local photography clubs as well as for PSA nationally. At the Thousand Oaks (CA) Photography Group he served in a number of

roles including president and field trips chair. He has published two photography eBooks: "Under the Night Sky, Your Complete Guide to Landscape Astrophotography" and "Photographing Patagonia". Pete can be found presenting his work at local art shows and the Ventura County (CA) Fair.

He is the Chair of the Executive Committee of the Southern California Chapter of PSA. In PSA he holds GPSA (for his portfolio "Falling Water") and QPSA distinctions. In 2022 his book "Celestial Objects, Night Skies and Beautiful Places" won first place in PSA's annual photography book competition.

