

# Prepare for a solar eclipse

IN DEPTH

The window of opportunity is small for capturing a moon-sun overlap – so it pays to be ready, advises Gary Evans ASIS FRPS

**O**n 21 August 2017, a total solar eclipse will be visible across a wide swathe of the USA, from Oregon to South Carolina – and a very slight partial eclipse visible from the UK. Millions of people will be able to photograph this astonishing celestial event, with thousands travelling from around the world just to see it. Here are a few tips for photographing an eclipse for the first time.

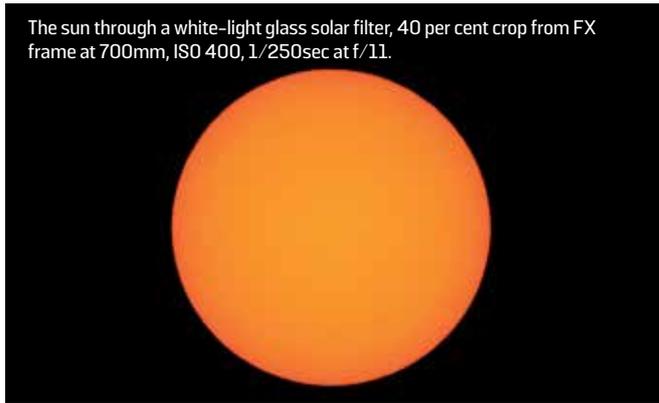
## PROTECT YOUR EYES

Never look directly at the sun. Only look at it through proper solar viewing glasses, such as mylar (plastic) eclipse glasses, which are cheap and easily available online. Even when 99 per cent of the sun's surface is obscured by the moon, the remaining sliver of light can permanently damage your eyes. During the actual eclipse you can safely look at the sun without protection, but as soon as it peeps around the edge of the moon you must protect your eyes again. Don't be tempted to view the sun through stacked neutral-density filters or crossed polarisers as these can still allow damaging infrared light through.

## BE READY

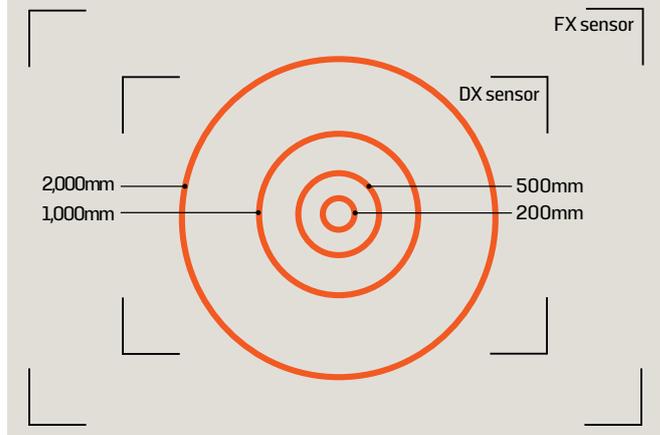
This year's eclipse lasts for just over two and a half minutes at totality. The partial phase before it lasts almost an hour. Plan your exposures and bracketing (see later), practise making any changes to camera

The sun through a white-light glass solar filter, 40 per cent crop from FX frame at 700mm, ISO 400, 1/250sec at f/11.



## FIT TO FRAME

The size of the sun viewed at different focal lengths on FX and DX cameras.



settings and the removal and replacement of the solar filter. Eclipses are exciting things – you won't have time to think.

## CHOOSE THE RIGHT LENS

The sun appears smaller in the sky than you might imagine. For most SLR cameras, a focal length of 500mm to 1,000mm is ideal – much smaller and the sun will be quite little in the frame, much bigger and you



Set-up for a solar eclipse either side of totality – Nikon D800, 200–500mm f/5.6 lens with TC-14E 1.4x teleconverter, white-light filter taped to lens hood

will need a computerised mount to follow the sun as it moves through the sky. Remember also that during the eclipse the corona, or outer atmosphere, of the sun is visible, so you need a bit of room to fit this in. The diagram above shows how big the sun appears at different focal lengths in DX and FX cameras. To see how big an image your lens will produce, try photographing the moon, as it appears roughly the same size in the sky as the sun.



A total eclipse and, below, a sequence of images made of the 2006 eclipse in Libya by Fred Espenak. Either side of totality are the two 'diamond ring' exposures



#### **FIND THE RIGHT FILTER**

It is crucial to use a proper solar filter to capture the partial phase of the eclipse. Unfiltered sunlight can do a good job of frying the sensor on your camera. During the eclipse itself you can take off the filter. One solution is to attach the filter to a lens hood, allowing it to be removed and replaced easily. A mylar filter is cheaper and gives a grey-blue image of the sun, while a more expensive metal-coated 'white light'

glass filter gives a more natural orange colour.

#### **USE A TRIPOD**

A sturdy tripod is important. If you are using a lens with good vibration reduction this is less of an issue. In any case, the tripod should be quick and easy to align and adjust when necessary.

#### **USE A REMOTE RELEASE**

Absolutely essential: a remote release will allow you to look either at the camera screen or at the

eclipse (during totality) while setting off your shots.

#### **GET YOUR EXPOSURE RIGHT**

Bracketing is vital. Different exposures during totality will let you see different parts of the corona and capture other phenomena. Use the auto bracket function of your camera where available with full stop intervals to give the maximum possible range. If your camera doesn't have exposure bracketing it may have an HDR mode that will

capture a range of exposures and blend them for you. A typical range of exposures would centre on 1/125sec at f/8 at ISO 400, with  $\pm 4$  stops of bracketing (1/8sec to 1/2,000sec).

Most of all, do as much planning and set-up as you can before the eclipse starts. The experience of entering totality, when day turns to night like a dimmer switch on the world, is truly awesome. At that stage, you really just want to be looking up and taking in the wonder.