

Solar Photography Setup

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This article describes the setup that I use for capturing white light solar images. All of my solar photographs can be seen on www.astrosoft.co.uk.

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1 Setup Overview

Figure 1 below shows my setup which consists of:

- A Meade LX200 10" F10 classic;
- A 8" Thousand Oaks white light type 2 glass solar filter;
- A Canon EOS 550D (Rebel T2i).

Close up views are shown in Figs 2 and 3 below.



Figure 1 – My Solar Photograph Setup

2 Setup Details

Figure 2 below shows my 8" Thousand Oaks white light filter. This gives an image with a pleasing yellow/orange appearance. As can be seen in Fig. 2 below I have made a wooden frame that holds the filter **very securely** onto my scope. I use a type 2 Thousand Oaks glass filter which I have owned for about 10 years and I keep it boxed and wrapped when not using to ensure that it does not get scratched.



Figure 2 – An 8" Thousand Oaks White Light Filter

Figure 3 below shows my Canon EOS 550D attached to the scope via a Meade prime focus camera adaptor.



Figure 3 – Canon EOS550D at prime focus

3 Safety Considerations

Observing the Sun without proper safety considerations will immediately and permanently blind you. These are the safety procedures that I take:

- The thousand Oaks filter is very securely held onto my scope – even accidentally tipping the scope beyond horizontal will not make it come off and it is impossible for it to be accidentally knocked off the front of my scope;
- I check the filter for scratches every time before use;
- My finder and guide scopes are always capped. Even if you are not going to use them you could accidentally get your eye in line with them if they are not covered resulting in blindness;
- As I focus via live-mode on my Canon camera I never actually need to look at the Sun through the view finder.

4 Taking an image

Using the setup described above I use the following additional setting and camera features:

- I set the camera exposure controls as follows:-
 - Manual exposure;
 - 1/125 second exposure;
 - 100 ASA;
 - Manual white balance (I use a 5200K white balance setting). I find that using an auto white balance setting can cause the results to vary when taking a montage of pictures.
- Set the mirror lock up option to on (if your camera supports such a custom function). This reduces any vibration when taking the photo.
- Use a cable release (or a short self-timer setting) which again reduces vibration when taking the photo.
- If your camera supports a 'live-mode' view with zoom then that is an absolute gift. I always focus using live-mode and the 10x zoom setting.

5 Results

Figure 4 below shows a typical image. This was taken on the 7th July 2012.

The setup that I use, as described above, results in a field of view of approximately $\frac{1}{4}$ of the solar disk. To create a full solar disk montage I use the freeware GIMP (that in my opinion is every bit as good as Photoshop) to stitch together 4-5 images.



Figure 4 – Example solar photograph

Figure 5 below shows a close up from figure 4.

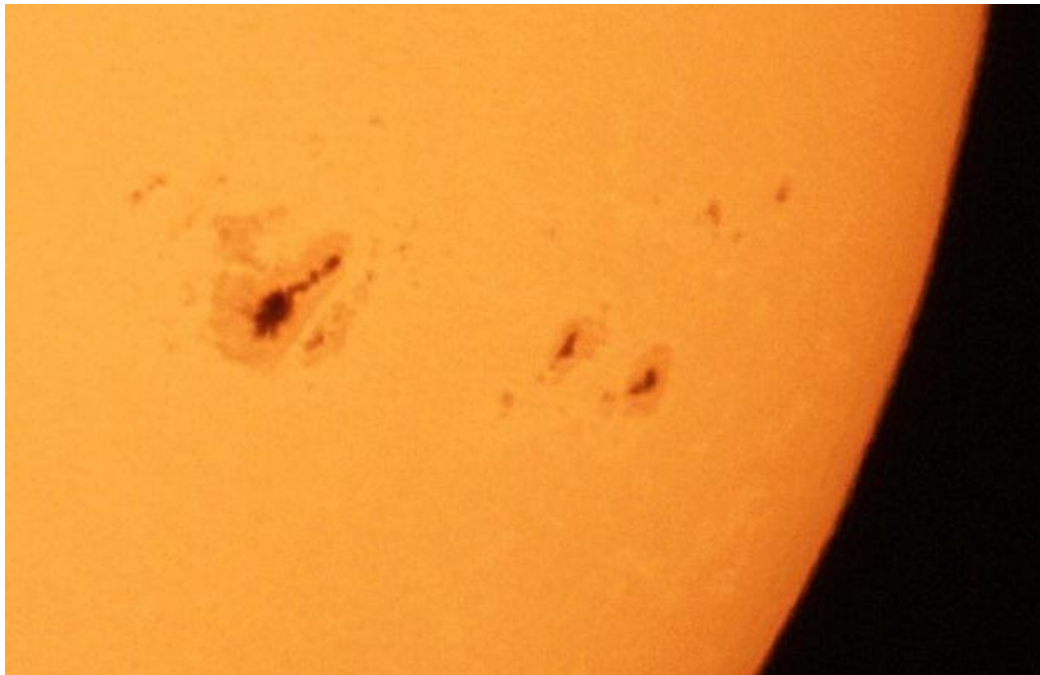


Figure 5 – Sun spot close up