

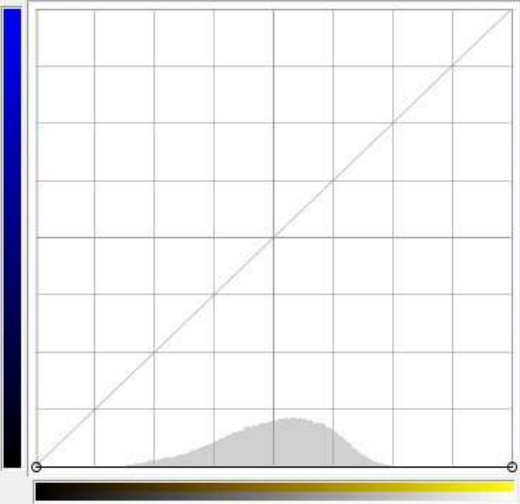
Curves

Adjust Color Curves

Background-20 (sun_2015-08-22-140638-0001.jpg)

Presets: [dropdown] + -

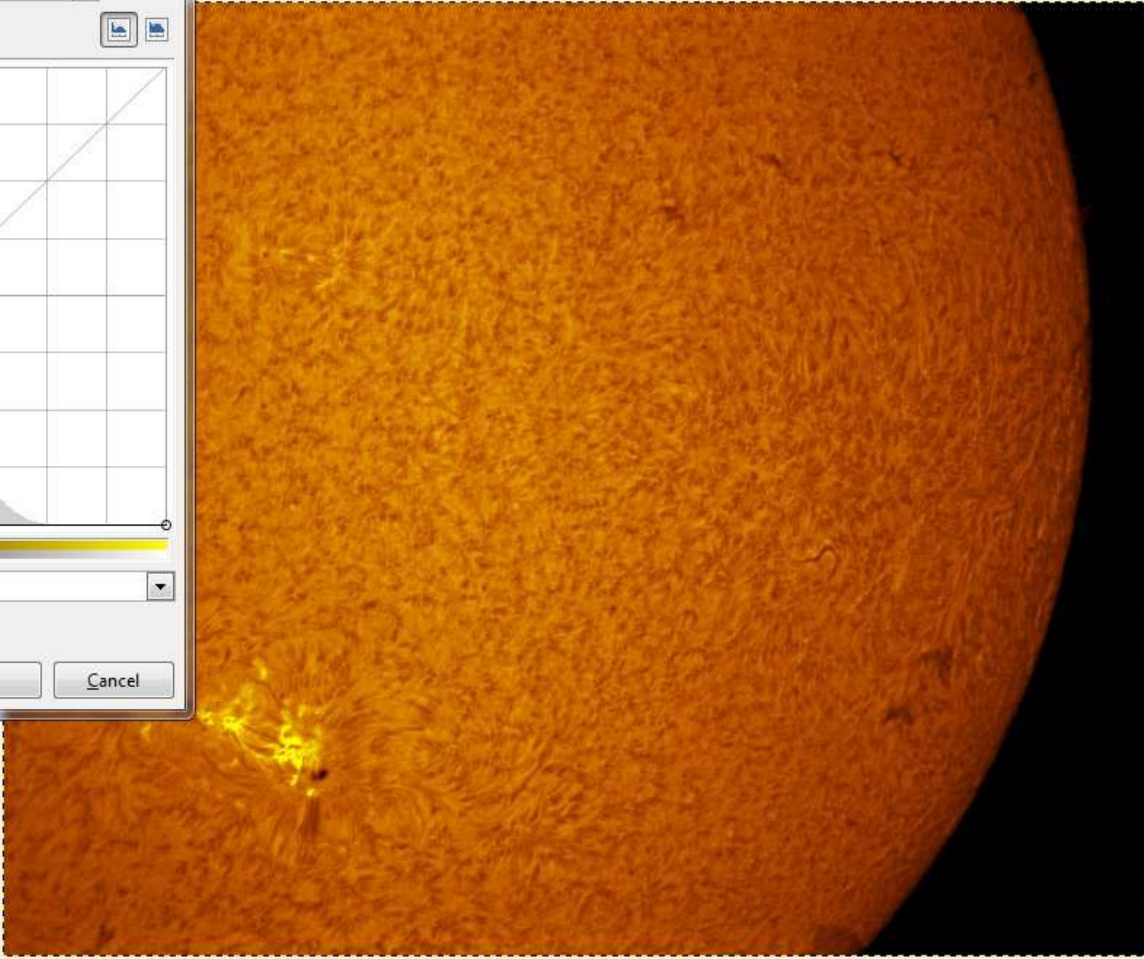
Channel: **Blue** [dropdown] [Reset Channel]




Curve type: Smooth [dropdown]

Preview

Help Reset OK Cancel



Toolbox



Curves


Histogram Scale

Linear histogram

Logarithmic histogram

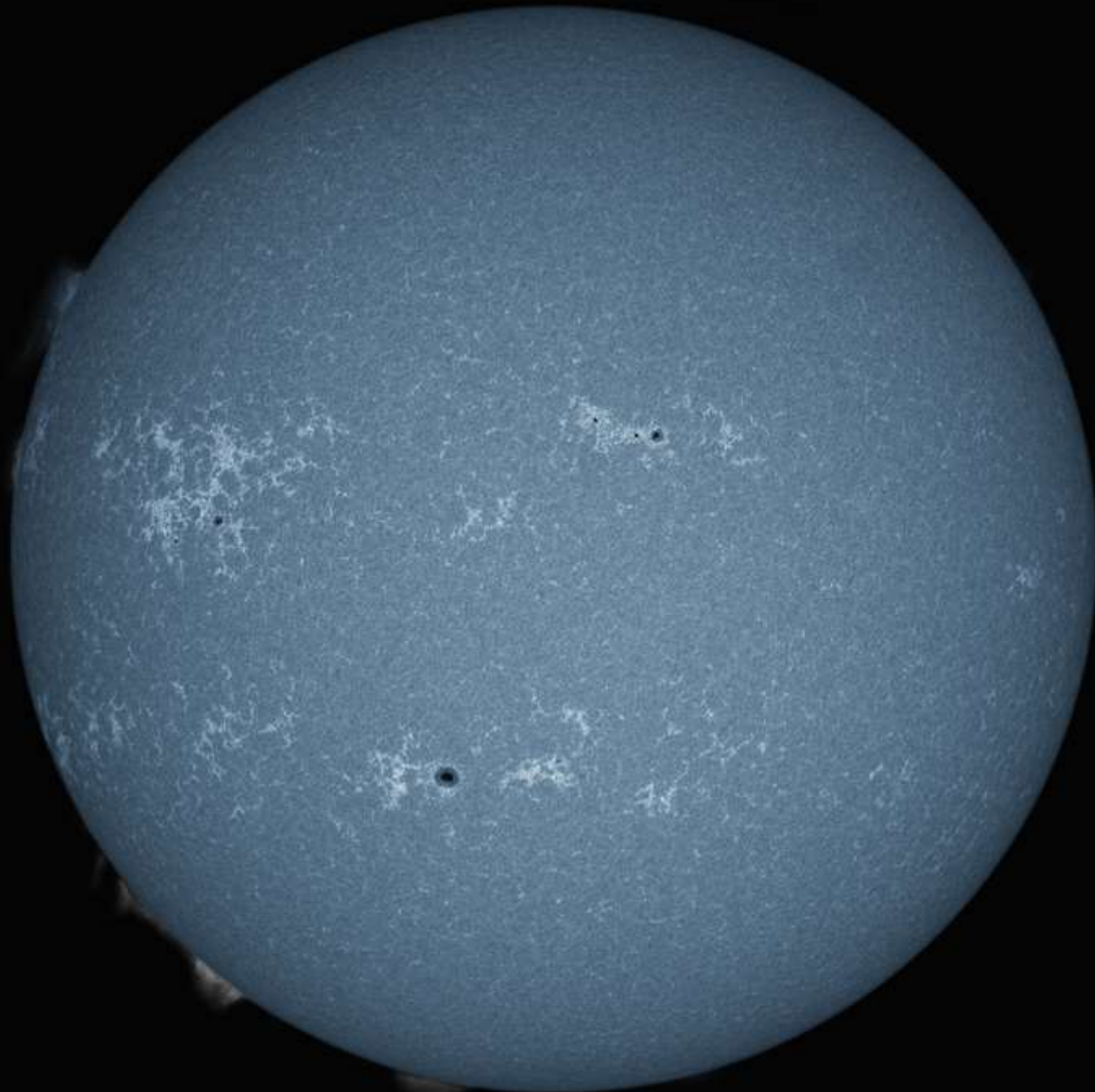
Sample average

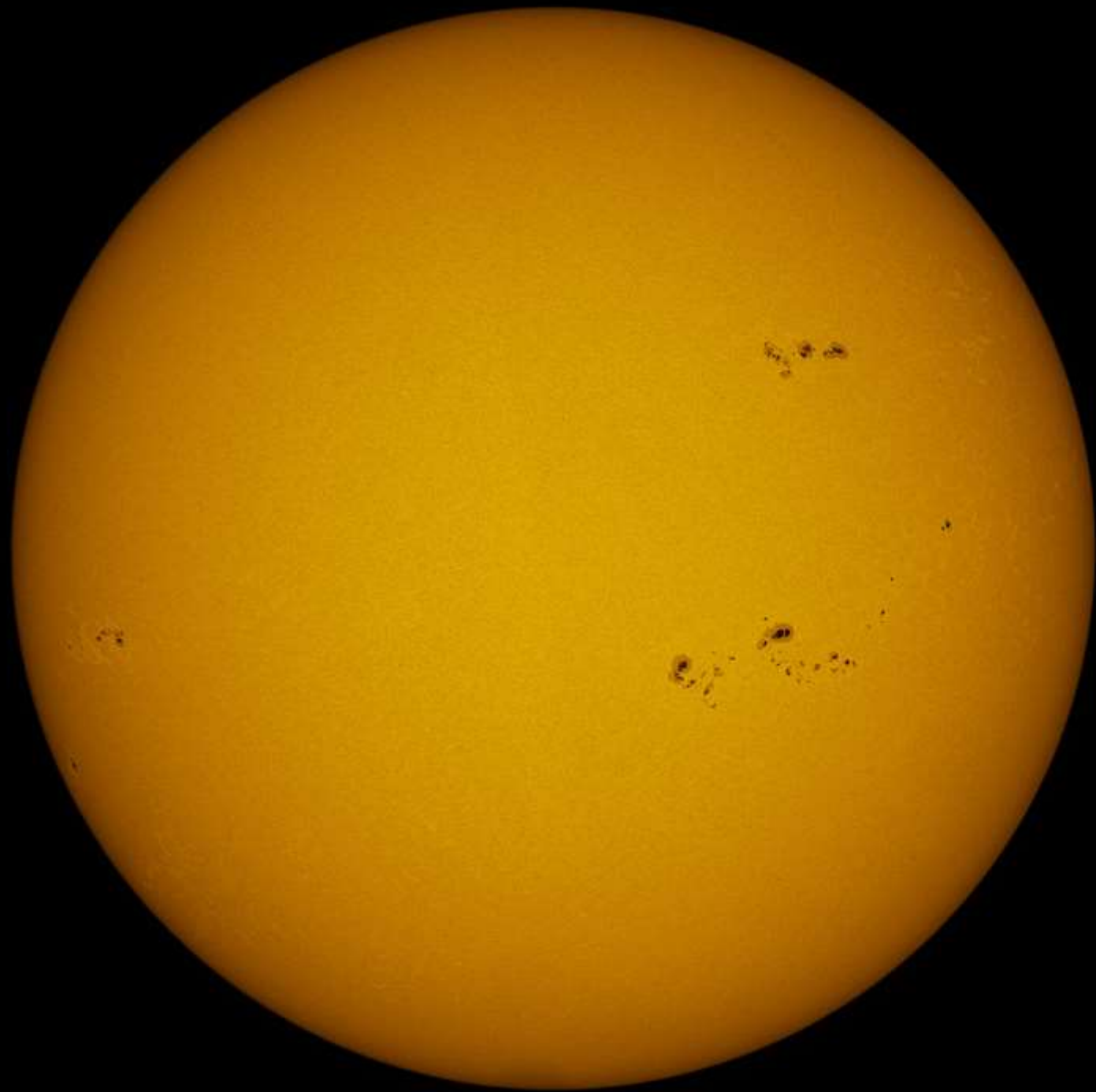
Radius: [slider] 3 [spin]



px 66.7% Background (19.2 MB)









Eclipse Orchestrator Free

File Location/Time Camera View Setup Window Help

2015/10/14 12:11:05.8 UTC No FPS CkErr -0.00s (0.00)
 Script: Emer. Script:
 Set Lat: 38° 00.0000' Set Lon: -87° 00.0000' Set Alt: 100.0m
 GPS not present.

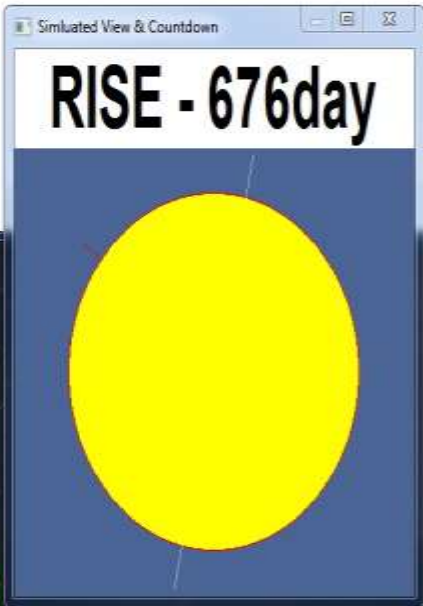
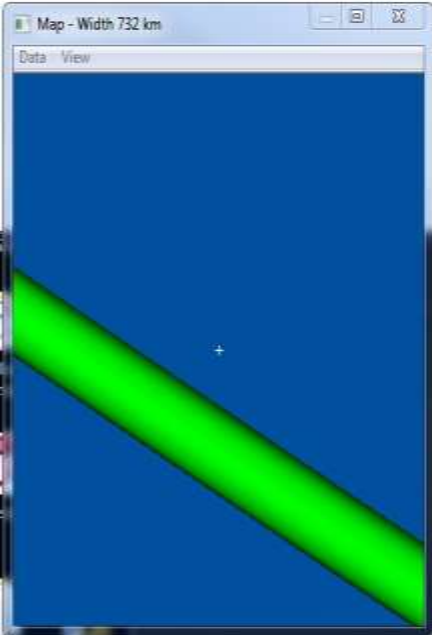
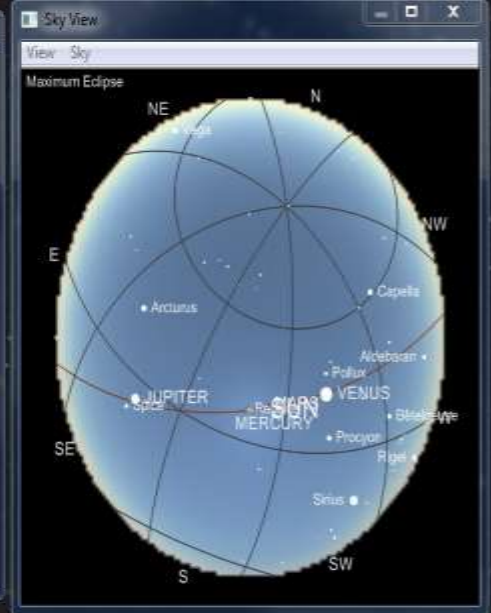
Type: Partial Penum. dur: 2h 53m 37.9s Umbrel dur:
 Centerline: 128.906km 69.6mm Bearing: 208.7degT CL Duration: (2m 41.5s)

Event	Countdown	Alt	Az	P	Z/W	Mag	A	Extn
Sunrise	T-676d 22h 57m 34.4s	-0.8	74.1	285	336	0.000	1.020	999.9
1st Contact	T-677d 4h 45m 50.1s	61.2	151.6	291	313	0.000	1.031	1.3
Max Eclipse	T-677d 6h 14m 30.3s	62.7	198.7	204	189	0.981	1.030	1.3
4th Contact	T-677d 7h 39m 28.0s	52.7	233.5	116	76	0.000	1.028	1.4
Sunset	T-677d 12h 21m 44.4s	-0.8	285.7	112	61	0.000	1.014	999.9
3rd Contact (none)								
2nd Contact (none)								

Current Type: None 2.0 101.9 0.000 127.1

-Camera- Actn ExpTime FRatio ISO -Q- MLU Quality Status

Countdown By Hr:Mn:Sec -Camera- Actn ExpTime FRatio ISO -Q- MLU Quality In Comment



About

Eclipse Orchestrator Version 3.5, 2013/10/12
 Unregistered Free version.

To upgrade to Pro and unlock (P) features,
 visit Help (Purchase EO Pro...)

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Eclipse algorithms and Besselian elements by Fred Espenak (NASA GSFC),
 Jean Meeus, and USNO.
 Blue Marble: Next Generation imagery courtesy NASA's Earth Observatory.

Camera interfaces courtesy Canon USA, Inc. and Nikon, Inc.
 Lunar Reconnaissance Orbiter LOLA data courtesy NASA.
 Kaguya lunar data by JAXA. Limb correction algorithm by Dave Herald.
 Stars from Yale Bright Star Catalog courtesy Yale/NASA.

OK

circumstances.txt - Notepad

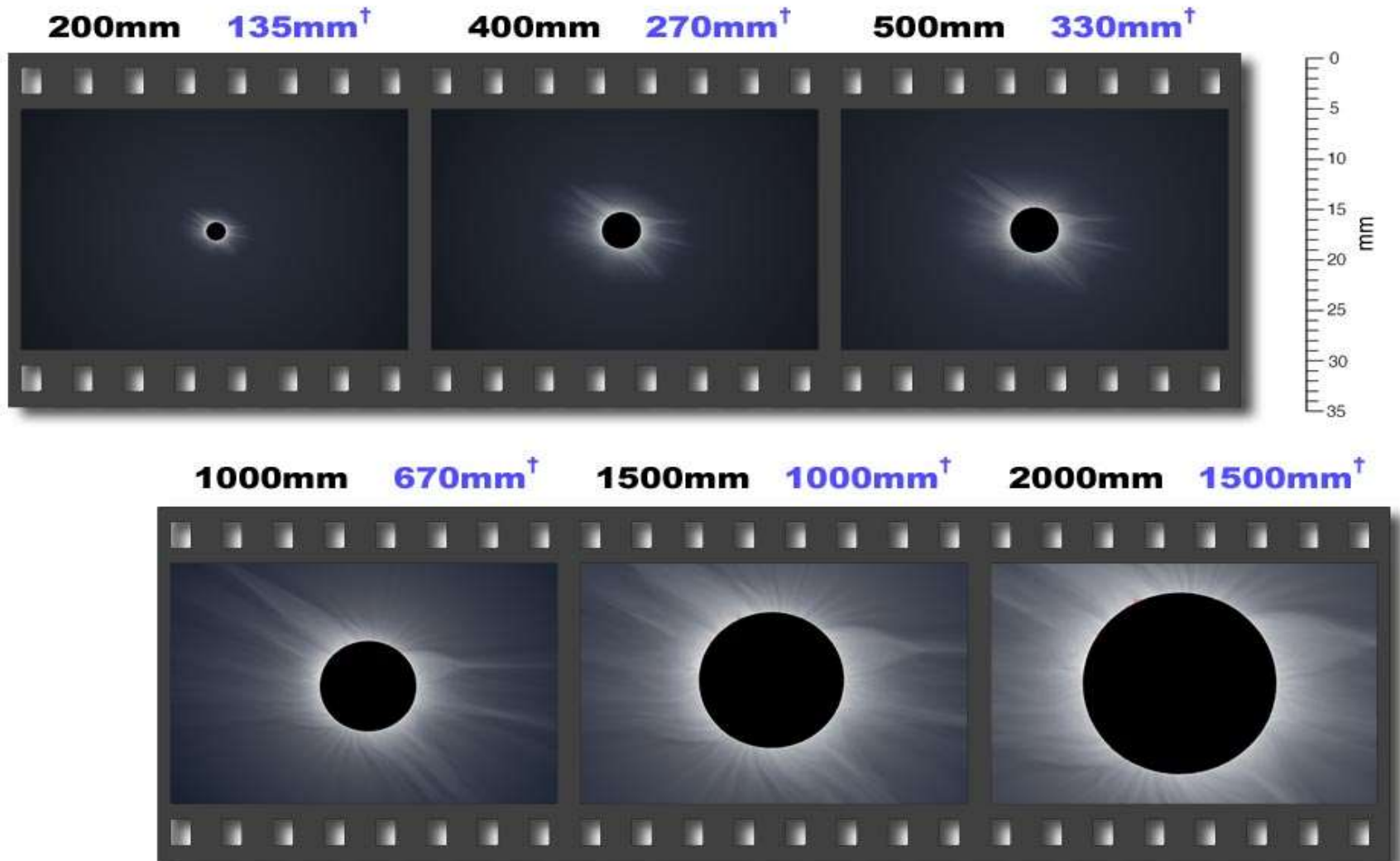
File Edit Format View Help

Lat: 38° 00.0000' N Lon: 87° 00.0000' W Alt: 100.0m

UTC time (delta 69.00s, 35 leap secs)

Date	Time	Alt	Az
Sunrise	8/21 11:08:40		0.0
1st Contact	8/21 16:56:55.9	0.0	0.0
Max Eclipse	8/21 18:25:36.1	0.0	0.0
4th Contact	8/21 19:50:33.8	0.0	0.0
Sunset	8/22 00:32:50		0.0

Lens Focal Length vs. Image Size – Solar Eclipses



[†]Focal lengths in BLUE are for DSLRs.

Field of View and Size of Sun's Image for Various Camera Focal Lengths

<u>Focal Length</u>	<u>Field of View</u> (35mm)	<u>Field of View</u> (digital)	<u>Size of Sun</u>
14 mm	98° x 147°	65° x 98°	0.2 mm
20 mm	69° x 103°	46° x 69°	0.2 mm
28 mm	49° x 74°	33° x 49°	0.2 mm
35 mm	39° x 59°	26° x 39°	0.3 mm
50 mm	27° x 40°	18° x 28°	0.5 mm
105 mm	13° x 19°	9° x 13°	1.0 mm
200 mm	7° x 10°	5° x 7°	1.8 mm
400 mm	3.4° x 5.1°	2.3° x 3.4°	3.7 mm
500 mm	2.7° x 4.1°	1.8° x 2.8°	4.6 mm
1000 mm	1.4° x 2.1°	0.9° x 1.4°	9.2 mm
1500 mm	0.9° x 1.4°	0.6° x 0.9°	13.8 mm
2000 mm	0.7° x 1.0°	0.5° x 0.7°	18.4 mm

Size of Sun's Image (mm) = Focal Length (mm) / 109

Ron Wodaski's CCD Calculator - Canon 60Da

File Settings View Help

New Astronomy Press CCD Calculator

Telescope **500mm Mirror Lens**

Aperture Add

Focal ratio **f/** Remove

Barlow or reducer

Focal length Recalc

Aperture adjust Ratio adjust

Camera **Canon 60Da**

Pixel size ×

Array size ×

Bin mode Add

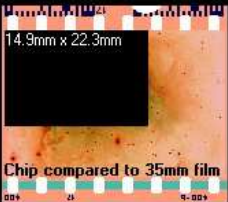
Exit Remove

Chip size **14.9mm x 22.3mm**

Image scale **1.78 arcsec/pix** Save

Field of view **102.5 x 153.8 arcmin**

Exp. Target CFZ (microns)
N/A **87.32**



14.9mm x 22.3mm

Chip compared to 35mm film

Last ten telescopes and cameras v. 1.5.0

< > Clear

< > Clear

FOV



10 arcmin - FOV: 102.5min x 153.8min

Ron Wodaski's CCD Calculator - Canon 60Da

File Settings View Help

New Astronomy Press CCD Calculator

Telescope **Celestron C6**

Aperture

Focal ratio **f/**

Barlow or reducer

Focal length

Aperture adjust Ratio adjust

Camera **Canon 60Da**

Pixel size ×

Array size ×

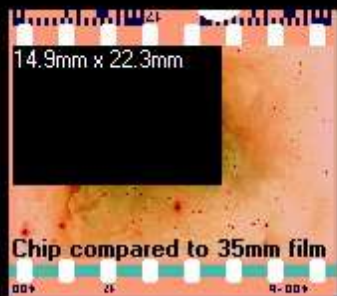
Bin mode

Chip size
14.9mm x 22.3mm

Image scale
0.94 arcsec/pix

Field of view
54 x 81 arcmin

Exp. Target CFZ (microns)

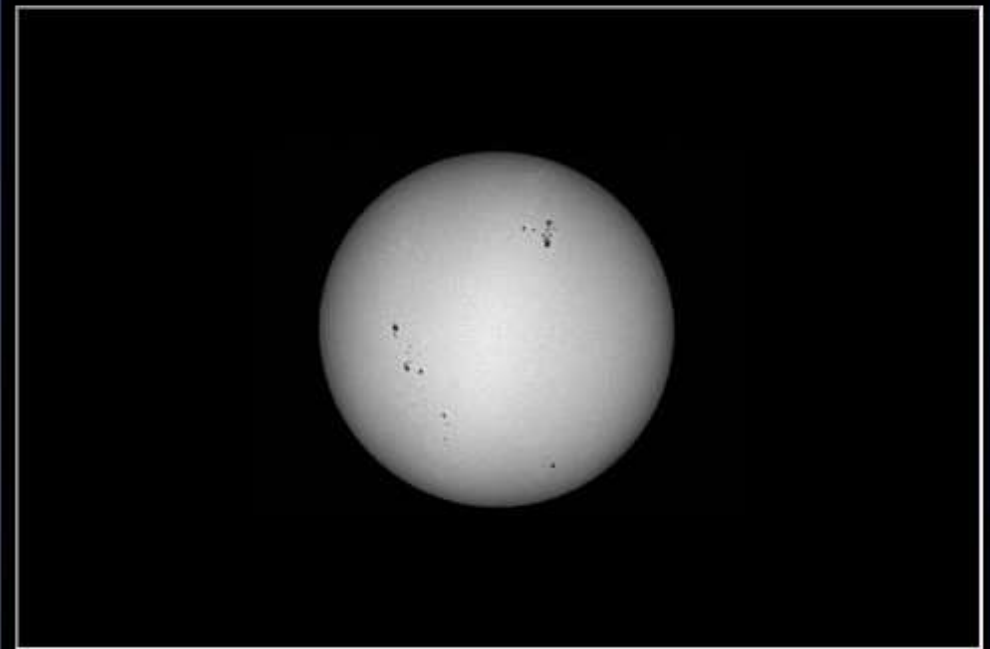


Last ten telescopes and cameras v. 1.5.0

Celestron C6

Canon 60Da

FOV



← 10 arcmin - FOV: 54min x 81min

Ron Wodaski's CCD Calculator - Canon 60Da

File Settings View Help

New Astronomy Press CCD Calculator

Telescope **Orion 80ED**

Aperture Add

Focal ratio f/ Remove

Barlow or reducer

Focal length Recalc

Aperture adjust Ratio adjust

Camera **Canon 60Da**

Pixel size ×

Array size ×

Bin mode Add

Exit Remove

Last ten telescopes and cameras v. 1.5.0

Orion 80ED < > **Clear**

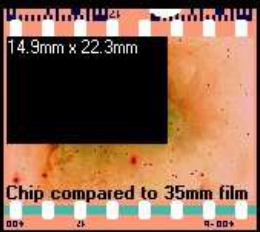
Canon 60Da < > **Clear**

Chip size
14.9mm x 22.3mm

Image scale
1.48 arcsec/pix Save

Field of view
85 x 127.6 arcmin


Exp. Target CFZ (microns)
N/A **123.75**



14.9mm x 22.3mm

Chip compared to 35mm film

FOV



10 arcmin - FOV: 85min x 127.6min

Ron Wodaski's CCD Calculator - Canon 6D

File Settings View Help

New Astronomy Press CCD Calculator

Telescope Orion 80ED

Aperture 80 Add

Focal ratio $f/$ 7.5 Remove

Barlow or reducer 2 $f = 1200$
f/15

Focal length 600 Recalc

Aperture adjust Ratio adjust

Camera Canon 6D

Pixel size 6.55 × 6.55

Array size 5472 × 3648

Bin mode 1x1 Add

Exit Remove

Last ten telescopes and cameras v. 1.5.0

Orion 80ED < > Clear

Canon 6D < > Clear

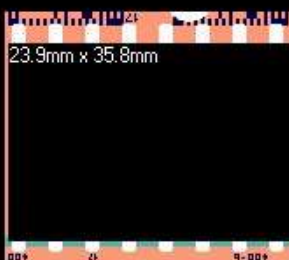
Chip size
23.9mm x 35.8mm

Image scale
1.12 arcsec/pix Save

Field of view
68.4 x 102.5 arcmin


Exp. Target CFZ (microns)
N/A 495

SS-Sun.jpg



23.9mm x 35.8mm

FOV



10 arcmin - FOV: 68.4min x 102.5min

Ron Wodaski's CCD Calculator - Canon 60Da

File Settings View Help

New Astronomy Press CCD Calculator

Telescope Orion 100ED

Aperture Add

Focal ratio f/ Remove

Barlow or reducer

Focal length Recalc

Aperture adjust Ratio adjust

Camera Canon 60Da

Pixel size ×

Array size ×

Bin mode Add

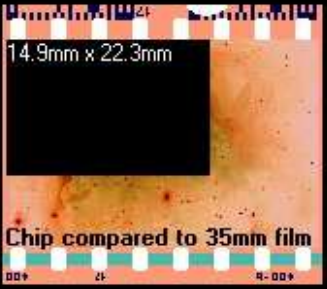
Last ten telescopes and cameras v. 1.5.0

Chip size
14.9mm x 22.3mm

Image scale
0.98 arcsec/pix Save

Field of view
56.7 x 85 arcmin

Exp. Target CFZ (microns)
N/A 178.2



FOV

10 arcmin - FOV: 56.7min x 85min

New Astronomy Press CCD Calculator

Telescope **Coronado SolarMax 60**

Aperture

Focal ratio **f/**

Barlow or reducer **f/ = 792**
f/13.2

Focal length

Aperture adjust Ratio adjust

Camera **PG Grasshopper 6MP**

Pixel size ×

Array size ×

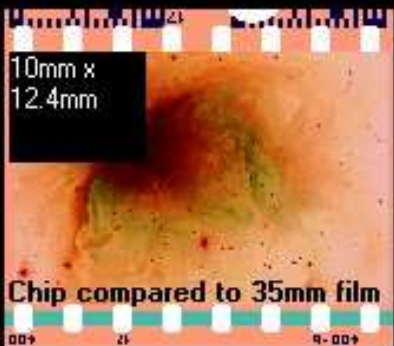
Bin mode

Chip size
10mm x 12.4mm

Image scale
1.18 arcsec/pix

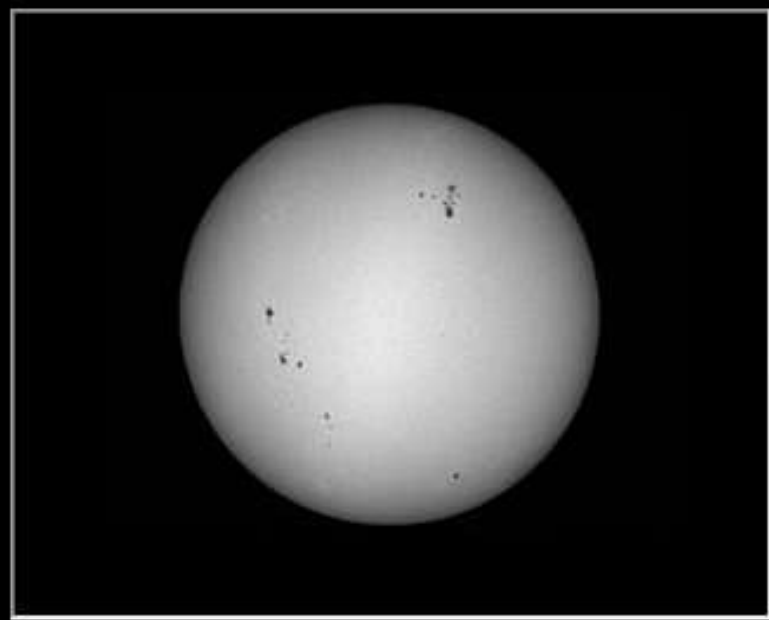
Field of view
43.1 x 53.8 arcmin

Exp. Target CFZ (microns)
383.33



Last ten telescopes and cameras

v. 1.5.0



10 arcmin - FOV: 43.1min x 53.8min

Solar Eclipse Exposure Guide

ISO	f/Number									
25	1.4	2	2.8	4	5.6	8	11	16	22	
50	2	2.8	4	5.6	8	11	16	22	32	
100	2.8	4	5.6	8	11	16	22	32	44	
200	4	5.6	8	11	16	22	32	44	64	
400	5.6	8	11	16	22	32	44	64	88	
800	8	11	16	22	32	44	64	88	128	
1600	11	16	22	32	44	64	88	128	176	

Eclipse Feature	Q	Shutter Speed								
Partial ¹ - 4.0 ND	11	—	—	—	1/4000	1/2000	1/1000	1/500	1/250	1/125
Partial ¹ - 5.0 ND	8	1/4000	1/2000	1/1000	1/500	1/250	1/125	1/60	1/30	1/15
Baily's Beads ²	11	—	—	—	1/4000	1/2000	1/1000	1/500	1/250	1/125
Chromosphere	10	—	—	1/4000	1/2000	1/1000	1/500	1/250	1/125	1/60
Prominences	9	—	1/4000	1/2000	1/1000	1/500	1/250	1/125	1/60	1/30
Corona - 0.1 Rs	7	1/2000	1/1000	1/500	1/250	1/125	1/60	1/30	1/15	1/8
Corona - 0.2 Rs ³	5	1/500	1/250	1/125	1/60	1/30	1/15	1/8	1/4	1/2
Corona - 0.5 Rs	3	1/125	1/60	1/30	1/15	1/8	1/4	1/2	1 sec	2 sec
Corona - 1.0 Rs	1	1/30	1/15	1/8	1/4	1/2	1 sec	2 sec	4 sec	8 sec
Corona - 2.0 Rs	0	1/15	1/8	1/4	1/2	1 sec	2 sec	4 sec	8 sec	15 sec
Corona - 4.0 Rs	-1	1/8	1/4	1/2	1 sec	2 sec	4 sec	8 sec	15 sec	30 sec
Corona - 8.0 Rs	-3	1/2	1 sec	2 sec	4 sec	8 sec	15 sec	30 sec	1 min	2 min

Instructions

Choose the ISO speed in the upper left column. Next, select the f/number of the lens or telescope (on same line as ISO). Finally, drop straight down to the bottom table to get the correct exposure for each feature of the solar eclipse.

Note that the brightness of the corona varies dramatically with distance from the Sun's edge. All exposure values in this guide are estimates. For best results, use them only as a guide and bracket your exposures.

Exposure Formula: $t = f^2 / (I \times 2^Q)$ where: t = exposure time (sec)
 f = f/number or focal ratio
 I = ISO film speed
 Q = brightness exponent

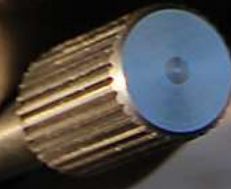
Abbreviations: ND = Neutral Density Filter.
 Rs = Solar Radii.

Notes: ¹ Exposures for partial phases are also good for annular eclipses.
² Baily's Beads are extremely bright and change rapidly.
³ This exposure also recommended for the *Diamond Ring* effect.





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HINODE 5G

Finder



Calibrate



Guide



AM



PM

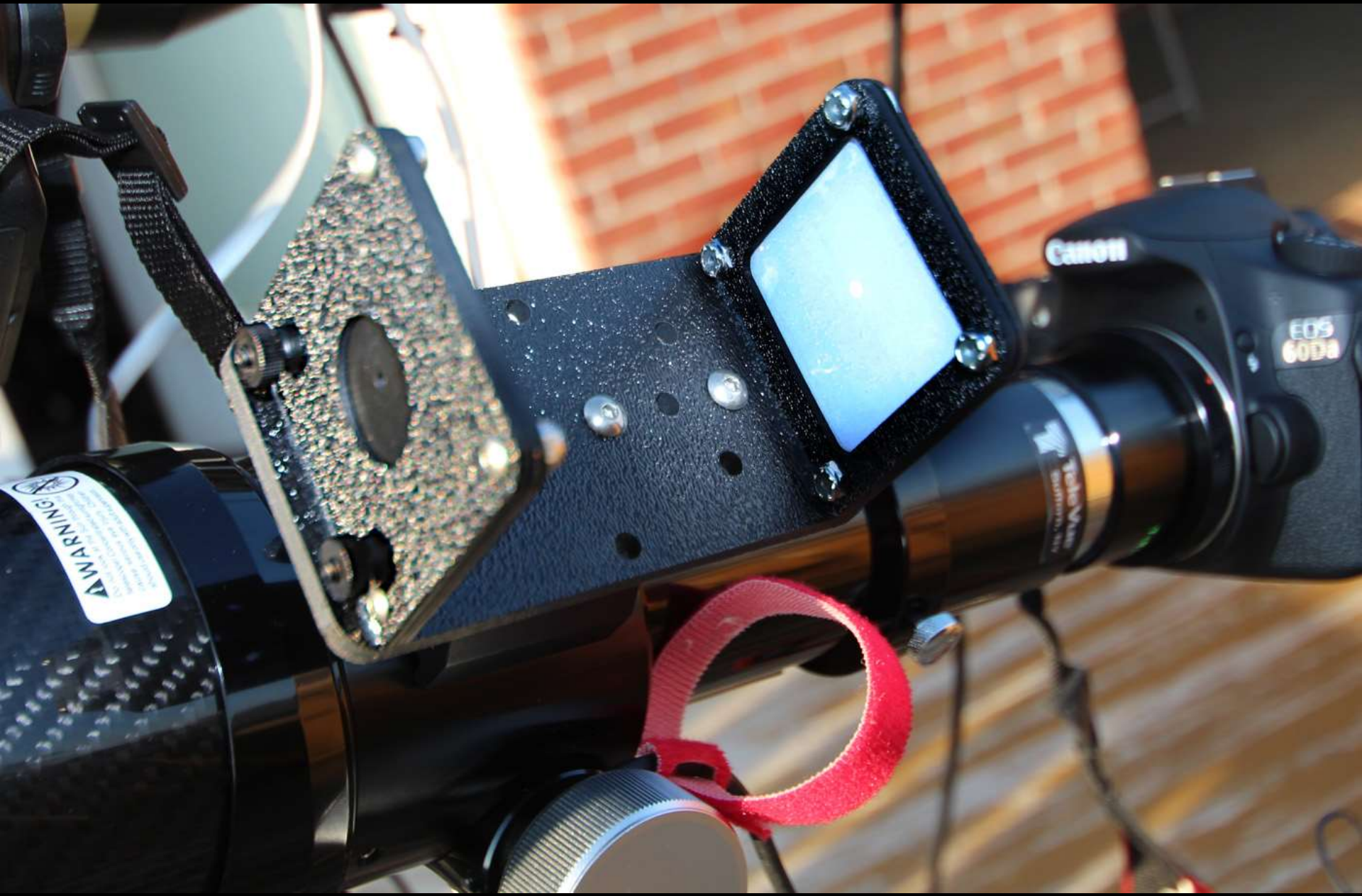


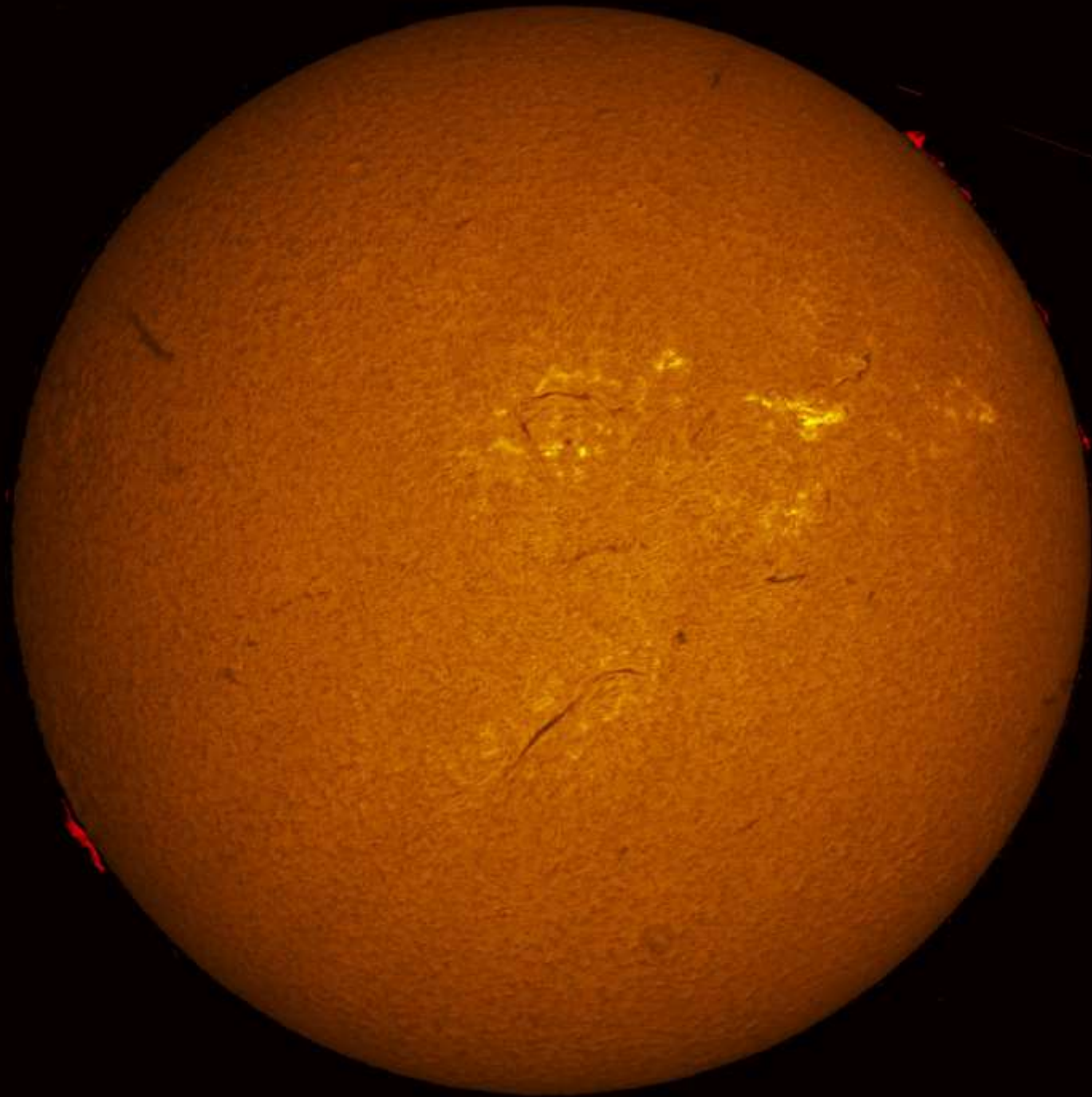
Recall

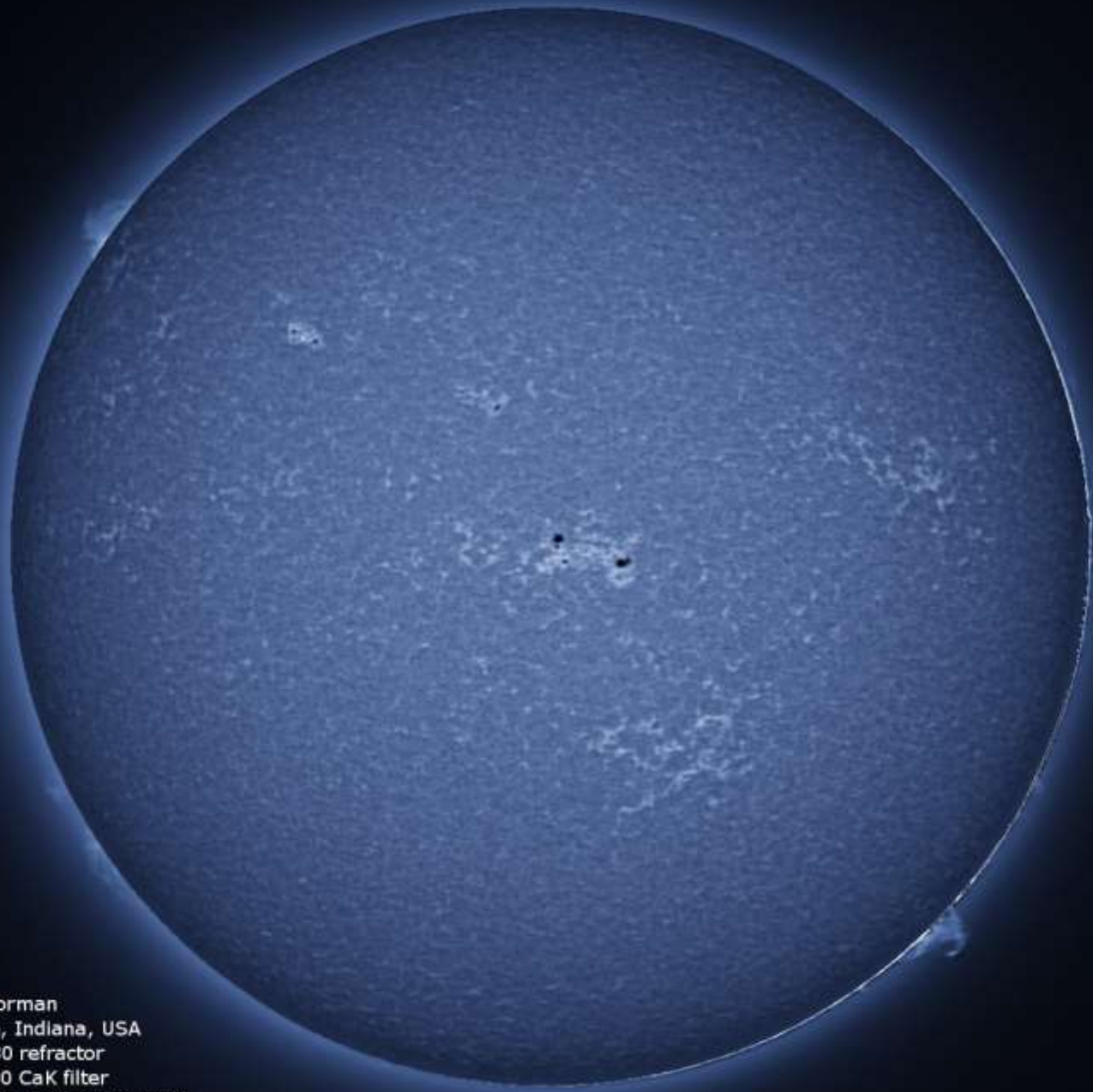


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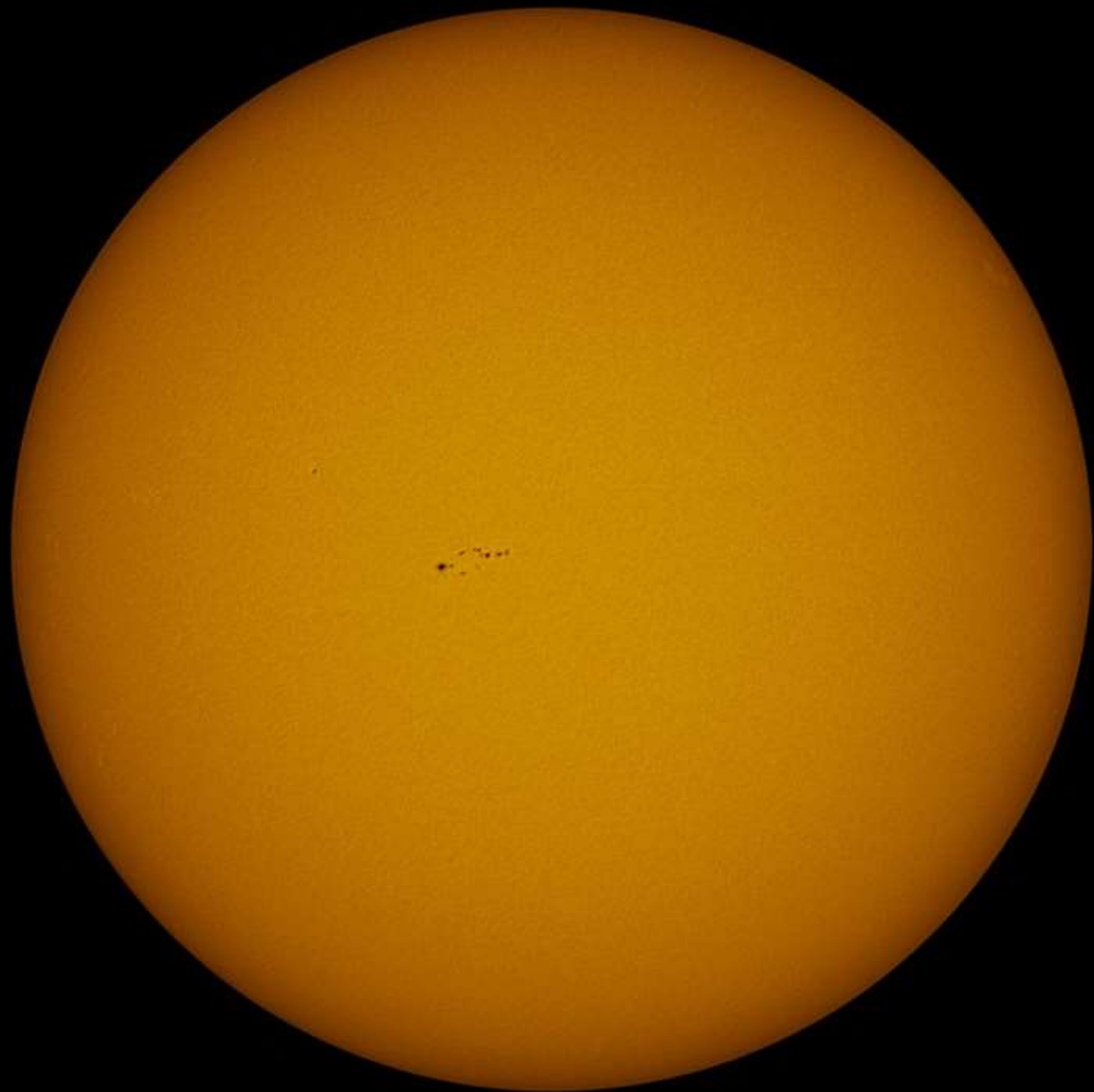








Michael Borman
Evansville, Indiana, USA
Orion ED80 refractor
Lunt B1200 CaK filter
February 28, 2016 18:05 UTC
Seeing Poor, Clear
PGR Grasshopper 3 Camera









THE END