

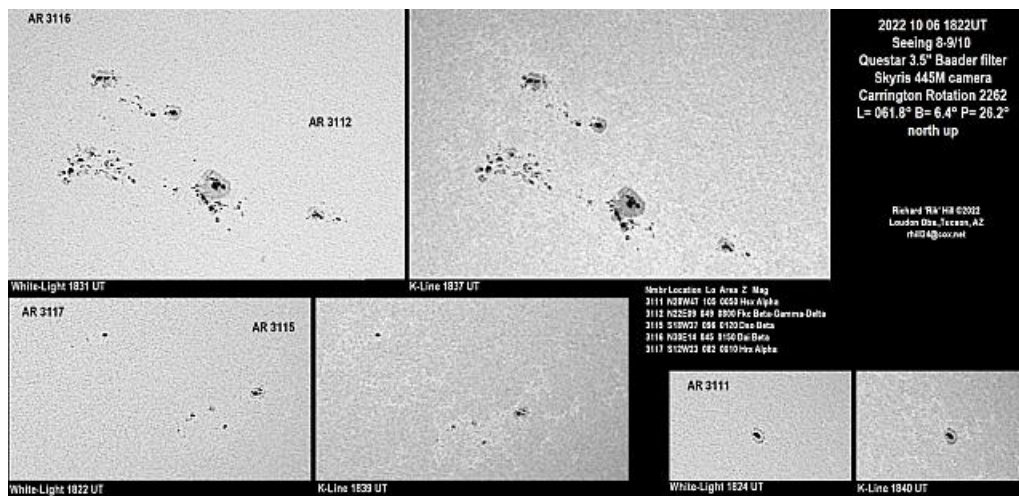
Rotation Report for CR2262-CR2264

(Sept. 15- Dec 5, 2022)

Kim Hay Assistant Solar Coordinator

Our Sun has certainly done the roller coaster ride over the last three rotations . Starting with CR2262 , which produced 11 M class flares, there was one X 1.06 flare on October 2nd. Below is an image from Rik Hill showing the flare from Group AR 3110. This was a big month also in sunspot numbers . Peak day was October 4 & 5th, with 165 total. Great capture Rik!

AR3110 on October 2, 2022 erupted with an M8.77 and an X 1.06 flare which was a Beta DAO. Not directed at the Earth, it was moving off the face of the Sun in the Northern Hemisphere. Image below from the GOES X-ray Satellite* showing the X1.06 flare. (More information on flares can be found at the end of this Rotation Report)



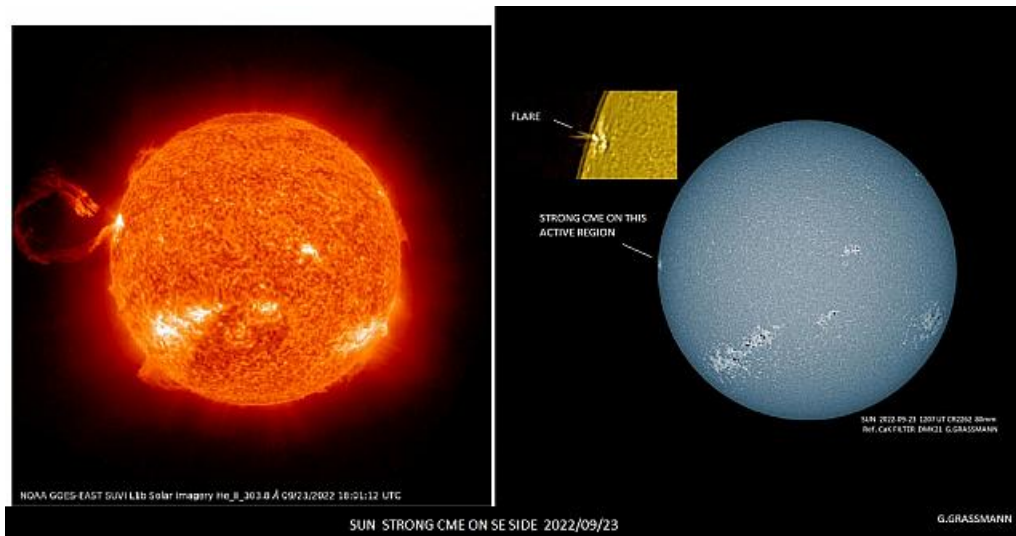
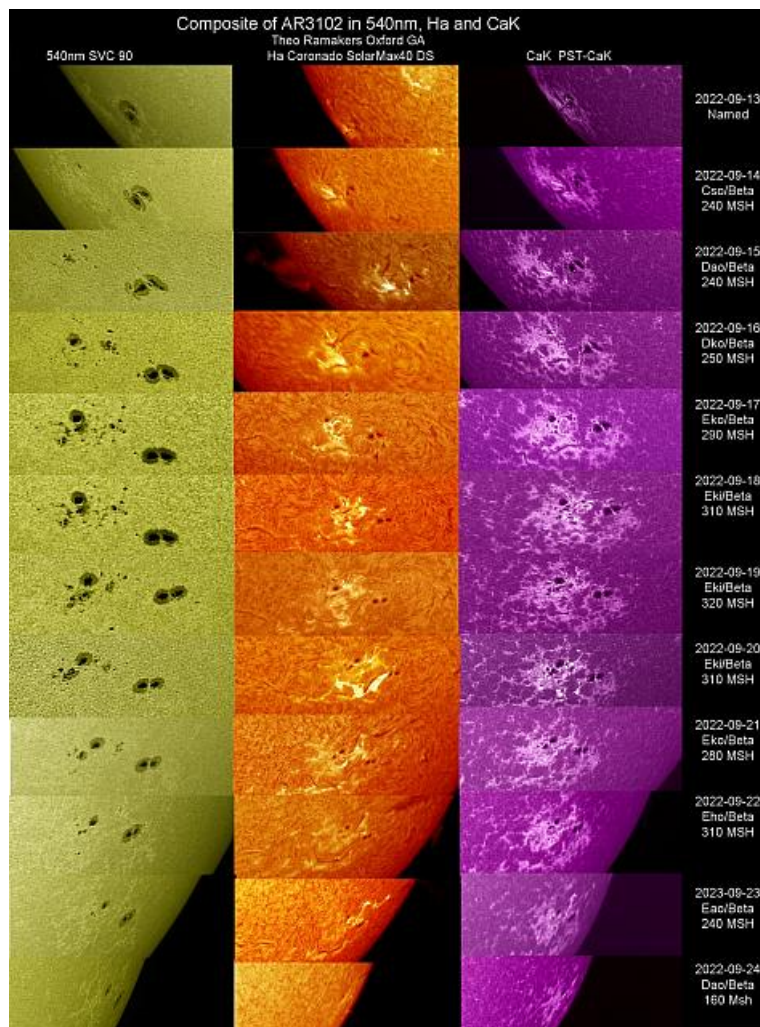
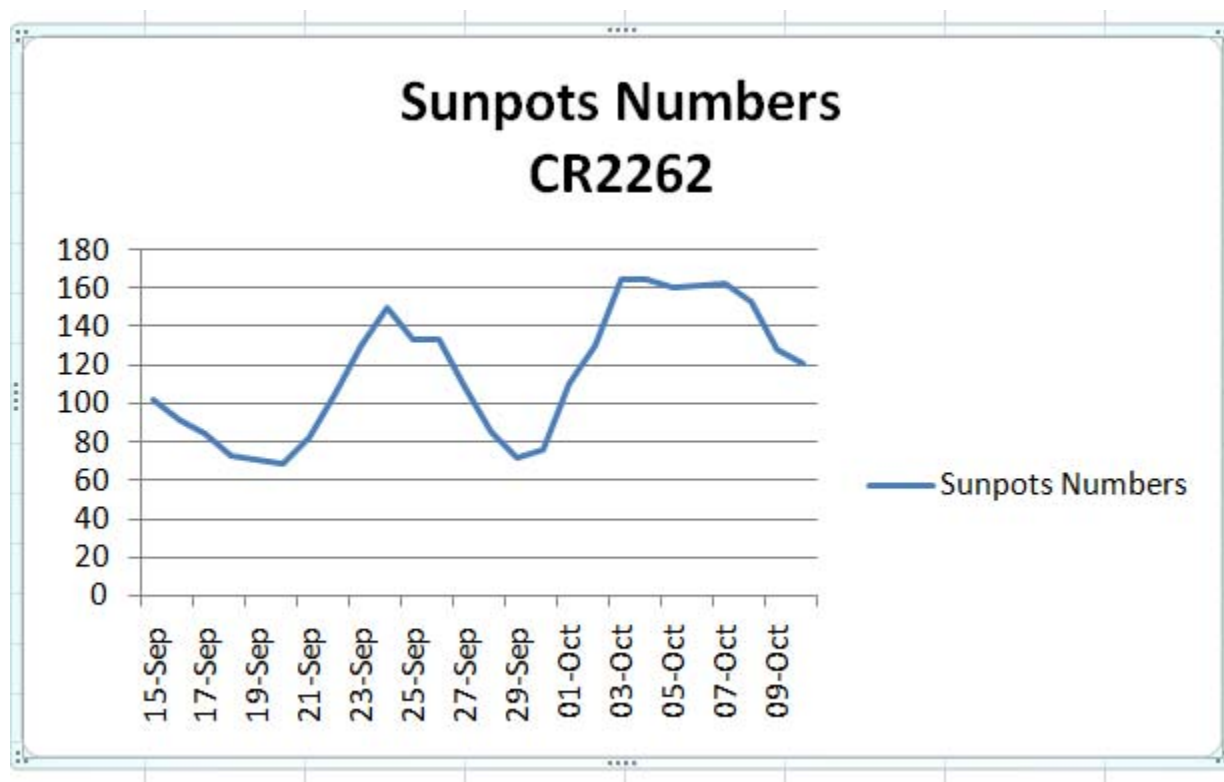


Image on right by Guilherme Grassmann catching a Flare from new group rotating on the NE limb numbered AR3110. Image on left by NOAA GOES-East SUVI L1b in He_{II}.

Image on the right is by Theo Ramakers which is a composite of AR3102. Great composite Theo, and amazing that you had the days of great weather to complete this.





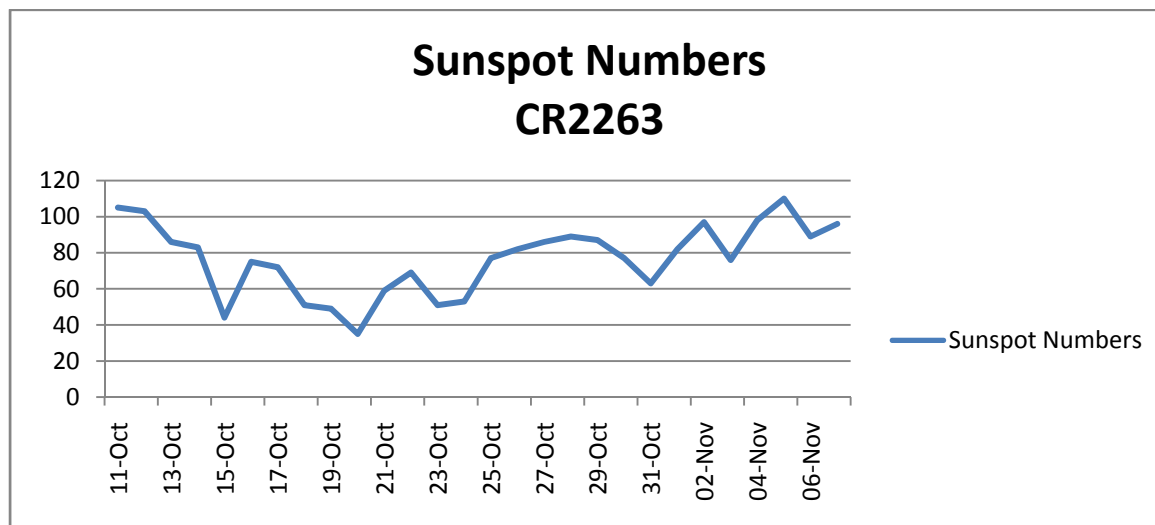
CR2262 Sept 15- October 9th, 2022

Observers for CR2262 were the following: We had 513 images submitted from 16 Observers.

Name	WL	HaWL	Ha	CAK	CAKWL	CAKHa	Other
Tony Broxton	X						
Christian Viladrich				X		X	X-OIII
David Teske	X	X	X				
Efrain Morales			X				
Frank Mellilo			X				
Gerd Vandenbulcke	X		X				
Guilherme Grassmann			X	X			
Howard Eskildsen	X		X	X			
James Kevin Ty			X				
Kim Hay	X		X				
Michael Toth	X		X				
Monty Leventhal		X					
Patrick Poitevin			X				
Rik Hill			X		X		
Theo Ramakers	X		X	X			
Vlamiir da Silva Junior			X				

I want to thank Tony Broxton for all his observations over the years and his dedication to the A.L.P.O. Solar Observing Group. Tony submitted his last observations to the ALPO group with CR2262. Due to medical difficulties, he felt he could not contribute accurately anymore. If you have not read Tony Broxton's book "Solar Observer's Handbook", (ISBN 978-1-4389-1140-3 by AuthorHouse®) give it a read, it is a very good book and on my desk as a reference guide.

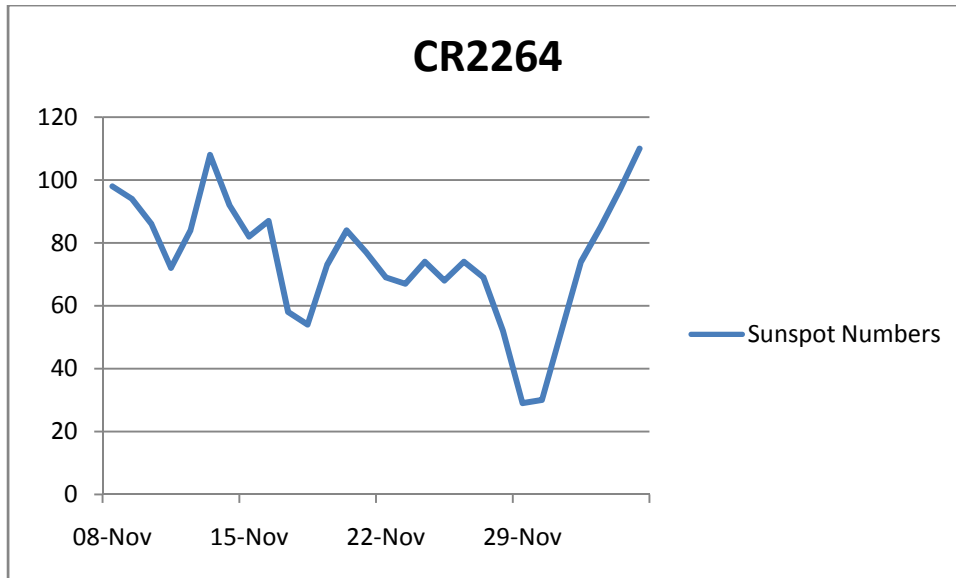
CR2263 (October 11- November 7th) produced only 1 M class flare, and 91 C class flares. November 5th was the highest day with 110 sunspot count. The largest active group in this rotation was AR3141 which was in the Northern Hemisphere.



We had 359 images submitted by 11 observers. These are listed below. I am sure that weather was effecting many observers over this time frame.

Name	WL	HaWL	Ha	CAK	CAKWL	CAKHa	Other
David Ladevaia			X				
David Teske	X	X	X				
Efrain Morales			X				
Gerd Vandenbulcke	X		X				
Guilherme Grassmann			X	X		X	
James Kevin Ty			X				
Kim Hay	X		X				
Monty Leventhal		X					
Rik Hill			X		X		
Theo Ramakers	X		X	X			
Vlamir da Silva Junior			X				

CR2264 (November 8 - December 5) produced 7 M class flares, along with 165 C class flares. Sunspot numbers were above 50 for the time period with Dec. 5th holding the top sunspot count of 110.



CR2264 had 11 Observers submitting 360 images. There were three prominent groups during CR2264. AR3141 in the North which peaked on November 11, 2022 at 610 millionths with a Beta Delta Gamma arrangement. AR3149 which grew in size, also in the North, and AR3153 at 750 Millionths with a Beta Delta arrangement and peaked on December 2, 2022.

Name	WL	HaWL	Ha	CAK	CAKWL	CAKHa	Other
David Teske	X	X	X				
Efrain Morales			X				
Frank Mellilo			X				
Guilherme Grassmann			X	X		X	
Name	WL	HaWL	Ha	CAK	CAKWL	CAKHa	Other
Howard Eskildsen	X		X	X			
James Kevin Ty			X				
Kim Hay	X		X				
Monty Leventhal		X					
Rik Hill			X		X		
Theo Ramakers	X		X	X			
Vlamir da Silva Junior			X				



Image by Guilherme Grassmann. Prominence in Ha

November 24, 2022

Image by Rik Hill November 16, 2022 CaK_Ha_WL collage.

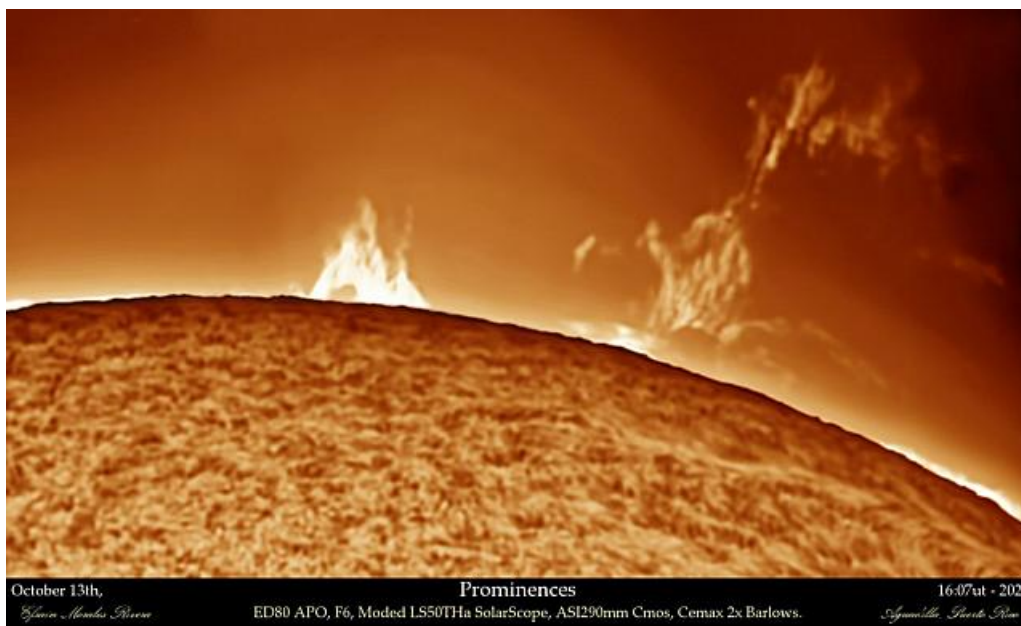
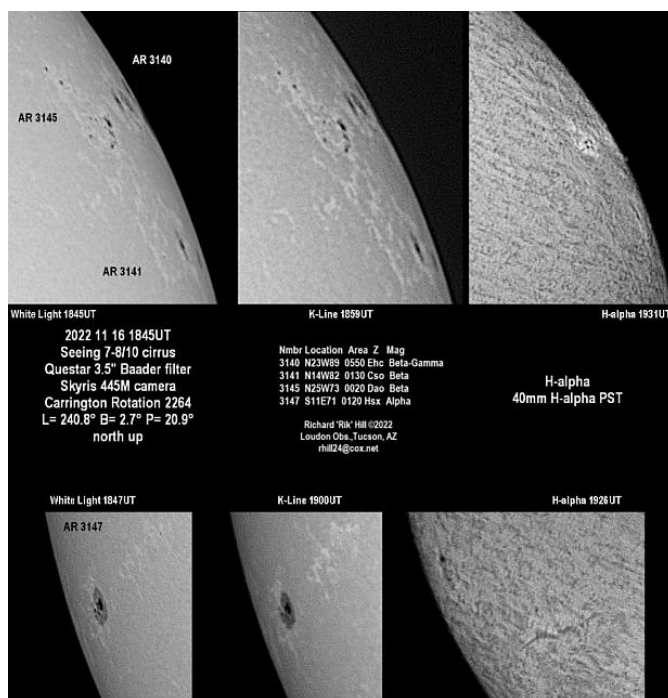


Image by Efrain Morales Prominences

Short Summary of all three Rotations (CR2262-CR2264)

Group Numbers	Northern Hemisphere	Southern Hemisphere
CR2262	11	11
CR2263	16	10
CR2264	14	8

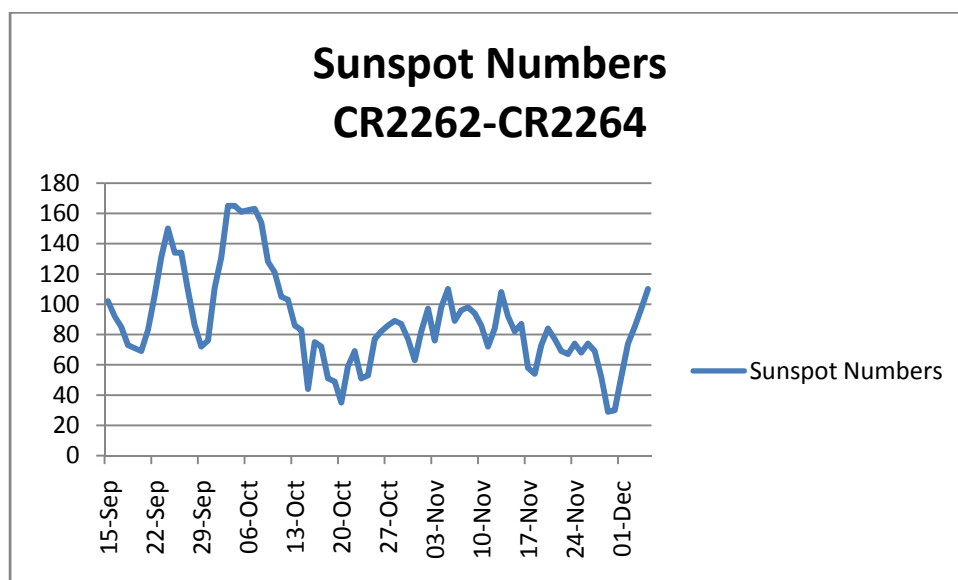
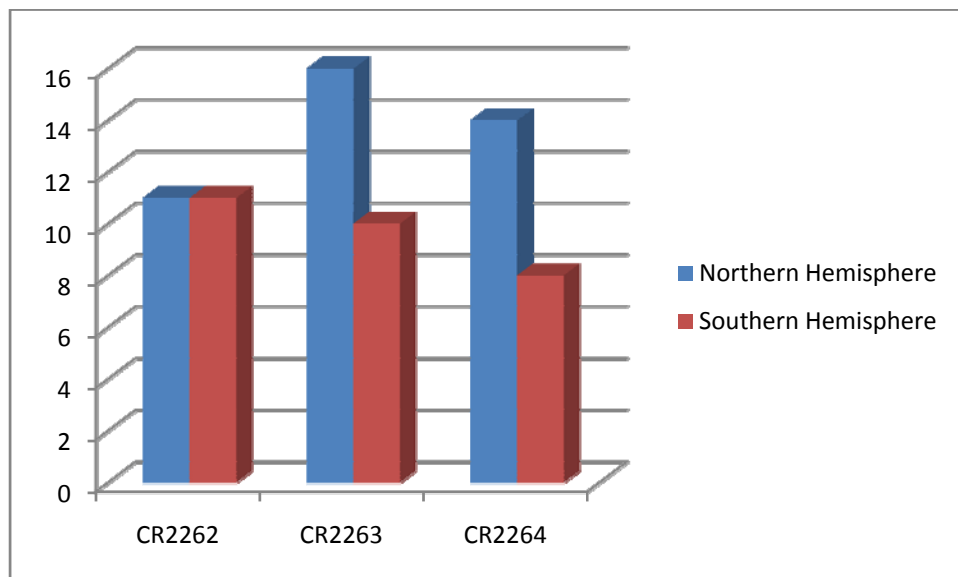


Chart created with numbers from SILSO* Dec 1-5th taken from the EISN current data for Sunspot Counts. The SILSO file to be released in January 2023 with all December numbers. Looking at the chart, the Sunspot numbers seem very chaotic.

There has been reference of a Extended Solar Cycle. This article was published October 24, 2022 in the Frontiers of Astronomy and Space Sciences
<https://www.frontiersin.org/articles/10.3389/fspas.2022.923049/full>

The story appeared on Spaceweather.com December 12, 2022. This was sent to the groups.io SolarALPO email list, and Theo Ramakers notes he had an article in the [ALPO-Journal Volume 62, number 1, Winter 2020](#) edition on the 100 year lasting modulation of the Solar Cycle and makes reference to the 80 year Gleissberg Cycle.

An interesting talk on Space Weather and the recent activity of flares was given by Dr. Tom Berger (University of Colorado) entitled "The Sun is Not Always Happy: Space Weather and the Question of Human Survivability".

Great talk, lots of history and great explanation of the Flare terminology. You can catch it at the YouTube link below.

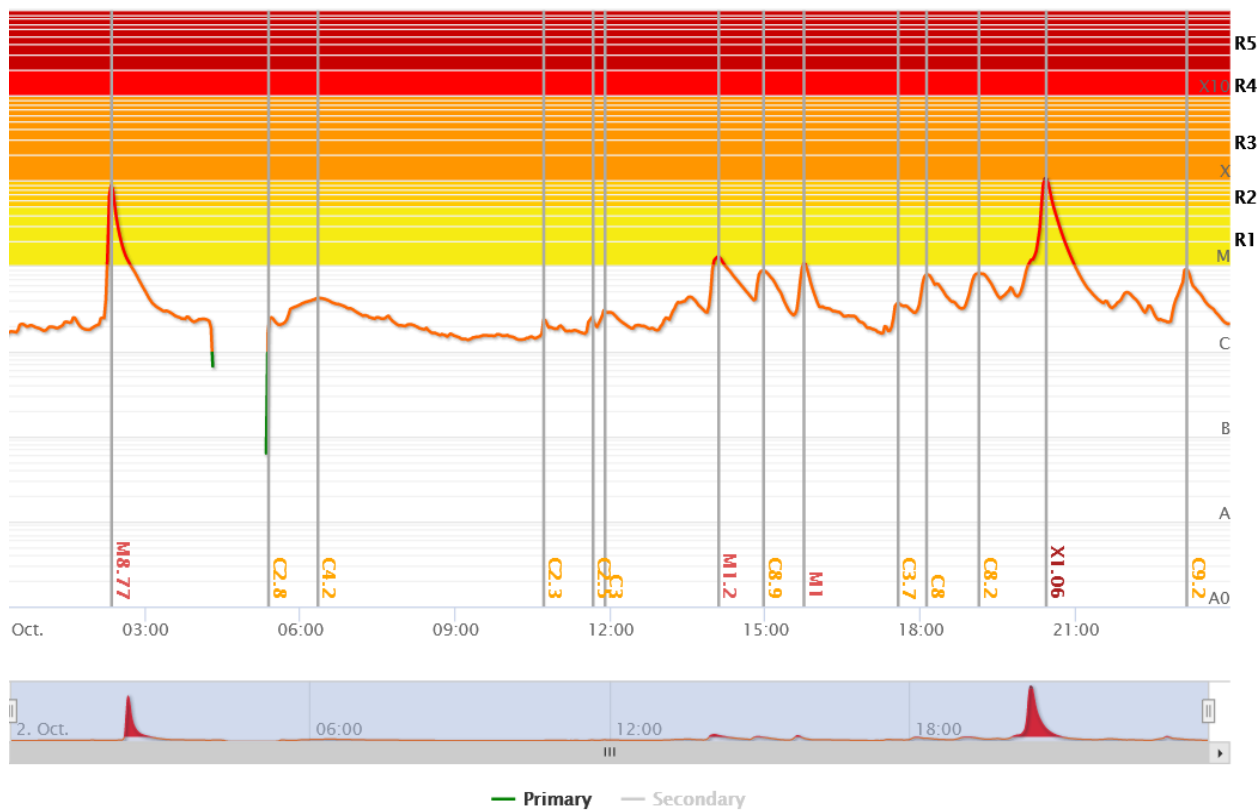
<http://www.youtube.com/SVAstronomyLectures>

Solar activity



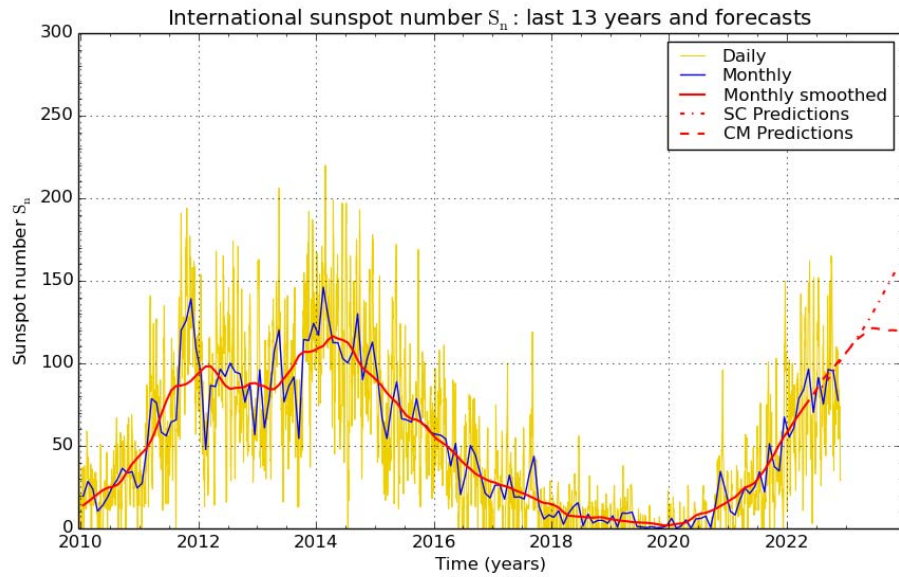
GOES X-ray satellite 1 minute solar X-rays average in the 1-8 Ångström passband

from 2 hours 6 hours 24 hours



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Flare Counts	C	M	X
CR2262	222	23	1 OCT 2, 2022 AR3110
CR2263	91	1	0
CR2264	165	7	0



SILSO graphics (<http://sidc.be/silso>) Royal Observatory of Belgium 2022 December 1

This particular Cycle (Cycle 25) seems to be on track with surpassing the earlier prediction of intensity. However, looking at the early prediction line, the sunspot count is on par, but it's still too early to say for certain, how the prediction will go - it's still a bit chaotic.

As we are coming to the end of 2022 what will the next AR2265 hold?

If you have not already signed up for the Solar ALPO chat list, please do at groups.io

All images for these three past rotations and all submissions are located at <https://alpo-astronomy.org/gallery3/index.php/Solar-Observations-Archive>

References

*Sunspot Index and Long-term Solar Observations <https://www.sidc.be/silso/>

*Sunspot group distribution and Flare information <https://Spaceweatherlive.com>

Images & Sketches <https://alpo-astronomy.org/gallery3/index.php/Solar-Observations-Archive/SolarImages2022>

Dr. Tom Berger (University of Colorado) "The Sun is Not Always Happy: Space Weather and the Question of Human Survivability". <http://www.youtube.com/SVAstronomyLectures>