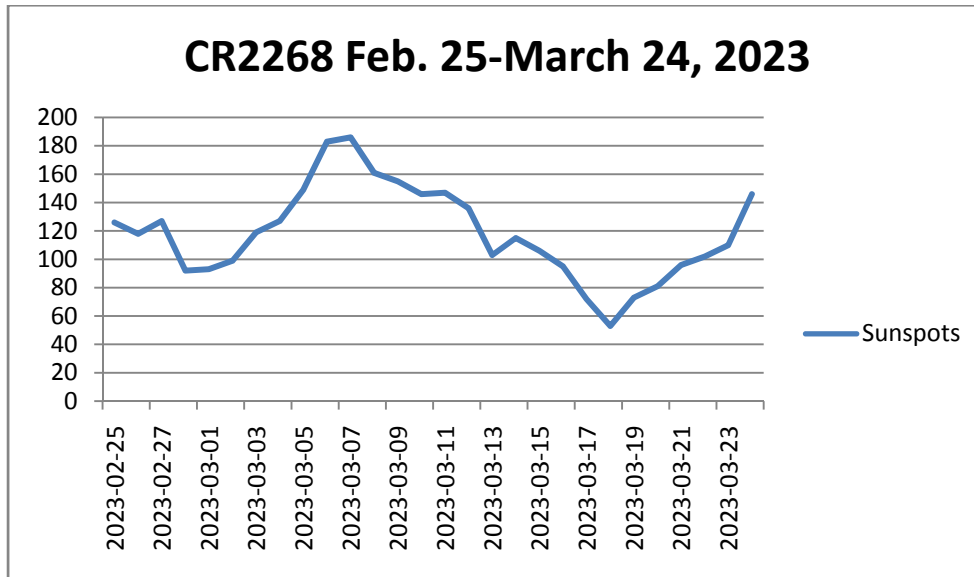


## Solar Rotation Report - Kim Hay

### Carrington Rotation Periods CR2268-2272

#### CR2268 Feb 25-March 24



This rotation started out with a strong number of sunspots and then increased with a maximum on March 7 with a Relative number of 186. Then it began a downward spiral.

Large group AR3234 in the Northern Hemisphere from Feb 27-March 3 was  $\beta$ - $\gamma$ - $\delta$  which produced an X2.07 flare on March 3. The size of this group reached 860 millionths in size on February 28.

There was a large group in the south (AR3256) that started to form, which reached  $\beta$ - $\gamma$  on March 25 - March 29 and reached 340 millionths on March 28 (though the 28th is in the next rotation period.)

During this period there were the following total of Groups per Hemisphere and Flares.

Groups per Hemisphere		Flares - C	Flares-M	Flares-X
N-10	S-15	140	19	1

There were 11 observers during this time period with 568 images submitted to the Solar Gallery

Names	WL	HAWL	HA	CAK	CAKWL
DVDTSK	X	X			
EFRNMRLS			X		
GEVDBU			X		
GLHGRSM			X	X	
HWESK	X		X	X	
JMKVTY	X		X		

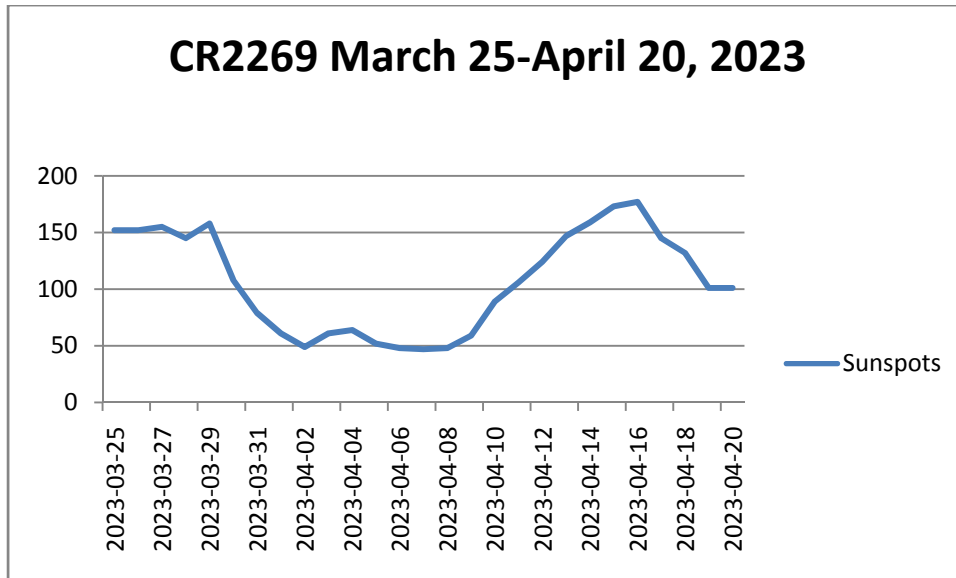
KIMHAY	X		X		
MKTH			X		
RKHLL					X
THRMK	X		X	X	
VDSLJ			X		

**CR2269 March 25- April 20**

During this rotation period we had 566 observations, with 13 observers

Names	WL	HAWL	HA	CAK
ChrVldr	X	X		X
DVDTSK	X	X	X	
EFRNMRLS			X	
FRNMLLO		X	X	
GEVDBU	X			
GLHGRSM			X	X
HWESK	X		X	X
JMKVTY	X		X	X
KIMHAY	X		X	
MkTh	X		X	
RKHLL	X			X
THRMK	X		X	X
VDSLJ			X	

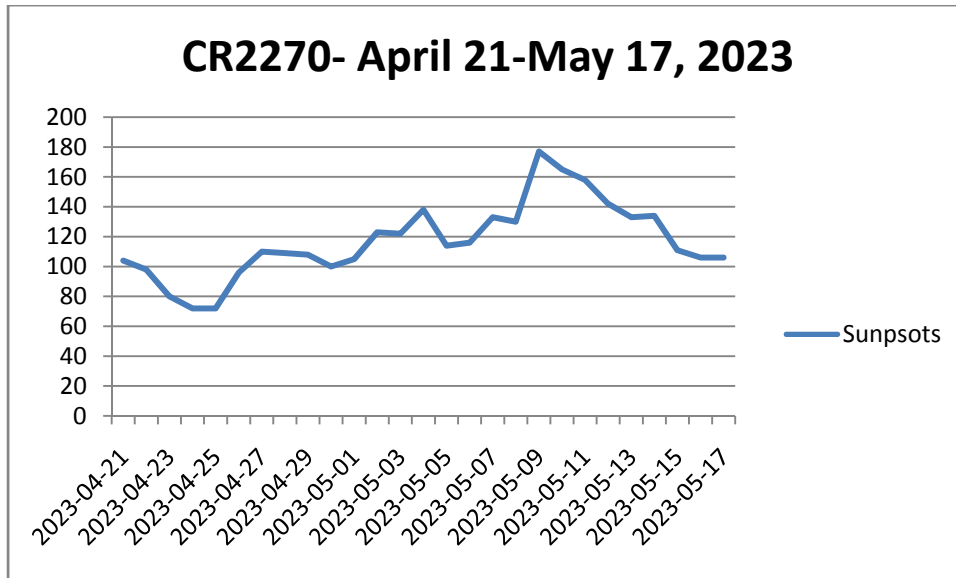
Highest R number on April 16 was 177 . The graph for this month certainly took a dip to the lower numbers under 100 from March 31 to April 10th. The groups per hemisphere also started to fall, and yet over the month the flare activity seemed to pick up in C class flares, lower in M class flares, and holding the same in X class flares. By April 9th, the north was void of groups, but plages were evident on the west and east limbs. By April 10 a new group AR3273 present , and the south was sporting Group AR3272 which was  $\beta$ - $\gamma$  from April 7-April 12, but only reached 280 millionths on April 9. AR3282 in the Northern Hemisphere showed up on April 13 as a  $\beta$  yet did a roller coaster ride with  $\beta$ - $\gamma$  on April 17 , then again from April 21-23 which moved this group into the next Carrington Rotation. It produced a total of 25 C and 2 M class flares after leaving the disk on April 25. It did reach 530 millionths twice on April 16 and April 19th.



Groups per Hemisphere		Flares - C	Flares-M	Flares-X
N-9	S-13	201	8	1

### **CR2270 April 21- May 17**

This rotation period showed a very erratic sunspot graph . Trending one step forward two steps back , it seemed to be building. The highest Relative Sunspot number was on May 9th at 177. Observer images were down to 389 with 12 Observers. At this time of year , the weather was not great, lots of cloud and rain in many parts of the world.

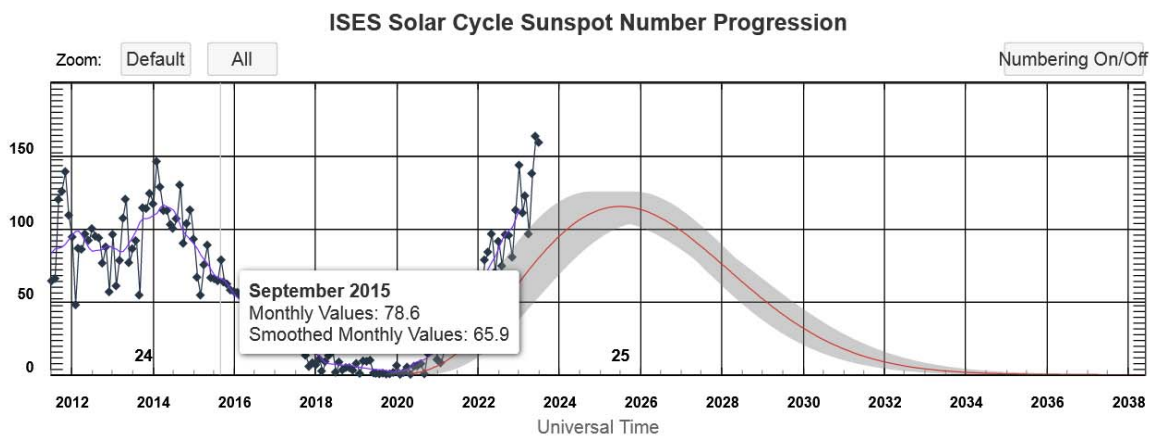


The C class flares remained over 200 but there were fewer M class and no X class flares during this rotation.

Groups per Hemisphere	Flares - C	Flares-M	Flares-X	
N-14	S-12	204	5	0

### CR2271 May 18- June 14

This rotation started out with higher sunspot numbers and reaching a peak on June 7th with 201 sunspots. This Solar Cycle 25 has already gone past the predicted peak of Cycle 24 which was predicted by NOAA.



Monthly Values   
  Smoothed Monthly Values   
  Predicted Values   
  Predicted Range

Groups per Hemisphere		Flares - C	Flares-M	Flares-X
N- 17	S- 11	247	36	0

There were several groups in this rotation that produced many flares and grew quite elongated .

AR3311 in the Northern Hemisphere came into view May 18 as a  $\beta$  until May 31, producing 62 C class flares and 25 M class flares. Its largest size was 470 millionths on May 24. It was a  $\beta$ -  $\gamma$  May 19, 24-28 and was a  $\beta$ -  $\gamma$ -  $\delta$  from May 20-23.

AR3315 in the Southern Hemisphere appeared May 23 and rotated off on June 3. It was a  $\beta$ -  $\gamma$ -  $\delta$  May 27,28,30 and spent May 29 - 31 as a  $\beta$ -  $\gamma$ . It reached a peak of 800 millionths on May 28.

AR3323 in the Southern Hemisphere appeared May 31 as a  $\beta$  moved to  $\beta$ -  $\gamma$  from June 1-8 then rotated off the disk on June 13.

AR3327, also in the Southern Hemisphere, came on June 4 as a  $\beta$  then moved to  $\beta$ -  $\gamma$ -  $\delta$  for three days until June 8th, then downgraded to  $\beta$ -  $\gamma$  before moving off the disk June 14 as a  $\beta$ . Its largest size was 300millionths on June 6.

Observers for this rotation were 16 with 618 images submitted to the ALPO Solar Gallery.

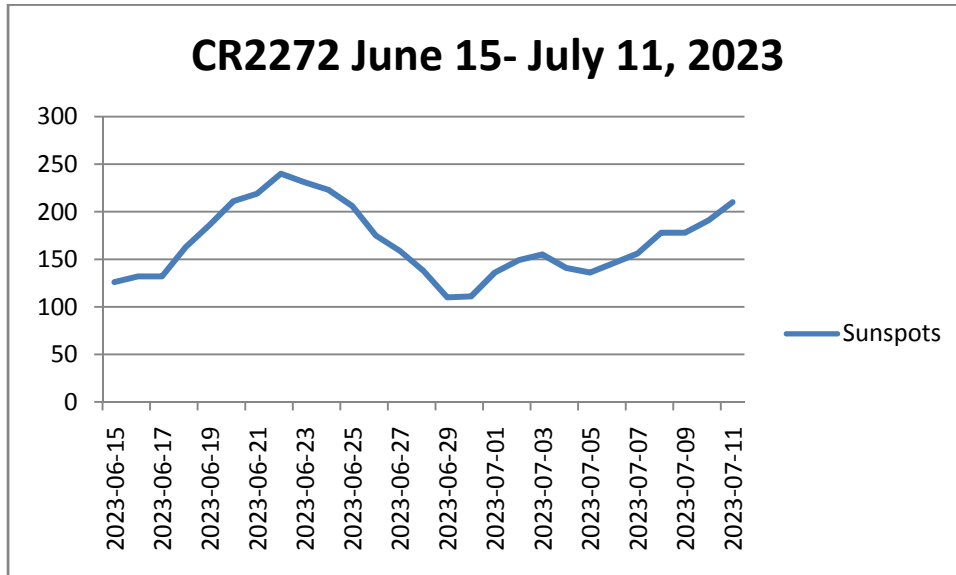
Names	WL	HAWL	HA	CAK	CAKWL	OTHER	OIII
ChrVldr	X		X	X			X
DVDTSK	X	X	X				
FRNMLLO	X		X				
EFRNMRLS			X				
GEVDBU	X		X				
GLHGRSM			X	X			
HWESK	X		X	X			
JFRCRL	X						
JMKVTY	X		X	X			
KIMHAY	X		X				
MLOTT	X						
MrkJstn	X						
RKHLL	X			X			
RNDTTM			X				
THRMK	X			X			
VDSLJV			X				

### **CR2272 June 15- July 11**

This next rotation certainly had some excitement due to a lot of forest fire smoke from Canada. With the particulate matter in the air over much of Canada and the US there were many deep orange sunsets and sunrises observed. CMEs and resulting auroras were also had in the Northern Hemisphere.

There were 514 observations submitted to the ALPO Solar Gallery, with 16 Observers.

Names	WL	HAWL	HA	CAK	CAKWL	OTHER	OIII
ChrVldr	X		X	X			X
DVDTSK	X	X	X				
FRNMLLO	X		X				
EFRNMRLS			X				
GEVDBU	X		X				
GLHGRSM			X	X			
HWESK	X		X	X			
JMKVTY	X		X	X			
KIMHAY	X		X				
LgiMrrn	X						
MLOTT	X						
RckSctt	X						
RKHLL	X			X			
RNDTTM			X				
THRMK	X			X			
VDSLJ			X				



Groups per Hemisphere		Flares - C	Flares-M	Flares-X
N- 14	S- 20			

Two groups in this rotation grew very large and active. AR3354 North, and AR3363 South.

AR3354 came on June 26 as  $\beta$  spent one day as  $\beta$ - $\gamma$  then moved into  $\beta$ - $\gamma$ - $\delta$  from June 28 to July 5th when it exited on the Western Hemisphere. It was still at 1130 millionths when it rotated off the disk. It

produced 42 C class flares, 3 M class flares and 1 X class flare on July 2nd. However on July 5th Spaceweather.com reported that a magnetic canopy from AR3359 (southern Group) was aimed at the Earth with a partial CME hitting on July 7th.

AR3363 came into view on July 6th at 390 millionths and grew to 850 millions by July 12th, which is in our next Rotation period. We'll have more discussion on this naked eye sunspot in CR2273.

The highest Relative Sunspot number was 240 on June 22nd. And ISES has also reported that the sunspot count has reached a 21 year high since 2002. There is a graph above and this is also reported in the Solar Section Report from Rik Hill (CR2264-CR2267) in the September released of the Strolling Astronomer. A very interesting report, do not miss it.

See you next time with CR2273.

### **References**

#### Observers List

Dvdtsk	David Teske	MLott	Marie Lott
EfrnMrls	Efrain Morales	MkTh	Michael Teoh
FrnMilo	Frank Mellilo	MchlRos	M.Rosolina
GevDbU	Gerd Vanderbulcke	MrkJstn	M. Johnston
GlhGrsm	Guilherme Grassmann	RndTtm	Randy Tatum
HwEsk	Howard Eskildsen	Rkhll	Rik Hill
JmKvTy	James Kevin Ty	ThRmk	Theo Ramakers
KimHay	Kim Hay	VdslvJ	Vlamir da Silva Junior

Spaceweatherlive.com

Sunspot numbers for each Rotation from SILSO Solar Influences Data Analysis Centre  
<https://www.sidc.be/SILSO/home>

NOAA National Oceanic and Atmospheric Administration- Space Weather Prediction Centre  
<https://www.swpc.noaa.gov/content/space-weather-enthusiasts-dashboard>

Greek Alphabet list [https://www.rapidtables.com/math/symbols/greek\\_alphabet.html](https://www.rapidtables.com/math/symbols/greek_alphabet.html)

ISES Sunspot Number <https://spaceweather.com/archive.php?view=1&day=03&month=07&year=2023>