

## Carrington Report for CR2254-CR2258

Kim Hay

The Solar activity over the last four Cycles has certainly been a roller coaster. Information from SILSO had May 22 in CR2257 with a day topping out with a sunspot count of 161 and on June 8th, in CR 2258 with a Sunspot count of 4. What will CR2259 bring? It's been fairly quiet, but activity is starting to pick up. As of July 3rd, the Northern Corona Hole is facing Earth.

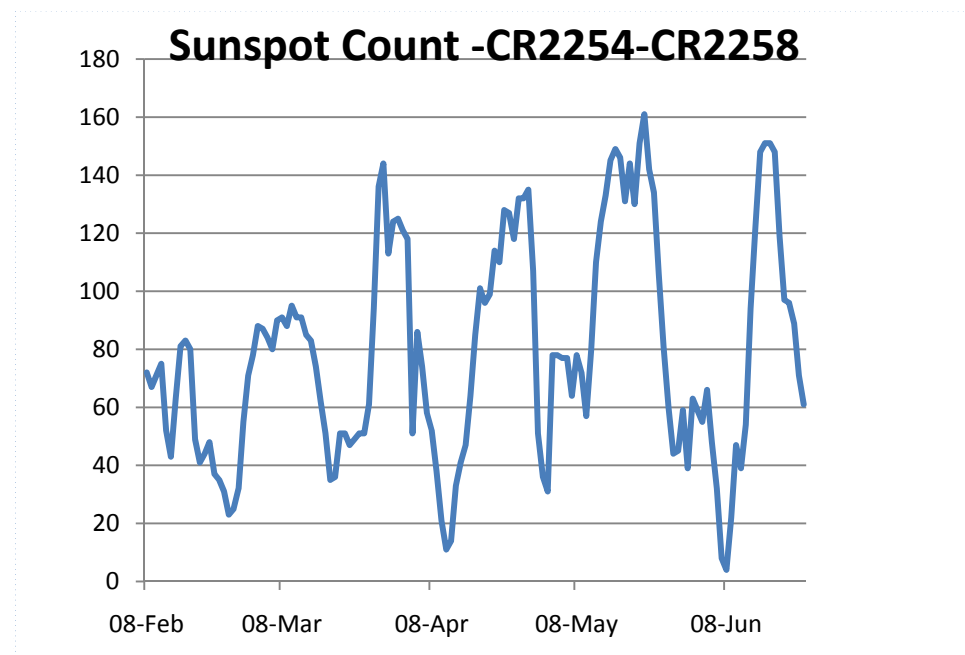
There have been several flares during this period that have been over M5, capable of affecting the Earth's ionosphere and causing damage to electronics, as well as producing aurora.

- March 30 X1.3 class flare causing Aurora that came from a CME on March 28th.
- April 21 M9.6 flare .
- May 3 X1.1 flare SE limb.
- May 4th M5.7 from region AR3004.
- May 10th X1.5 .

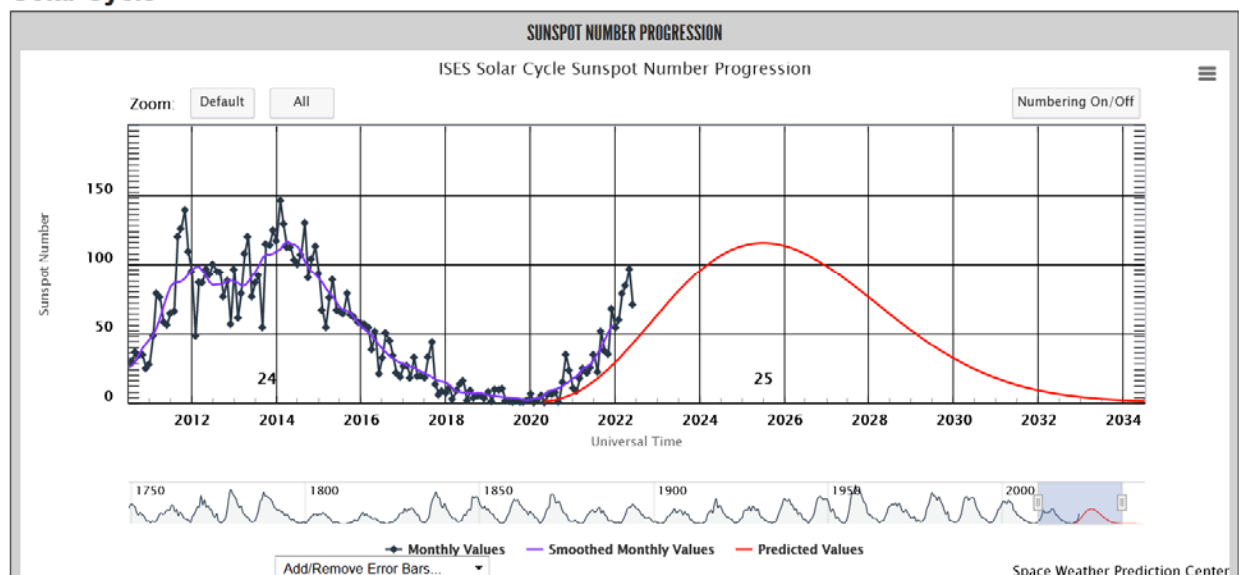
There were two C class flares on June 28th which produced aurora displays July 4th and we are expecting the next one due July 6th.

During CR2254, 2255, 2256 there were groups (AR 2955, AR2975) that showed the Wilson Effect.\* see references

During CR2255 there was one group ( AR2975) that showed a light bridge.\* see references



## Solar Cycle



Graph from NOAA Space Weather Prediction Centre

### Number of strongest flares for each month- from spaceweatherlive.com

| Month    | B | C  | M  | X |
|----------|---|----|----|---|
| February | 5 | 20 | 3  | 0 |
| March    | 4 | 18 | 8  | 1 |
| April    | 0 | 18 | 9  | 3 |
| May      | 1 | 16 | 11 | 2 |
| June     | 7 | 19 | 3  | 0 |

### Number of Photographic Submissions to the ALPO Solar Gallery per Rotation

#### Groups Observed and Number of Groups per Hemisphere (NASA SDO/HMI)

| Rotation | # of Photo Submissions | Groups Observed (ALPO database)   | North Groups | South Groups | Notes  |
|----------|------------------------|---|--------------|--------------|--|
| CR2254   | 549                    | AR2939 2940<br>2941 2943 2944<br>2945 2946 2947<br>2948 2949 2950<br>2951 2952 2953<br>2954 2955 2956<br>2957 2958 2959<br>2960 2961 2962 | 11           | 13           | Wilson effect<br>AR 2955<br>Southern hemisphere void of groups<br>February 23-27th |

| Rotation | # of Photo Submissions | Groups Observed   | North Groups | South Groups | Notes   |
|----------|------------------------|---|--------------|--------------|---|
| CR2255   | 396                    | AR2957 2959<br>2960 2961 2962<br>2963 2964 2965<br>2966 2967 2968<br>2926 2970 2971<br>2972 2973 2974<br>2975 2976 2977<br>2978 2979 2980<br>2981 2982 2983<br>2984 | 11           | 15           | Wilson Effect<br>AR 2975<br>Light bridge<br>AR2974<br>Last week of<br>March 19-20th<br>Southern<br>Hemisphere void<br>of groups |
| CR2256   | 707                    | AR2978 2981<br>2982 2973 2975<br>2981 2982 2983<br>2985 2989 2990<br>2991 2992 2993<br>2994 2995 2996<br>2997 2998 2999<br>3000 3001 3002                           | 14           | 12           | Wilson Effect<br>AR2999<br>April 12-14th<br>Southern<br>Hemisphere void<br>of Groups  |
| CR2257   | 665                    | AR2995 2999<br>3001 2995 3004<br>3005 3006 3007<br>3008 3009 3010<br>3011 3012 3014<br>3015 3016 3017   | 11           | 15           | Northern<br>Hemisphere void<br>of groups<br>May 5-8th   |
| CR2258   | 539                    | AR3021 3023<br>3024 3025 3026<br>3027 3028 3029<br>3030 3031 3032<br>3033 3034 3035<br>3036 3037 3038<br>3039 3040  | 10           | 11           | Northern<br>Hemisphere void<br>of groups<br>June 7-9th  |

It is interesting that after such activity in each hemisphere, there are several days where no activity happens at all. By the number of observed groups per hemisphere it looks pretty even in the activity, and that both hemispheres have caught up to each other.

## Observer's submitting Sketches and Images for Rotations CR2254-CR2258

All available for viewing at <http://alpo-astronomy.org/gallery3/index.php/Solar-Observations-Archive>

| Observers | WL | HAWL | HA | CaK |
|-----------|----|------|----|-----|
| AnthBrx   | X  |      |    |     |
| ChrVldr   |    |      | X  | X   |
| Dvdldv    |    |      | X  |     |
| DvdTsk    |    | X    | X  |     |
| EfrnMrls  |    |      | X  |     |
| FrnMllo   | X  |      | X  |     |
| GeVdbu    | X  |      | X  |     |
| GlhGrsm   |    |      |    | X   |
| HwEsk     | X  |      | X  | X   |
| JfrCrl    | X  |      |    |     |
| JmKvTy    | X  |      | X  | X   |
| KimHay    | X  |      | X  |     |
| LgiMrrn   |    |      | X  |     |
| MKTH      | X  |      | X  |     |
| MntLvnt   |    | X    |    |     |
| PatPtvn   |    |      | X  |     |
| PIAndr    | X  |      | X  |     |
| RkHll     | X  |      |    | X   |
| ThRmk     | X  |      | X  | X   |
| VdSlvJ    |    |      | X  |     |

Howard Eskildsen posted to the Groups.io email list on April 1st that as of the past week he passed the 7,000 mark for solar images sent to ALPO. Congratulations Howard, here's to many more.

We have 98 subscribers to our groups.io SolarALPO@groups.io email group.

### **References**

SILSO <https://www.sidc.be/silso/>

Spaceweatherlive.com

ALPO Solar Gallery- database

\*Wilson Effect- Perceived depression of the sunspot's umbra, or centre, in the Sun's photosphere.

\*Light Bridge- Observed in White light where a bright streak is crossing a sunspot umbrae. This is frequently sign of impending division.