Monthly Preliminary Report

MPR

Kjell Inge Malde, Director/Editor
Hunsteinstien 42A, N-4083 Hundvaag NORWAY
Web: http://www.cv-helios.net
Email: cvhelios@gmail.com

Volume 44 Number 12 **MPR no. 509** **December 2023** **ISSN 2535-3780**

CV-Helios Network

Monthly Preliminary Report for December 2023

Solar Cycle 25: Month no. 49

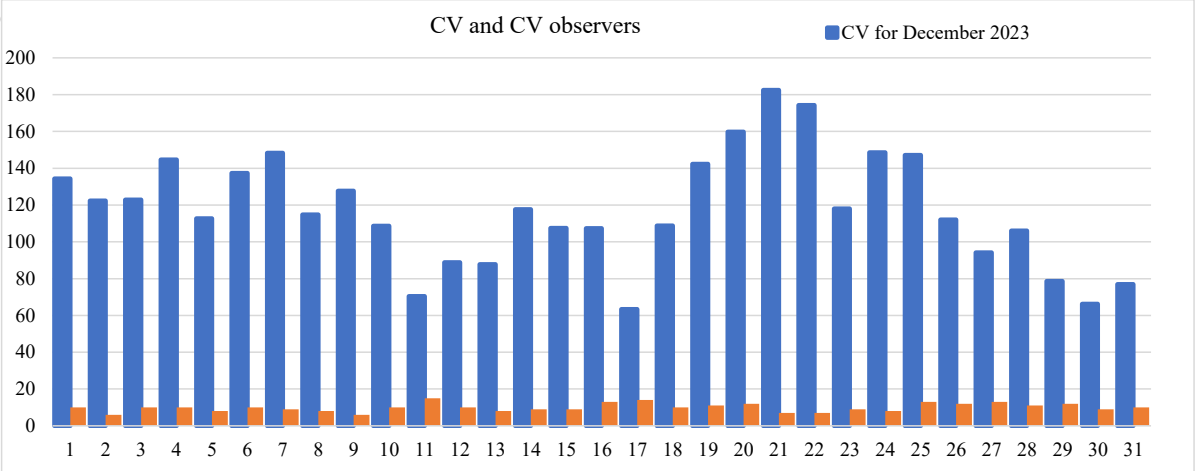
Report id.: cv2312 - CV-report no.: 509

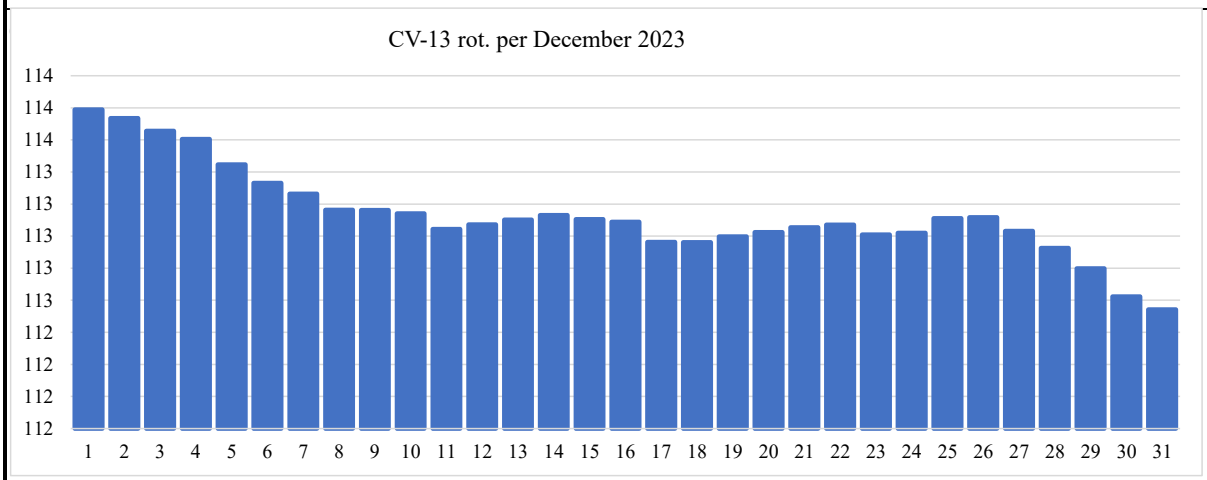
Memno.	Name	Country	CV	Obs	K	Obs. Tot.
CV-001	KJELL INGE MALDE	NORWAY	127,1	17	1,061	9342
CV-010	FRANKY DUBOIS	BELGIUM	83,7	14	0,813	9729
CV-019	ELMAR JUNKER	GERMANY	195,0	5	1,426	3862
CV-023	HARTMUT BRETSCHNEIDER	GERMANY	57,2	12	0,502	5955
CV-040	ROBERTO BATTAIOLA	ITALY	133,0	7	0,992	2154
CV-068	SVEN OVE THIMM	DENMARK	70,8	4	0,561	4310
CV-077	ANDREW JOHNSTON	UNITED KINGDOM	112,5	4	0,955	3701
CV-080	JAN JANSSENS	BELGIUM	79,5	2	0,740	1230
CV-082	PIOTR URBANSKI	POLAND	89,3	9	0,835	5577
CV-086	TOS POLAND	POLAND	115,1	31	0,999	8783
CV-091	GRZEGORZ DALEK	POLAND	93,1	14	0,824	4802
CV-102	PAULO ROBERTO MOSER	BRAZIL	97,4	28	0,837	3154
CV-105	ALEXEY RYBACK	RUSSIA	103,2	10	0,952	3513
CV-122	VLASTISLAV FEIK	CZECH REPUBLIC	73,9	7	0,742	3210
CV-135	GEMA ARAUJO	SPAIN	141,1	29	1,240	7587
CV-136	FAUSTINO GARCIA	SPAIN	82,4	9	0,678	4012
CV-139	JAVIER ALONSO	SPAIN	110,9	10	0,941	4176
CV-151	JEFFREY CARELS	BELGIUM	74,0	4	0,784	3279
CV-171	WALTER JOSE MALUF	BRAZIL	206,7	26	1,725	3073
CV-181	ADAM DERDZIKOWSKI	POLAND	103,6	5	1,051	1211
CV-207	ONDREJOV OBS. (AI CAS)	CZECH REPUBLIC	104,2	13	1,064	3852
CV-208	JOHAN NEYS	BELGIUM	54,5	2	0,842	779
CV-214	IGOR GRAGEDA MENDEZ	BOLIVIA	116,2	22	0,985	1366
CV-215	ARNAUD MENGUS	FRANCE	106,6	5	0,976	371
CV-219	KANDILLI OBSERVATORY	TURKEY	95,1	17	0,865	1023
CV-220	MICHEL FRANGEUL	FRANCE	98,7	3	0,748	188

Totals	Observers	Days	CV	No	K
	26	**31**	**104,79**	**309**	**0,928**

Results

Date	CV	Obsrvrs	Regions 6 rot.	CV-USAF 6-rot.	CV-6 rot.	CV-13 rot.
1	134,40	10	7,49	107,37	113,14	113,79
2	122,33	6	7,46	107,16	112,66	113,73
3	122,80	10	7,45	106,96	112,24	113,66
4	144,70	10	7,41	106,93	112,15	113,60
5	112,63	8	7,38	106,96	111,95	113,45
6	137,40	10	7,35	106,97	111,96	113,33
7	148,33	9	7,34	107,13	112,22	113,26
8	114,75	8	7,33	107,10	112,22	113,16
9	127,67	6	7,33	107,11	112,28	113,16
10	108,60	10	7,34	107,07	112,42	113,14
11	70,40	15	7,35	106,93	112,36	113,04
12	88,80	10	7,34	106,61	112,35	113,07
13	87,75	8	7,35	106,25	112,17	113,10
14	117,67	9	7,36	106,12	112,00	113,13
15	107,44	9	7,37	105,93	111,88	113,10
16	107,31	13	7,40	106,36	111,94	113,09
17	63,43	14	7,40	106,32	111,62	112,96
18	108,80	10	7,40	106,29	111,40	112,96
19	142,27	11	7,40	106,23	111,34	113,00
20	159,75	12	7,38	105,99	111,26	113,02
21	182,43	7	7,36	105,42	110,95	113,05
22	174,29	7	7,35	104,81	110,55	113,07
23	118,00	9	7,32	104,21	110,12	113,01
24	148,50	8	7,32	104,08	109,96	113,02
25	147,15	13	7,30	103,72	109,69	113,11
26	112,08	12	7,31	103,45	109,45	113,12
27	94,15	13	7,32	103,21	109,03	113,03
28	106,09	11	7,30	102,38	108,53	112,93
29	78,58	12	7,29	101,70	107,60	112,80
30	66,22	9	7,26	100,70	106,99	112,62
31	76,90	10	7,24	99,66	105,91	112,54
Totals/ Avrgs	**3,96**	**27,3**	**0,97**	**4,83**	**110,98**	**113,13**





Latest sunspot regions developments

Reg.,1st date,Max.dt.,Last dt.,Lat.,Long.,Rot.,Max.mvh,Class,CV

3153,01.12.22,04.12.22,14.12.22,-17,327,2265,1080,FKO,45
3155,01.12.22,04.12.22,08.12.22,22,25,2264,140,DAI,22
3156,02.12.22,03.12.22,14.12.22,25,320,2265,220,DAO,19
3157,03.12.22,10.12.22,14.12.22,16,295,2265,230,ESI,29
3158,04.12.22,05.12.22,09.12.22,24,355,2265,110,DAI,22
3163,10.12.22,17.12.22,21.12.22,-20,215,2265,530,EKI,47
3165,11.12.22,15.12.22,17.12.22,-20,278,2265,340,EKC,56
3166,11.12.22,19.12.22,20.12.22,-8,226,2265,180,DSO,25

Reg.,1st date,Max.dt.,Last dt.,Lat.,Long.,Rot.,Max.mvh,Class,CV

3167,13.12.22,14.12.22,20.12.22,20,241,2265,190,DAO,19
3169,16.12.22,27.12.22,29.12.22,21,117,2265,490,FKC,57
3171,19.12.22,23.12.22,30.12.22,24,97,2265,250,DKO,43
3176,26.12.22,31.12.22,06.01.23,19,9,2265,430,EKO,44
3177,28.12.22,31.12.22,08.01.23,-18,334,2266,310,DAC,31
3507,29.11.23,06.12.23,10.12.23,8,222,2278,210,CSO,11
3510,03.12.23,05.12.23,10.12.23,-15,217,2278,150,DAI,22
3511,03.12.23,09.12.23,11.12.23,-22,215,2278,180,FSI,30

:Product: Weekly Highlights and Forecasts

Highlights of Solar and Geomagnetic Activity
01 - 07 January 2024

Solar activity was at low to moderate levels. Moderate activity (R1/Minor) was observed from Region 3536 (N06, L=151, class/area Eko/250 on 03 Jan) on 01, 02 and 04 Jan. The largest of these M flares was an M4.7 observed at 01/1225 UTC. This region also produced a total of 35 C-class flares. Region 3538 (N21, L=175, class/area Dai/070 on 05 Jan) produced a total of 17 C-class flares, the largest a C7.1/1n at 06/1527 UTC. C-class activity was also produced by Regions 3534 (S13, L=225, class/area Dao/150 on 30 Dec), 3535 (S05, L=285, class/area Bxo/010 on 28 Dec), 3537 (N18, L=153, class/area Dsi/120 on 05 Jan) and 3540 (S18, L=095, class/area Dki/350 on 06 Jan).

Numerous CME signatures were detected during the period, but none were determined to have an Earth-directed component.

Solar activity is expected to be low with a chance for M-class (R1-R2/Minor-Moderate) flares and a slight chance for X-class (R3/Strong) flares from 08-24 Jan, 26-31 Jan and 01-03 Feb. Low activity is expected on 25 Jan.

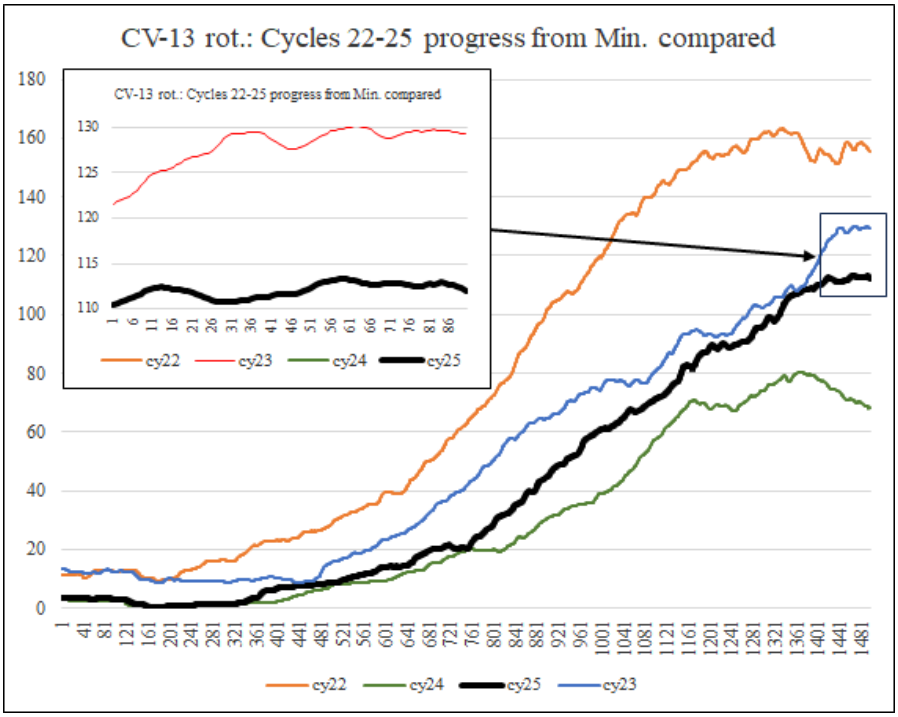
A slight chance for proton events exists at geosynchronous orbit through the period.

http://services.swpc.noaa.gov/text/weekly.txt

Sunspot regions of December 2023

3153,01.12.22,04.12.22,14.12.22,-17,327,2265,1080,FKO,45
3155,01.12.22,04.12.22,08.12.22,22,25,2264,140,DAI,22
3156,02.12.22,03.12.22,14.12.22,25,320,2265,220,DAO,19
3157,03.12.22,10.12.22,14.12.22,16,295,2265,230,ESI,29
3158,04.12.22,05.12.22,09.12.22,24,355,2265,110,DAI,22
3163,10.12.22,17.12.22,21.12.22,-20,215,2265,530,EKI,47
3165,11.12.22,15.12.22,17.12.22,-20,278,2265,340,EKC,56
3166,11.12.22,19.12.22,20.12.22,-8,226,2265,180,DSO,25
3167,13.12.22,14.12.22,20.12.22,20,241,2265,190,DAO,19
3169,16.12.22,27.12.22,29.12.22,21,117,2265,490,FKC,57
3171,19.12.22,23.12.22,30.12.22,24,97,2265,250,DKO,43
3176,26.12.22,31.12.22,06.01.23,19,9,2265,430,EKO,44
3177,28.12.22,31.12.22,08.01.23,-18,334,2266,310,DAC,31
3507,29.11.23,06.12.23,10.12.23,8,222,2278,210,CSO,11
3510,03.12.23,05.12.23,10.12.23,-15,217,2278,150,DAI,22
3511,03.12.23,09.12.23,11.12.23,-22,215,2278,180,FSI,30

Progress Solar Cycle no. 25



It is apparent that the stage and rise of solar cycle 25 now can be compared to solar cycle 23 (1996-2008).
At the time of issue CV-I for last day of December 2023 we can still compete with solar cycle 23, though we are now about 18 CV-I units below!
See enlarged view.
Solar cycle 25 has now long gone superseded solar cycle 24 (2008-2019) at the same stage of development.

Further updates in the following issues of MPR.

Graphic show CV-Int. levels cycle 25 compared to same stage cycles 21-24 per end Dec 2023.

Highlights December 2023

The solar activity in December 2023 have slowly come out of pause with many regions, though the solar activity is rising slowly and many regions have been of very modest sizes.

The 6 rot. average was 105,5 CV-units by end November,
but the 13 rot. average was 112,0 CV-units by last month end.
Report-end this MPR 509 for December show we may still approach cycle 23, though 20% behind.
A total of 799 regions this cycle per end January 2024 (398 regions North and 401 regions South).
At the same time solar cycle 24 produced 617 regions .(257 north and 360 south)

It now seems that prediction mix of 6 and 13 rotation averages may indicate maximum 14.08.2025 (+/- 2 rot.)
as a time of maximum for the CV-I (though it may happen a bit earlier). Updates will come.

We reckon there have passed 1512 days of the new cycle by this issue.

We may see a continued production of smaller regions for a while
but within first half year of 2024 we expect more active periods!

Solar Flux onset: OCCURED 30 September 2022. Stay tuned and obser

Please remember you are always welcome to contribute with drawings ar

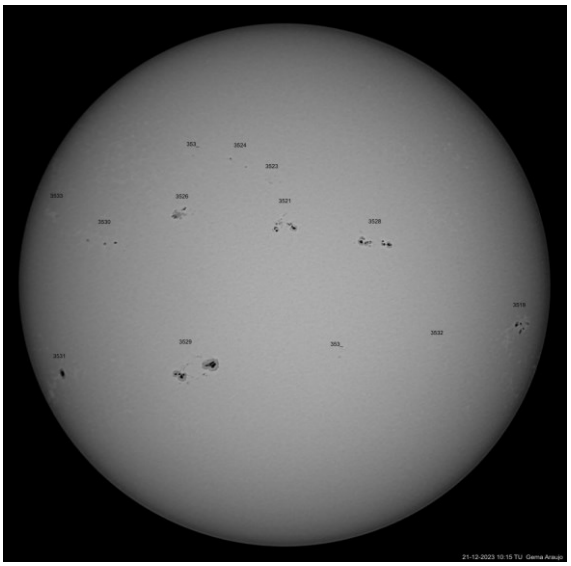
Need for new members! Do you know any amateur solar astronomer that know or like to learn classifications?
Then please pass the information about CV-Helios Network's work and contact cvhelios@gmail.com

Supergroups-catalogue:
CV-Helios Network is currently working on a catalogue with drawings or photos
of the, currently 858, sunspot regions that exceeded 1000 mvh
in the period of RGO-USAF tables, that is, from 1874 to the current year.
Drawings or photos will be collected from the archives of wellknown different observatories!
Hopefully this catalogue will be published 2024 or 2025! Stay tuned!

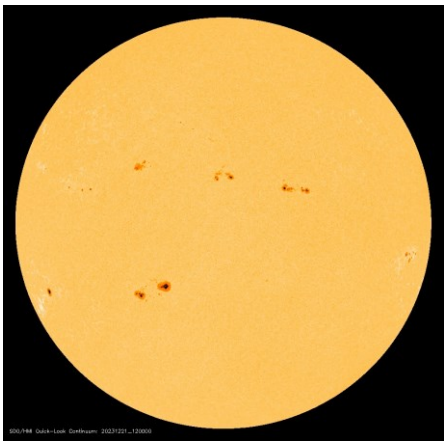
Pictures from last month - Observer contributions, etc.

Photo courtesy: Thanks to CV-135 Gema Araujo, Spain **Highlights December 2023**

Thank you, Gema Araujo, for giving us access to your large collection of solar images



Left: Photo from CV-135 Gema Araujo, Spain from 21 December 2023.
Picture below in hmiigr from SOHO taken on 21 December 2023.



Awards this month 0

none

New members: **Welcome to:**

0

We are now 51 active members (last 12 mo.)

Data for Zürich/McIntosh classifications, compared period 1981-2023 with solar cycle 25

Zürich/McIntosh classifications cycle 25 observed by SWPC		
No. observed		5536
1st Letter	No. obs.	Pct. tot. Ltr.
A	592	10,7 %
B	594	10,7 %
C	1287	23,2 %
D	1102	19,9 %
E	508	9,2 %
F	86	1,6 %
H	1367	24,7 %
	5536	100 %
2nd Letter		
X	1186	21,4 %
R	689	12,4 %
A	1276	23,0 %
S	1713	30,9 %
K	487	8,8 %
H	185	3,3 %
	5536	100 %
3rd Letter		
X	1959	35,4 %
O	2646	47,8 %
I	736	13,3 %
C	195	3,5 %
	5536	100 %

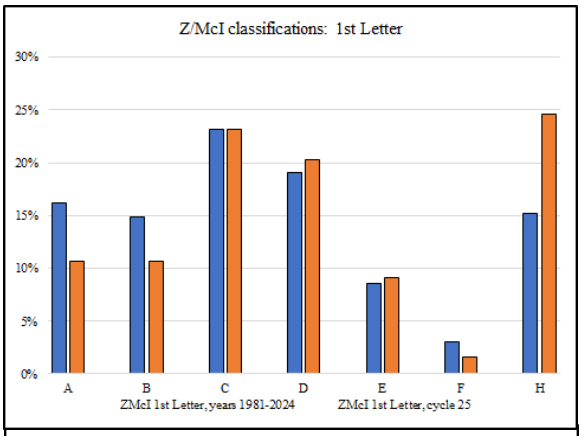
Zürich/McIntosh classifications cycle 25 observed by SWPC 19.12.2019 - 14.01.2024			
Class	CV-value	No. obsrv.	Pct. of Total
AXX	1	594	10,65 %
BXO	2	587	10,53 %
BXI	3	10	0,18 %
HRX	4	173	3,10 %
CRO	5	412	7,39 %
CRI	6	17	0,30 %
HAX	7	195	3,50 %
CAO	8	374	6,71 %
CAI	9	44	0,79 %
HSX	10	974	17,47 %
CSO	11	369	6,62 %
CSI	12	27	0,48 %
DRO	13	63	1,13 %
ERO	14	1	0,02 %
FRO	15	0	0,00 %
DRI	16	23	0,41 %
ERI	17	0	0,00 %
FRI	18	0	0,00 %
DAO	19	326	5,85 %
EAO	20	34	0,61 %
FAO	21	5	0,09 %
DAI	22	205	3,68 %
EAI	23	76	1,36 %
FAI	24	5	0,09 %
DSO	25	214	3,84 %
ESO	26	34	0,61 %
FSO	27	3	0,05 %
DSI	28	56	1,00 %
ESI	29	29	0,52 %
FSI	30	3	0,05 %

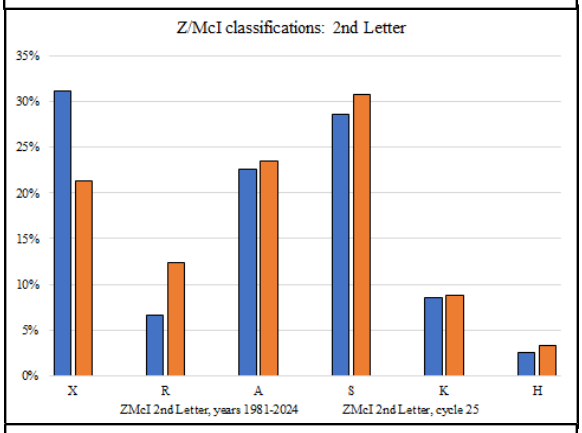
Zürich/McIntosh classifications cycle 25 observed by SWPC 19.12.2019 - 14.01.2024			
Class	CV-value	No. obsrv.	Pct. of Total
DAC	31	27	0,48 %
EAC	32	13	0,23 %
FAC	33	2	0,04 %
DSC	34	2	0,04 %
ESC	35	4	0,07 %
FSC	36	0	0,00 %
HKX	37	12	0,22 %
CKO	38	24	0,43 %
CKI	39	3	0,05 %
HHX	40	14	0,25 %
CHO	41	19	0,34 %
CHI	42	3	0,05 %
DKO	43	43	0,77 %
EKO	44	50	0,90 %
FKO	45	8	0,14 %
DKI	46	72	1,29 %
EKI	47	93	1,67 %
FKI	48	22	0,39 %
DHO	49	31	0,56 %
EHO	50	39	0,70 %
FHO	51	16	0,29 %
DHI	52	21	0,38 %
EHI	53	29	0,52 %
FHI	54	1	0,02 %
DKC	55	45	0,81 %
EKC	56	94	1,69 %
FKC	57	21	0,38 %
DHC	58	2	0,04 %
EHC	59	12	0,22 %
FHC	60	0	0,00 %

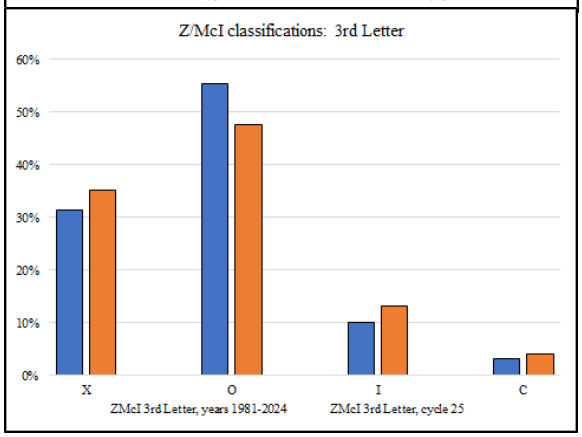
Data for Zürich/McIntosh classifications, compared period 1981-2023 with solar cycle 25

Data collected from noaa.gov.

Data for 1st, 2nd and 3rd letter Zürich/McIntosh classifications, compared 1981-2023 with solar cycle 25







Data for 1st letter

Zürich/McIntosh classifications, compared period 1981-2023 with solar cycle 25

Graphic above show comparisons of Zürich/McIntosh classifications distribution 1st letter time period 1981-2024 and for the isolated solar cycle 25.
Classification groups C and D seem to follow the main trend over period 1981-2024, while H-type are more numerous than the main trend. Also notice that group types A and B have a great deal lower percentage cover than the main. The main occurrence trend are numerous C, D and H type groups.

Data for 2nd letter

Classification groups A, S and K, H seem to follow the main trend over period 1981-2024, while R-type are more numerous than the main trend. Also notice that group type X have a great deal lower percentage cover than the main.

Data for 3rd letter

Classification groups X and O seem to differ a bit from the main.

Data collected from noaa.gov.

Solar Coordinates

Daily list of Solar Ephemeris available at:
Daily list of Solar Ephemeris and SDO on grid
Here you can see Today's Po, Bo, Lo, Rotation no., RA and Dec. and adjusted SOHO-picture on grid.

Calculating CV

For your convenience and security, use the mif2021, **NEW form (beta) for classifications released!**
https://www.cv-helios.net/mif2021.xlsx
the Monthly Input Form, which you can use for all of your next reportings!

Monitor MPR daily progress

CV-Helios Network: Monitor MPR progress as entries are made!
Monitor your submissions as they are registered:
https://cv-helios.net/helios/cv/web/mprpost.html
The data are available fresh from about 10:00 UTC until local midnight.
Content comprises CV-Report for latest month, CV-Report for latest month
individual results, Extracts from NOAA on forecasts/discussion,
Extracts from NOAA warehouse on SRS and other activity,
Last 24 months CV-data, This month CV acc. to USAF

Registration data

Check if your CV-observations have been registered (please allow up to 24 hrs):
https://www.cv-helios.net/helios/cv/web/datlist.htm
https://www.cv-helios.net/helios/cv/web/cvobsmonth.htm for checking of Entries Summary

CONTRIBUTE WITH YOUR PHOTOS AND OTHER OF INTEREST!

We would like YOU to contribute with drawings or photos from last month
Also any other contribution that may have an interest for our observers.
Please send by email to:
cvhelios@gmail.com

Please check out www.cv-helios.net/cvrep2.html for updates of files!

SUBMISSIONS OF CV-OBSERVATIONS

Log on to:
https://www.cv-helios.net/observations/index.html **Classification Help**

login	solaris	
password	cvheliosobs	**Monthly Input Form as excel**

Submission before 15th of proceeding month 18:00 UTC. (password: cvhelios)
MPR issue 15th of proceeding month 2000 UTC. Good luck CV-observing!

Average received to registered time: 0 day 23 hours 49 minutes
and average macrotime used for one registration is 20,34 seconds

CV-Helios Network
- over 42 years in solar amateur astronomy service!

There are now 13154 registrations made, containing 212023 CV-observations!
Last 12 months 5585 CV-observations from 39 observers originating from 17 countries

Editorial close: 15.01.2024 18:39 UTC

Merry Christmas

CV-Helios Network

Happy New Year