

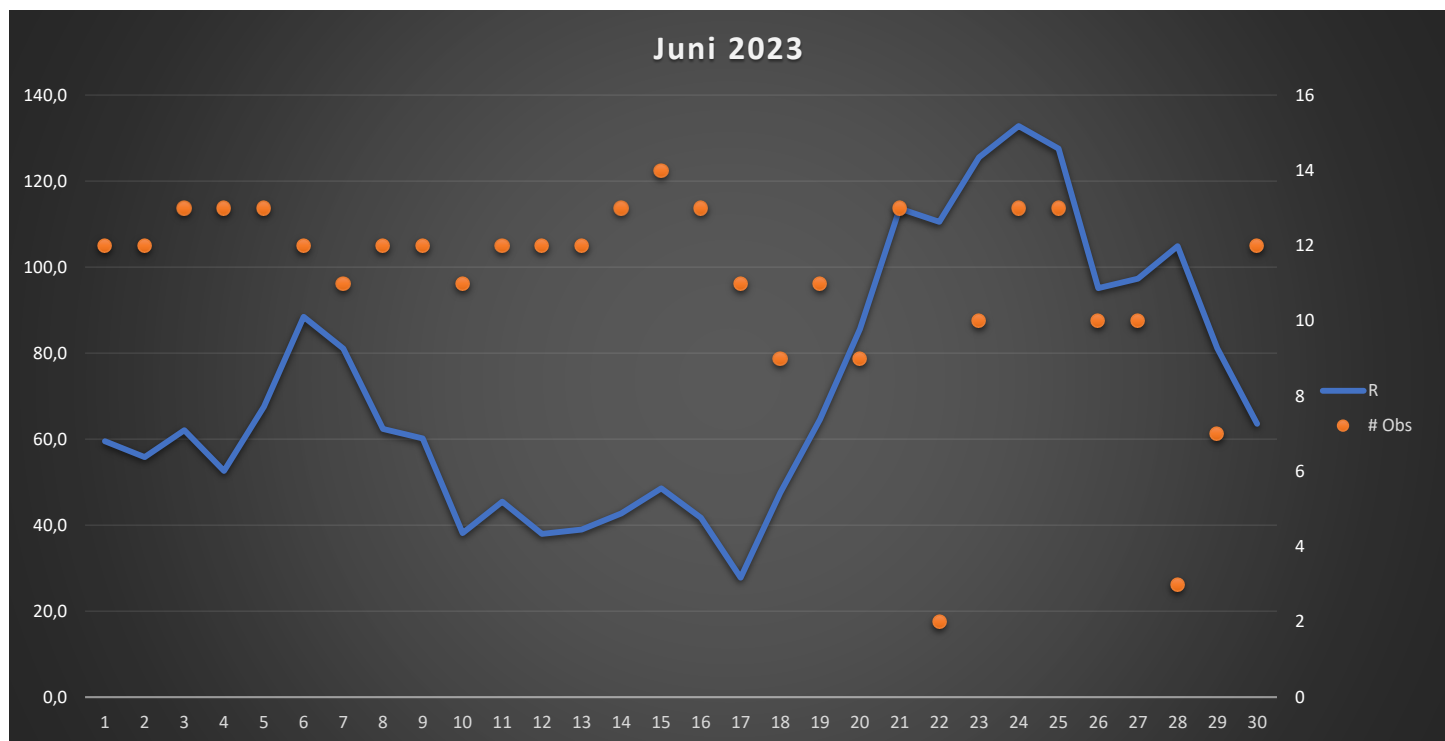
Zonnerapport Werkgroep Zon VVS

Waarnemingsresultaten en nieuws voor zonnewaarnemers

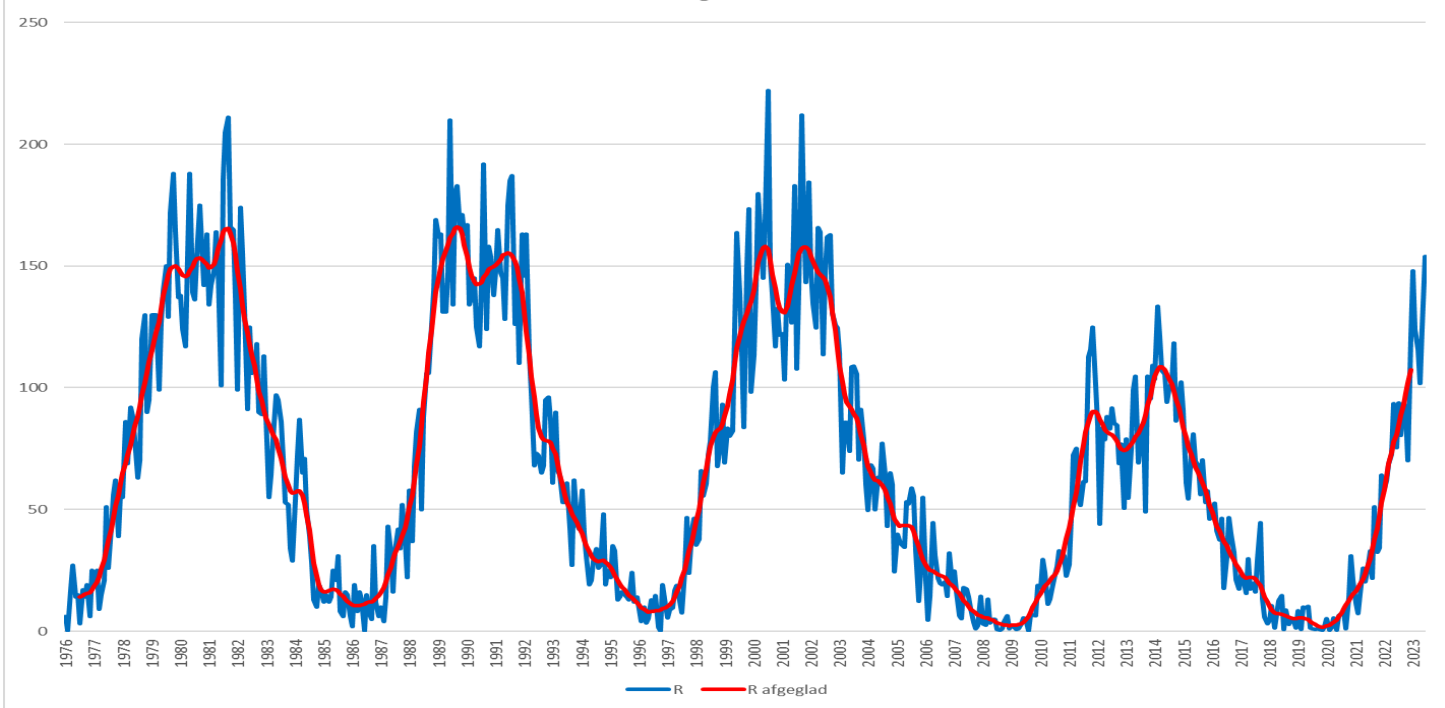
Jaargang : 28

Nummer: 325

Website: <http://www.bso.vvs.be/> e-mail: waarnemingen-wgzon@carels.be



Wolfgetal WZON



Gemiddelden werkgroep zon juni 2023

Groepen:	N	6,2	Wolfgetal:	N	72,0	RE'	1064,3	
	S	5,6		S	82,0	CV	115,9	
	N+S	11,8		N+S	154,0	SN	142,4	
							IS	67,9

330 waarnemingen - 14 waarnemers

Sunspotnumbers VVS Belgium

Month: June 2023

Day	Groups			Wolfnumber			Other Solar Indices				# OBS
	N	S	N+S	N	S	N+S	RE'	CV	SN	IS	
1	7	5	12	59,5	80,7	140,3	949,1	150,3	147,5	58,0	12
2	5	5	10	55,8	73,7	129,5	988,6	147,3	153,5	50,0	12
3	7	4	11	62,1	66,0	128,1	1035,9	129,0	144,0	61,5	13
4	6	4	10	52,6	72,2	124,8	976,4	127,5	149,6	45,5	13
5	7	5	12	67,5	84,7	152,2	1521,1	123,9	140,8	63,5	13
6	8	5	13	88,4	87,9	176,3	1557,6	139,0	169,2	78,0	12
7	7	7	14	81,1	104,0	185,1	1642,4	155,0	188,3	88,5	11
8	6	5	11	62,4	100,9	163,3	1395,8	134,6	166,4	76,0	12
9	6	6	12	60,2	102,4	162,6	1270,4	123,9	162,4	76,5	12
10	5	7	12	38,1	107,2	145,4	1170,6	94,0	111,8	71,5	11
11	6	6	12	45,5	96,9	142,4	945,6	81,3	112,4	76,5	12
12	6	5	11	38,0	80,0	118,0	665,0	57,8	93,8	58,0	12
13	4	5	9	39,0	56,1	95,1	397,3	61,8	80,8	37,0	12
14	6	6	12	42,7	69,2	111,9	606,7	87,9	117,6	38,0	13
15	5	5	10	48,5	76,2	124,7	764,1	102,6	127,6	51,0	14
16	5	4	9	41,7	84,4	126,2	948,4	98,3	131,2	61,0	13
17	2	5	7	27,8	96,7	124,5	1110,3	104,2	133,8	58,5	11
18	4	7	11	47,5	110,9	158,4	1259,0	127,3	154,3	72,5	9
19	6	8	14	64,6	109,5	174,1	1038,9	135,0	159,8	77,5	11
20	7	7	14	85,6	114,1	199,7	1346,8	159,8	178,7	107,0	9
21	9	8	17	113,6	106,0	219,6	1195,0	187,1	230,4	114,5	13
22	8	7	15	110,5	94,0	204,5	819,0	142,0	167,0	76,0	2
23	11	7	18	125,6	99,9	225,4	1139,0	141,2	175,0	87,0	10
24	10	6	16	132,8	81,0	213,8	873,0	118,9	166,2	88,0	13
25	10	6	16	127,6	64,7	192,2	746,3	102,6	132,6	87,0	13
26	6	6	12	95,1	62,6	157,7	747,5	79,5	129,0	69,0	10
27	5	6	11	97,3	58,1	155,4	1121,8	99,8	131,0	50,0	10
28	5	4	9	104,9	48,1	153,0	1211,0	103,0			3
29	4	3	7	81,1	26,3	107,4	1170,0	89,7	74,0	39,0	7
30	3	5	8	63,6	44,7	108,3	1316,4	72,0	100,7	54,0	12
	6,20	5,63	11,83	72,0	82,0	154,0	1064,3	115,9	142,4	67,9	330

Monthly mean:	154,0	Spotless days:	0	Covering:	30/30
Observations:	330	Number of observers:	14		

V.V.S. BELGIUM SOLAR SECTION

Processing: Jeffrey Carels
e-mail : jeffrey@carels.be

Observers:

E.De Ceuninck; J.Janssens; J.Bourgeois; O. Steen
H. De Backer; F.Dubois; B.Taillieu; J.Carels; G.Verbanck
KSB; L.Claeys; J.De Wit; J. Neys; D. Laurent

Individuele waarnemingen - Wolfgetal

Dag	SIDC	J. Bourgeois			J. Carels			L. Claeys			H. De Backer			E. De Ceuninck			J. De Wit			F. Dubois			Dag
	R	g	f	R	g	f	R	g	f	R	g	f	R	g	f	R	g	f	R	g	f	R	
1	155	6	52	112				9	55	145	11	54	164	10	49	149	11	45	155	10	49	149	1
2	147	7	50	120				7	46	116	8	52	132	9	38	128	10	55	155	9	43	133	2
3	145	6	56	116	8	60	140	8	51	131	9	49	139	9	40	130	9	63	153	7	51	121	3
4	146	6	36	96	9	41	131	8	46	126	8	53	133	7	41	111	10	53	153	10	41	141	4
5	158	8	69	149	9	56	146	7	58	128	9	68	158	9	53	143	11	67	177	9	58	148	5
6	186	7	51	121	12	74	194				12	70	190	9	59	149	11	78	188	12	68	188	6
7	201	9	91	181	11	90	200				11	90	200	11	63	173	10	76	176	11	71	181	7
8	183	8	68	148	10	74	174				10	78	178	10	63	163	11	72	182	10	65	165	8
9	170	8	70	150	9	73	163				10	78	178	12	63	183	10	65	165	9	68	158	9
10	168	8	58	138	8	66	146				9	80	170	11	51	161				9	65	155	10
11	149	6	50	110	9	69	159				9	64	154	10	69	169	8	52	132	9	72	162	11
12	124	6	48	108	7	46	116	6	52	112	7	51	121	8	54	134	7	53	123	7	59	129	12
13	91	4	14	54	8	31	111	6	39	99	8	39	119	6	27	87	7	28	98	8	33	113	13
14	118	7	44	114	7	33	103	8	37	117	7	42	112	8	37	117	9	39	129	8	31	111	14
15	126	8	41	121	9	47	137	7	35	105	8	38	118	9	37	127	8	44	124	10	42	142	15
16	132	6	52	112	9	55	145	7	50	120	7	55	125	8	49	129	9	64	154	8	51	131	16
17	132	7	53	123	7	53	123	8	61	141	7	44	114	7	46	116	7	61	131	7	53	123	17
18	163	7	62	132	10	68	168	7	58	128	10	54	154	12	66	186	9	64	154	9	64	154	18
19	186	8	52	132	12	69	189	8	47	127	10	44	144	12	87	207	13	73	203	13	75	205	19
20	211	12	69	189				10	74	174	11	72	182	13	79	209	13	89	219	14	93	233	20
21	219	13	83	213	15	103	253	9	61	151	14	77	217	14	84	224	16	93	253	14	97	237	21
22	240	14	66	206																14	63	203	22
23	231				12	84	204				14	81	221	18	76	256	17	89	259	16	74	234	23
24	223	13	61	191	15	83	233	12	72	192	14	76	216	15	81	231	16	83	243	14	67	207	24
25	206	13	51	181	13	77	207	13	71	201	14	60	200	14	63	203	13	75	205	13	73	203	25
26	175	9	45	135				11	61	171	10	52	152	11	63	173	11	65	175	11	60	170	26
27	159	10	67	167				9	76	166	10	66	166	10	58	158	9	66	156	9	44	134	27
28	138										8	69	149				8	61	141				28
29	110	6	50	110				6	56	116	6	48	108				5	55	105	5	36	86	29
30	111	4	45	85				6	51	111	6	47	108	6	41	101	6	46	106	6	52	112	30
163,4	8,1	55,5	136,2	9,9	63,4	161,9	8,4	56,4	140,0	9,5	60,6	156,0	10,2	56,5	158,7	10,3	63,4	165,9	10,0	59,2	159,6		

Dag	SIDC	KSB			D. Laurent			J. Neys			O. Steen			B. Taillieu			G. Verbanck			R. Verboven			Dag
	R	g	f	R	g	f	R	g	f	R	g	f	R	g	f	R	g	f	R	g	f	R	
1	155	8	52	132	9	43	133	8	29	109	11	49	159	11	45	155	7	51	121				1
2	147	8	55	135	9	42	132	8	35	115	8	43	123	9	33	123	9	52	142				2
3	145	8	70	150	7	40	110	7	38	108	7	45	115	7	46	116	7	66	136				3
4	146	8	66	146	8	35	115	7	33	103	8	45	125	8	38	118							4
5	158	10	65	165	9	46	136	9	43	133	10	61	161	11	56	166	10	69	169				5
6	186	11	72	182	12	63	183	12	47	167	12	78	198	12	53	173	11	73	183				6
7	201	11	91	201	11	50	160				11	63	173	11	74	184	11	97	207				7
8	183	10	82	182	9	48	138	9	36	126	10	60	160	9	57	147	11	86	196				8
9	170	10	91	191	9	46	136	9	41	131	10	49	149	10	68	168	9	89	179				9
10	168	9	69	159	9	38	128	8	33	113	8	48	128	10	51	151	8	70	150				10
11	149	9	74	164	7	36	106	9	38	128	9	55	145	8	66	146	7	64	134				11
12	124	6	65	125	7	27	97				5	31	81	7	54	124	8	66	146				12
13	91	7	40	110				6	15	75	8	26	106	8	20	100	5	19	69				13
14	118	9	45	135	7	25	95	7	23	93	8	26	106	8	36	116	7	37	107				14
15	126	8	54	134	8	29	109	9	31	121	9	37	127	9	38	128	8	48	128		no data		15
16	132	7	90	160	6	42	102	7	31	101	8	56	136	7	38	108	6	57	117				16
17	132	7	87	157				7	40	110				6	29	89	7	72	142				17
18	163	10	126	226							8	53	133	9	55	145							18
19	186	10	58	158	10	53	153				14	58	198	13	69	199							19
20	211	13	84	214				11	42	152							13	95	225				20
21	219	16	124	284	11	43	153	14	54	194	14	91	231	14	78	218	14	87	227				21
22	240																						22
23	231	15	79	229							13	72	202	13	66	196	14	88	228				23
24	223	16	87	247	12	55	175	13	47	177	13	75	205	15	84	234	14	89	229				24
25	206	15	71	221	11	47	157	13	36	166	9	53	143	13	81	211	14	61	201				25
26	175	12	67	187	8	41	121							9	37	127	11	56	166				26
27	159	11	75	185							7	53	123	9	40	130	10	69	169				27
28	138	9	79	169																			28
29	110	6	60	120							6	47	107										29
30	111	7	78	148	6	36	96				7	43	113	6	31	91	6	60	120				30
163,4	9,9	74,3	173,0	8,8	42,1	130,2	9,1	36,4	127,5	9,3	52,7	145,9	9,7	51,7	148,6	9,5	67,5	162,1					

Het Wolfgetal wordt berekend als tien maal het aantal groepen plus het totaal aantal zonnevlekken. De formule is als volgt: $R = 10 \times g + f$ waarbij R het Wolf-getal is, g het aantal groepen van zonnevlekken en f het aantal individuele zonnevlekken.

Individuele waarnemingen - andere maatgetallen

R' - Beckgetal										
Dag	J. Bourgeois	J. Carels	H. De Backer	E. De Ceuninck	F. Dubois	D. Laurent	J. Neys	O. Steen	G. Verbanck	R. Verboven
1	933		929	1138	1010	844	575	1003	1161	
2	1509		1119	701	796	875	710	899	1300	
3	1106	1007	1075	800	1315	864	782	808	1566	
4	936	917	1397	1006	1118	830	754	853		
5	2109	1459	2172	1247	1448	967	912	1304	2072	
6	1530	1793	1964	1247	1642	1304	993	1514	2031	
7	1631	1814	2286	1272	1713	1070		1032	2321	
8	1350	1487	1691	1495	1513	989	897	1089	2051	
9	1460	1359	1687	1130	1248	712	932	820	2086	
10	1316	1278	1731	966	1348	610	743	992	1551	
11	661	620	1344	1332	1457	267	942	342	1545	
12	512	123	1084	375	1228	276		277	1445	
13	338	386	684	295	480		332	306	357	
14	804	668	705	541	505	434	450	592	761	
15	843	832	680	686	882	570	658	702	1024	
16	1090	1007	878	949	1033	716	617	1031	1215	
17	1216	1170	945	1029	1032		879		1501	
18	1418	1414		1091	1332			1040		
19	1049	1105	889	1154	1259	787		1029		
20	1177		1164	1596	1375		719		2050	
21	1487	1278	1097	933	1430	586	846	1376	1722	
22	1012			626						
23			1003	852	1251			1037	1552	
24	579	1044	806	565	928	641	785	1182	1327	
25	710	880	815	273	875	624	505	1006	1029	
26	771		810	861	731	479			833	
27	1194		1038	1547	751			997	1204	
28			1211							
29	1659		1097		915			1009		
30	1526		1181	953	1746	861		1027	1921	
	1140,2	1082,1	1195,8	964,2	1137,5	728,9	738,5	930,7	1484,4	

CV - Classification Value										
Dag	J. Carels	H. De Backer	E. De Ceuninck	F. Dubois	J. Janssens	D. Laurent	J. Neys	O. Steen		
1		131	109	157		180	128	197		
2		167	92	170		161	145	149		
3	104	167	99	137		117	96	183		
4	124	165	83	126	121	131	134	136		
5	107	179	92	139		85	129	136		
6	127	184	84	147		135	150	146		
7	119	201	116	173		153		168		
8	110	179	141	142		109	143	118		
9	103	206	103	154		93	118	90		
10	69	106	114	98		80	99	92		
11	99	94	122	73		44	85	52		
12	51	77	57	72		35		55		
13	49	64	59	66			63	70		
14	92	108	63	80		89	98	85		
15	93	108	89	94	115	98	117	107		
16	96	88	95	111		86	111	101		
17	77	114	97	104			129			
18	172		113	107				117		
19	161	146	130	118		100		155		
20		159	141	163			176			
21	225	155	137	202		124	228	239		
22				142						
23		129	140	156	127			154		
24	124	108	74	147		89	150	140		
25	81	119	80	149		92	101	96		
26		112	67	79		60				
27		96	93	88				122		
28		103								
29		94		93				82		
30		88	37	77	74	79		77		
	109,2	130,3	97,3	122,9	109,3	101,9	126,3	122,7		

SN - Pettis Index					
Dag	J. Carels	E. De Ceuninck	F. Dubois	J. Neys	O. Steen
1		190	156	102	142
2		144	175	135	160
3	164	164	178	126	88
4	142	143	189	139	135
5	149	124	160	125	146
6	214	157	171	144	160
7	196	184	197		176
8	160	219	164	126	163
9	170	203	178	133	128
10	73	125	149	104	108
11	127	125	132	90	88
12	90	88	122		75
13	72	81	89	75	87
14	140	109	116	106	117
15	134	127	139	124	114
16	138	136	147	111	124
17	126	157	137	115	
18	164	154	163		136
19	153	181	160		145
20		178	189	169	
21	262	203	220	240	227
22			167		
23		171	192		162
24	191	125	176	182	157
25	141	151	146	122	103
26		135	123		
27		151	111		131
28					
29			84		64
30		109	89		104
	150,3	149,4	152,4	129,9	129,6

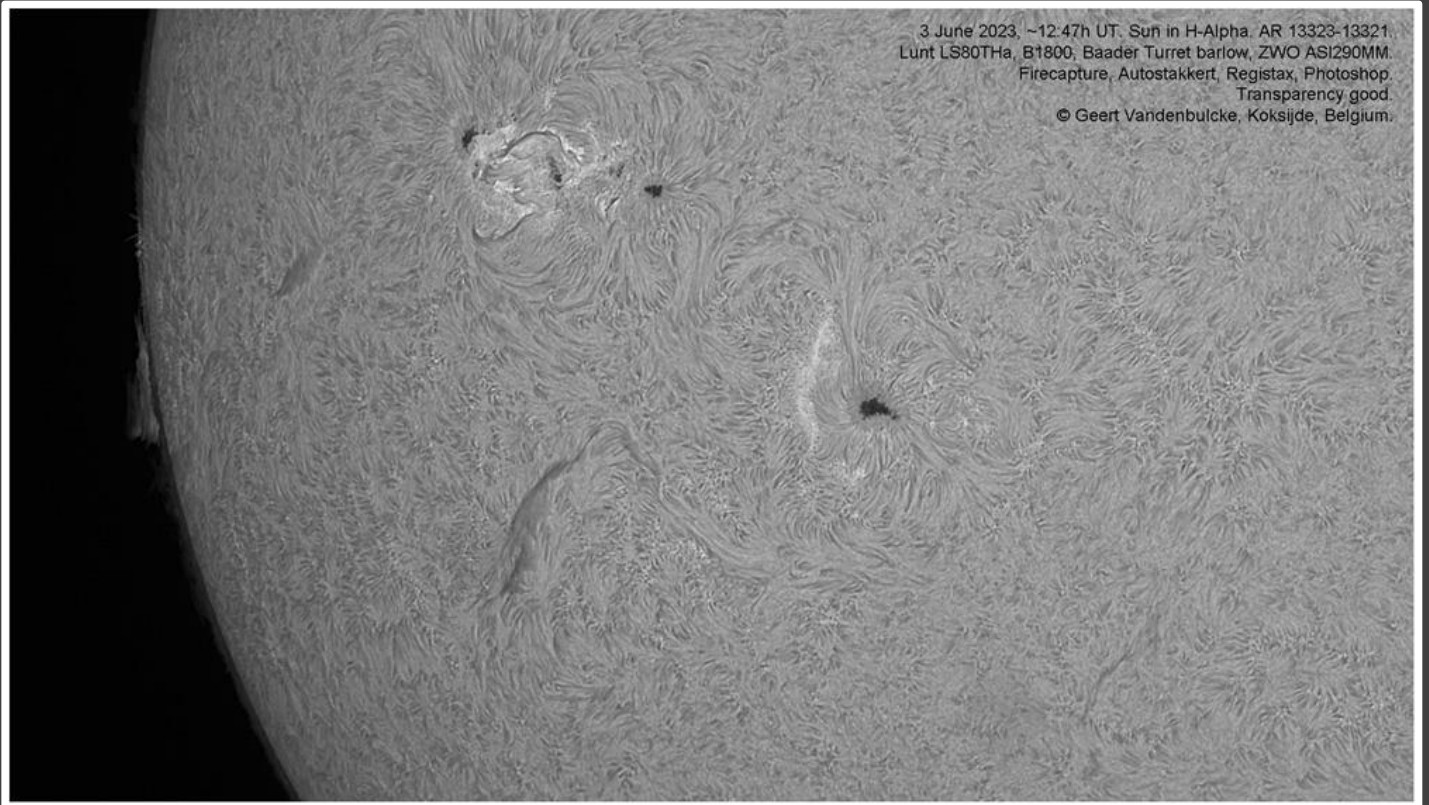
IS - Inter-sol Index		
Dag	J. Carels	F. Dubois
1		58
2		50
3	66	57
4	45	46
5	62	65
6	81	75
7	98	79
8	81	71
9	80	73
10	72	71
11	75	78
12	52	64
13	37	37
14	39	37
15	53	49
16	63	59
17	58	59
18	72	73
19	76	79
20		107
21	117	112
22		76
23		87
24	97	79
25	89	85
26		69
27		50
28		
29		39
30		54
	70,7	66,8

A - Blote Oog *		
Dag	J. Carels	J. Janssens
1		
2		
3	0	
4	1	0
5	1	
6	1	
7	0	
8	0	
9	0	
10	0	
11	0	
12	0	
13	0	
14	0	
15	0	0
16	0	
17	0	
18	1	
19	1	
20		
21	0	
22		
23		0
24	0	
25	0	
26	0	
27		
28		
29		
30		1
	5,0	1,0

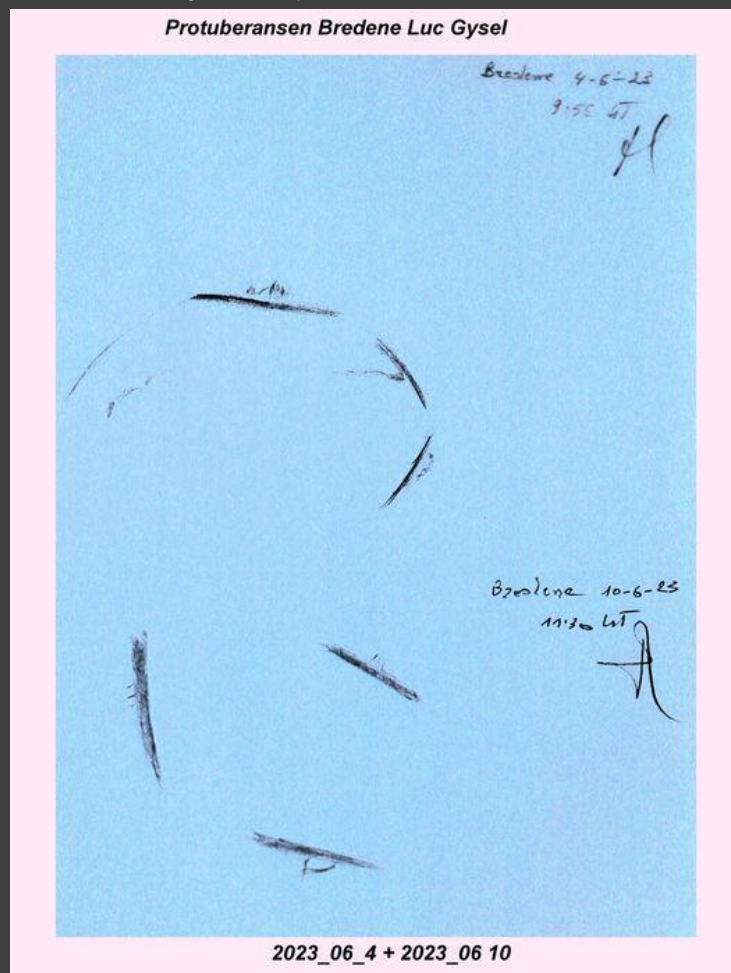
R' - Beckgetal
 CV - Classification Value (<https://www.cv-helios.net>)
 SN - Pettisgetal
 IS - Inter-Sol Index (<https://www.inter-sol.org>)
 A - Blote oog zonnevlekken

Bijdragen van zonnewaarnemers

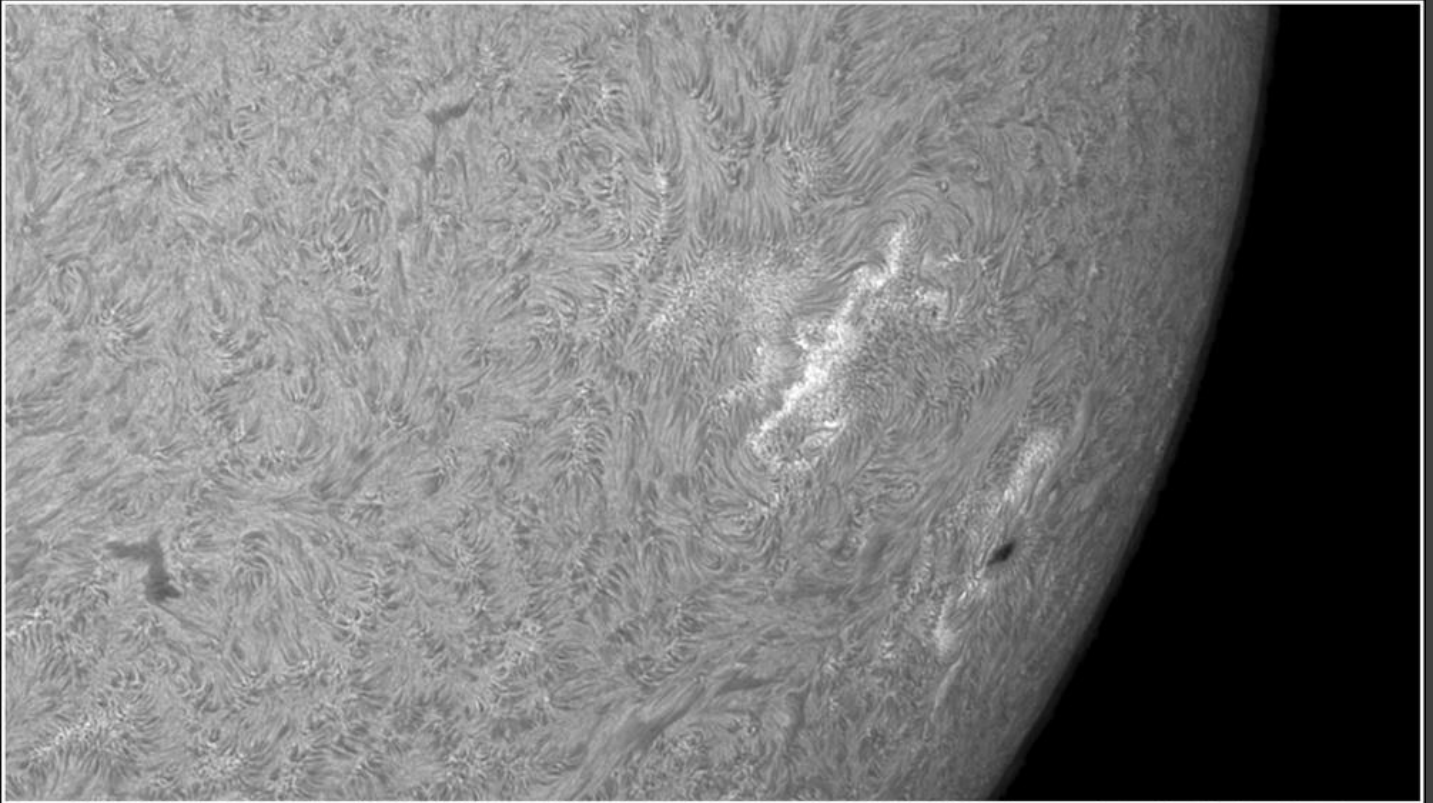
Geert Vandenbulcke – 3 juni 2023 – Lunt LS80THa



Luc Gysel – 4 juni 2023 – Protuberansen

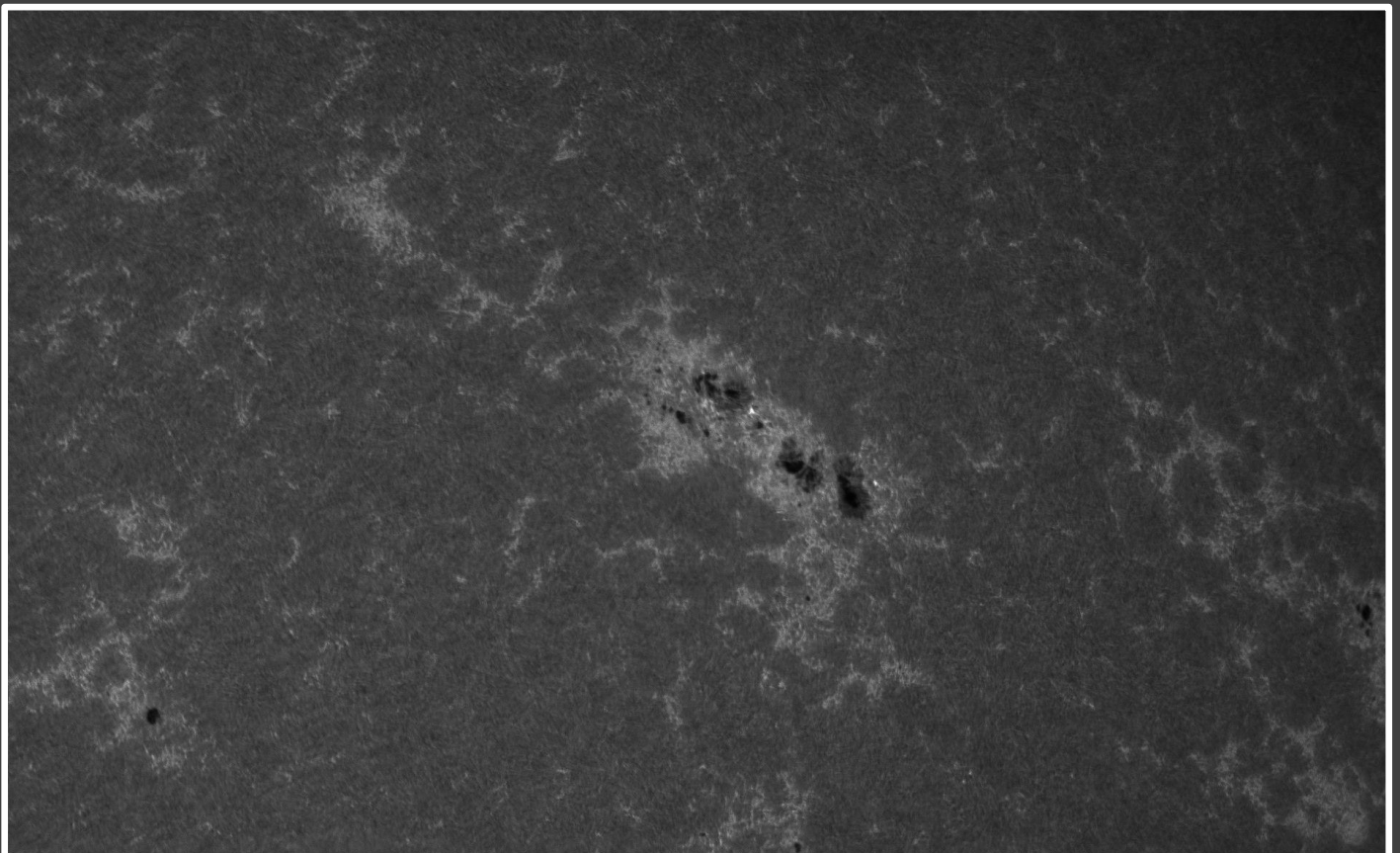


Geert Vandenbulcke – 10 juni 2023 – Lunt LS80THa



10 June 2023, ~08:53h UT. Sun in H-Alpha, AR13321-13323. Lunt LS80THa, B1800, Baader barlow 2.25x, ZWO ASI290MM. Firecapture, Autostakkert, Registax, Photoshop. Transparency good. © Geert Vandenbulcke, Koksijde, Belgium.

Daniel Abts – 25 juni 2023 – ES 127mm ED Call K Line Lunt BI200



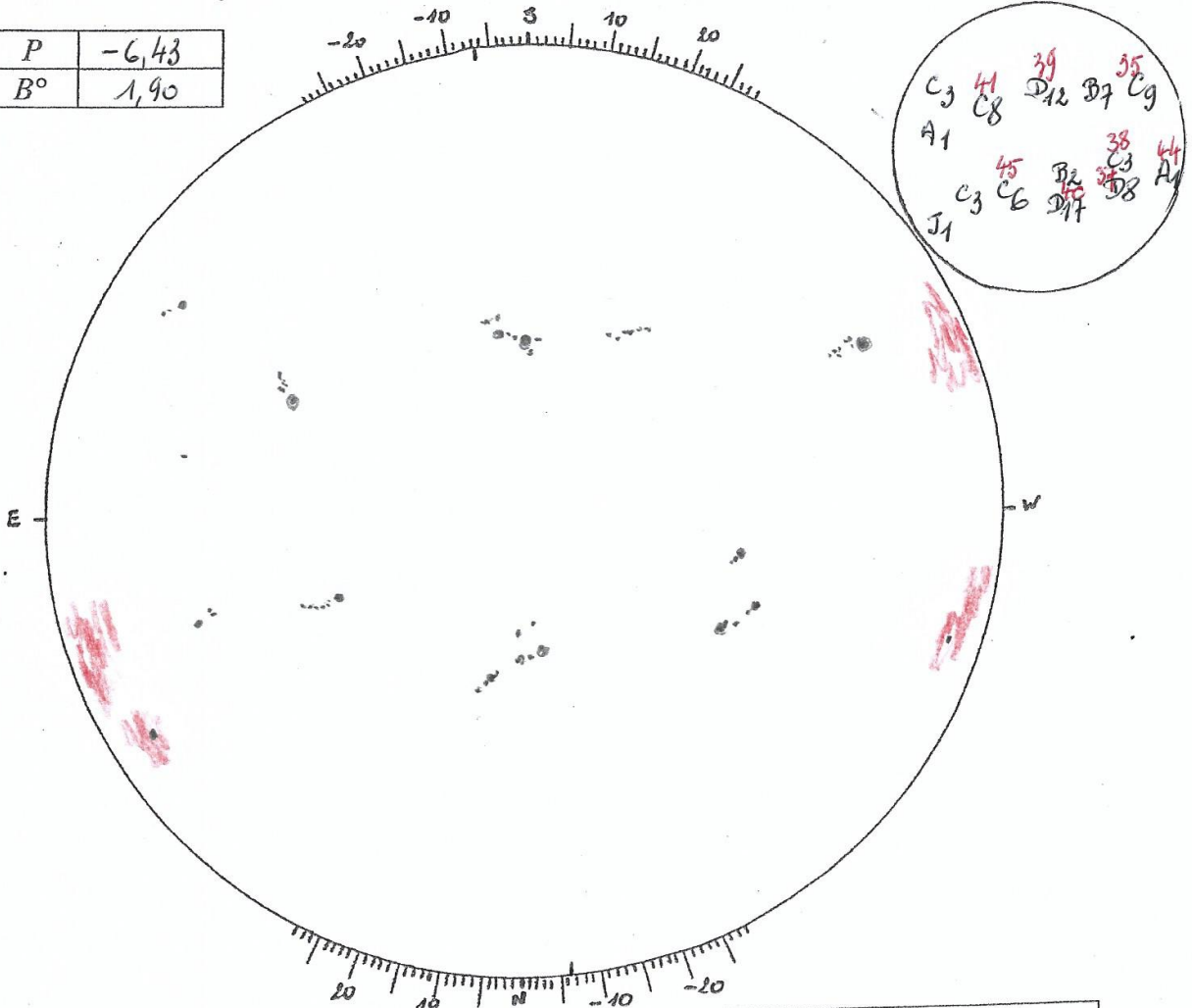
WAARNEMINGSFORMULIER ZON nr..23.1..135....

Station: 007
DE BACKER Nelly-Hendrik

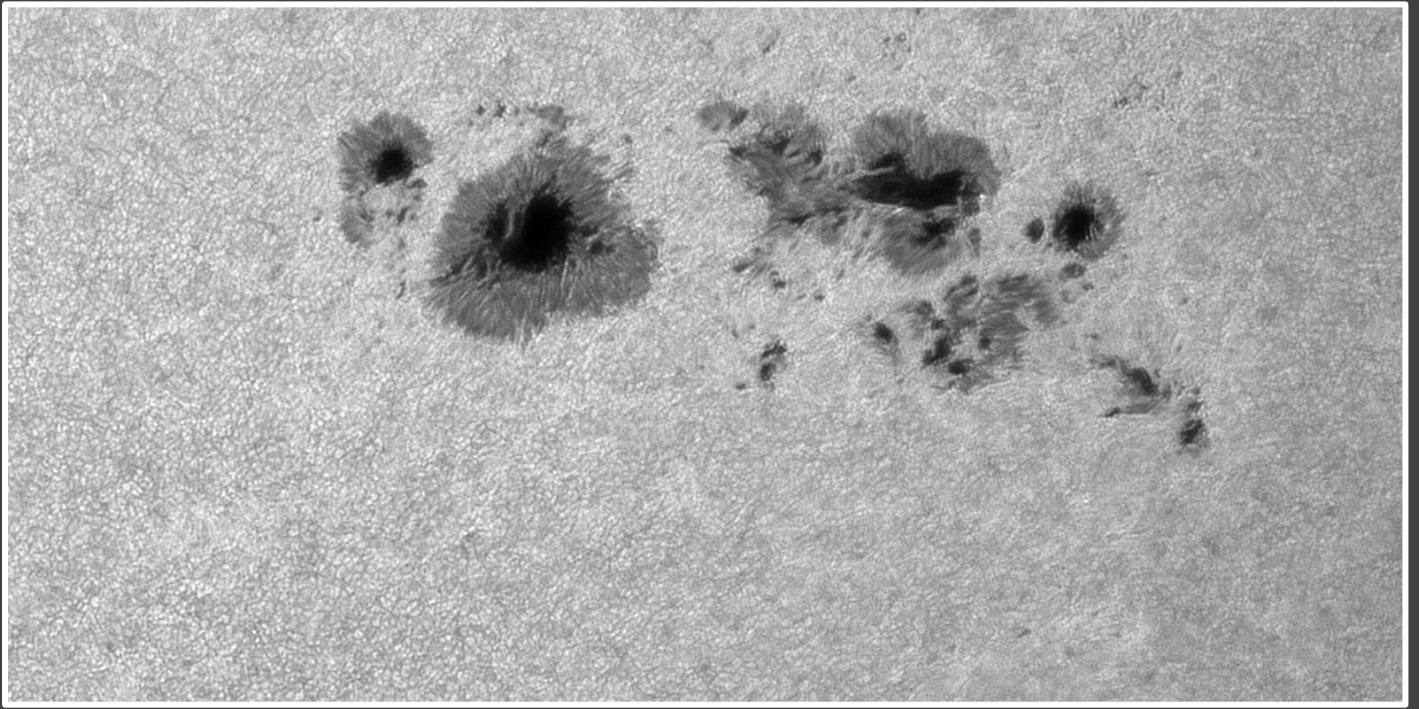
Instrument: Newton 140 mm
F/1035 mm
oculair: OR x18
vergroting: 58x
solar screen

date	UT	Q	gN	fN	gS	fS	gg	ff	R	a	Re'	C.V.
23.06.23	7.10	4	8	41	6	40	14	81	221	3	1003	129

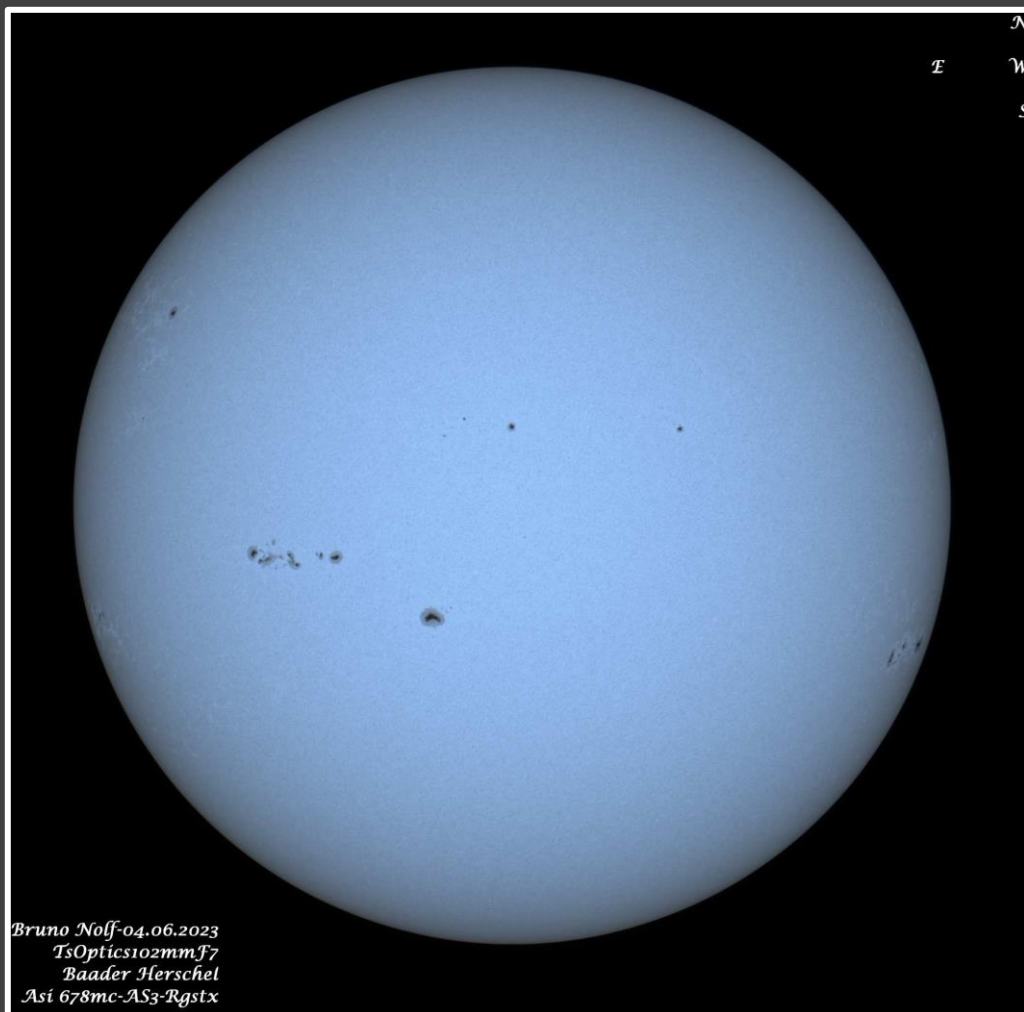
P	-6,43
B°	1,90



nr NOAA	Breedte	L° uurcorr. ligging	Lengte	Type	Opmerking
13 335	-15	$242,15 - 3,94 + 48 =$	286,21	Cai	
13 337	+17	+26 =	264,21	Dxi	
13 338	+10	+26 =	264,21	Cxo	
13 339	-20	0 =	238,21	Dai	
13 340	+21	-3 =	235,21	Dai	
13 341	-17	-28 =	210,21	Cxo	
13 344	+22	+70 =	308,21	Axx	
13 345	+10	-23 =	213,21	Cxo	
	-19	+16 =	254,21	Bxi	
	+16	-2 =	236,21	Bxo	
	+10	-45 =	193,21	Cxo	
	-10	-45 =	193,21	Axx	
	-30	-52 =	186,21	Cxo	
	+23	-62 =	176,21	Hxx	



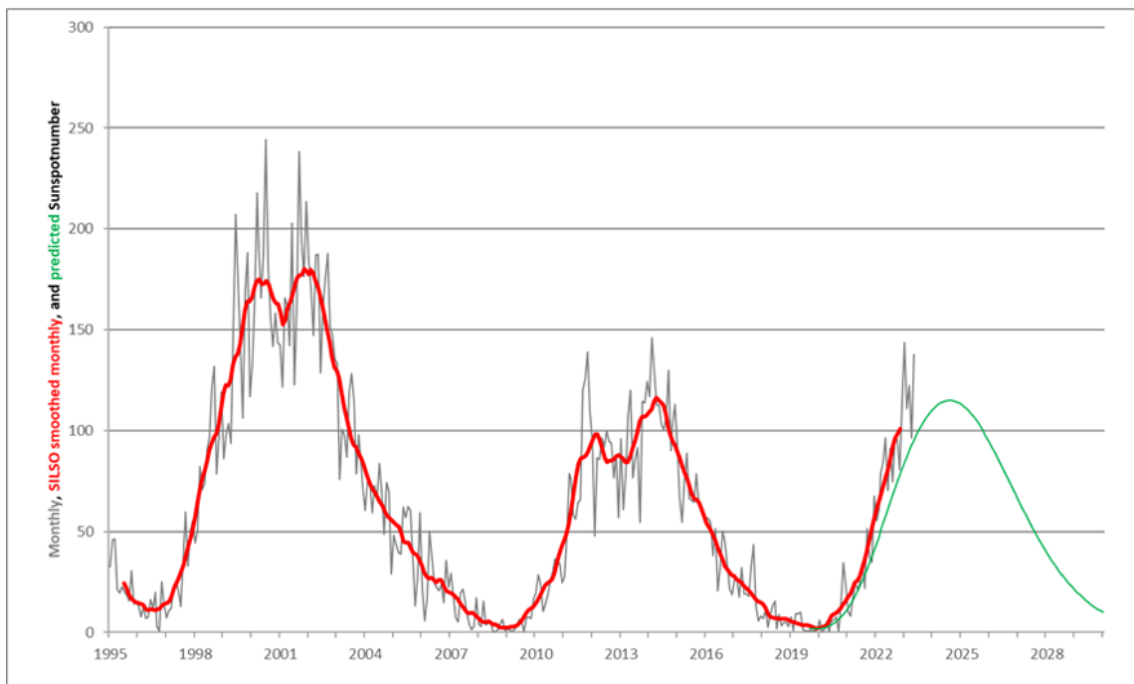
Bruno Nolf



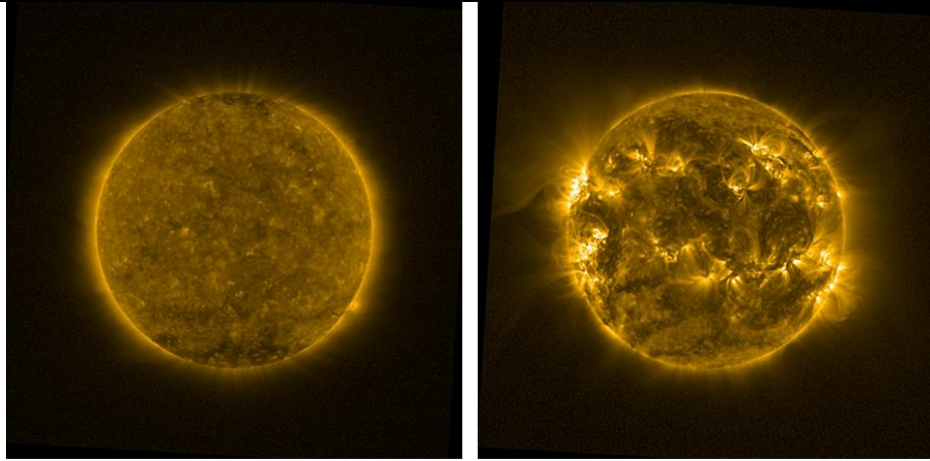
Nieuwsfeitje van de maand

The STCE's SC25 Tracking page (<https://www.stce.be/content/sc25-tracking>) has been updated to reflect the latest evolution in some critical space weather parameters for the ongoing solar cycle 25 (SC25), from sunspot numbers over geomagnetic indices all the way to cosmic rays. The multiple graphs allow for a comparison with previous solar cycles at similar stages in their evolution.

Solar activity remained at the enhanced levels already recorded in December 2022 and January 2023. The provisional monthly sunspot number reached values between about 100 and 140 (SILSO - <https://www.sidc.be/silso/>), reminiscent of the previous solar cycle maximum. Based on this surge in solar activity, the Solar Cycle Science webpage (<http://solarcyclescience.com/forecasts.html>) now gives a maximum for SC25 around 135 in October 2024 (best fitting curve for a single maximum). The results from the SILSO prediction methodologies (12-month window; <https://www.sidc.be/silso/ssngraphics>) are somewhat diverging, but favor sunspot numbers well above the ones initially predicted by the SC25 panel, i.e. well above 115. These numbers can change further pending the evolution of solar activity in the coming months. Also, there's still a good possibility that SC25 may have a similar outlook as SC24, i.e. with 2 moderate, well-separated maxima.



The increase in sunspot numbers was accompanied by a corresponding enhancement in other solar parameters, such as the solar radio flux and the number of solar flares. Also the number of coronal mass ejections (CME) was near an average of 6/day. The February to April 2023 period saw some important geomagnetic storms. A strong geomagnetic storm on 26-27 February 2023 affected drilling operations in Manitoba, Canada. The severe storms from 23-24 March (Dst = -163 nT) and 23-24 April (Dst = -212 nT) resulted in spectacular aurora and also impacted some GNSS applications. The April storm was the strongest since the famous St-Patrick Day's event of 17 March 2015. The images underneath show the Sun in extreme ultraviolet, as pictured by the PROBA2/SWAP instrument (<https://proba2.sidc.be/ssa>). Both images were taken on 10 February, but the one to the left dates from 2020 near solar cycle minimum, while the one to the right was taken in 2023 and exemplifies the increased solar activity that has been observed during the last few months.



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