

Space Weather Highlights
24 January - 30 January 2022

SWPC PRF 2422
31 January 2022

Solar activity reached moderate levels due to a long duration M1 flare observed at 29/2332 UTC from Region 2936 (N17, L=116, class/area Ekc/720 on 30 Jan). Associated with this event was a 10cm (320 sfu) radio event and asymmetric full halo CME, first visible in LASCO C2 imagery at 29/2336 UTC. Forecaster analysis/WSA Enlil modeling determined this CME to arrive at Earth late on 01 Feb. Region 2936 also produced numerous (31) C-class flares. Regions 2939 (S15, L=37, class/area Cso/120 on 30 Jan) and 2940 (N17, L=37, class/area are unknown due to foreshortening at the east limb) also produced C-class activity during the period.

No proton events were observed at geosynchronous orbit during the highlight period.

The greater than 2 MeV electron flux at geosynchronous orbit reached high levels on 24 Jan due to recurrent CH HSS influences. Normal to moderate levels were observed on 25-30 Jan.

Geomagnetic field activity reached active levels on 28-29 Jan due to influences from a positive polarity CH HSS. Quiet to unsettled levels were observed on 24-27, and 30 Jan.

Space Weather Outlook
31 January - 26 February 2022

Solar activity is expected to be at very low to low levels, with a chance for isolated M-class flares on 31 Jan - 05 Feb due to the flare potential from Region 2936 (N17, L=116, class/area Ekc/720 on 30 Jan). Very low to low levels are expected on 06-26 Feb as Region 2936 rotates to the far side of the disk.

There is a slight chance for a proton event at geosynchronous orbit while Region 2936 is on the visible disk (31 Jan - 05 Feb). No proton events are otherwise expected during the outlook period.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to reach high levels on 03-05 Feb, 12-14 Feb, and 18-20 Feb all due to influences from recurrent CH HSS activity. Normal to moderate levels are expected for the remainder of the outlook period.

Geomagnetic field activity is expected to reach G1-G2 (Minor-Moderate) storm levels on 02 Feb due to the anticipated arrival of the full halo CME from 29 Jan. Active to G1 levels are expected on 05 Feb due to influences from a recurrent CH HSS. Active levels are expected on 06, 10, 18, and 25 Feb all due to recurrent CH HSS activity. Quiet to unsettled levels are expected on the remaining days of the period.



Daily Solar Data

Date	Radio Flux 10.7cm	Sun spot No.	Sunspot Area (10 ⁻⁶ hemi.)	X-ray Background Flux	Flares								
					X-ray			Optical					
					C	M	X	S	1	2	3	4	
24 January	95	26	170	B1.5	2	0	0	0	0	0	0	0	0
25 January	101	53	190	B2.3	5	0	0	0	0	0	0	0	0
26 January	102	71	310	B2.5	6	0	0	0	0	0	0	0	0
27 January	107	85	280	B2.3	2	0	0	2	0	0	0	0	0
28 January	113	77	540	B3.5	9	0	0	7	0	0	0	0	0
29 January	125	74	760	B6.8	17	2	0	13	0	0	0	0	0
30 January	130	70	930	B8.2	12	0	0	5	0	0	0	0	0

Daily Particle Data

Date	Proton Fluence (protons/cm ² -day -sr)		Electron Fluence (electrons/cm ² -day -sr)	
	>1 MeV	>10 MeV	>2MeV	
	24 January	9.1e+05	4.7e+04	3.0e+08
25 January	6.6e+05	4.4e+04	5.9e+06	
26 January	4.0e+05	4.3e+04	1.8e+06	
27 January	2.2e+05	4.2e+04	4.6e+06	
28 January	8.5e+04	4.2e+04	1.1e+07	
29 January	1.4e+05	4.2e+04	1.1e+07	
30 January	3.6e+05	4.3e+04	2.6e+07	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	24 January	3	0-0-0-1-2-2-1-1	1	0-0-0-1-0-0-1-0	4
25 January	10	2-2-2-3-3-3-2-2	23	2-2-2-6-3-5-3-2	13	2-3-3-3-3-3-3-3
26 January	8	2-2-2-3-1-2-2-2	12	2-1-2-4-4-2-2-2	10	2-2-3-3-2-2-2-3
27 January	5	1-1-1-1-2-2-2-2	9	1-0-2-4-4-1-1-1	7	1-1-1-2-2-2-3-3
28 January	7	1-2-2-1-1-2-2-3	10	1-1-3-3-3-2-1-3	8	2-2-2-1-1-1-2-4
29 January	14	3-4-3-3-4-2-1-1	38	2-3-5-6-7-2-1-0	17	4-4-4-3-4-1-1-1
30 January	8	2-3-3-1-2-2-1-2	12	1-2-3-3-4-3-1-2	12	3-3-3-2-2-2-1-3

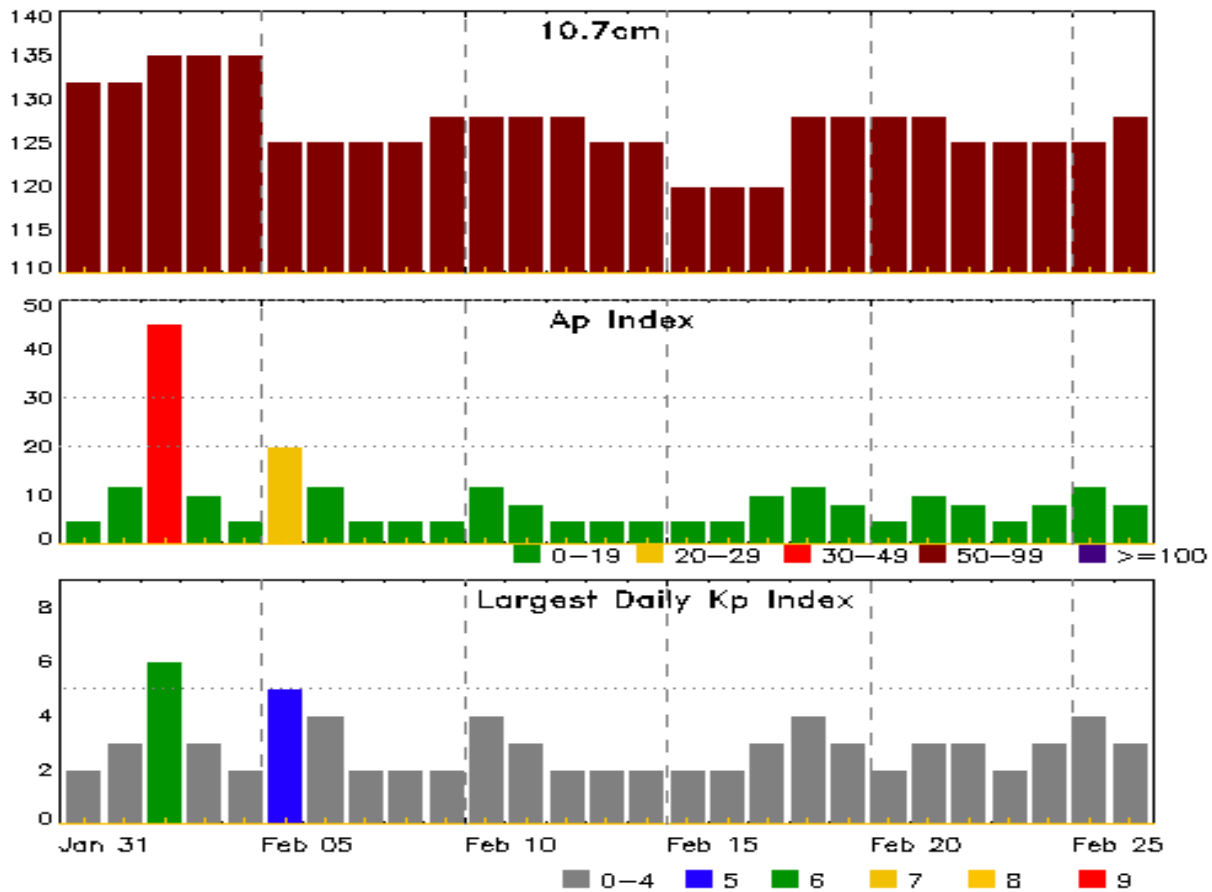


Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
24 Jan 0503	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	16/1445
24 Jan 2127	WARNING: Geomagnetic K = 4	24/2125 - 25/0000
25 Jan 1507	WARNING: Geomagnetic K = 4	25/1507 - 2359
28 Jan 2149	WARNING: Geomagnetic K = 4	28/2150 - 29/0900
28 Jan 2205	ALERT: Geomagnetic K = 4	28/2205
29 Jan 0855	EXTENDED WARNING: Geomagnetic K = 4	28/2150 - 29/1500
29 Jan 1428	EXTENDED WARNING: Geomagnetic K = 4	28/2150 - 30/0900
30 Jan 0029	SUMMARY: 10cm Radio Burst	29/2318 - 30/0016
30 Jan 0120	CANCELLATION: 10cm Radio Burst	
30 Jan 2054	WATCH: Geomagnetic Storm Category G2 predicted	



Twenty-seven Day Outlook



Date	Radio Flux 10.7cm	Planetary A Index	Largest Kp Index	Date	Radio Flux 10.7cm	Planetary A Index	Largest Kp Index
31 Jan	132	5	2	14 Feb	125	5	2
01 Feb	132	12	3	15	120	5	2
02	135	45	6	16	120	5	2
03	135	10	3	17	120	10	3
04	135	5	2	18	128	12	4
05	125	20	5	19	128	8	3
06	125	12	4	20	128	5	2
07	125	5	2	21	128	10	3
08	125	5	2	22	125	8	3
09	128	5	2	23	125	5	2
10	128	12	4	24	125	8	3
11	128	8	3	25	125	12	4
12	128	5	2	26	128	8	3
13	125	5	2				



Energetic Events

Date	Time		Half Max	X-ray		Optical Information			Peak		Sweep Freq	
	Begin	Max		Class	Integ Flux	Imp/ Brtns	Location Lat CMD	Rgn #	Radio Flux 245 2695	Intensity II IV		
29 Jan	2232	2332	0032	M1.1	0.057				2936			
29 Jan	2245	2332	0024	M1.1	0.051	SF	N16E08		2936			

Flare List

Date	Time			X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
	Begin	Max	End				
24 Jan	0200	0208	0212	C1.0			
24 Jan	0226	0237	0246	C1.1			
24 Jan	0400	0413	0427	B4.3			
24 Jan	0444	0451	0457	B4.0			
24 Jan	0730	0736	0740	B2.7			
24 Jan	0803	0812	0817	B2.1			
24 Jan	0926	0933	0959	B2.8			
24 Jan	1522	1532	1541	B3.3			
24 Jan	2031	2036	2042	B3.8			
24 Jan	2100	2115	2118	B4.5			
25 Jan	0056	0102	0111	B1.8			
25 Jan	0204	0214	0230	B8.3			
25 Jan	0534	0553	0605	C2.1			2935
25 Jan	0706	0722	0726	B6.5			
25 Jan	0832	0850	0906	B7.7			
25 Jan	0915	0926	0940	C1.0			2936
25 Jan	0955	1004	1014	B7.6			
25 Jan	1021	1029	1036	C3.7			
25 Jan	1255	1259	1304	B6.4			
25 Jan	1347	1359	1407	B6.8			
25 Jan	1443	1453	1513	B5.1			
25 Jan	1522	1529	1533	B6.3			
25 Jan	1708	1714	1721	B5.9			
25 Jan	1750	1801	1810	B5.5			
25 Jan	1826	1829	1833	B5.4			
25 Jan	1947	2002	2022	B6.1			
25 Jan	2147	2153	2158	B7.6			
25 Jan	2202	2211	2222	B6.9			2936
25 Jan	2238	2244	2248	C2.1			



Flare List

Date	Time			X-ray Class	Optical		Rgn #
	Begin	Max	End		Imp/ Brtns	Location Lat CMD	
25 Jan	2338	2349	2354	C9.9			
26 Jan	0152	0156	0200	C1.0			
26 Jan	0224	0231	0239	B6.9			
26 Jan	0448	0454	0458	B4.6			
26 Jan	0542	0553	0615	C1.0			
26 Jan	0646	0655	0659	B8.8			
26 Jan	0712	0716	0721	C1.0			
26 Jan	0725	0732	0736	C7.2			
26 Jan	0911	0915	0919	C1.3			
26 Jan	0944	0951	0956	B8.9			
26 Jan	1019	1024	1028	C1.6			
26 Jan	1400	1410	1415	B3.8			
26 Jan	1538	1542	1549	B4.0			
26 Jan	1639	1644	1649	B2.7			
26 Jan	1716	1726	1733	B5.3			
26 Jan	1823	1831	1837	B3.2			
26 Jan	1925	1951	1957	B5.0			
26 Jan	2253	2311	2331	B3.9			2938
27 Jan	0214	0222	0229	B9.0	SF	N16E76	2938
27 Jan	0258	0308	0315	B6.5			
27 Jan	0554	0601	0619	B6.8	SF	N16E46	2936
27 Jan	0716	0728	0734	C1.2			2936
27 Jan	0754	0807	0823	B7.0			
27 Jan	1039	1056	1109	B5.1			
27 Jan	1207	1226	1250	C1.4			
27 Jan	1510	1520	1531	B6.6			
27 Jan	1613	1617	1621	B8.7			
27 Jan	1710	1718	1726	B5.4			
27 Jan	1850	1904	1917	B6.2			
27 Jan	2310	2324	2341	B7.3			2936
27 Jan	2357	0005	0015	B5.6			2935
28 Jan	0051	0054	0100	B5.5			2936
28 Jan	0125	0135	0140	C2.5	SF	N16E37	2936
28 Jan	0225	0234	0238	C1.4	SF	N16E37	2936
28 Jan	0240	0246	0253	C1.1	SF	N16E37	2936
28 Jan	0331	0337	0341	B5.2			2935
28 Jan	0341	0347	0353	B6.3			2935
28 Jan	0403	0416	0421	C1.0			2936



Flare List

Date	Time			X-ray Class	Optical		Rgn #
	Begin	Max	End		Imp/ Brtns	Location Lat CMD	
28 Jan	0448	0458	0506	B8.9			2936
28 Jan	0514	0523	0531	B6.5			2935
28 Jan	0602	0610	0618	B5.3			2935
28 Jan	0639	0645	0649	B6.0			2936
28 Jan	0708	0720	0732	B7.9	SF	N11E31	2936
28 Jan	0803	0815	0826	C1.0			2936
28 Jan	0835	0841	0846	C2.6	SF	N00E00	2936
28 Jan	1014	1021	1034	B6.8			2936
28 Jan	1535	1546	1601	B6.6			2936
28 Jan	1712	1721	1726	C1.1			2936
28 Jan	1729	1735	1741	C3.1	SF	N21E23	2936
28 Jan	1804	1808	1812	B8.4			2936
28 Jan	1856	1904	1912	B6.0			2936
28 Jan	1922	1934	1940	C2.7	SF	N17E22	2936
28 Jan	1958	2002	2008	B4.9			2936
28 Jan	2027	2035	2042	B5.3			2936
28 Jan	2042	2049	2058	B6.5			2935
28 Jan	2327	2334	2342	B7.1			2936
29 Jan	0037	0050	0100	C3.0	SF	N16E24	2936
29 Jan	0112	0119	0123	C1.4			
29 Jan	0157	0157	0204		SF	N16E24	2936
29 Jan	0226	0229	0232	B6.7	SF	N16E24	2936
29 Jan	0313	0323	0327	B6.9	SF	N16E24	2936
29 Jan	0327	0343	0349	B8.4			2936
29 Jan	0410	0417	0425	C2.3	SF	N16E24	2936
29 Jan	0528	0536	0544	C1.1	SF	N16E24	2936
29 Jan	0555	0602	0604	B8.5	SF	N16E24	2936
29 Jan	0706	0711	0719	C1.0			2936
29 Jan	0851	0858	0902	B9.5			2936
29 Jan	1027	1033	1040	C1.3			2936
29 Jan	1203	1214	1232	C6.9	SF	N17E13	2936
29 Jan	1319	1323	1335	B9.2			2936
29 Jan	1335	1343	1348	C1.2			2939
29 Jan	1407	1417	1424	C2.0			2936
29 Jan	1514	1518	1522	C1.1	SF	N18E12	2936
29 Jan	1528	1535	1541	C1.3			2936
29 Jan	1623	1623	1625		SF	N18E10	2936
29 Jan	1630	1637	1643	C1.5			2936



Flare List

Date	Time			X-ray Class	Optical		Rgn #
	Begin	Max	End		Imp/ Brtns	Location Lat CMD	
29 Jan	1647	1655	1704	C7.3			2939
29 Jan	1729	1734	1739	C2.1			2936
29 Jan	1815	1824	1836	C1.2			2936
29 Jan	1938	1938	1939		SF	N16E11	2936
29 Jan	1954	2007	2026	C3.3			
29 Jan	2050	2051	2052		SF	N18E08	2936
29 Jan	2133	2137	2142	C1.6	SF	N18E08	2936
29 Jan	2232	2332	0032	M1.1			2936
29 Jan	2245	2332	0024	M1.1	SF	N16E08	2936
30 Jan	0250	0300	0310		SF	N17E07	2936
30 Jan	0506	0509	0513	C1.9			2936
30 Jan	0653	0657	0701	C1.6	SF	N17E04	2936
30 Jan	0712	0719	0725	C6.7			2940
30 Jan	0943	0953	1002	C2.2			2940
30 Jan	1244	1258	1320	C1.9			2940
30 Jan	1538	1544	1548	C1.7			2936
30 Jan	1756	1759	1810	B9.7			
30 Jan	1955	2013	2019	C2.7			
30 Jan	2116	2120	2124	C1.3			2936
30 Jan	2135	2138	2142	C1.2			2936
30 Jan	2157	2204	2210	C1.7	SF	N16E77	2936
30 Jan	2225	2232	2243	C1.1	SF	N15W02	2936
30 Jan	2321	2330	2342	C1.6			



Region Summary

Date	Location		Sunspot Characteristics					Flares									
	Lat	CMD	Helio	Area	Extent	Spot	Spot	Mag	X-ray			Optical					
			Lon	10 ⁶ hemi.	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4	
Region 2932																	
14 Jan	N32E74	245		plage								1					
15 Jan	N32E60	245	20		3	Cro	8	B	4							1	
16 Jan	N31E49	242	10		3	Bxo	4	B									
17 Jan	N32E34	245	10		1	Axx	2	A									
18 Jan	N32E20	245		plage													
19 Jan	N32E07	245		plage													
20 Jan	N32W07	246		plage													
21 Jan	N32W21	247		plage													
22 Jan	N32W35	248		plage													
23 Jan	N32W49	249		plage													
24 Jan	N32W63	250		plage													
25 Jan	N32W77	250		plage													
									5	0	0	0	0	0	0	1	0

Died on Disk.

Absolute heliographic longitude: 245

Region 2933																	
16 Jan	S21E06	286	60		3	Cso	6	B									
17 Jan	S22W08	287	80		5	Dso	8	B									
18 Jan	S22W22	287	80		5	Cso	8	B									
19 Jan	S22W35	287	100		6	Cao	10	B									
20 Jan	S22W49	288	80		6	Cao	4	B									
21 Jan	S20W63	289	60		2	Hax	2	A									
22 Jan	S19W77	289	40		1	Hsx	1	A									
23 Jan	S20W88	287	50		2	Hsx	1	A									
									0	0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 286



Region Summary - continued

Date	Location		Sunspot Characteristics				Flares										
	Lat CMD	Lon	Helio 10 ⁻⁶ hemi.	Area	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical					
									C	M	X	S	1	2	3	4	
Region 2934																	
20 Jan	S24E69	170	90	2	Hsx	1	A										
21 Jan	S24E54	172	140	2	Hsx	1	A										
22 Jan	S25E41	172	140	2	Hsx	1	A										
23 Jan	S25E28	172	140	2	Hsx	1	A										
24 Jan	S25E15	172	140	2	Hsx	1	A										
25 Jan	S25E01	172	120	2	Hsx	1	A										
26 Jan	S24W12	171	100	2	Hsx	1	A										
27 Jan	S24W24	170	120	2	Hsx	1	A										
28 Jan	S24W35	169	50	2	Hsx	1	A										
29 Jan	S26W49	170	60	2	Hsx	1	A										
30 Jan	S26W62	169	70	2	Hsx	1	A										
								0	0	0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 172

Region 2935																	
24 Jan	N26E05	181	30	3	Cro	5	B										
25 Jan	N27W08	181	30	3	Cro	4	B	1									
26 Jan	N27W21	180	10	6	Bxo	2	B										
27 Jan	N27W28	177	10	9	Bxo	3	B										
28 Jan	N28W44	178	50	4	Cro	3	B										
29 Jan	N27W58	179	40	5	Cro	4	B										
30 Jan	N27W72	179	20	3	Bxo	2	B										
								1	0	0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 181

Region 2936																	
25 Jan	N14E59	113	30	8	Cro	5	B	1									
26 Jan	N15E47	112	100	4	Dsi	8	B										
27 Jan	N16E33	113	110	8	Dai	18	B	1				1					
28 Jan	N17E23	111	400	9	Dkc	18	B	9				7					
29 Jan	N17E05	116	640	10	Dkc	26	B	13	2			13					
30 Jan	N17W09	115	720	12	Ehc	23	B	7				4					
								31	2	0	25	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 116



Region Summary - continued

Date	Location		Sunspot Characteristics				Flares								
	Lat CMD	Lon	Helio 10 ⁻⁶ hemi.	Area	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical			
									C	M	X	S	1	2	3

Region 2937

25 Jan	S19E15	157	10	3	Cro	3	B										
26 Jan	S20E01	158	90	5	Dao	8	B										
27 Jan	S19W13	159	30	5	Cro	10	B										
28 Jan	S19W25	159	30	5	Bxo	3	B										
29 Jan	S20W39	160	20	3	Bxo	3	B										
30 Jan	S20W53	160	plage														
									0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 158

Region 2938

26 Jan	N18E68	92	10	2	Bxo	2	B										
27 Jan	N17E56	90	10	8	Bxo	3	B				1						
28 Jan	N19E48	86	10	4	Bxo	2	B										
29 Jan	N19E34	87	plage														
30 Jan	N18E14	93	plage														
									0	0	0	1	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 93

Region 2939

29 Jan	S15E84	37	plage								2						
30 Jan	S15E70	37	120	5	Cso	4	B										
									2	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 37

Region 2940

30 Jan	S15E84	37	plage								3						
									3	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 37



Preliminary Report and Forecast of Solar Geophysical Data (The Weekly)

Published every Monday by the Space Weather Prediction Center.

U.S. Department of Commerce
NOAA / National Weather Service
Space Weather Prediction Center
325 Broadway, Boulder CO 80305

Notice: The 27-day Outlook, Satellite Environment, X-ray and Proton plots have been redesigned. Comments and suggestions are welcome SWPC.Webmaster@noaa.gov

The Weekly has been published continuously since 1951 and is available online since 1997.

<https://www.swpc.noaa.gov/products/weekly-highlights-and-27-day-forecast> --

Current

<ftp://ftp.swpc.noaa.gov/pub/warehouse> -- Online archive from 1997

<https://www.ngdc.noaa.gov/stp/satellite/goes-r.html> -- NCEI GOES data
textarchive

<https://www.swpc.noaa.gov/products/solar-cycle-progression> -- Solar Cycle
Progression web site

<https://www.swpc.noaa.gov/content/contact-us> -- Contact and Copyright
information

https://www.swpc.noaa.gov/sites/default/files/images/u2/Usr_guide.pdf -- User
Guide

