

SOLAR WEATHER

2 JUL 2024

Lewis Thompson
W5IFQ



October 30, 2022 @ Fairbanks

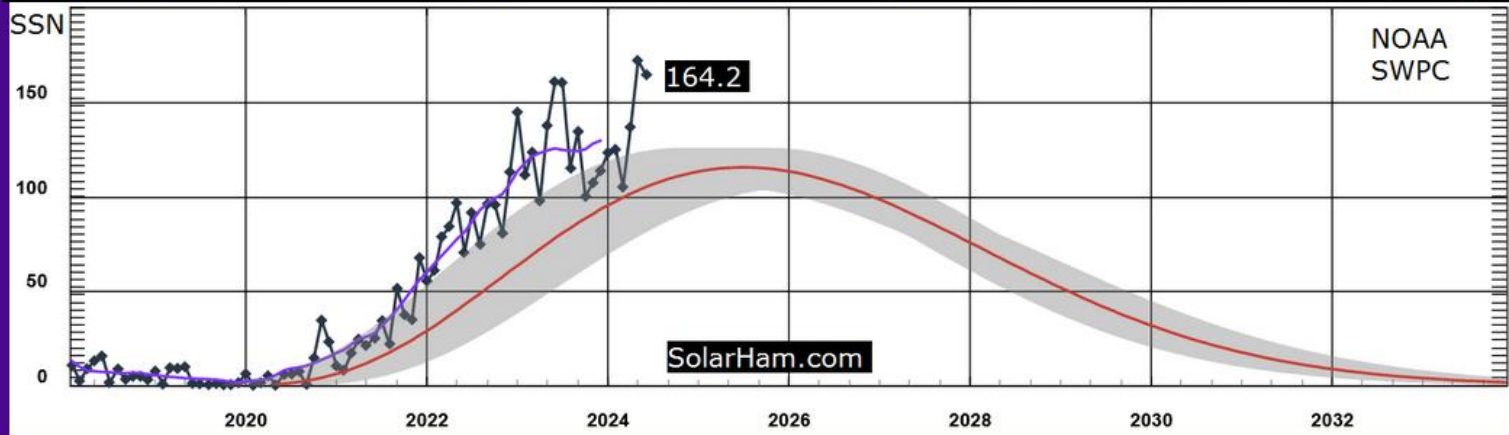
Taken by **Matt Comerford** on June 28, 2024 @ Hiawatha National Forest, Michigan

Solar Cycle 25 Progression

(Updated July 1, 2024)

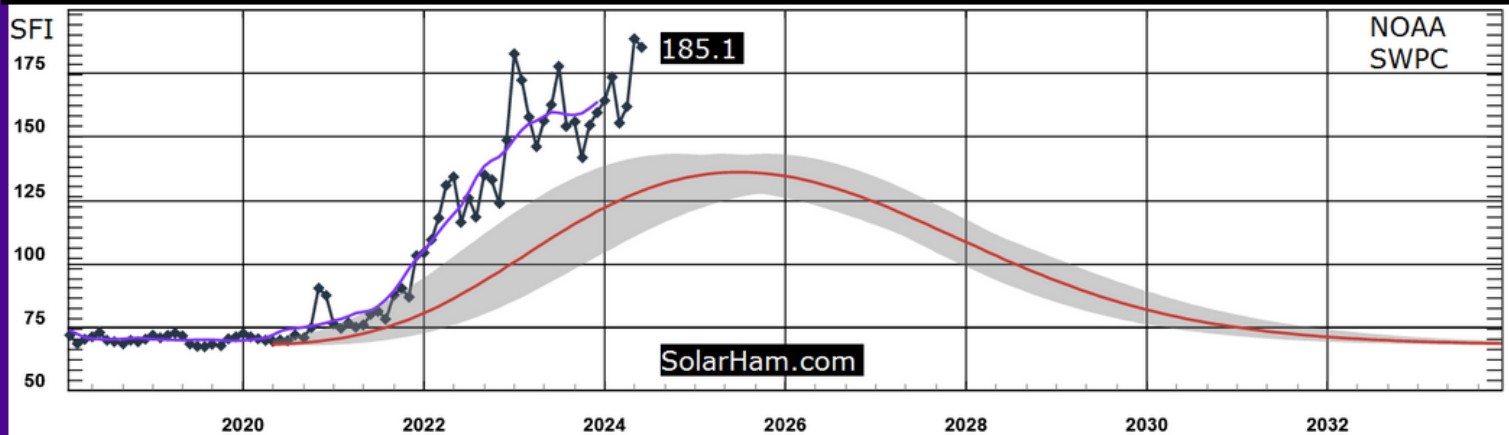
Sunspot Number Progression (June 2024)

Predicted SSN: 104.9 Actual: 164.2 Latest Smoothed Predicted SSN (12/2023): 93.2 Actual: 129.4



10.7cm Solar Flux Progression (June 2024)

Predicted SFI: 128.5 Actual: 185.1 Latest Smoothed Predicted SFI (12/2023): 120.4 Actual: 163.3



Present Conditions and Forecast



3 Day Geomagnetic Forecast

July 2	July 3	July 4
3-4 (G0)	4-5 (G1)	4 (G0)
<i>Max Kp</i>		
M-Lat 10%	M-Lat 30%	M-Lat 05%
H-Lat 40%	H-Lat 65%	H-Lat 30%
<i>Probabilities</i>		
Latest SWPC Forecast (@ 00:30 + 12:30 UTC)		
Detailed Forecast		

Current Moon Phase:
13% Illumination

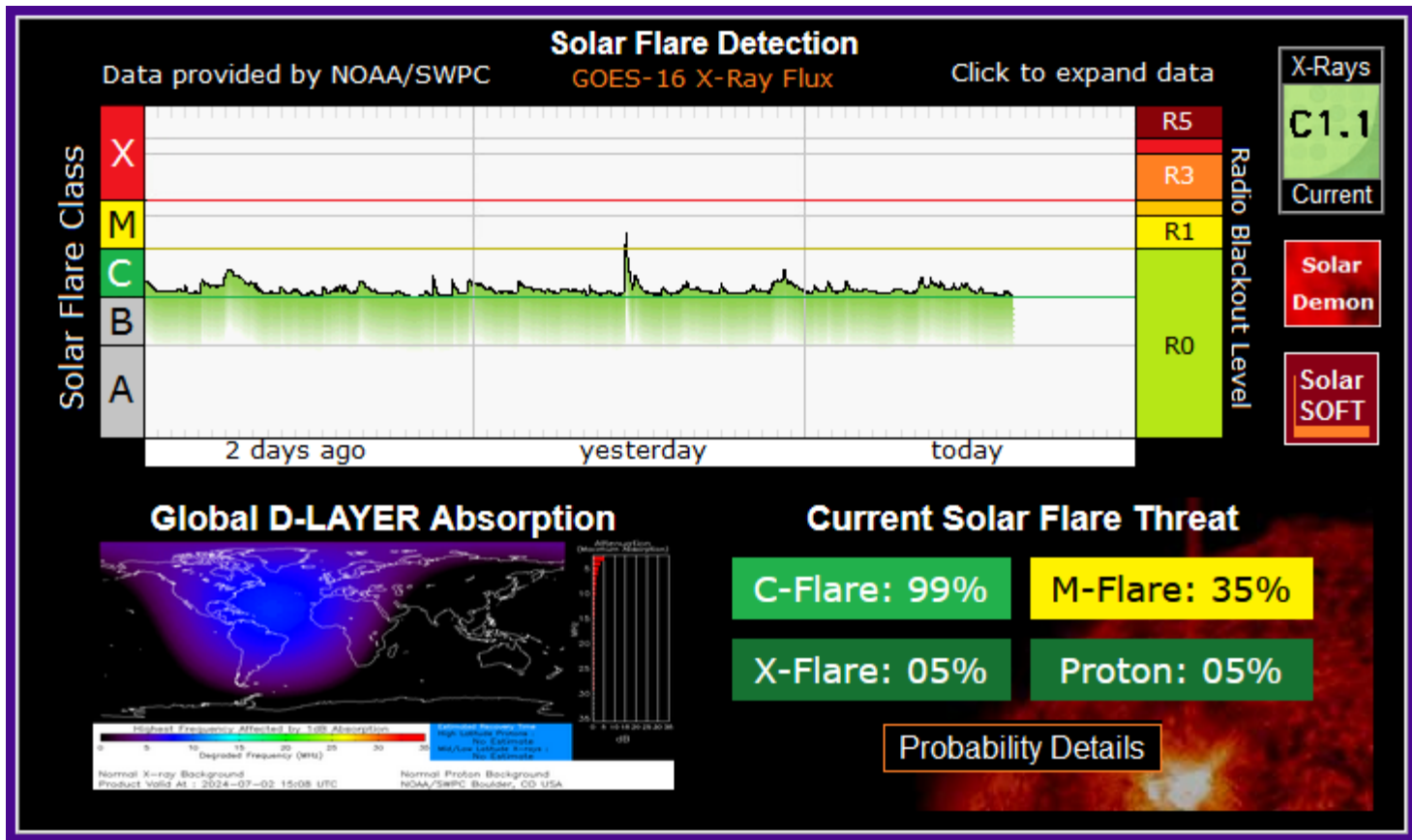
Flare Events (M2+) Past 48 Hours

M2.1 AR 3730 7/1/24 @ 11:02 UTC

[Event Report](#)
[Top Solar Flares](#)

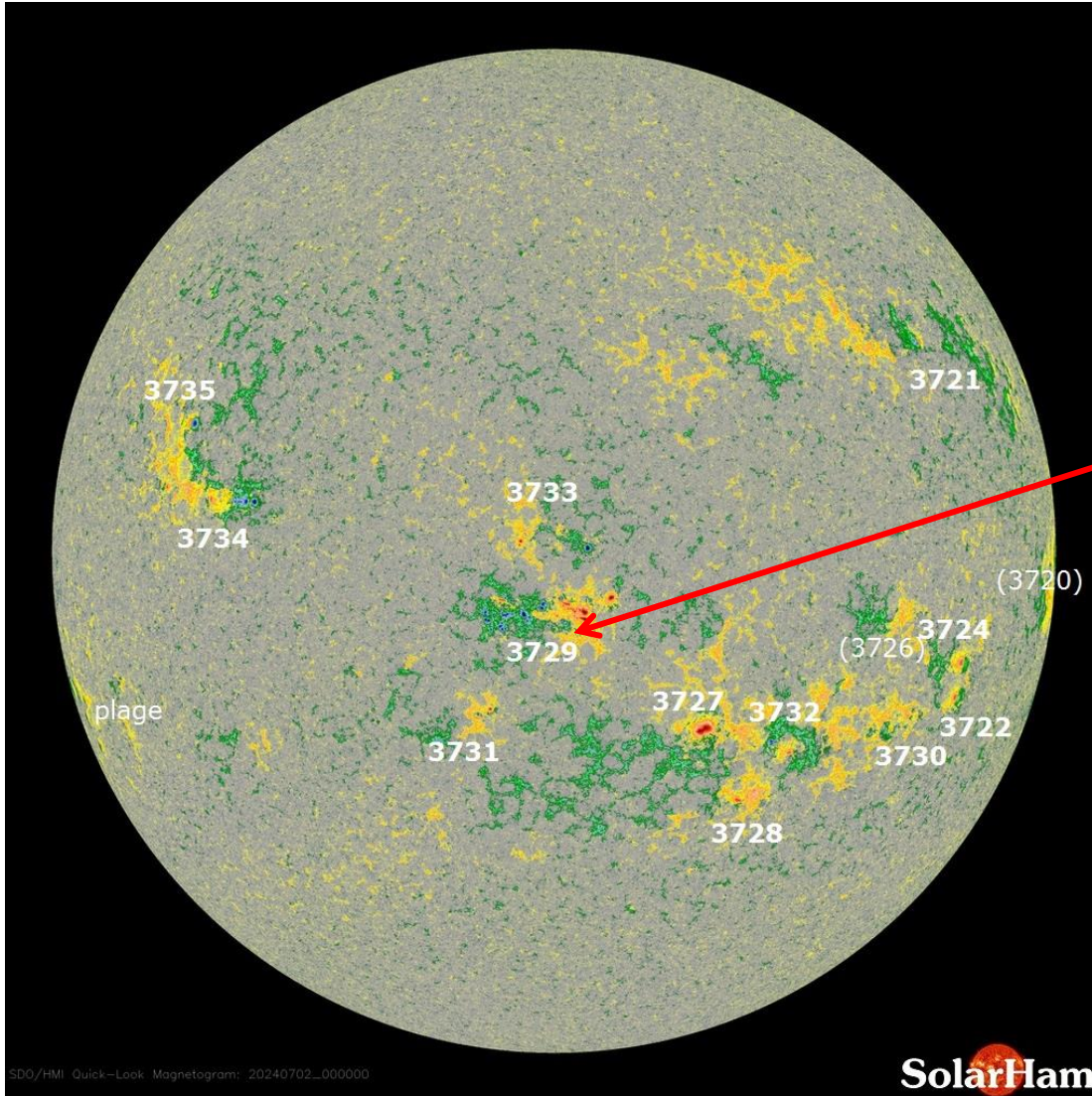
Visible Sunspot Regions			
AR 3735	A	N17E47	Declining
AR 3734	B	N09E42	Growing
AR 3733	B	N05W00	Stable
AR 3732	B	S18W25	Growing
AR 3731	A	S15E07	Stable
AR 3730	B	S17W47	Growing
AR 3729	BG	S04W00	Growing
AR 3728	B	S27W22	Declining
AR 3727	B	S18W19	Declining
AR 3724	A	S16W56	Stable
AR 3722	A	S12W57	Declining
AR 3721	A	N26W55	Stable

Present Conditions and Forecast

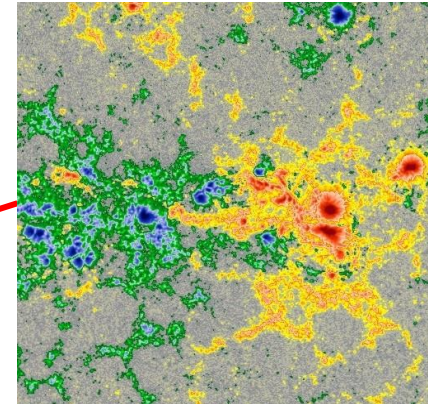


Solar Flare Activity

Magnetogram Image (Updated July 2, 2024)



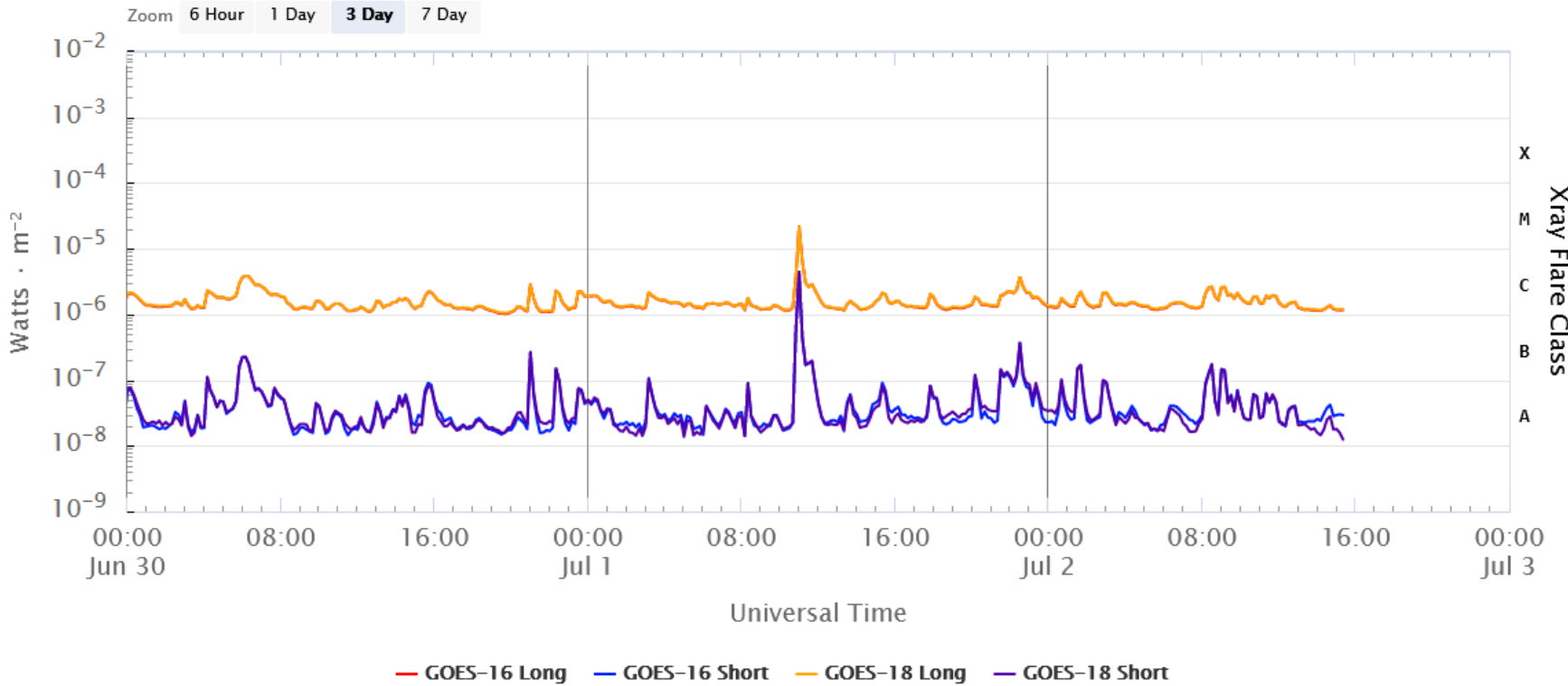
Uses Zeeman effect to measure polarity of magnetic fields



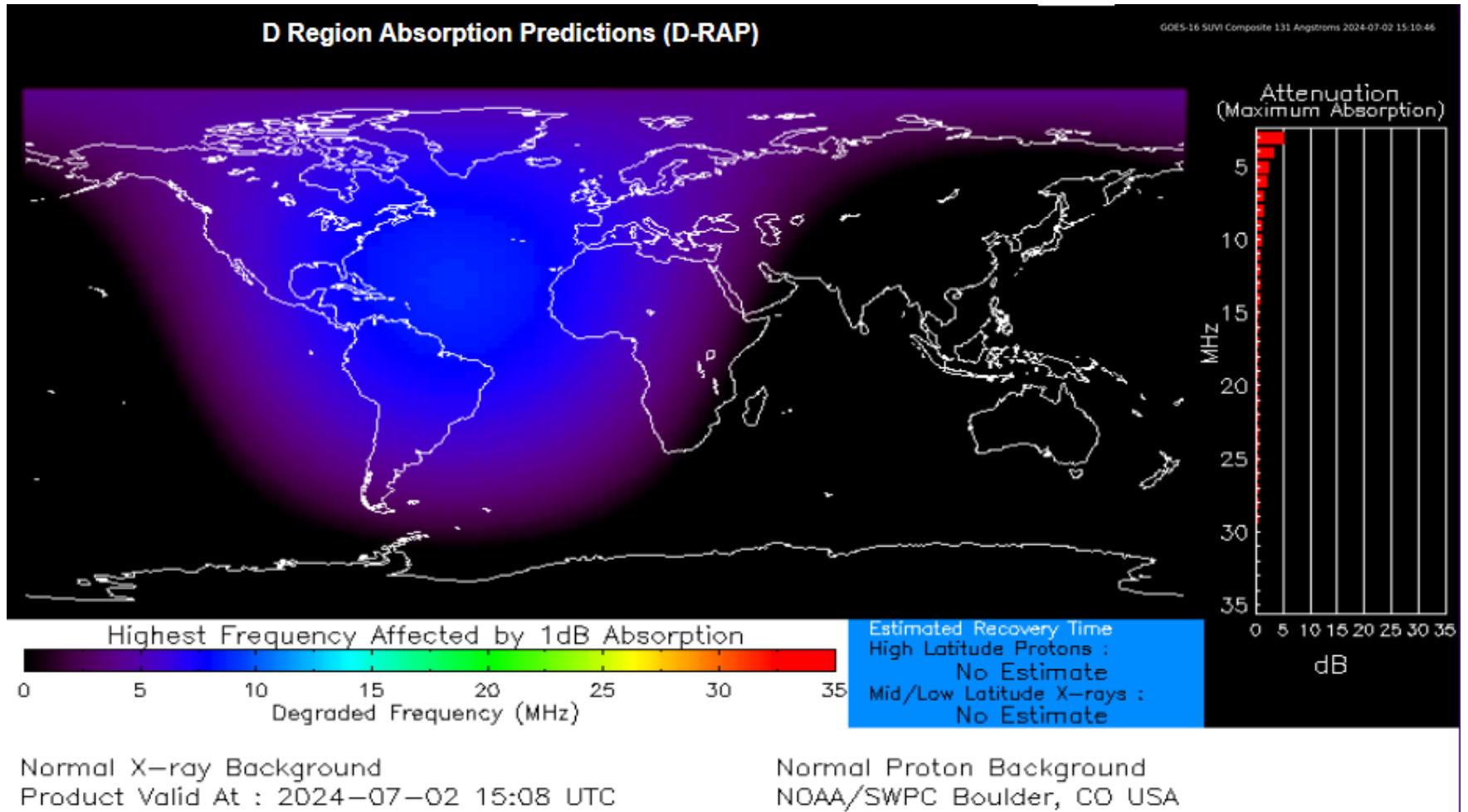
Beta-Gamma

Solar X-Ray Flux: 30 JUN – 2 JUL 2024

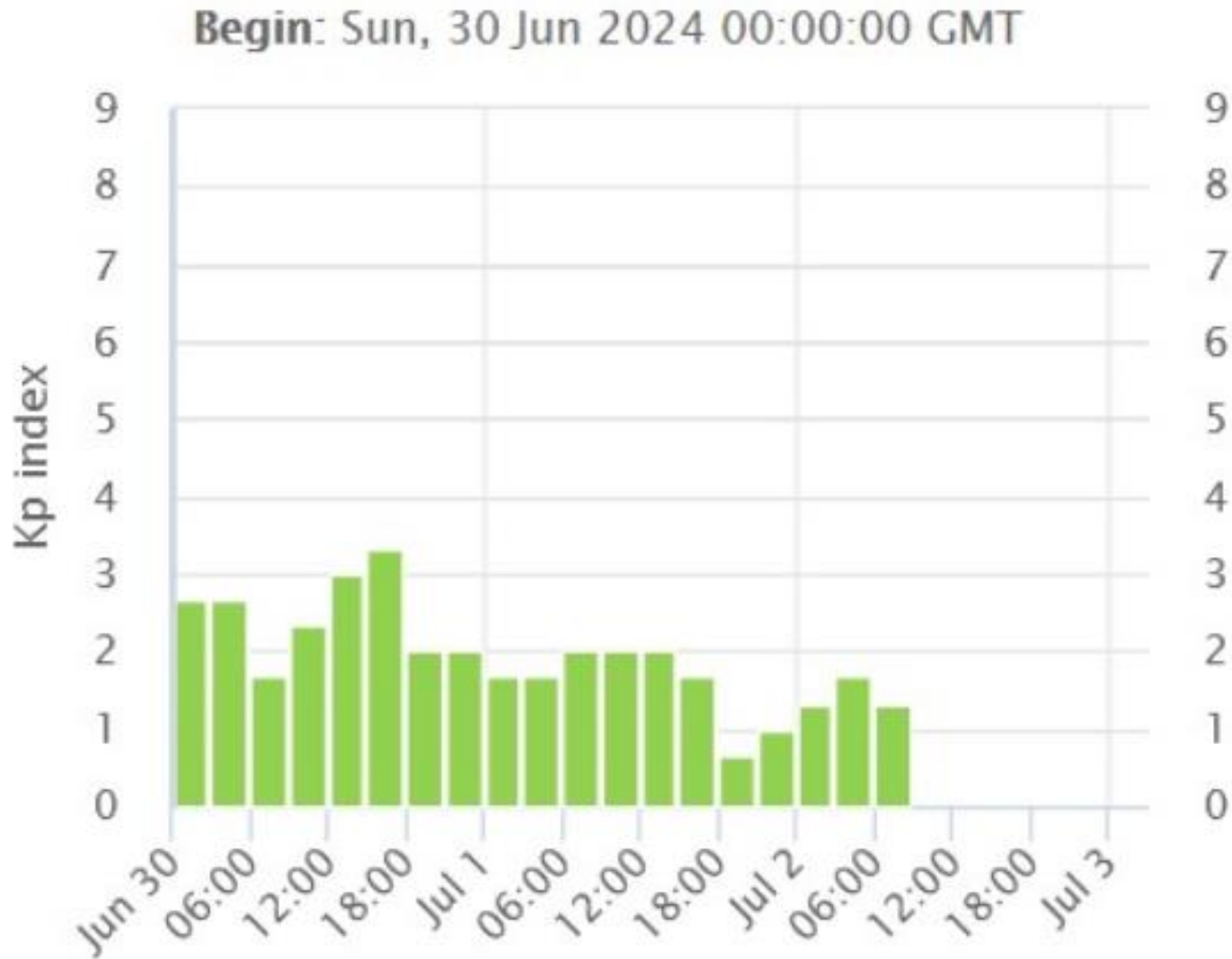
GOES X-Ray Flux (1-minute data)



NOAA – D-Region Absorption Predictions



Earth's Geomagnetic Activity



Geomagnetic Conditions: 2 JUL 2024

Solar wind:

$B_z = 0$ nT

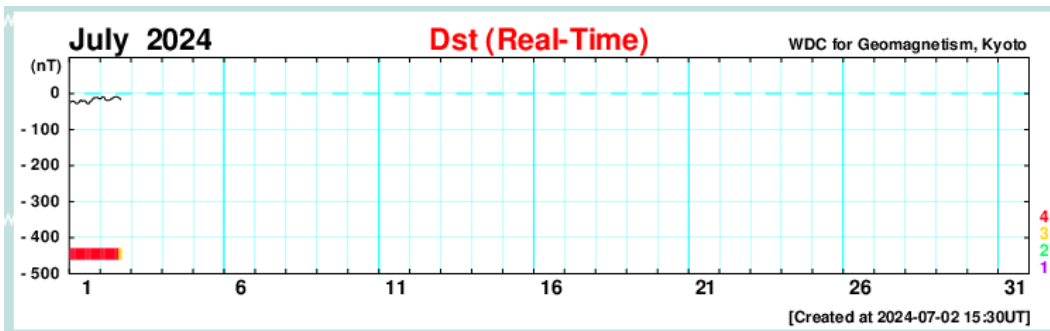
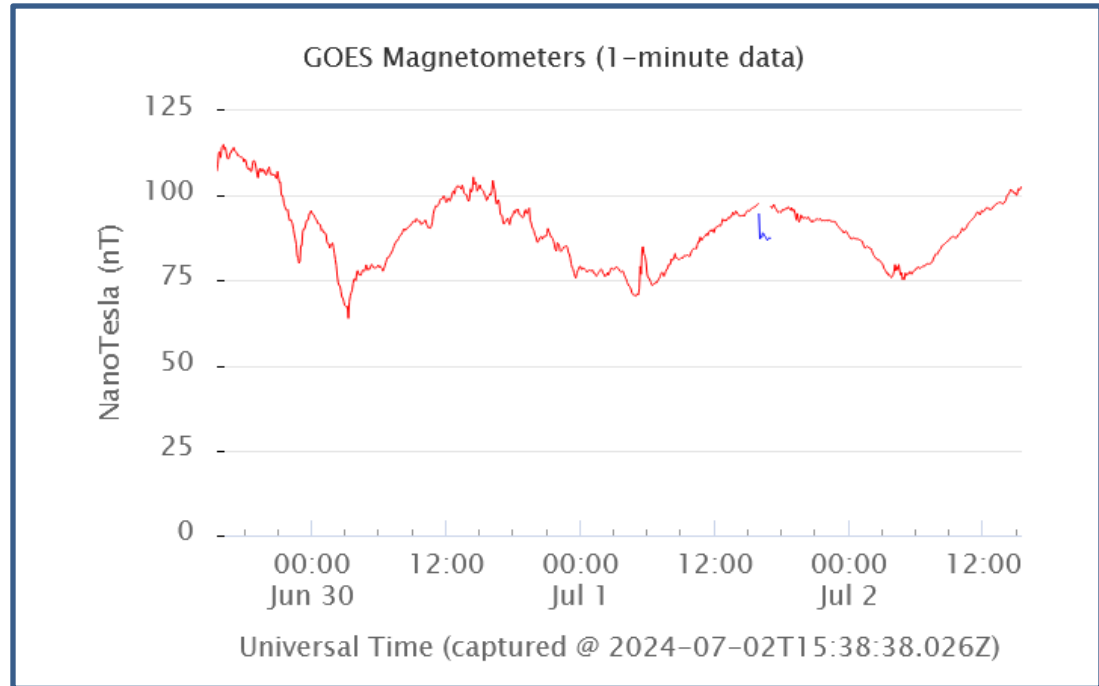
speed = 386 km/sec

density = 1.50 protons/cm³

(From – NOAA DSCOVR
In L1, Lagrange Point)

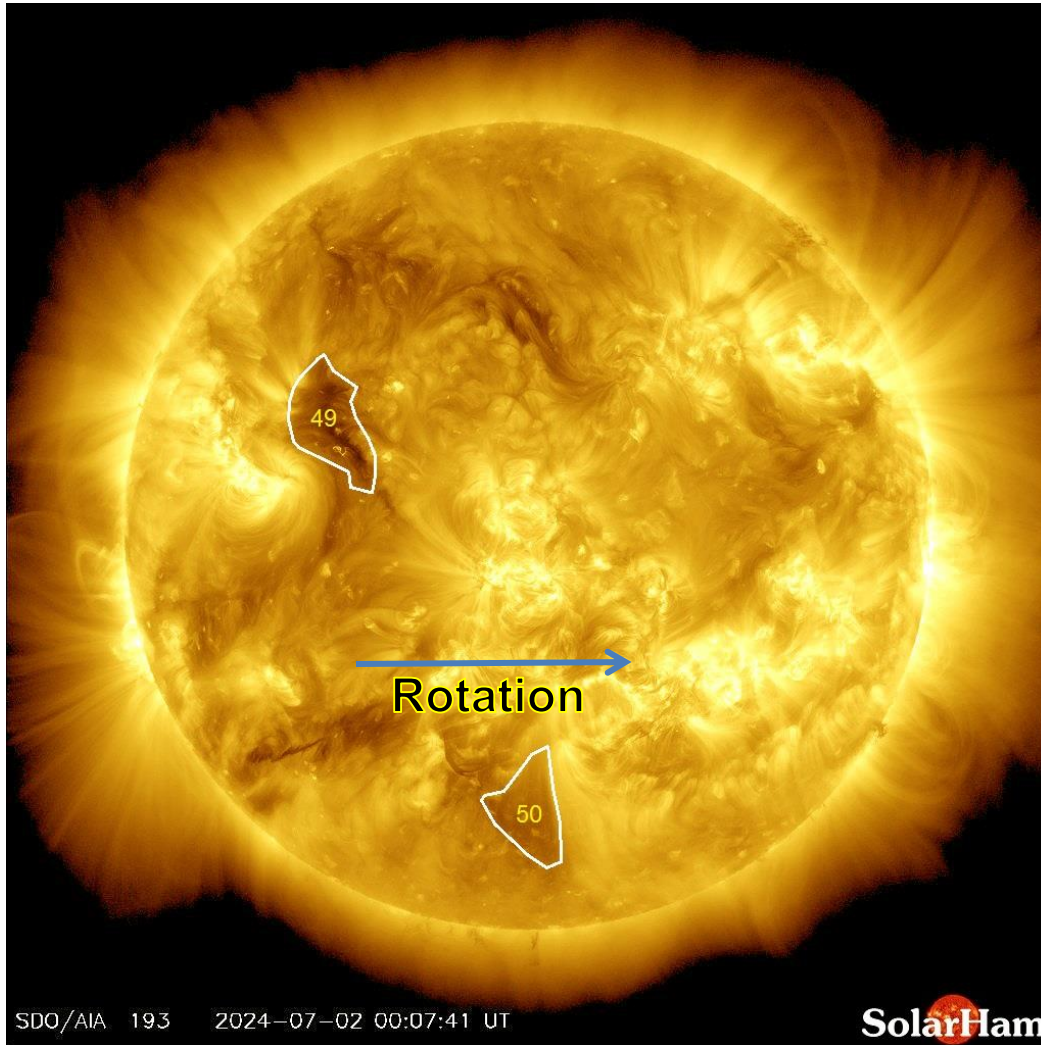
Dst = -17 nT (Ring Field)

(From – Data Analysis Center
For Geomagnetism and Space
Magnetism – Kyoto University)



From – GOES 16
In geostationary orbit

Coronal Holes – 2 JUL 2024



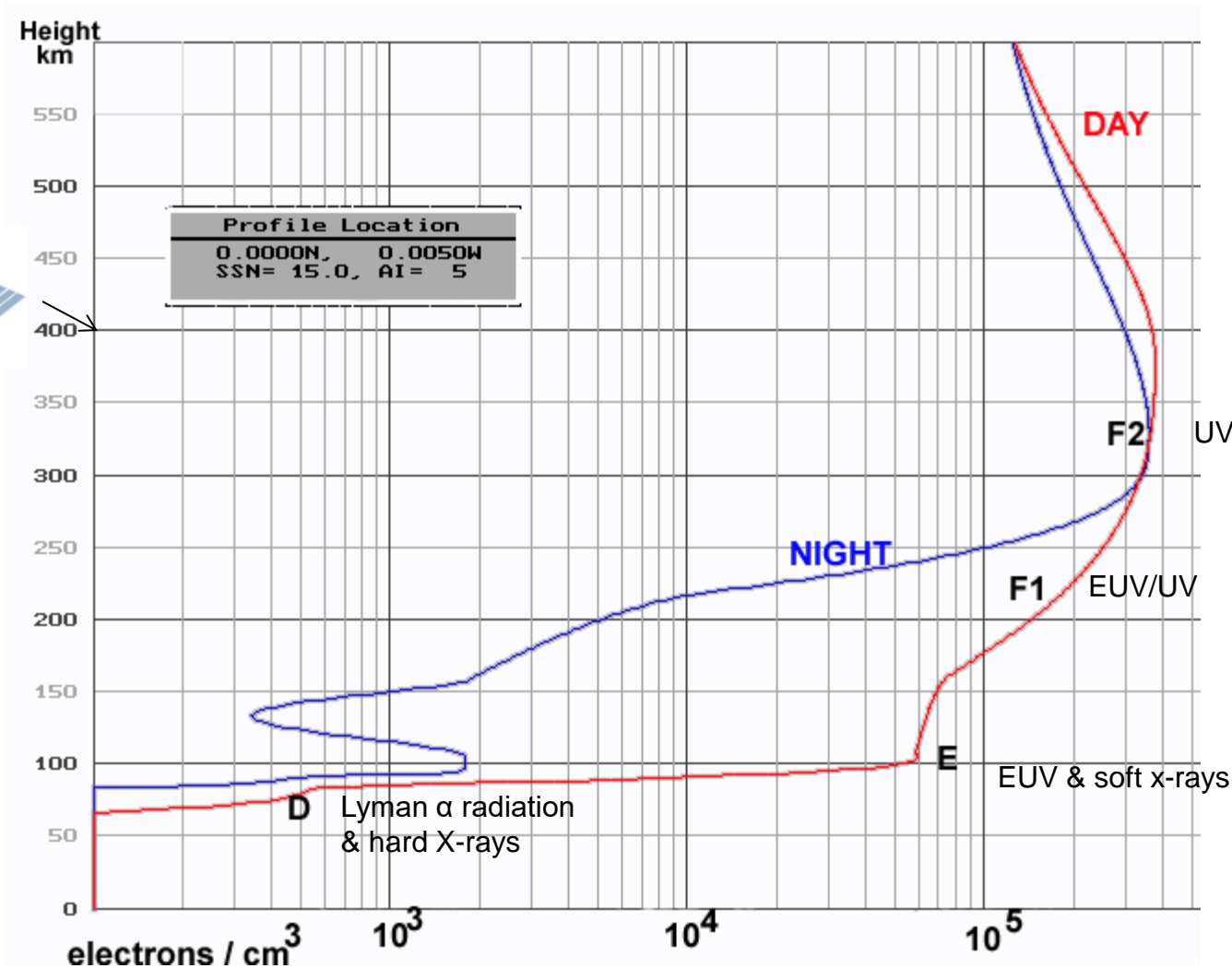
Analysis

There are currently no large coronal holes facing Earth.

Ionospheric Conditions



Gravity
↓



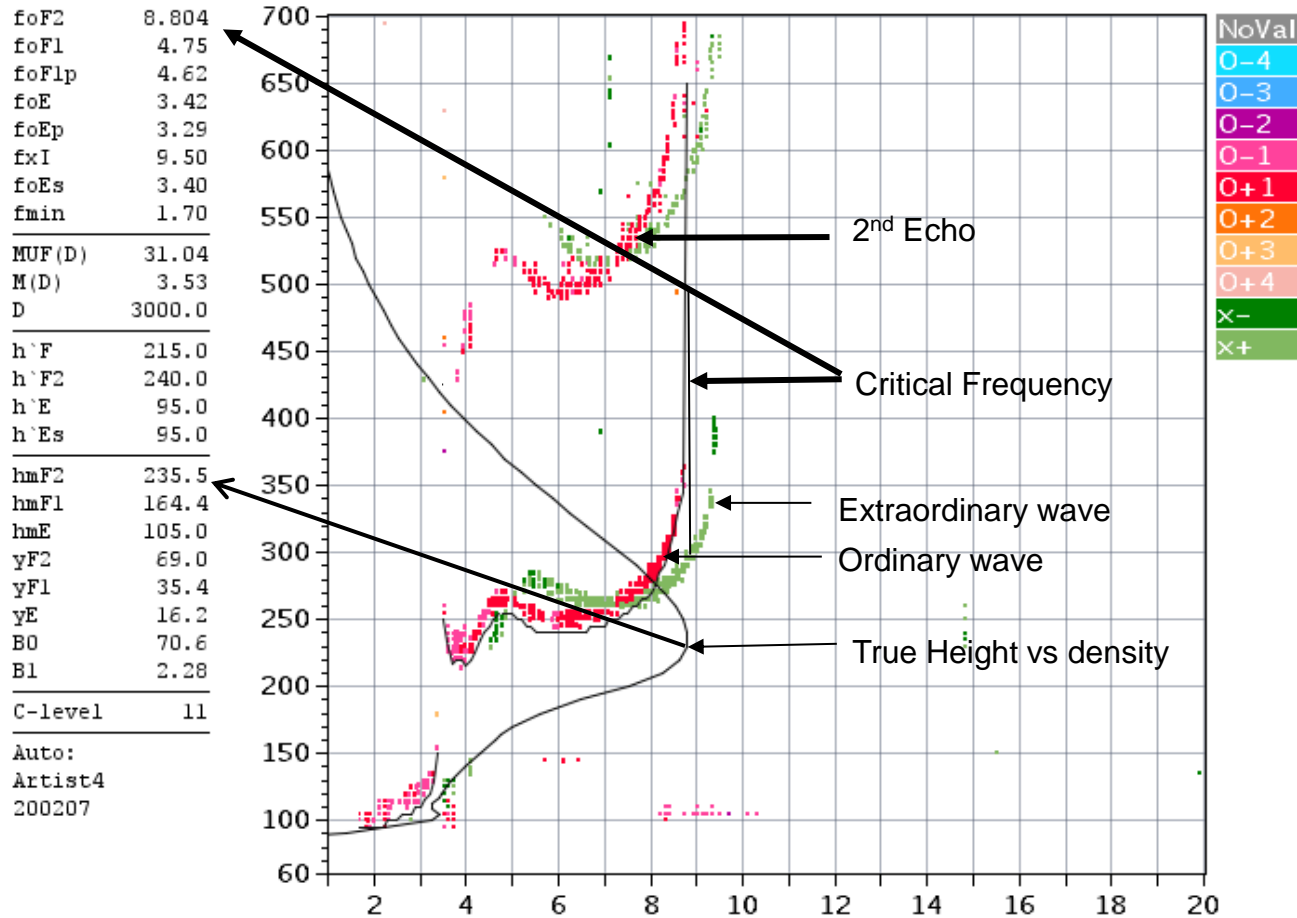
Solar Radiation
↓

Monoatomic oxygen

Ionogram Interpretation



Statio YYYY DAY DDD HHMMSS P1 FFS S AXN PPS IGA PS
 Austin 2013 Jan03 003 185505 MMM 1 045 100 32+ A1



foF2	8.804
foF1	4.75
foF1p	4.62
foE	3.42
foEp	3.29
fxI	9.50
foEs	3.40
fmin	1.70
<hr/>	
MUF(D)	31.04
M(D)	3.53
D	3000.0
<hr/>	
h`F	215.0
h`F2	240.0
h`E	95.0
h`Es	95.0
<hr/>	
hmF2	235.5
hmF1	164.4
hmE	105.0
yF2	69.0
yF1	35.4
yE	16.2
B0	70.6
B1	2.28
<hr/>	
C-level	11
<hr/>	
Auto:	
Artist4	
200207	

D 100 200 400 600 800 1000 1500 3000 [km] ← Oblique propagation MUF Chart
 MUF 9.4 9.5 10.0 10.8 12.0 13.7 18.5 31.0 [MHz] i.e. 31 MHz to 3000 km

Austin Ionosonde – 2 JUL (1043 CDT)



Statio YYYY DAY DDD HHMMSS P1 FFS S AXN PPS IGA PS
 Austin 2024 Jul02 184 154005 MMM 1 045 100 32+ A1

foF2 9.150
 foF1 5.65
 foF1p 5.03
 foE N/A
 foEp 3.51
 fxI 10.30
 foEs N/A
 fmin 4.00

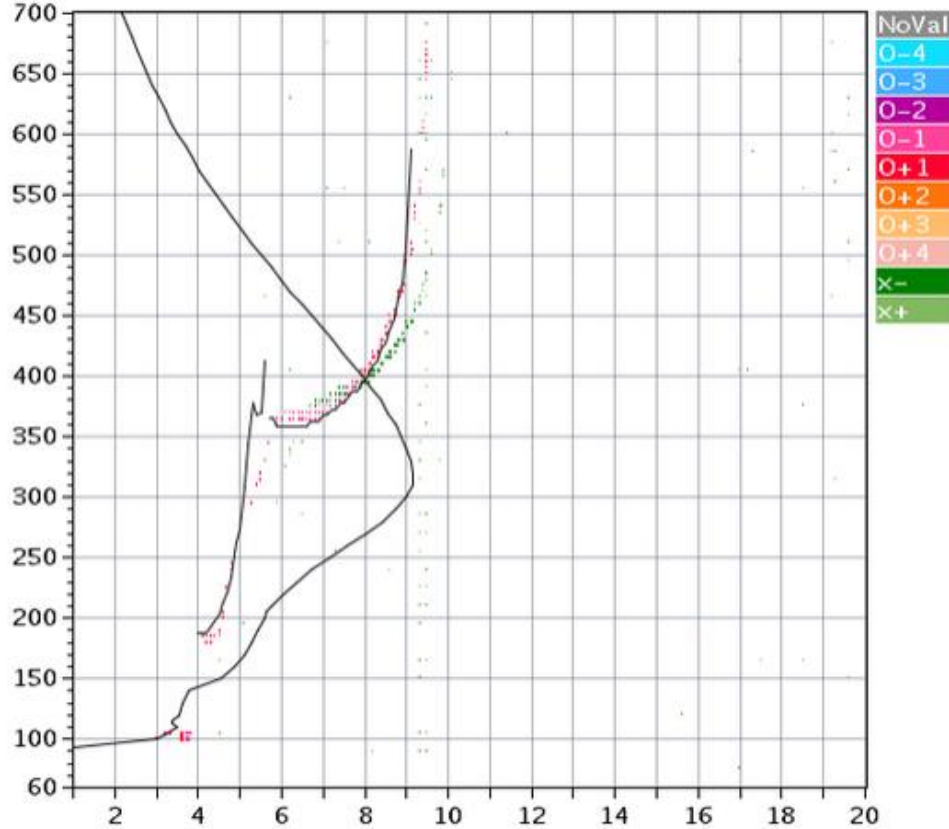
MUF(D) 25.11
 M(D) 2.76
 D 3000.0

h'F 187.5
 h'F2 358.0
 h'E N/A
 h'Es N/A

hmF2 313.1
 hmF1 206.4
 hmE 110.0
 yF2 89.8
 yF1 87.7
 yE 20.0
 B0 136.5
 B1 1.30

C-level 15

Auto:
 Artist4.5
 200311



D 100 200 400 600 800 1000 1500 3000 [km]
 MUF 9.7 9.8 10.2 10.8 11.6 12.8 16.3 25.1 [MHz]

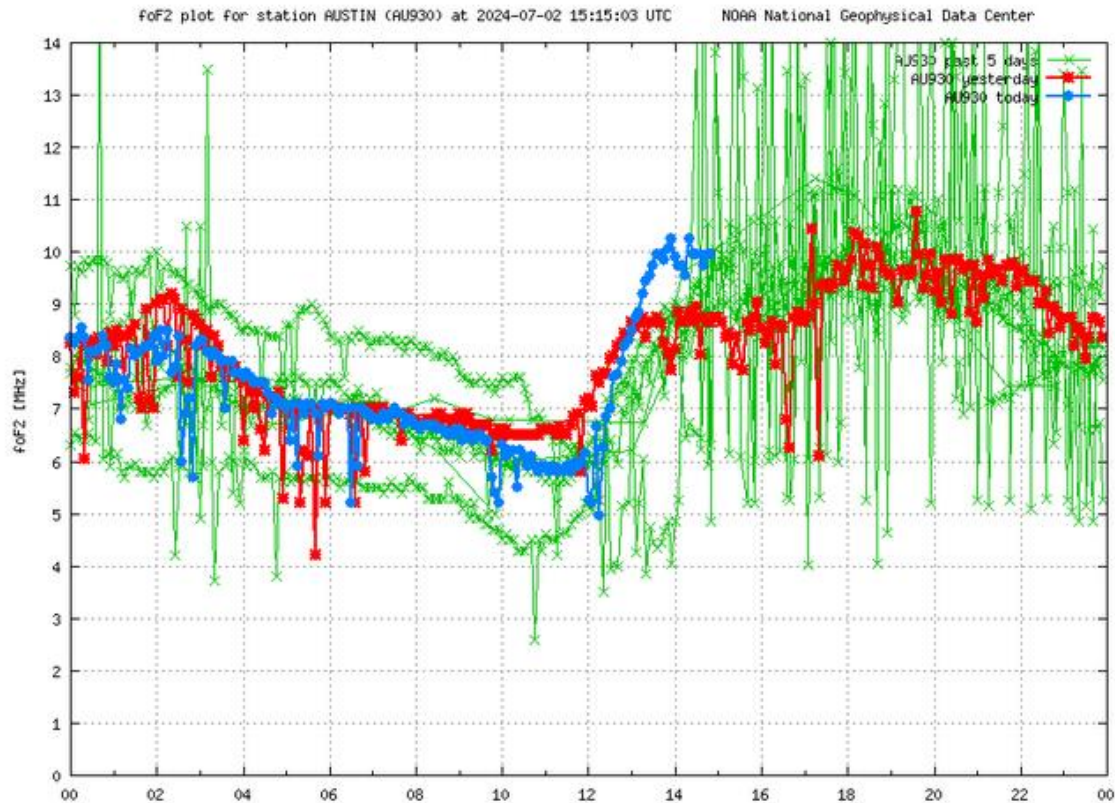
AU930_2024184154005.MMM / 1504x128h 100 kHz 5.0 km / 158-256 AU930 130 / 30.4 H 262.3 E

Ion2Png v. 1.3.11

foF2 Trend – Austin Ionosonde

AUSTIN IONOSONDE FOF2 TREND

This is a graph of real-time data from the Austin, TX ionosonde in comparison with historic data from the same site. Updated every 15 minutes.



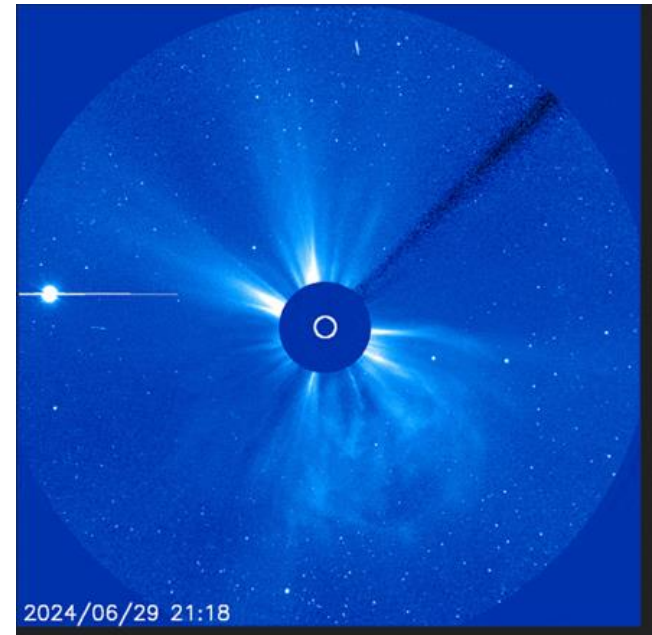
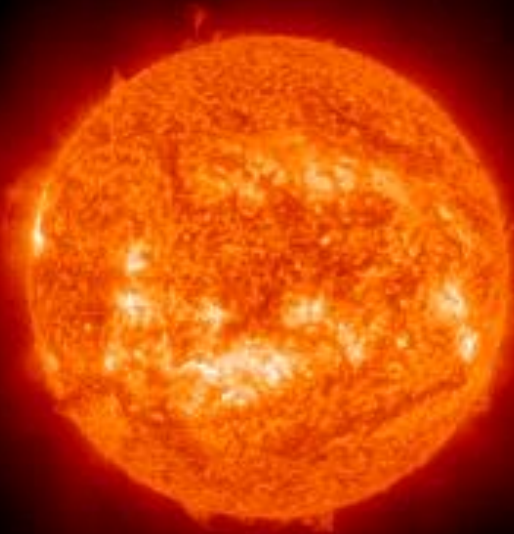
Notable Recent Events

Filament Eruption

June 29, 2024 @ 17:00 UTC (UPDATED)

A filament located in the southern hemisphere lifted off the Sun beginning around 15:00 UTC (Jun 29). This will likely fling a coronal mass ejection into space, however the trajectory should be mostly south of the Sun-Earth line. A further update will be provided once updated coronagraph imagery is available.

UPDATE #2: A coronal mass ejection (CME) was produced and is predicted to possibly deliver a glancing blow to our geomagnetic field on July 3rd.



Solar Weather Data

The screenshot shows the website for Region 6 Army MARS. The top navigation menu includes: Home, What is MARS?, Join, Contact Us, Solar Weather, and Login. A red arrow points from the text 'Menu' to the navigation menu. Another red arrow points from the text 'Solar Weather' to the 'Solar Weather' menu item. A third red arrow points from the text 'Solar Weather' to the 'WHO WE ARE' section of the page.

Solar Weather

Other Solar Weather Links of Interest

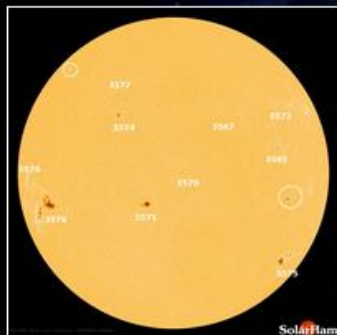
All Ionosondes

- • [DIDBase](#) - Select Station List then EGLIN then year/month/day/time for Ionosonde plot.
- [NOAA Solar Weather](#) - Solar Weather plots of Kp and X-Ray and other solar emissions.
- [Solen Solar Weather](#) - Good general solar forecast from an individual.
- [Solar Ham](#) - SolarHam provides real time solar news, as well as consolidated data from various sources.

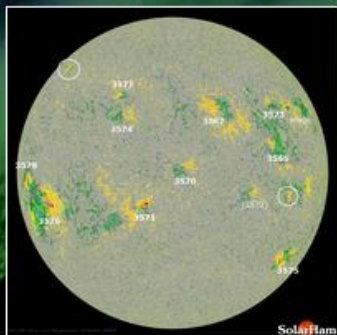
Space Weather for February 6, 2024

[Help Center + FAQ](#)

UTC Time 13:45:49 Tuesday



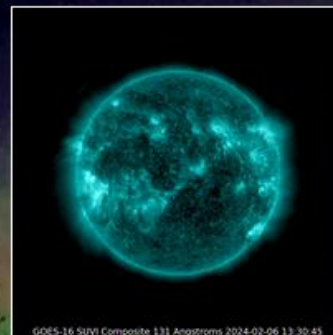
HMI Intensity
Latest | Movie | HARP



HMI Magnetogram
Latest | Movie



Coronal Holes
Analysis | Movie



SUVI 131 (Latest)
Movie



SUVI 304 (Latest)
Movies

Latest Imagery: [SDO](#) | [AIA](#) | [GOES](#) | [GONG](#) | [STEREO](#) | [LASCO](#)

Video: [SDO](#) | [SOHO](#) | [STEREO](#) | [Heliviewer](#) | [YouTube](#)

[Solar Report](#)

[Space Weather Alerts](#) >

[Real Time Solar Wind](#)

[Protons and Electrons](#)

[Satellite Environment](#) >

Note: URL is now
<https://solarham.com/>

See New Addition

Welcome to the SolarHam Help Center

Below you will find an explanation of frequency used terms regarding space weather used on the SolarHam website. Please note that this section is currently being built and will contain more information and answers to frequently asked questions soon.

<https://www.spaceweather.com/>

Current Conditions

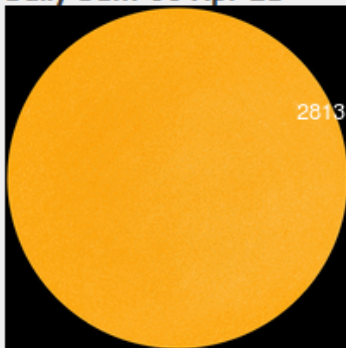
Solar wind

speed: **314.8** km/sec
density: **9.9** protons/cm³
more data: [ACE](#), [DSCOVR](#)
Updated: Today at 1225 UT

X-ray Solar Flares

6-hr max: **A1** 1027 UT Apr06
24-hr: **A1** 1515 UT Apr05
[explanation](#) | [more data](#)
Updated: Today at: 1230 UT

Daily Sun: 06 Apr 21



Sunspot AR2813 is decaying, and poses no threat for strong flares.
Credit: SDO/HMI

FLYING TO THE VOLCANO: Iceland's Geldingadalur volcano has turned into an popular tourist attraction—especially since auroras were sighted [above the glowing lava](#). Early this morning, Tuesday, April 6th, Brian Emfinger saw auroras before he even reached the Reykjanes peninsula:



QUESTIONS?

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512-587-9944