

SOLAR WEATHER

1 OCT 2024

Lewis Thompson
W5IFQ



Taken by Ian Wright on
September 24, 2024 @
At 37000ft near
Fairbanks, Alaska whilst
en route from Tokyo -
London

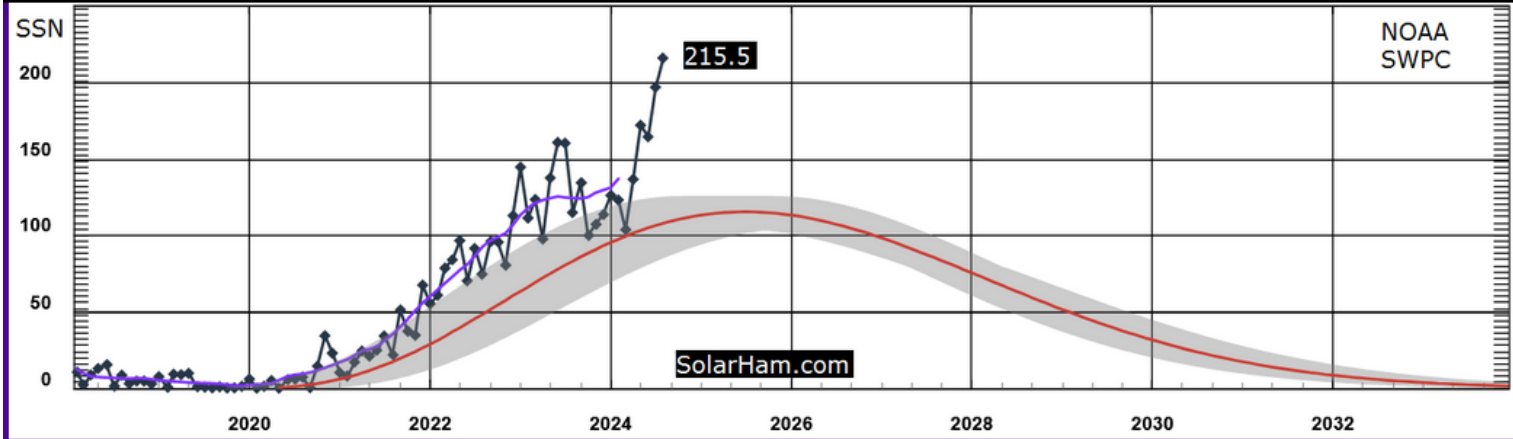
© IWright 2024

Solar Cycle 25 Progression

(Updated September 1, 2024)

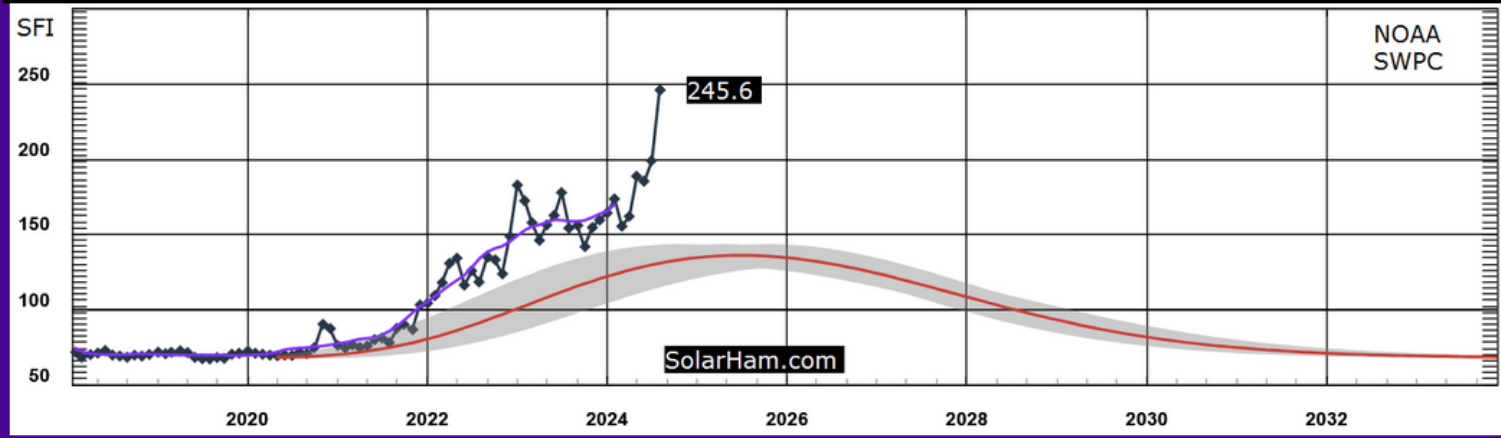
Sunspot Number Progression (August 2024)

Predicted SSN: 107.8 Actual: 215.5 Latest Smoothed Predicted SSN (2/2024): 97.3 Actual: 136.8



10.7cm Solar Flux Progression (August 2024)

Predicted SFI: 130.6 Actual: 245.6 Latest Smoothed Predicted SFI (2/2024): 123.3 Actual: 169.8



SolarHam

Indices: (10/1 @ 00:35 UTC) SFI **214** ▲ 17 SSN **150** ▼ 4 AREA **580** ▼ 80

3 Day Geomagnetic Forecast

Oct. 1	Oct. 2	Oct. 3
2 (G0)	2 (G0)	2 (G0)
<i>Max Kp</i>		
M-Lat 05%	M-Lat 05%	M-Lat 05%
H-Lat 15%	H-Lat 15%	H-Lat 15%
<i>Probabilities</i>		

Latest SWPC Forecast (@ 00:30 + 12:30 UTC)

[Detailed Forecast](#)

Current Moon Phase:

1% Illumination
Waning Crescent



Flare Events (M2+) Past 48 Hours

M7.6 AR 3842 9/30/24 @ 23:59 UTC

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

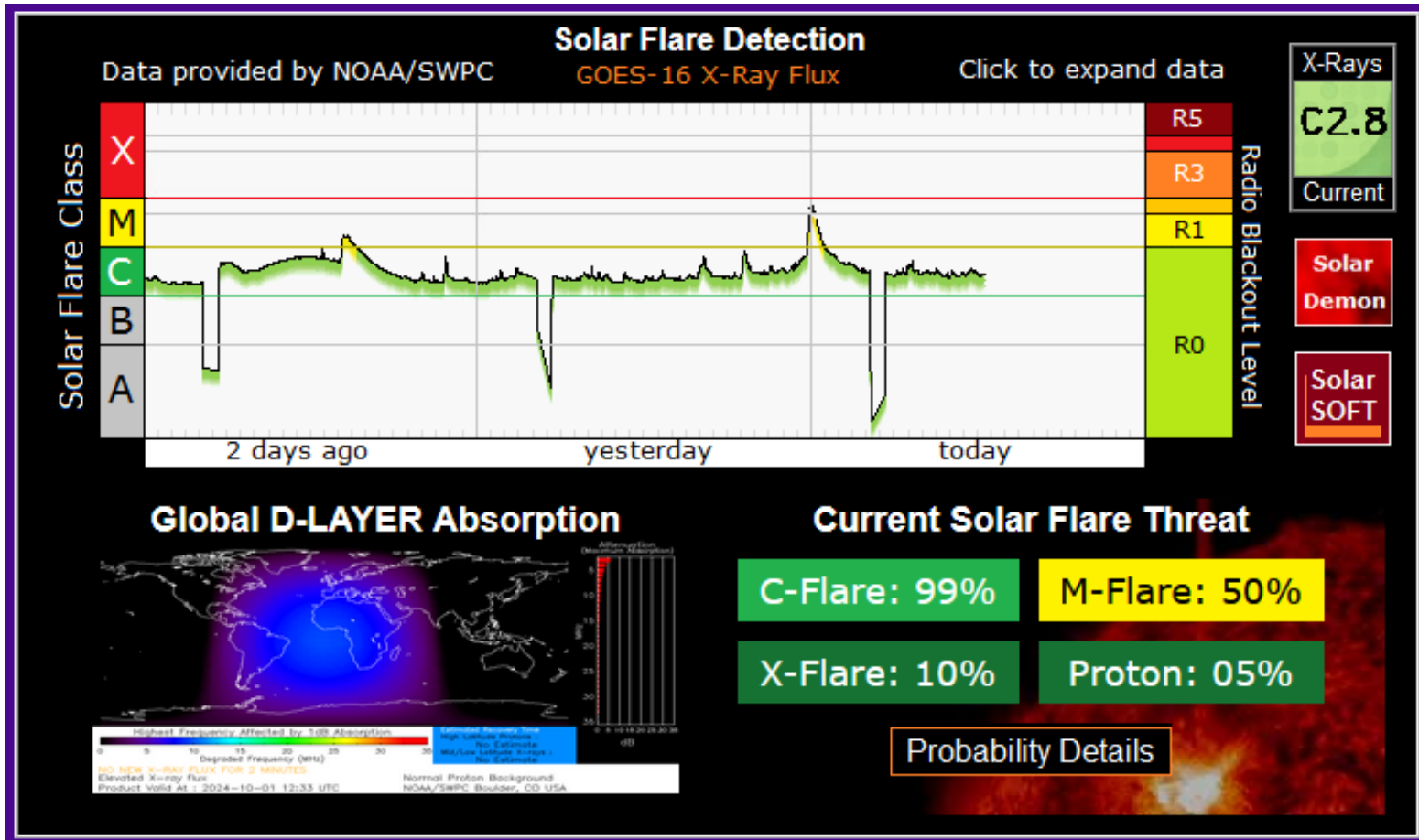
Visible Sunspot Regions

[Sunspot Summary](#) [SRS](#)

AR 3844	B	S15E09	-
AR 3843	B	S08E01	<i>Growing</i>
AR 3842	BGD	S15E31	<i>Growing</i>
AR 3841	B	N12E20	<i>Growing</i>
AR 3839	A	S15E20	<i>Growing</i>
AR 3836	B	S09W22	<i>Declining</i>
AR 3835	BG	S21W44	<i>Declining</i>
AR 3834	B	S13W65	<i>Declining</i>

Updated @ 00:45 UTC (October 1)

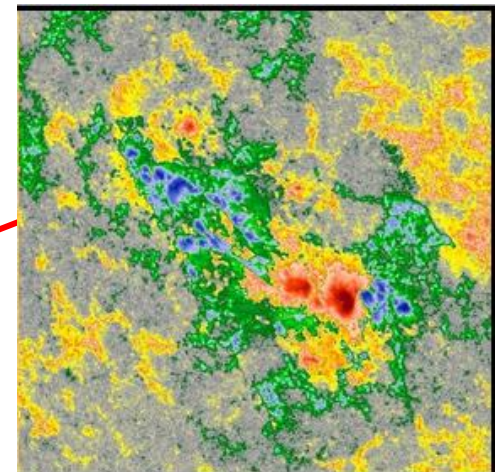
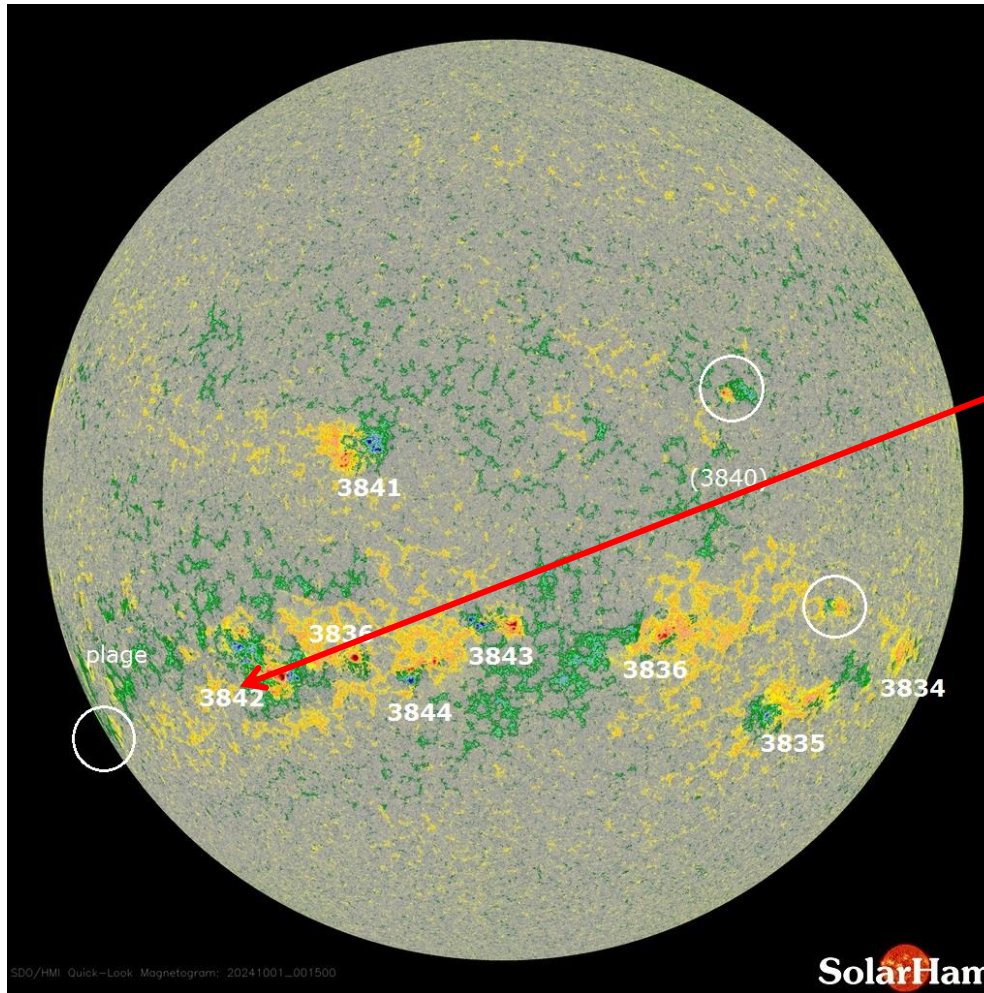
SolarHam



Sun Spots

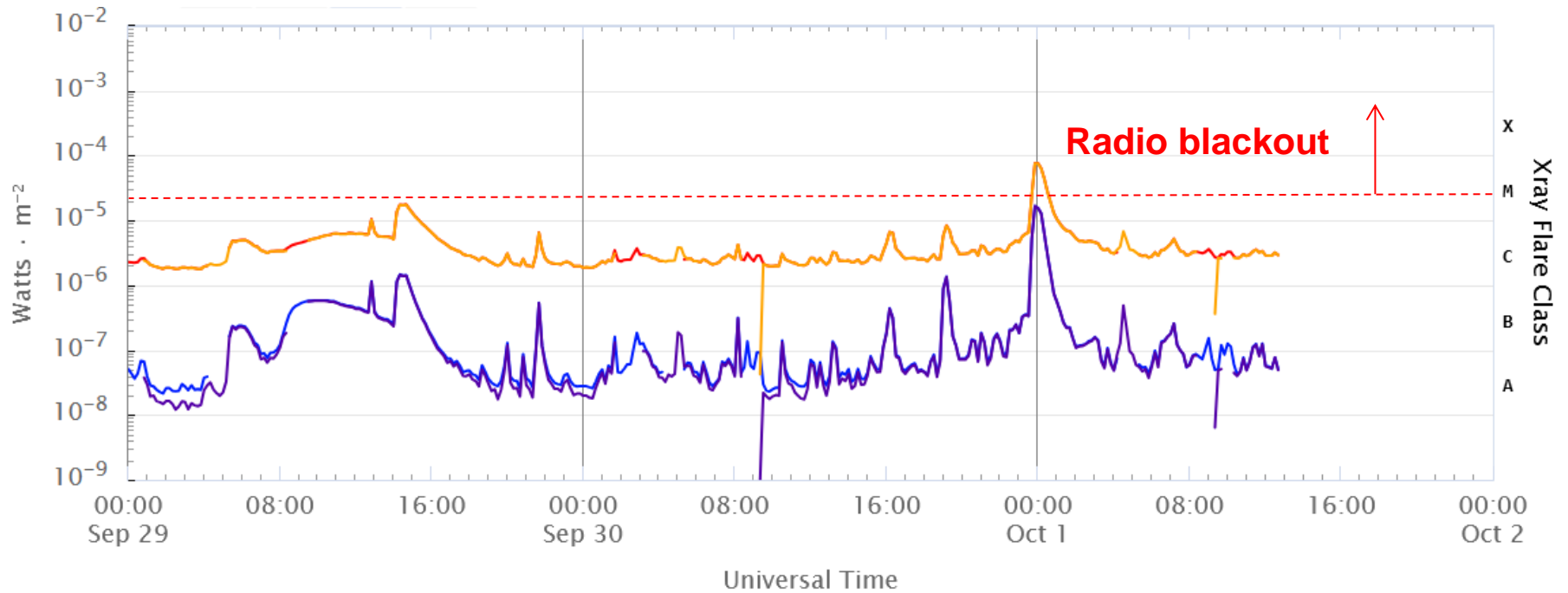
Magnetogram Image (Updated September 3, 2024)

Uses Zeeman effect to measure polarity of magnetic fields

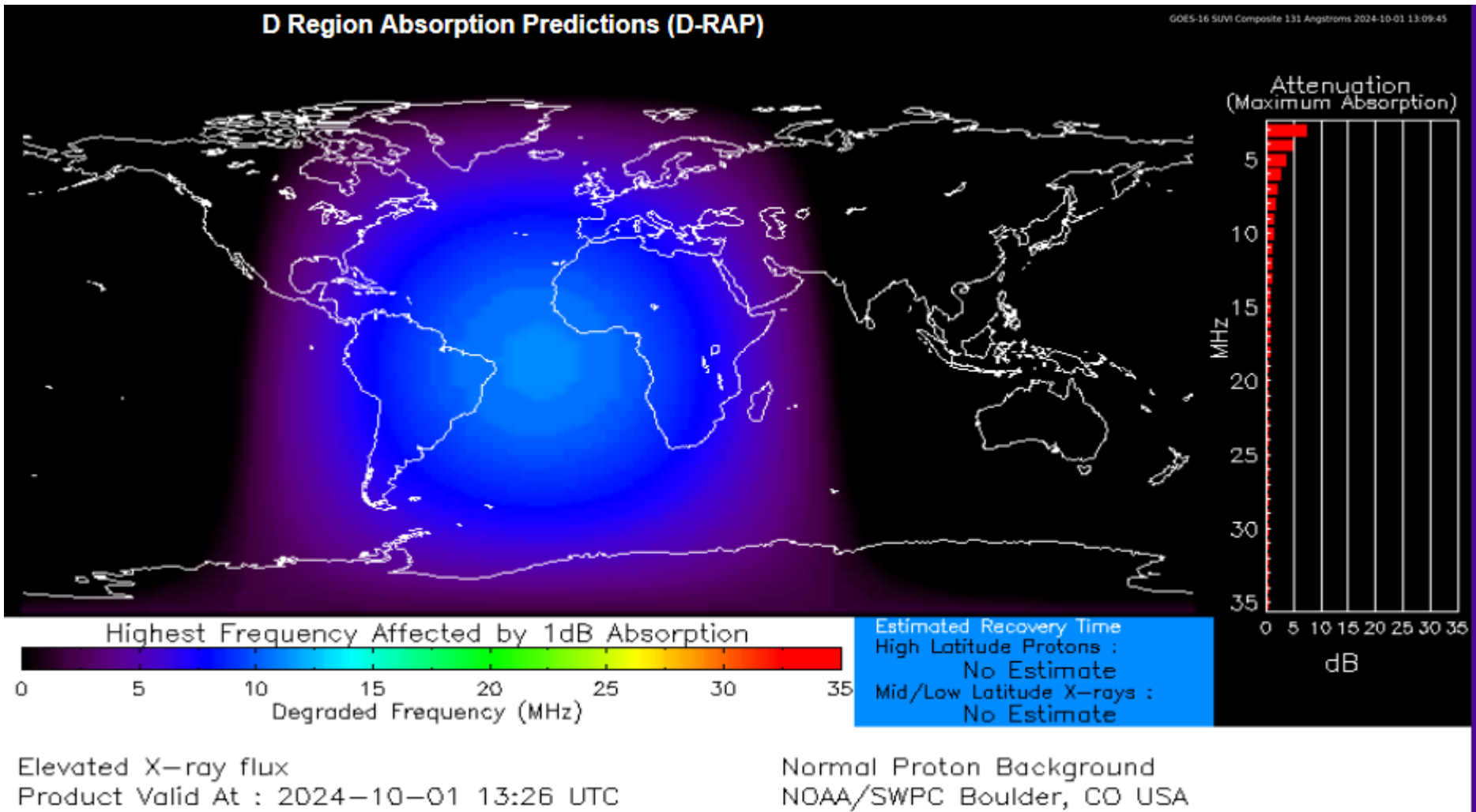


Beta-Gamma-Delta

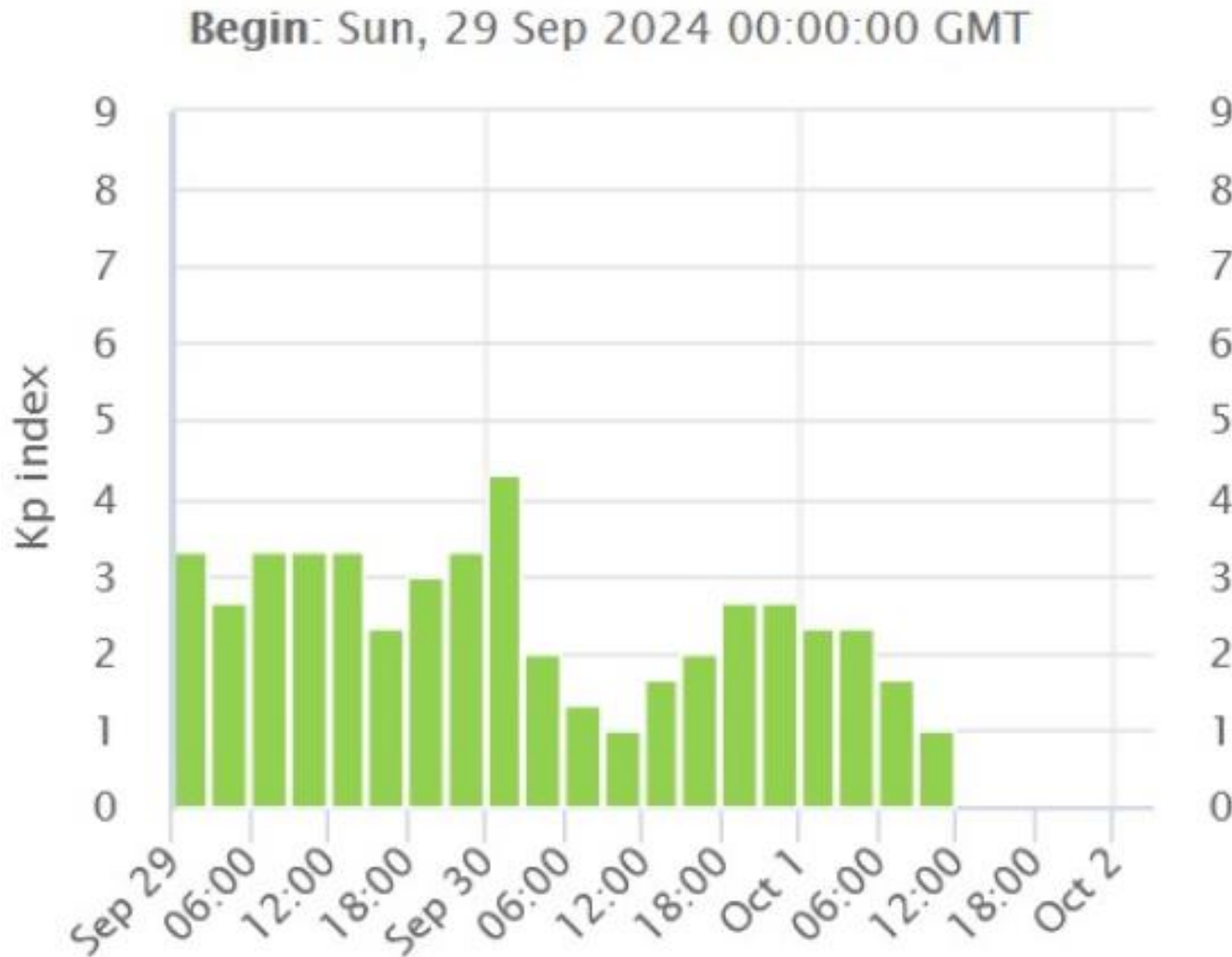
Solar X-Ray Flux: 29 SEP – 1 OCT 2024



NOAA – D-Region Absorption Predictions



Earth's Geomagnetic Activity



Geomagnetic Conditions: 1 OCT 2024

Solar wind:

$B_z = 2 \text{ nT}$

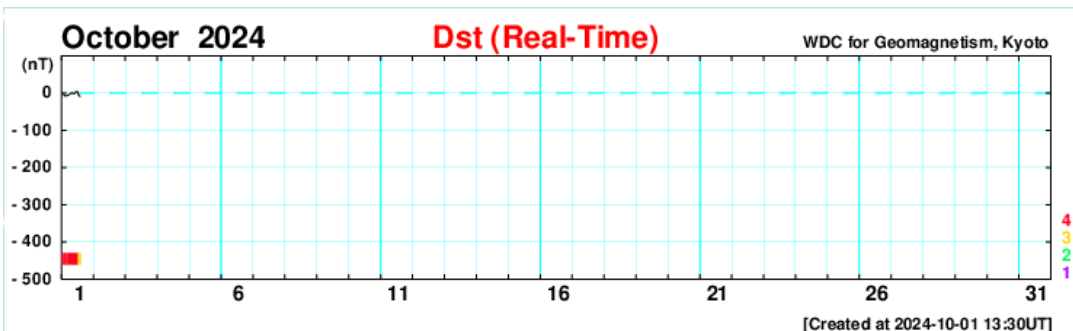
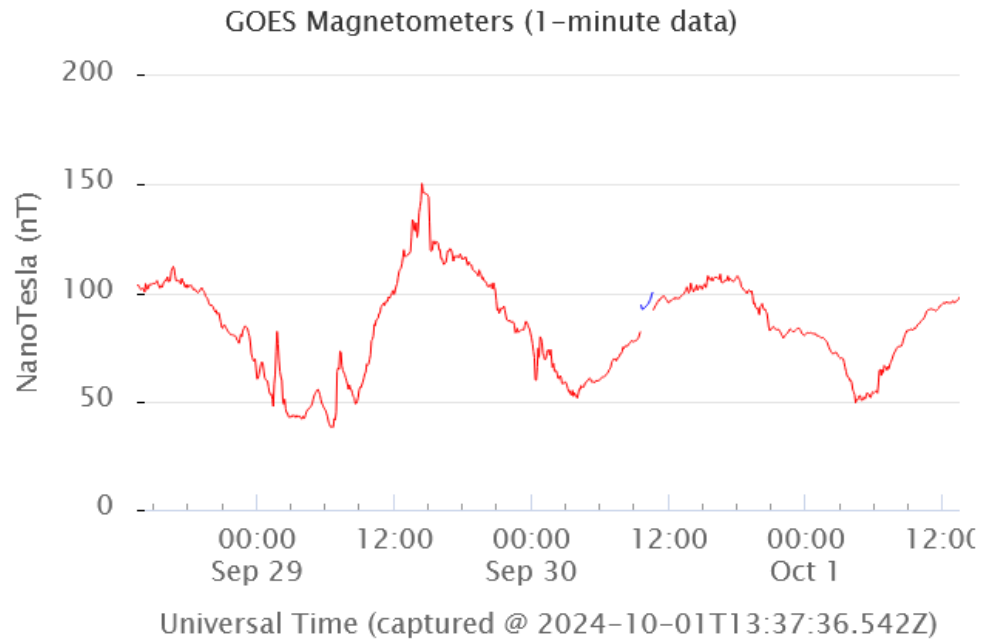
speed = 407 km/sec

density = 1.12 protons/cm³

(From – NOAA DSCOVR
In L1, Lagrange Point)

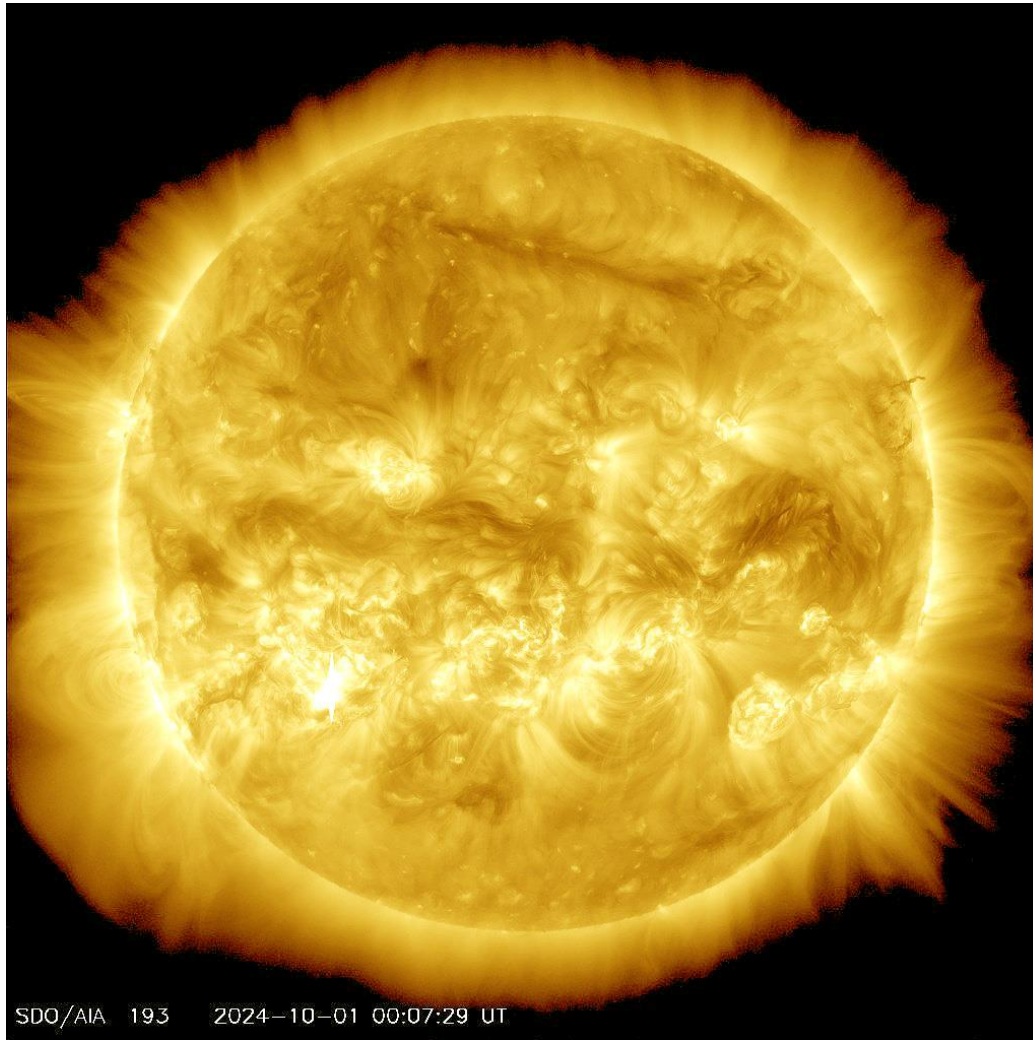
Dst = -1 nT (Ring Field)

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



From – GOES 16
In geostationary orbit

Coronal Holes – 1 OCT 2024



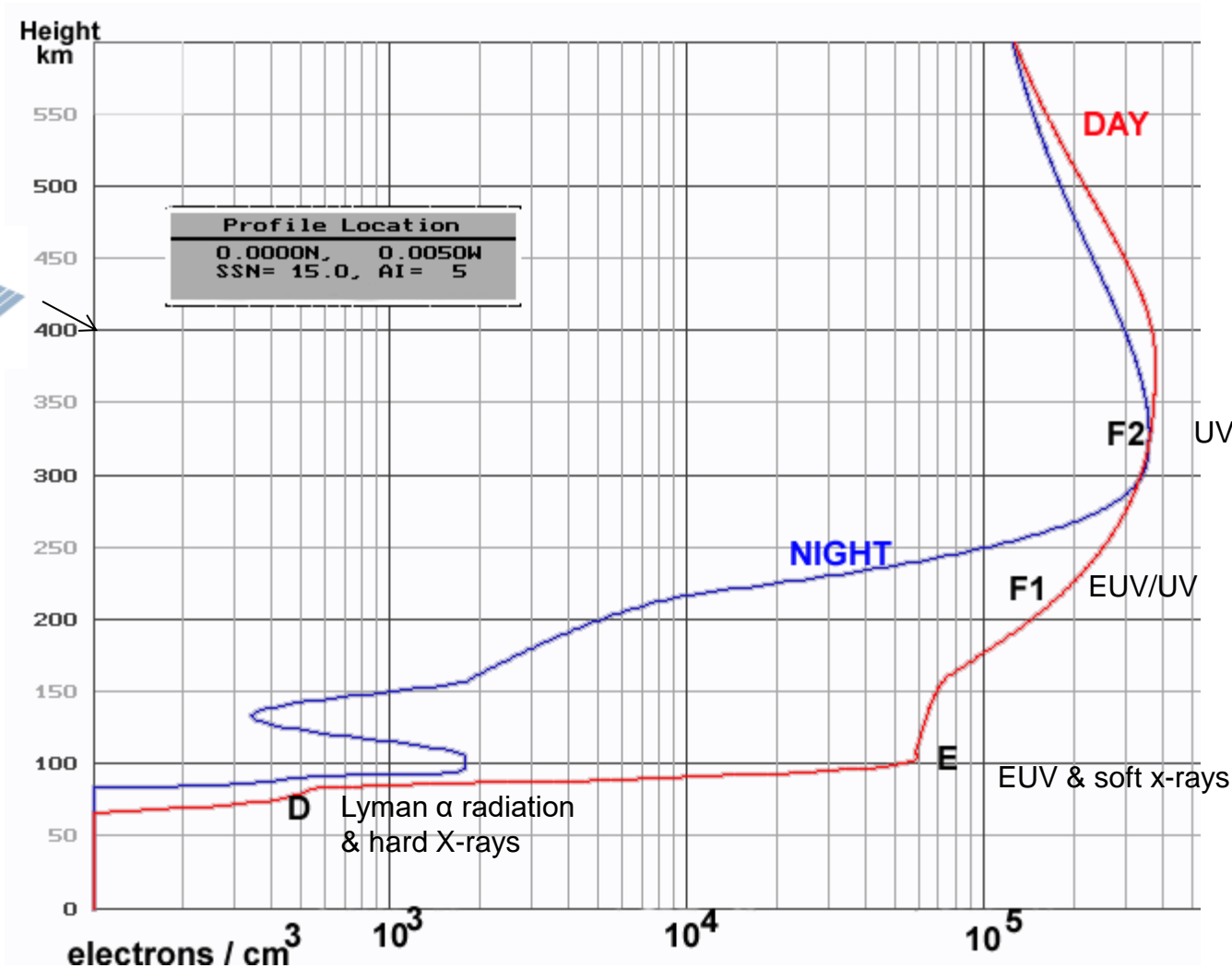
Analysis

There are currently no large coronal holes facing Earth.

Ionosphere Creation



Gravity
↓



Solar Radiation
↓

UV
Monoatomic oxygen

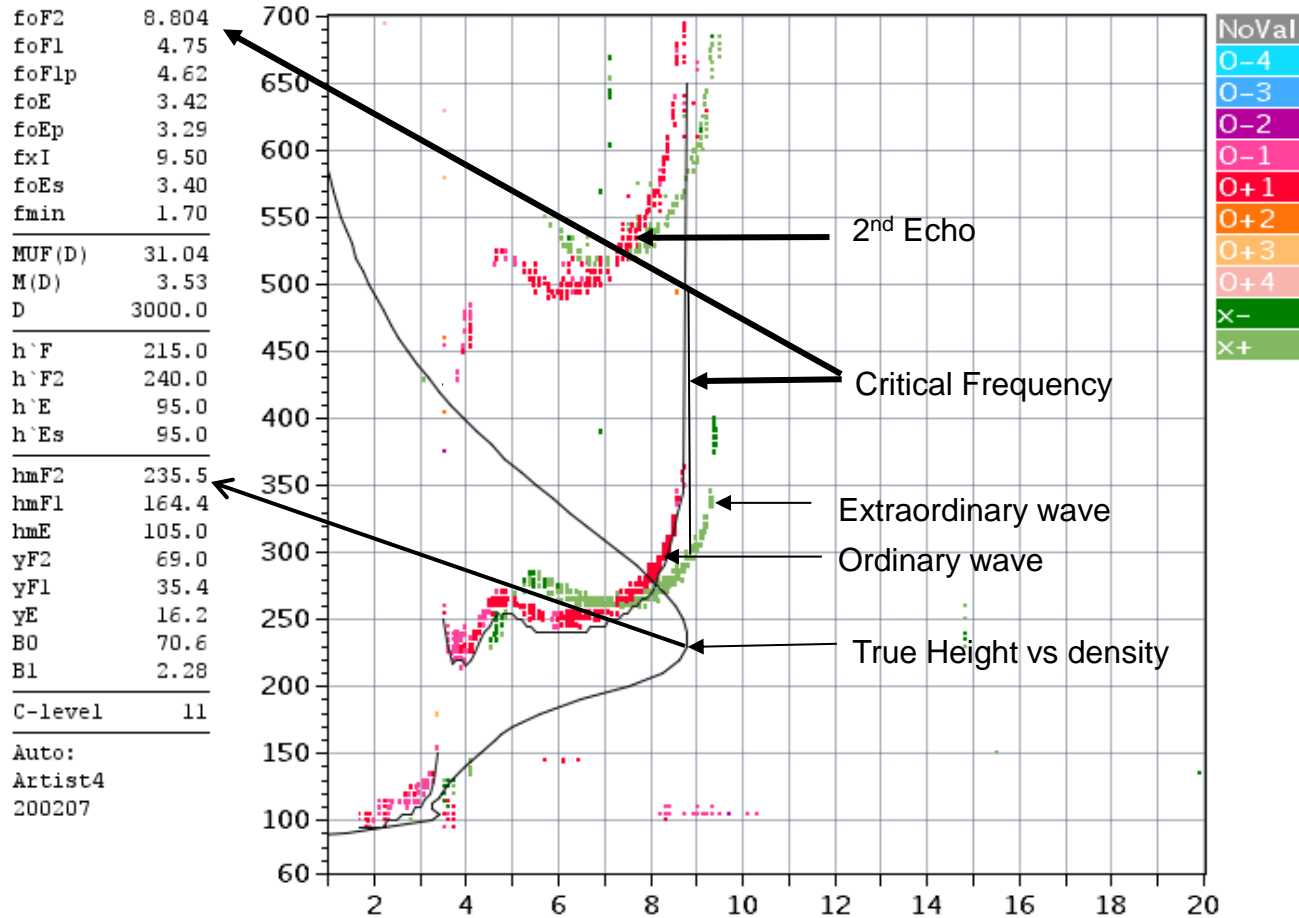
F1 EUV/UV

E EUV & soft x-rays

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 – 1 OCT (0841 CDT)



Statio YYYY DAY DDD HHMMSS P1 FFS S AXN PPS IGA PS
 Austin 2024 Oct01 275 133505 MMM 1 045 100 33+ AI

foF2 9.800
 foF1 N/A
 foF1p N/A
 foE 2.42
 foEp 2.51
 fxI 10.60
 foEs 2.40
 fmin 1.00

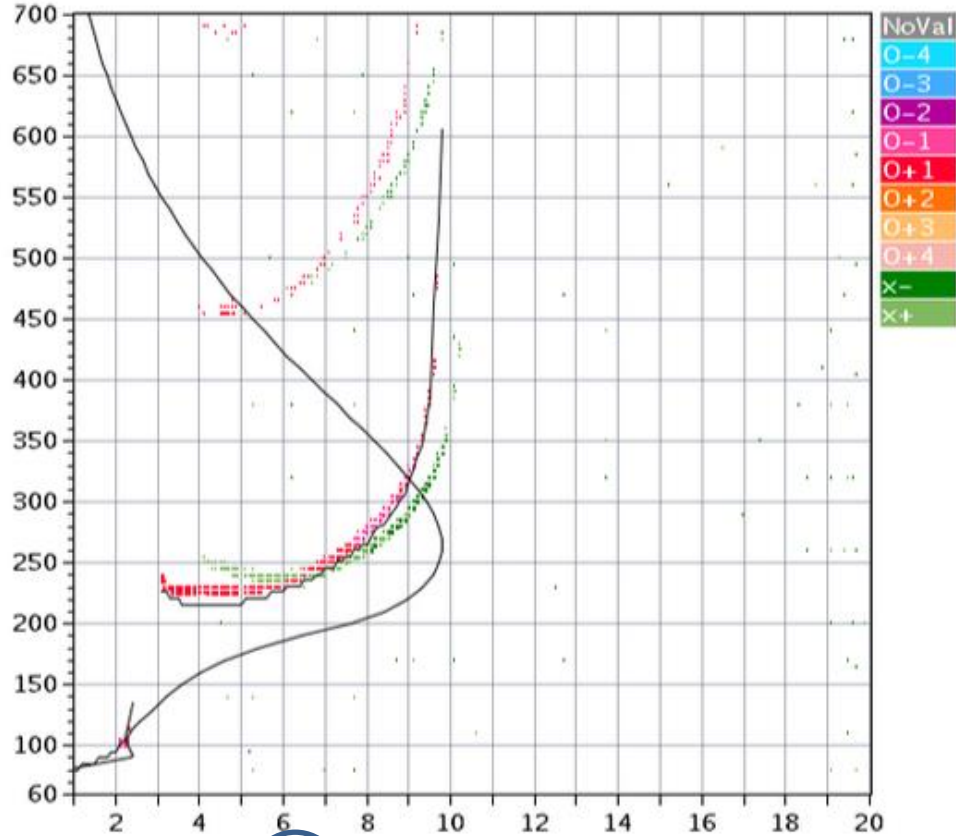
MUF(D) 32.16
 M(D) 3.28
 D 3000.0

h'F 216.0
 h'F2 N/A
 h'E 85.0
 h'Es 85.0

hmF2 263.1
 hmF1 N/A
 hmE 92.6
 yF2 99.7
 yF1 N/A
 yE 13.2
 B0 77.9
 B1 6.00

C-level 11

Auto:
 Artist4.5
 200311



D 100 200 400 600 800 1000 1500 3000 [km]
 MUF 10.4 10.5 11.0 11.8 13.0 14.7 19.6 32.2 [MHz]

AV920_2024275133505.MMM / 190Ez120h 100 hMm 5.0 km / D3S-256 AV930 130 / 30.4 N 262.3 E

Ion2Png v. 1.0.11

Notable Recent Events

CME Impact / Severe Storm Observed

September 16, 2024 @ 23:10 UTC (UPDATED)

A little later and slower than expected, the CME associated with the X4.5 solar flare on Saturday **passed the ACE spacecraft** at 22:49 UTC (Sept 16). Solar wind speed initially looks to have increased to above 500 km/s. A passage past Earth is expected within the hour. Great timing for aurora sky watchers across Europe and North America. Let us just hope that the Bz/IMF component cooperates. Stay tuned for updates.

CME Impact: Magnetometers **detected** a geomagnetic sudden impulsive measuring 39 nT around 23:30 UTC (Sept 16). This is the moment that the X4.5/CME passed Earth.

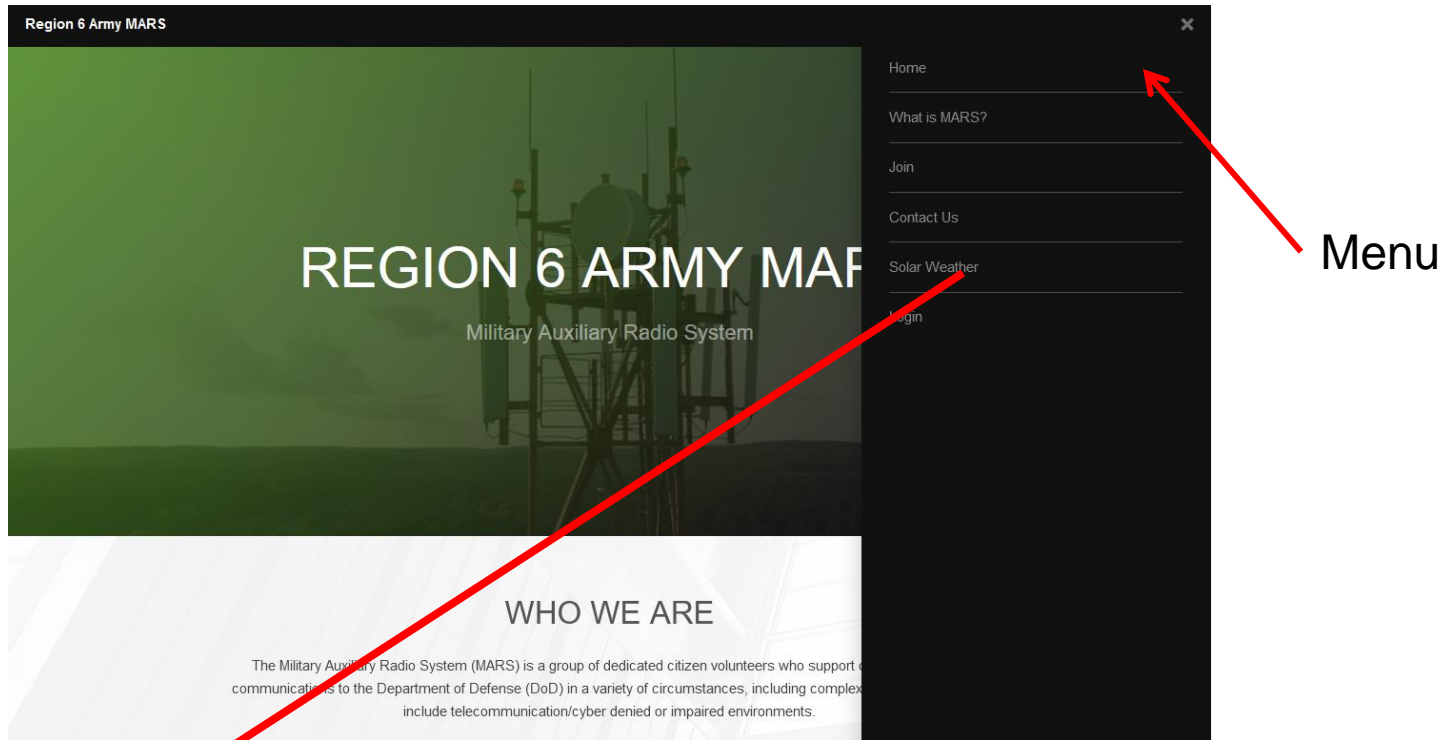
Severe (G4) geomagnetic storming was observed. Despite the full moon, vivid displays of aurora have been reported across many locations. Below is photo of myself with an excellent display captured around 03:00 UTC (Sept 17) from near Cornwall, Ontario. Sky watchers at middle to high latitudes should remain alert tonight.



ALERT: Geomagnetic K-index of 8, 9-
Threshold Reached: 2024 Sep 17 0257 UTC
Synoptic Period: 0000-0300 UTC
Active Warning: Yes
NOAA Scale: G4 - Severe

SUMMARY: Geomagnetic Sudden Impulse
Observed: 2024 Sep 16 2329 UTC
Deviation: 39 nT
Station: BOU

Solar Weather Data



Solar Weather

Other Solar Weather Links of Interest

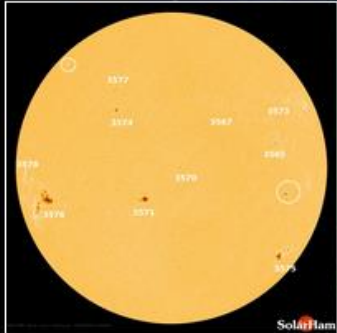
All Ionosondes

- • [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.

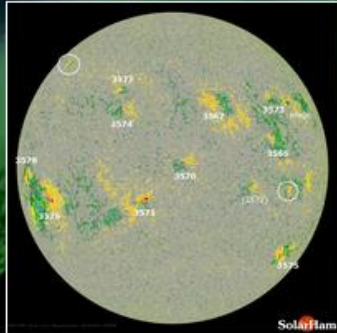
Space Weather for February 6, 2024

[Help Center + FAQ](#)

UTC Time 13:45:49 Tuesday



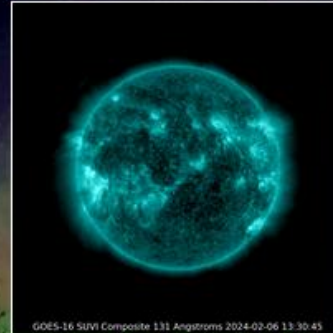
HMI Intensity
Latest | Movie | HARP



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

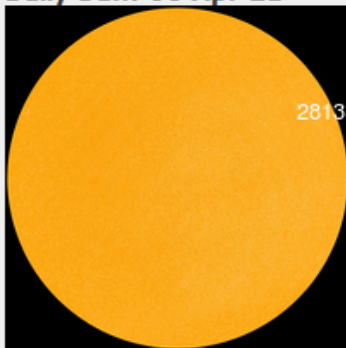
Solar wind

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 a 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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