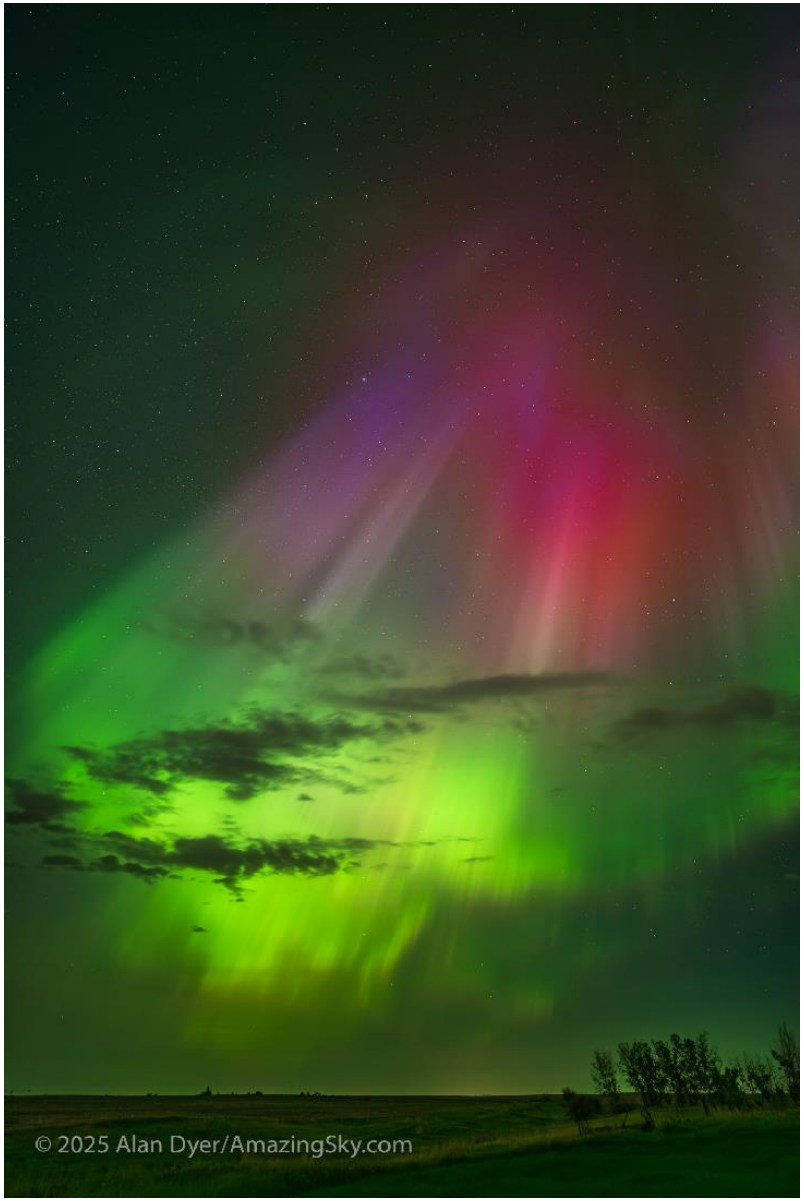
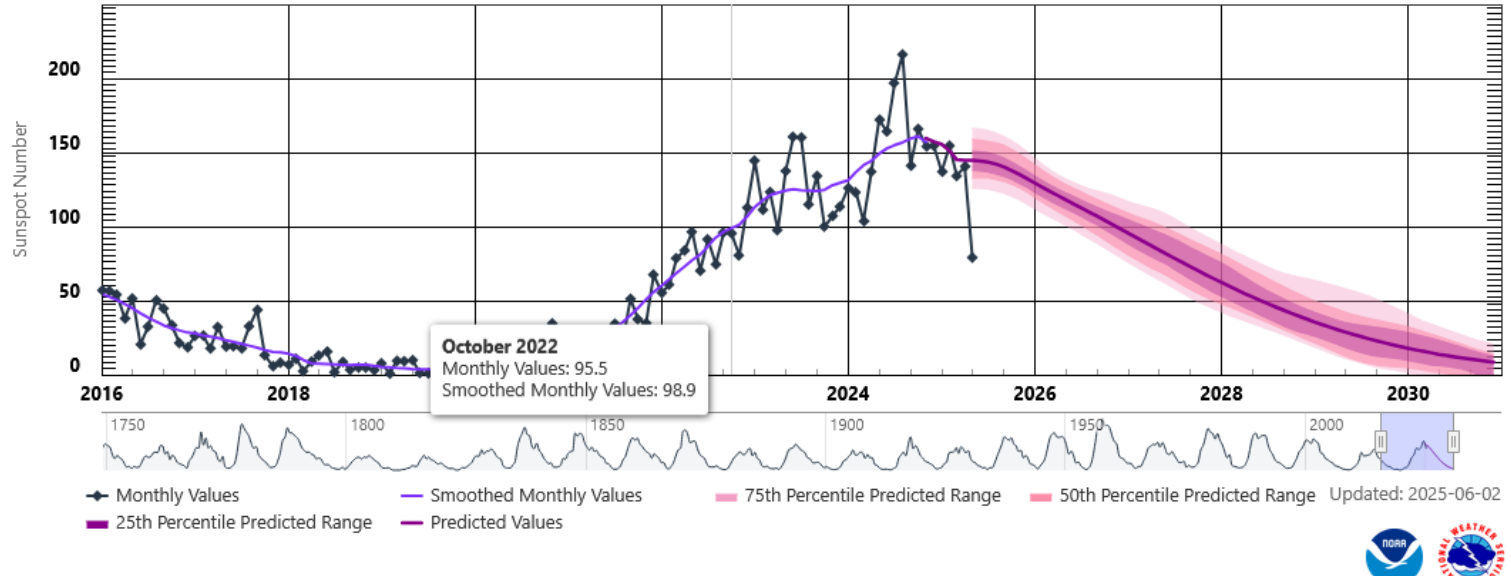


SOLAR WEATHER
3 JUN 2025

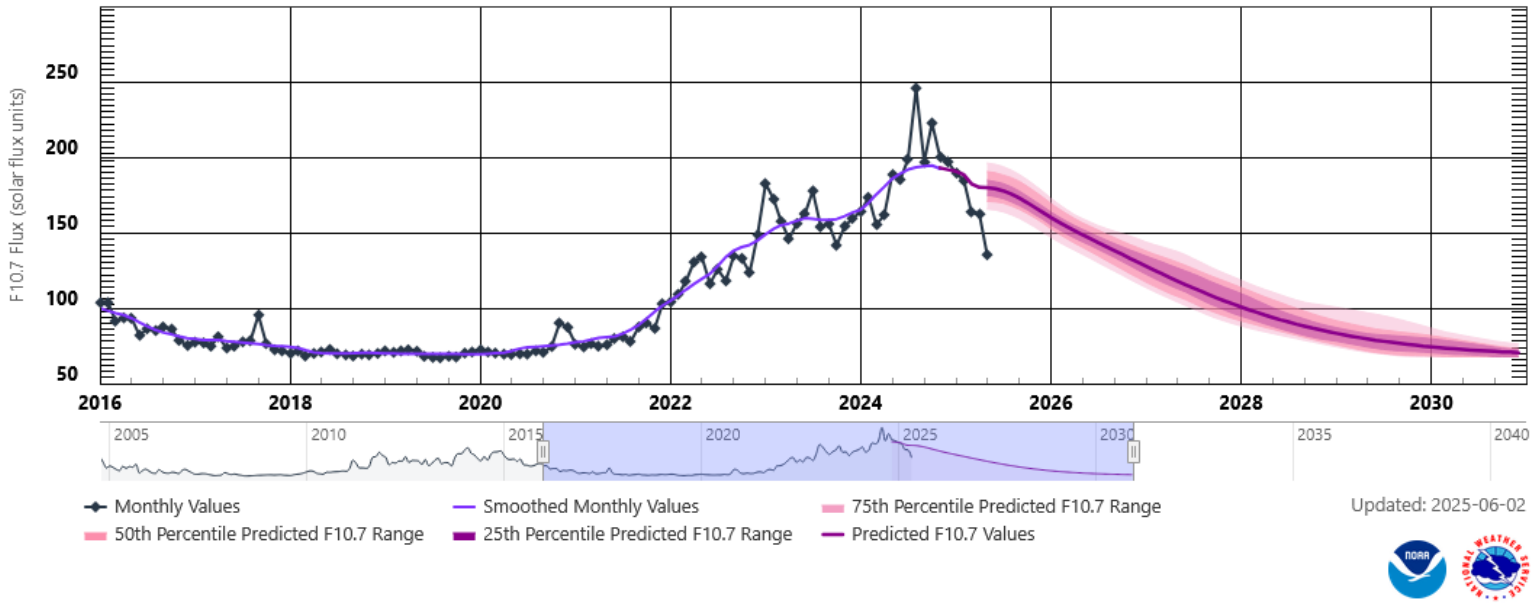
Lewis Thompson
W5IFQ

Taken by Alan Dyer on May 31, 2025 @ near Gleichen, Alberta

Solar Cycle Sunspot Number Progression



Solar Cycle F10.7cm Radio Flux Progression



SolarHam

Indices: (6/3 @ 00:35 UTC) SFI 140 ▼ 10 SSN 103

3 Day Geomagnetic Forecast

June 3	June 4	June 5
6 (G2)	4-5 (G1)	4-5 (G1)

Max Kp

June 3	June 4	June 5
M-Lat 35%	M-Lat 25%	M-Lat 25%
H-Lat 80%	H-Lat 60%	H-Lat 60%

Probabilities

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

Detailed Forecast

Current Moon Phase:

54% Illumination

First Quarter

Flare Events (M2+) Past 48 Hours

M3.3	AR 4100	6/2/25 @ 11:18 UTC

Event Report | Top Solar Flares

Data Archive

Visible Sunspot Regions

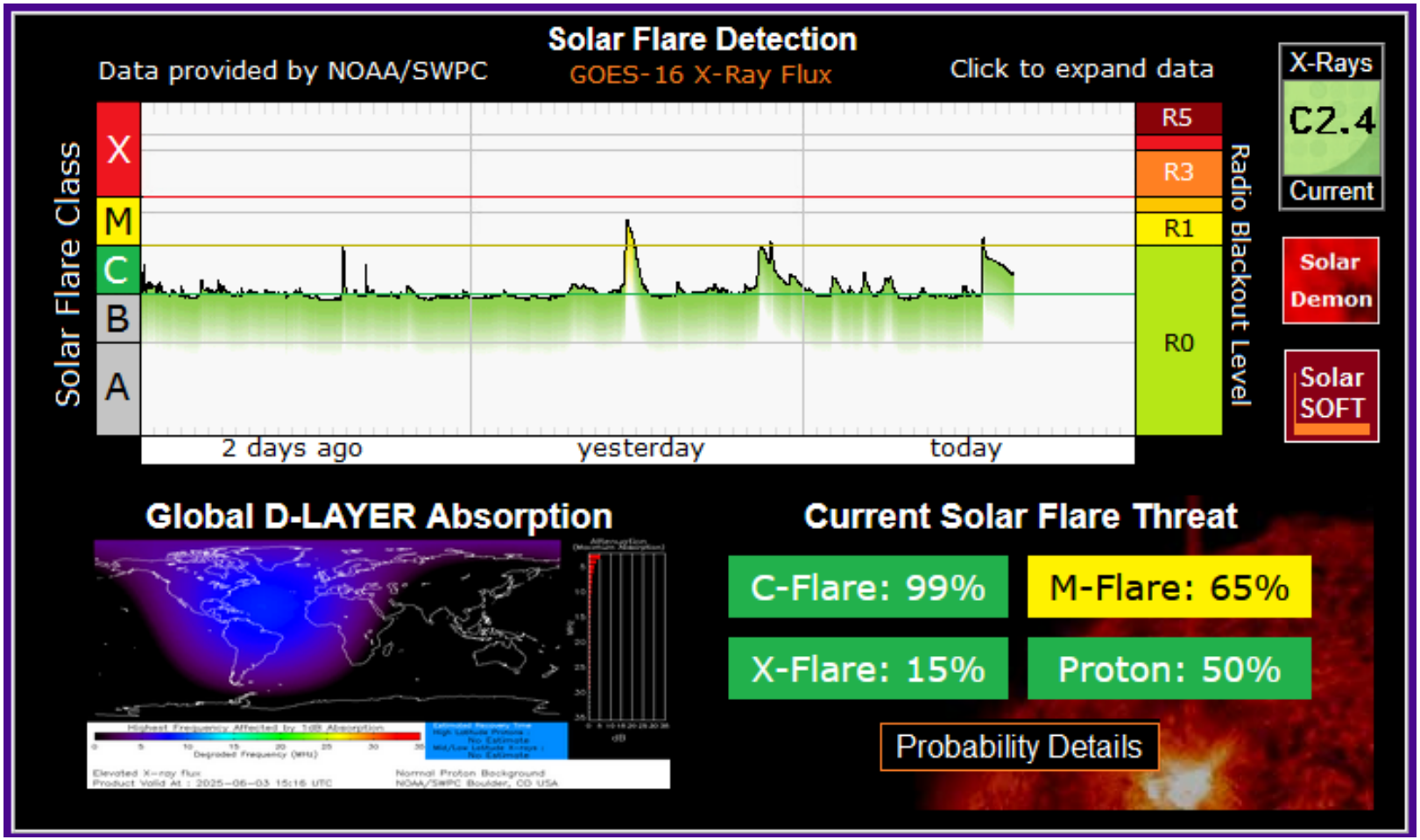
Sunspot Summary | SRS

AR 4104	B	N06E01	Declining
AR 4101	A	N04W45	Declining
AR 4100	BG	N10W28	Declining
AR 4099	B	S14W37	Declining

Updated @ 00:45 UTC (June 3)

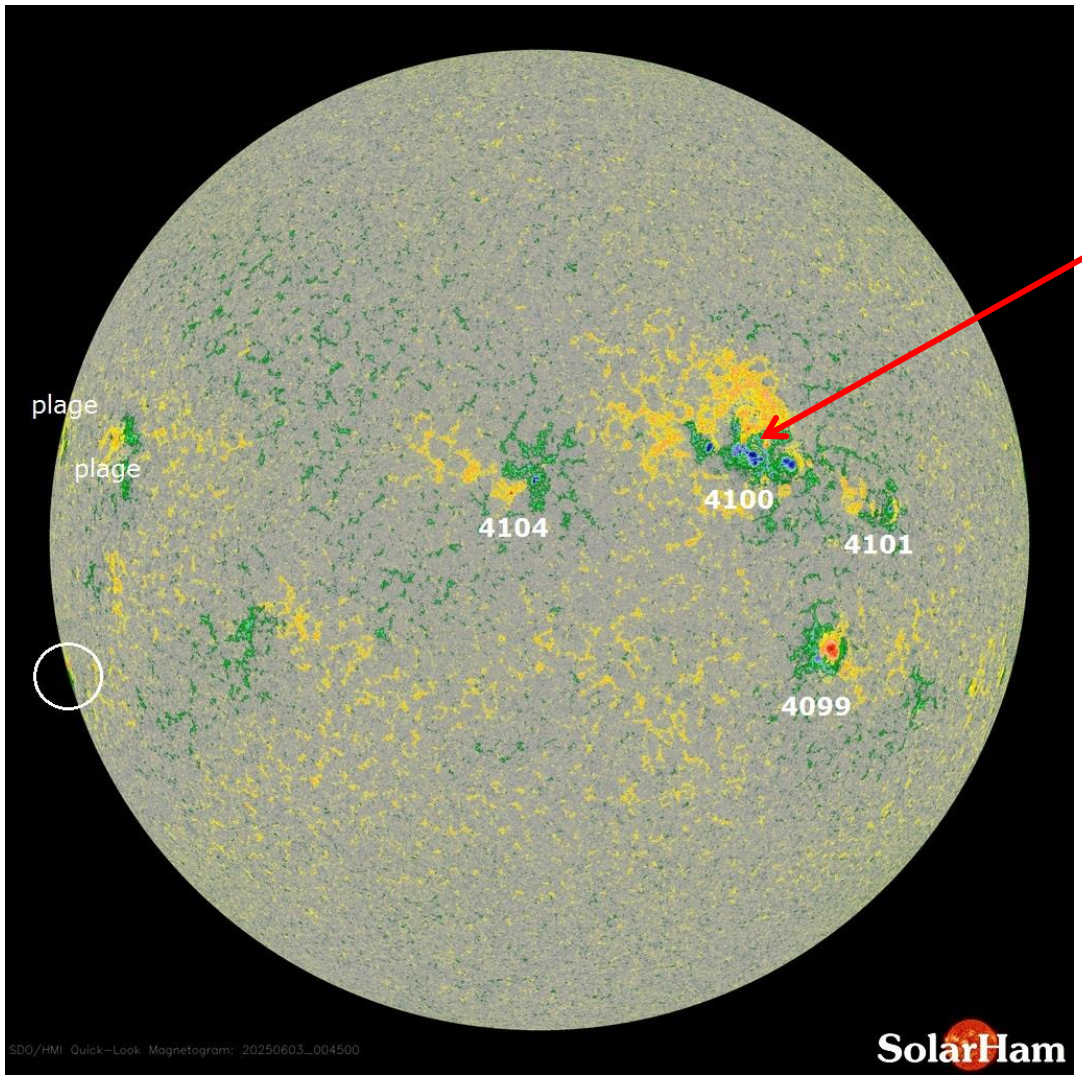
Data Archive

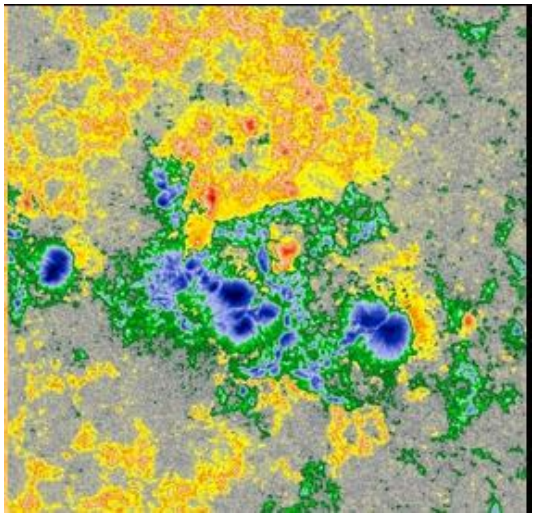
SolarHam


Solar Flare Detection
Data provided by NOAA/SWPC
GOES-16 X-Ray Flux
Click to expand data
Solar Flare Class
X
M
C
B
A
2 days ago
yesterday
today
R5
R3
R1
R0
Radio Blackout Level
X-Rays
C2.4
Current
Solar Demon
Solar SOFT
Global D-LAYER Absorption
Current Solar Flare Threat
C-Flare: 99%
M-Flare: 65%
X-Flare: 15%
Proton: 50%
Probability Details

Sun Spots

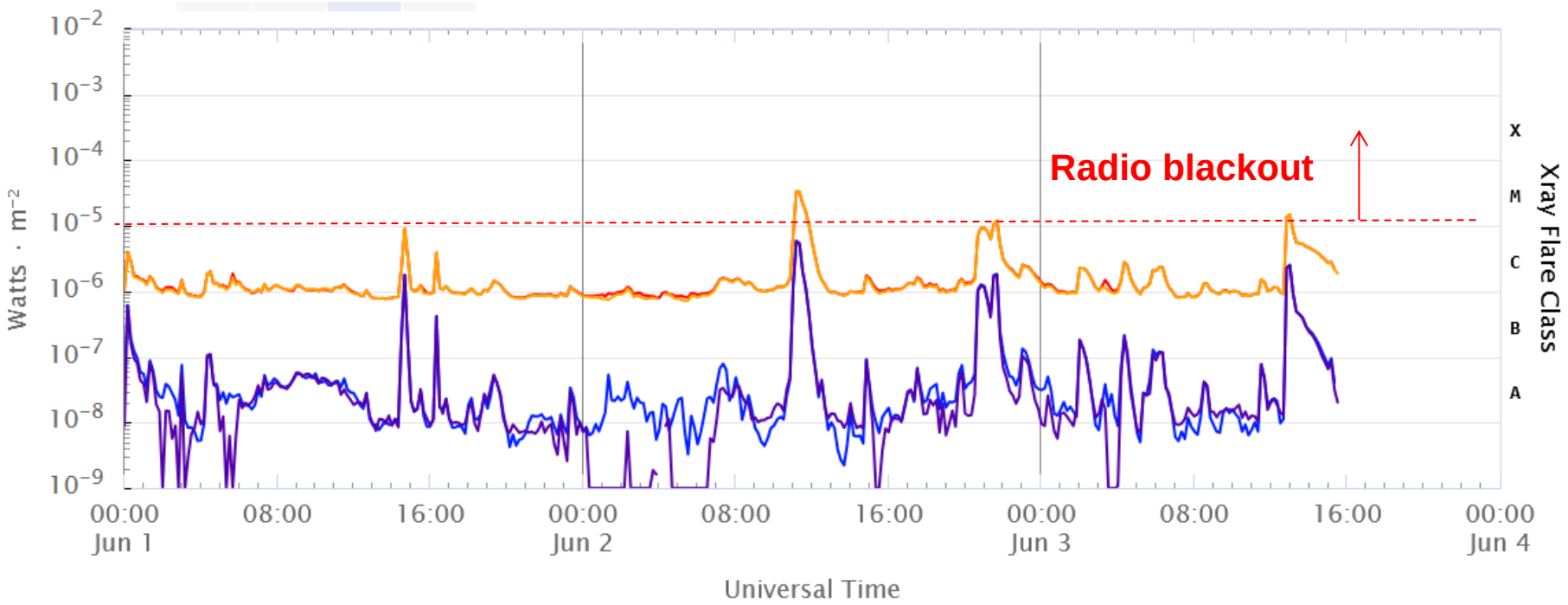
Magnetogram Image (Updated June 3, 2025)



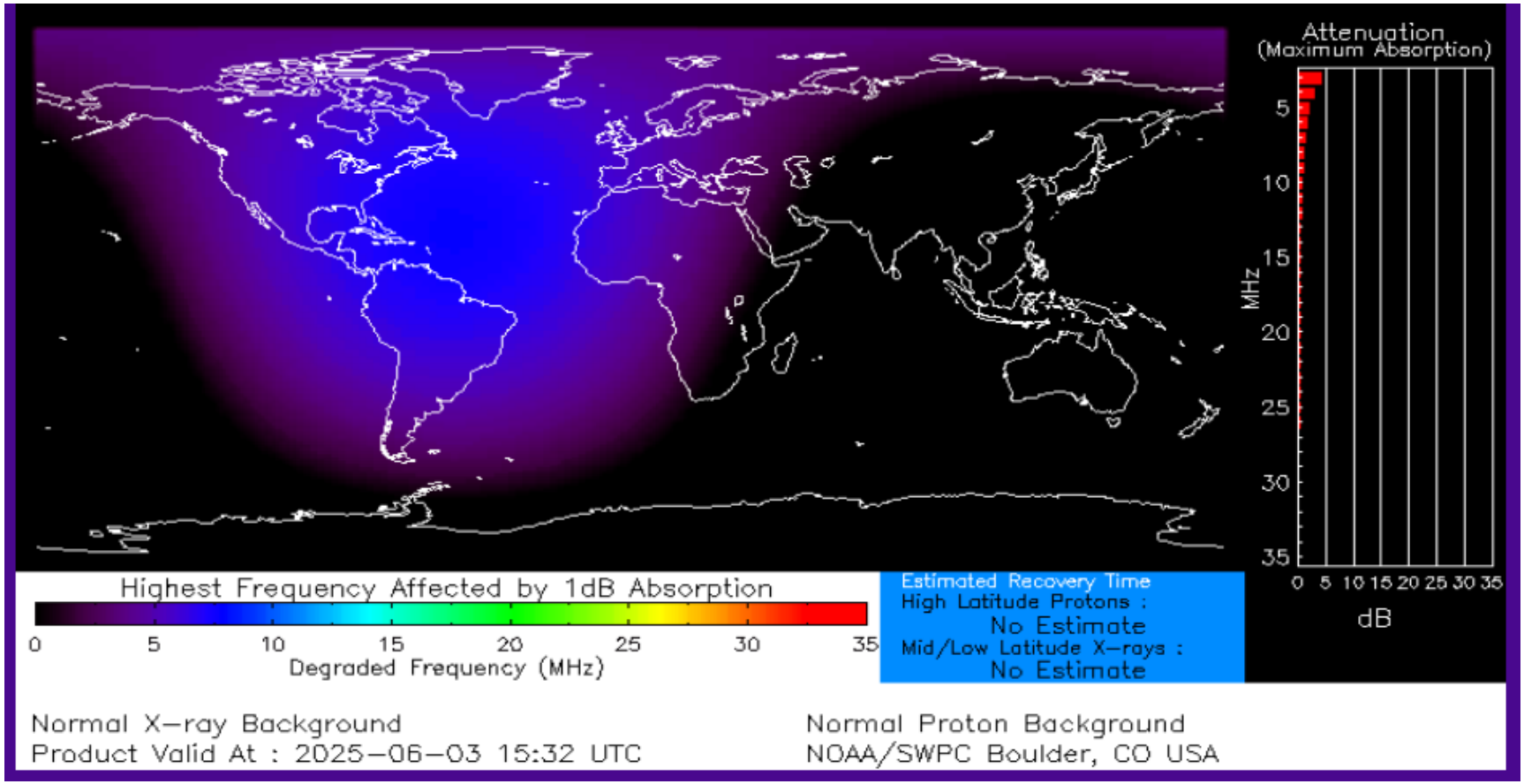


4100
Beta-Gamma

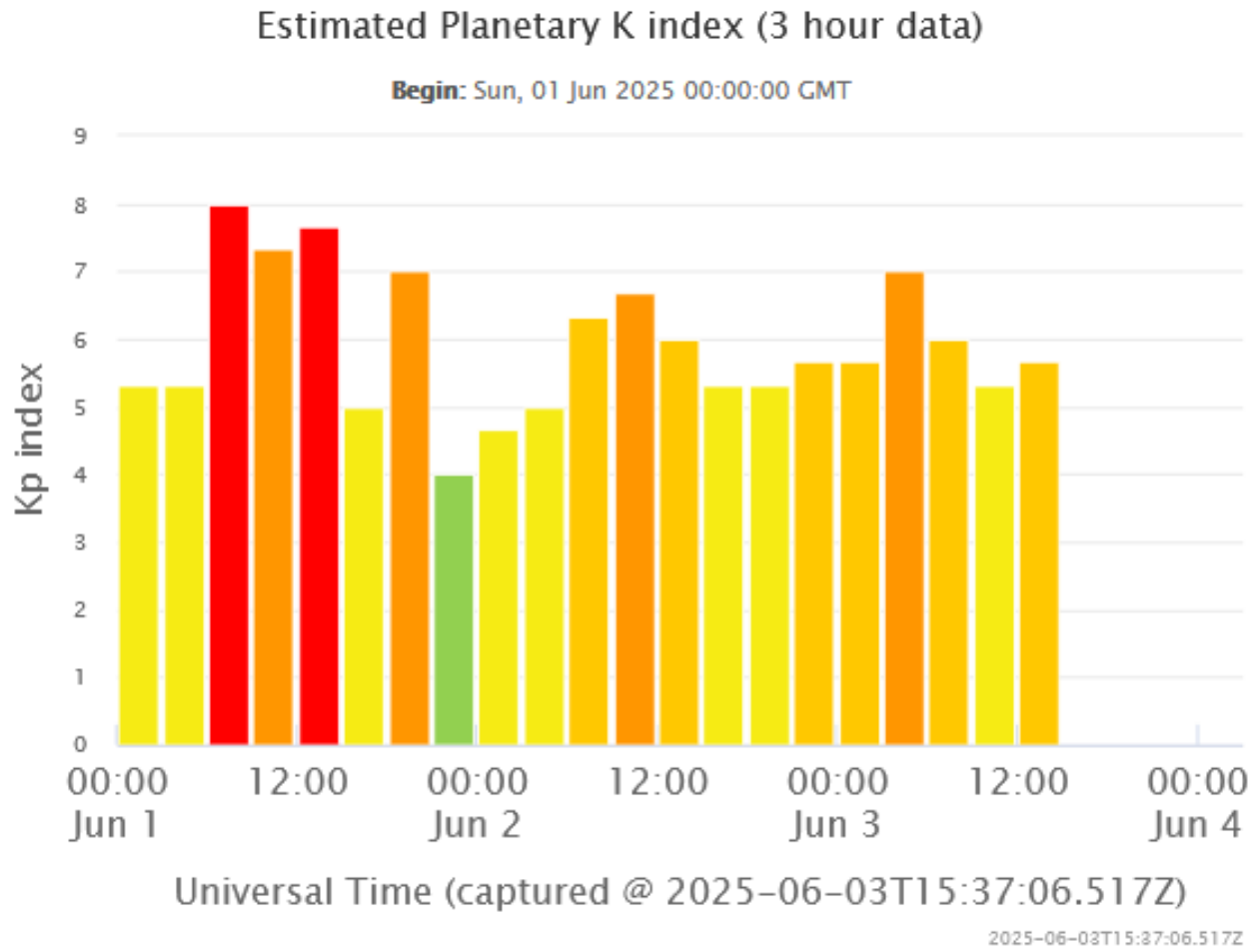
Solar X-Ray Flux: 1 – 3 JUN 2025



NOAA – D-Region Absorption Predictions



Earth’s Geomagnetic Activity



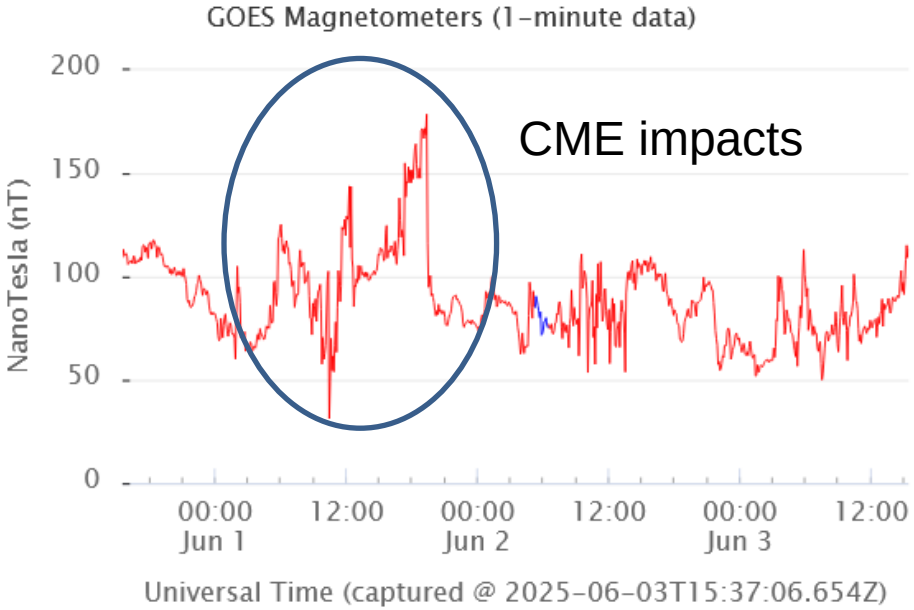
Geomagnetic Conditions: 3 JUN 2025

Solar wind:
Bz = -2 nT
speed = 587 km/sec
density = 1.87 protons/cm^3

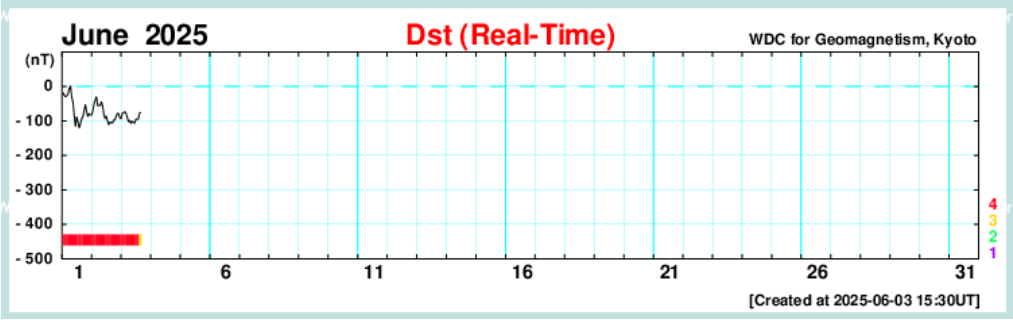
(From – NOAA DSCOVR
In L1, Lagrange Point)

Dst = -75 nT (Ring Field)

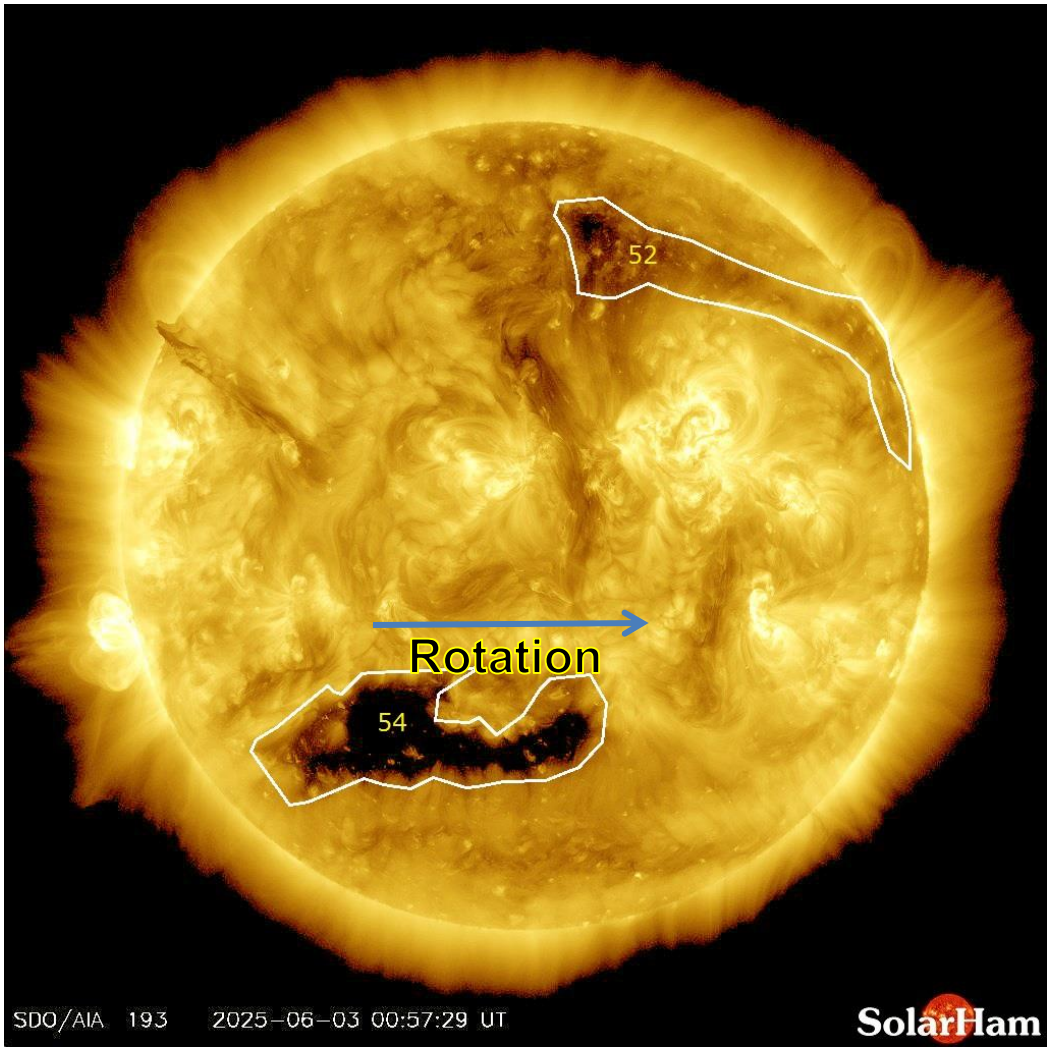
(From – Data Analysis Center
For Geomagnetics and Space
Magnetism – Kyoto University)



From – GOES 16
In geostationary orbit



Coronal Holes – 3 JUN 2025

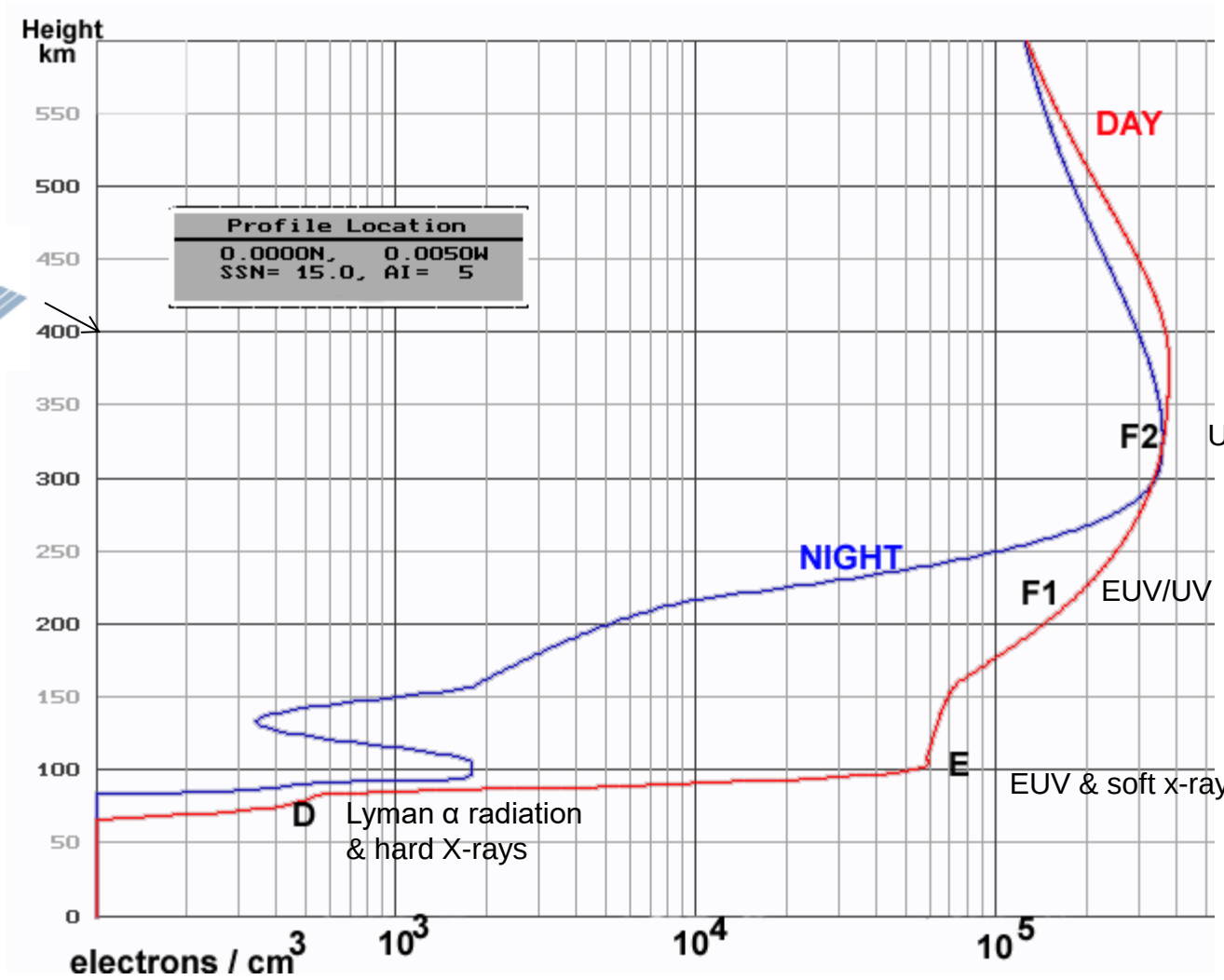


Analysis

Coronal hole #54 is now beginning to partially face Earth.

Ionosphere Creation

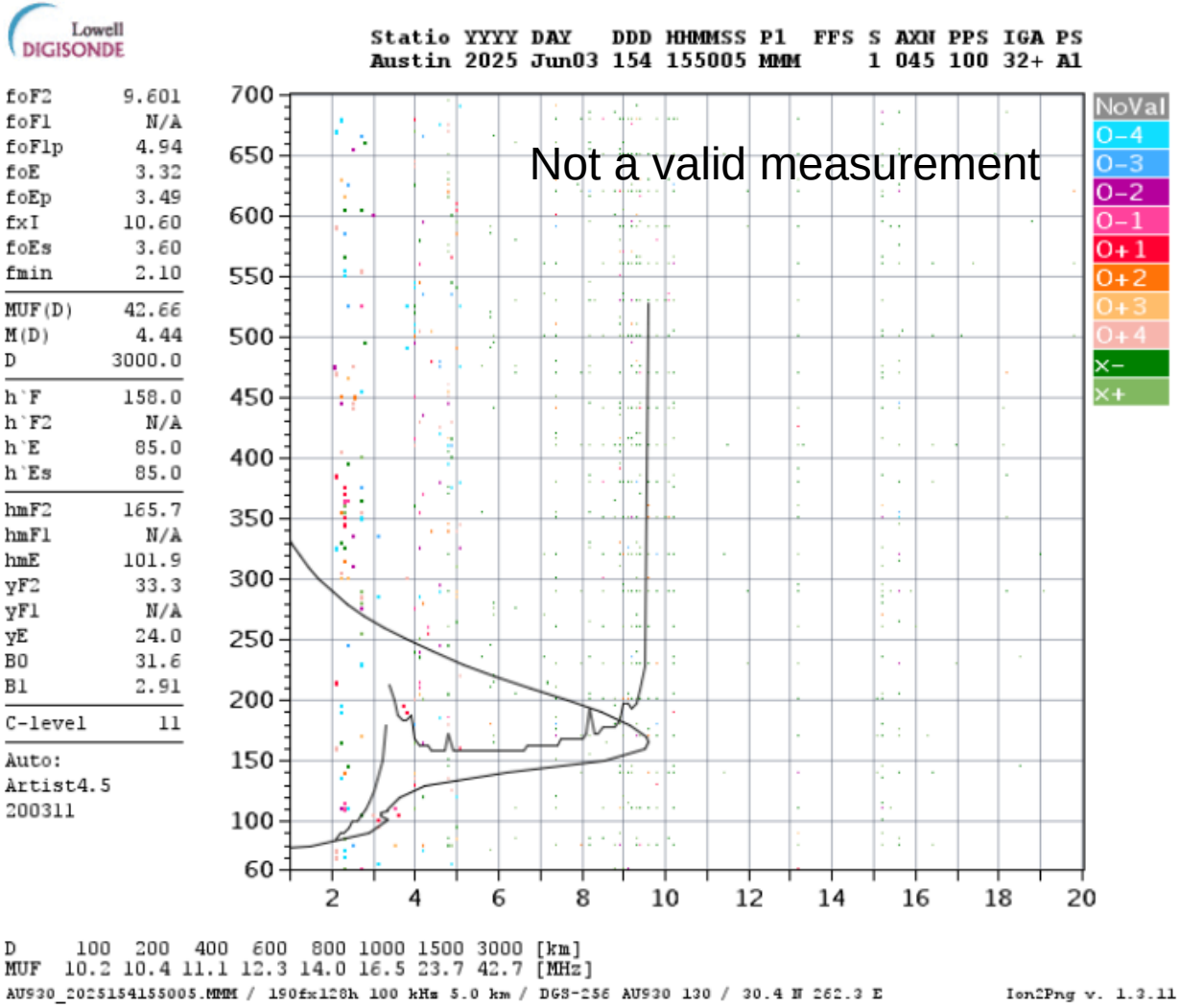
Gravity



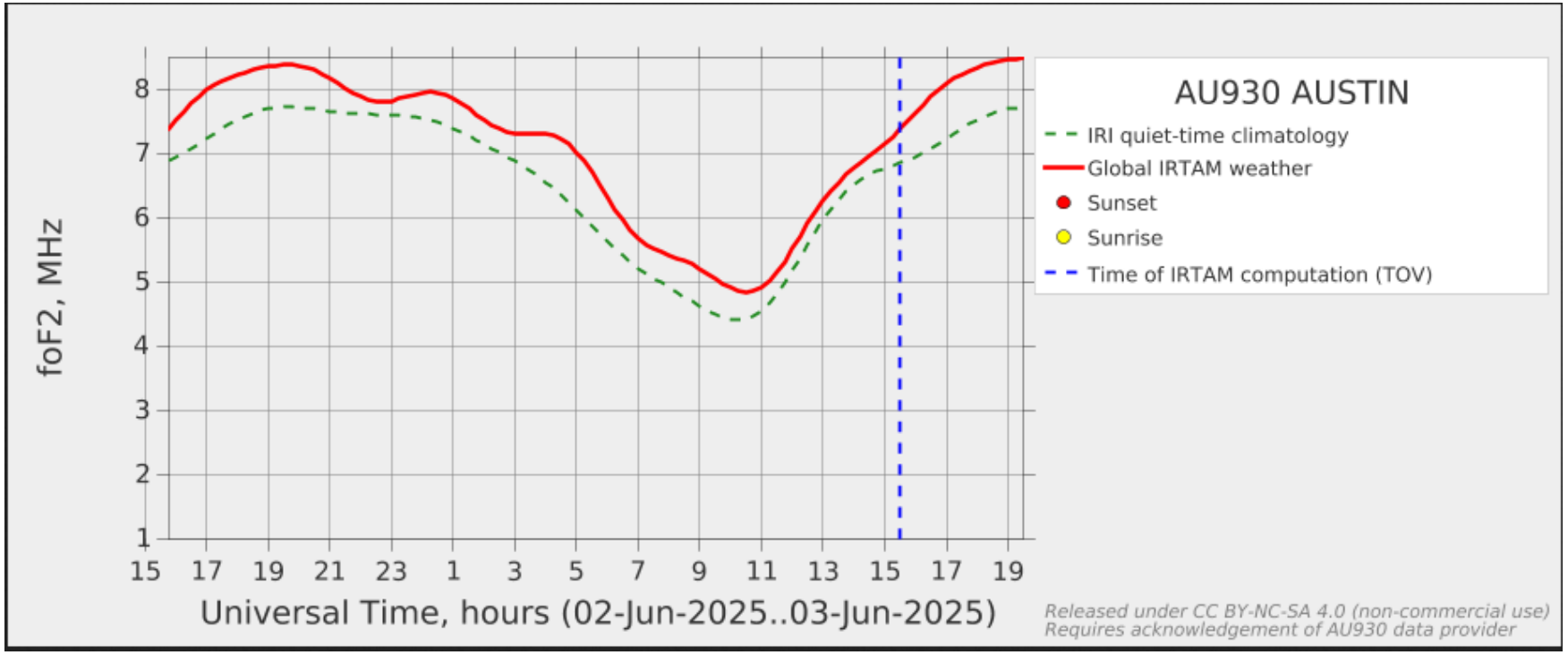
Solar Radiation

Monoatomic oxygen

Austin Ionosonde – 10:50 CDT



GAMBIT – Trending Chart for Austin Ionosonde



For 0800 (1300Z) MARS HF net, Critical Frequency was about 5 MHz Using Radio Checks.

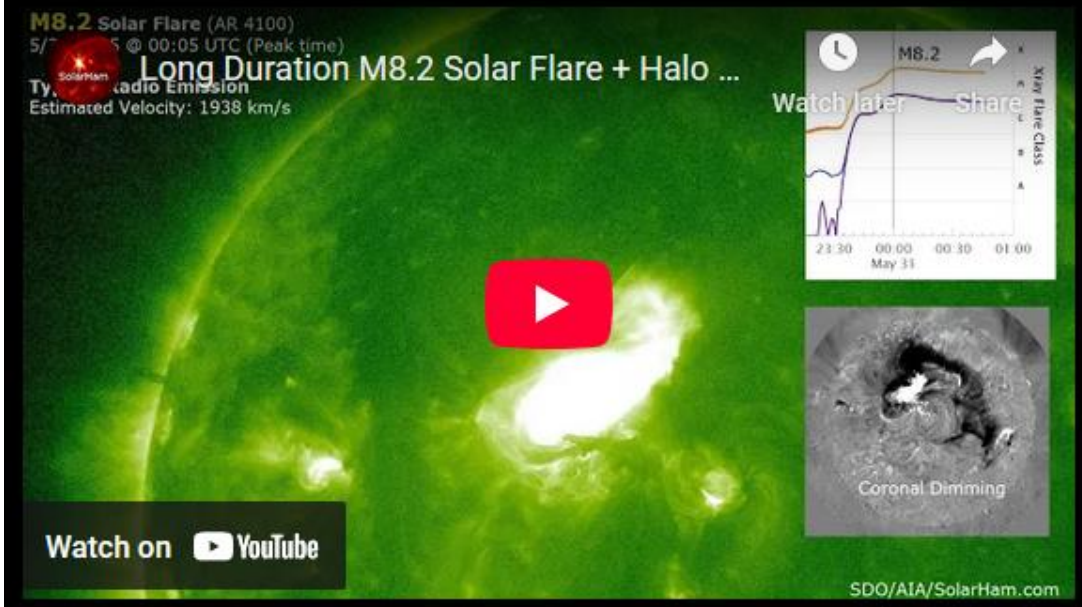
Notable Recent Events
1 JUNE CME's

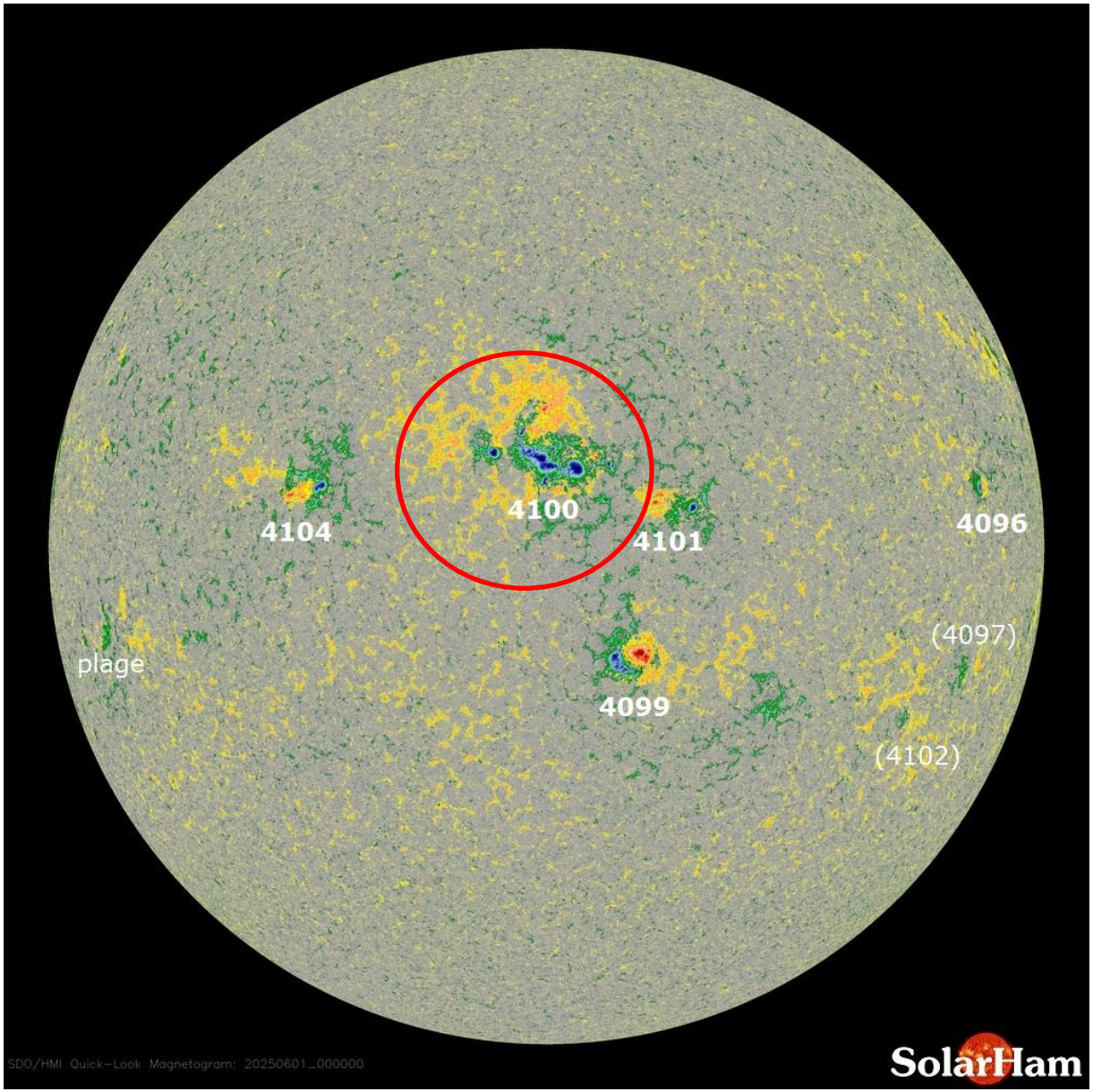
Earth Facing Long Duration Eruption (M8.2)

May 31, 2025 @ 00:15 UTC (UPDATED)

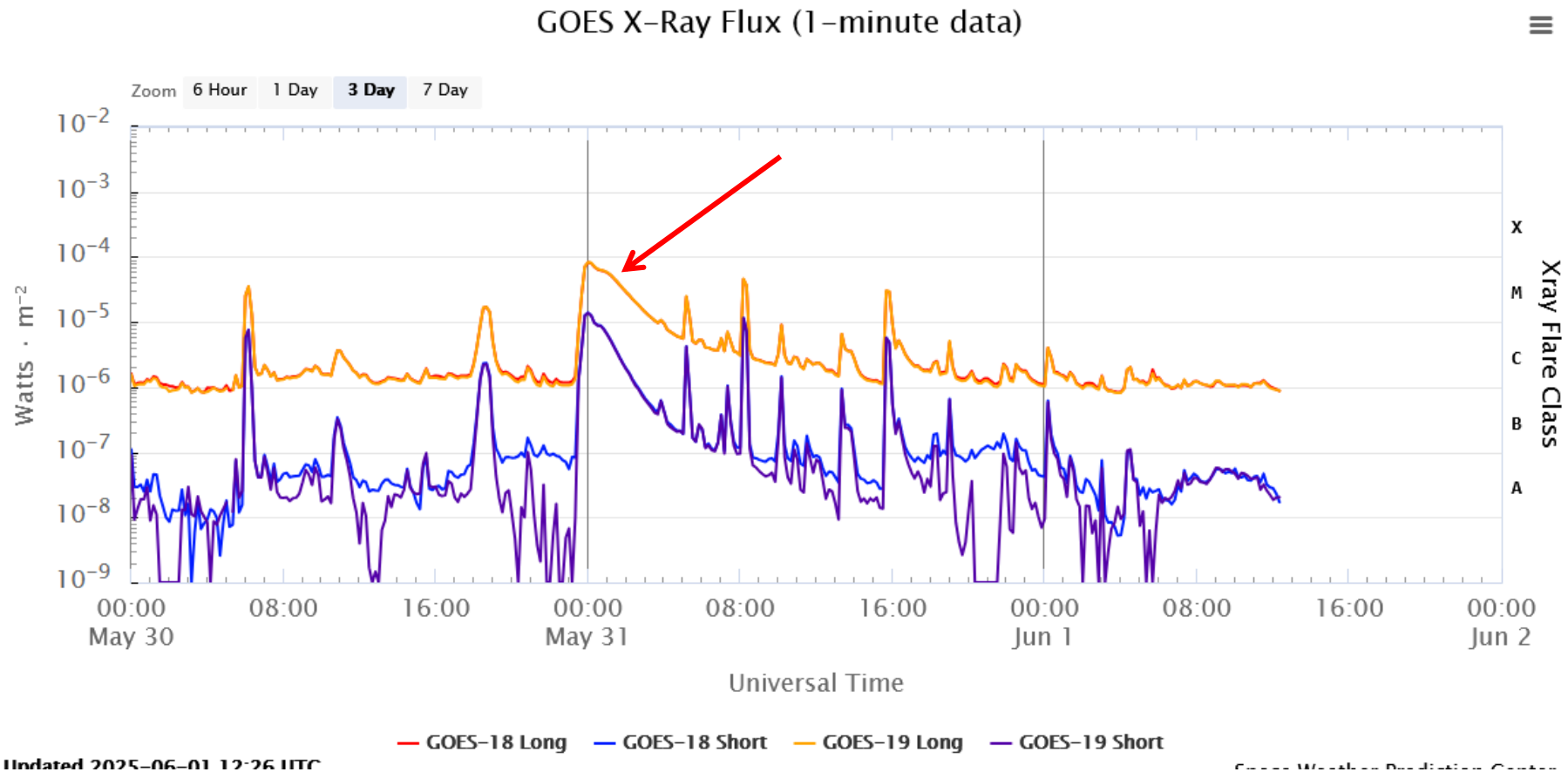
A long duration M8.2 solar flare and eruption was detected around AR 4100 nearing center disk peaking at 00:05 UTC (May 31). This event is associated with a Type II radio emission with an estimated velocity of 1938 km/s, along with a 10cm radio burst (TenFlare) measuring 1100 solar flux units (SFU) and lasting over 100 minutes. A full halo coronal mass ejection (CME) is associated with this event and I would expect a passage past Earth within 48-72 hours. Further updates will be provided via SolarHam.com once additional data and information becomes available.

ALERT: Type II Radio Emission
Begin Time: 2025 May 30 2353 UTC
Estimated Velocity: 1938 km/s

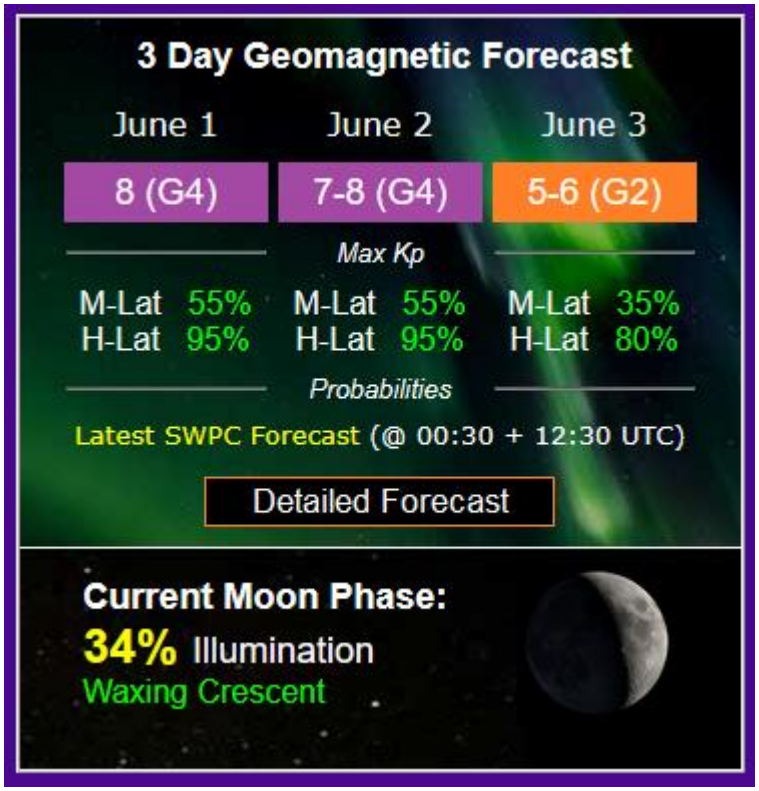


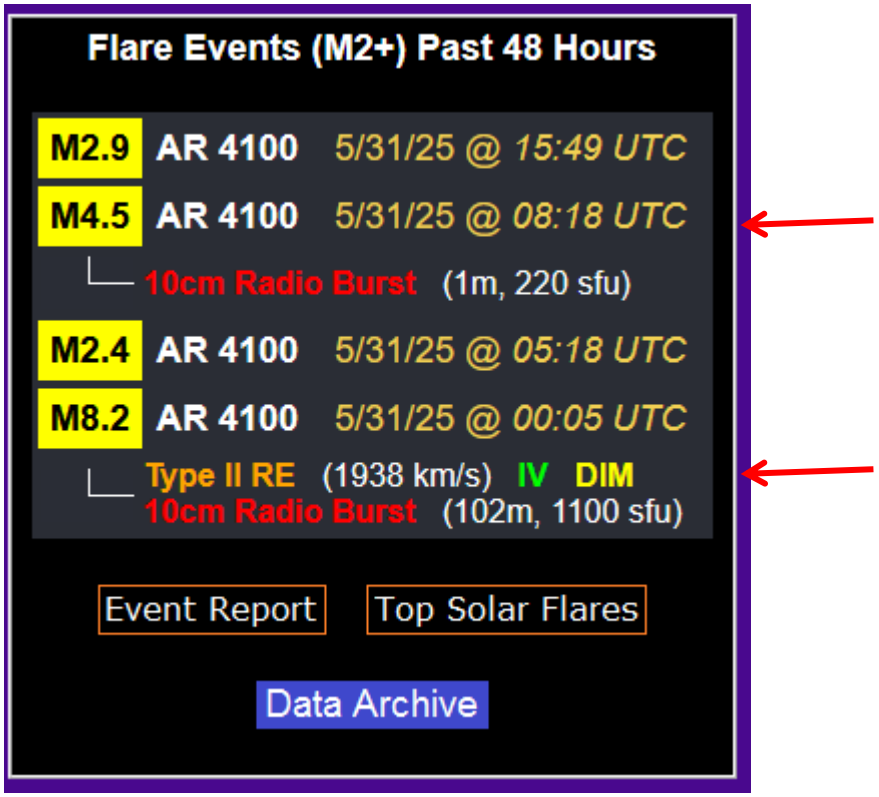

4104
4100
4101
4096
plage
(4097)
4099
(4102)
SDO/HMI Quick-Look Magnetogram: 20250601_000000
SolarHam

X-Rays Plot for CME

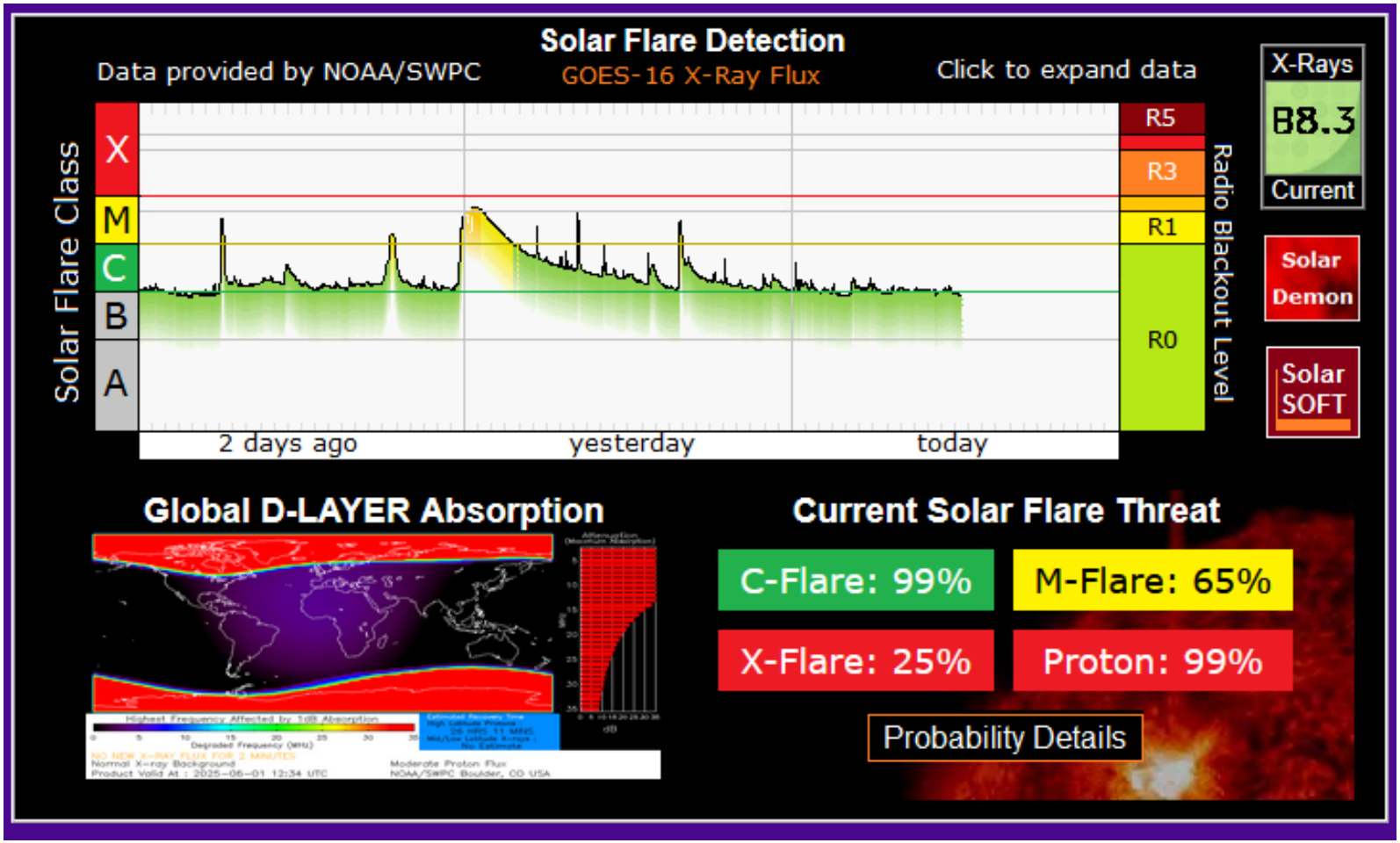


Flare events from SS 4100

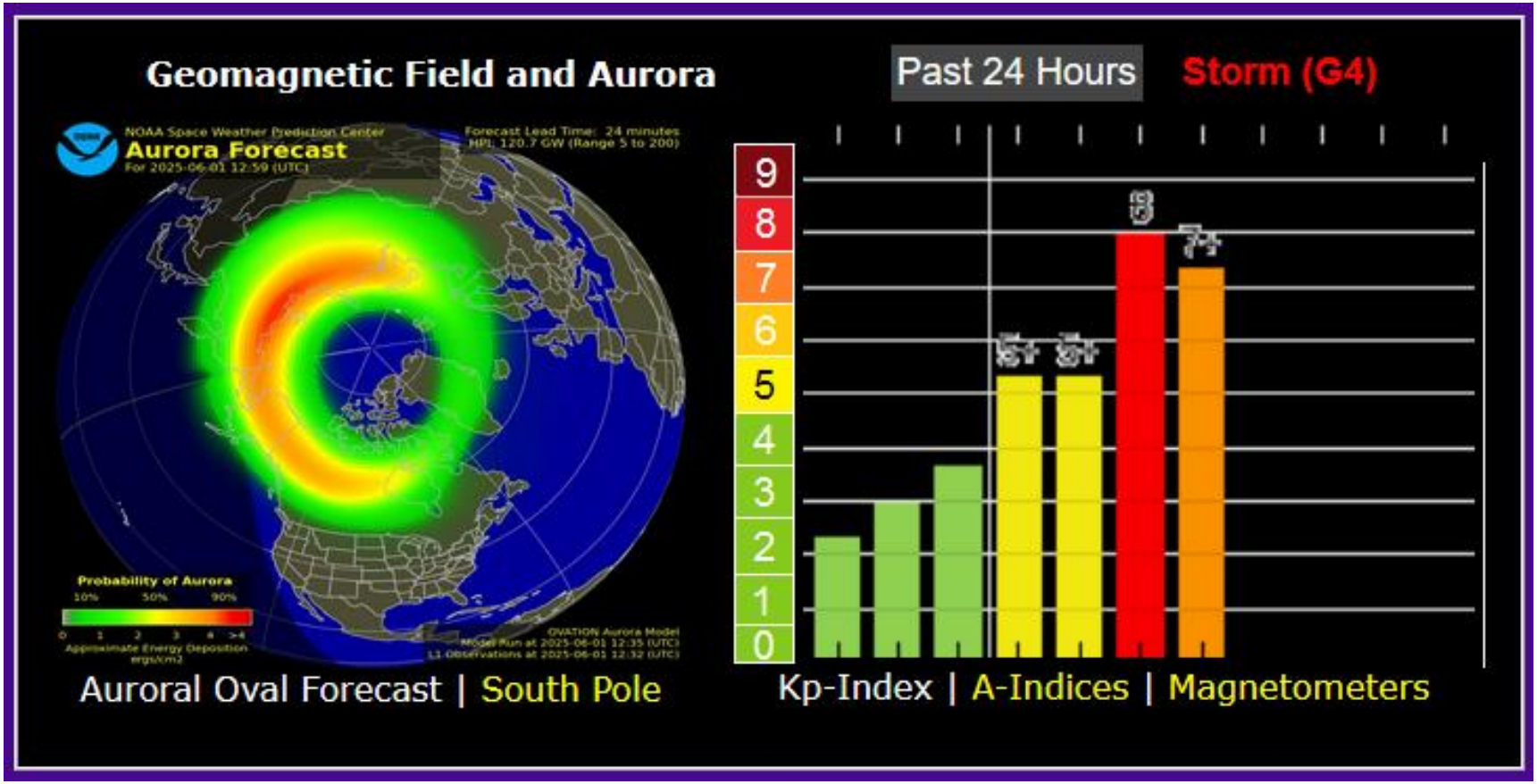




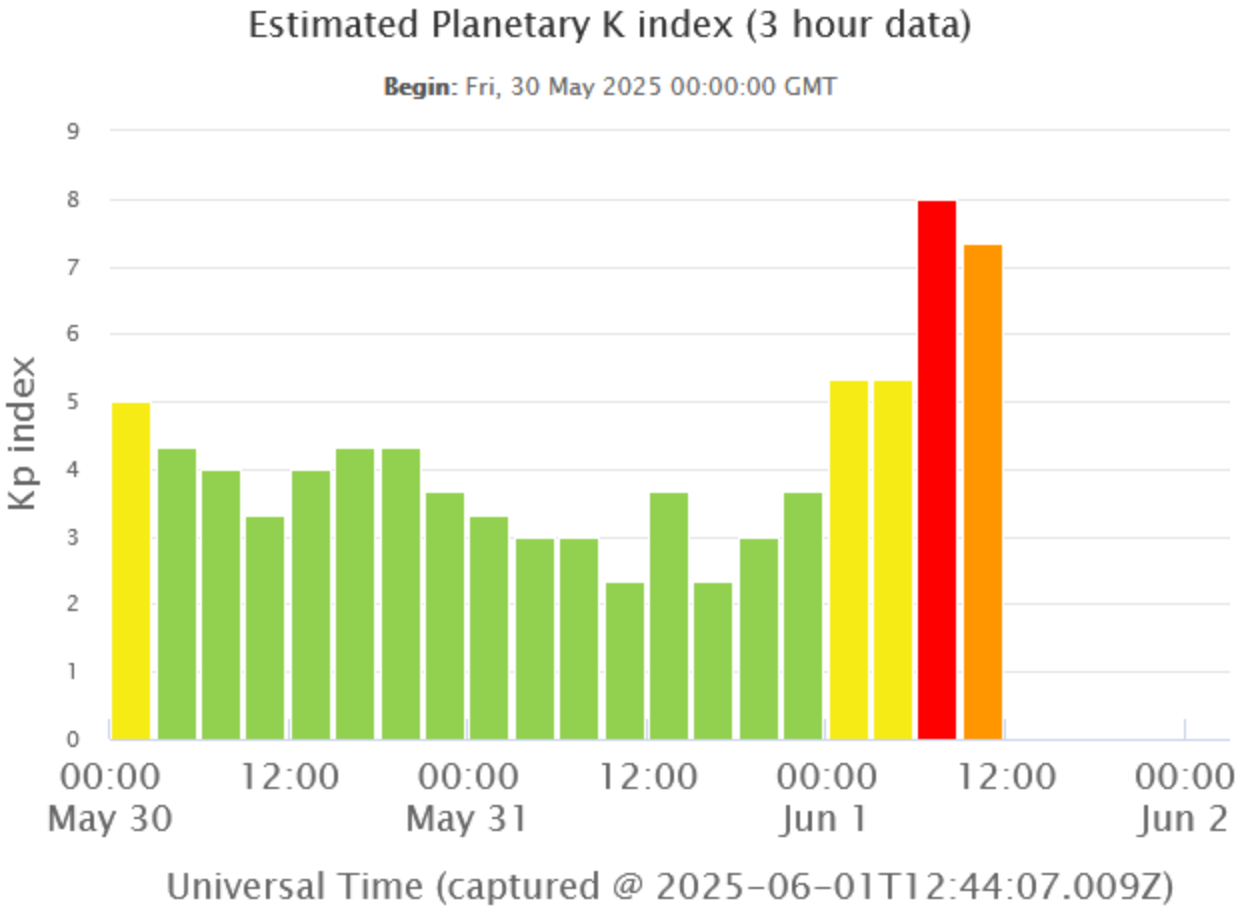
Solar Flare Detection Panel



Geomagnetic Field and Aurora



PLANETARY K INDEX



CME Impact! / Severe Storm in Progress

June 1, 2025 @ 05:55 UTC (UPDATED)

Arriving faster than expected, the CME associated with the M8 solar flare has swept past Earth at 05:42 UTC (Jun 1). The solar wind speed is in the vicinity of 1000 km/s which is very high and the Bz component of the interplanetary magnetic field (IMF) initially is pointing south. A geomagnetic storm warning is now in effect. Also of note, a moderate (S2) radiation storm is currently in progress. Aurora sky watchers should be alert for visible aurora should local light and weather conditions allow.

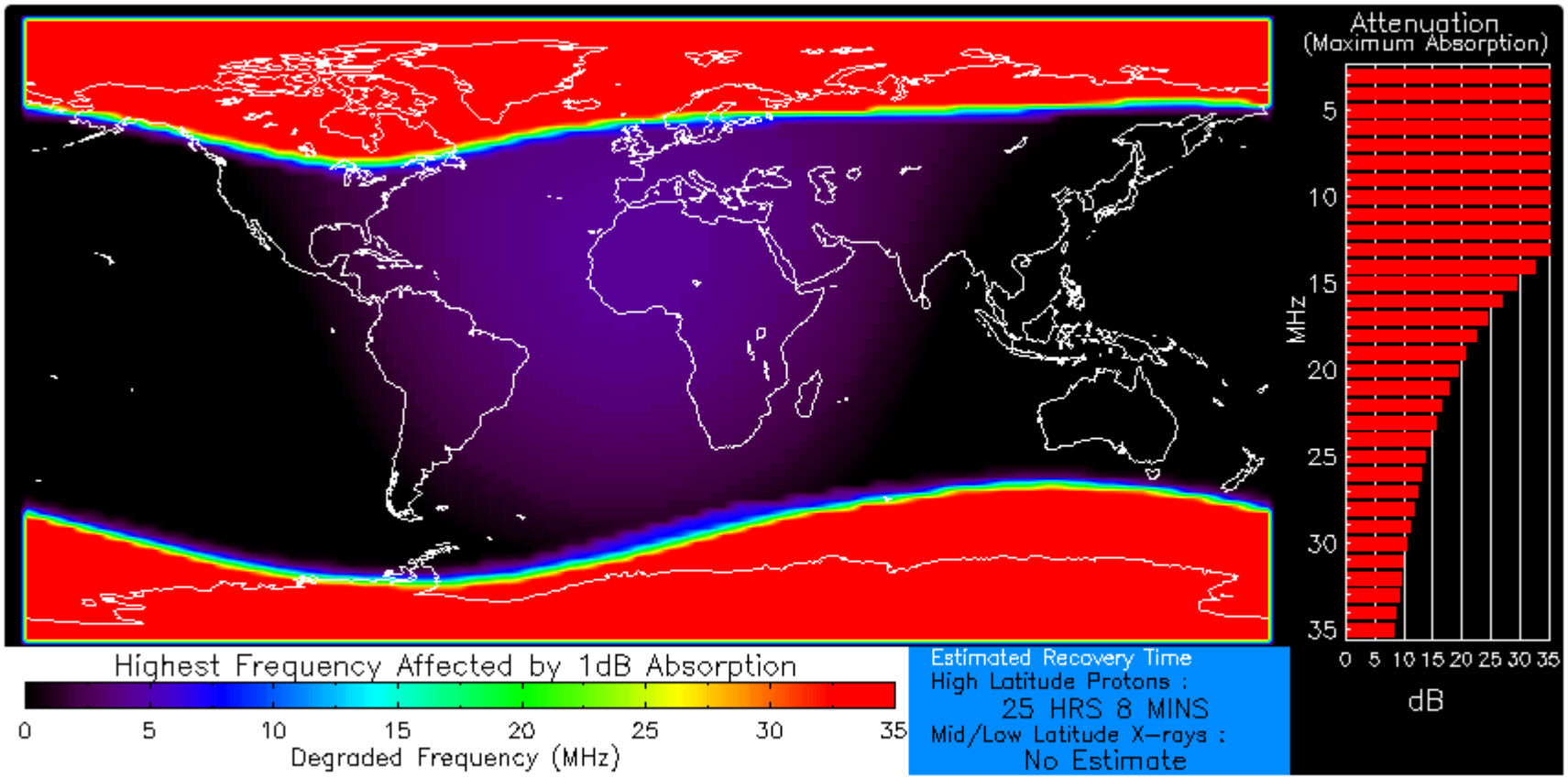
Severe Storm: The solar wind speed following the CME passage has increased to near an incredible 1100 km/s. The severe geomagnetic storm threshold was reached at 08:00 UTC (June 1).

ALERT: Geomagnetic K-index of 8, 9-
Threshold Reached: 2025 Jun 01 0800 UTC
Synoptic Period: 0600-0900 UTC
Active Warning: Yes
NOAA Scale: G4 - Severe

SUMMARY: Geomagnetic Sudden Impulse
Observed: 2025 Jun 01 0542 UTC
Deviation: 99 nT
Station: BOU

Solar Radiation Storm Event

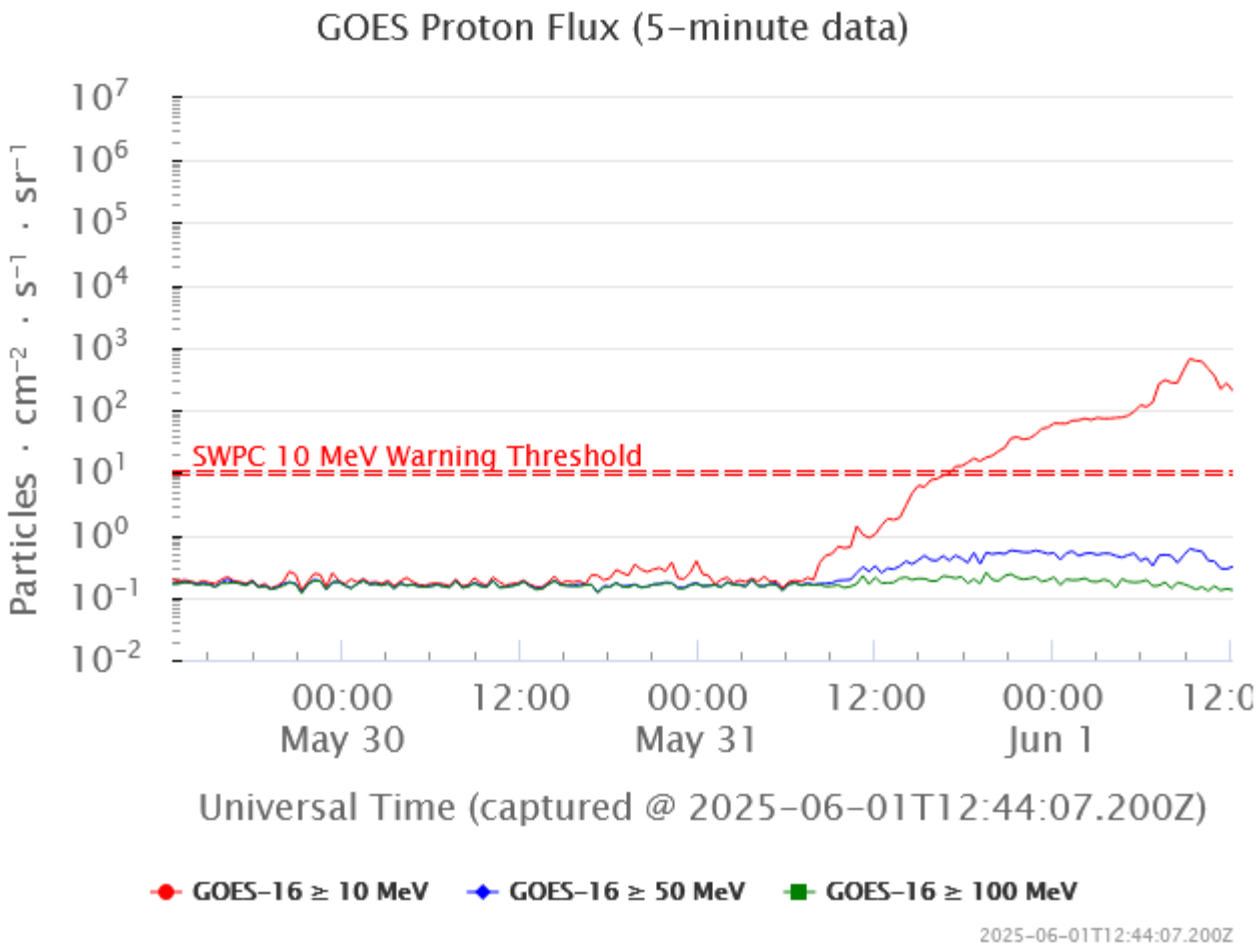
UNUSUAL D-REGION ABSORPTION PATTERNS



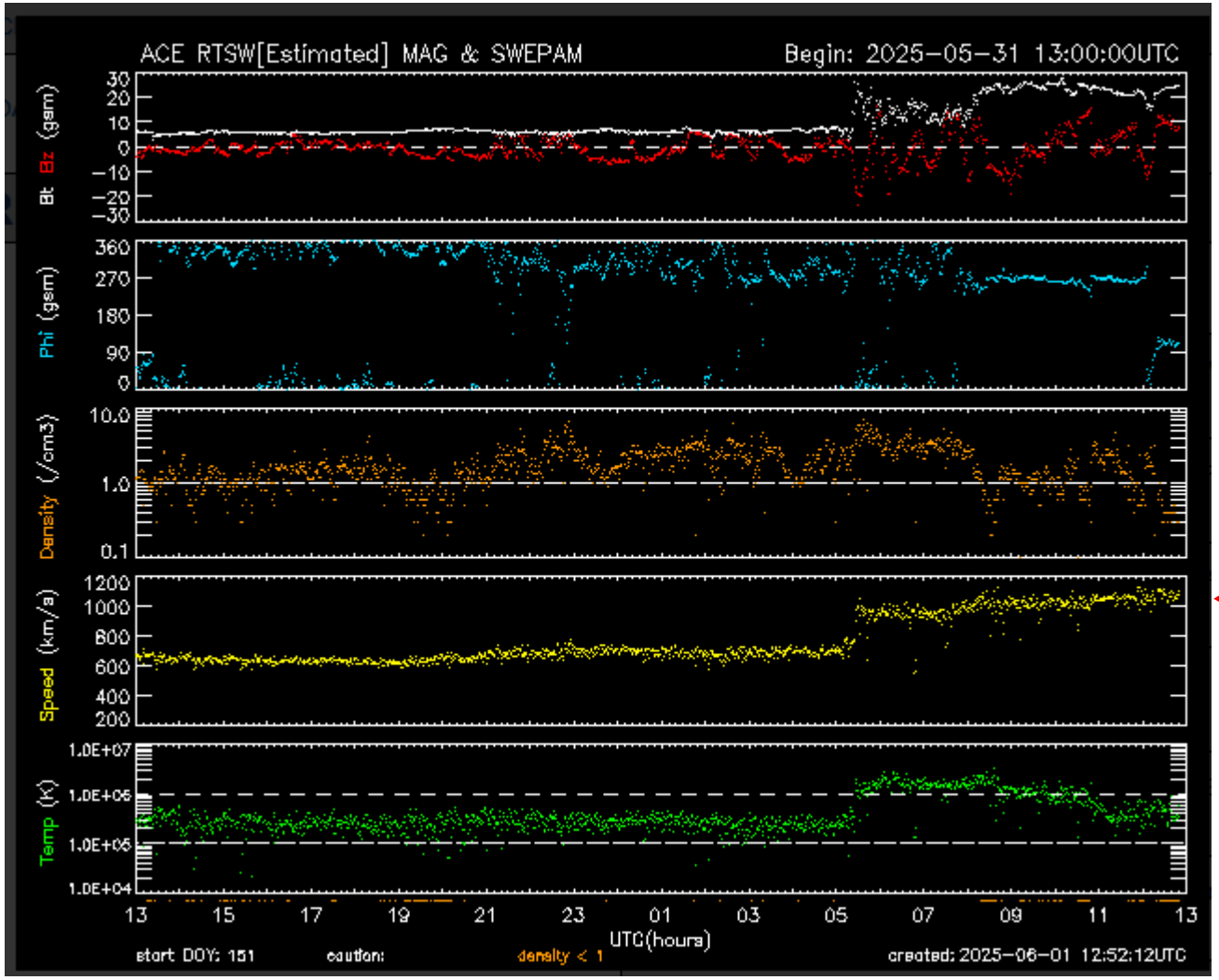
NO NEW X-RAY FLUX FOR 2 MINUTES
Normal X-ray Background
Product Valid At : 2025-06-01 12:26 UTC

Moderate Proton Flux
NOAA/SWPC Boulder, CO USA

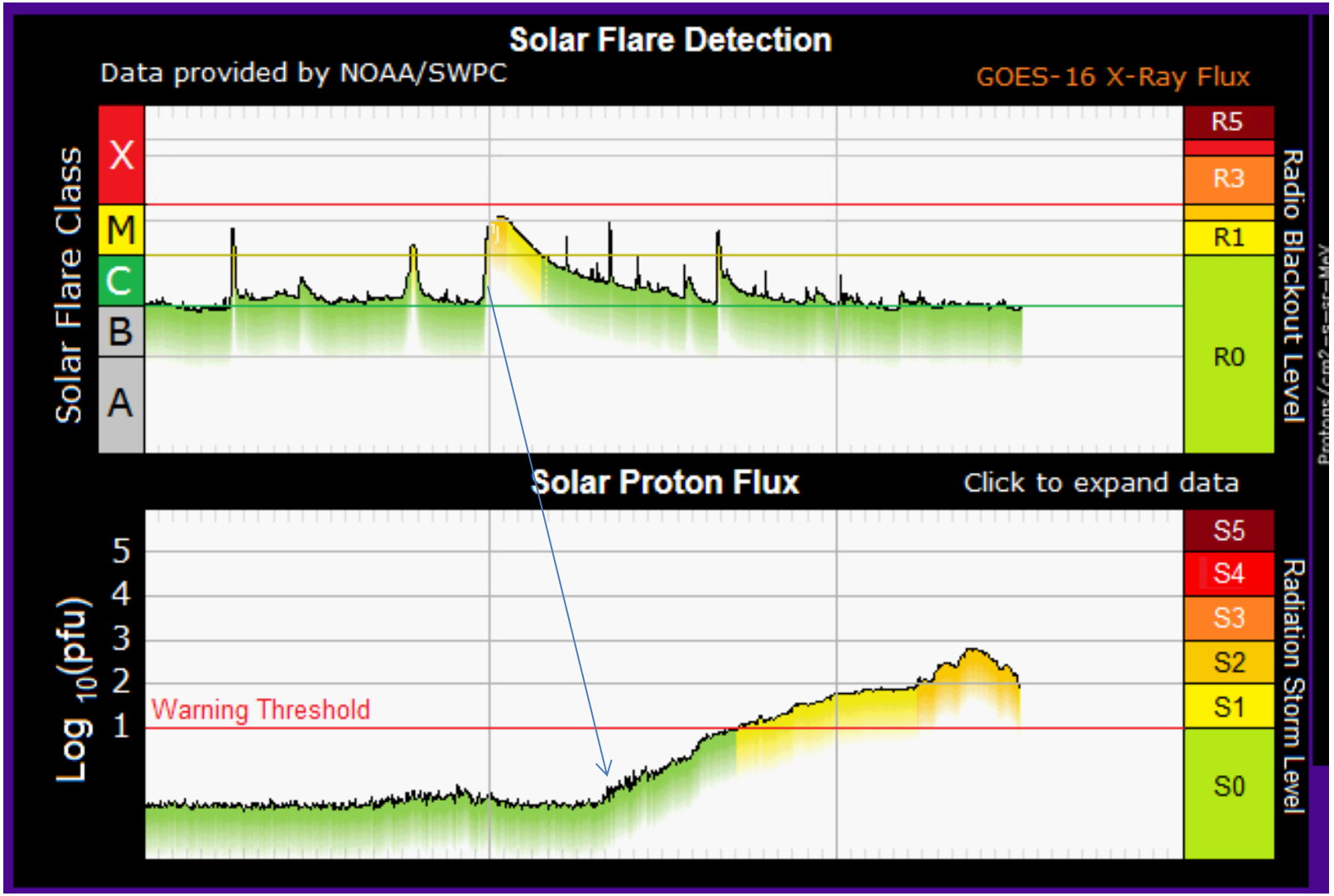
PROTON FLUX


GOES Proton Flux (5-minute data)
Particles · cm⁻² · s⁻¹ · sr⁻¹
10⁷
10⁶
10⁵
10⁴
10³
10²
10¹
10⁰
10⁻¹
10⁻²
SWPC 10 MeV Warning Threshold
00:00
May 30
12:00
00:00
May 31
12:00
00:00
Jun 1
12:0
Universal Time (captured @ 2025-06-01T12:44:07.200Z)
GOES-16 ≥ 10 MeV
GOES-16 ≥ 50 MeV
GOES-16 ≥ 100 MeV
2025-06-01T12:44:07.200Z

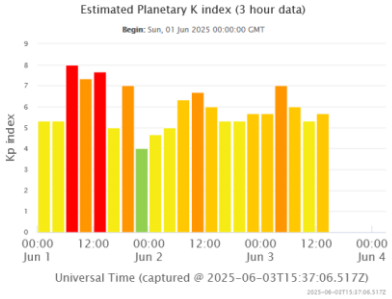
ACE Solar Wind



1100 Km/s

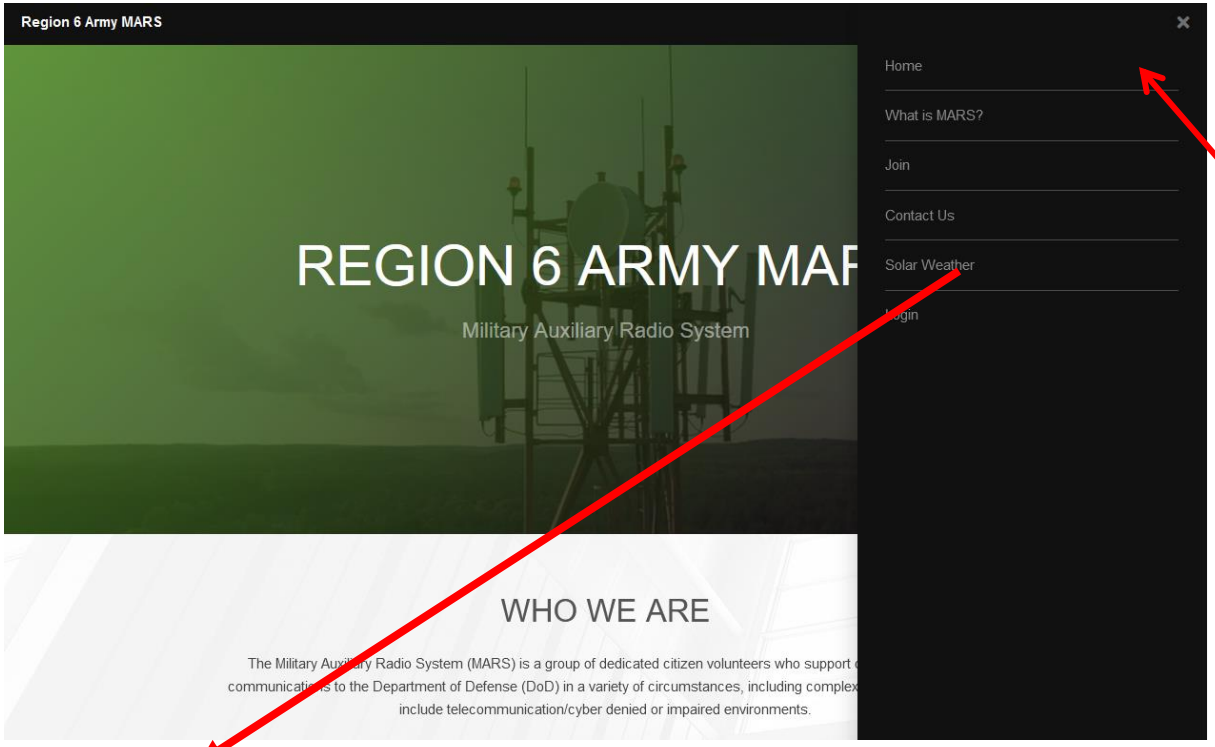

Solar Flare Detection
Data provided by NOAA/SWPC
GOES-16 X-Ray Flux
Solar Flare Class
X
M
C
B
A
R5
R3
R1
R0
Radio Blackout Level
Solar Proton Flux
Click to expand data
Log 10(pfu)
5
4
3
2
1
Warning Threshold
S5
S4
S3
S2
S1
S0
Radiation Storm Level

Storm Comments



- Geomagnetic storm is ongoing at this time.
- Austin Ionosonde is having trouble detecting echoes from Ionosphere.
- MARS net on 3 June at 0800 used Radio Checks to find Critical Frequency, but digital traffic was passed by station running 500 watts power levels on lower net frequencies (5 MHz rather than 7 MHz).

Solar Weather Data



Menu

Solar Weather

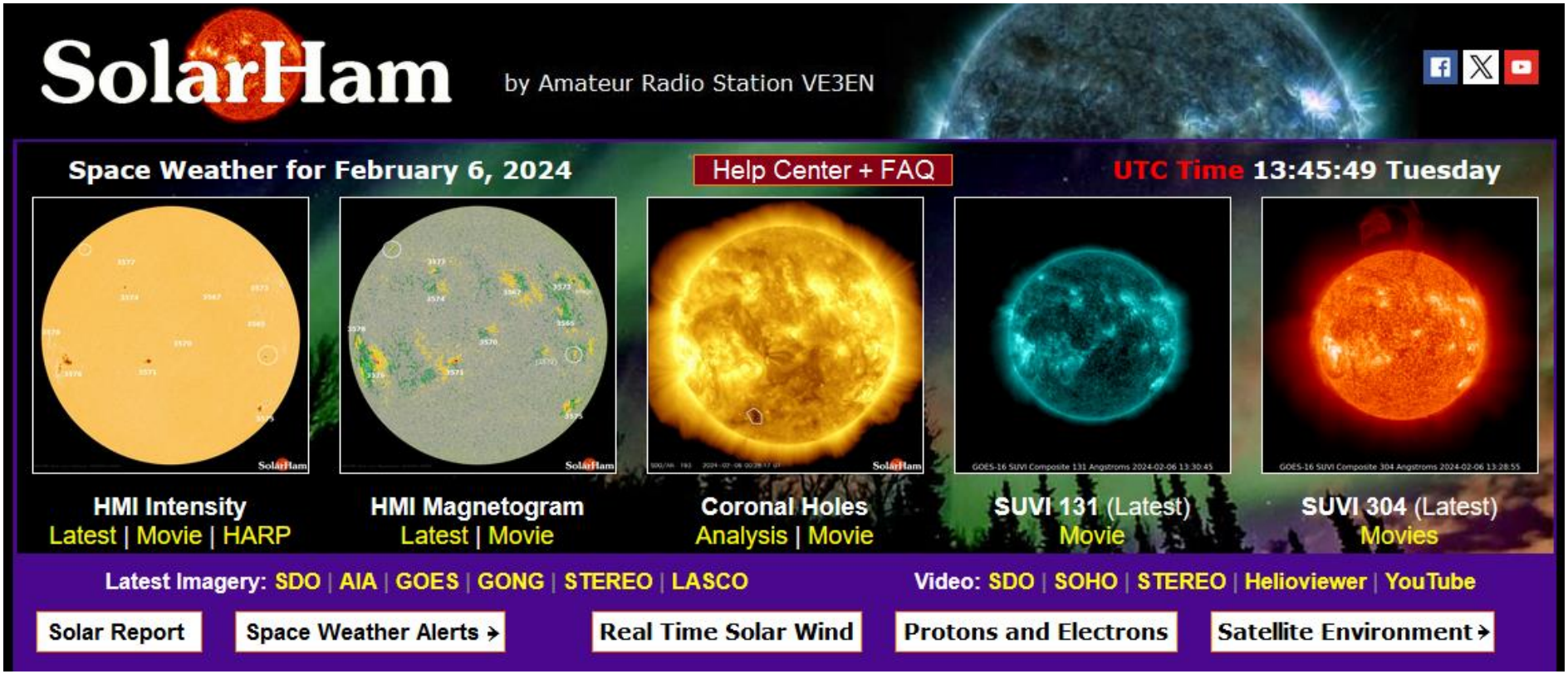
All Ionosondes

GAMBIT URL

Austin Ionosonde

- GAMBIT - Global Assimilative Model of Bottomside Ionosphere Timeline
- Austin
- Boulder
- Eglin

- 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.


SolarHam
by Amateur Radio Station VE3EN
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 | Helioviewer | YouTube
Solar Report
Space Weather Alerts
Real Time Solar Wind
Protons and Electrons
Satellite Environment

spaceweather.com

News and information about the Sun-Earth environment

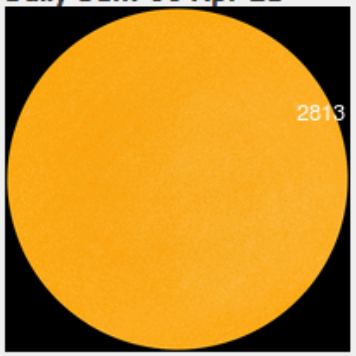
https://www.spaceweather.com/

Current Conditions

Solar wind
speed: **314.8** km/sec
density: **9.9** protons/cm^3
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?

Lewis Thompson

W5IFQ@att.net

512-587-9944