

SIDC Space Weather Briefing

29 December 2024 - 05 January 2025

Jennifer O'Hara

& the SIDC forecaster team



Royal Observatory
of Belgium

Solar Influences
Data analysis Centre
www.sidc.be

Summary Report

Solar activity from 2024-12-29 12:00 to 2025-01-05 23:59

Active regions	24 Active regions observed over the week: SIDC Sunspot Groups 349(NOAA AR 3936) and 360 (NOAA AR 3947) were most active
Flares	# C-class flare: 28 # M-class flare: 40 # X-class flare: 5
Coronal Holes	2 positive polarity Coronal Holes transited central meridian
CMEs	4 possible Earth directed CMEs observed

Proton flux	Above 10 pfu threshold on January 04 and 05
Electron flux	Mostly below the 1000 pfu threshold, above on January 05

Solar wind and geomagnetic conditions

ICMEs	3 possible ICME arrivals
Solar wind conditions	B : 1.59 - 27.05 nT //Bz: -23.52 nT to 18.24 nT //Speed: 310- 700km/s
Geomagnetic conditions	max K _{Be} : 7.0, max K _p (NOAA): 8.0, Severe Storm conditions

All Quiet Alert: Not all quiet

Solar Activity

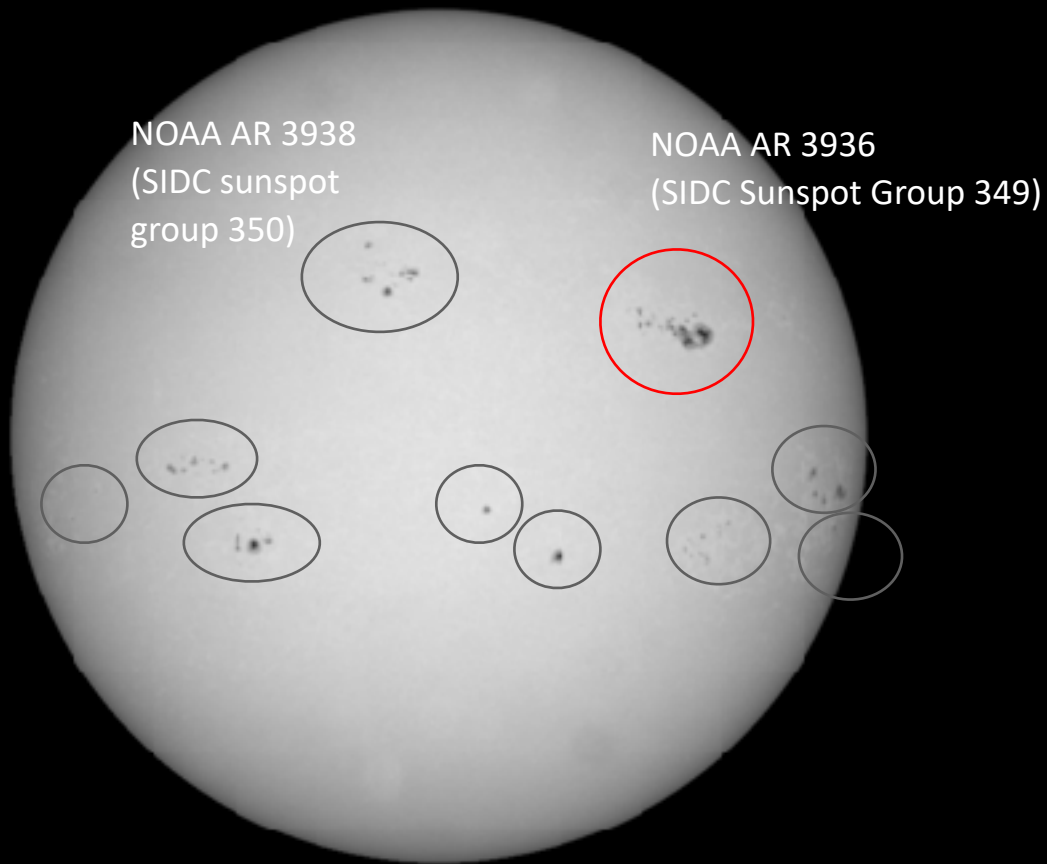


Royal Observatory
of Belgium

Solar Influences
Data analysis Centre
www.sidc.be

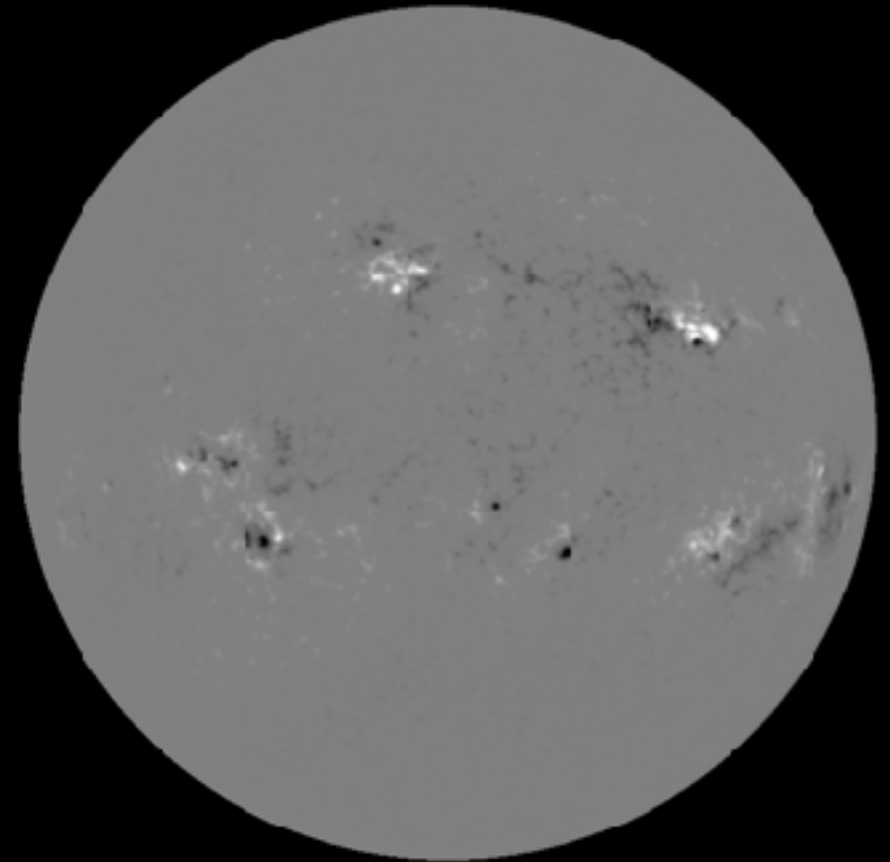
Solar active regions

GONG 677 nm 2024-12-29



2024-12-29T12:04:16.011

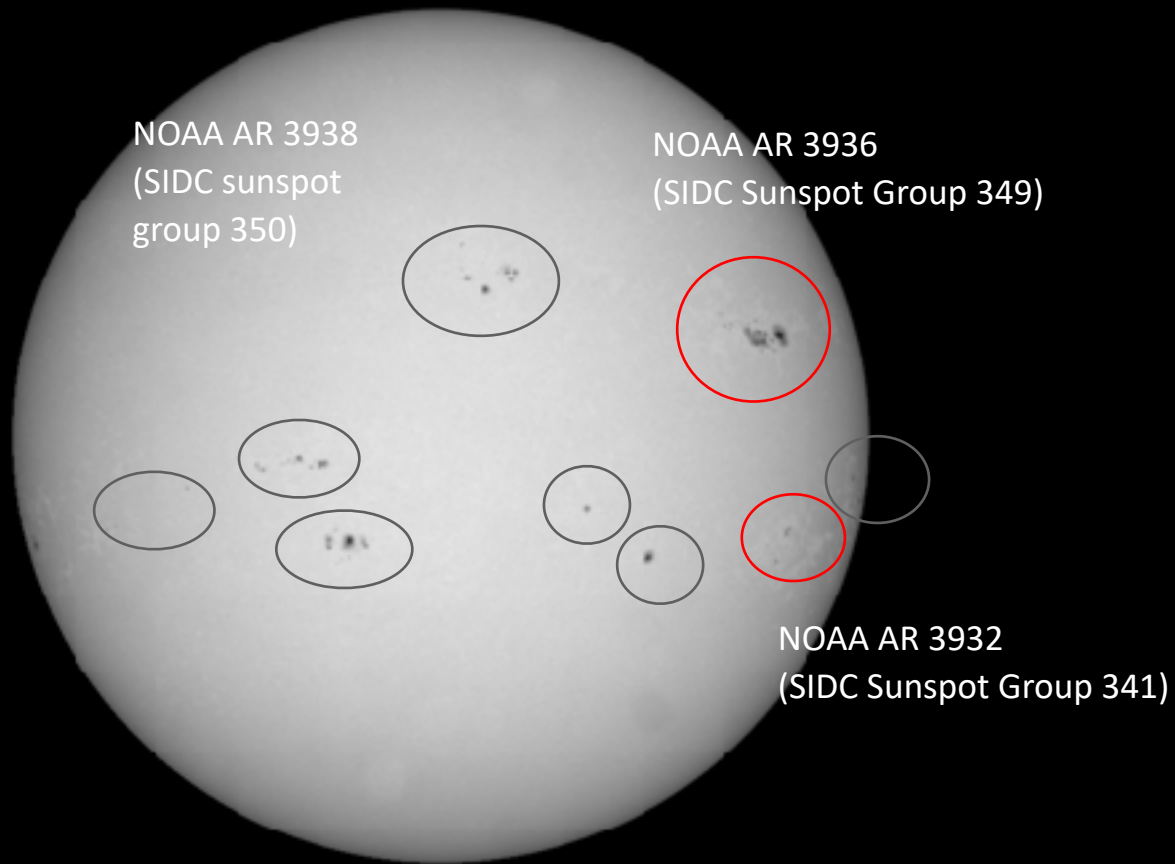
GONG Magnetogram 2024-12-29



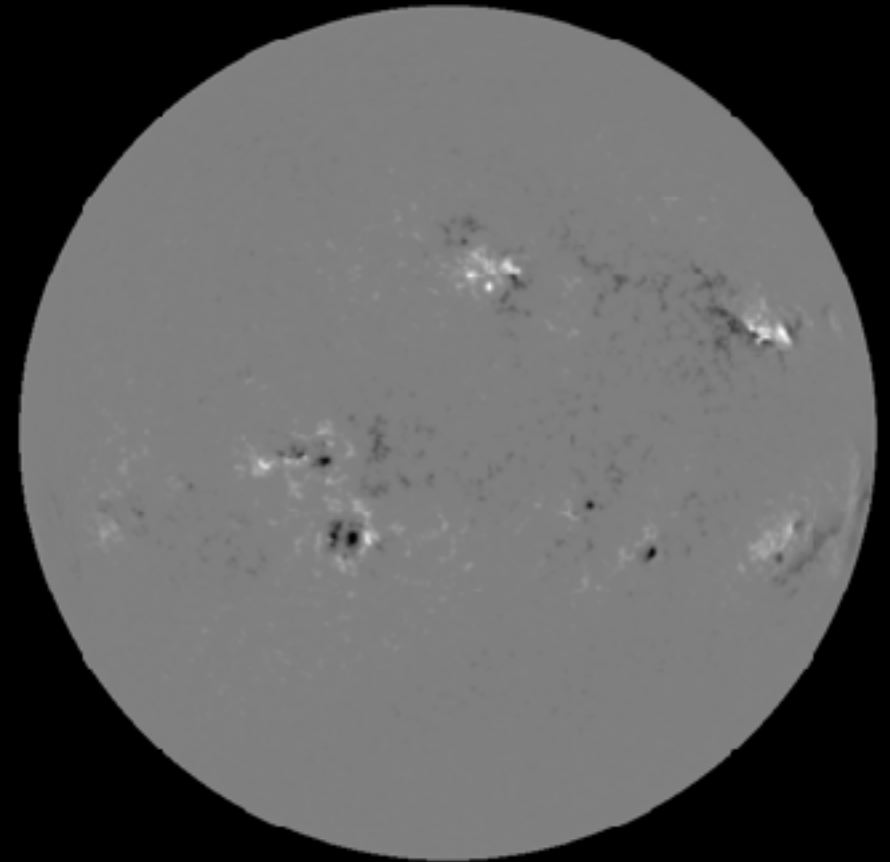
2024-12-29T12:04:16.011

Solar active regions

GONG 677 nm 2024-12-30

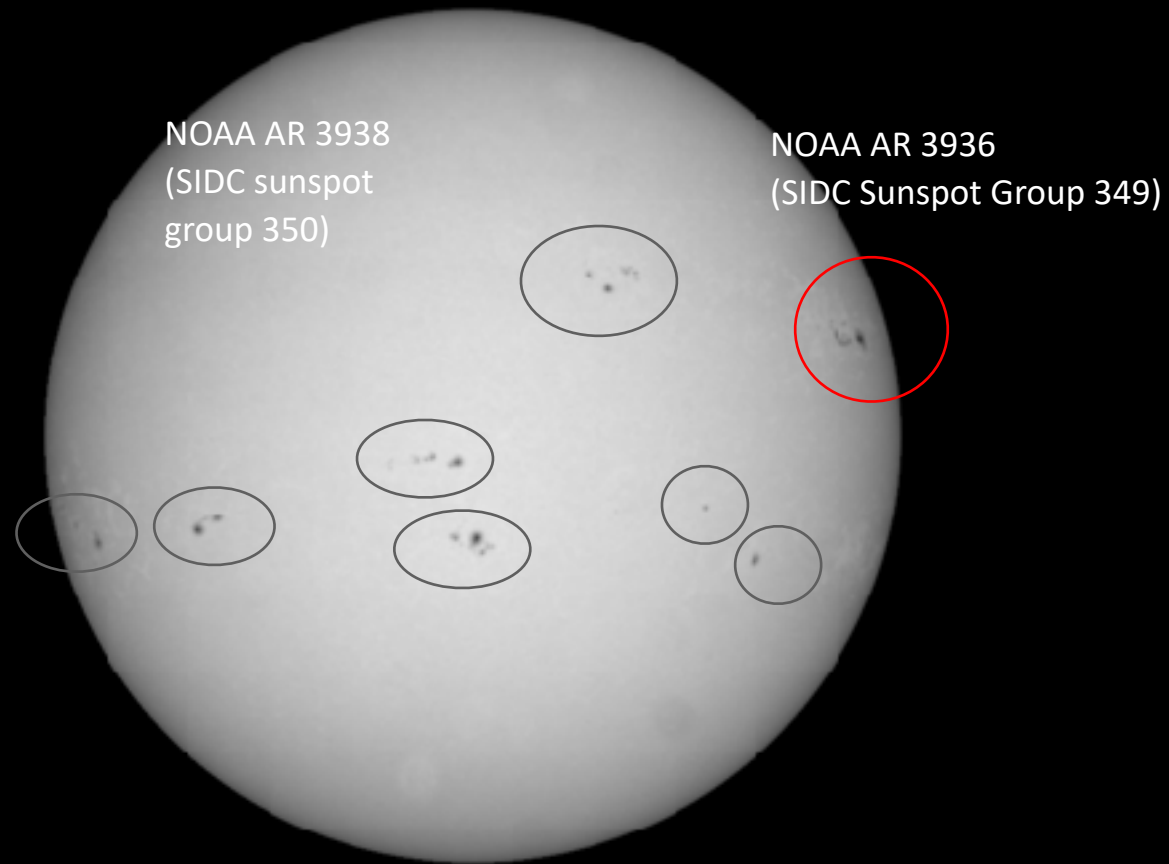


GONG Magnetogram 2024-12-30

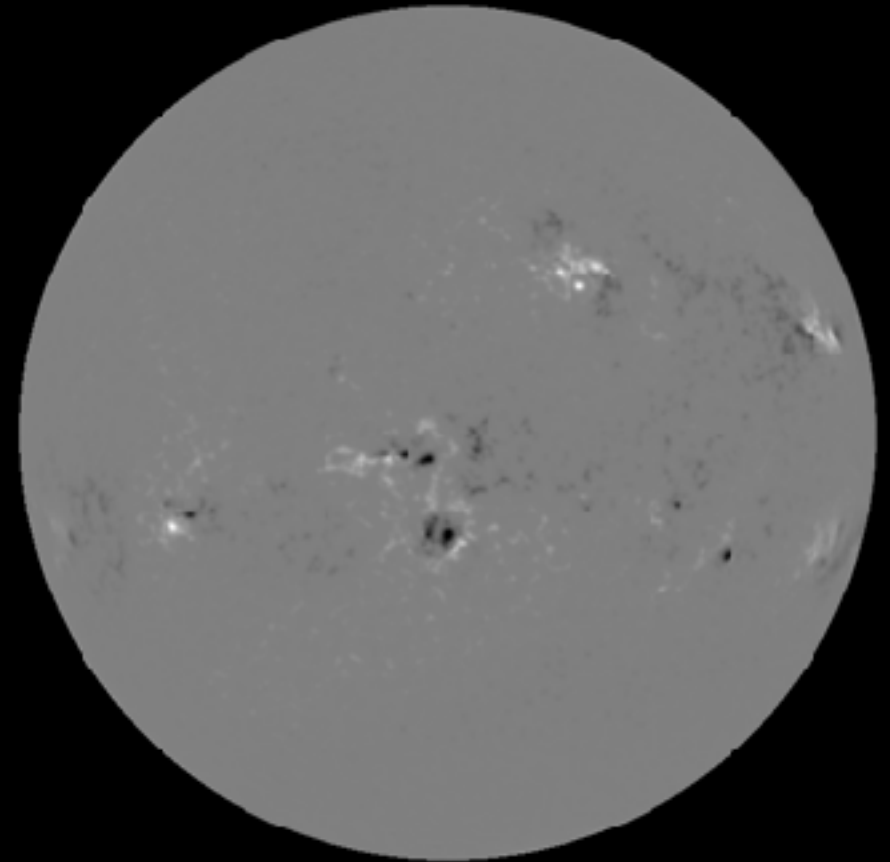


Solar active regions

GONG 677 nm 2024-12-31



GONG Magnetogram 2024-12-31



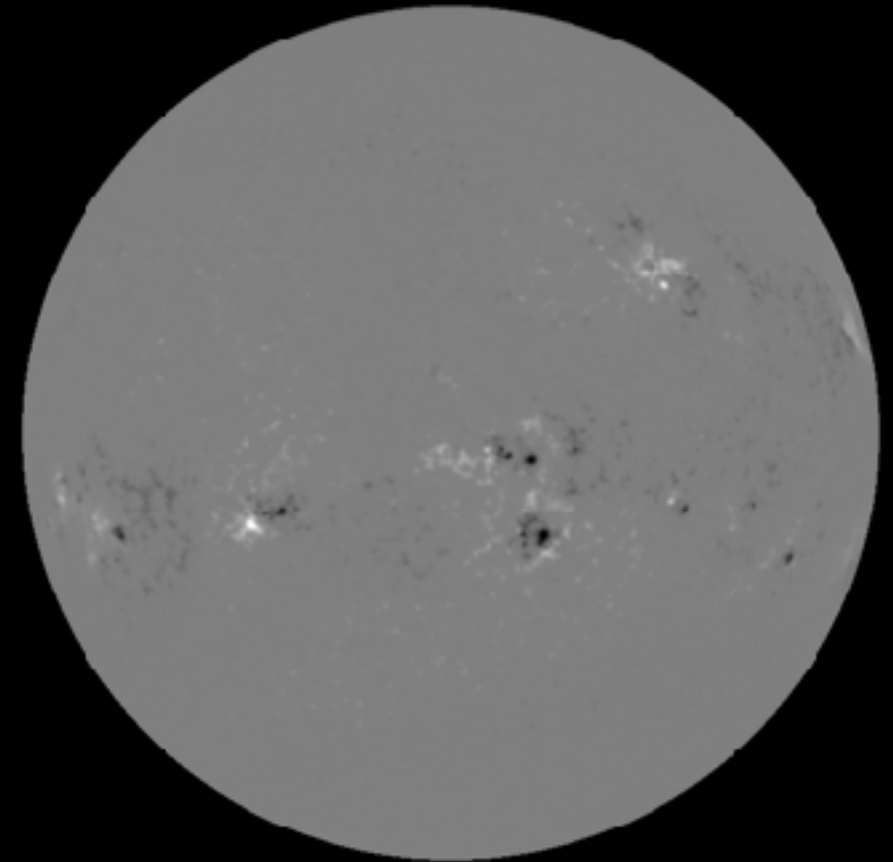
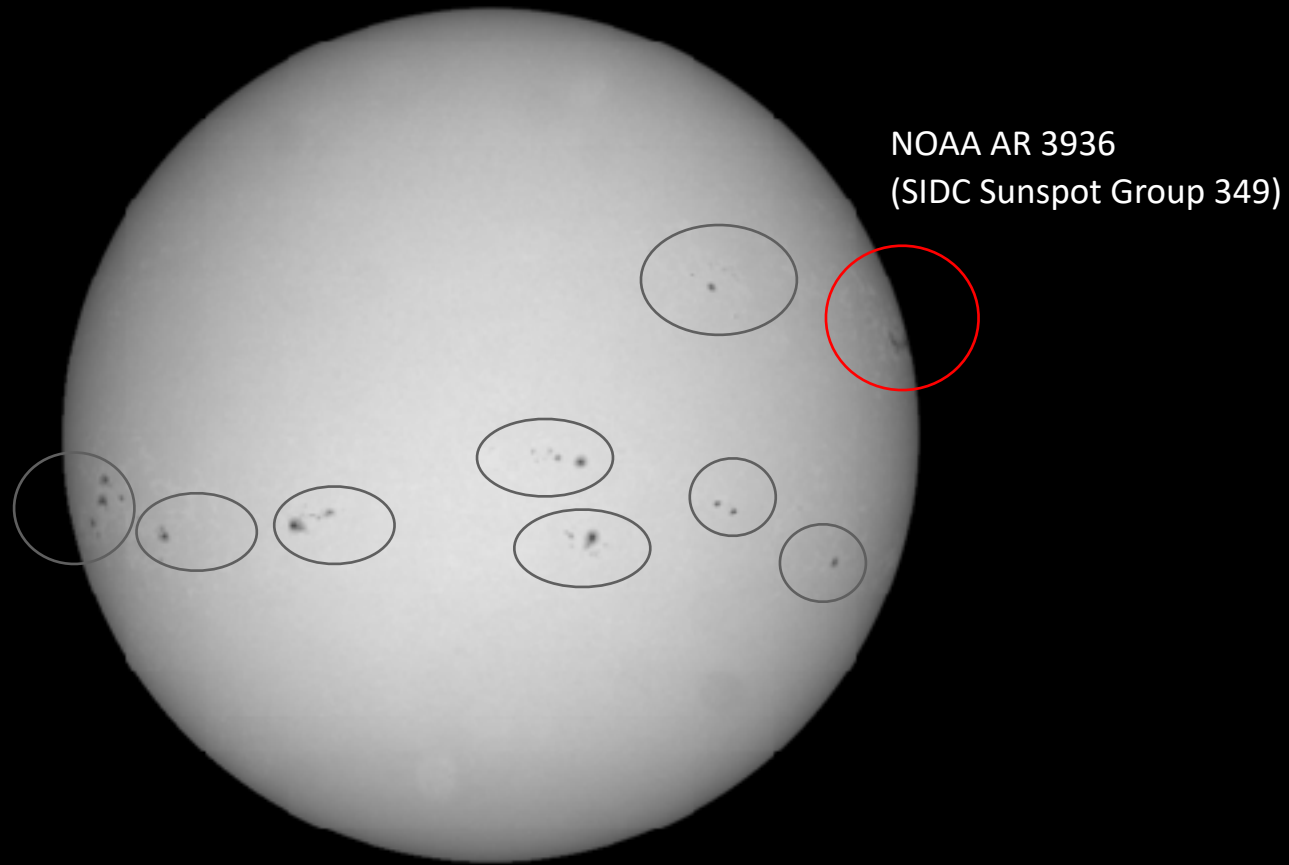
2024-12-31T12:43:16.009

2024-12-31T11:54:16.010

Solar active regions

GONG 677 nm 2025-01-01

GONG Magnetogram 2025-01-01



2025-01-01T13:16:16.011

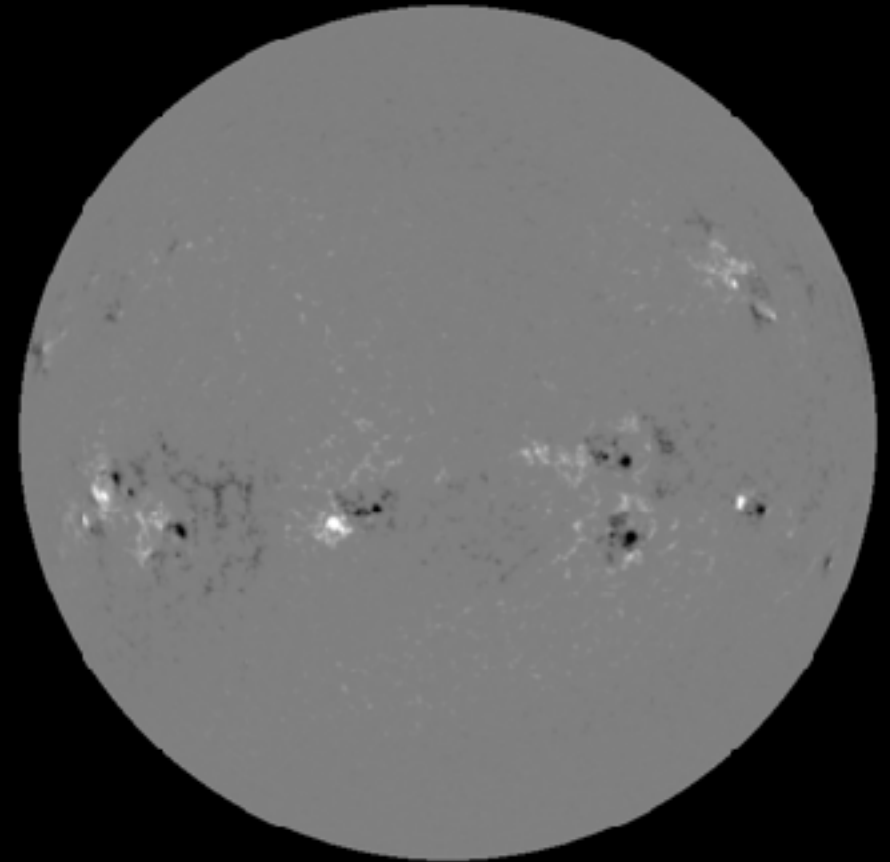
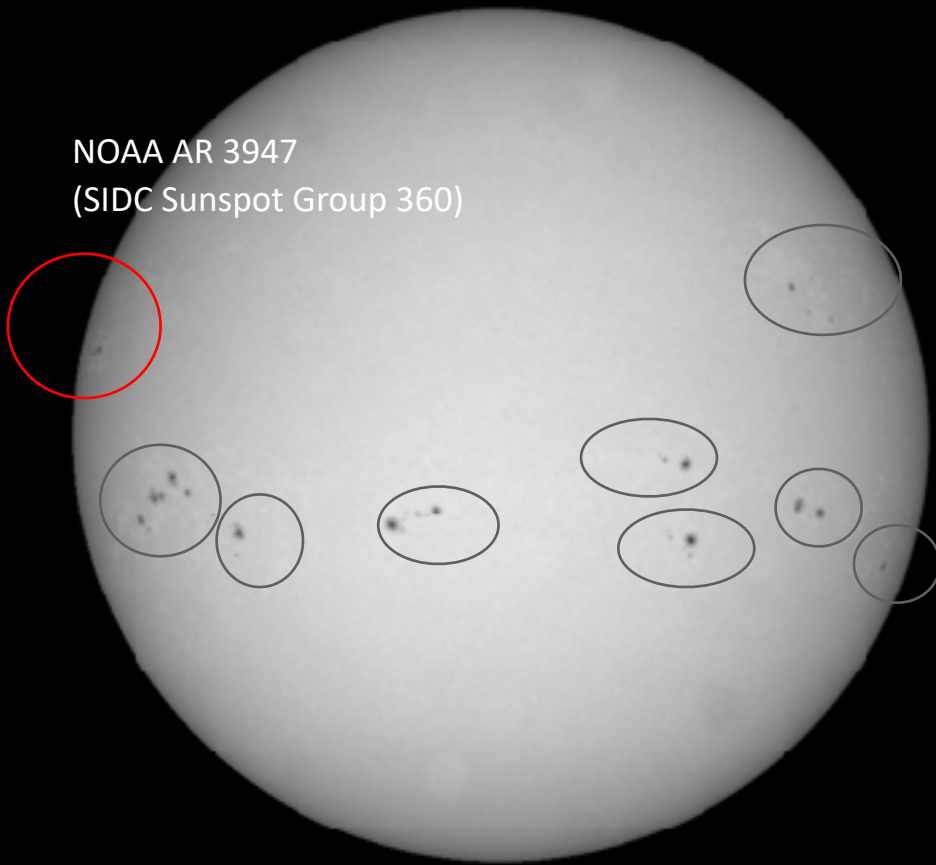
2025-01-01T11:15:16.010

Solar active regions

GONG 677 nm 2025-01-02

GONG Magnetogram 2025-01-02

NOAA AR 3947
(SIDC Sunspot Group 360)

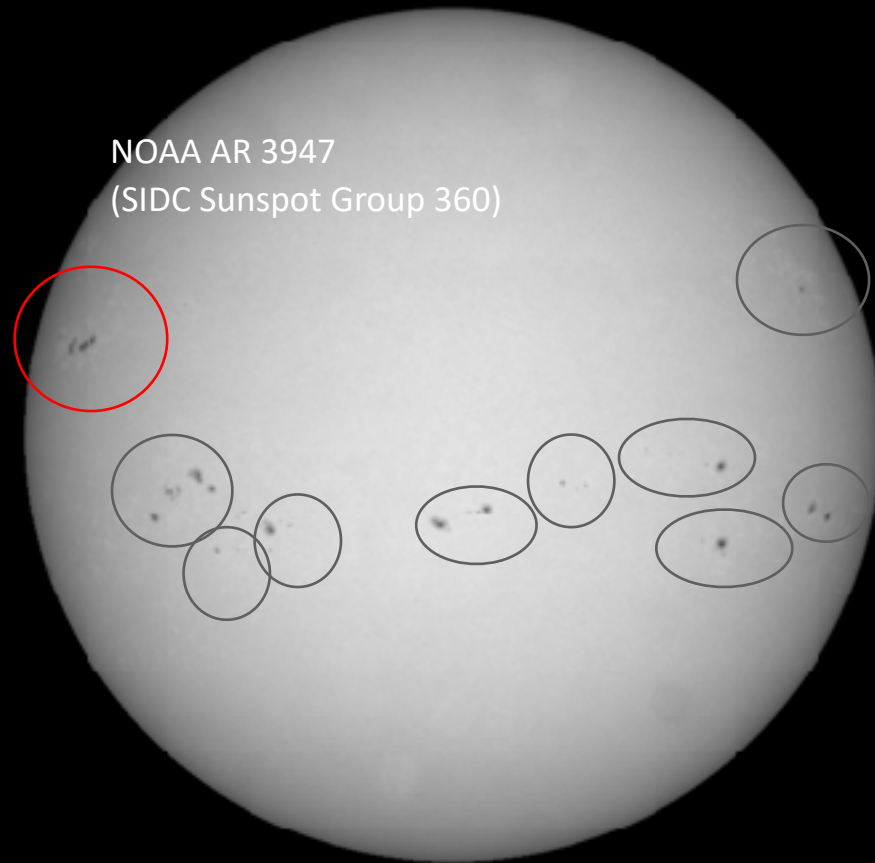


2025-01-02T12:58:16.010

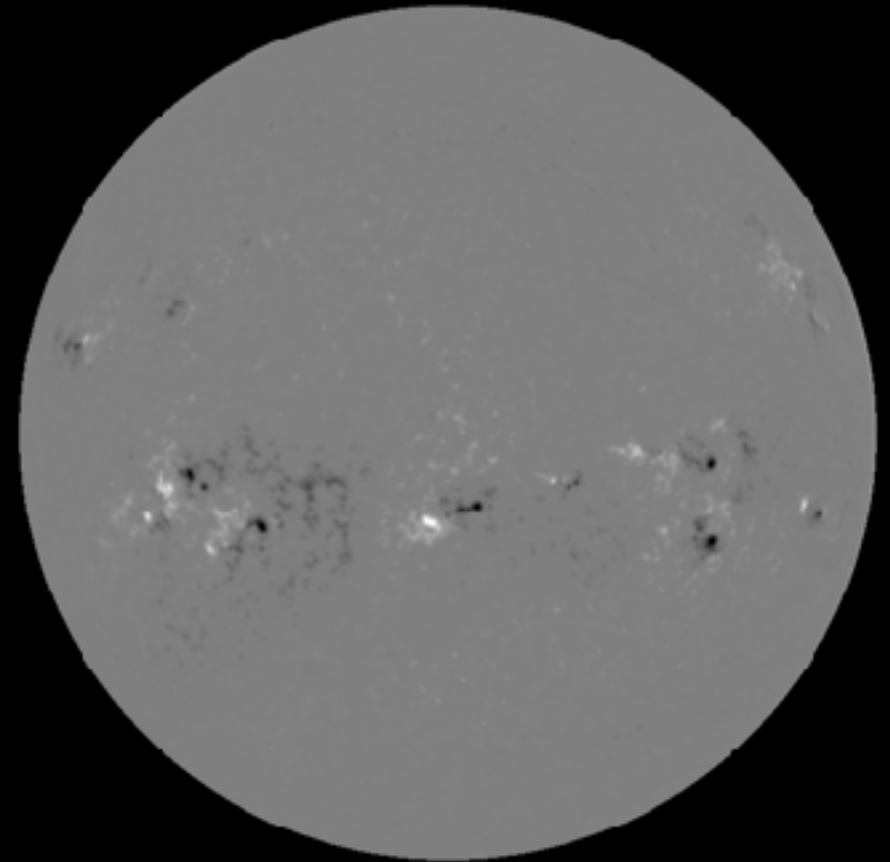
2025-01-02T11:32:16.009

Solar active regions

GONG 677 nm 2025-01-03



GONG Magnetogram 2025-01-03

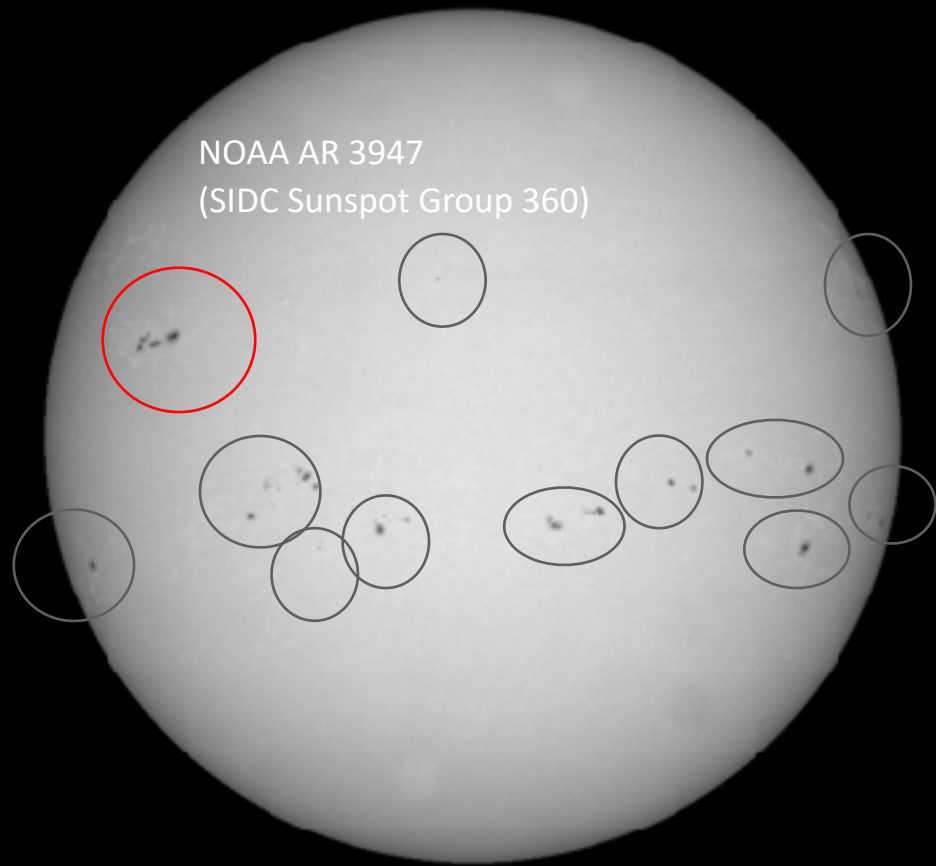


2025-01-03T12:56:16.010

2025-01-03T11:54:16.010

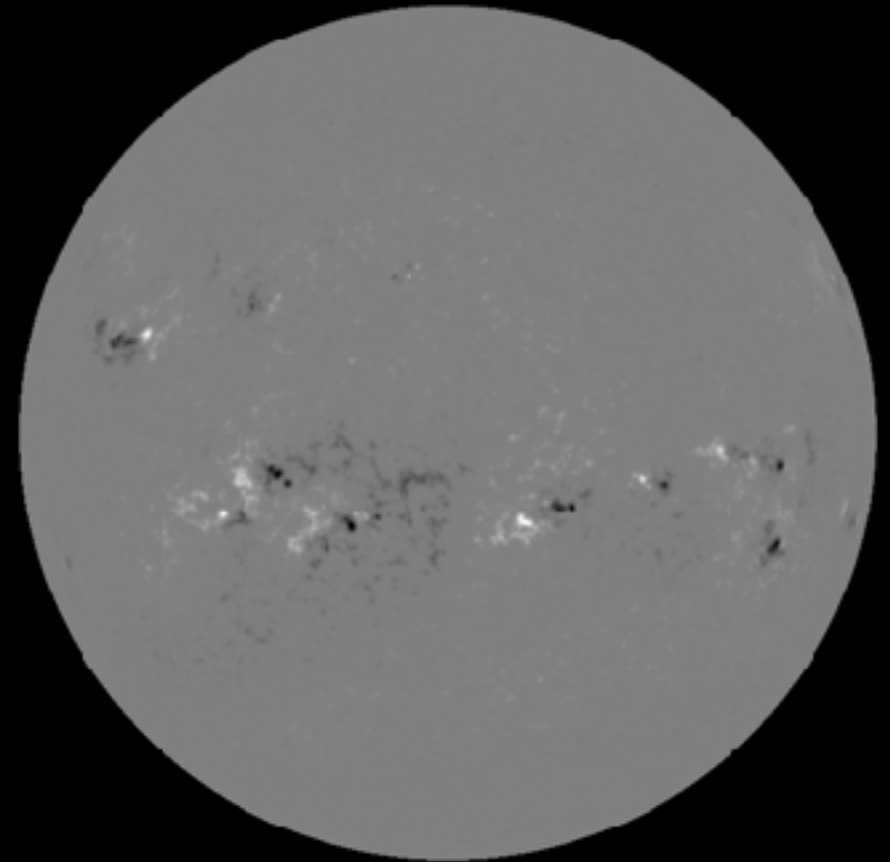
Solar active regions

GONG 677 nm 2025-01-04



2025-01-04T12:54:16.011

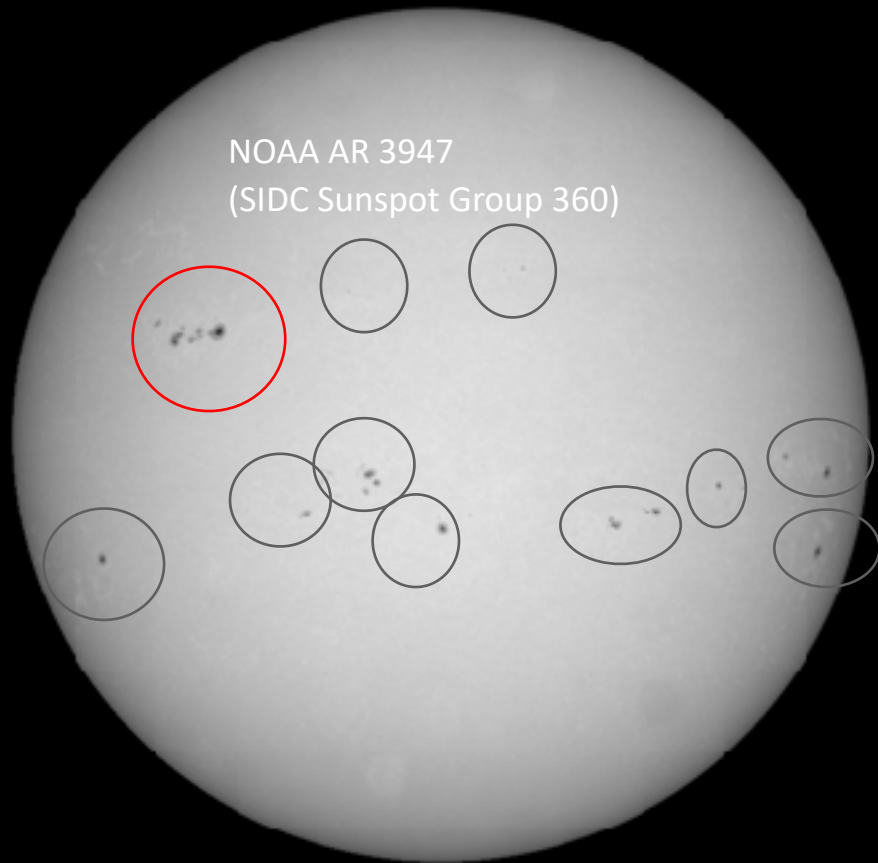
GONG Magnetogram 2025-01-04



2025-01-04T11:54:16.010

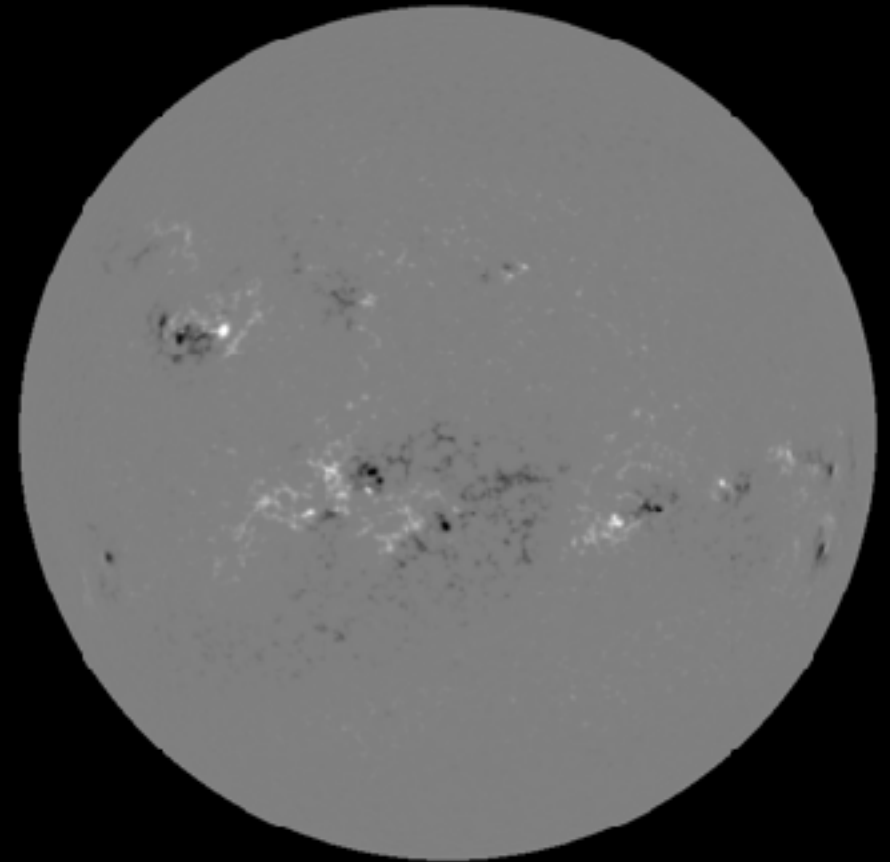
Solar active regions

GONG 677 nm 2025-01-05



2025-01-05T12:54:16.010

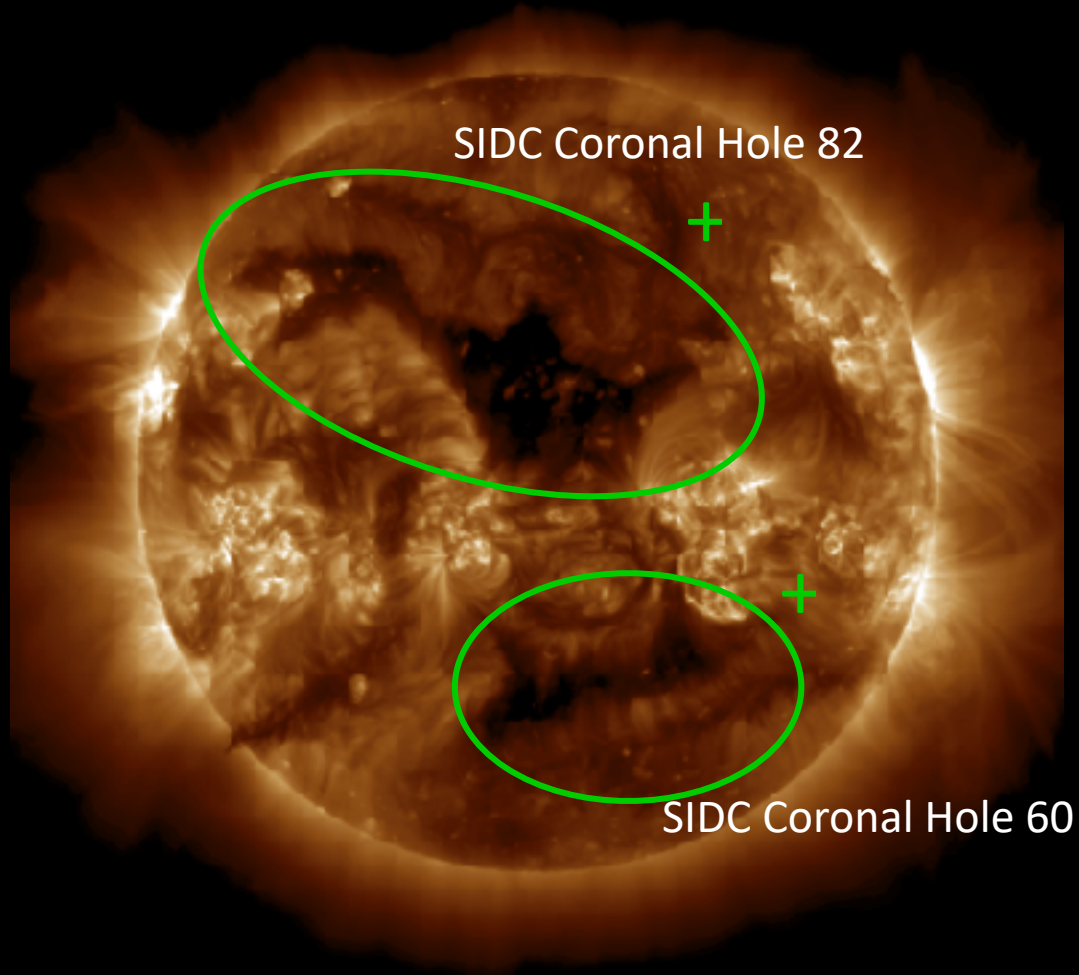
GONG Magnetogram 2025-01-05



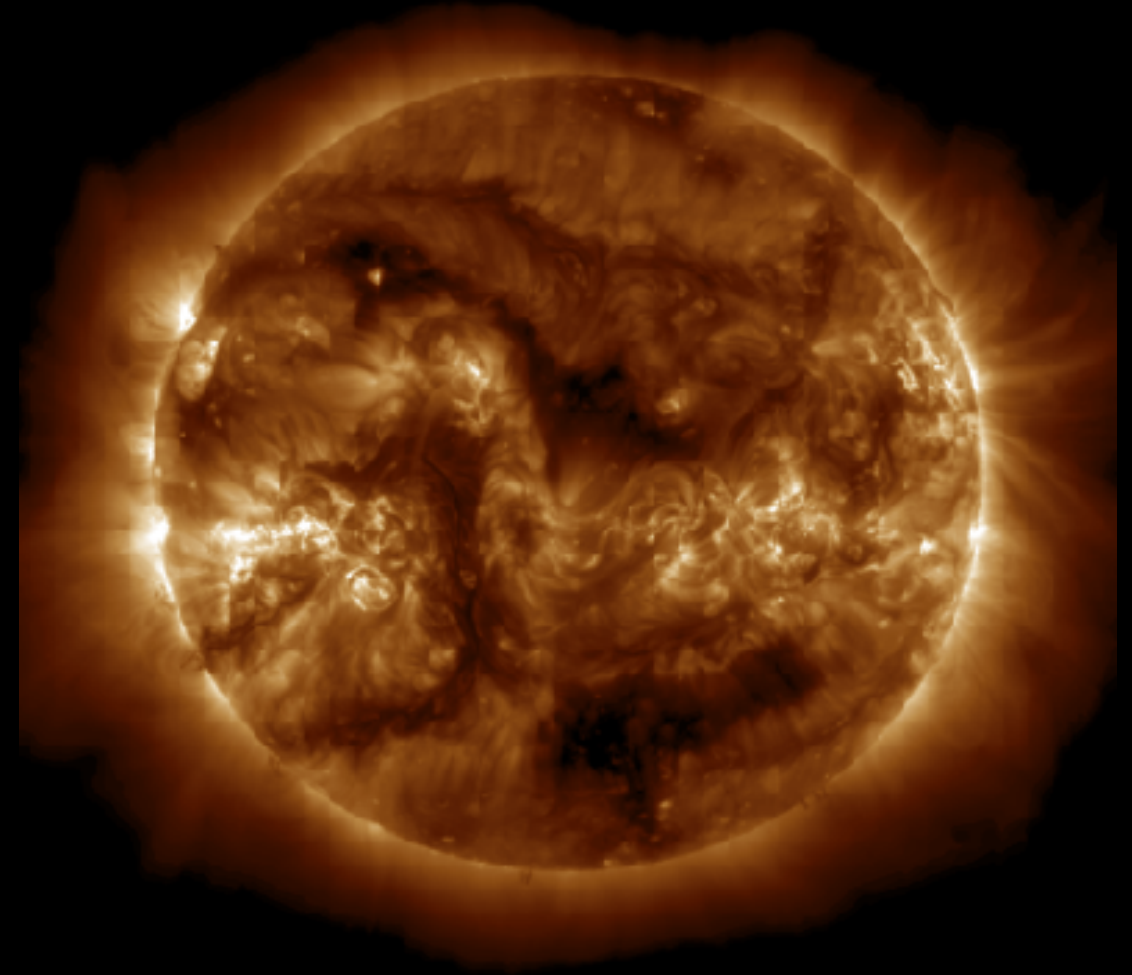
2025-01-05T11:54:16.010

Coronal holes

GOES-R/SUVI 195 2025-01-02



GOES-R/SUVI 195 2024-12-07 (Last Rotation)

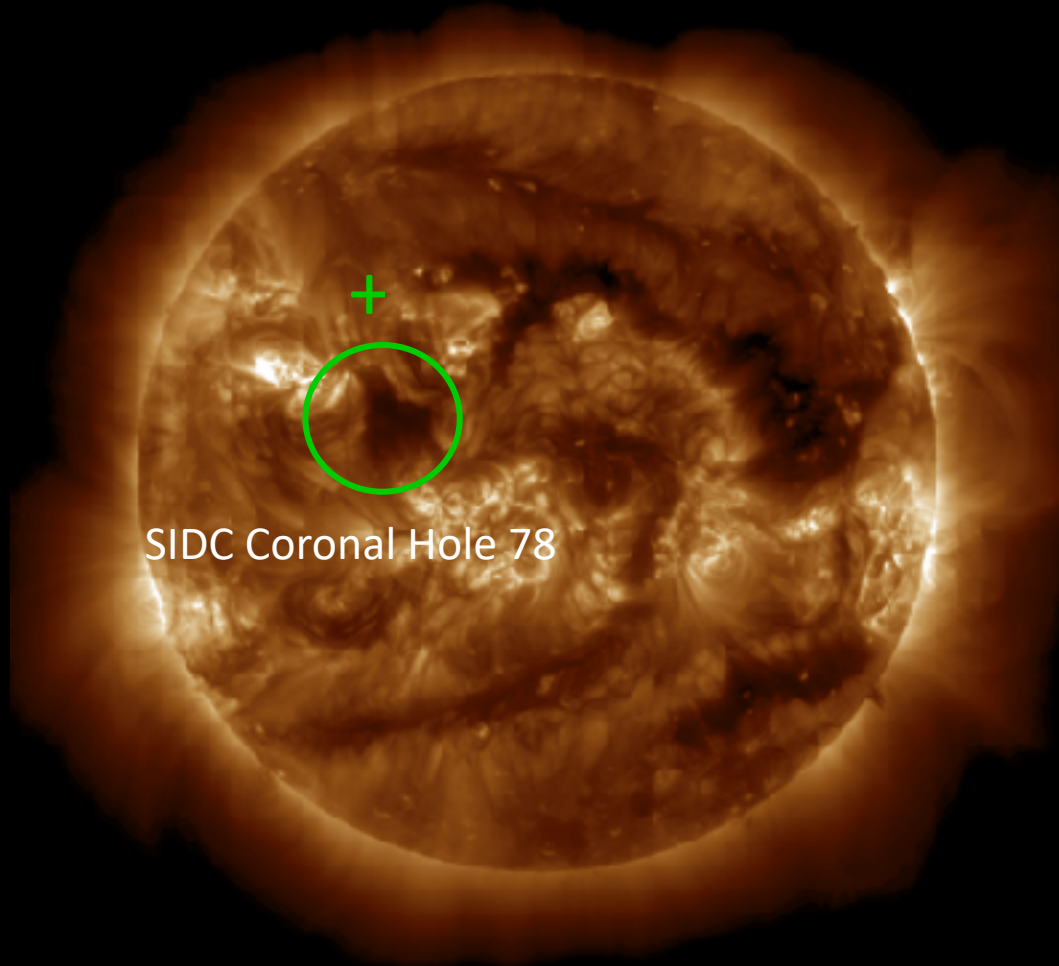


2025-01-02T16:56:51.290

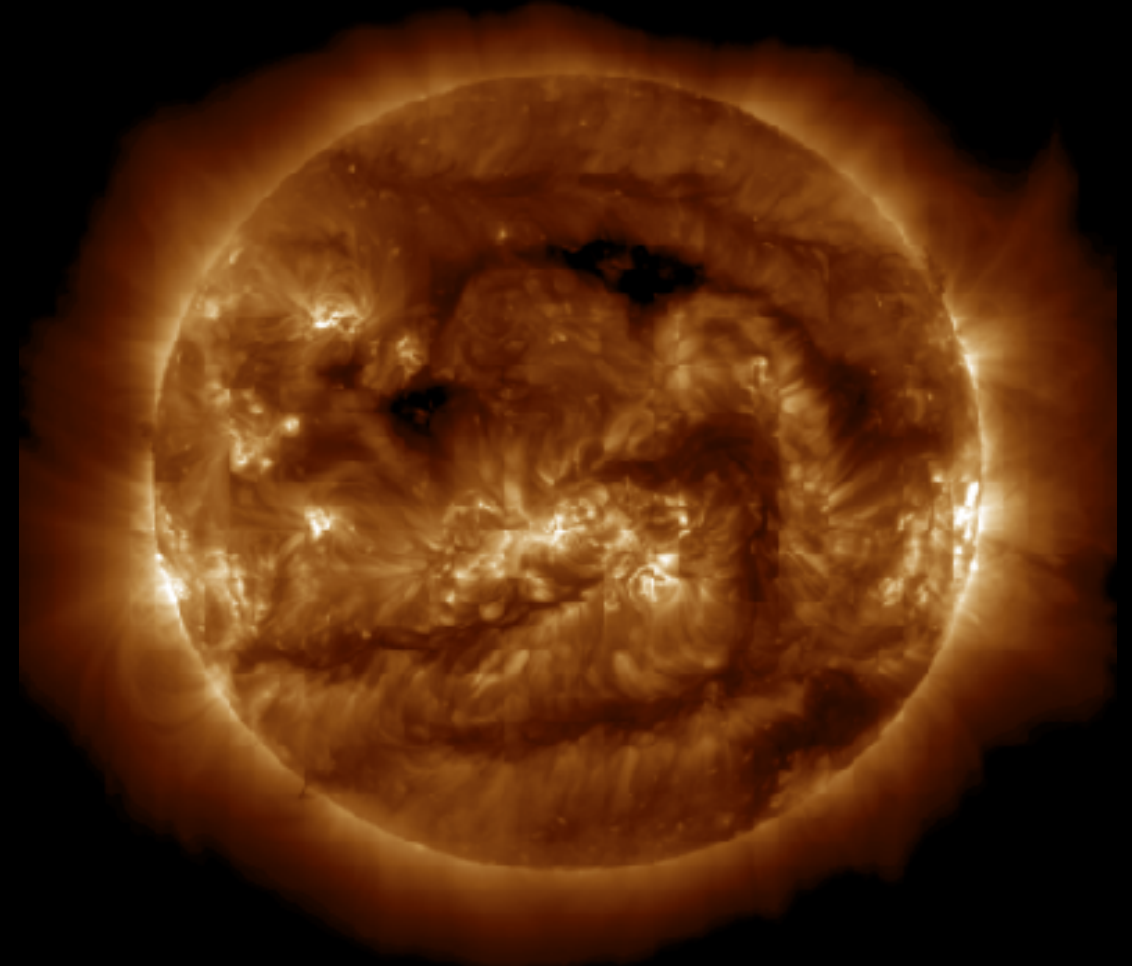
2024-12-07T00:00:01.427

Coronal holes – previous rotation

GOES-R/SUVI 195 2025-01-05



GOES-R/SUVI 195 2024-12-10 (Last Rotation)



2025-01-05T12:56:11.869

2024-12-10T04:00:13.251

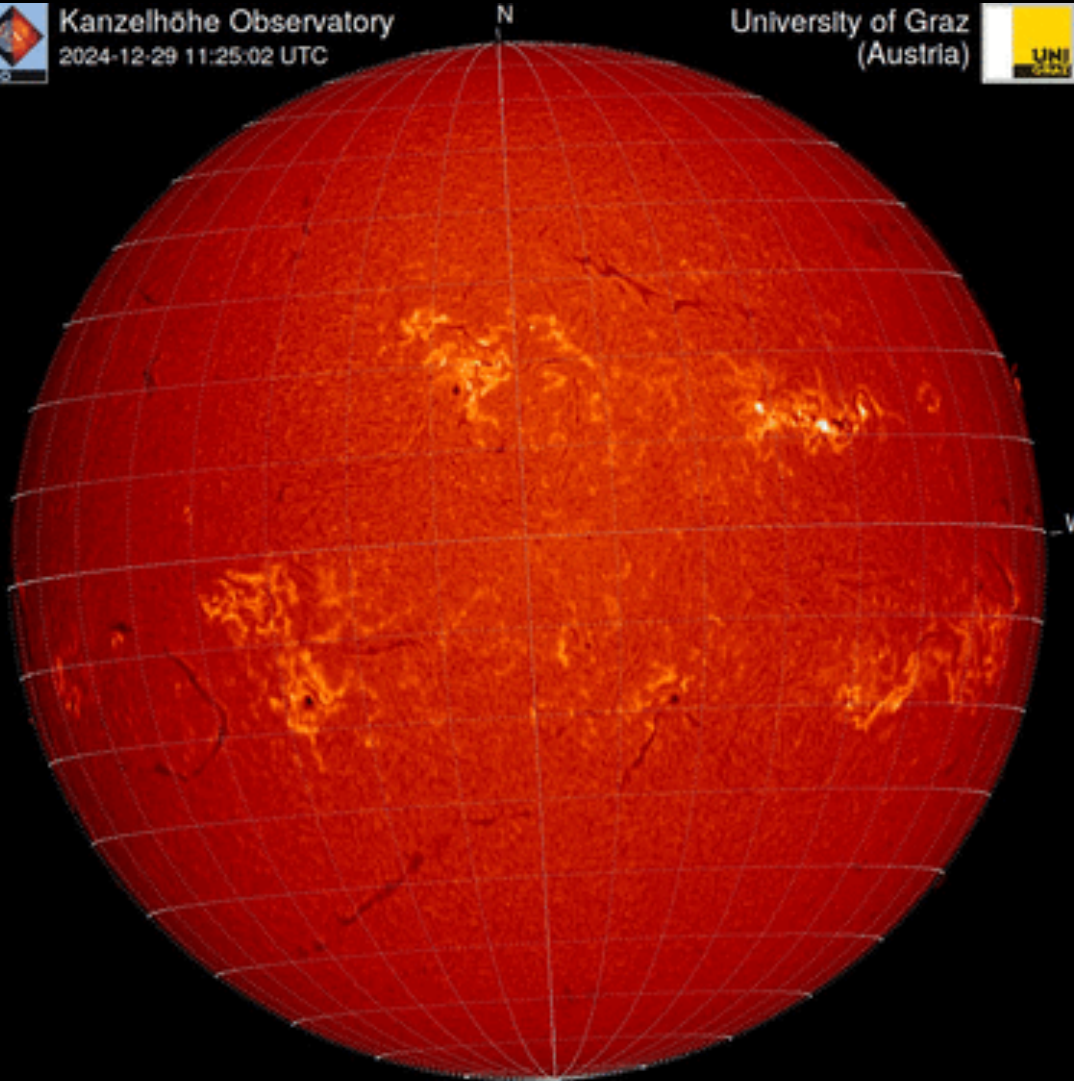
Filaments & Filament eruptions

H-alpha 2024-12-29



Kanzelhöhe Observatory
2024-12-29 11:25:02 UTC

University of Graz
(Austria)

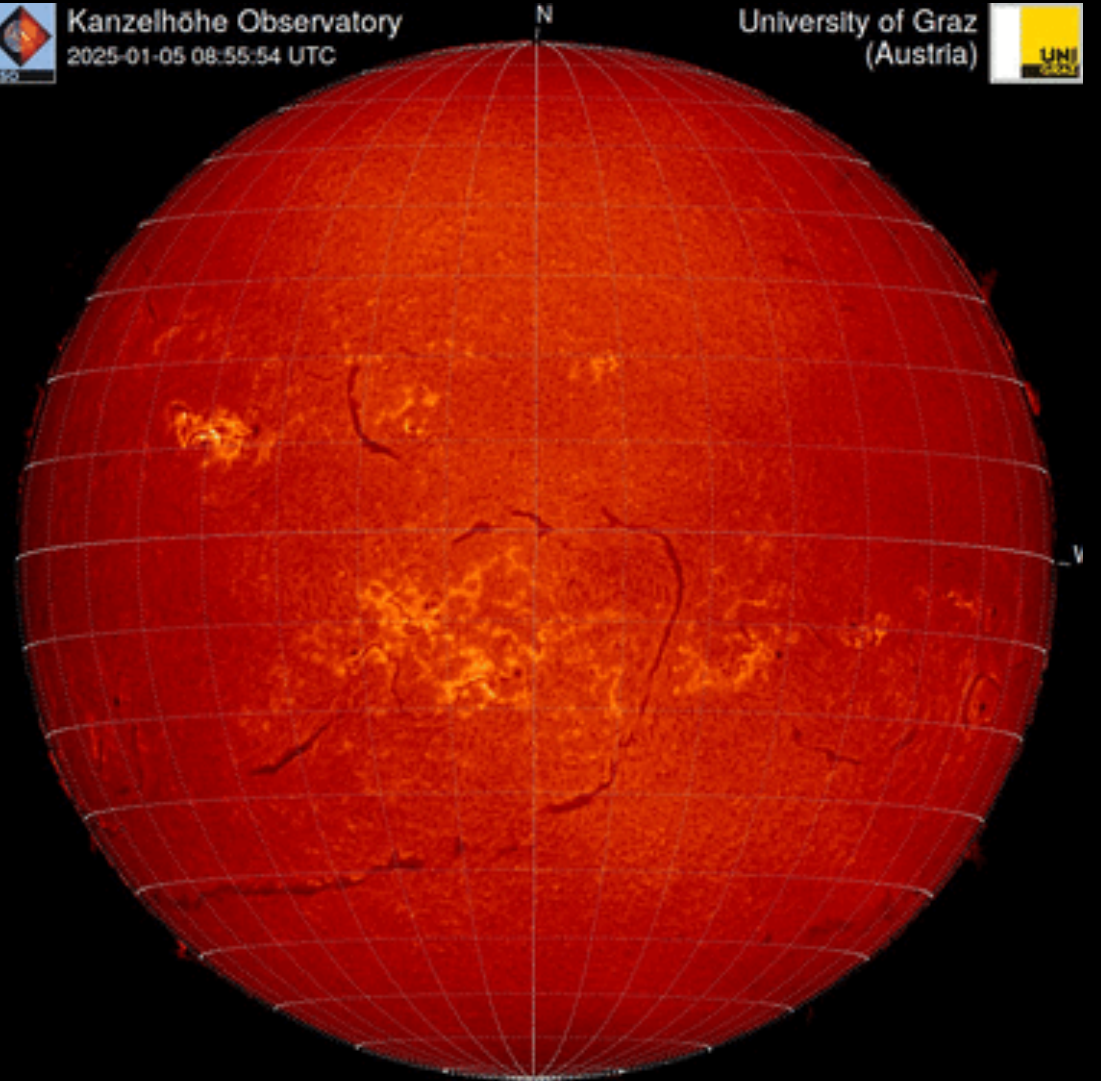


H-alpha 2025-01-05

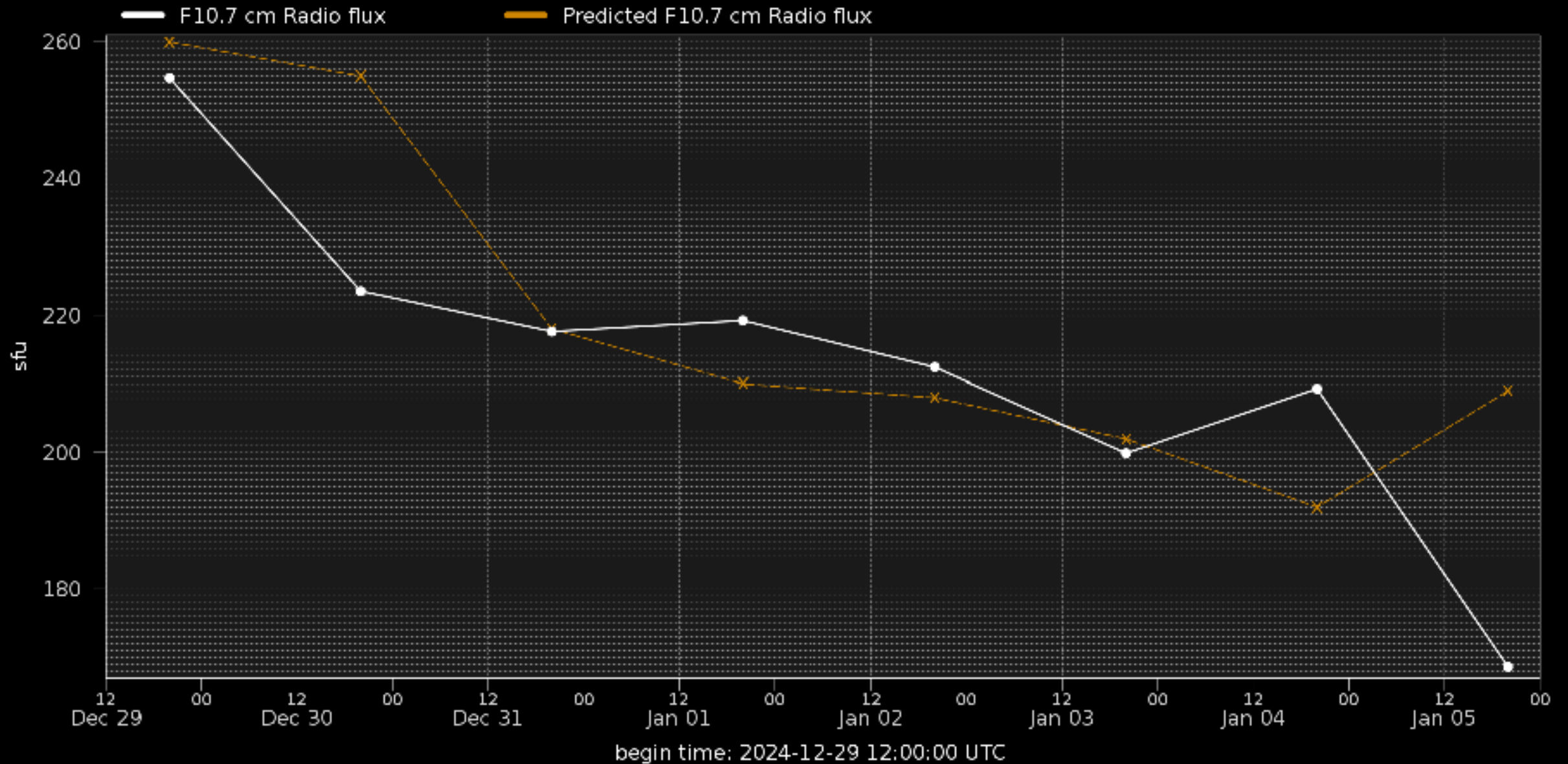


Kanzelhöhe Observatory
2025-01-05 08:55:54 UTC

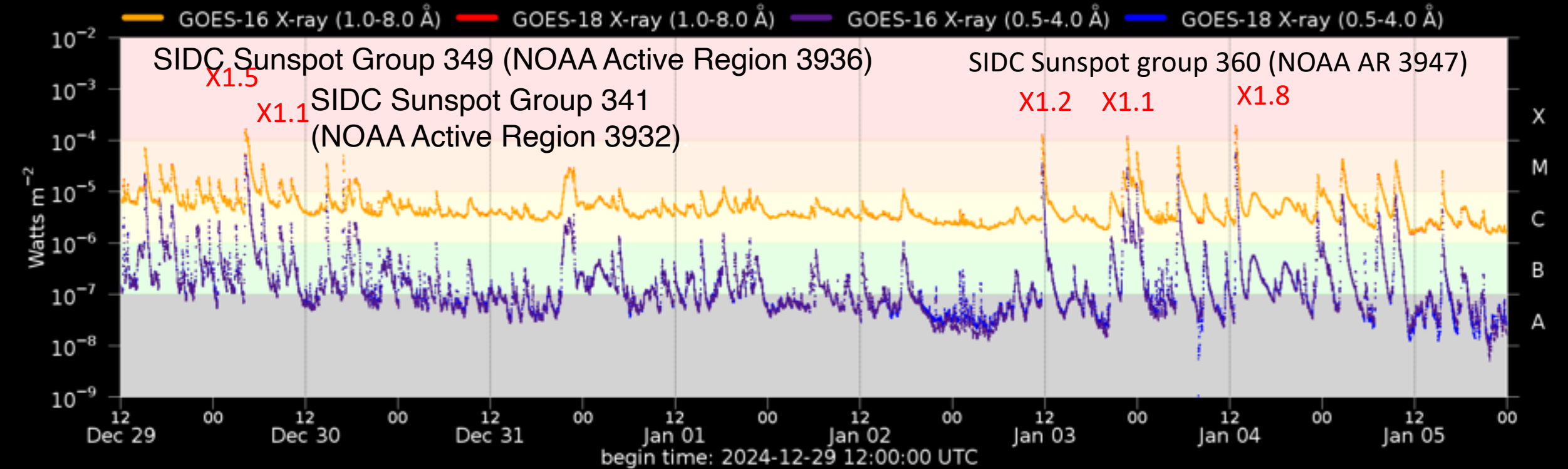
University of Graz
(Austria)



Solar F10.7cm radio flux



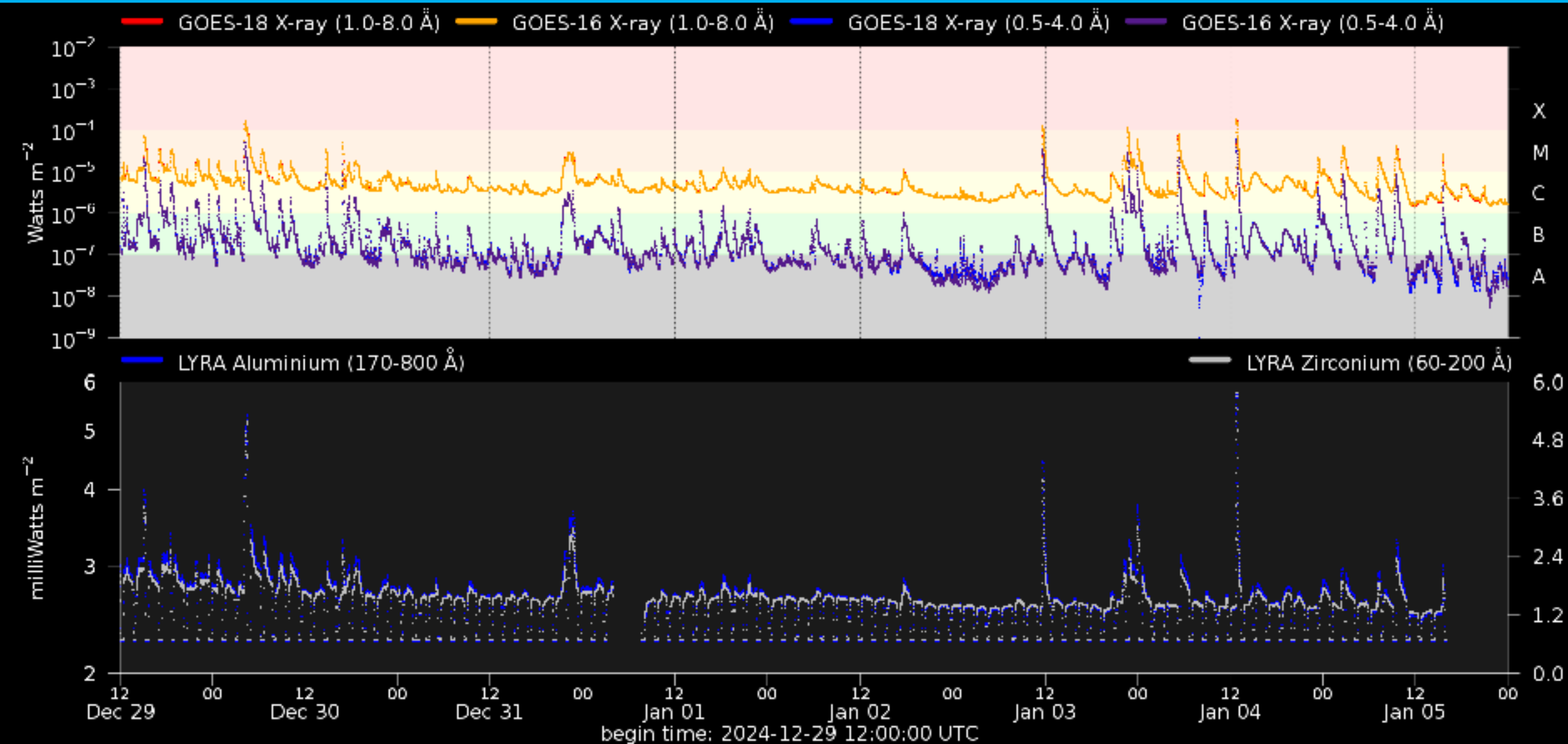
Flaring activity



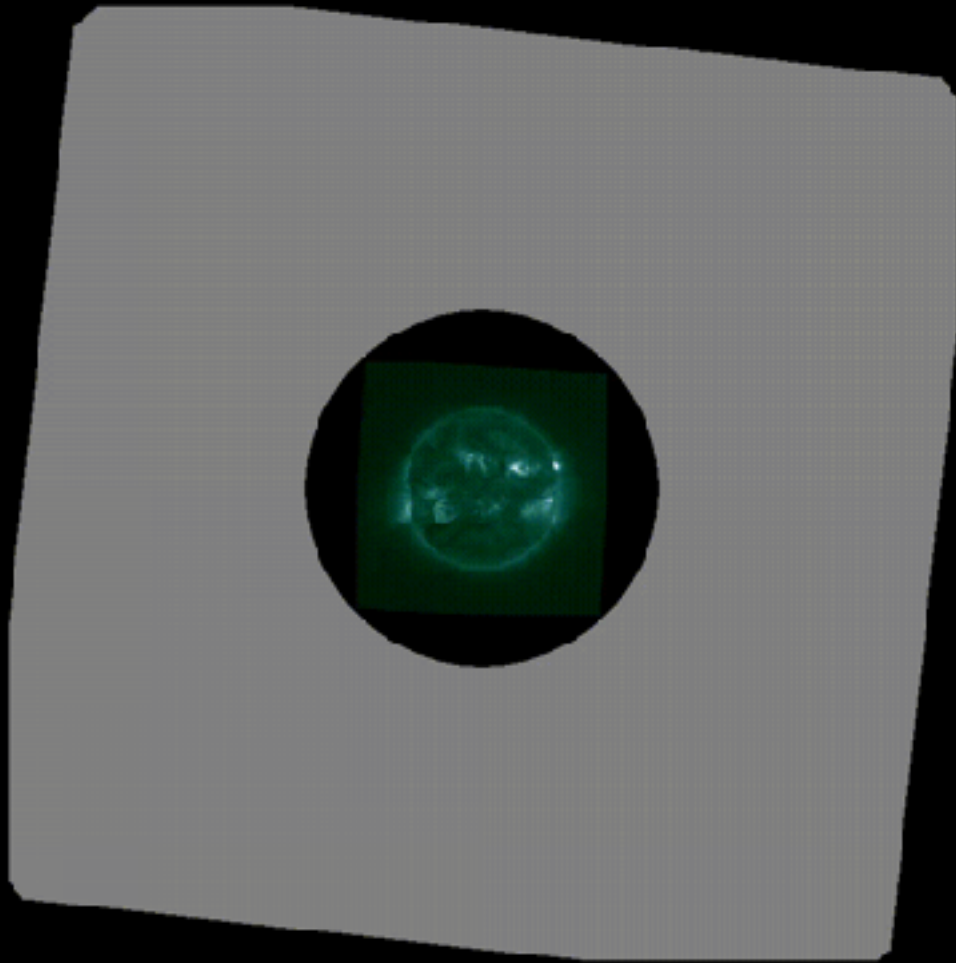
Probabilities (%) and occurrences (#) of C/M/X-flares daily, from noon to noon:

Issue date	2024-12-29	2024-12-30	2024-12-31	2025-01-01	2025-01-02	2025-01-03	2025-01-04	2025-01-05
Probability (%)	99 98 26	99 90 25	99 90 30	99 90 30	99 85 15	99 75 20	99 80 20	99 85 25
Observed (#)	02 15 01	03 07 00	04 04 00	03 03 00	04 01 01	06 04 01	03 04 01	03 02 00

Solar X-Ray and UV flux



Coronal Mass Ejections

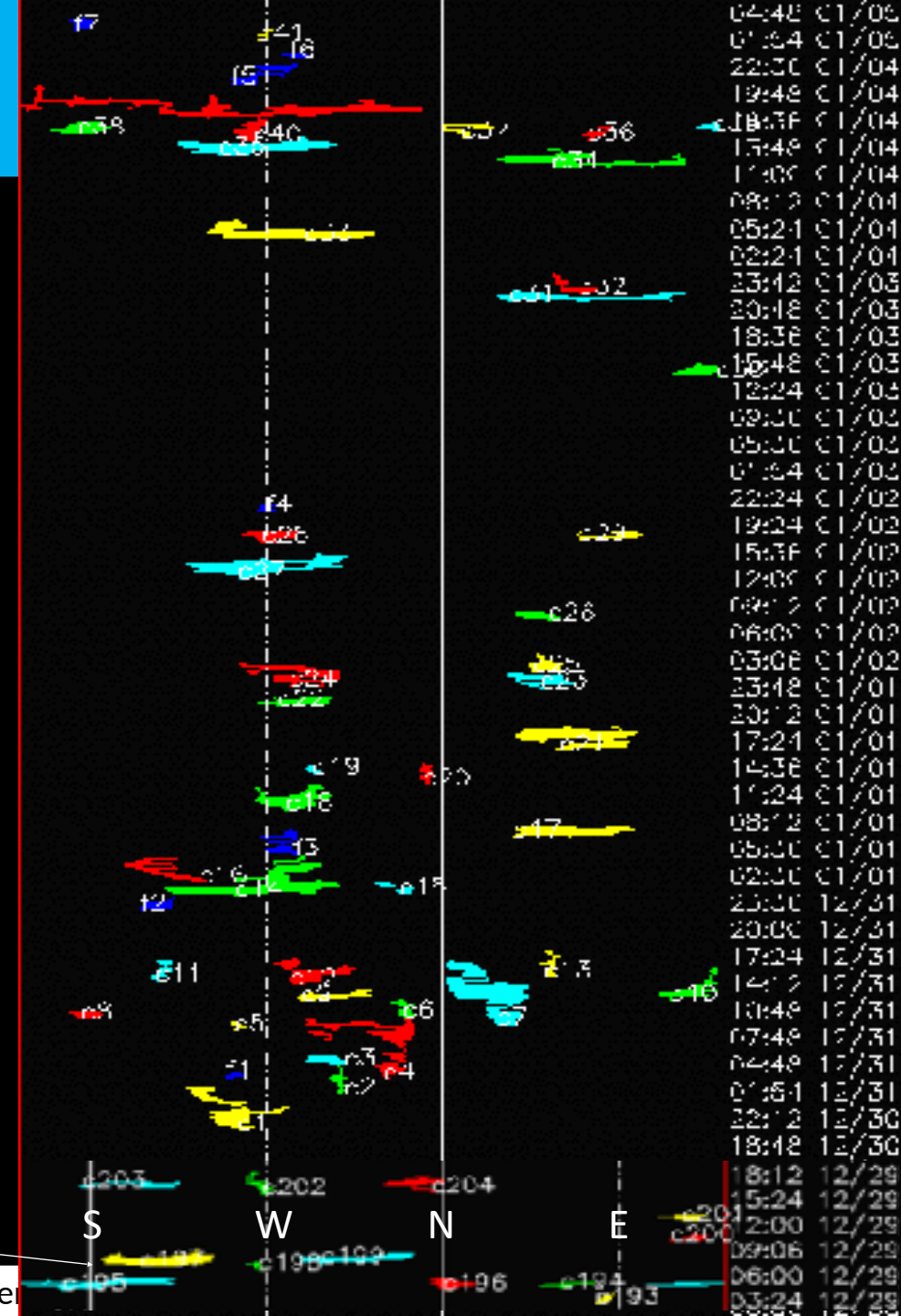


**Partial Halo
Coronal Mass
Ejection (CME) to
south east**
- 06:12 UTC Dec 29
in SOHO/LASCO-C2

Details:
- M2 flare at 04:30
UTC - SIDC Sunspot
Group 351 (NOAA AR
3939) in the south-
east of the solar disk.

Predicted arrival
20:00 UTC Dec 31.

Arrived
15:45 UTC Dec 31



2024-12-29T00:48:53.810

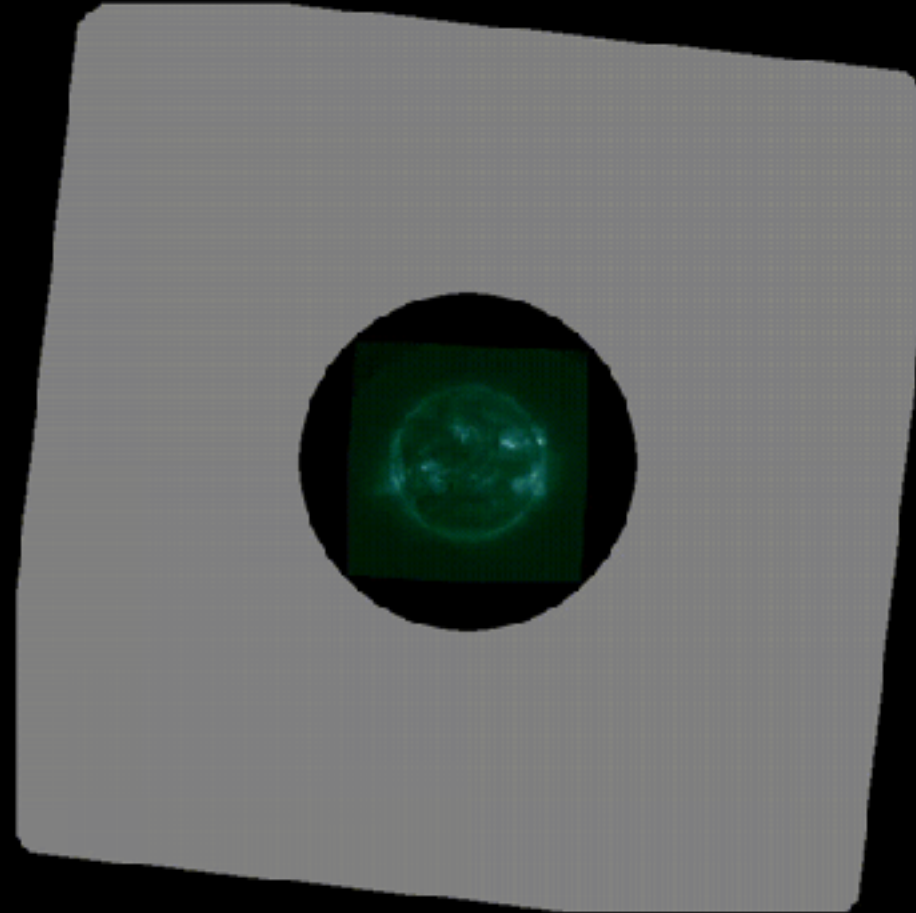
Coronal Mass Ejections

Faint Partial Halo CME to the south-east SOHO/LASCO-C2 data from 18:12 UTC on Dec 29

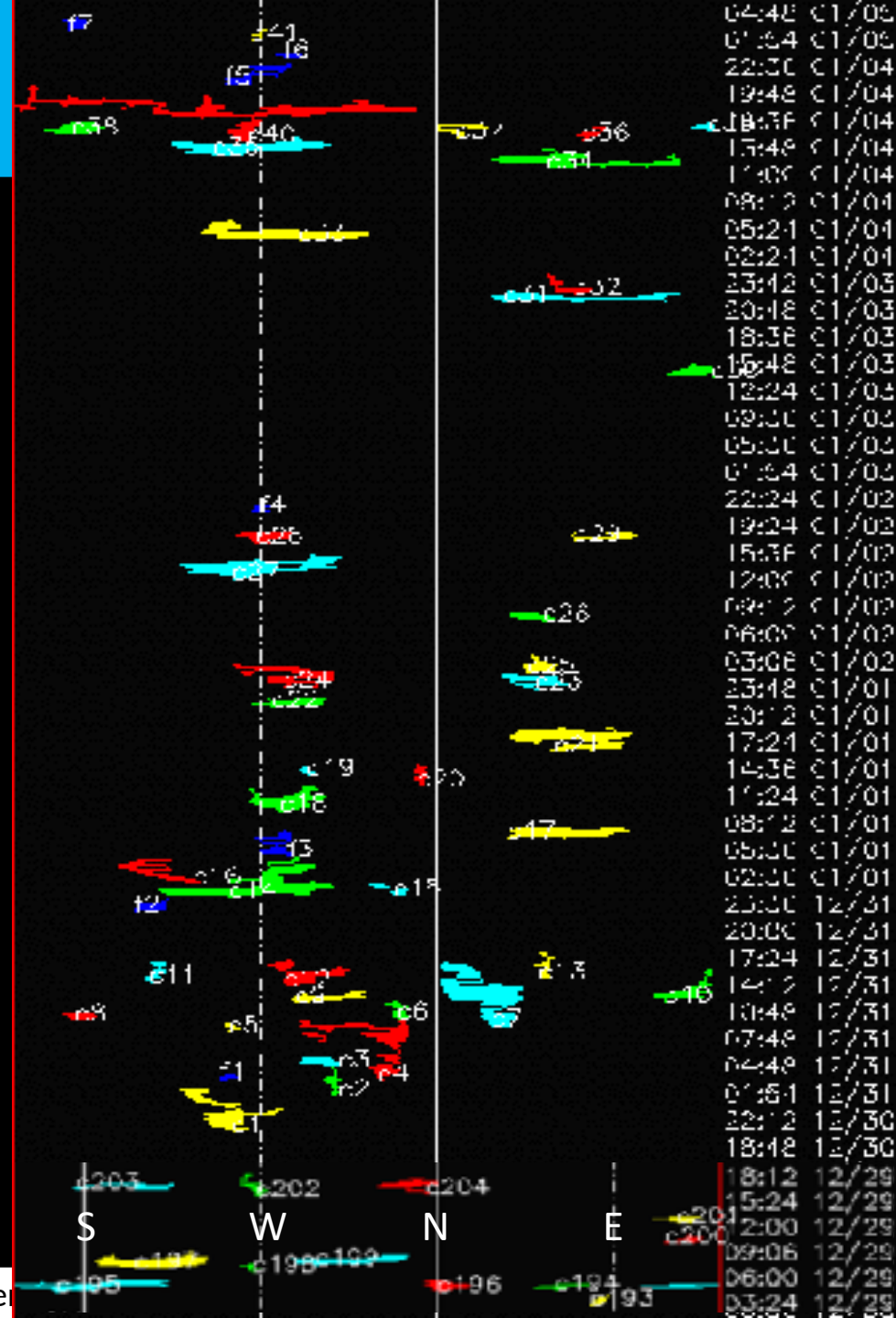
On disk dimming and eruption visible in the south-east quadrant near SIDC Sunspot Group 351 (NOAA AR 3939)

Predicted arrival
10:00 UTC Jan 01

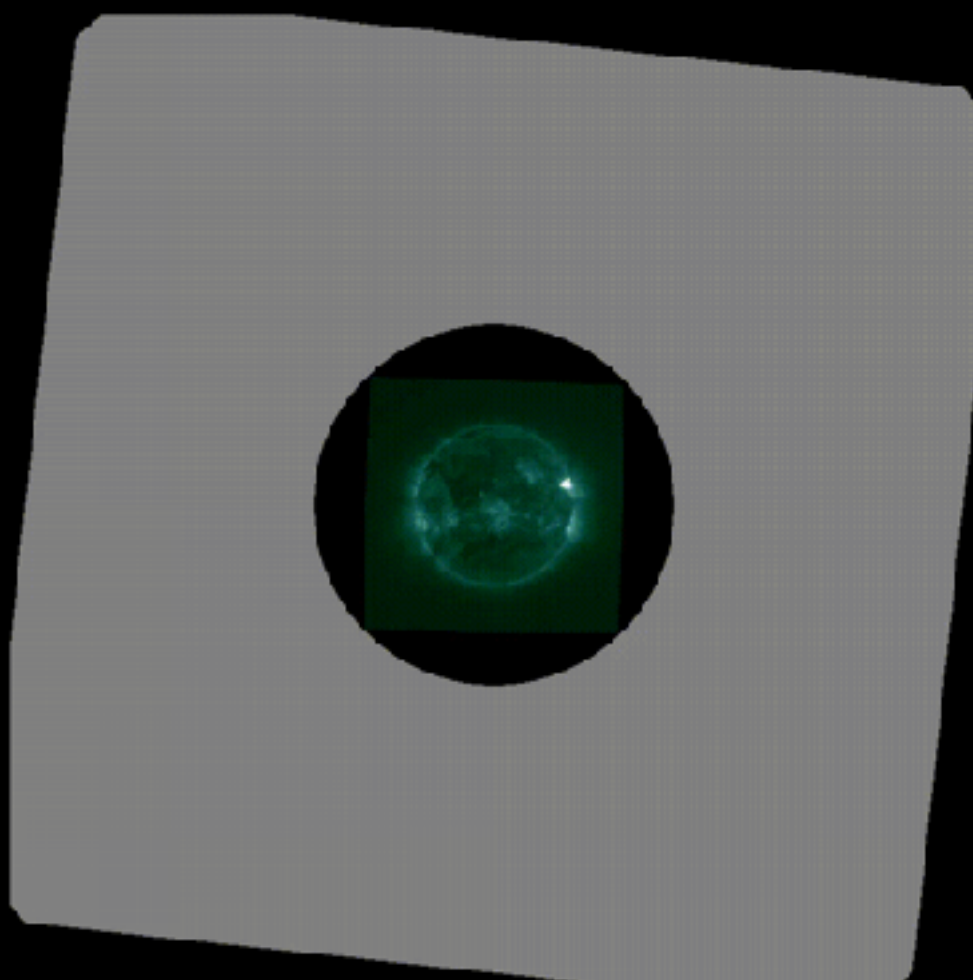
Arrived
10:05 UTC Jan 02



2024-12-29T12:50:55.702



Coronal Mass Ejections



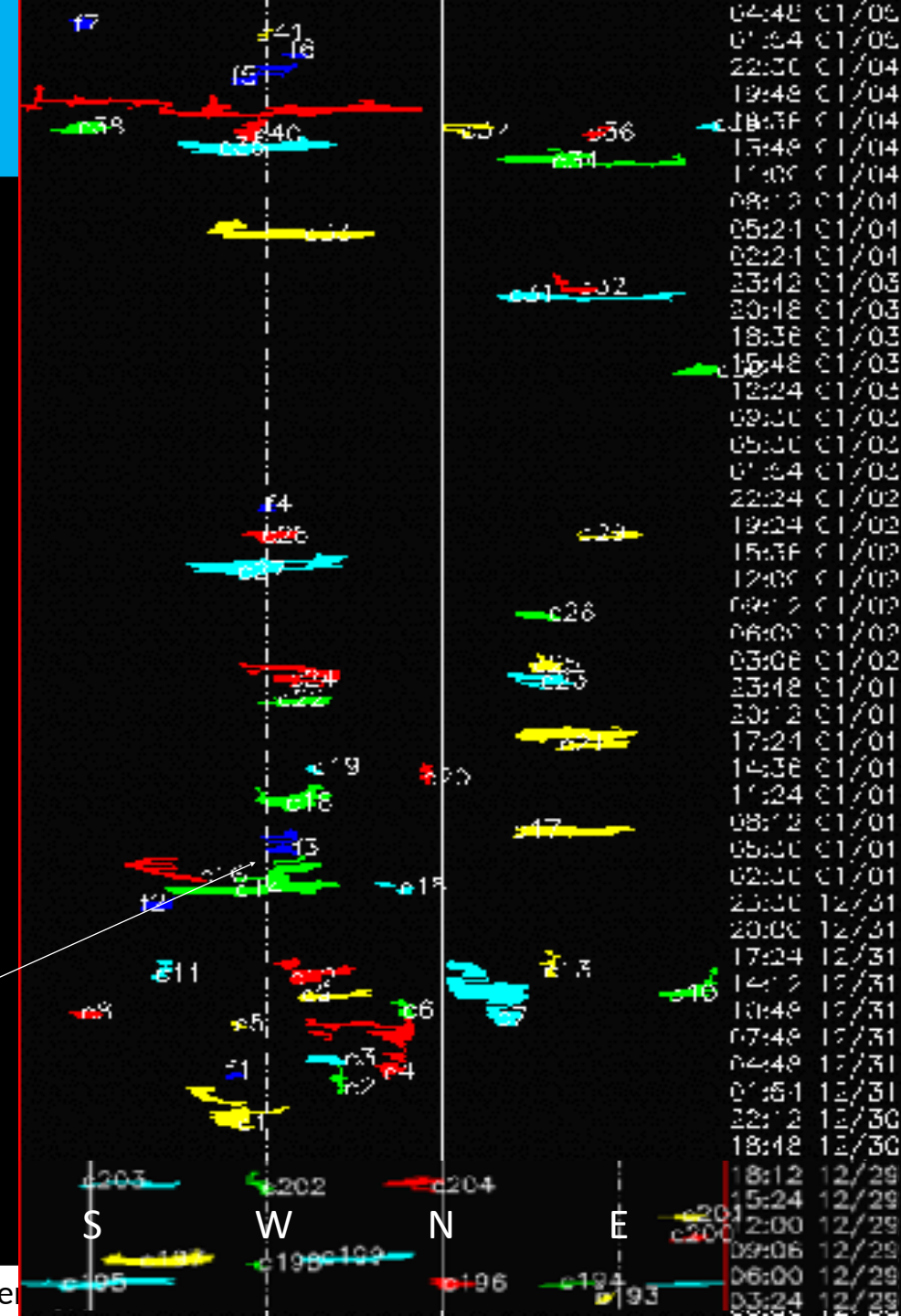
2024-12-31T22:33:04.674

Faint Coronal Mass Ejection (CME) can be seen in SOHO/LASCO-C2 data from 02:20 UTC January 01, directed to the south-west.

A filament eruption at the disk centre near SIDC Sunspot Group 351 (NOAA AR 3939) around January 01 01:00 UTC.

Predicted arrival
22:00 UTC Jan 03

Arrived?
23:30 UTC Jan 03?

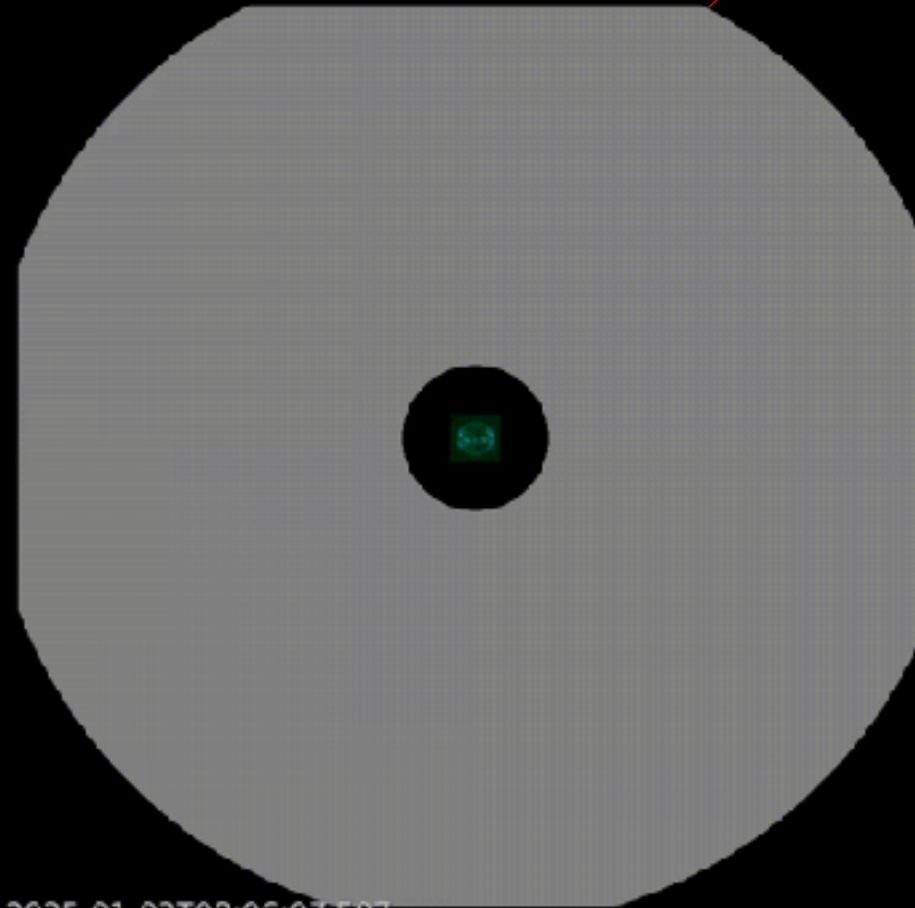


Coronal Mass Ejections

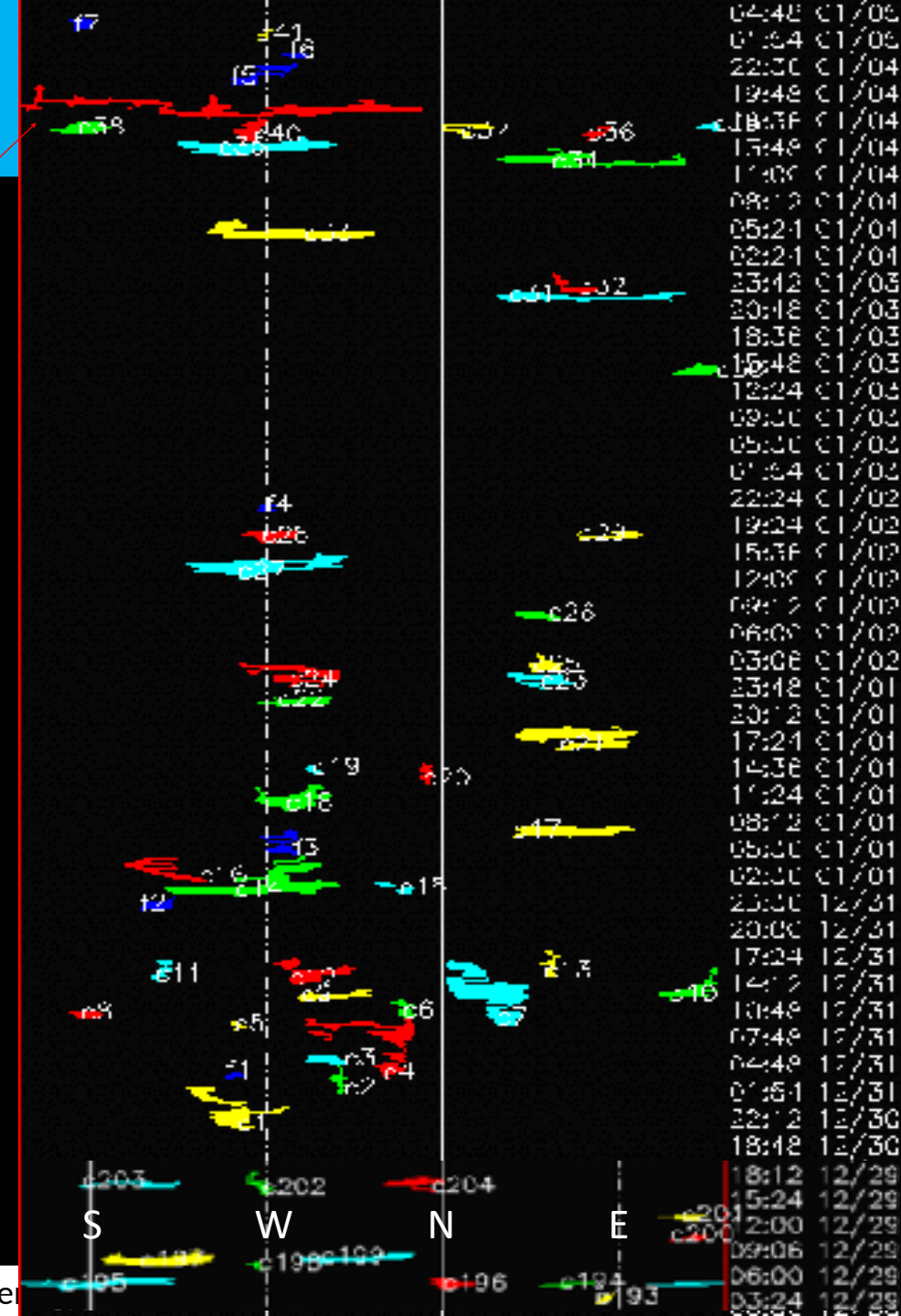
A partial halo Coronal Mass Ejection directed to the south-west was first detected in SOHO/LASCO-C2 imagery from 18:54 UTC Jan 04.

Long duration C7.6 flare from SIDC
Sunspot group 351 (NOAA Active Region 3939).

Prediction:
Possible glancing blow at Earth from Jan 07 04:00 UTC



2025-01-03T08:06:07.507



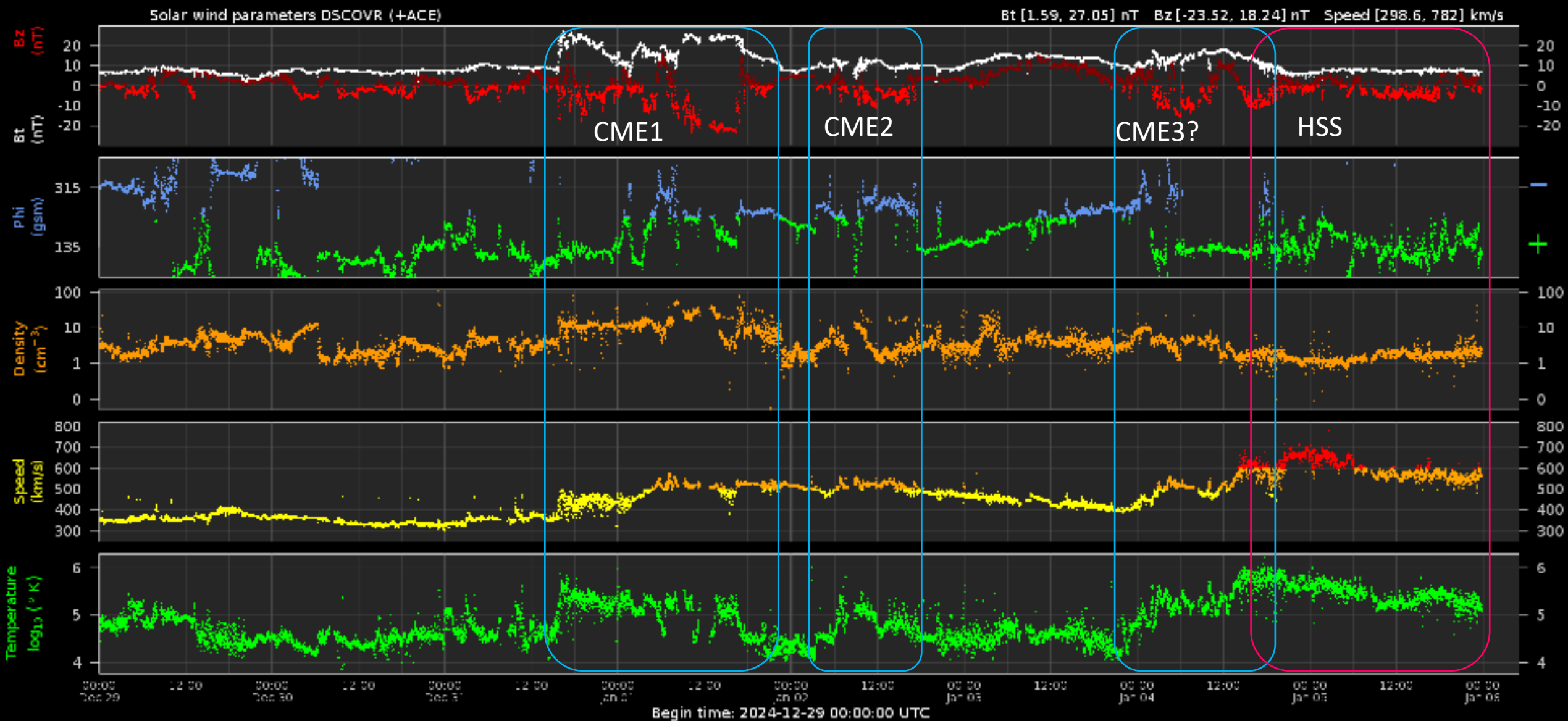
Solar Wind and Geomagnetic Activity



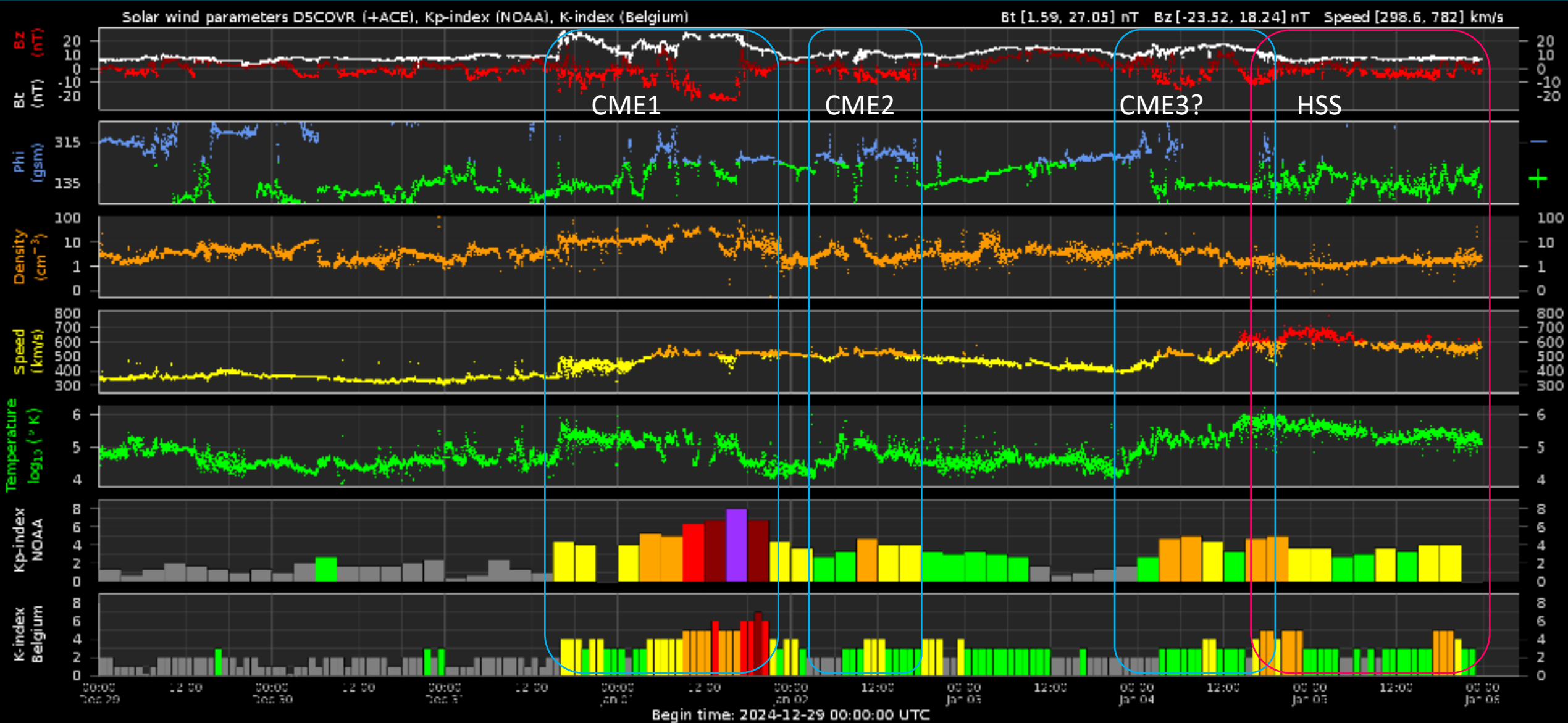
Royal Observatory
of Belgium

Solar Influences
Data analysis Centre
www.sidc.be

Solar wind parameters



Solar wind parameters & K-indices



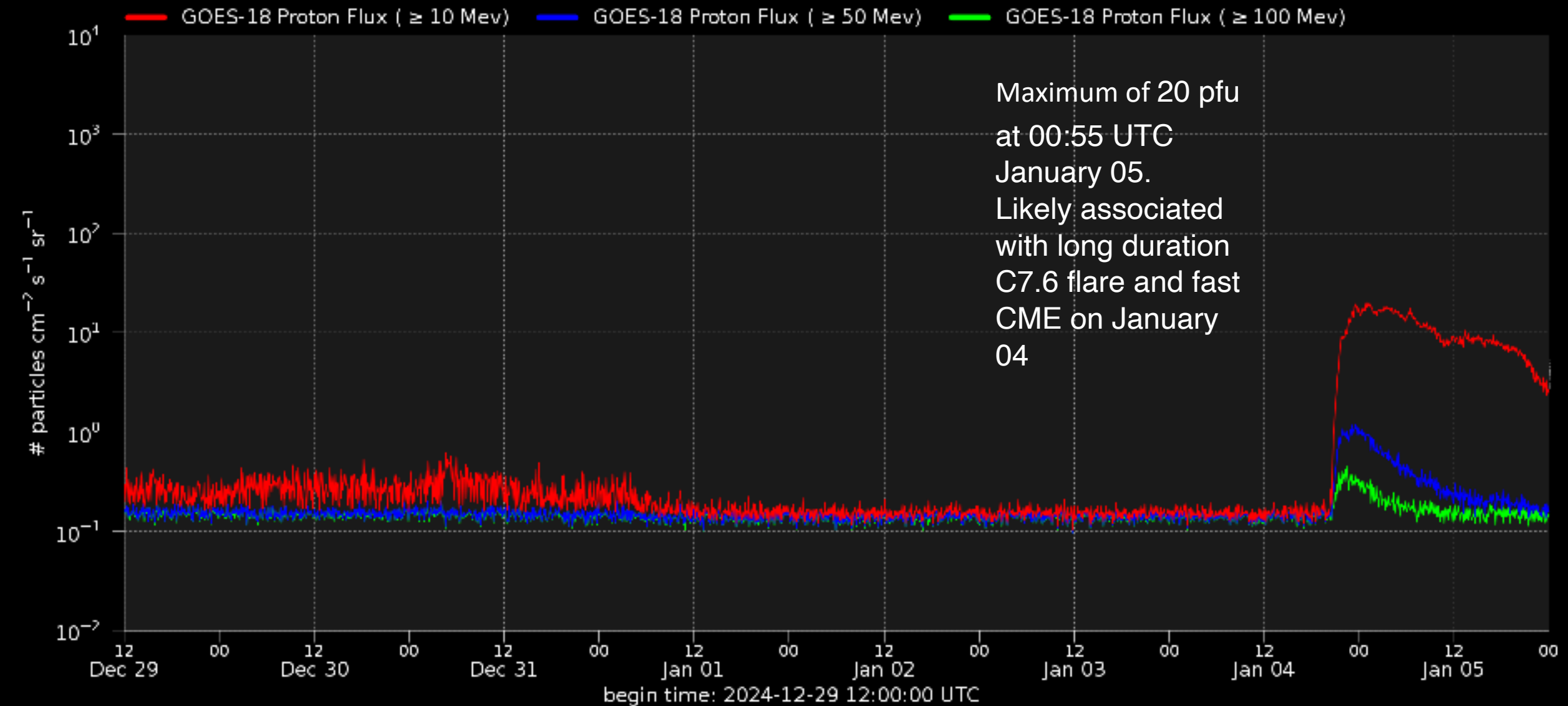
Energetic Particles



Royal Observatory
of Belgium

Solar Influences
Data analysis Centre
www.sidc.be

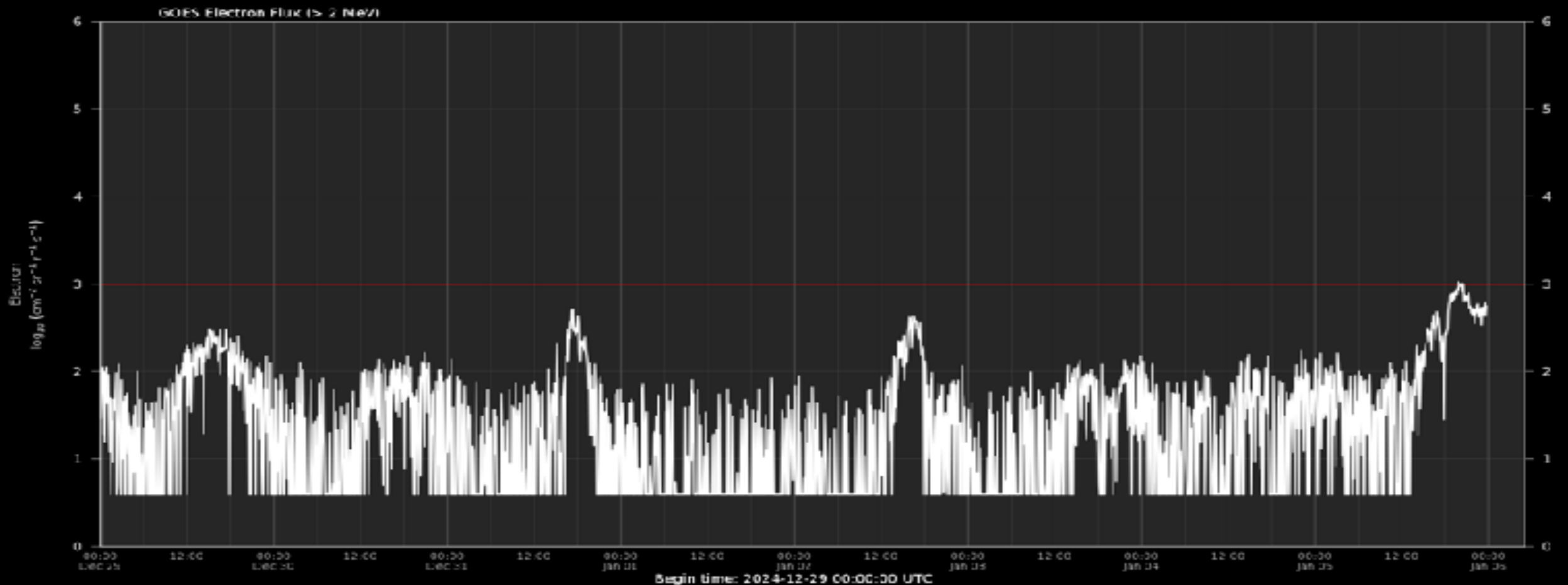
Solar proton flux



Electron flux at GEO

www.stce.be/educational/classification#electrons

www.spaceweather.gc.ca/forecast-prevision/space-spatiale/sffl-en.php



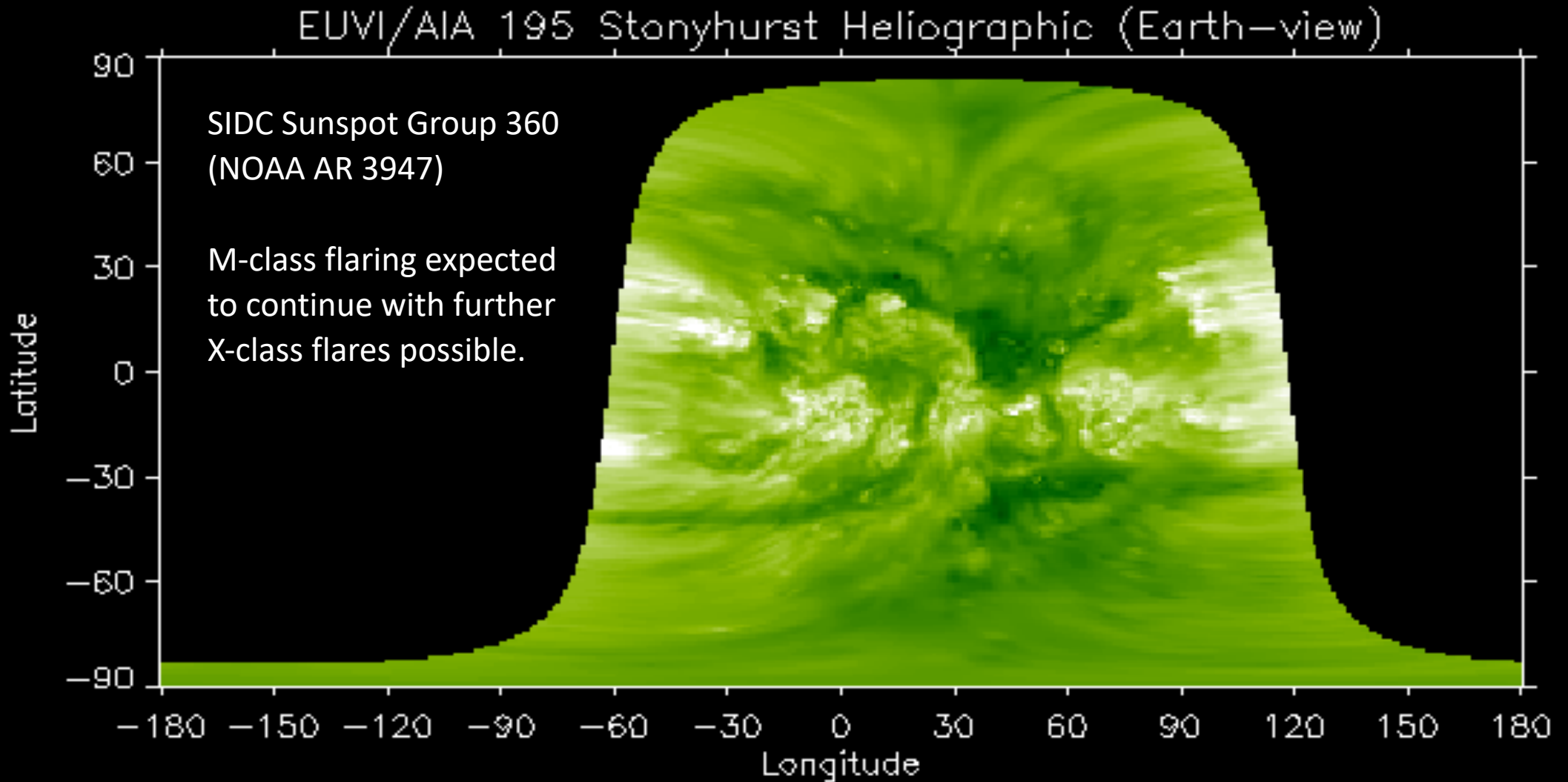
Outlook



Royal Observatory
of Belgium

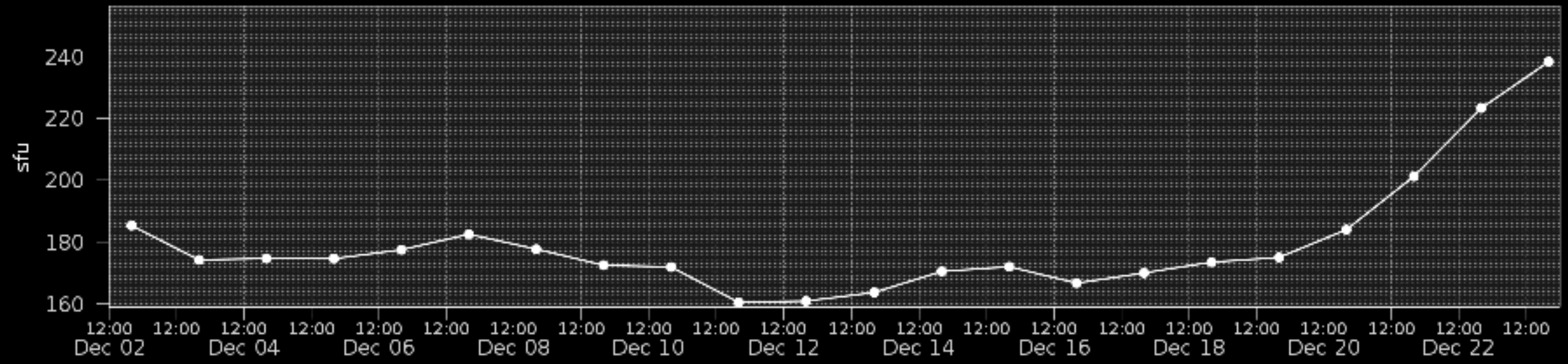
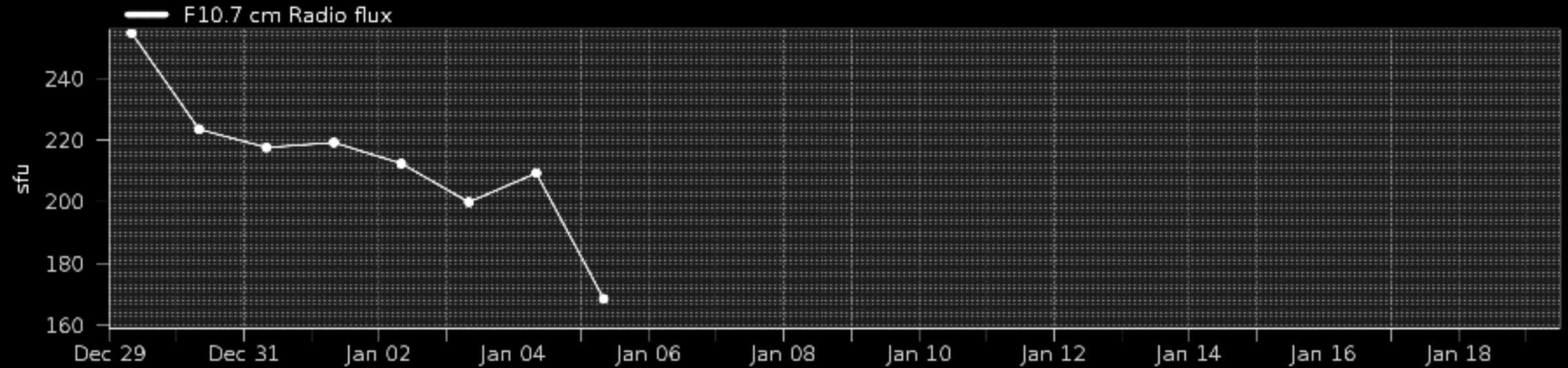
Solar Influences
Data analysis Centre
www.sidc.be

Outlook: Solar activity



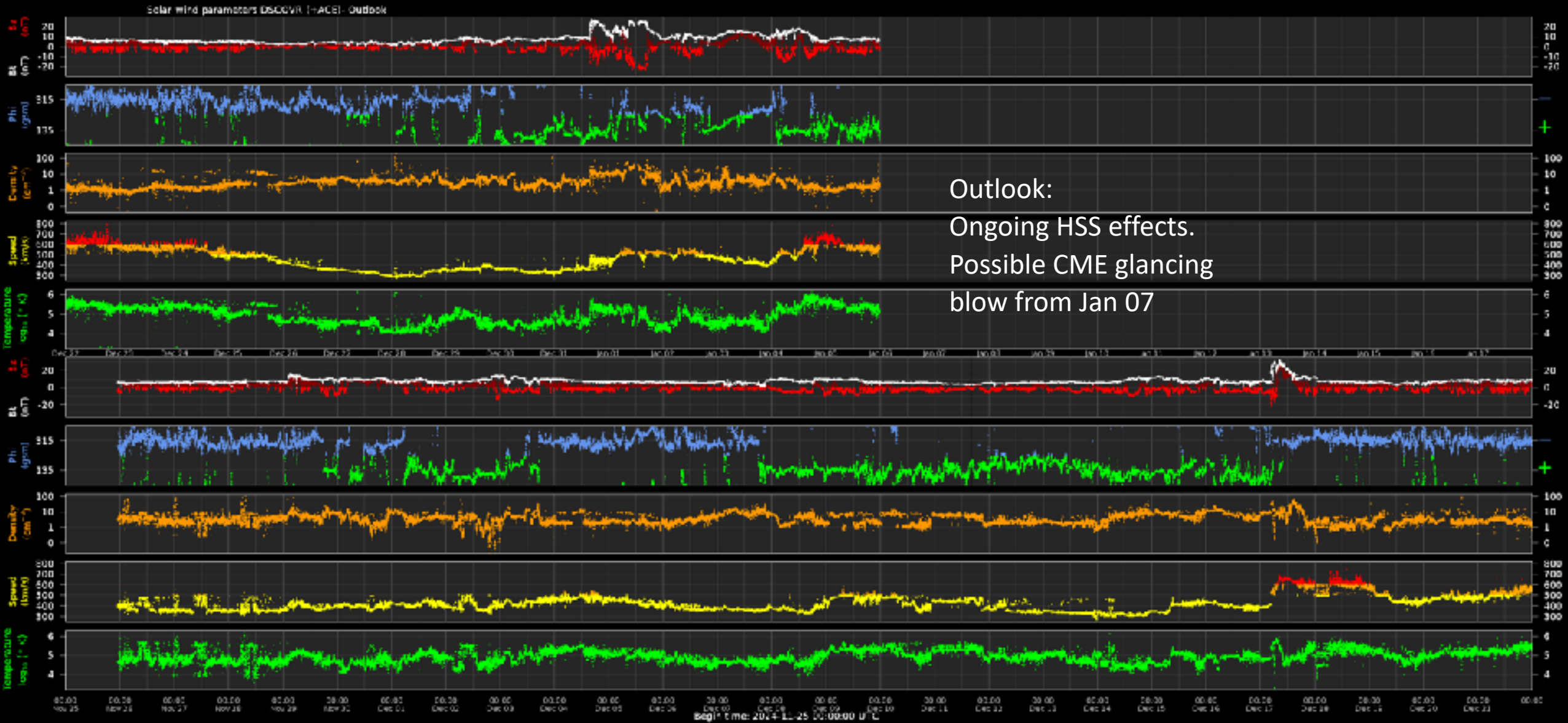
Observation date: 2025/01/05 22:35:00

Outlook: Solar F10.7cm radio flux

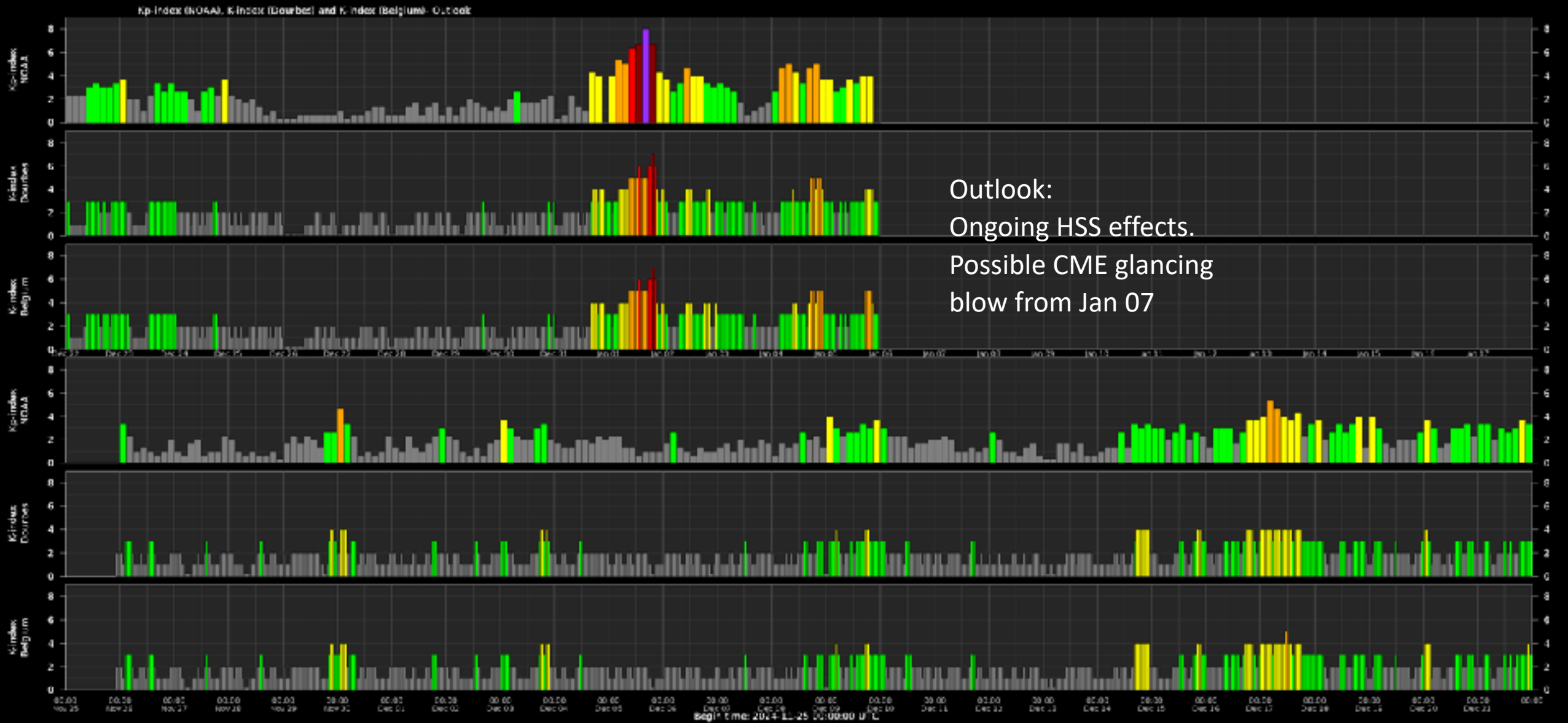


begin time: 2024-12-29 12:00:00 UTC

Outlook: Solar wind parameters



Outlook: Geomagnetic activity



Outlook: Electron Flux at GEO Outlook



PECASUS



Royal Observatory
of Belgium

Solar Influences
Data analysis Centre
www.sidc.be

Pegasus related events

Advisories Issued for :

- Scintillation (equatorial plasma bubbles and polar regions)
- Short Wave Fade out (4 events with X-ray flux > X1)
- Post storm depression (KP >6)
- Auroral Absorption (Kp 8)
- Polar Cap Absorption (proton event)

SIDC Space Weather Briefing

See you at our next briefing!

Or visit us at www.sidc.be



Royal Observatory
of Belgium

Solar Influences
Data analysis Centre
www.sidc.be