SIDC Space Weather Briefing

01 September 2024-08 September 2024

de Patoul Judith

& the SIDC forecaster team

Royal Observatory
of Belgium

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Summary Report

Solar activity from 2024-09-01 12:00 to 2024-09-08 23:59

Active regions	NOAA Active Region 3806, 3807 and 3813 Produced the M-class Flares
Flares	# C-class flare: 36 **# M-class flare: 17** # X-class flare: 0
Coronal Holes	Small CHs Crossed the Central Meridian
CMEs	2 Halo CMEs back sided + 1 Halo CME associated with a filament

Proton flux	Proton flux increased following a M-class flare in September 01
Electron flux	Reached the threshold following the Solar Wind Shock event

Solar wind and geomagnetic conditions

ICMEs	One Solar wind Shock event associated to a CME on September 1
Solar wind conditions	|B|: 0.77 - 26.86 nT // Bz: -11.49 nT to 21.58 nT // Speed: 315.5 - 585.1km/s
Geomagnetic conditions	max KBel: 4.0, max Kp(NOAA): 4.33, Active conditions (due to the Solar Wind Shock)

All Quiet Alert: OFF (not quiet)

Summary Report – 5 PRESTO ALERTS

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:Issued: 2024 Sep 01 1908 UTC
:Product: documentation at http://www.sidc.be/products/presto
#-----------------------------------------------------------------#
# FAST WARNING 'PRESTO' MESSAGE  from the SIDC (RWC-Belgium)      #
#-----------------------------------------------------------------#
A halo coronal mass ejection (CME) was detected in LASCO/C2 coronagraph
imagery starting at 12:00 UTC on September 1. The CME is directed
primarily to the southeast from Earth's perspective and is likely
associated with an M5.5 flare that peaked at 13:22 UTC on September 1,
originating from an active region behind the east limb. Due to the
location of the source region, no impact on Earth is expected.
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:Issued: 2024 Sep 03 1431 UTC
:Product: documentation at http://www.sidc.be/products/presto
#-----------------------------------------------------------------#
# FAST WARNING 'PRESTO' MESSAGE  from the SIDC (RWC-Belgium)      #
#-----------------------------------------------------------------#
A halo coronal mass ejection (CME) was first observed in the SOHO/LASCO-
C2 coronograph images around 08:12 UTC on Sep 03. It was mostly directed
towards NW, with a faint full halo signature. This CME is determined to
be a back-sided event and will not influence the Earth.
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:Issued: 2024 Sep 04 1314 UTC
:Product: documentation at http://www.sidc.be/products/presto
#-----------------------------------------------------------------#
# FAST WARNING 'PRESTO' MESSAGE  from the SIDC (RWC-Belgium)      #
#-----------------------------------------------------------------#
A solar wind shock was observed today, September 4, at 09:35 UTC. The
interplanetary magnetic field increased from approximately 9 nT to 20
nT, while the solar wind speed rose from around 320 km/s to 400 km/s.
This shock could be linked to the arrival of the coronal mass ejection
(CME) associated with the M5.5 flare that peaked at 13:22 UTC on
September 1. The halo CME was primarily directed toward the southeast
from Earth's perspective and had a projected speed of 781 km/s. Solar
wind conditions are expected to intensify in the coming days as a result
of this solar wind shock.
```

```
:Issued: 2024 Sep 06 1244 UTC
:Product: documentation at http://www.sidc.be/products/presto
#-----------------------------------------------------------------#
# FAST WARNING 'PRESTO' MESSAGE  from the SIDC (RWC-Belgium)      #
#-----------------------------------------------------------------#
A halo coronal mass ejection (CME) was detected in LASCO/C2 coronagraph
images at 06:12 UTC on September 5. The projected speed is estimated to
be about 600-700 km/s. This eruption is believed to be directed towards
the far side of the Sun, as no source region could be identified on the
visible disk.
```

```
:Issued: 2024 Sep 08 1256 UTC
:Product: documentation at http://www.sidc.be/products/presto
#-----------------------------------------------------------------#
# FAST WARNING 'PRESTO' MESSAGE  from the SIDC (RWC-Belgium)      #
#-----------------------------------------------------------------#
A halo coronal mass ejection (CME) was detected in LASCO/C2 coronagraph
images at 00:36 UTC on September 8. This CME is associated with the
filament eruption located at 15 degrees North and 23 degrees West. The
projected speed is estimated to be about 600 km/s in the northwest
direction. This eruption is believed to be Earth-directed and is
currently under analysis. A preliminary estimate suggests an arrival
time of September 10.
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Solar Activity

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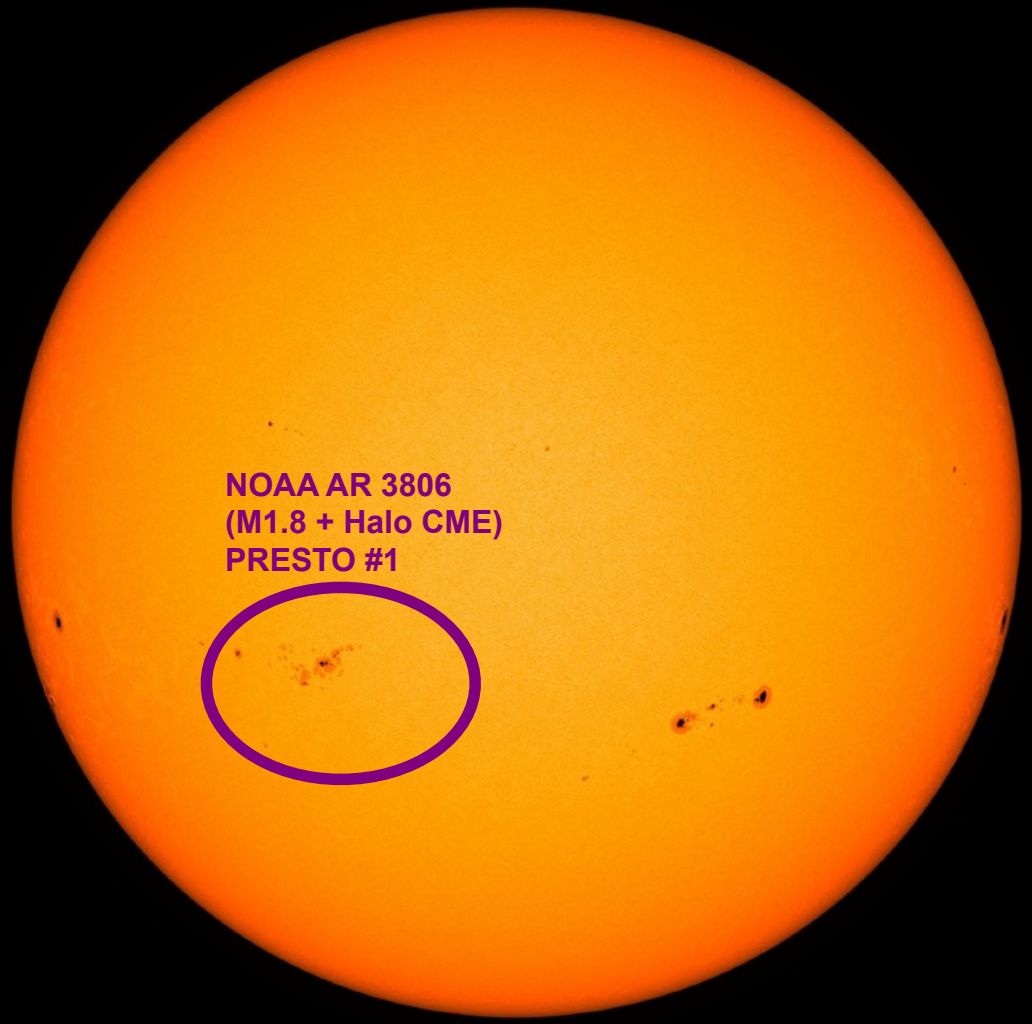
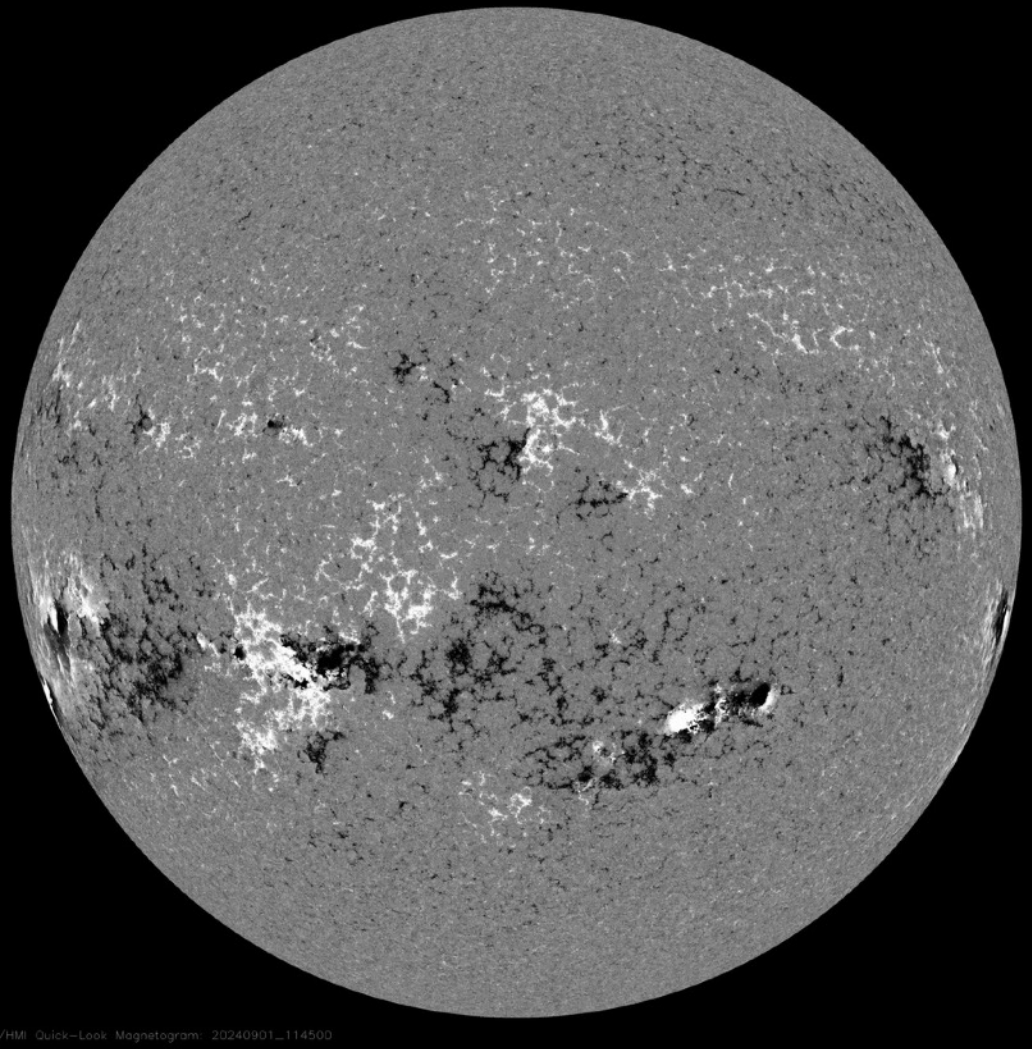
Solar active regions

SDO/HMI White Light 2024-09-01

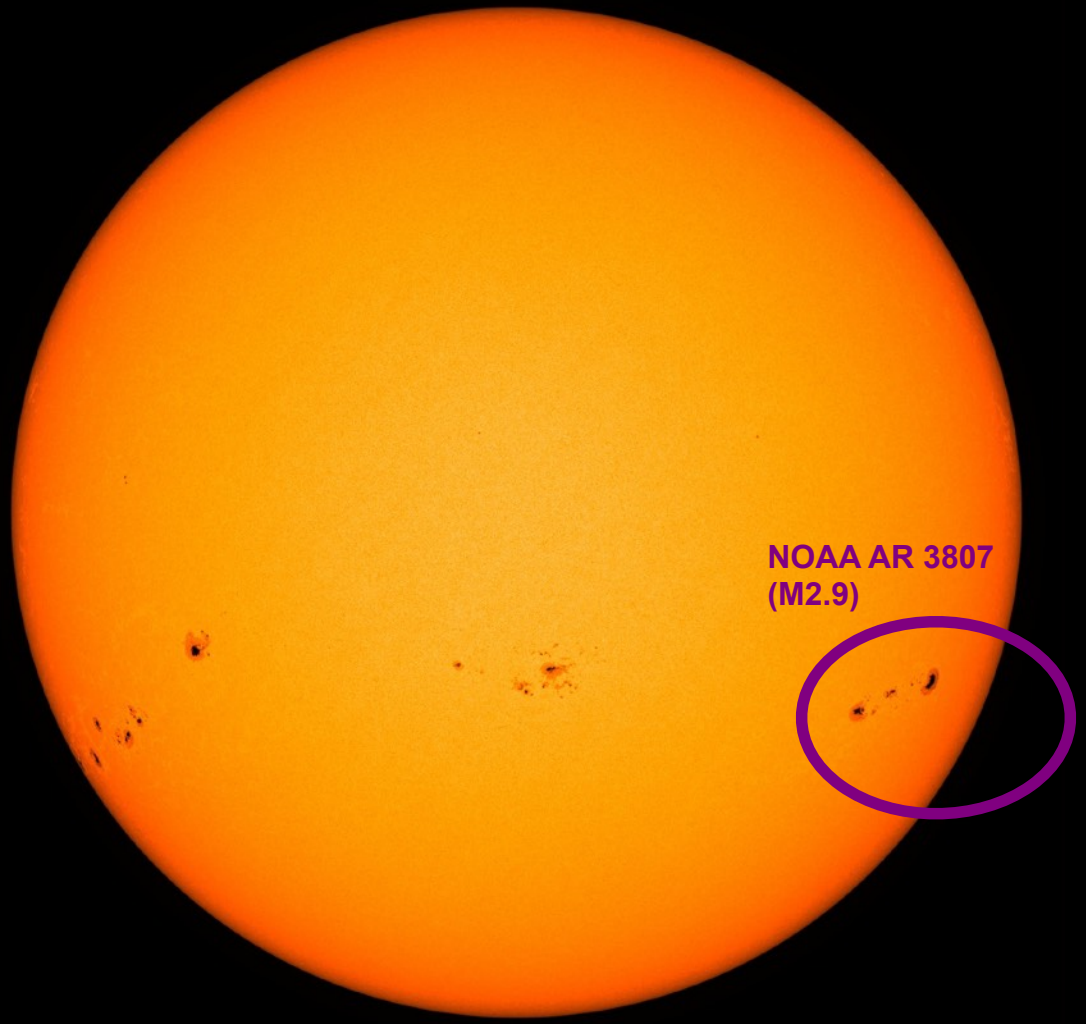


SDO/HMI Magnetogram 2024-09-01

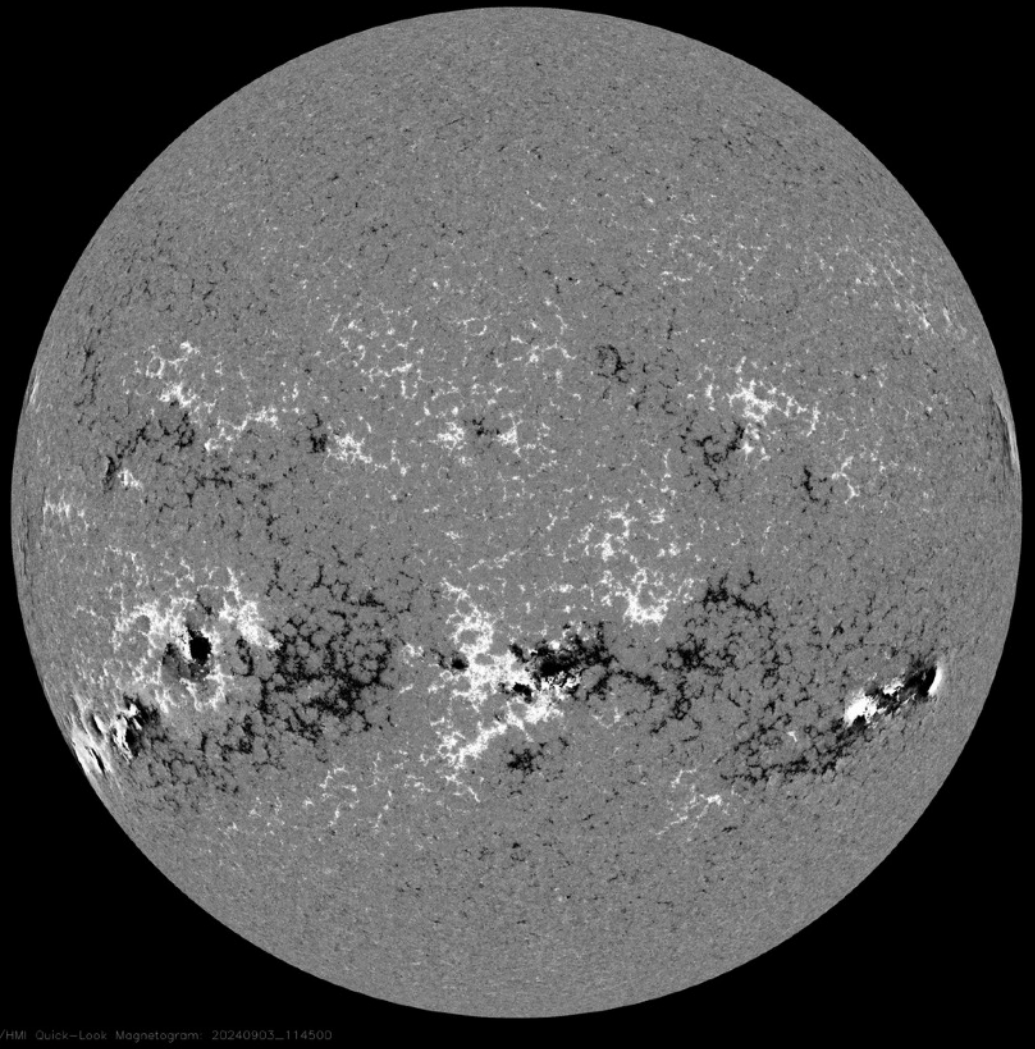


Solar active regions

SDO/HMI White Light 2024-09-03



SDO/HMI Magnetogram 2024-09-03



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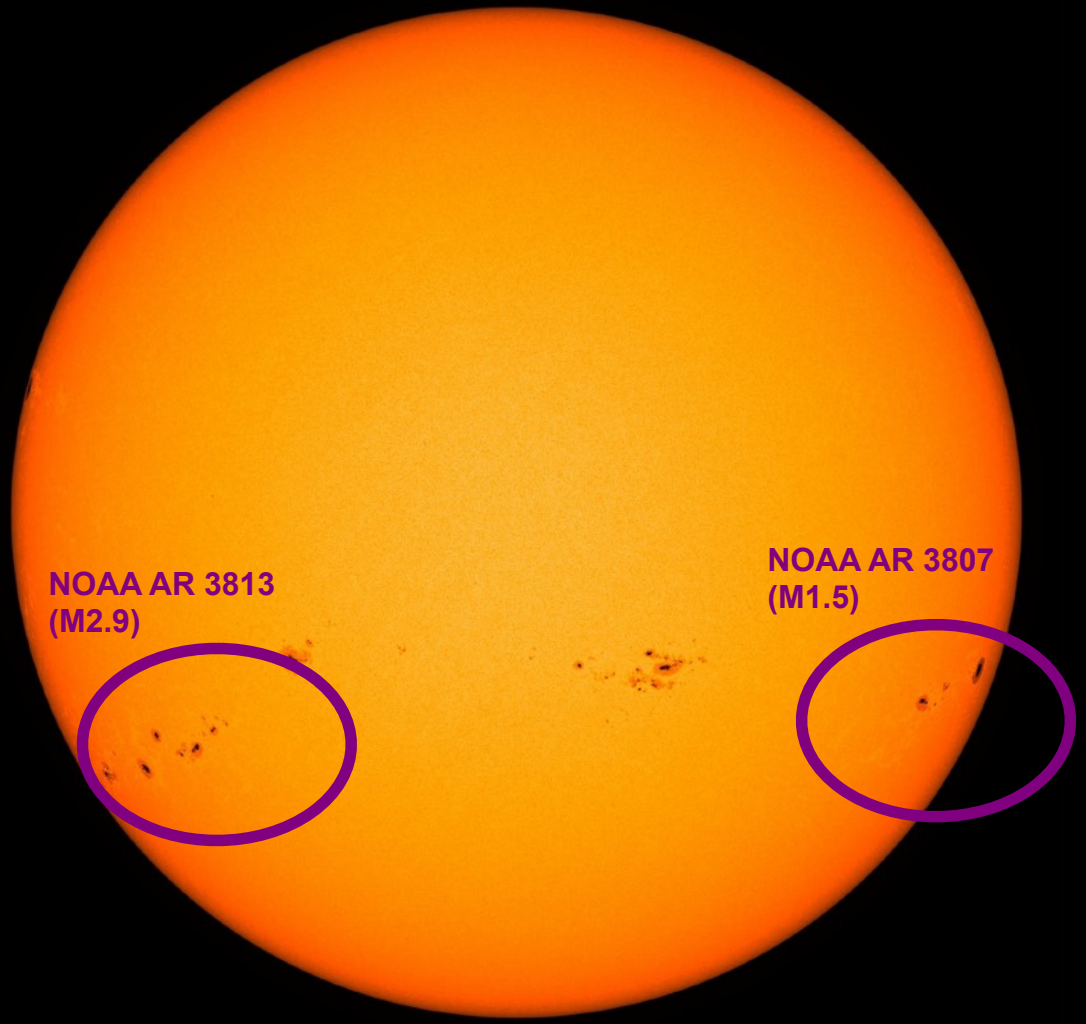
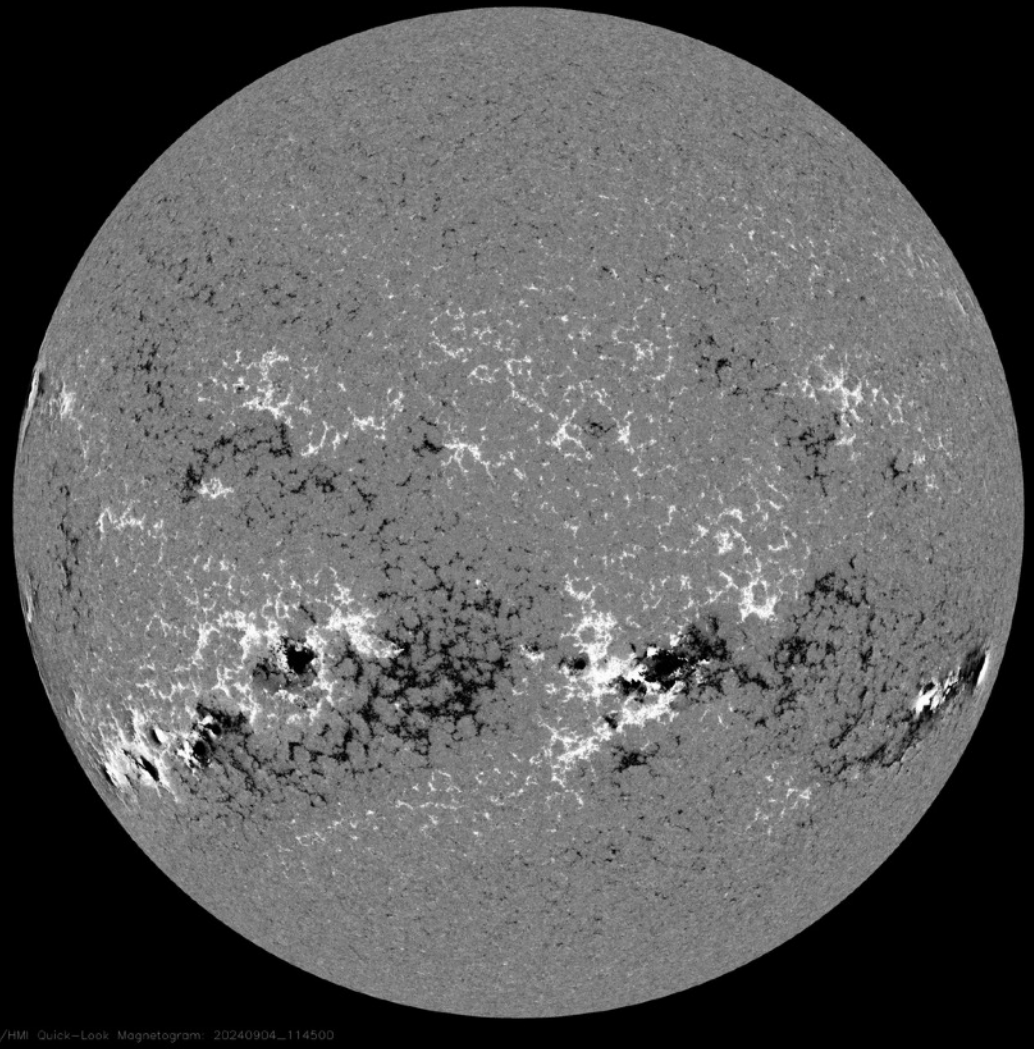
Solar active regions

SDO/HMI White Light 2024-09-04

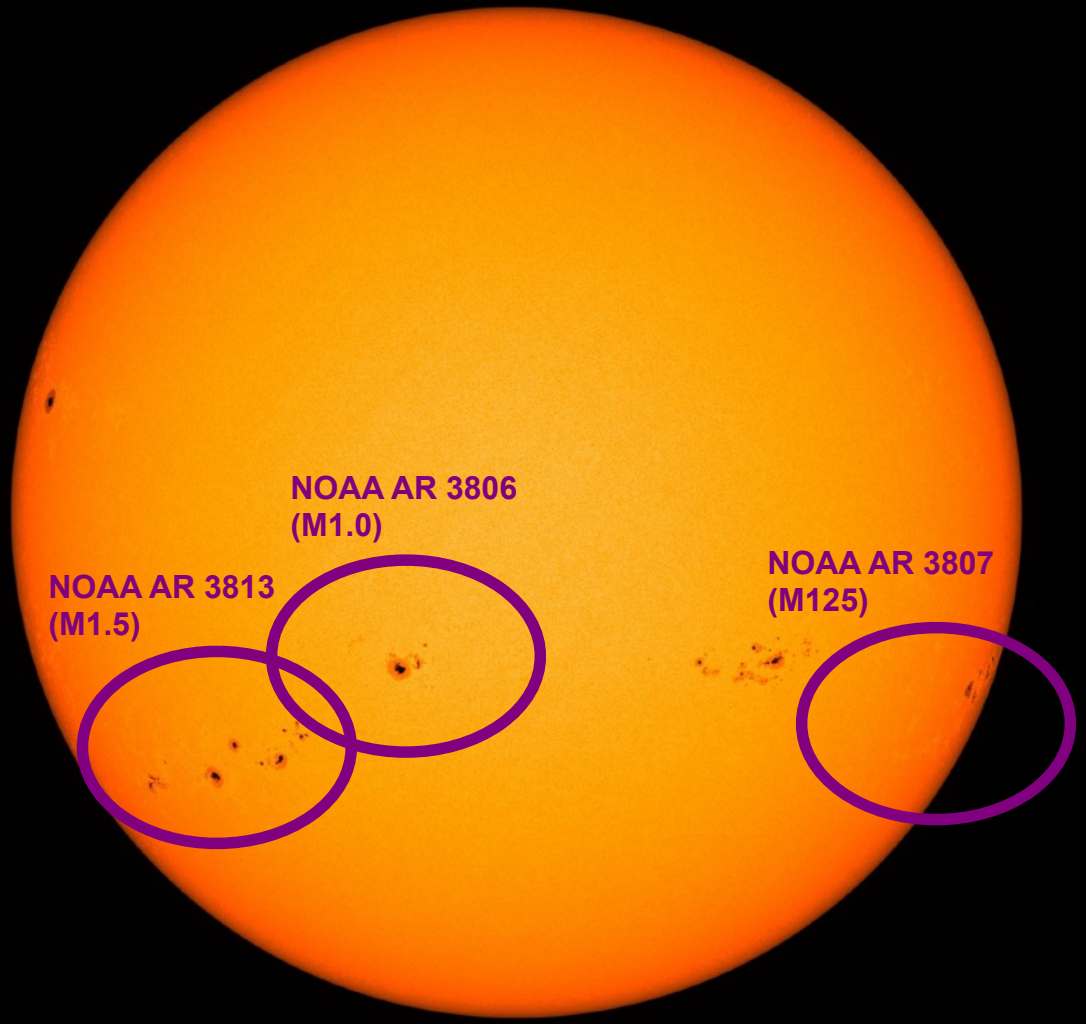


SDO/HMI Magnetogram 2024-09-04

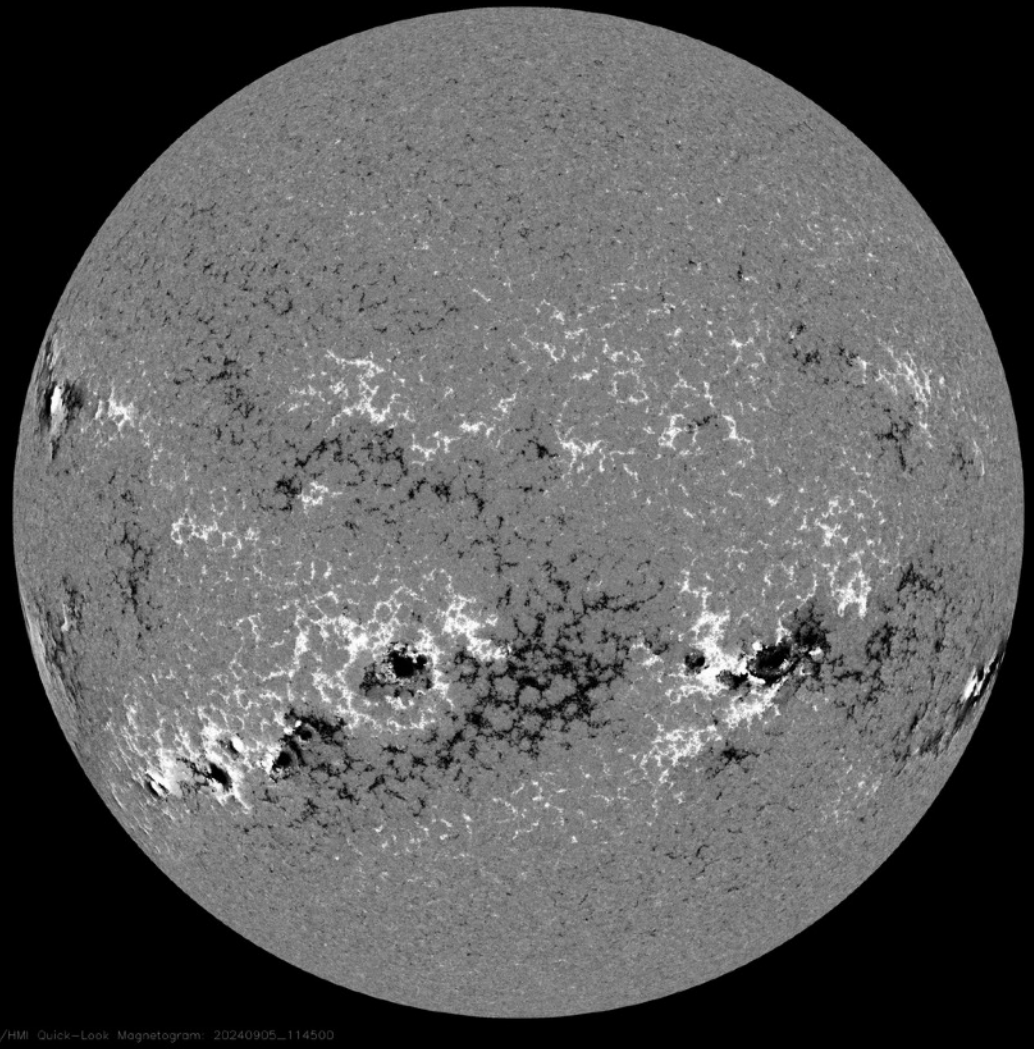


Solar active regions

SDO/HMI White Light 2024-09-05



SDO/HMI Magnetogram 2024-09-05



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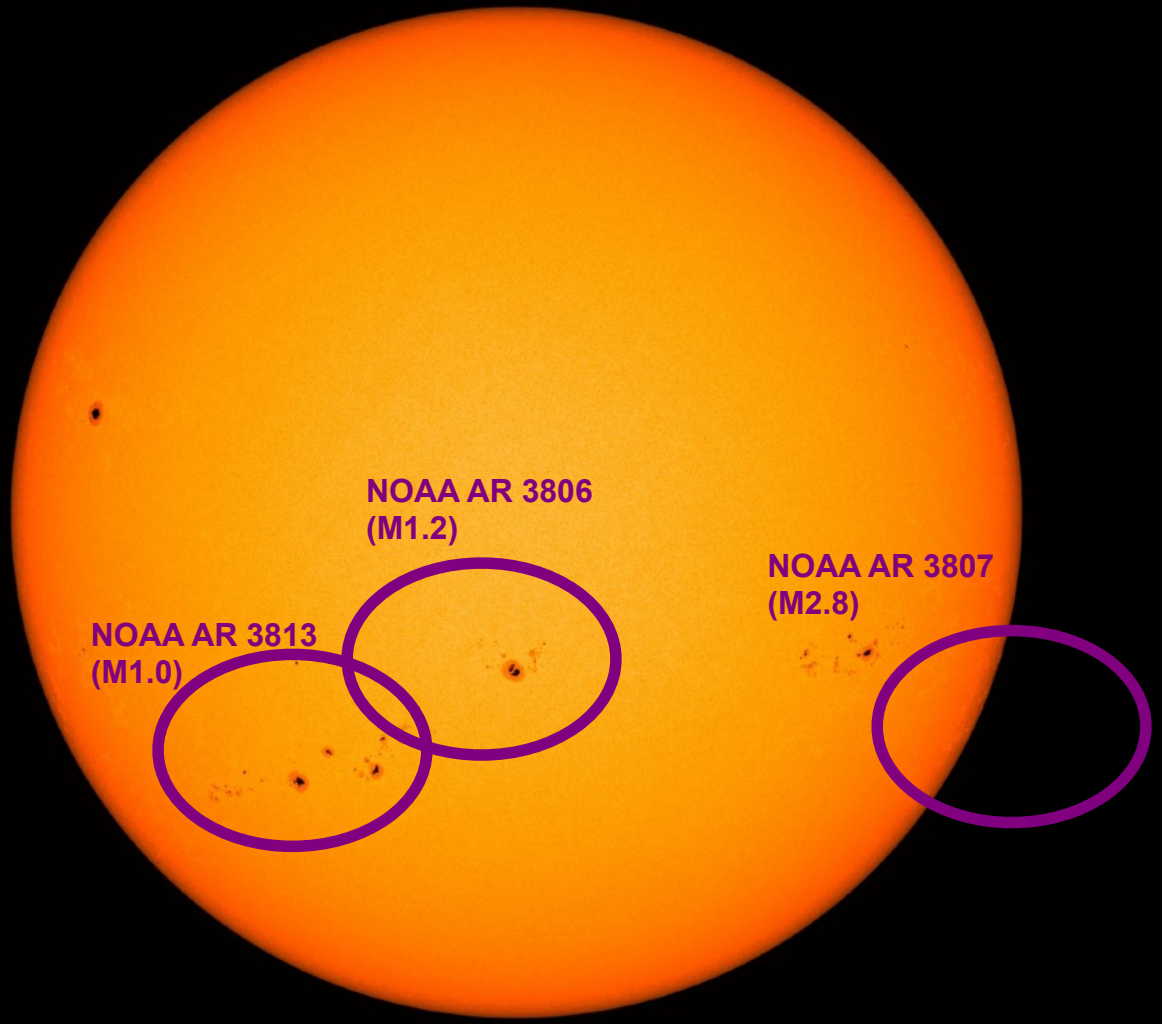
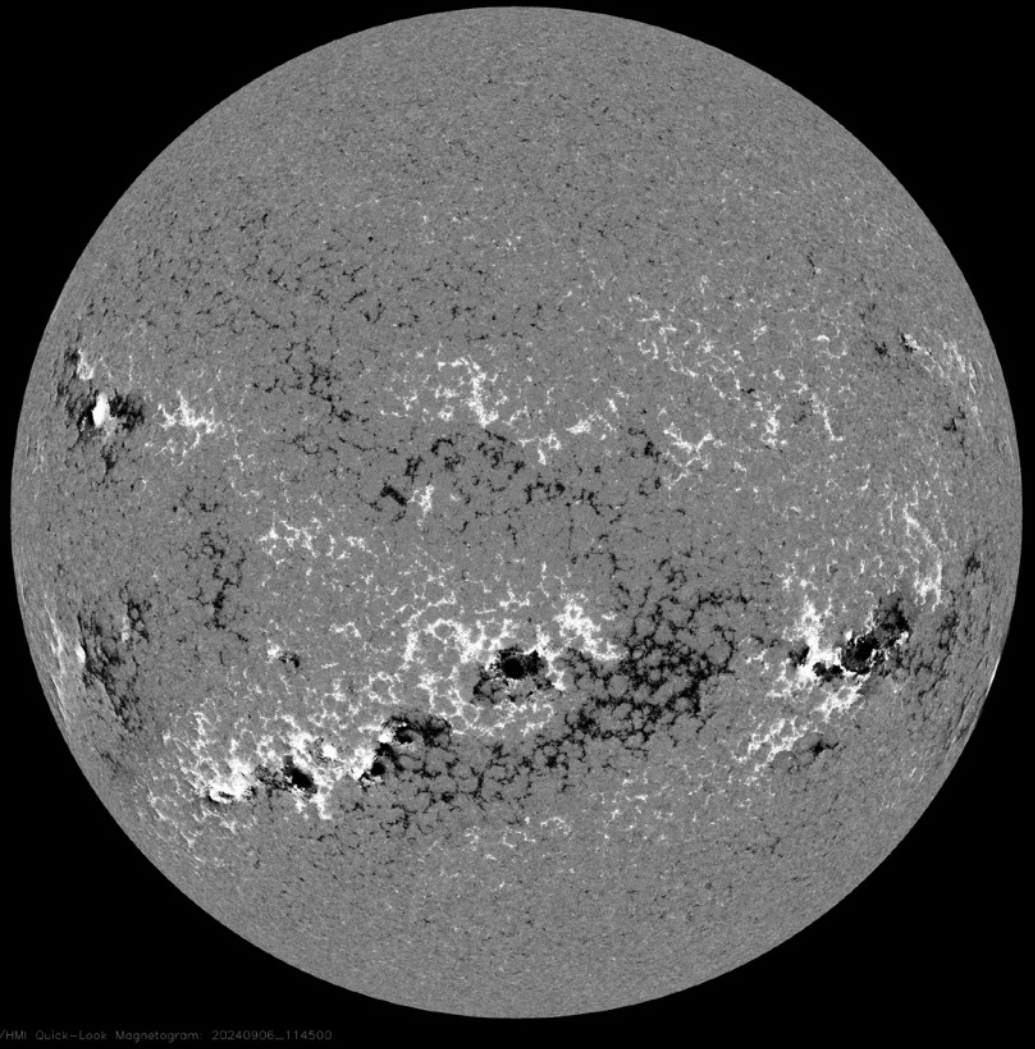
Solar active regions

SDO/HMI White Light 2024-09-06

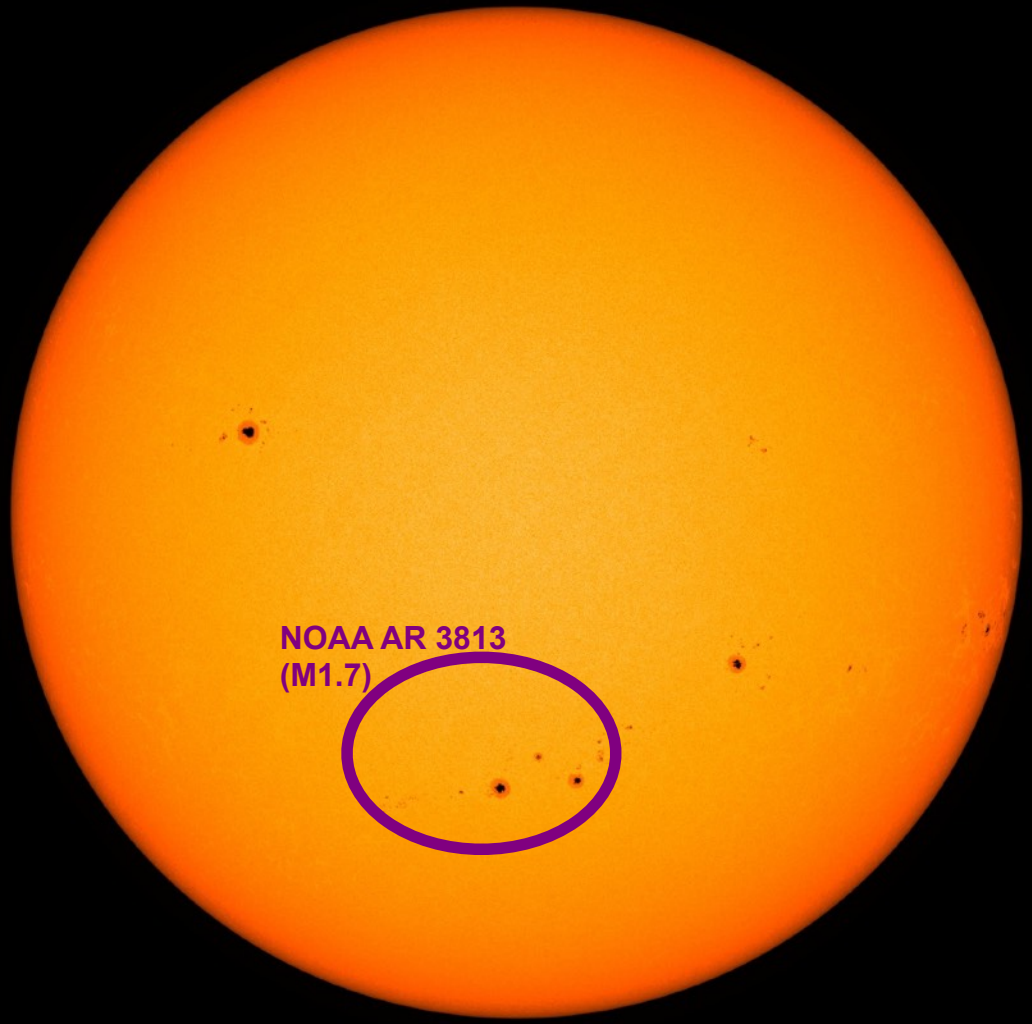


SDO/HMI Magnetogram 2024-09-06

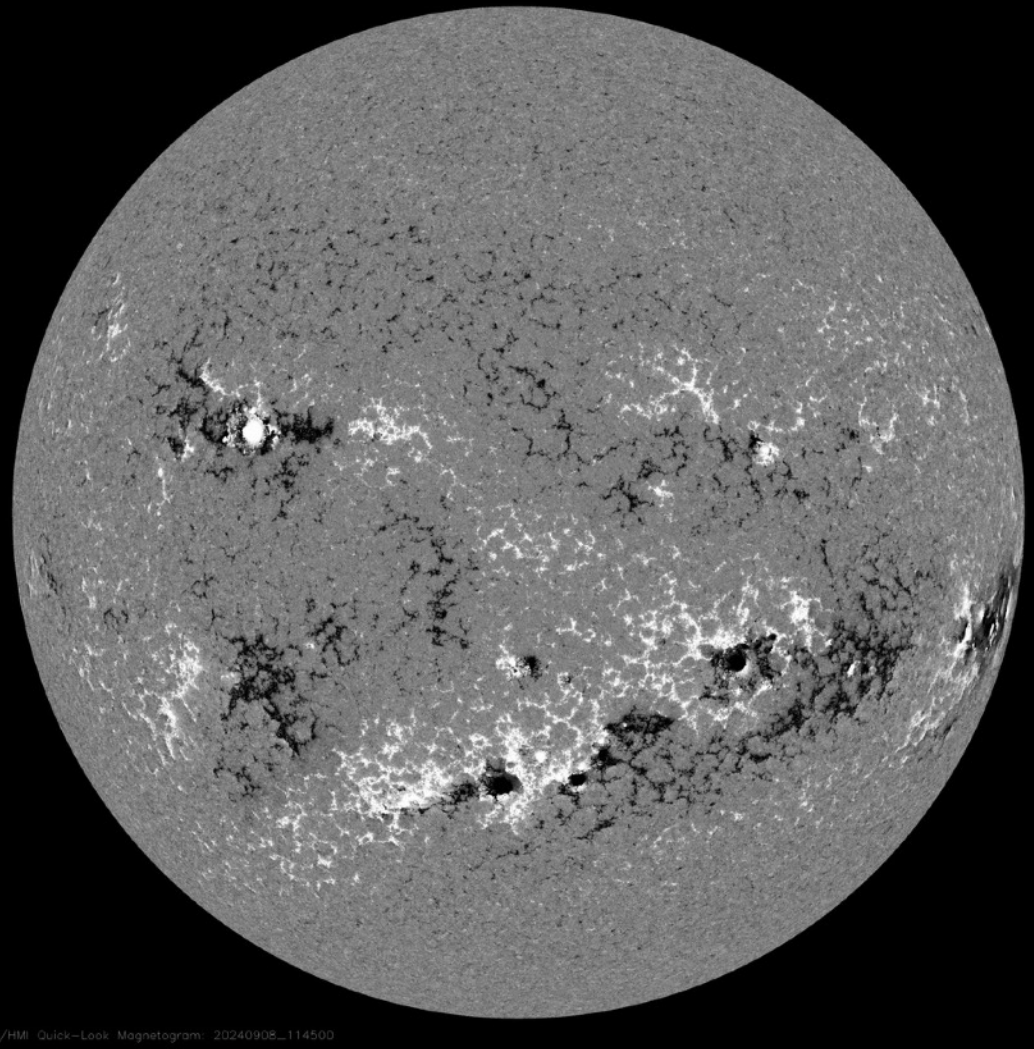


Solar active regions

SDO/HMI White Light 2024-09-08

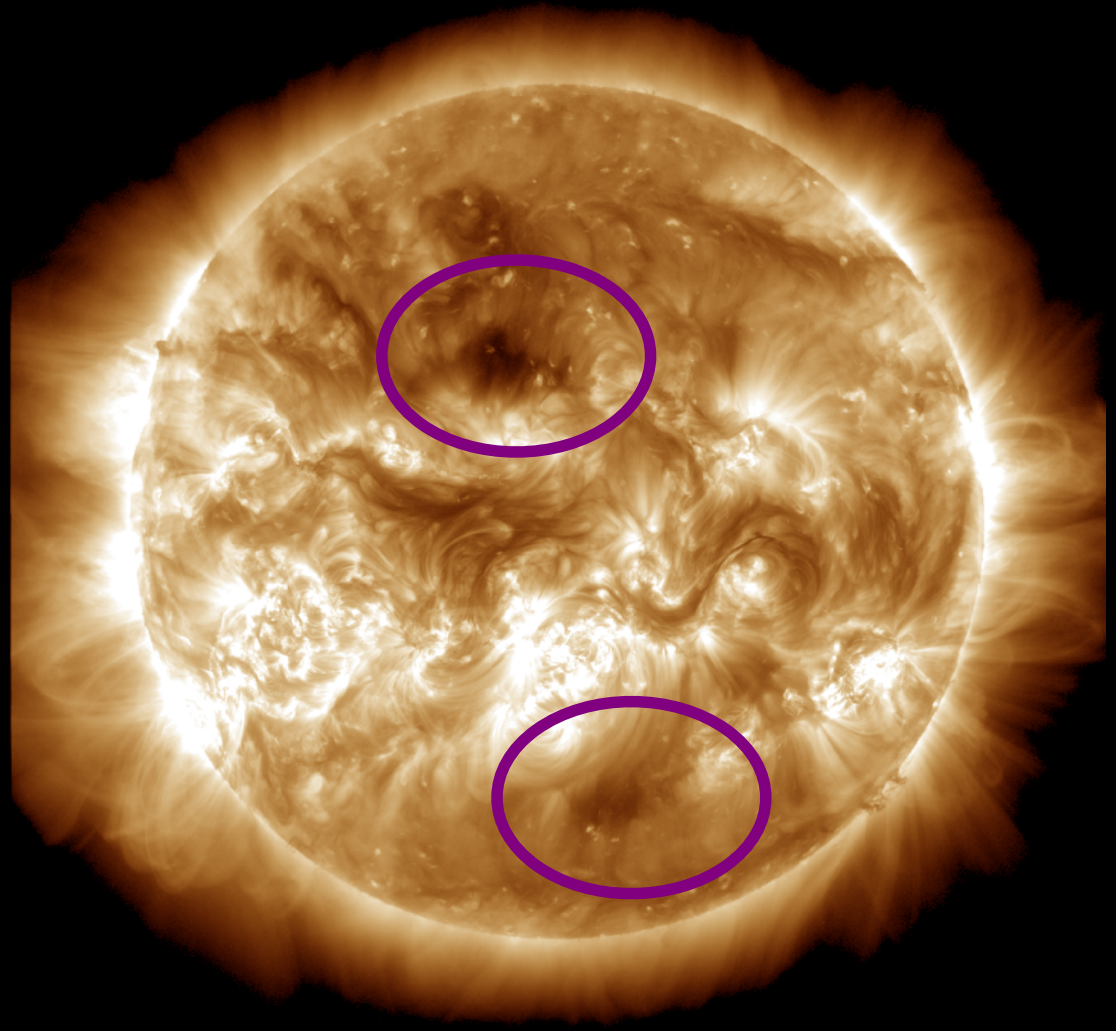


SDO/HMI Magnetogram 2024-09-08

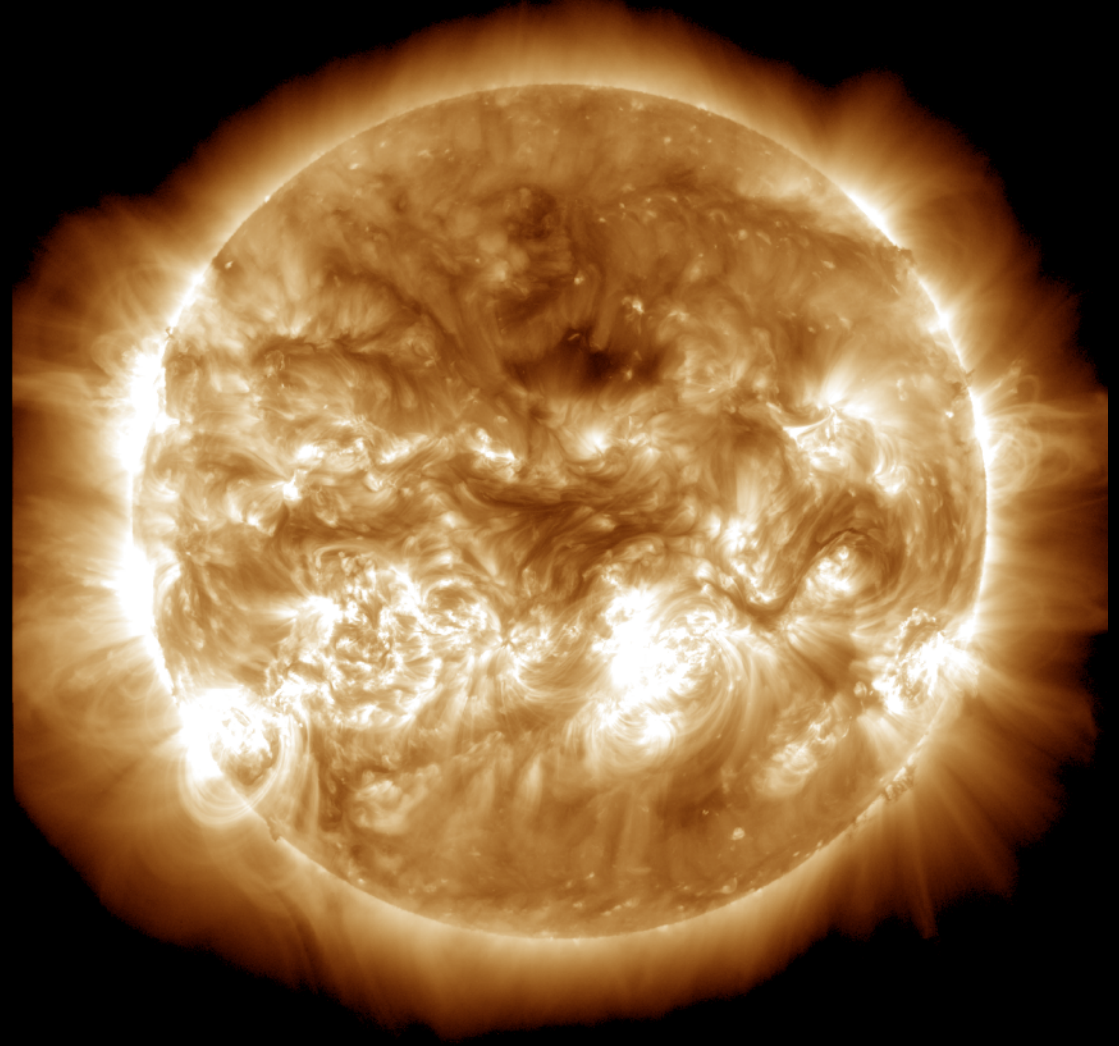


Coronal holes

SDO/AIA 19.3 nm 2024-09-03

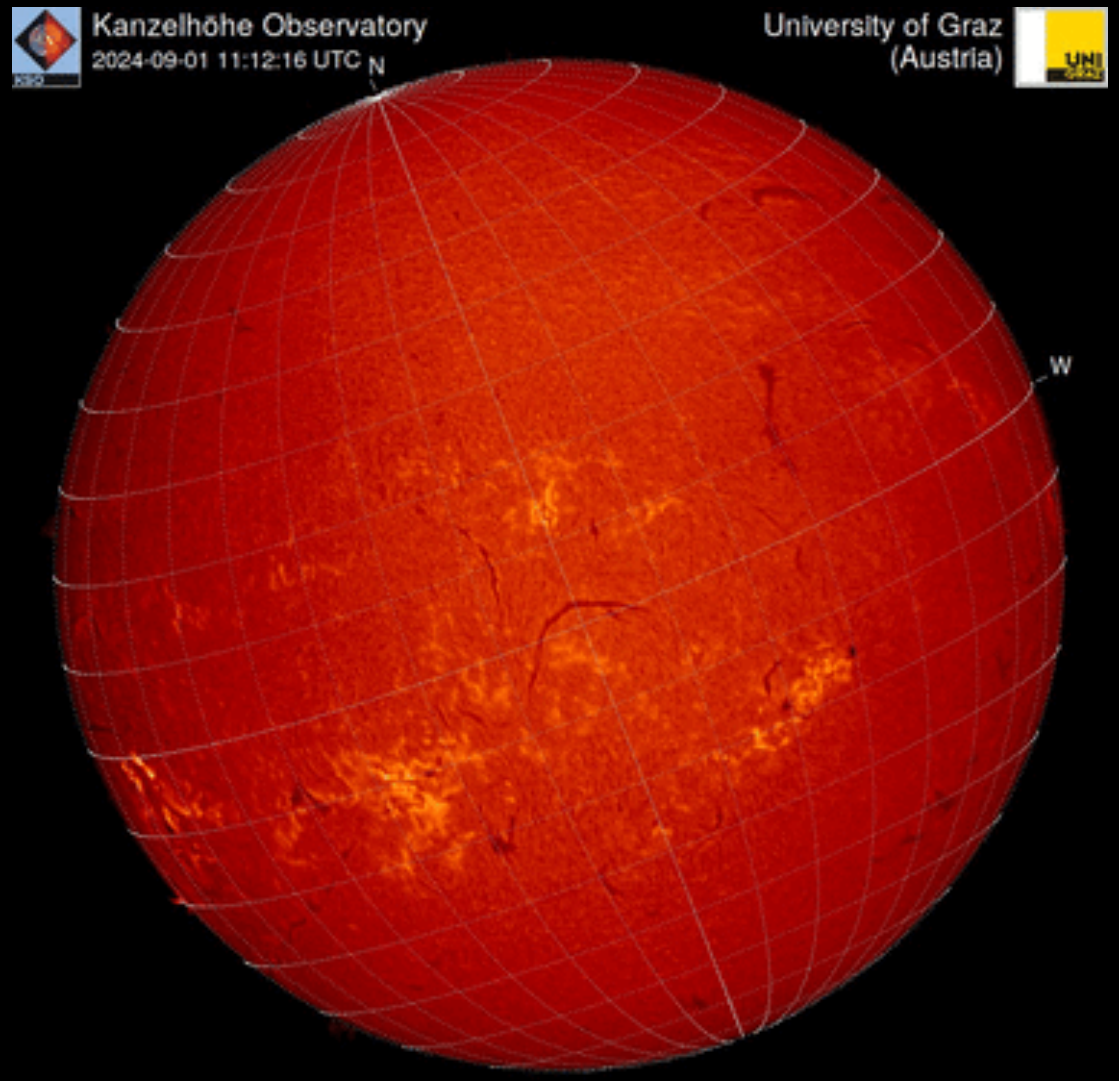


SDO/AIA 19.3 nm 2024-09-04

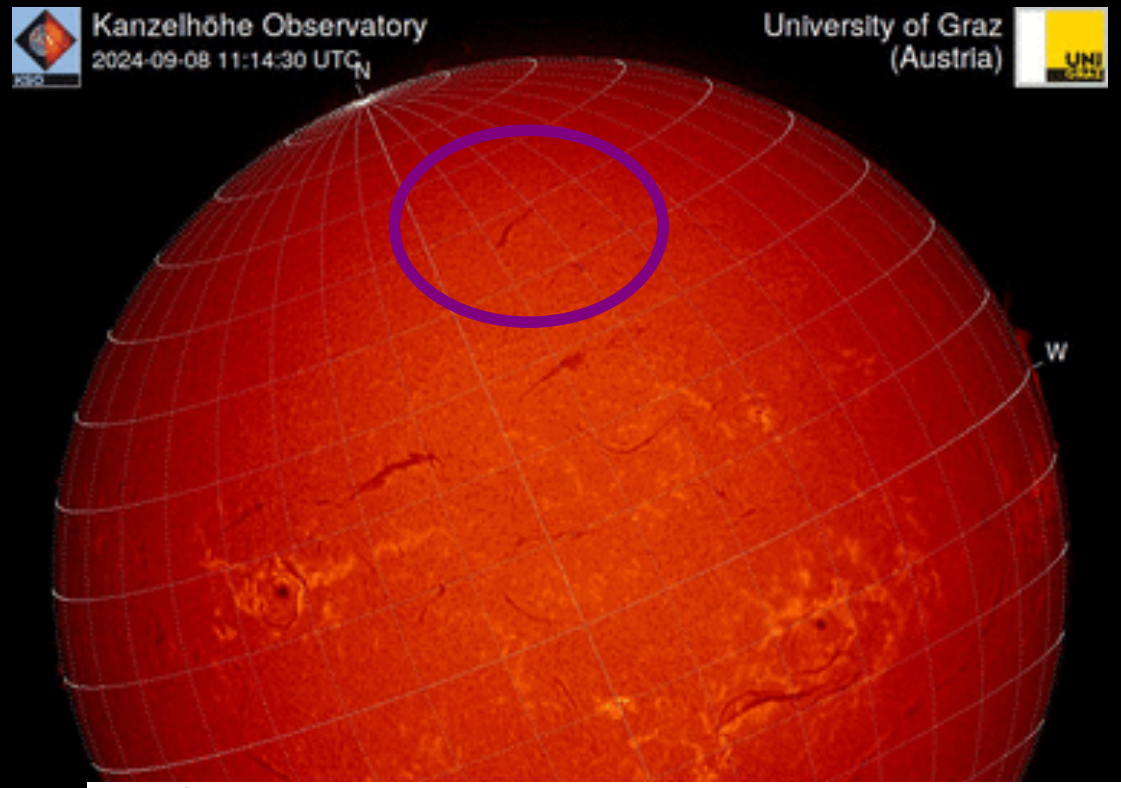


Filaments & Filament eruptions

H-alpha 2024-09-01



H-alpha 2024-09-08




```
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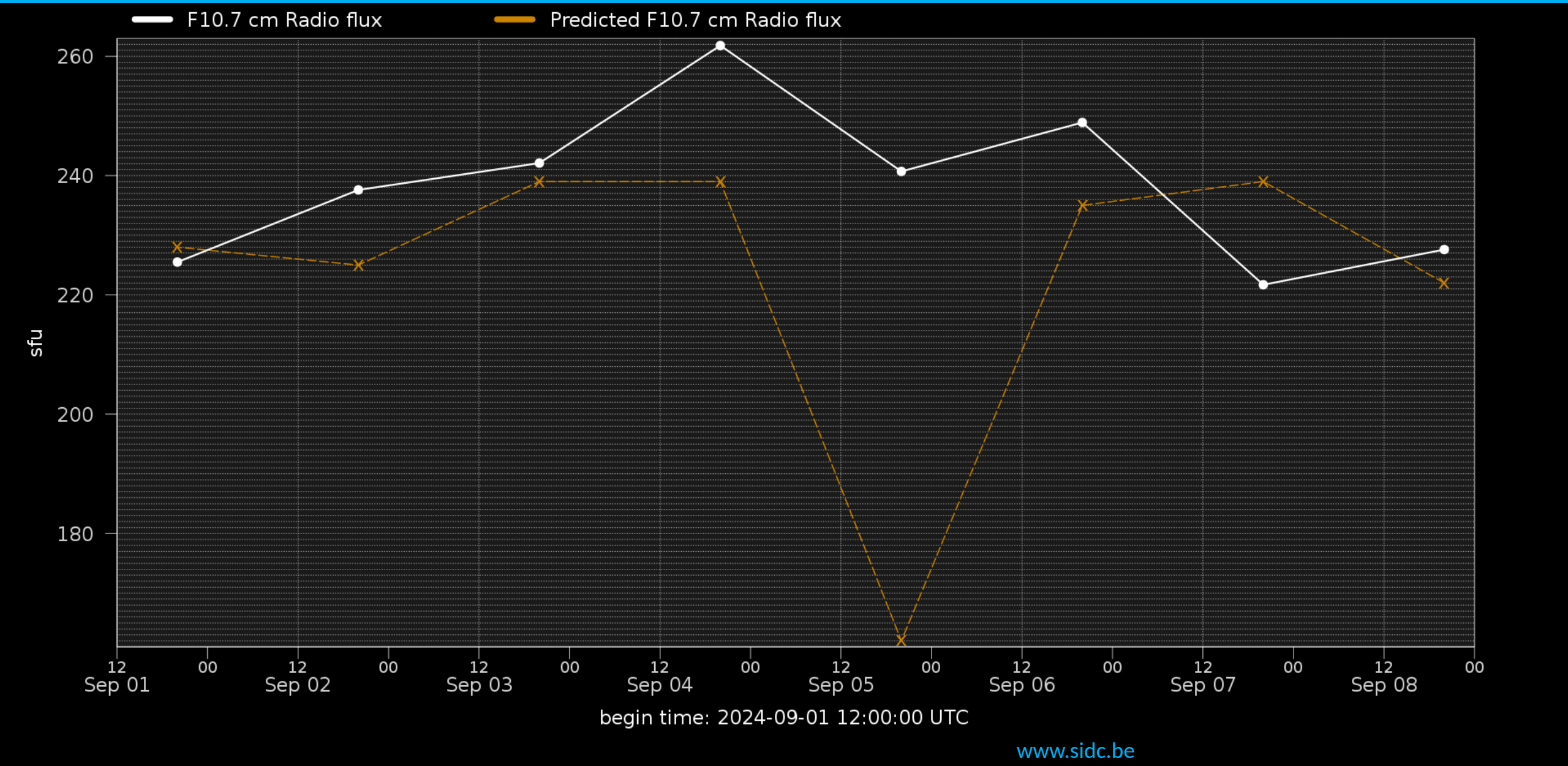
Solar F10.7cm radio flux



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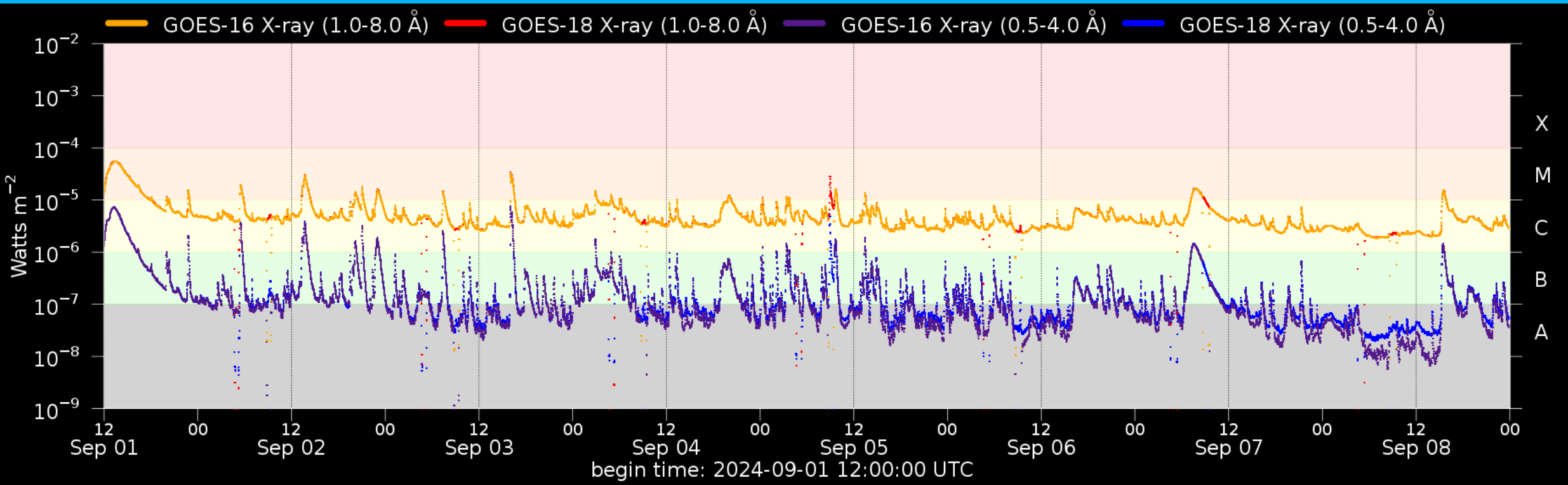
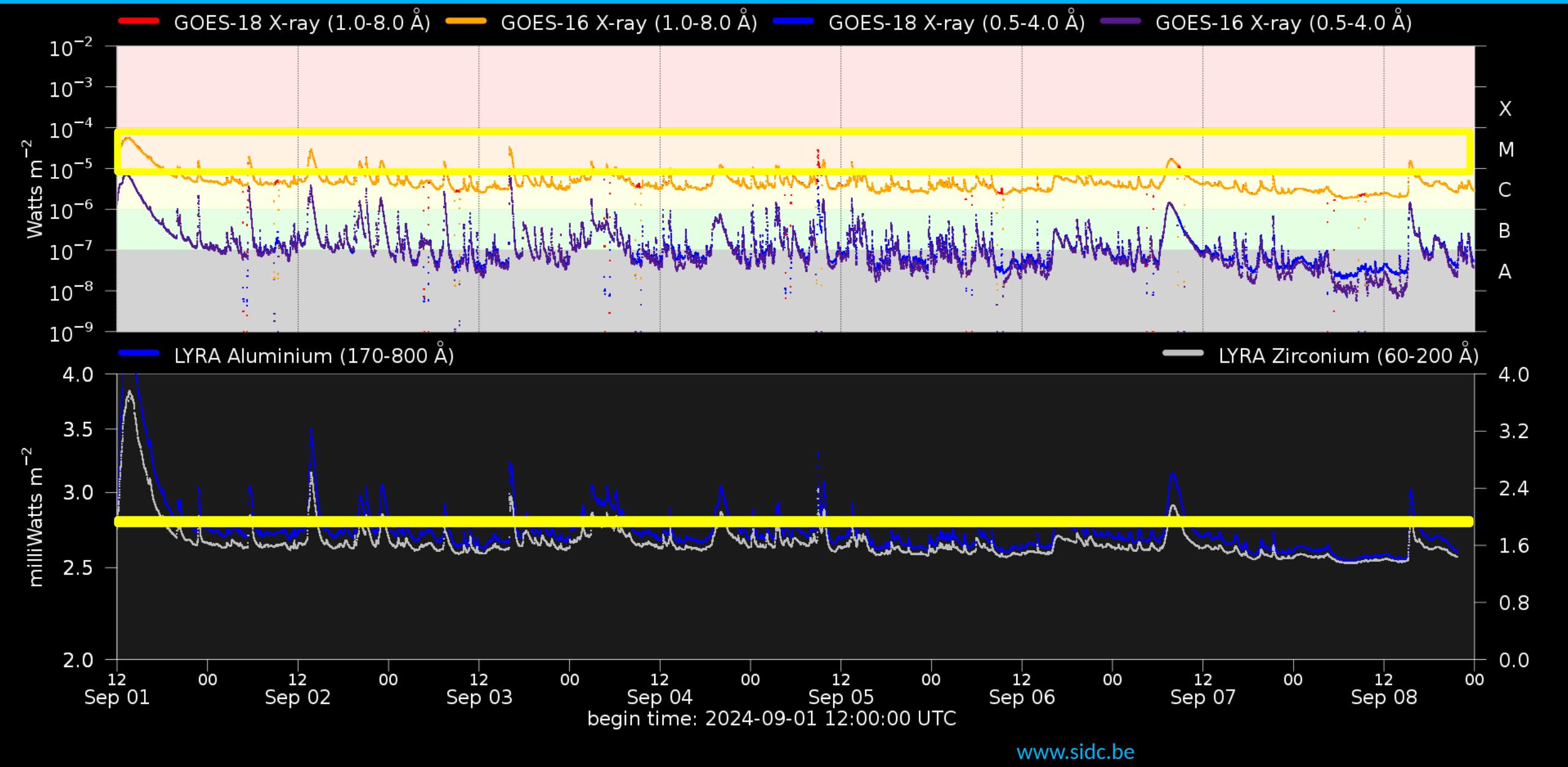
Flaring activity



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

Issue date	2024-09-01	2024-09-02	2024-09-03	2024-09-04	2024-09-05	2024-09-06	2024-09-07	2024-09-08
Probability (%)	99|60|15	99|70|20	95|75|40	99|75|30	99|50|15	99|65|21	99|50|15	99|30|05
Observed (#)	06|03|00	06|04|00	03|02|00	05|06|00	12|01|00	06|00|00	04|00|00	01|01|00

Solar X-Ray and UV flux



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Coronal Mass Ejections

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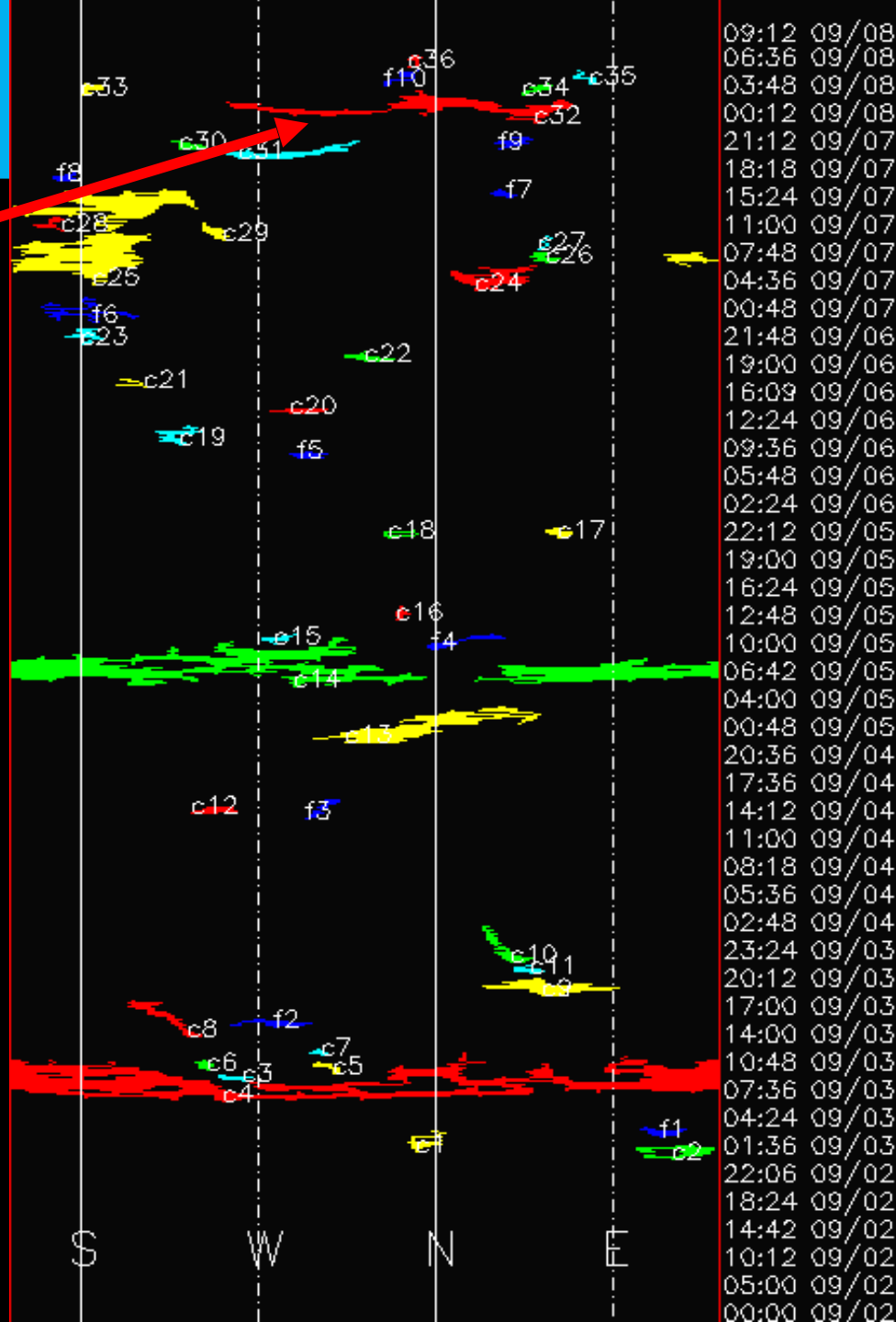

Solar Wind and

Geomagnetic Activity

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Solar wind parameters

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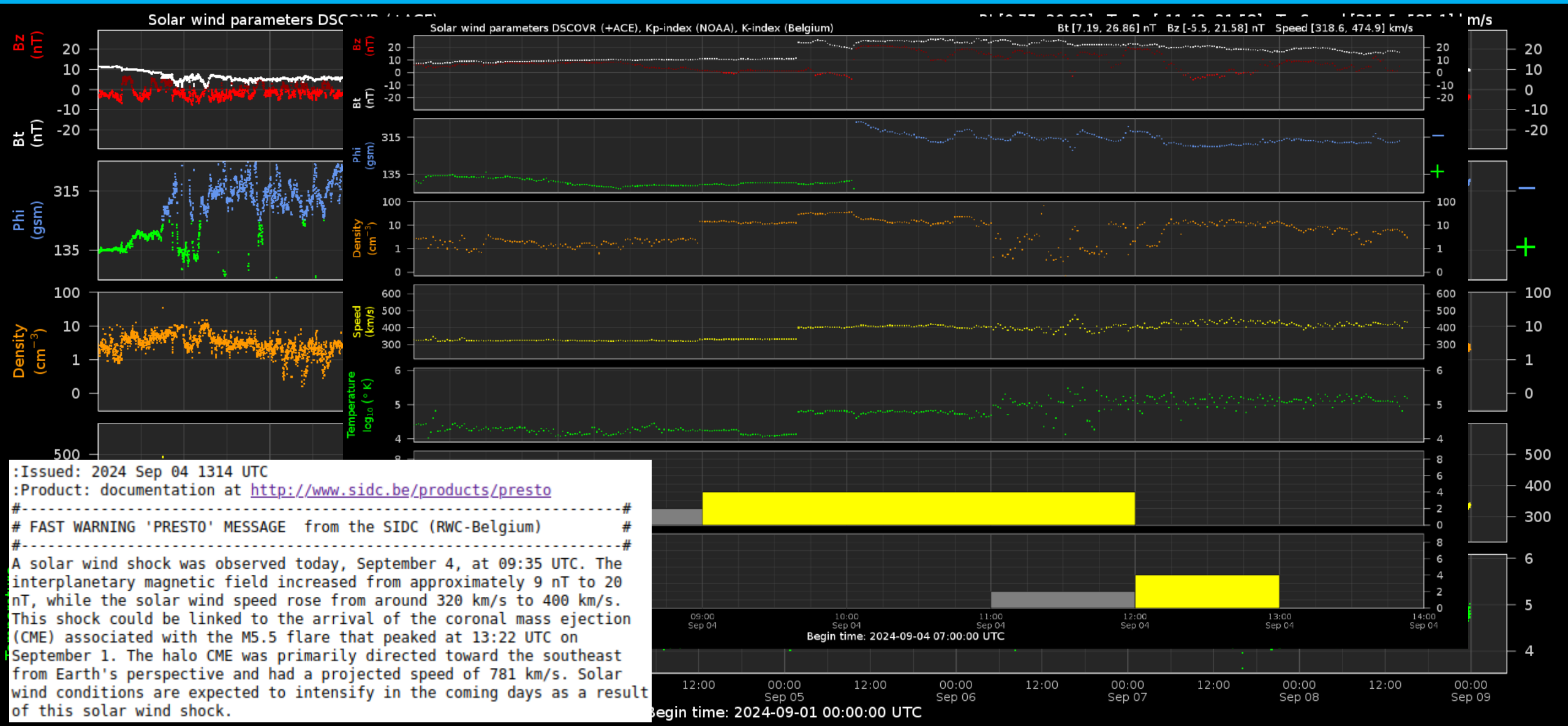
Solar wind parameters



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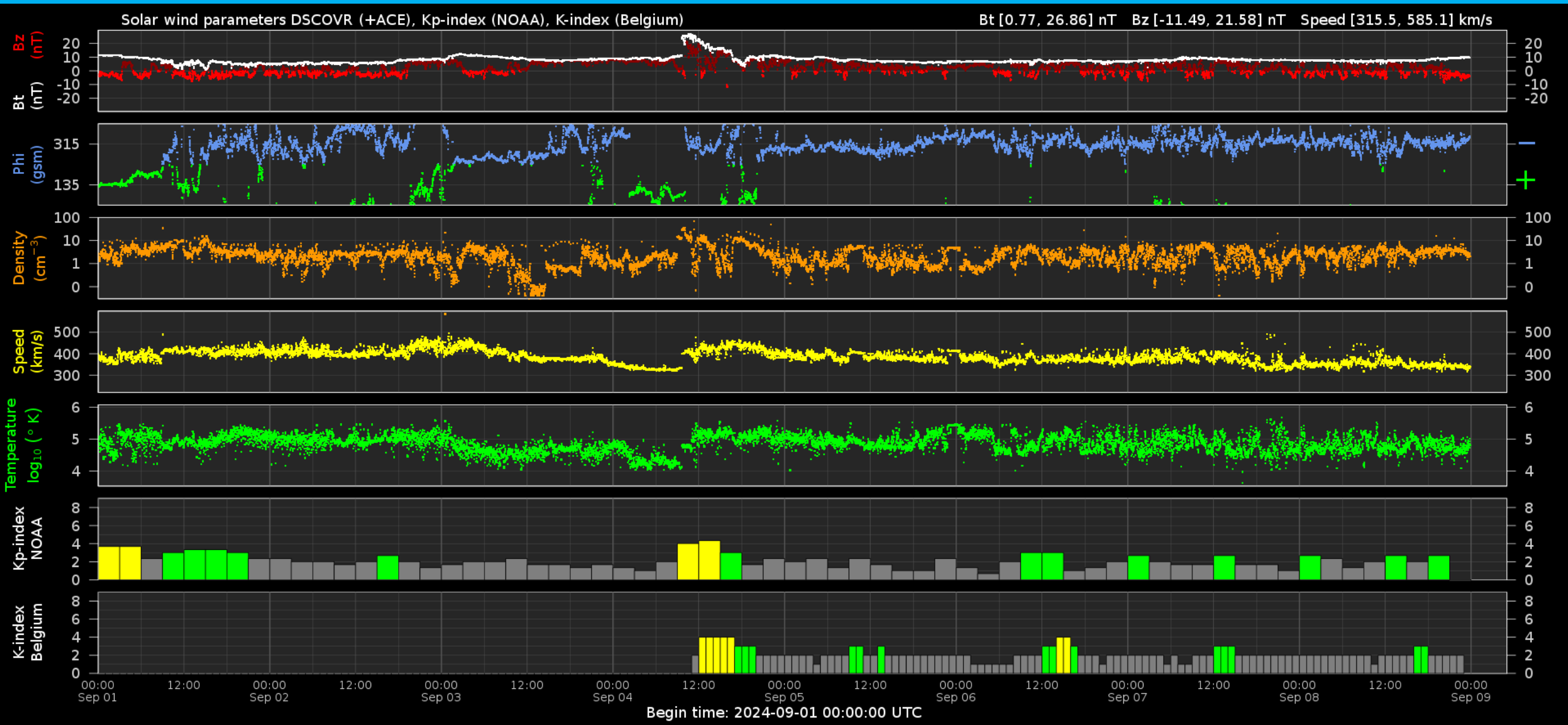
Solar wind parameters & K-indices



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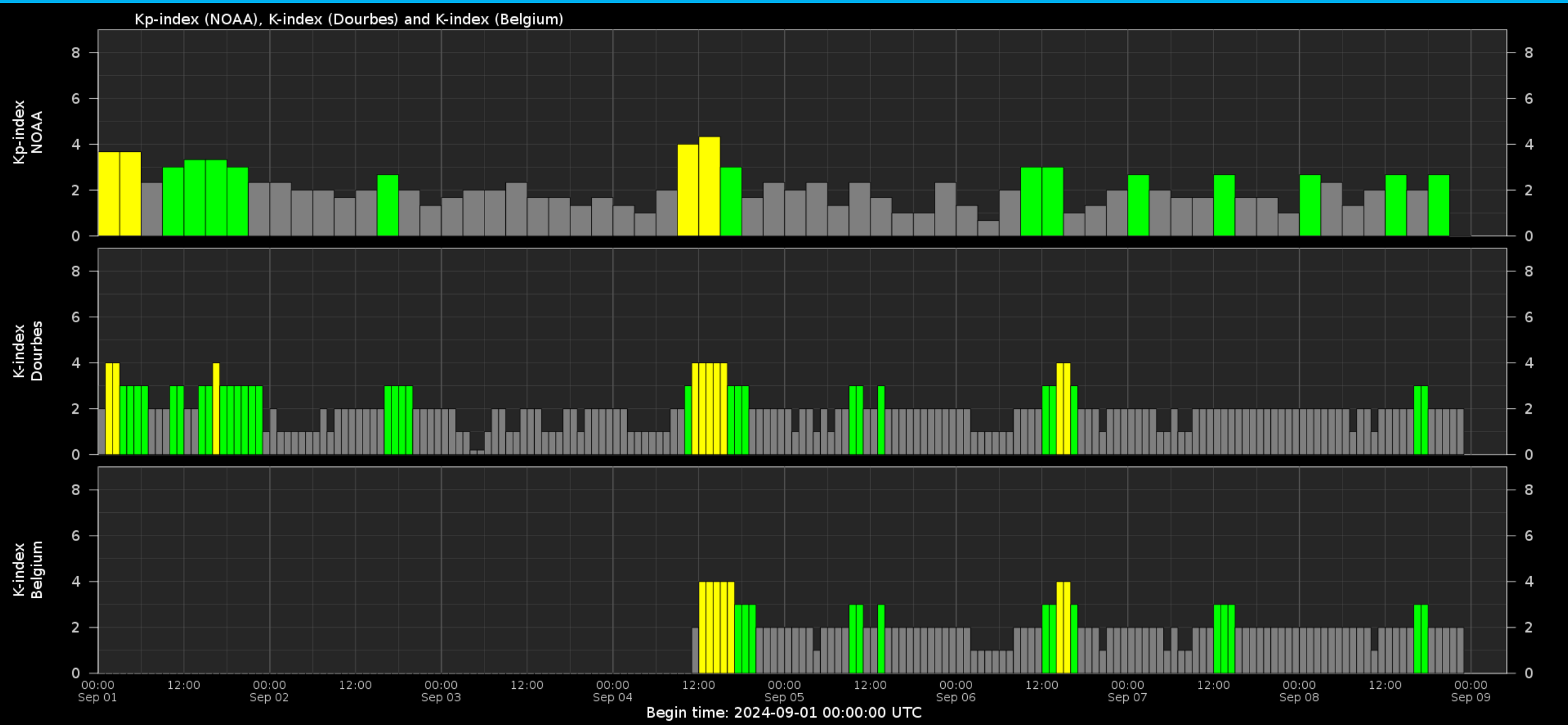
Geomagnetic activity (K-indexes)



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Energetic Particles

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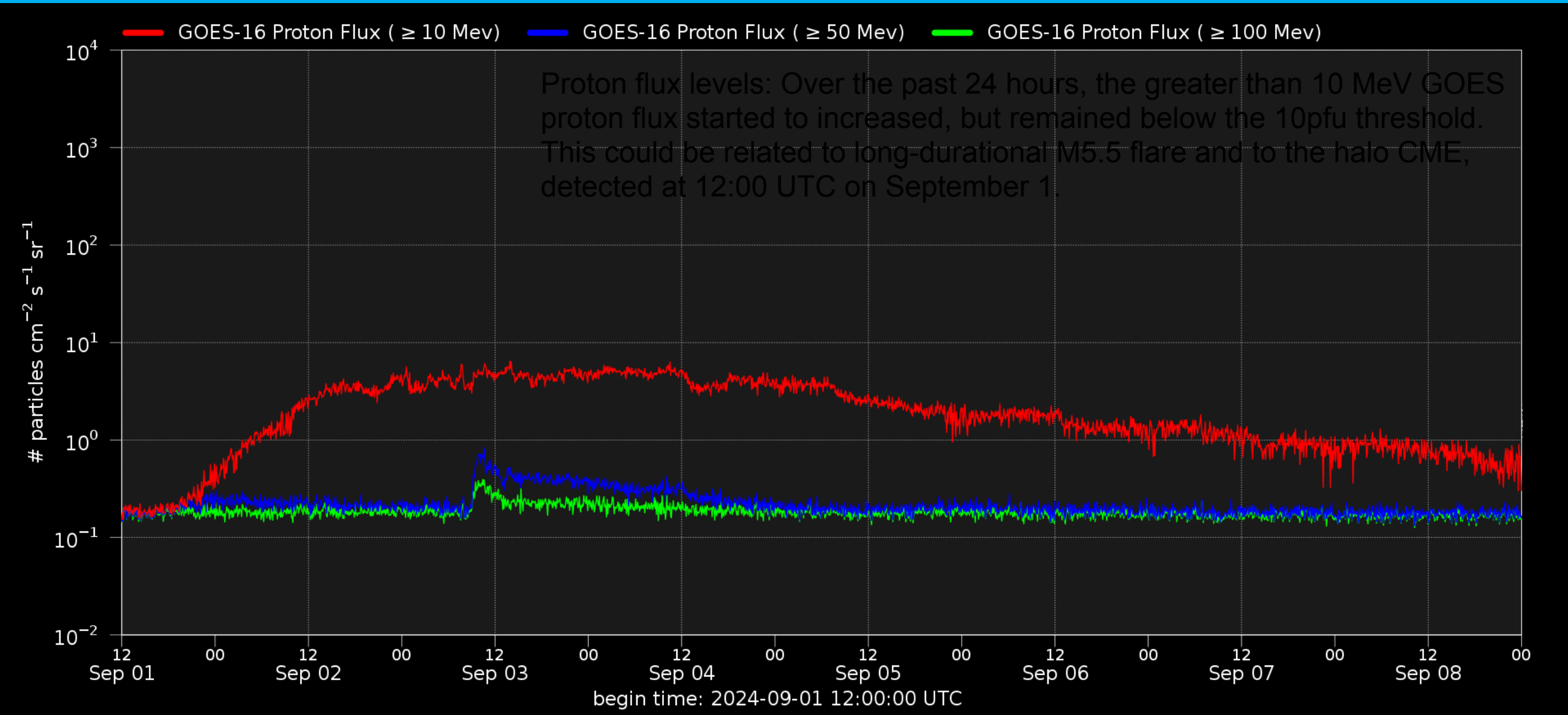
Solar proton flux



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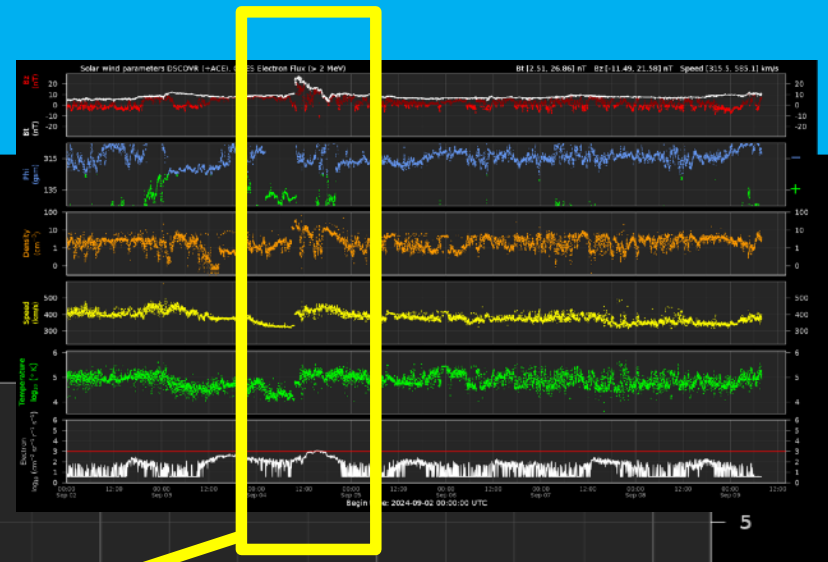
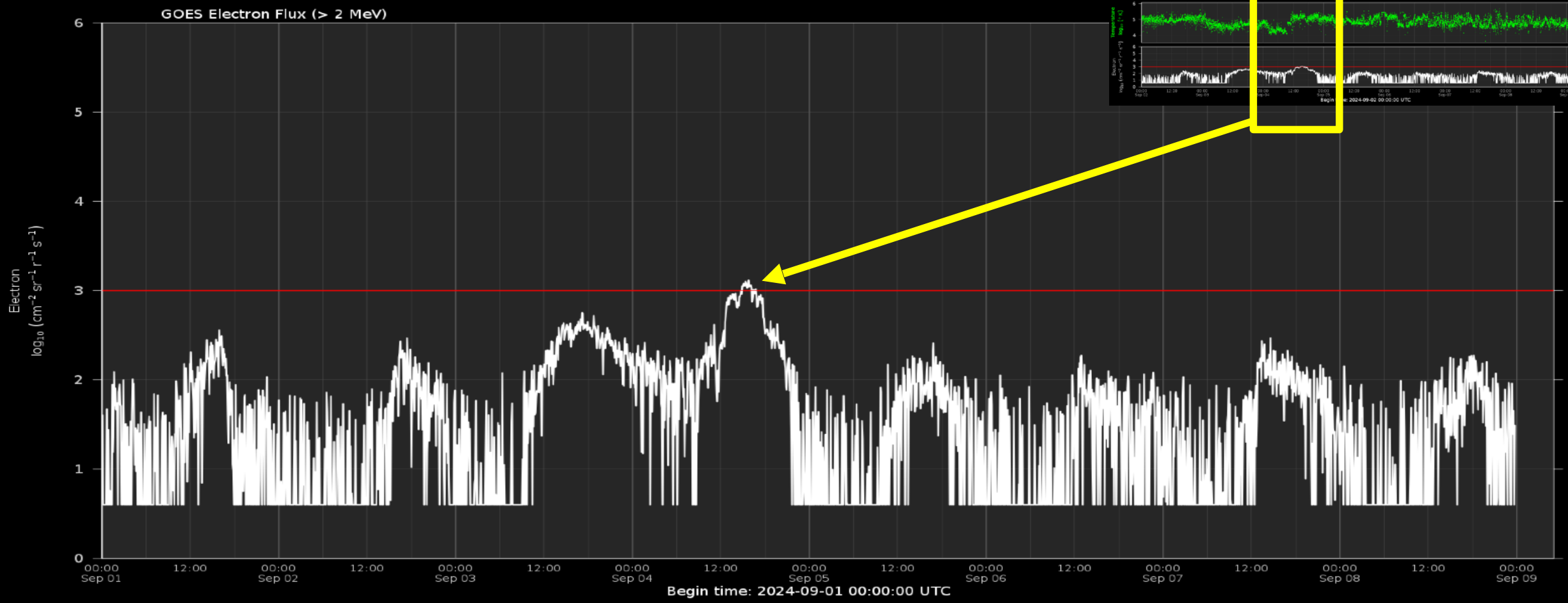
Electron flux at GEO

www.stce.be/educational/classification#electrons

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





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Outlook

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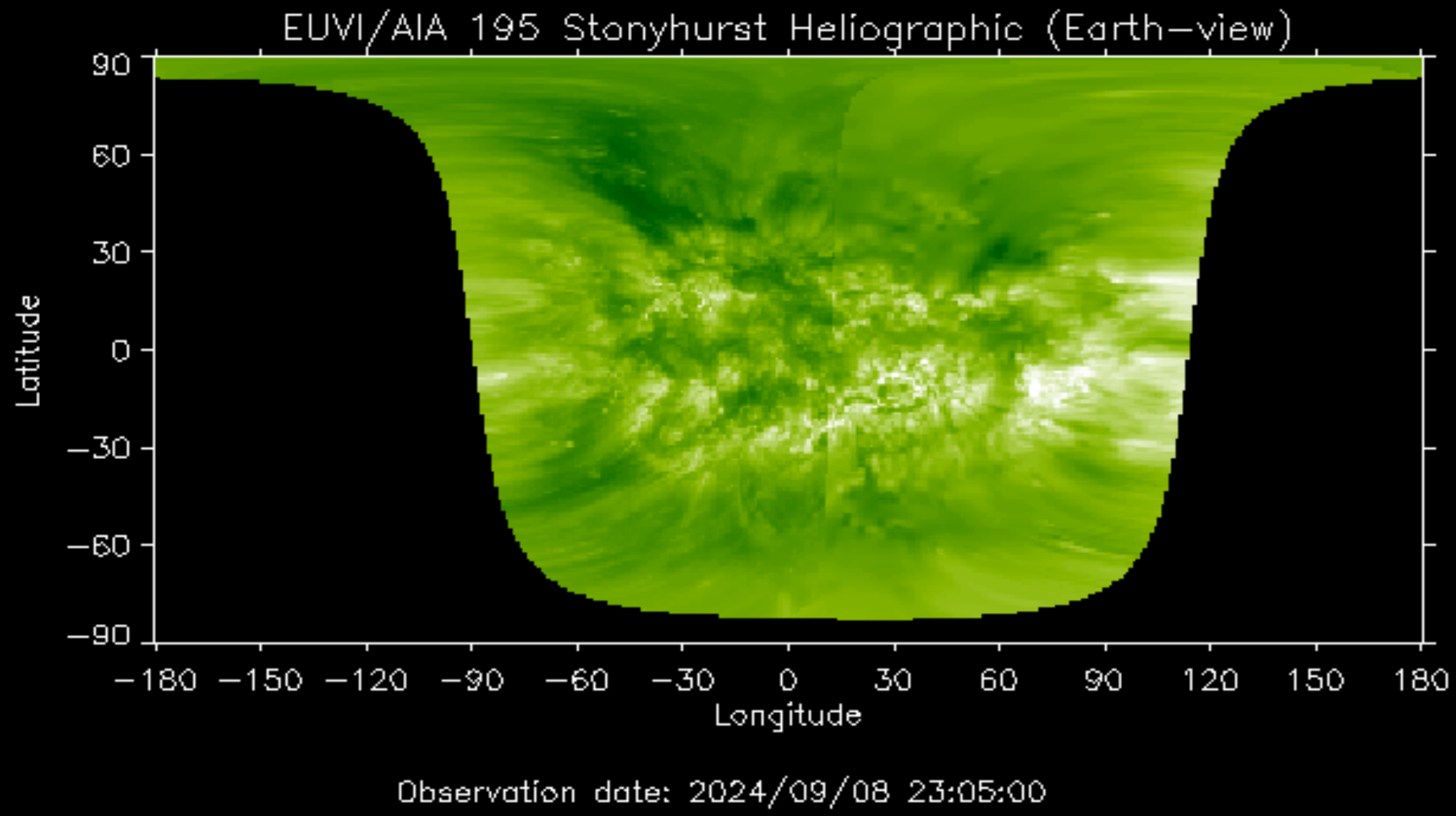
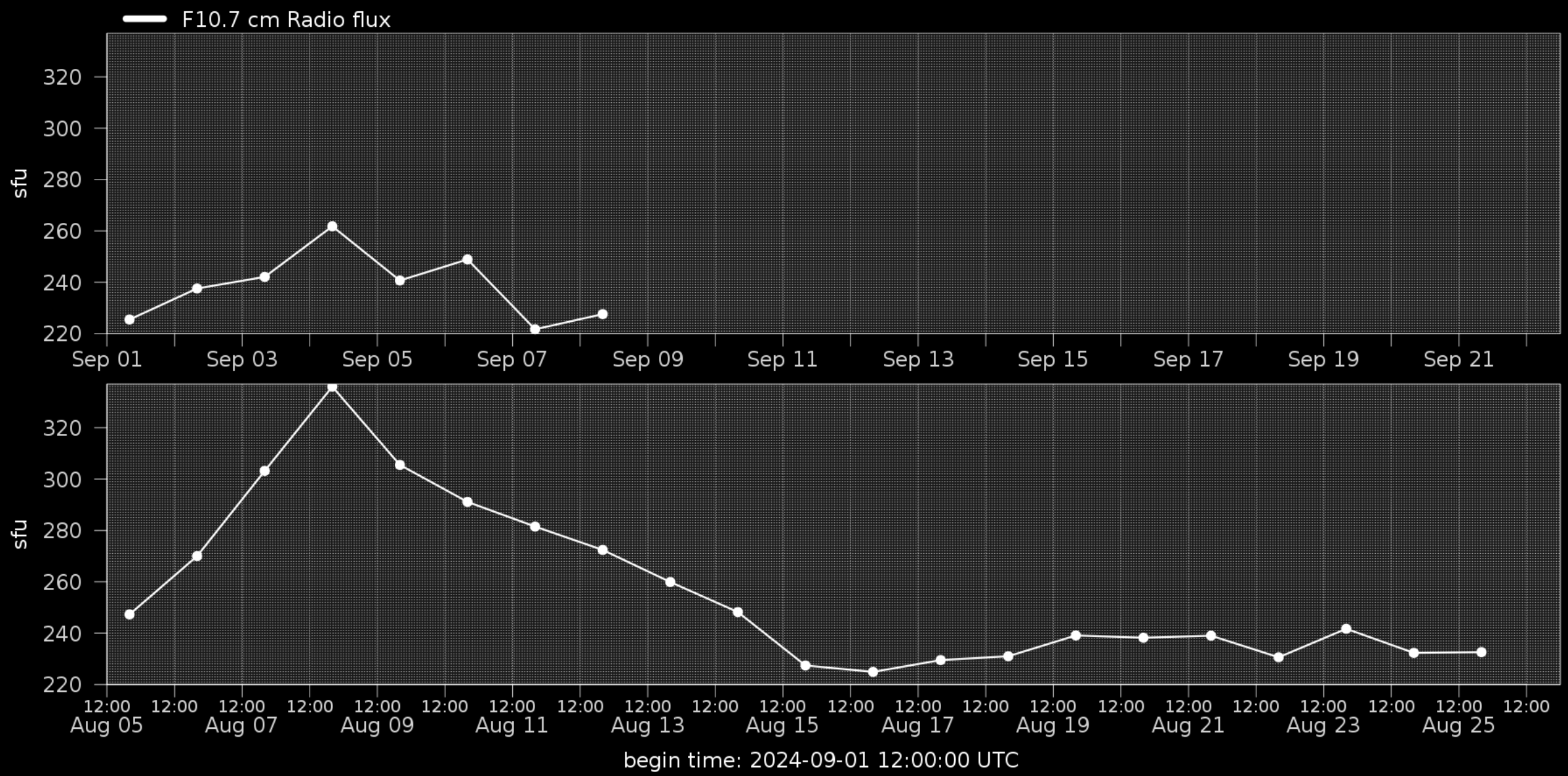
Outlook: Solar activity



Outlook: Solar F10.7cm radio flux



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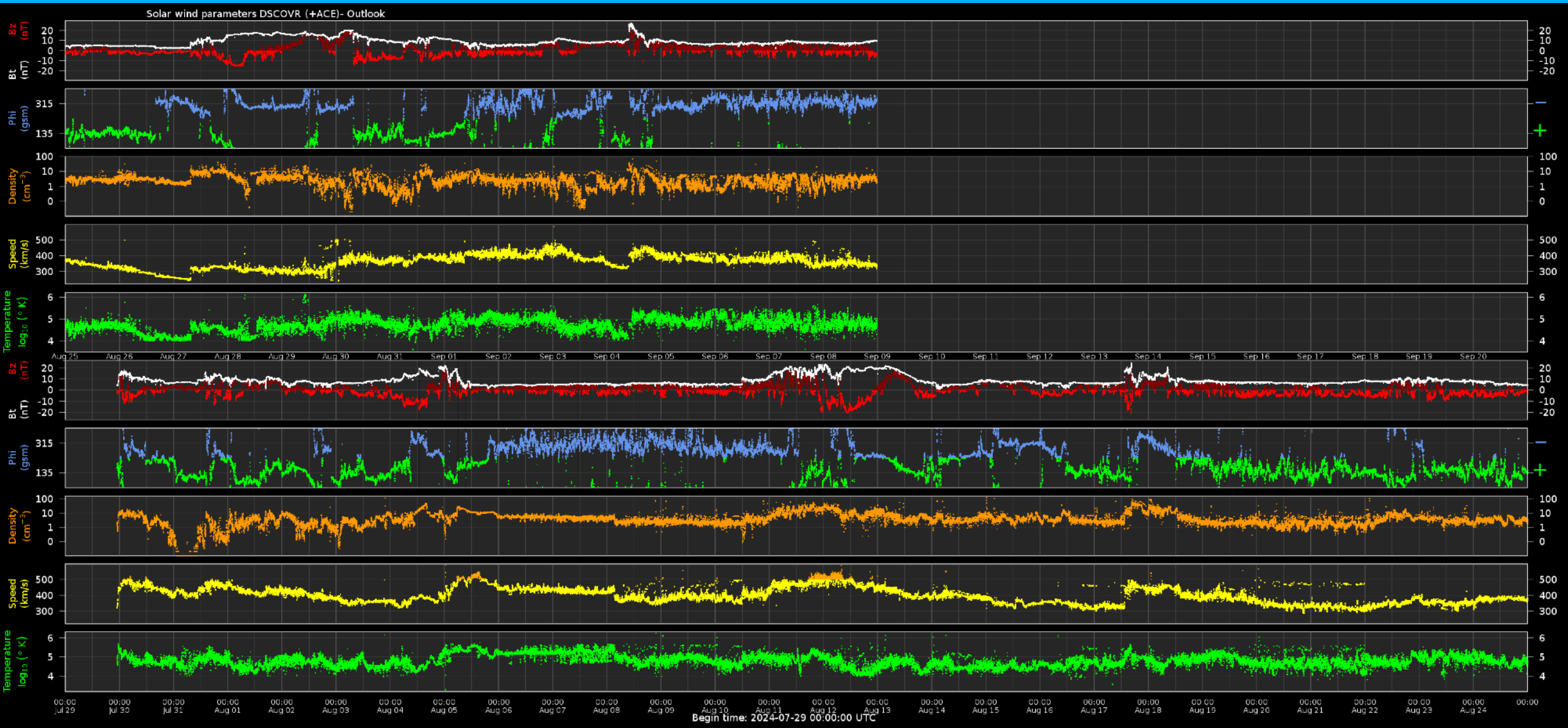
Outlook: Solar wind parameters



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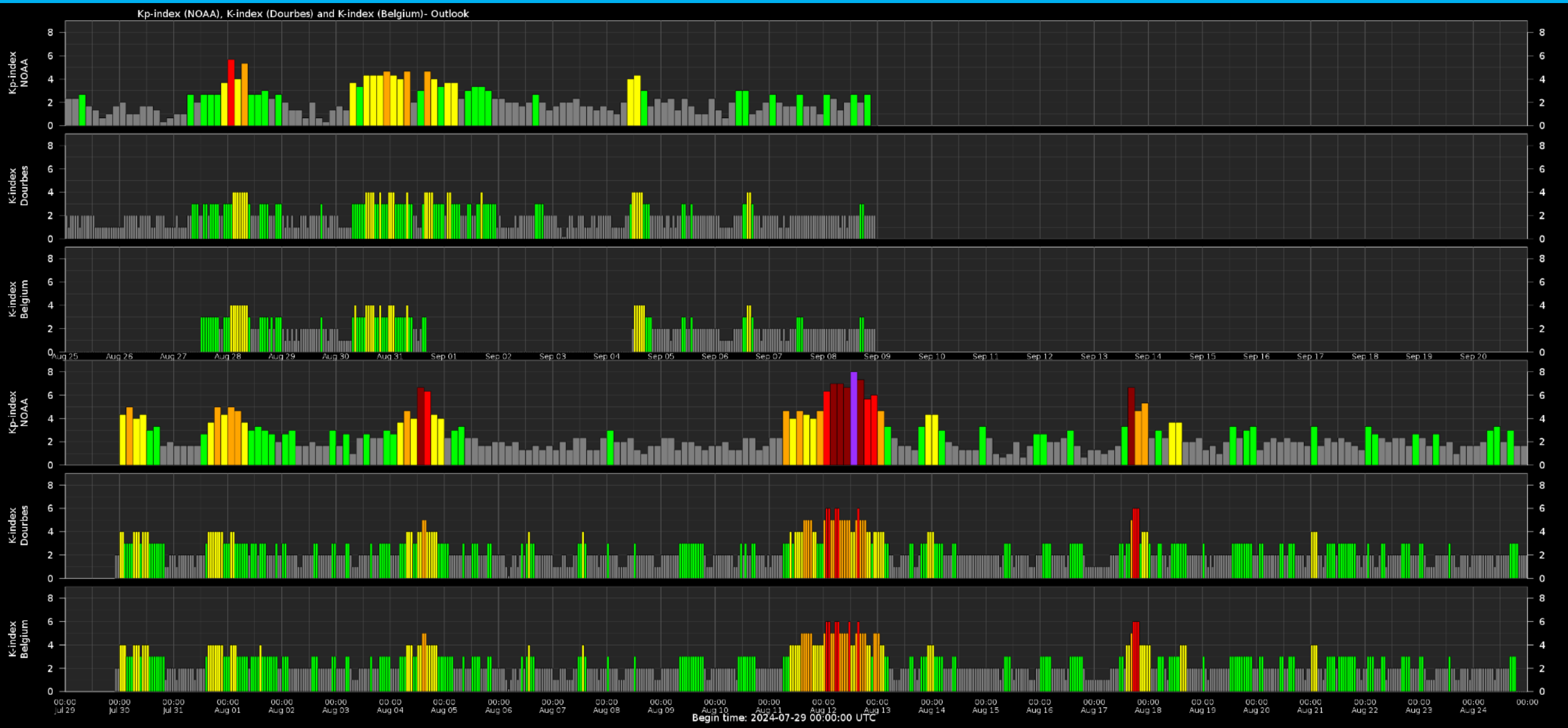
Outlook: Geomagnetic activity



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Outlook: Electron Flux at GEO Outlook

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PECASUS

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