SIDC Space Weather Briefing

08 January 2023-15 January 2023 Yana Maneva

& the SIDC forecaster team

Royal Observatory
of Belgium

Solar Influences
Data analysis Centre
www.sidc.be

Summary Report

Solar activity from 2023-01-08 12:00 to 2023-01-15 23:59

Active regions	16 ARs, NOAA 3177, NOAA 3180-3194
Flares	# C-class flare: 41 # M-class flare: 25 # X-class flare: 2
Coronal Holes	Mild effect from CH-, arrival of CH+ foreseen for Jan 17th
CMEs	Wide SE CME at 17 UTC on Jan 11th; back-sided partial halo on Jan 12th; partial halo at 21:48 UTC on Jan 14th, expected arrival Jan 19th

Proton flux	elevated on Jan 10th, Jan 13th, but below radiation storm levels
Electron flux	Nominal

Solar wind and geomagnetic conditions

ICMEs	mild arrival on Jan 14th
Solar wind conditions	|B|: 1.14 - 14.08 nT //Bz: -11.23 nT to 9.4 nT //Speed: 305.7 - 556.5km/s
K-indices	max K-index (KBel): 4 max Kp-index (NOAA): 5

All Quiet Alert: Not Quiet

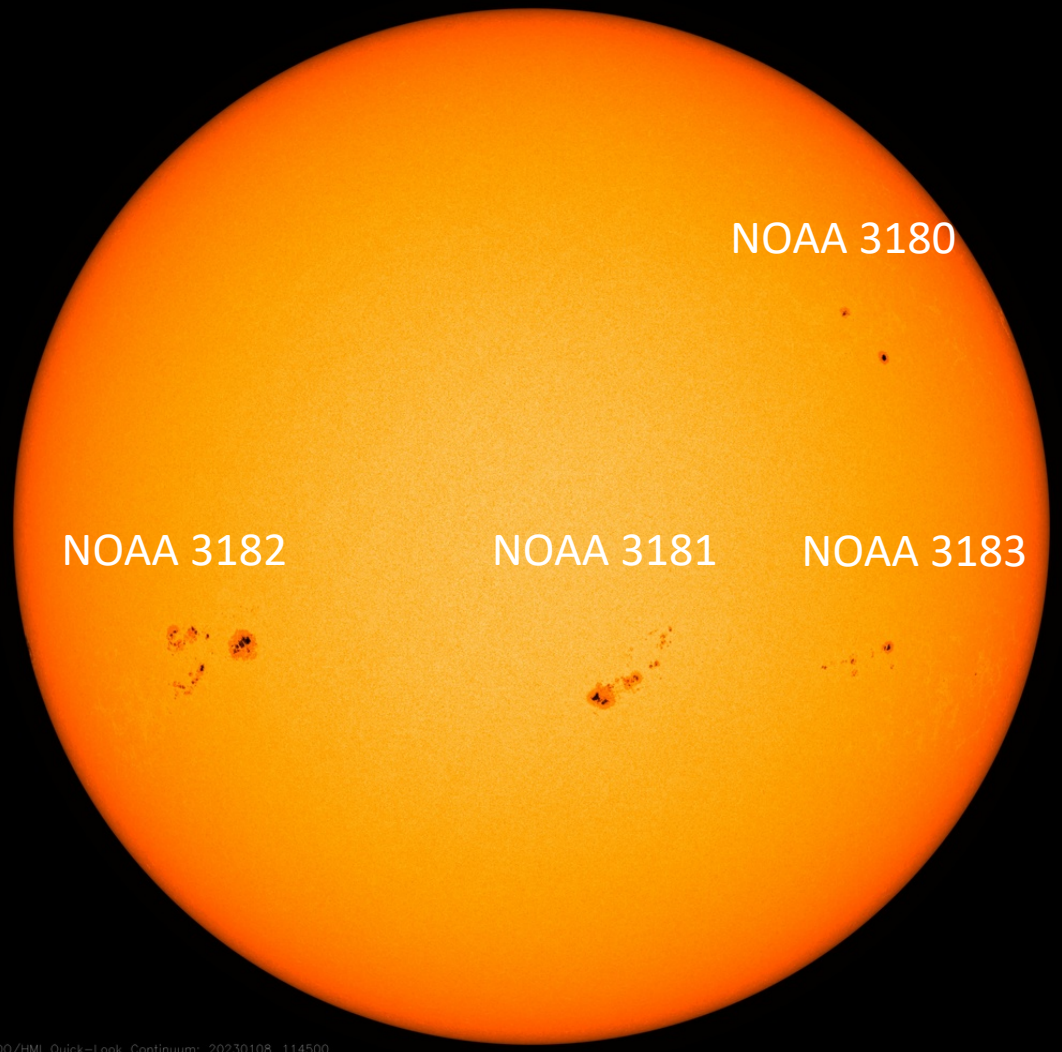
Solar Activity

Royal Observatory
of Belgium

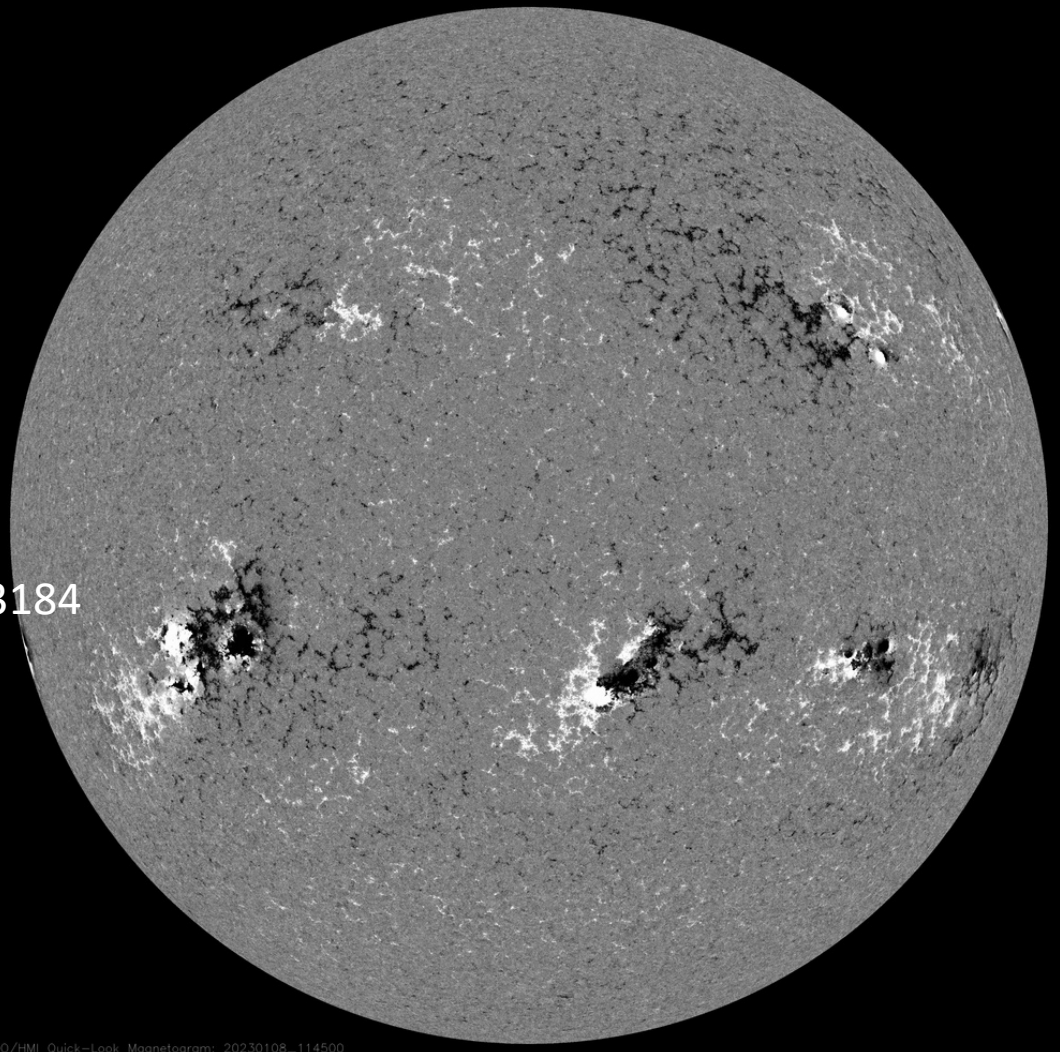
Solar Influences
Data analysis Centre
www.sidc.be

Solar active regions

SDO/HMI White Light 2023-01-08

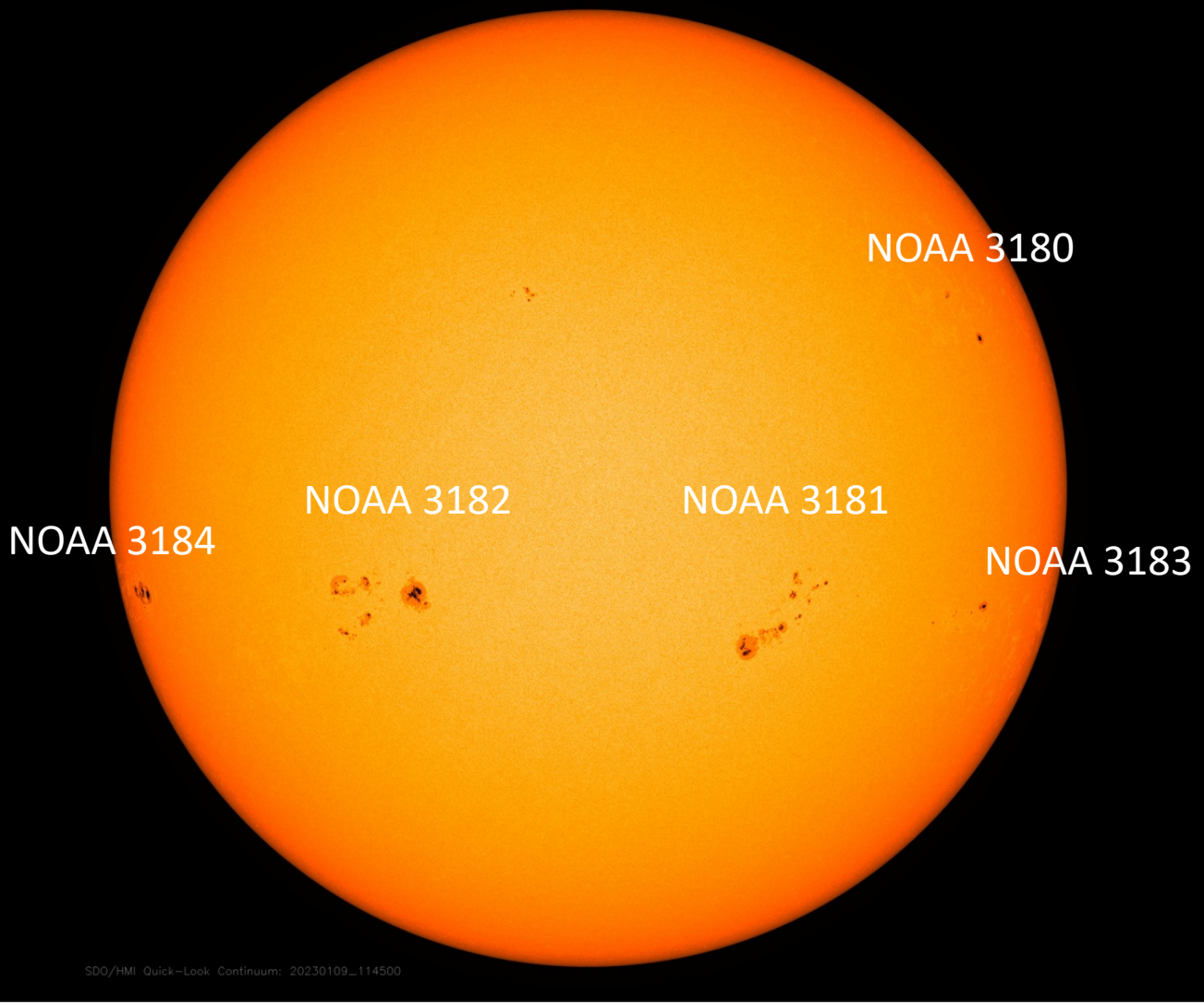


SDO/HMI Magnetogram 2023-01-08

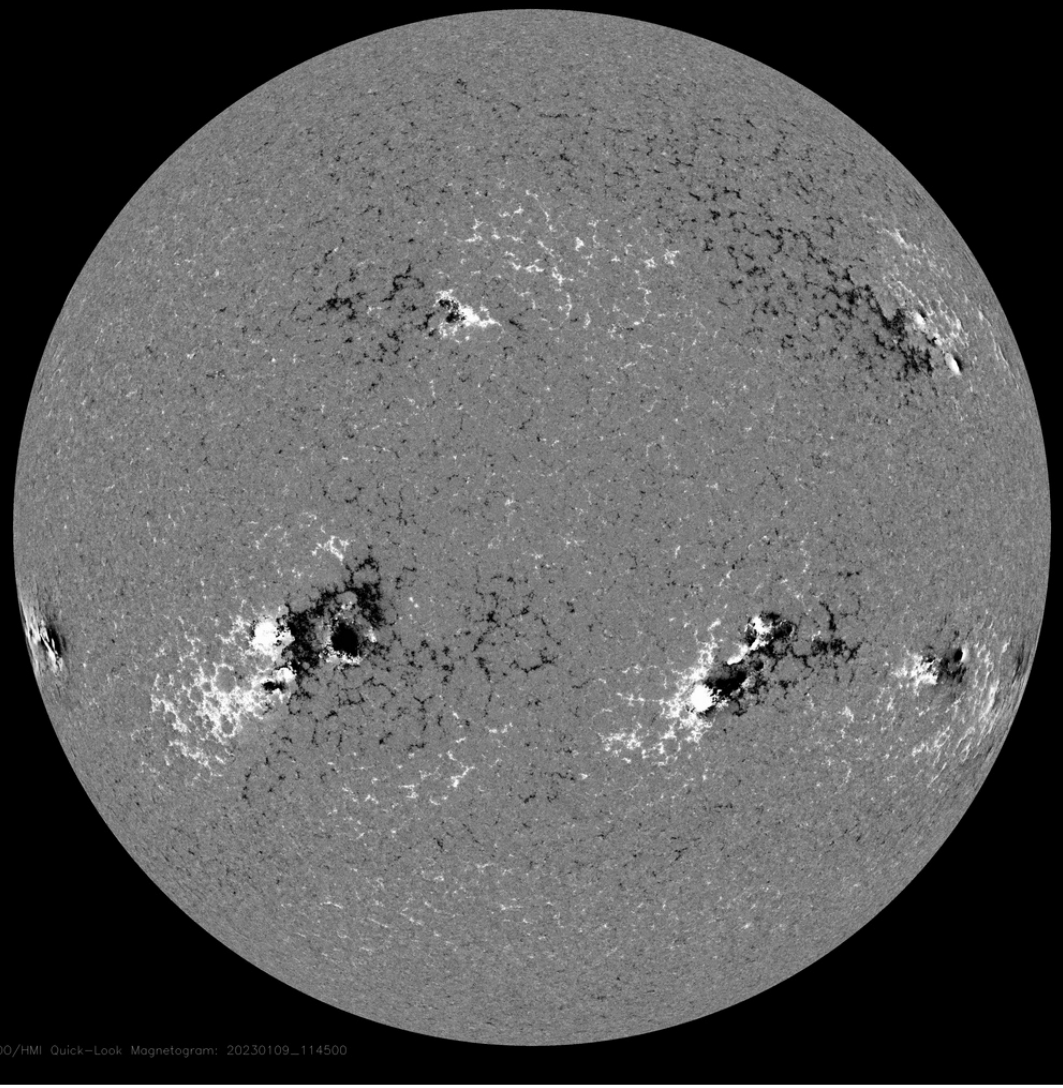


Solar active regions

SDO/HMI White Light 2023-01-09

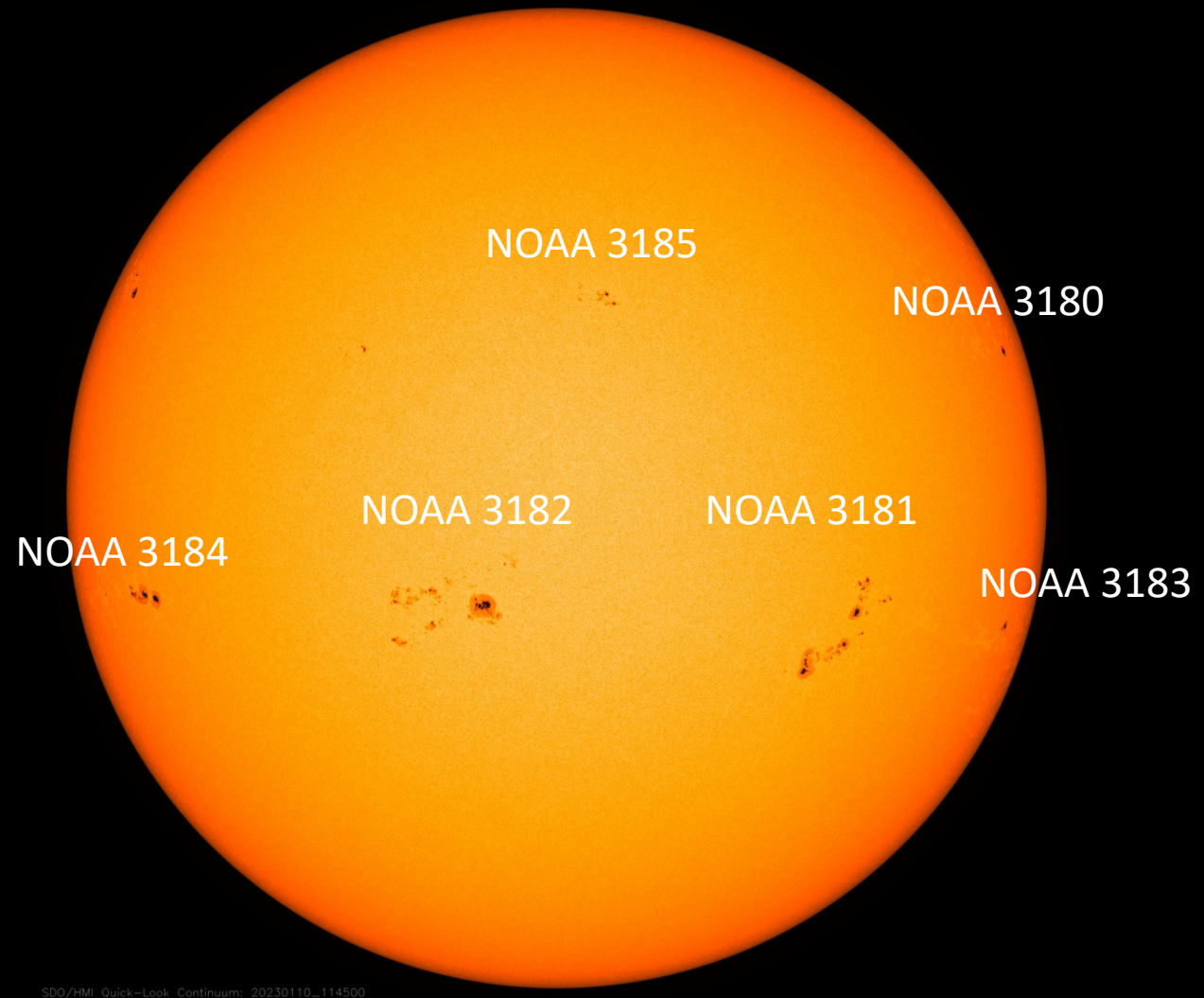


SDO/HMI Magnetogram 2023-01-09

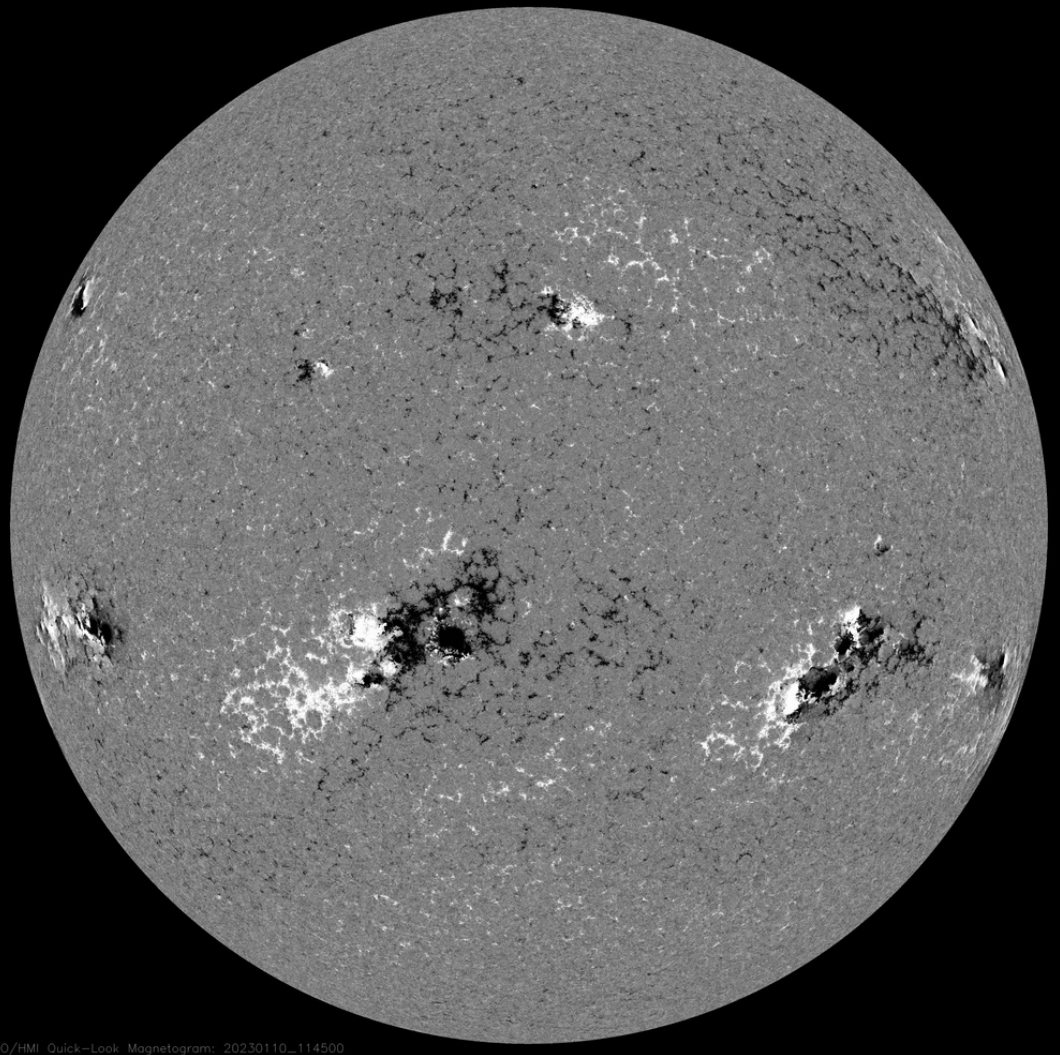


Solar active regions

SDO/HMI White Light 2023-01-10

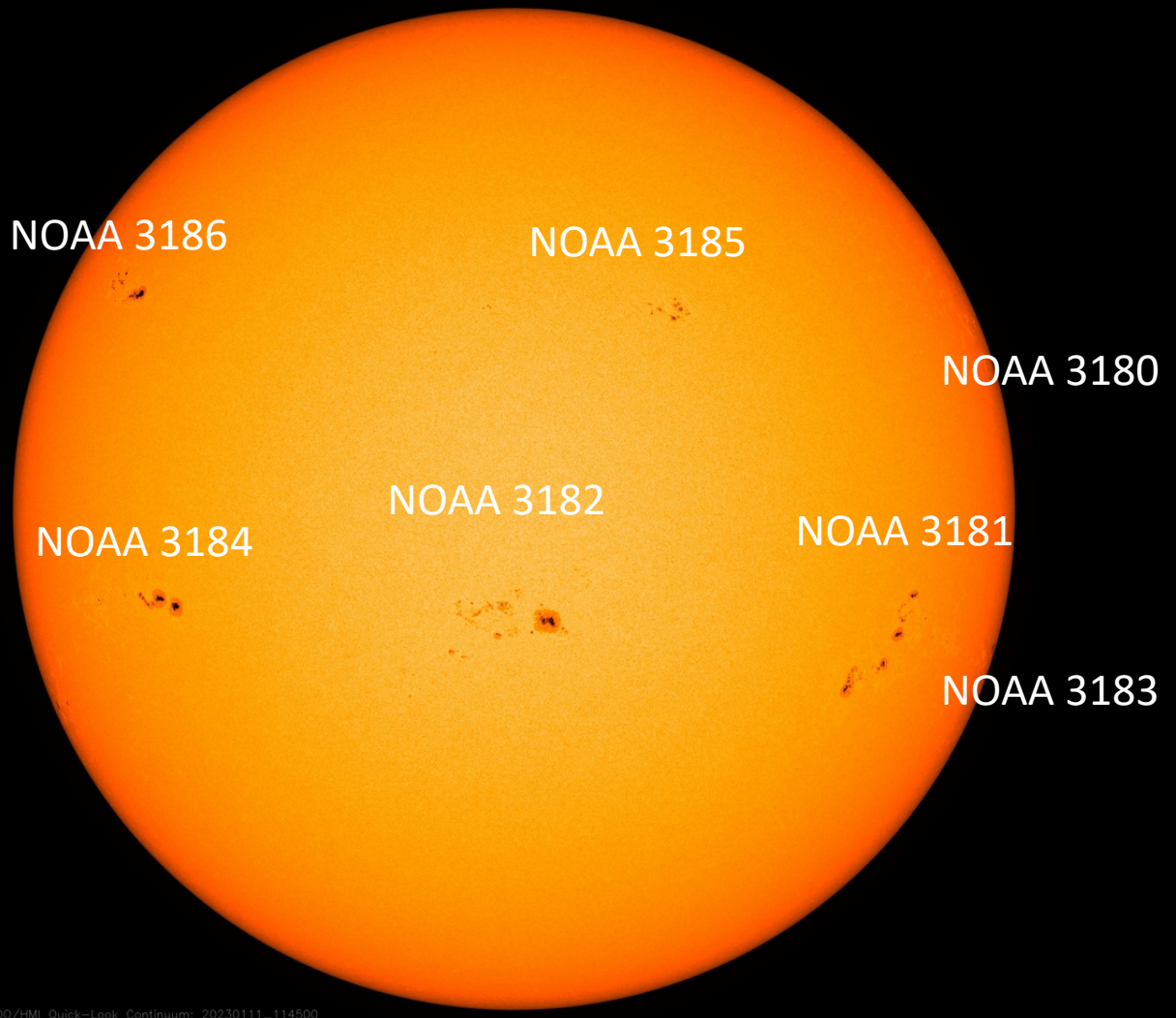


SDO/HMI Magnetogram 2023-01-10

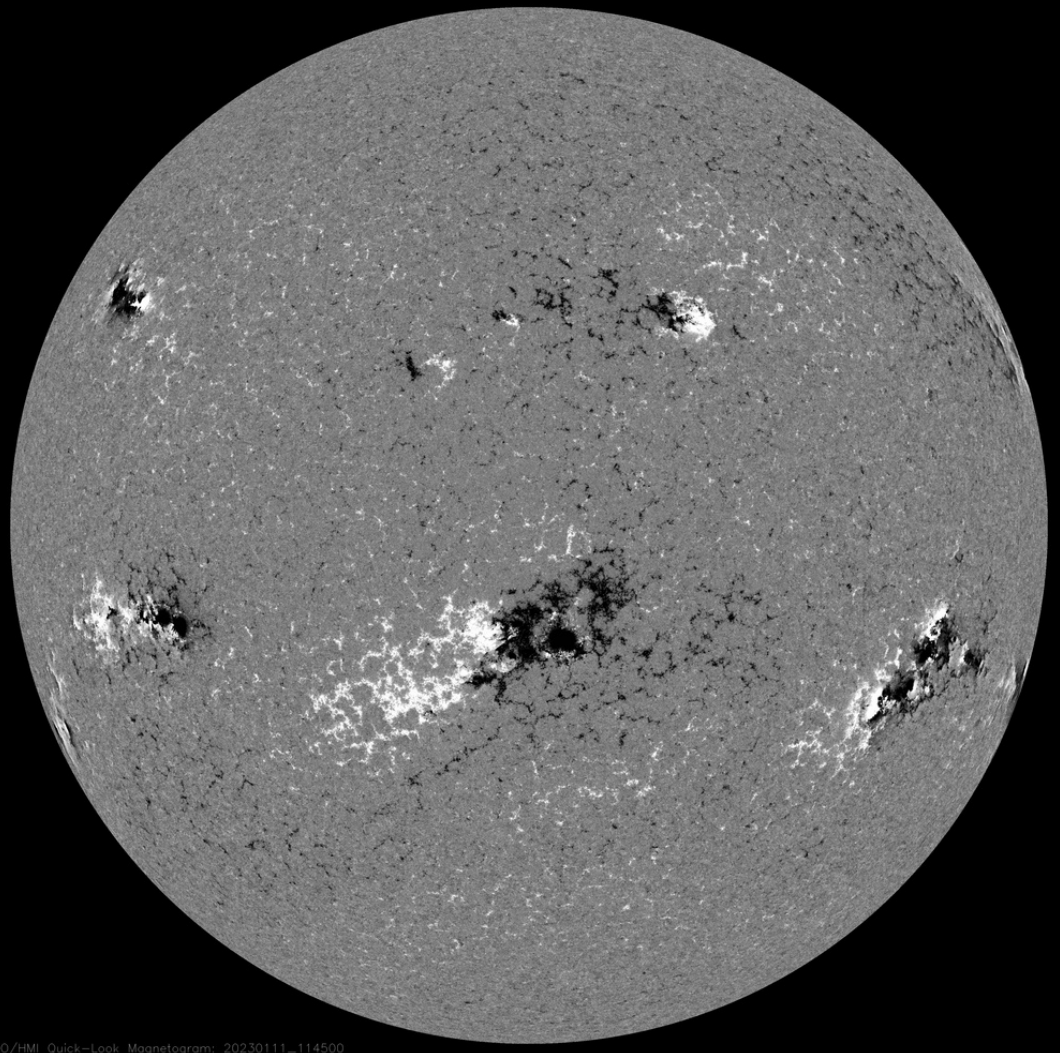


Solar active regions

SDO/HMI White Light 2023-01-11

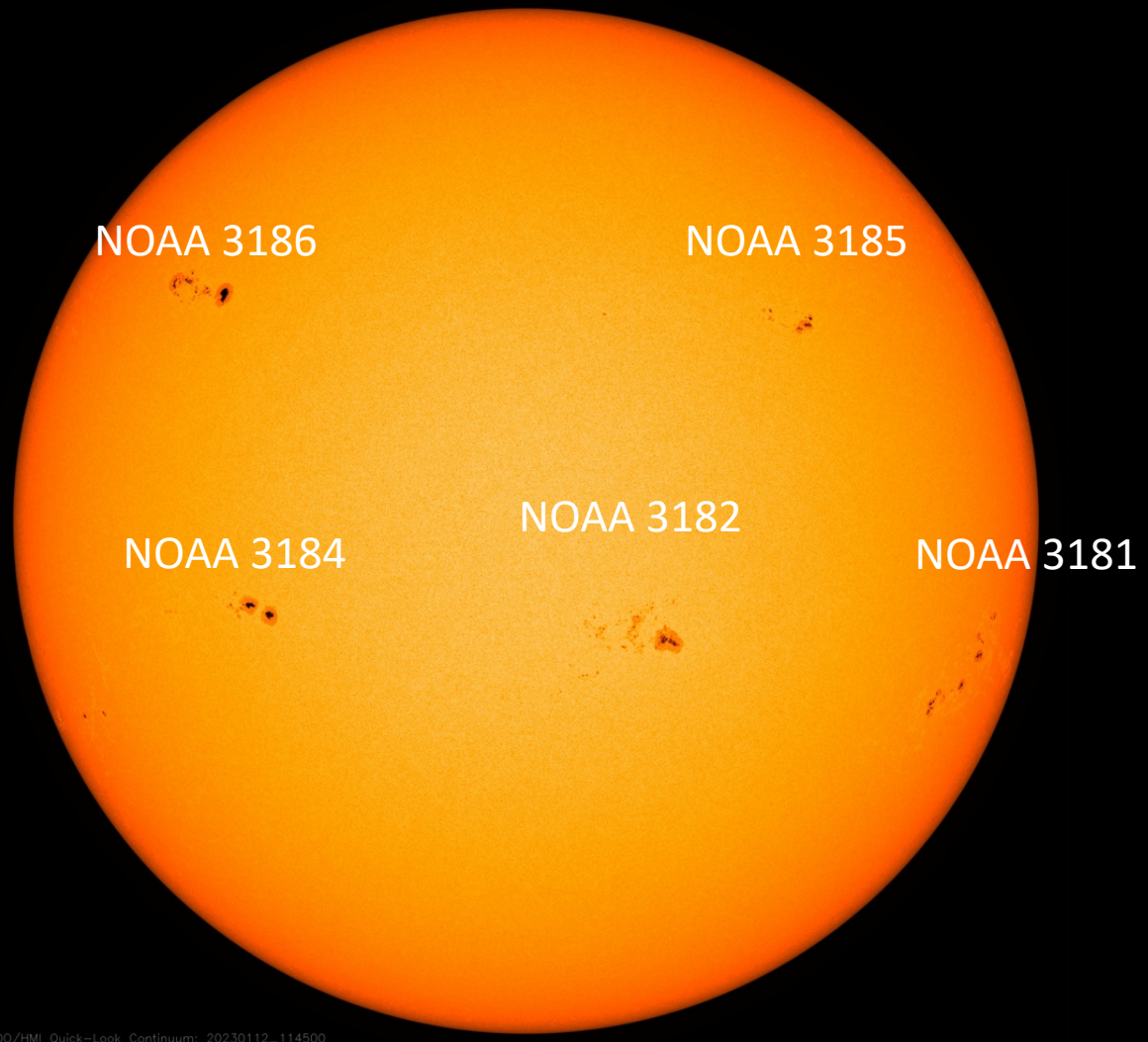


SDO/HMI Magnetogram 2023-01-11

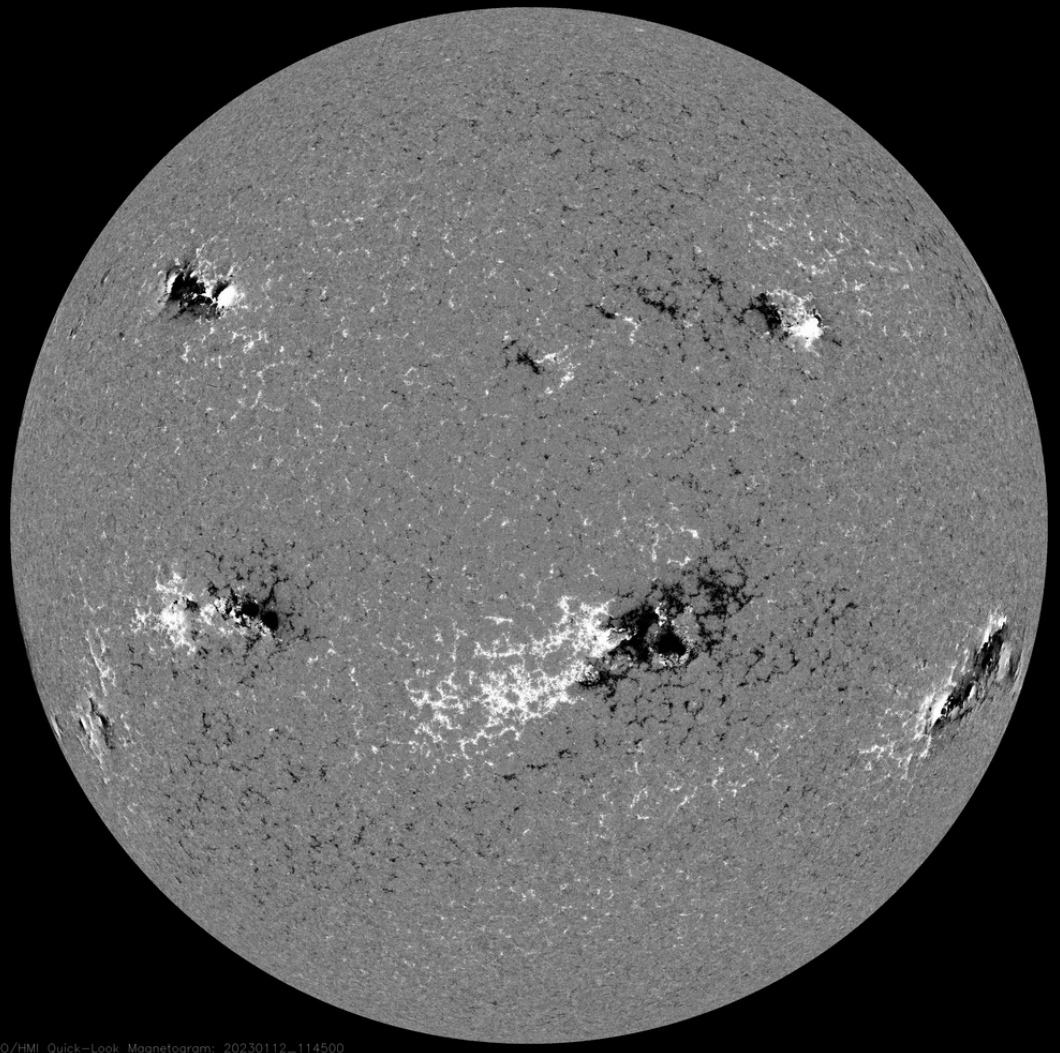


Solar active regions

SDO/HMI White Light 2023-01-12

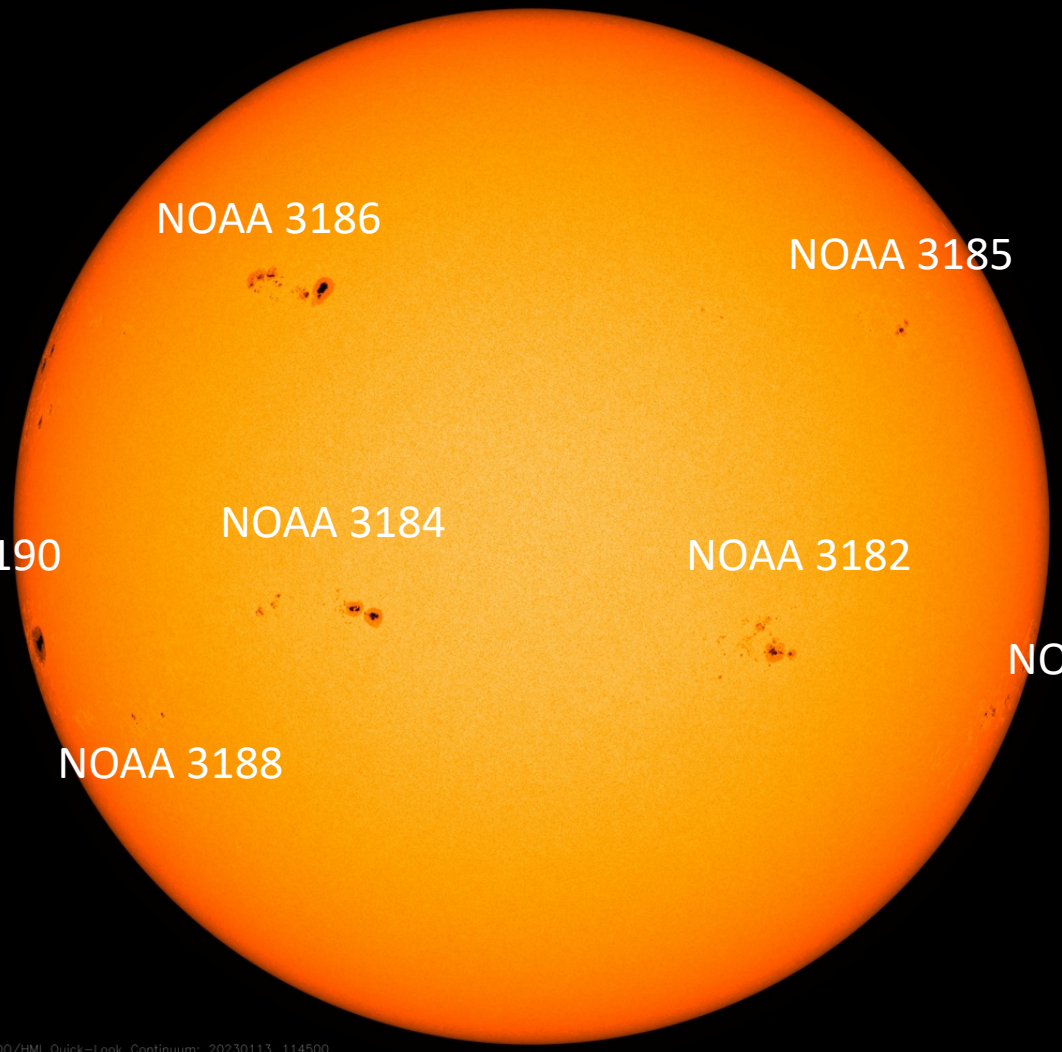


SDO/HMI Magnetogram 2023-01-12

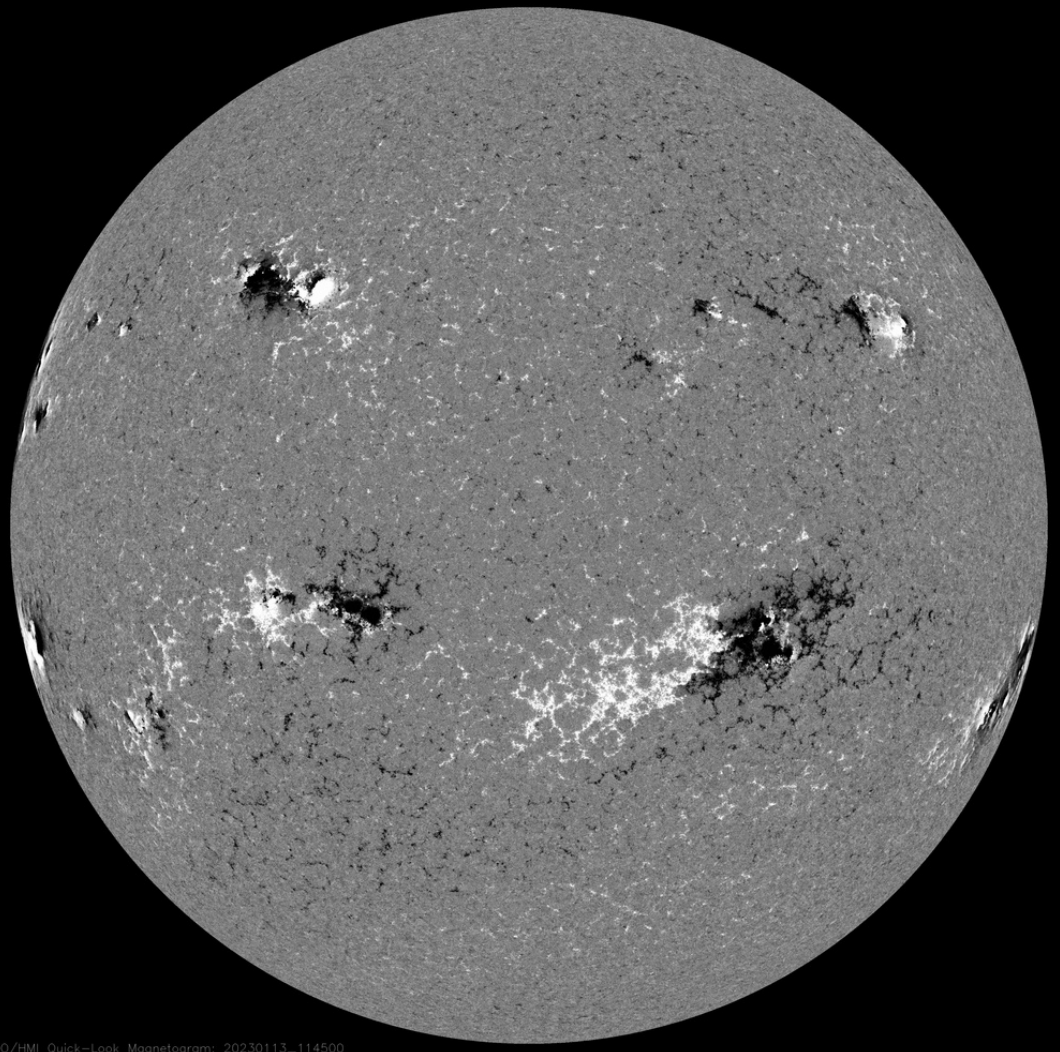


Solar active regions

SDO/HMI White Light 2023-01-13

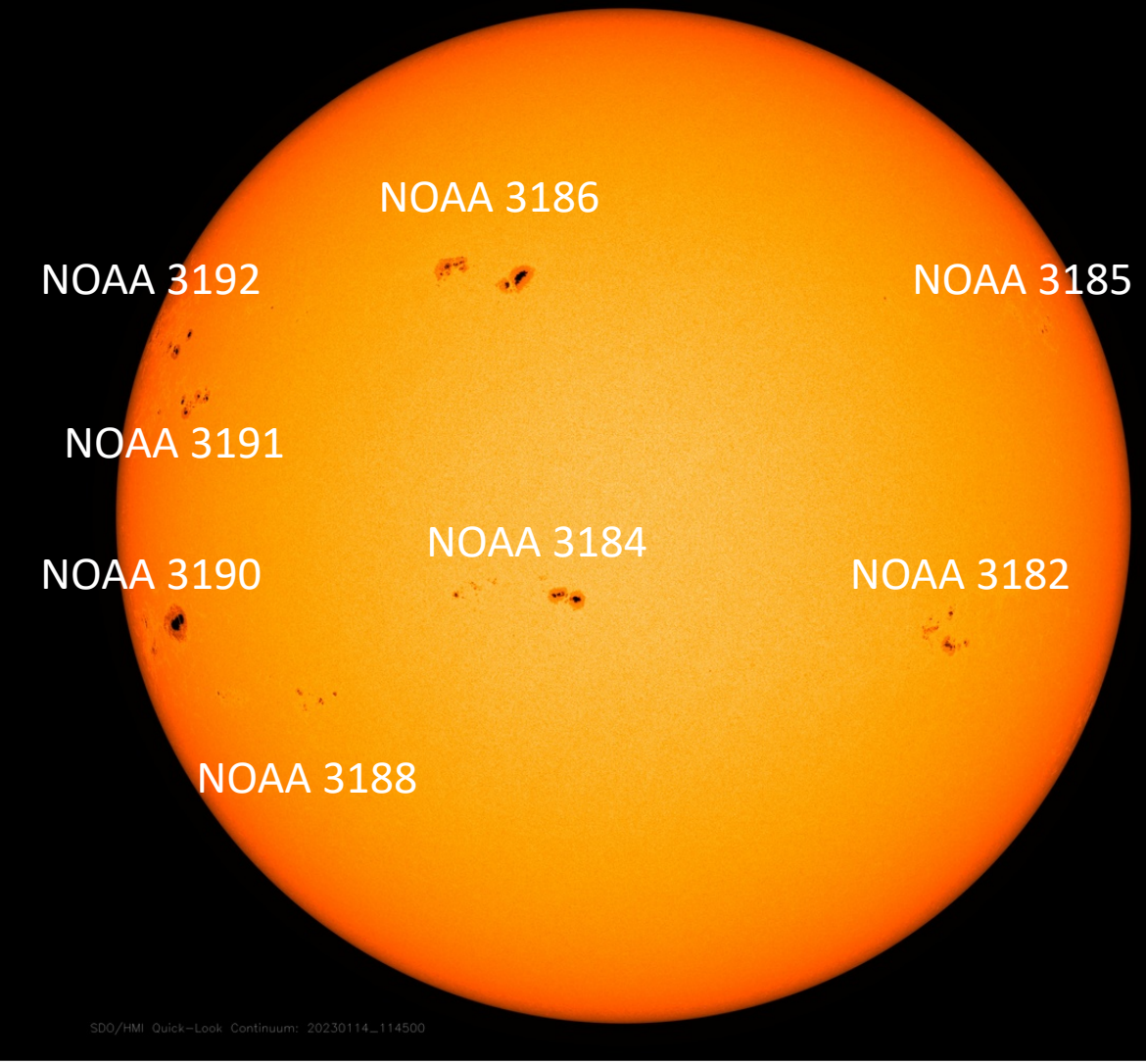


SDO/HMI Magnetogram 2023-01-13

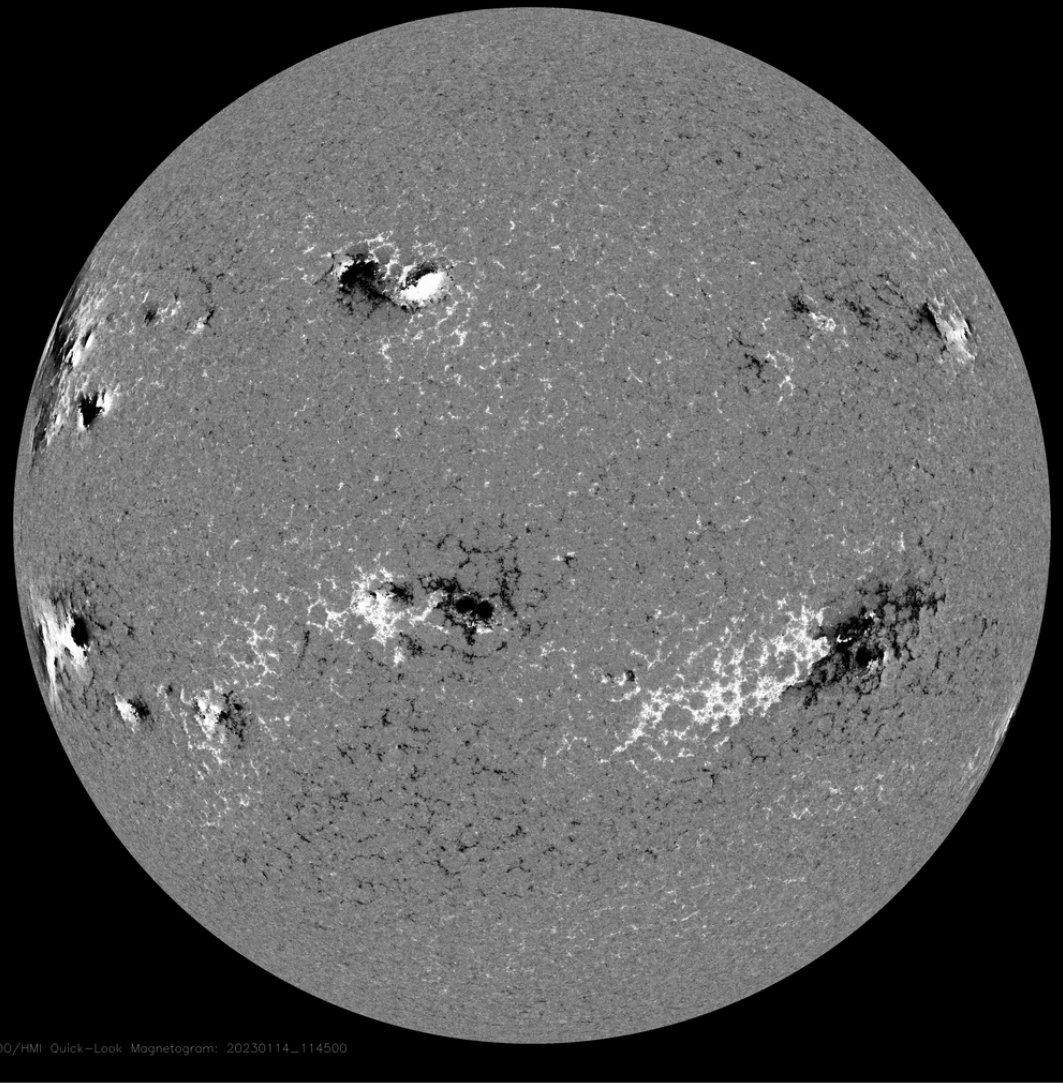


Solar active regions

SDO/HMI White Light 2023-01-14

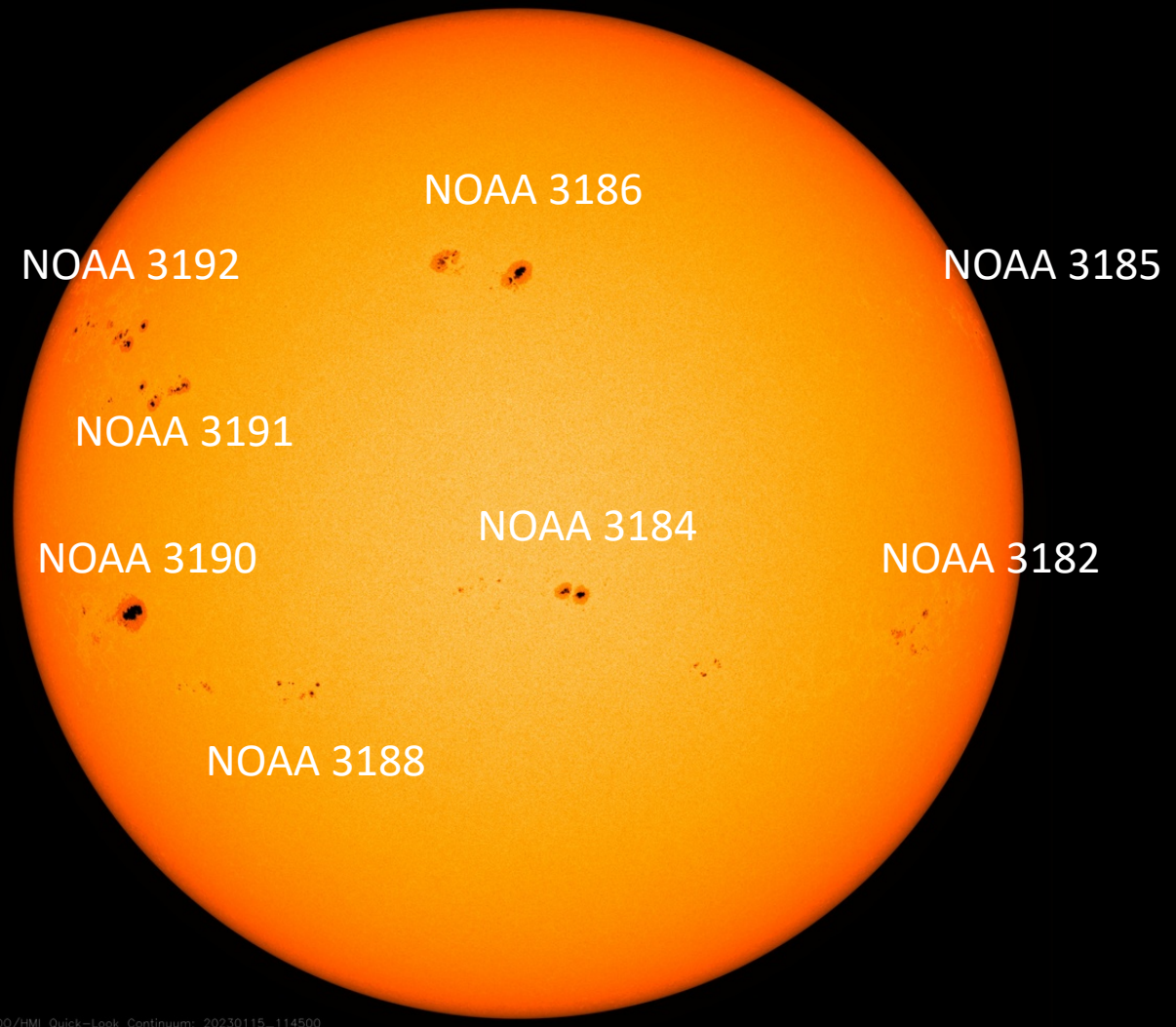


SDO/HMI Magnetogram 2023-01-14

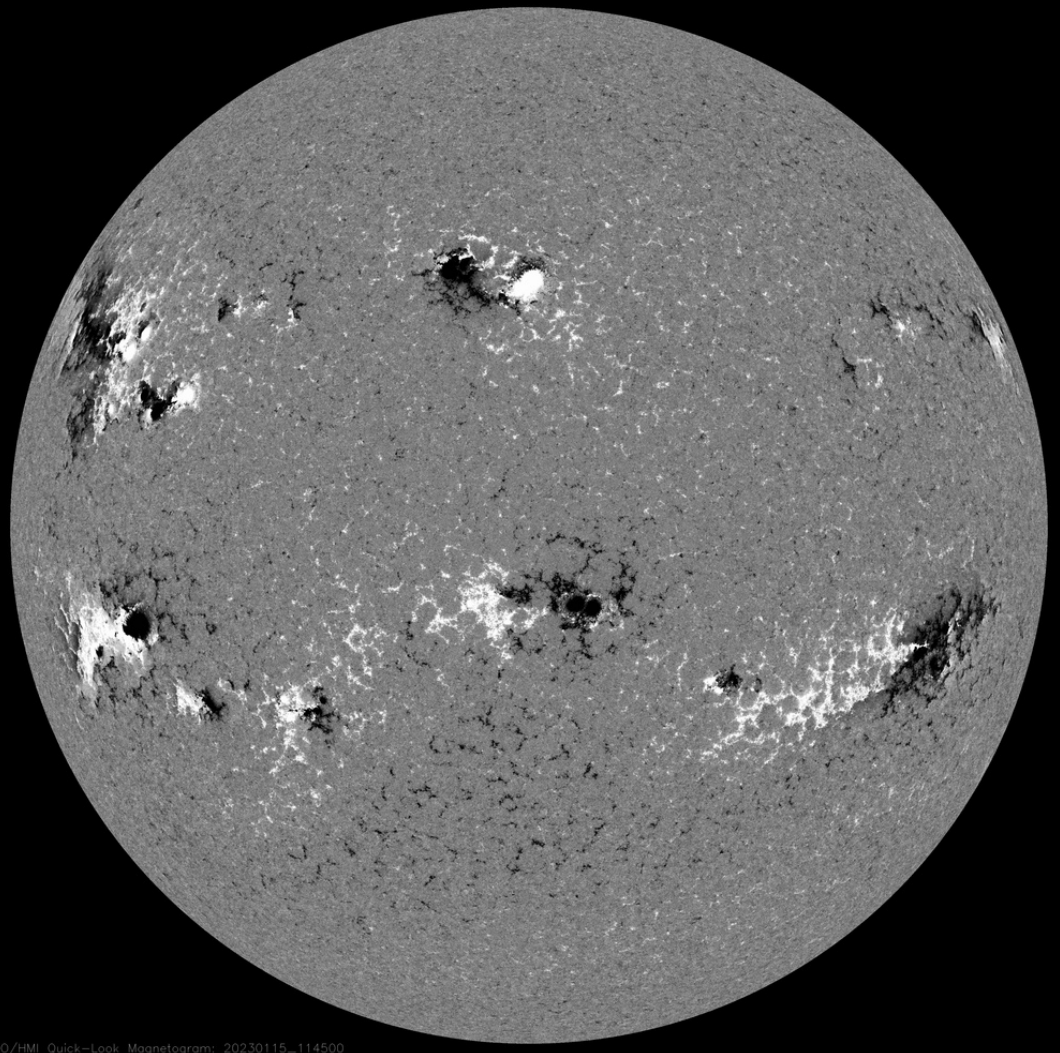


Solar active regions

SDO/HMI White Light 2023-01-15

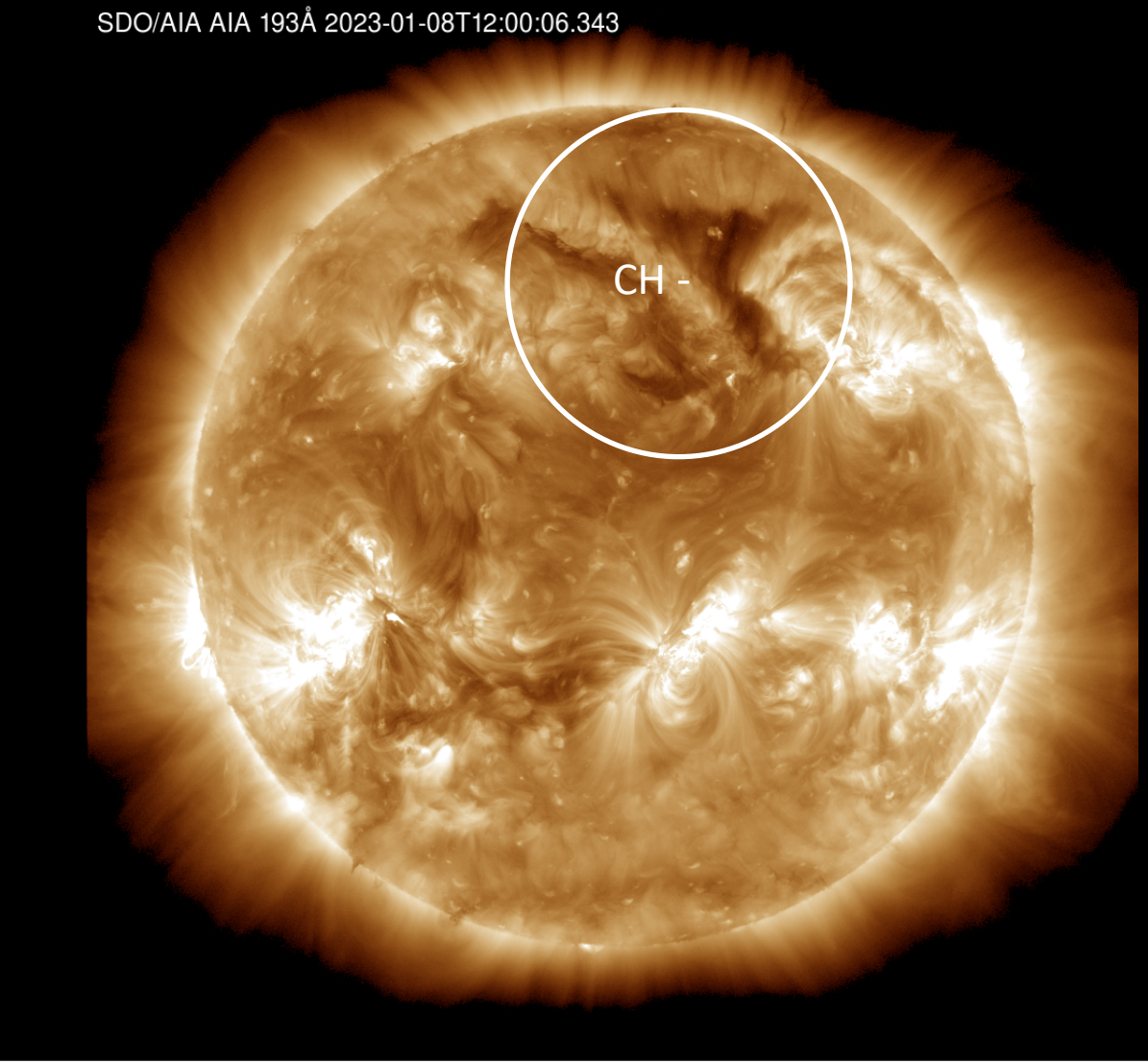


SDO/HMI Magnetogram 2023-01-15

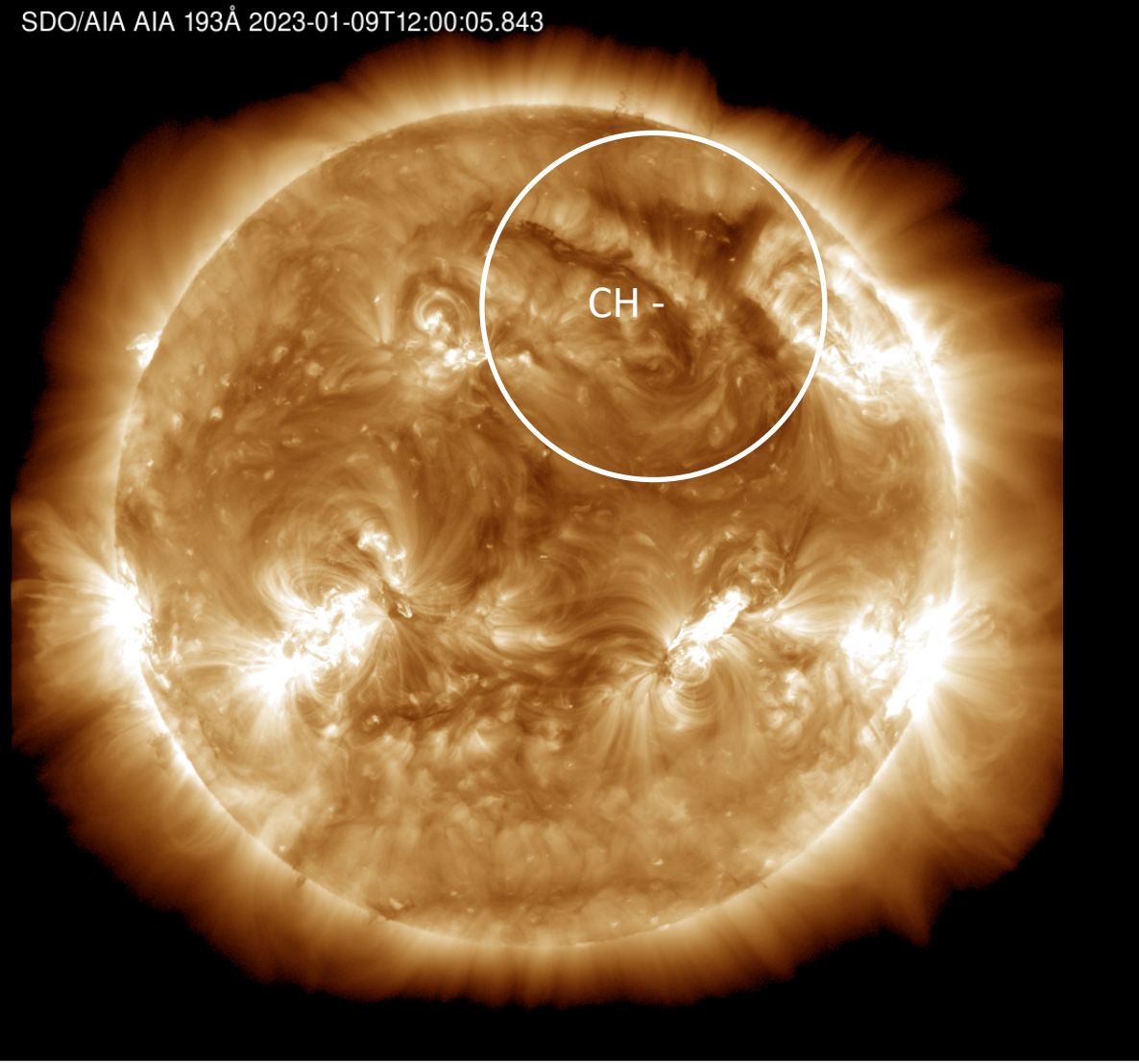


Coronal holes

SDO/AIA 19.3 nm 2023-01-08

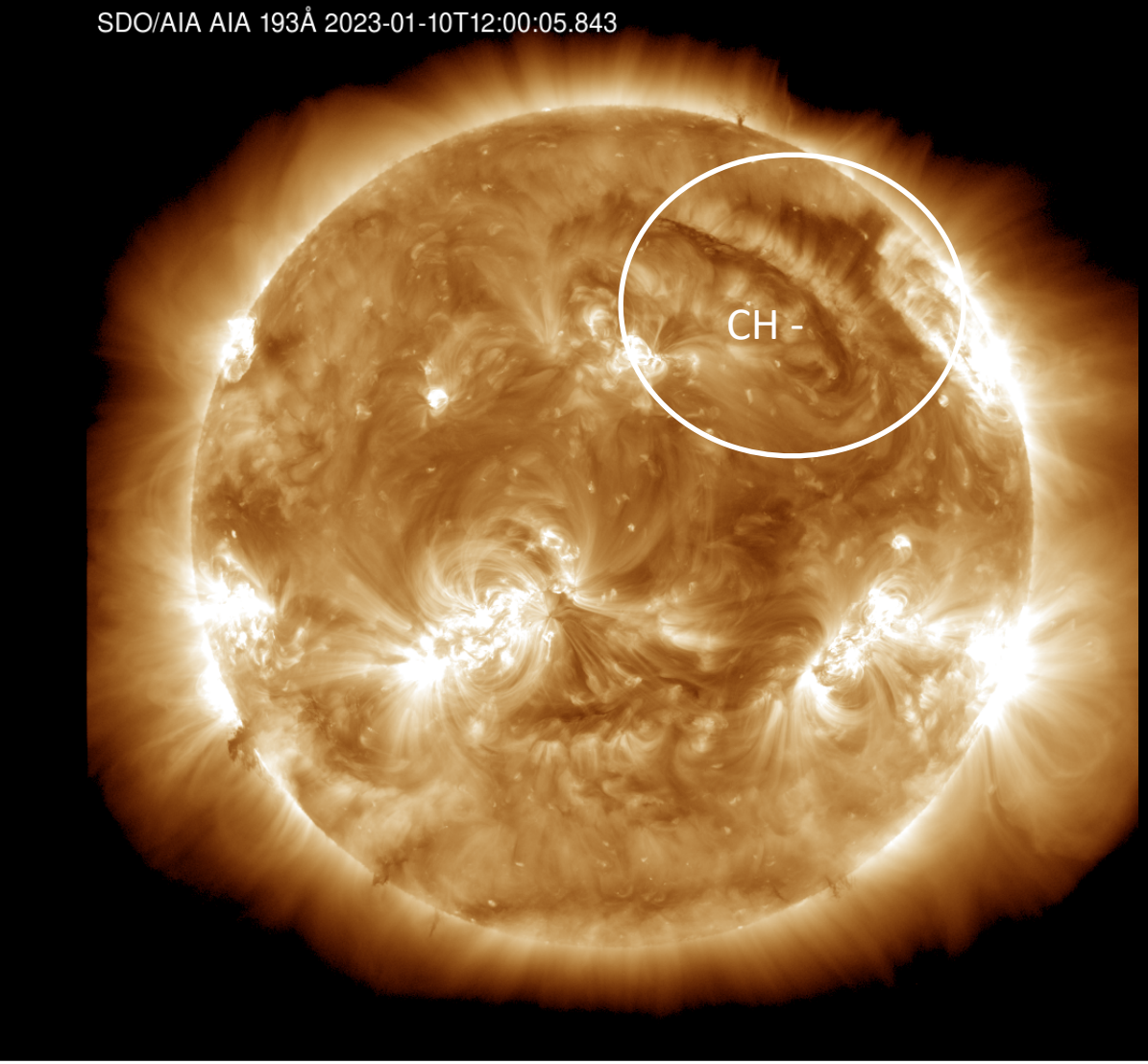


SDO/AIA 19.3 nm 2023-01-09

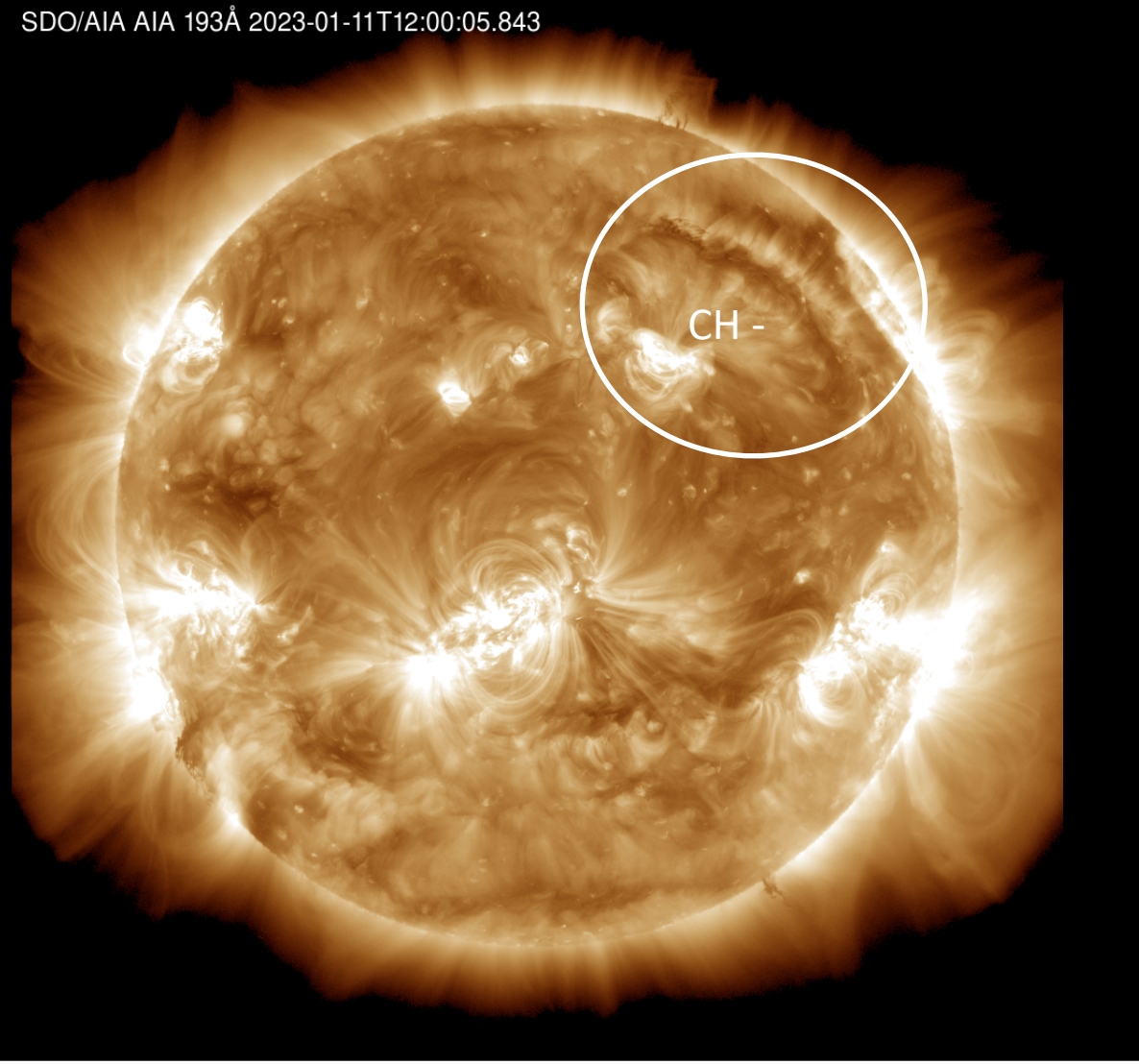


Coronal holes

SDO/AIA 19.3 nm 2023-01-10

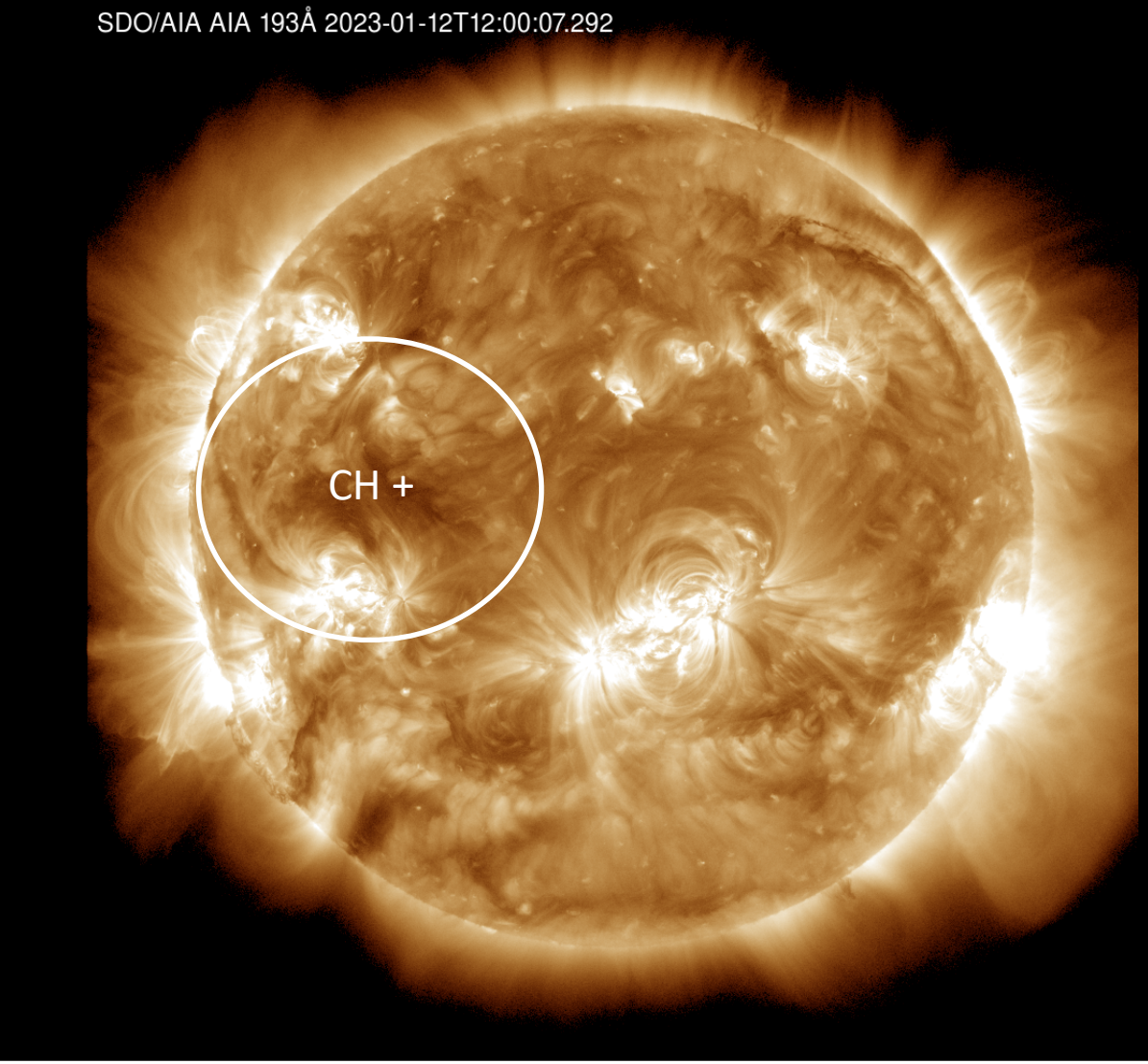


SDO/AIA 19.3 nm 2023-01-11

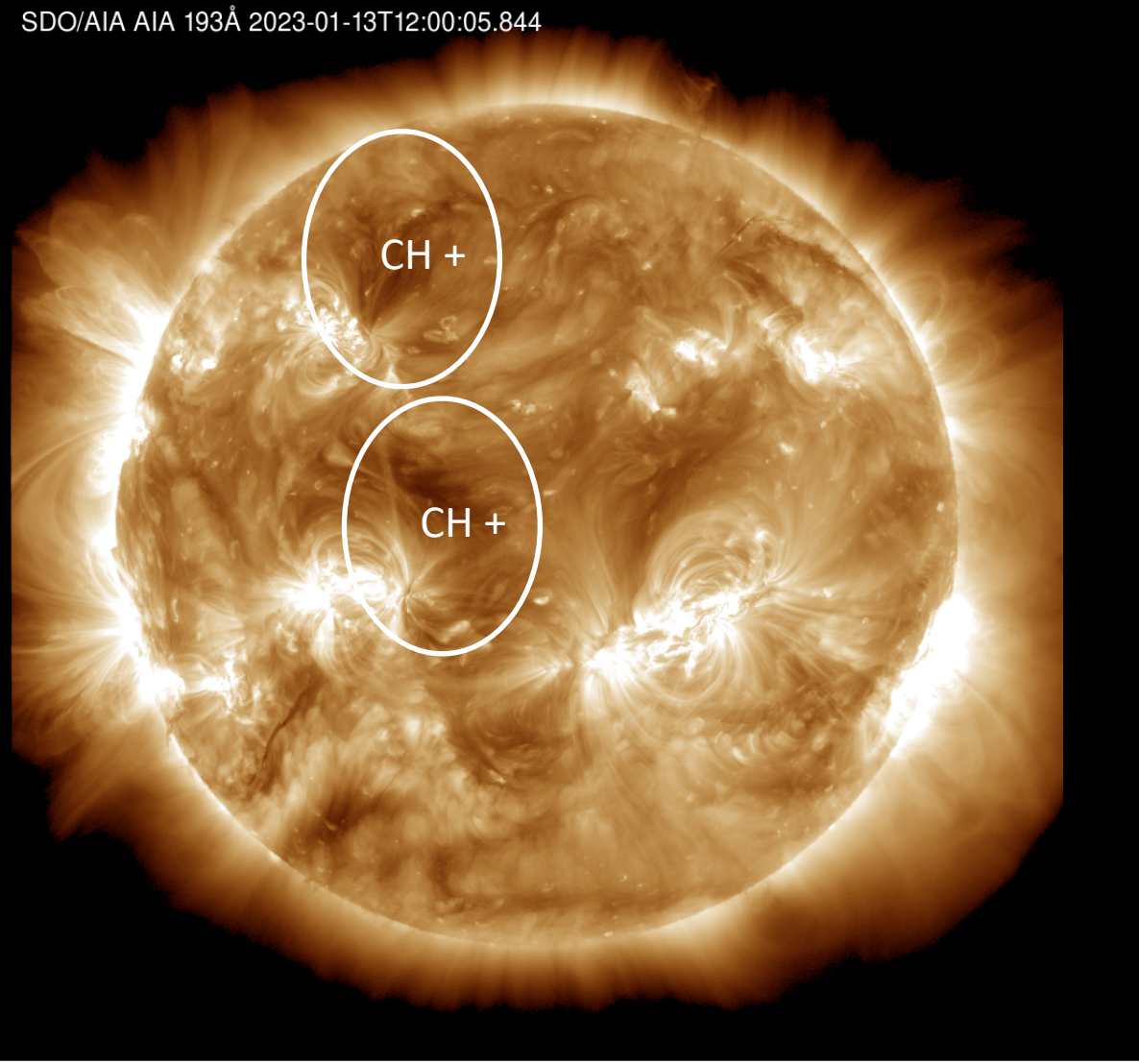


Coronal holes

SDO/AIA 19.3 nm 2023-01-12

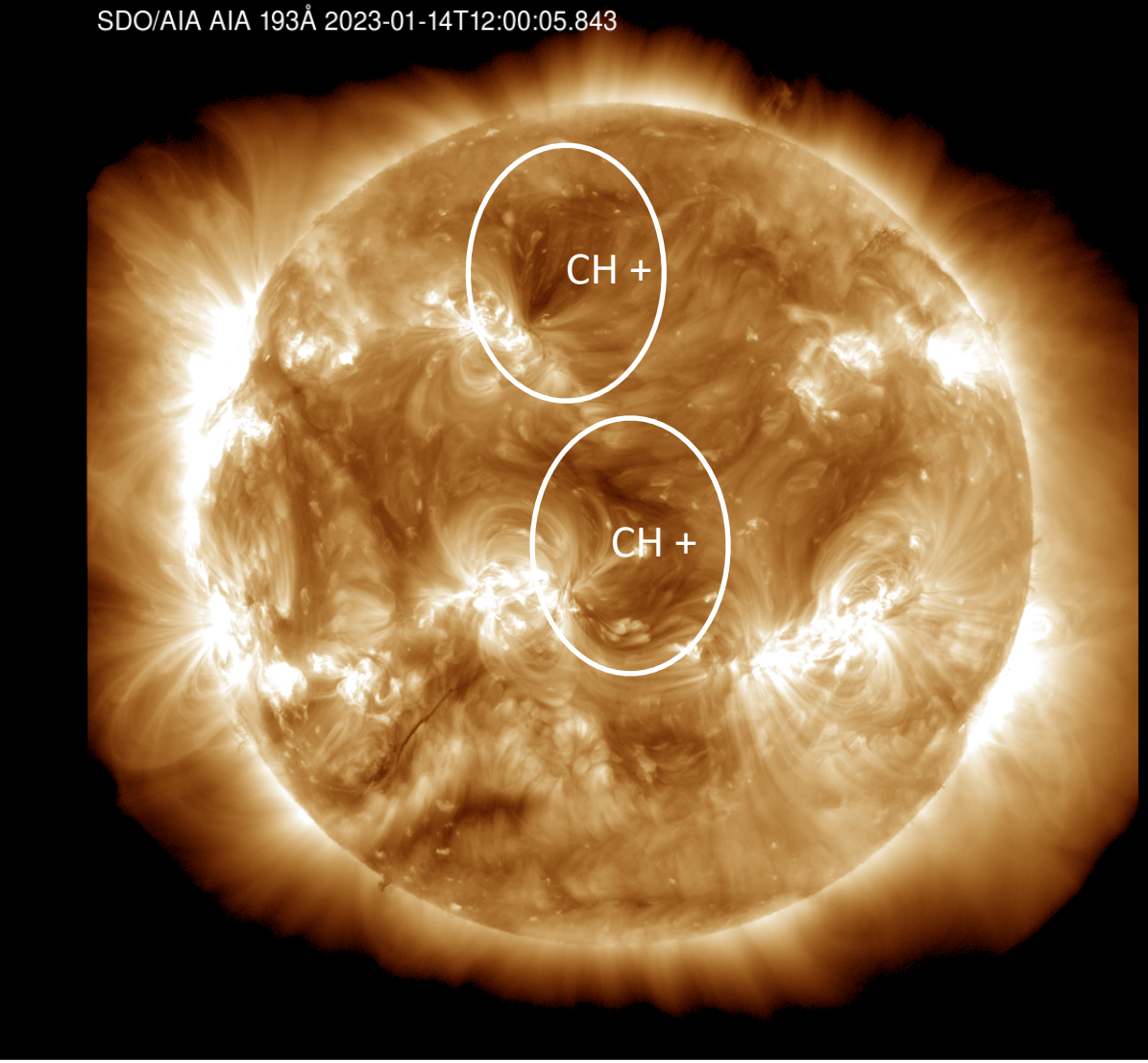


SDO/AIA 19.3 nm 2023-01-13

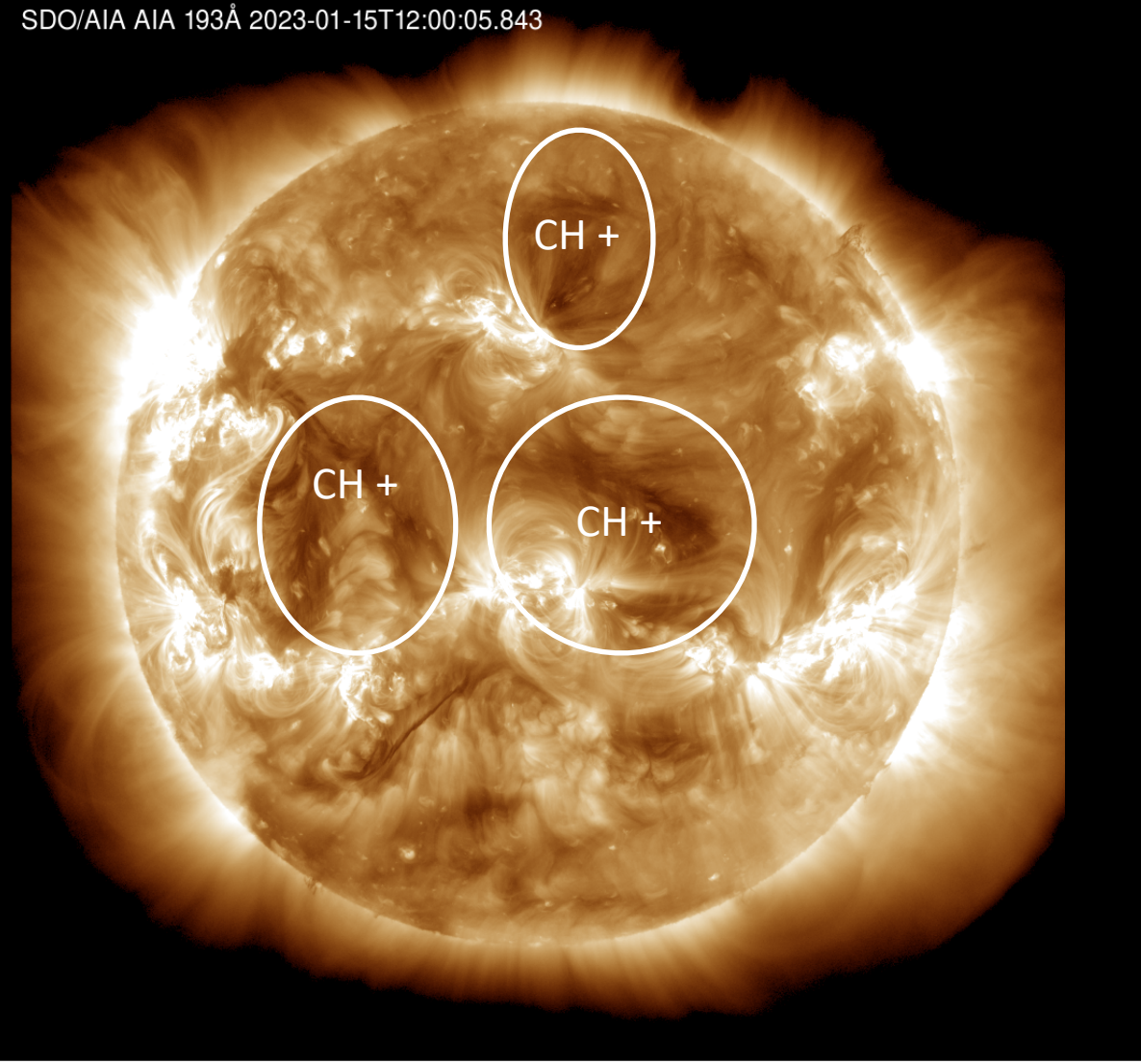


Coronal holes

SDO/AIA 19.3 nm 2023-01-14

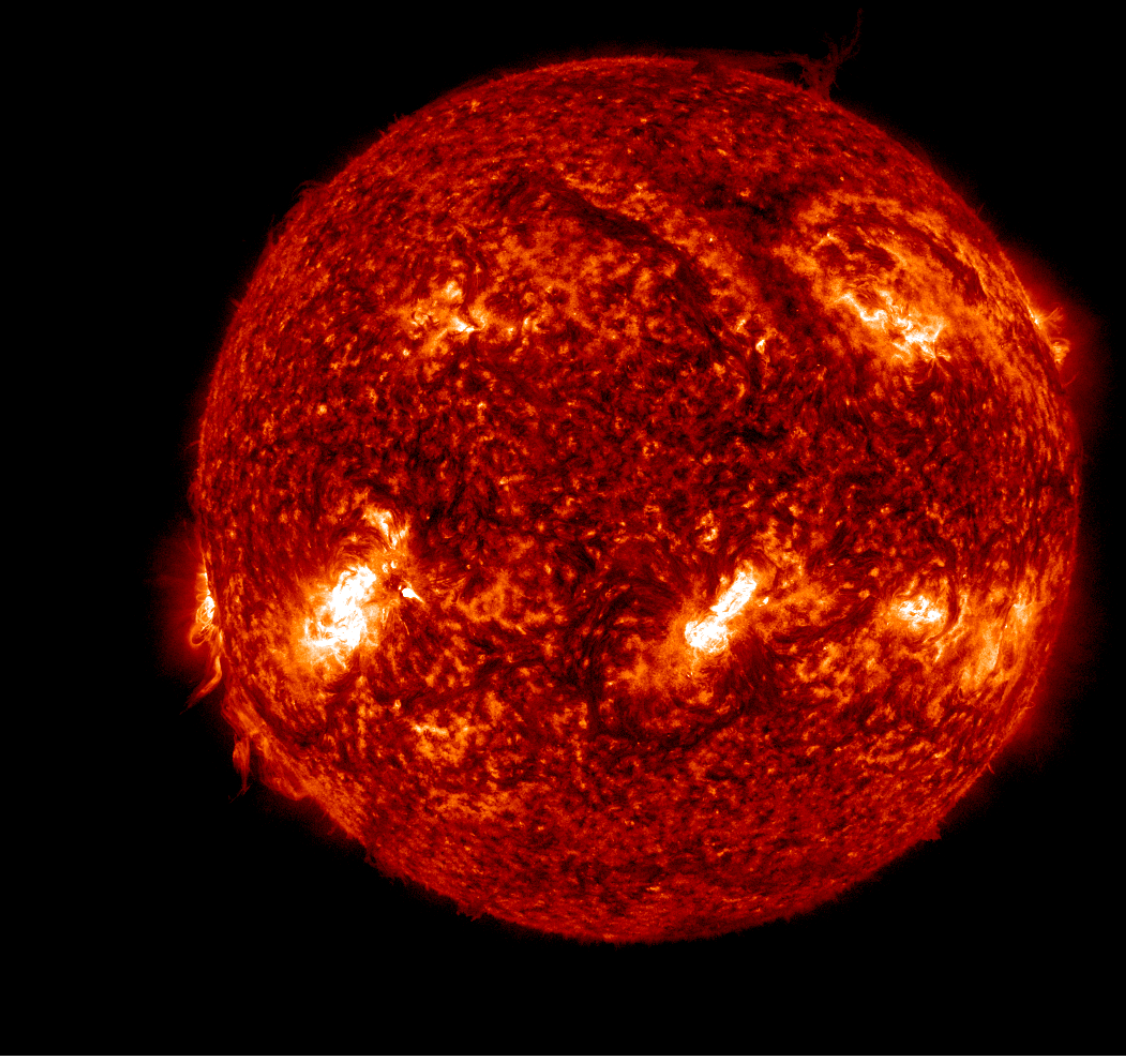


SDO/AIA 19.3 nm 2023-01-15

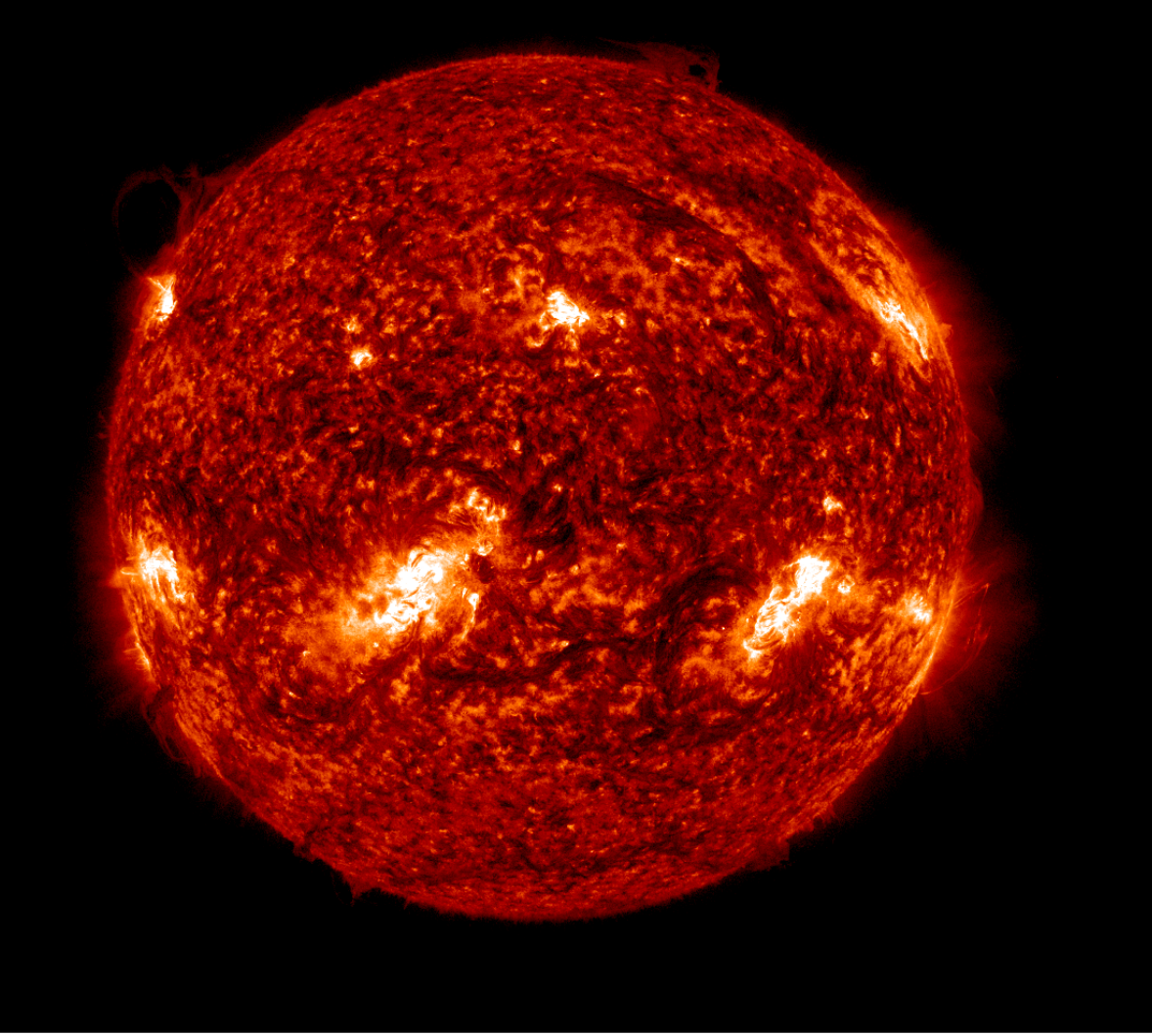


Filaments

SDO/AIA 30.4 nm 2023-01-08

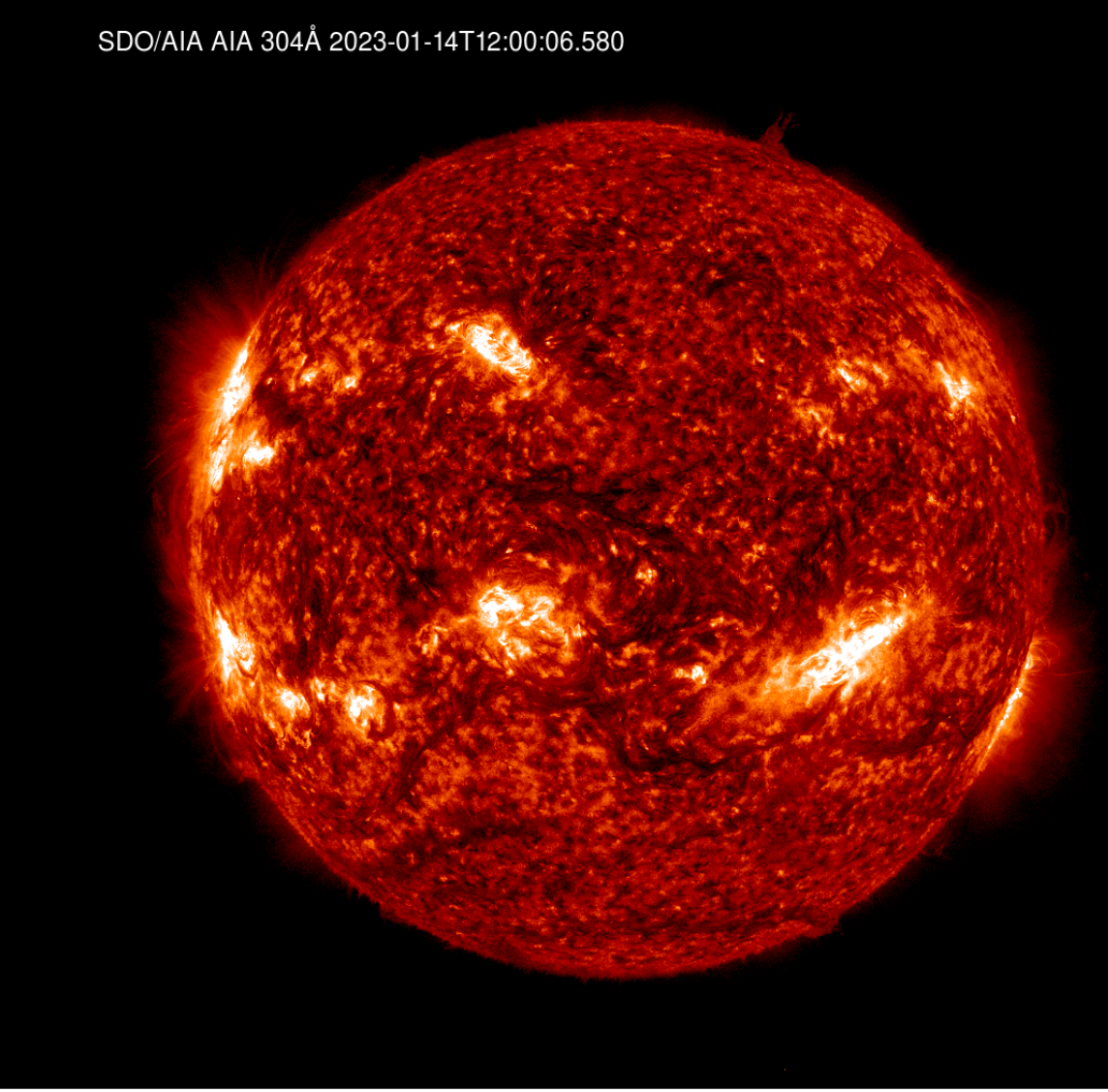


SDO/AIA 30.4 nm 2023-01-10

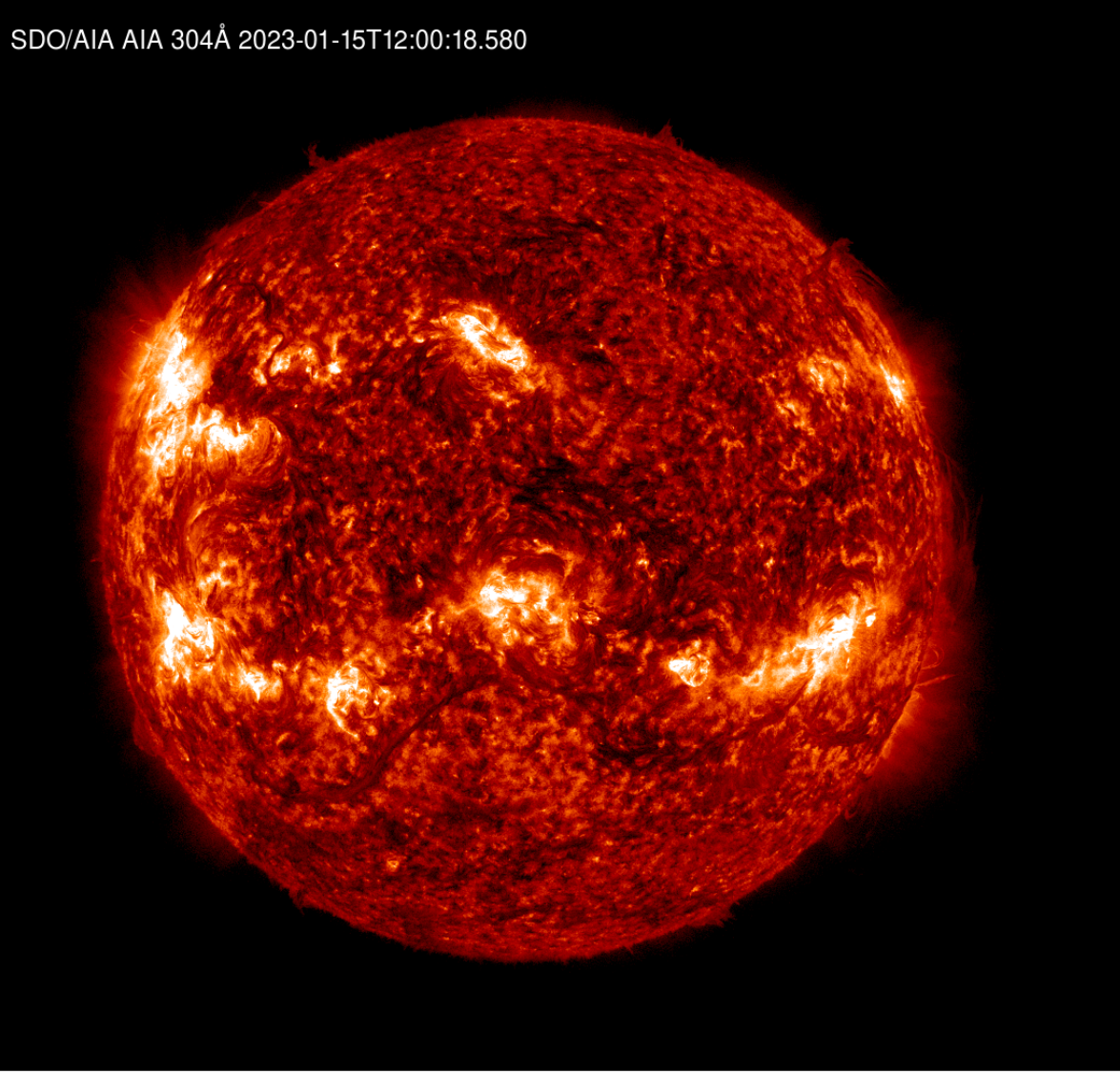


Filaments

SDO/AIA 30.4 nm 2023-01-14

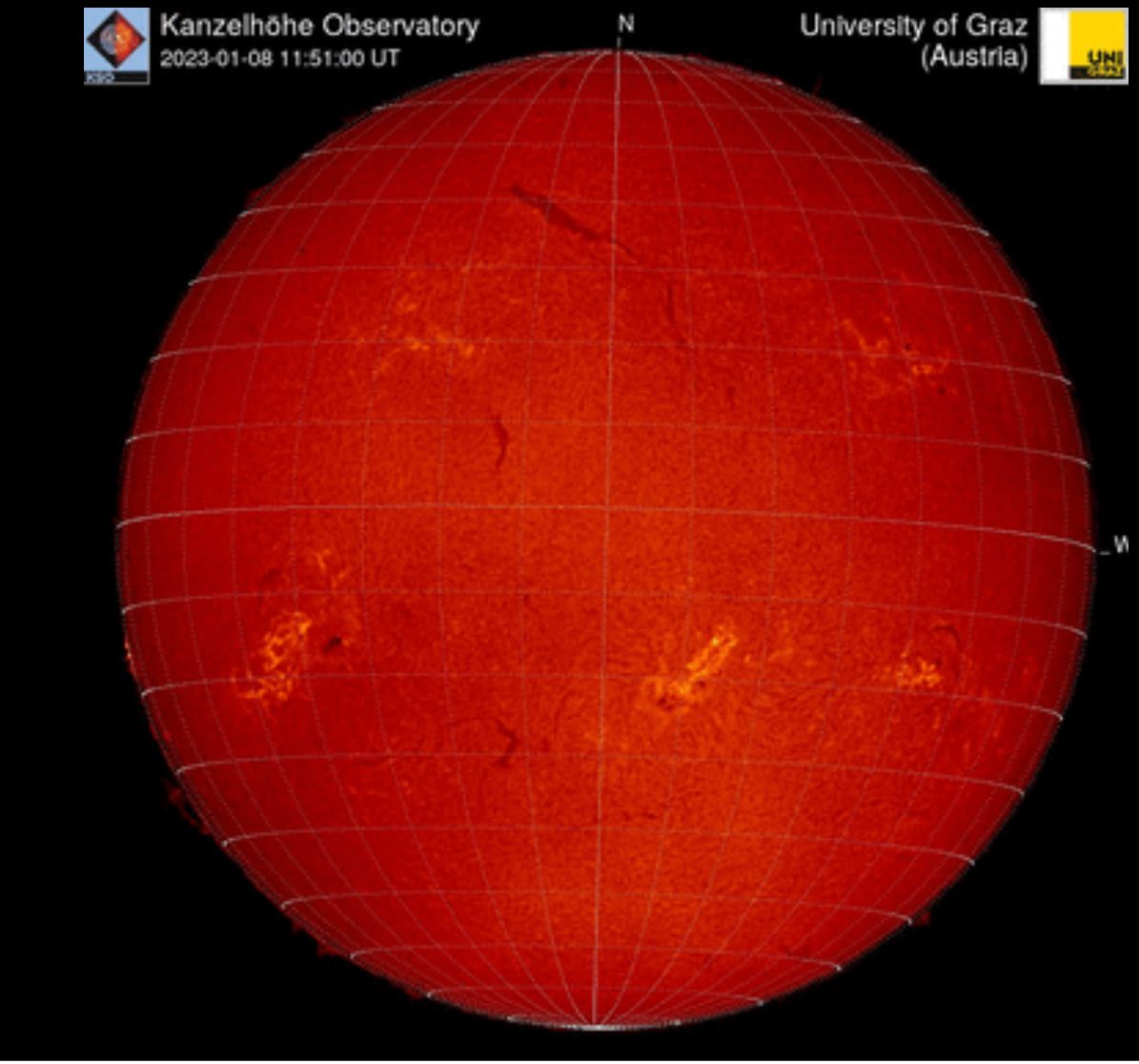


SDO/AIA 30.4 nm 2023-01-15

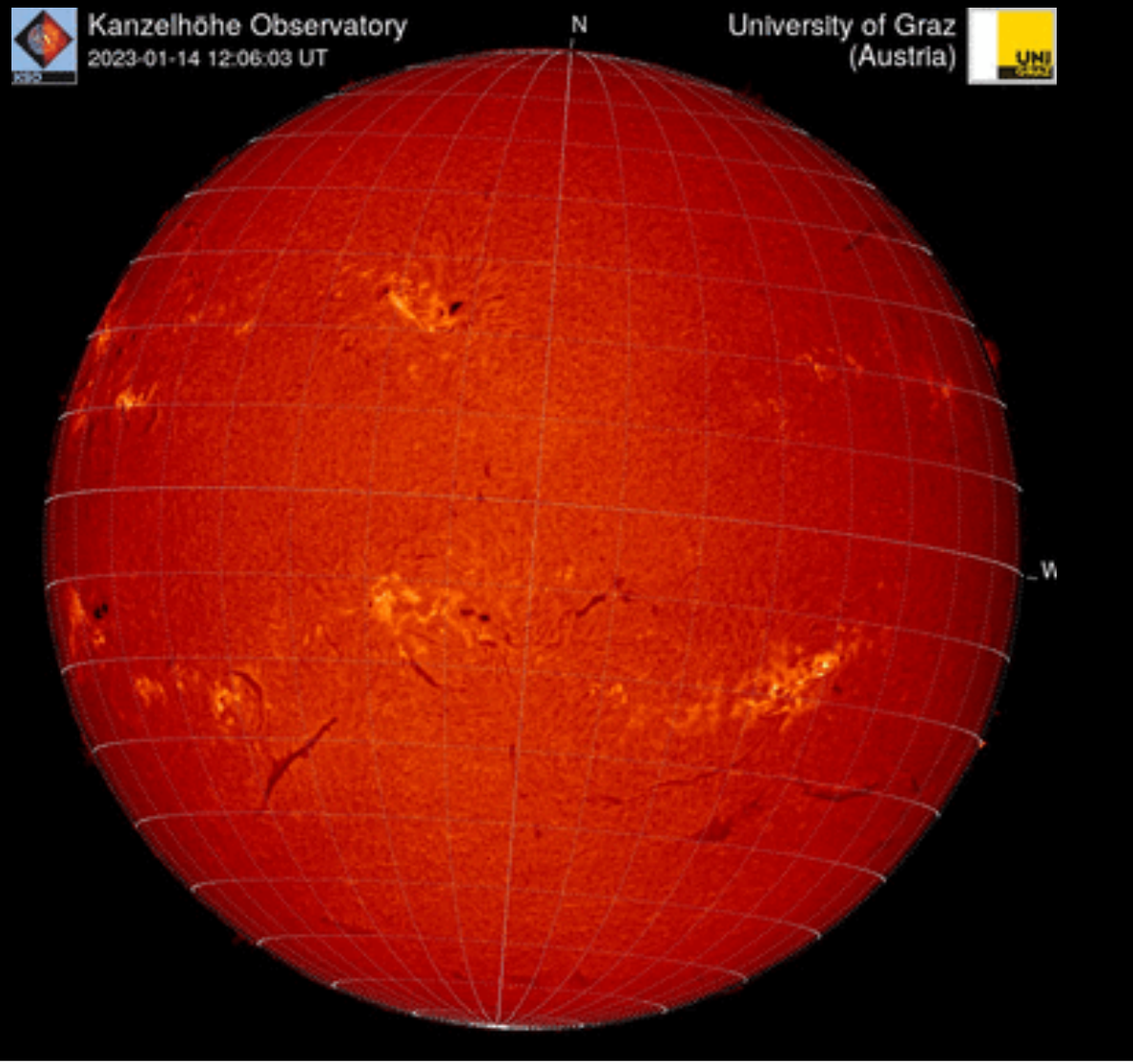


Filaments & Filament eruptions

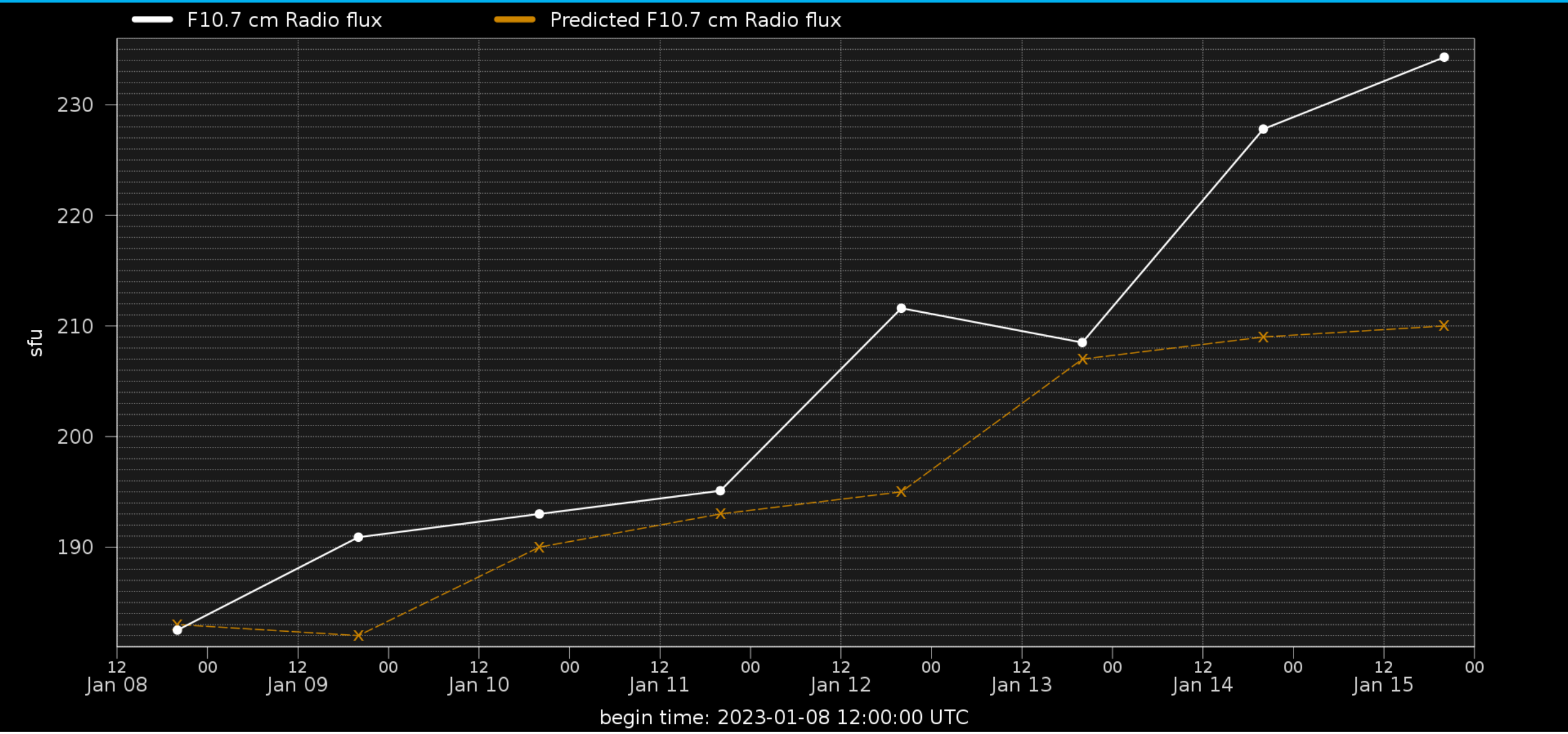
H-alpha 2023-01-08



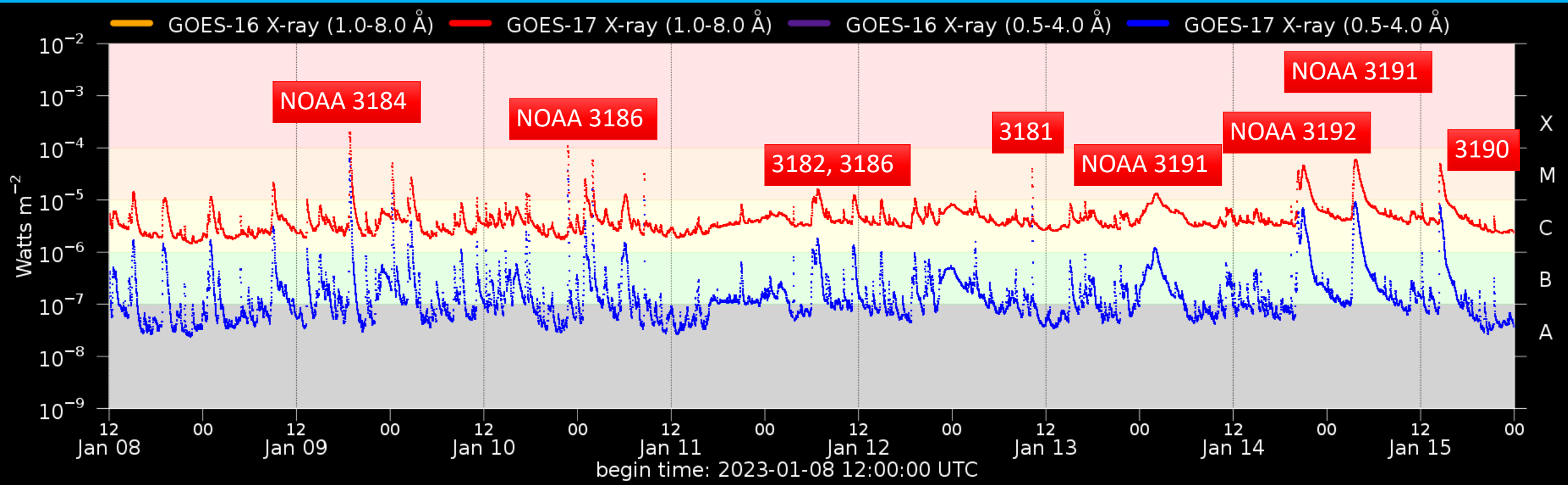
H-alpha 2023-01-15



Solar F10.7cm radio flux



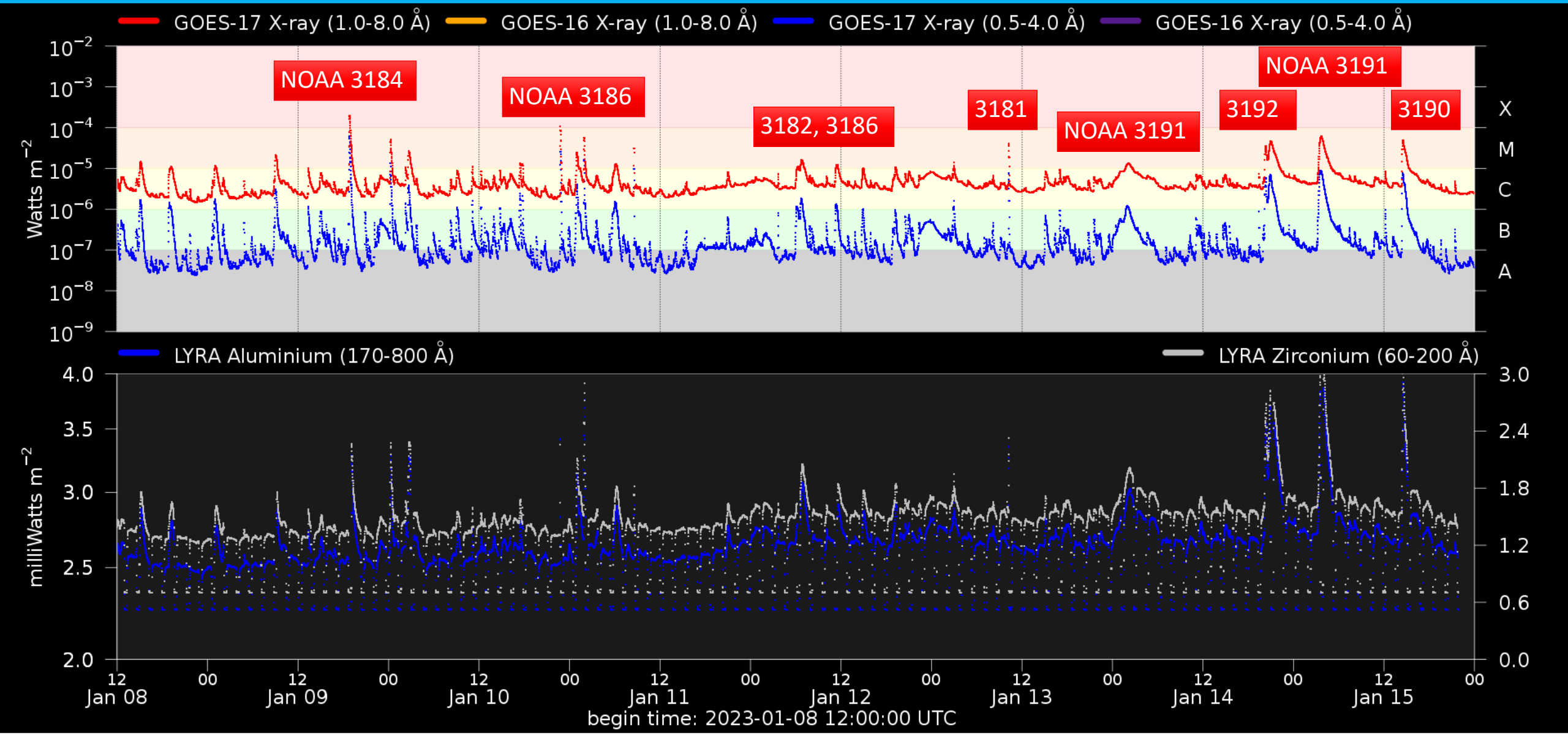
Flaring activity



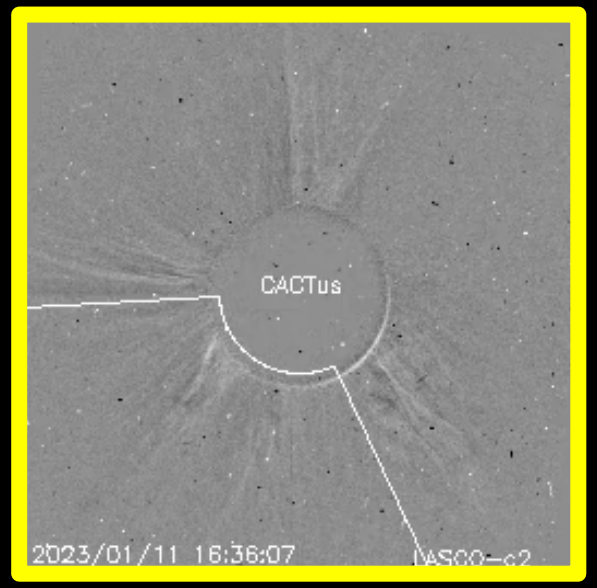
Probabilities (%) and occurrences (#) of C/M/X-flares daily, from noon to noon:

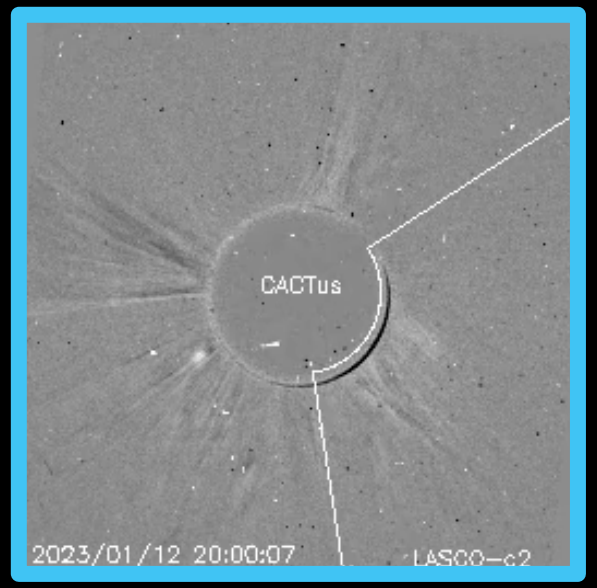
Issue date	2023-01-08	2023-01-09	2023-01-10	2023-01-11	2023-01-12	2023-01-13	2023-01-14	2023-01-15
Probability (%)	99|60|25	99|50|10	99|75|15	99|80|30	99|60|15	99|70|10	99|70|15	99|80|20
Observed (#)	05|03|00	11|05|01	07|06|01	04|03|00	05|04|00	05|00|00	02|03|00	02|01|00

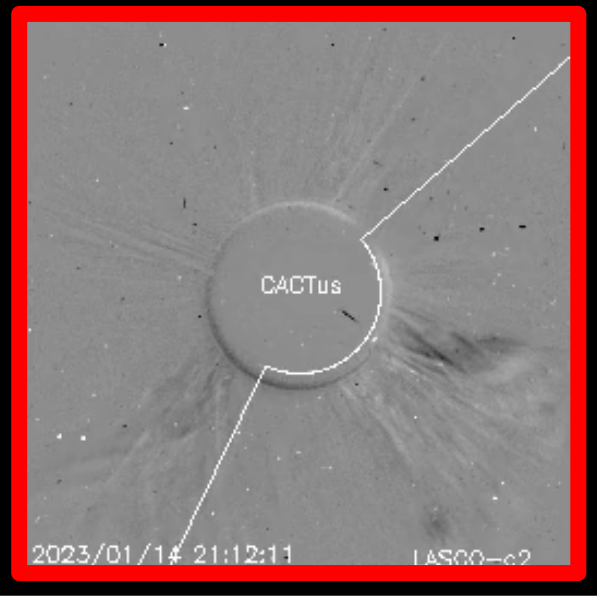
Solar X-Ray and UV flux

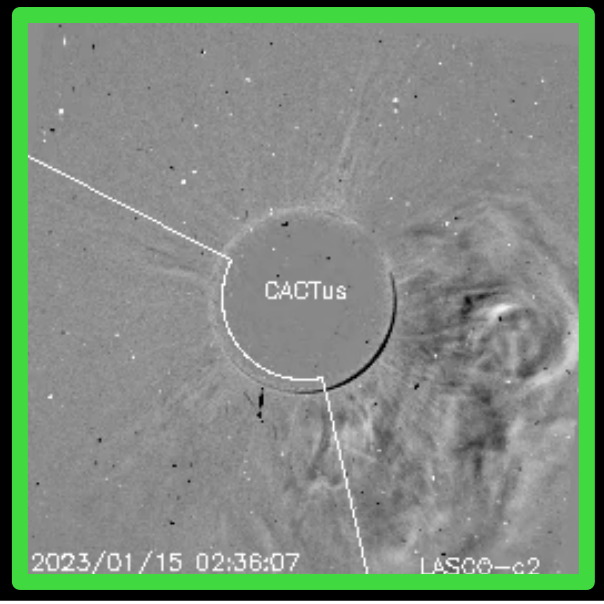


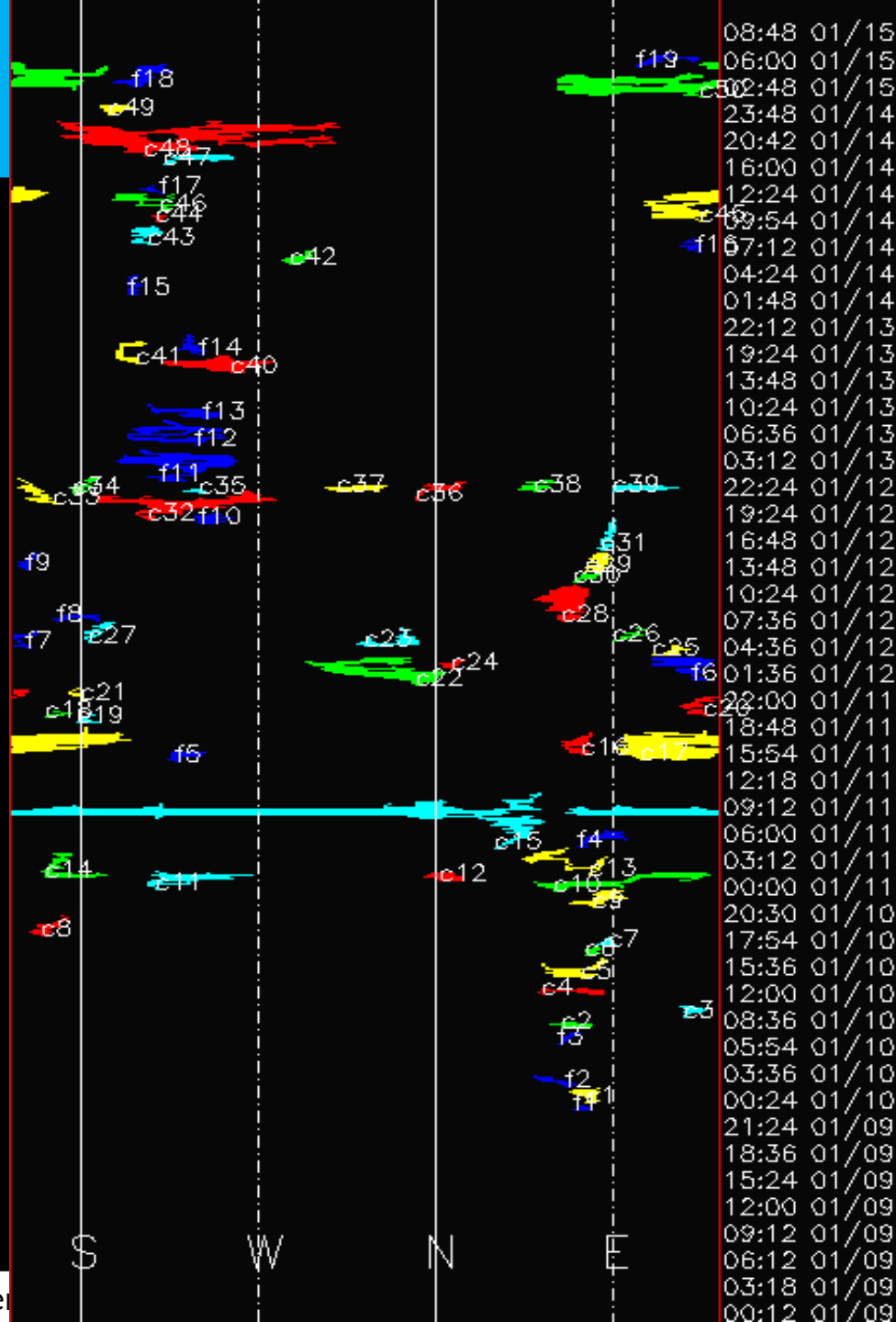
Coronal Mass Ejections











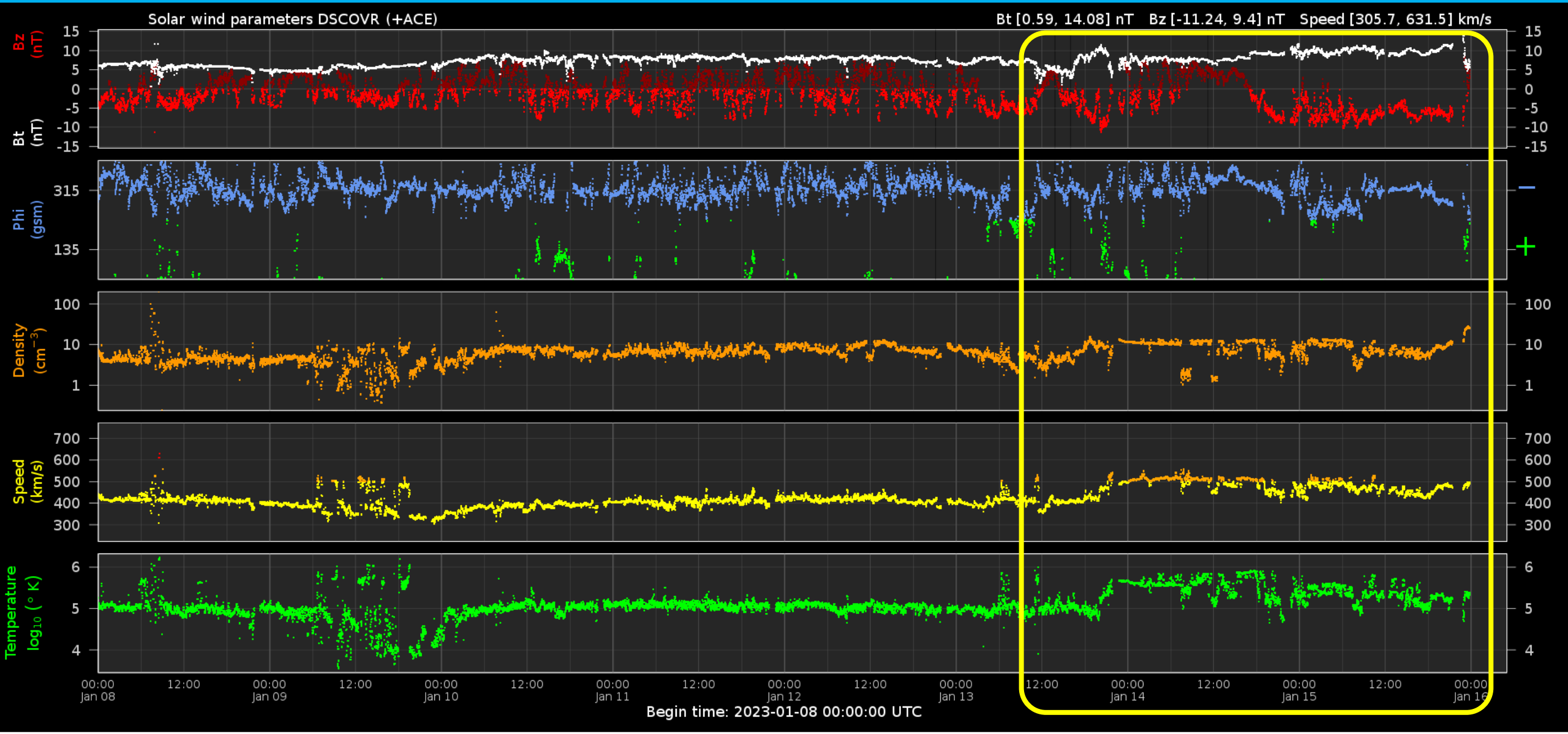
Solar Wind and Geomagnetic Activity

Royal Observatory
of Belgium

Solar Influences
Data analysis Centre
www.sidc.be

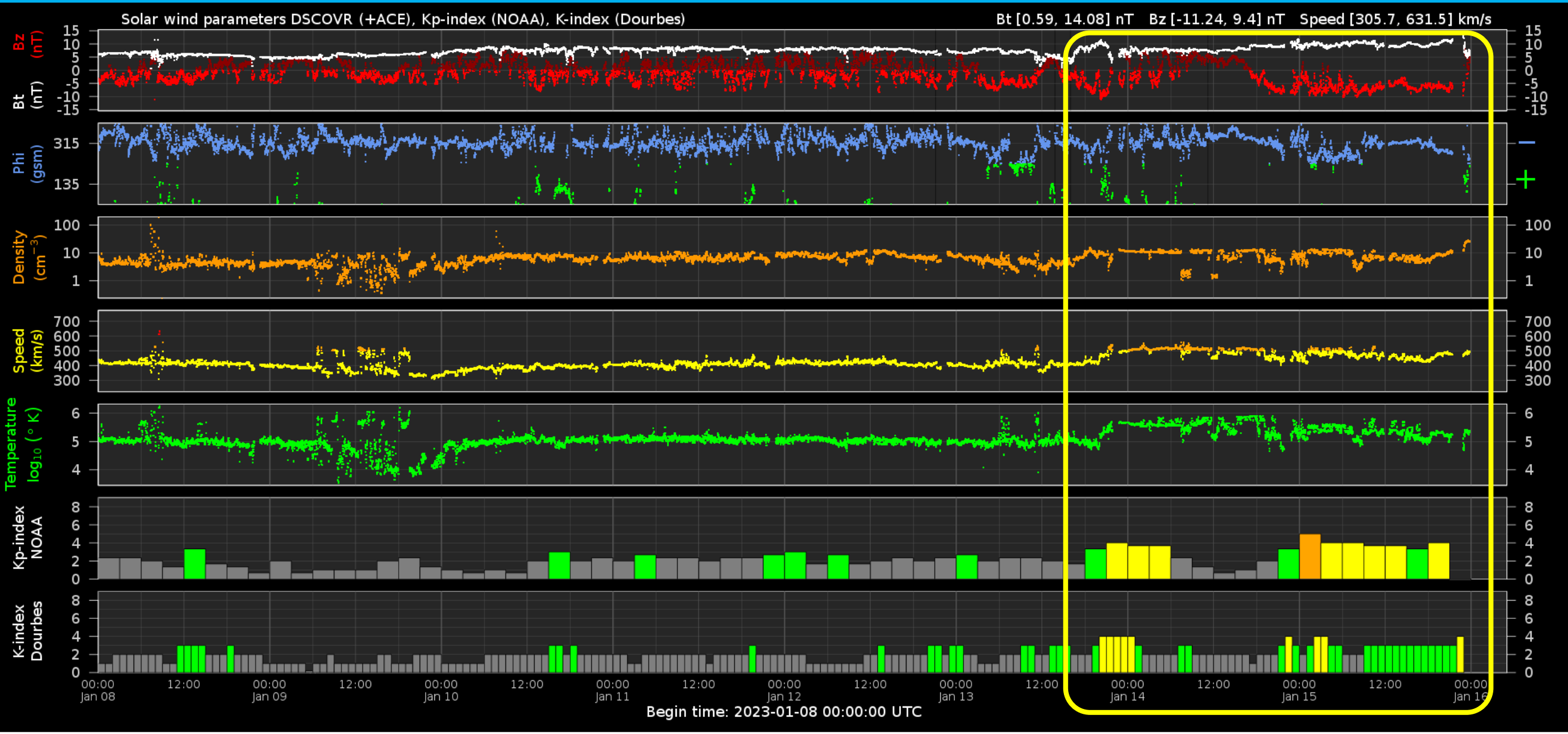
Solar wind parameters

HSS + ICME

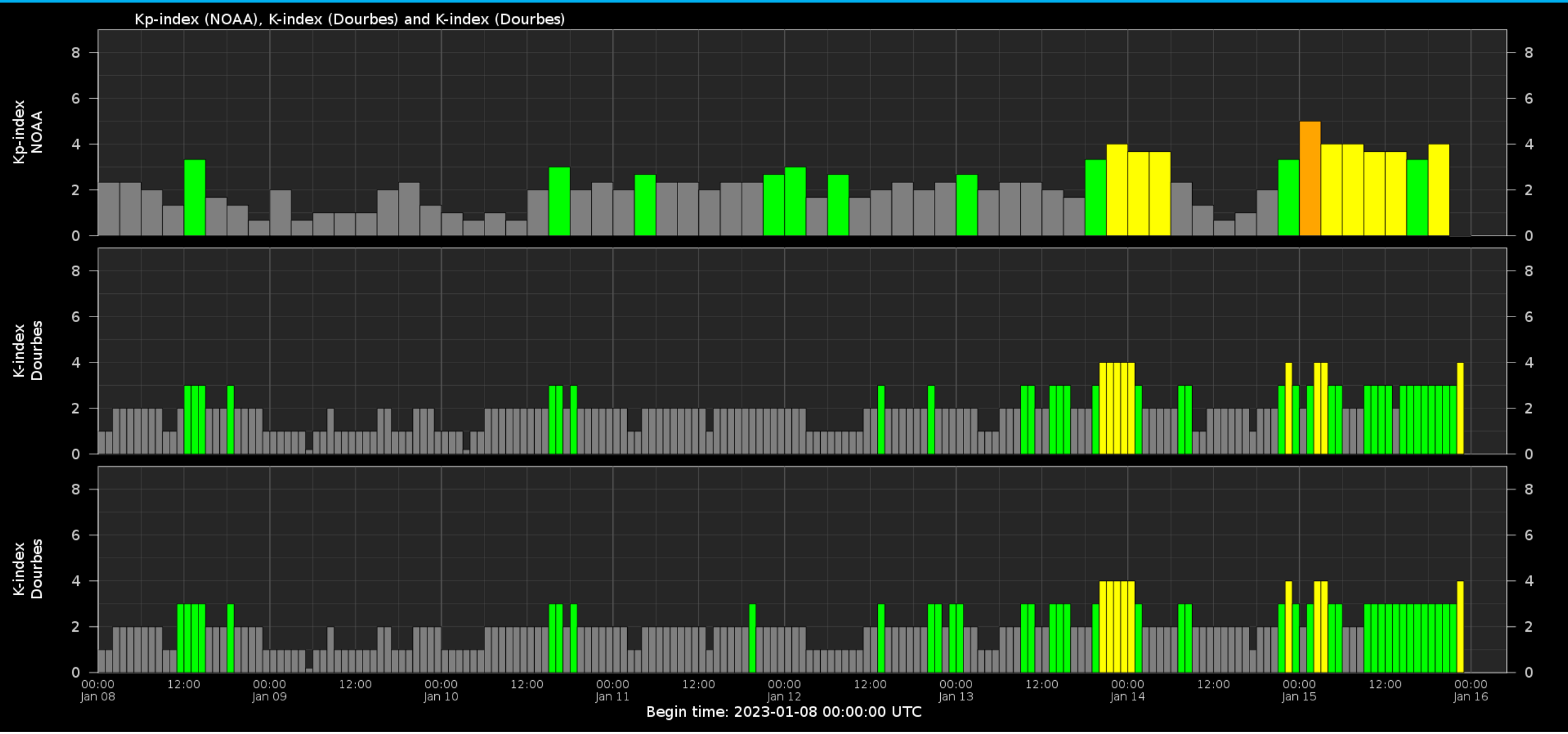


Solar wind parameters & K-indices

HSS + ICME



Geomagnetic activity (K-indexes)

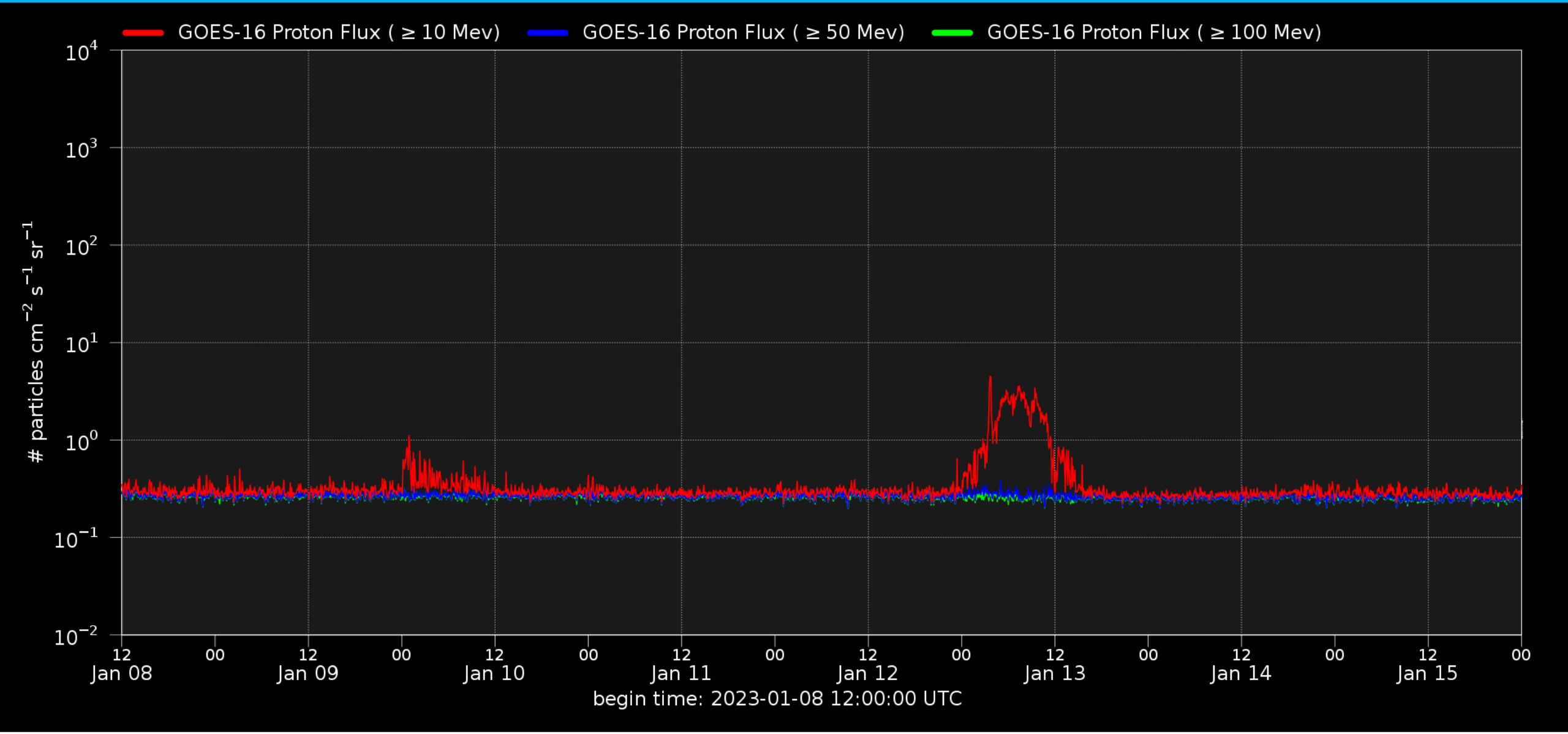


Energetic Particles

Royal Observatory
of Belgium

Solar Influences
Data analysis Centre
www.sidc.be

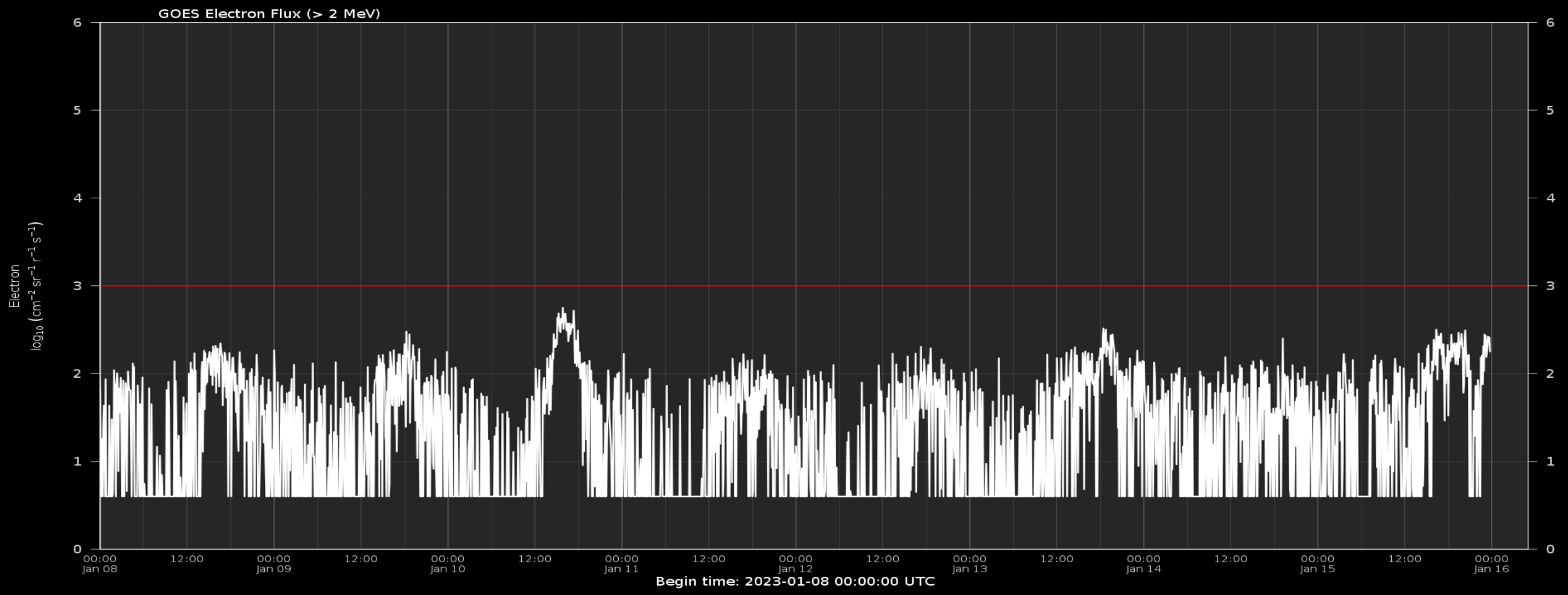
Solar proton flux



Electron flux at GEO

www.stce.be/educational/classification#electrons

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

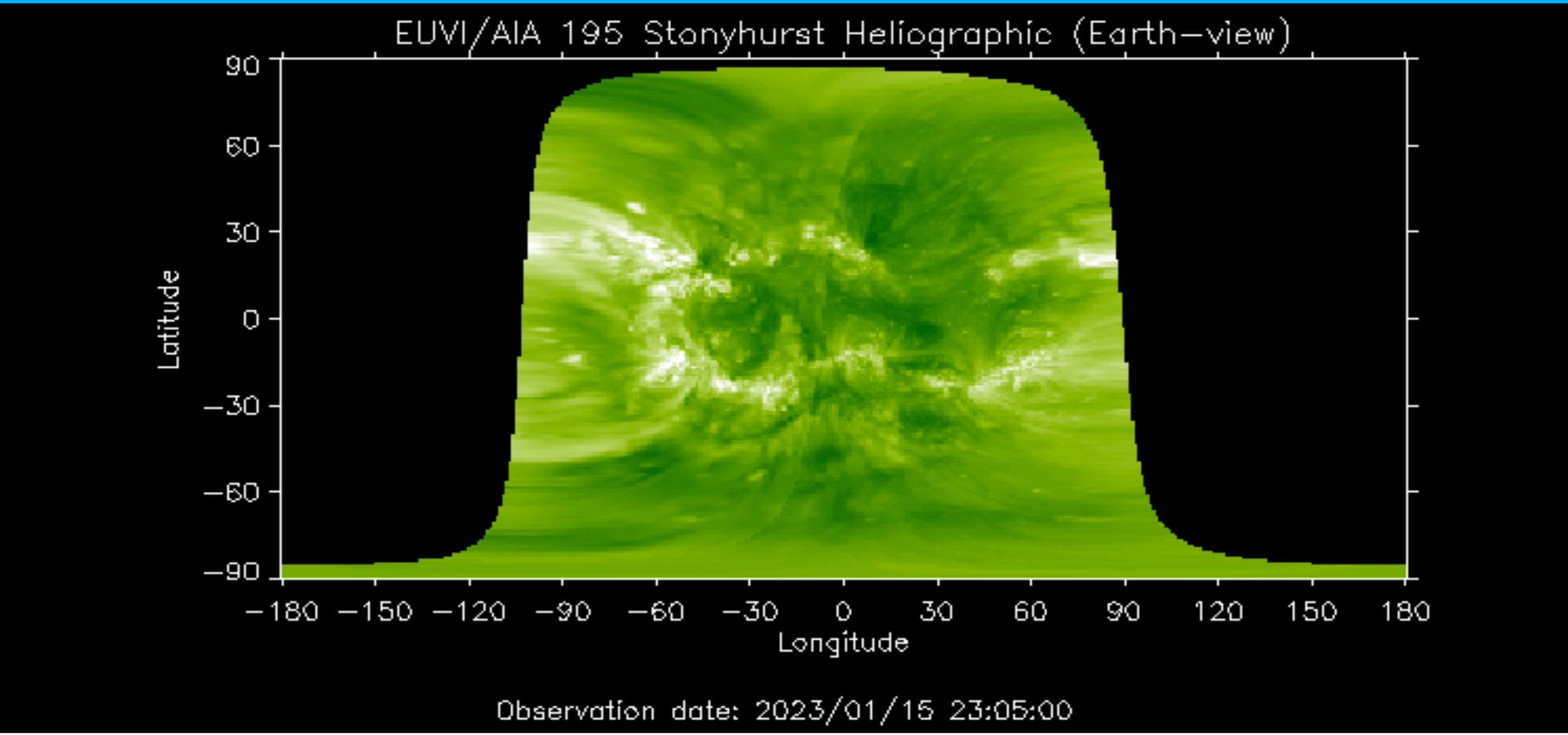


Outlook

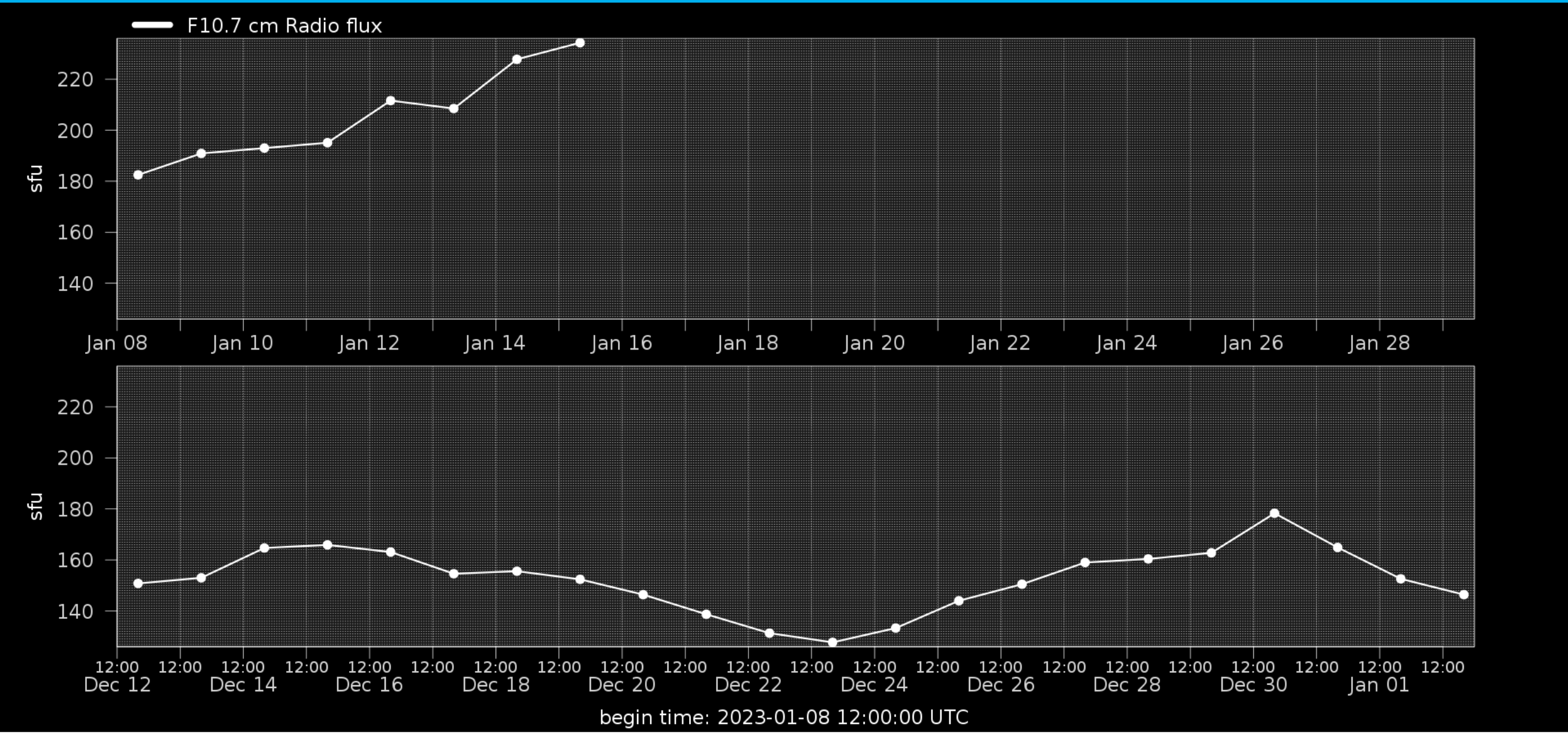
Royal Observatory
of Belgium

Solar Influences
Data analysis Centre
www.sidc.be

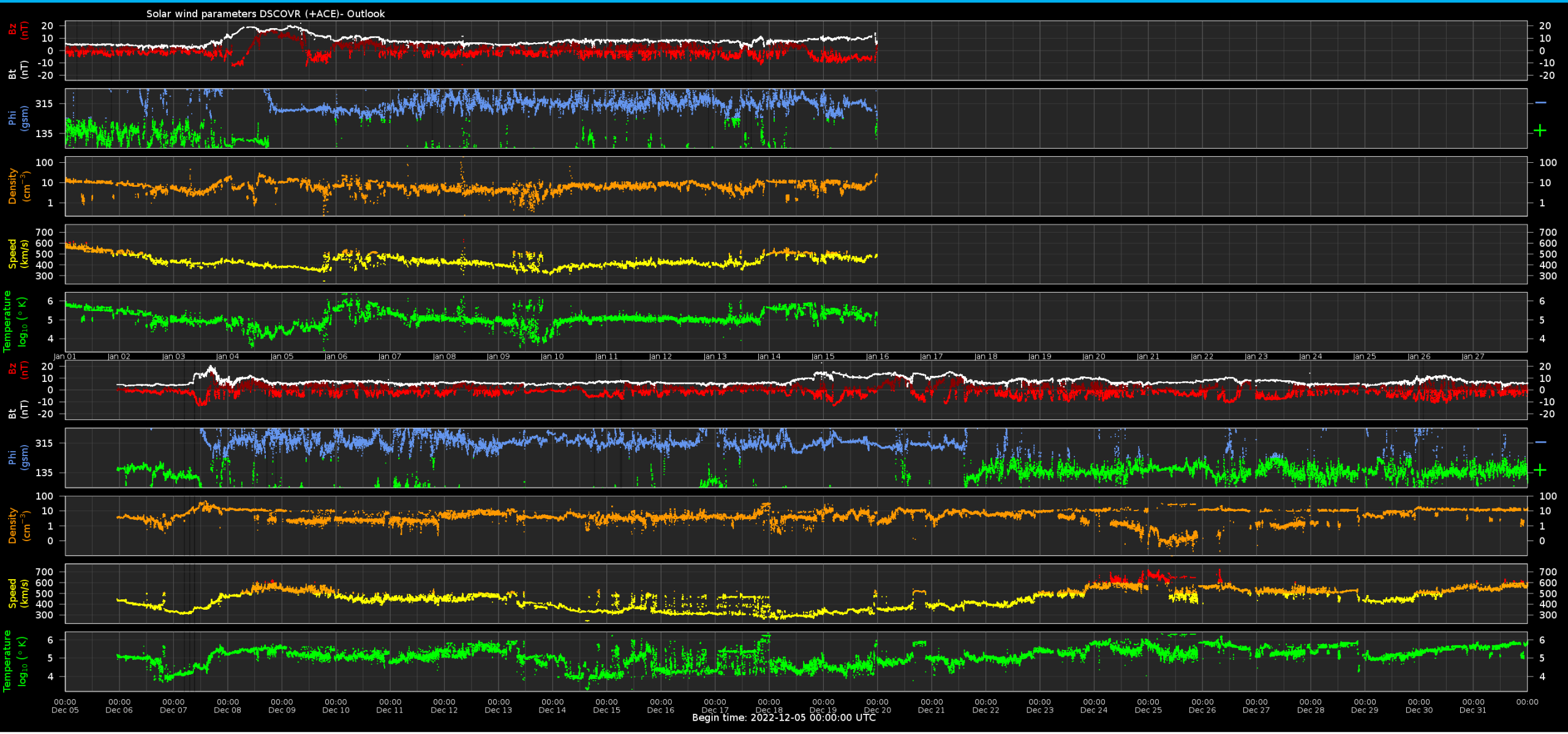
Outlook: Solar activity



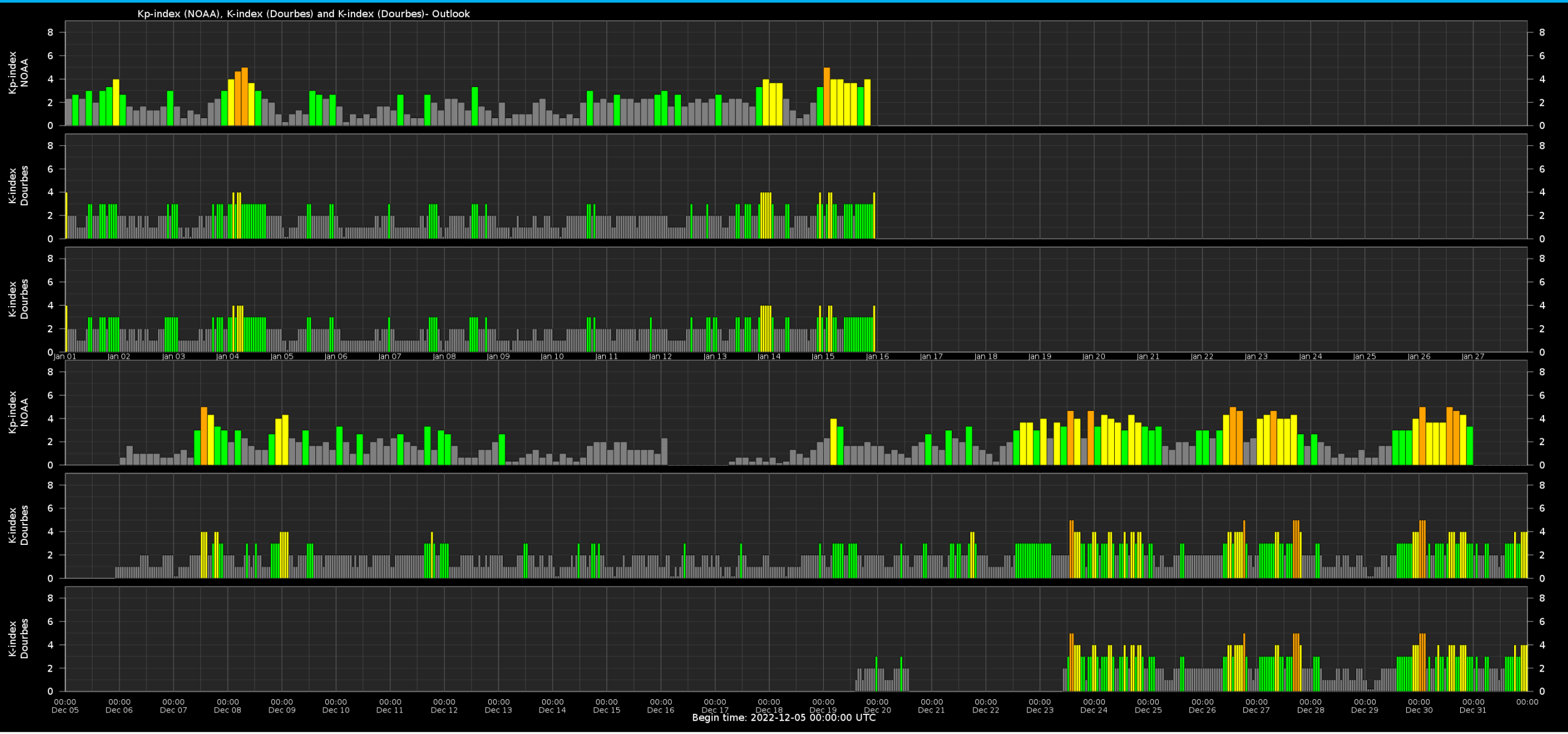
Outlook: Solar F10.7cm radio flux



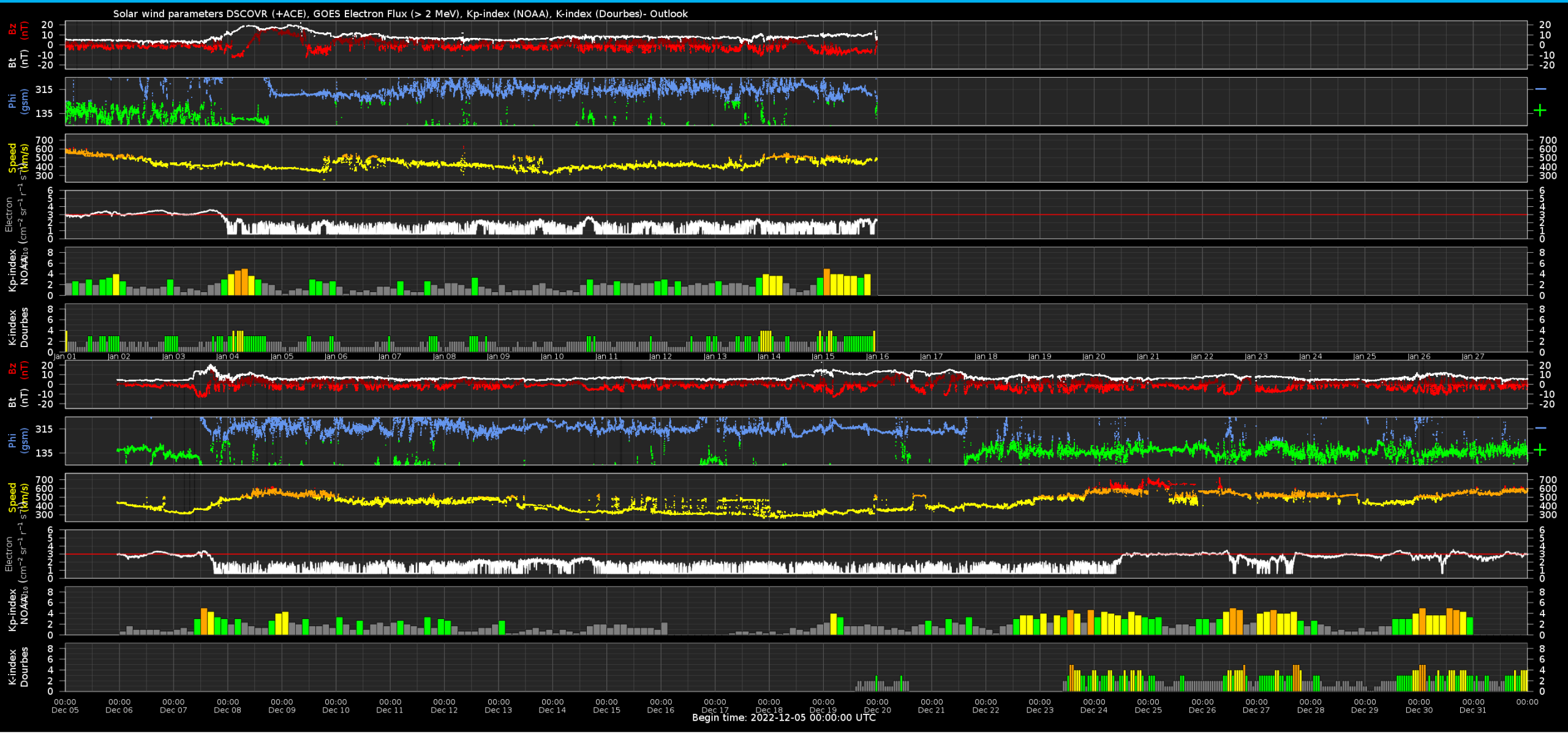
Outlook: Solar wind parameters



Outlook: Geomagnetic activity



Outlook: Electron Flux at GEO Outlook



Pecasus

Royal Observatory
of Belgium

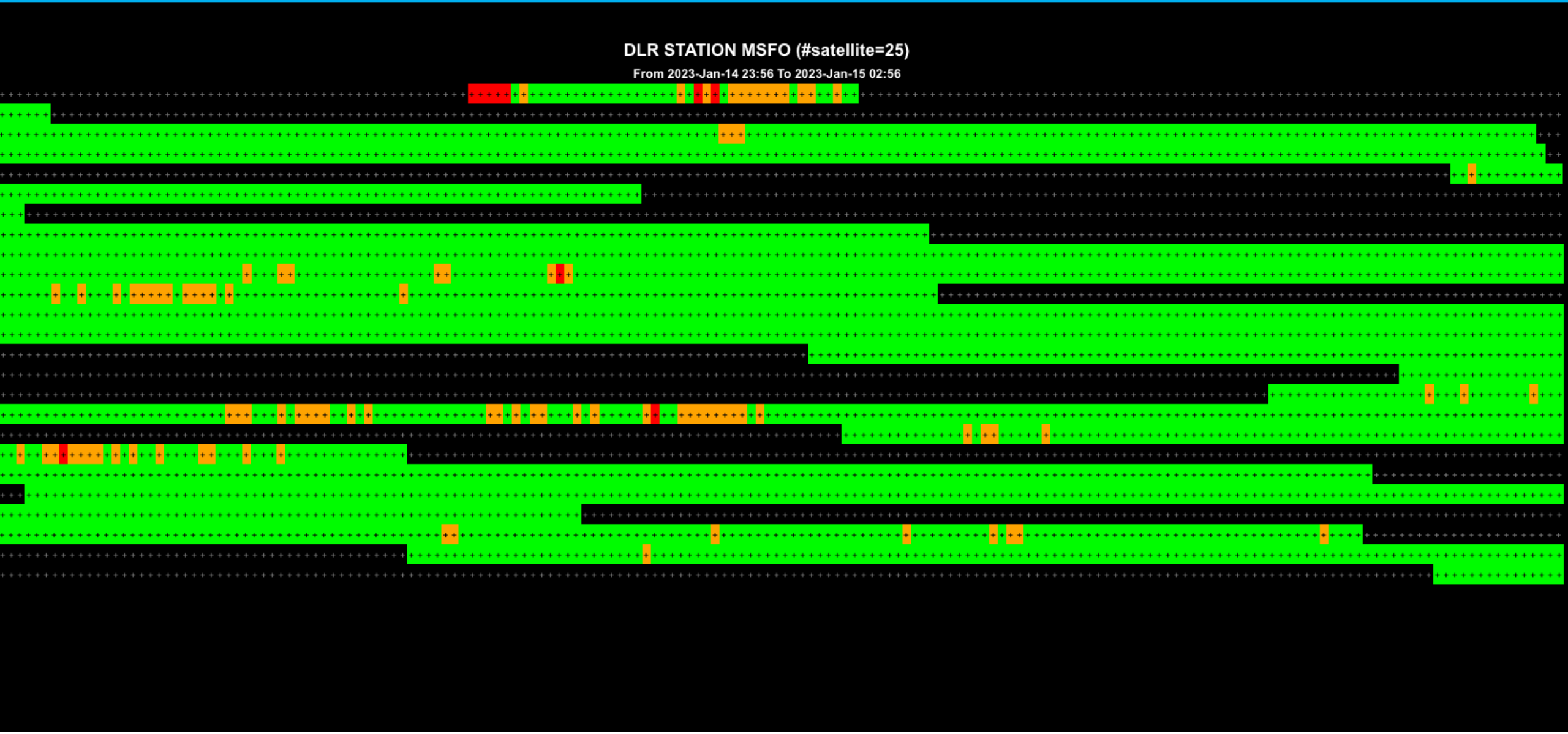
Solar Influences
Data analysis Centre
www.sidc.be

Pecasus related events: 2 short wave fadeouts (SWF)

```
SWX ADVISORY


DTG:                20230110/2258Z

SWXC:               PECASUS

ADVISORY NR:        2023/5

SWX EFFECT:         HF COM MOD

OBS SWX:            10/2255Z DAYLIGHT SIDE

FCST SWX  +6 HR:    11/0500Z NOT AVBL

FCST SWX +12 HR:    11/1100Z NOT AVBL

FCST SWX +18 HR:    11/1700Z NOT AVBL

FCST SWX +24 HR:    11/2300Z NOT AVBL

RMK:                SPACE WEATHER EVENT (SOLAR FLARE) IN

                    PROGRESS. IMPACT ON LOWER HF COM

                    FREQUENCY BANDS EXPECTED ON THE DAYLIGHT

                    SIDE. HIGHER FREQUENCY BANDS MAY BE LESS

                    IMPACTED.

NXT ADVISORY:       WILL BE ISSUED BY 20230111/0455Z
```

```
0000058001

FNXX02 EFKL 091914

SWX ADVISORY
DTG:                20230109/1911Z
SWXC:               PECASUS
ADVISORY NR:        2023/3
SWX EFFECT:         HF COM MOD
OBS SWX:            09/1904Z DAYLIGHT SIDE
FCST SWX +6 HR:     10/0200Z NOT AVBL
FCST SWX +12 HR:    10/0800Z NOT AVBL
FCST SWX +18 HR:    10/1400Z NOT AVBL
FCST SWX +24 HR:    10/2000Z NOT AVBL
RMK:                SPACE WEATHER EVENT (SOLAR FLARE) IN
PROGRESS. IMPACT ON LOWER HF COM FREQUENCY BANDS EXPECTED
ON THE DAYLIGHT SIDE. HIGHER FREQUENCY BANDS MAY BE LESS
IMPACTED.
NXT ADVISORY:       WILL BE ISSUED BY 20230110/0109Z=
```

Pecasus related events: regular nightly EQ scintillations



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