

SIDC Space Weather Briefing

25 September 2022-02 October 2022

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& the SIDC forecaster team



Royal Observatory
of Belgium

Solar Influences
Data analysis Centre
www.sidc.be

Summary Report

Solar activity from 2022-09-25 12:00 to 2022-10-02 23:59

Active regions	8 regions on the disk: NOAA AR 3105, 3107, 3108, 3110 , 3111, 3112 , 3113, 3114
Flares	# C-class flare: 42 # M-class flare: 7 # X-class flare: 1
Coronal Holes	Large equatorial positive polarity CH, crossed central meridian on Sep 28
CMEs	Filament eruption on Sep 28, multiple CMEs on Oct 01 and Oct 02
Proton flux	Nominal levels
Electron flux	Enhanced on Sep 26, nominal levels from Sep 27

Solar wind and geomagnetic conditions

ICMEs	Possible ICME / transient feature coinciding with high speed stream Small shock on Oct 01.
Solar wind conditions	B : 0.35 - 31.45 nT //Bz: -17.77 nT to 30.84 nT // Speed: 294 - 591km/s (DSCVR) (700 km/s ACE)
K-indices	max K-index (KDou): 4 max Kp-index (NOAA): 6

All Quiet Alert: Not all Quiet

Solar Activity

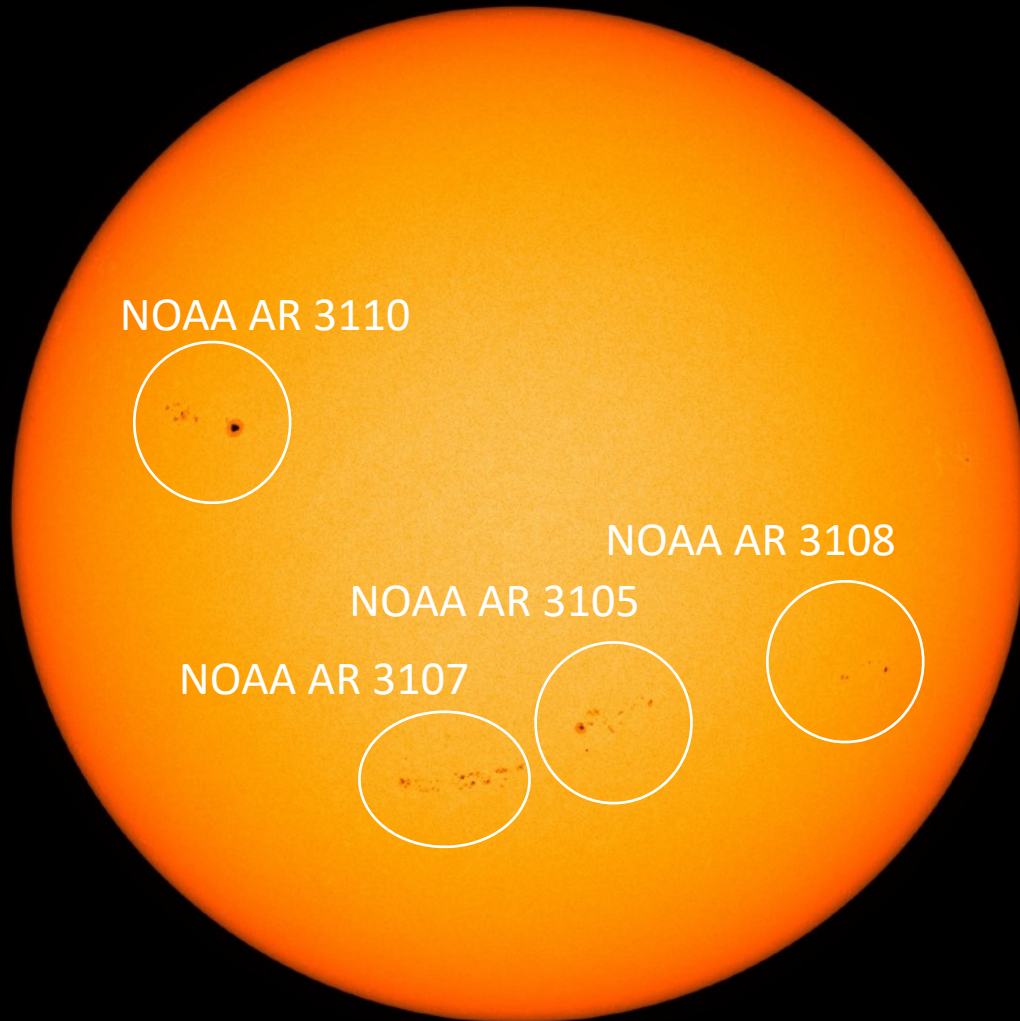


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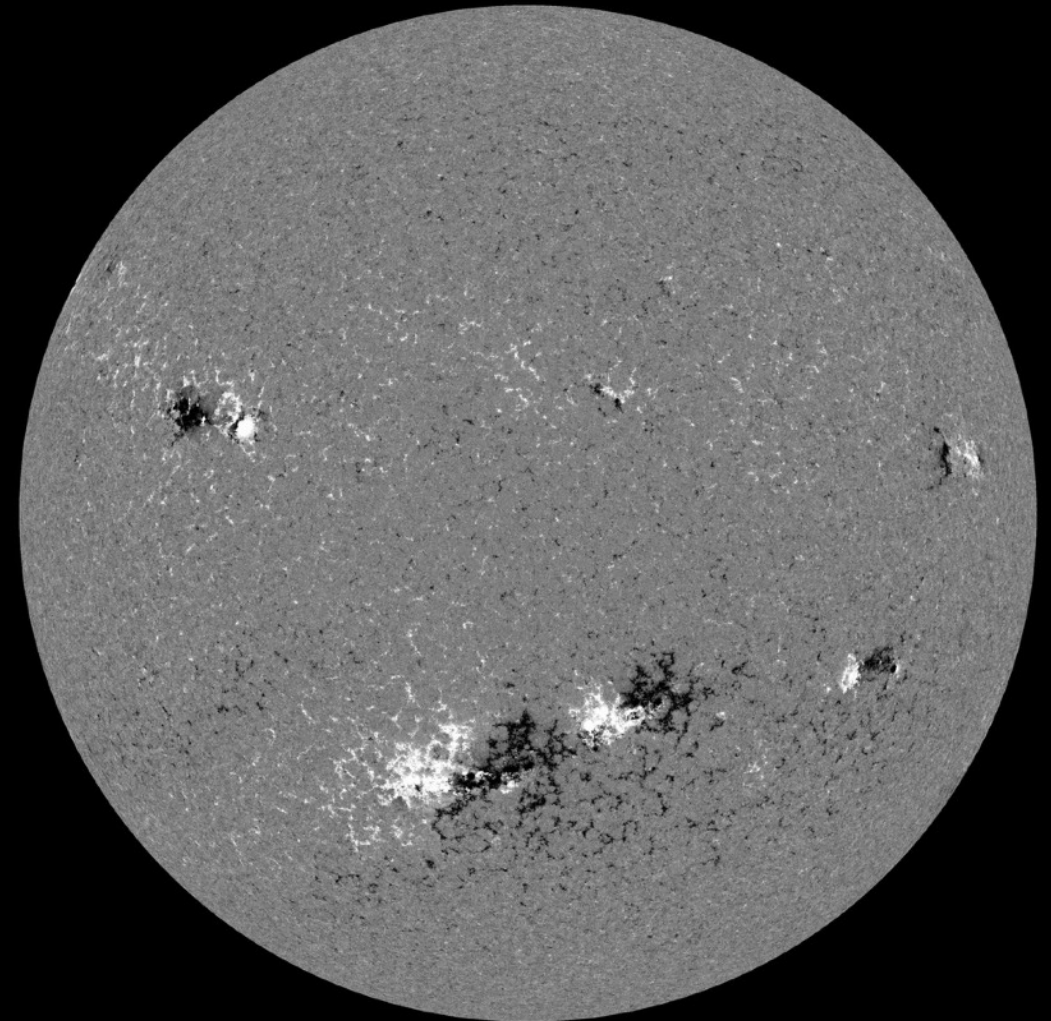
Solar active regions

SDO/HMI White Light 2022-09-26



SDO/HMI Quick-Look Continuum: 20220926_114500

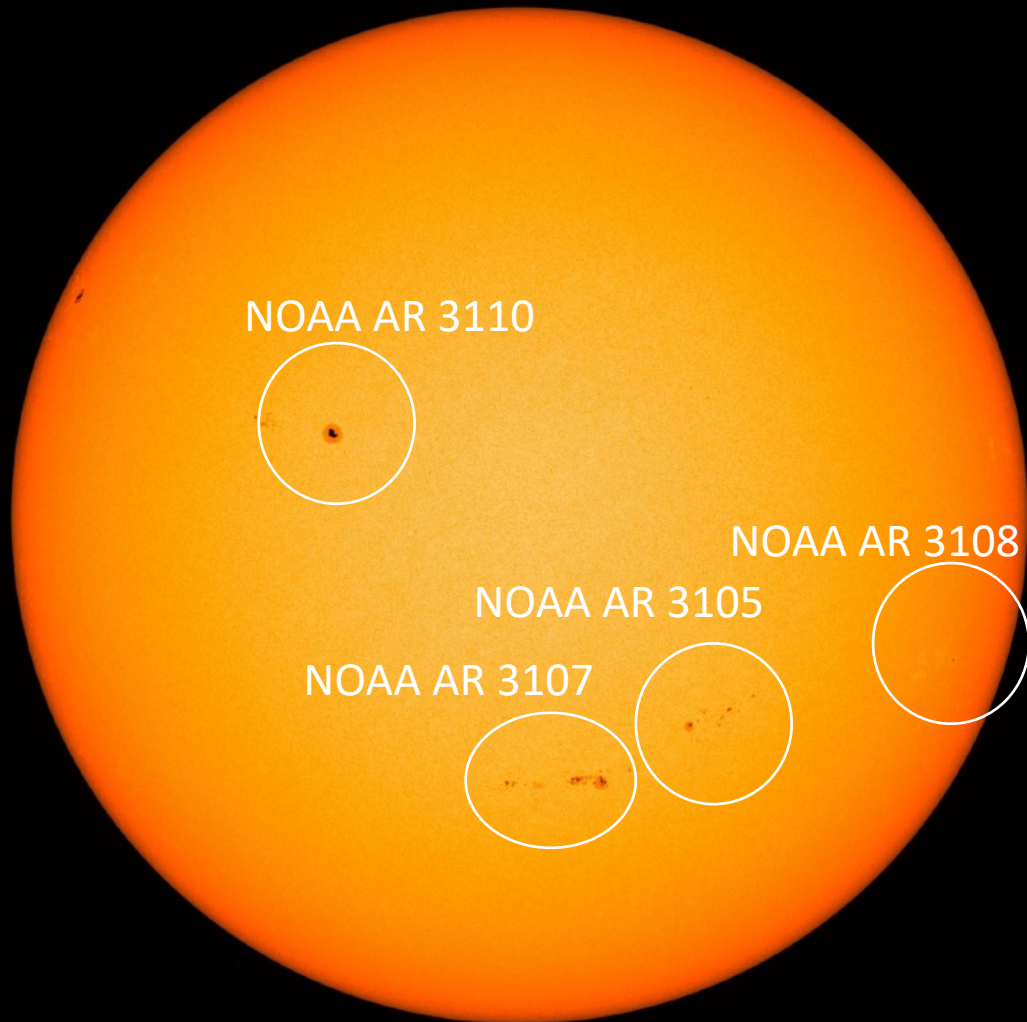
SDO/HMI Magnetogram 2022-09-26



SDO/HMI Quick-Look Magnetogram: 20220926_114500

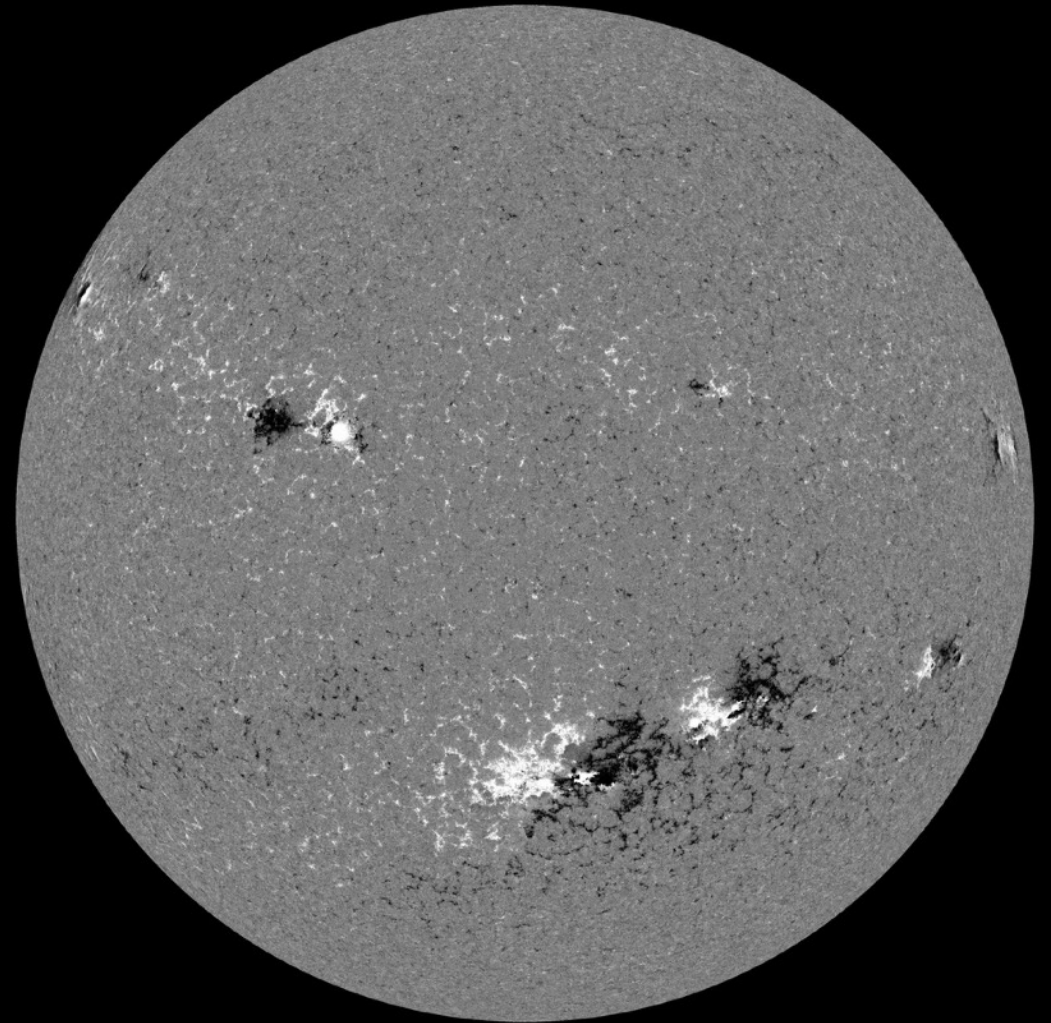
Solar active regions

SDO/HMI White Light 2022-09-27



SDO/HMI Quick-Look Continuum: 20220927_114500

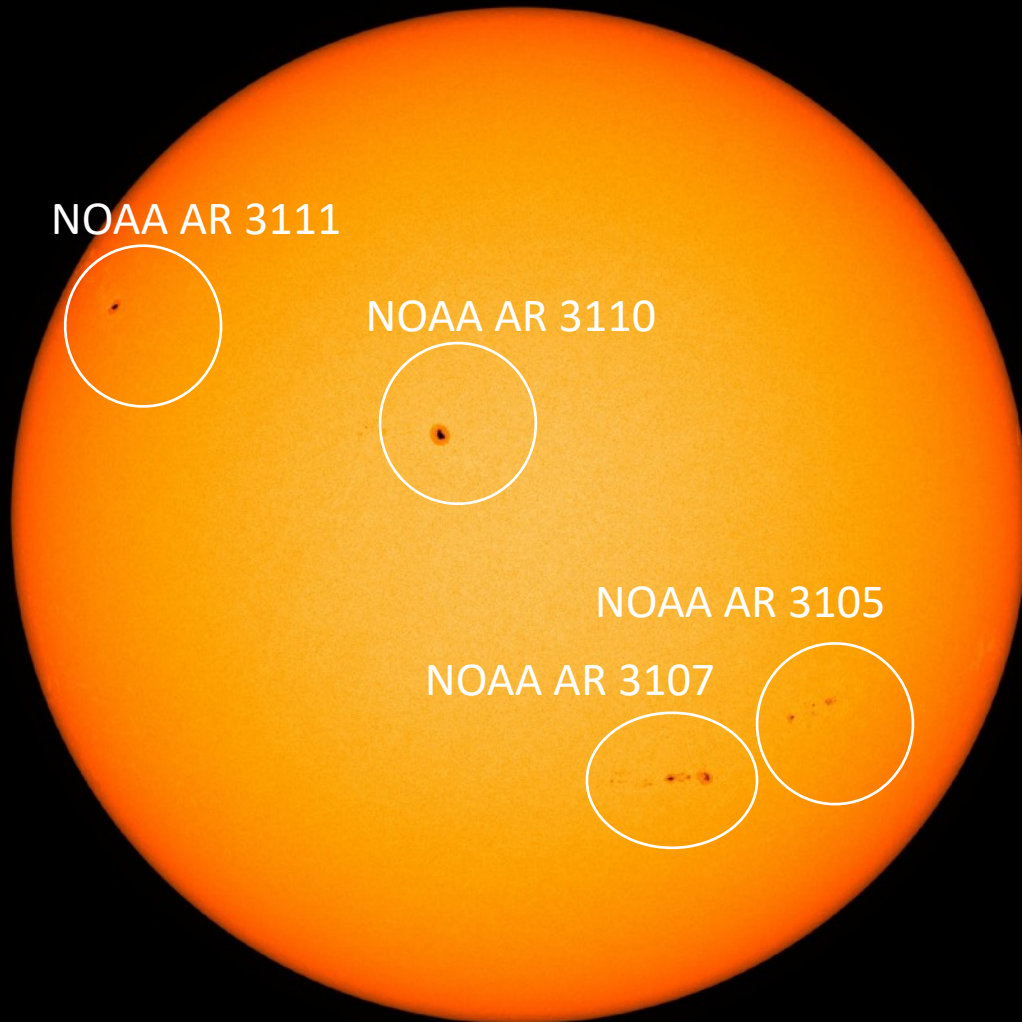
SDO/HMI Magnetogram 2022-09-27



SDO/HMI Quick-Look Magnetogram: 20220927_114500

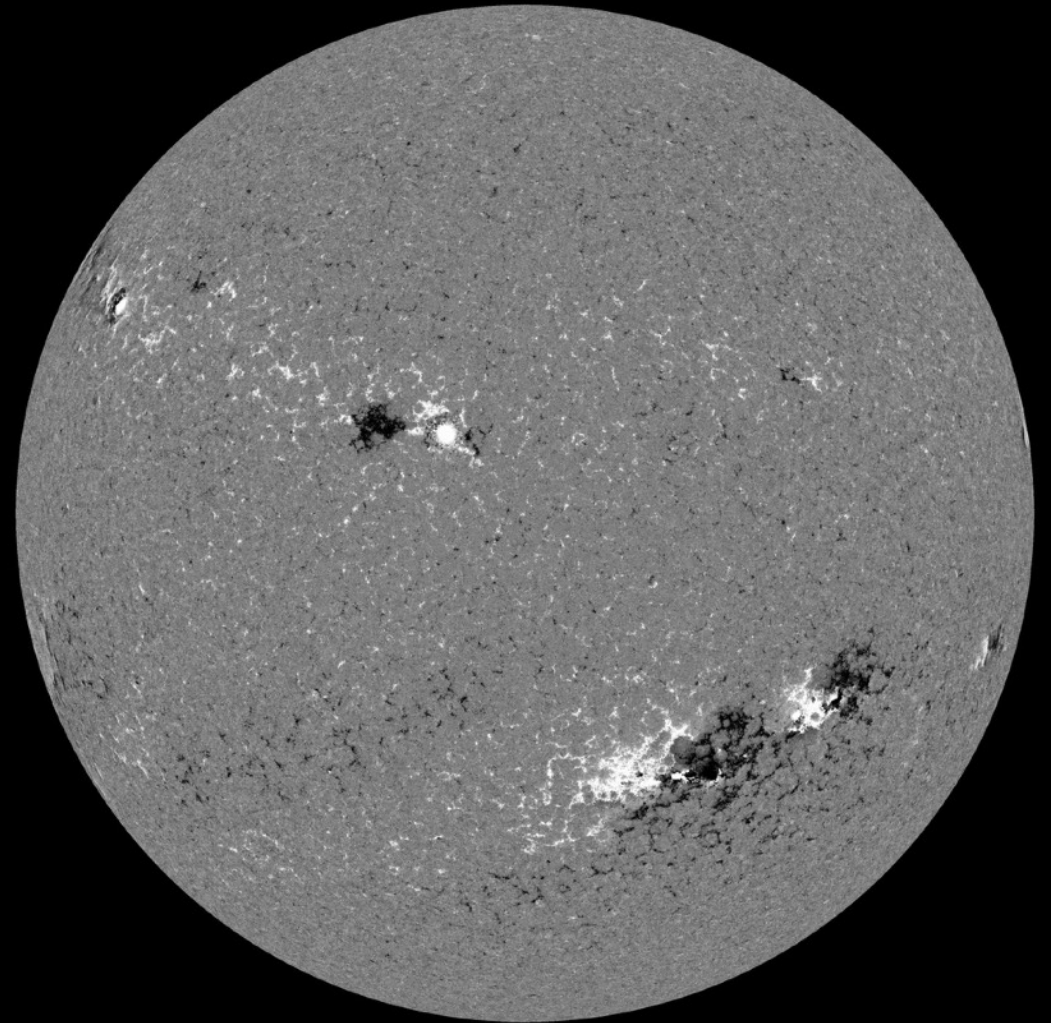
Solar active regions

SDO/HMI White Light 2022-09-28



SDO/HMI Quick-Look Continuum: 20220928_114500

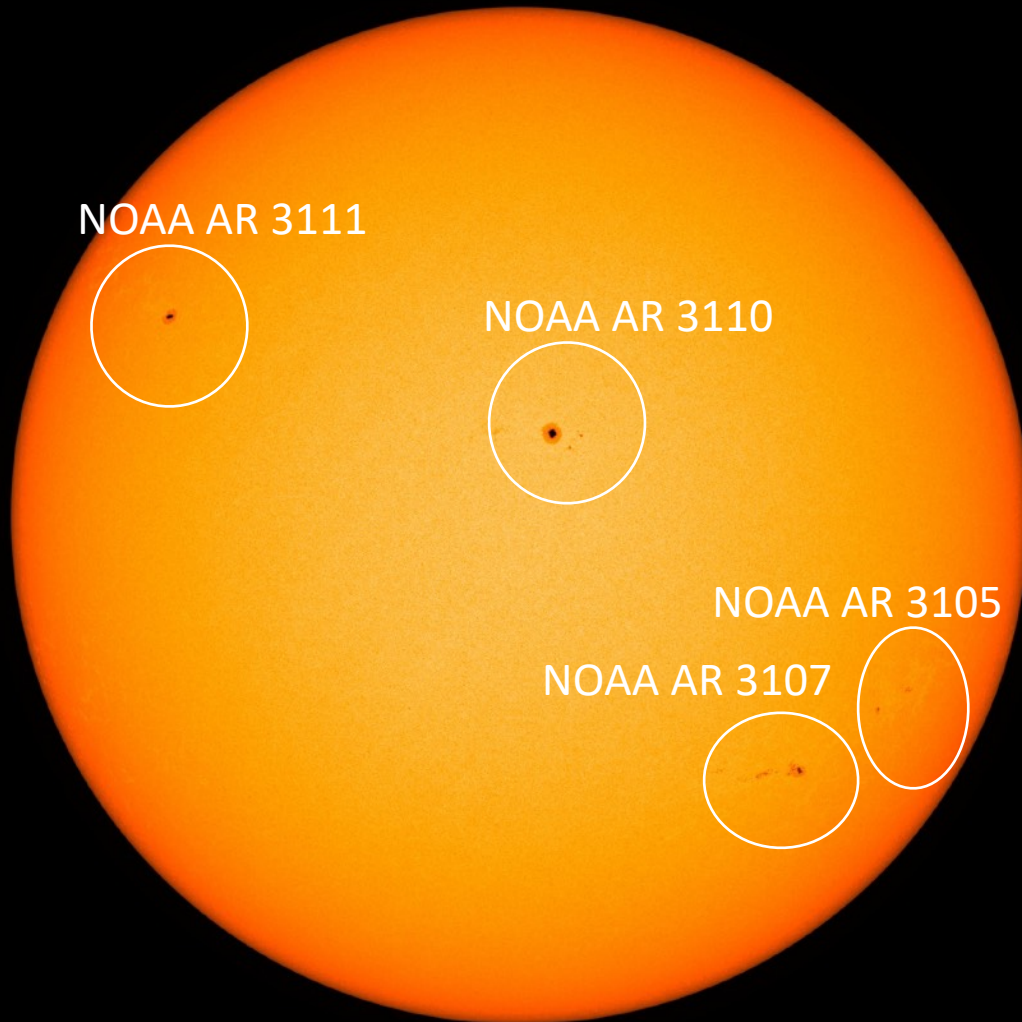
SDO/HMI Magnetogram 2022-09-28



SDO/HMI Quick-Look Magnetogram: 20220928_114500

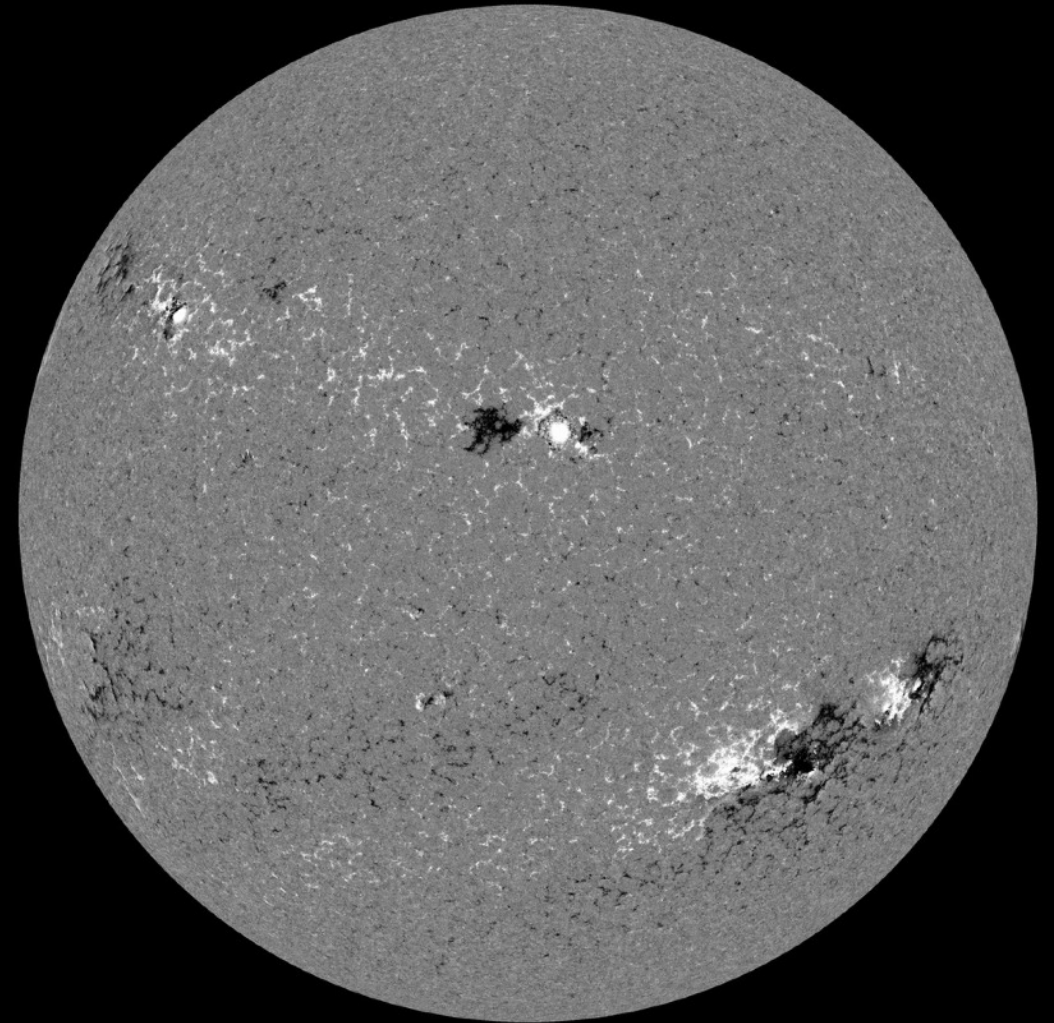
Solar active regions

SDO/HMI White Light 2022-09-29



SDO/HMI Quick-look Continuum: 20220929_114500

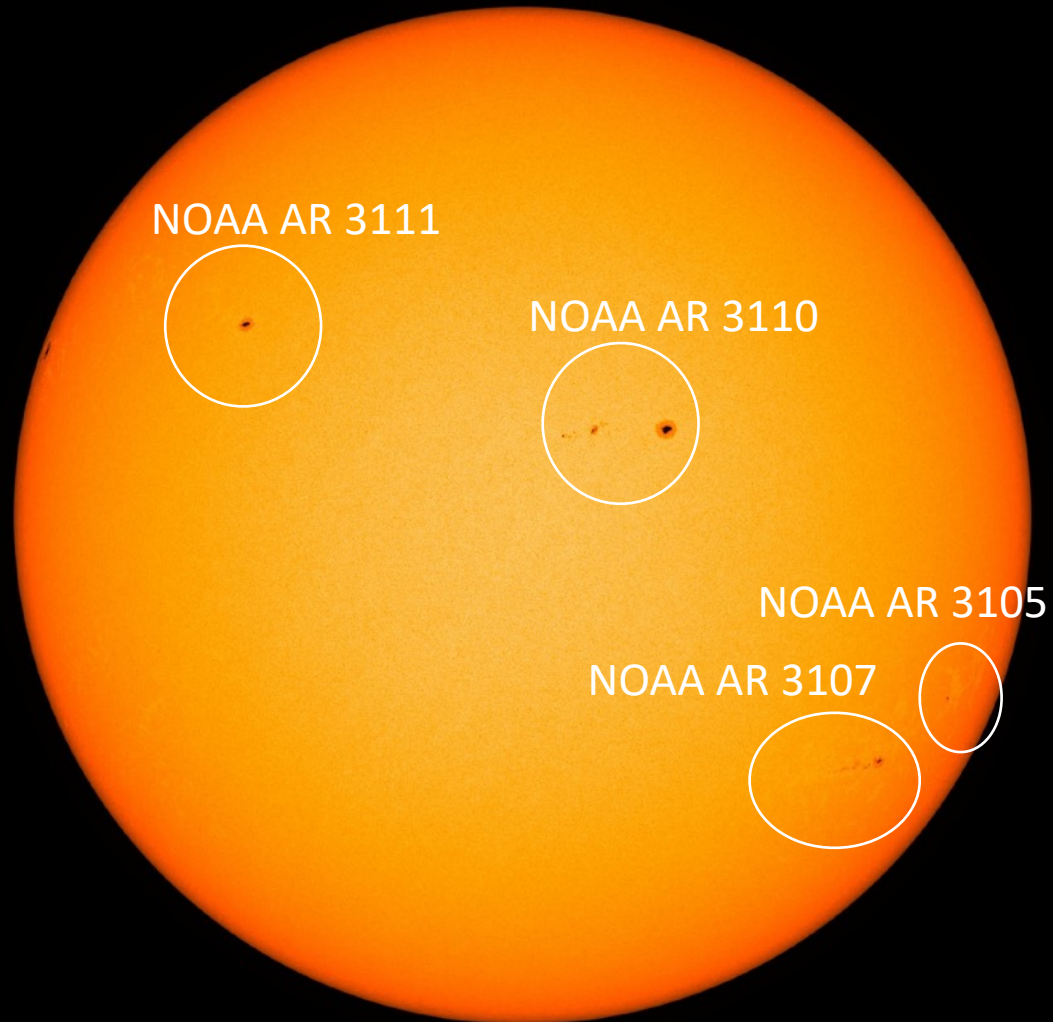
SDO/HMI Magnetogram 2022-09-29



SDO/HMI Quick-look Magnetogram: 20220929_114500

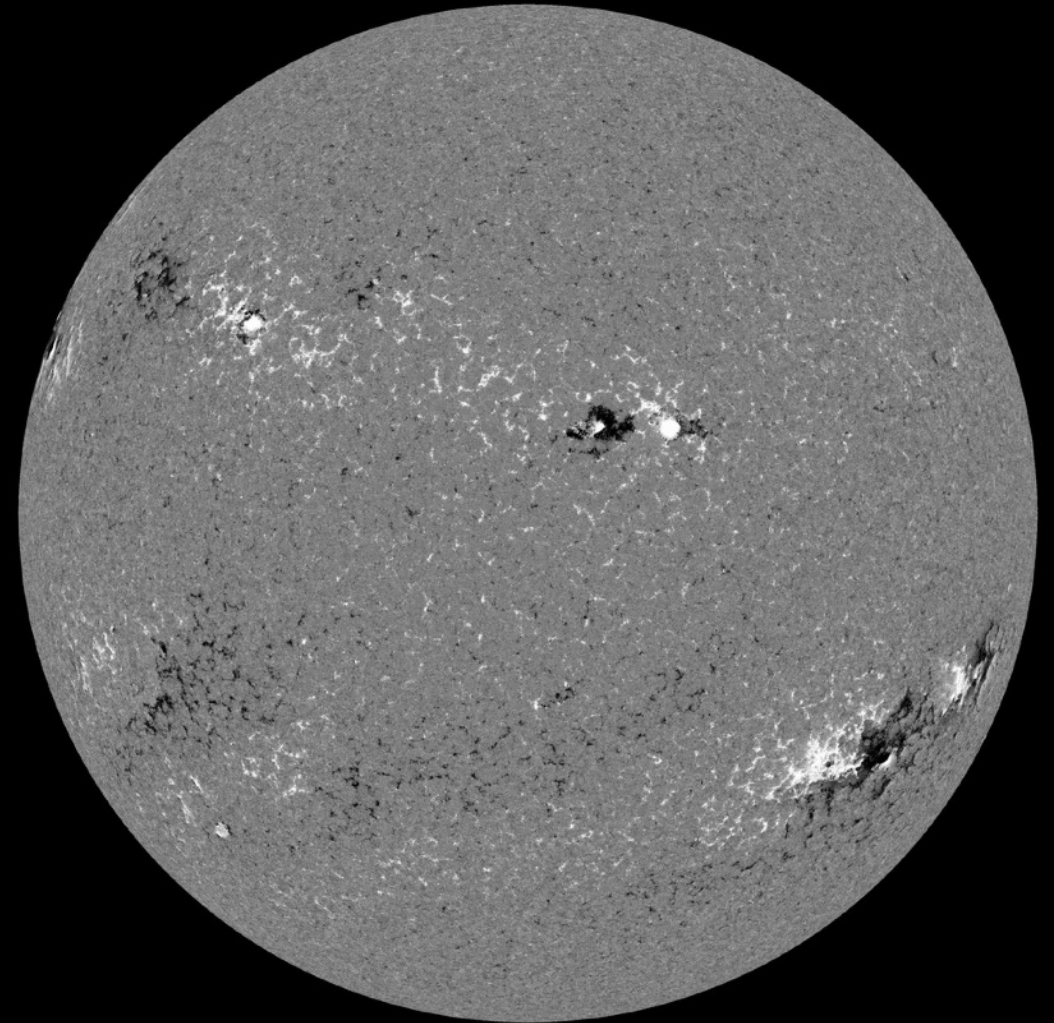
Solar active regions

SDO/HMI White Light 2022-09-30



SDO/HMI Quick-Look Continuum: 20220930_114500

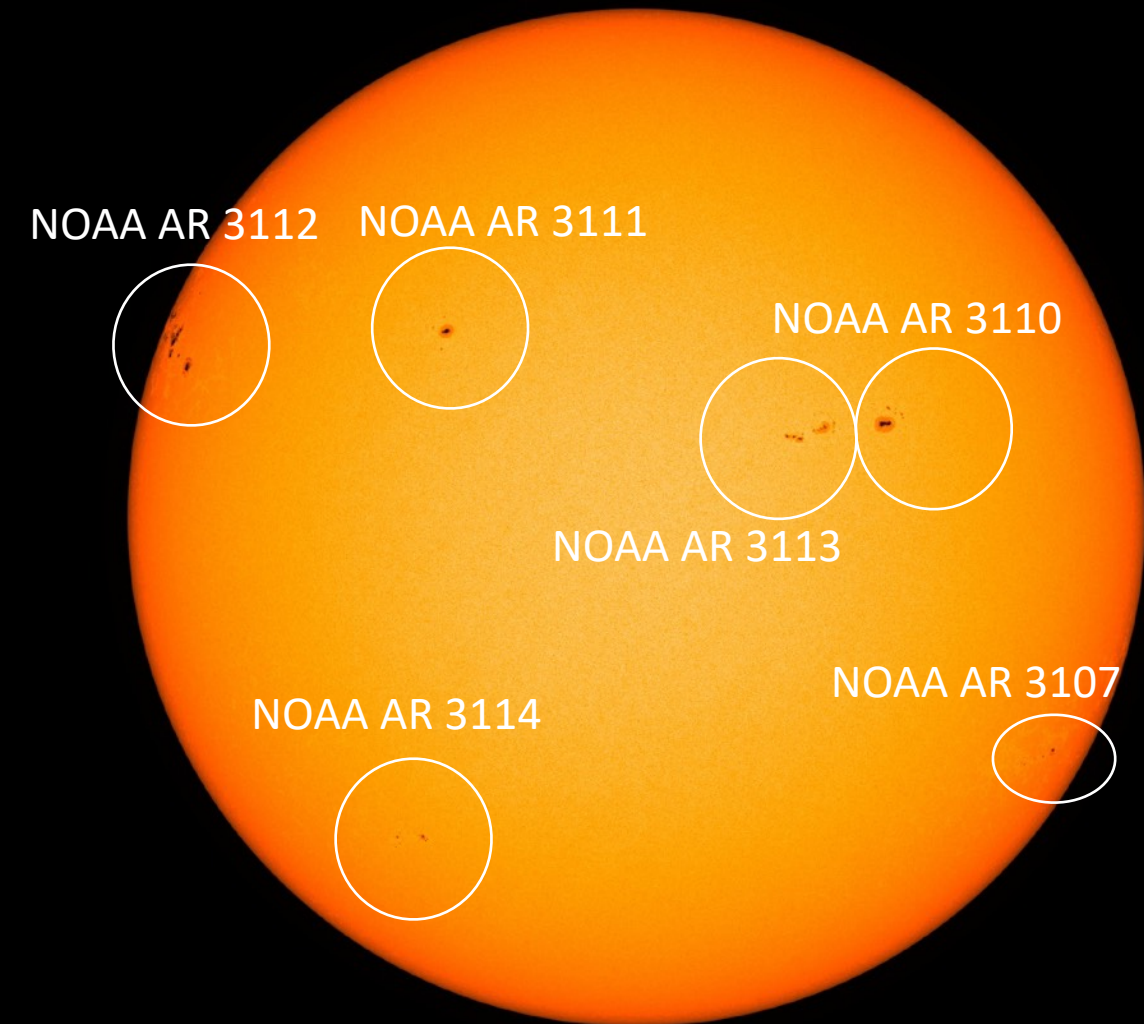
SDO/HMI Magnetogram 2022-09-30



SDO/HMI Quick-Look Magnetogram: 20220930_114500

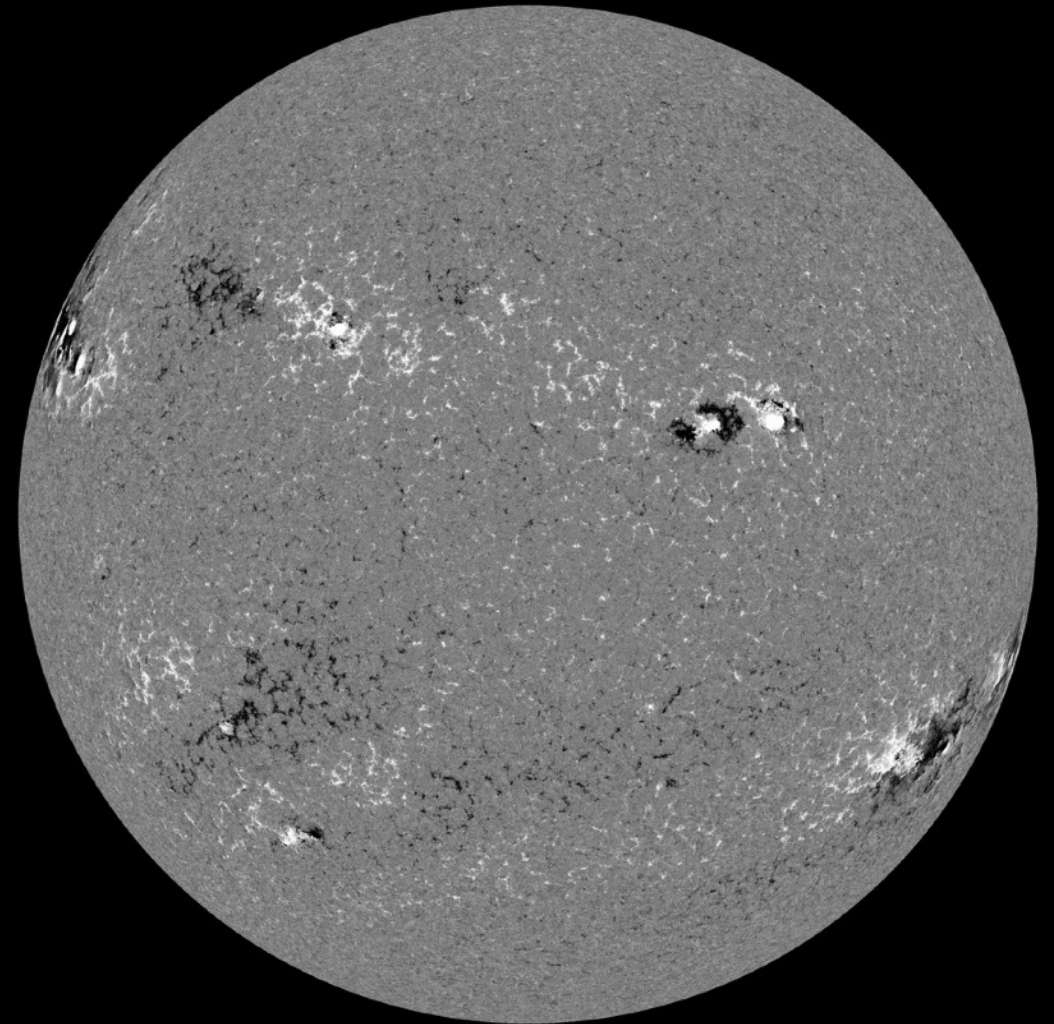
Solar active regions

SDO/HMI White Light 2022-10-01



SDO/HMI Quick-look Continuum: 20221001_114500

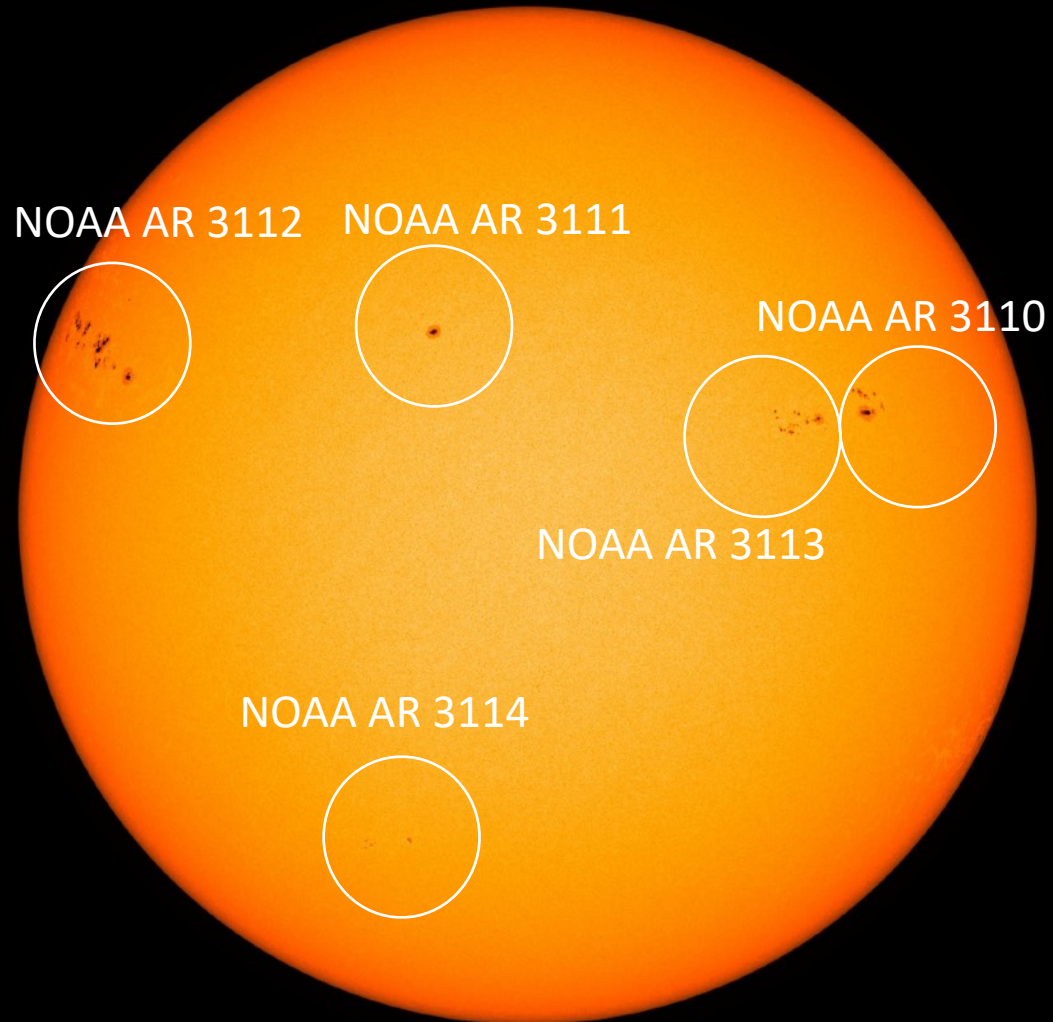
SDO/HMI Magnetogram 2022-10-01



SDO/HMI Quick-look Magnetogram: 20221001_114500

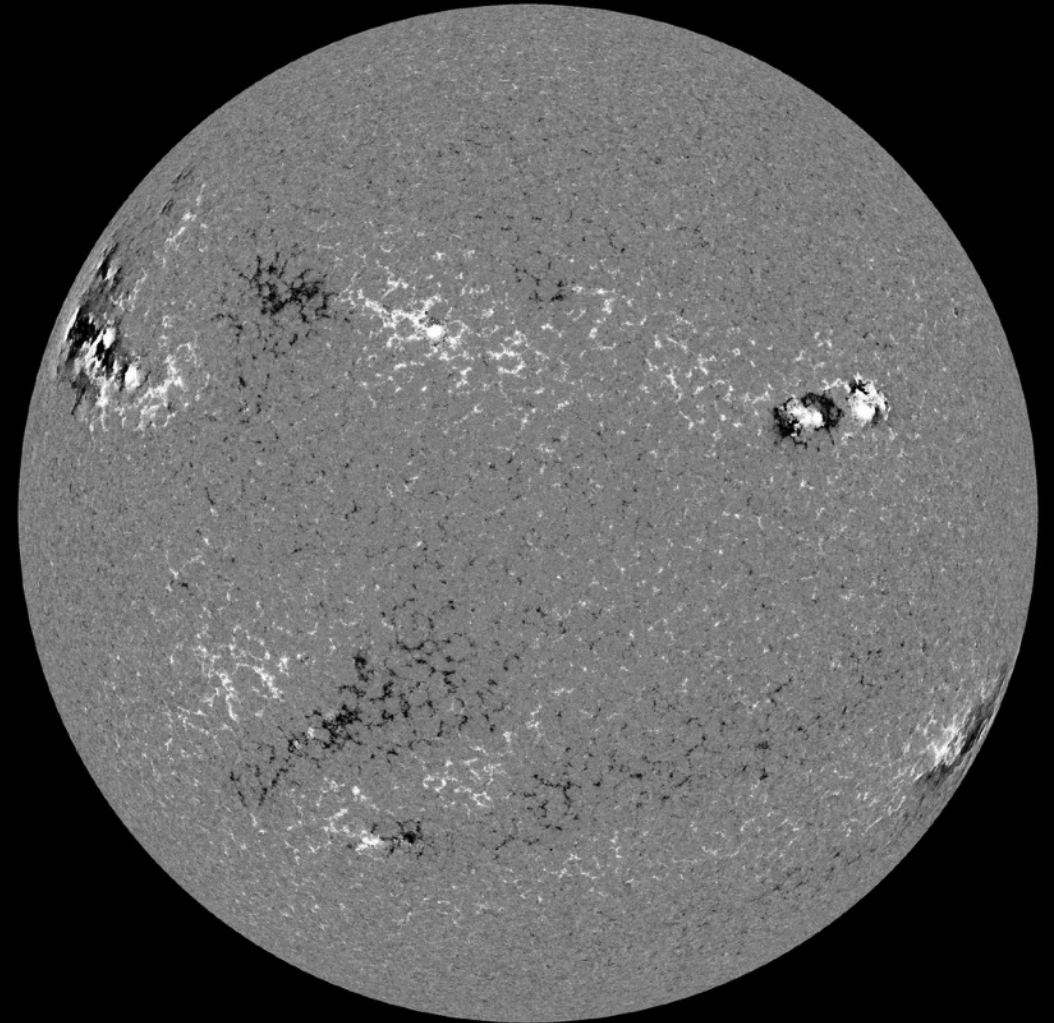
Solar active regions

SDO/HMI White Light 2022-10-02



SDO/HMI Quick-Look Continuum: 20221002_114500

SDO/HMI Magnetogram 2022-10-02

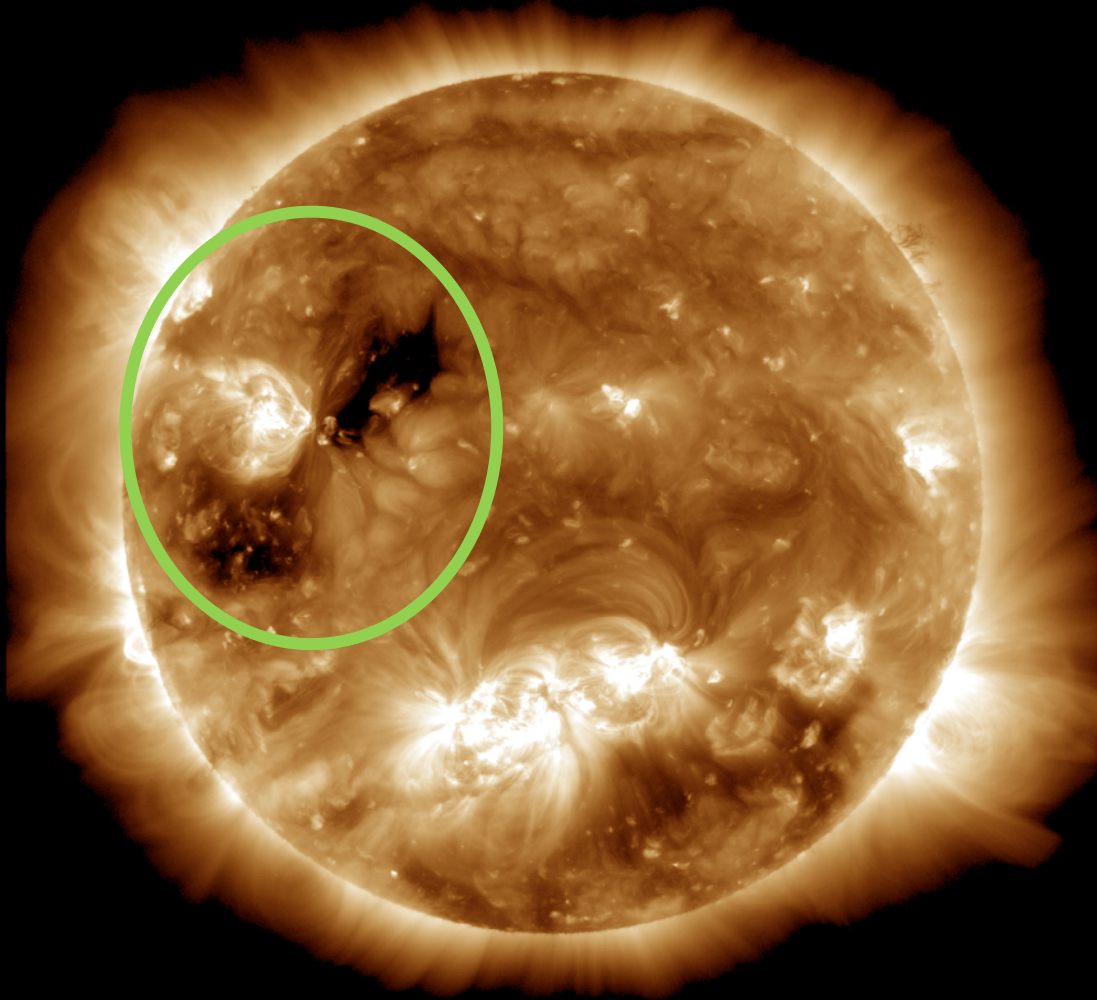


SDO/HMI Quick-Look Magnetogram: 20221002_114500

Coronal holes

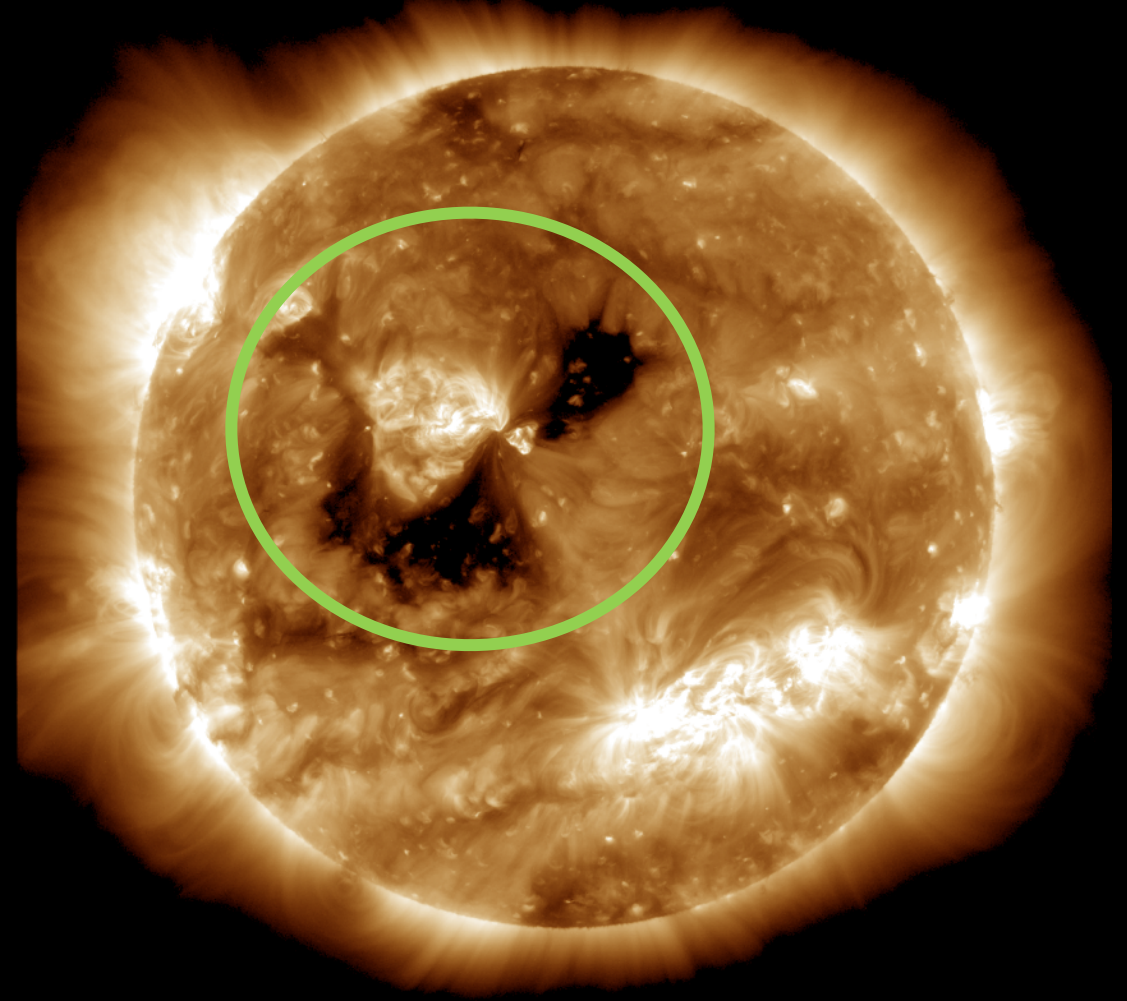
SDO/AIA 19.3 nm 2022-09-26

SDO/AIA AIA 193Å 2022-09-26T12:00:05.839



SDO/AIA 19.3 nm 2022-09-28

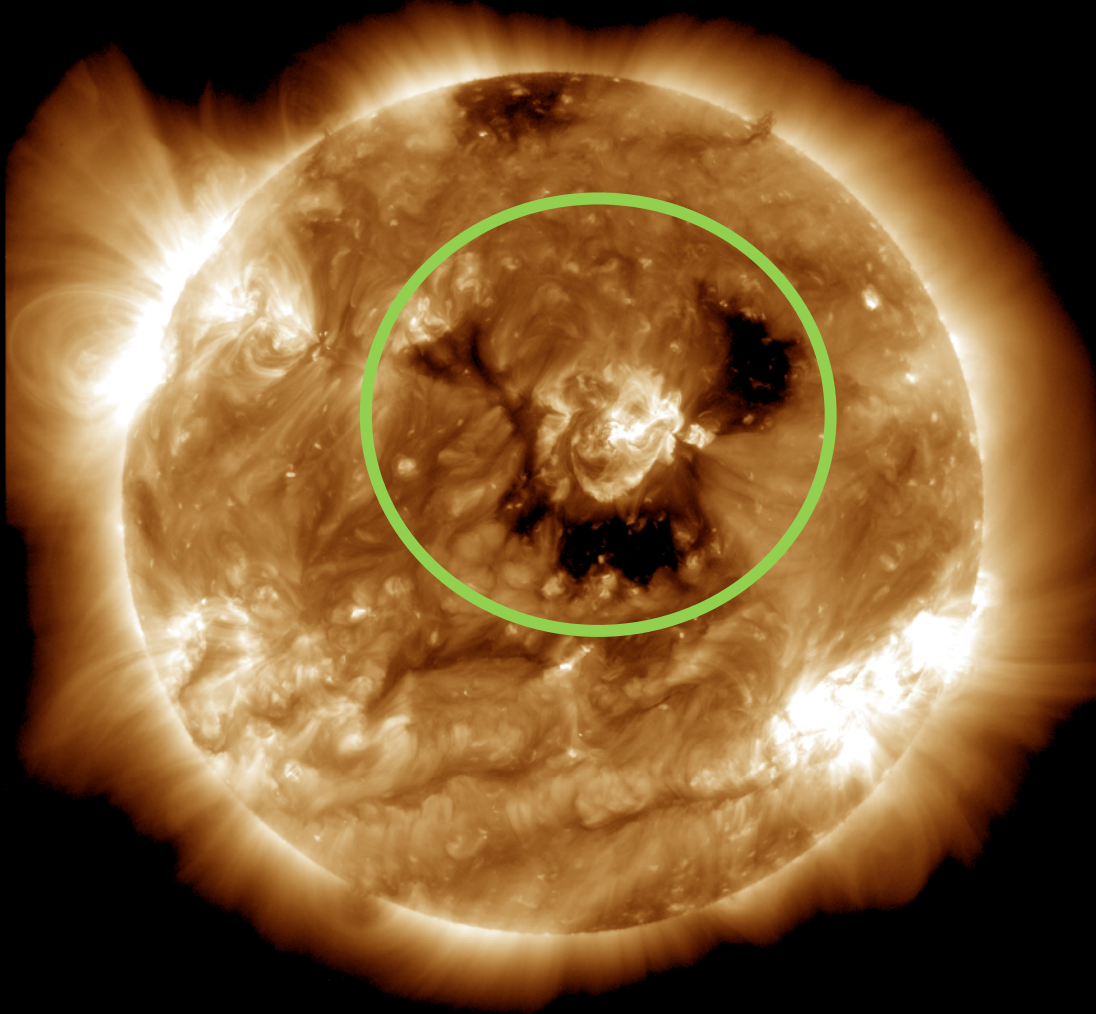
SDO/AIA AIA 193Å 2022-09-28T12:00:05.843



Coronal holes

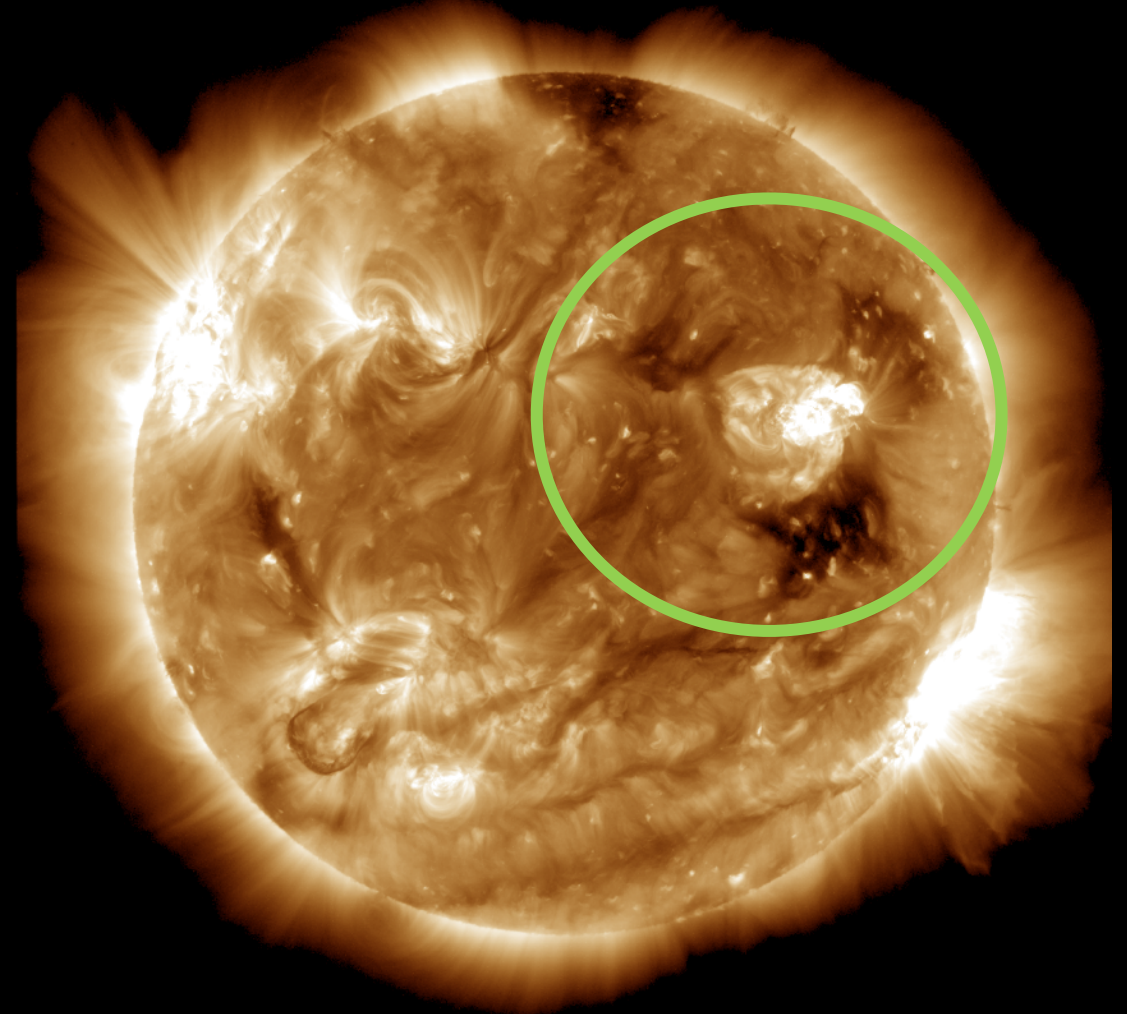
SDO/AIA 19.3 nm 2022-09-30

SDO/AIA AIA 193Å 2022-09-30T12:00:05.843



SDO/AIA 19.3 nm 2022-10-02

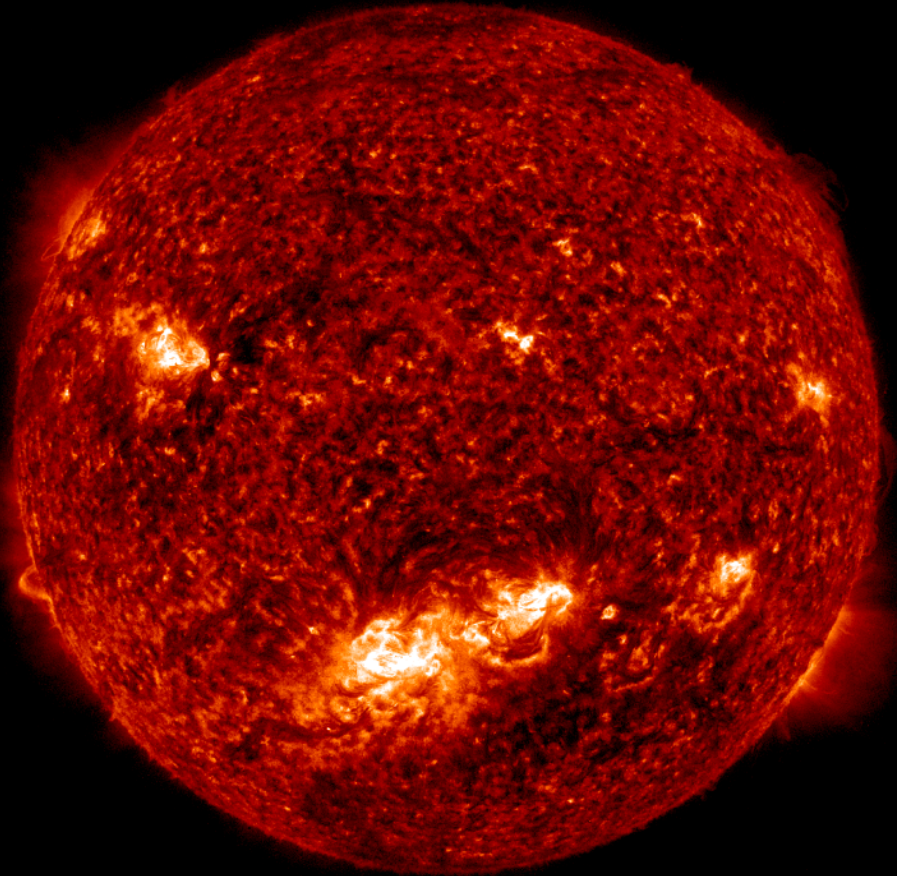
SDO/AIA AIA 193Å 2022-10-02T12:00:05.846



Filaments

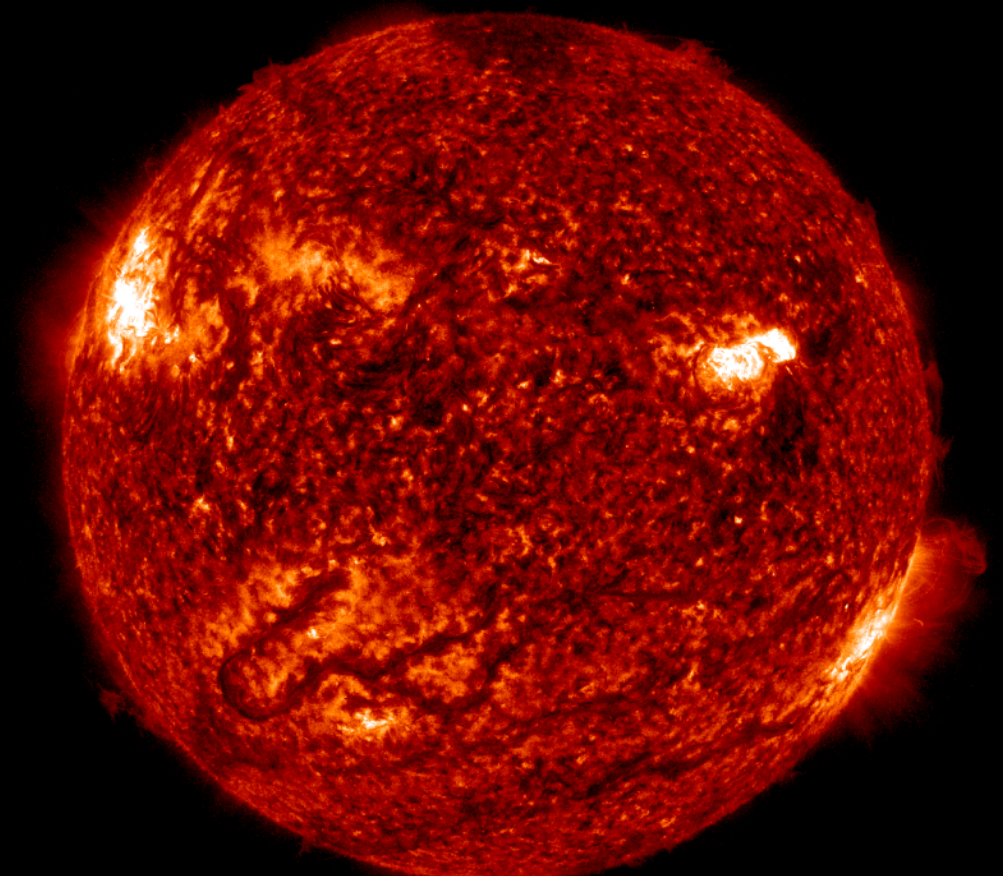
SDO/AIA 30.4 nm 2022-09-26

SDO/AIA AIA 304Å 2022-09-26T12:00:54.580



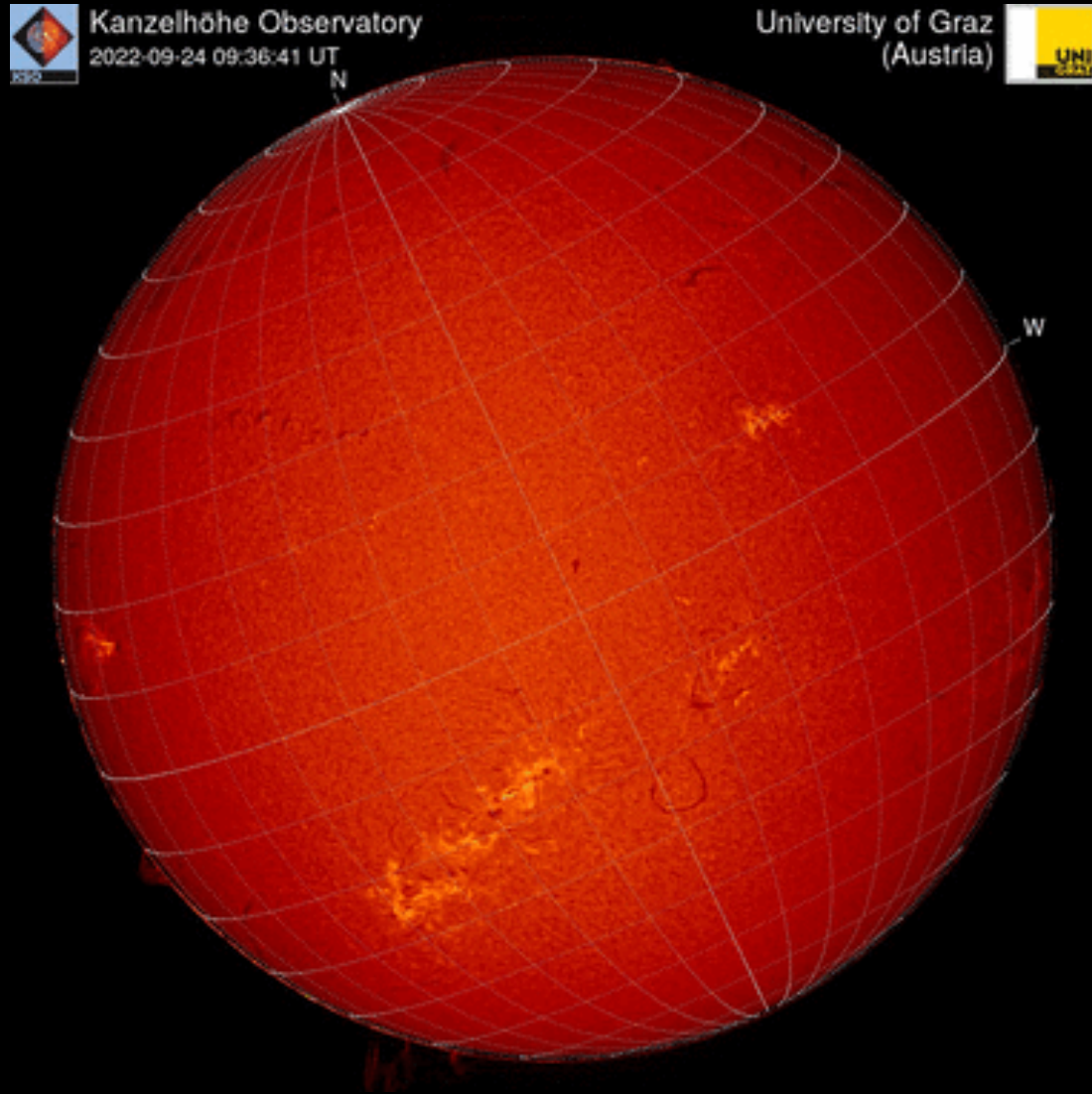
SDO/AIA 30.4 nm 2022-10-02

SDO/AIA AIA 304Å 2022-10-02T12:00:06.591

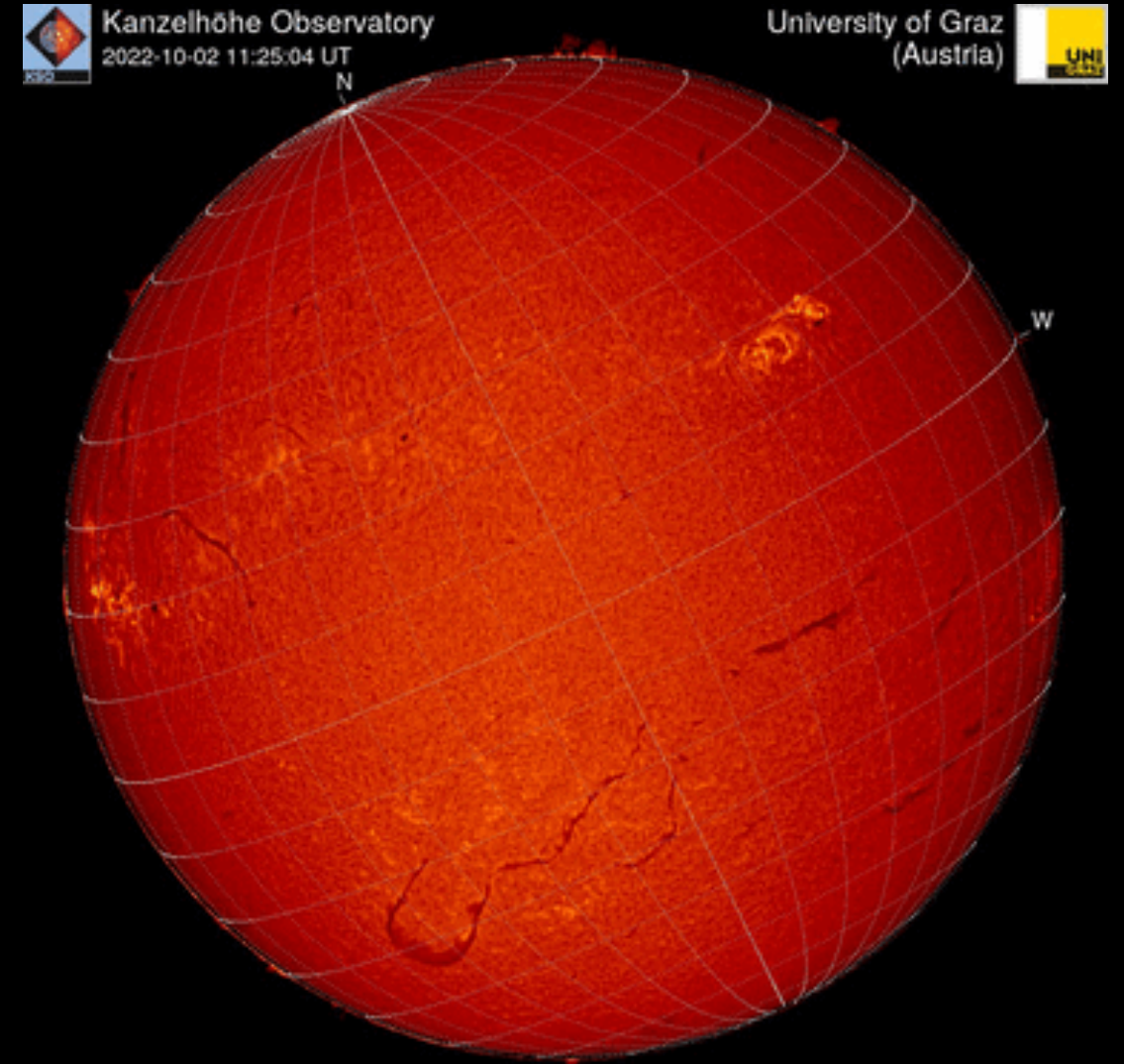


Filaments & Filament eruptions

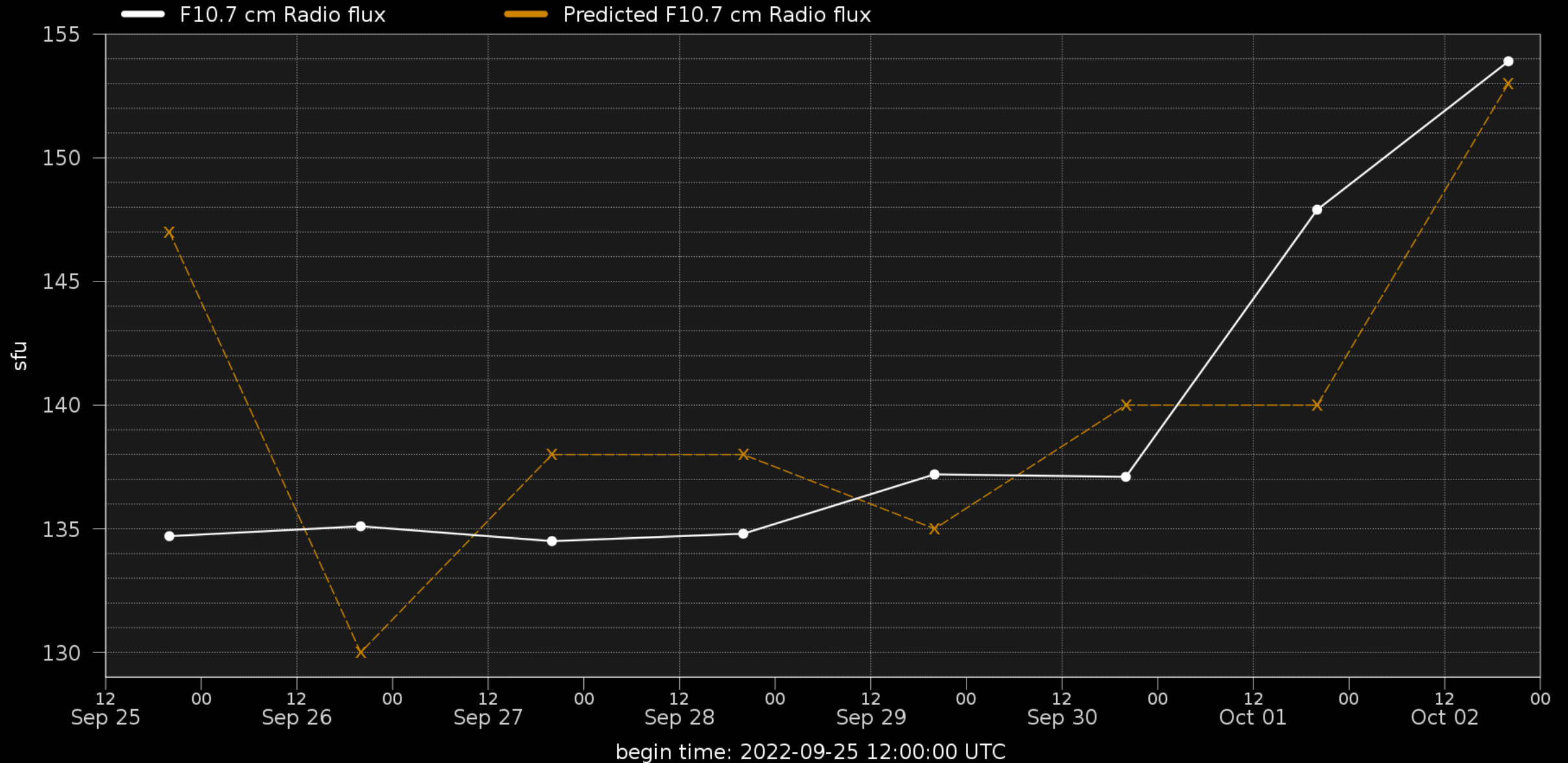
H-alpha 2022-09-25



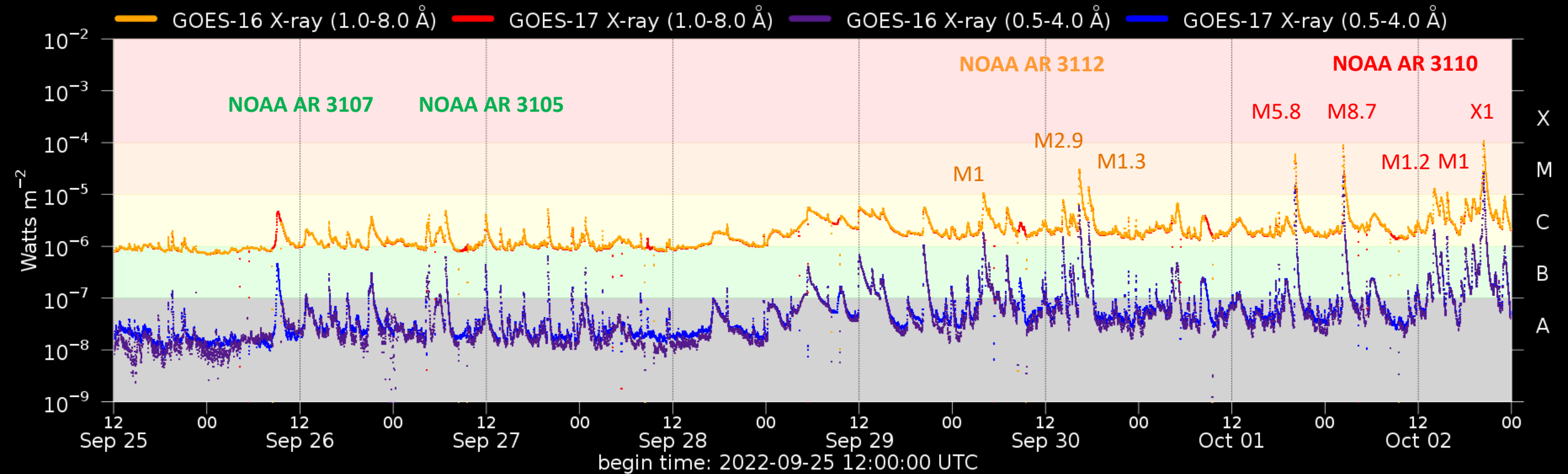
H-alpha 2022-10-02



Solar F10.7cm radio flux



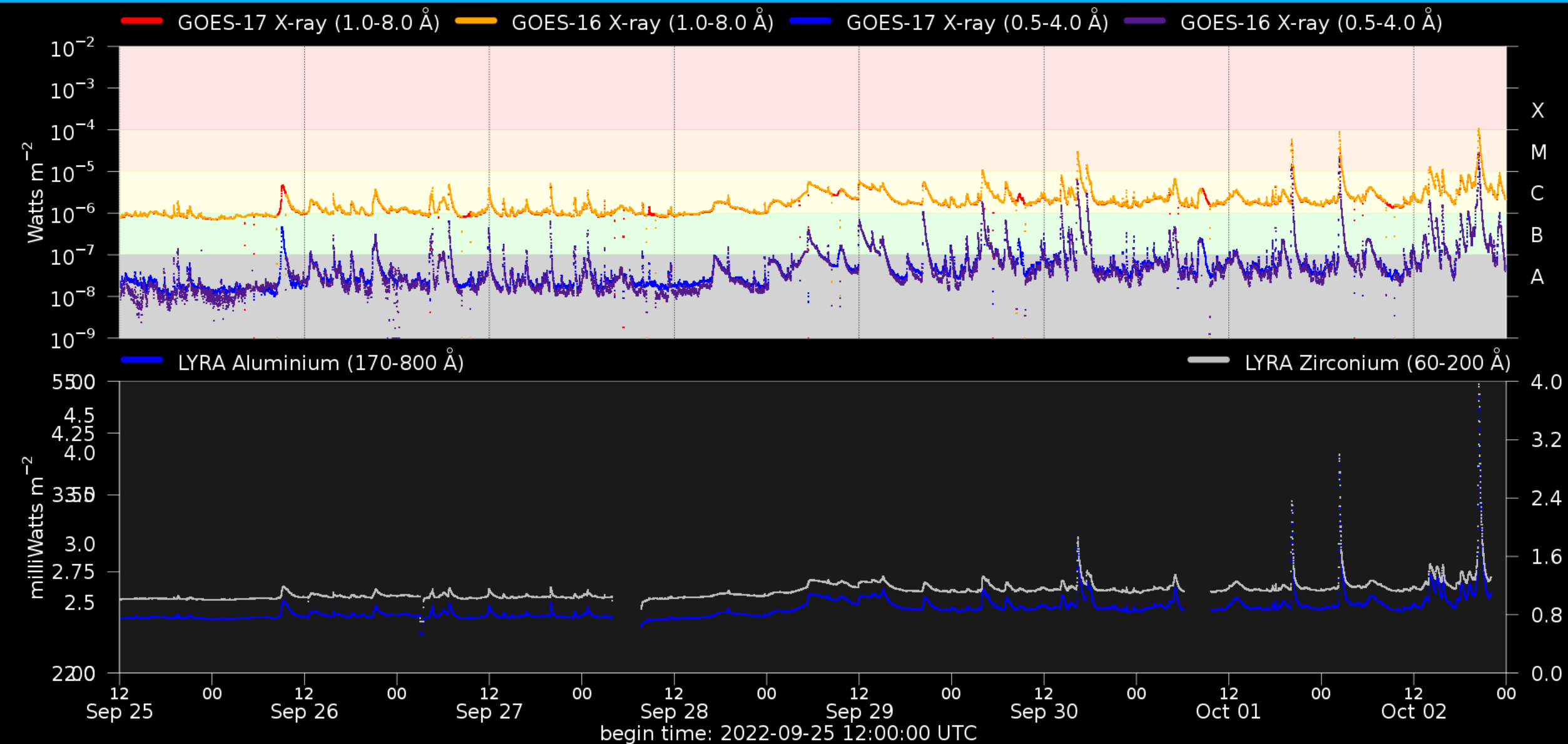
Flaring activity



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

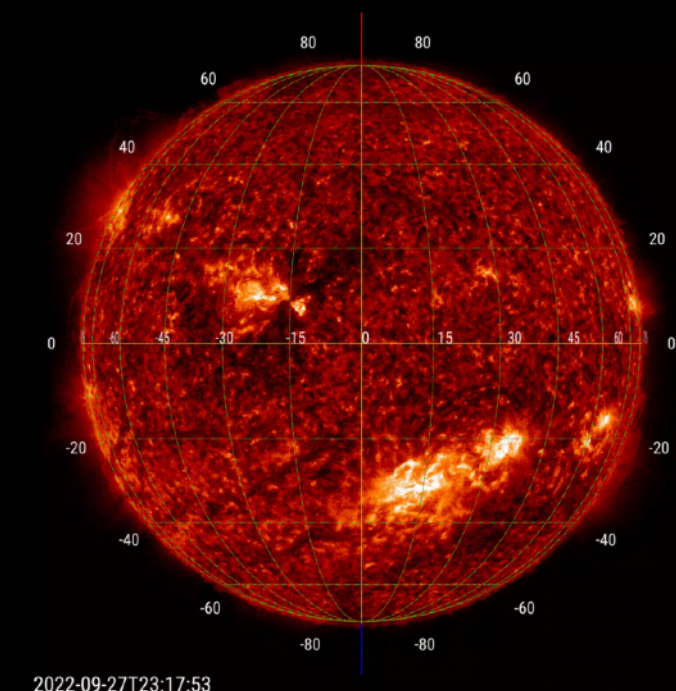
Issue date	2022-09-25	2022-09-26	2022-09-27	2022-09-28	2022-09-29	2022-09-30	2022-10-01	2022-10-02
Probability (%)	95 45 05	90 30 05	95 30 05	90 20 05	90 20 01	95 30 05	99 45 10	99 60 20
Observed (#)	04 00 00	06 00 00	09 00 00	02 00 00	05 00 00	07 02 00	05 02 00	04 02 01

Solar X-Ray and UV flux

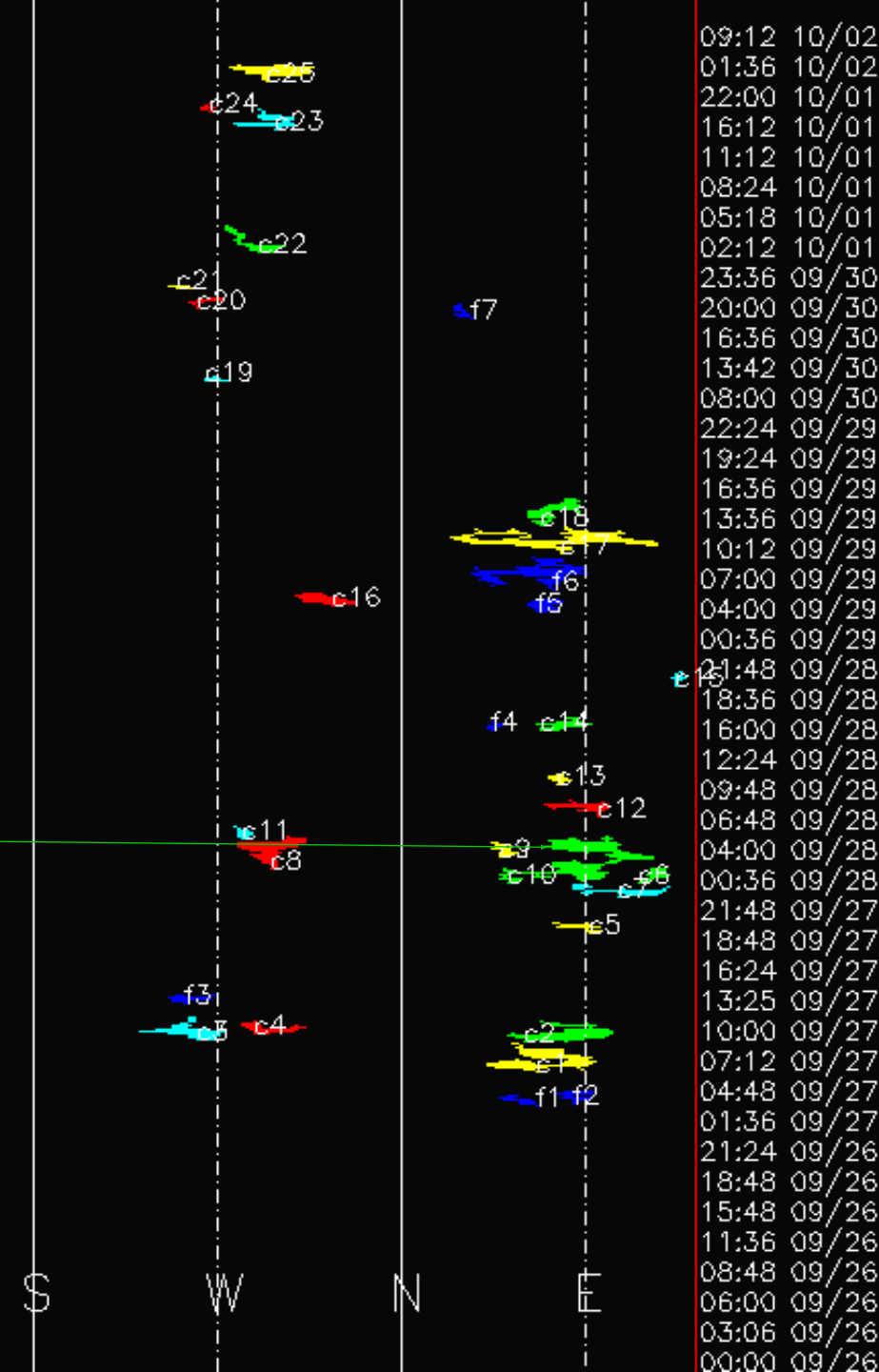
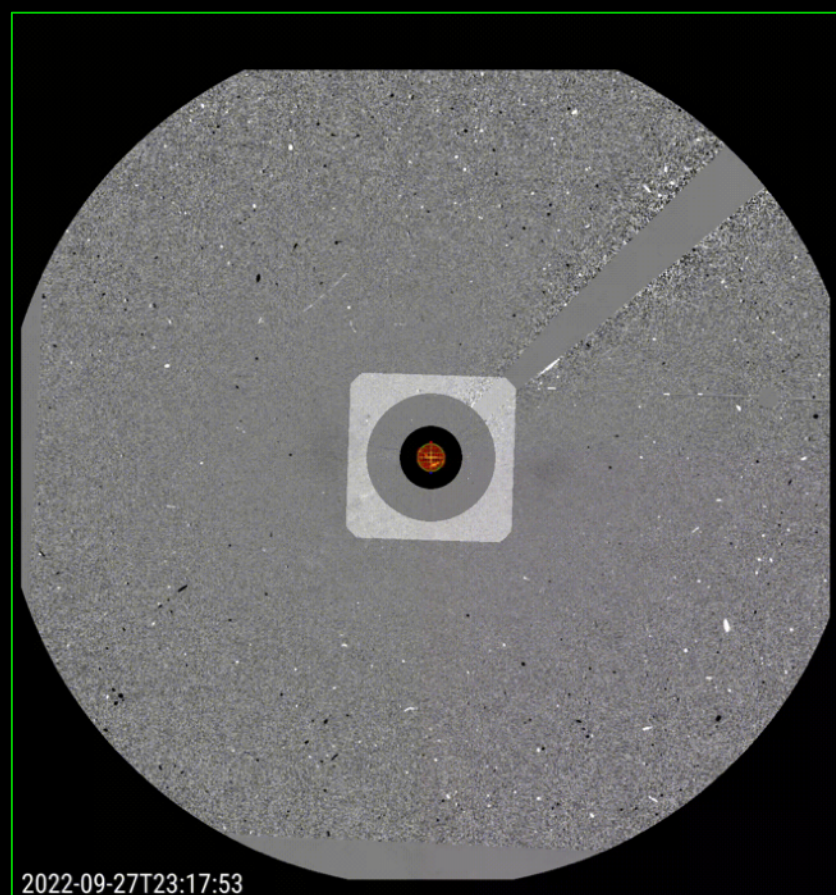


Coronal Mass Ejections

A faint CME to the south-east seen in LASCO C2 from 05:30 UT **September 28**, probably associated with the filament eruption observed from the north-east quadrant in SDO/304 at 04:48 UT September 28.



Glancing blow predicted for Oct 01



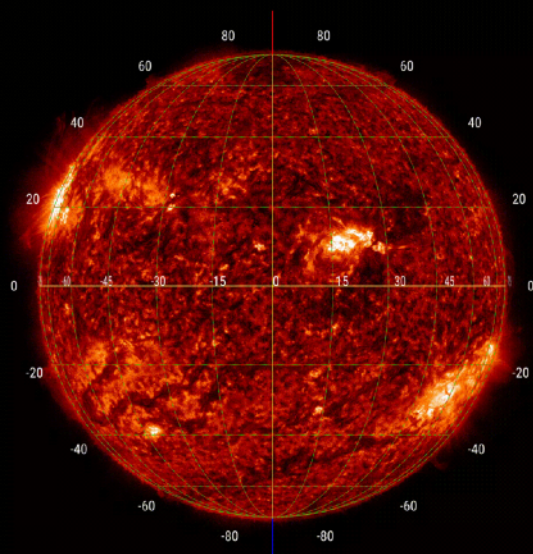
Coronal Mass Ejections

October 01: 3 eruptions, LASCO data gaps

1st Near AR 3113: filament eruption 11:59 UT (C3.5 flare)

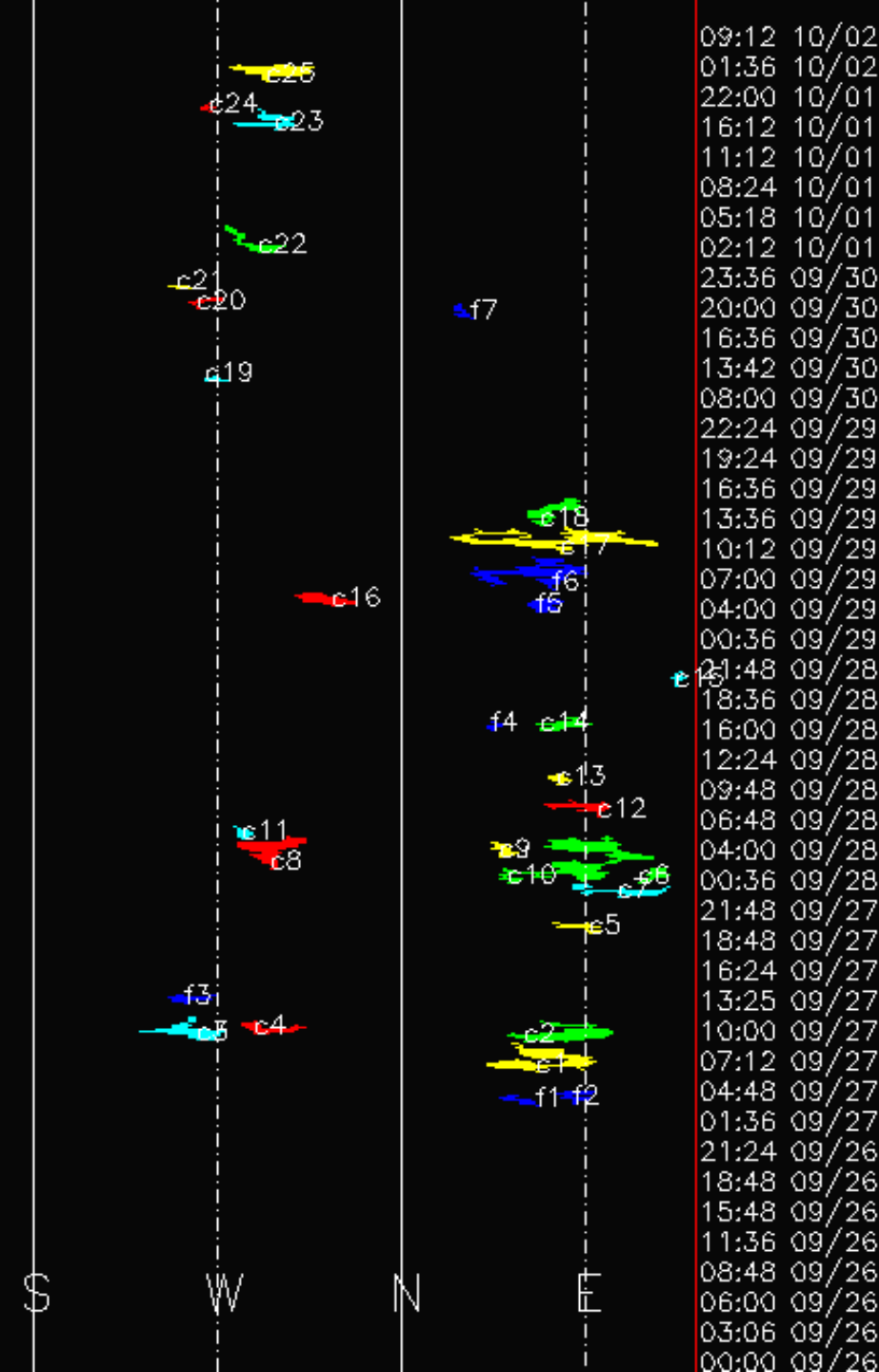
2nd AR 3110 M5.5 flare

3rd AR 3110 M8.7 flare (Oct 02)



2022-10-01T03:24:07

1st predicted to arrive early on October 4,
Two subsequent CMEs may catch the 1st.



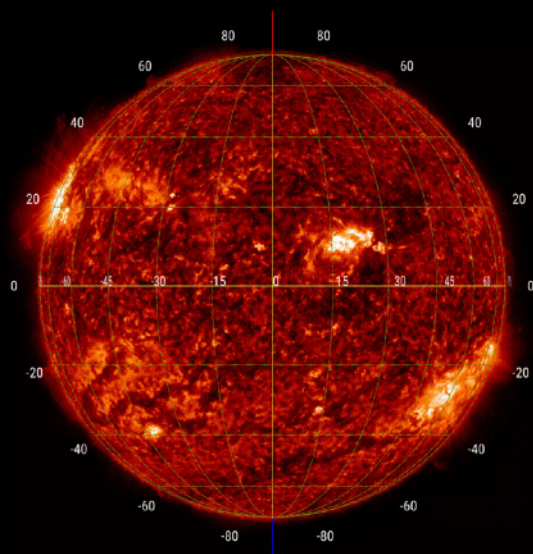
Coronal Mass Ejections

October 01: 3 eruptions, LASCO data gaps

1st Near AR 3113: filament eruption 11:59 UT (C3.5 flare)

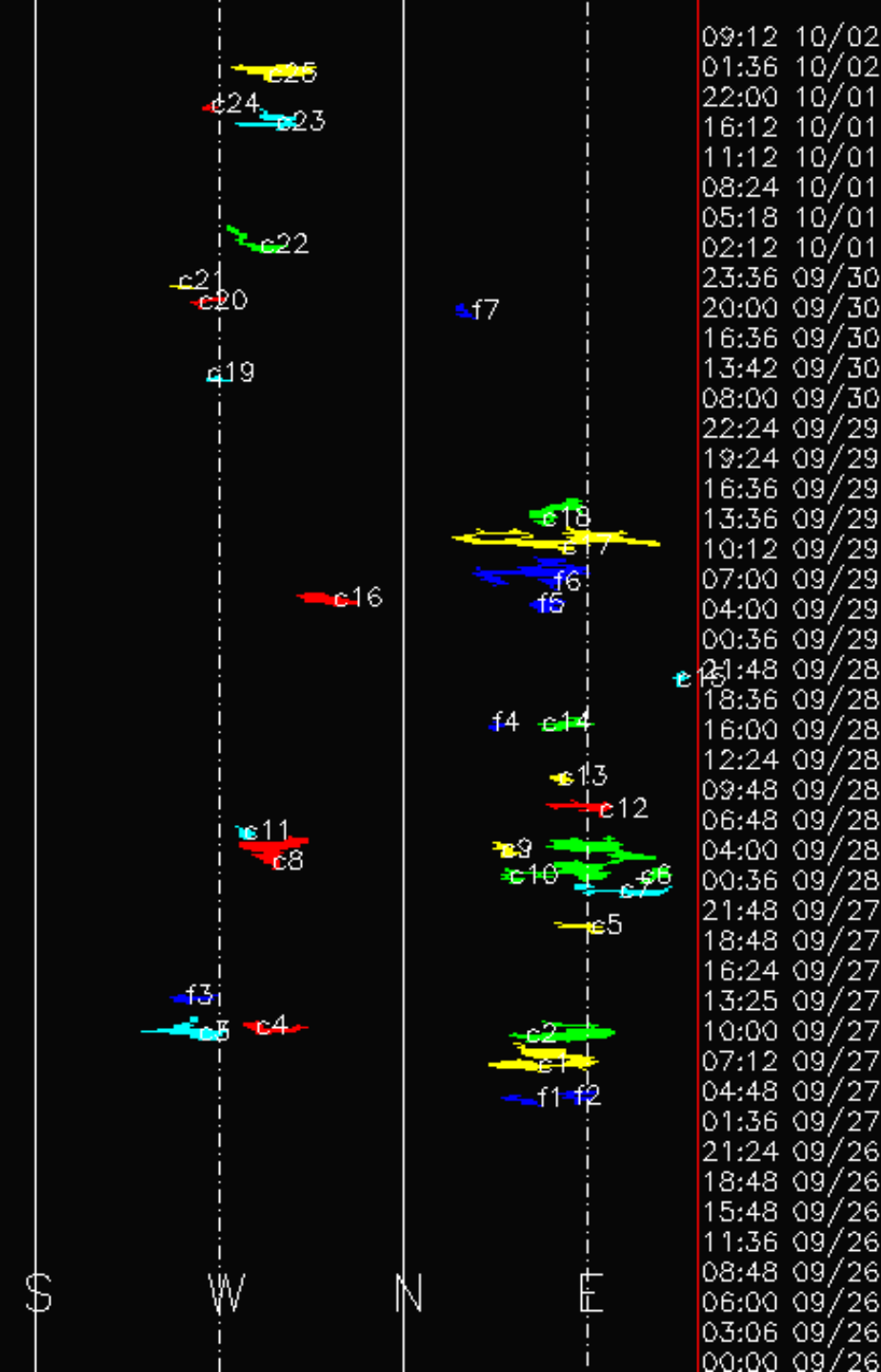
2nd AR 3110 M5.5 flare

3rd AR 3110 M8.7 flare (Oct 02)



022-10-01T15:06:07

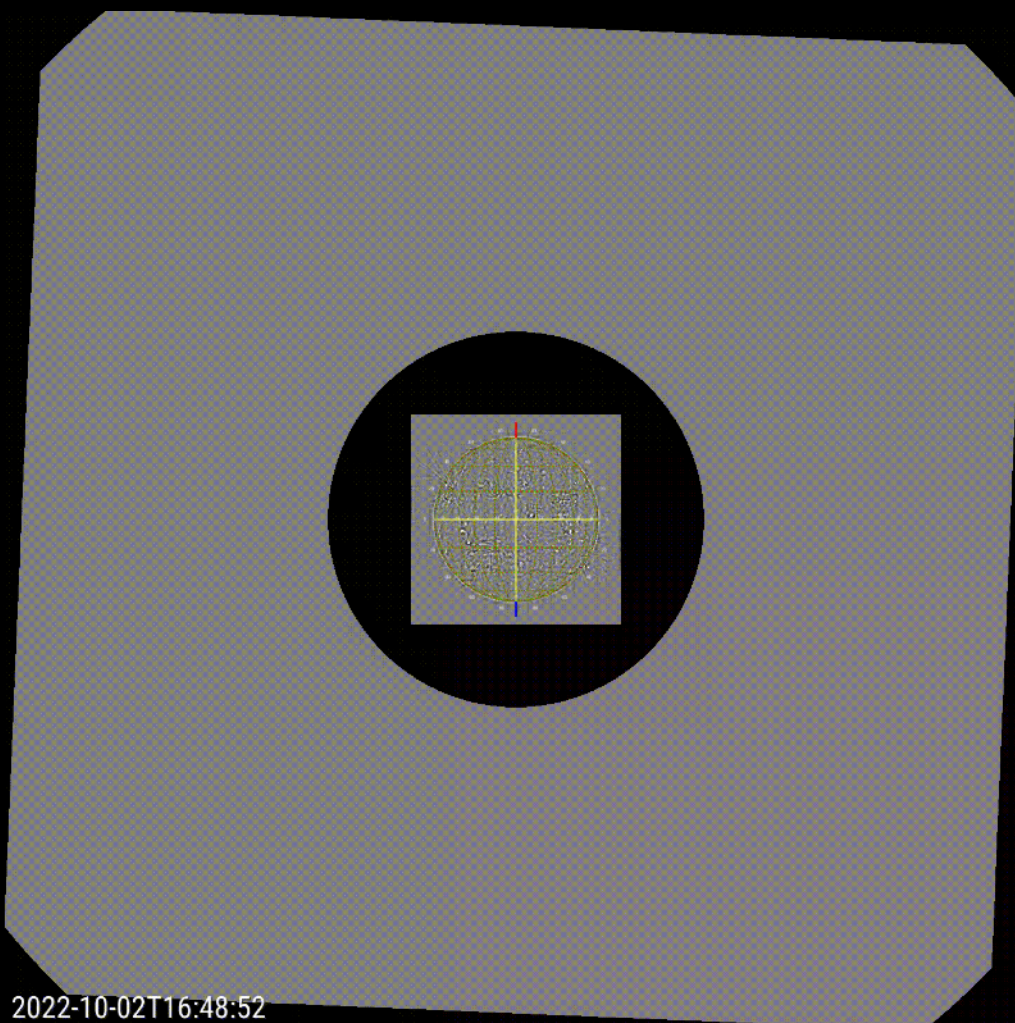
1st predicted to arrive early on October 4,
Two subsequent CMEs may catch the 1st.



Coronal Mass Ejections

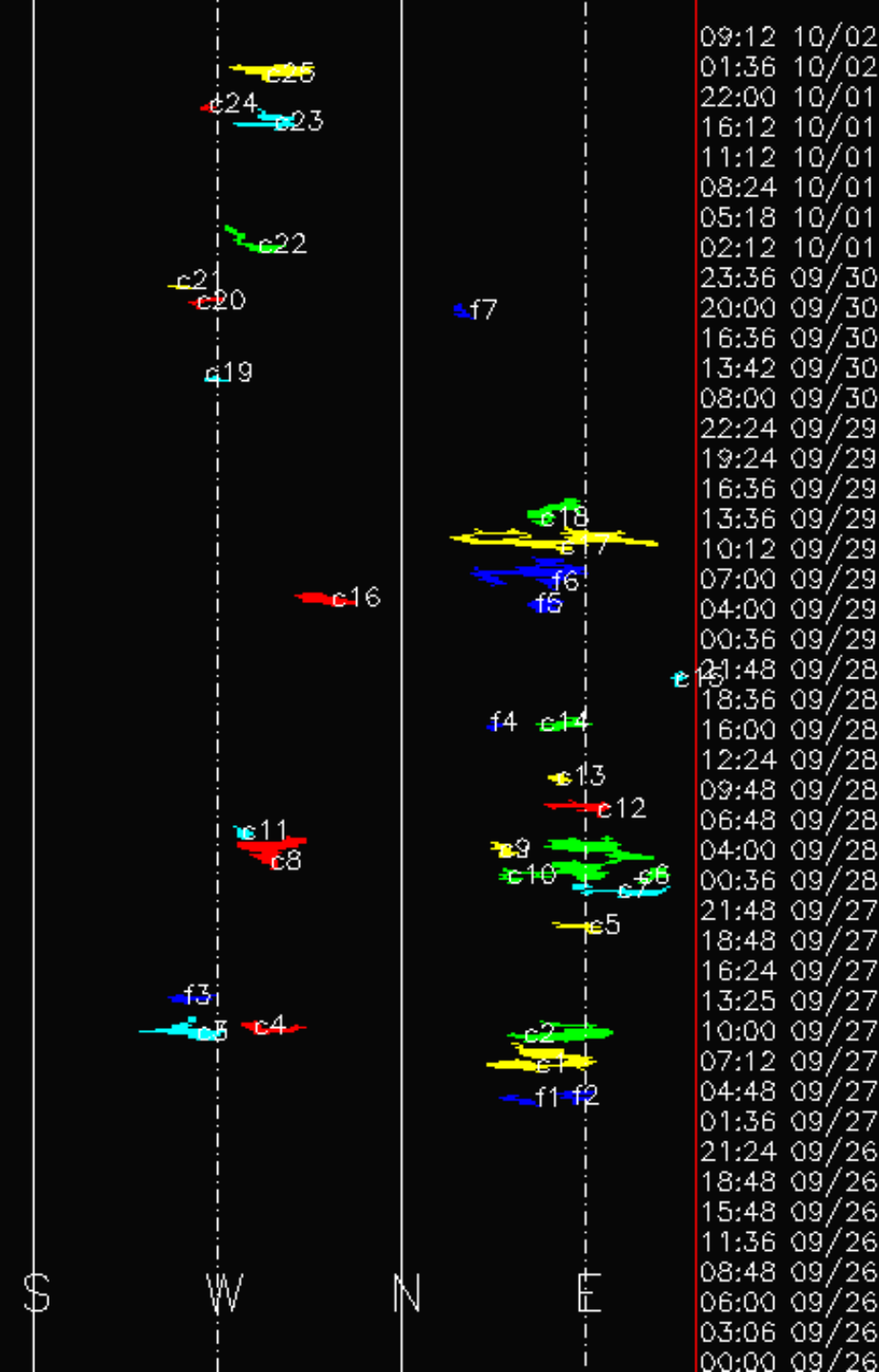
October 02

AR 3110 X1 flare 20:25 UT + Type II radio emission (to be analysed further)



2022-10-02T16:48:52

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Solar Wind and Geomagnetic Activity



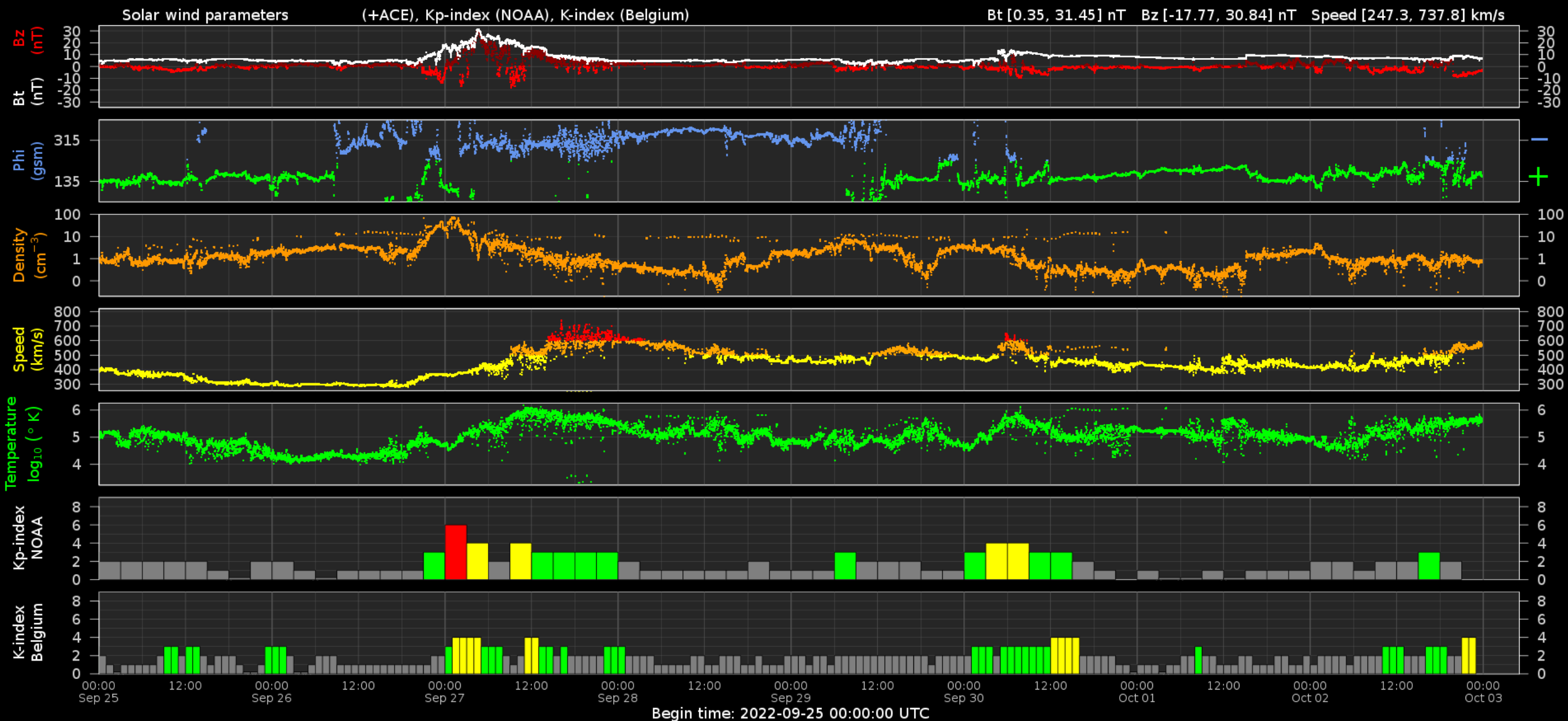
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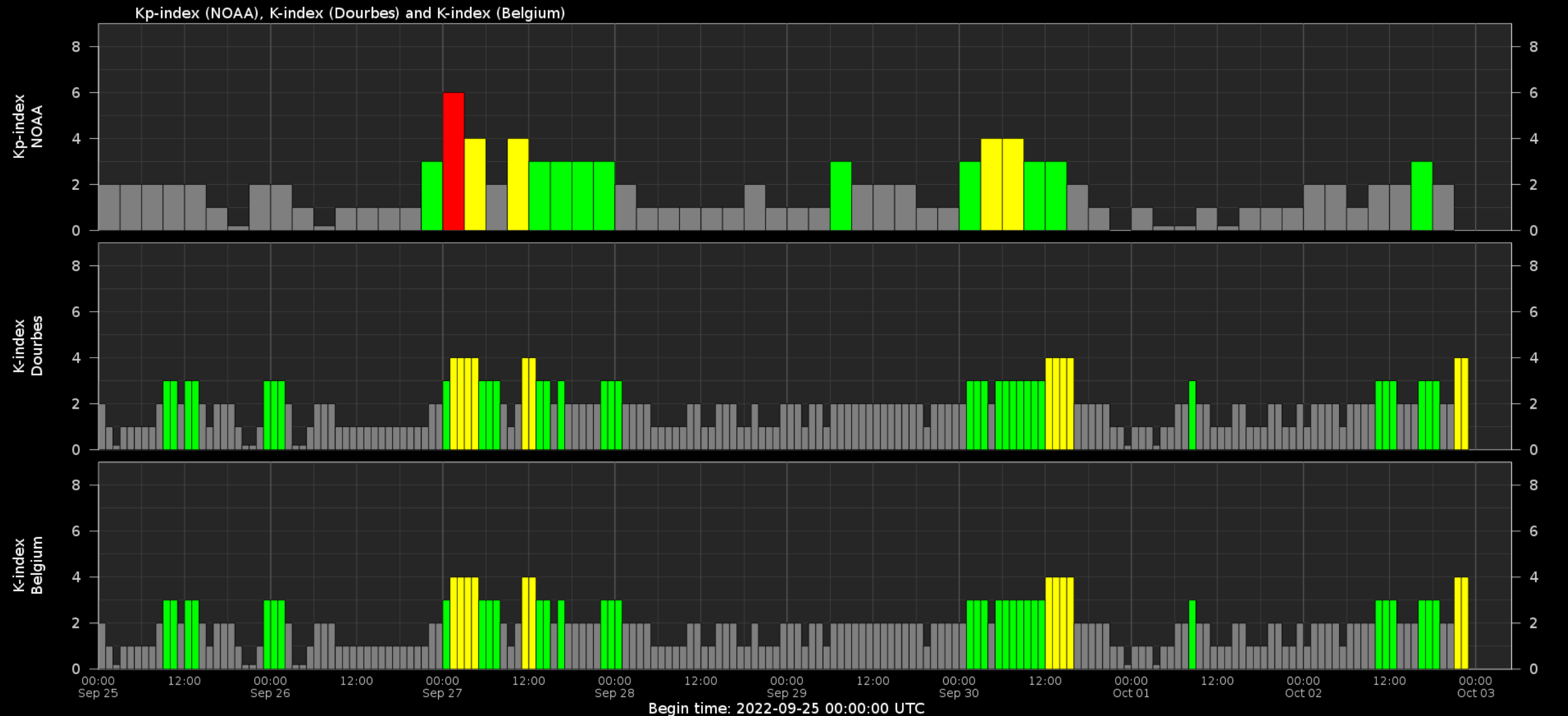
Solar wind parameters



Solar wind parameters & K-indices



Geomagnetic activity (K-indexes)



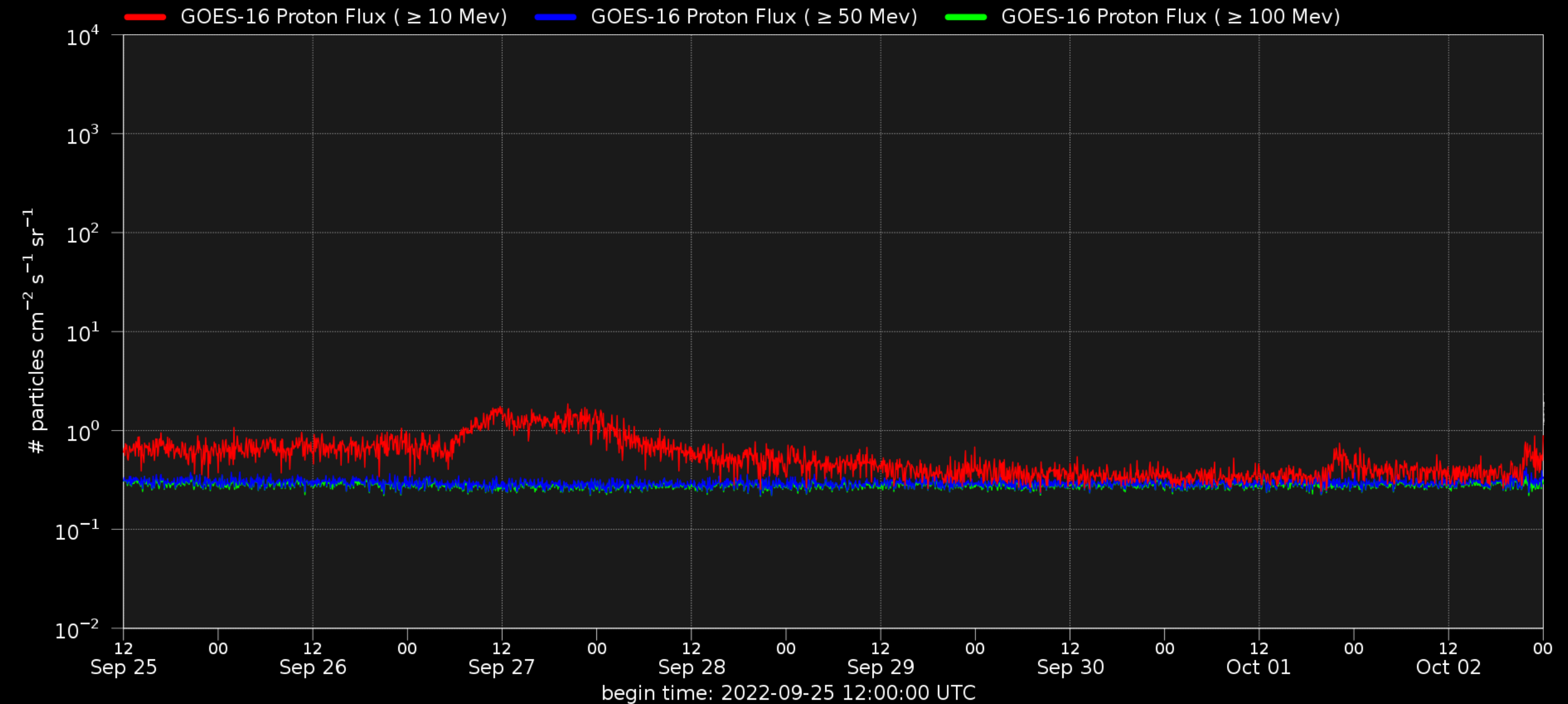
Energetic Particles



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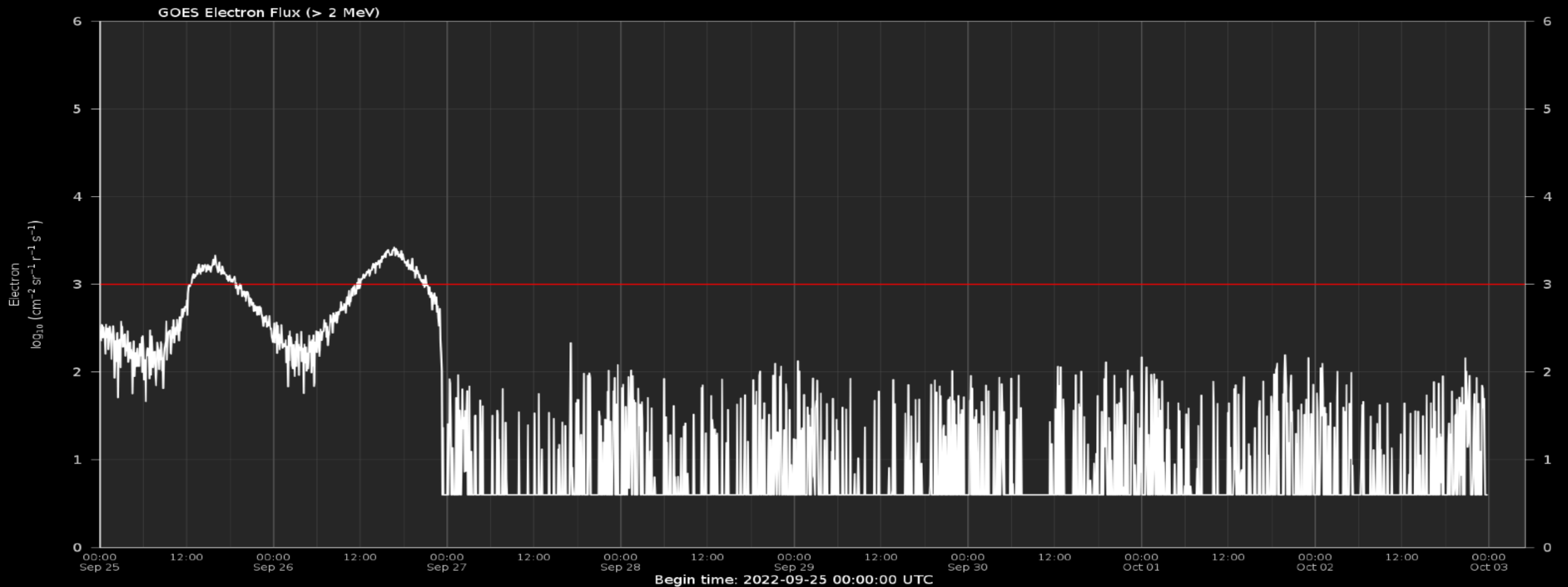
Solar proton flux



Electron flux at GEO

www.stce.be/educational/classification#electrons

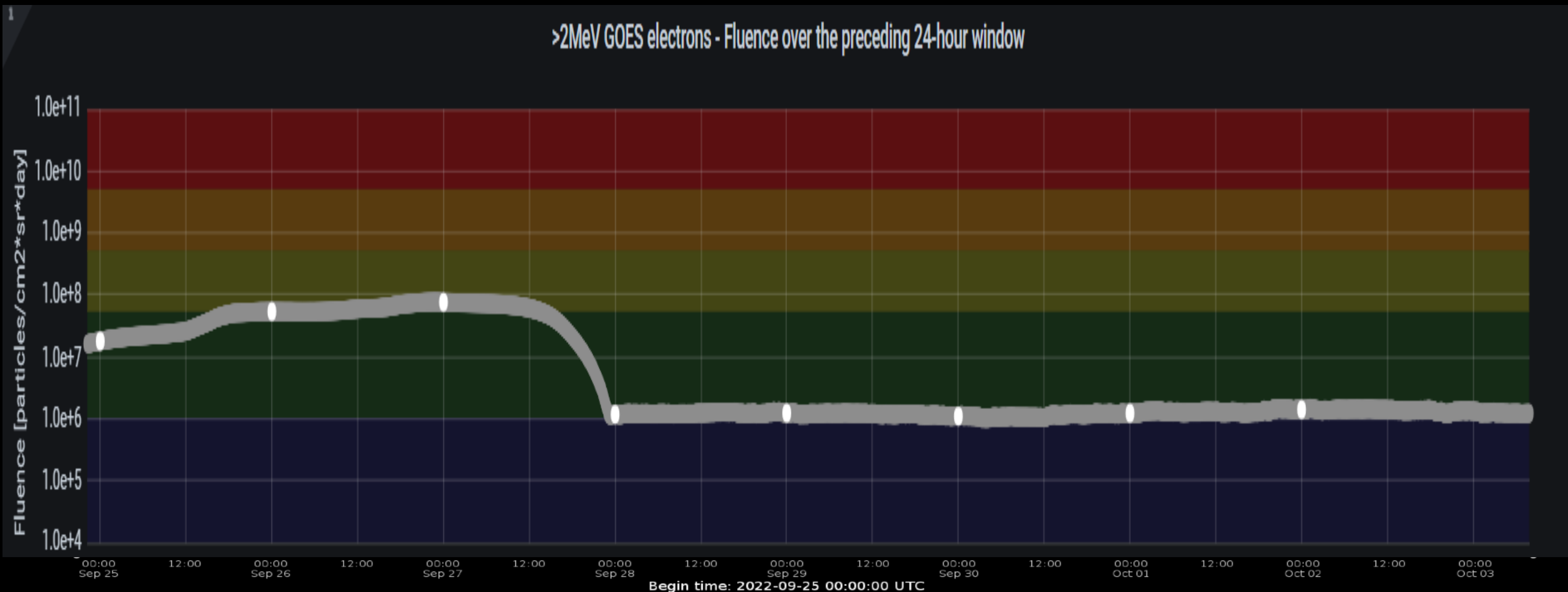
www.spaceweather.gc.ca/forecast-prevision/space-spatiale/sffl-en.php



Electron flux at GEO

www.stce.be/educational/classification#electrons

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



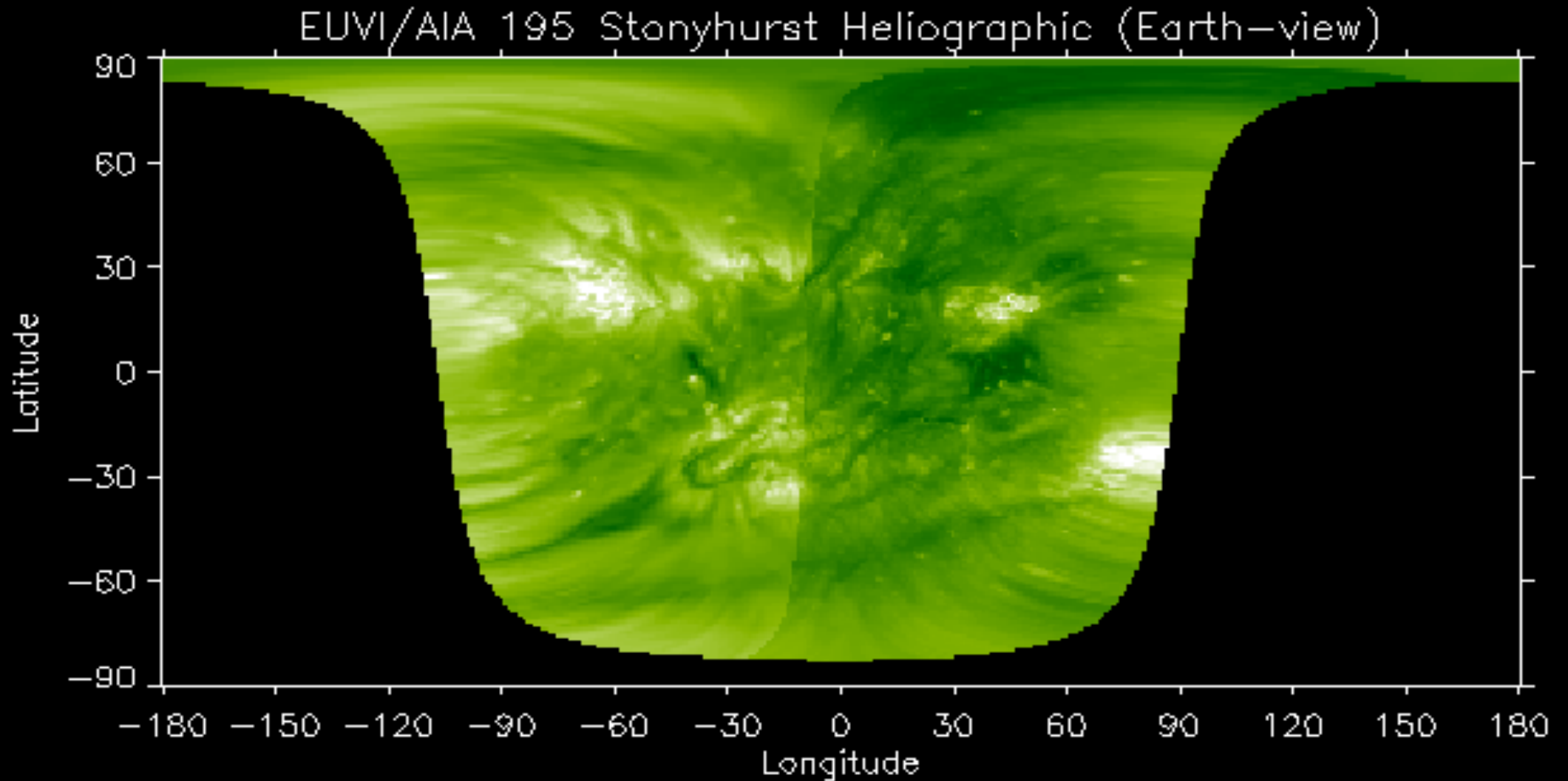
Outlook



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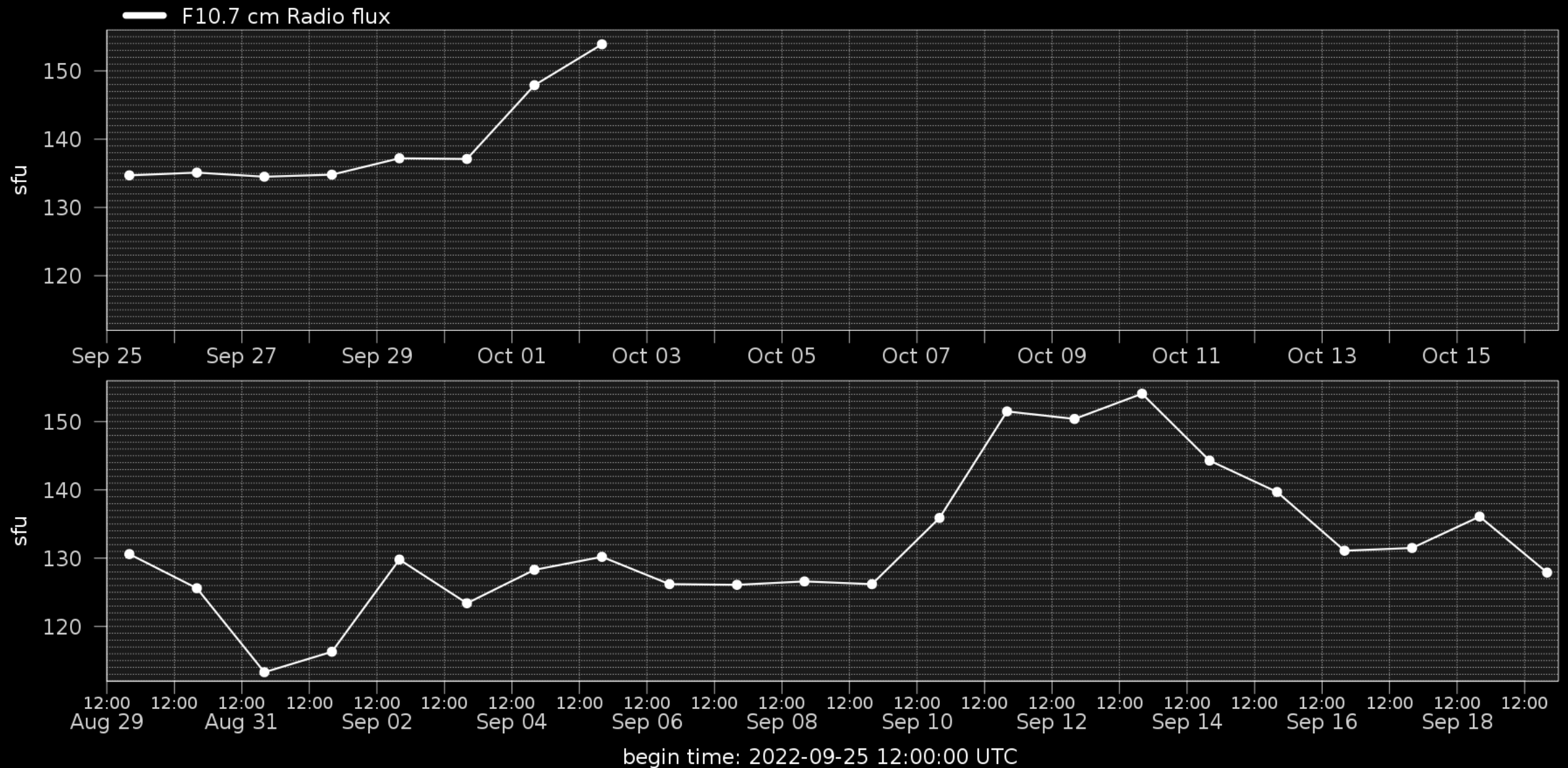
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Outlook: Solar activity

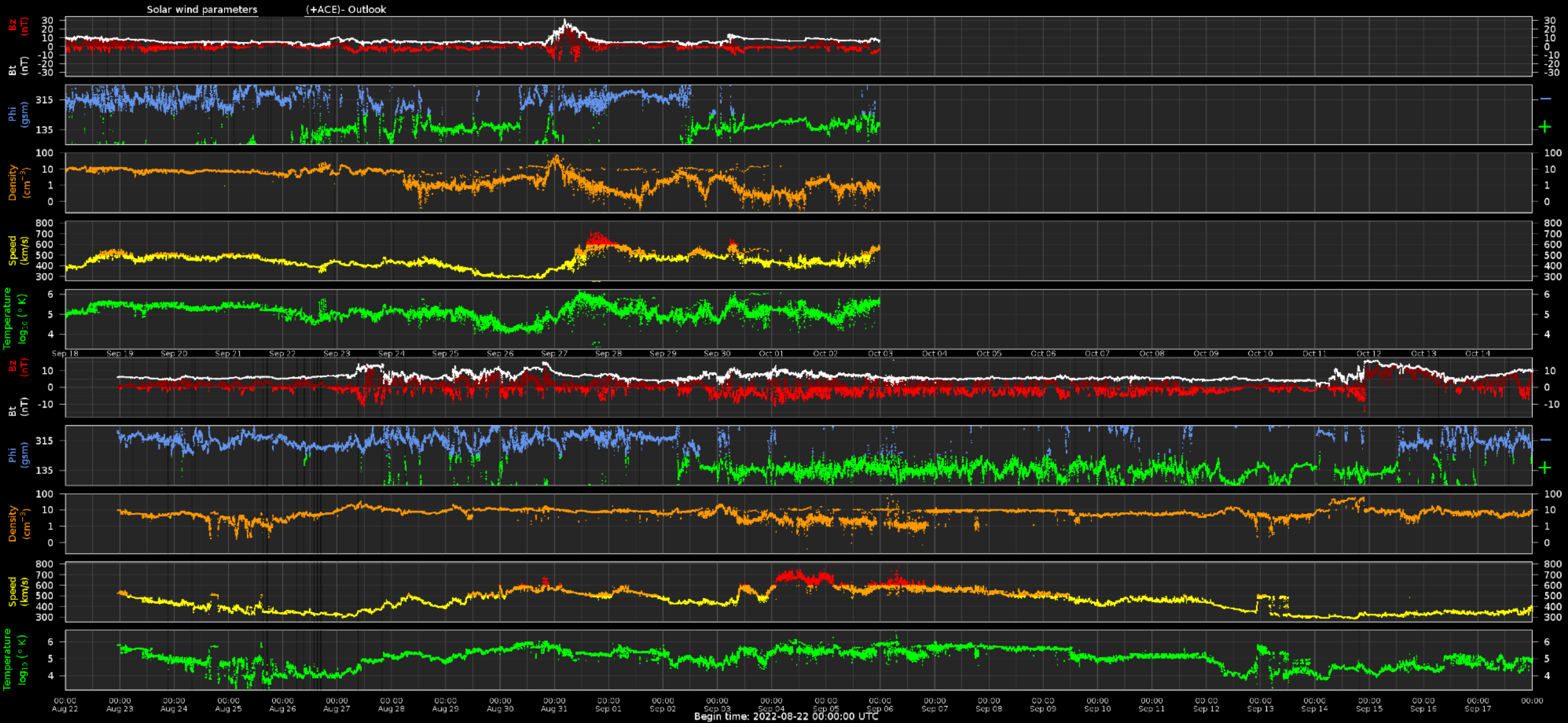


Observation date: 2022/10/02 19:45:00

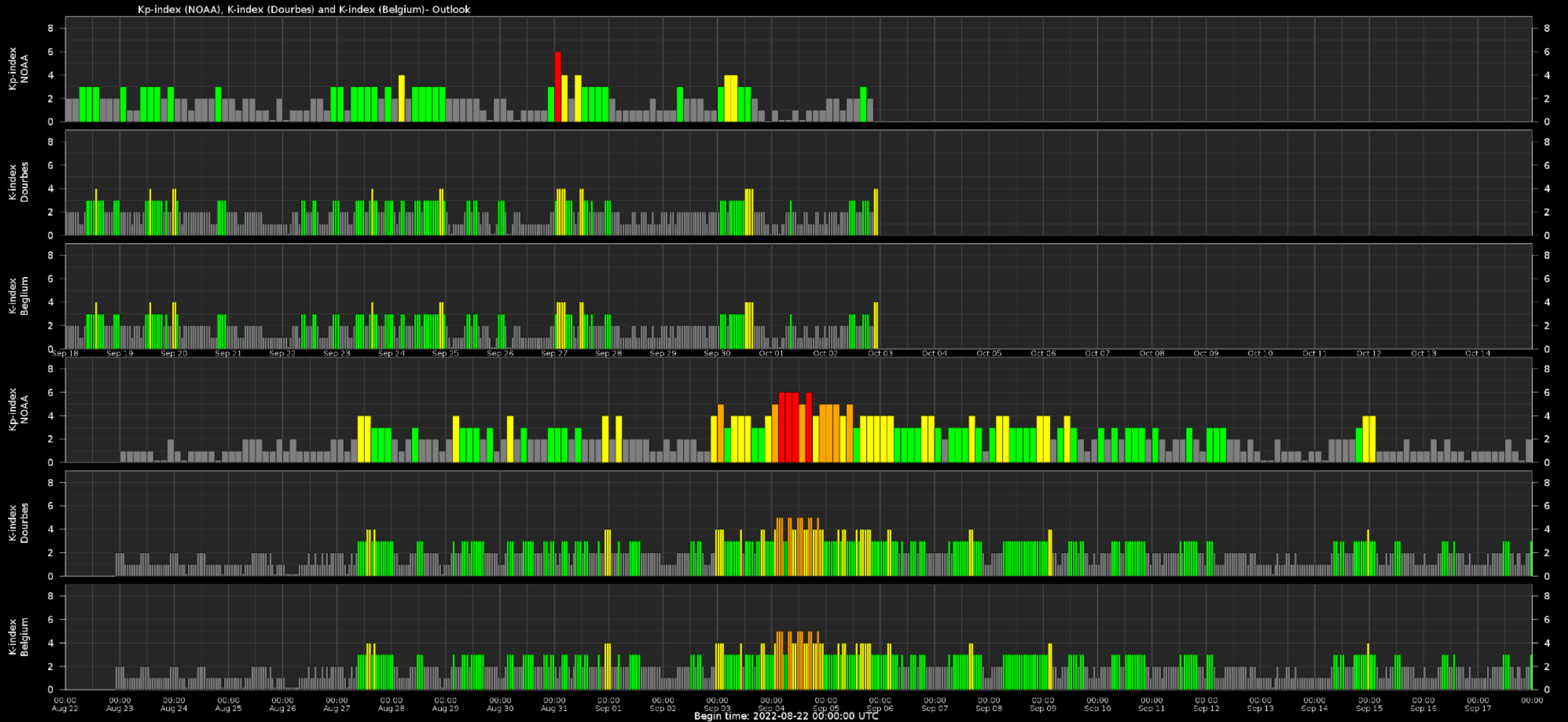
Outlook: Solar F10.7cm radio flux



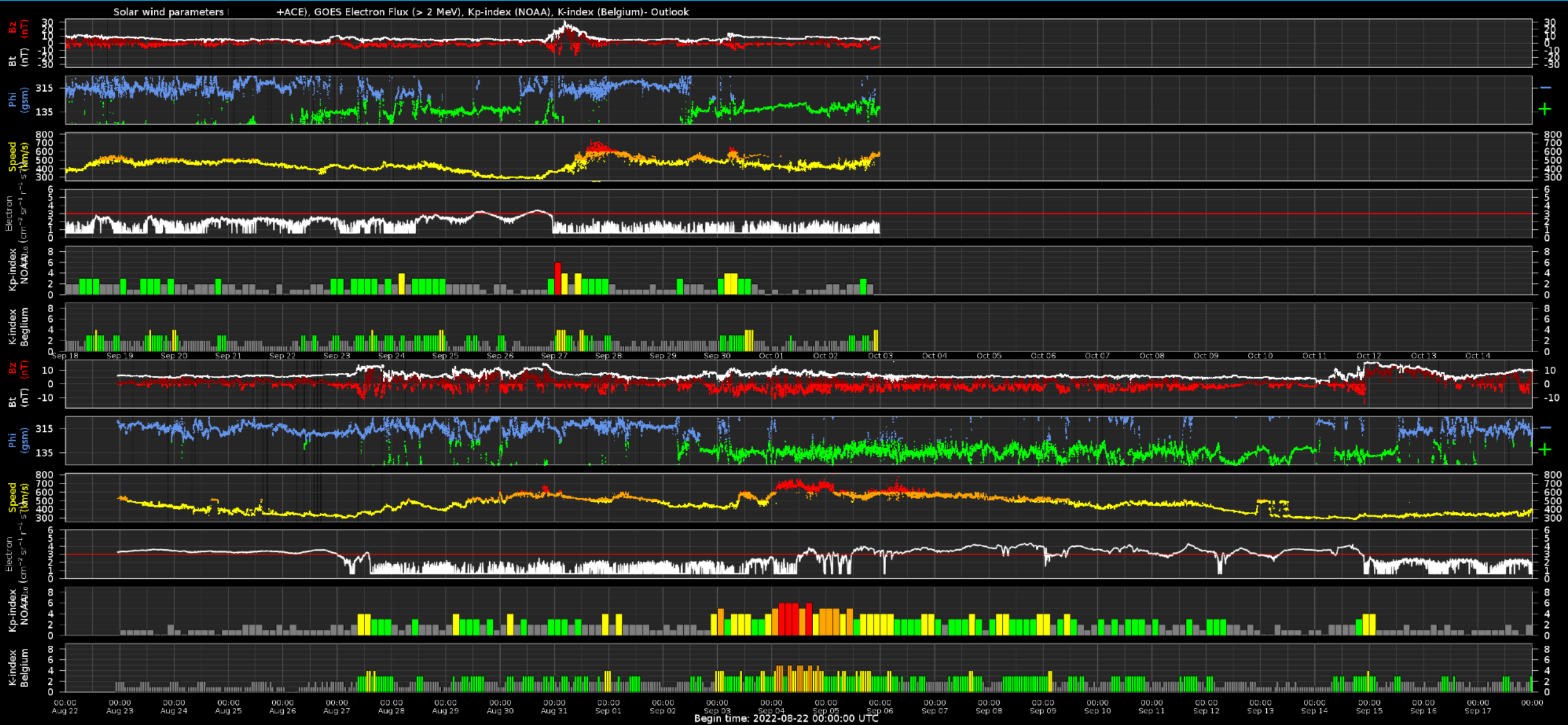
Outlook: Solar wind parameters



Outlook: Geomagnetic activity



Outlook: Electron Flux at GEO Outlook



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