

# SIDC Space Weather Briefing

31 October 2021 - 07 November 2021

Jesse Andries

& the SIDC forecaster team



Royal Observatory  
of Belgium

Solar Influences  
Data analysis Centre  
[www.sidc.be](http://www.sidc.be)

# Summary Report

Solar activity from 2021-10-31 12:00 to 2021-11-07 23:59

Active regions	2887 and 2891 both produced M flares
Flares	# C-class flare: 14 # M-class flare: 1 (2) # X-class flare: 0
Filament eruptions	A number of filament eruptions
Coronal Holes	Extension of North pole CH+, small eq. CH+

Proton flux	Remained enhanced following last weeks X flare and up to Nov 3 shock arrival.
Electron flux	Reached above event threshold with ongoing elevated Solar wind conditions

## Solar wind and geomagnetic conditions

ICME	Nov 1 and 2 CMEs arriving on November 3-6
SW Conditions	B : 0.67 - 24.4 nT // Bz: -18.08 nT to 15.63 nT // Speed: 244.7 - 817.3km/s
K-indices	max K-index (Dourbes): 6 max Kp-index (NOAA): 7

All Quiet Alert: was off all week

# Solar Activity

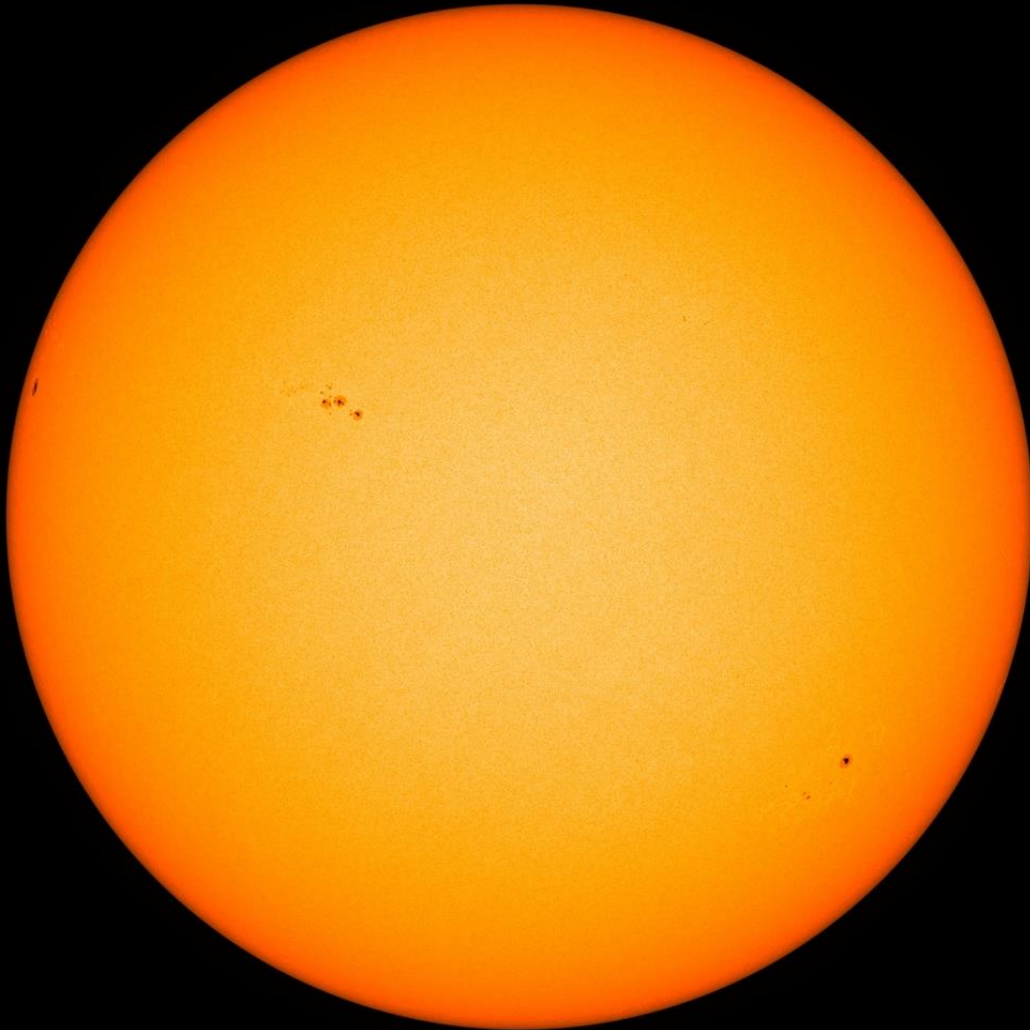


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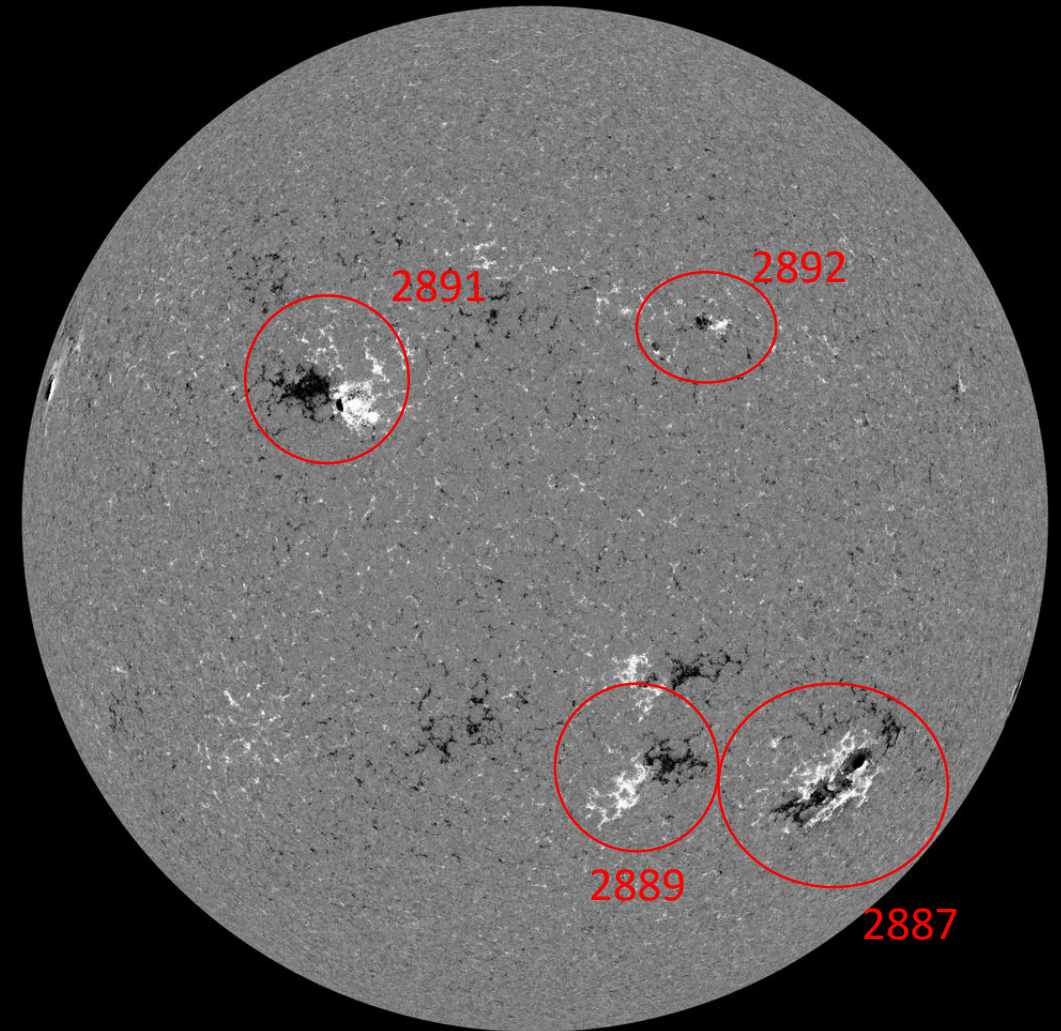
# Solar active regions

SDO/HMI White Light 2021-10-31



SDO/HMI Quick-Look Continuum: 20211031\_120000

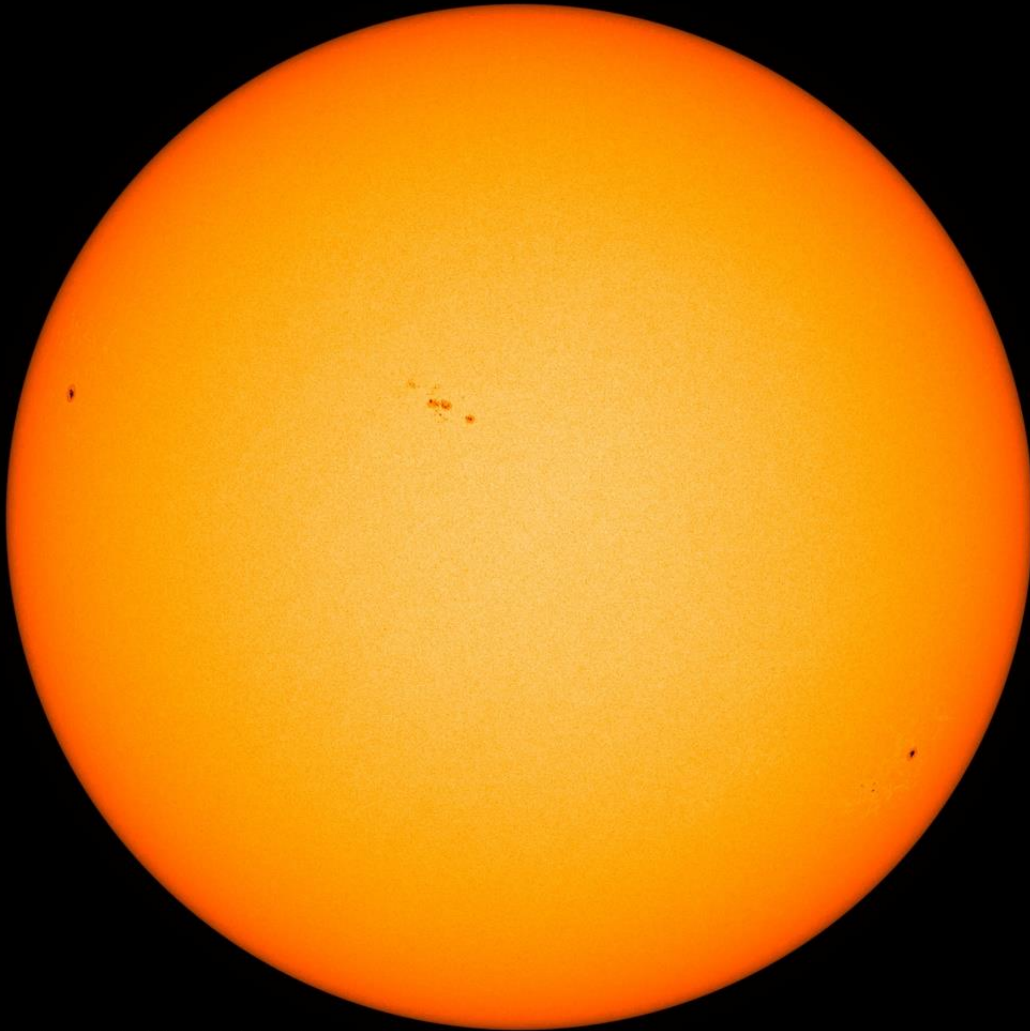
SDO/HMI Magnetogram 2021-10-31



SDO/HMI Quick-Look Magnetogram: 20211031\_114500

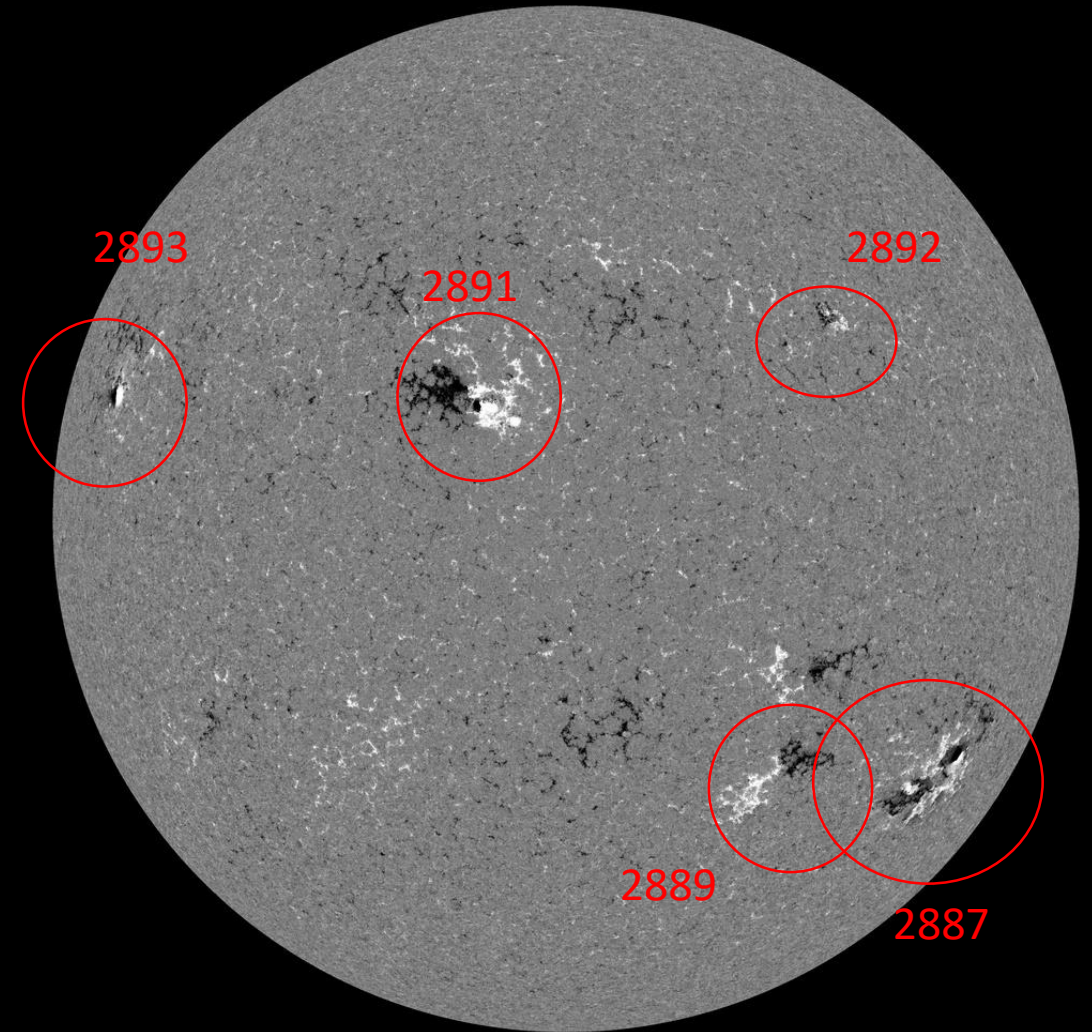
# Solar active regions

SDO/HMI White Light 2021-11-01



SDO/HMI Quick-Look Continuum: 20211101\_120000

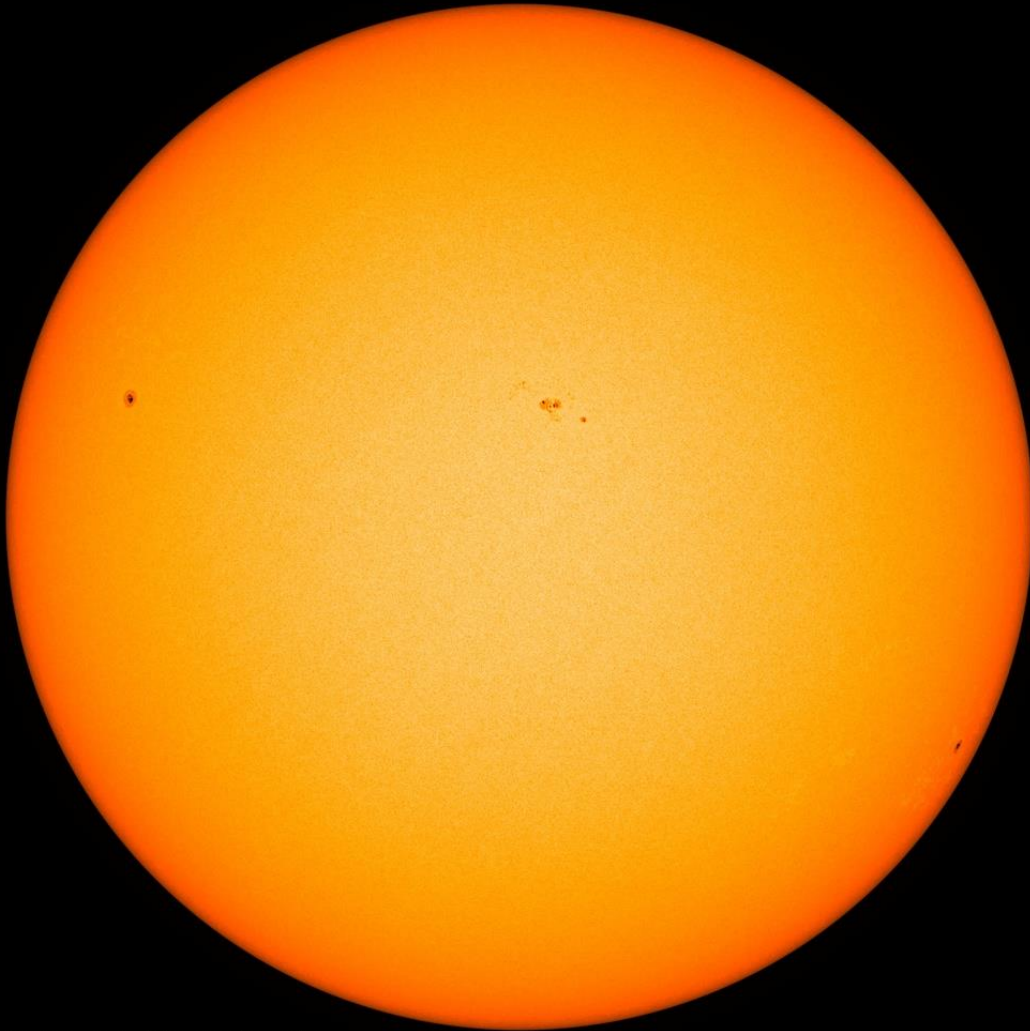
SDO/HMI Magnetogram 2021-11-01



SDO/HMI Quick-Look Magnetogram: 20211101\_114500

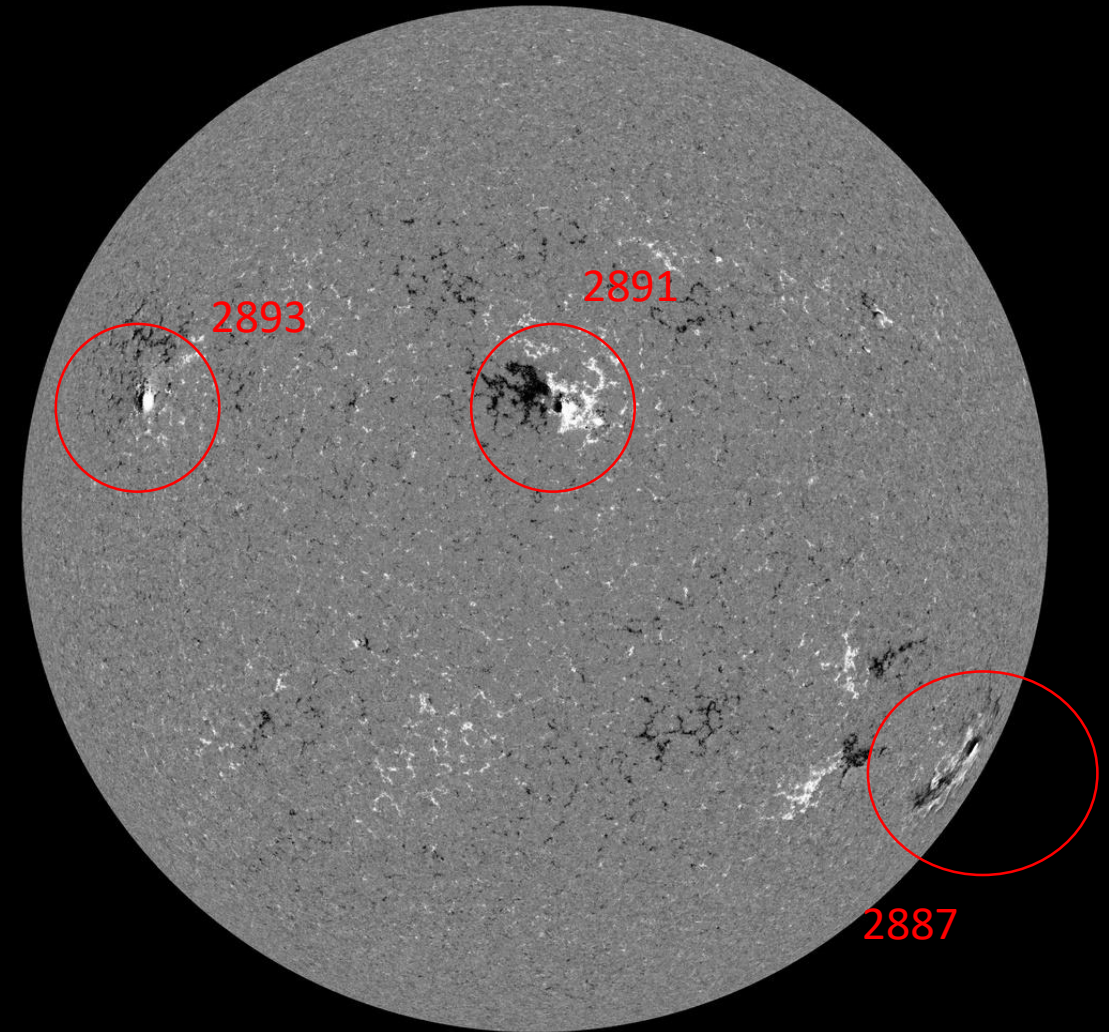
# Solar active regions

SDO/HMI White Light 2021-11-02



SDO/HMI Quick-Look Continuum: 20211102\_114500

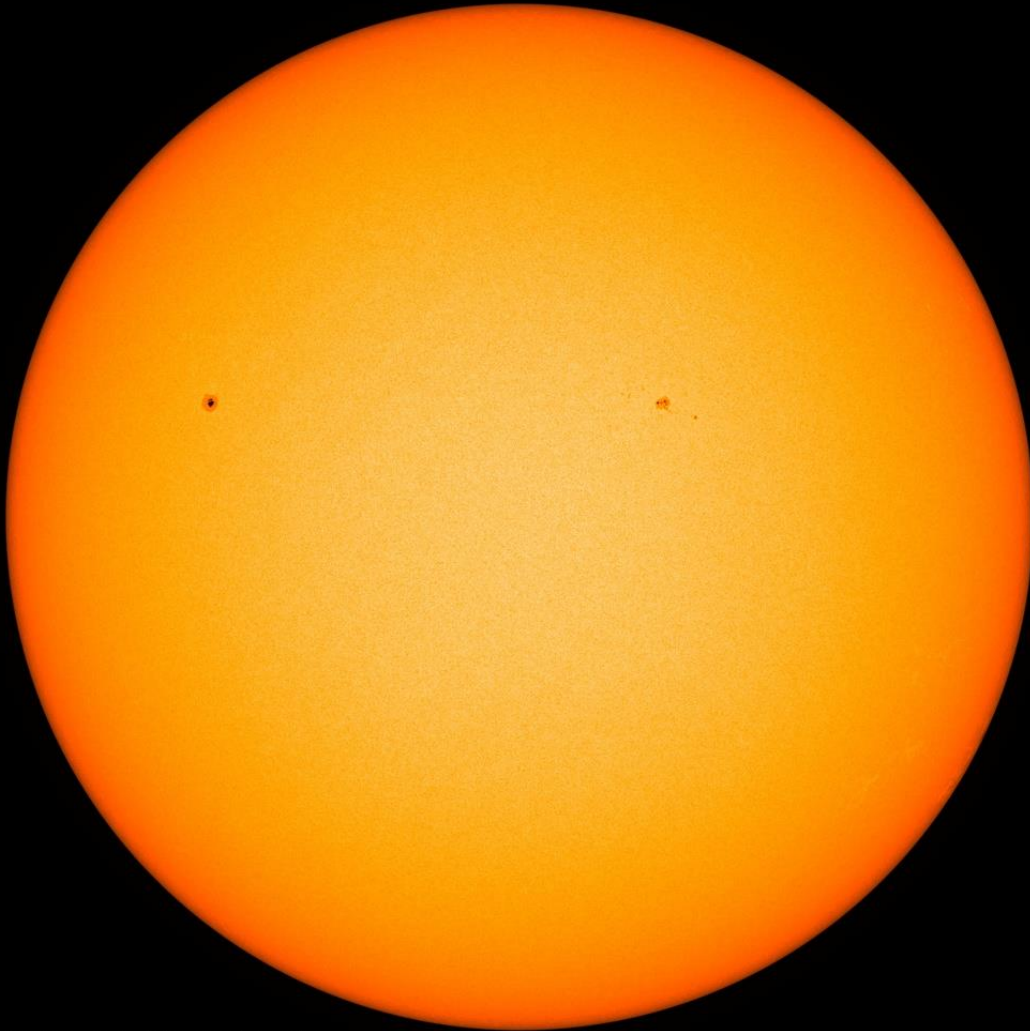
SDO/HMI Magnetogram 2021-11-02



SDO/HMI Quick-Look Magnetogram: 20211102\_114500

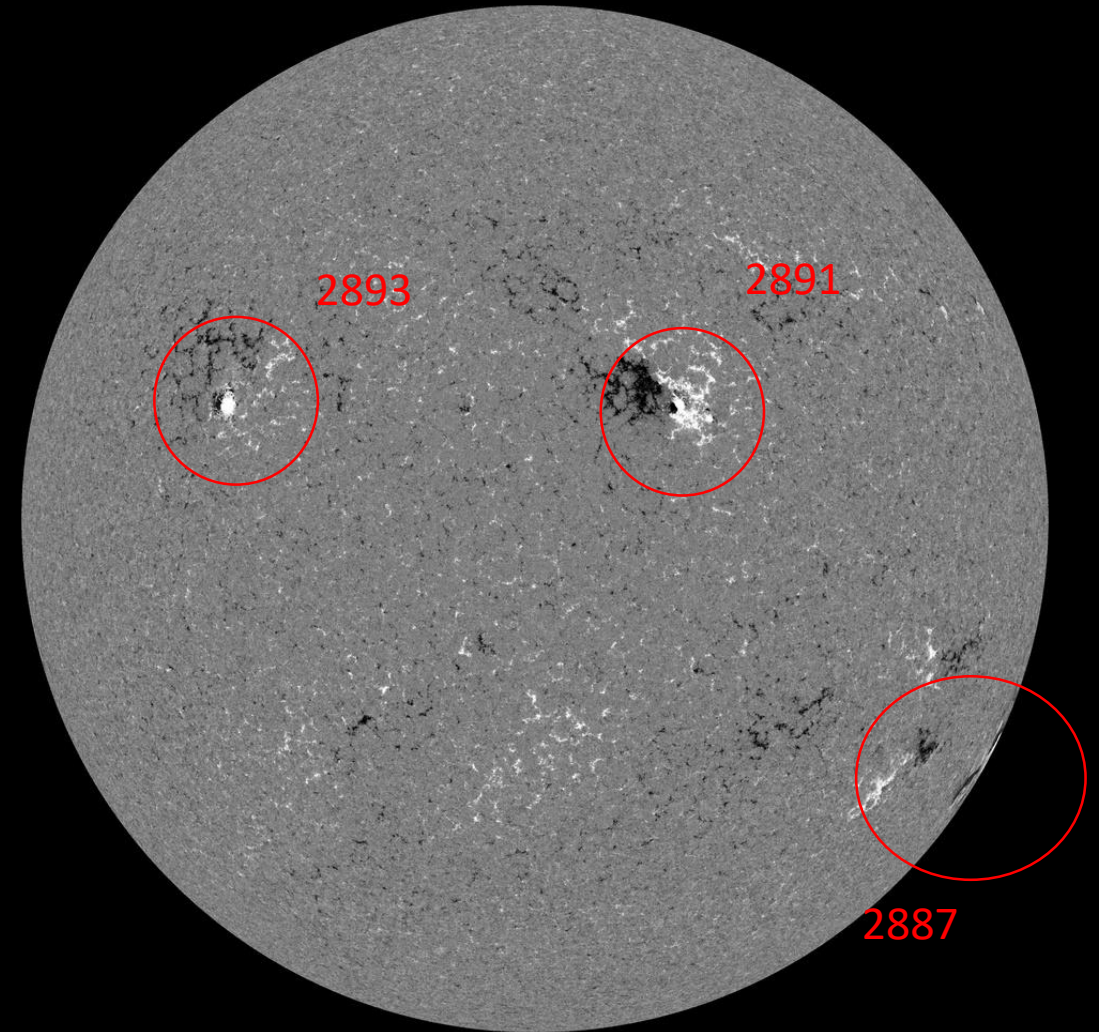
# Solar active regions

SDO/HMI White Light 2021-11-03



SDO/HMI Quick-Look Continuum: 20211103\_114500

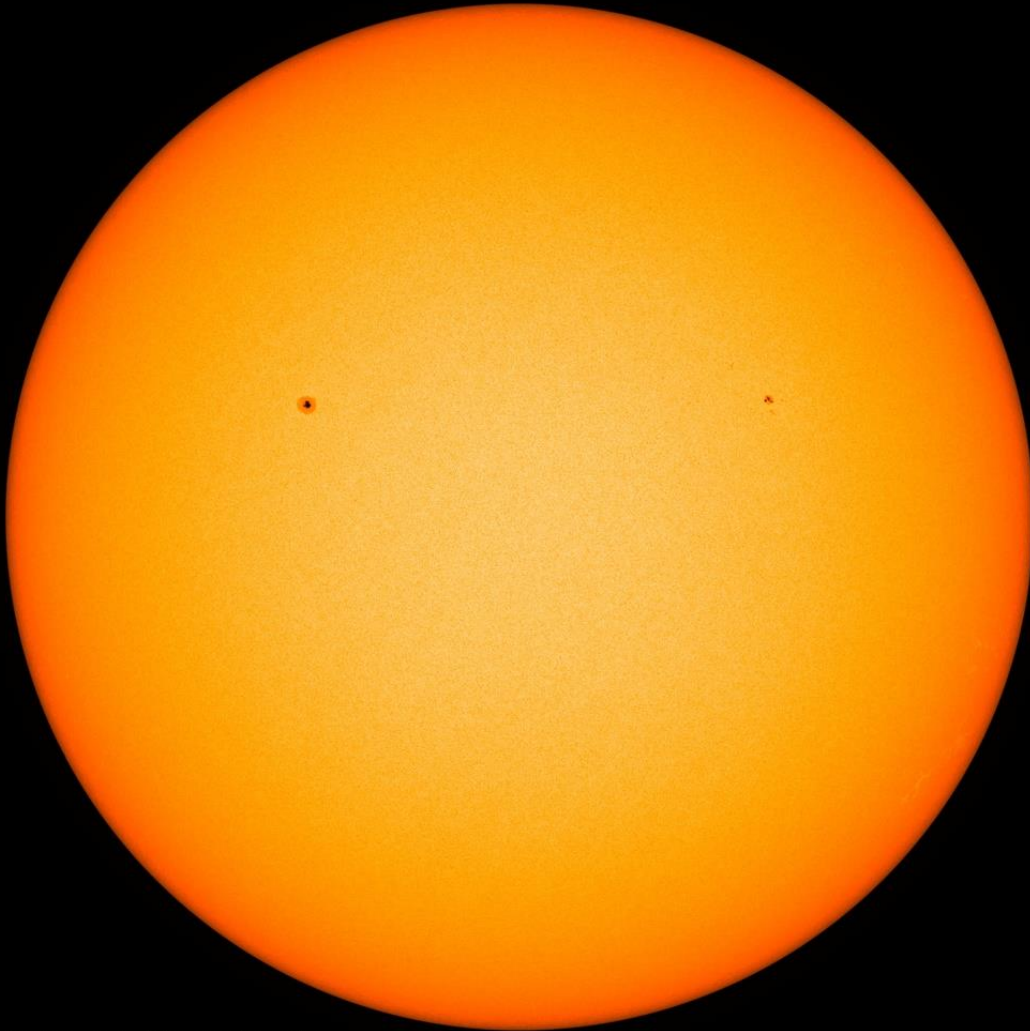
SDO/HMI Magnetogram 2021-11-03



SDO/HMI Quick-Look Magnetogram: 20211103\_114500

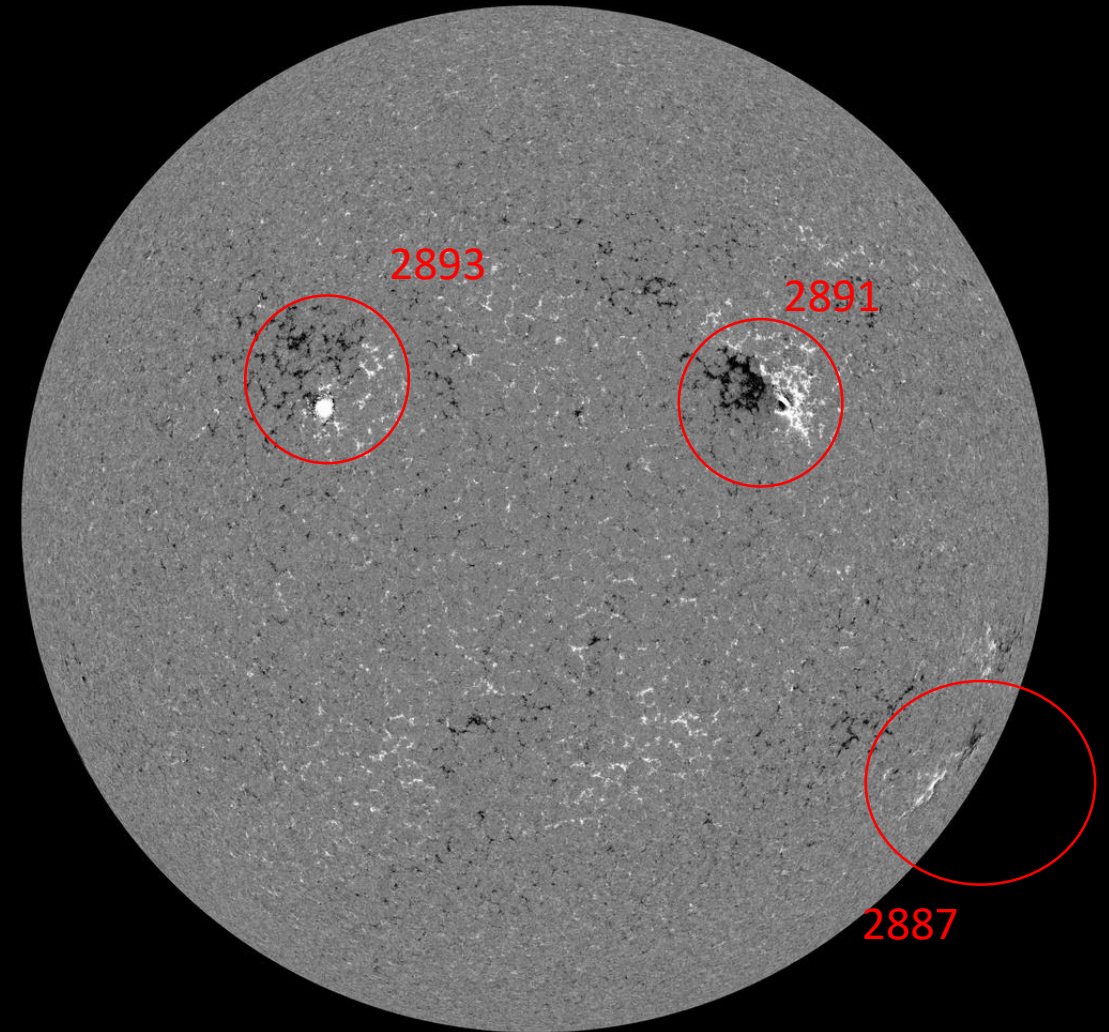
# Solar active regions

SDO/HMI White Light 2021-11-04



SDO/HMI Quick-Look Continuum: 20211104\_114500

SDO/HMI Magnetogram 2021-11-04

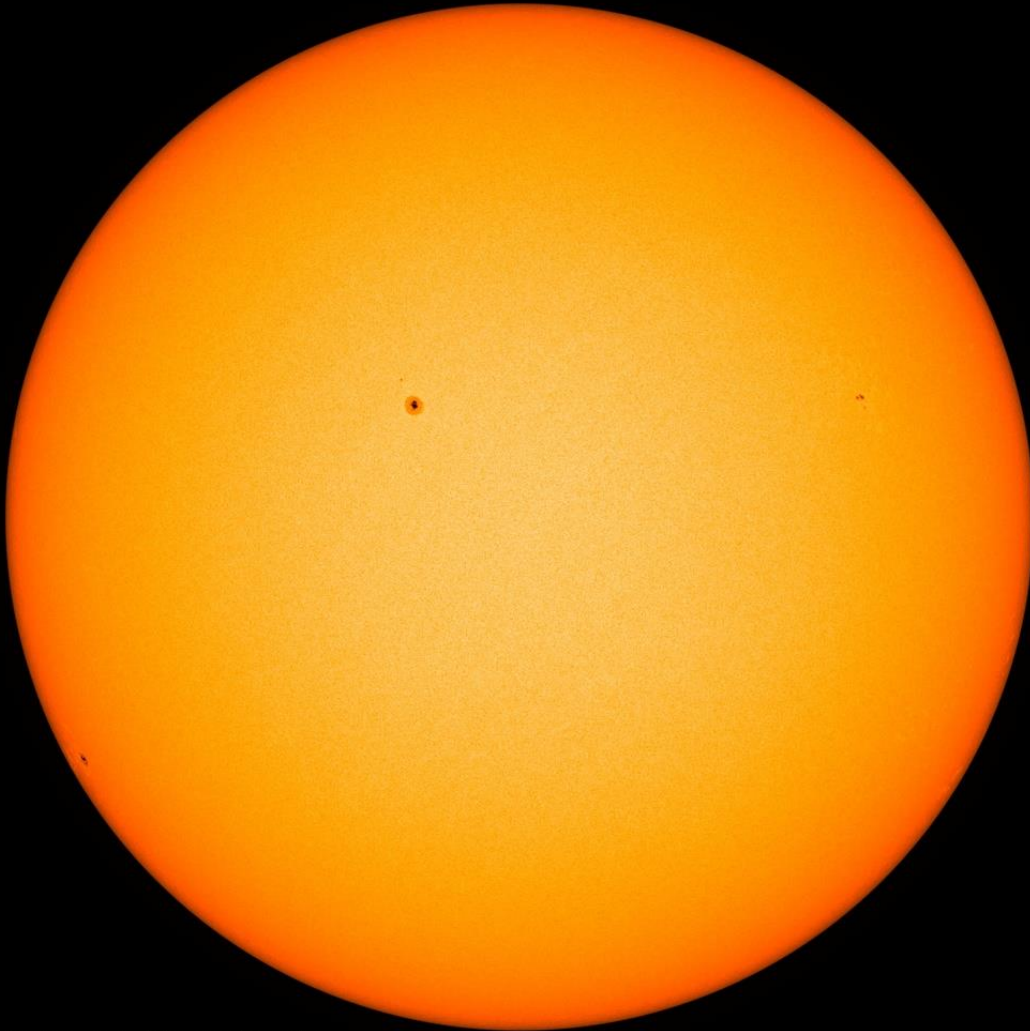


SDO/HMI Quick-Look Magnetogram: 20211104\_114500



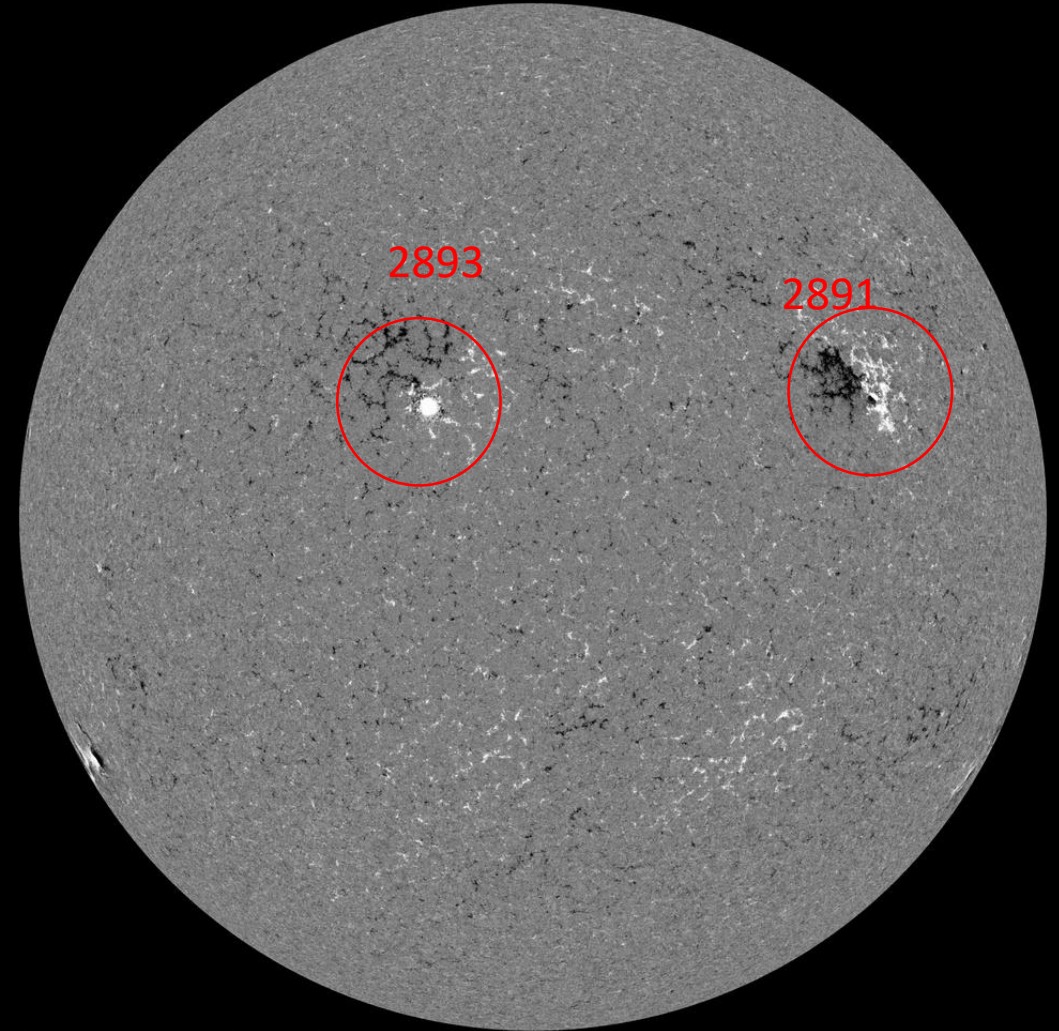
# Solar active regions

SDO/HMI White Light 2021-11-05



SDO/HMI Quick-Look Continuum: 20211105\_114500

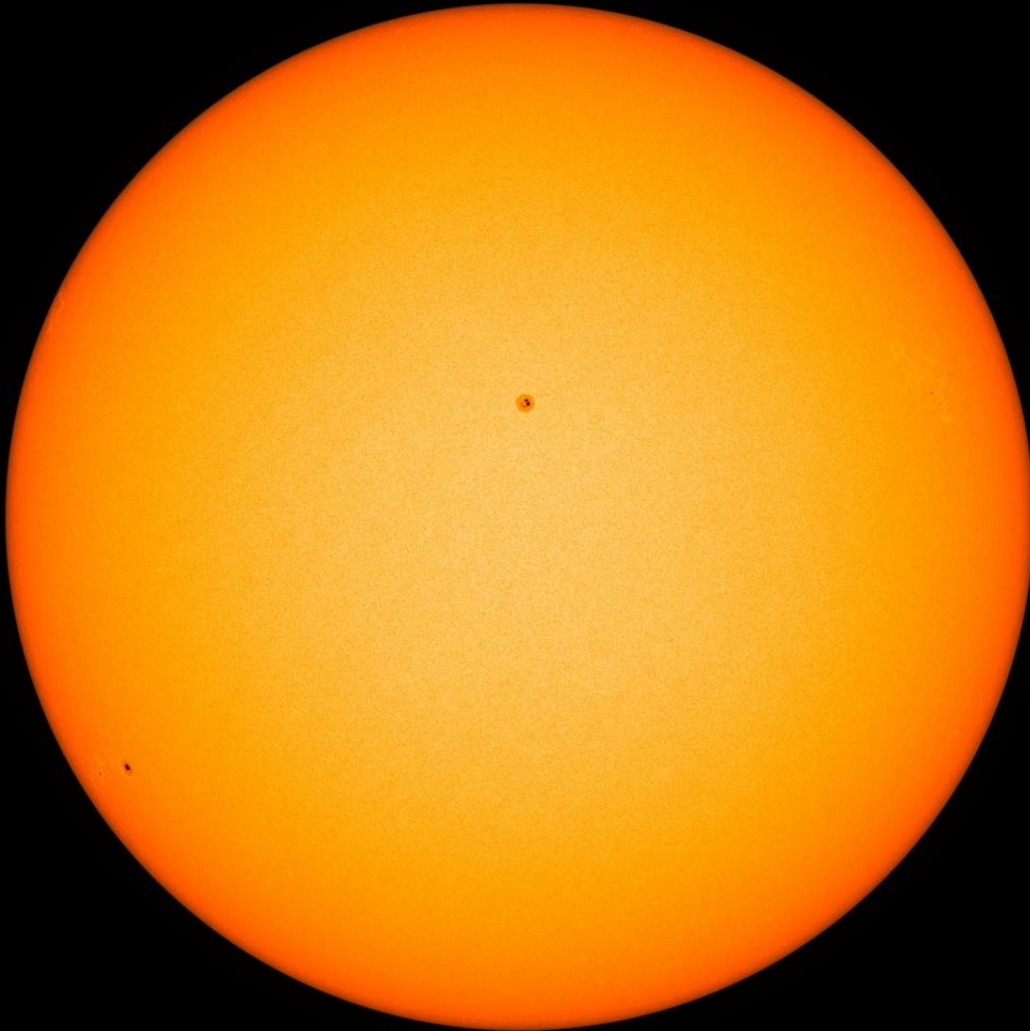
SDO/HMI Magnetogram 2021-11-05



SDO/HMI Quick-Look Magnetogram: 20211105\_114500

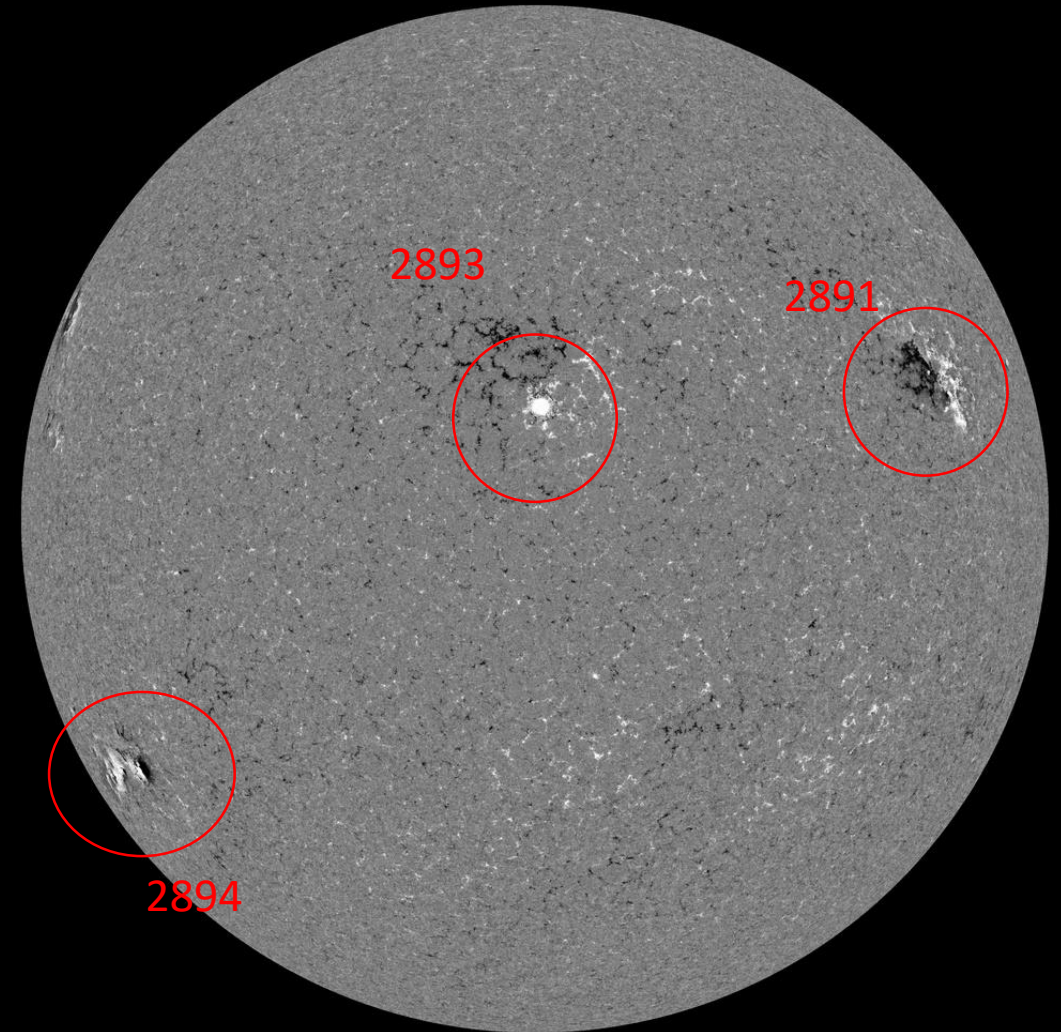
# Solar active regions

SDO/HMI White Light 2021-11-06



SDO/HMI Quick-Look Continuum: 20211106\_114500

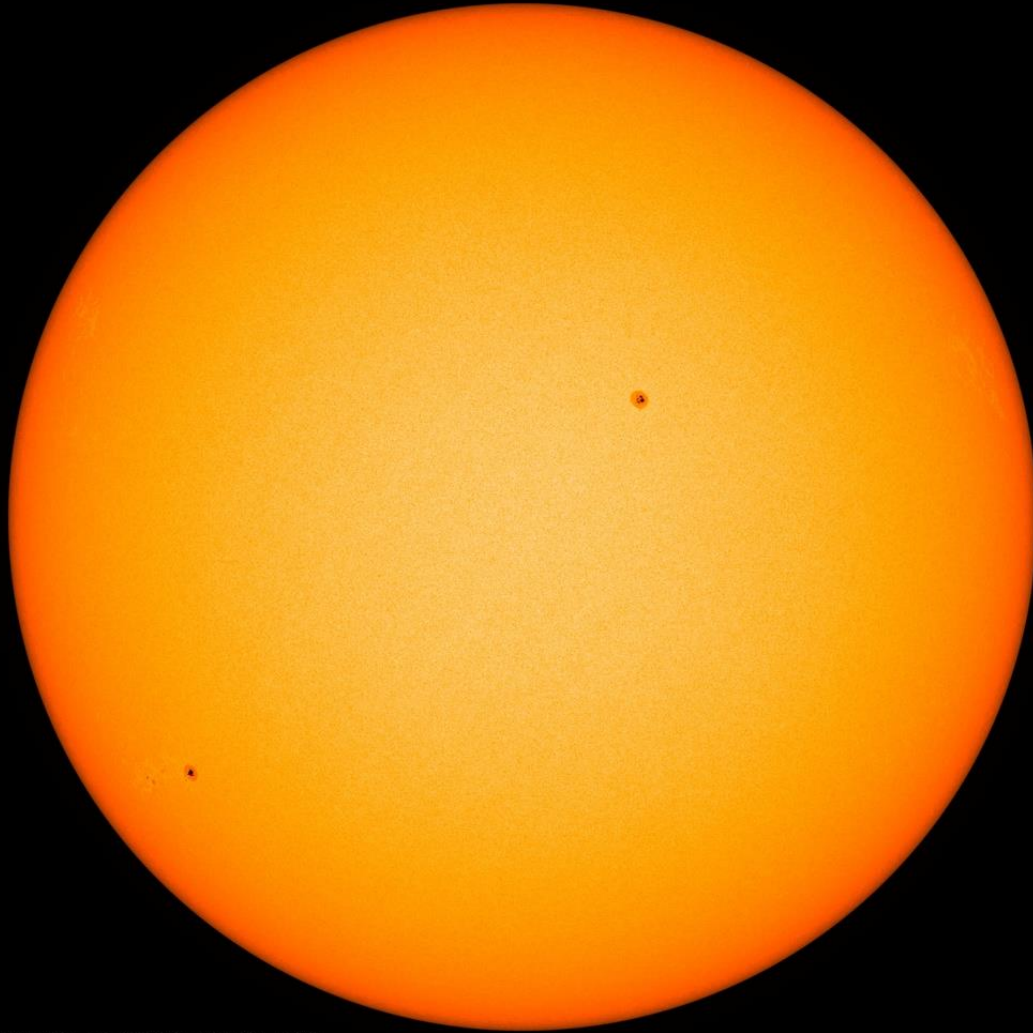
SDO/HMI Magnetogram 2021-11-06



SDO/HMI Quick-Look Magnetogram: 20211106\_114500

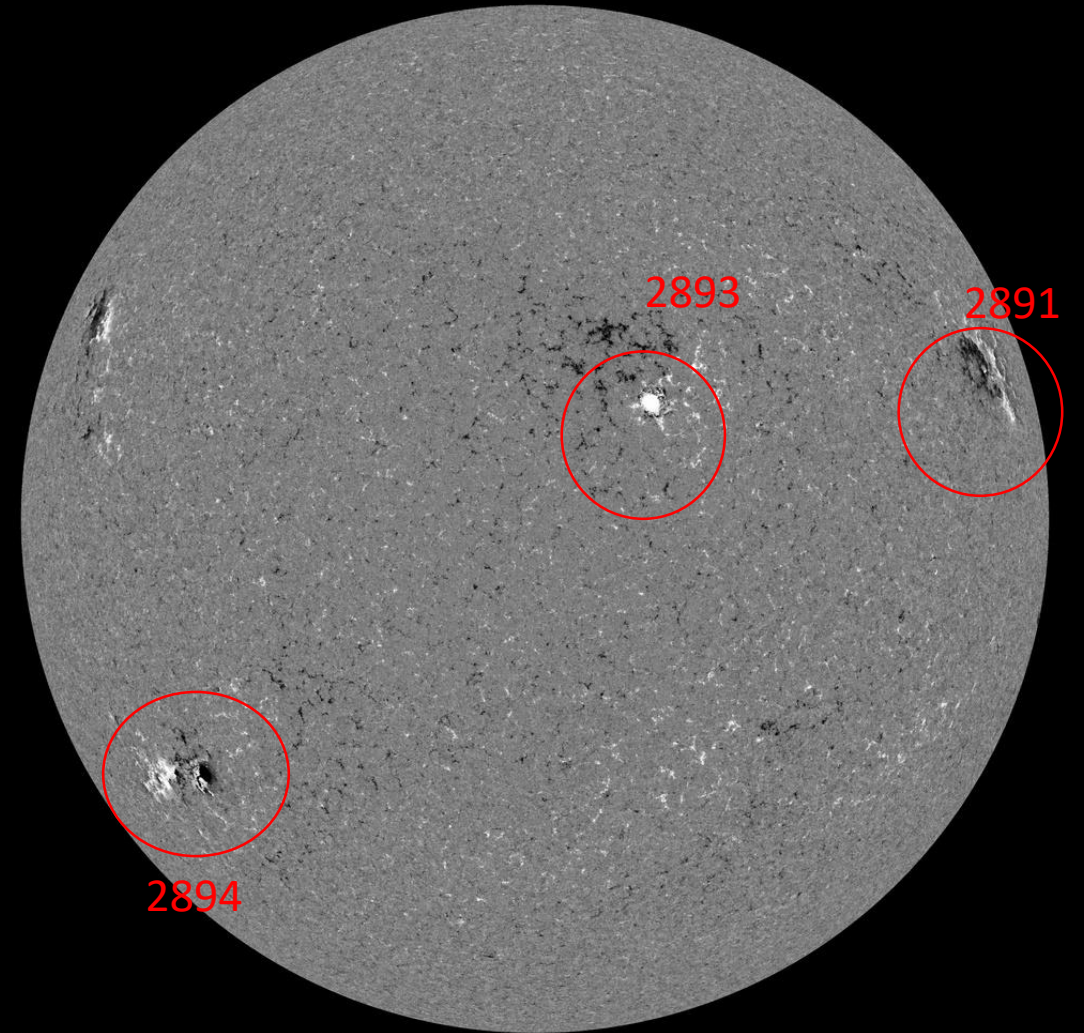
# Solar active regions

SDO/HMI White Light 2021-11-07



SDO/HMI Quick-Look Continuum: 20211107\_114500

SDO/HMI Magnetogram 2021-11-07

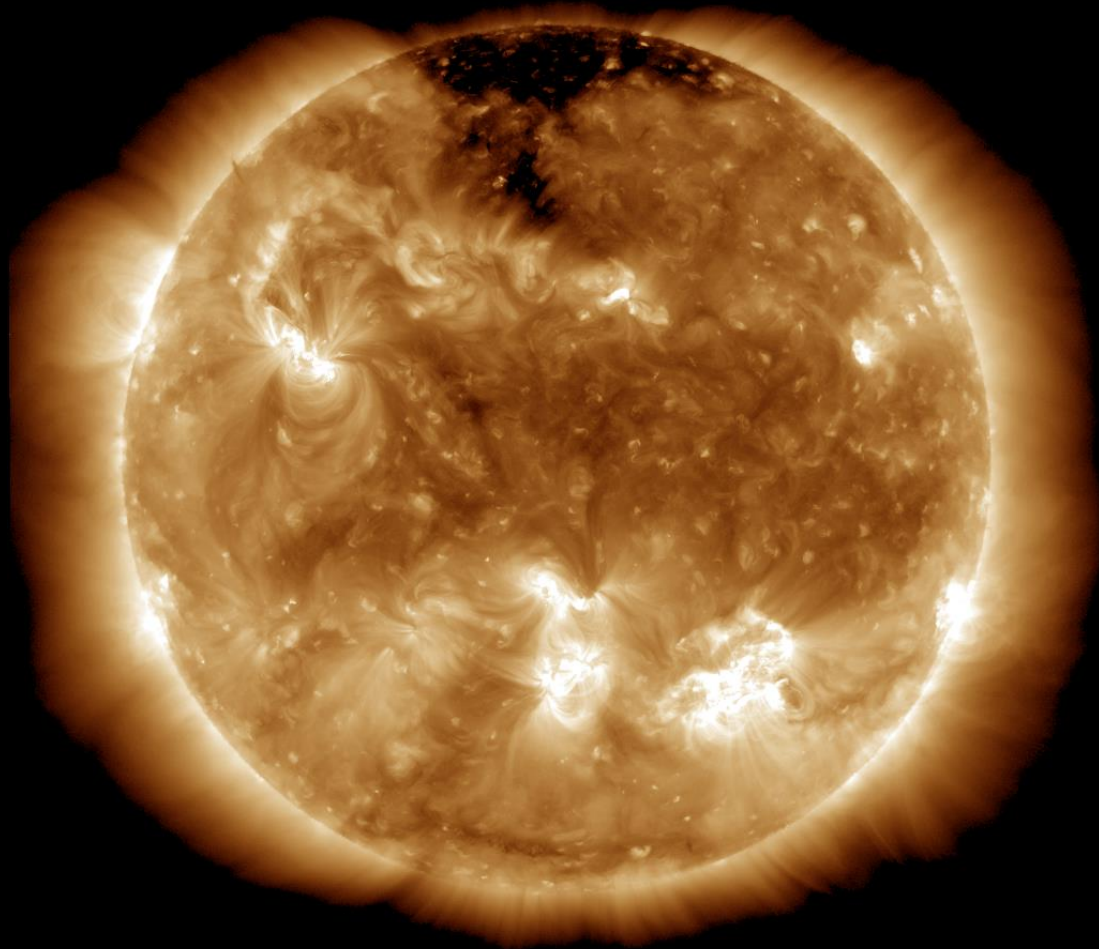


SDO/HMI Quick-Look Magnetogram: 20211107\_114500

# Coronal holes

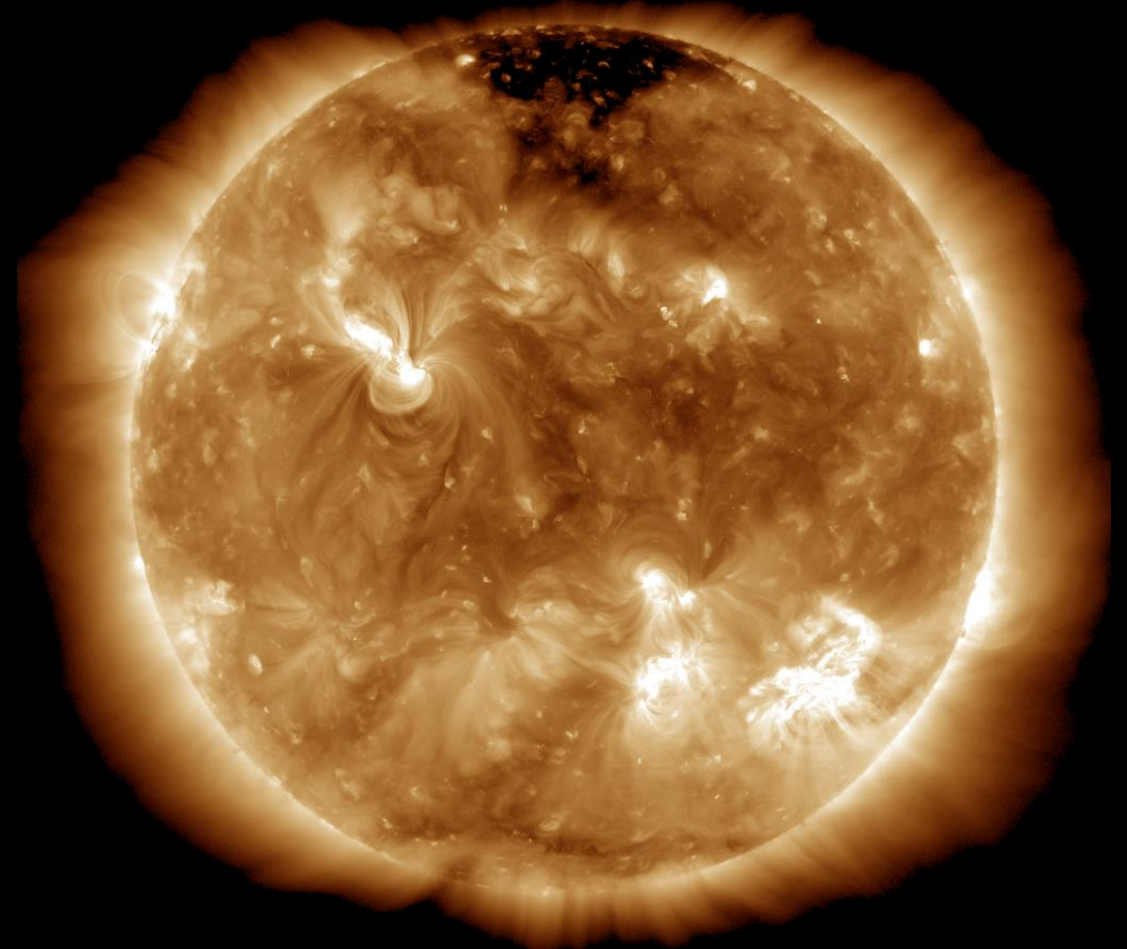
SDO/AIA 19.3 nm 2021-10-30

SDO/AIA AIA 193Å 2021-10-30T12:00:05.843



SDO/AIA 19.3 nm 2021-10-31

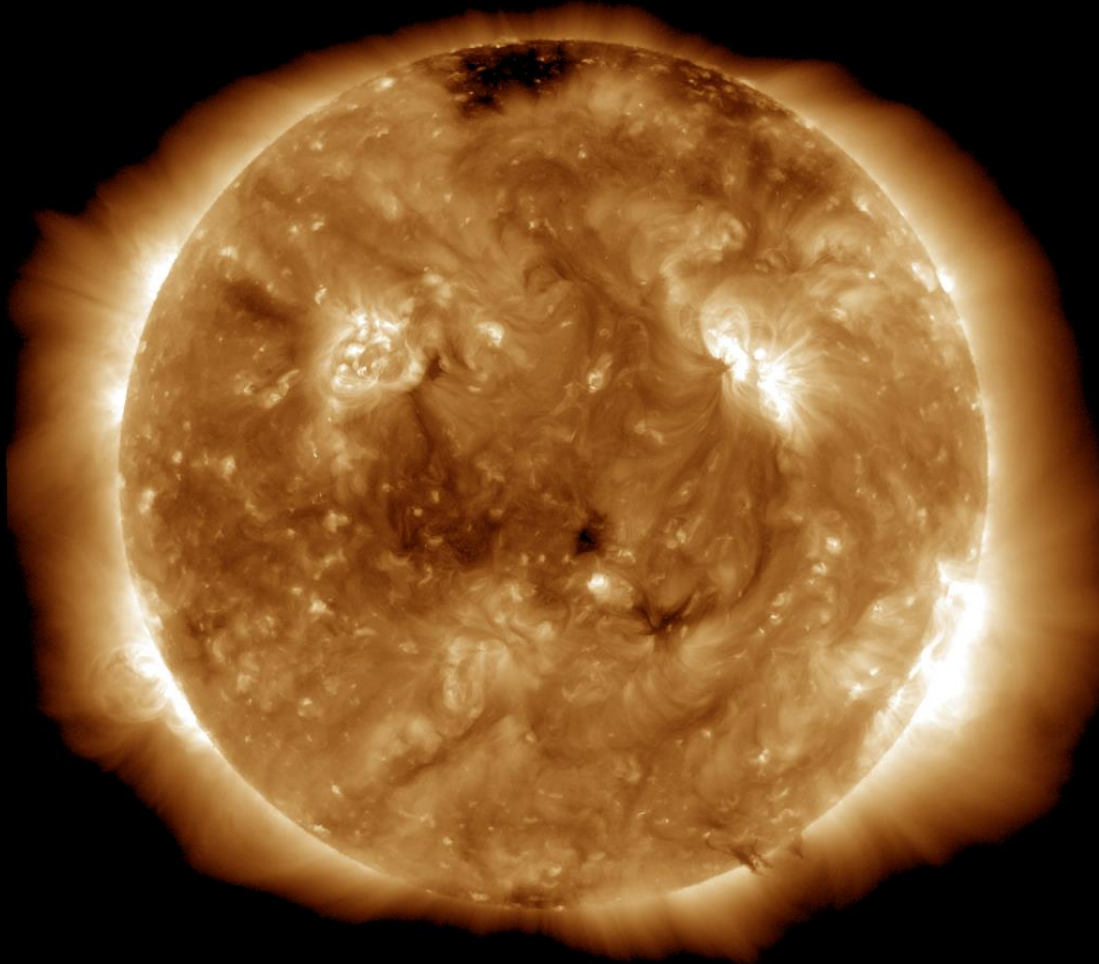
SDO/AIA AIA 193Å 2021-10-31T12:00:05.844



# Coronal holes

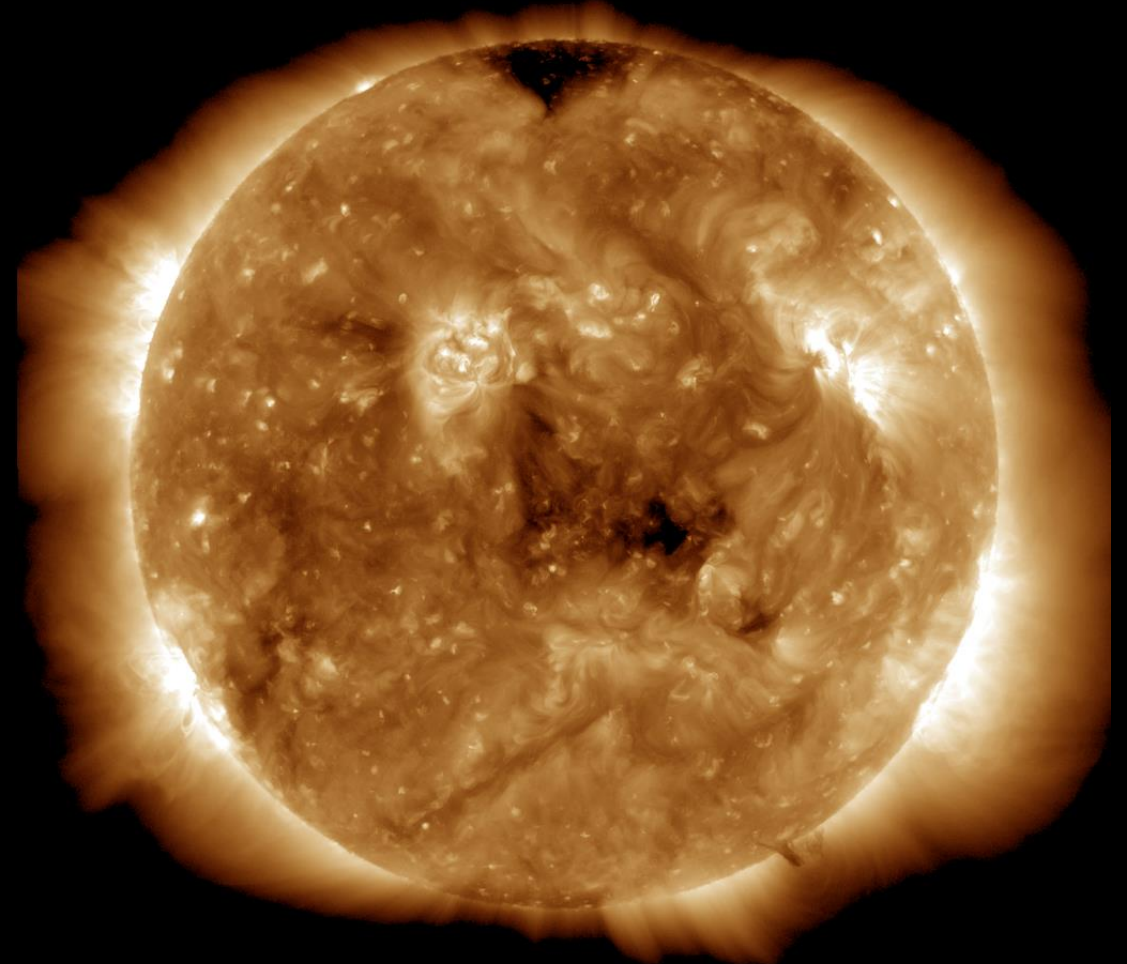
SDO/AIA 19.3 nm 2021-11-04

SDO/AIA AIA 193Å 2021-11-04T12:00:05.846



SDO/AIA 19.3 nm 2021-11-05

SDO/AIA AIA 193Å 2021-11-05T12:00:05.844



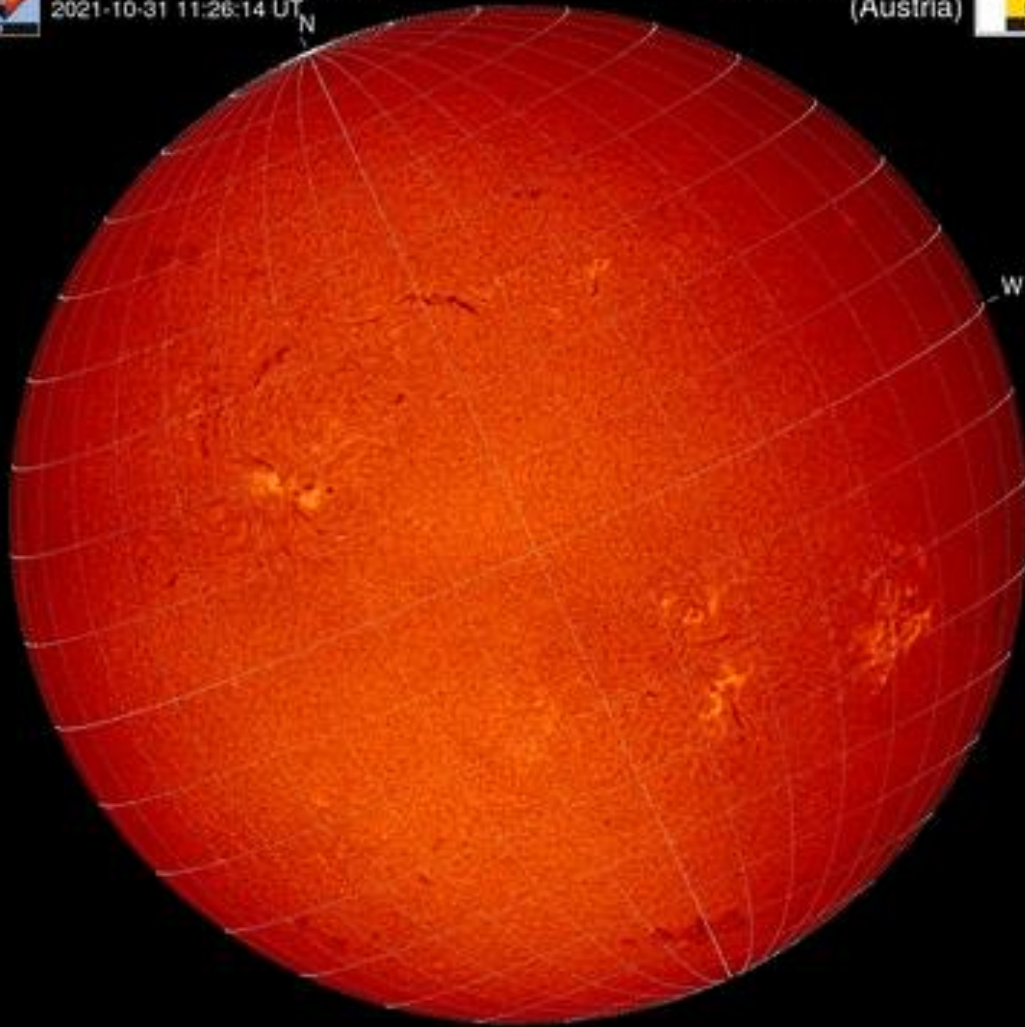
# Filaments & Filament eruptions

H-alpha 2021-10-31



Kanzelhöhe Observatory  
2021-10-31 11:26:14 UT

University of Graz  
(Austria)

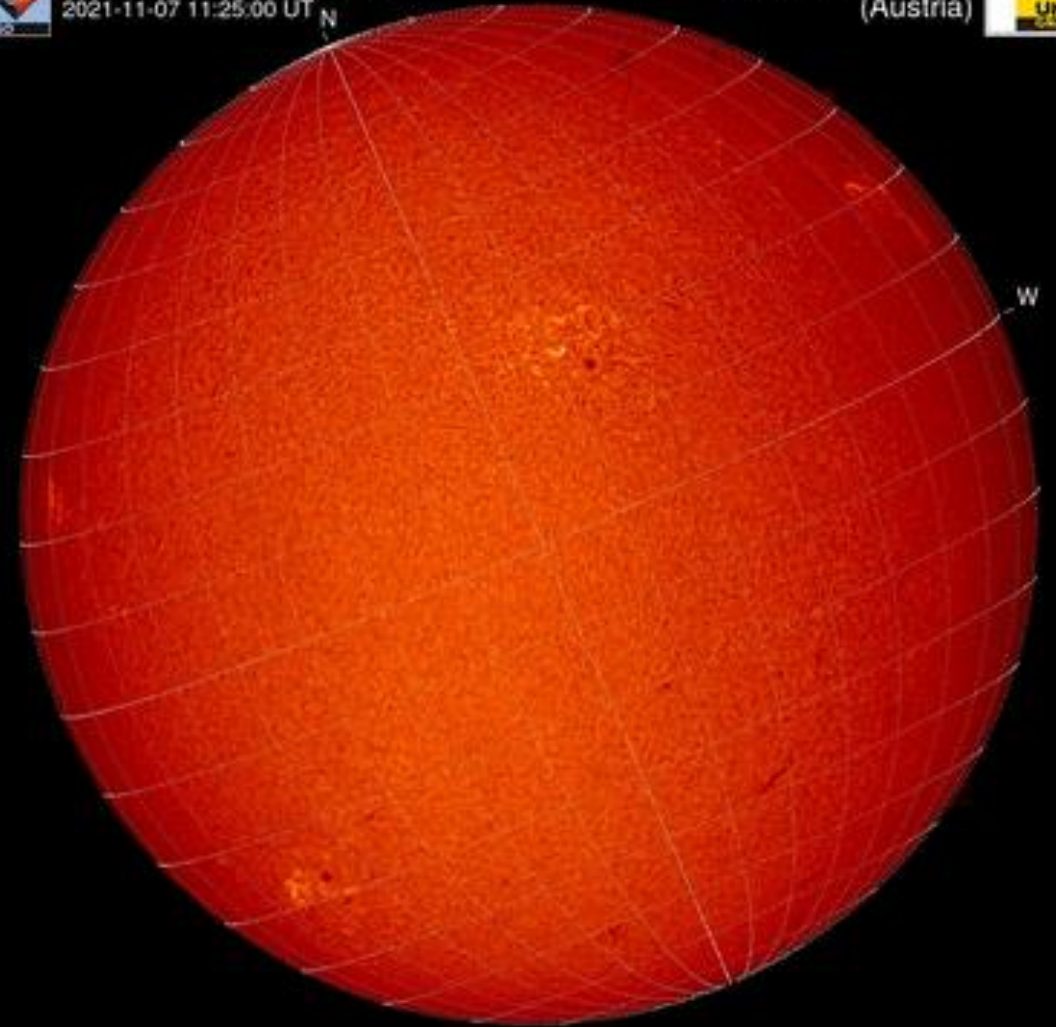


H-alpha 2021-11-07



Kanzelhöhe Observatory  
2021-11-07 11:25:00 UT

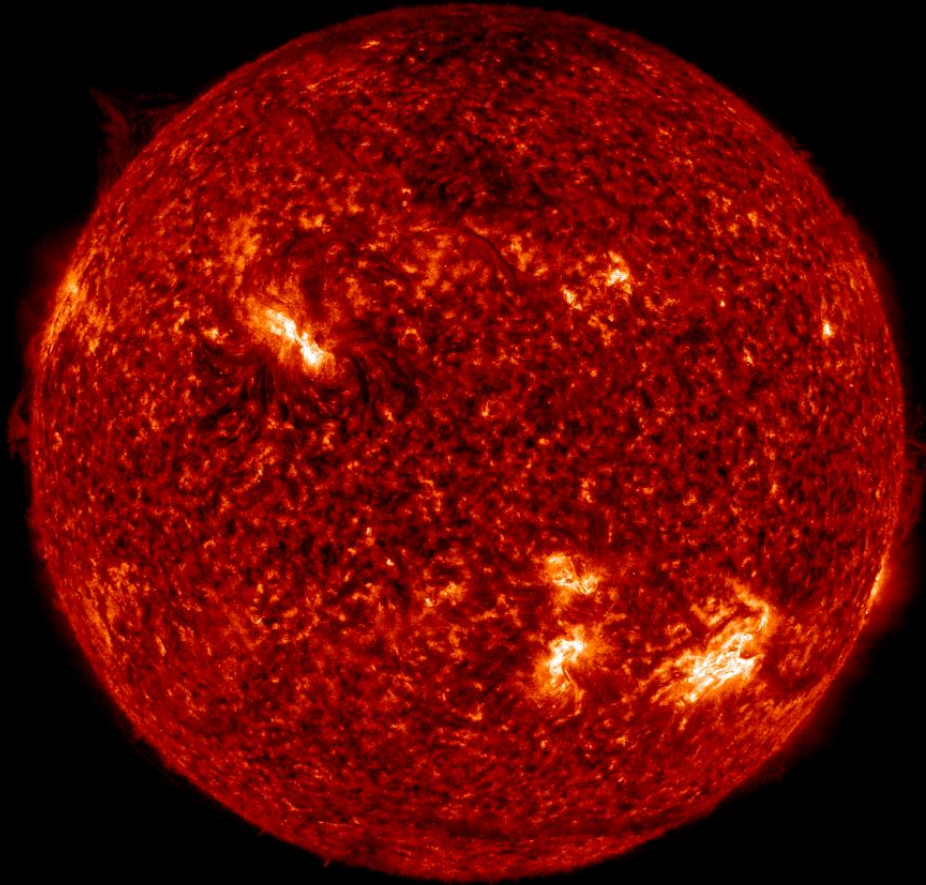
University of Graz  
(Austria)



# Filaments

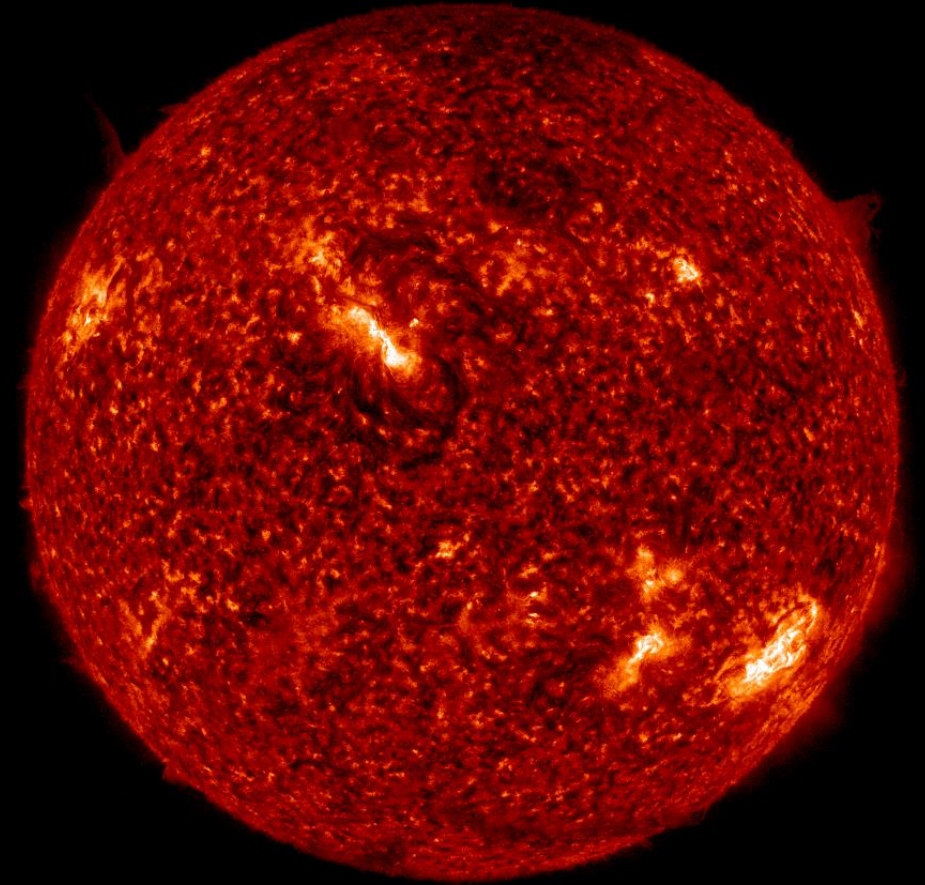
SDO/AIA 30.4 nm 2021-10-31

SDO/AIA AIA 304Å 2021-10-31T12:00:06.575



SDO/AIA 30.4 nm 2021-11-01

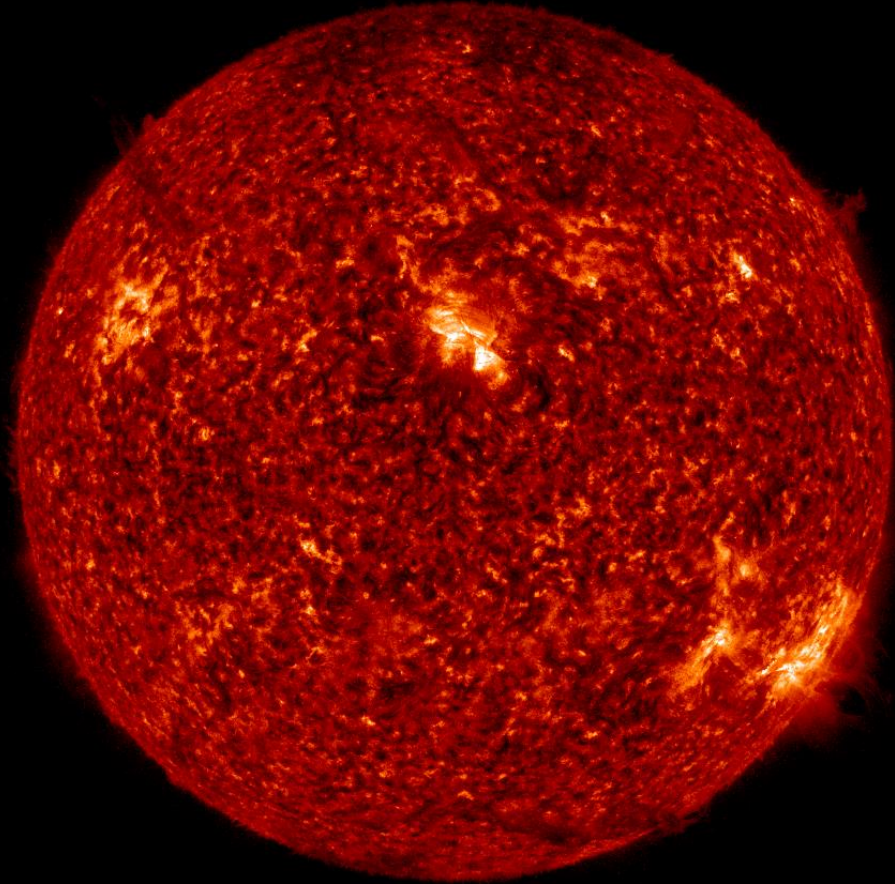
SDO/AIA AIA 304Å 2021-11-01T12:00:06.584



# Filaments

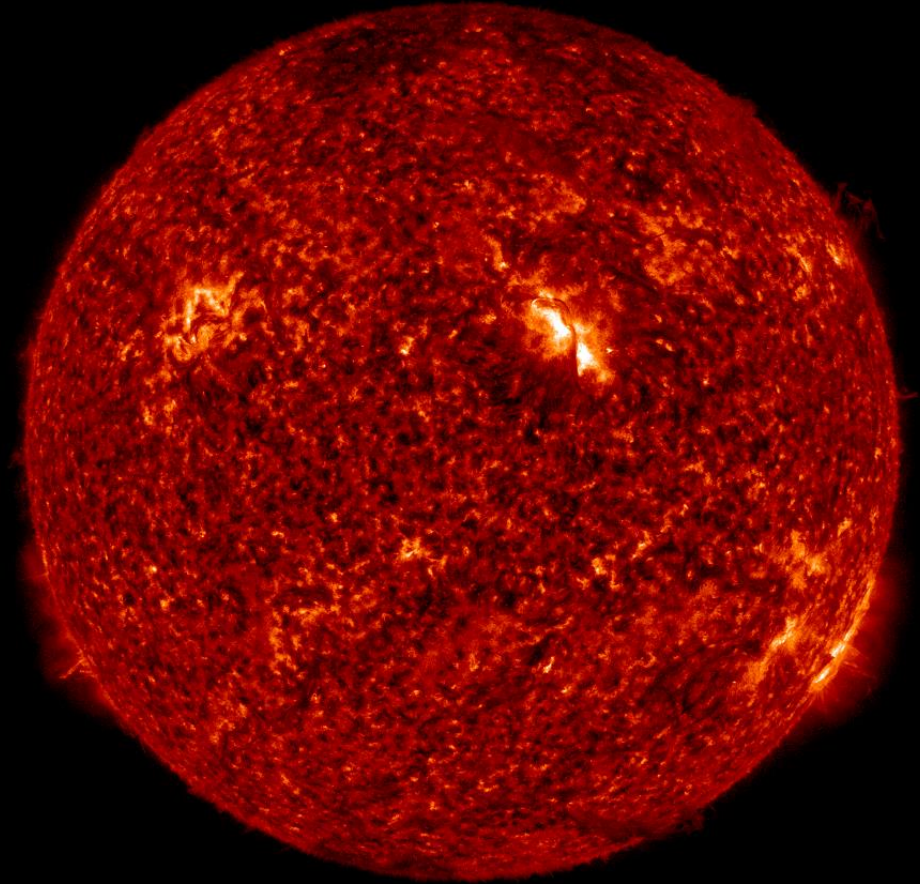
SDO/AIA 30.4 nm 2021-11-02

SDO/AIA AIA 304Å 2021-11-02T12:00:06.581



SDO/AIA 30.4 nm 2021-11-03

SDO/AIA AIA 304Å 2021-11-03T12:00:06.572

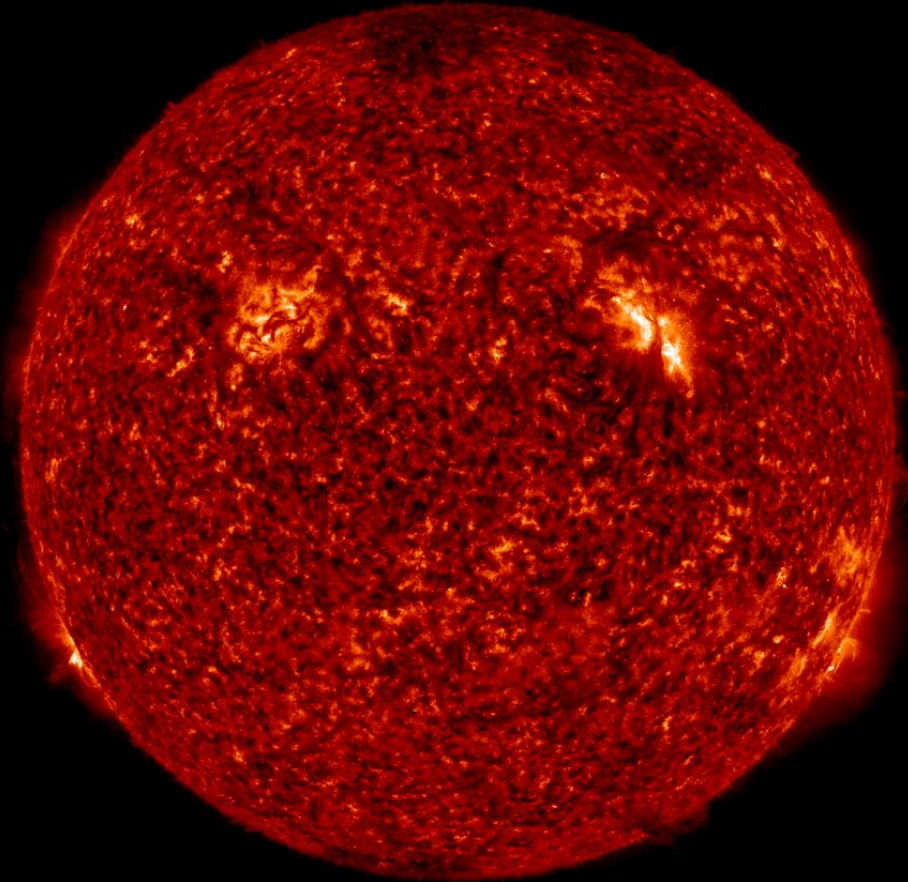




# Filaments

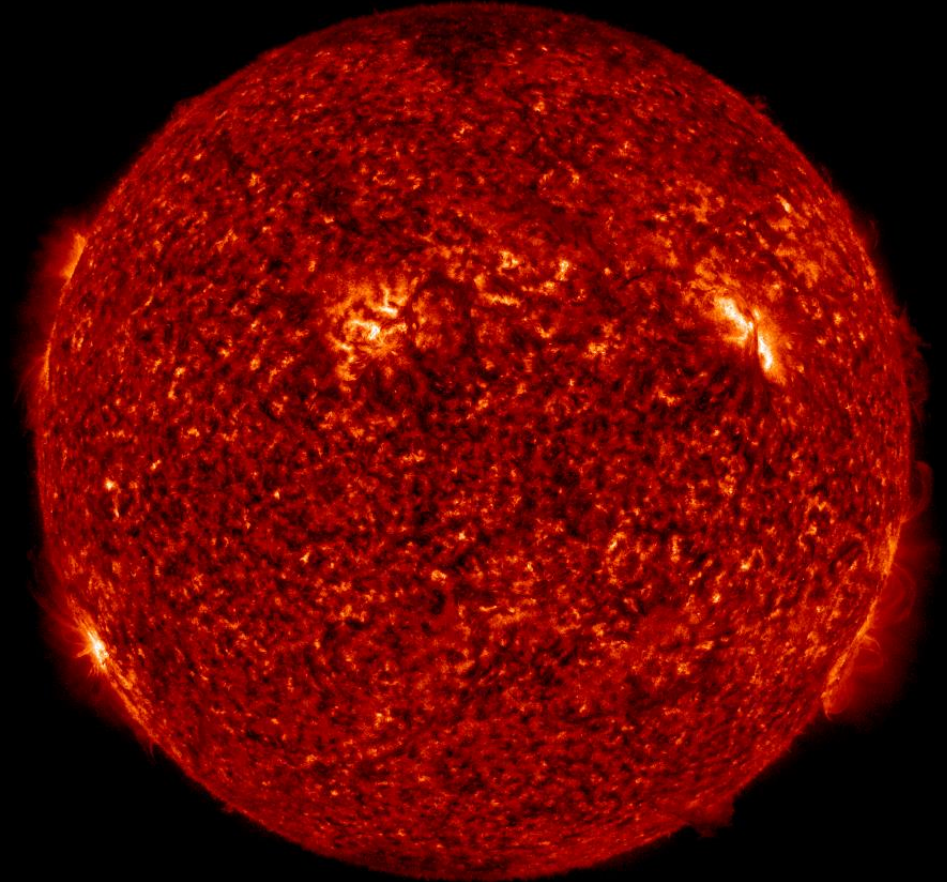
SDO/AIA 30.4 nm 2021-11-04

SDO/AIA AIA 304Å 2021-11-04T12:00:06.580



SDO/AIA 30.4 nm 2021-11-05

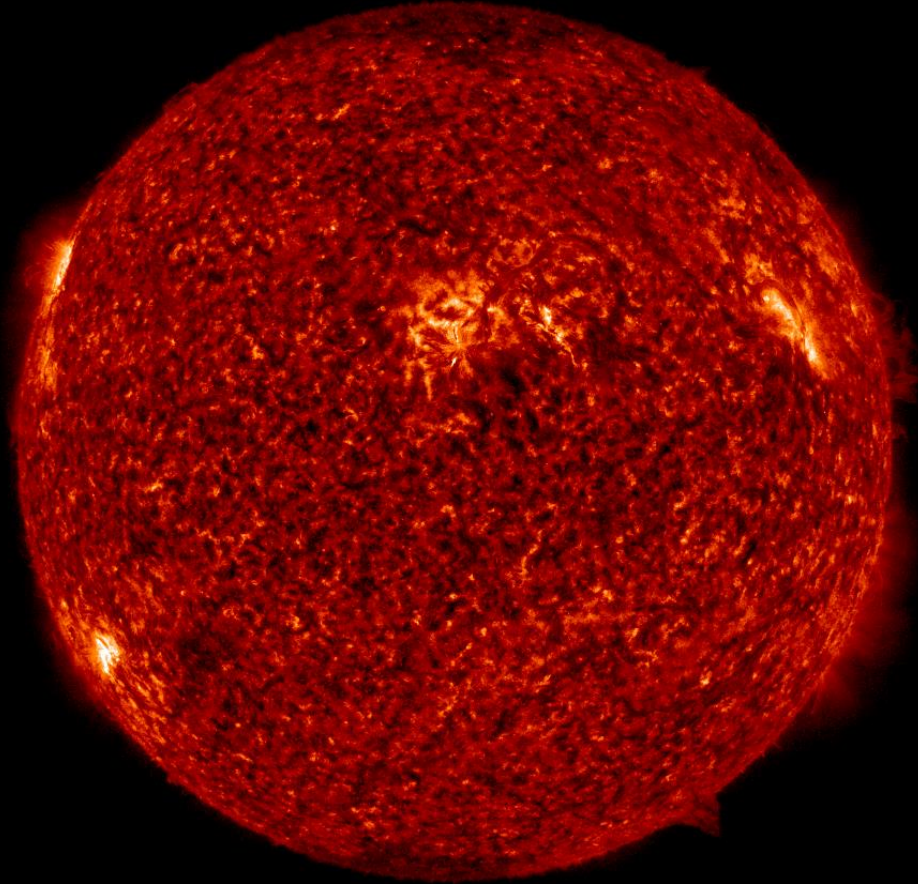
SDO/AIA AIA 304Å 2021-11-05T12:00:06.572



# Filaments

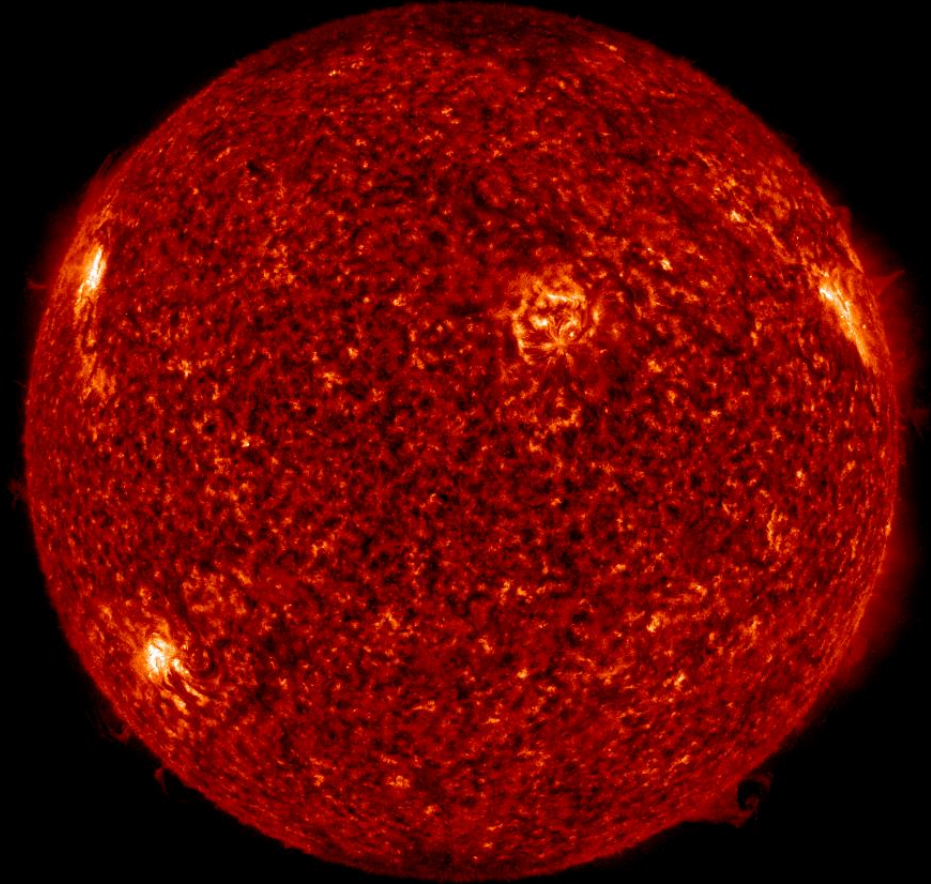
SDO/AIA 30.4 nm 2021-11-06

SDO/AIA AIA 304Å 2021-11-06T12:00:06.572

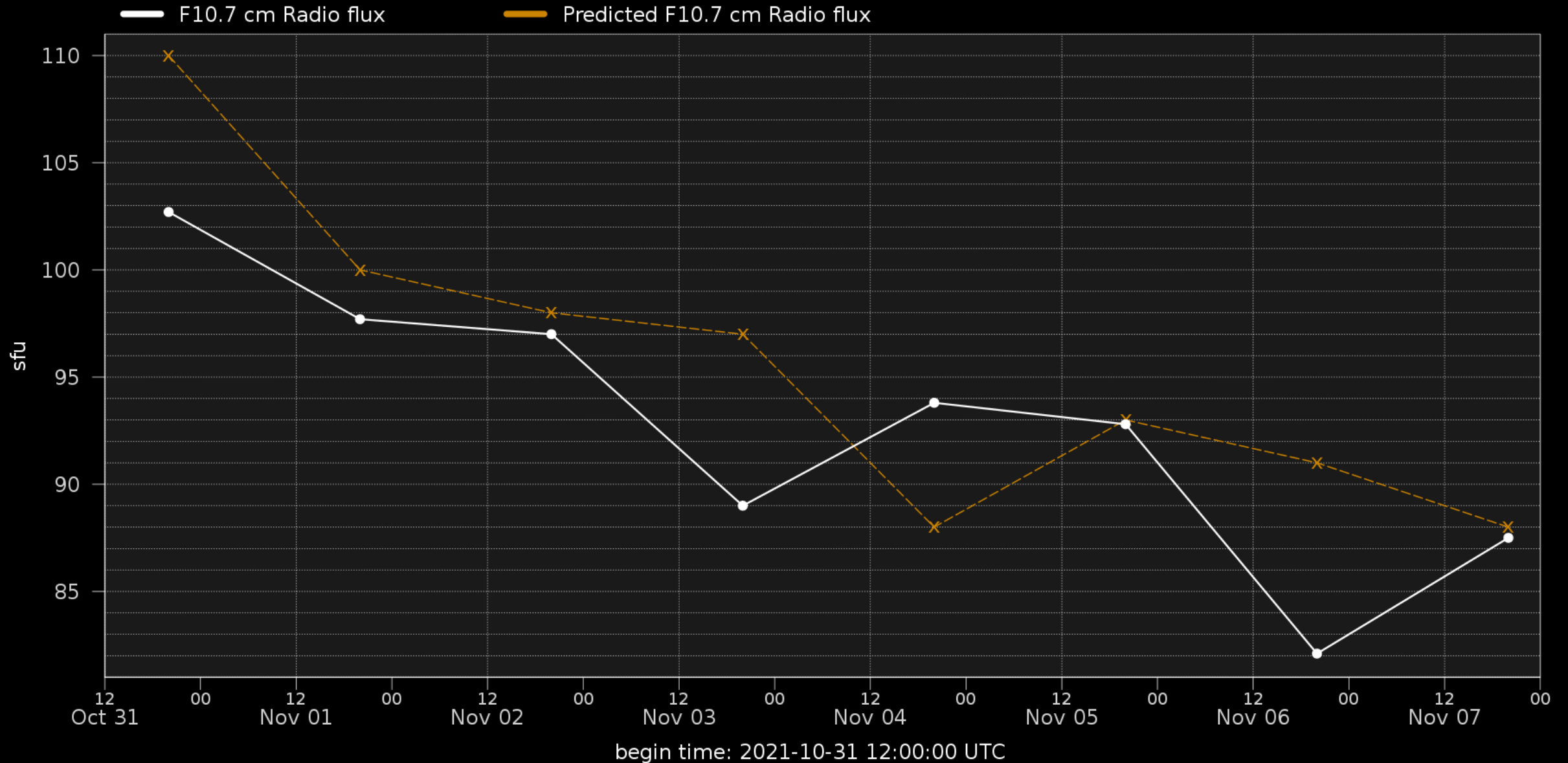


SDO/AIA 30.4 nm 2021-11-07

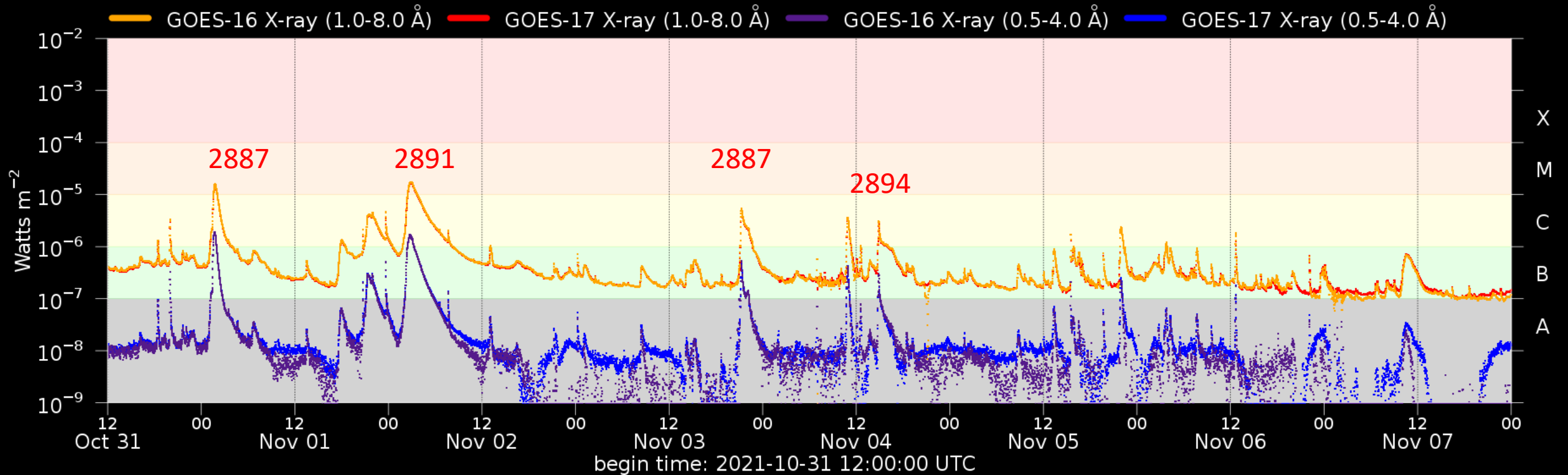
SDO/AIA AIA 304Å 2021-11-07T12:00:06.573



# Solar F10.7cm radio flux



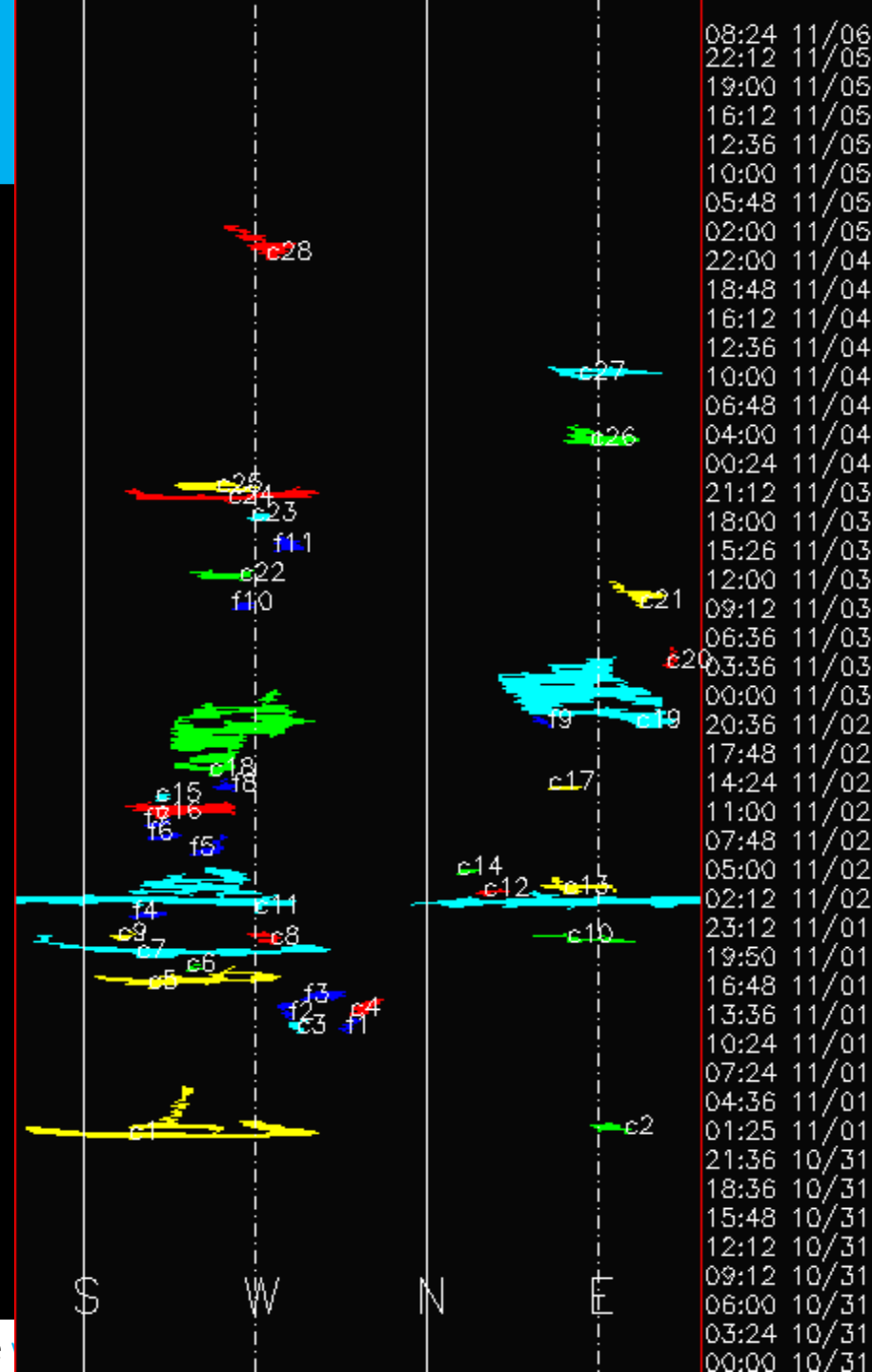
# Flaring activity



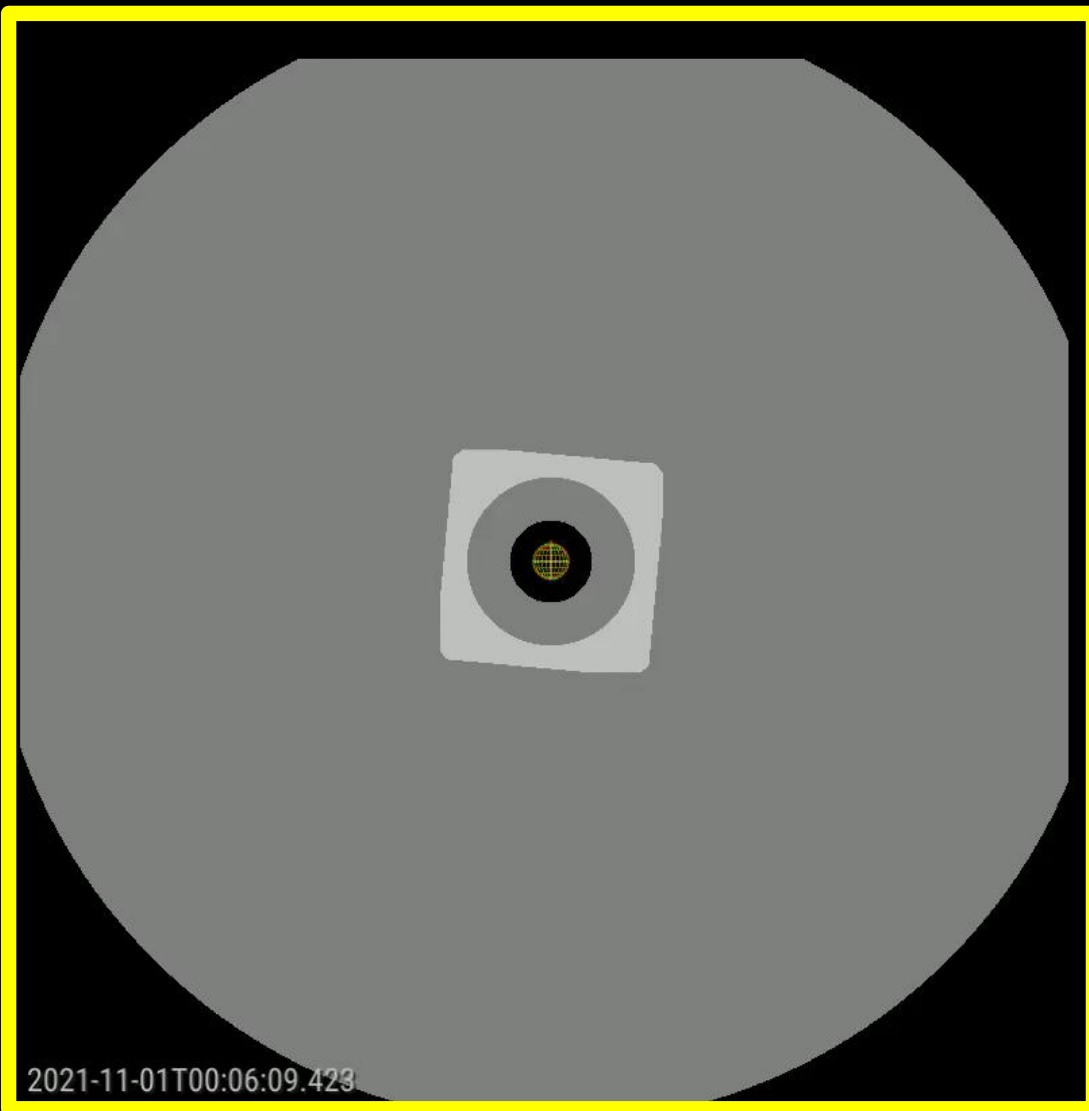
Probabilities (%) and occurrences (#) of C/M/X-flares daily, from noon to noon:

Issue date	2021-10-31	2021-11-01	2021-11-02	2021-11-03	2021-11-04	2021-11-05	2021-11-06	2021-11-07
Probability (%)	98 35 03	80 15 01	80 20 01	70 15 01	60 05 01	55 05 01	50 01 01	40 01 01
Observed (#)	02 01 00	04 00 00	00 00 00	02 00 00	02 00 00	03 00 00	01 00 00	00 00 00

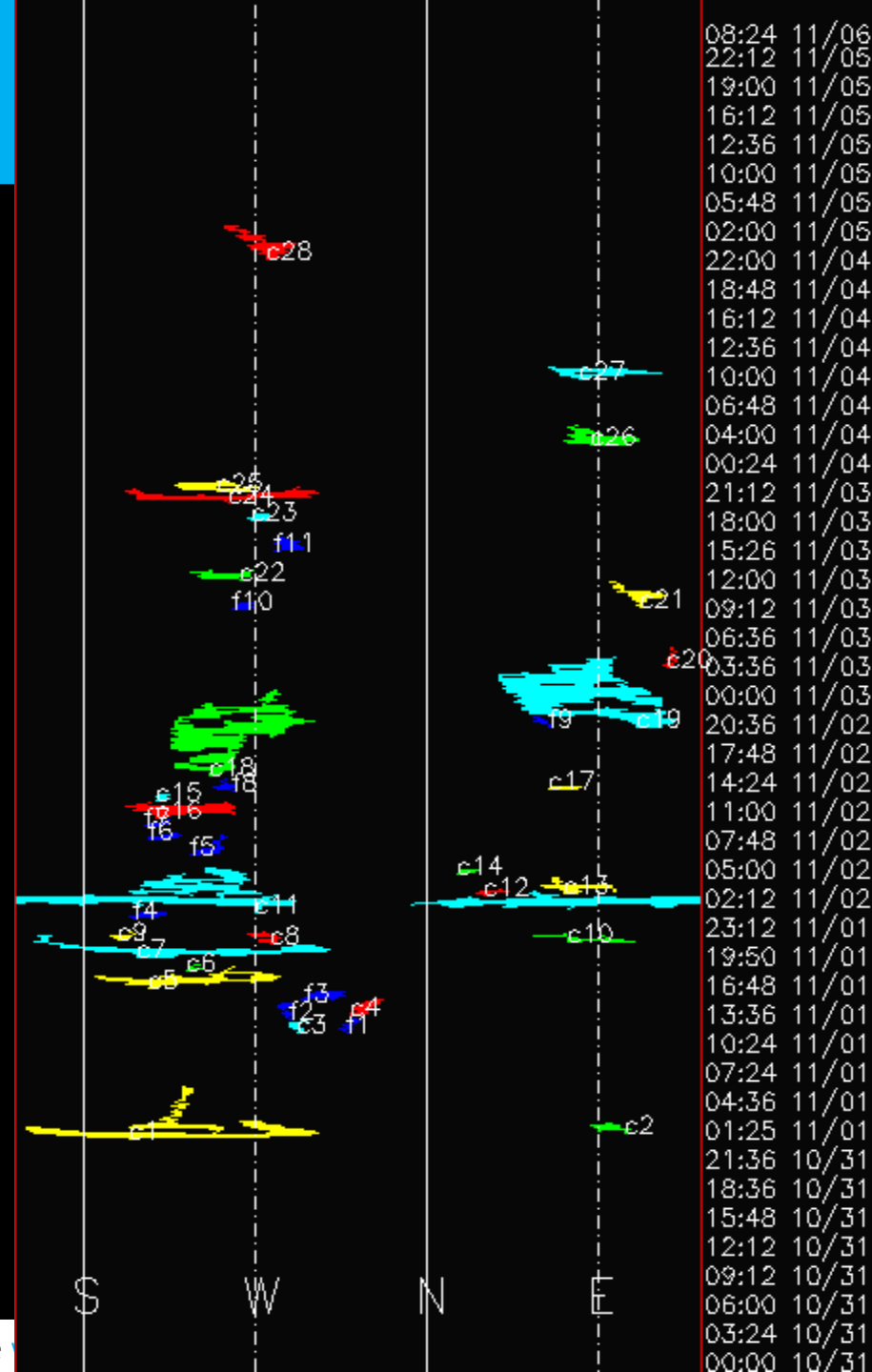
# Coronal Mass Ejections



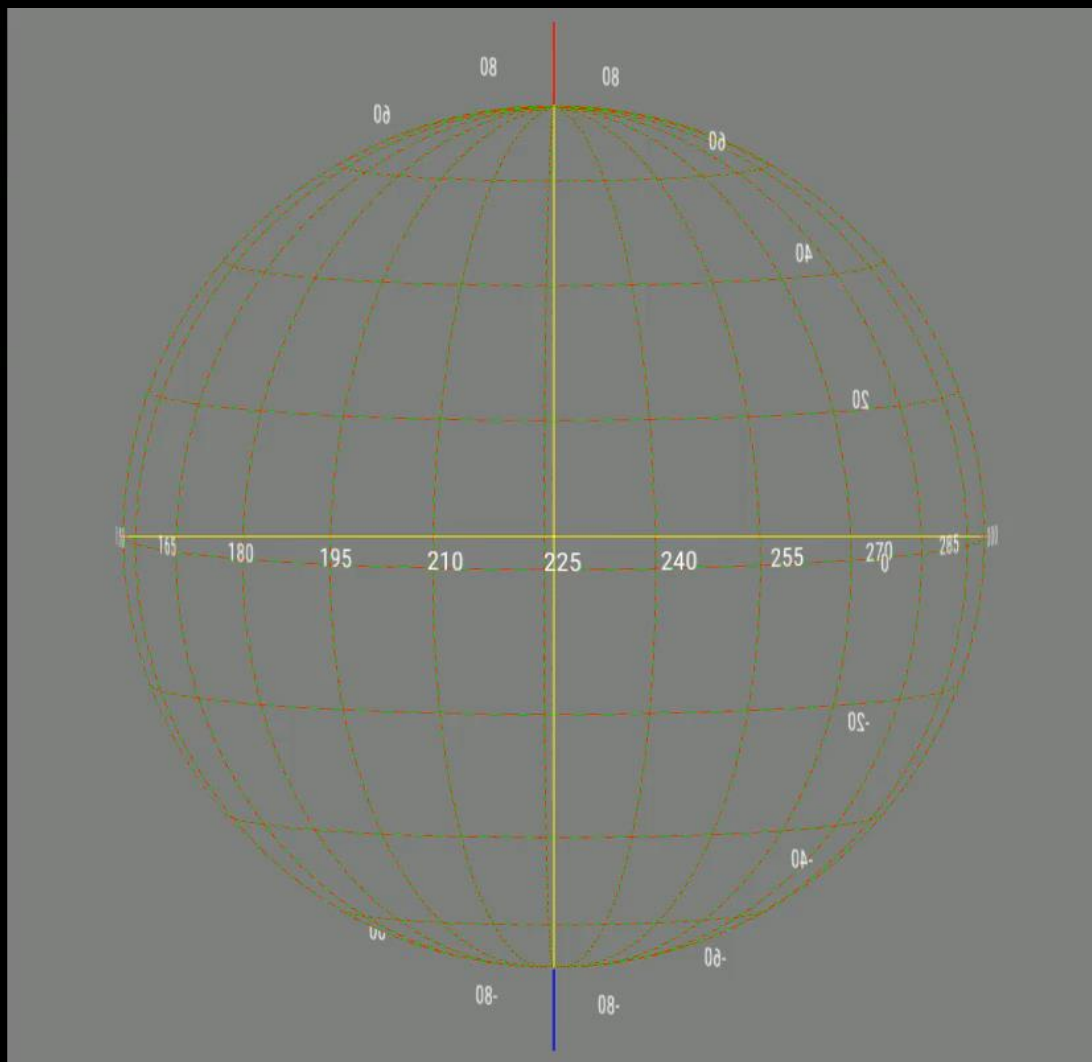
# Coronal Mass Ejections



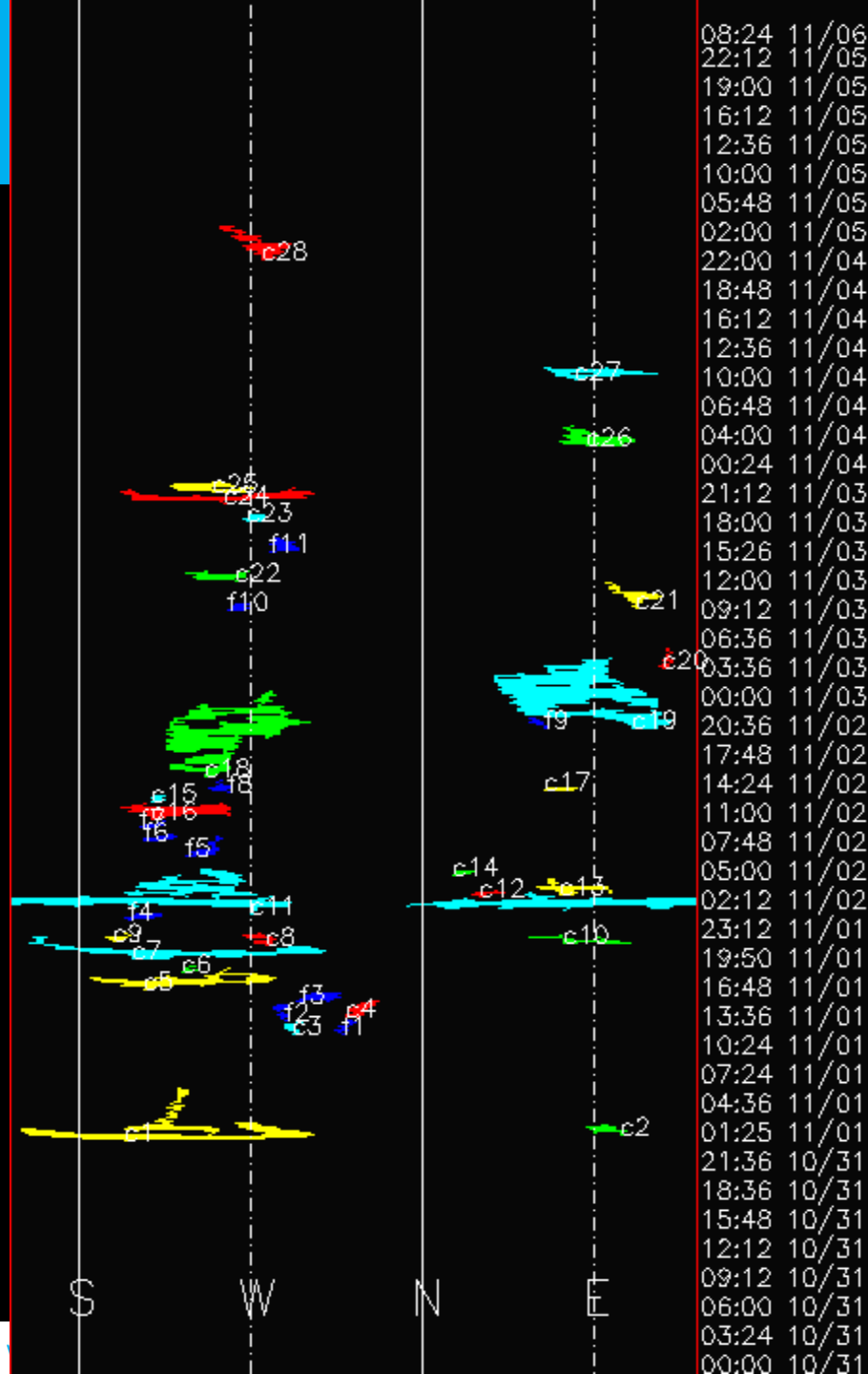
- M1.5 flare from NOAA 2887
- SoHO LASCO (C2 from Nov 1, 2:00UT): Partial halo South-West. angular width 230 degrees. Speed 900 km/s estimated arrival November 4 2:00UT



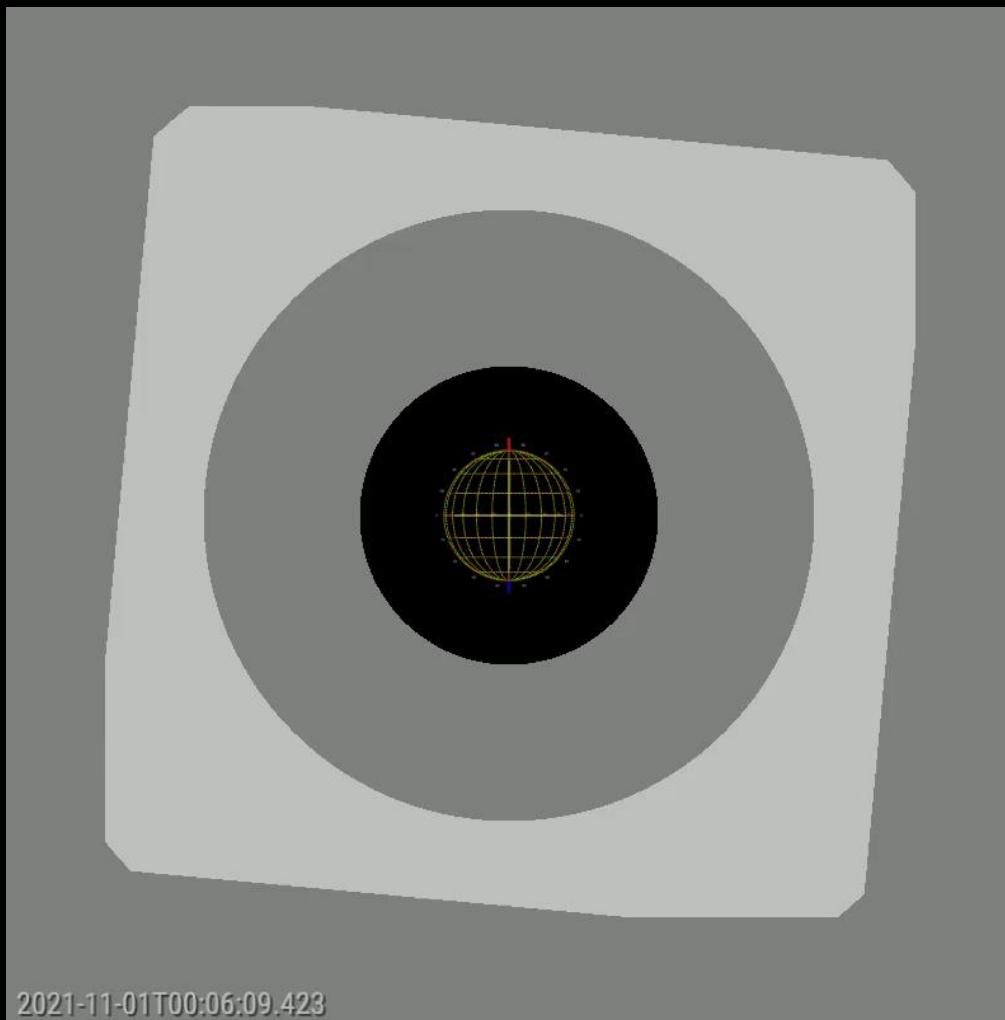
# Coronal Mass Ejections



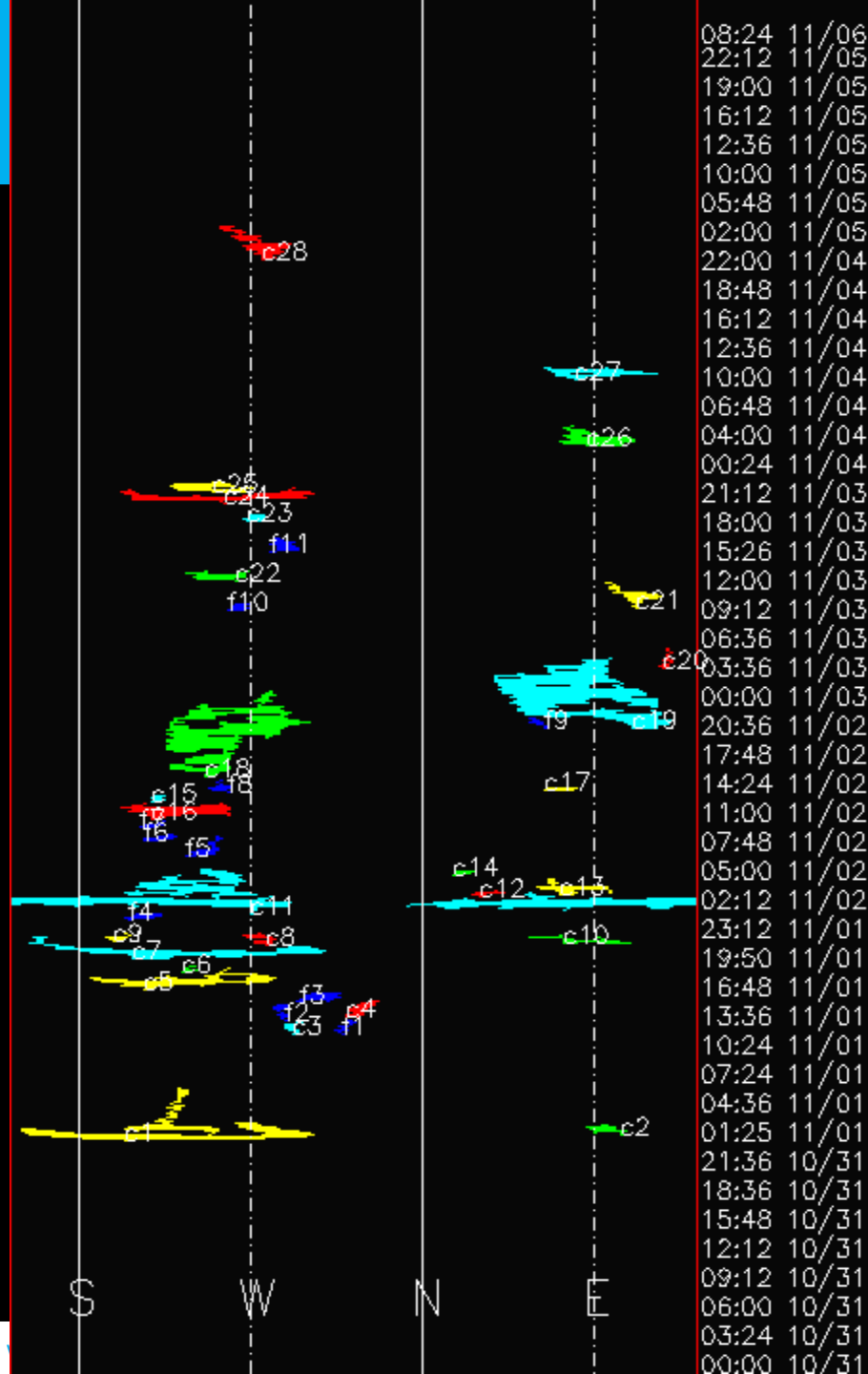
- M1.5 flare from NOAA 2887
- SoHO LASCO (C2 from Nov 1, 2:00UT): Partial halo South-West. angular width 230 degrees. Speed 900 km/s estimated arrival November 4 2:00UT



# Coronal Mass Ejections



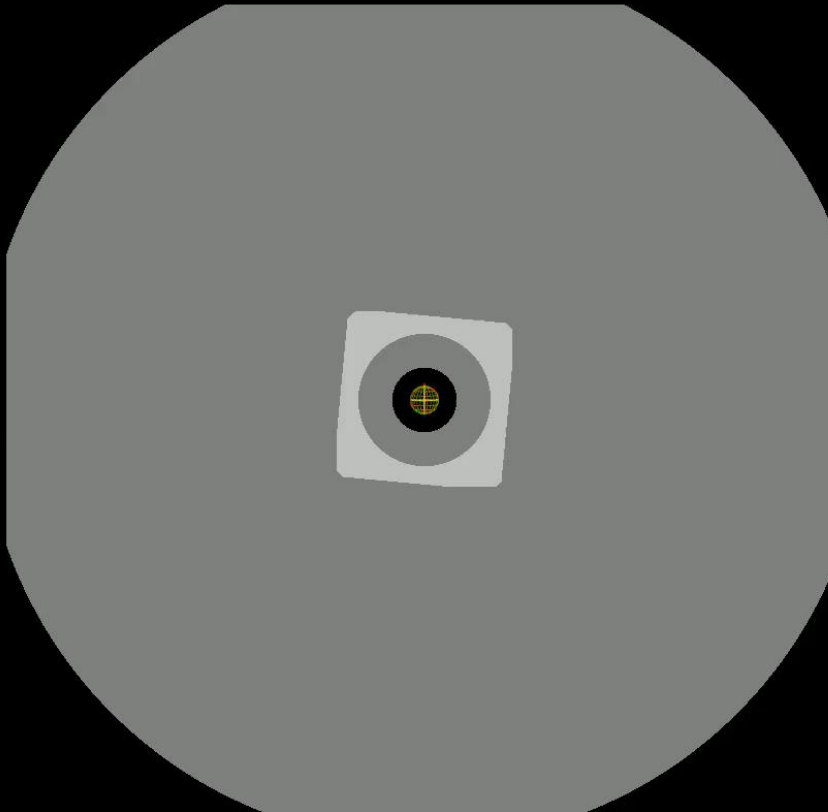
- C4 flare from NOAA 2887
- SoHO LASCO (C2 from Nov 1, 21:36UT): Partial halo South-West. angular width 150-180 degrees.
- estimated arrival uncertain and insignificant in light of the more probable earlier and later Earthbound CMEs



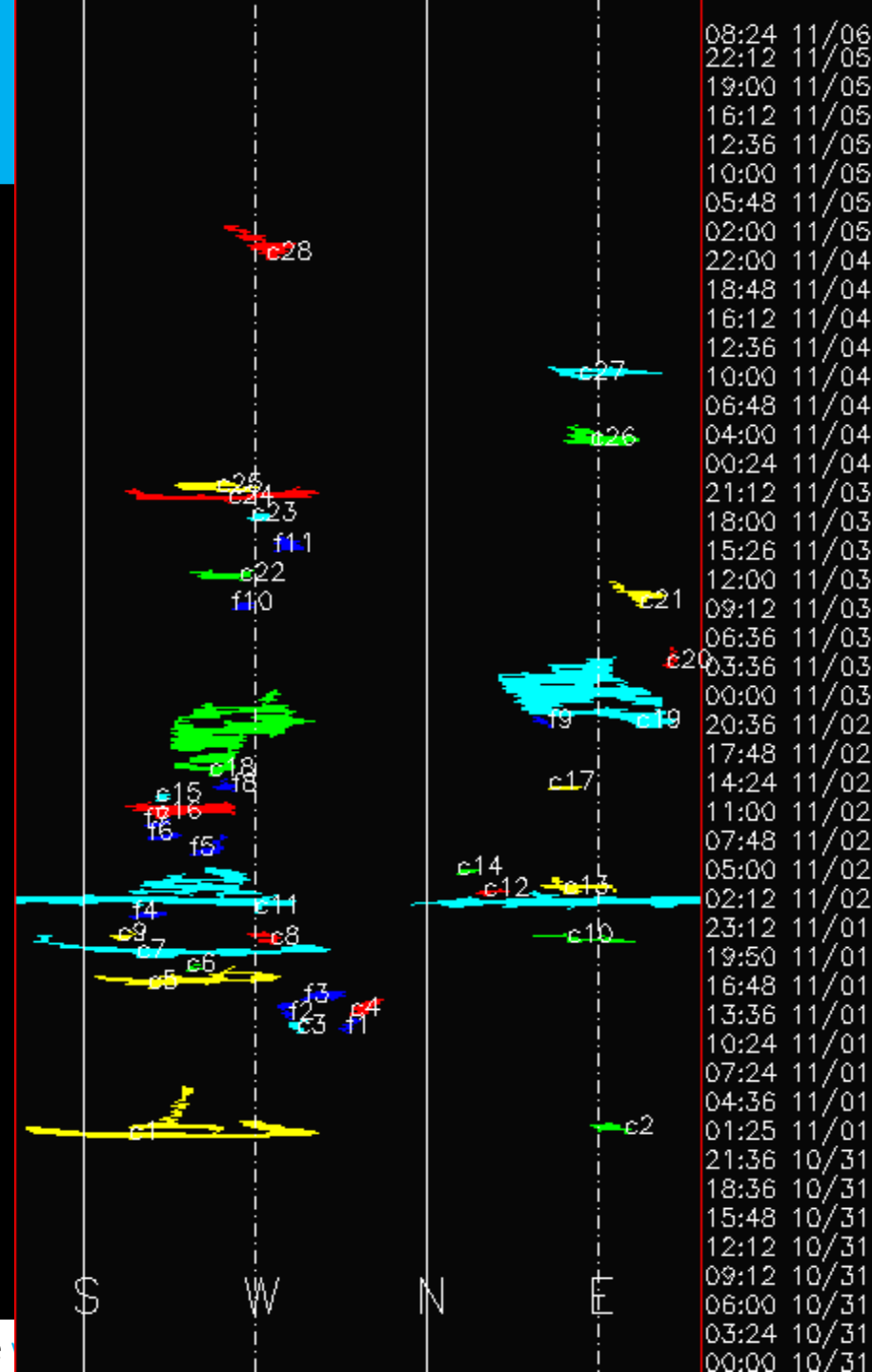


# Coronal Mass Ejections

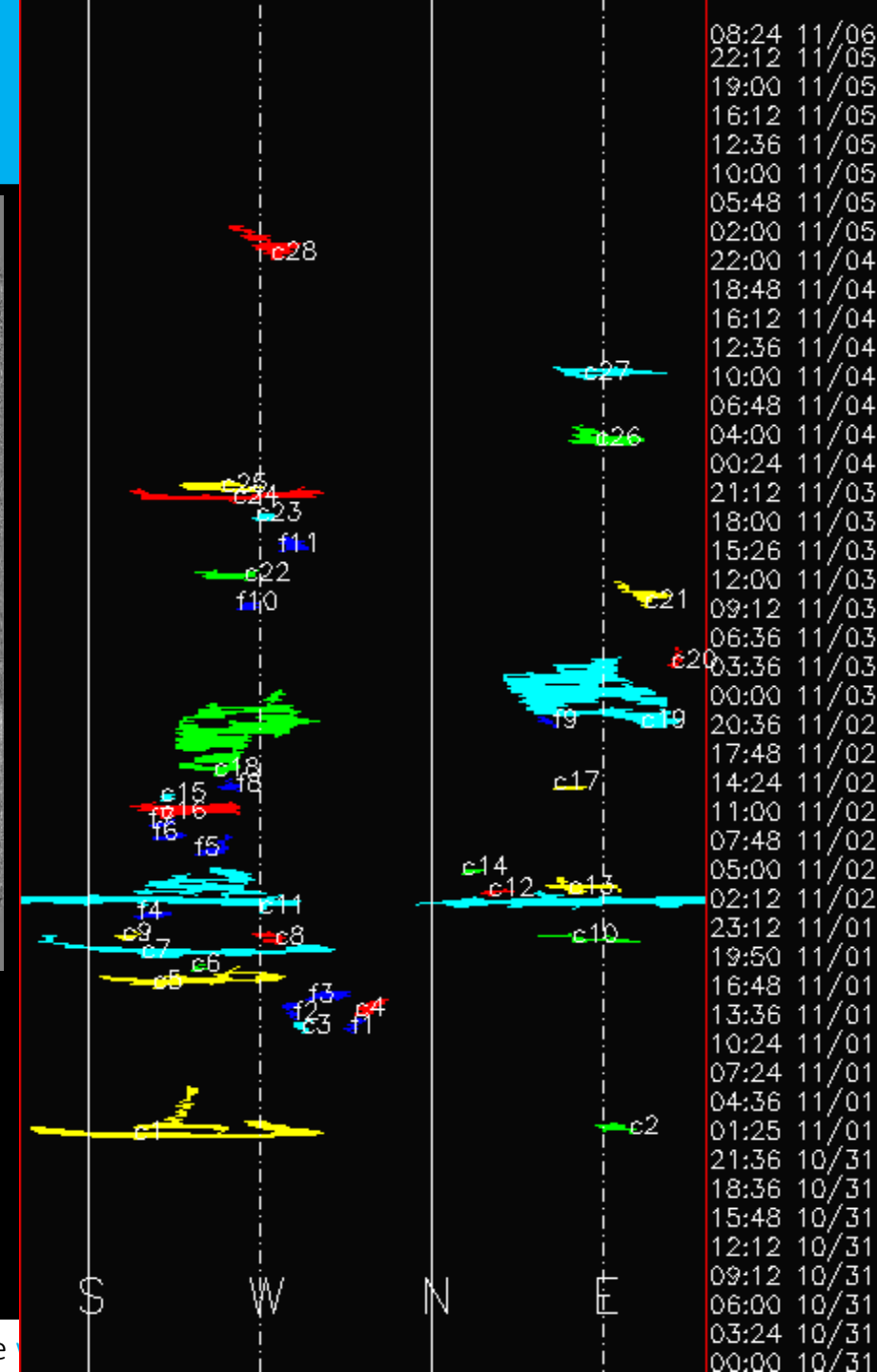
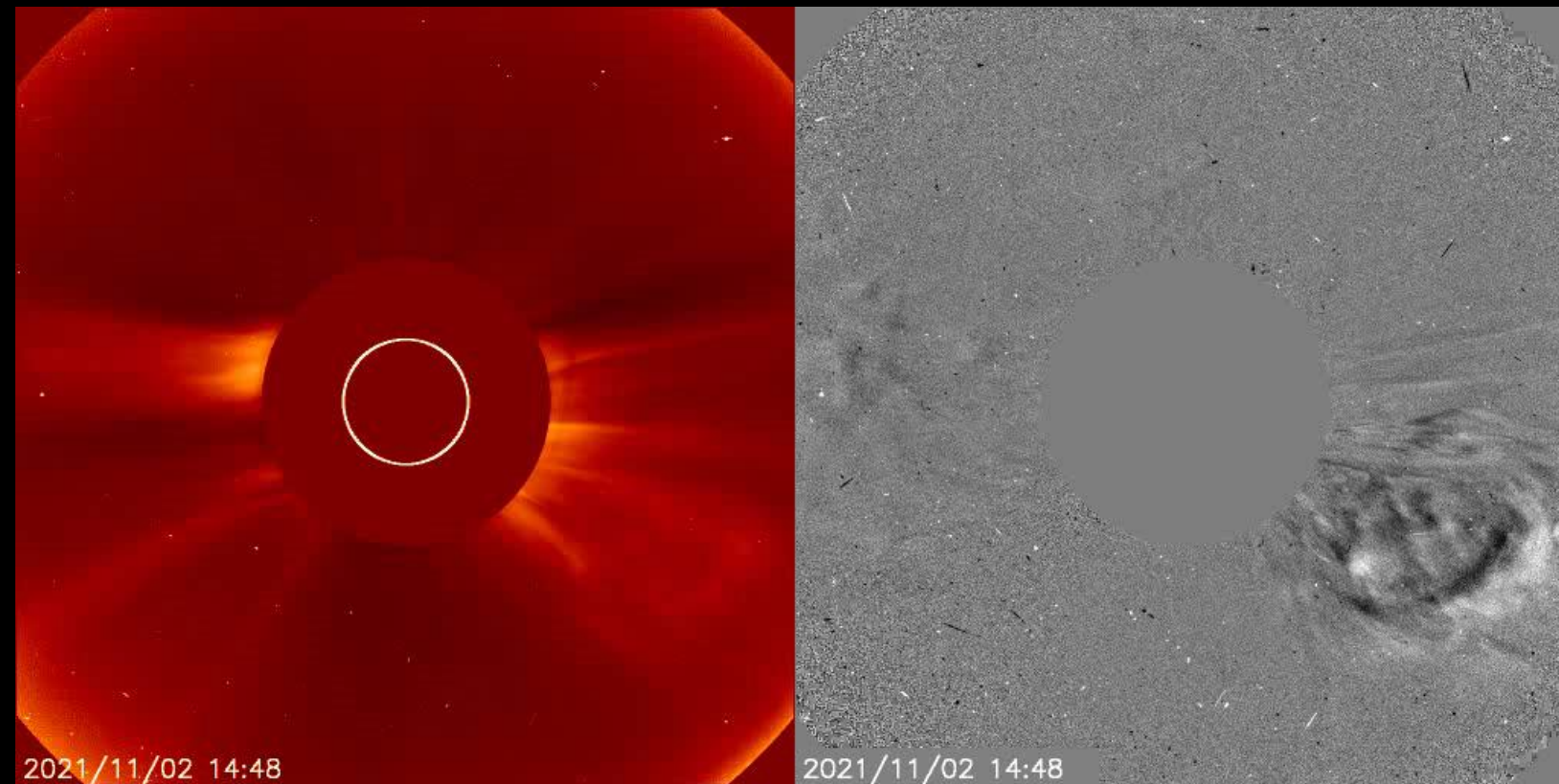
- M1.7 flare from NOAA 2891
- SoHO LASCO (C2 from Nov 2, 02:48UT):  
asymmetric full halo.
- Speed 1100 km/s plane of the sky projection
- arrival was estimated at November 4 noon but occurred November 3 19:24UT (true speed of propagation was underestimated)



6:07.466



# Coronal Mass Ejections



- A few more CME's from NOAA 2887, West directed but cotemporal with East directed CME's (from NOAA 2894). None expected to be Earth directed

# Solar Wind and

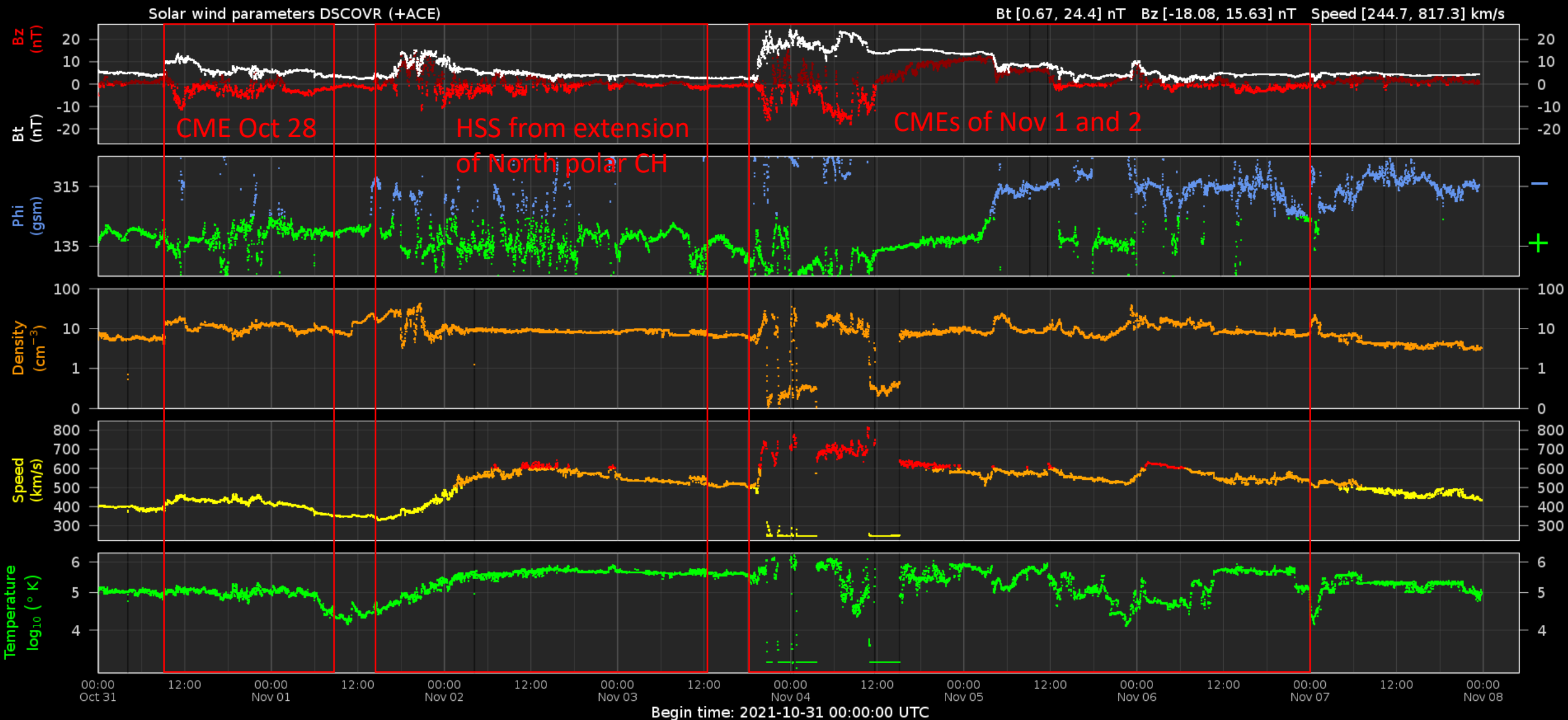
# Geomagnetic Activity



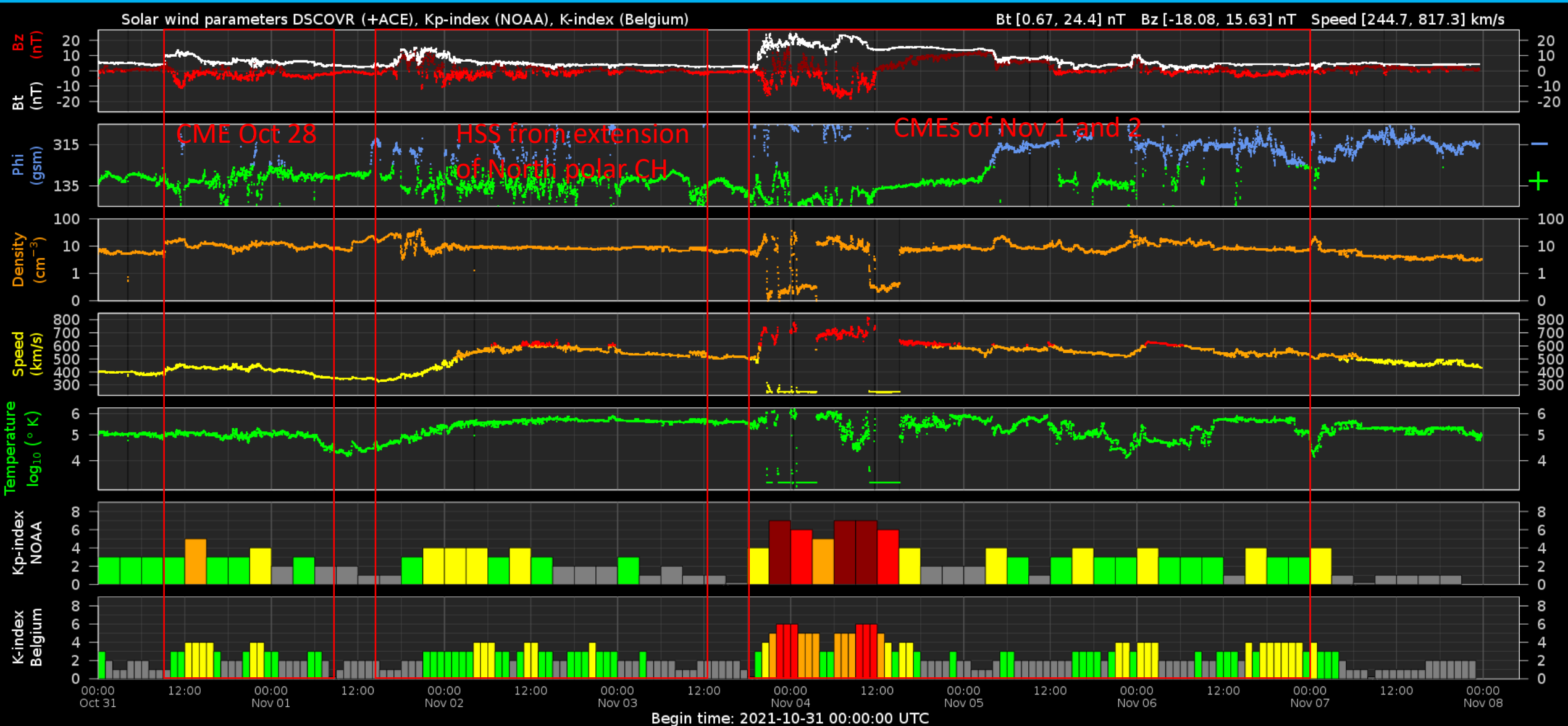
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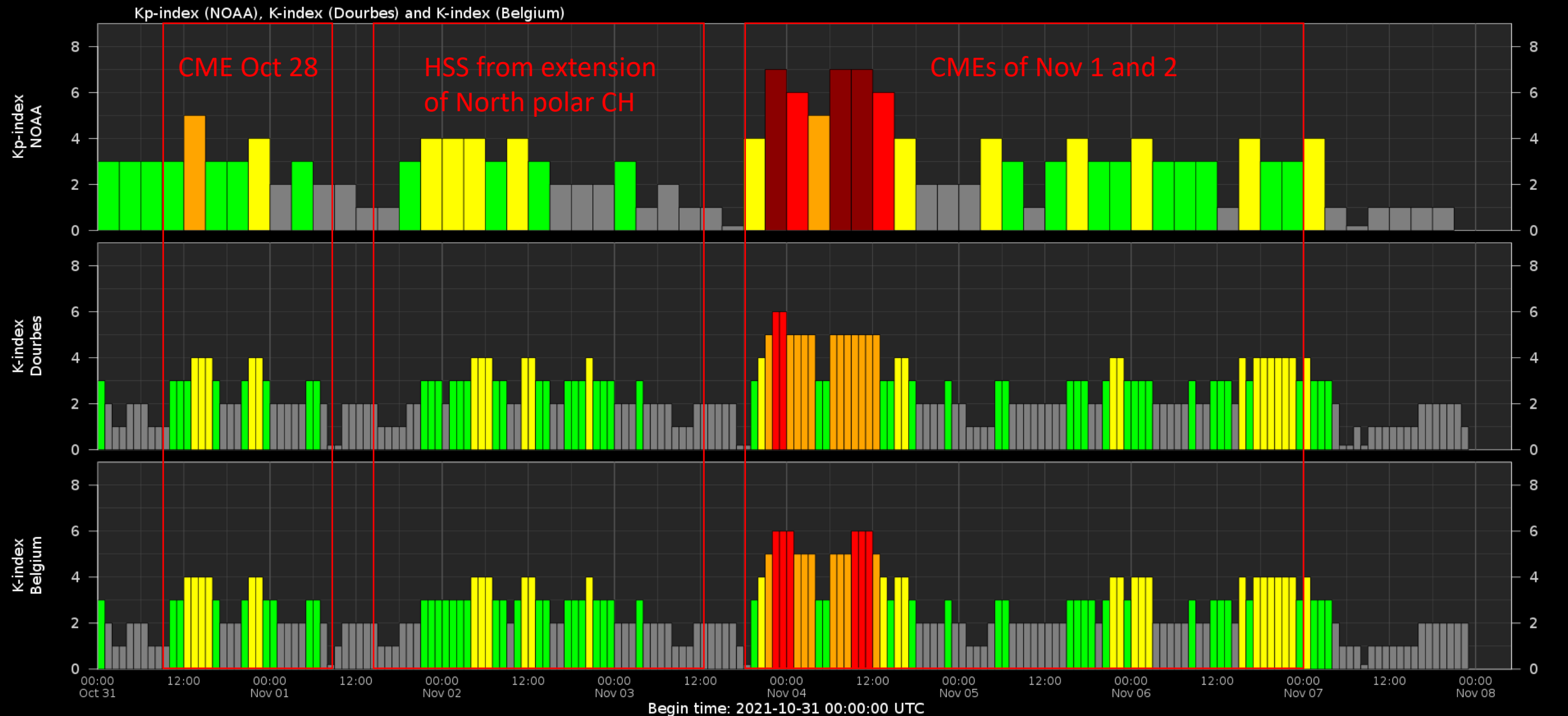
# Solar wind parameters



# Solar wind parameters & K-indices



# Geomagnetic activity (K-indexes)



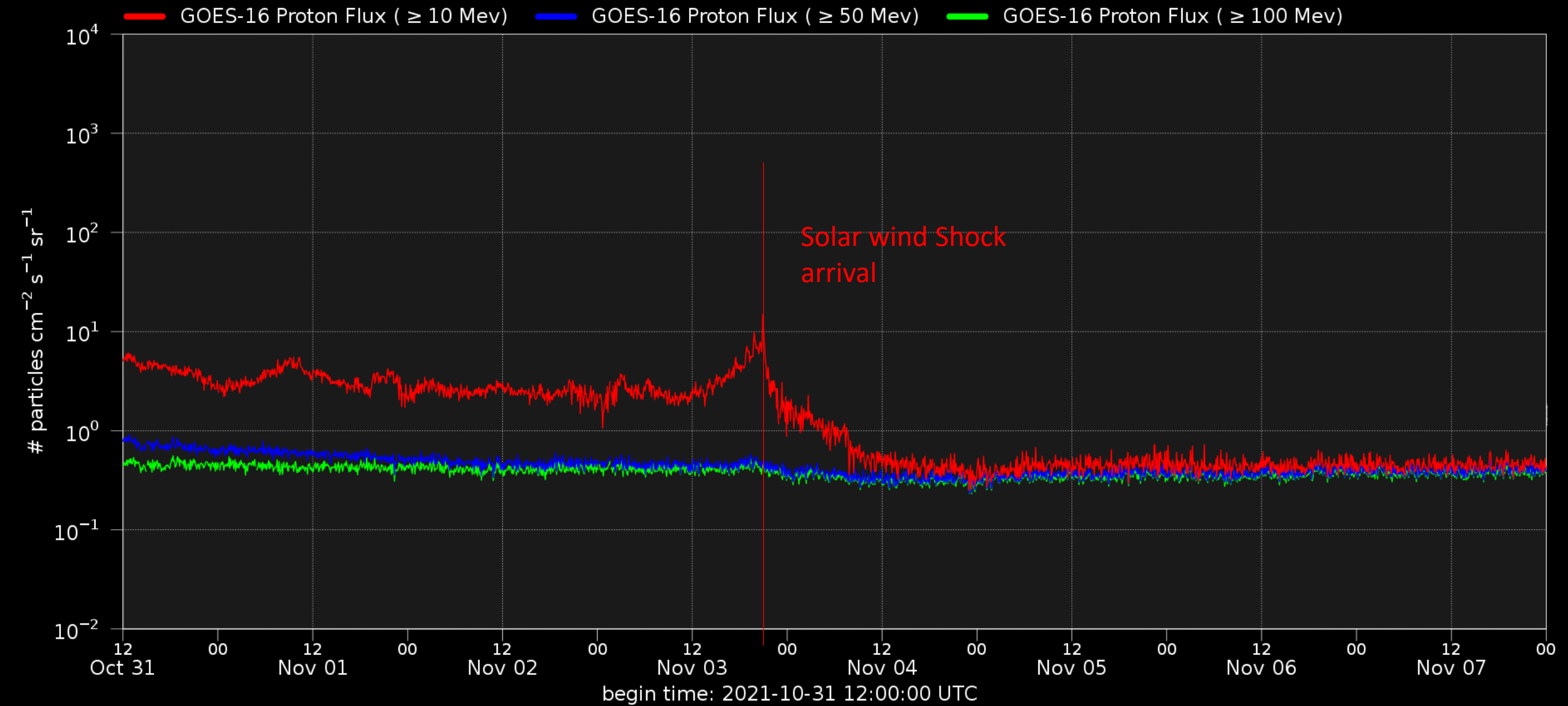
# Energetic Particles



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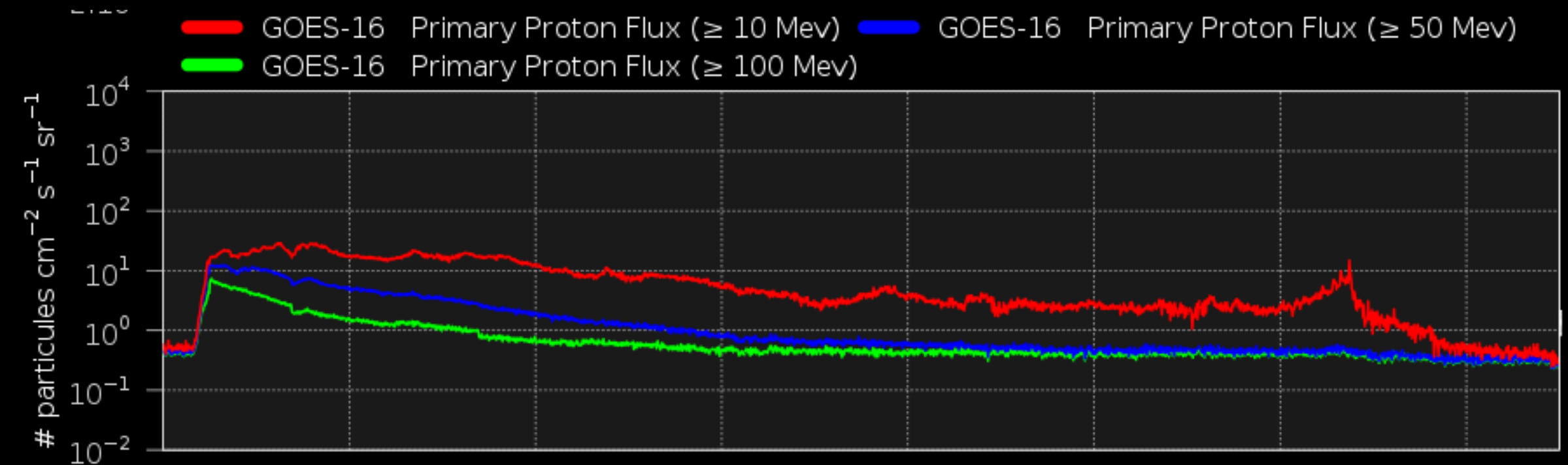
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Data analysis Centre  
[www.sidc.be](http://www.sidc.be)

# Solar proton flux

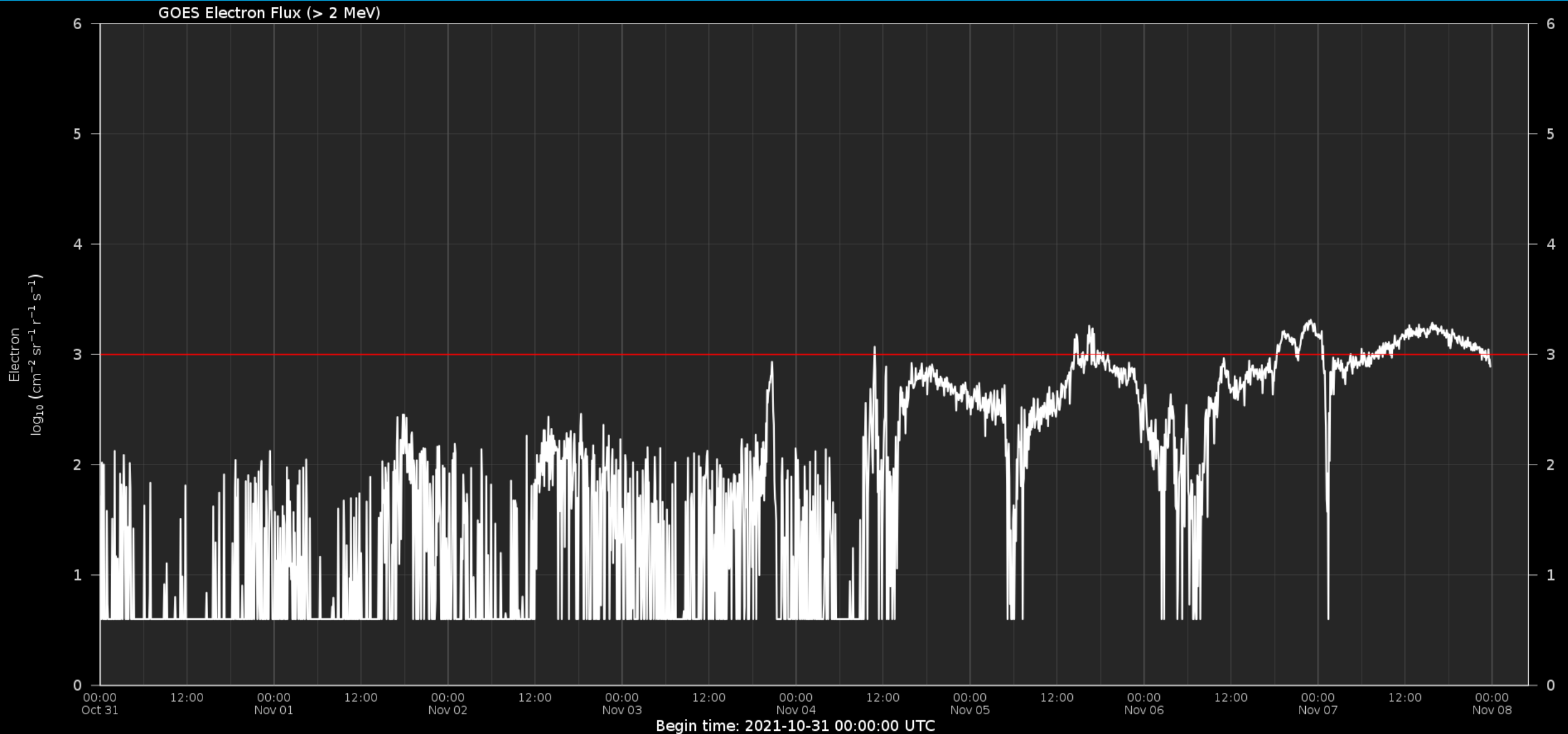




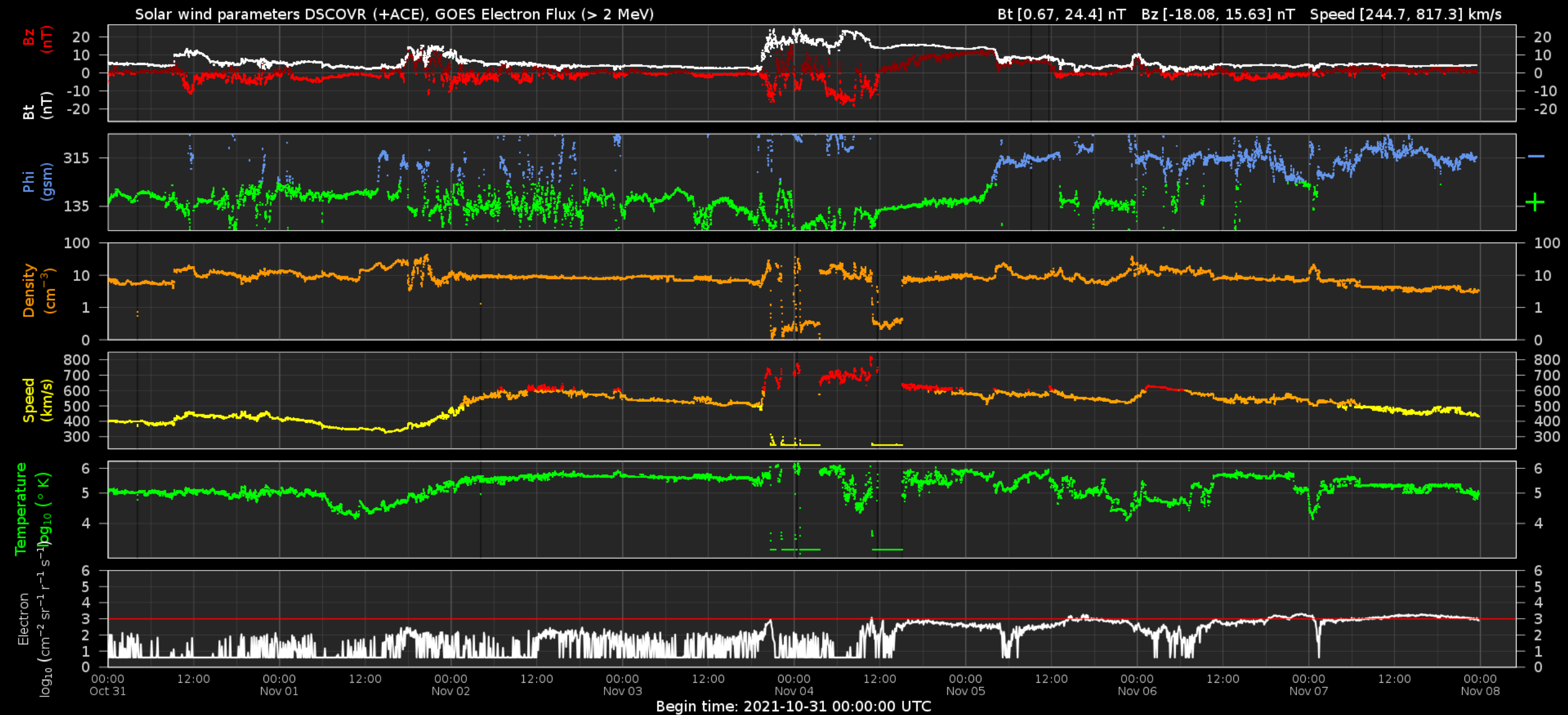
# Solar proton flux



# Electron flux at GEO



# Electron flux at GEO



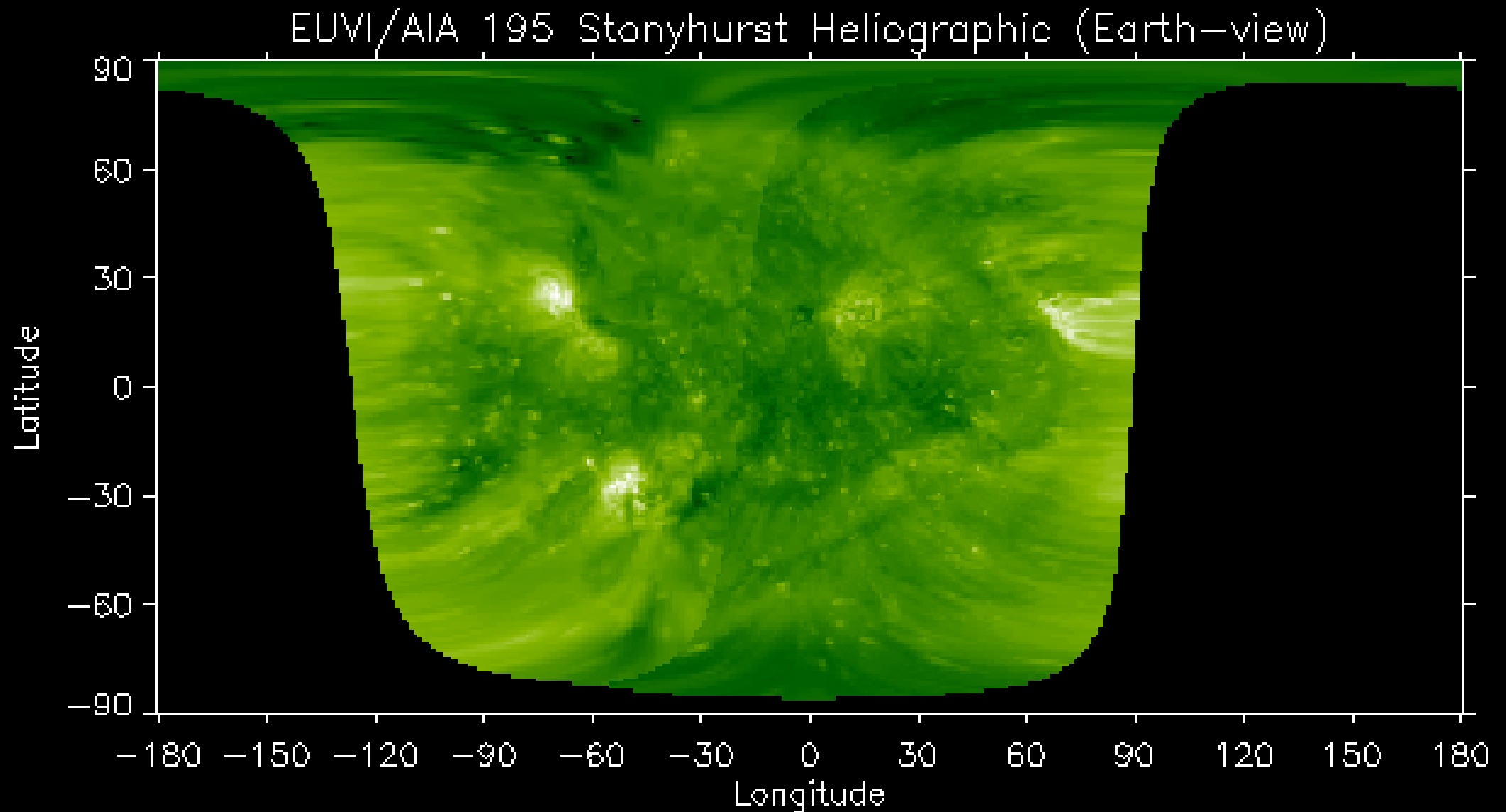
# Outlook



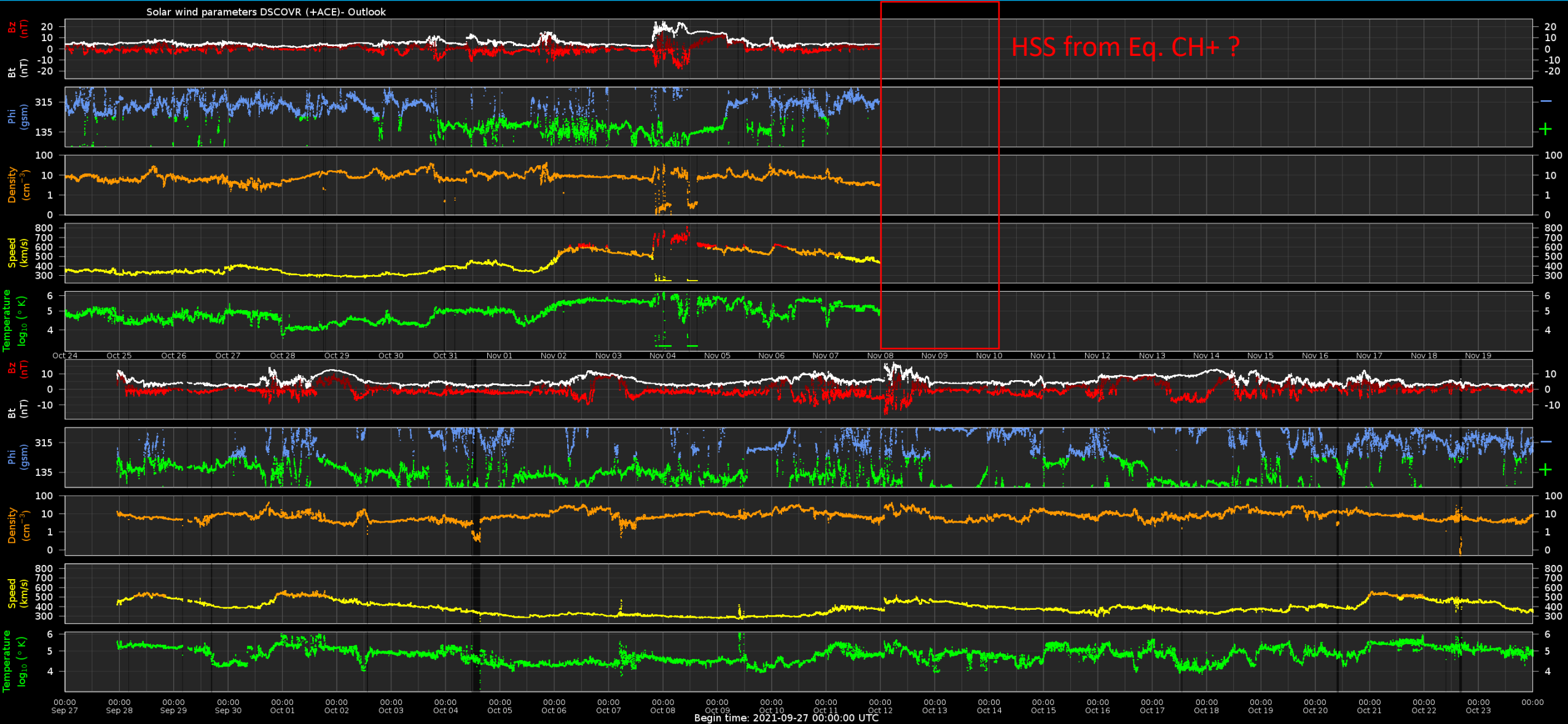
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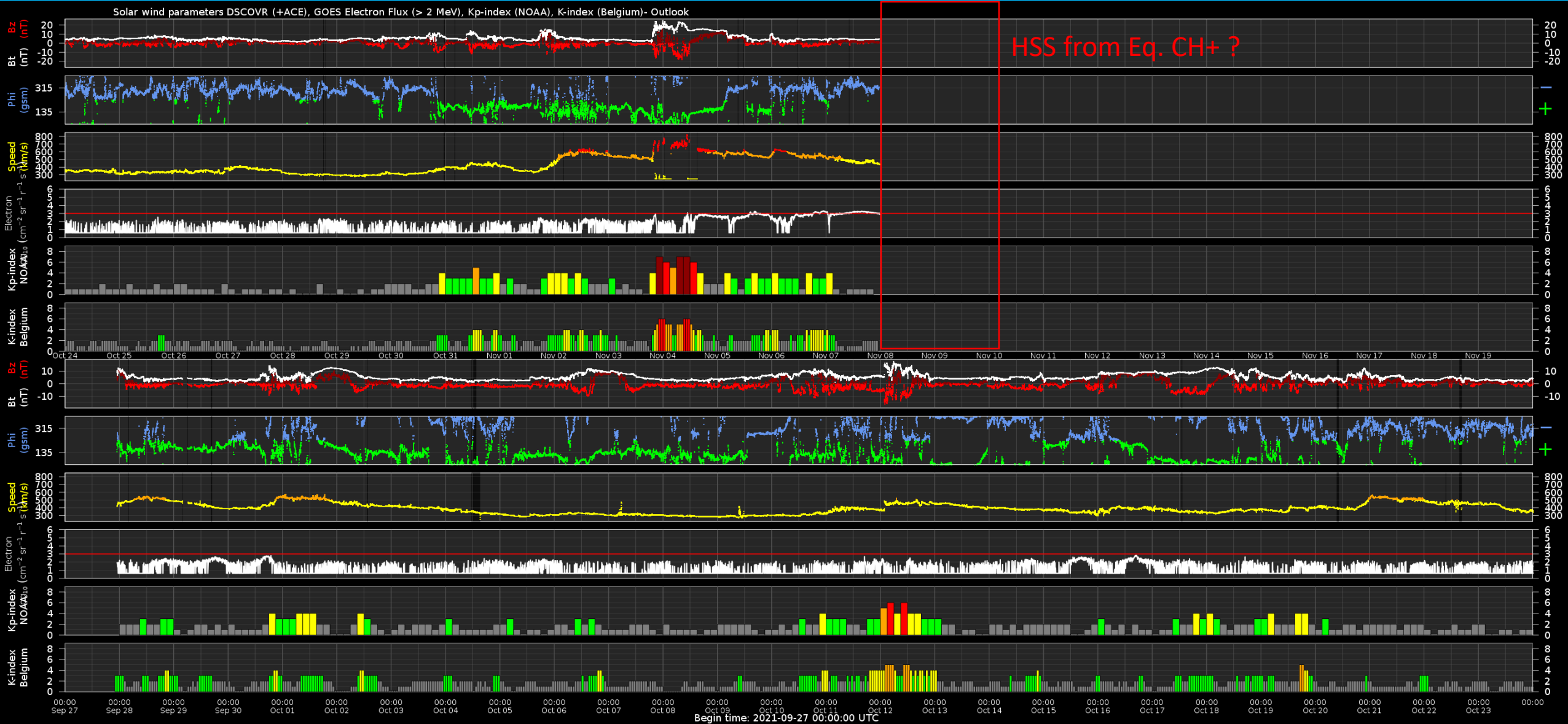
# Outlook: Solar activity



# Outlook: Solar wind parameters



# Outlook: Electron Flux at GEO Outlook



# SIDC Space Weather Briefing

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