

SIDC Space Weather Briefing

25 December 2022-01 January 2023

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& the SIDC forecaster team



Royal Observatory
of Belgium

Solar Influences
Data analysis Centre
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Summary Report

Solar activity from 2022-12-25 12:00 to 2023-01-01 23:59

Active regions	3169 -3180; 3169 rotating off the disc, 3176 and 3180 rotating onto the disc
Flares	# C-class flare: 53 # M-class flare: 7 # X-class flare: 0
Coronal Holes	CH+ in northern hemisphere
CMEs	No halo CMEs. A dimming at central disc on December 30

Proton flux	background
Electron flux	Around the event threshold during most of the week; normal to moderate fluence.

Solar wind and geomagnetic conditions

ICMEs	Solar wind transient (magnetic cloud) on December 26-27
Solar wind conditions	B : 0.62 - 12.19 nT //Bz: -11.07 nT to 10.51 nT //Speed: 399.8 - 722.4km/s
K-indices	max K-index (KBel): 5 max Kp-index (NOAA): 5

All Quiet Alert: Not quiet

Solar Activity

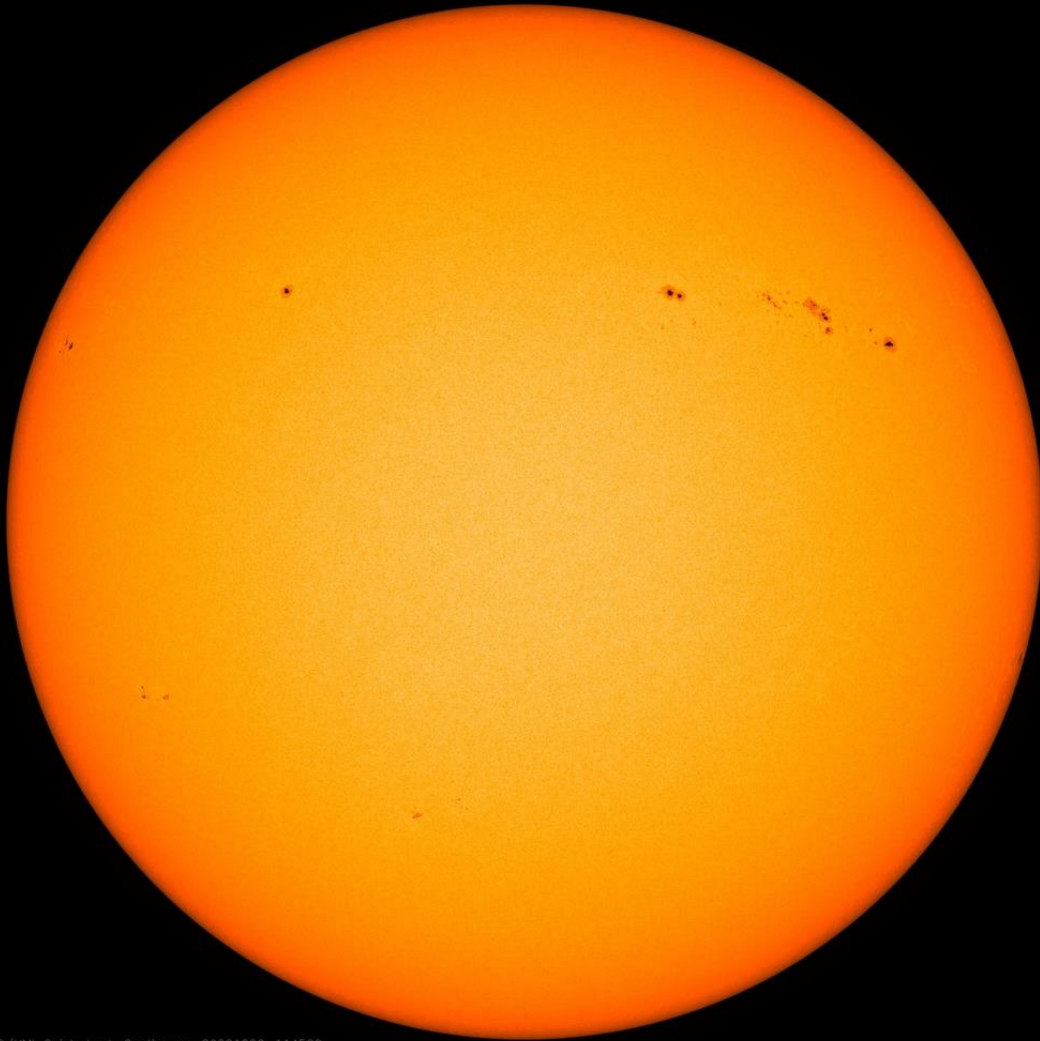


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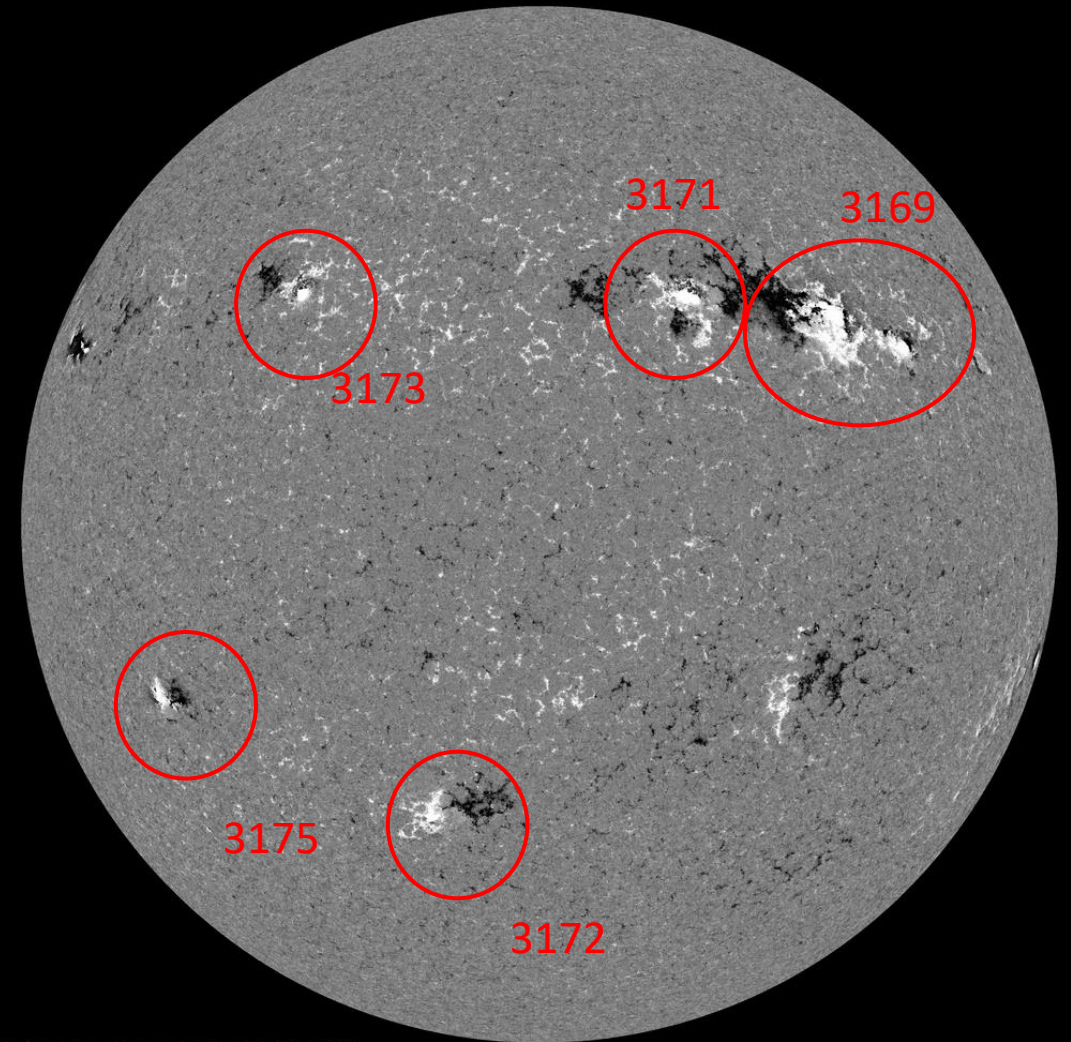
Solar active regions

SDO/HMI White Light 2022-12-26



SDO/HMI Quick-Look Continuum: 20221226_114500

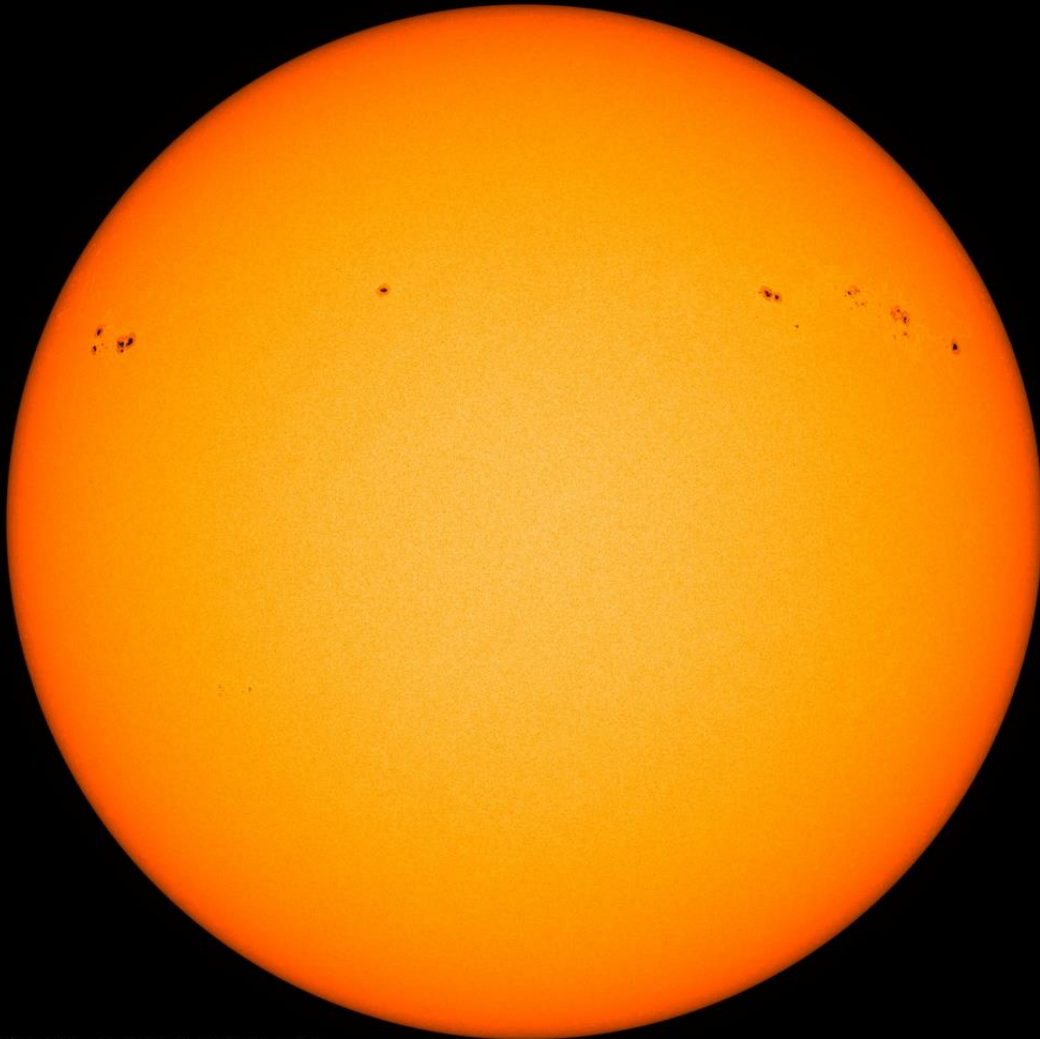
SDO/HMI Magnetogram 2022-12-26



SDO/HMI Quick-Look Magnetogram: 20221226_114500

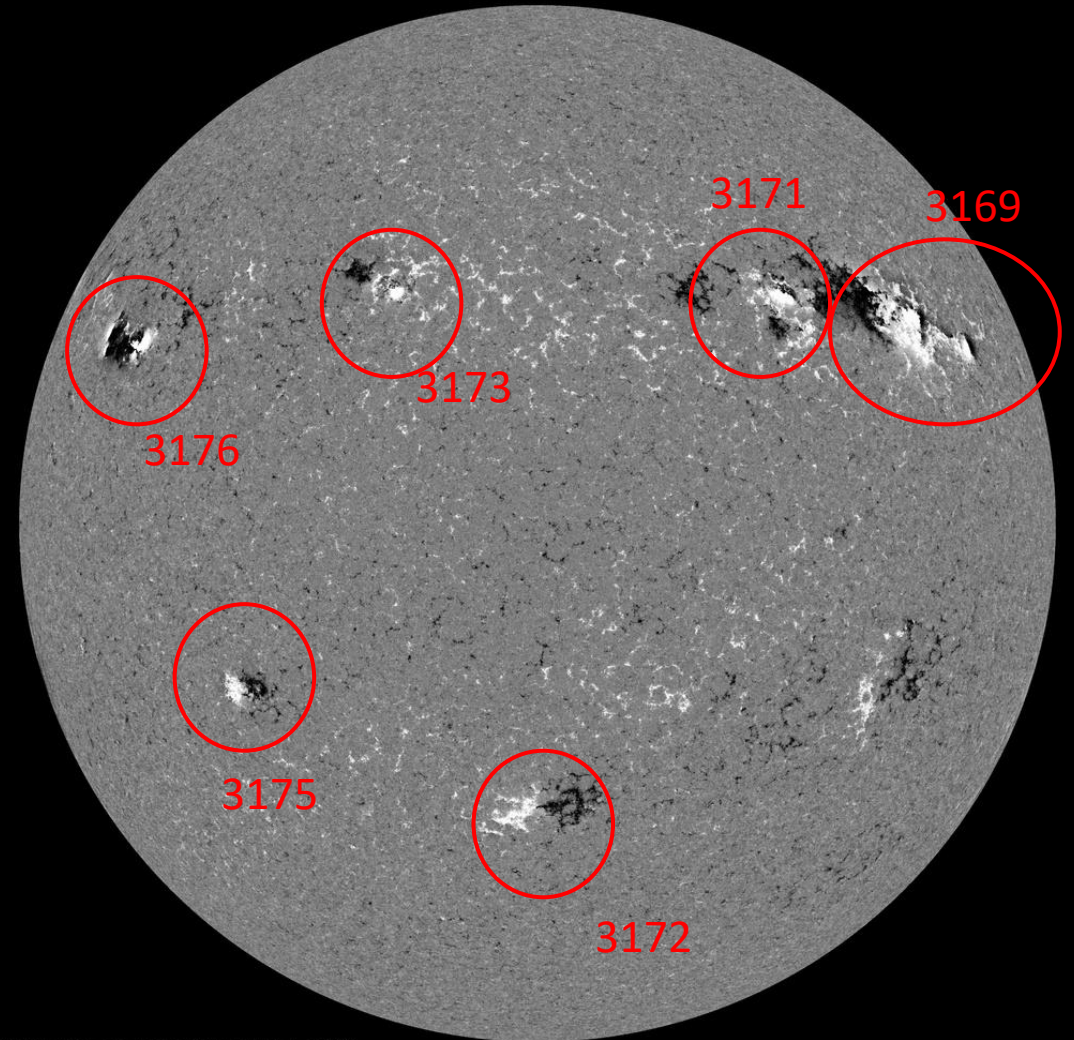
Solar active regions

SDO/HMI White Light 2022-12-27



SDO/HMI Quick-Look Continuum: 20221227_114500

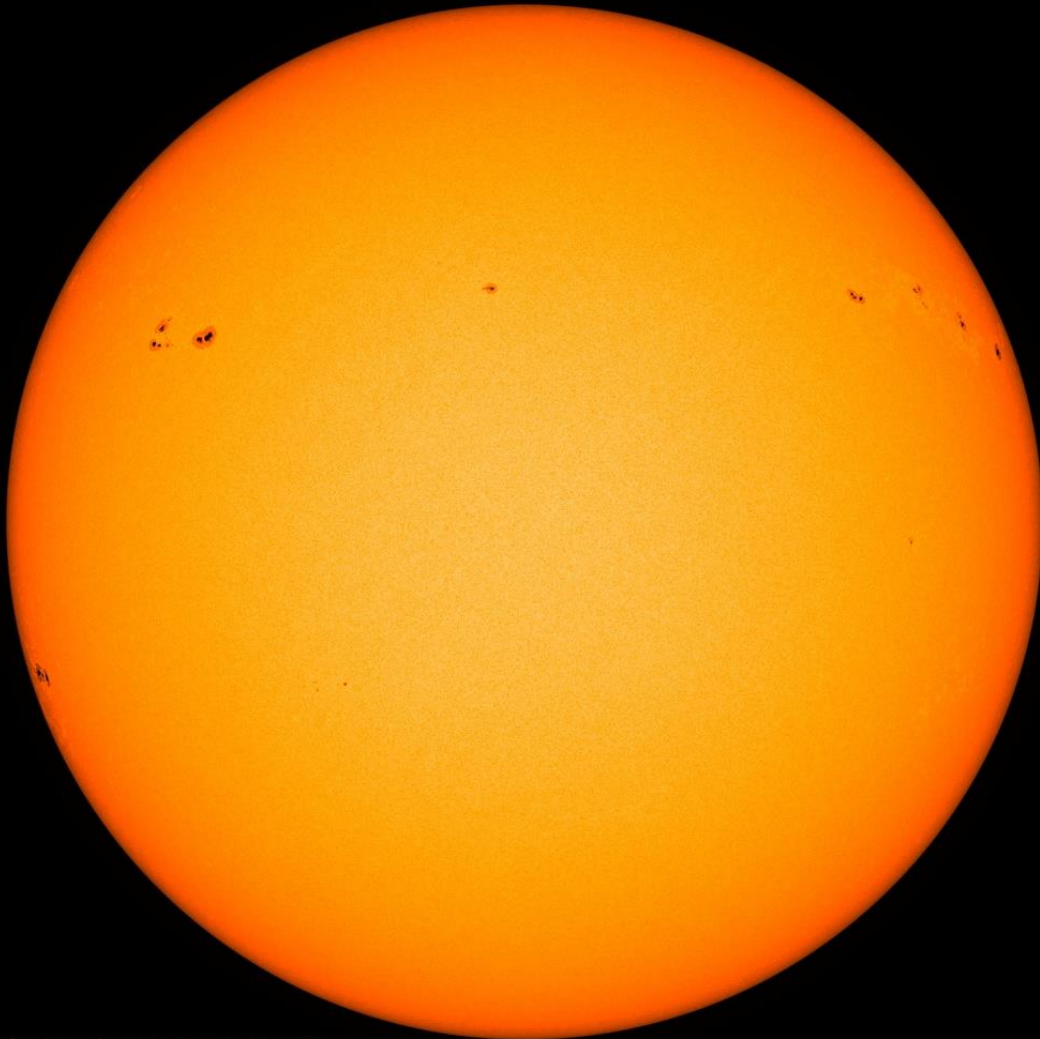
SDO/HMI Magnetogram 2022-12-27



SDO/HMI Quick-Look Magnetogram: 20221227_114500

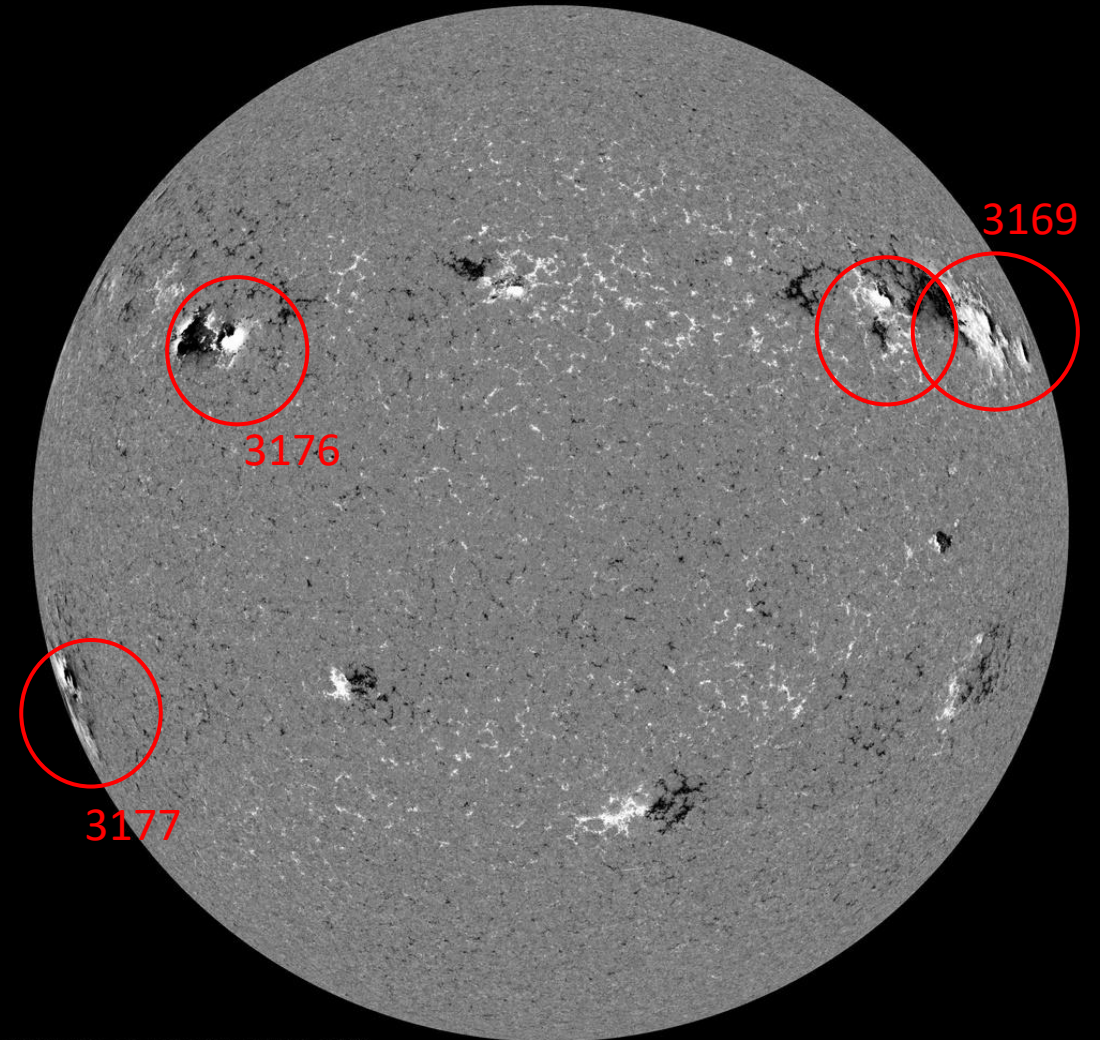
Solar active regions

SDO/HMI White Light 2022-12-28



SDO/HMI Quick-Look Continuum: 20221228_114500

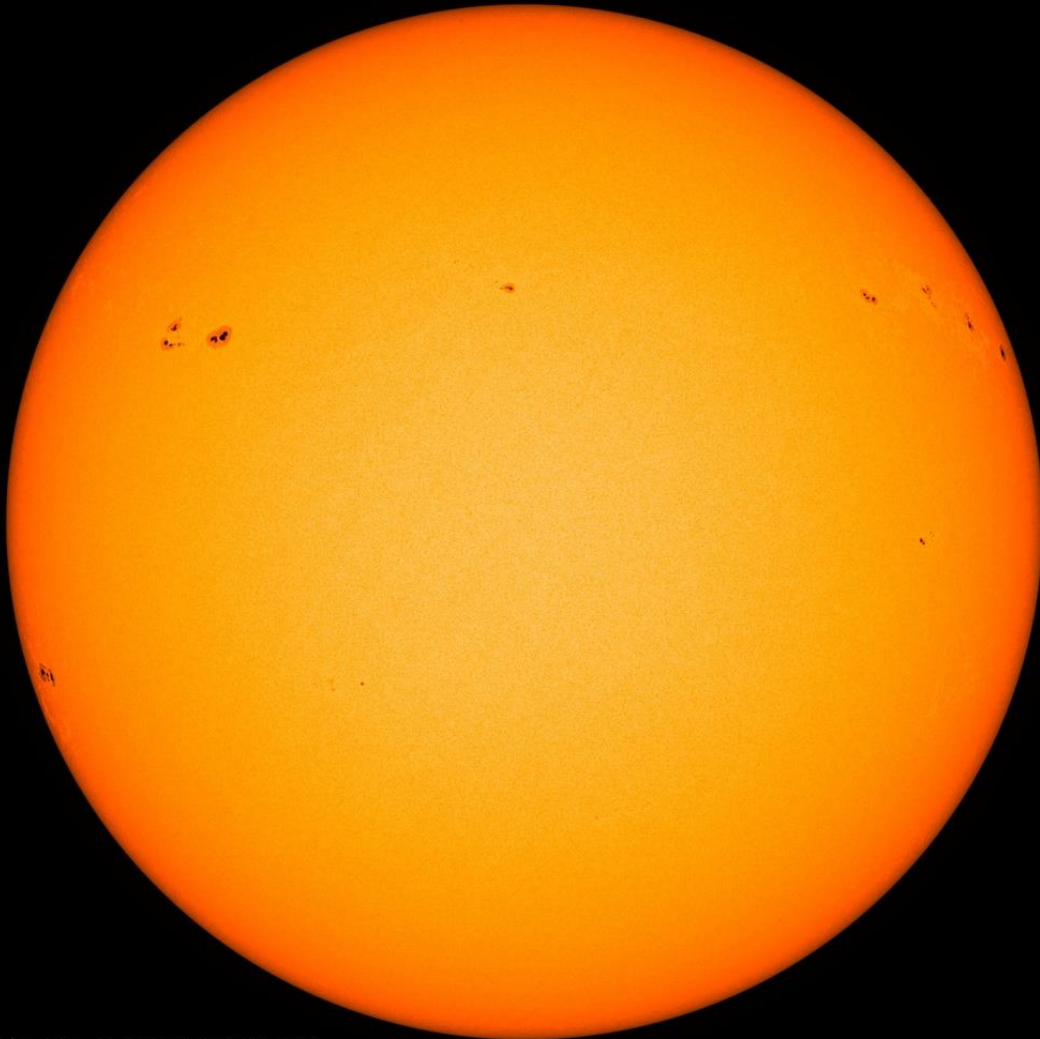
SDO/HMI Magnetogram 2022-12-28



SDO/HMI Quick-Look Magnetogram: 20221228_114500

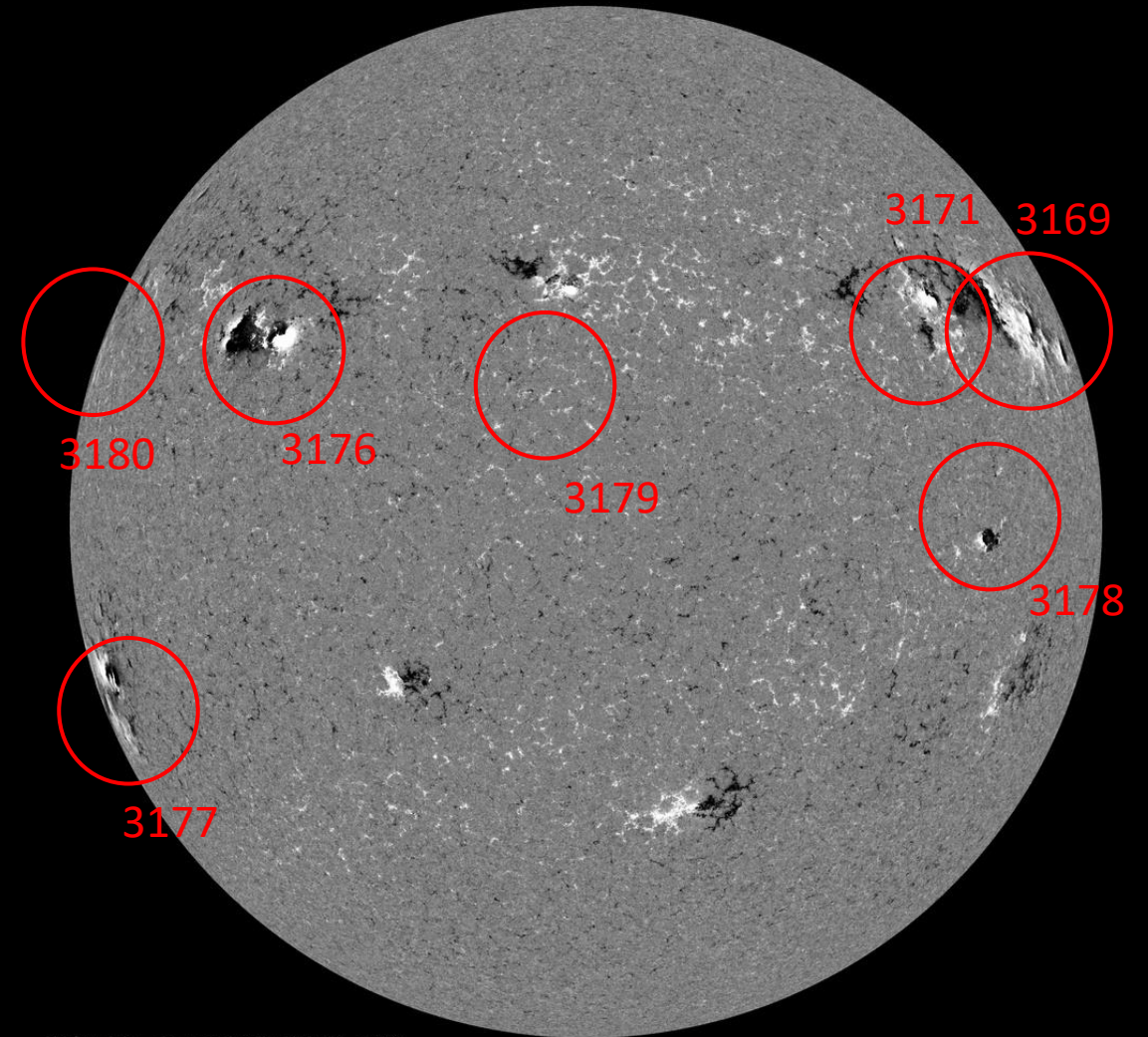
Solar active regions

SDO/HMI White Light 2022-12-31



SDO/HMI Quick-Look Continuum: 20221228_154500

SDO/HMI Magnetogram 2022-12-31

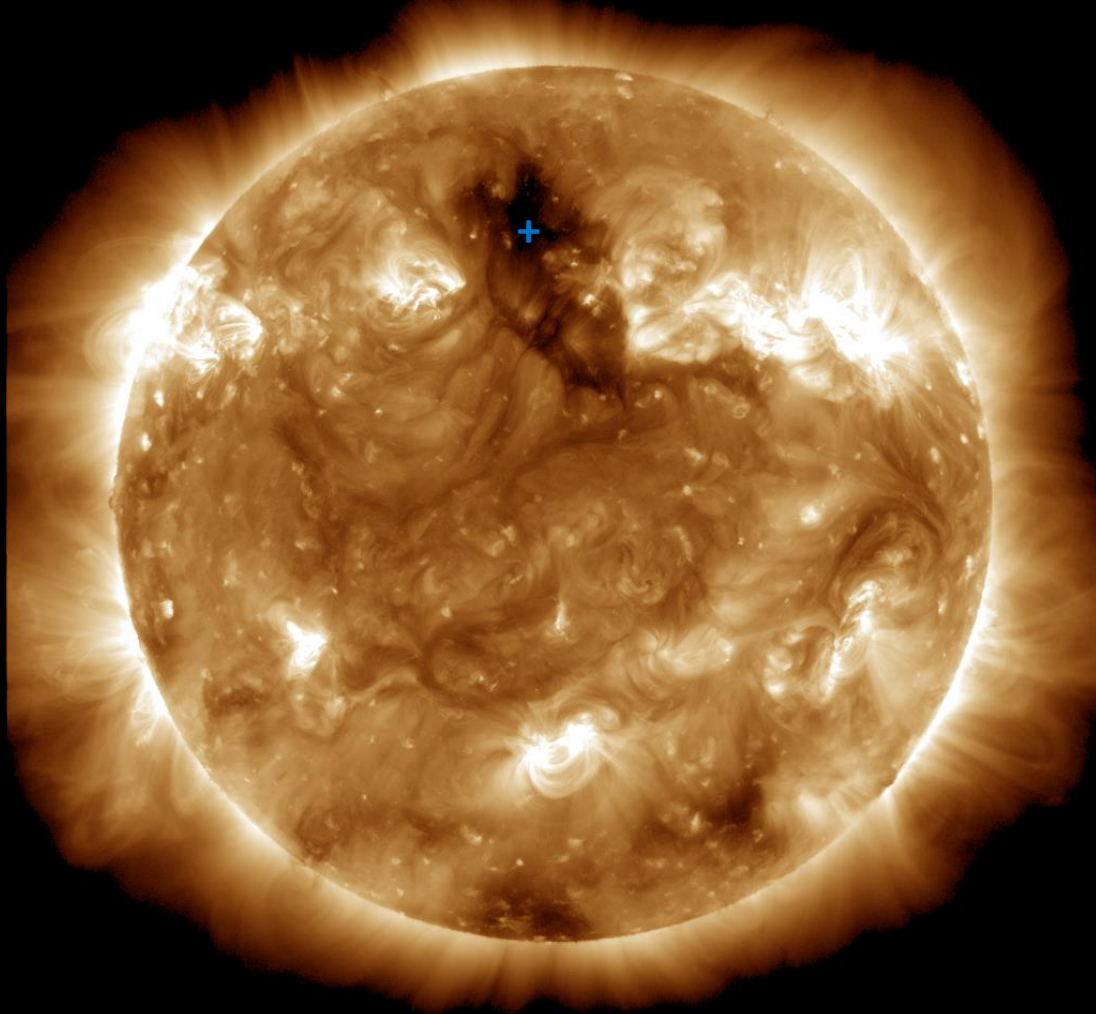


SDO/HMI Quick-Look Magnetogram: 20221228_154500

Coronal holes

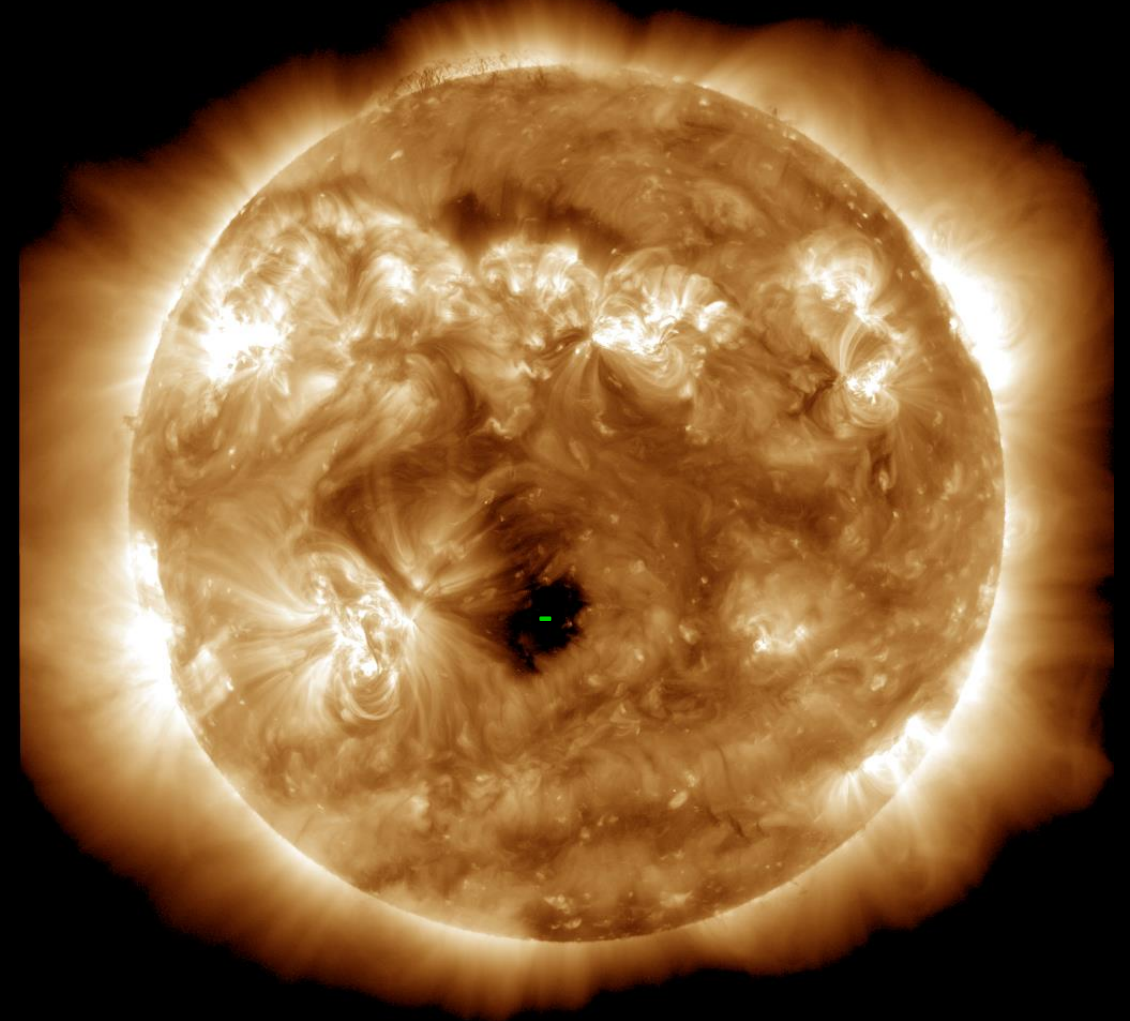
SDO/AIA 19.3 nm 2022-12-27

SDO/AIA AIA 193Å 2022-12-27T12:00:05.843

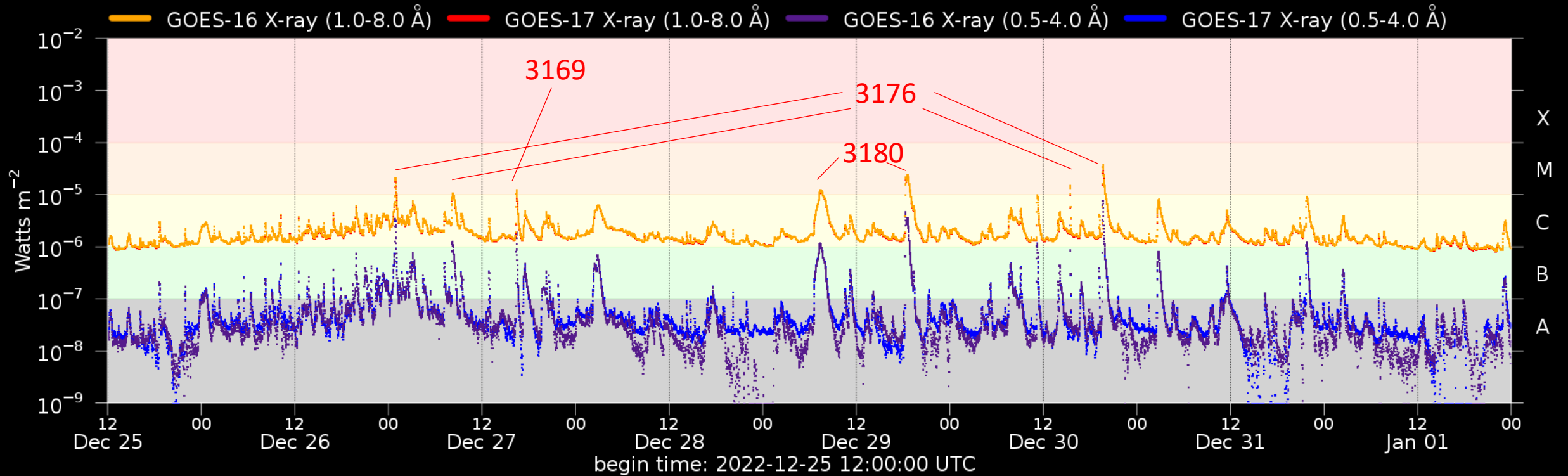


SDO/AIA 19.3 nm 2023-01-01

SDO/AIA AIA 193Å 2023-01-01T12:00:05.843



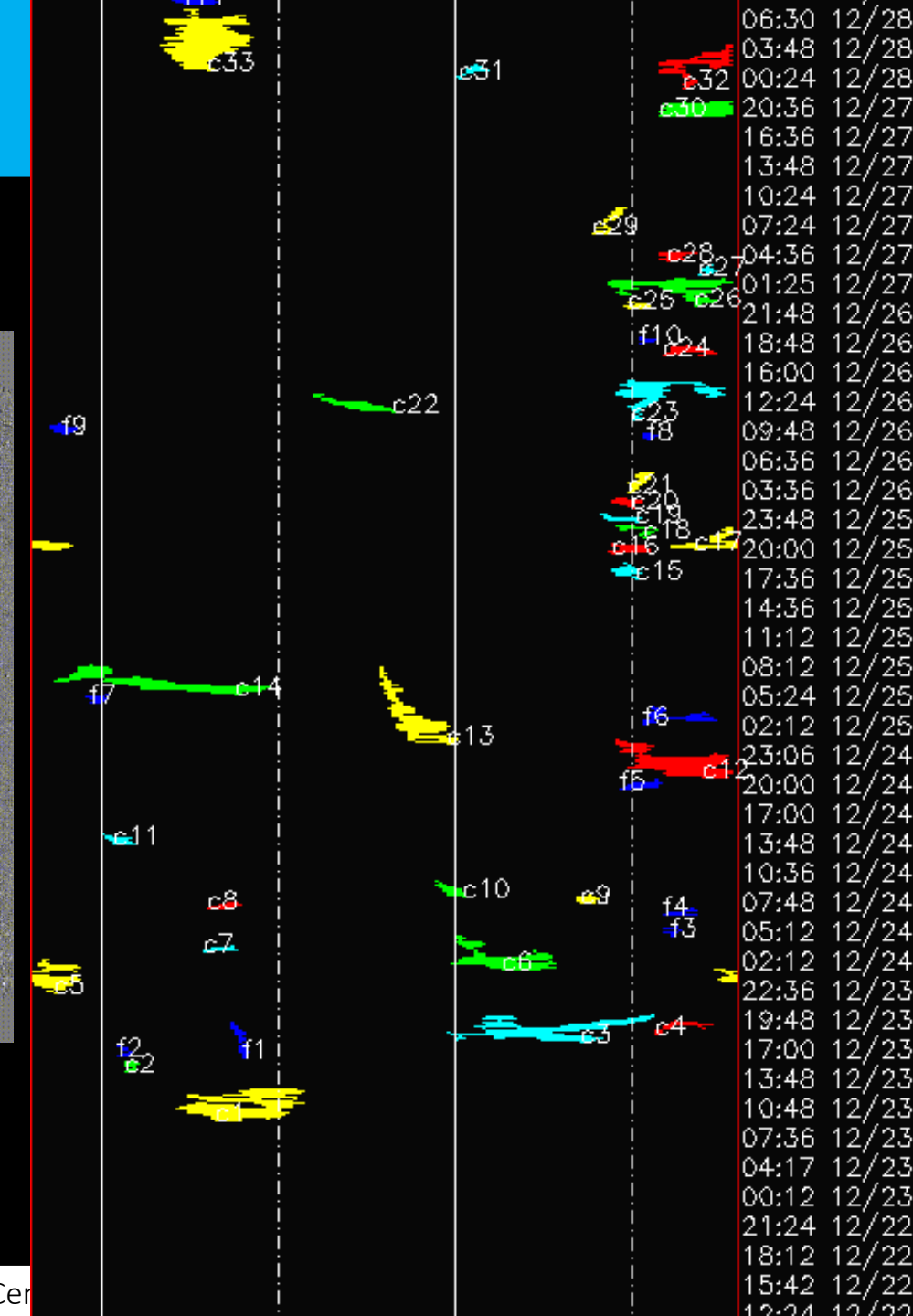
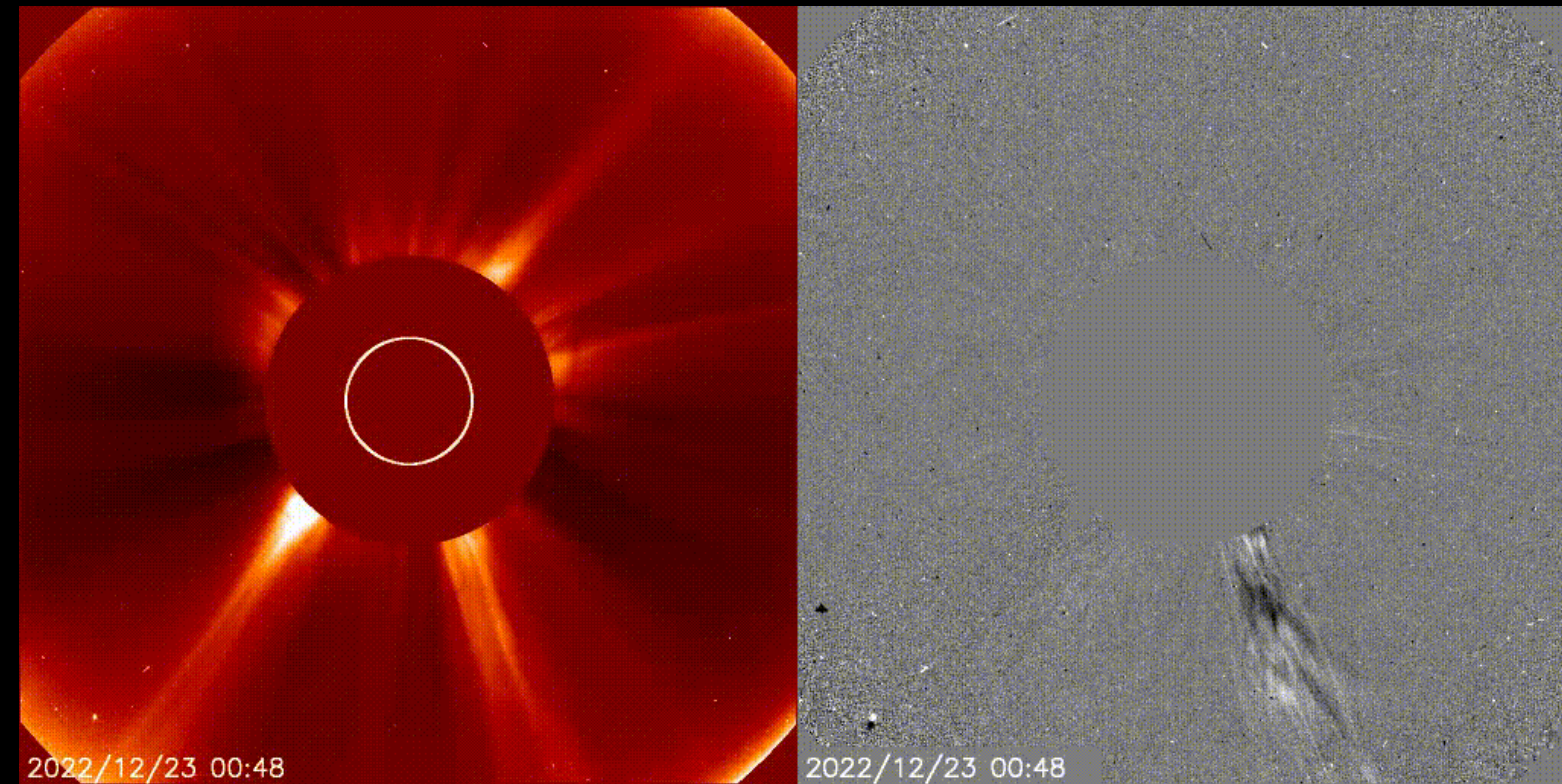
Flaring activity



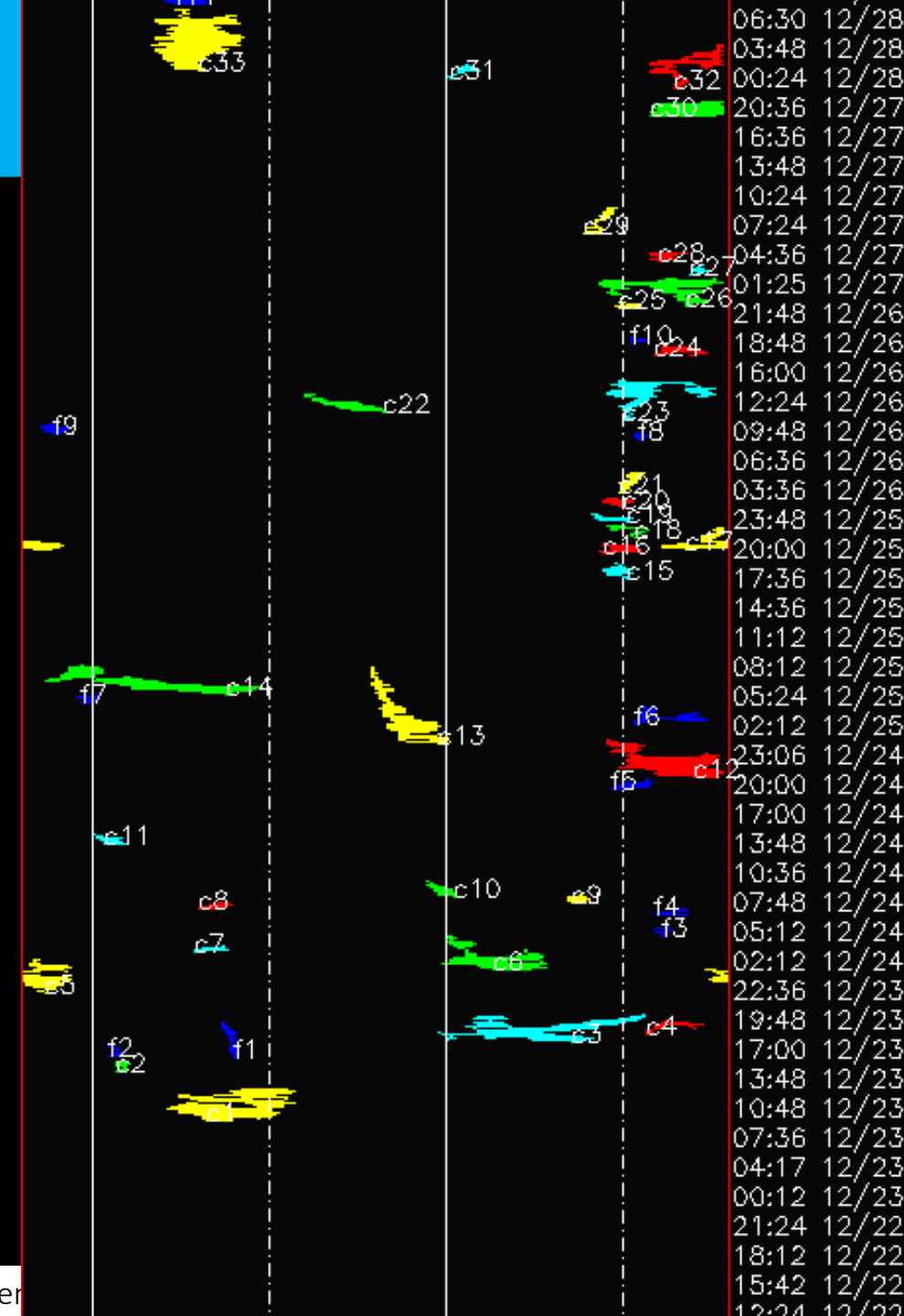
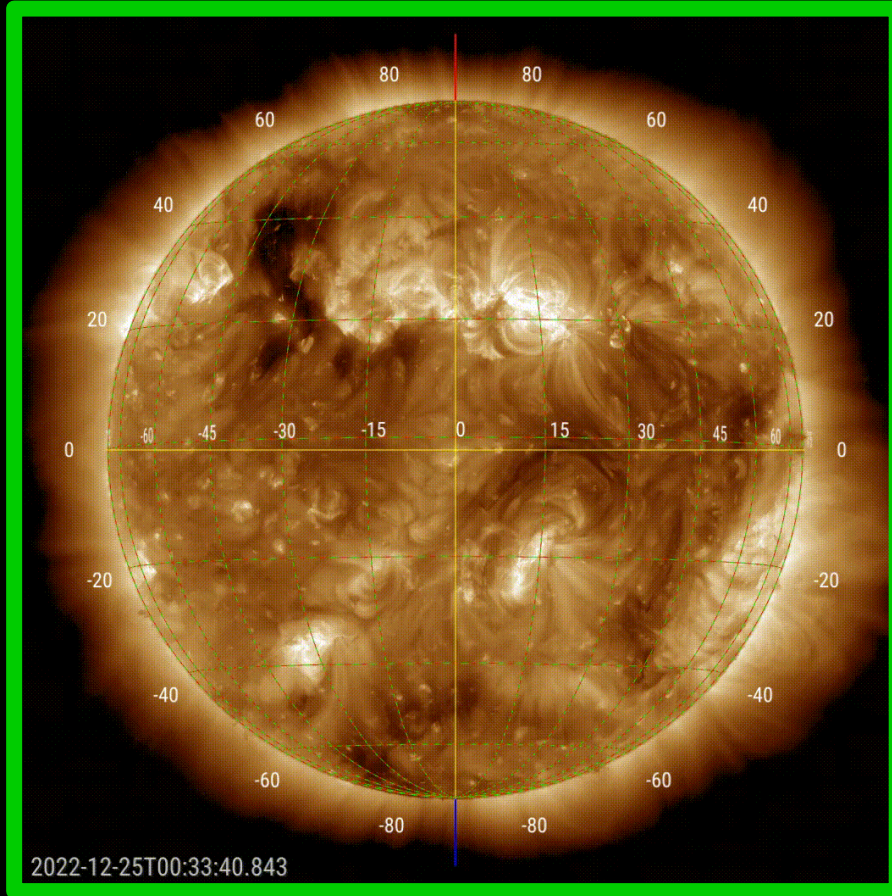
Probabilities (%) and occurrences (#) of C/M/X-flares daily, from noon to noon:

Issue date	2022-12-25	2022-12-26	2022-12-27	2022-12-28	2022-12-29	2022-12-30	2022-12-31	2023-01-01
Probability (%)	75 05 01	90 20 01	90 25 01	90 20 01	90 30 02	90 40 03	95 40 03	95 40 03
Observed (#)	08 00 00	15 02 00	05 01 00	05 01 00	05 01 00	05 02 00	07 00 00	03 00 00

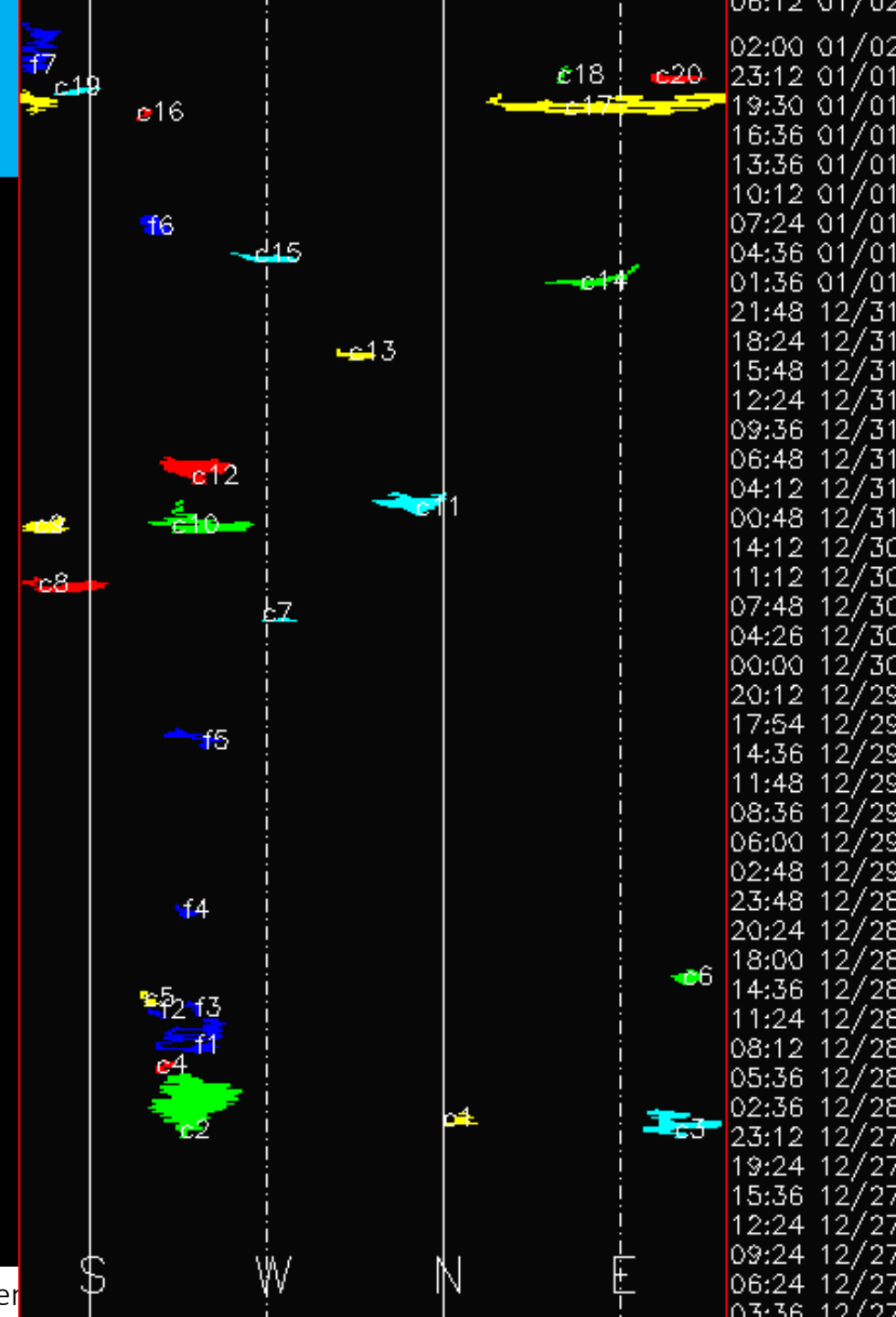
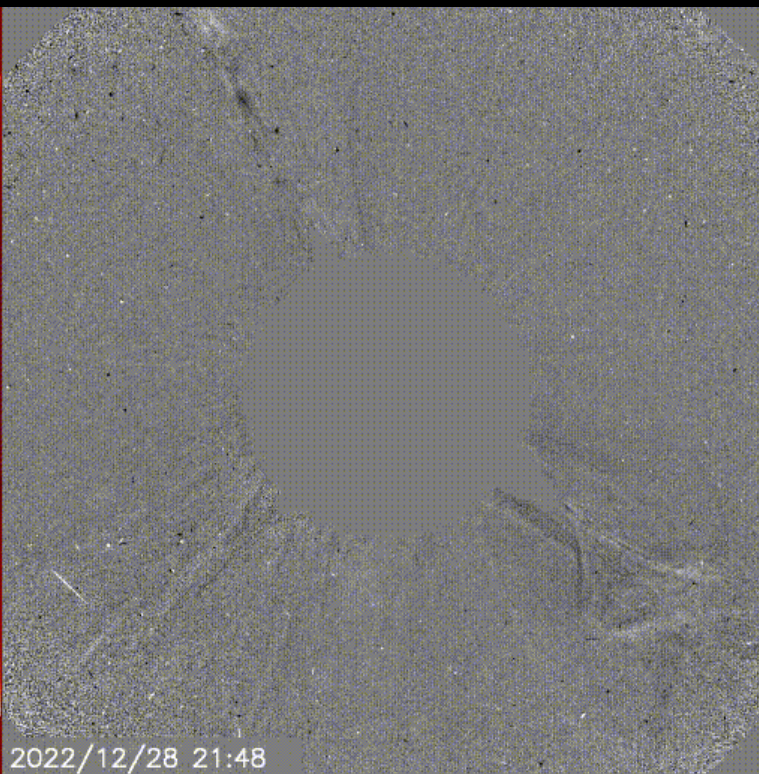
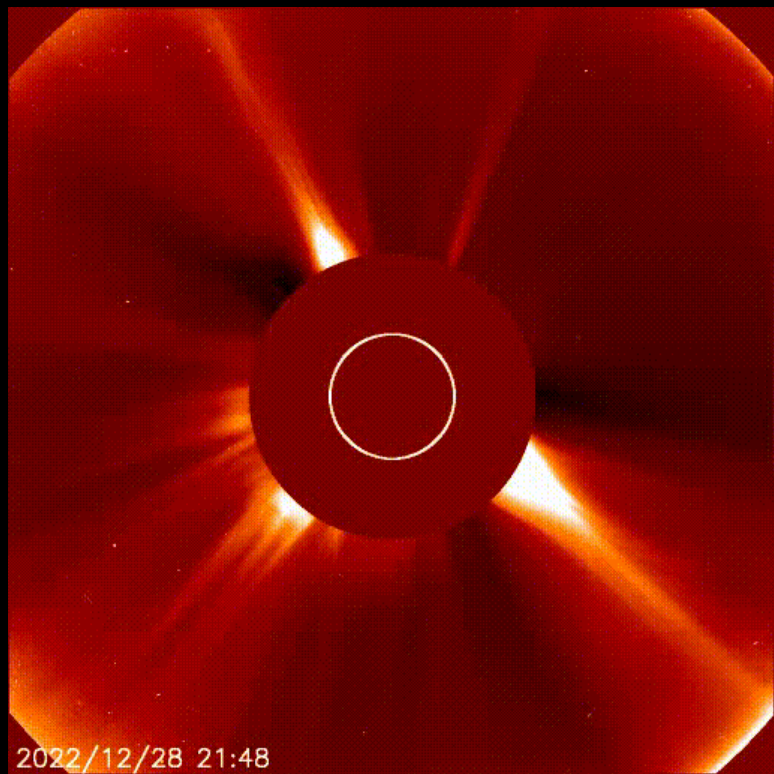
Coronal Mass Ejections



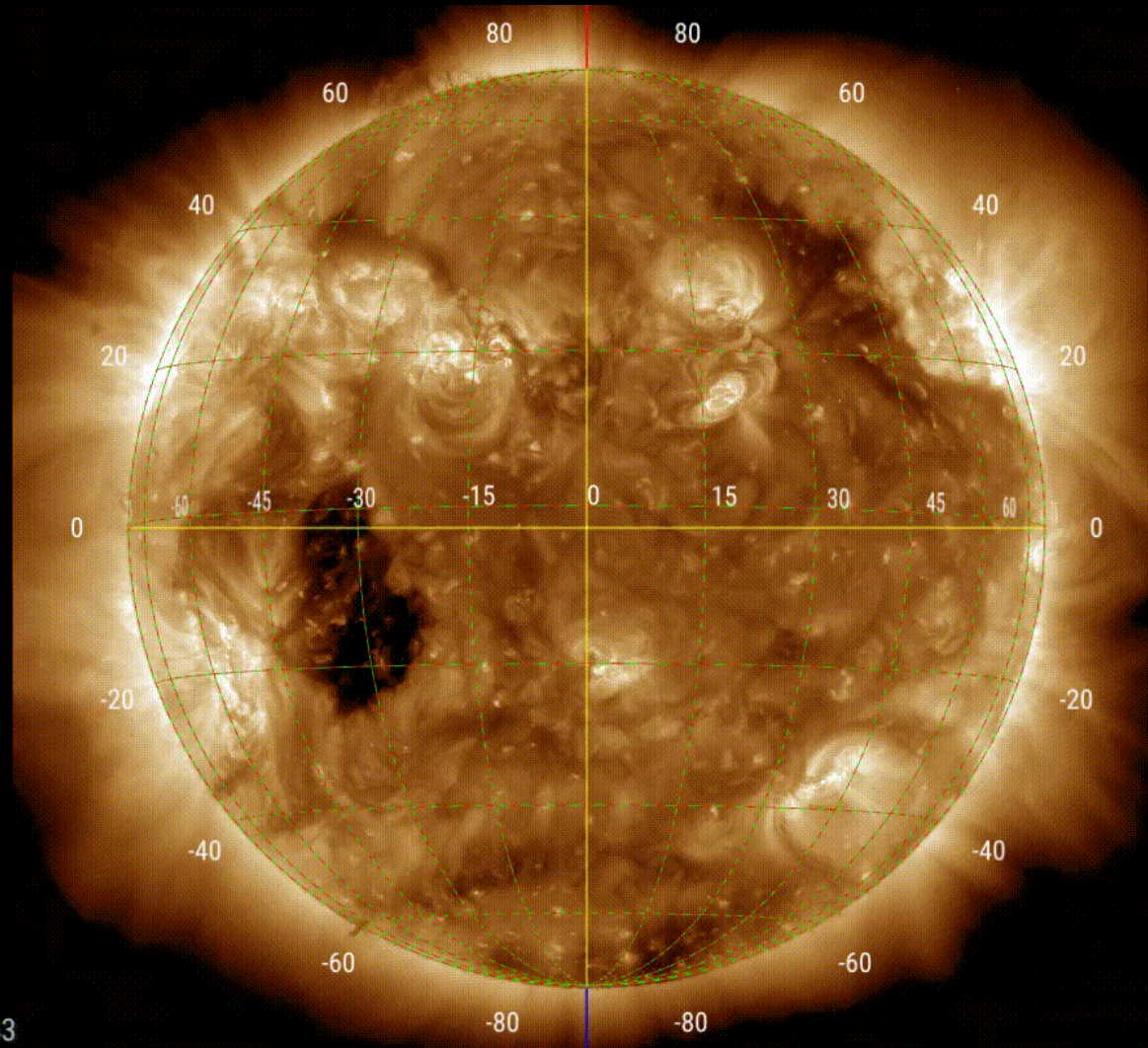
Coronal Mass Ejections



Coronal Mass Ejections

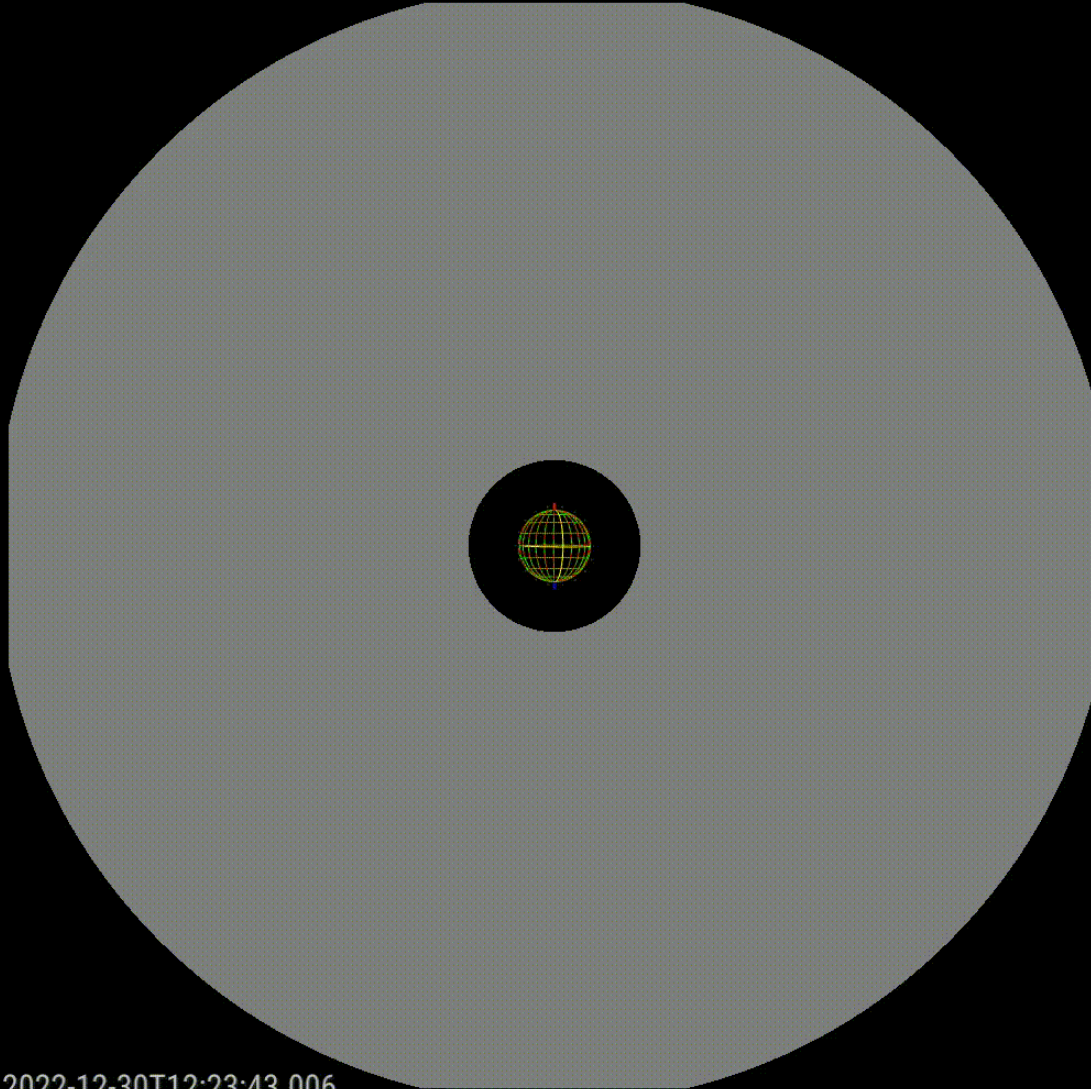


Coronal Mass Ejections: dimming December 30



2022-12-30T12:01:04.843

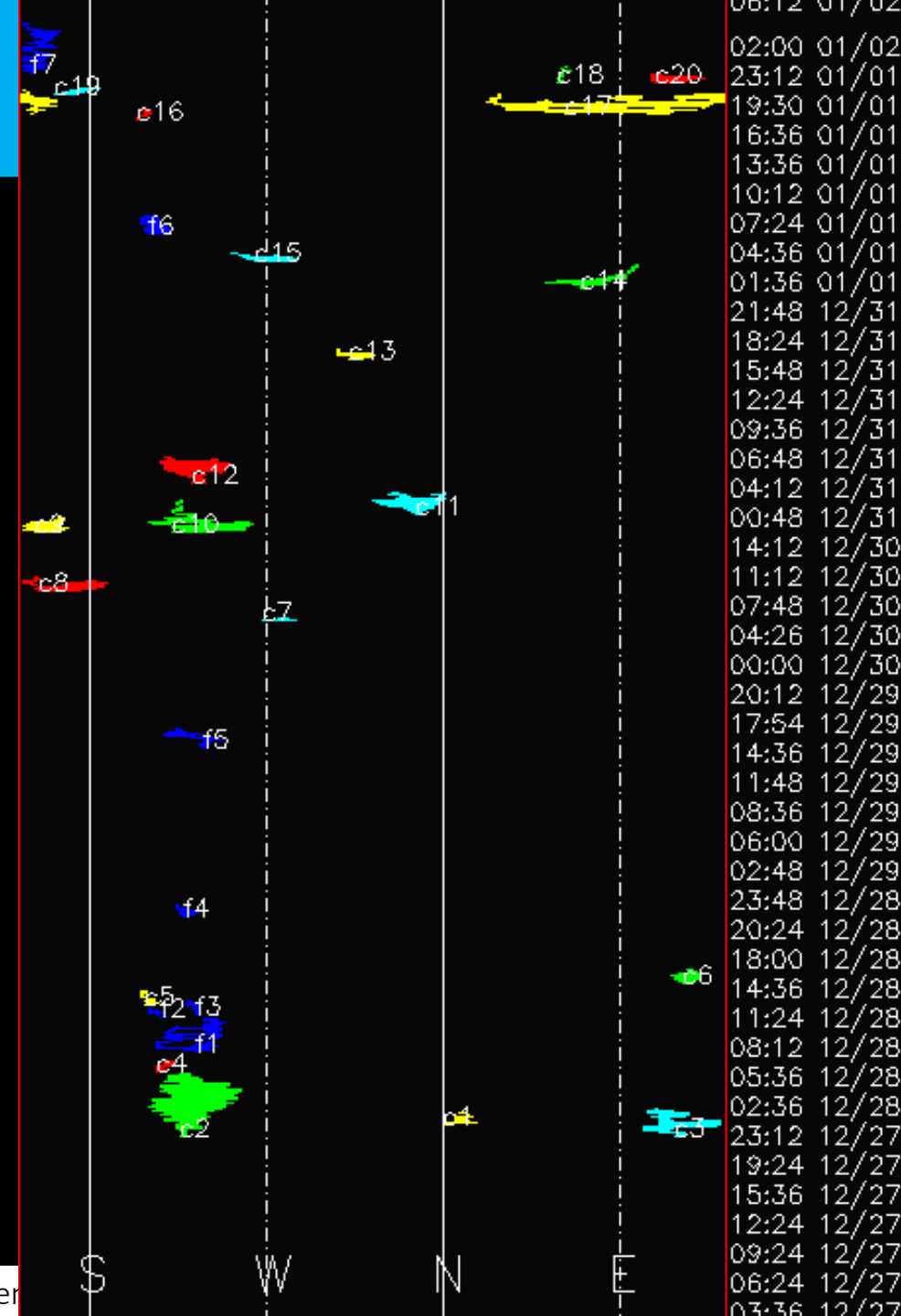
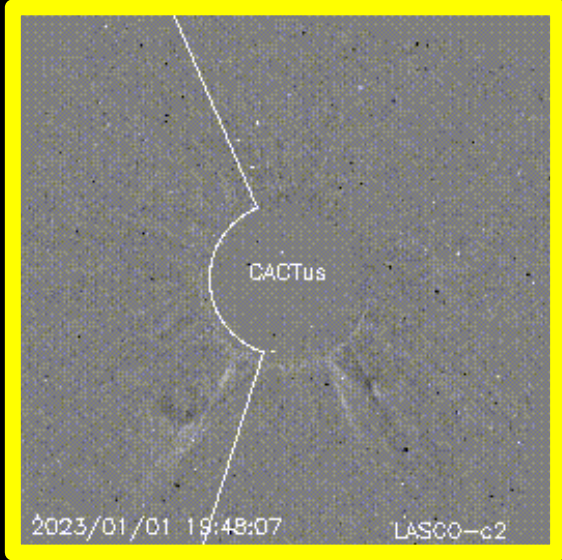
Coronal Mass Ejections: December 30, STEREO A COR2



Seems mostly off the Sun-Earth line. Speed is comparable to ambient solar wind. No specific arrival forecast given. If any transient would arrive to Earth, it should be around midnight 3-4 January.

2022-12-30T12:23:43.006

Coronal Mass Ejections



Solar Wind and

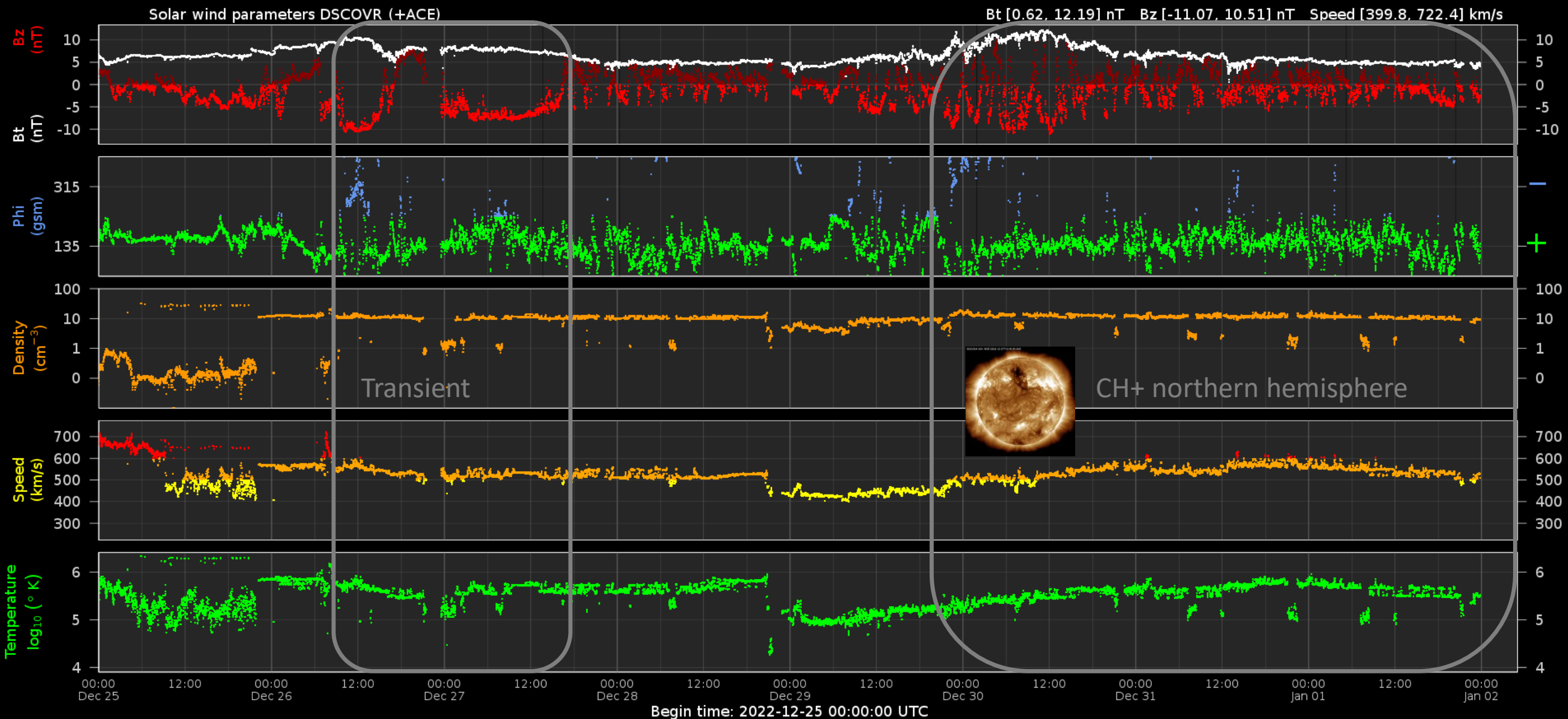
Geomagnetic Activity



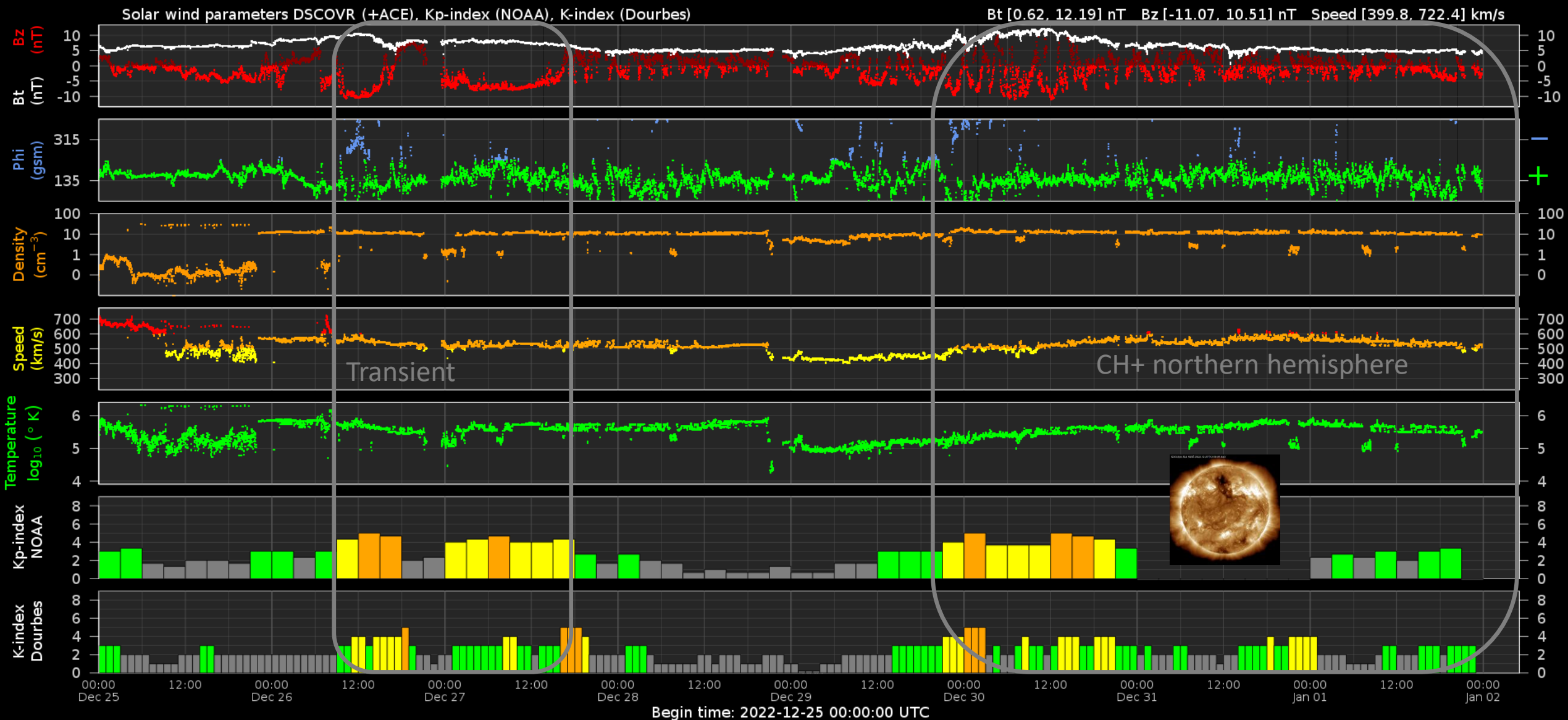
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Solar wind parameters



Solar wind parameters & K-indices



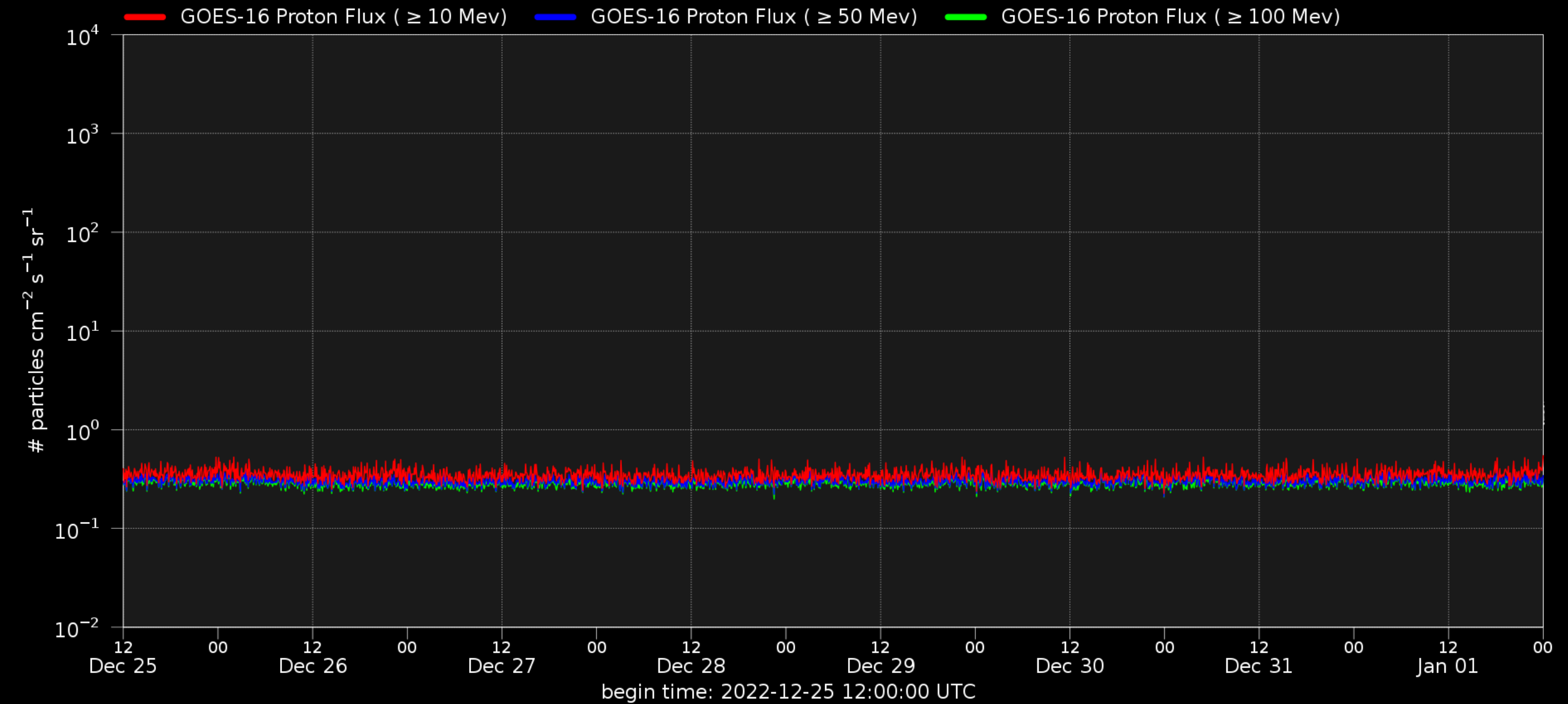
Energetic Particles



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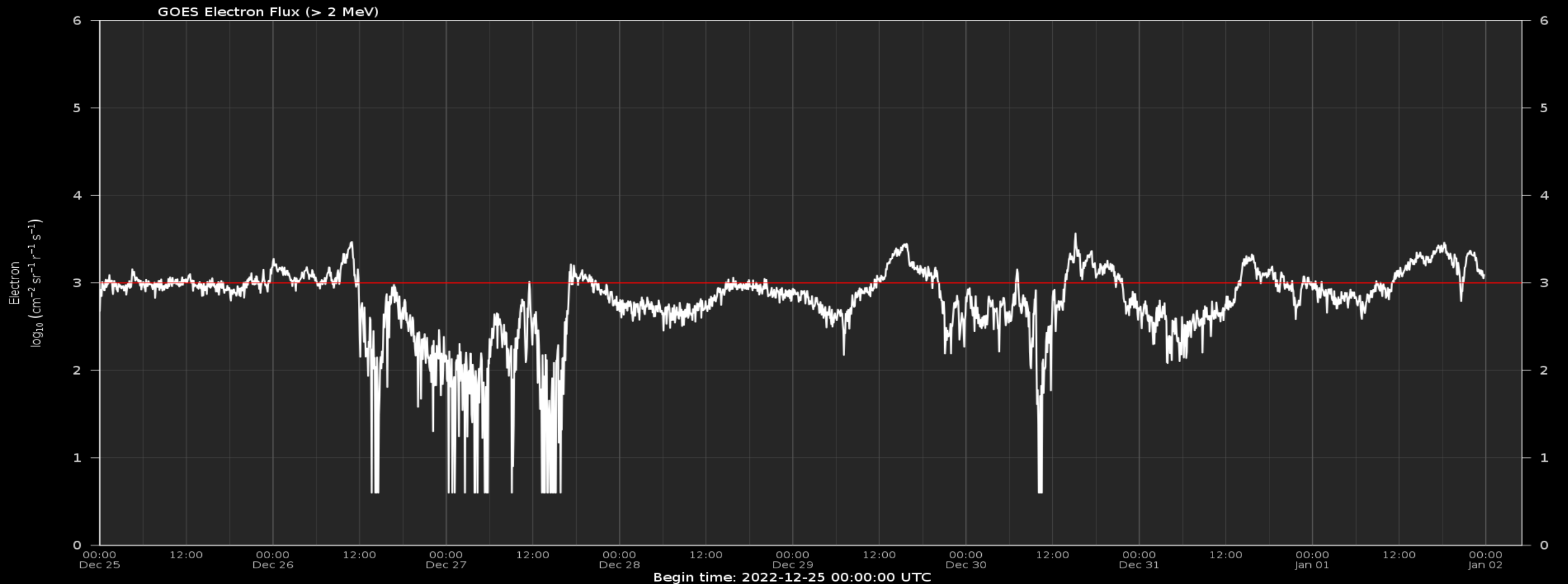
Solar proton flux



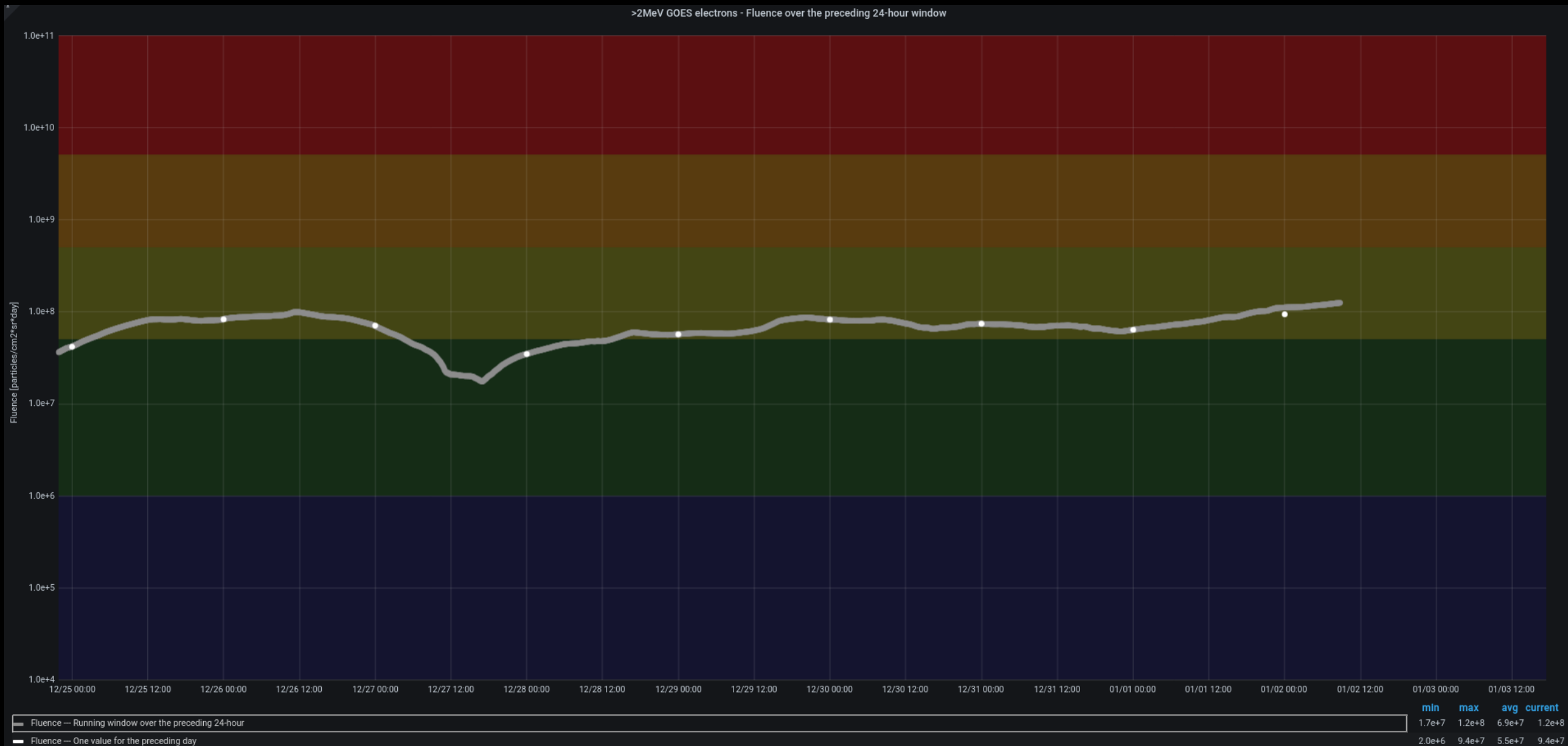
Electron flux at GEO

www.stce.be/educational/classification#electrons

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



Electron fluence at GEO



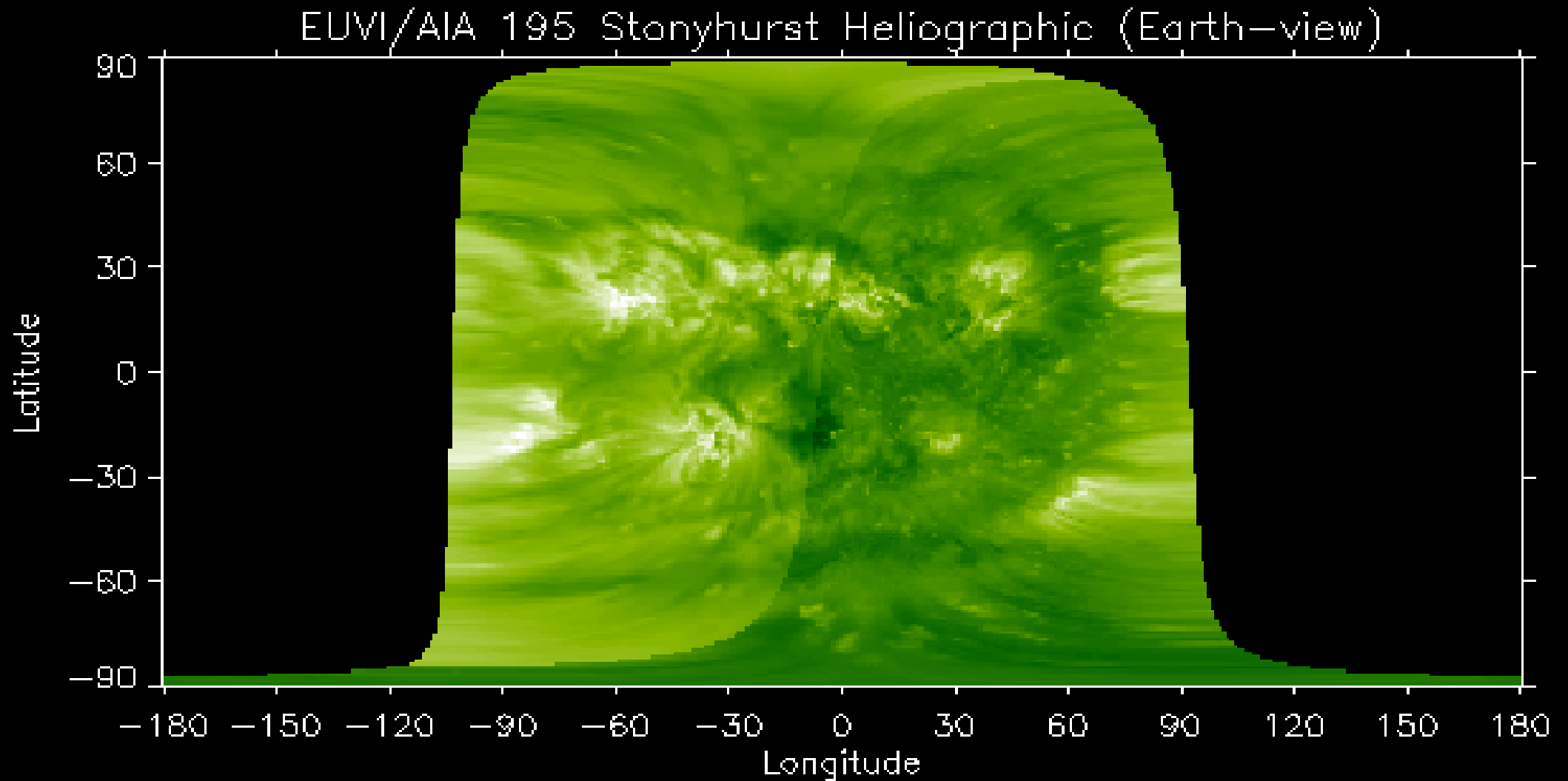
Outlook



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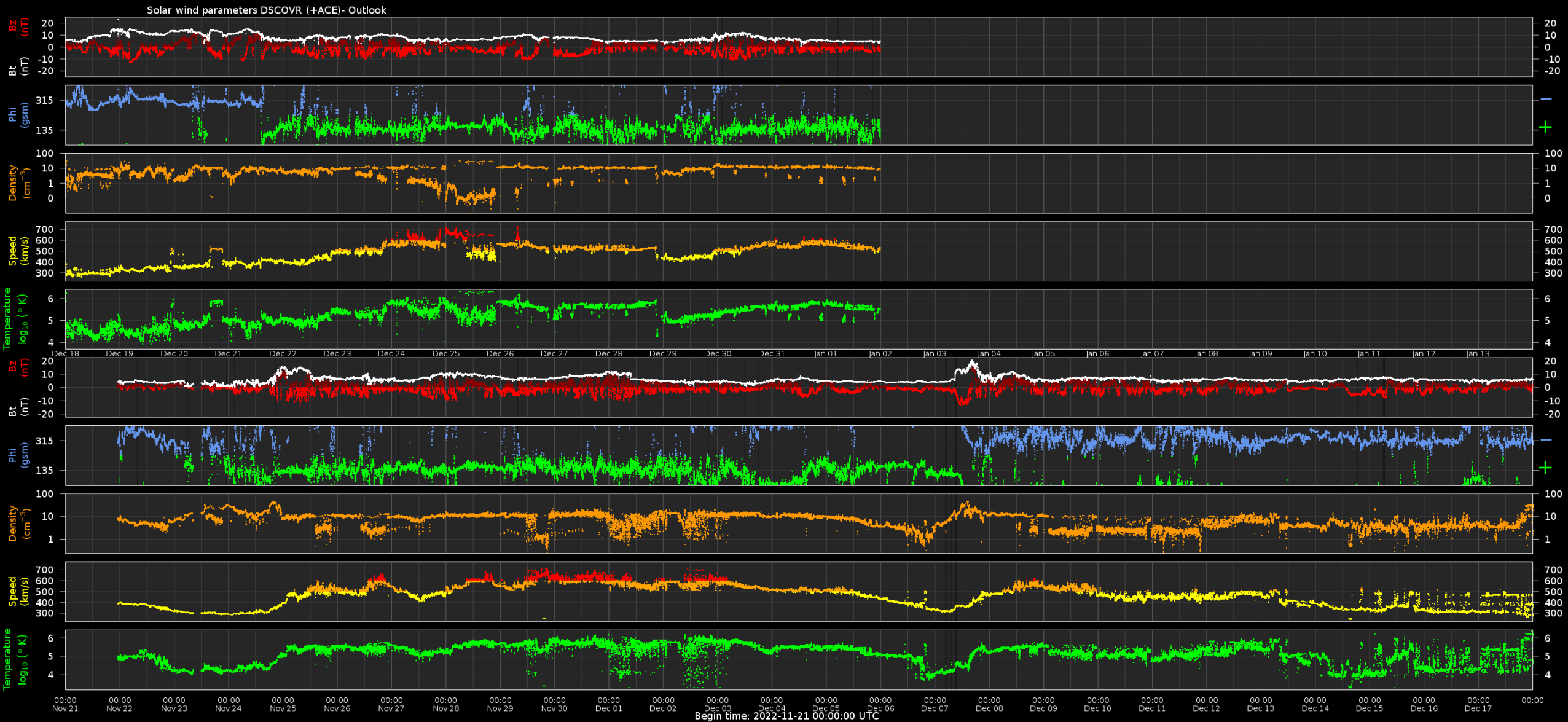
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Outlook: Solar activity

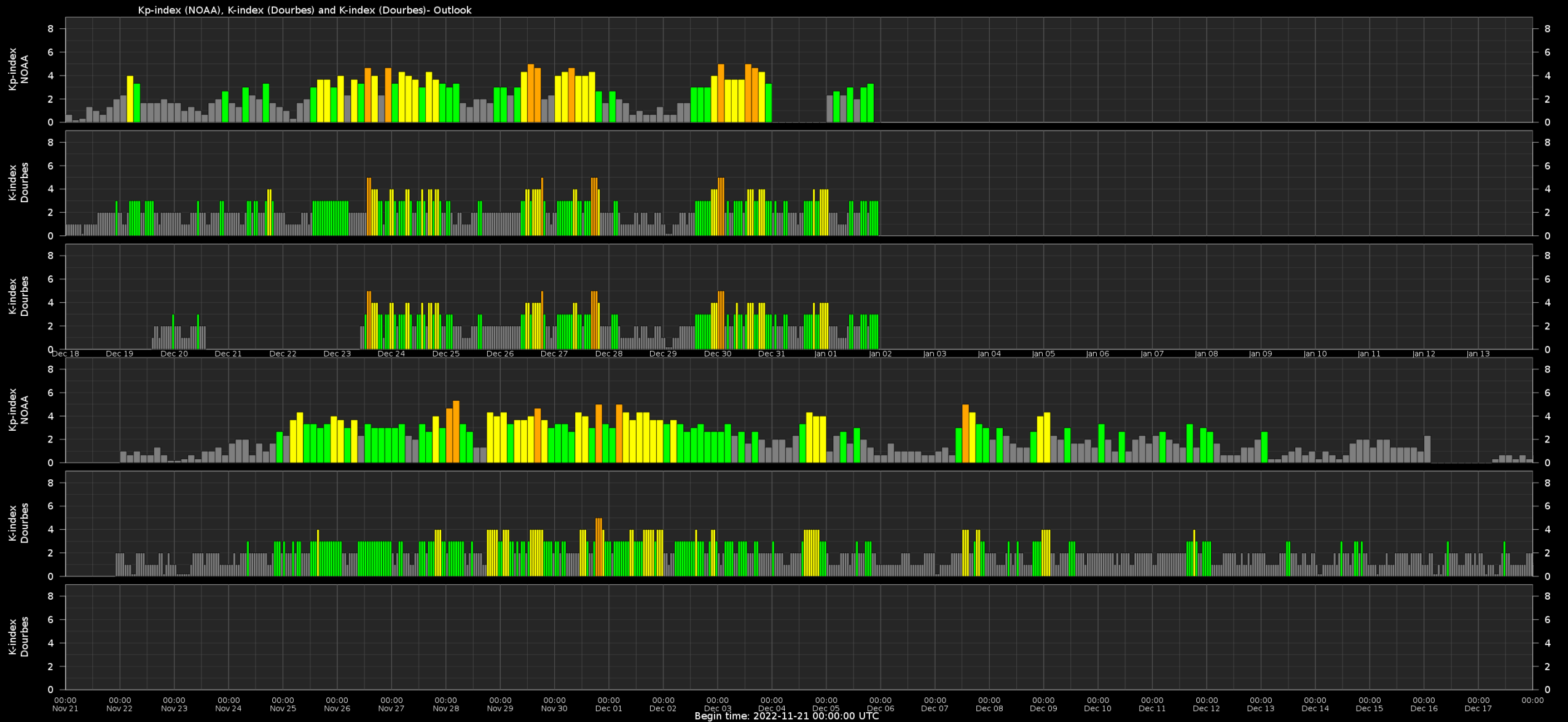


Observation date: 2023/01/01 04:35:00

Outlook: Solar wind parameters



Outlook: Geomagnetic activity



Outlook: Electron Flux at GEO Outlook



ICAO service

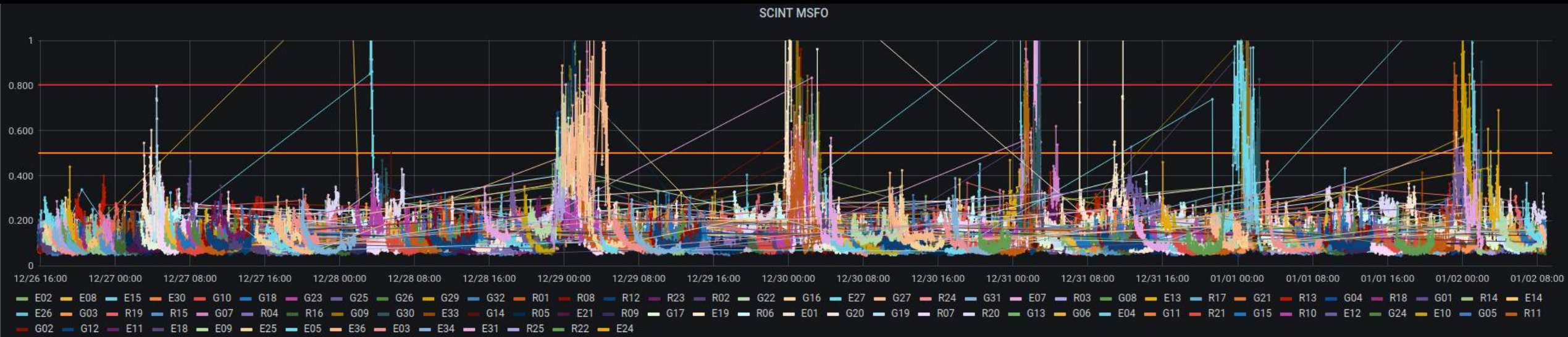


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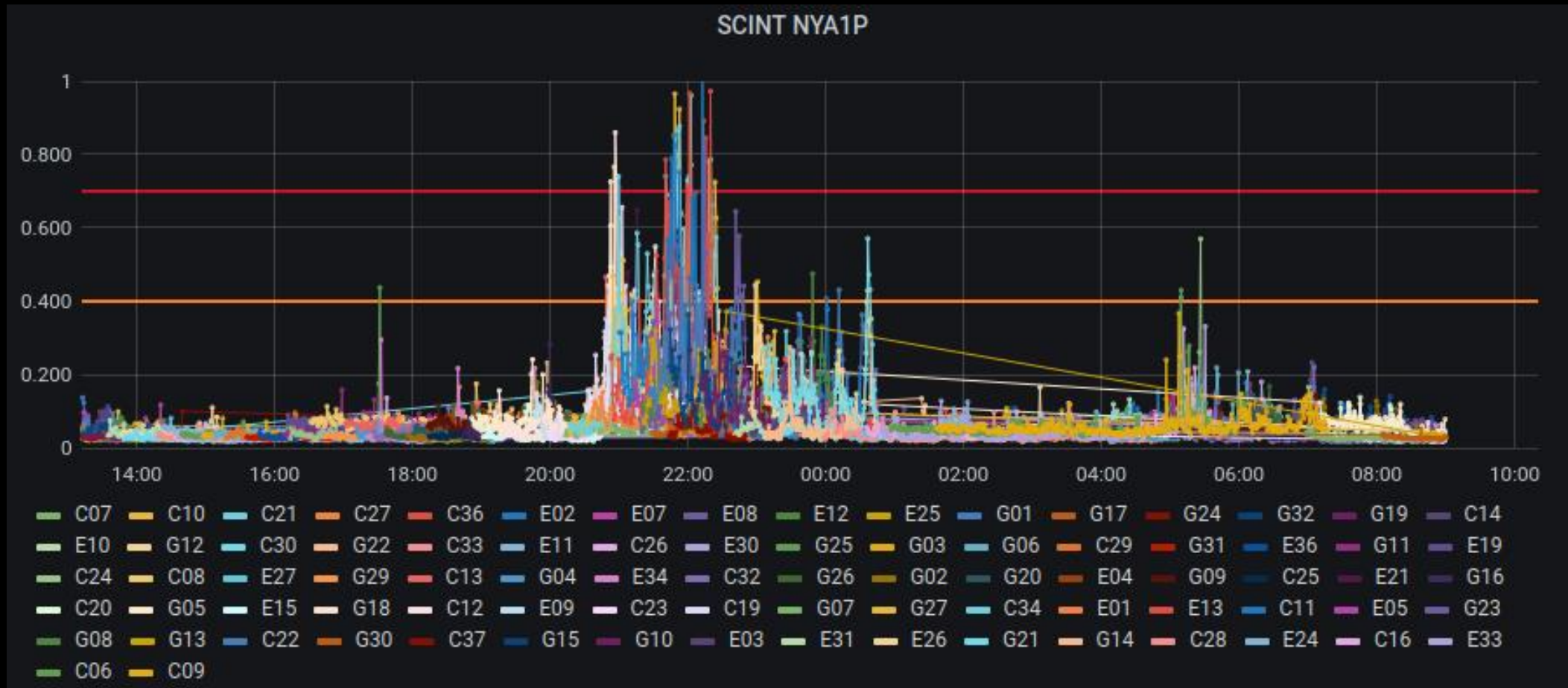
ICAO service related events

- GNSS Equatorial scintillation in the South-American region. Advisories issued December 29, 30, 31 (Data from Fortaleza station, DLR)



ICAO service related events

- GNSS Phase scintillation in Svalbard area. Advisory issued in UTC night of 1-2 January. (Data from Alesund station, INGV)



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