

SIDC Space Weather Briefing

17 December 2023-24 December 2023

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& the SIDC forecaster team



Solar Influences
Data analysis Centre
www.sidc.be

Summary Report

Solar activity from 2023-12-17 12:00 to 2023-12-24 23:59

| | |
|----------------|---|
| Active regions | 20 Active Regions NOAA AR 3513, 3514, 3516 - 3533 |
| Flares | # C-class flare: 93 # M-class flare: 6 # X-class flare: 0 |
| Coronal Holes | One negative polarity coronal hole |
| CMEs | Few narrow CMEs |

| | |
|---------------|---------------------------------|
| Proton flux | Remained below 10 pfu threshold |
| Electron flux | Exceeded 1000 pfu threshold |

Solar wind and geomagnetic conditions

| | |
|------------------------|---|
| ICMEs | No ICME arrivals |
| Solar wind conditions | B : 0.69 - 15.01 nT //Bz: -13.11 nT to 11.77 nT //Speed: 330 - 720km/s |
| Geomagnetic conditions | max K _{BeI} : 5, max K _p (NOAA): 6, Moderate Storm conditions |

All Quiet Alert: Off

- Solar Activity

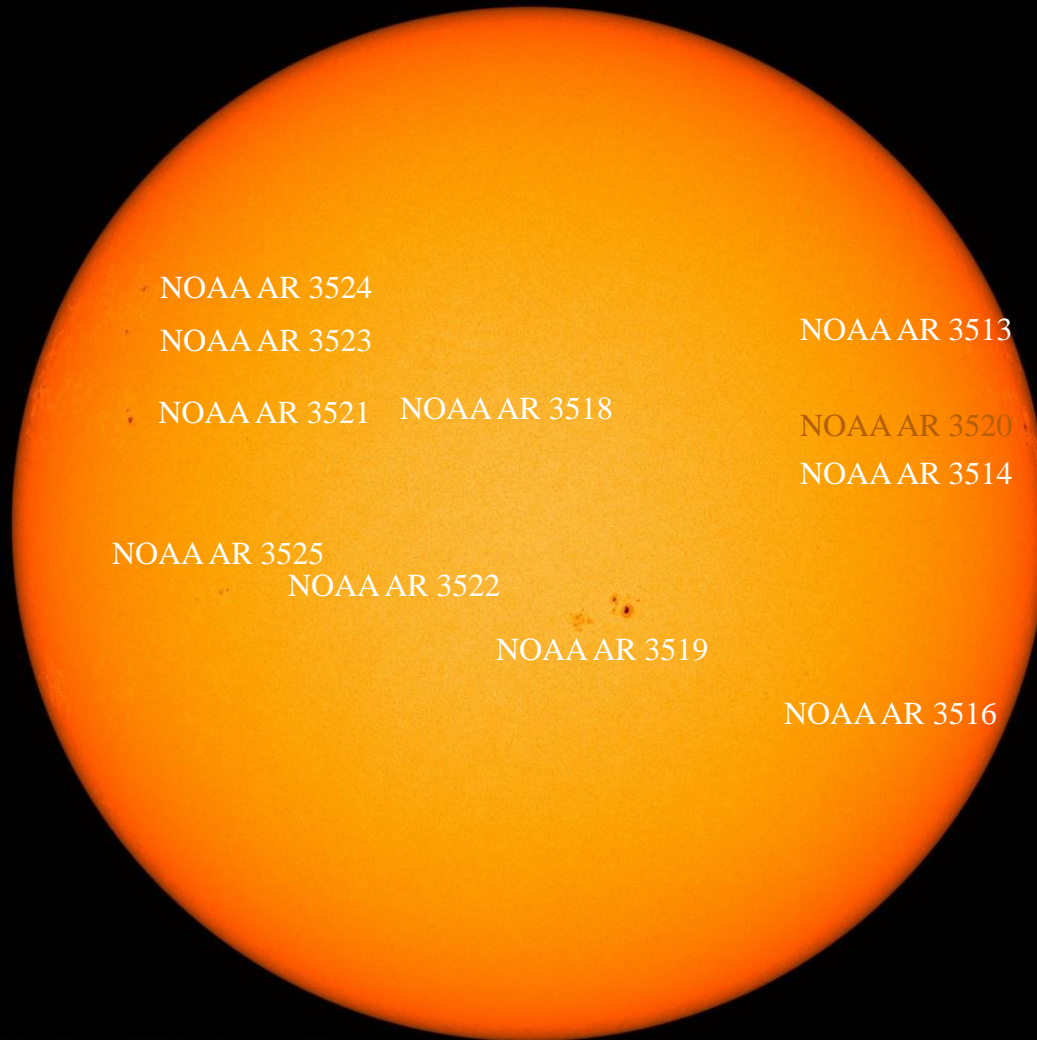


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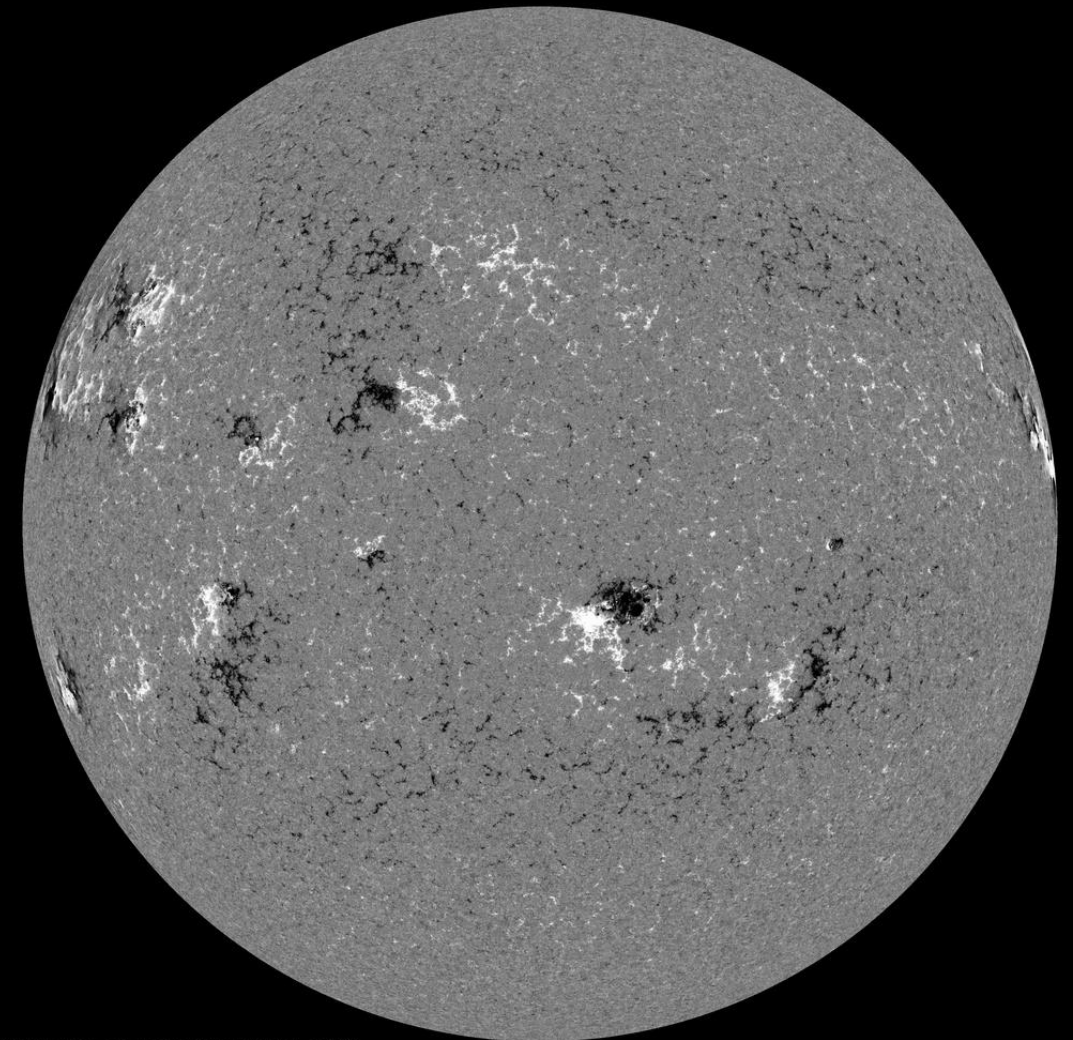
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Solar active regions

SDO/HMI White Light 2023-12-17

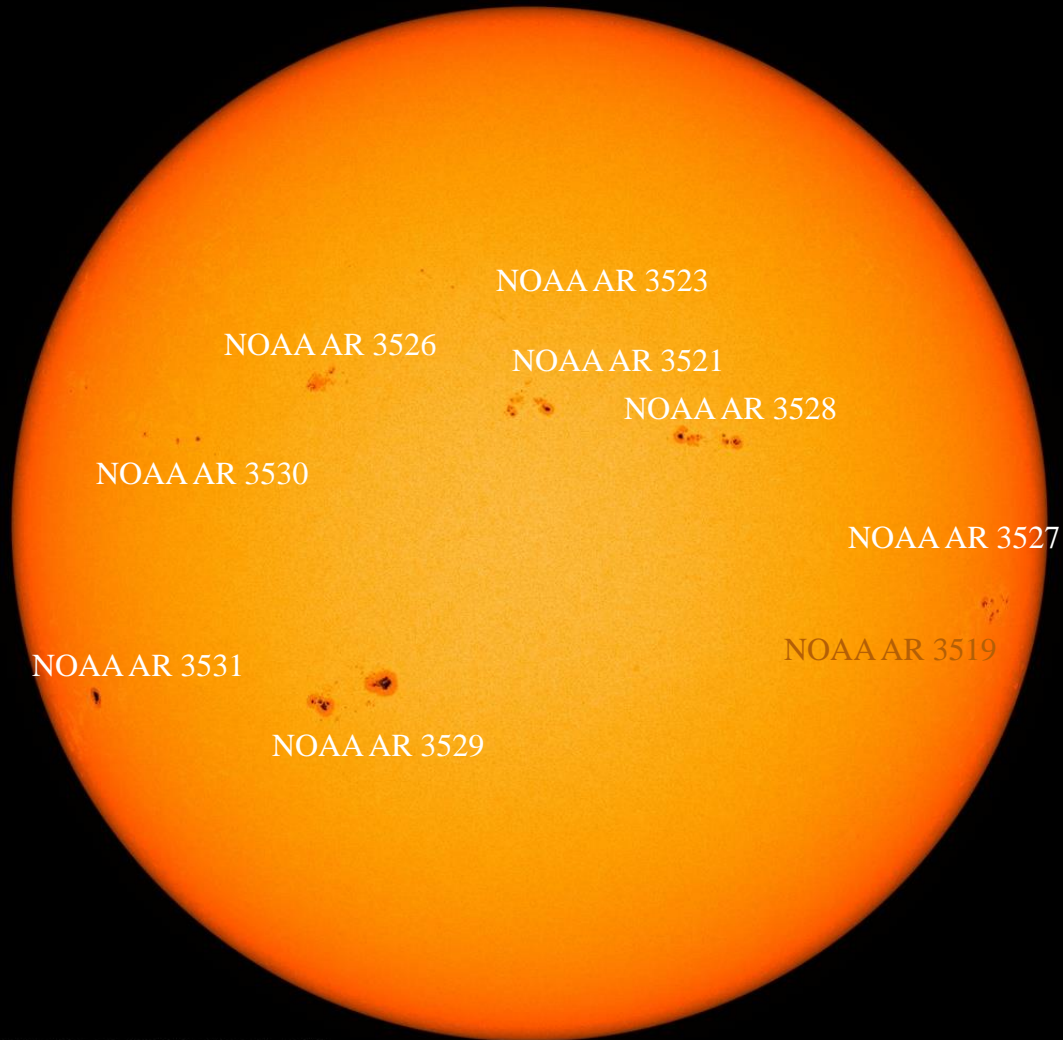


SDO/HMI Magnetogram 2023-12-17



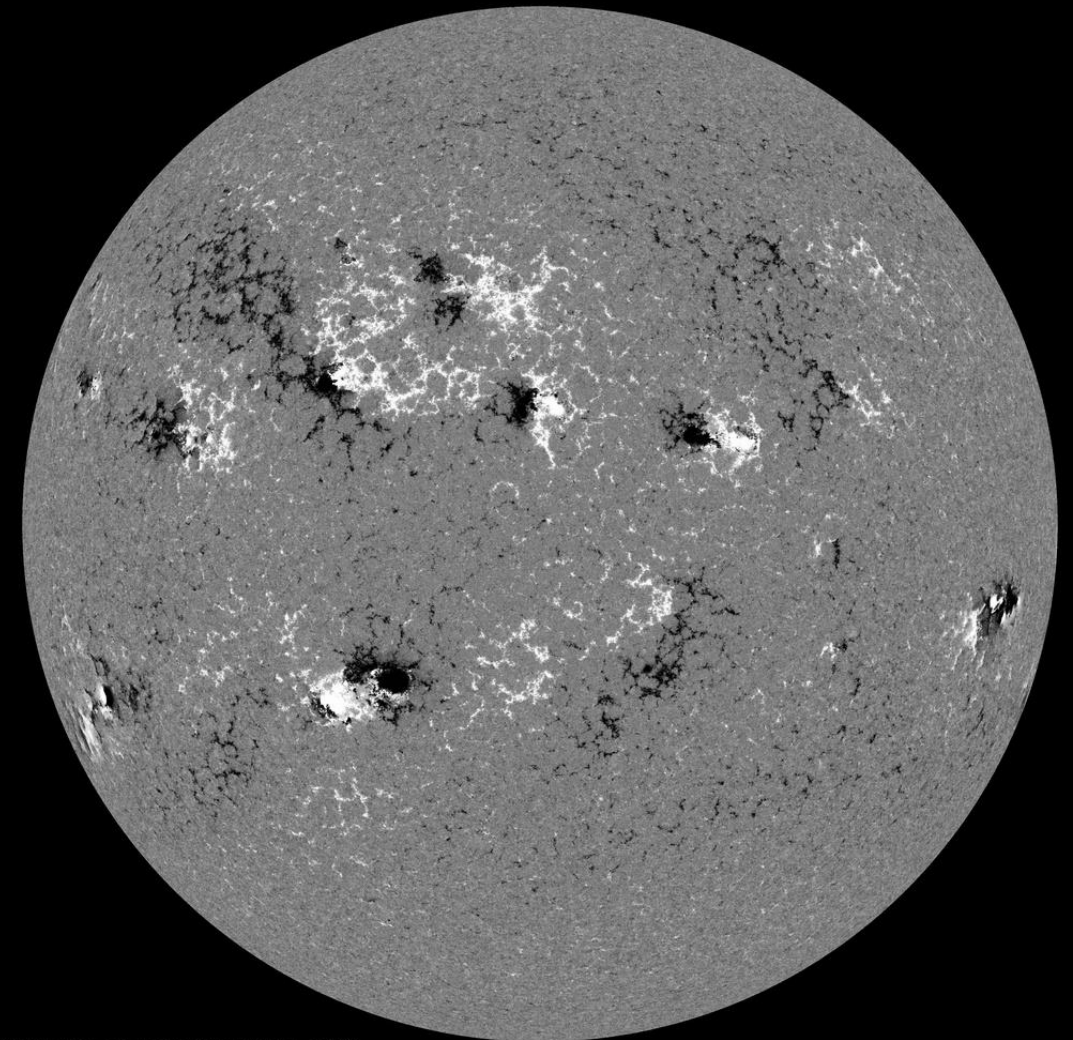
Solar active regions

SDO/HMI White Light 2023-12-21



SDO/HMI Quick-Look Continuum: 20231221_114500

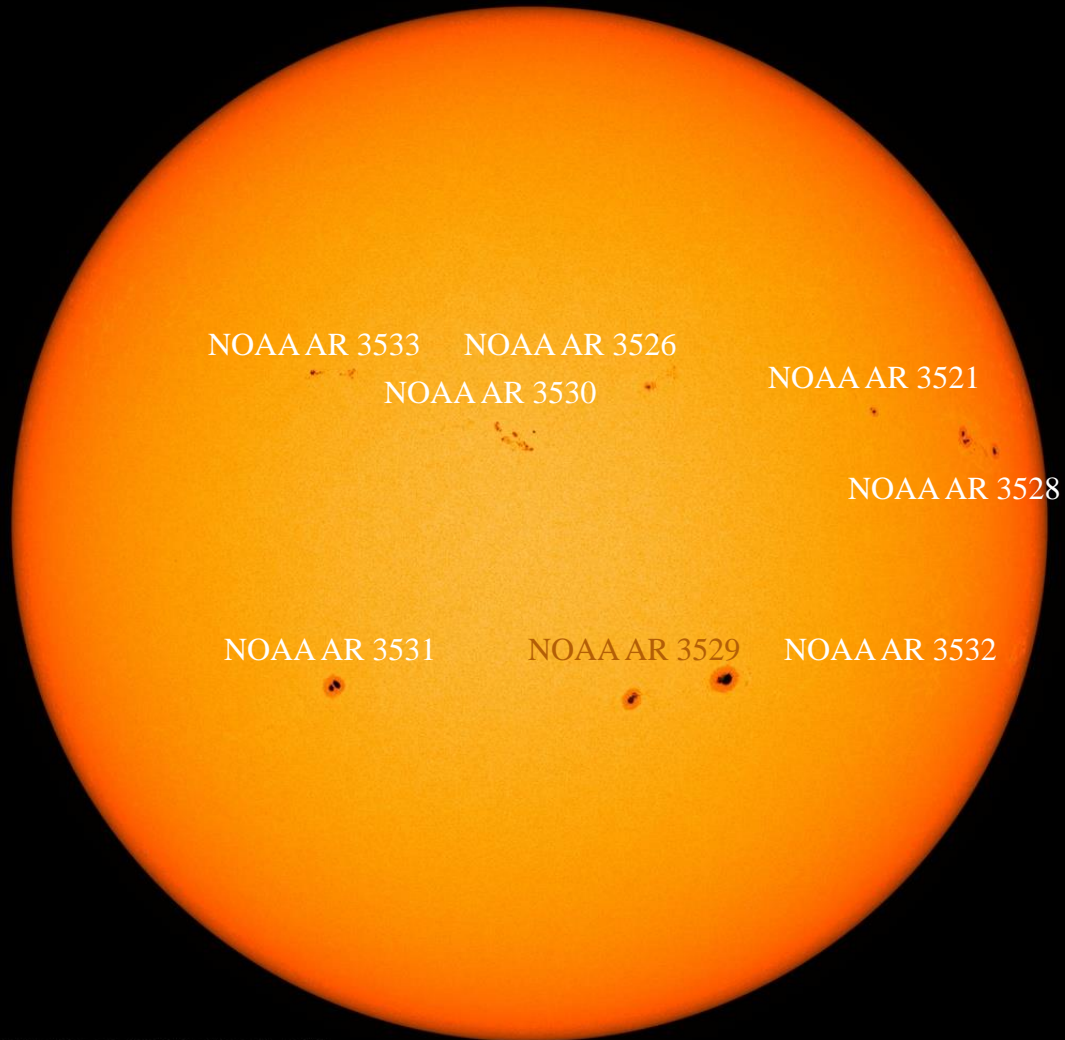
SDO/HMI Magnetogram 2023-12-21



SDO/HMI Quick-Look Magnetogram: 20231221_114500

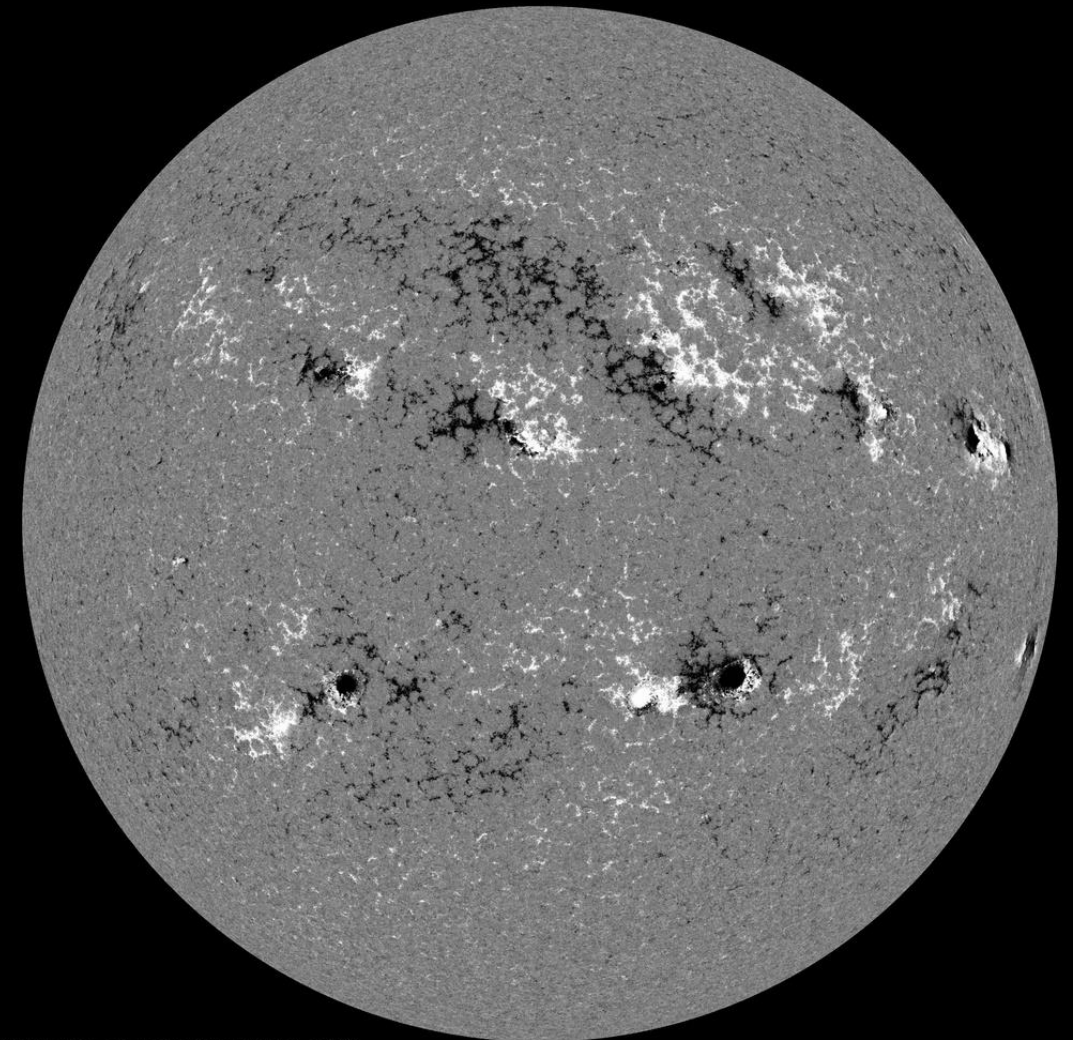
Solar active regions

SDO/HMI White Light 2023-12-24



SDO/HMI Quick-Look Continuum: 20231224_114500

SDO/HMI Magnetogram 2023-12-24

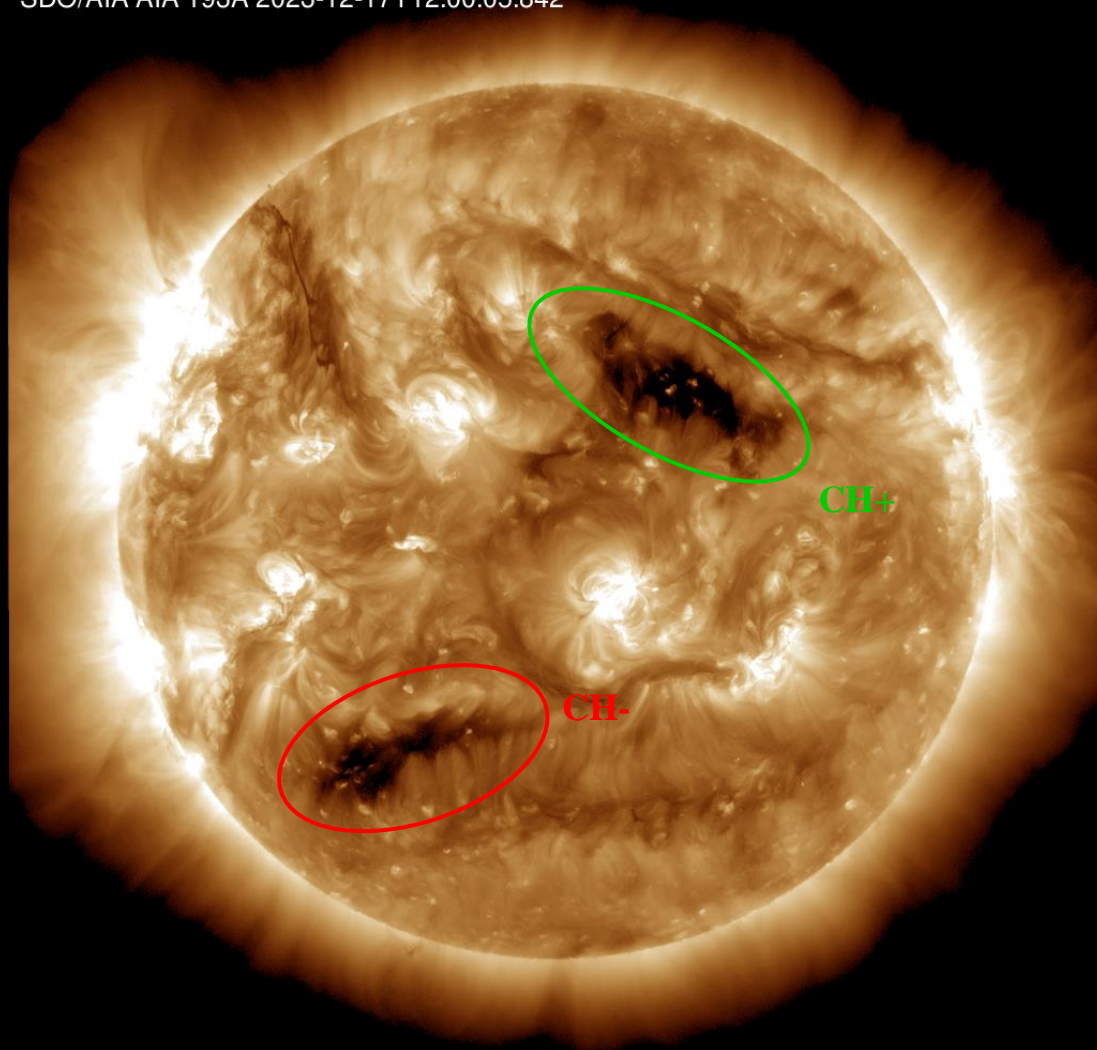


SDO/HMI Quick-Look Magnetogram: 20231224_114500

Coronal holes

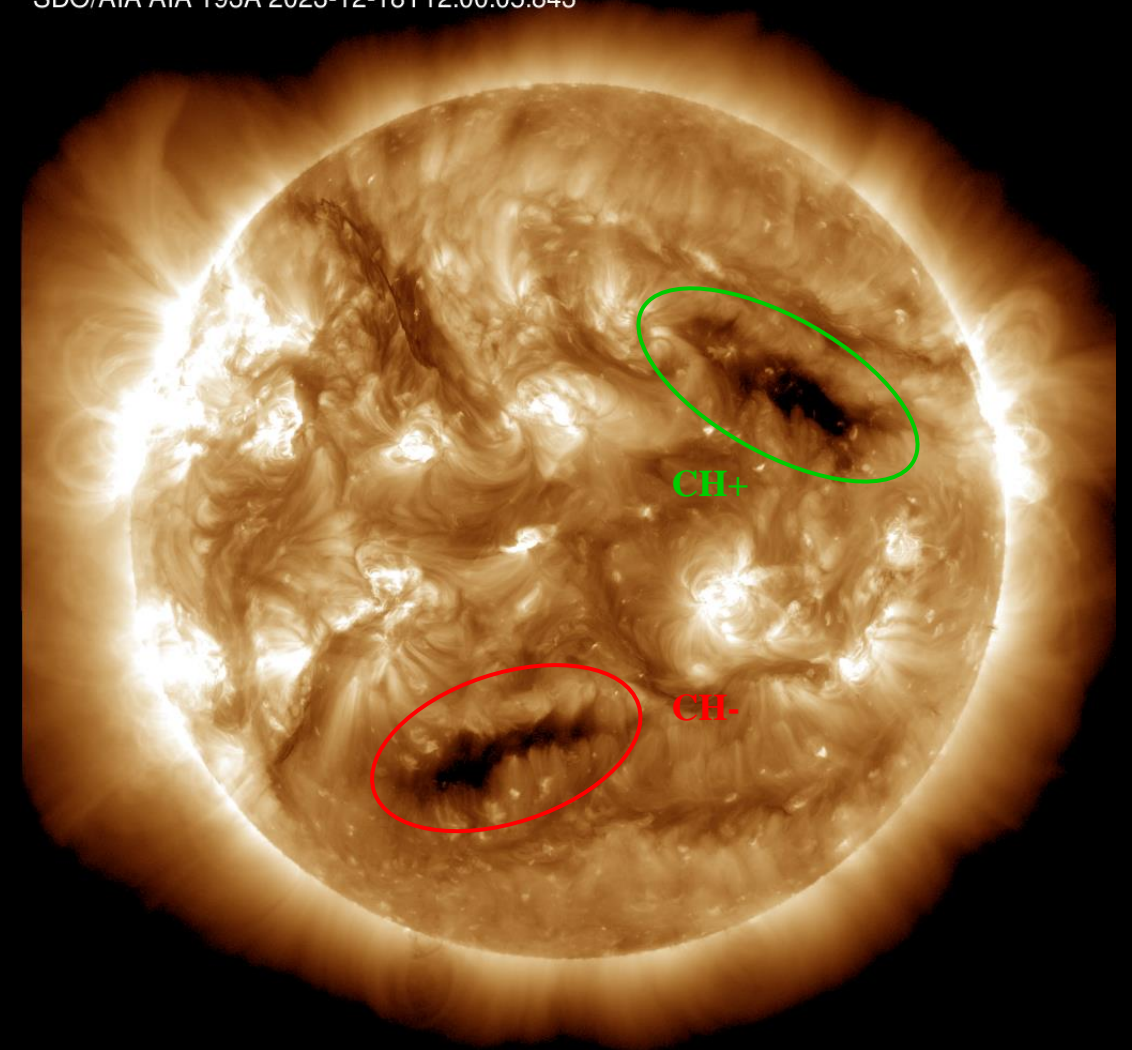
SDO/AIA 19.3 nm 2023-12-17

SDO/AIA AIA 193Å 2023-12-17T12:00:05.842



SDO/AIA 19.3 nm 2023-12-18

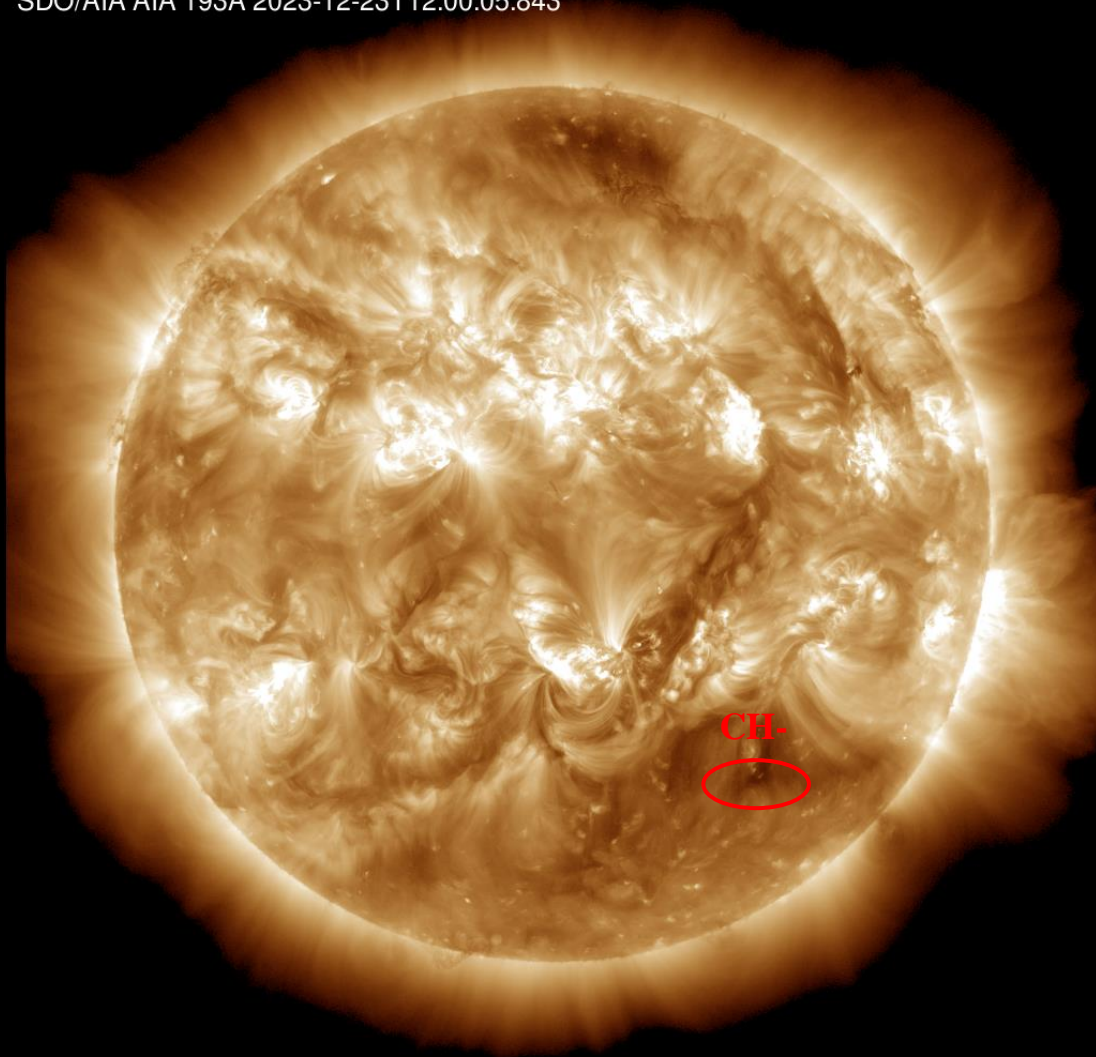
SDO/AIA AIA 193Å 2023-12-18T12:00:05.843



Coronal holes

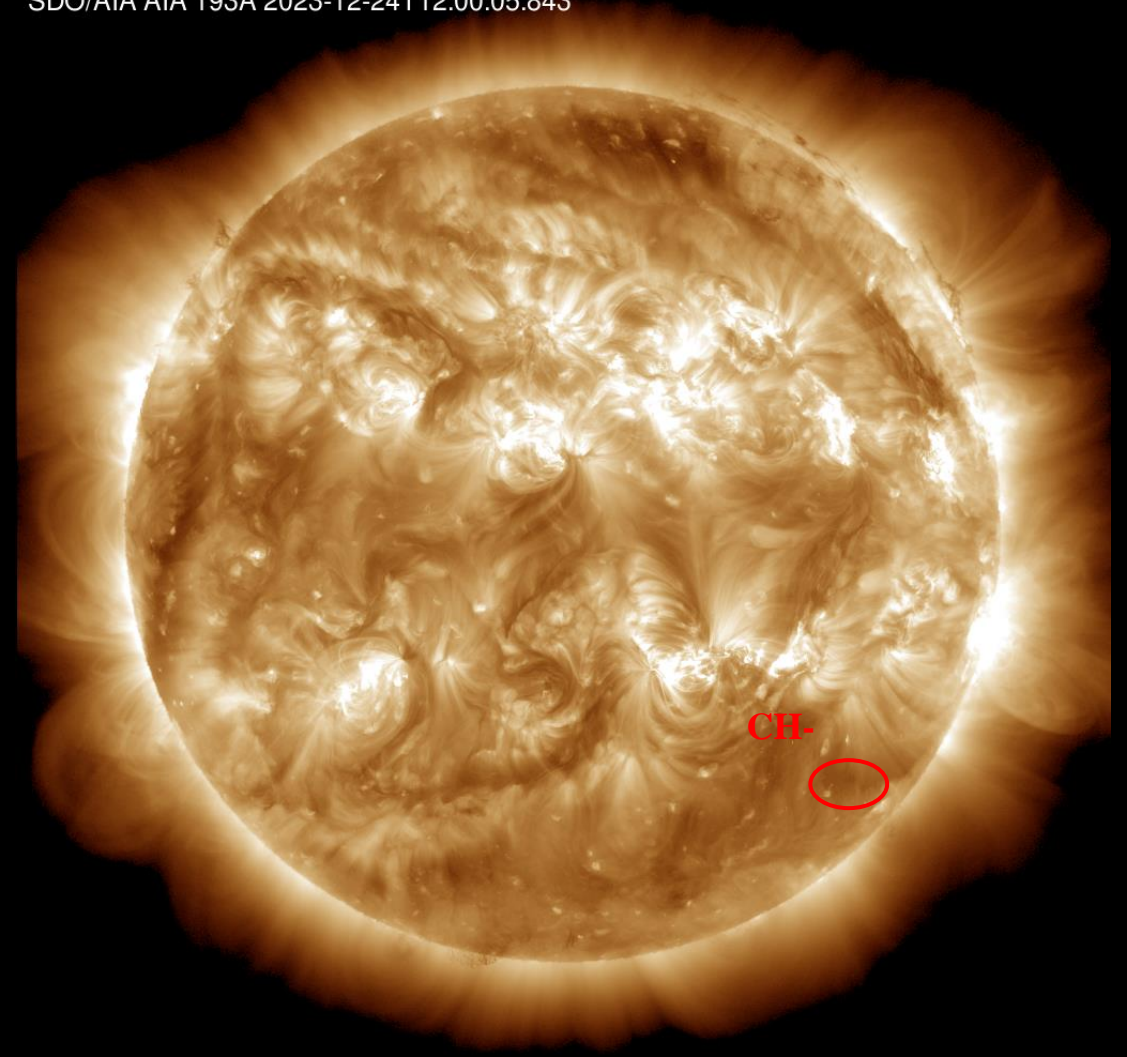
SDO/AIA 19.3 nm 2023-12-23

SDO/AIA AIA 193Å 2023-12-23T12:00:05.843



SDO/AIA 19.3 nm 2023-12-24

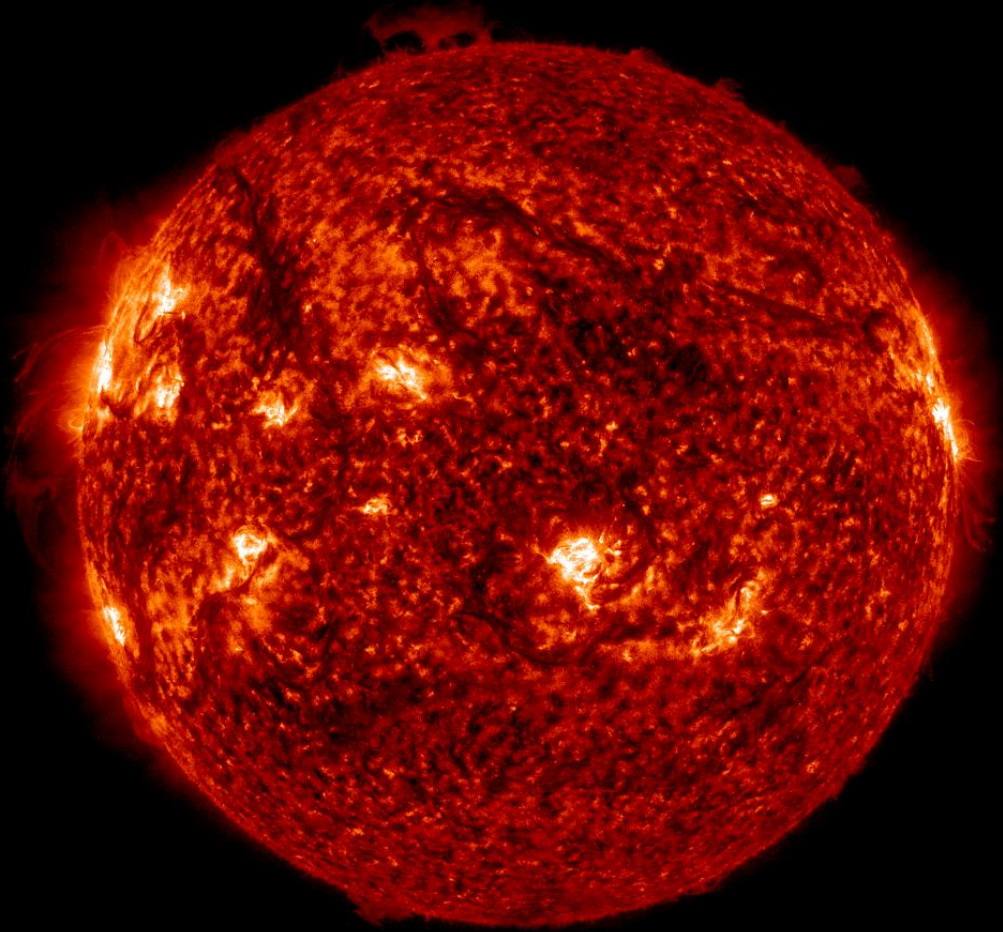
SDO/AIA AIA 193Å 2023-12-24T12:00:05.843



Filaments

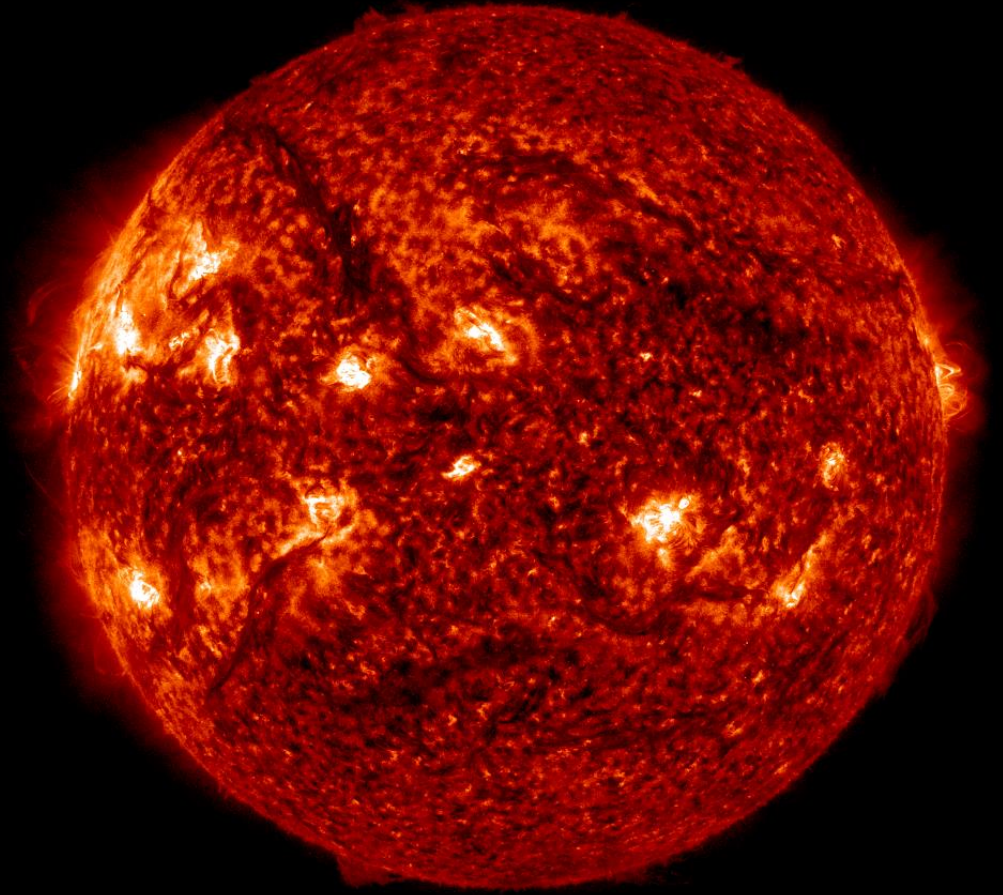
SDO/AIA 30.4 nm 2023-12-17

SDO/AIA AIA 304Å 2023-12-17T12:00:06.580



SDO/AIA 30.4 nm 2023-12-18

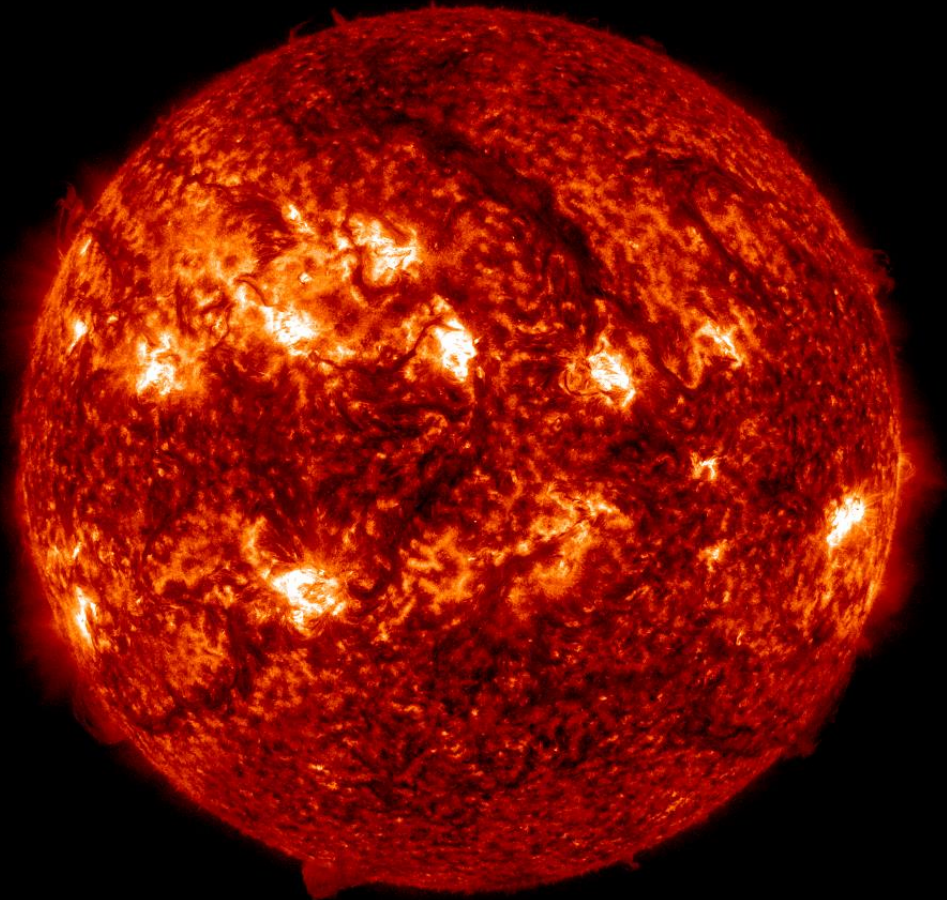
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Filaments

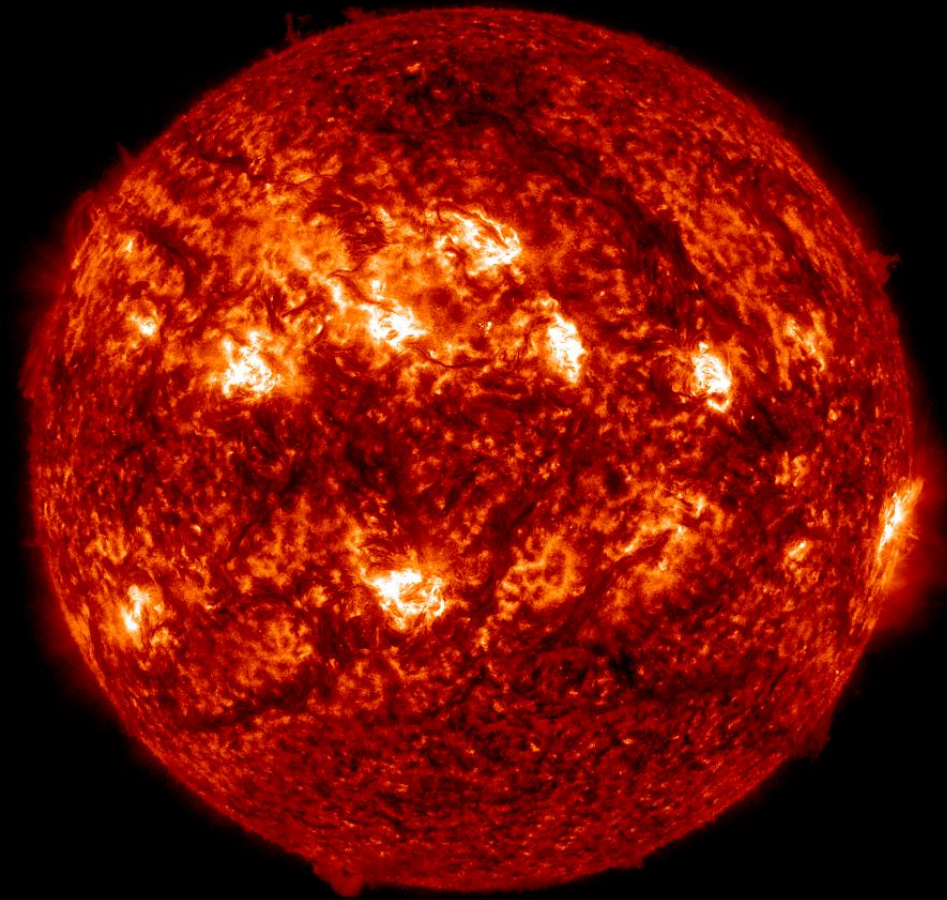
SDO/AIA 30.4 nm 2023-12-21

SDO/AIA AIA 304Å 2023-12-21T12:00:06.580



SDO/AIA 30.4 nm 2023-12-22

SDO/AIA AIA 304Å 2023-12-22T12:00:06.584



Filaments & Filament eruptions

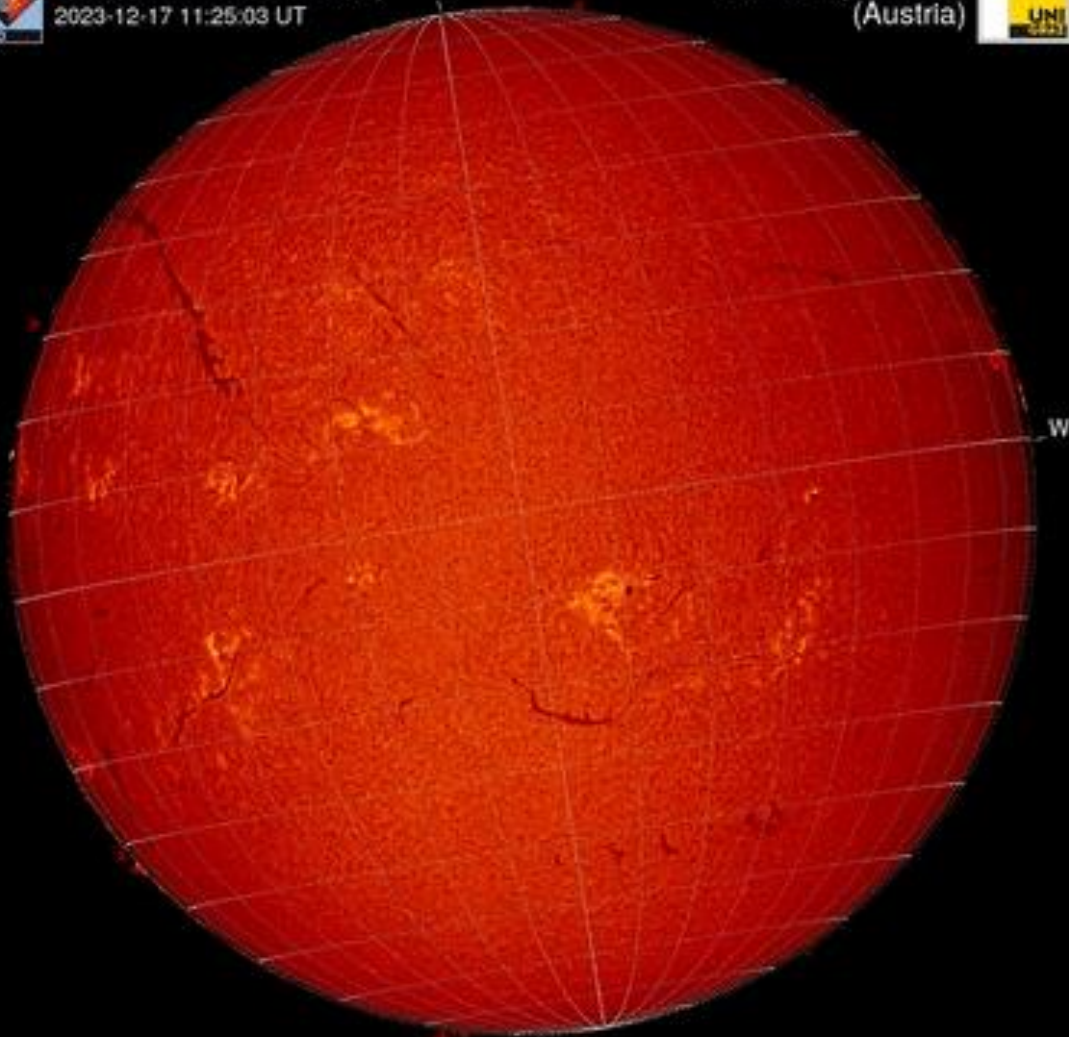
H-alpha 2023-12-17



Kanzelhöhe Observatory
2023-12-17 11:25:03 UT

N

University of Graz
(Austria)



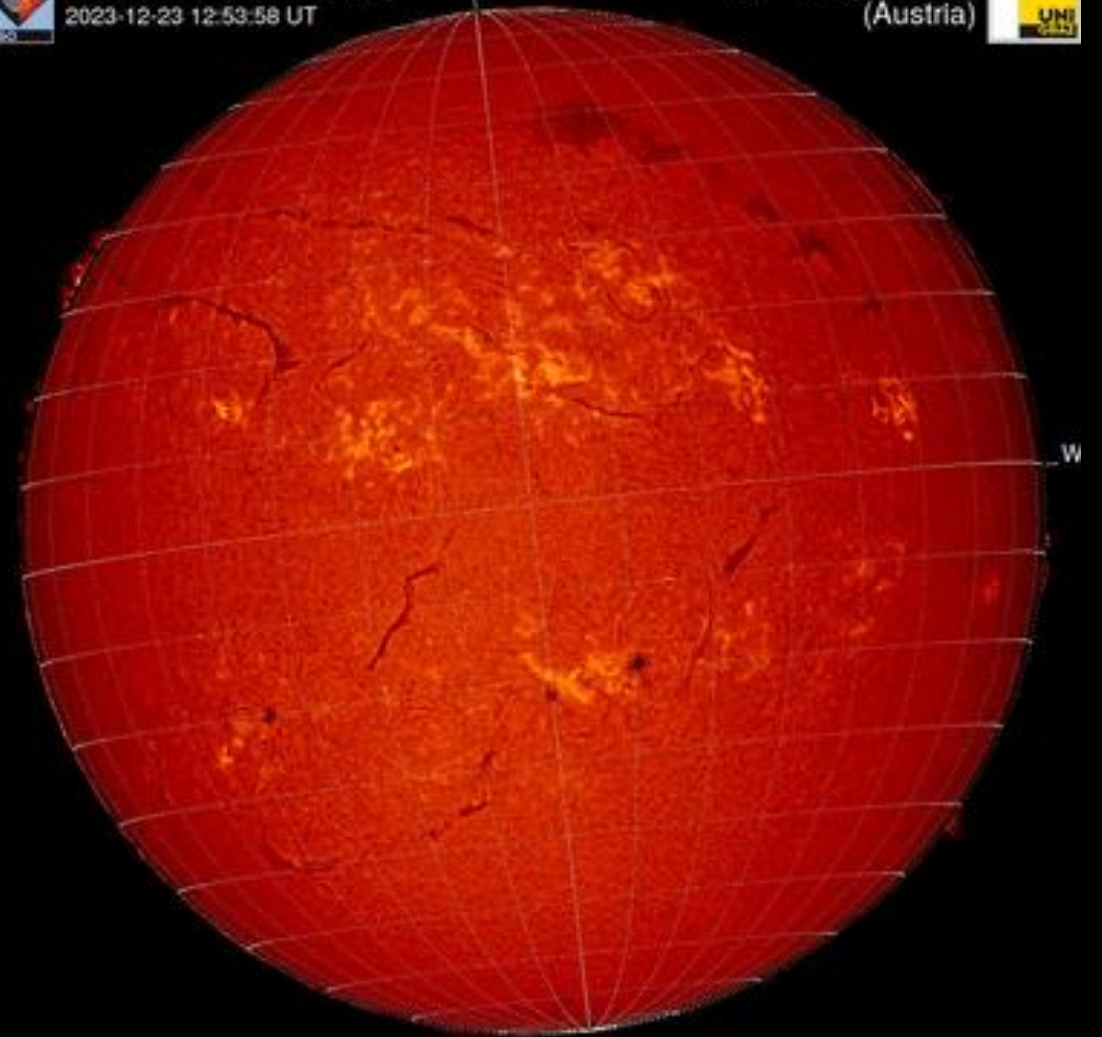
H-alpha 2023-12-24



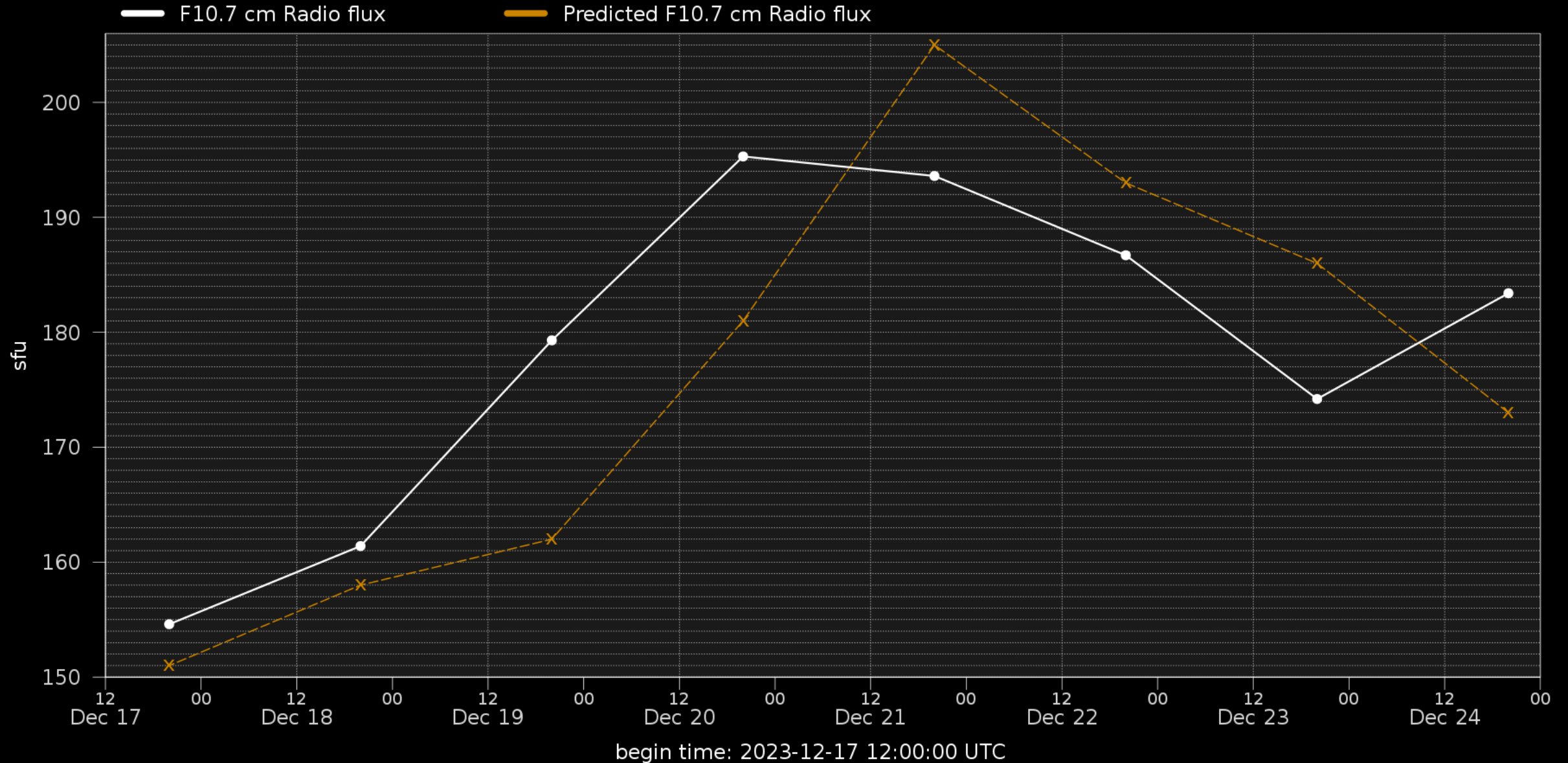
Kanzelhöhe Observatory
2023-12-23 12:53:58 UT

N

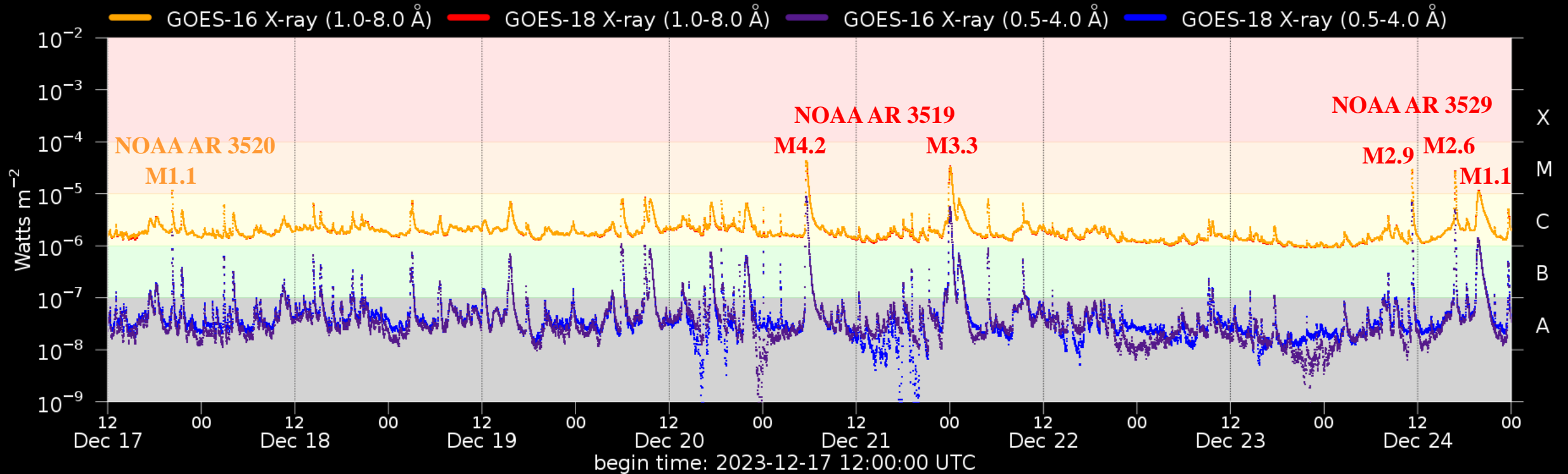
University of Graz
(Austria)



Solar F10.7cm radio flux



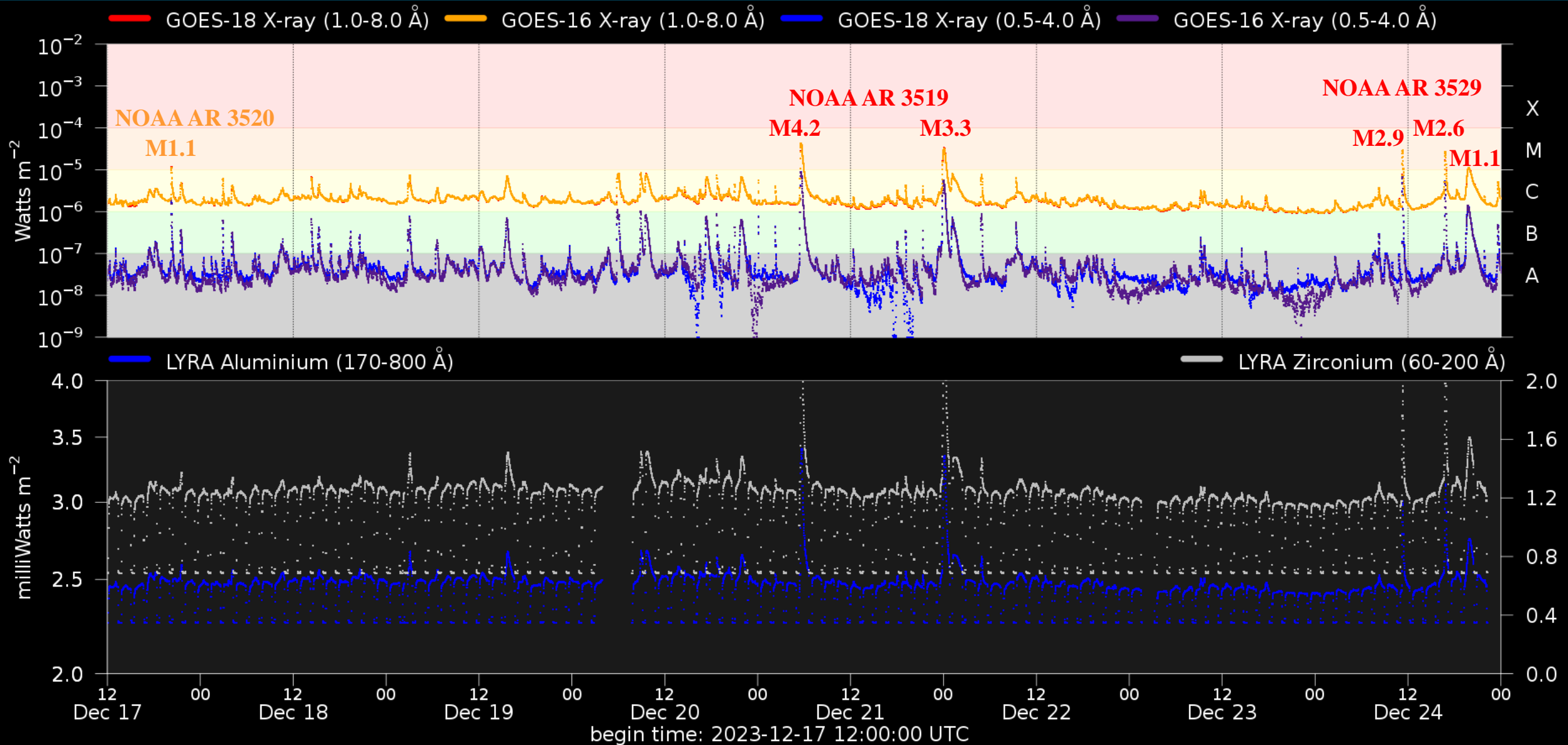
Flaring activity



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

| Issue date | 2023-12-17 | 2023-12-18 | 2023-12-19 | 2023-12-20 | 2023-12-21 | 2023-12-22 | 2023-12-23 | 2023-12-24 |
|-----------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Probability (%) | 99 50 20 | 90 10 05 | 99 20 05 | 95 10 01 | 95 15 05 | 90 10 03 | 95 15 03 | 95 15 03 |
| Observed (#) | 05 01 00 | 20 00 00 | 14 00 00 | 08 00 00 | 19 01 00 | 09 01 00 | 06 00 00 | 12 03 00 |

Solar X-Ray and UV flux

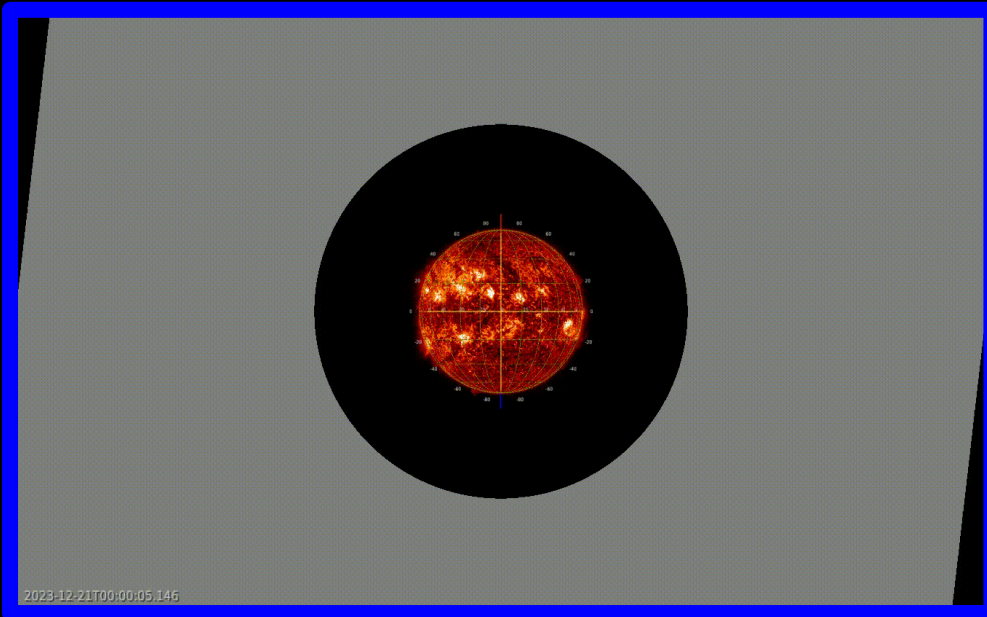


Coronal Mass Ejections

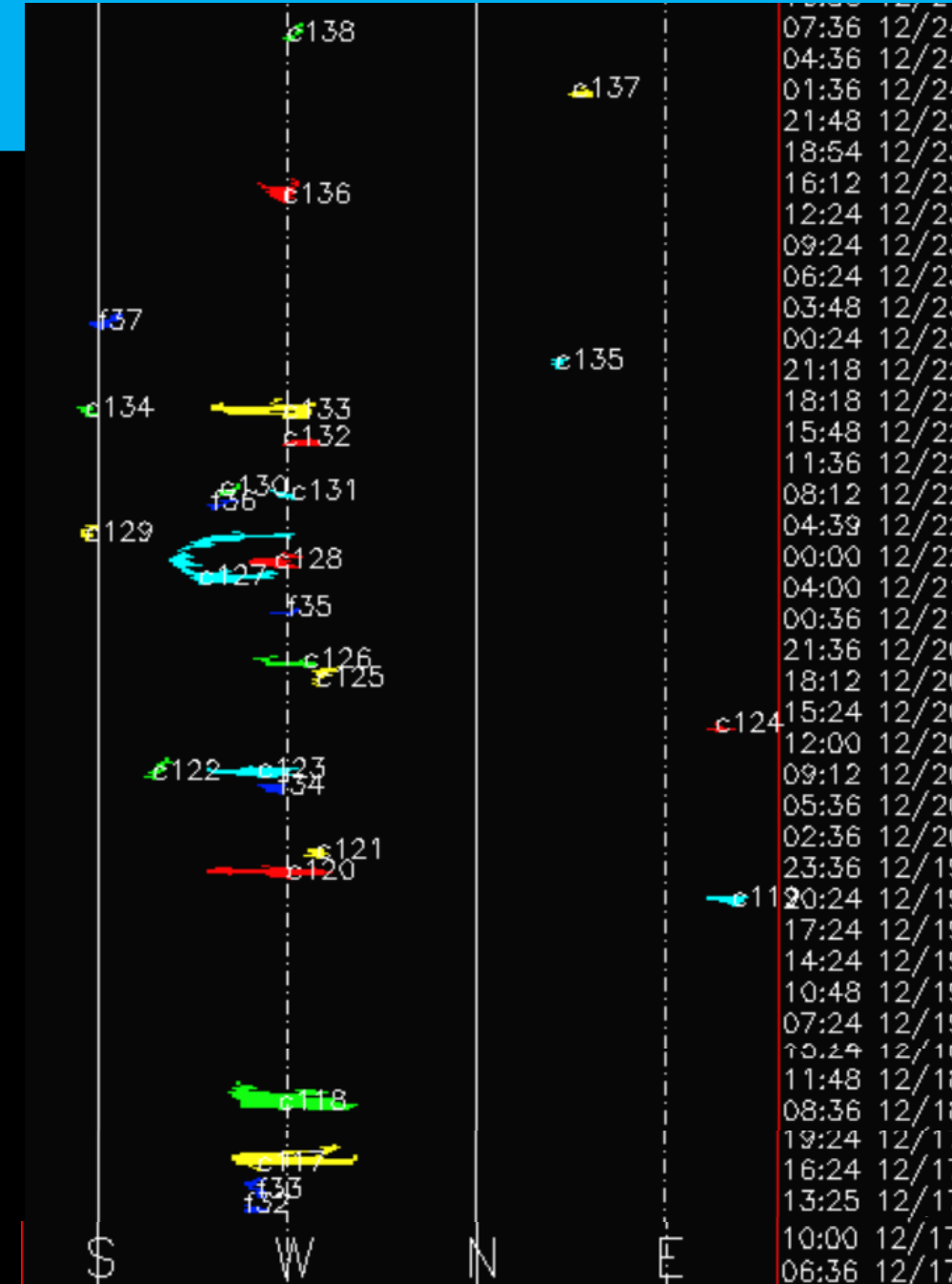
04:00 UTC on Dec 21

Associated with the prominence eruption on the West limb near NOAA AR 3519 around 3:30 UTC on Dec 21

Prediction: No possible impact



2023-12-21T00:00:05.146



- Solar Wind and

- **Geomagnetic Activity**



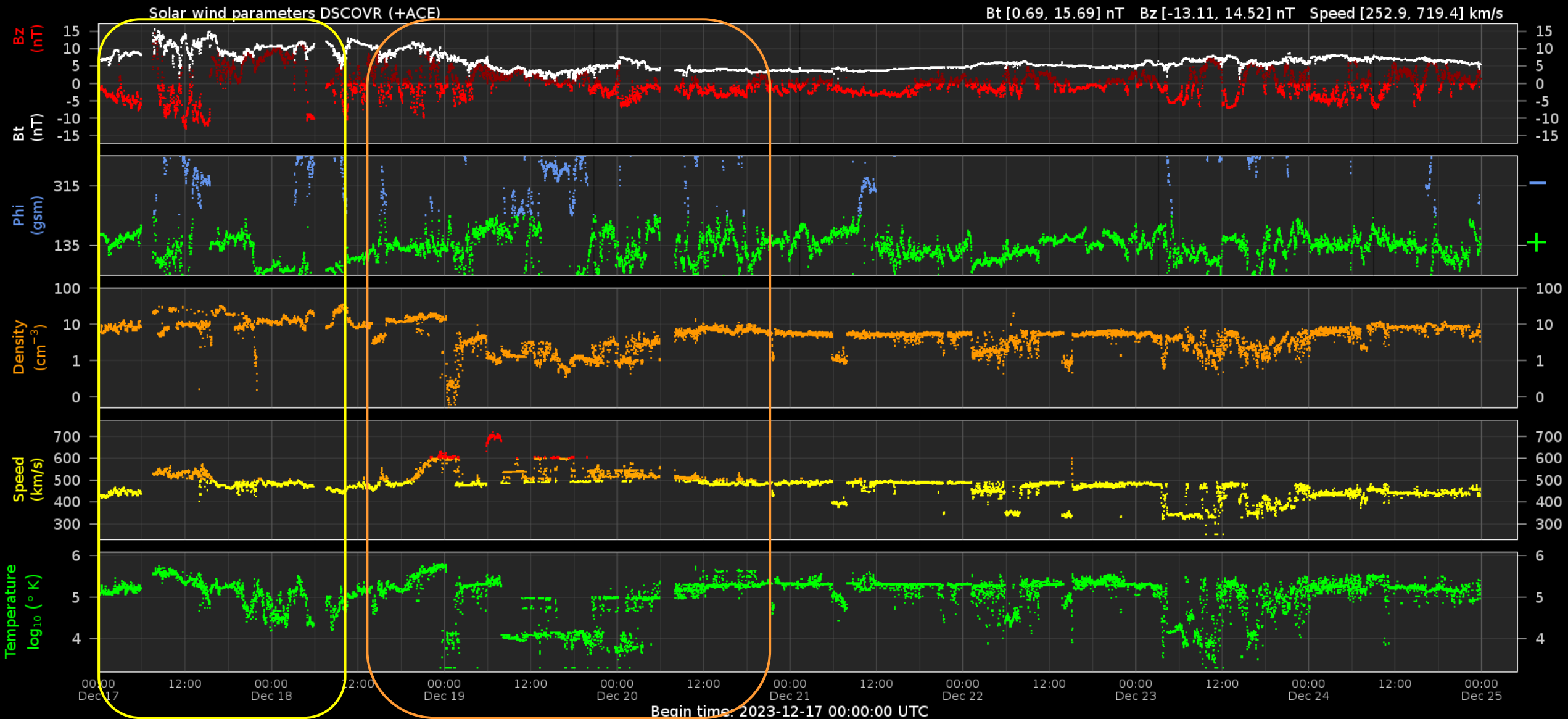
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Solar wind parameters

ICME

HSS



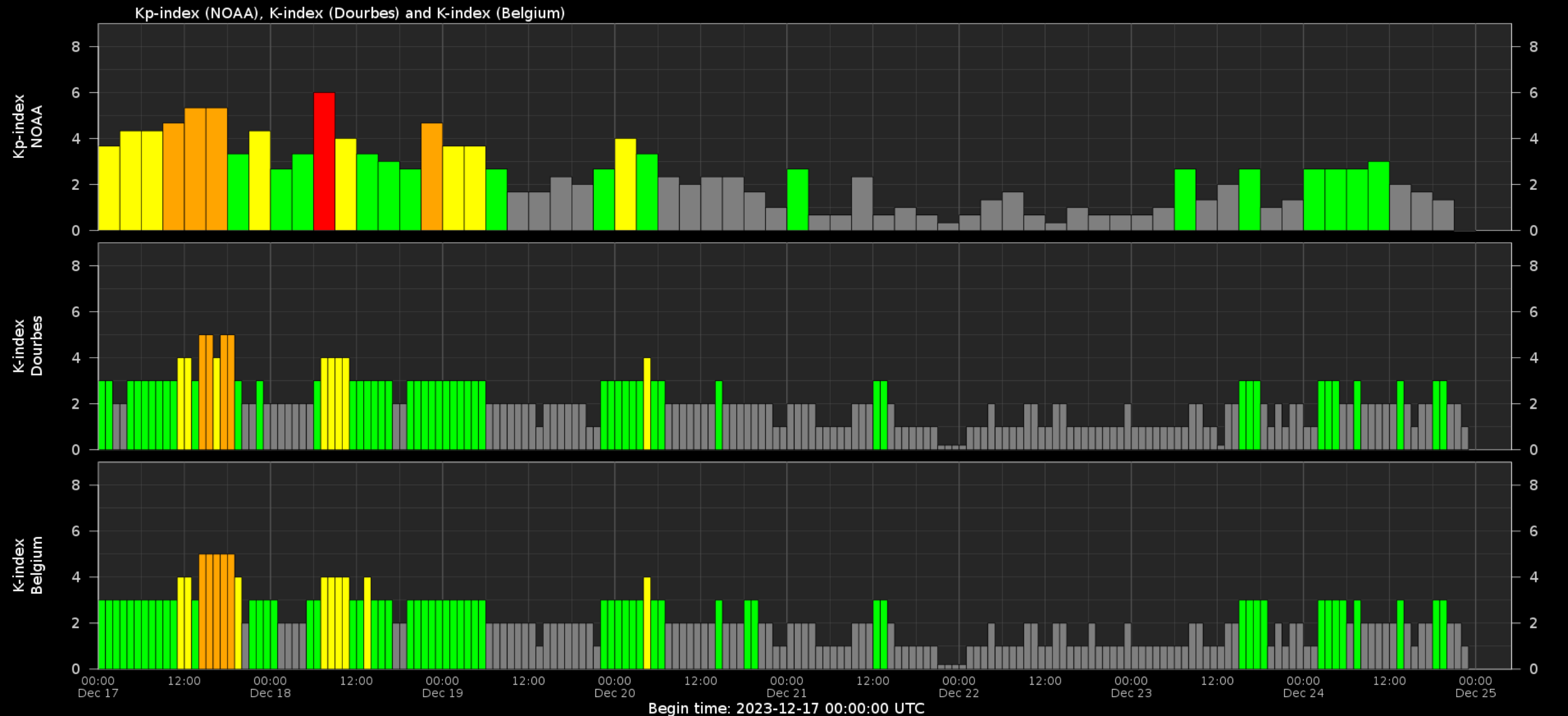
Solar wind parameters & K-indices

ICME

HSS



Geomagnetic activity (K-indexes)

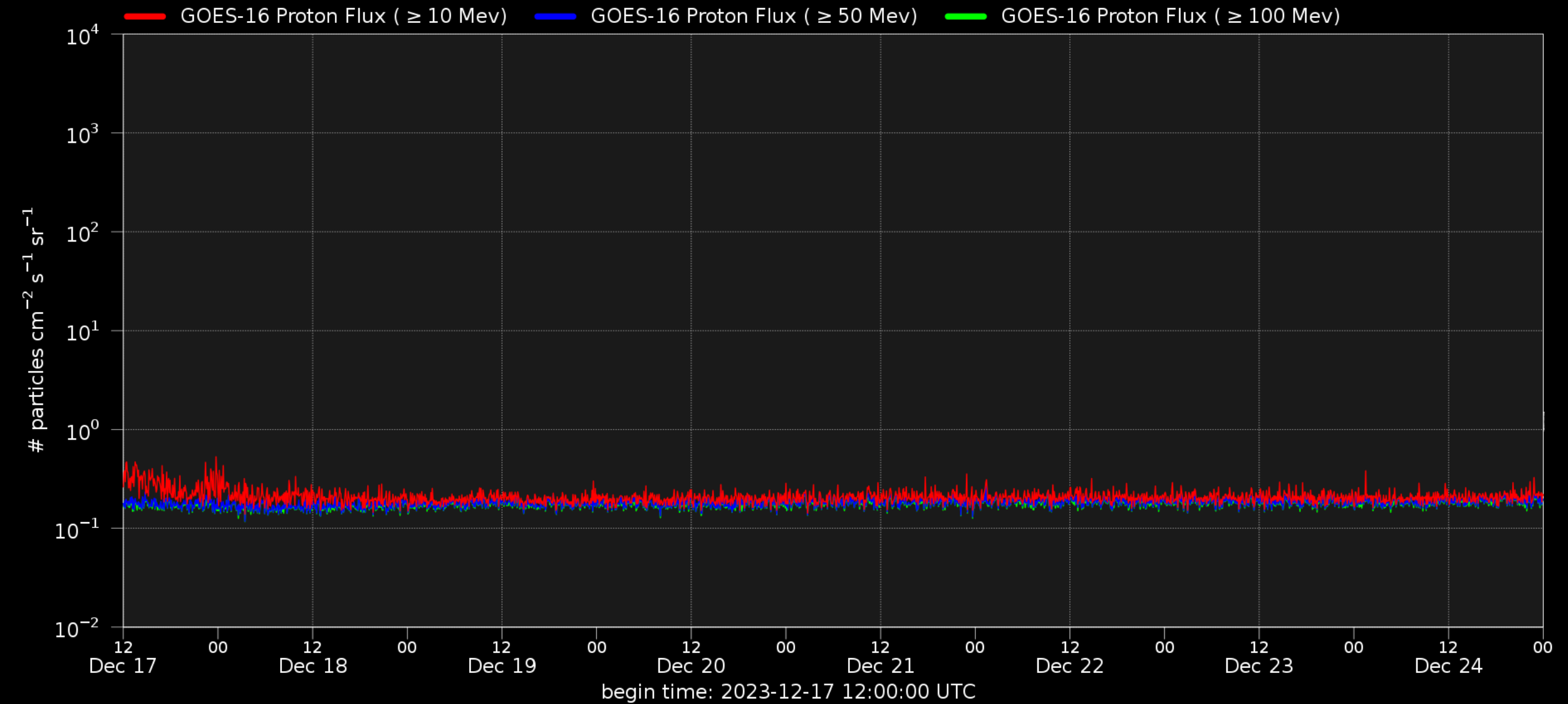


- Energetic Particles



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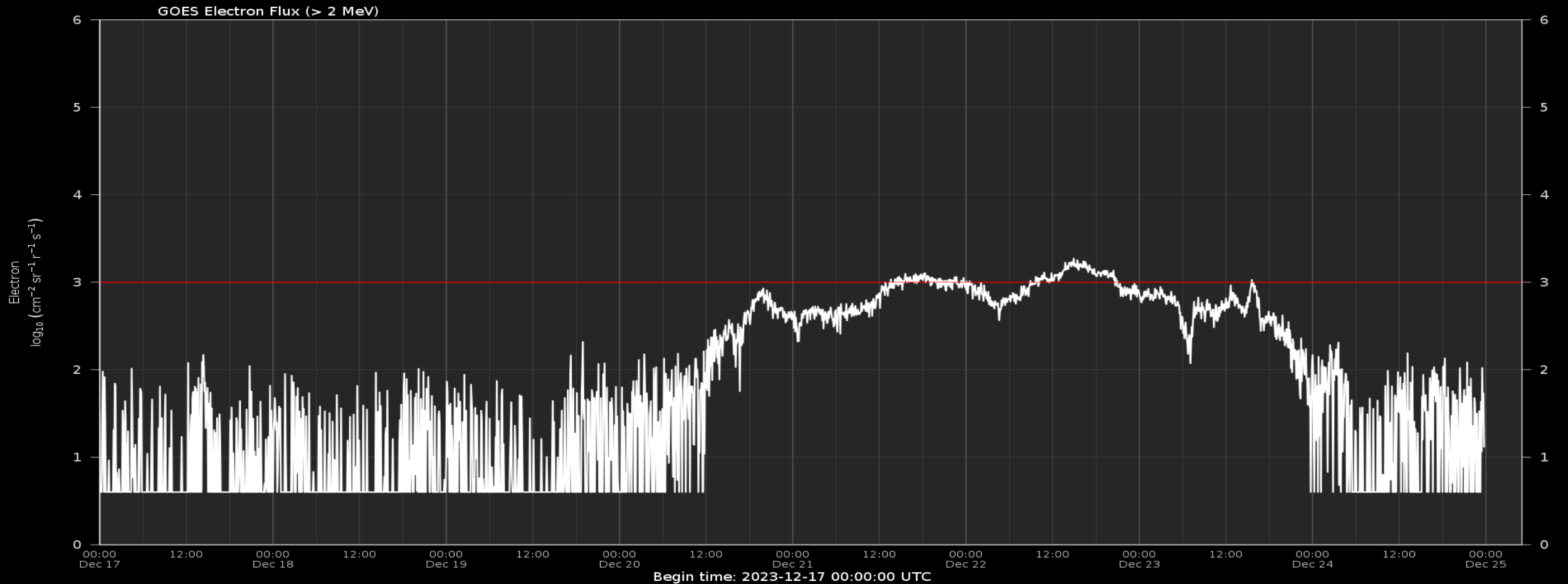
Solar proton flux



Electron flux at GEO

www.stce.be/educational/classification#electrons

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



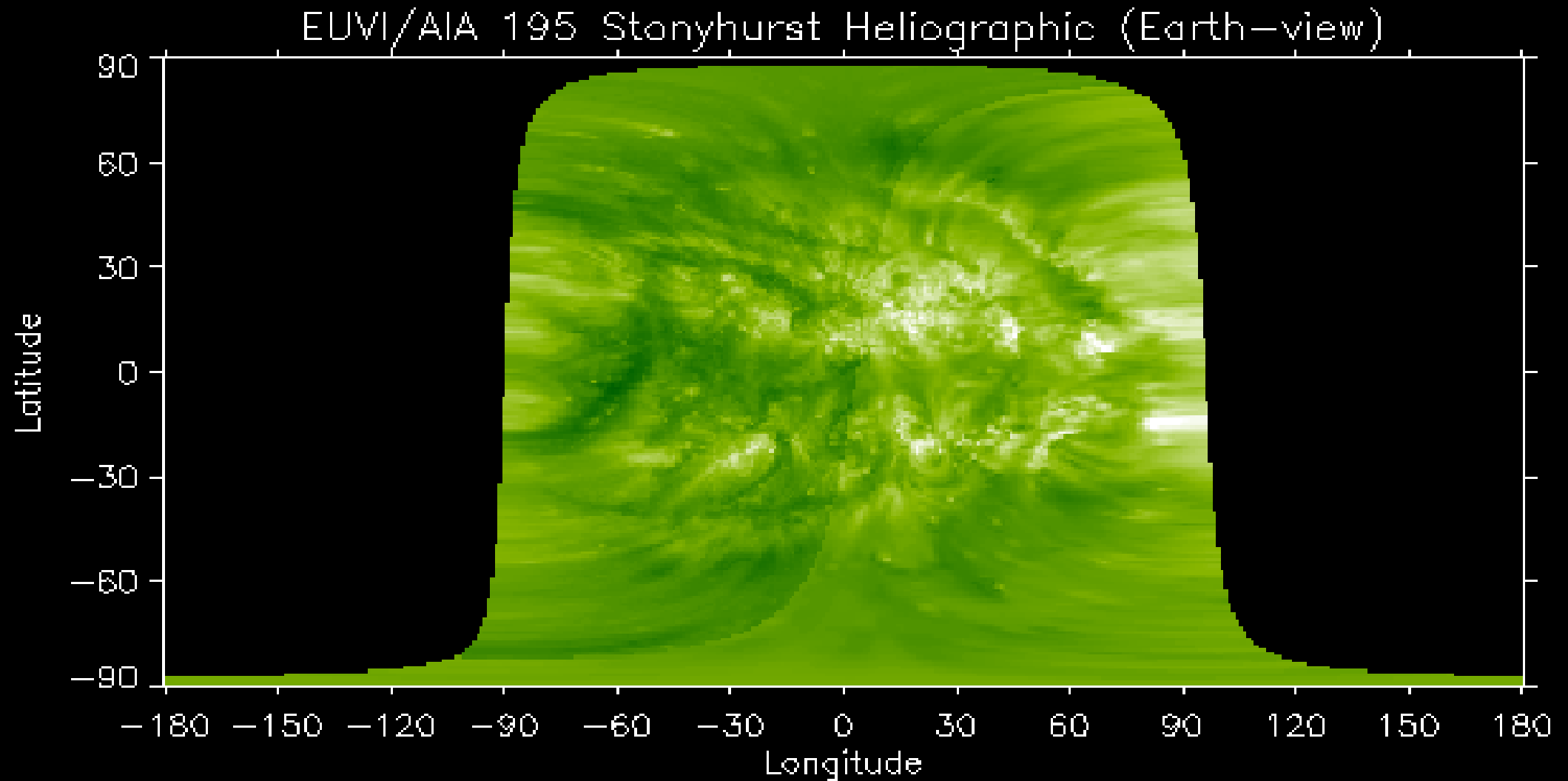
- Outlook



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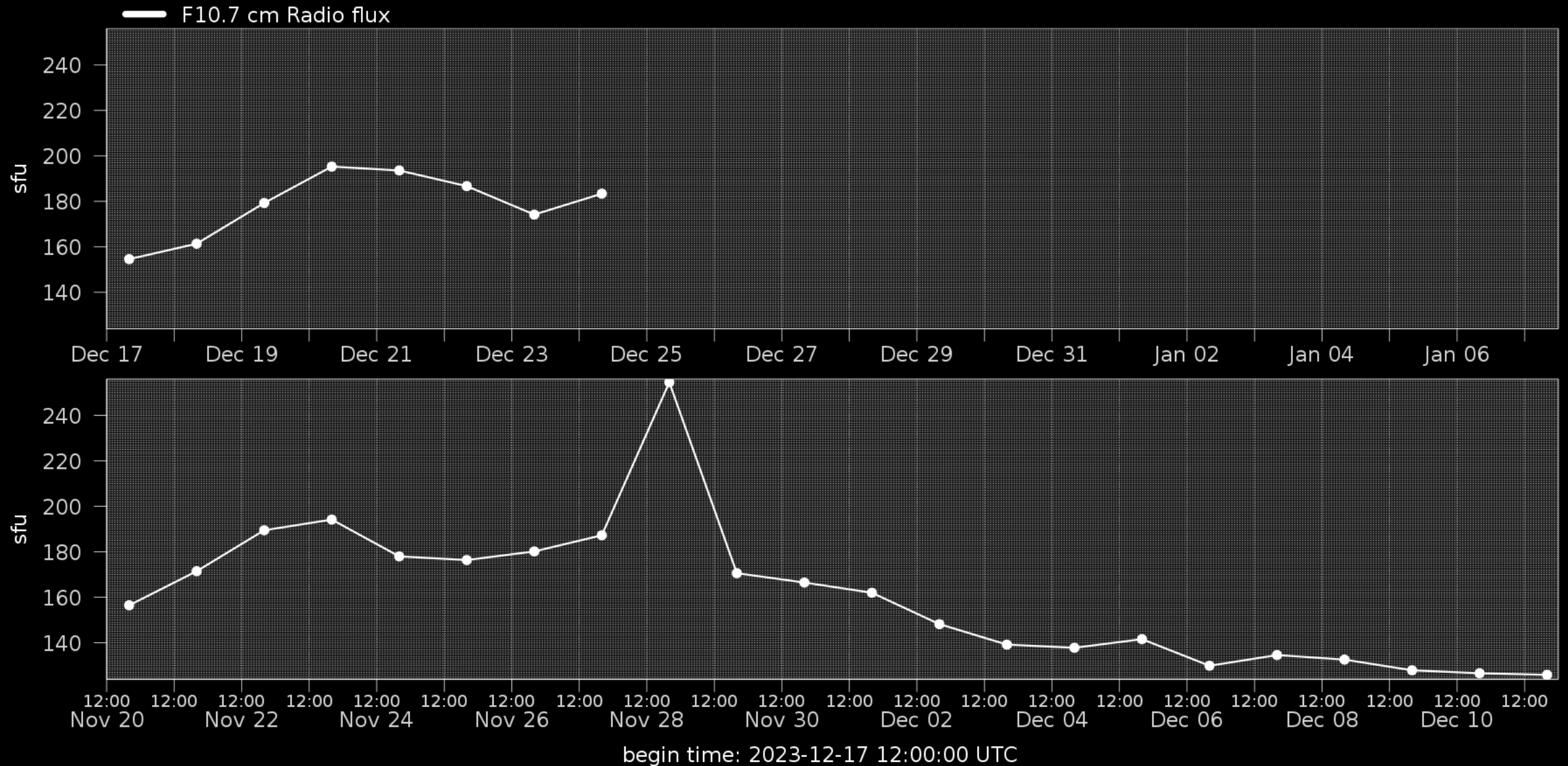
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Outlook: Solar activity



Observation date: 2023/12/24 20:35:00

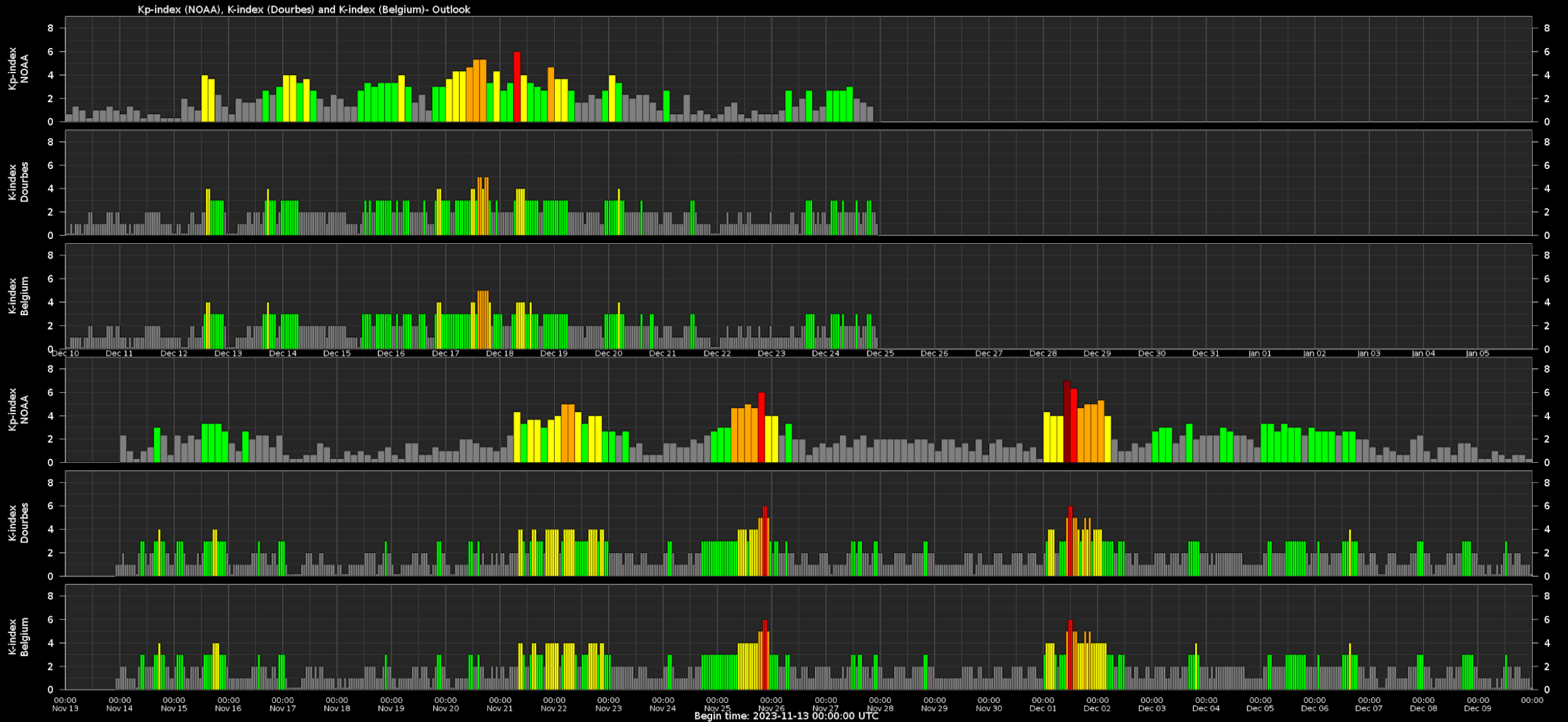
Outlook: Solar F10.7cm radio flux



Outlook: Solar wind parameters



Outlook: Geomagnetic activity



Outlook: Electron Flux at GEO Outlook



- Pegasus



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