

SIDC Space Weather Briefing

19 December 2021 - 26 December 2021

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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 2021-12-19 12:00 to 2021-12-26 23:59

Active regions	14 in total, NOAA 2906 - NOAA 2919
Flares	# C-class flare: 66 # M-class flare: 4 # X-class flare: 0
CMEs	Faint and slow partial halo on Dec 20th
Coronal Holes	CH- effecting Earth since Dec 19th, 2 CH+ expected to arrive on Dec 17th and Dec 28/29th

Proton flux	Nominal levels
Electron flux	Periodically crossing 1000 pfu threshold since Dec 23rd

Solar wind and geomagnetic conditions

ICME	Dec 25th: Possible magnetic cloud arrival from partial halo initiated on Dec 20th
SW Conditions	B : 1.79 - 23.92 nT // Bz: -20.72 nT to 14.87 nT // Speed: 303.1 - 638.4km/s
K-indices	max K-index (K_Bel): 5 max Kp-index (NOAA): 5

All Quiet Alert: Off for the entire week due to HSS and flaring activity

Solar Activity

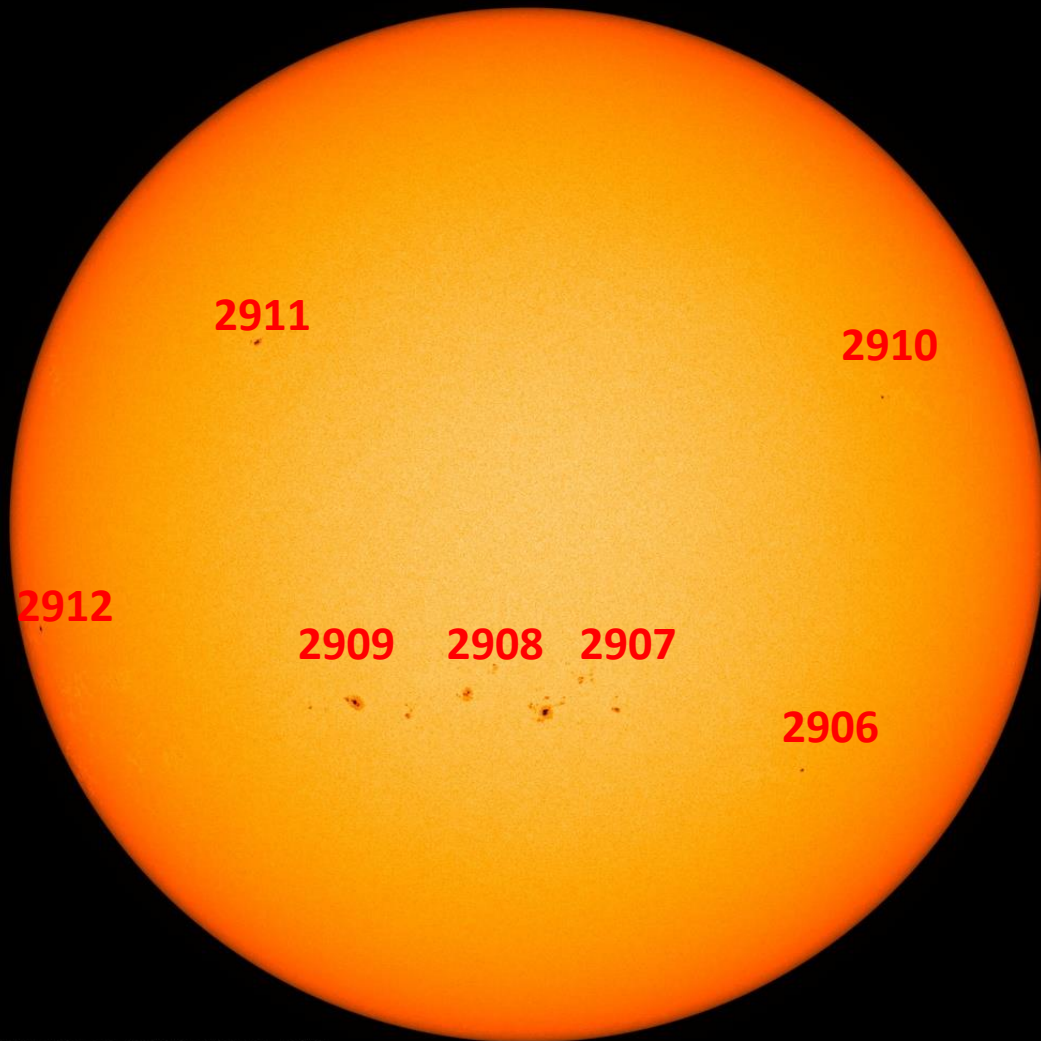


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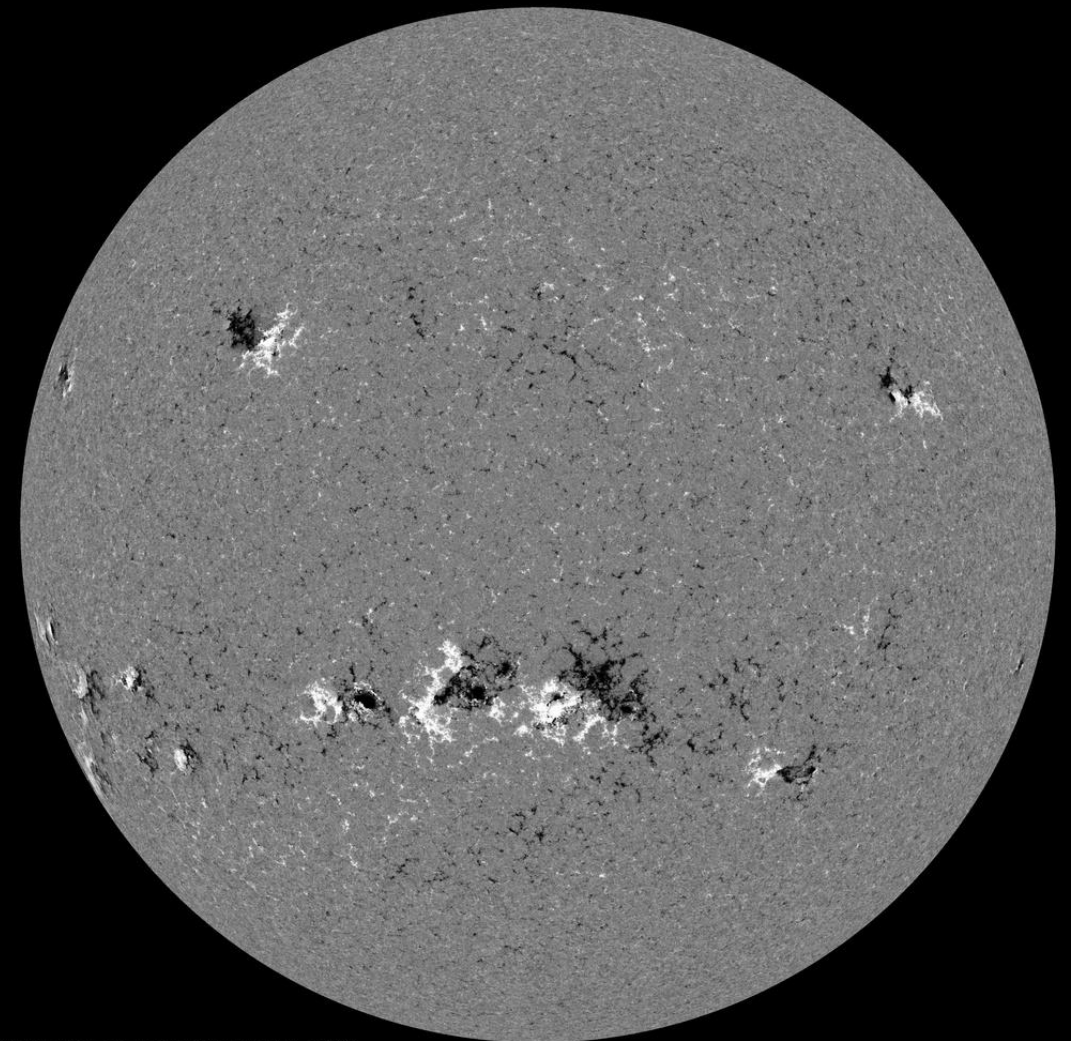
Solar active regions

SDO/HMI White Light 2021-12-19



SDO/HMI Quick-Look Continuum: 20211219_114500

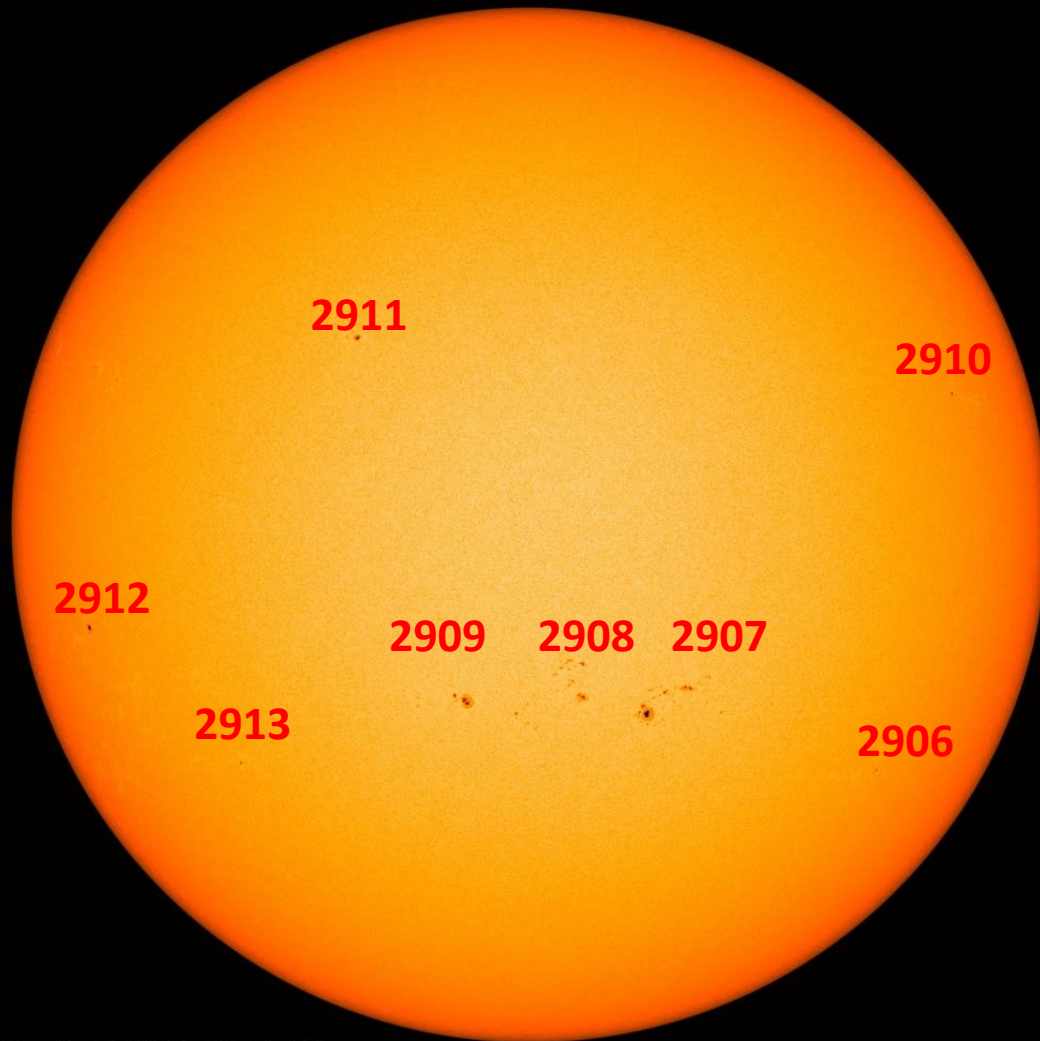
SDO/HMI Magnetogram 2021-12-19



SDO/HMI Quick-Look Magnetogram: 20211219_114500

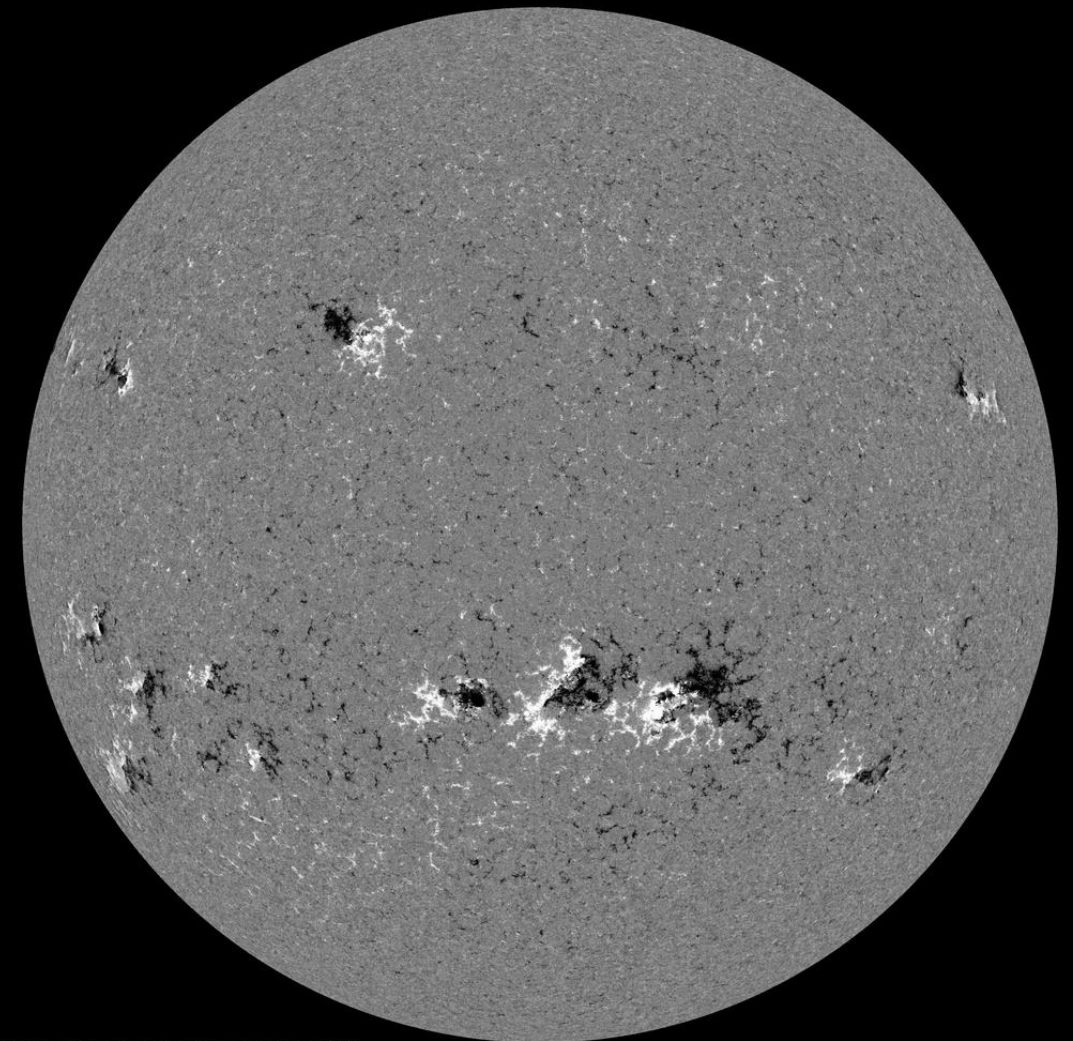
Solar active regions

SDO/HMI White Light 2021-12-20



SDO/HMI Quick-Look Continuum: 20211220_114500

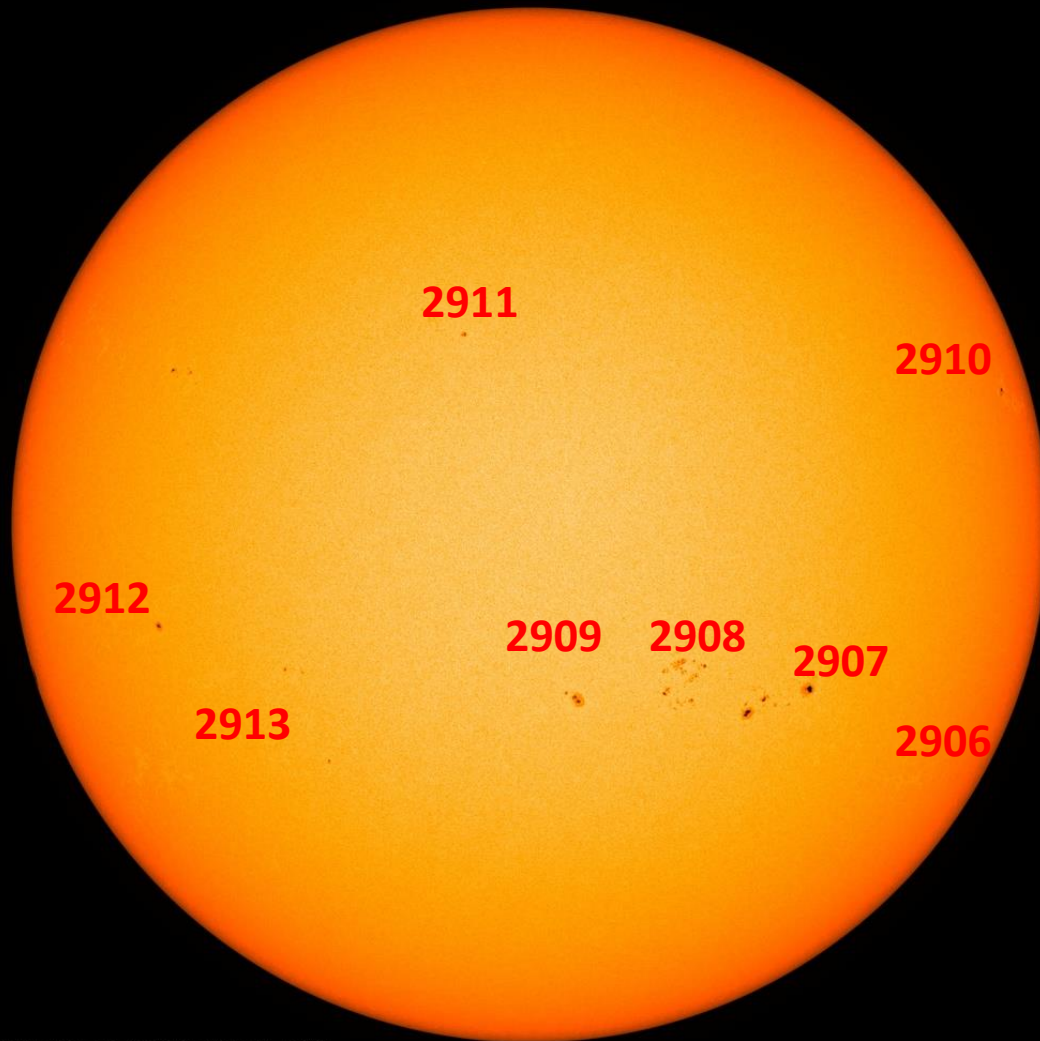
SDO/HMI Magnetogram 2021-12-20



SDO/HMI Quick-Look Magnetogram: 20211220_114500

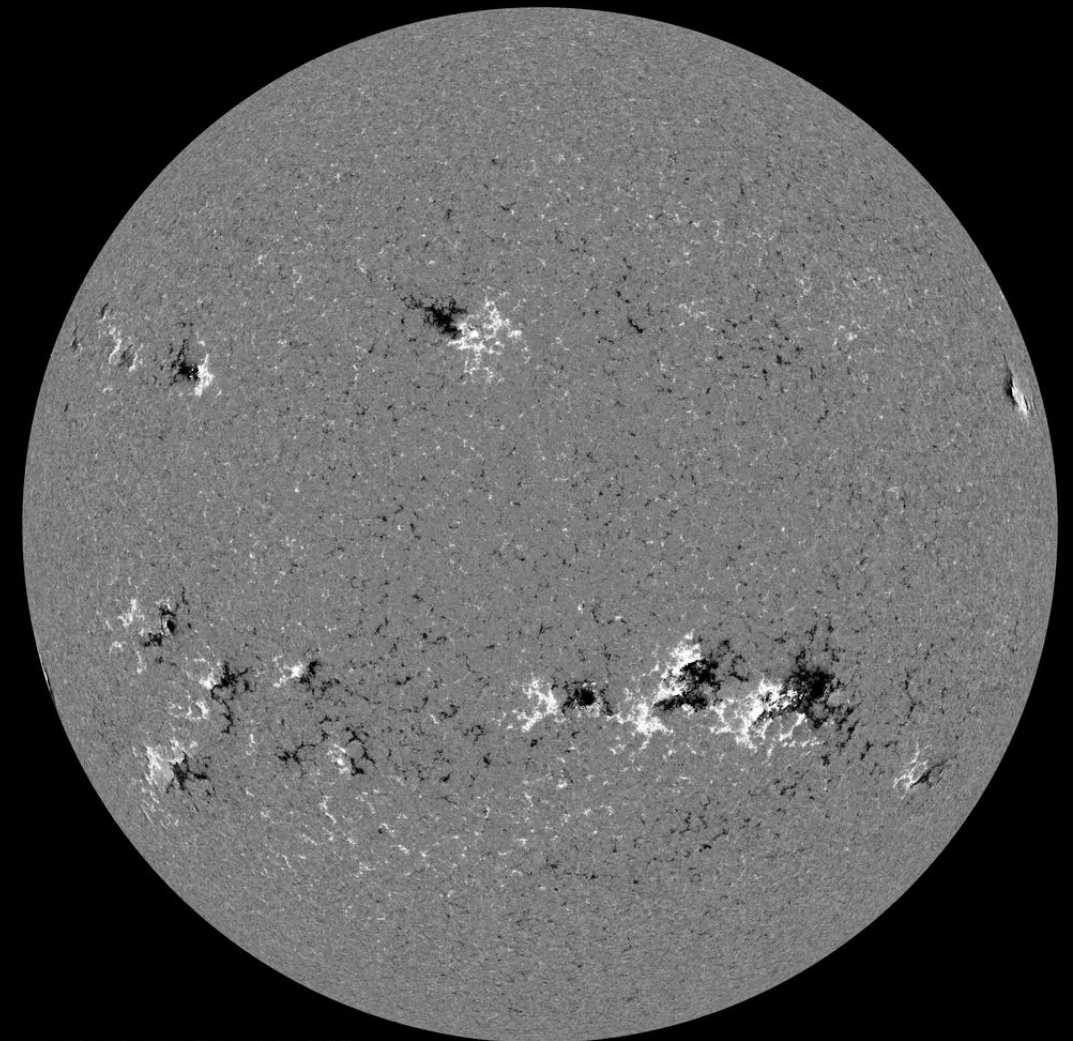
Solar active regions

SDO/HMI White Light 2021-12-21



SDO/HMI Quick-Look Continuum: 20211221_114500

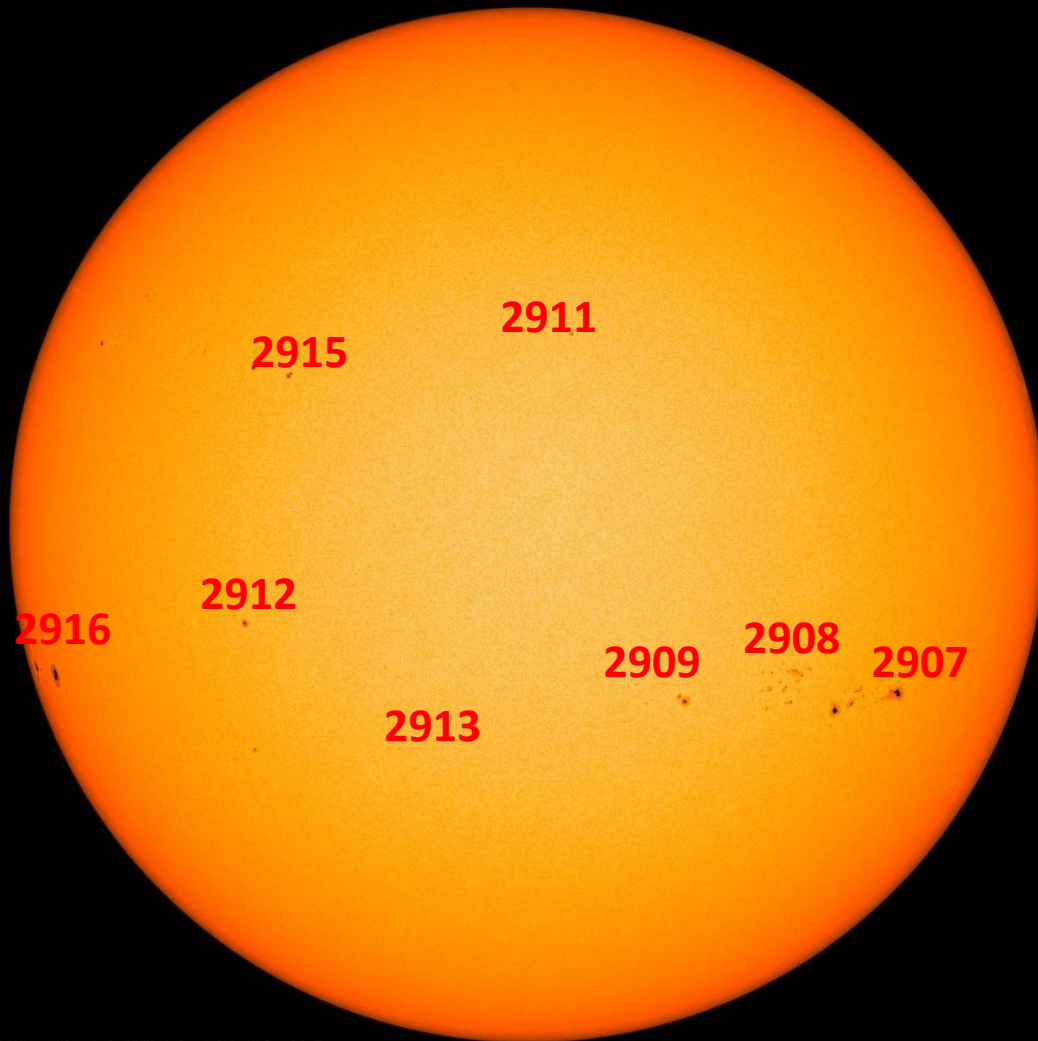
SDO/HMI Magnetogram 2021-12-21



SDO/HMI Quick-Look Magnetogram: 20211221_114500

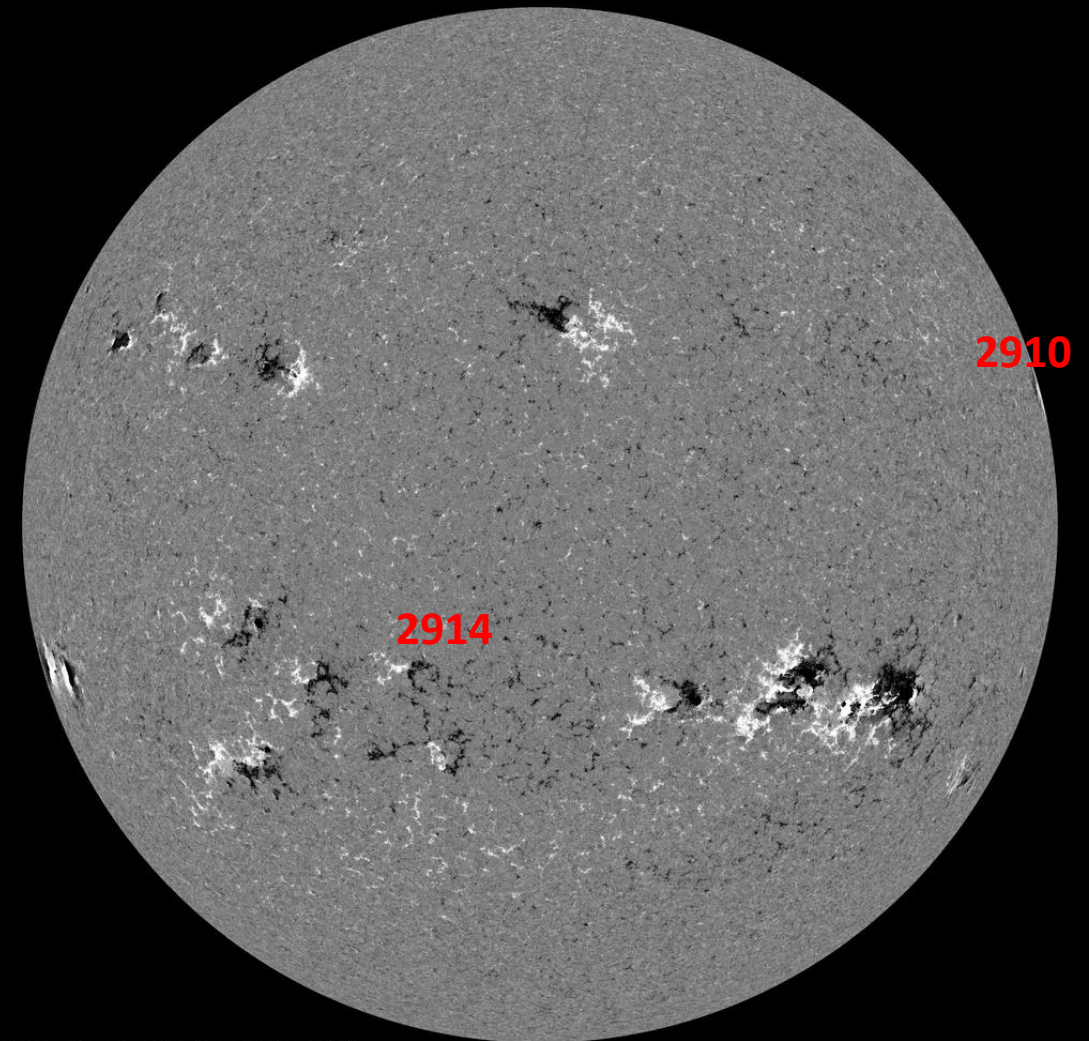
Solar active regions

SDO/HMI White Light 2021-12-22



SDO/HMI Quick-Look Continuum: 20211222_114500

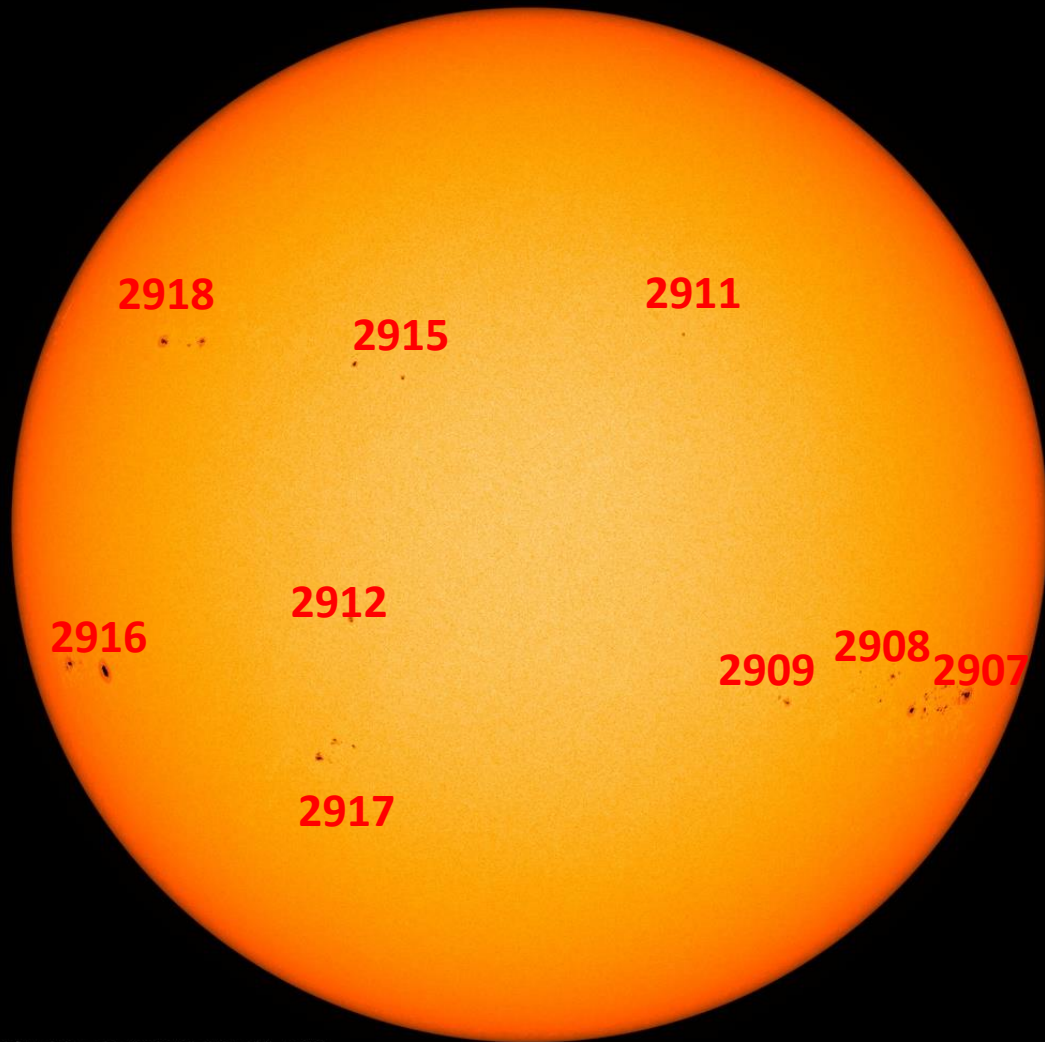
SDO/HMI Magnetogram 2021-12-22



SDO/HMI Quick-Look Magnetogram: 20211222_114500

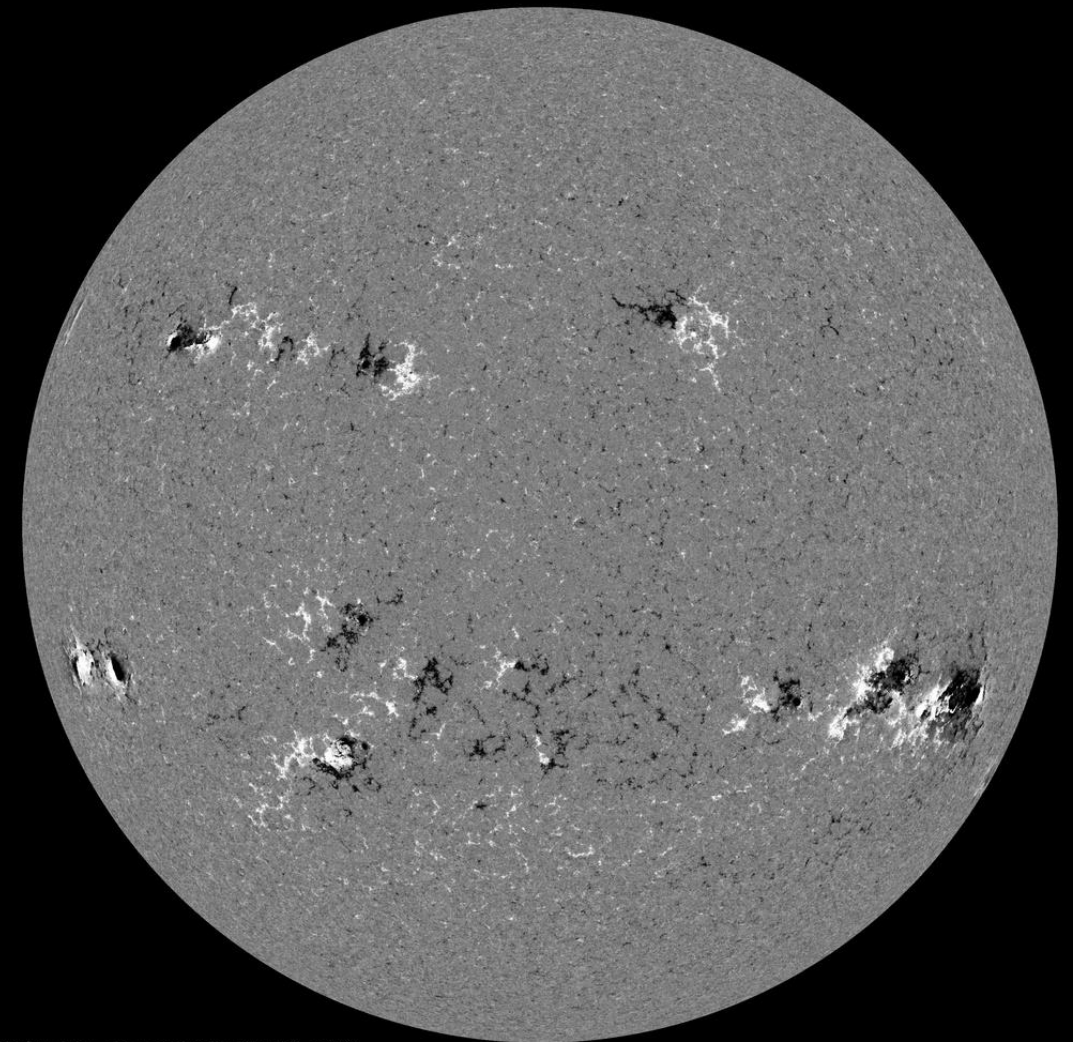
Solar active regions

SDO/HMI White Light 2021-12-23



SDO/HMI Quick-Look Continuum: 20211223_114500

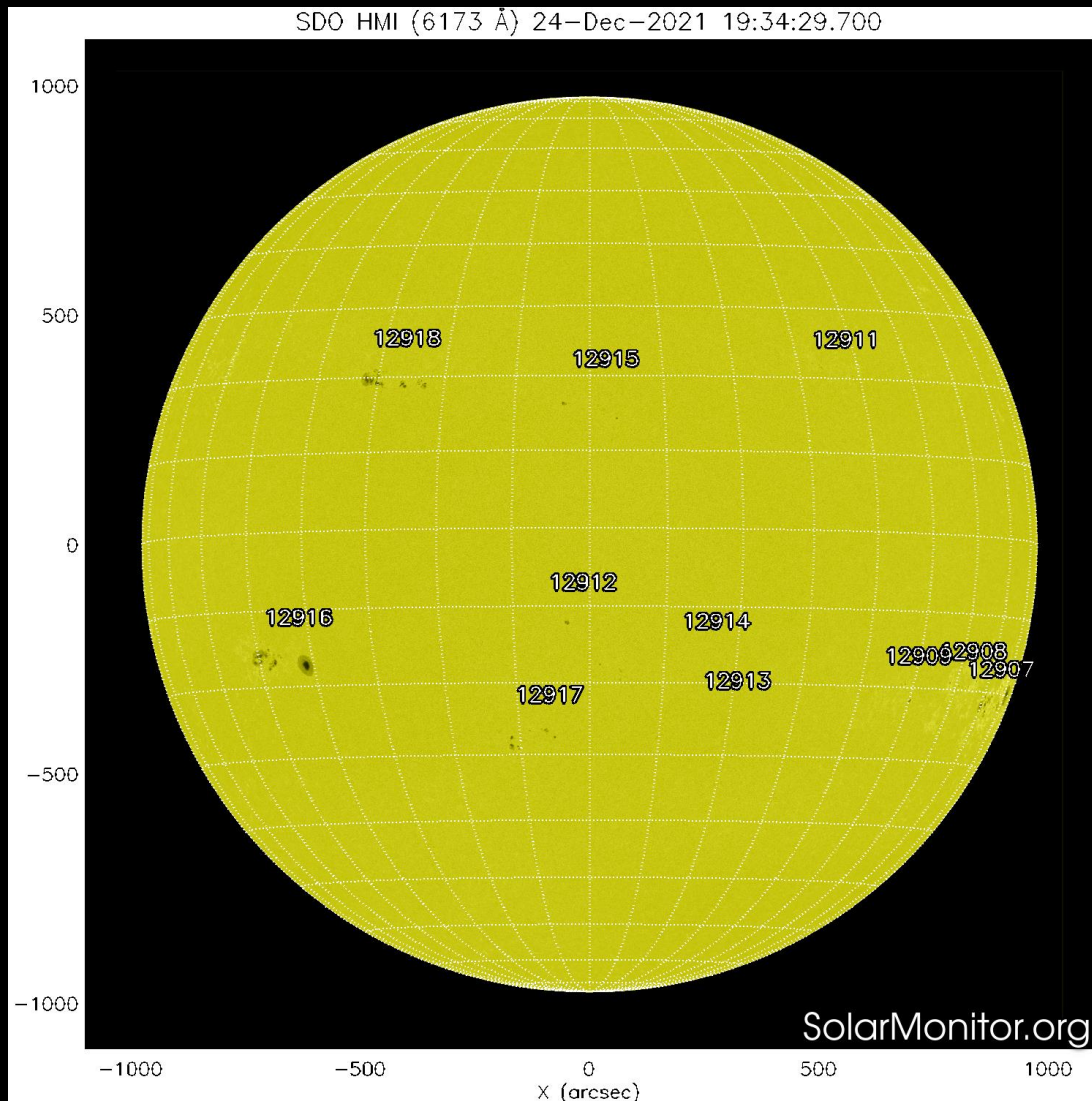
SDO/HMI Magnetogram 2021-12-23



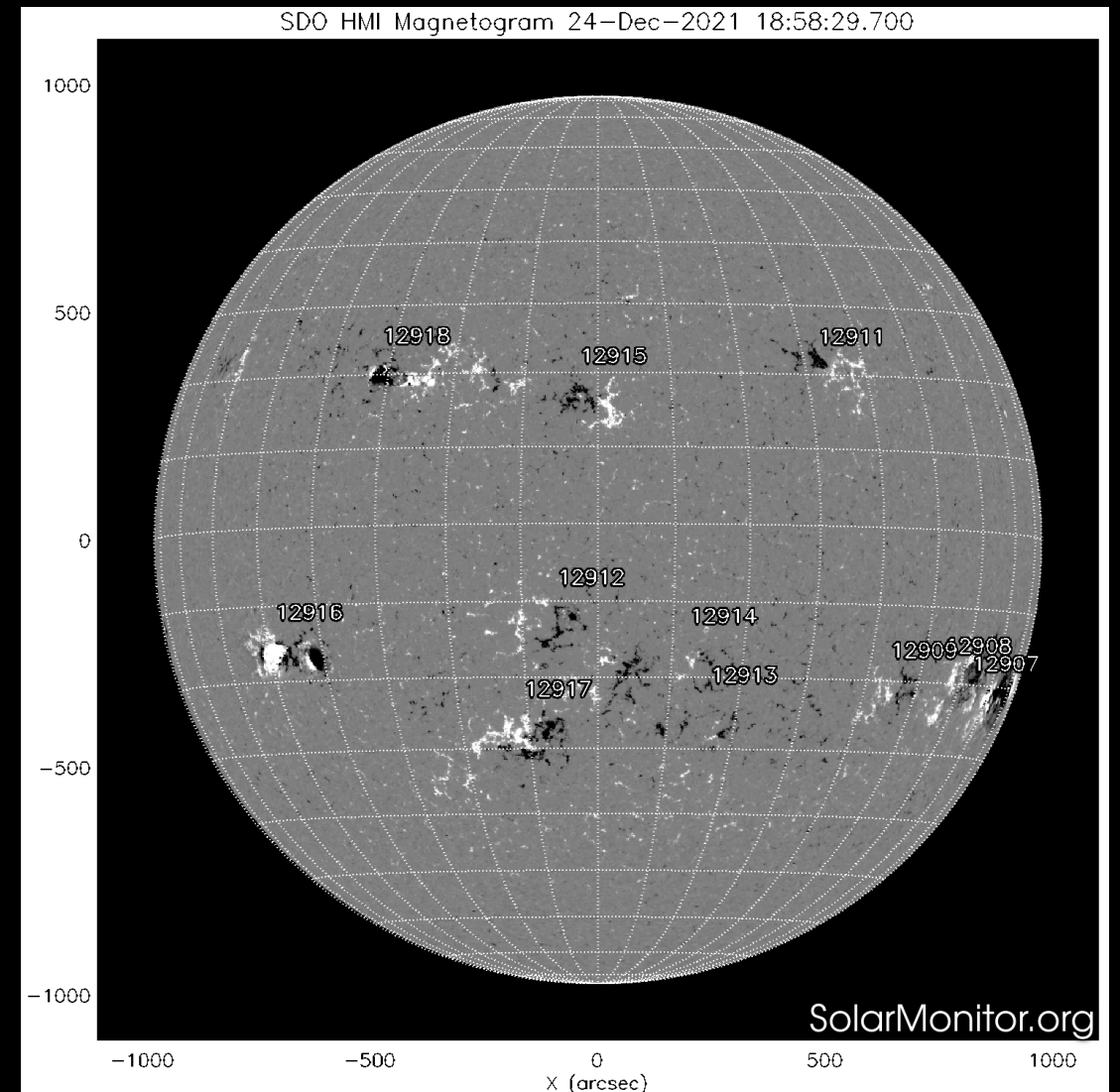
SDO/HMI Quick-Look Magnetogram: 20211223_114500

Solar active regions

SDO/HMI White Light 2021-12-24

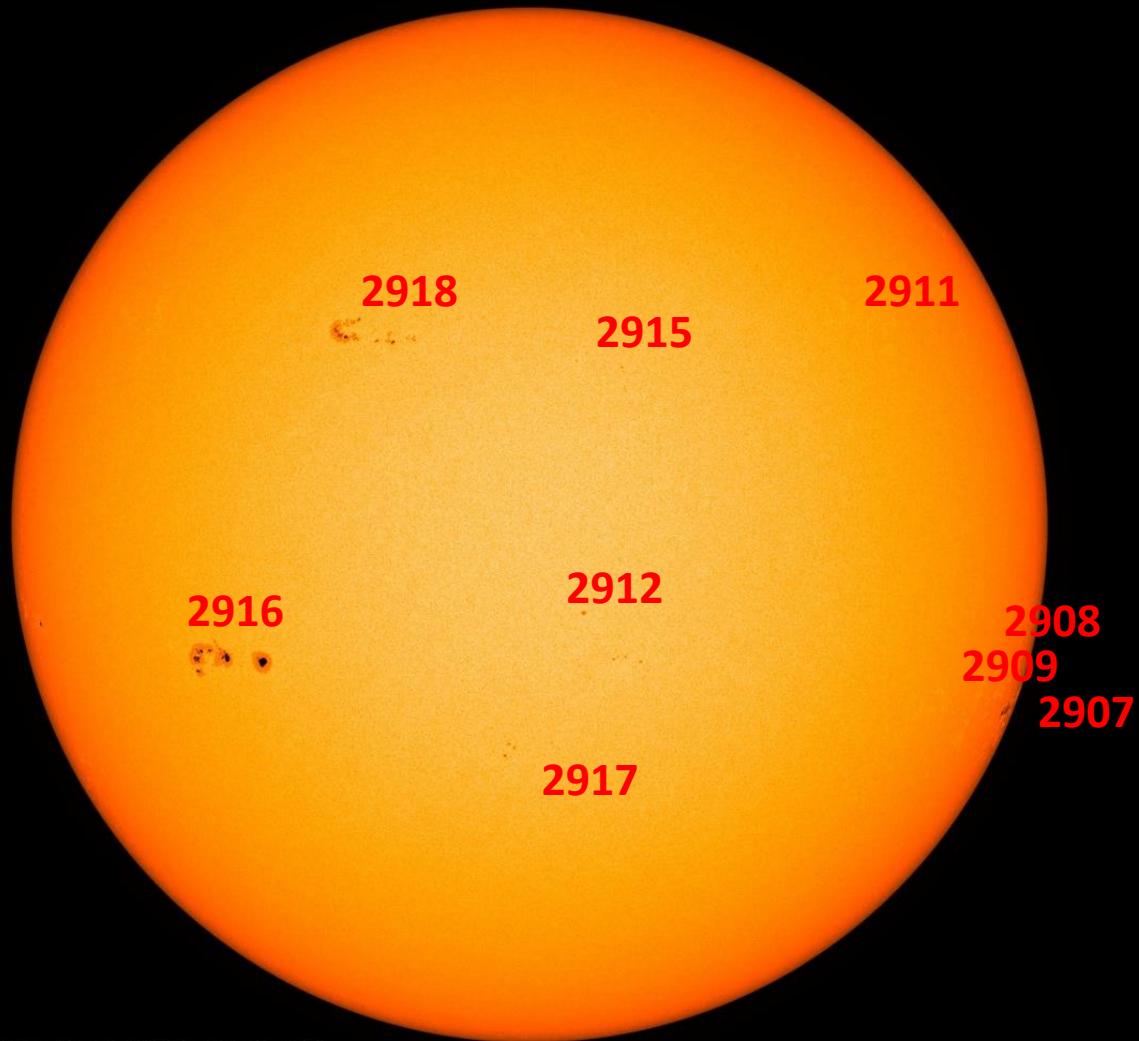


SDO/HMI Magnetogram 2021-12-24



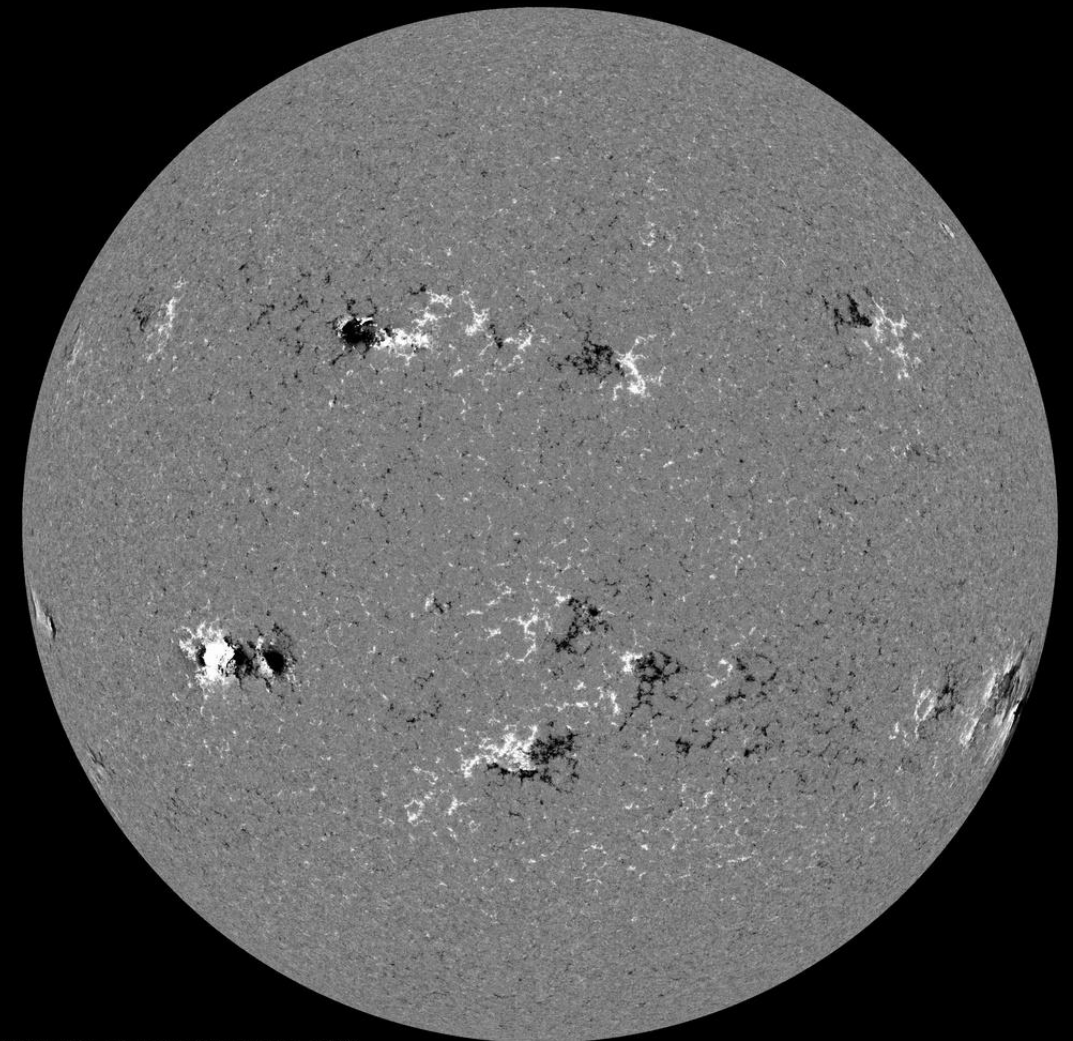
Solar active regions

SDO/HMI White Light 2021-12-25



SDO/HMI Quick-Look Continuum: 20211225_114500

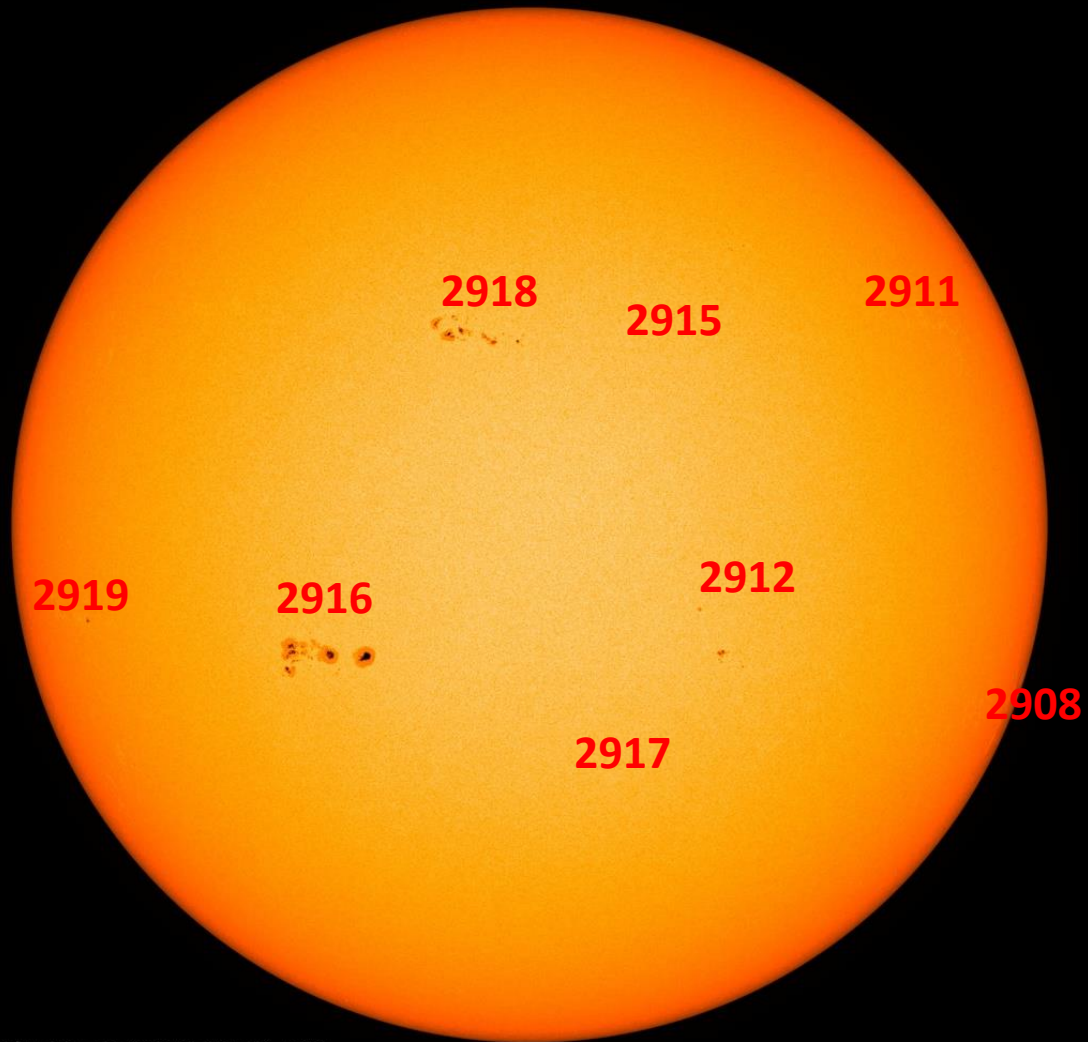
SDO/HMI Magnetogram 2021-12-25



SDO/HMI Quick-Look Magnetogram: 20211225_114500

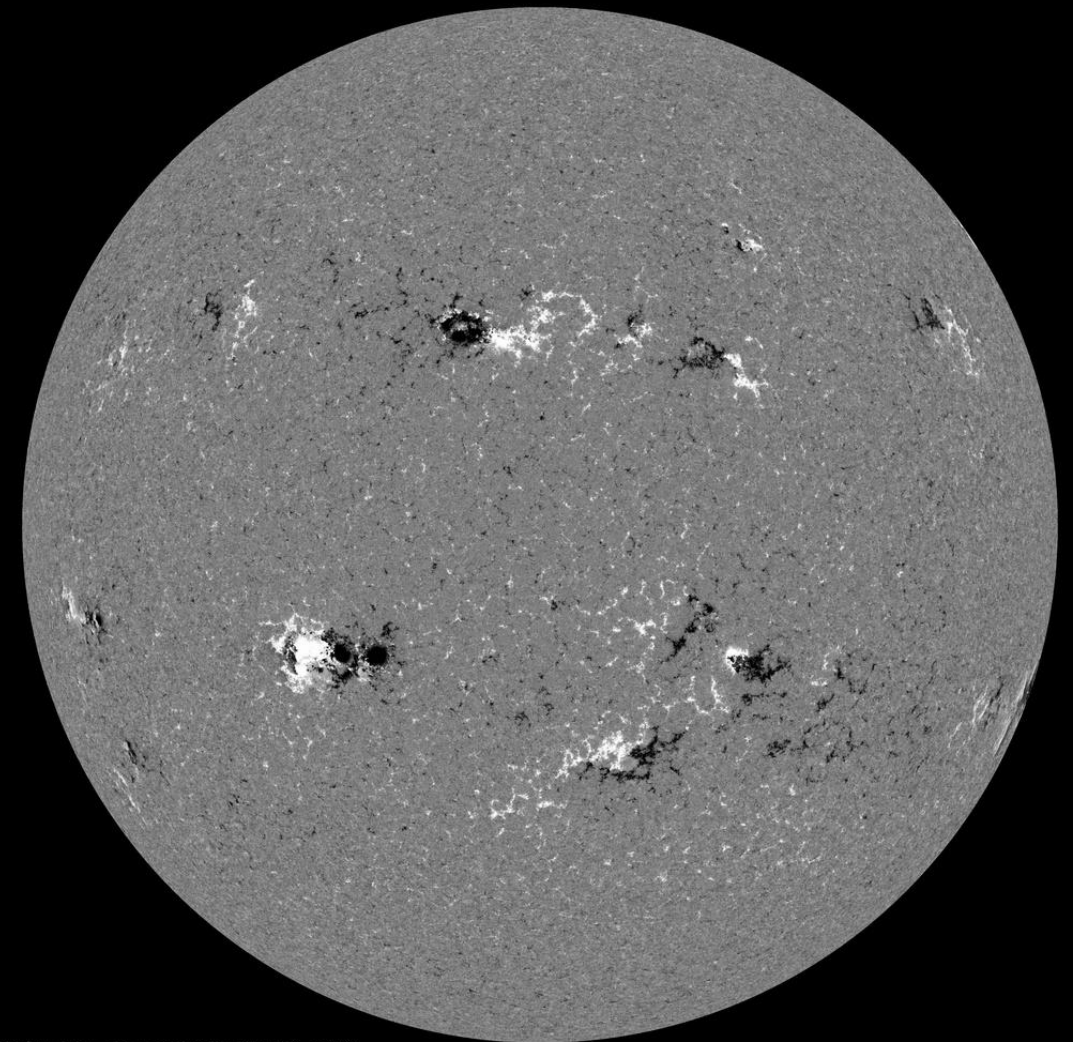
Solar active regions

SDO/HMI White Light 2021-12-26



SDO/HMI Quick-Look Continuum: 20211226_114500

SDO/HMI Magnetogram 2021-12-26

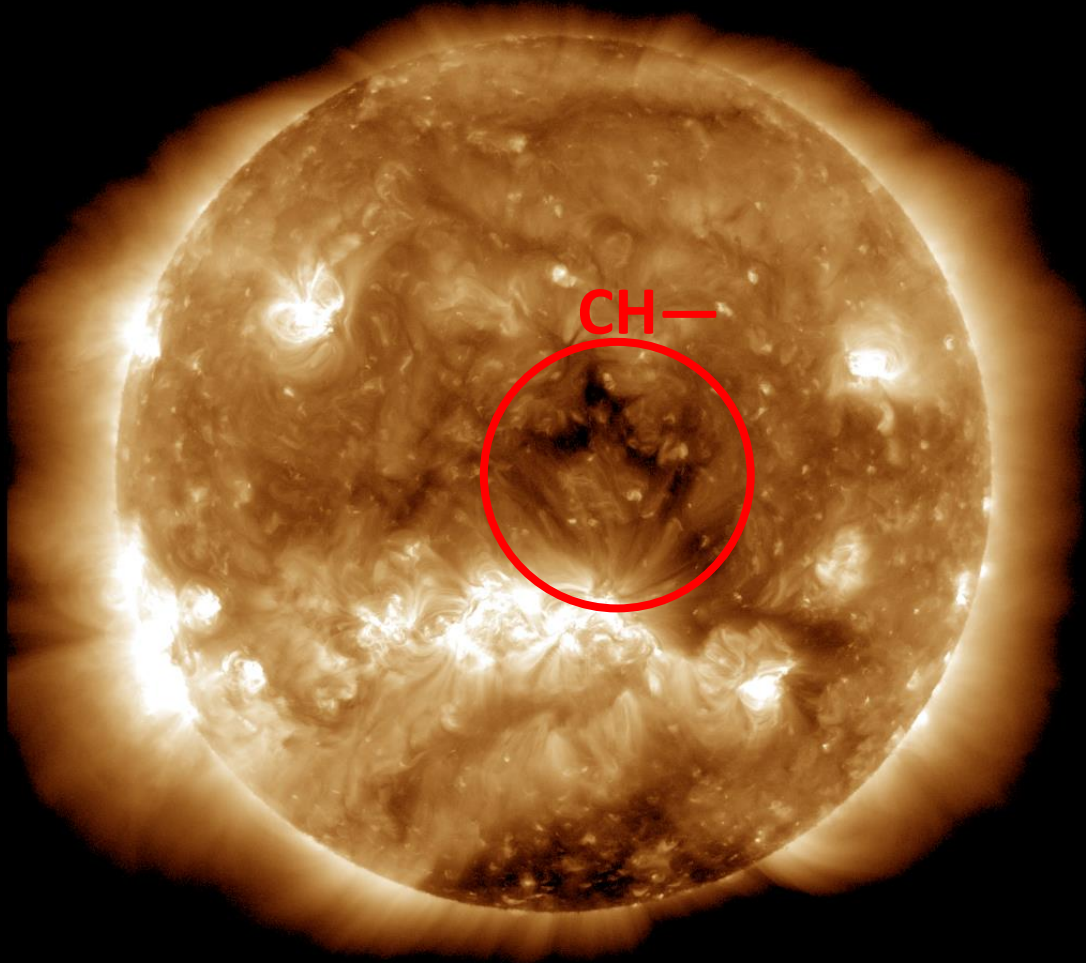


SDO/HMI Quick-Look Magnetogram: 20211226_114500

Coronal holes

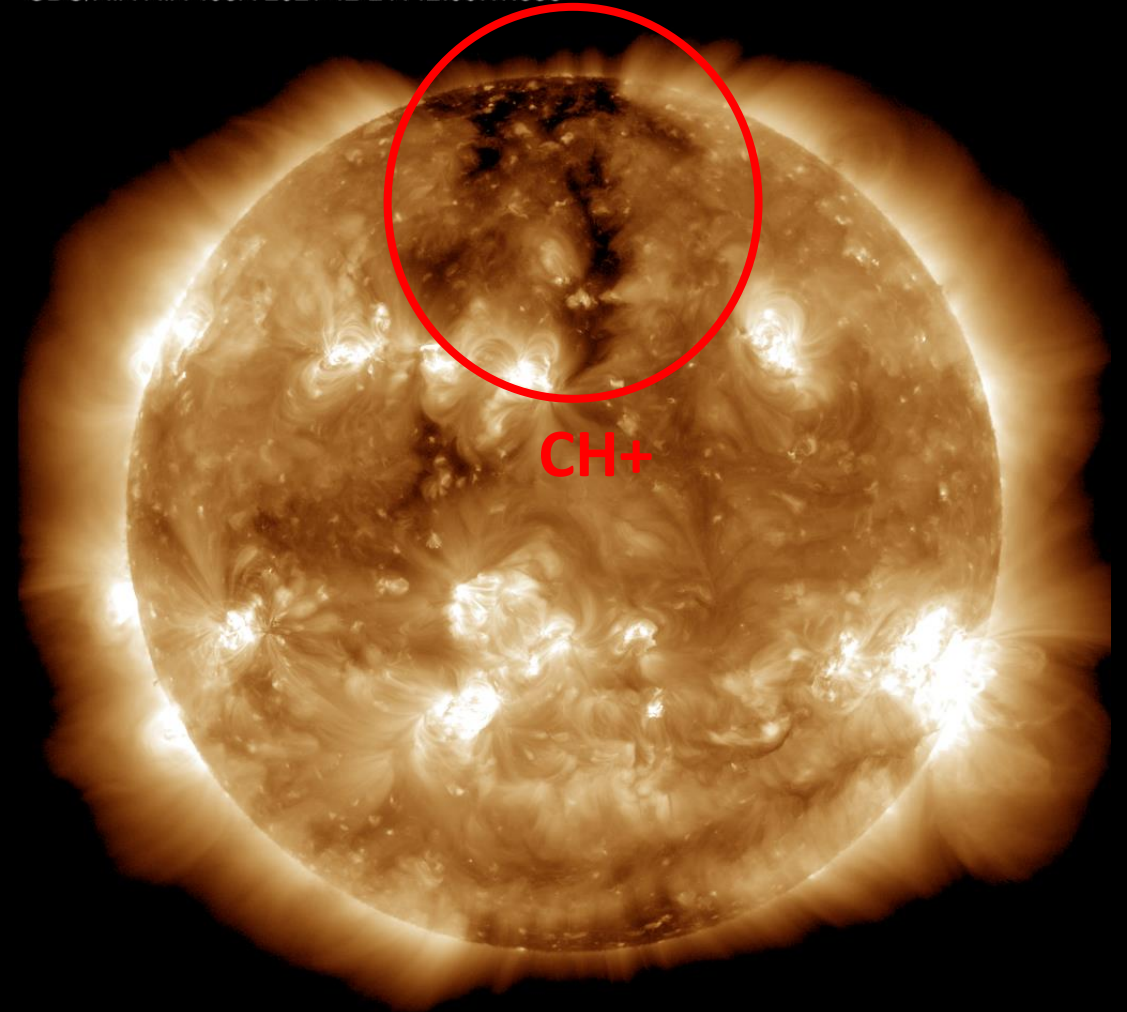
SDO/AIA 19.3 nm 2021-12-19

SDO/AIA AIA 193Å 2021-12-19T12:00:06.991



SDO/AIA 19.3 nm 2021-12-24

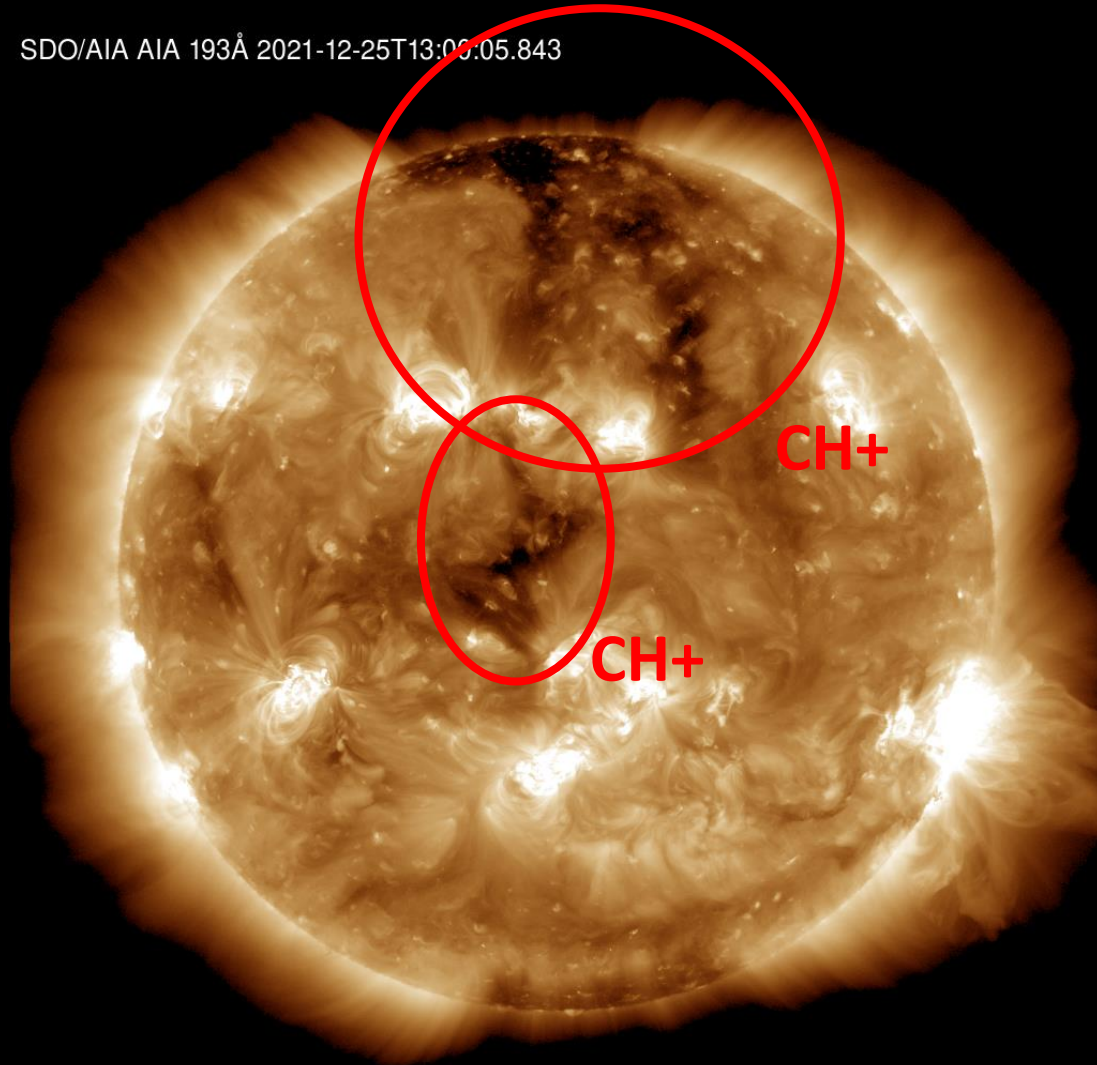
SDO/AIA AIA 193Å 2021-12-24T12:00:17.835



Coronal holes

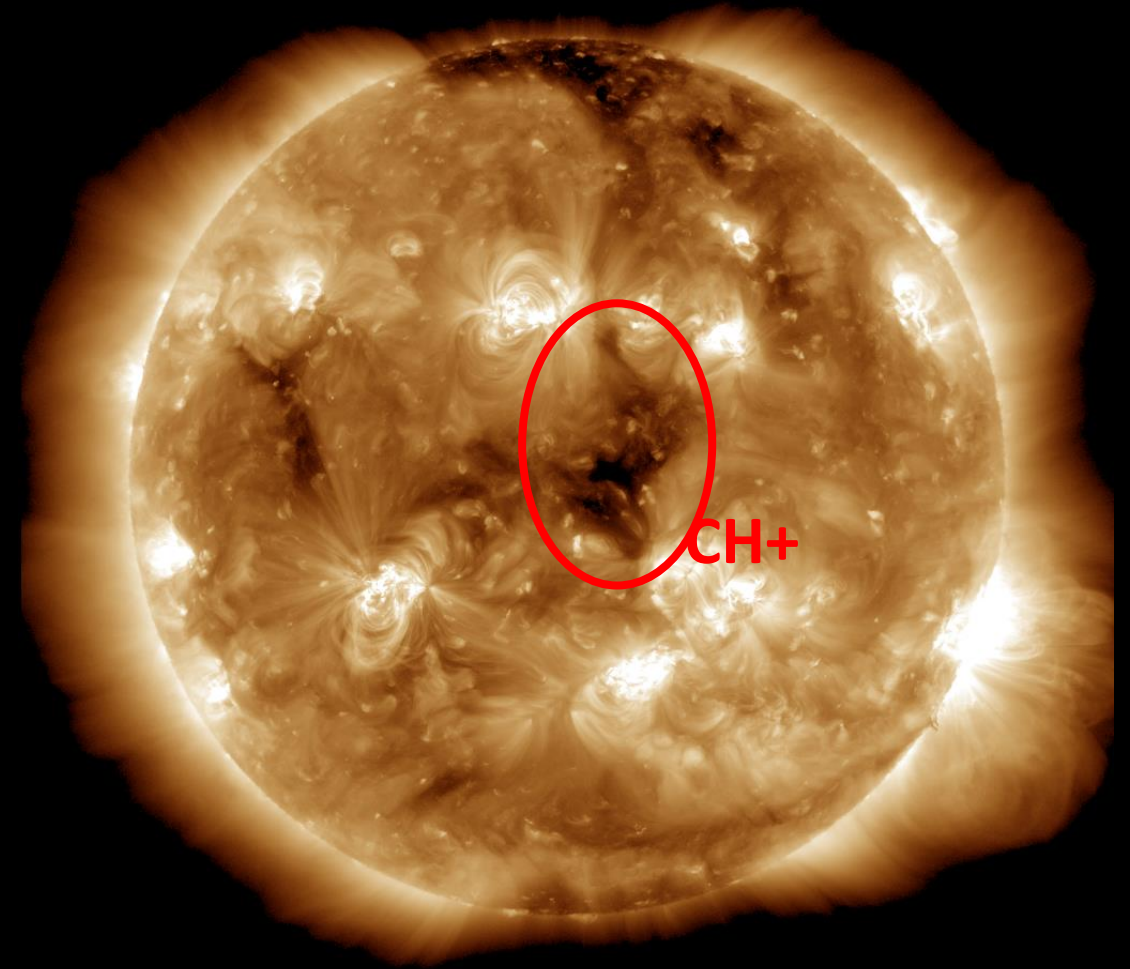
SDO/AIA 19.3 nm 2021-12-25

SDO/AIA AIA 193Å 2021-12-25T13:00:05.843



SDO/AIA 19.3 nm 2021-12-26

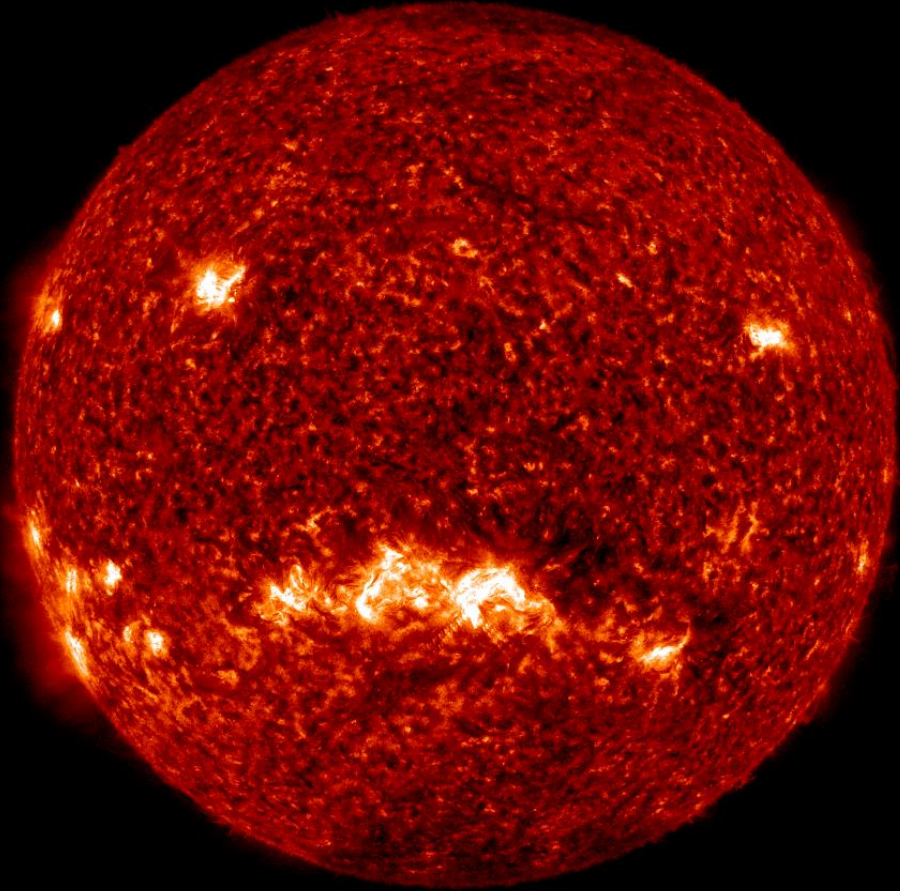
SDO/AIA AIA 193Å 2021-12-26T12:00:05.843



Filaments

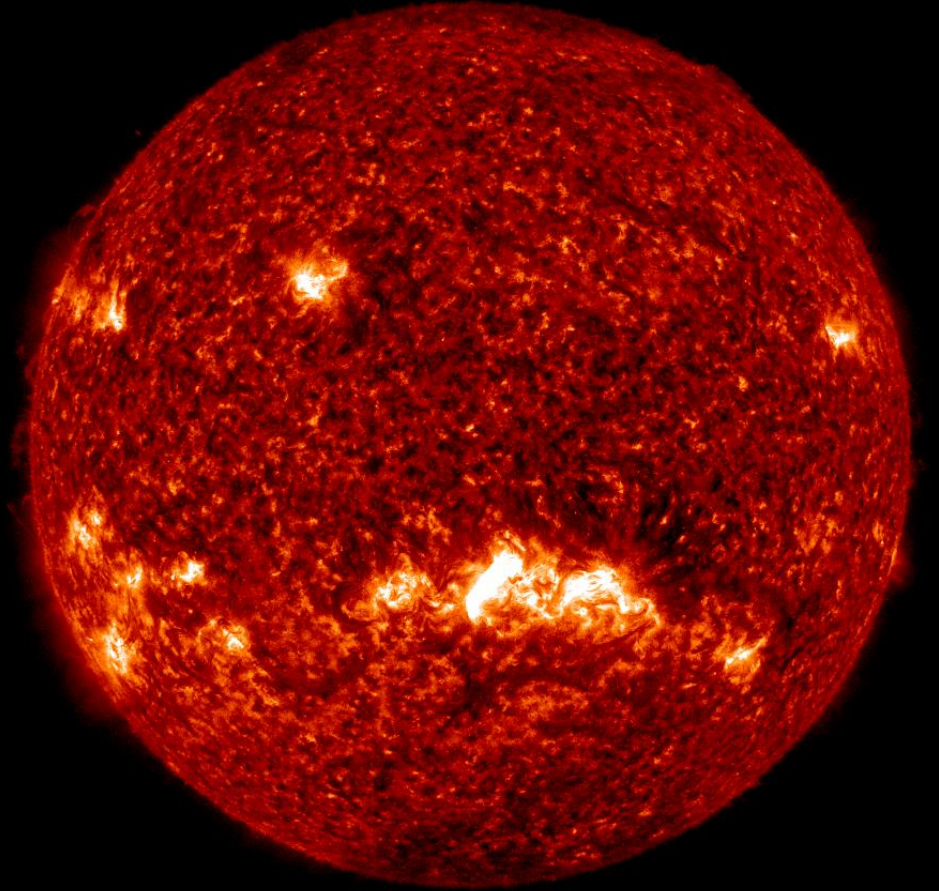
SDO/AIA 30.4 nm 2021-12-19

SDO/AIA AIA 304Å 2021-12-19T12:00:06.580



SDO/AIA 30.4 nm 2021-12-20

SDO/AIA AIA 304Å 2021-12-20T12:00:06.572



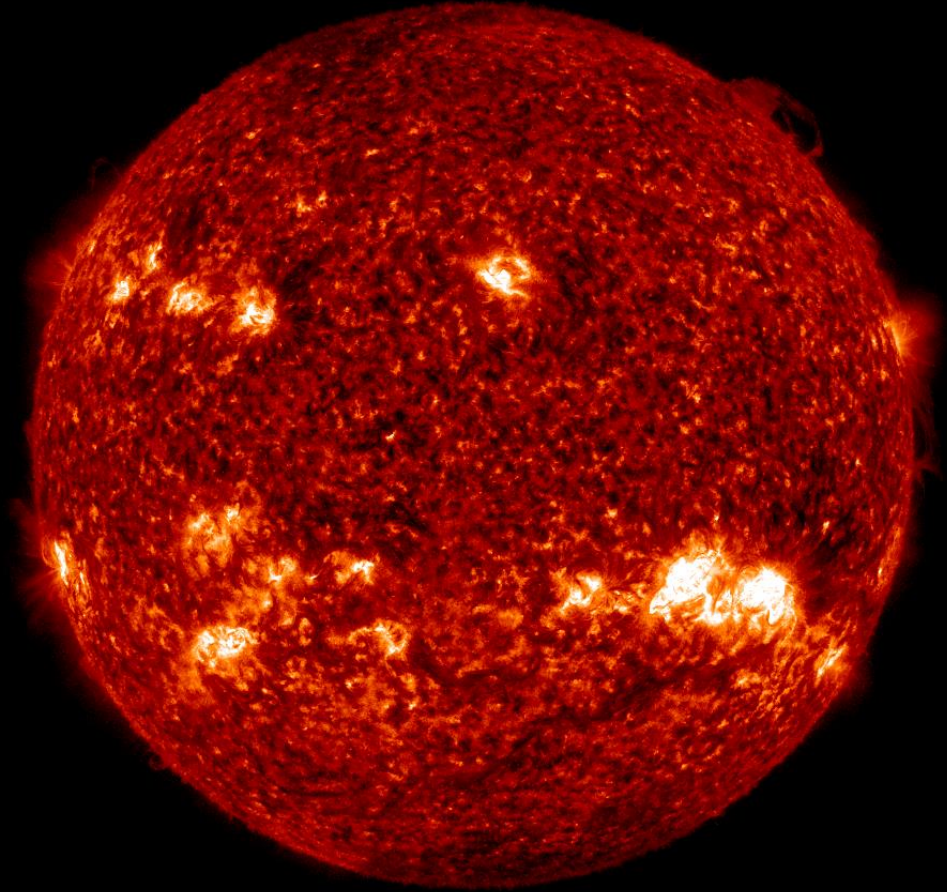
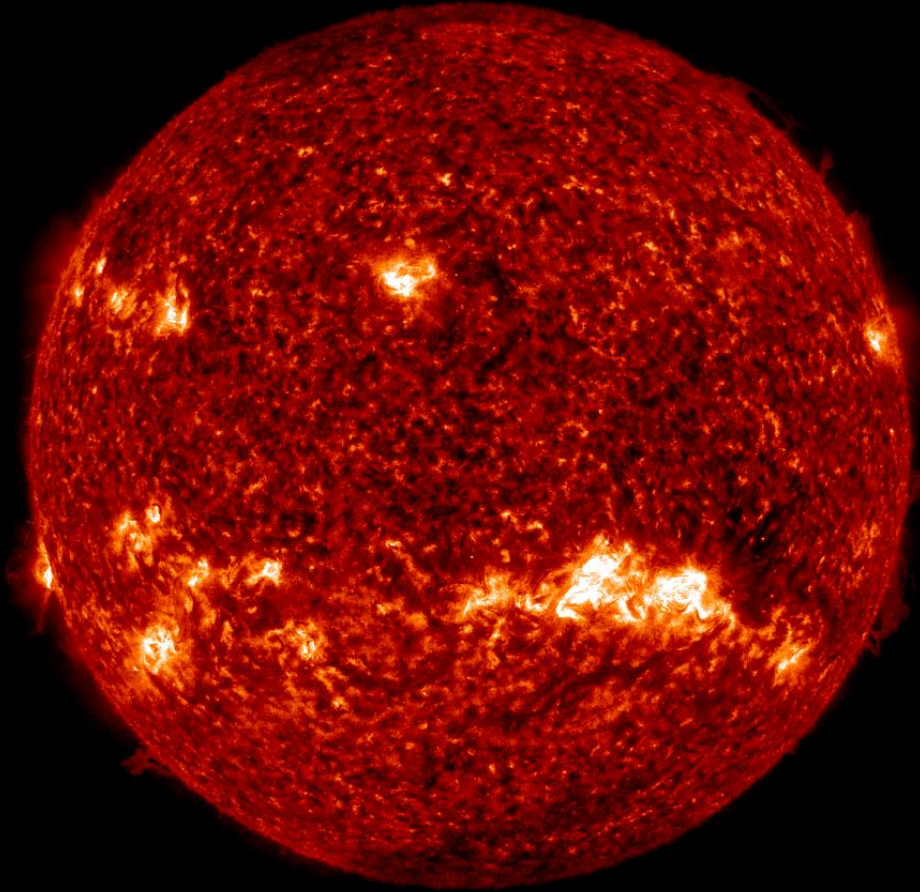
Filaments

SDO/AIA 30.4 nm 2021-12-21

SDO/AIA AIA 304Å 2021-12-21T12:00:06.589

SDO/AIA 30.4 nm 2021-12-22

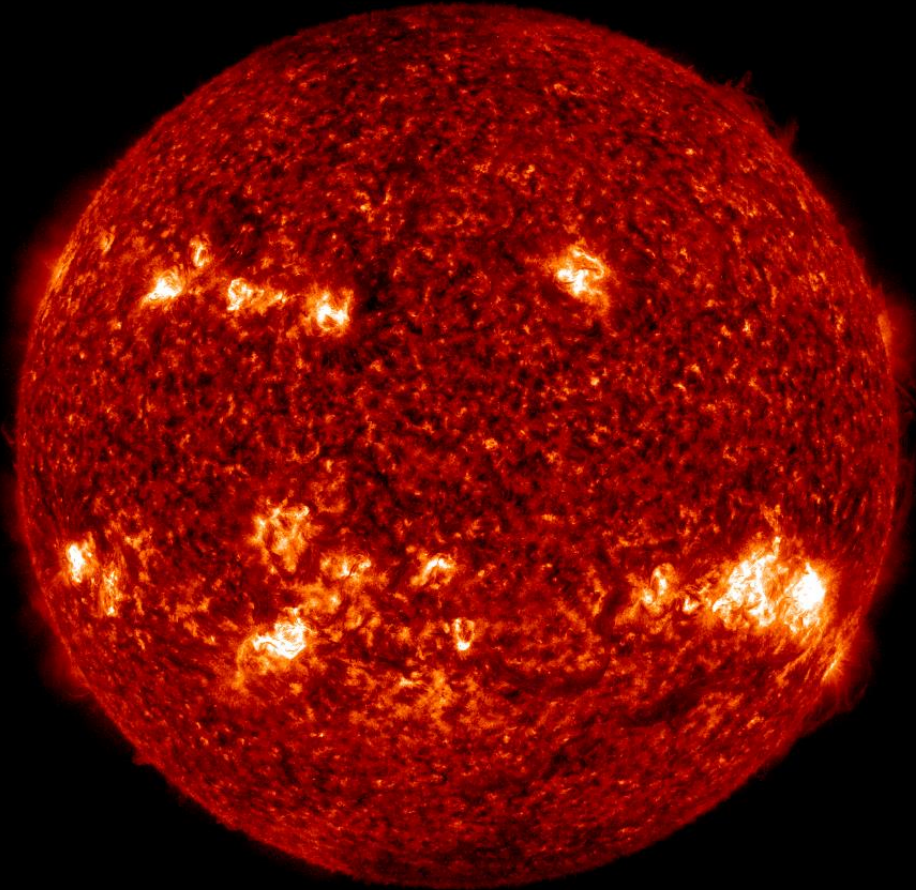
SDO/AIA AIA 304Å 2021-12-22T12:00:06.572



Filaments

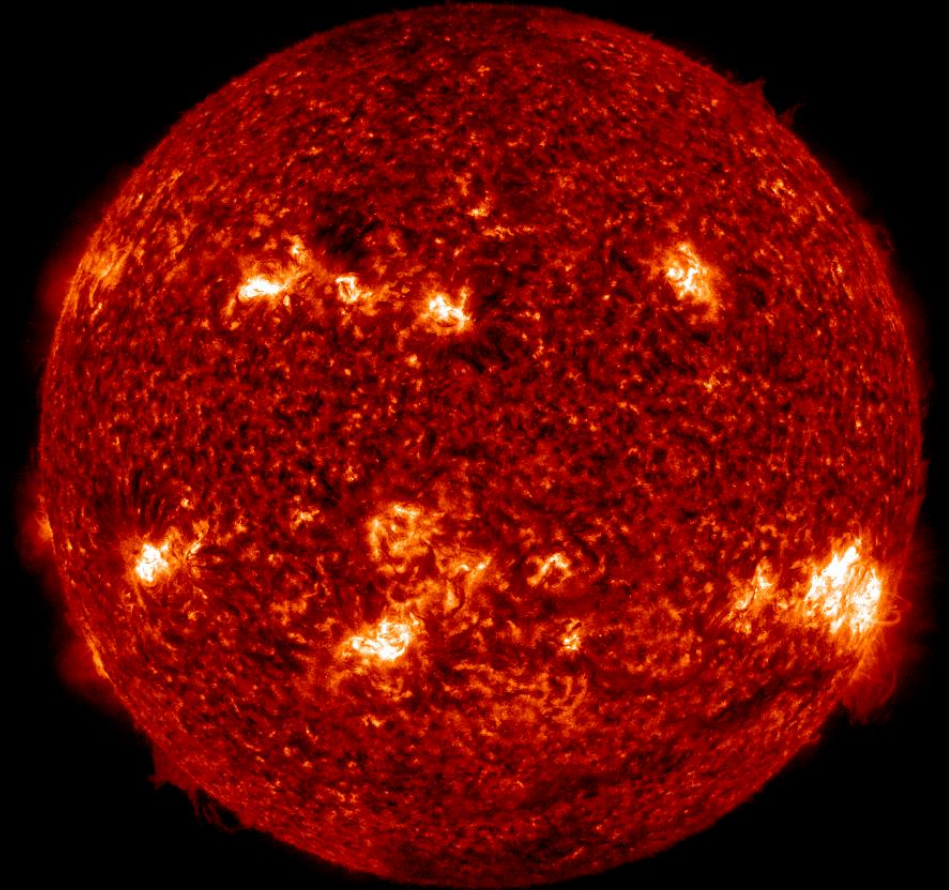
SDO/AIA 30.4 nm 2021-12-23

SDO/AIA AIA 304Å 2021-12-23T12:00:06.573



SDO/AIA 30.4 nm 2021-12-24

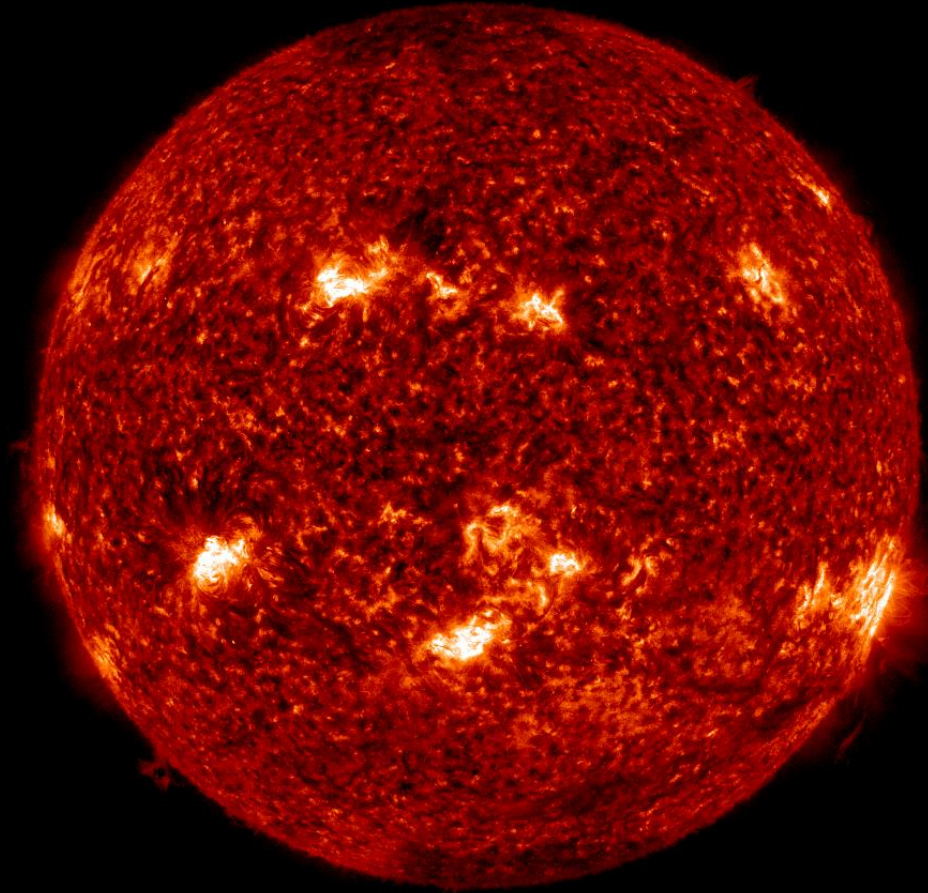
SDO/AIA AIA 304Å 2021-12-24T12:00:06.580



Filaments

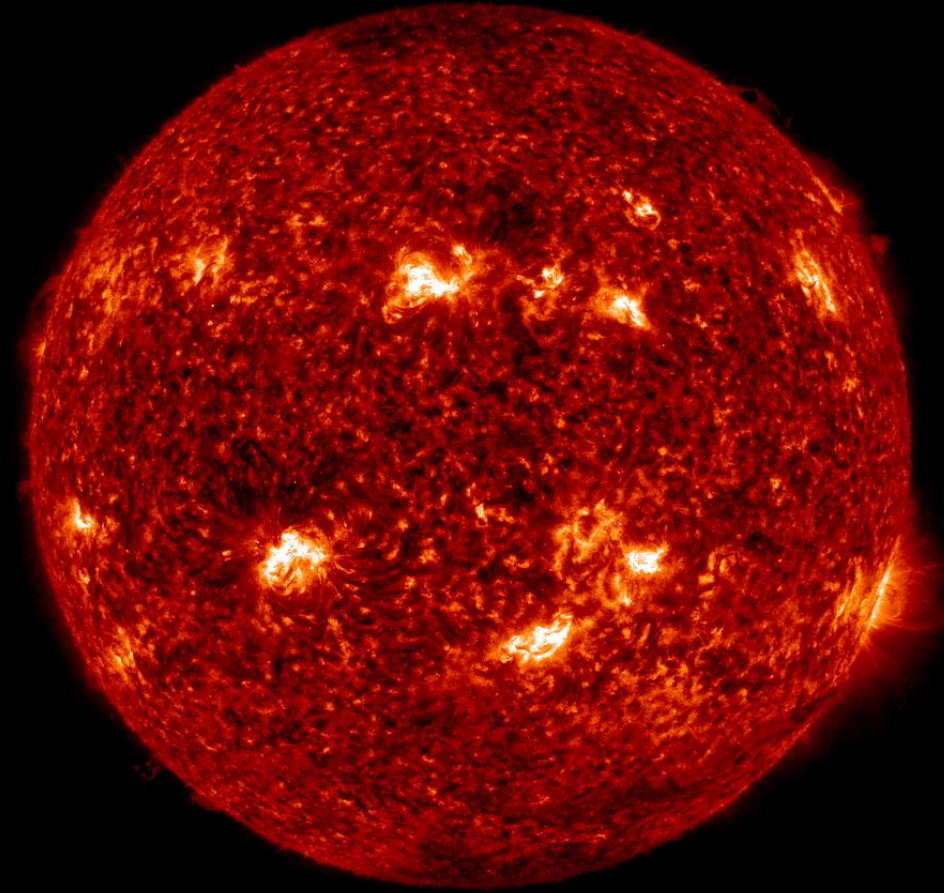
SDO/AIA 30.4 nm 2021-12-25

SDO/AIA AIA 304Å 2021-12-25T12:00:06.581



SDO/AIA 30.4 nm 2021-12-26

SDO/AIA AIA 304Å 2021-12-26T12:00:06.580



Filaments & Filament eruptions - none Earth-directed

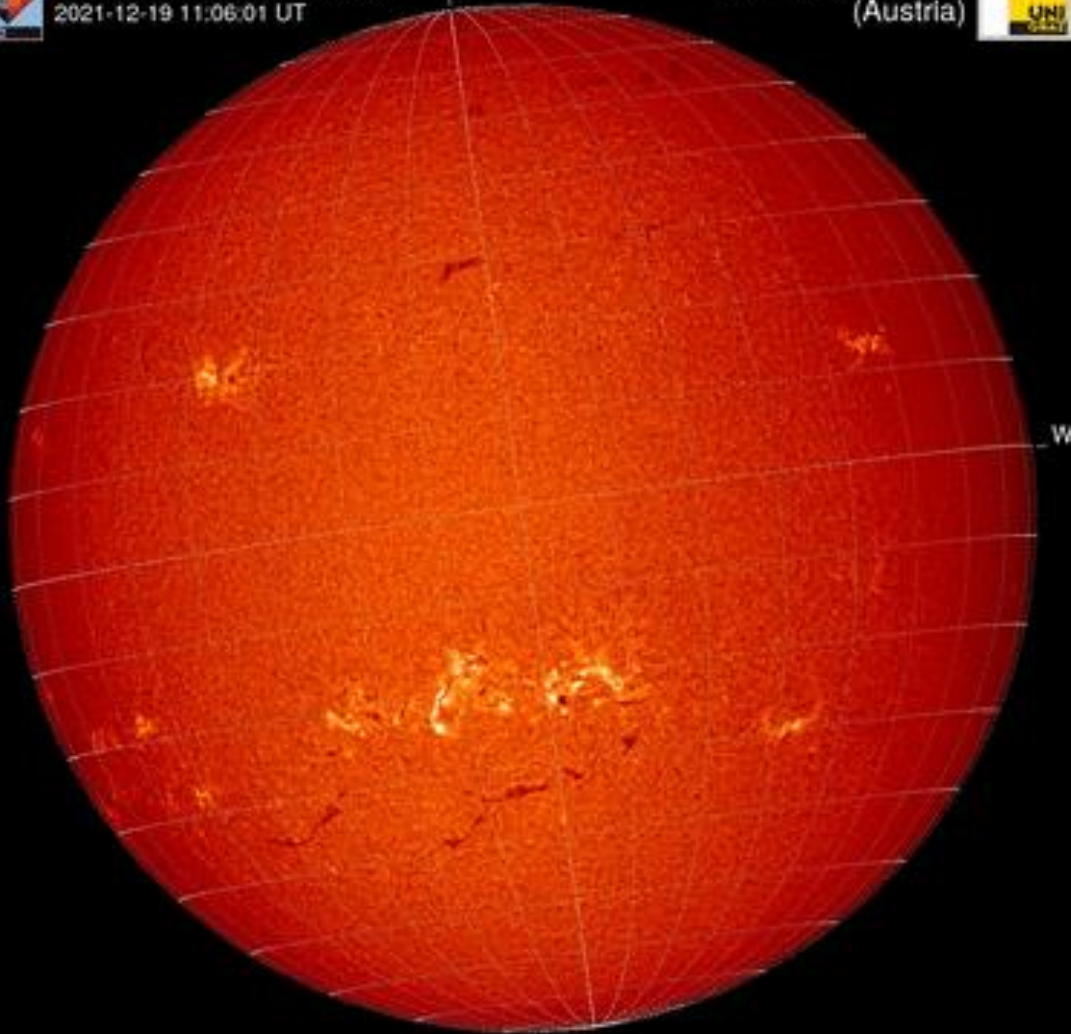
H-alpha 2021-12-19



Kanzelhöhe Observatory
2021-12-19 11:06:01 UT

N

University of Graz
(Austria)



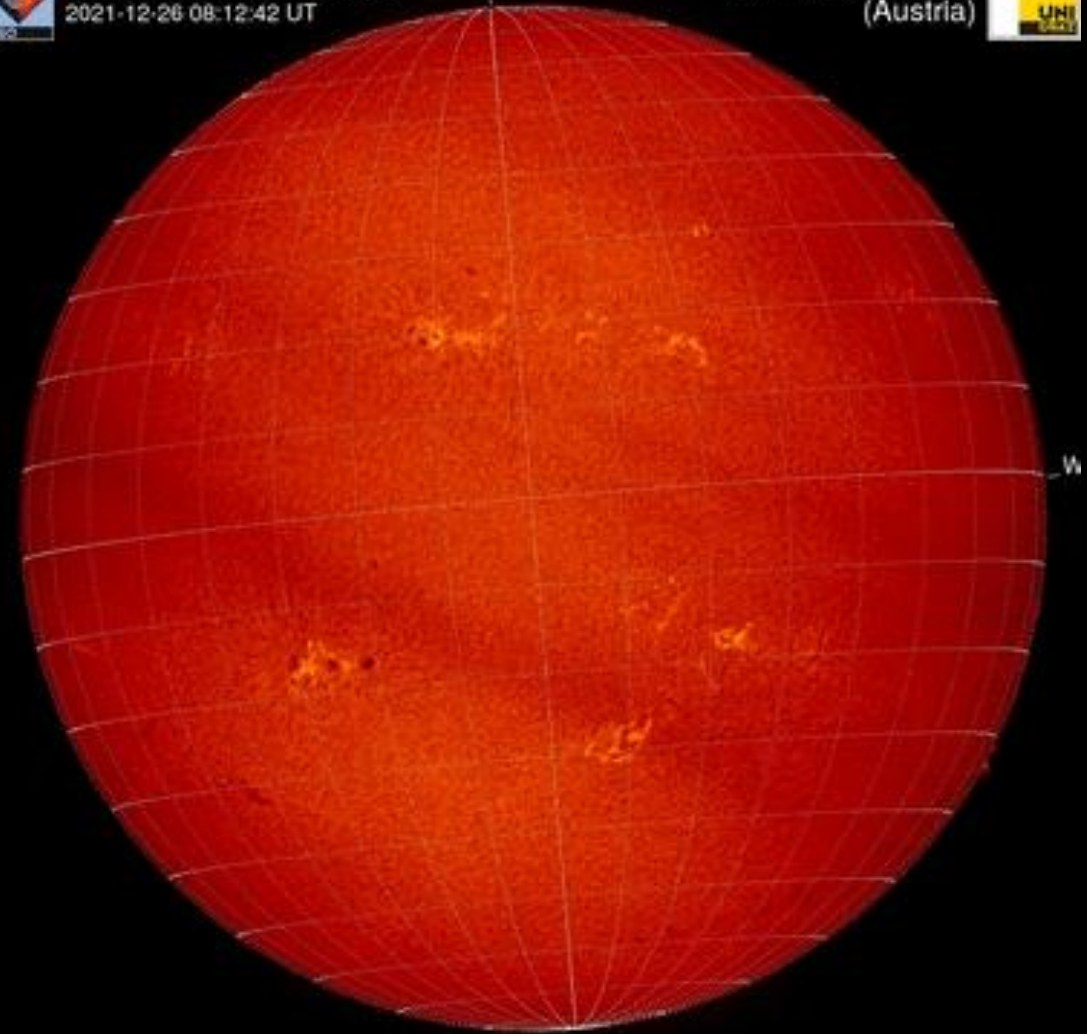
H-alpha 2021-12-26



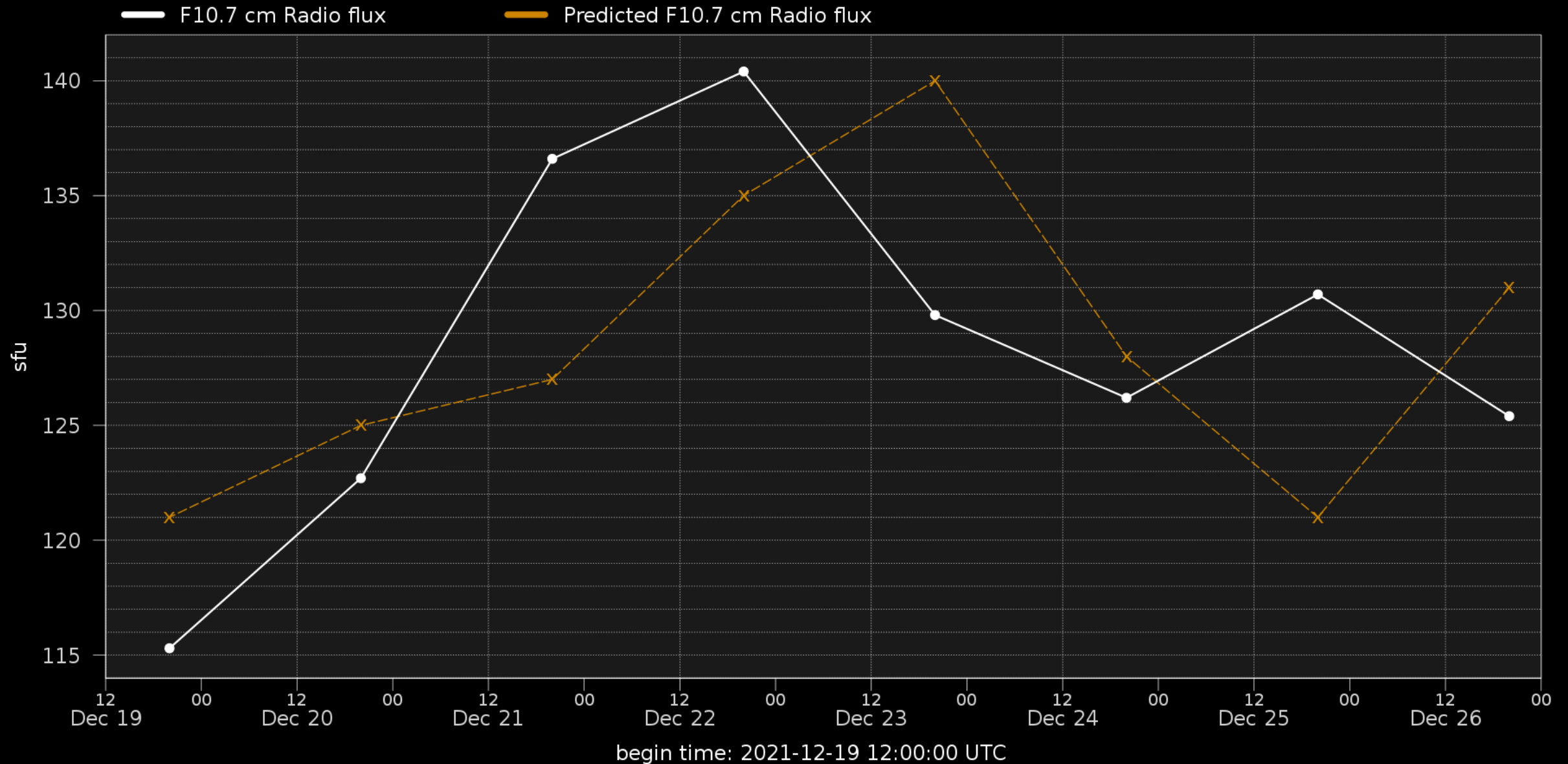
Kanzelhöhe Observatory
2021-12-26 08:12:42 UT

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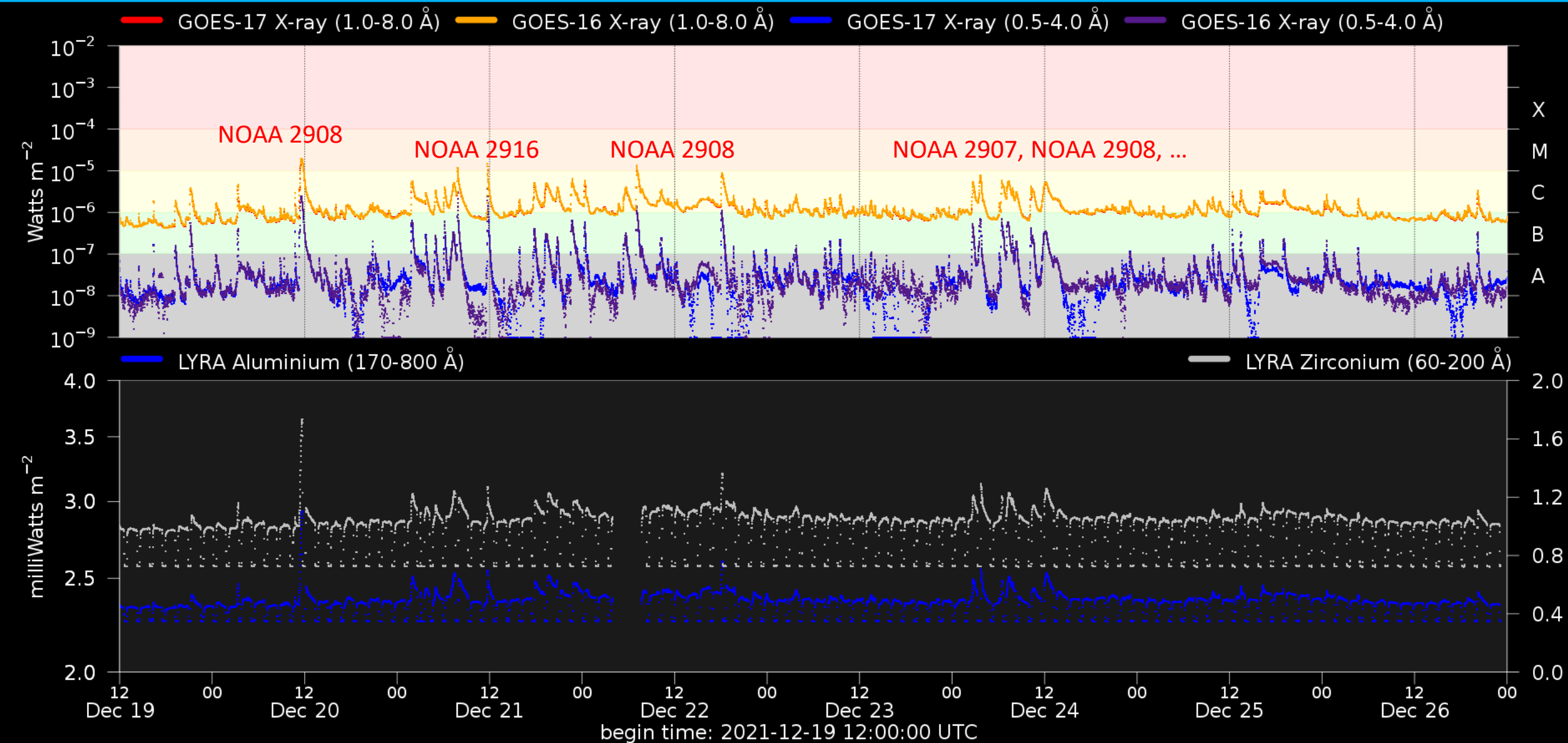
University of Graz
(Austria)



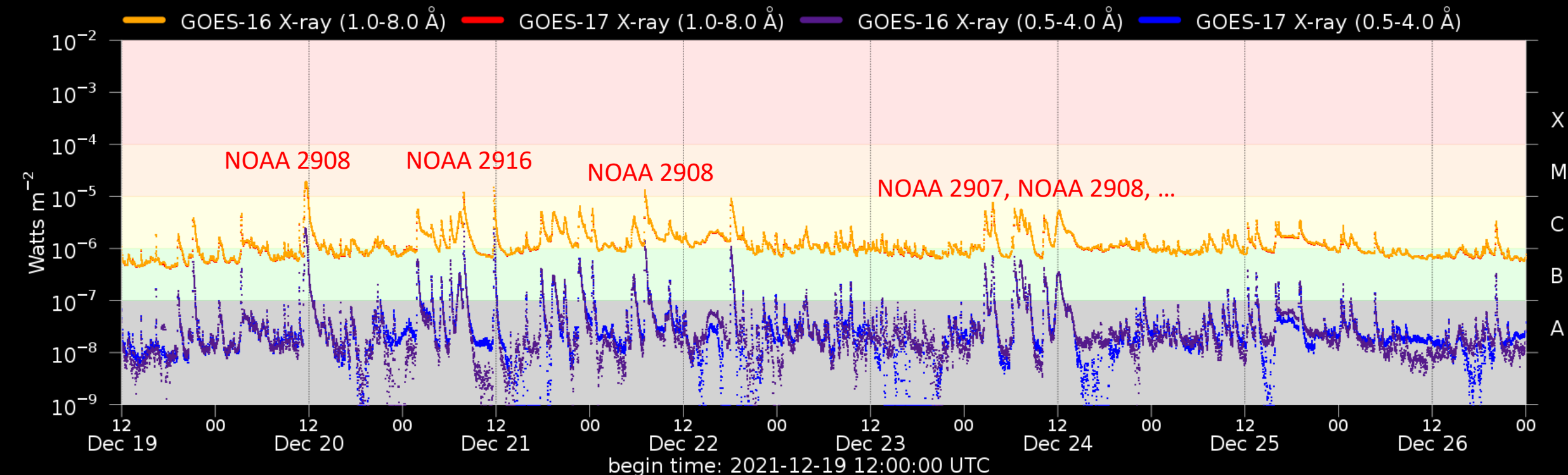
Solar F10.7cm radio flux



Solar X-Ray and UV flux



Flaring activity

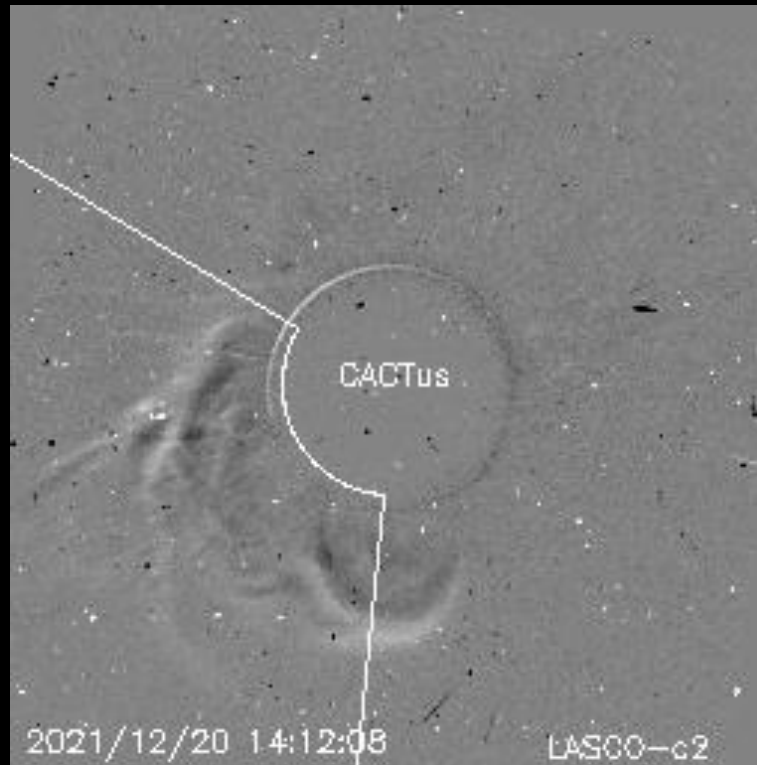


Probabilities (%) and occurrences (#) of C/M/X-flares daily, from noon to noon:

Issue date	2021-12-19	2021-12-20	2021-12-21	2021-12-22	2021-12-23	2021-12-24	2021-12-25	2021-12-26
Probability (%)	75 05 01	80 35 10	85 50 10	90 45 05	95 45 05	95 40 05	85 30 05	80 45 05
Observed (#)	08 01 00	08 02 00	08 01 00	10 00 00	13 00 00	08 00 00	09 00 00	02 00 00

Coronal Mass Ejections

Faint and Slow Partial Halo on Dec 20th
 (related to the impulsive M1.9-class flare from NOAA 2908
 with peak time 11:30 UTC on Dec 20th)



Solar Wind and Geomagnetic Activity

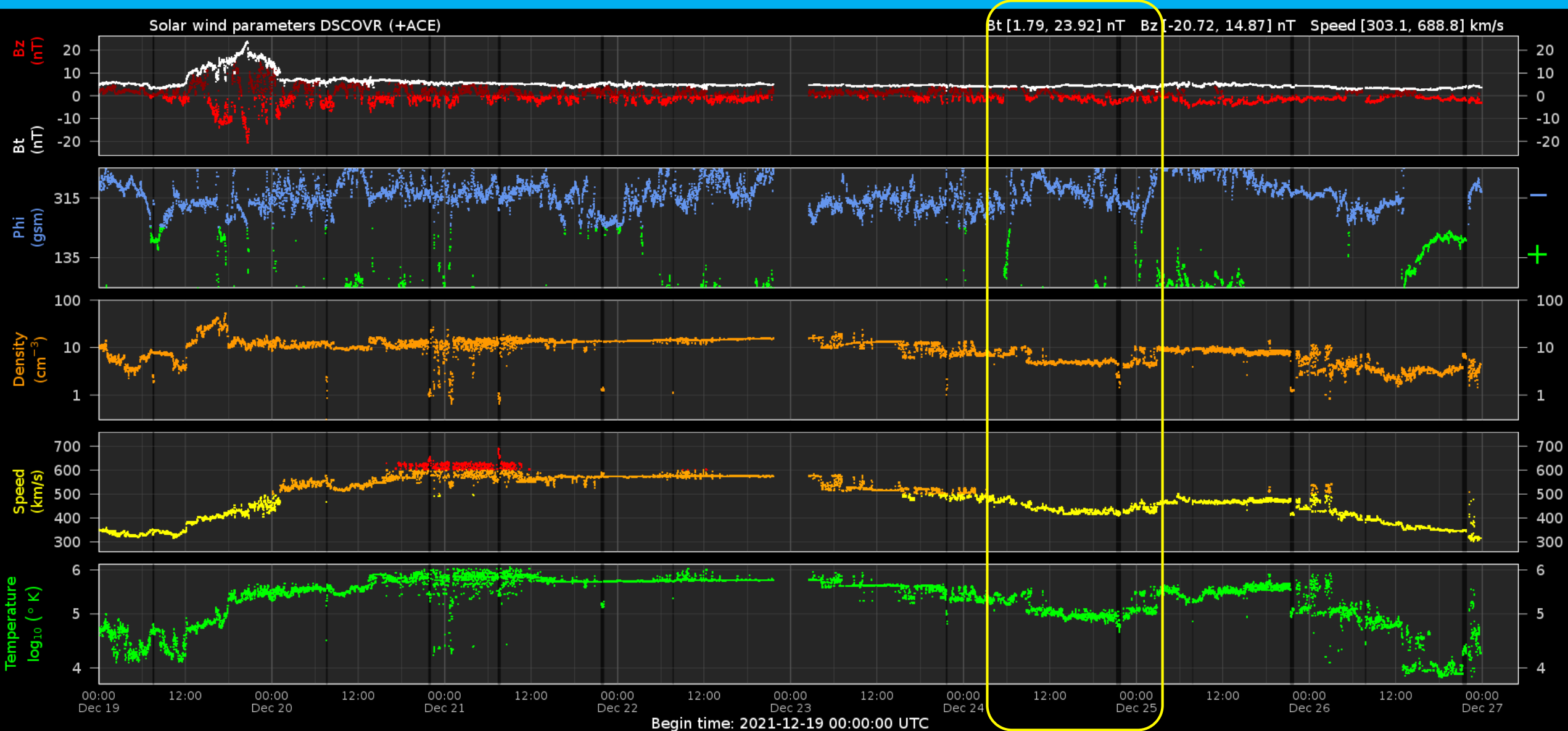


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Solar wind parameters

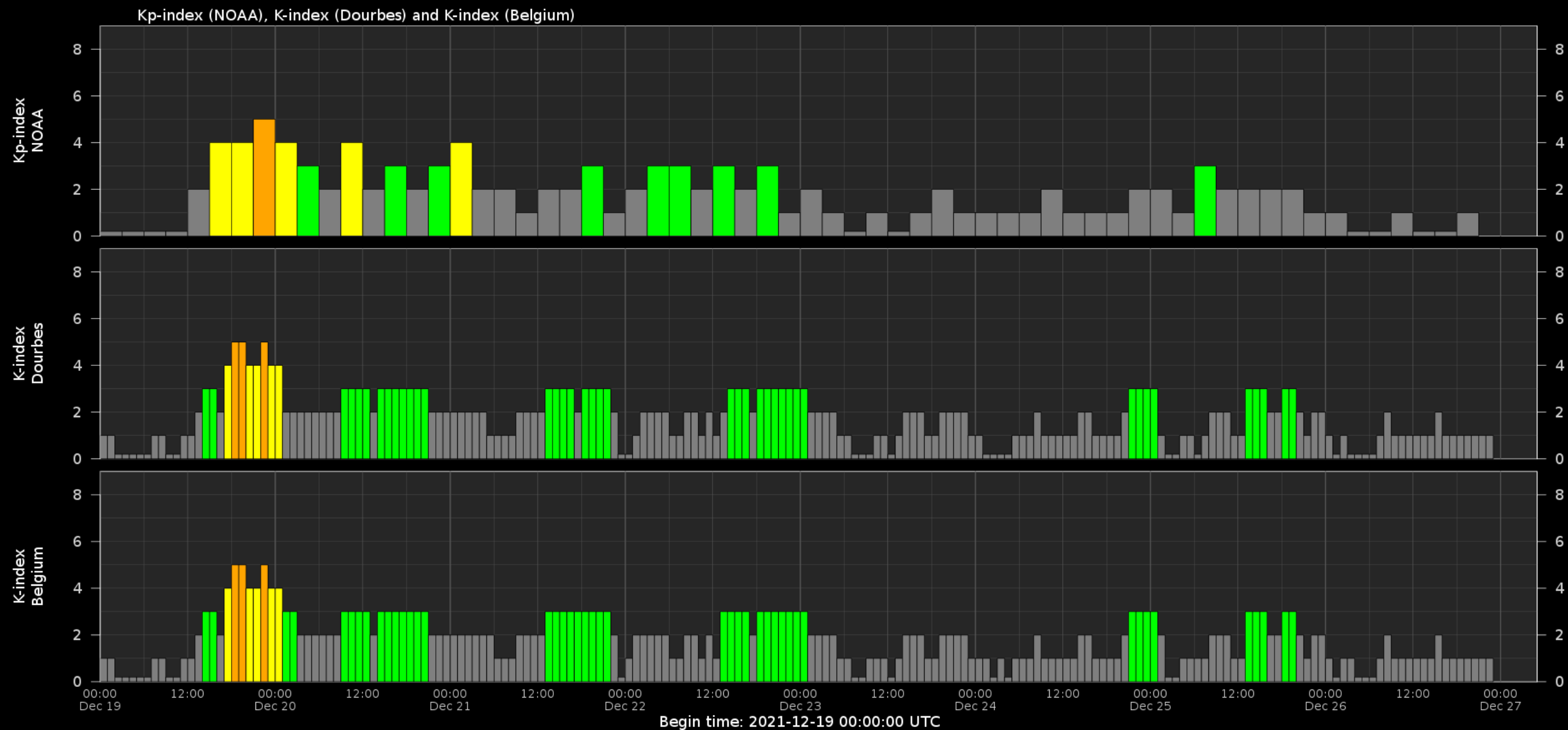
Magnetic cloud related
to Dec 20th partial halo?



Solar wind parameters & K-indices



Geomagnetic activity (K-indexes)



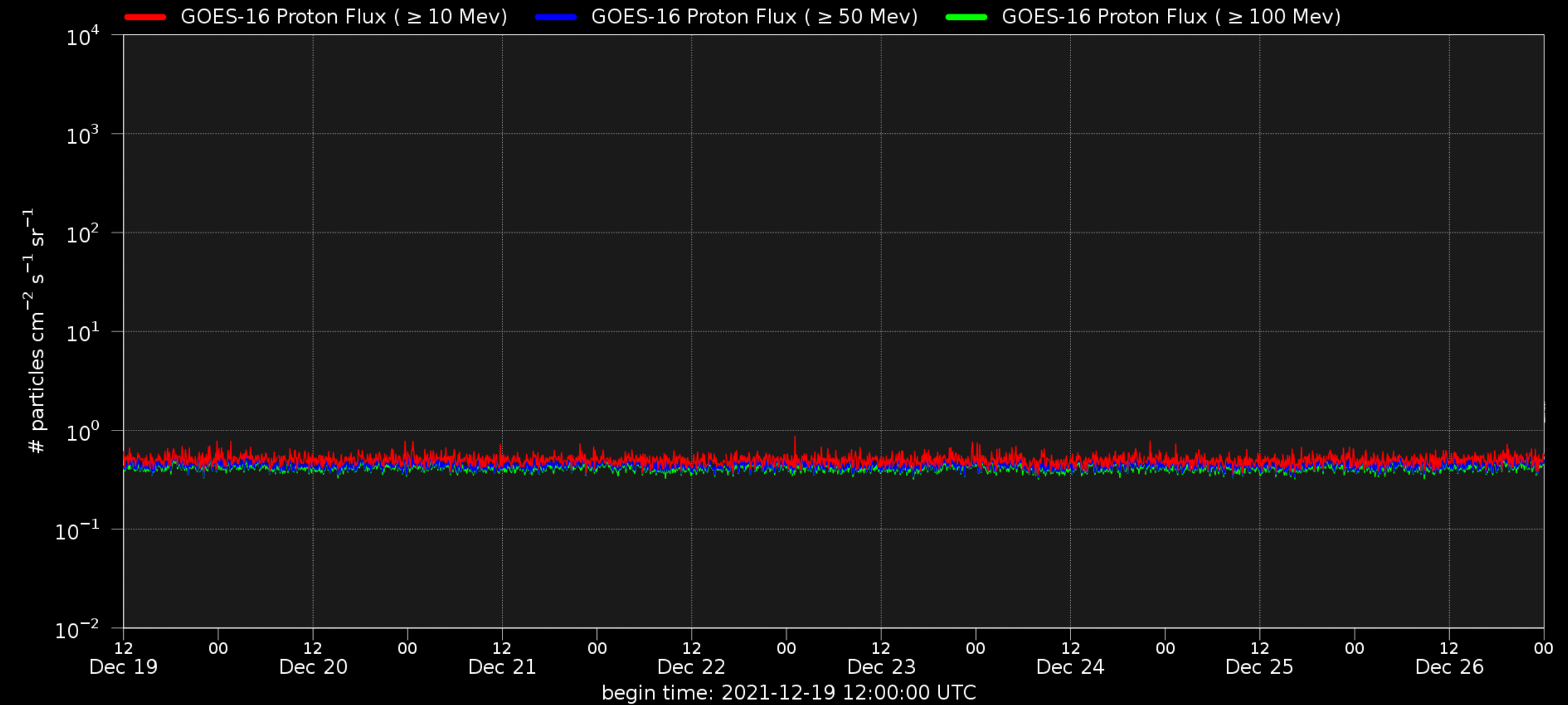
Energetic Particles



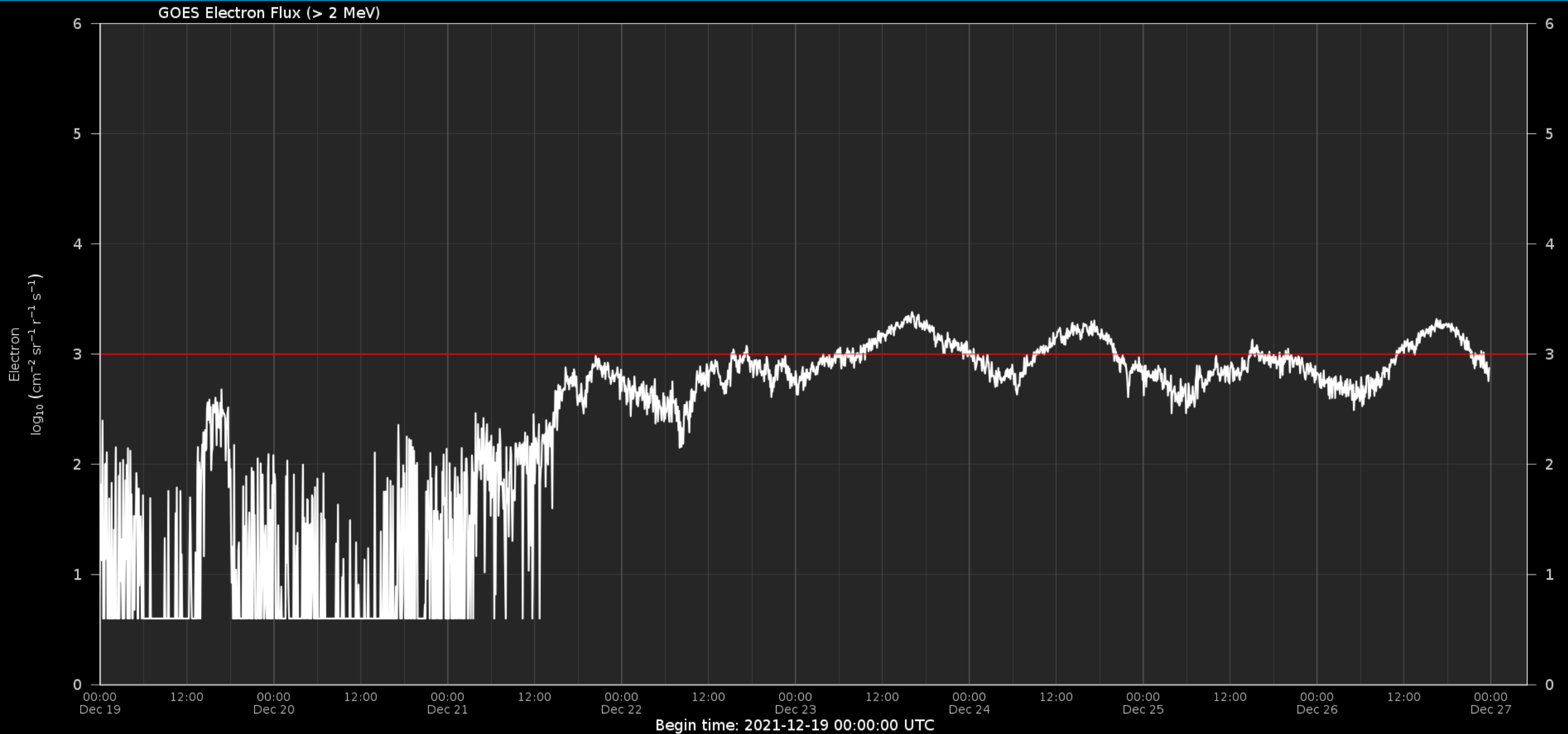
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Solar proton flux



Electron flux at GEO



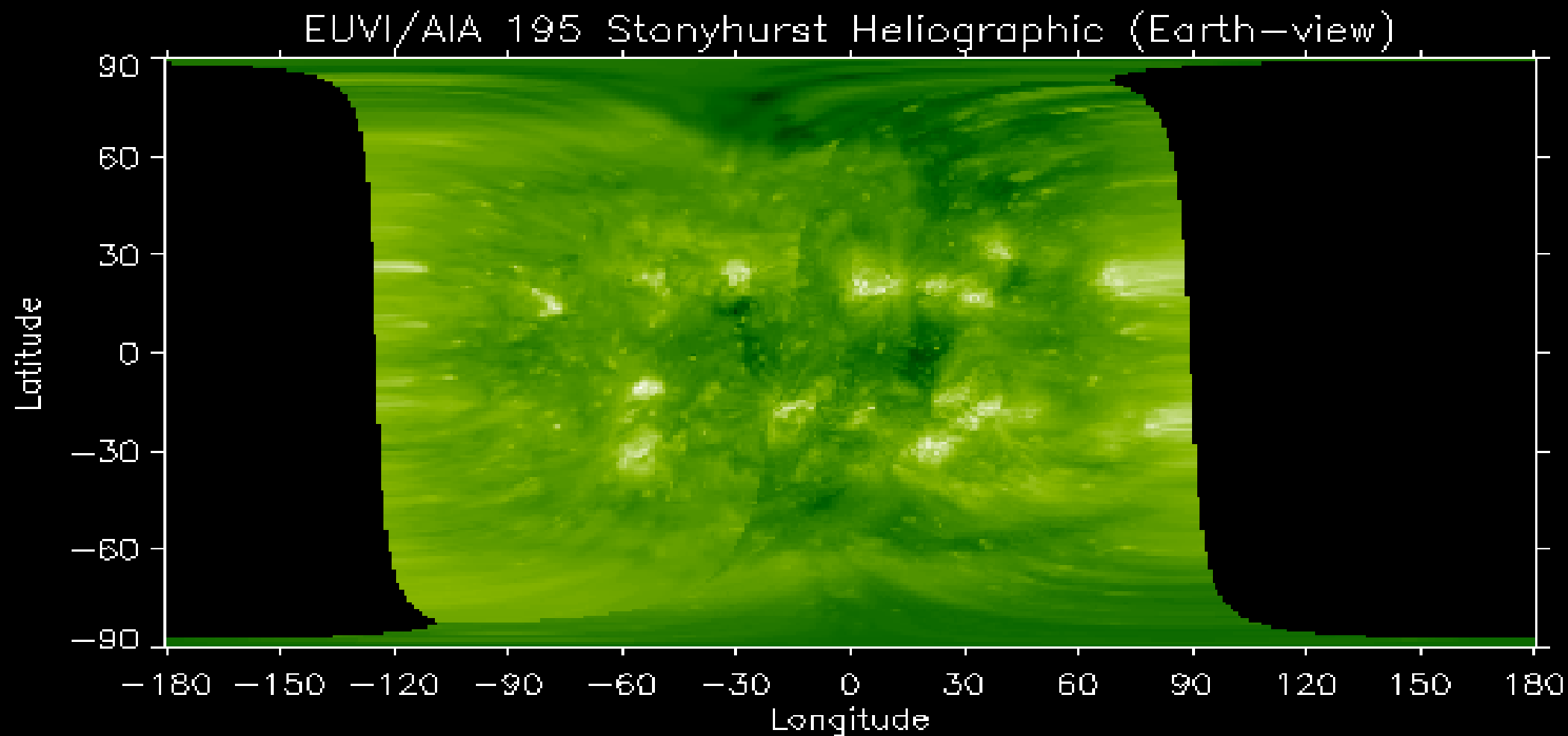
Outlook



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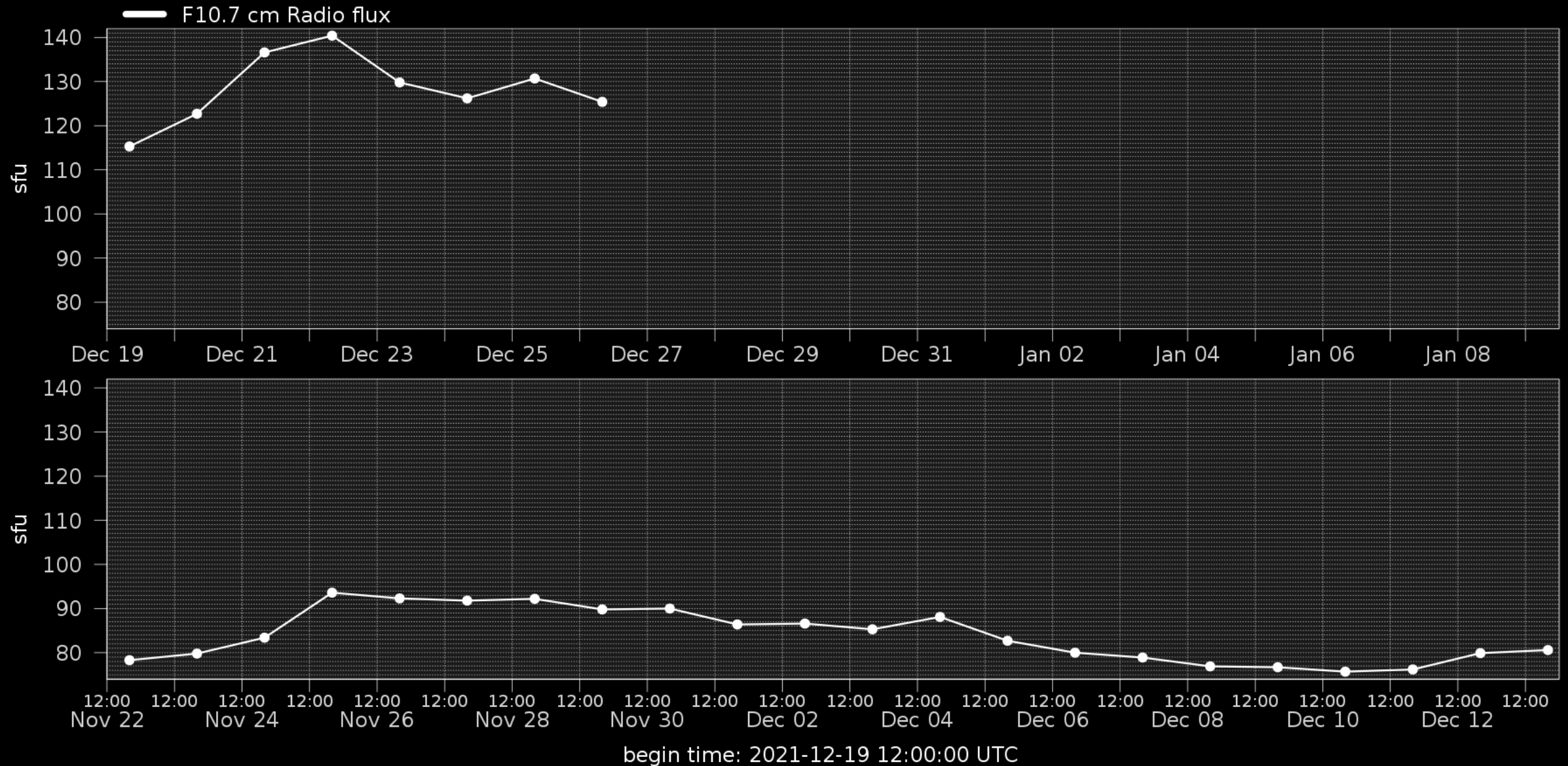
Solar Influences
Data analysis Centre
www.sidc.be

Outlook: Solar activity

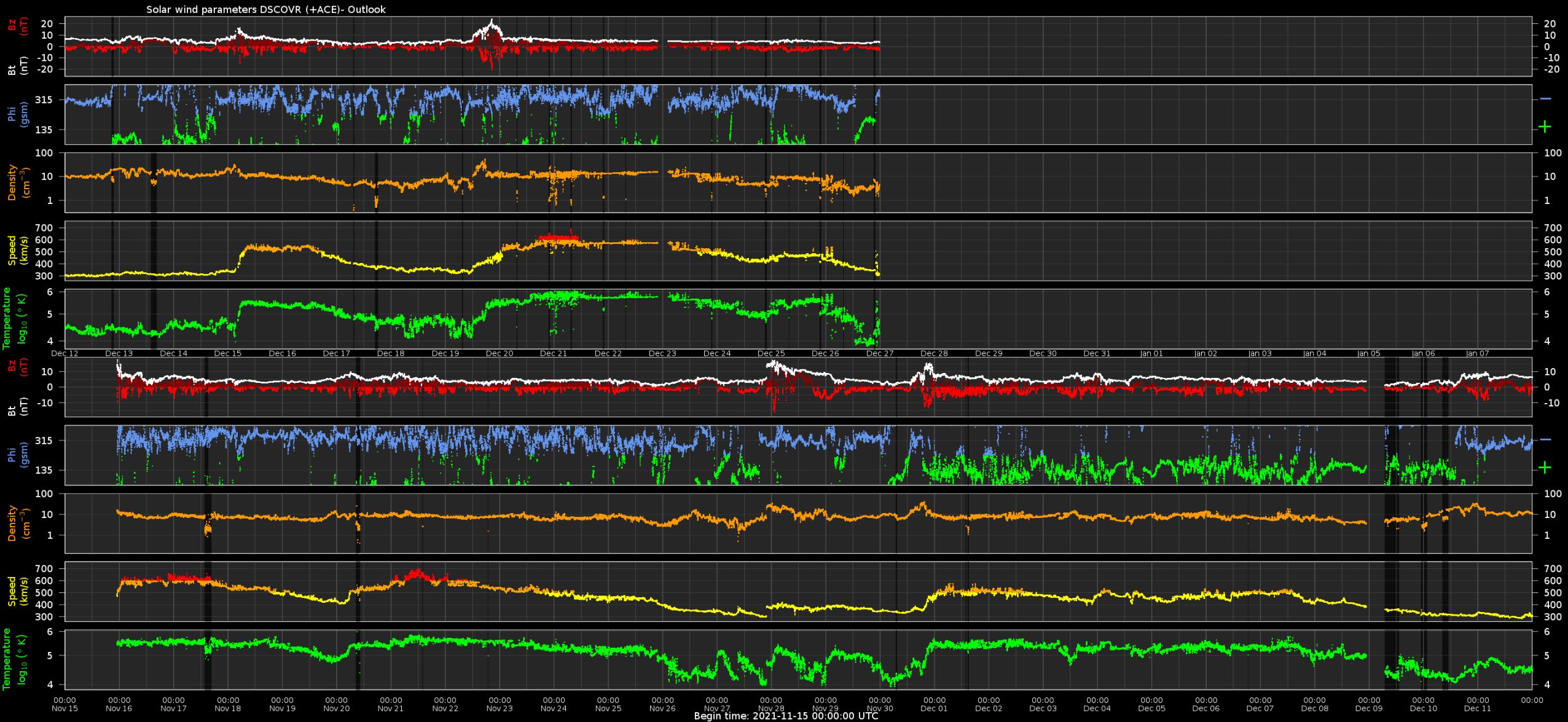


Observation date: 2021/12/27 08:05:00

Outlook: Solar F10.7cm radio flux



Outlook: Solar wind parameters



Outlook: Geomagnetic activity



Outlook: Electron Flux at GEO Outlook



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See you at our next briefing!

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