

SIDC Space Weather Briefing

19-26 March 2023

Yana Maneva

& the SIDC forecaster team



Royal Observatory
of Belgium

Solar Influences
Data analysis Centre
www.sidc.be

Summary Report

Solar activity from 2023-03-19 12:00 to 2023-03-26 23:59

Active regions	12 ARs: NOAA 3251, NOAA 3255 - NOAA 3265
Flares	# C-class flare: 17 # M-class flare: 1 # X-class flare: 0
Coronal Holes	CH+, 2 CH-
CMEs	partial halos: March 17th, March 20th

Proton flux	Nominal
Electron flux	Nominal

Solar wind and geomagnetic conditions

ICMEs	Severe storm on March 24th 03-06 UTC
Solar wind conditions	B : 2.17 - 22.01 nT //Bz: -17.54 nT to 11.11 nT //Speed: 284.2 - 700.0km/s
K-indices	max K-index (KBel): 6 max Kp-index (NOAA): 8-

All Quiet Alert: NOT QUIET the entire week

Solar Activity

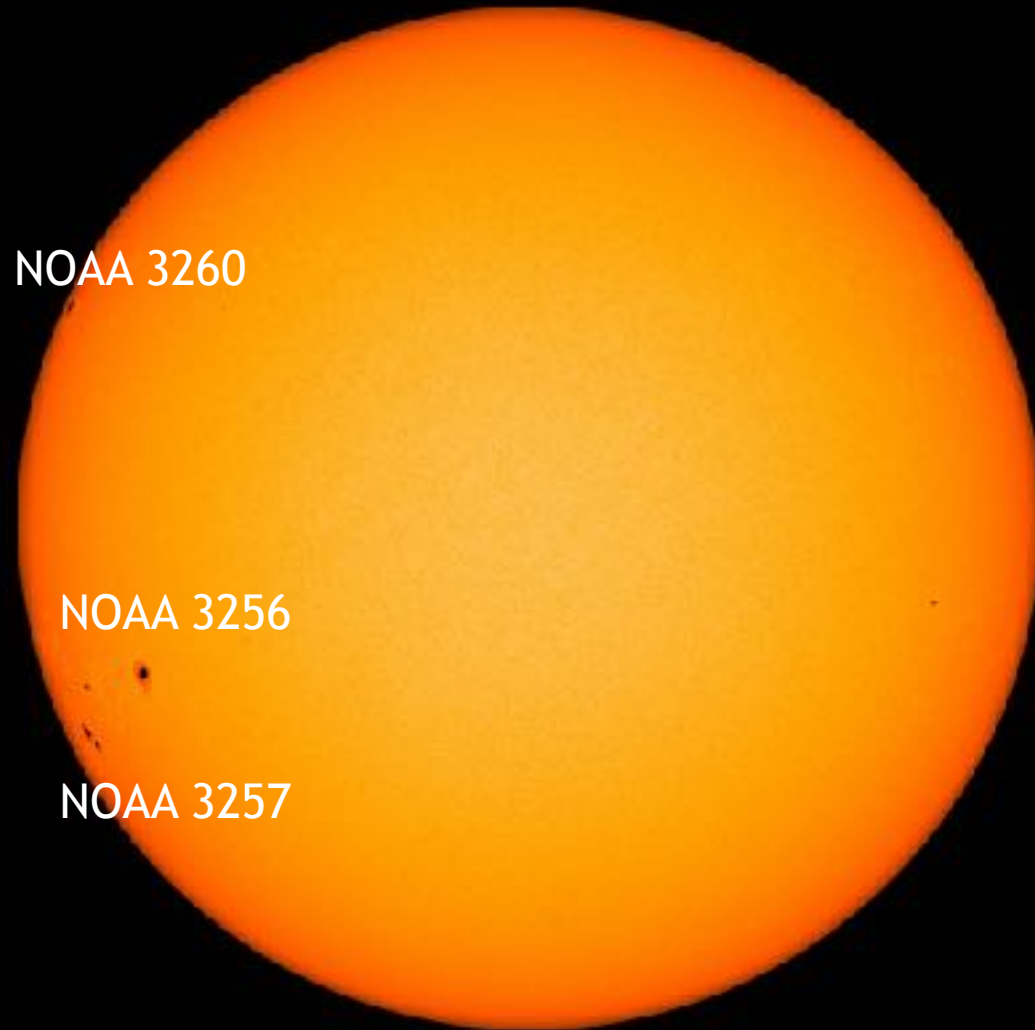


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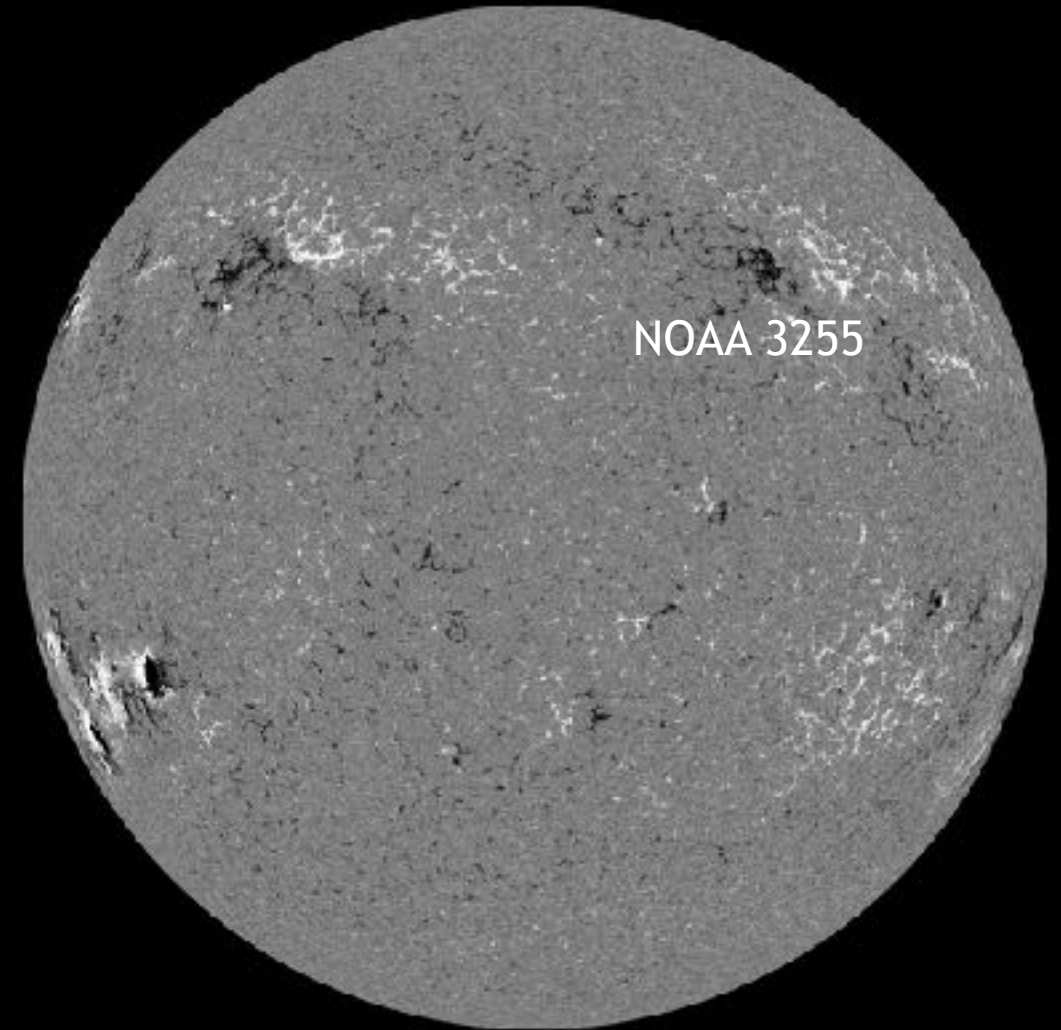
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Solar active regions

SDO/HMI White Light 2023-03-19

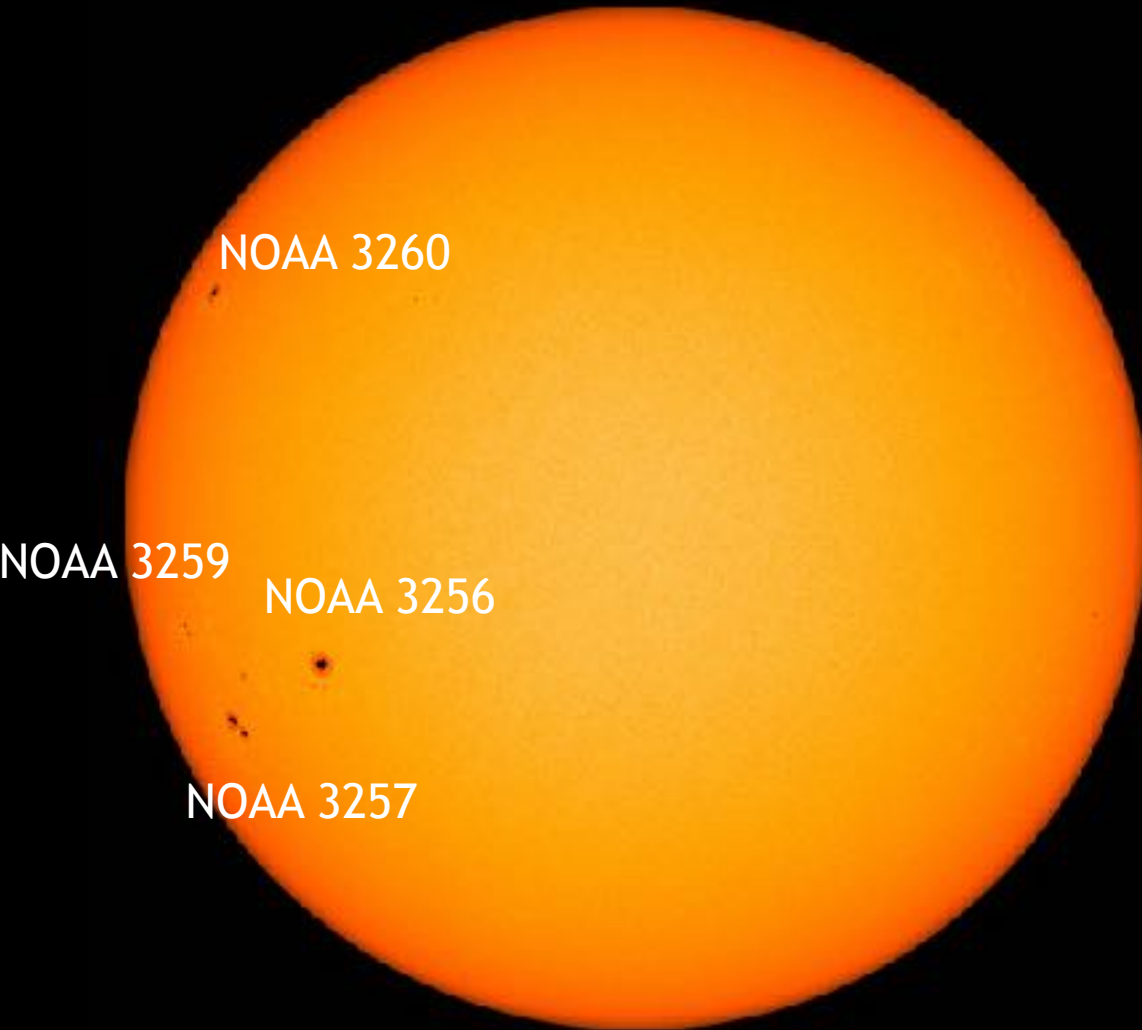


SDO/HMI Magnetogram 2023-03-19

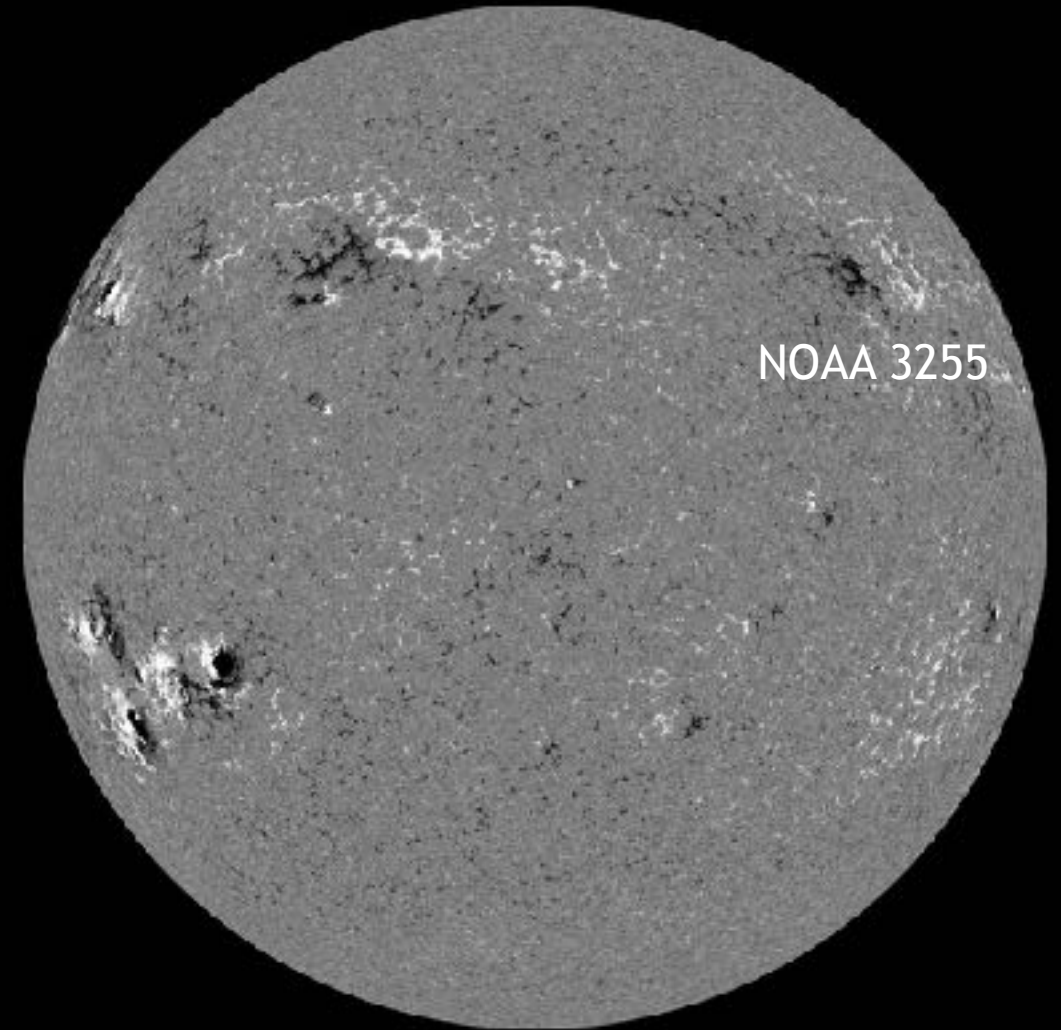


Solar active regions

SDO/HMI White Light 2023-03-20

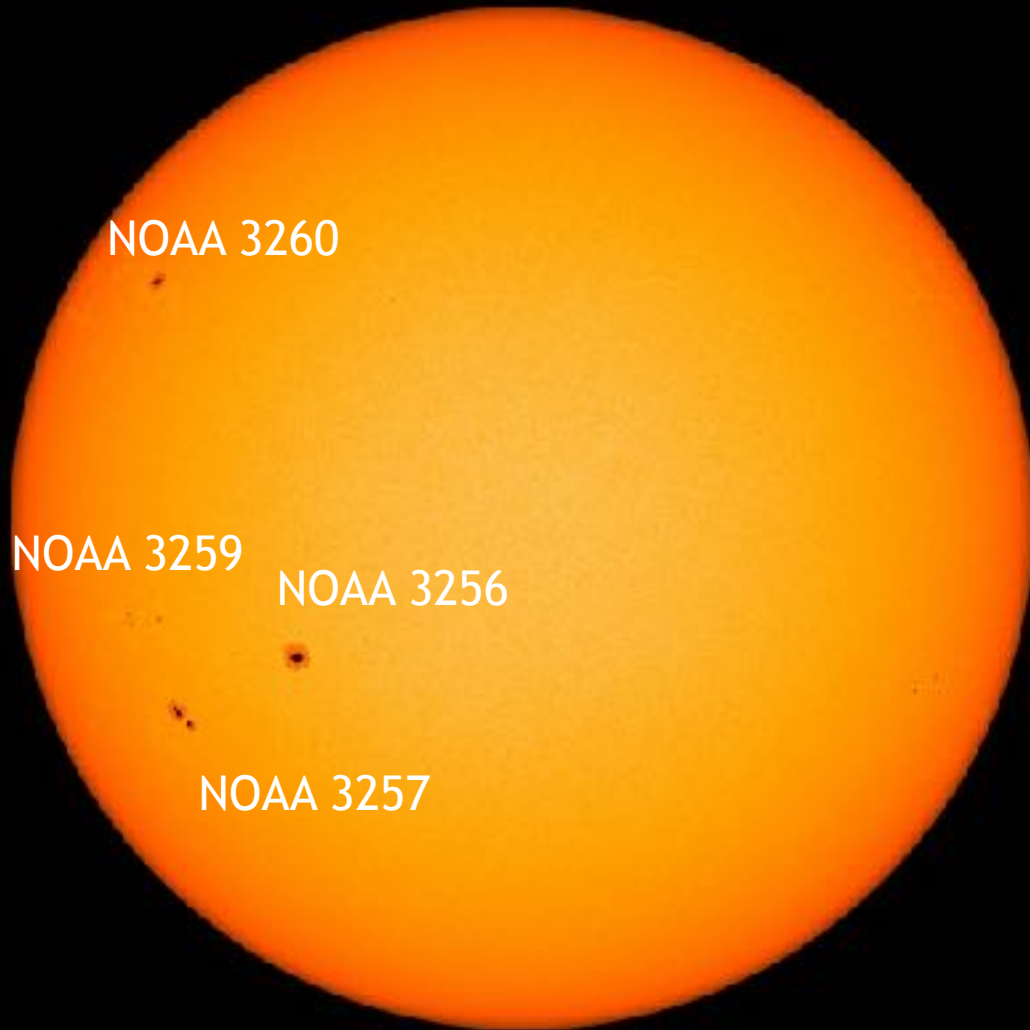


SDO/HMI Magnetogram 2023-03-20

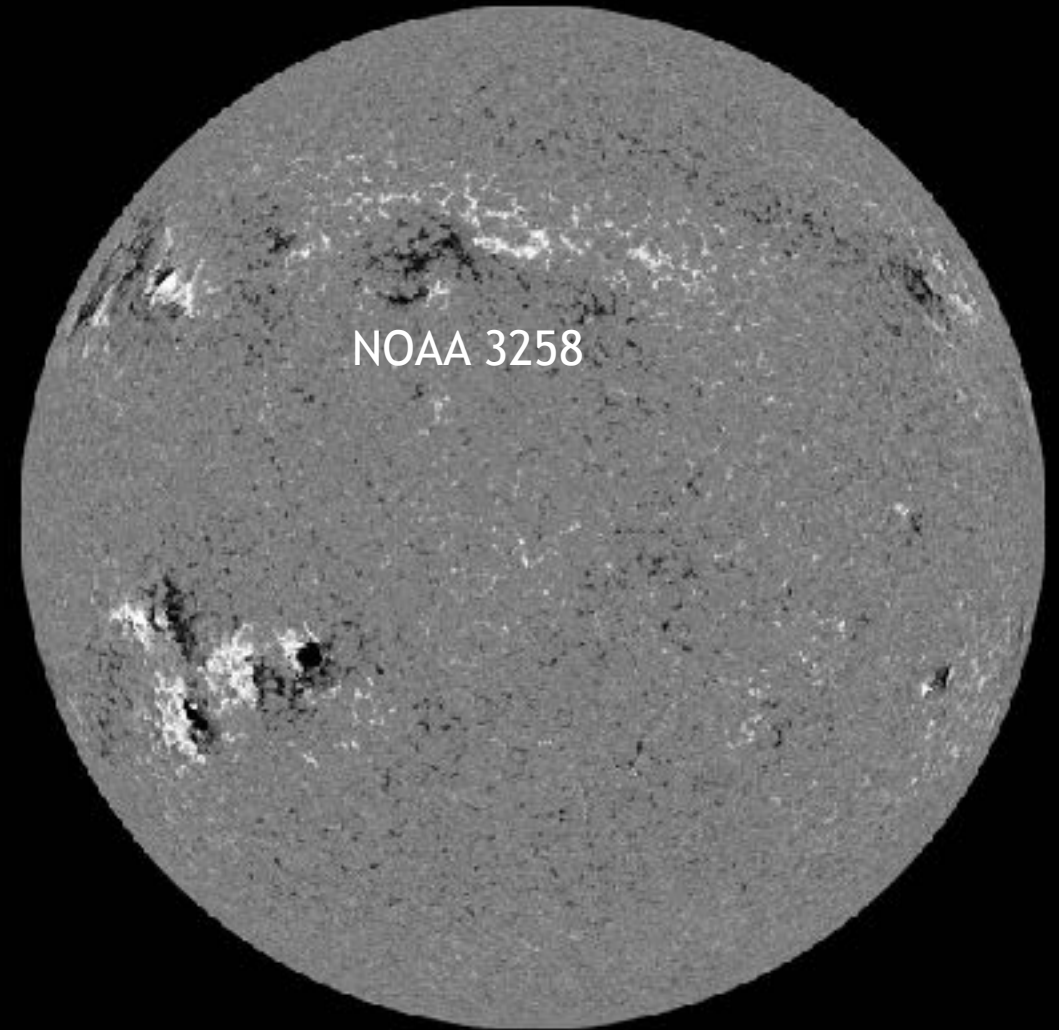


Solar active regions

SDO/HMI White Light 2023-03-21

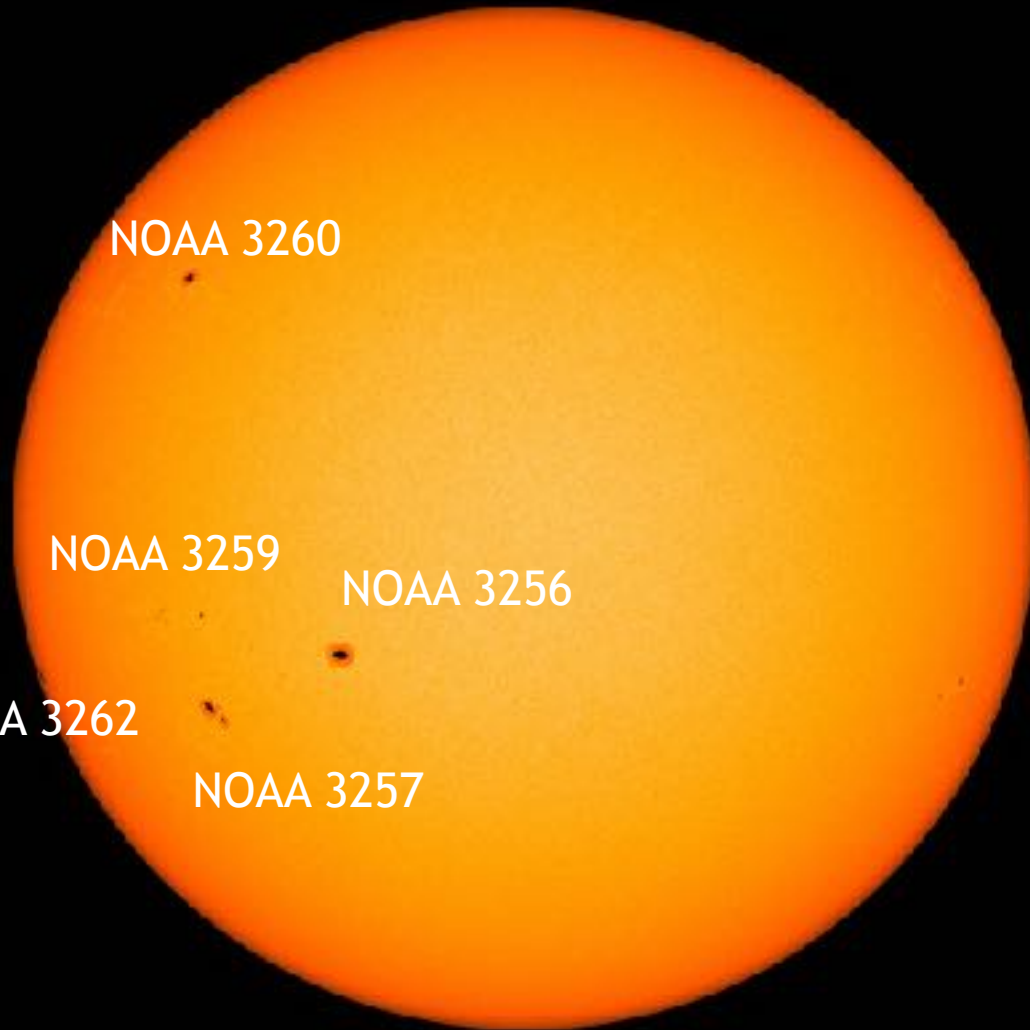


SDO/HMI Magnetogram 2023-03-21

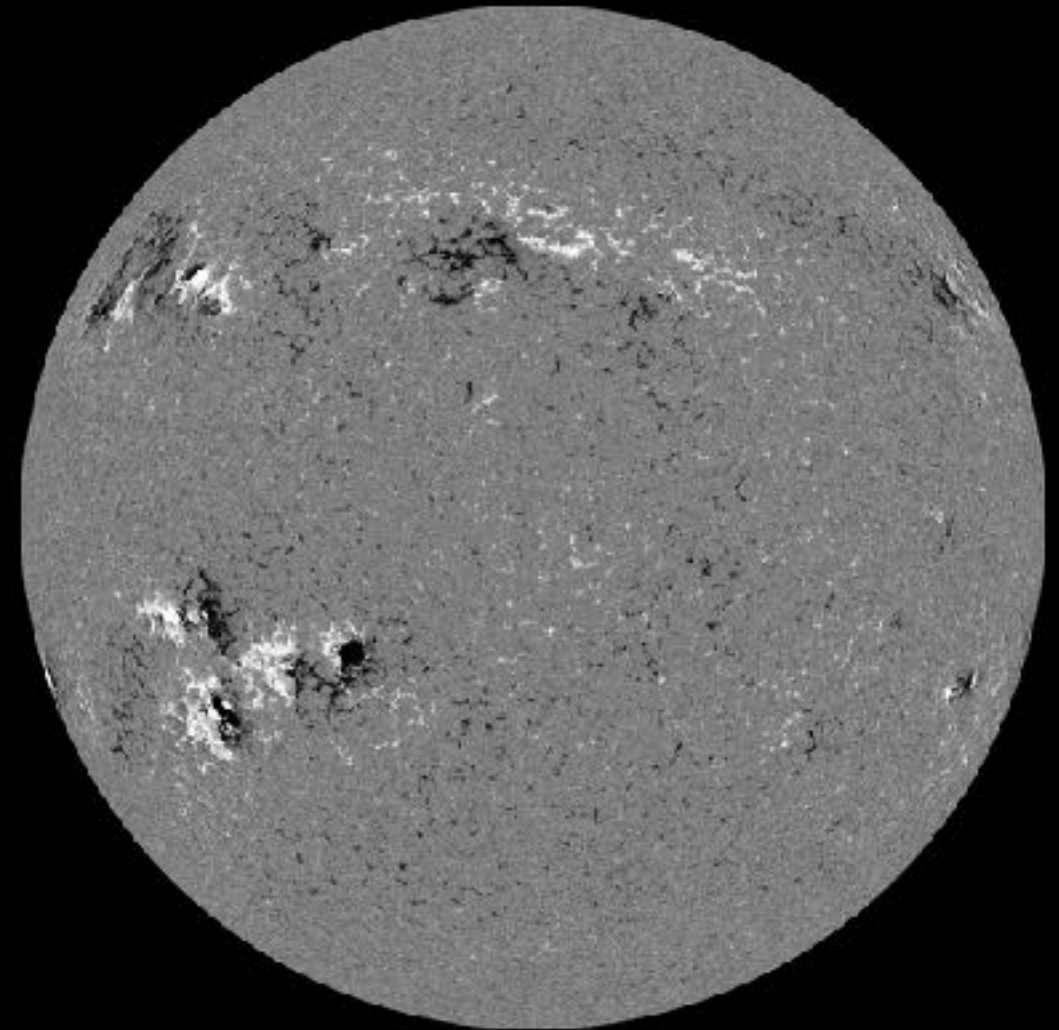


Solar active regions

SDO/HMI White Light 2023-03-22

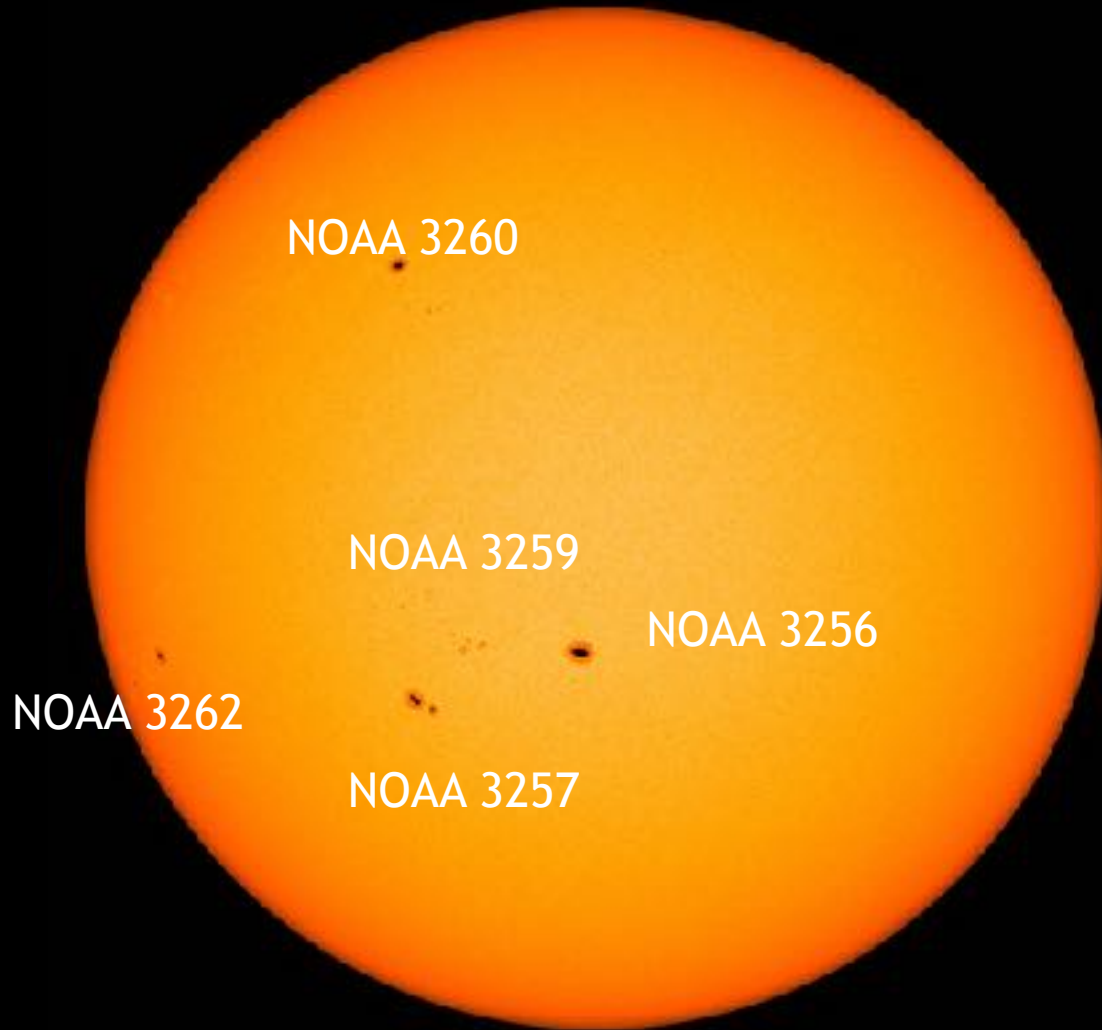


SDO/HMI Magnetogram 2023-03-22

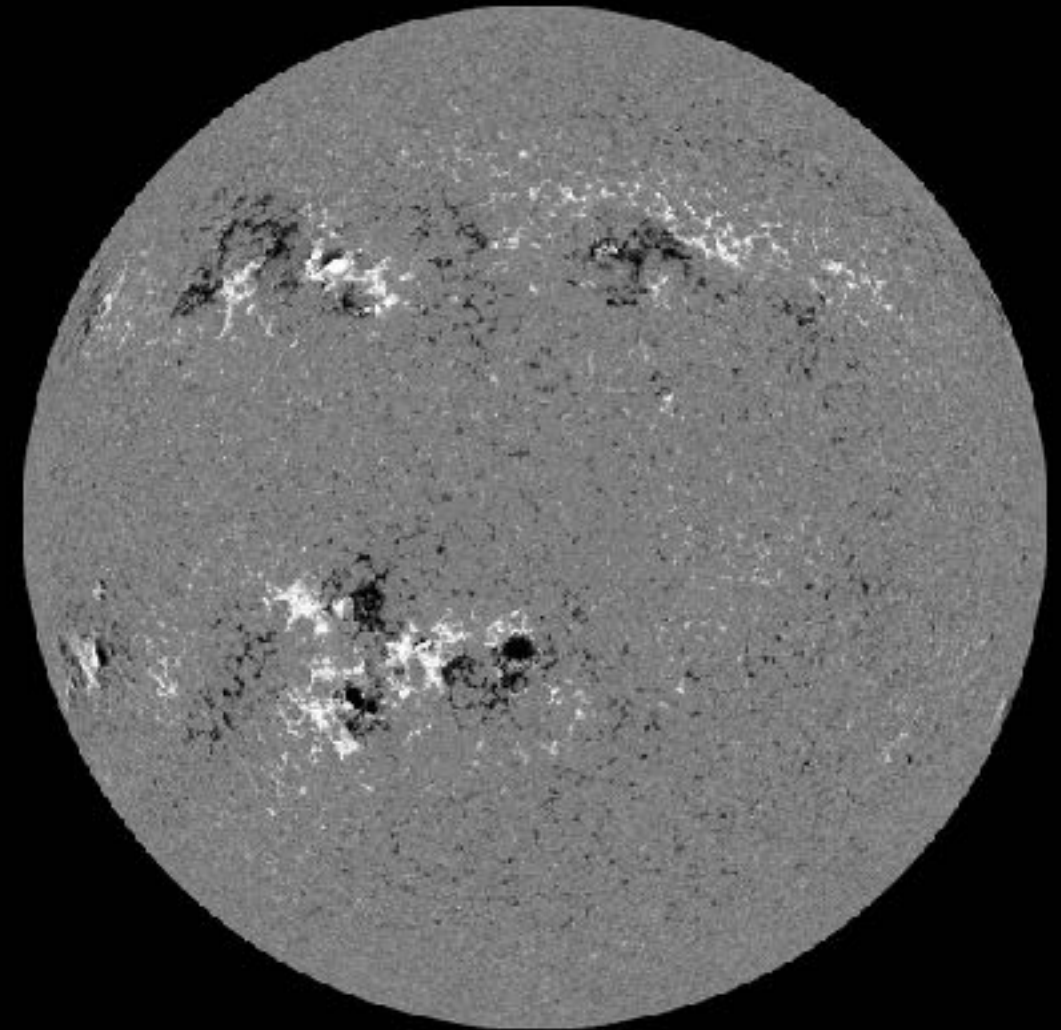


Solar active regions

SDO/HMI White Light 2023-03-23

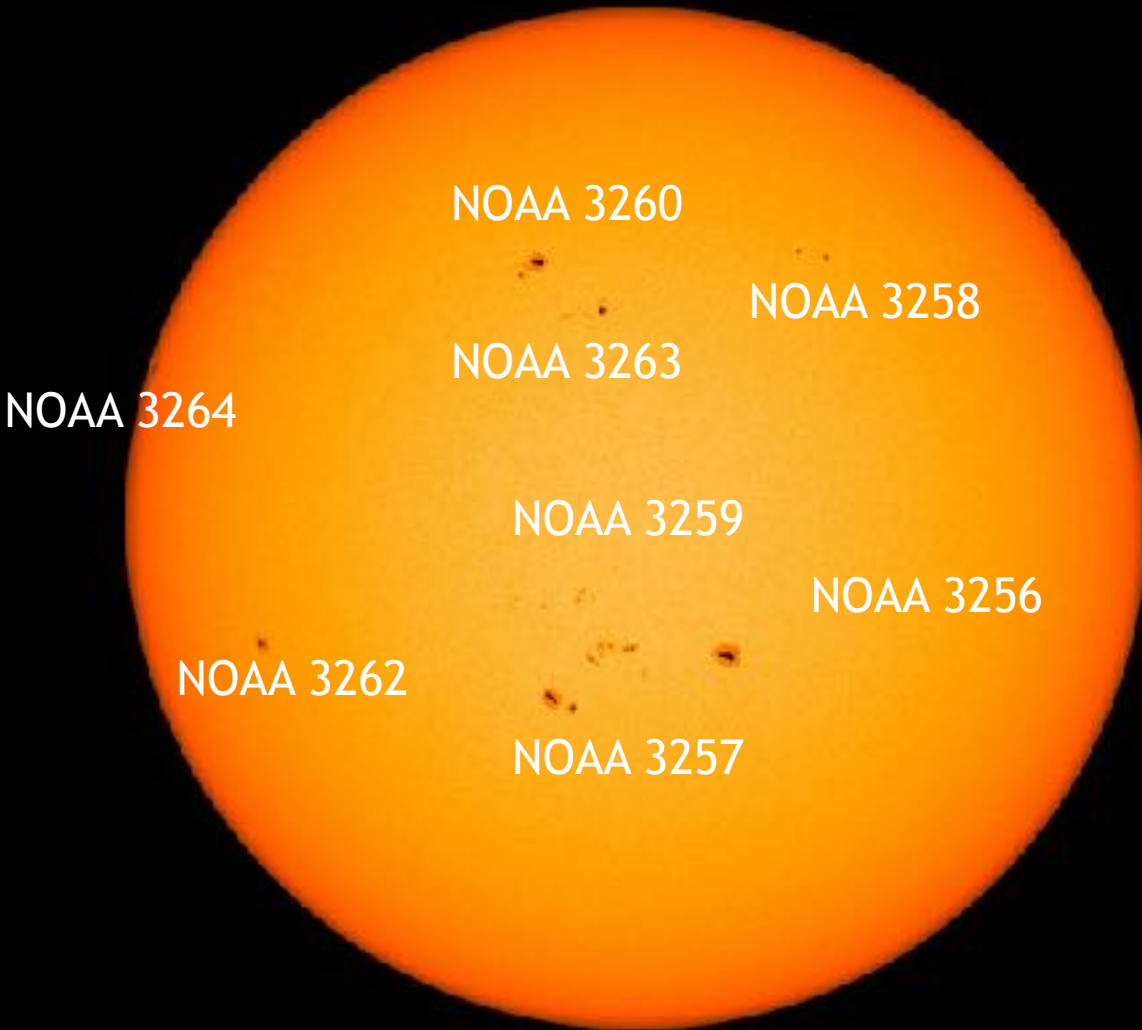


SDO/HMI Magnetogram 2023-03-23

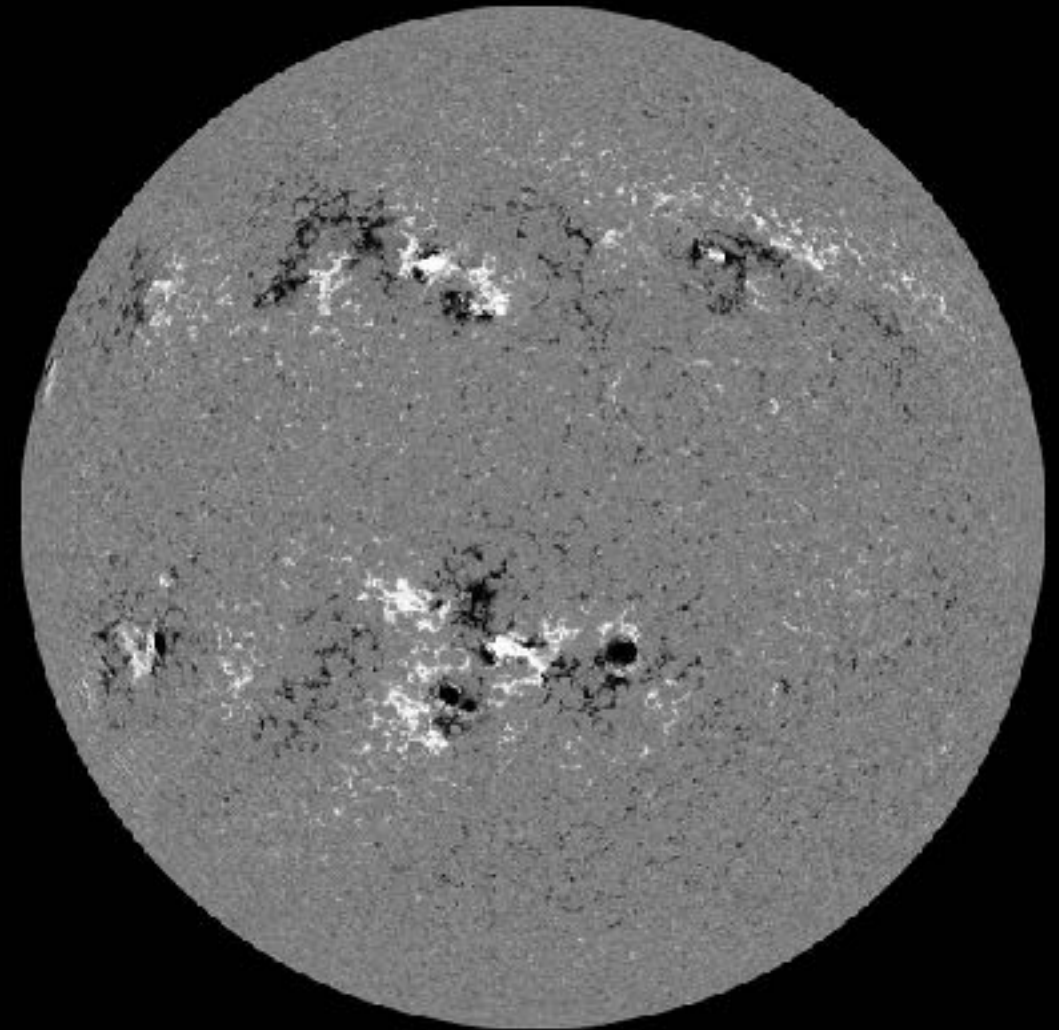


Solar active regions

SDO/HMI White Light 2023-03-24

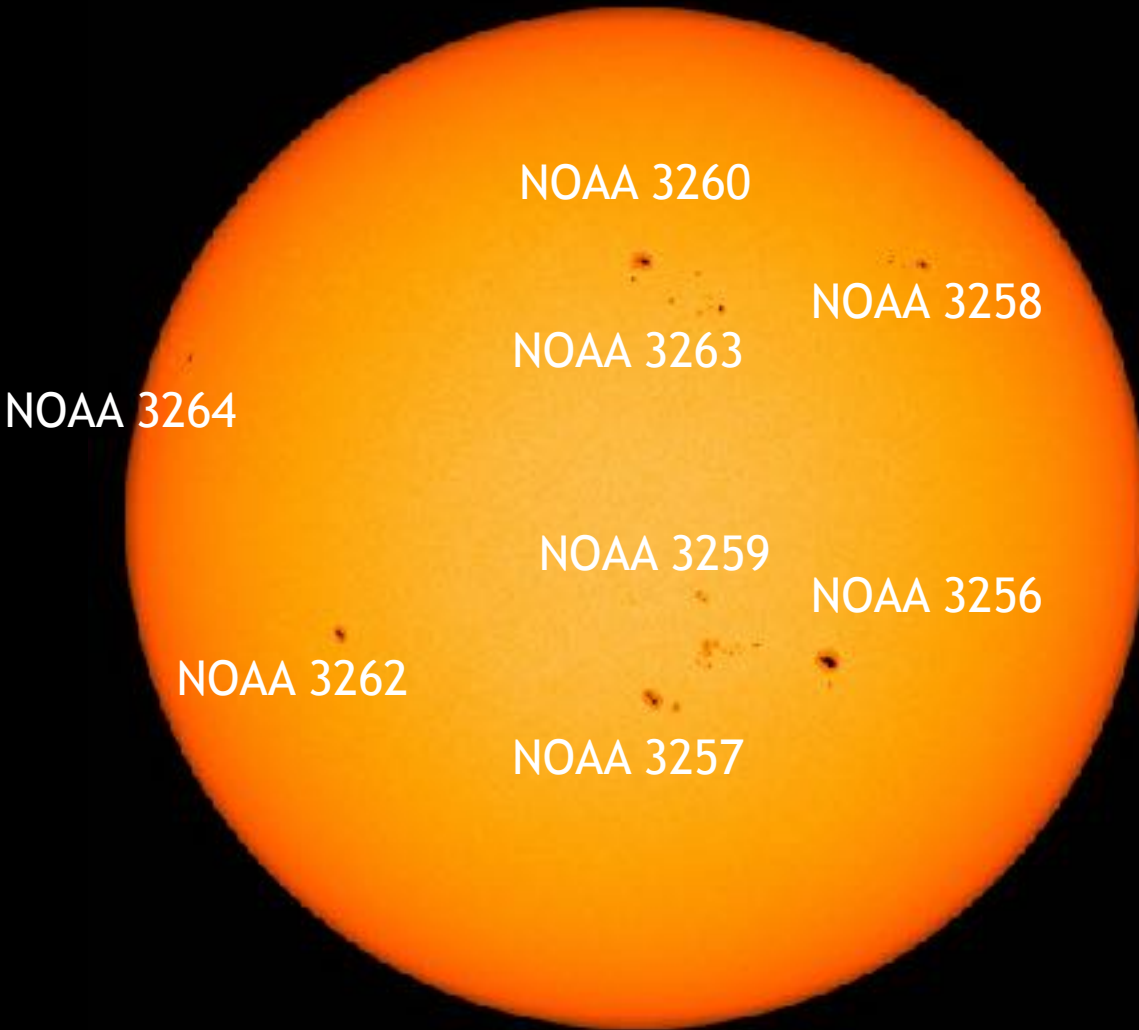


SDO/HMI Magnetogram 2023-03-24

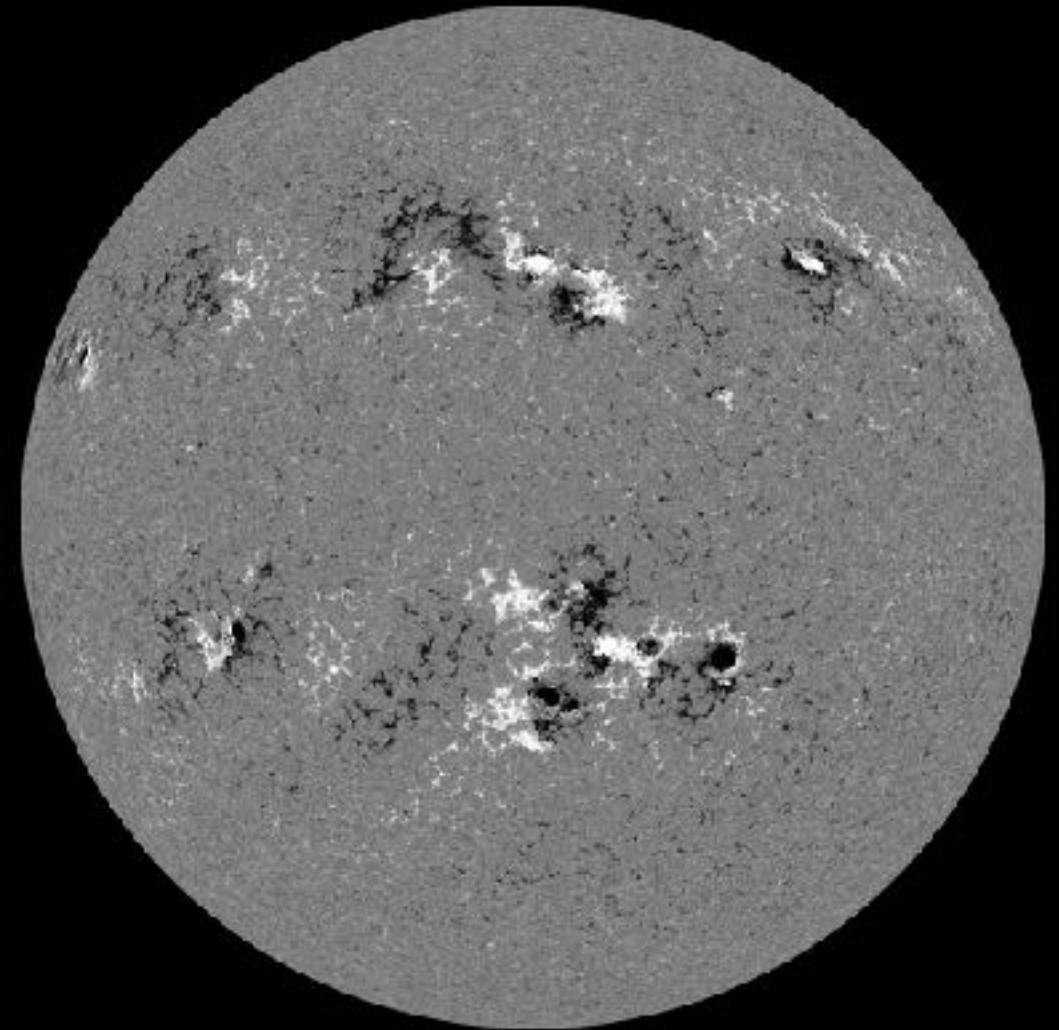


Solar active regions

SDO/HMI White Light 2023-03-25

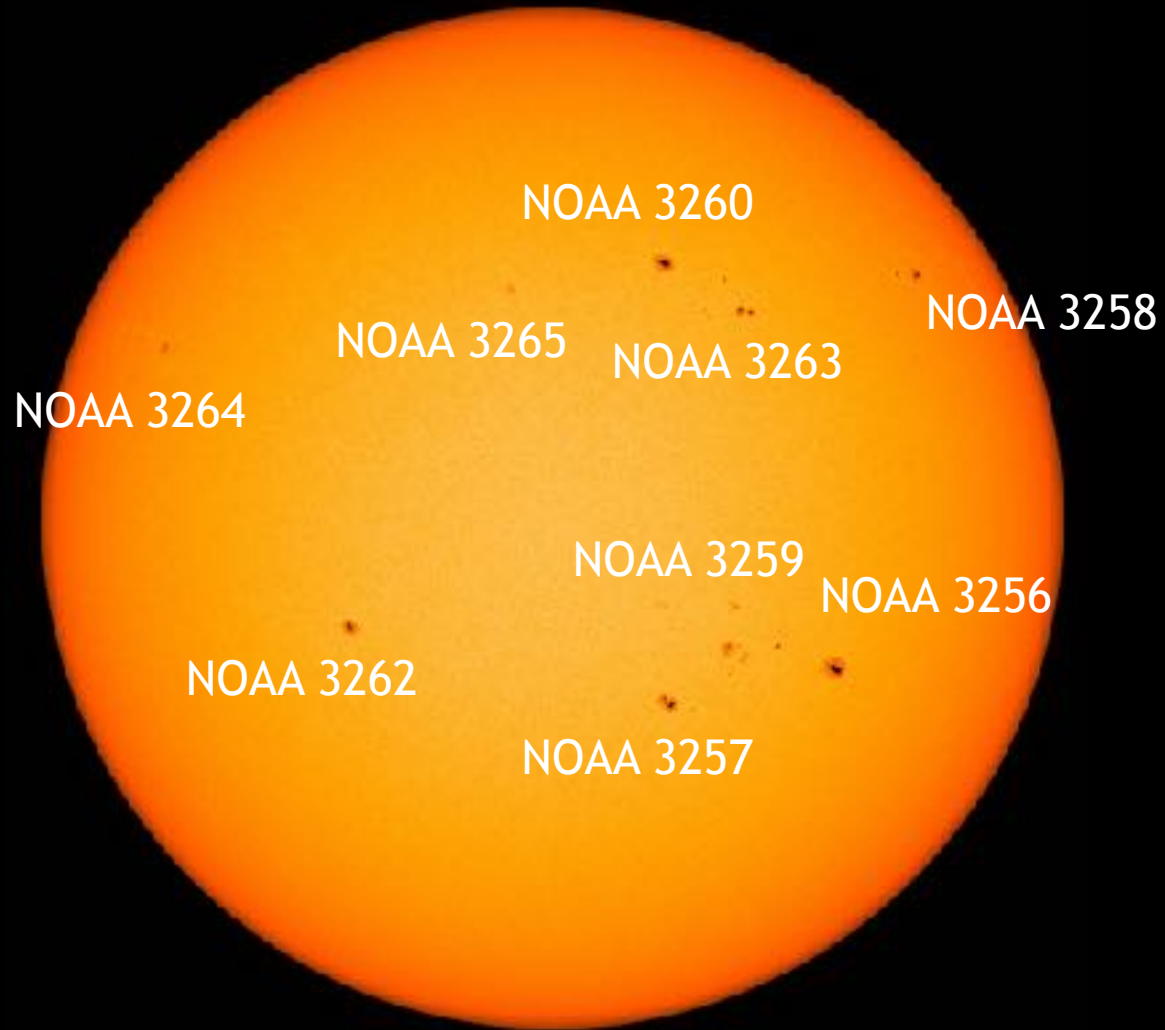


SDO/HMI Magnetogram 2023-03-25

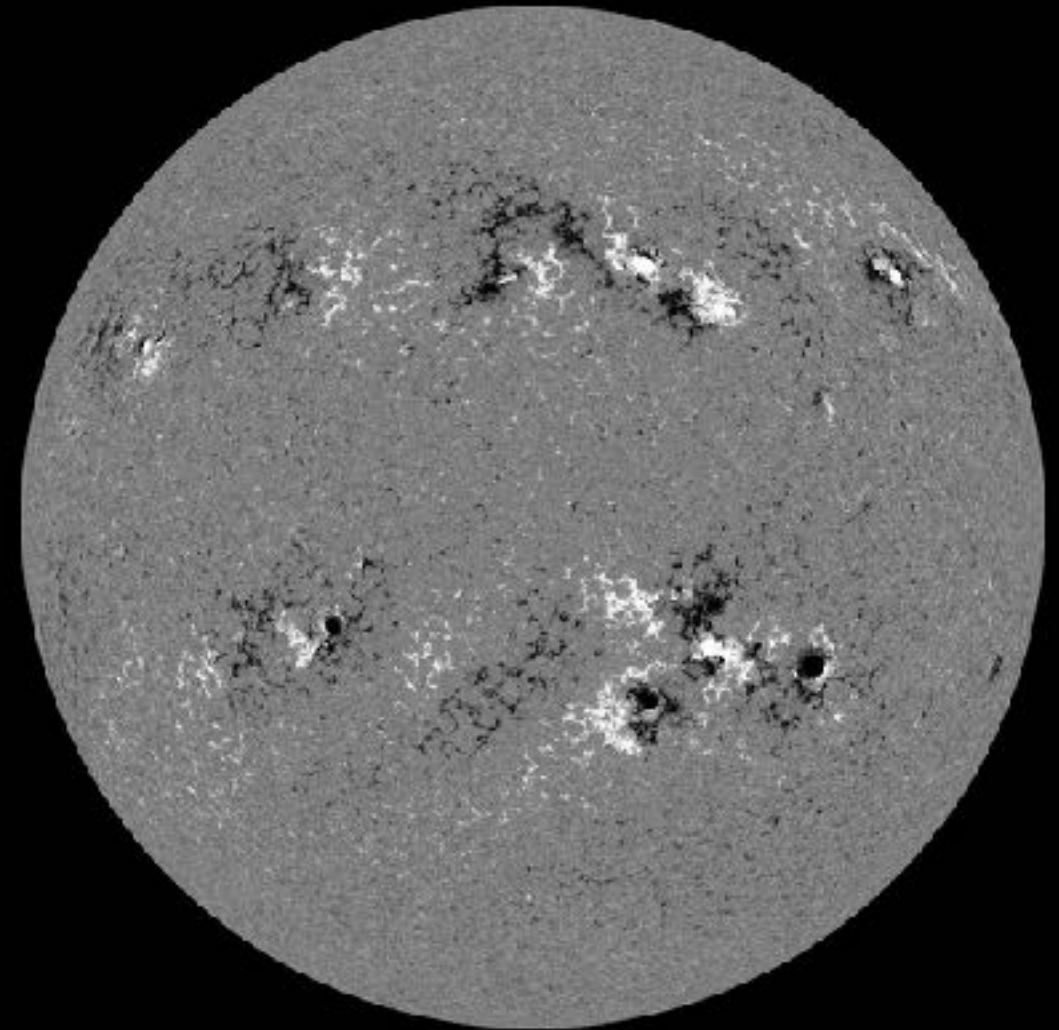


Solar active regions

SDO/HMI White Light 2023-03-26



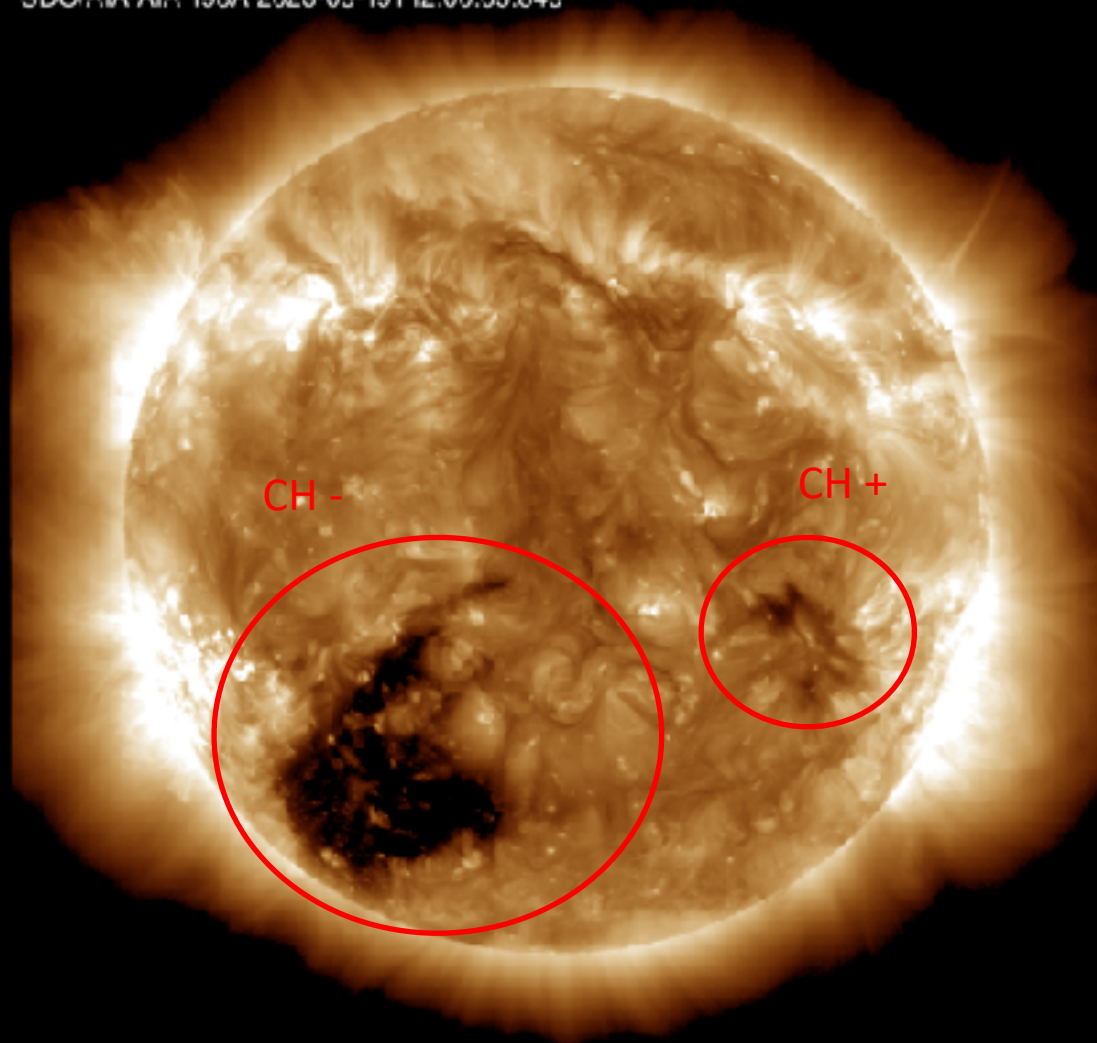
SDO/HMI Magnetogram 2023-03-26



Coronal holes

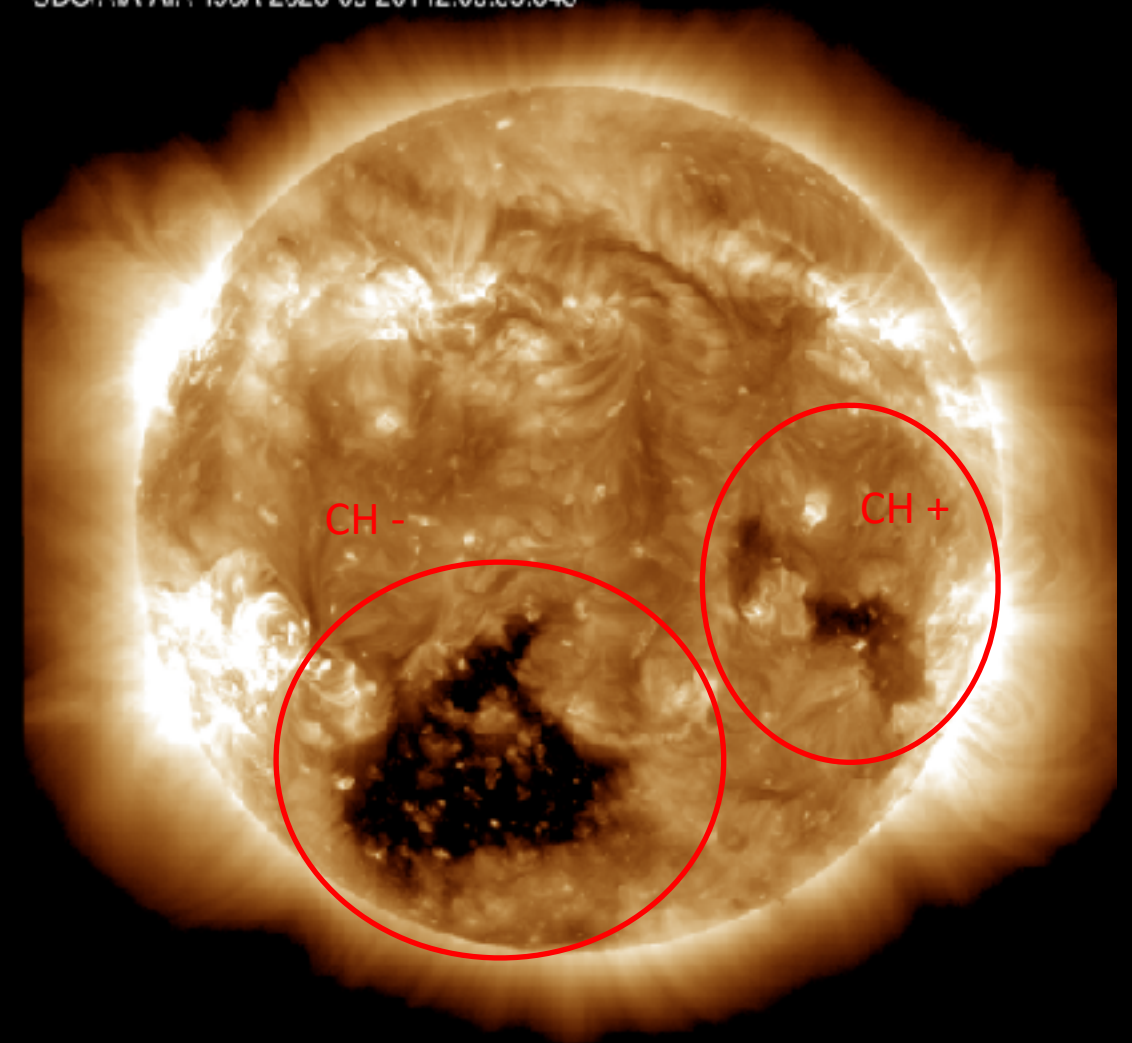
SDO/AIA 19.3 nm 2023-03-19

SDO/AIA AIA 193Å 2023-03-19T12:00:05.843



SDO/AIA 19.3 nm 2023-03-20

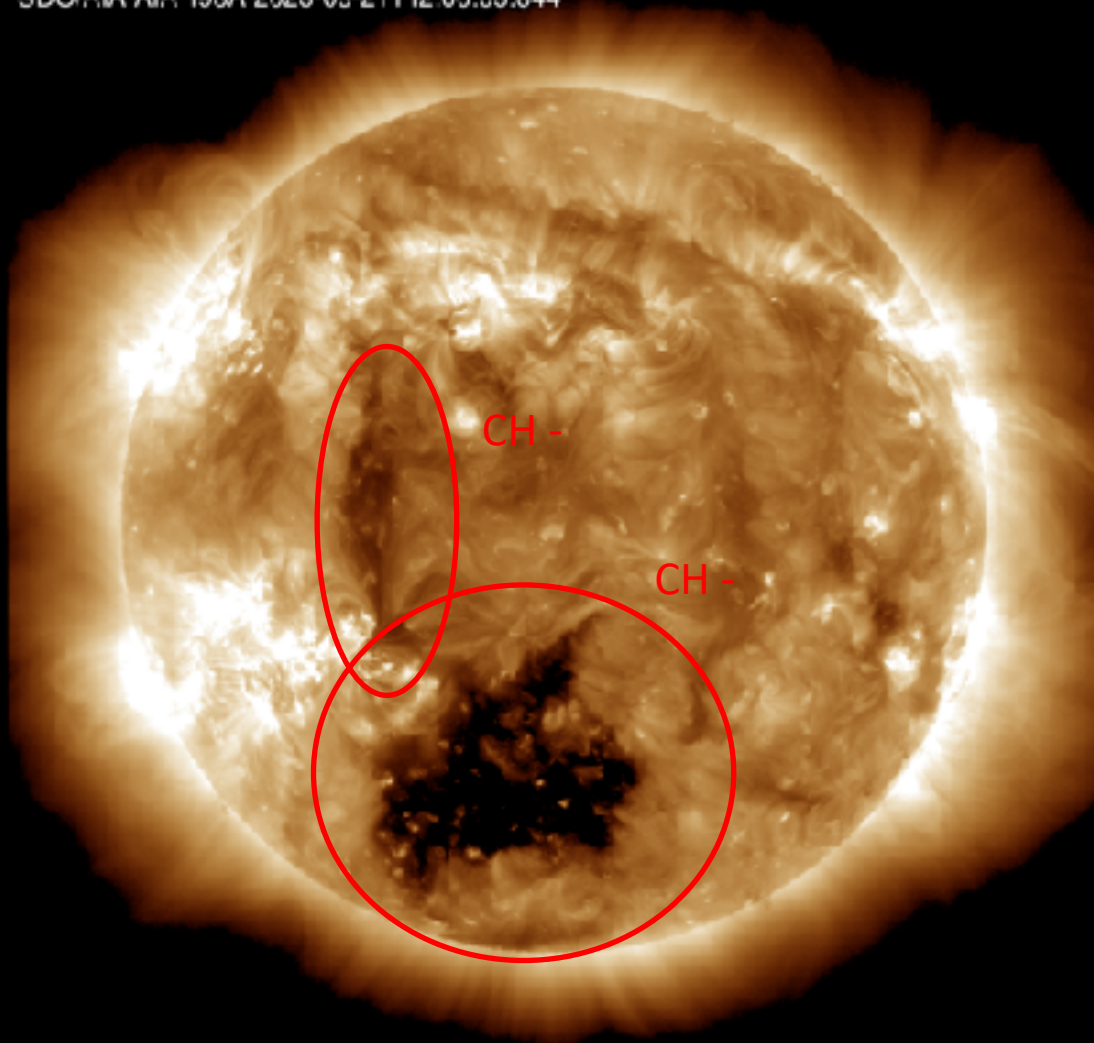
SDO/AIA AIA 193Å 2023-03-20T12:00:05.843



Coronal holes

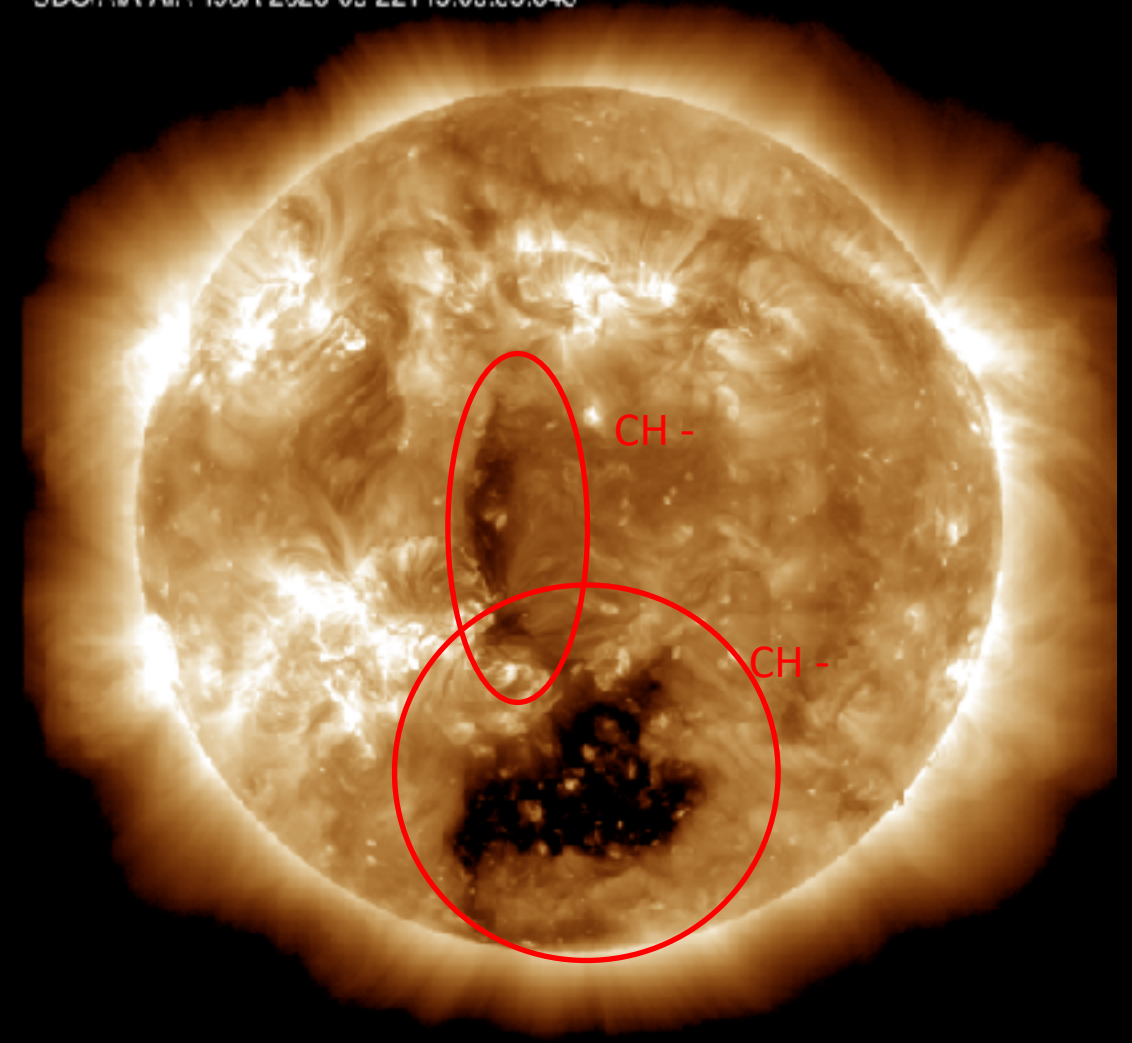
SDO/AIA 19.3 nm 2023-03-21

SDO/AIA AIA 193Å 2023-03-21T12:00:05.844



SDO/AIA 19.3 nm 2023-03-22

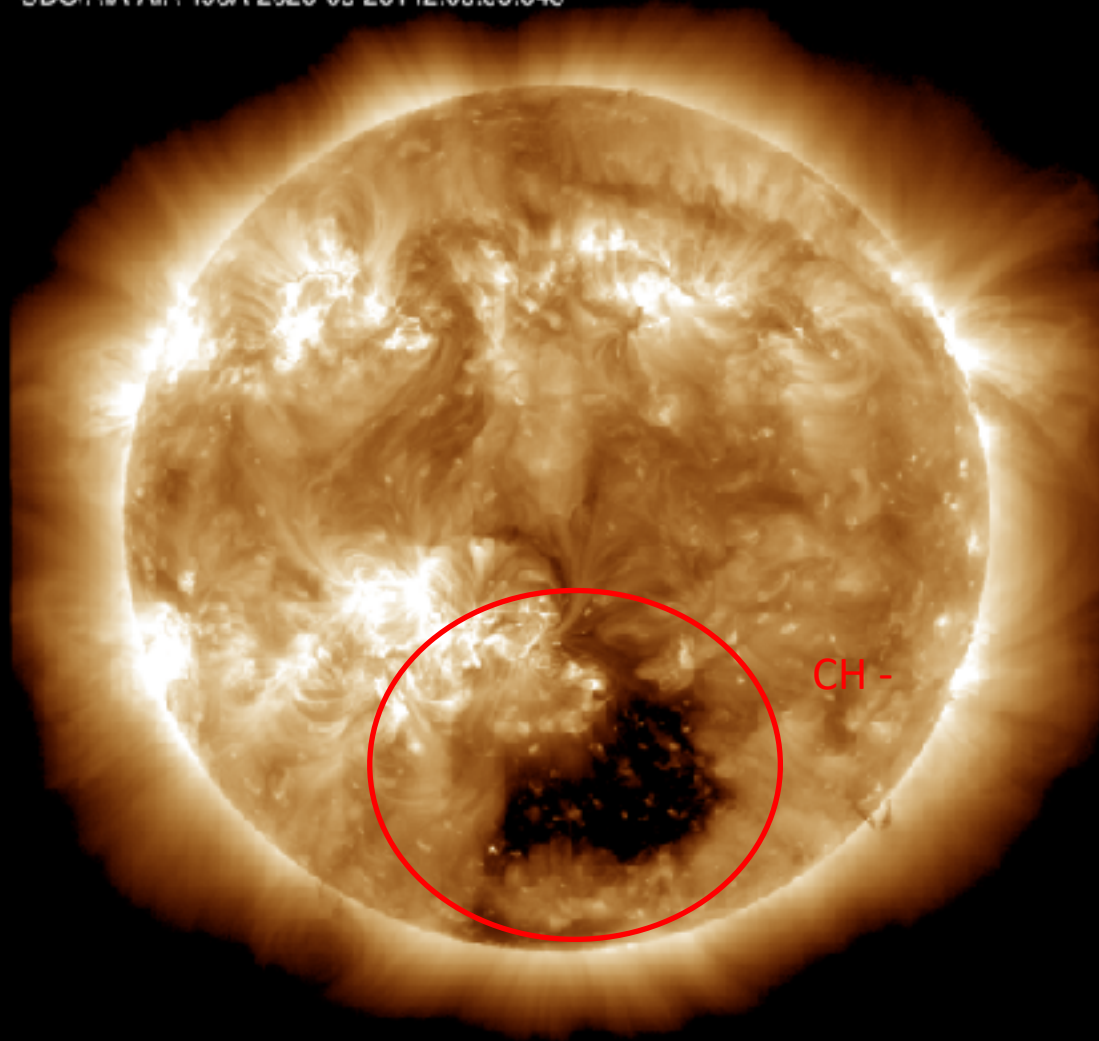
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Coronal holes

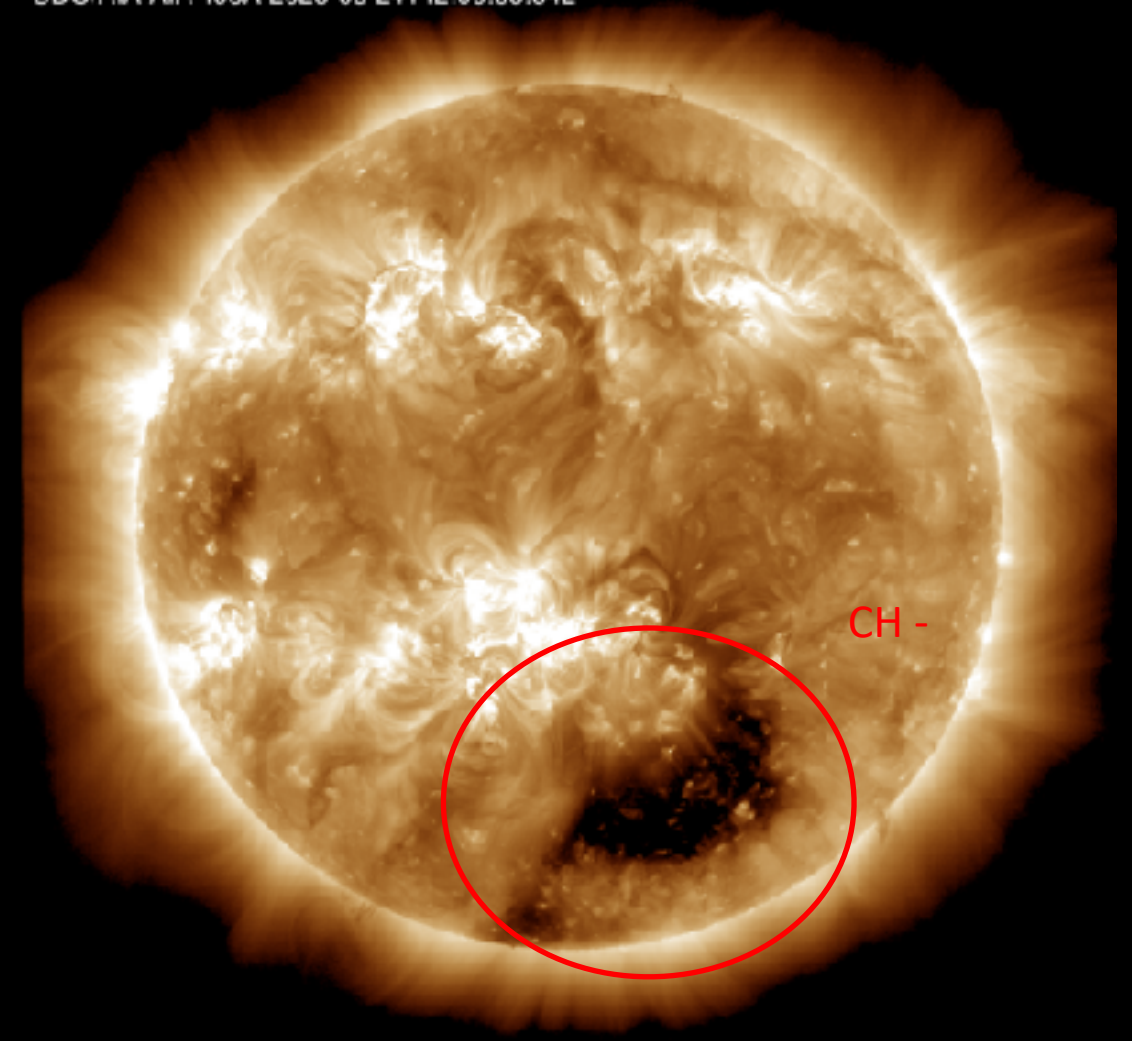
SDO/AIA 19.3 nm 2023-03-23

SDO/AIA AIA_193A_2023_03_23T12:00:05.843



SDO/AIA 19.3 nm 2023-03-24

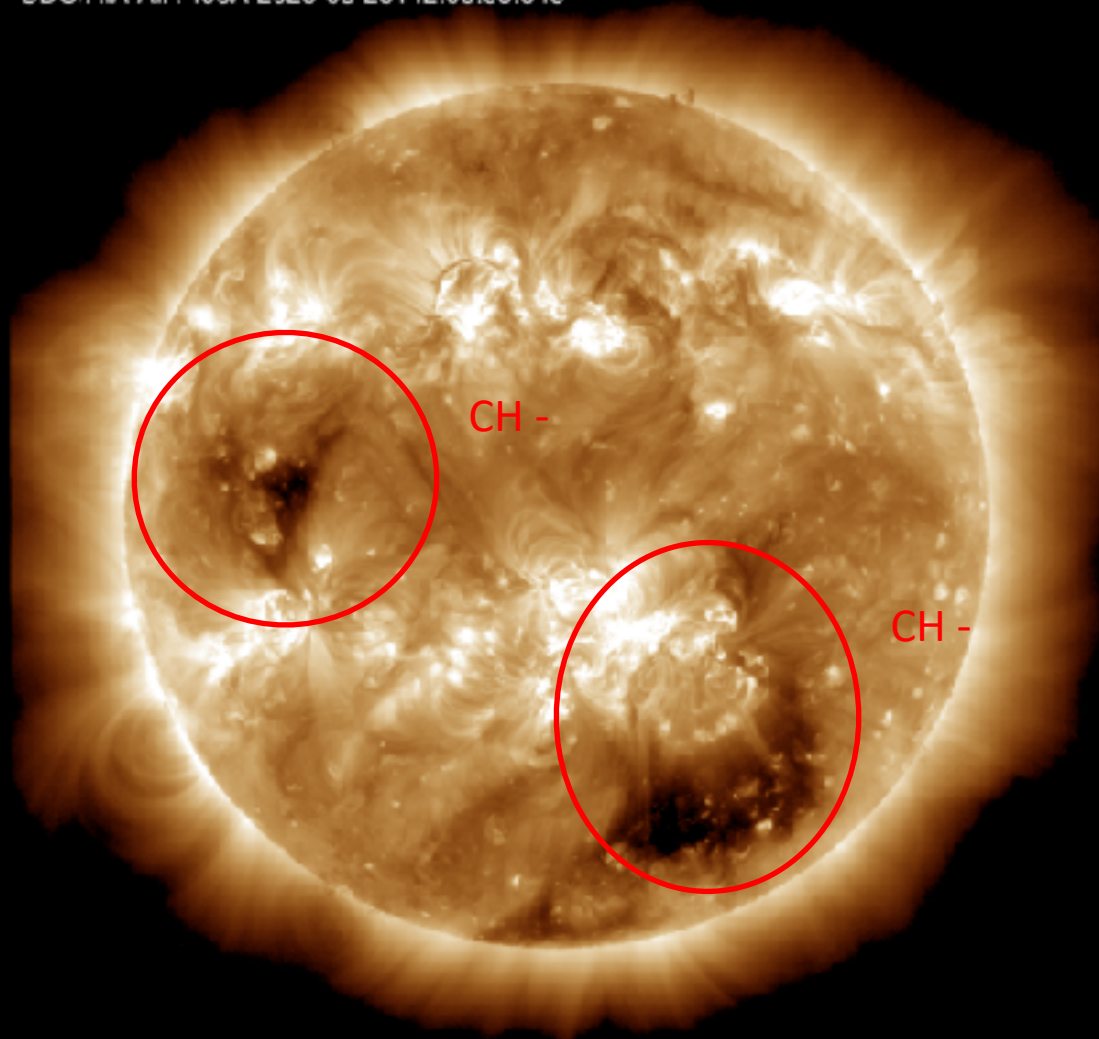
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Coronal holes

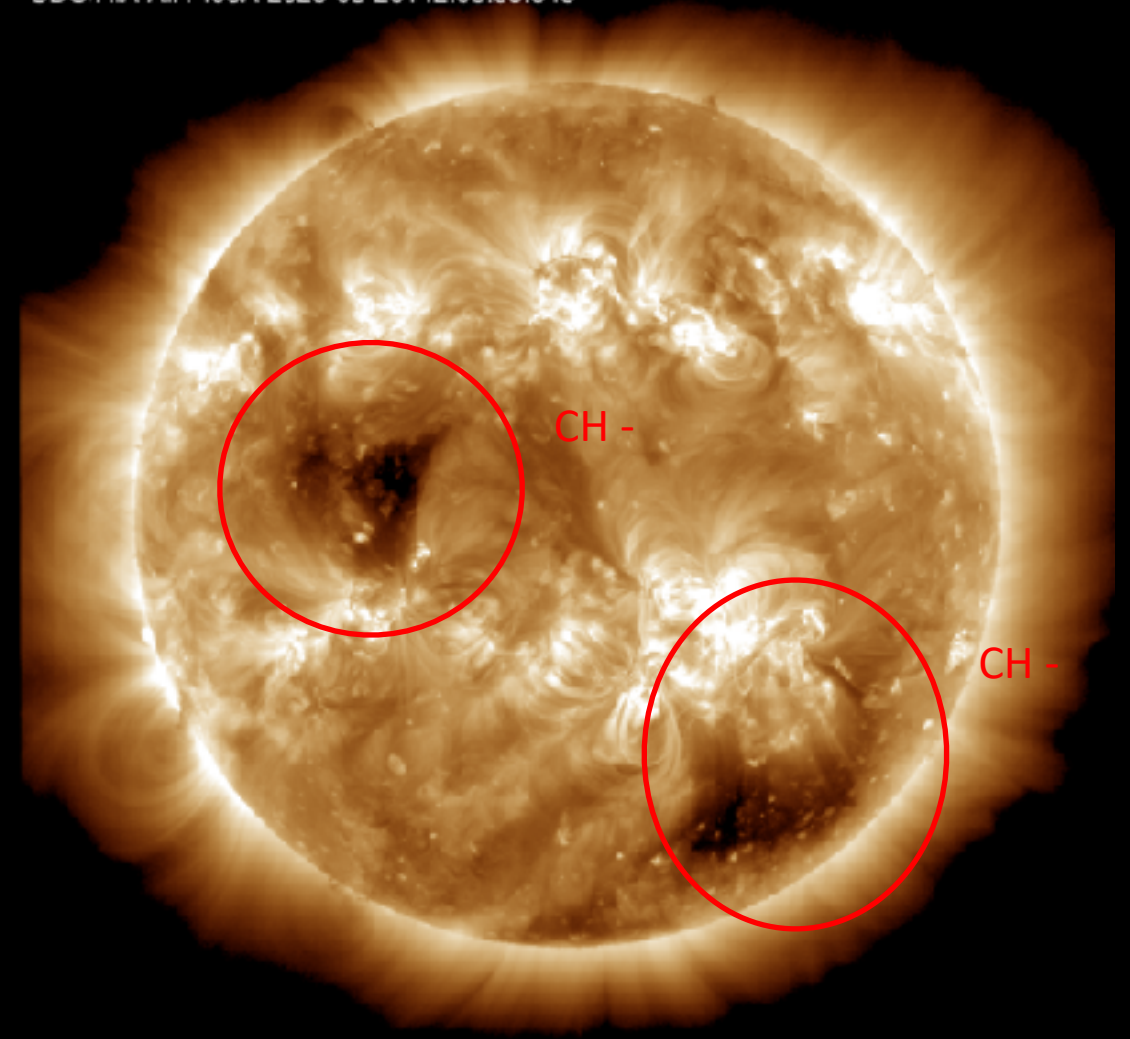
SDO/AIA 19.3 nm 2023-03-25

SDO/AIA AIA 193Å 2023-03-25T12:00:05.843



SDO/AIA 19.3 nm 2023-03-26

SDO/AIA AIA 193Å 2023-03-26T12:00:05.843



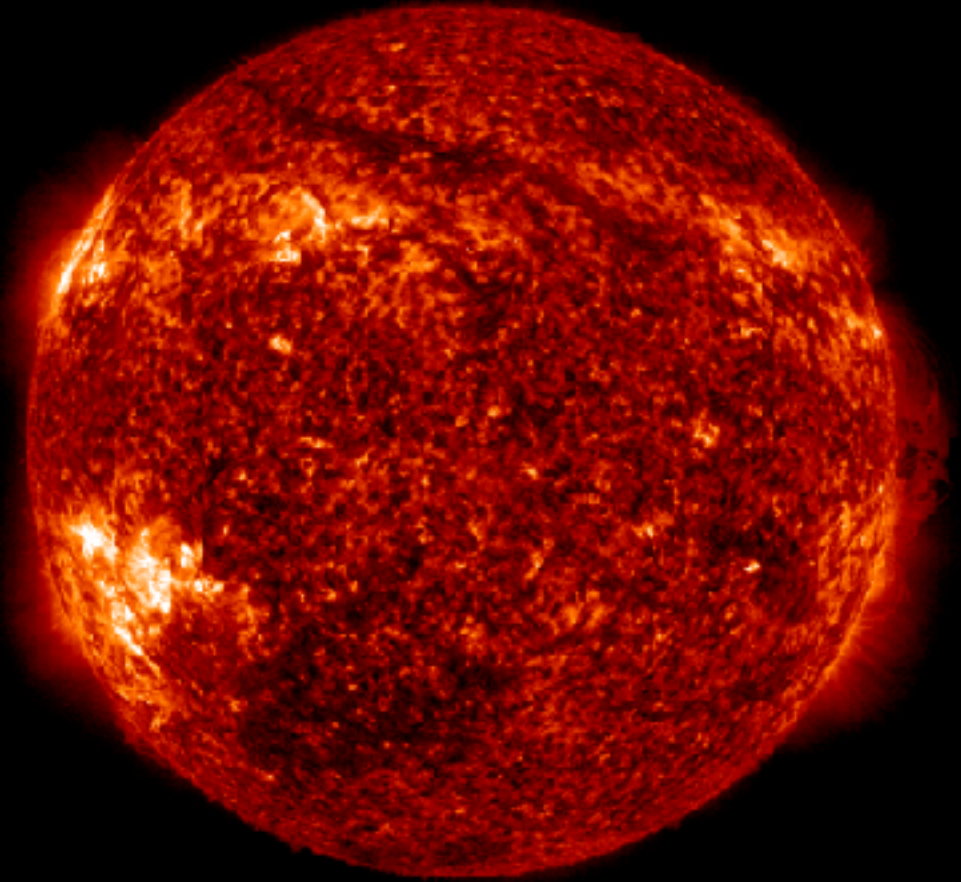
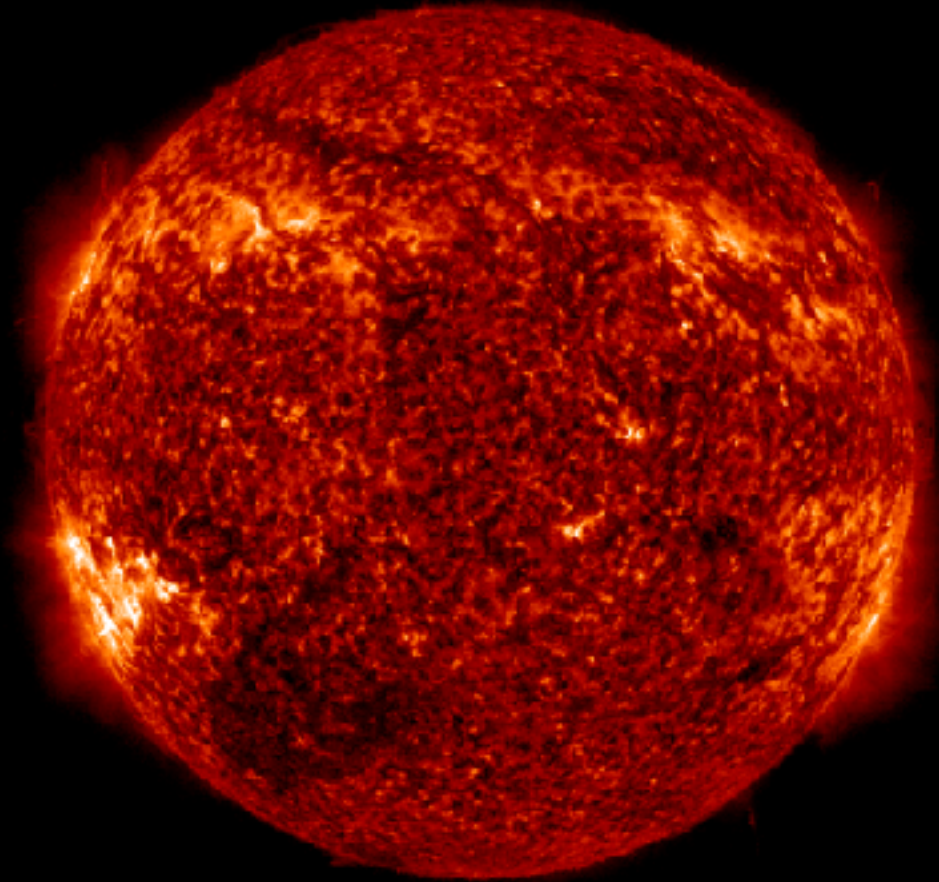
Filaments

SDO/AIA 30.4 nm 2023-03-19

SDO/AIA AIA 304Å 2023-03-19T12:00:06.581

SDO/AIA 30.4 nm 2023-03-20

SDO/AIA AIA 304Å 2023-03-20T12:00:06.580



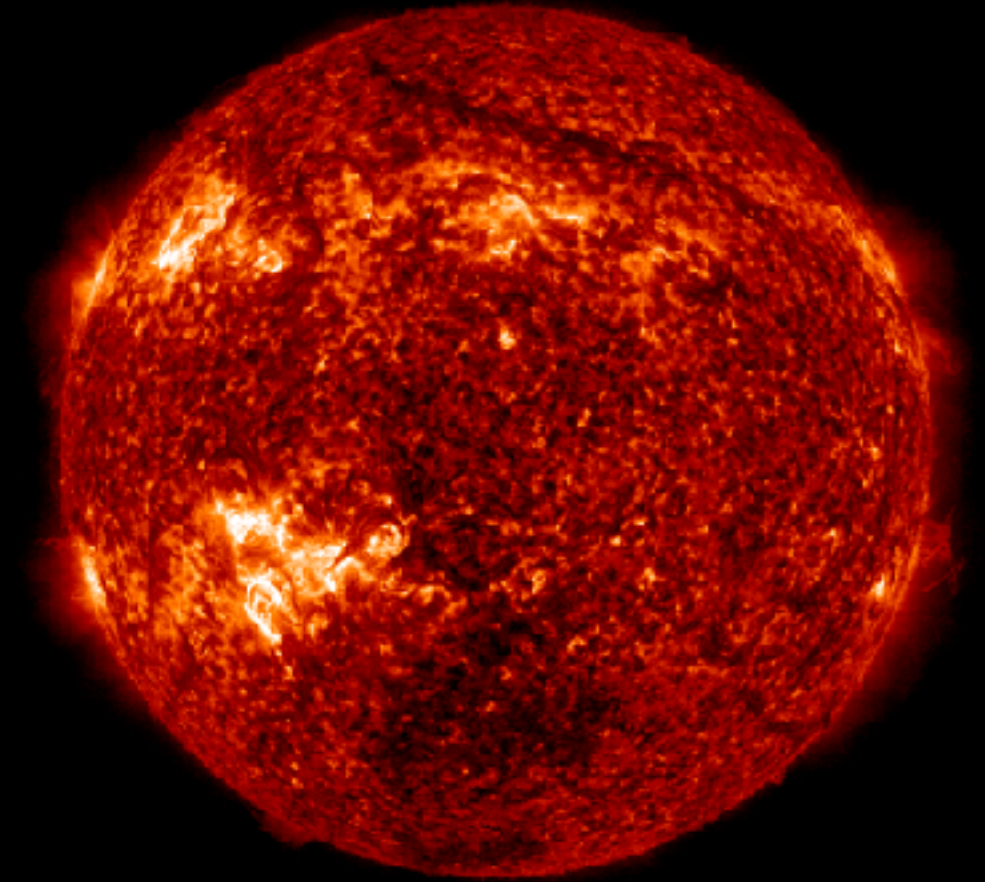
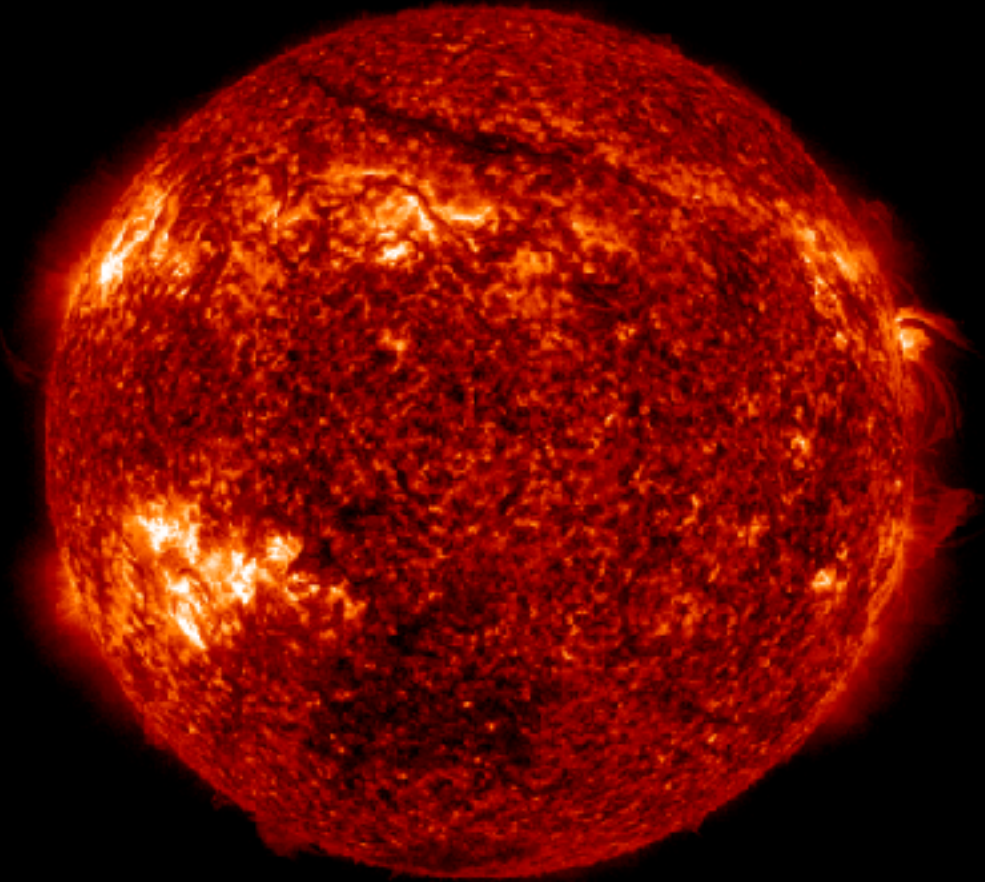
Filaments

SDO/AIA 30.4 nm 2023-03-21

SDO/AIA AIA 304Å 2023-03-21T12:00:06.584

SDO/AIA 30.4 nm 2023-03-22

SDO/AIA AIA 304Å 2023-03-22T12:00:06.580



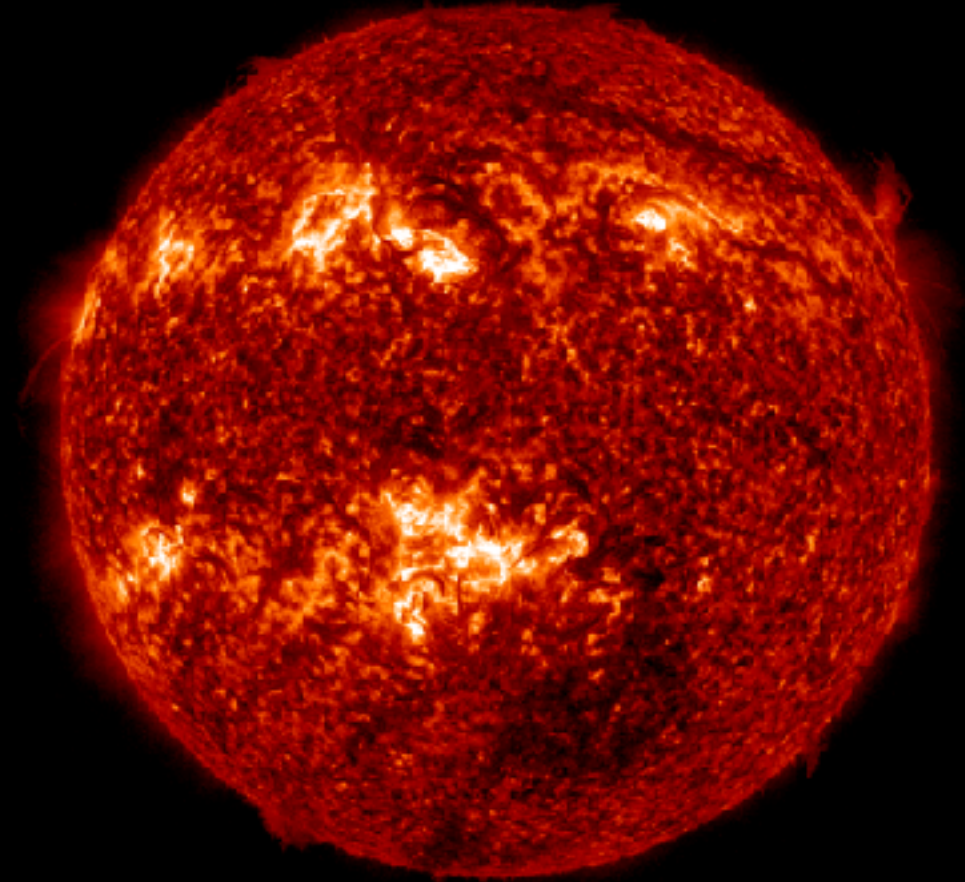
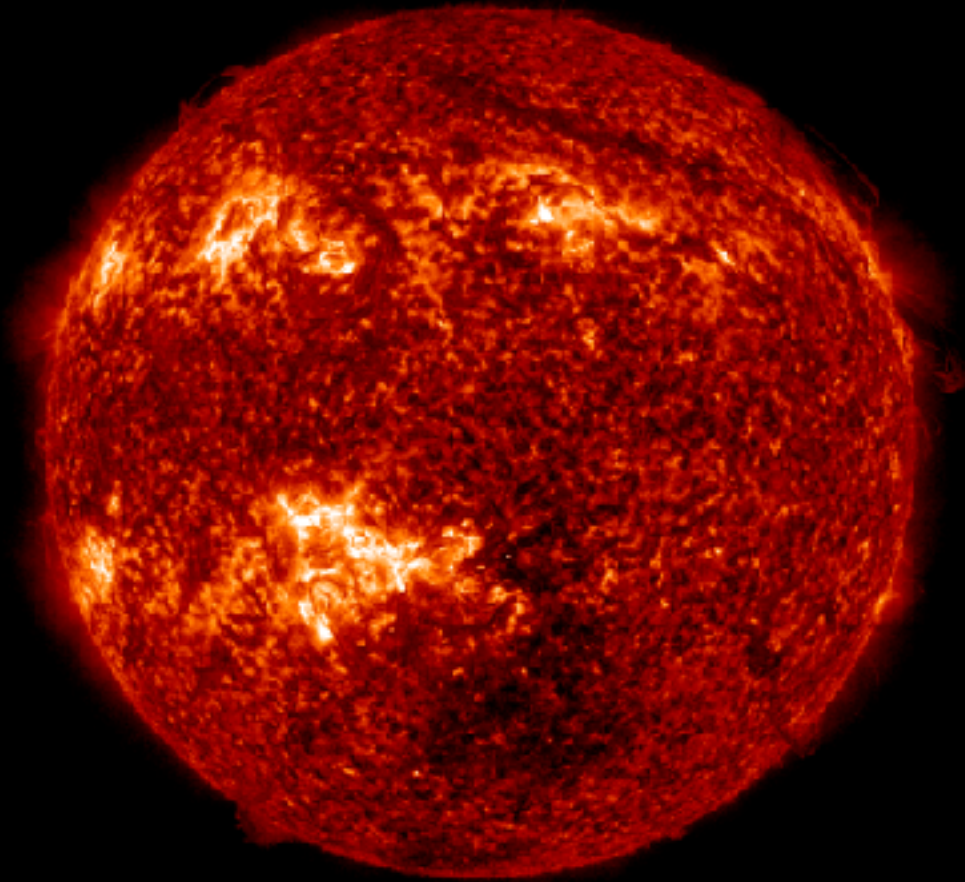
Filaments

SDO/AIA 30.4 nm 2023-03-23

SDO/AIA AIA 304Å 2023-03-23T12:00:06.580

SDO/AIA 30.4 nm 2023-03-24

SDO/AIA AIA 304Å 2023-03-24T12:00:06.582



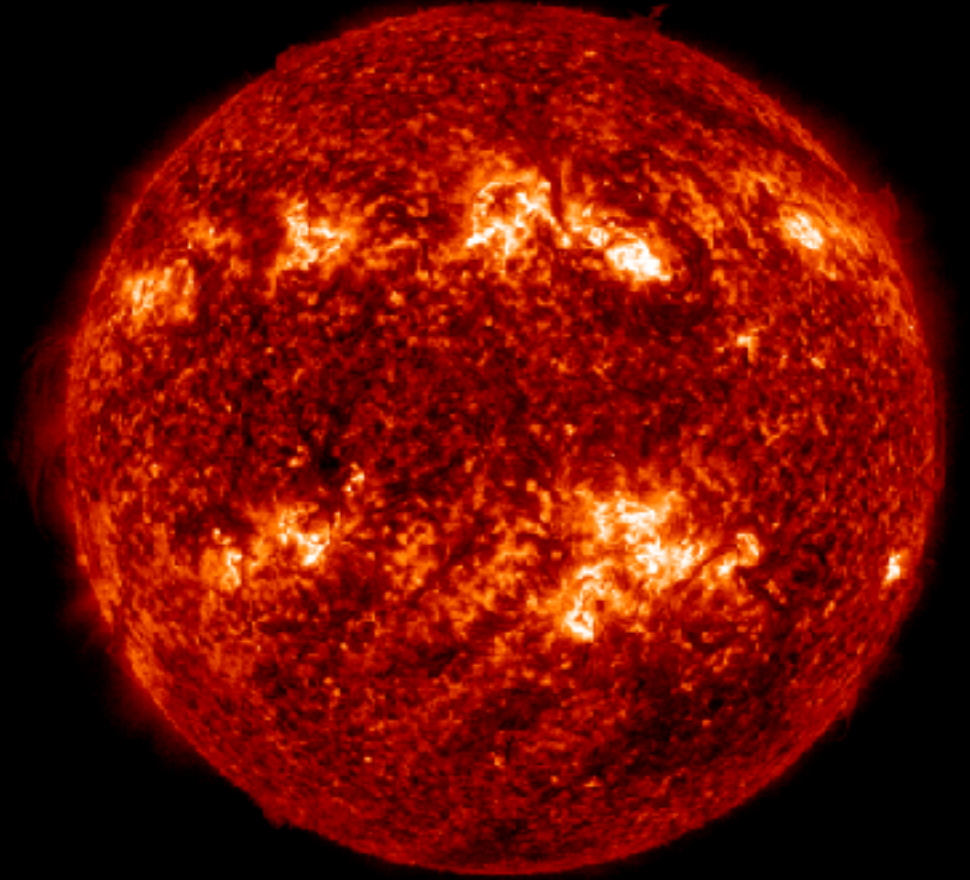
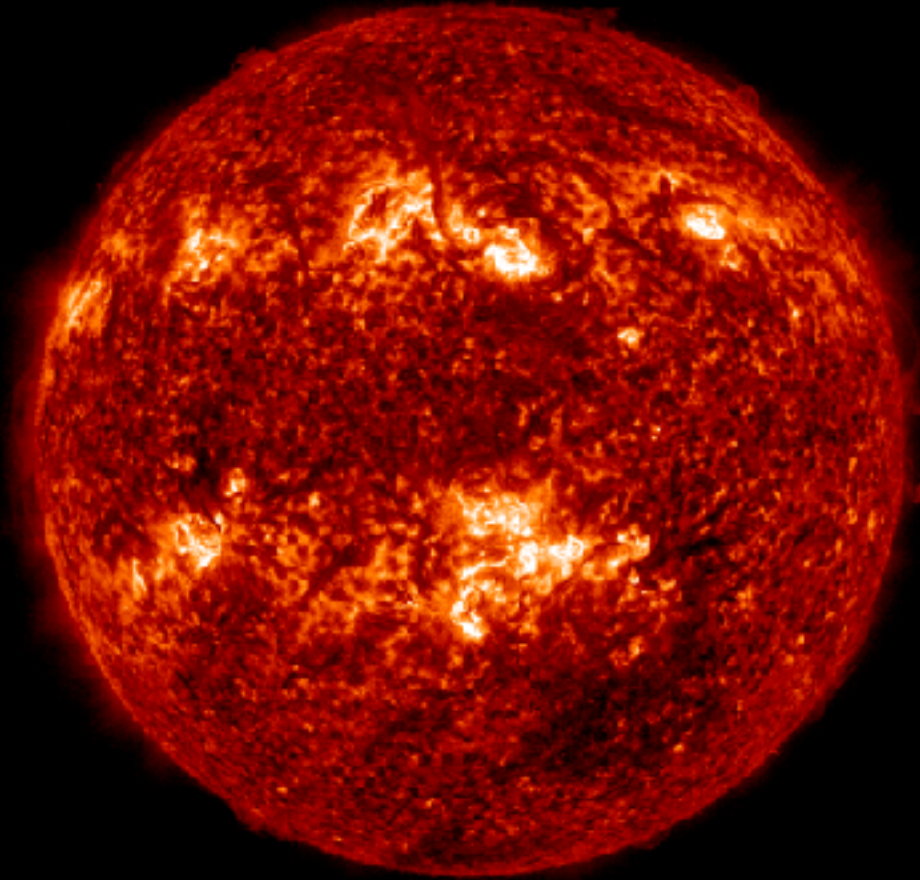
Filaments

SDO/AIA 30.4 nm 2023-03-25

SDO/AIA AIA 304Å 2023-03-25T12:00:06.580

SDO/AIA 30.4 nm 2023-03-26

SDO/AIA AIA 304Å 2023-03-26T12:00:06.583



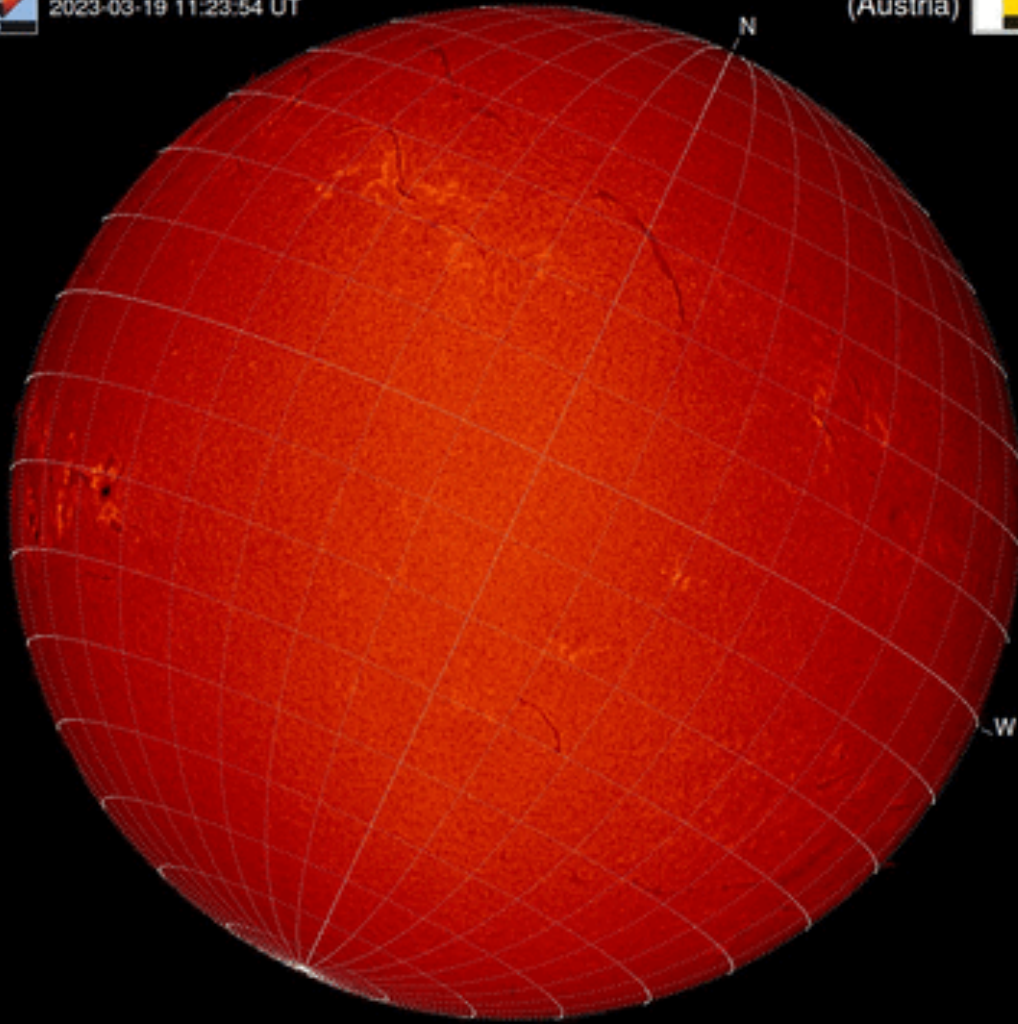
Filaments & Filament eruptions

H-alpha 2023-03-19



Kanzelhöhe Observatory
2023-03-19 11:23:54 UT

University of Graz
(Austria)

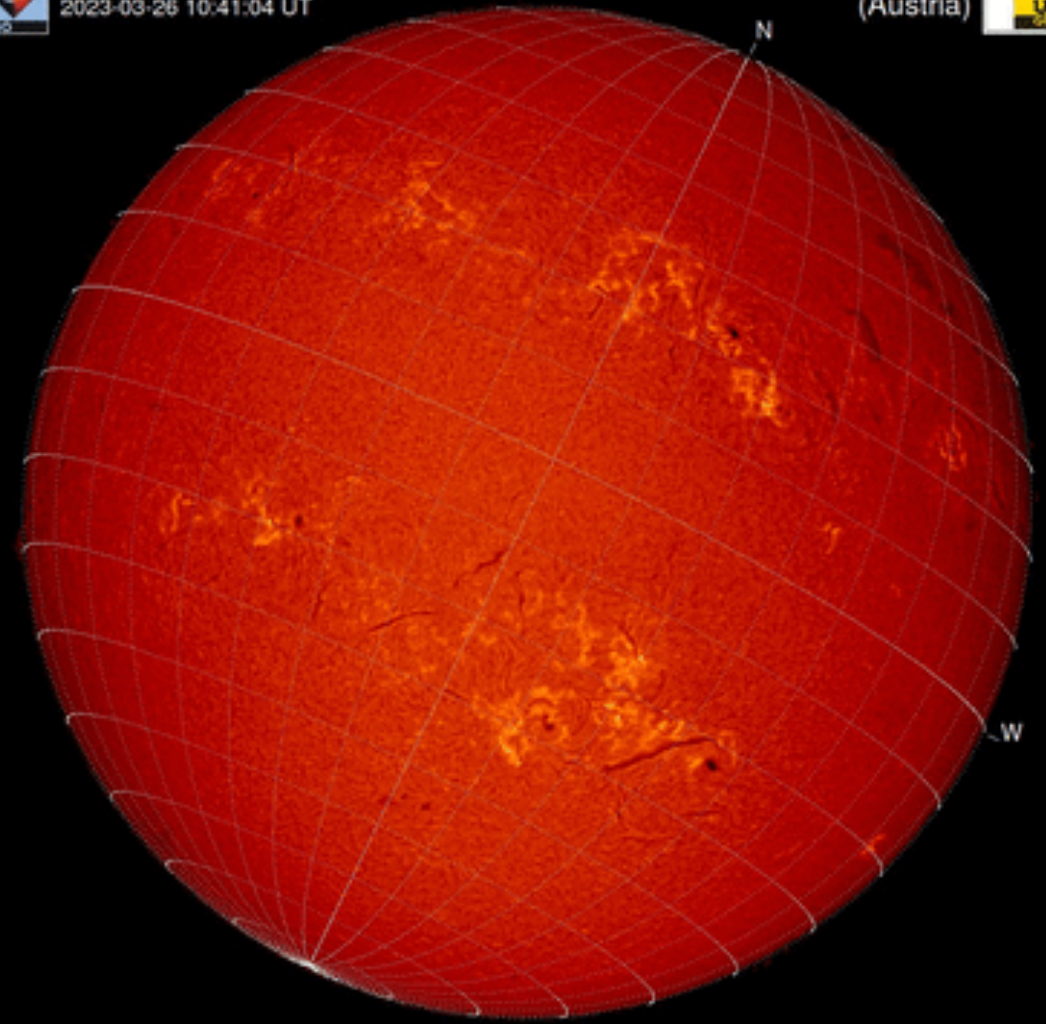


H-alpha 2023-03-26

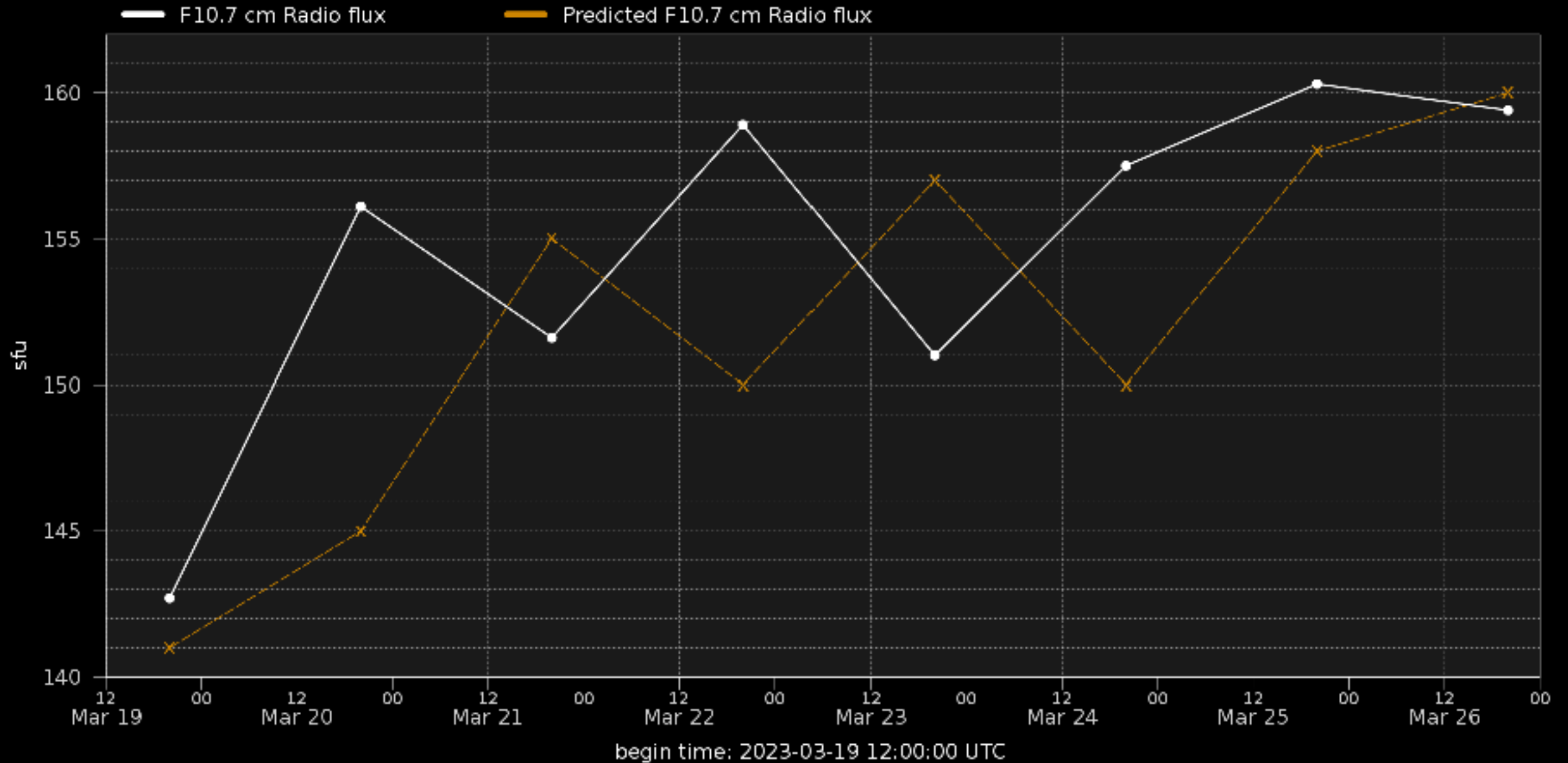


Kanzelhöhe Observatory
2023-03-26 10:41:04 UT

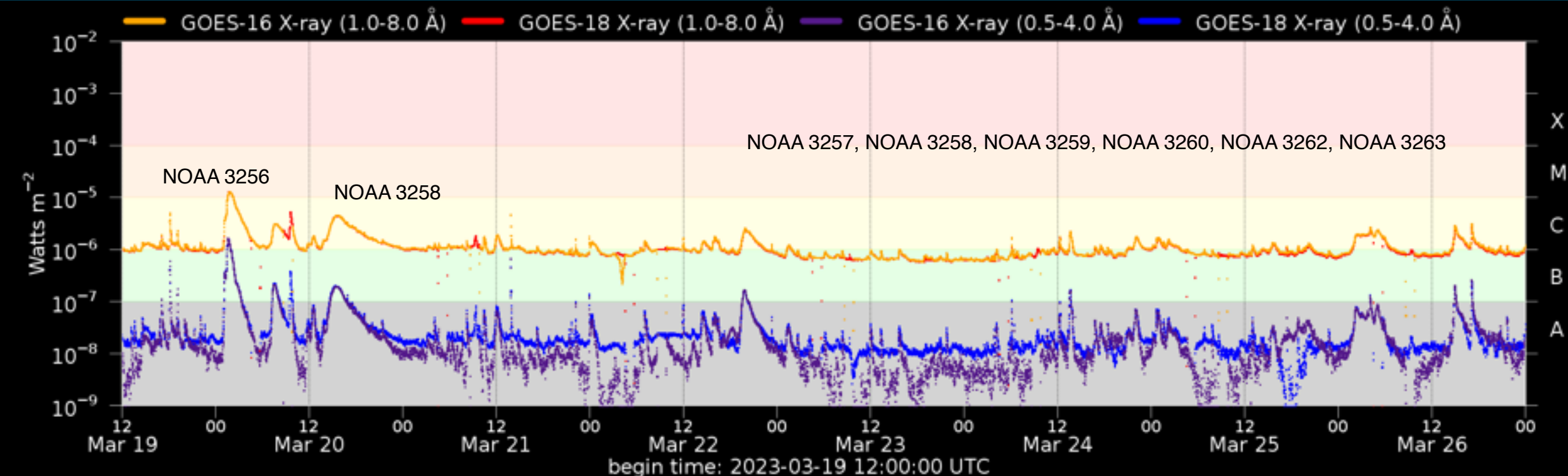
University of Graz
(Austria)



Solar F10.7cm radio flux



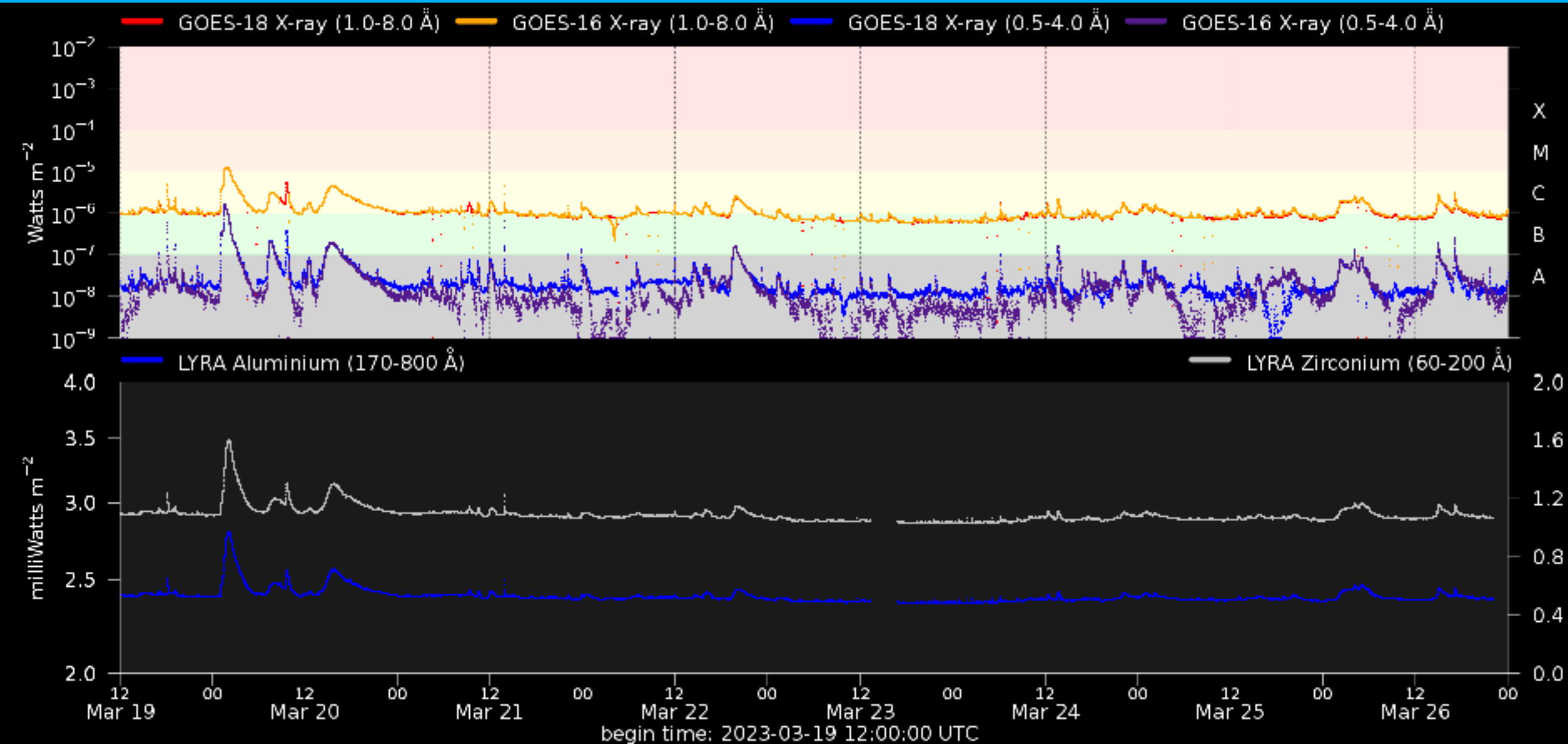
Flaring activity



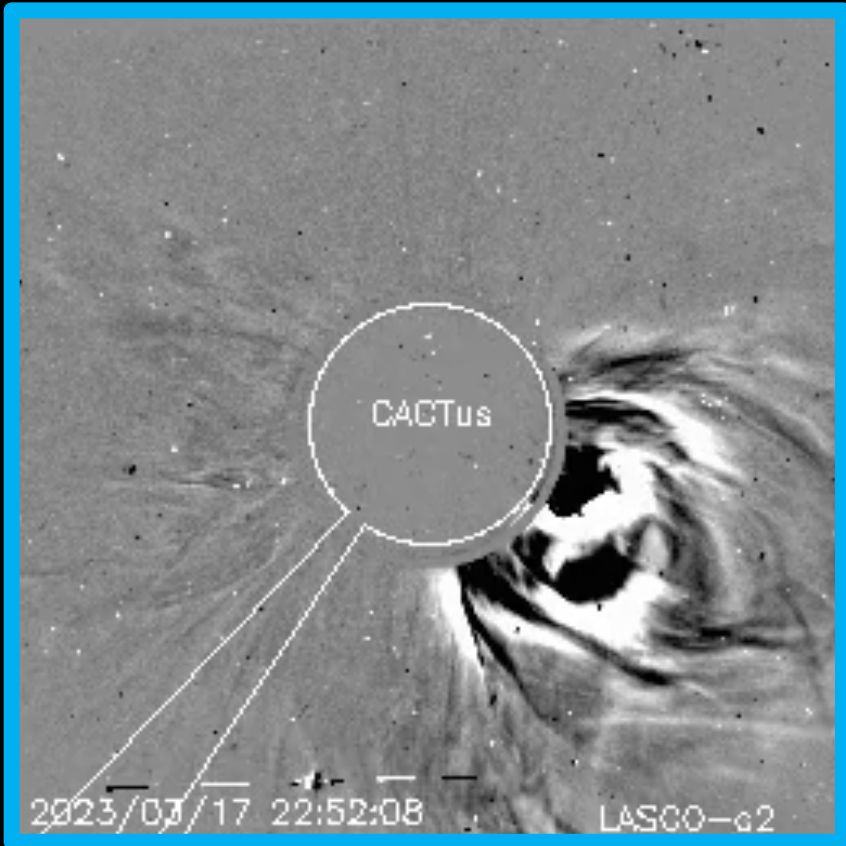
Probabilities (%) and occurrences (#) of C/M/X-flares daily, from noon to noon:

Issue date	2023-03-19	2023-03-20	2023-03-21	2023-03-22	2023-03-23	2023-03-24	2023-03-25	2023-03-26
Probability (%)	90 15 05	90 35 05	95 15 03	85 10 01	80 10 01	50 10 01	80 15 05	85 15 05
Observed (#)	04 00 00	03 00 00	03 00 00	01 00 00	01 00 00	02 00 00	02 00 00	01 00 00

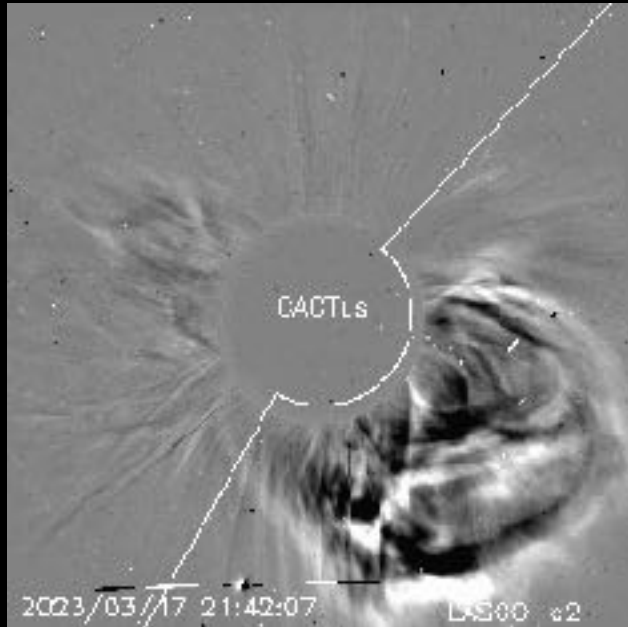
Solar X-Ray and UV flux



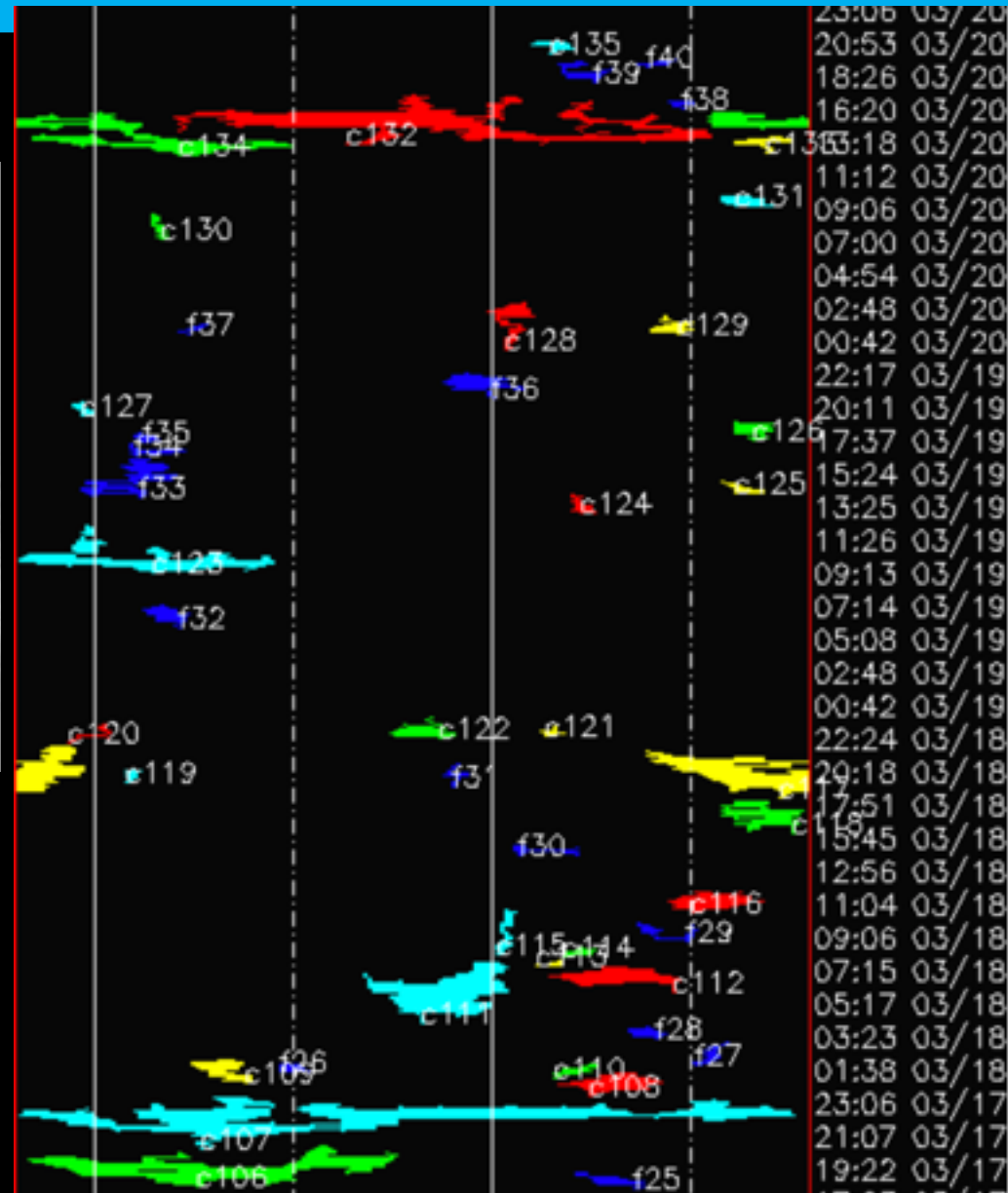
Coronal Mass Ejections



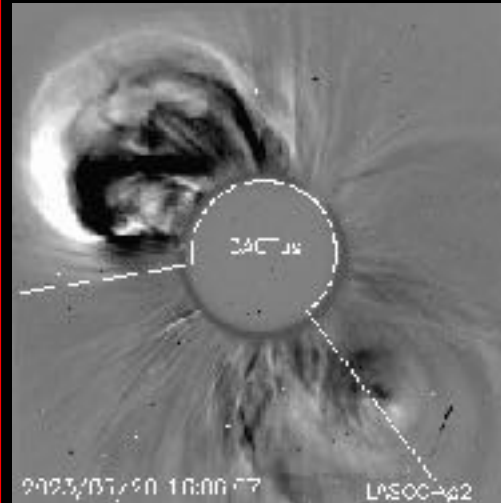
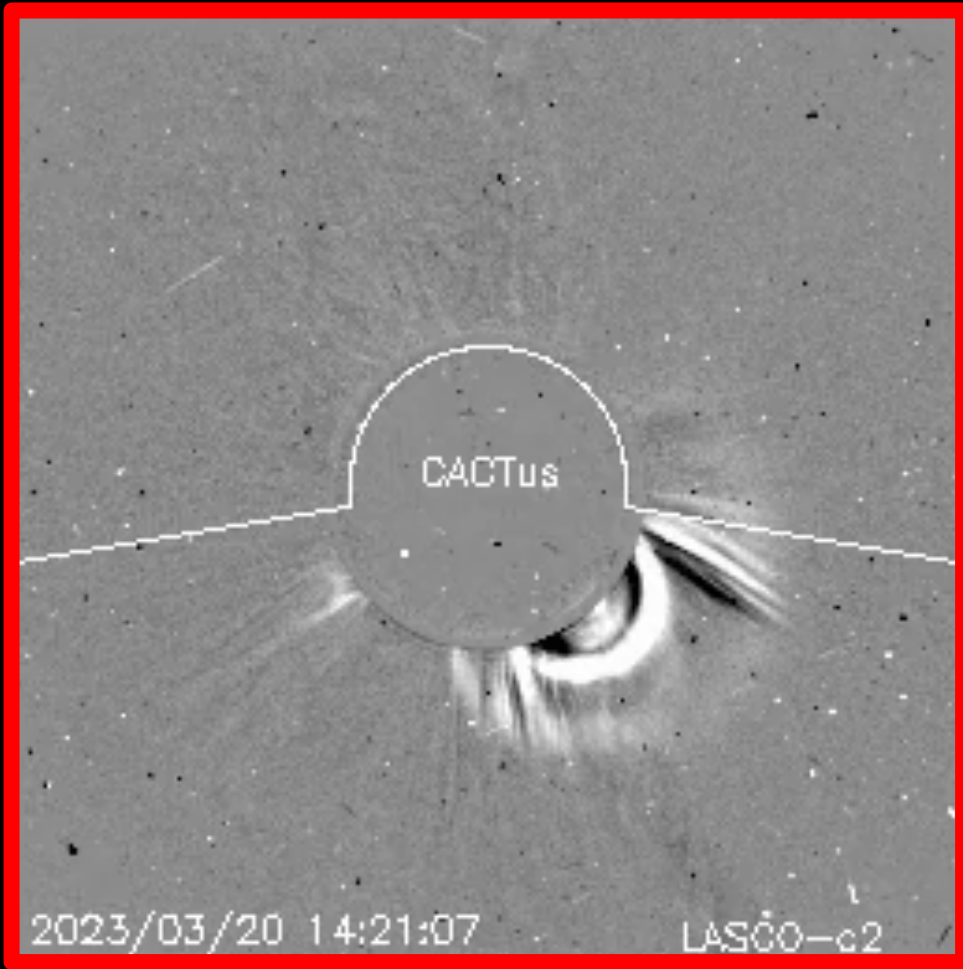
700-800 km/s



No clear in situ signatures
Possible mild glancing blow
arrival on March 20th

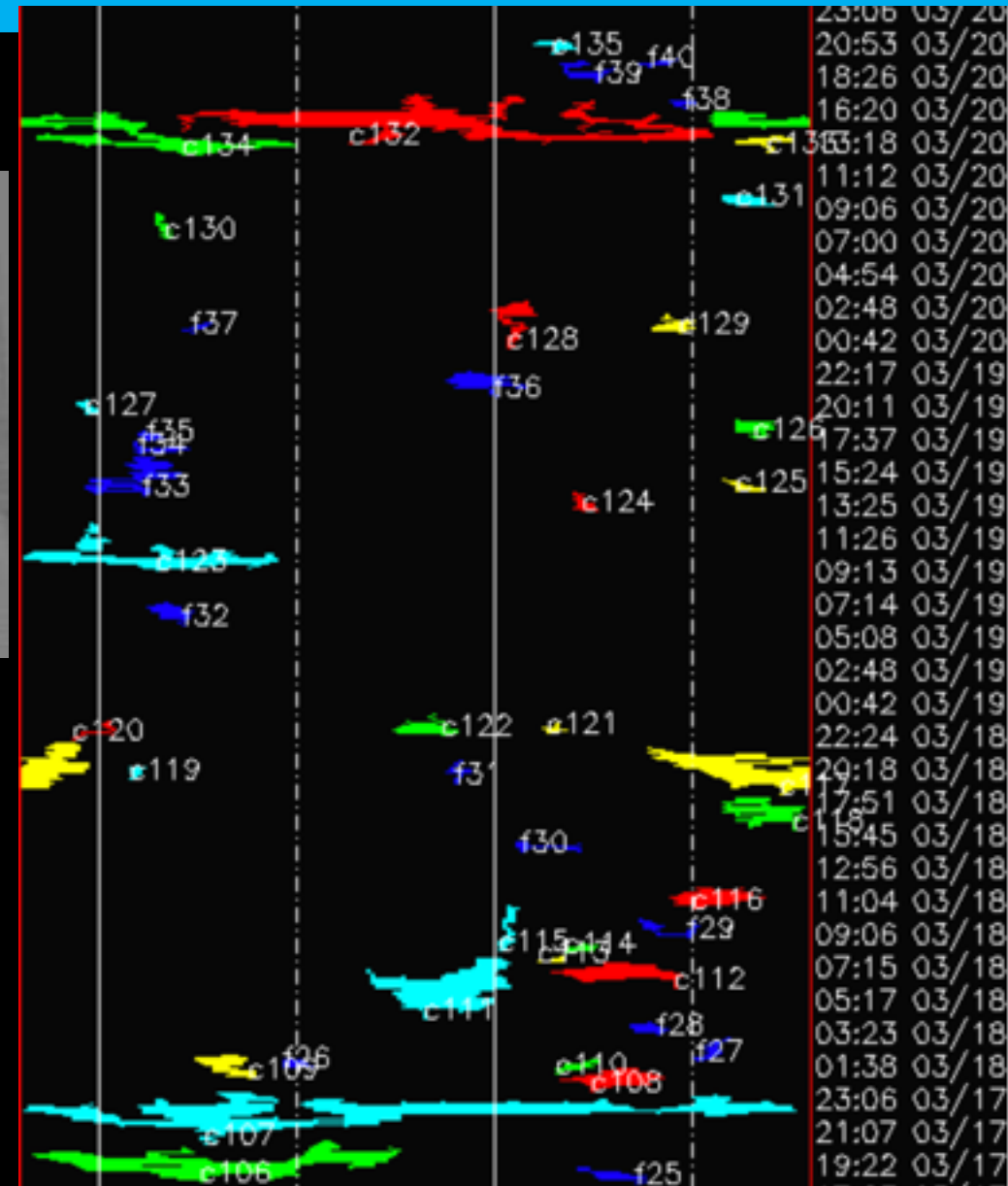


Coronal Mass Ejections

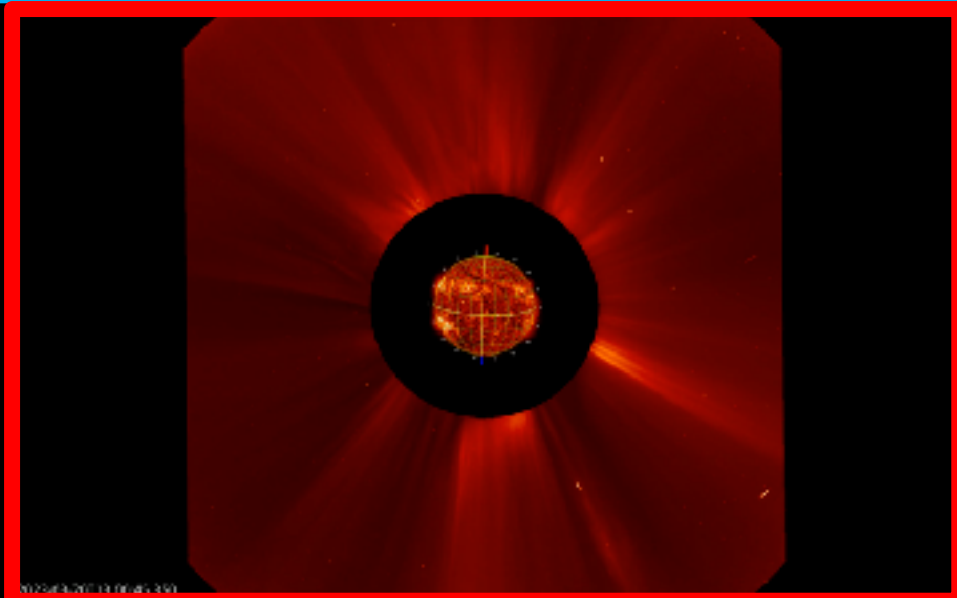


600-700 km/s

Prominent arrival on
March 23rd

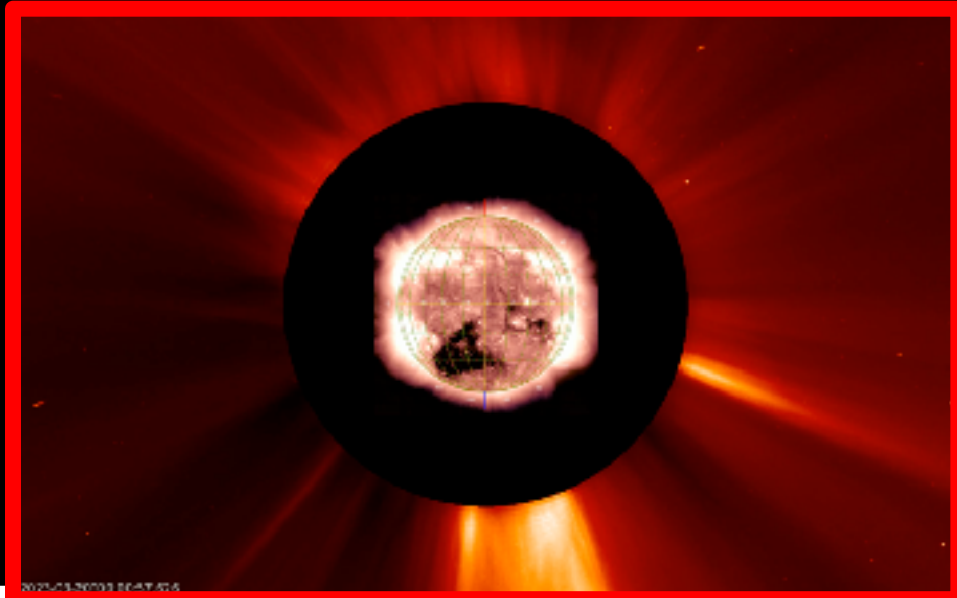


Coronal Mass Ejections

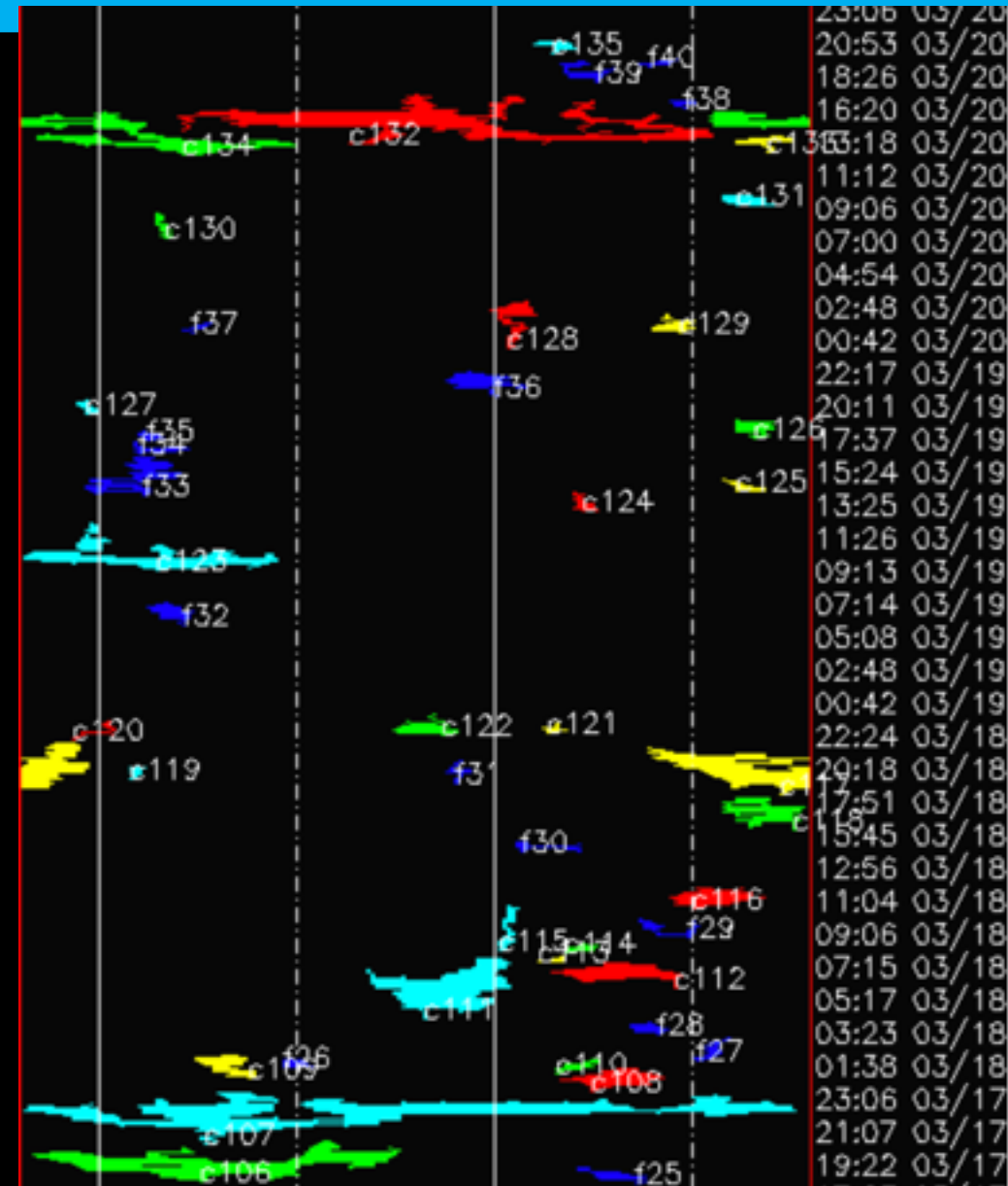


600-700 km/s

Arrival on
March 23rd



other possible
source?



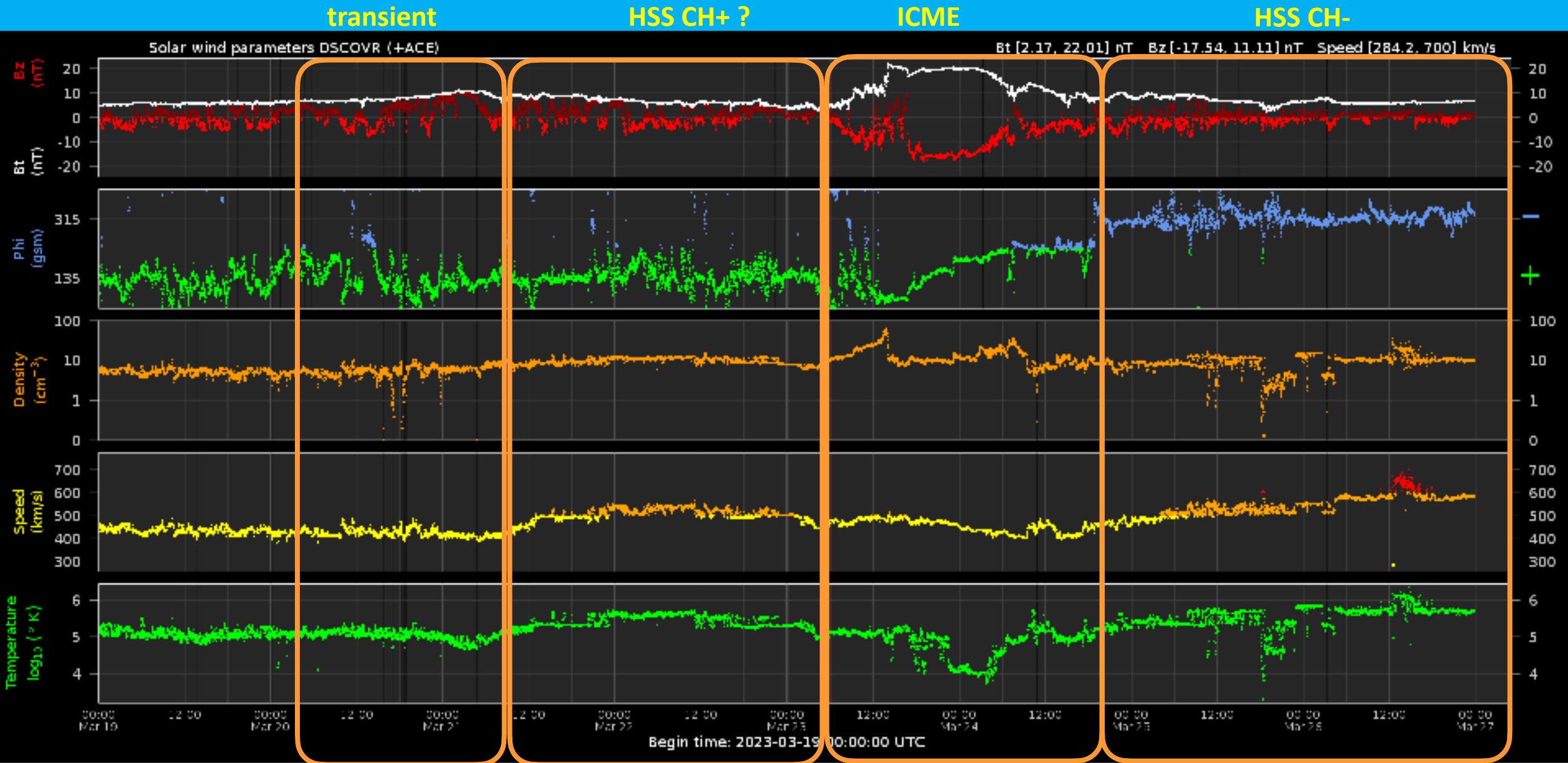
Solar Wind and Geomagnetic Activity



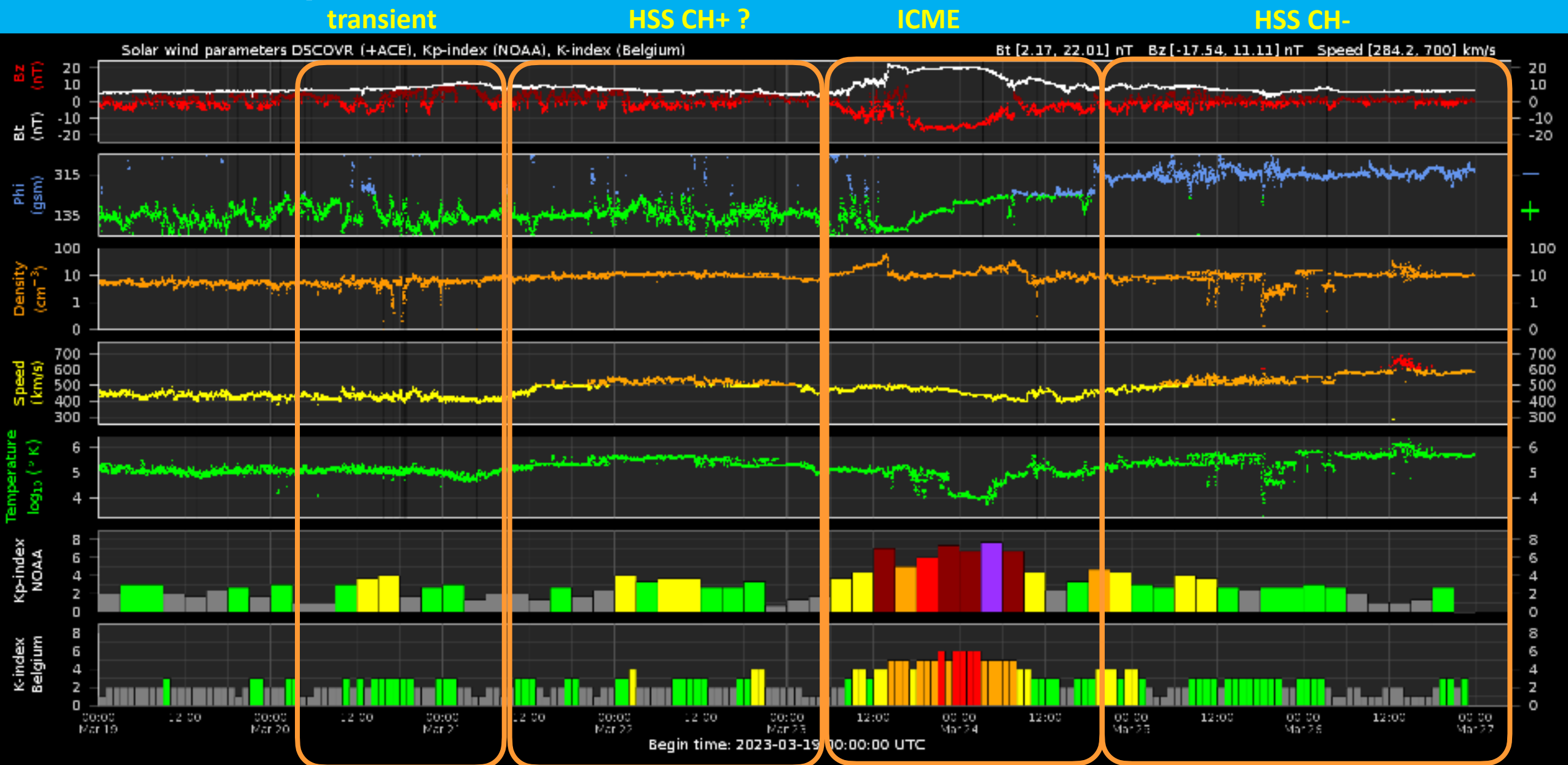
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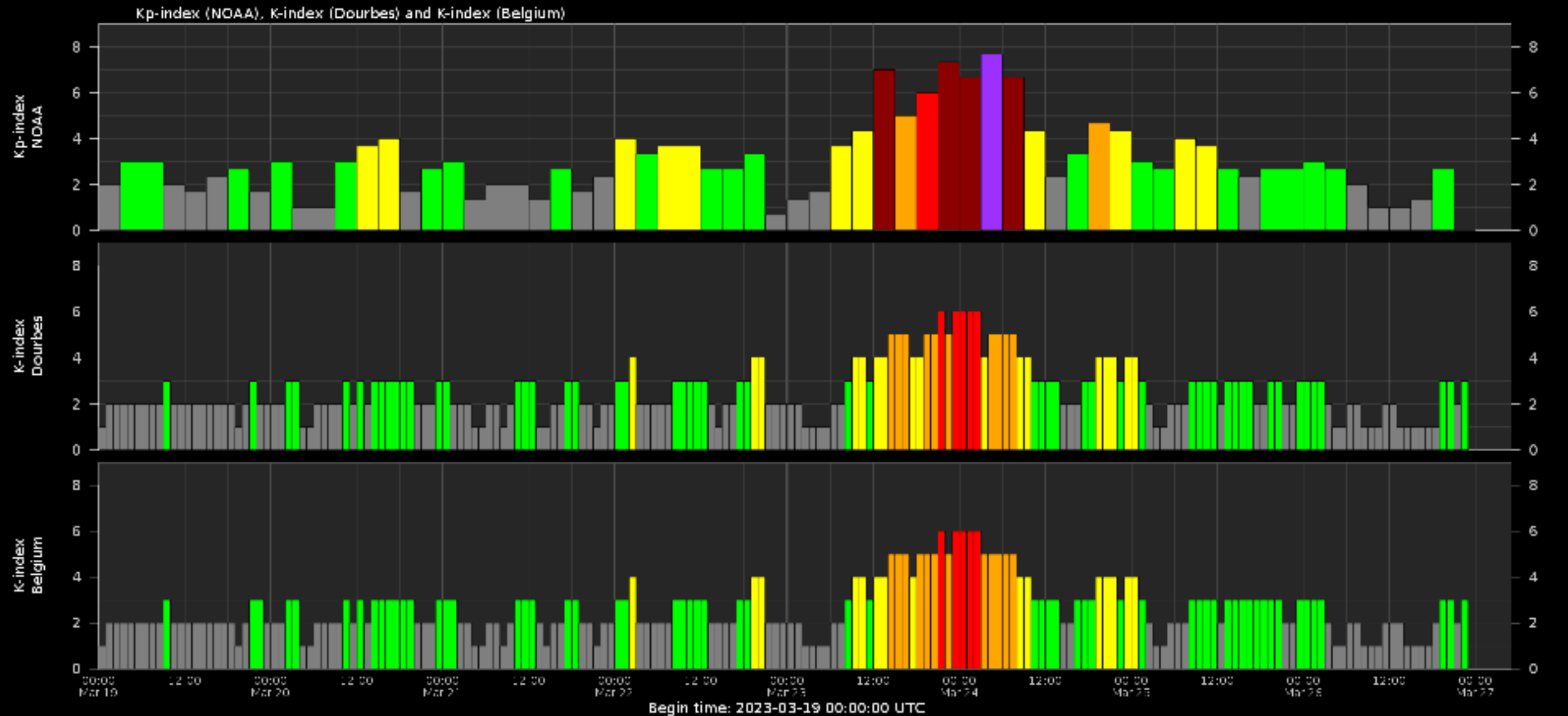
Solar wind parameters



Solar wind parameters



Geomagnetic activity (K-indexes)



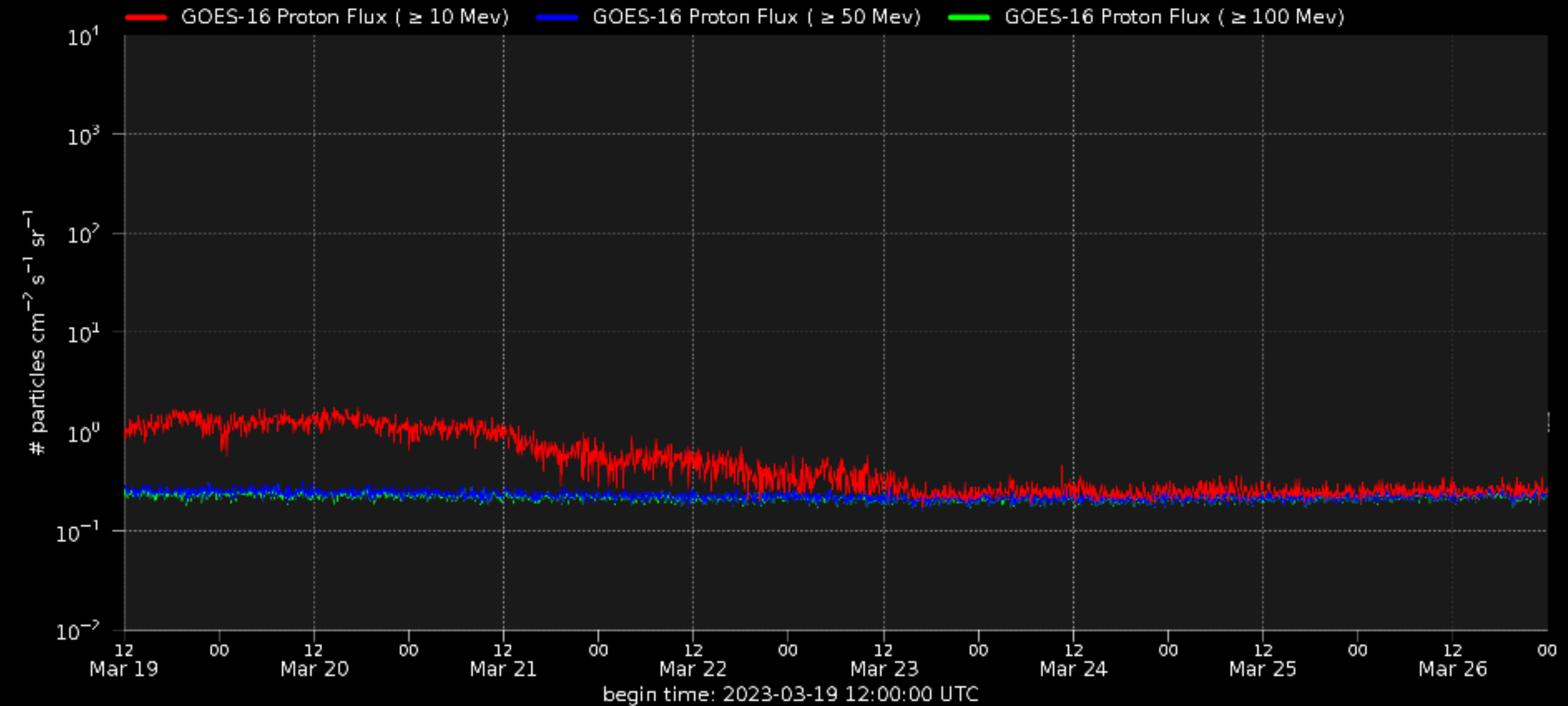
Energetic Particles



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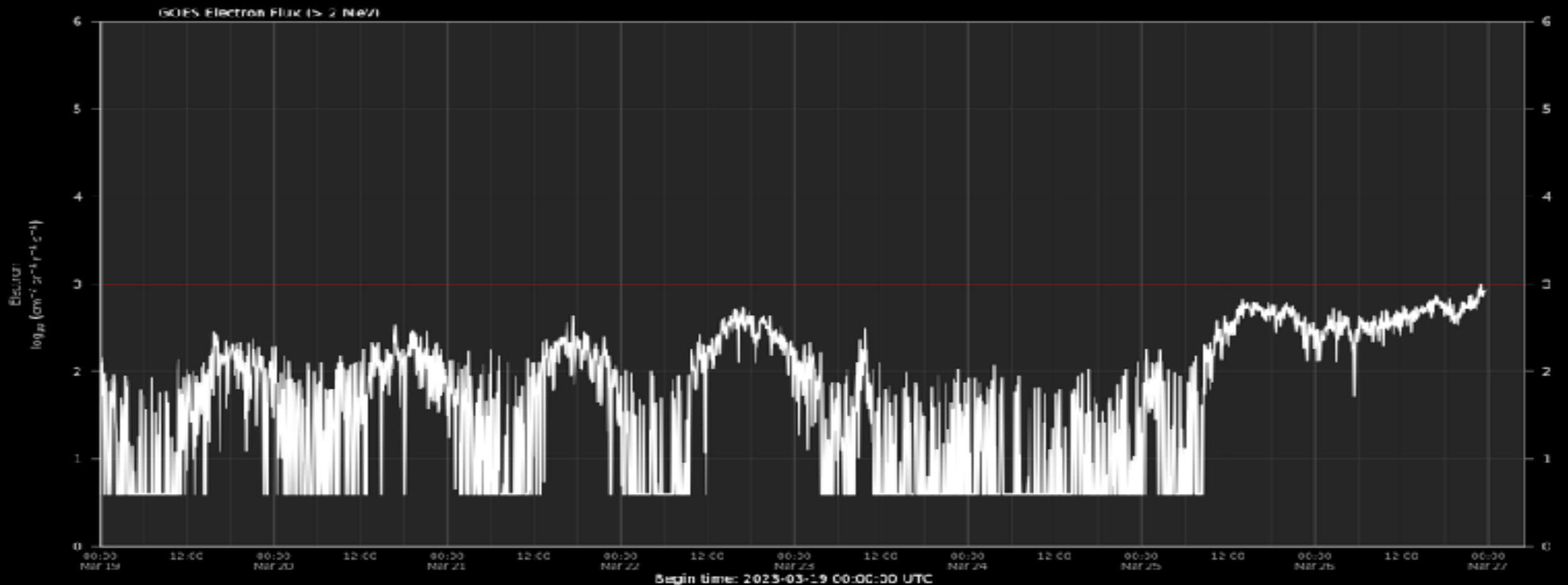
Solar proton flux



Electron flux at GEO

www.stce.be/educational/classification#electrons

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



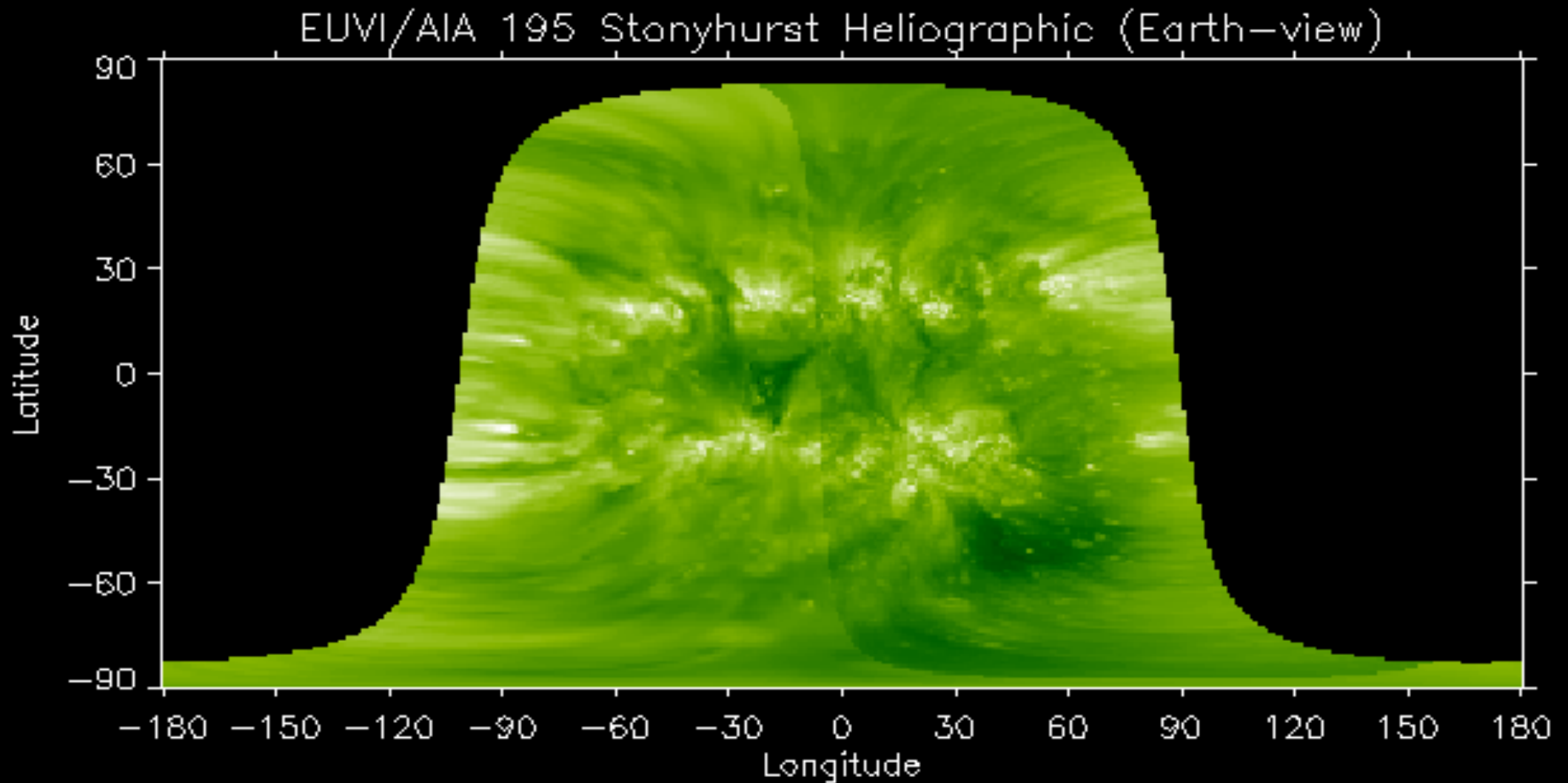
Outlook



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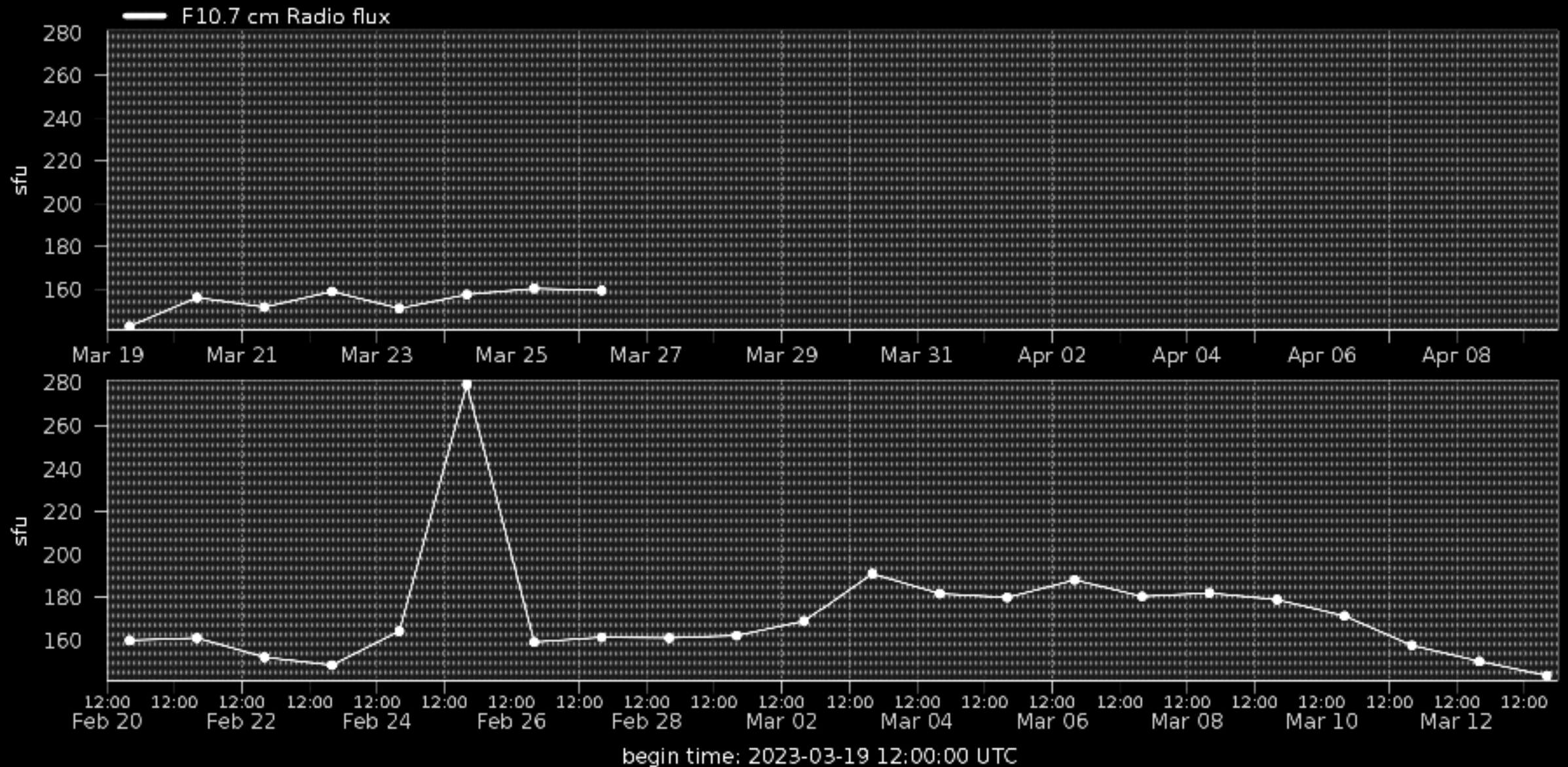
Solar Influences
Data analysis Centre
www.sidc.be

Outlook: Solar activity



Observation date: 2023/03/26 23:05:00

Outlook: Solar F10.7cm radio flux



Outlook: Solar wind parameters



Outlook: Geomagnetic activity



Outlook: Electron Flux at GEO Outlook



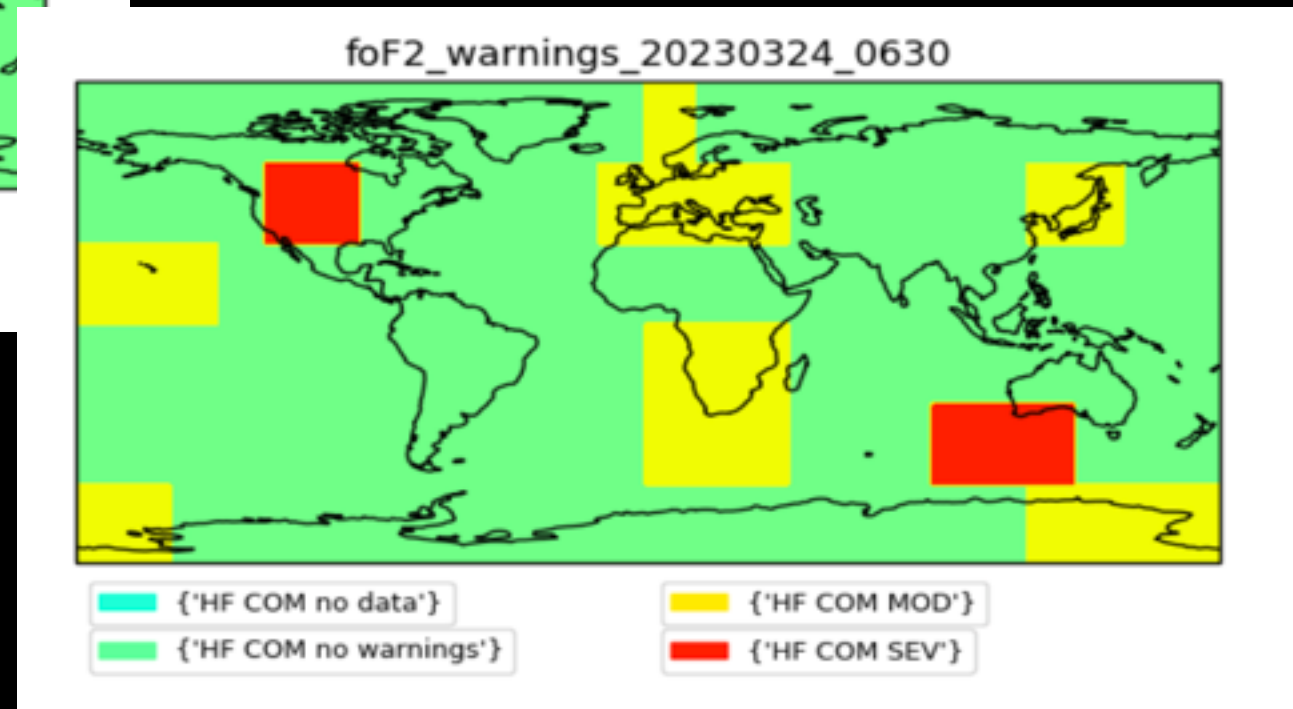
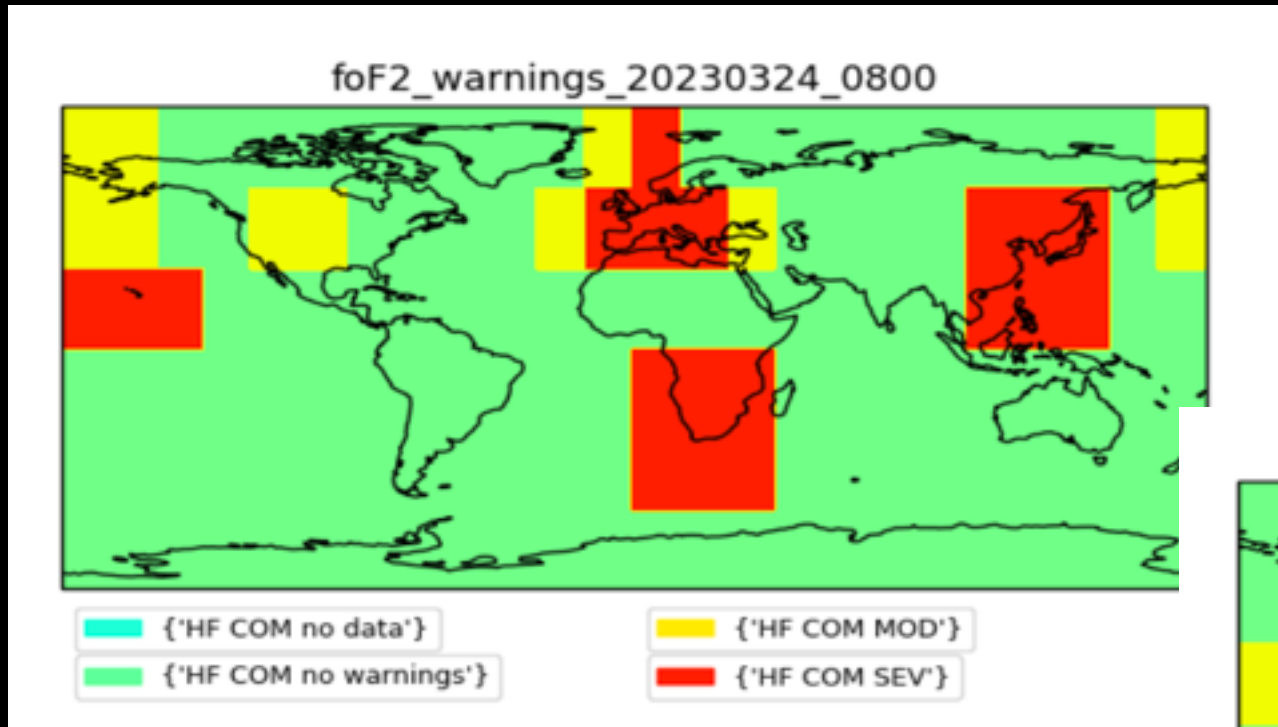
Pegasus



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Pegasus related events: SEV PSD + enhanced scintillation



SIDC Space Weather Briefing

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