

SIDC Space Weather Briefing

26 - 05 March 2023

de Patoul Judith

& the SIDC forecaster team



Royal Observatory
of Belgium

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Summary Report

Solar activity from 2023-02-26 12:00 to 2023-03-05 23:59

Active regions	X flare from NOAA-AR 3234, M-flare from NOAA-AR 3238, 3240, 3242, 3243
Flares	# C-class flare: 46 # M-class flare: 9 # X-class flare: 1
Coronal Holes	Equatorial coronal hole (negative polarity) reached the central meridian on March 02
CMEs	No clear Earth-directed coronal mass ejections were identified

Energetic particles

Proton flux	End of a Proton event from the past week
Electron flux	Above the 1000 pfu threshold due to the SW enhancement

Solar wind and geomagnetic conditions

ICMEs	The CME from Feb 25 arrived on Feb 26-27.
Solar wind conditions	B : 1.08 - 21.44 nT //Bz: -17.99 nT to 13.46 nT //Speed: 434.1 - 778.1km/s
K-indices	max K-index (KBel): 6 max Kp-index (NOAA): 7

All Quiet Alert: OFF

Solar Activity

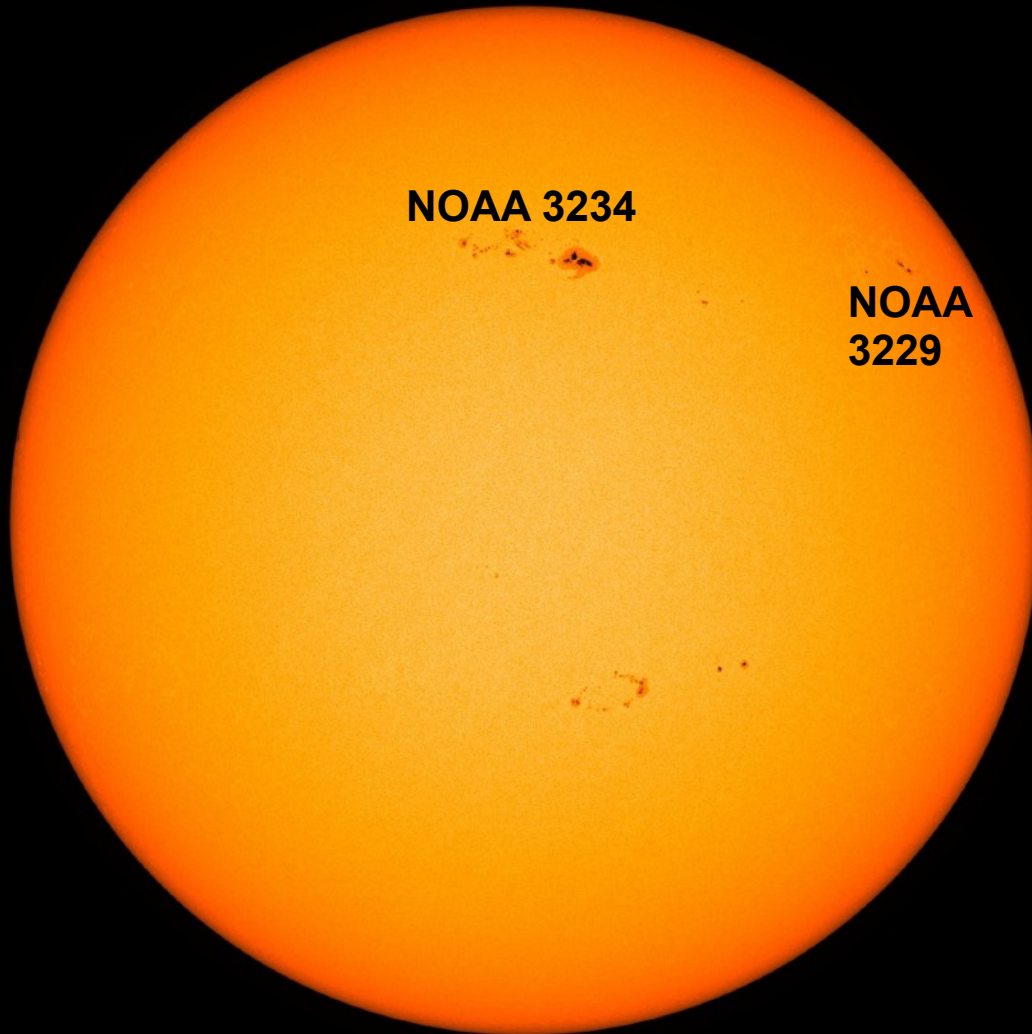


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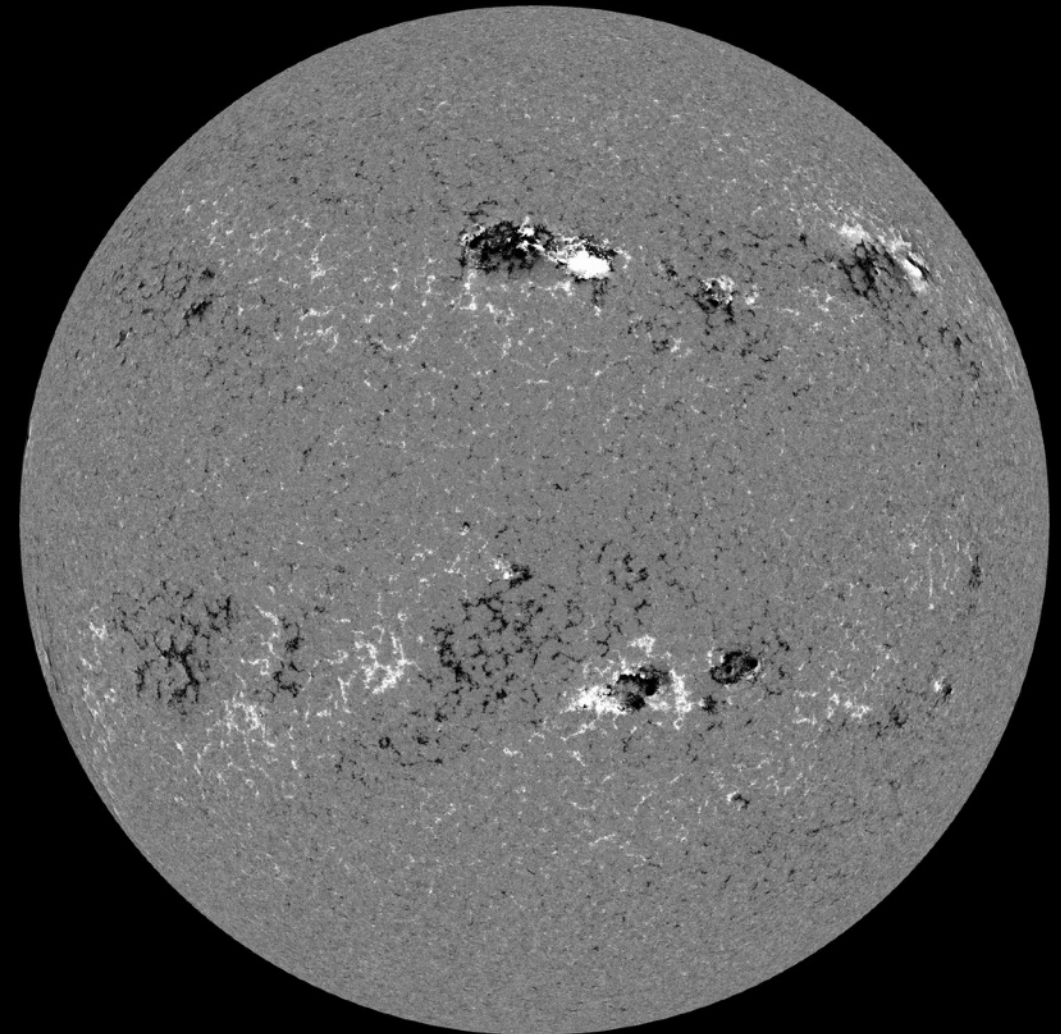
Solar active regions

SDO/HMI White Light 2023-02-26



SDO/HMI Quick-Look Continuum: 20230226_114500

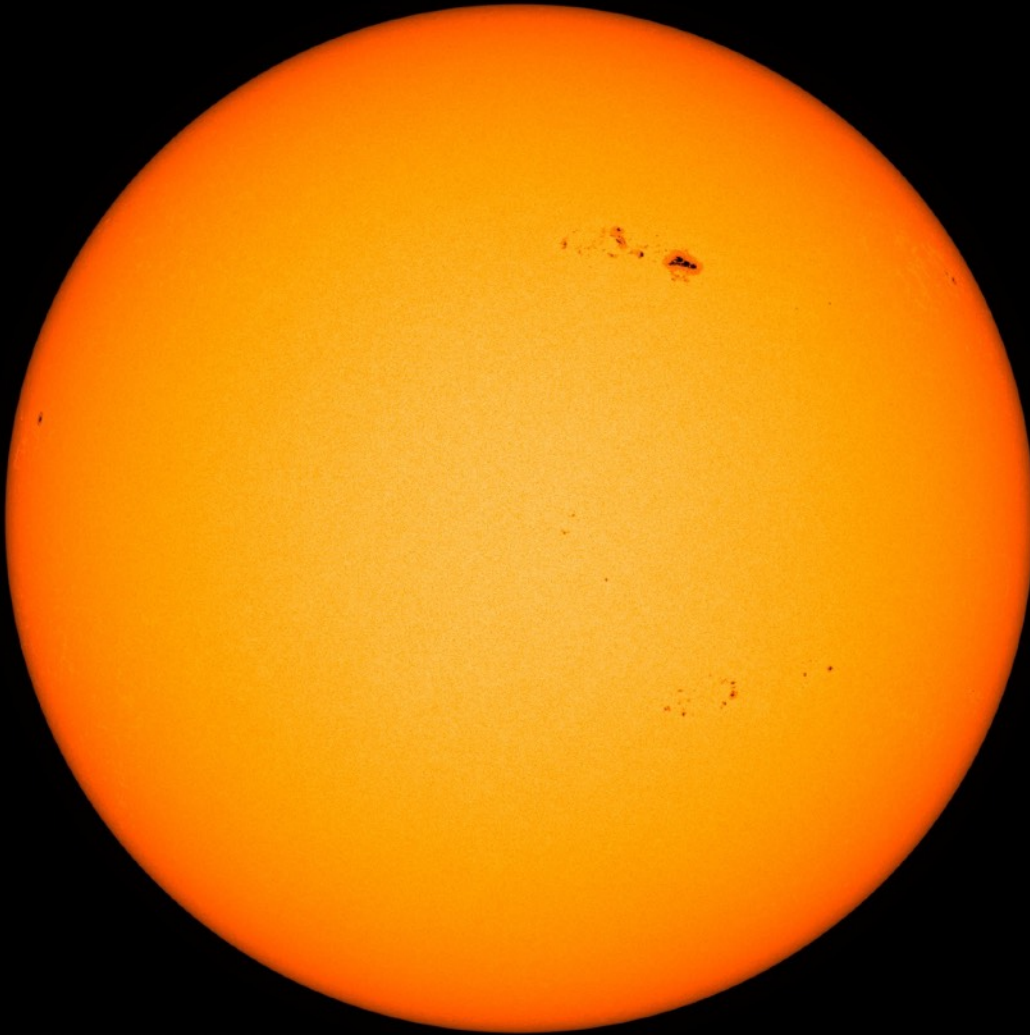
SDO/HMI Magnetogram 2023-02-26



SDO/HMI Quick-Look Magnetogram: 20230226_114500

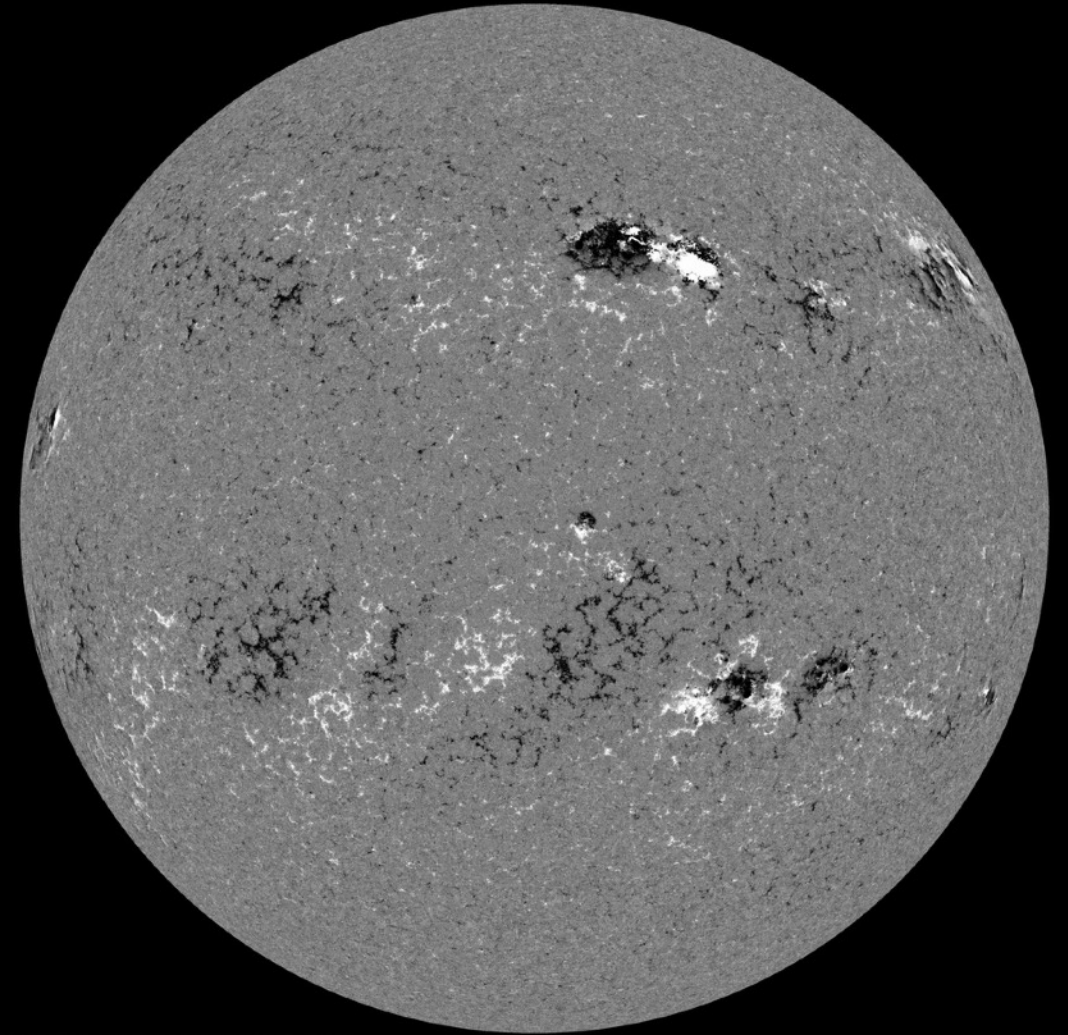
Solar active regions

SDO/HMI White Light 2023-02-27



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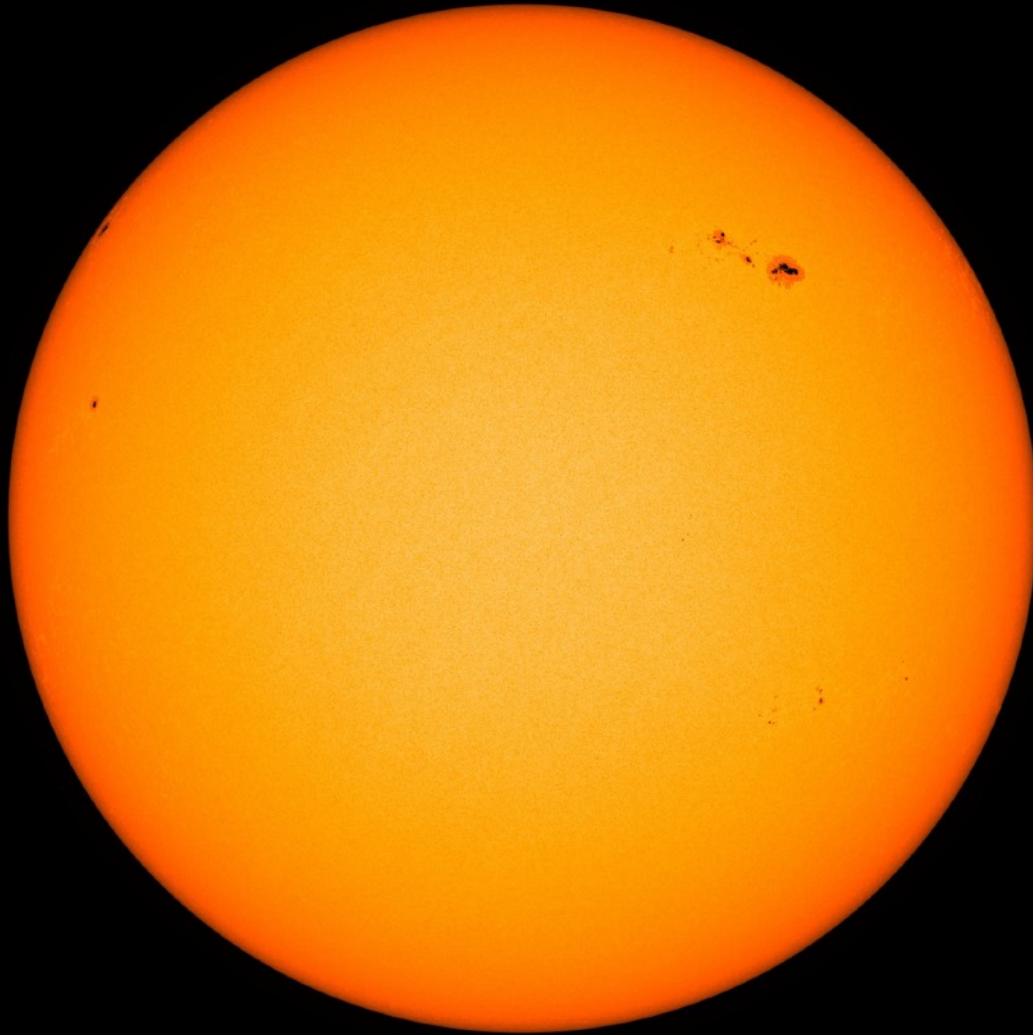
SDO/HMI Magnetogram 2023-02-27



SDO/HMI Quick-Look Magnetogram: 20230227_114500

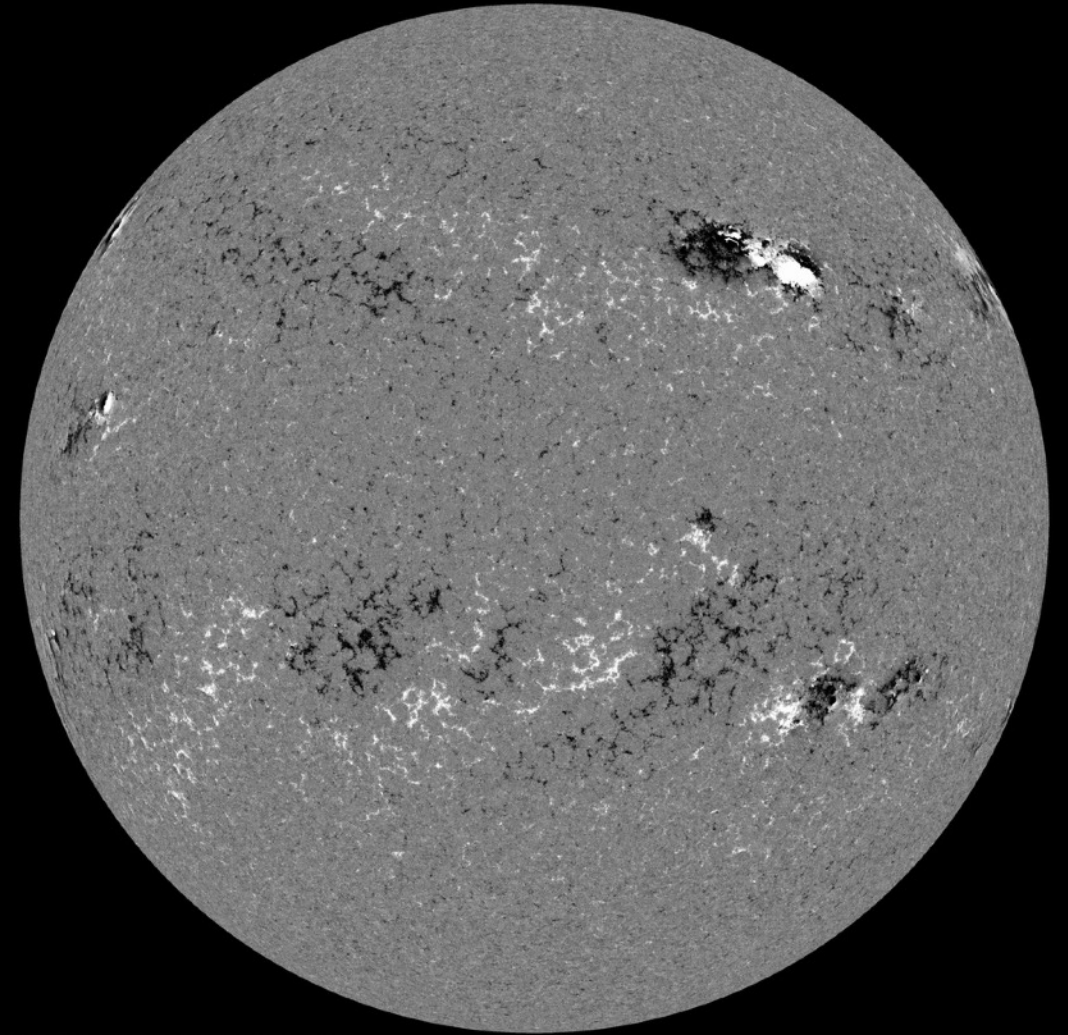
Solar active regions

SDO/HMI White Light 2023-02-28



SDO/HMI Quick-Look Continuum: 20230228_114500

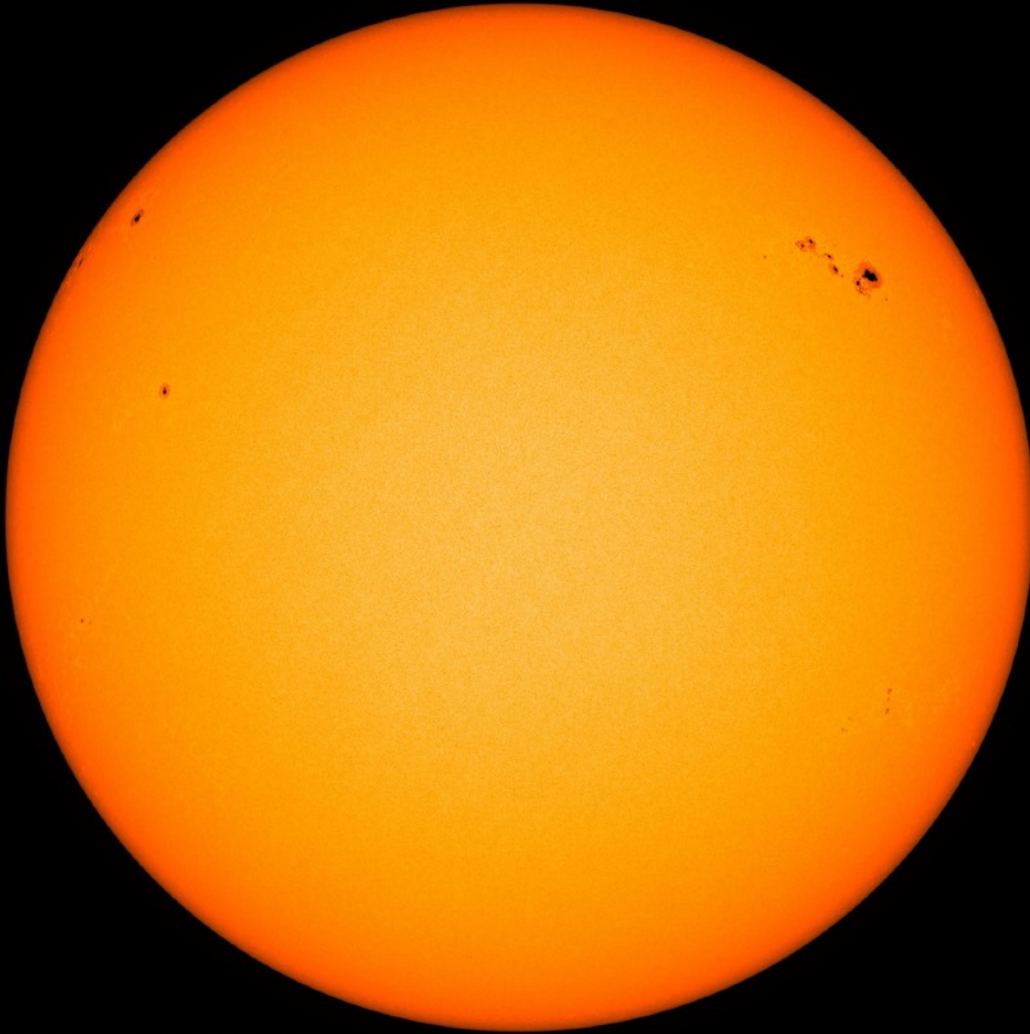
SDO/HMI Magnetogram 2023-02-28



SDO/HMI Quick-Look Magnetogram: 20230228_114500

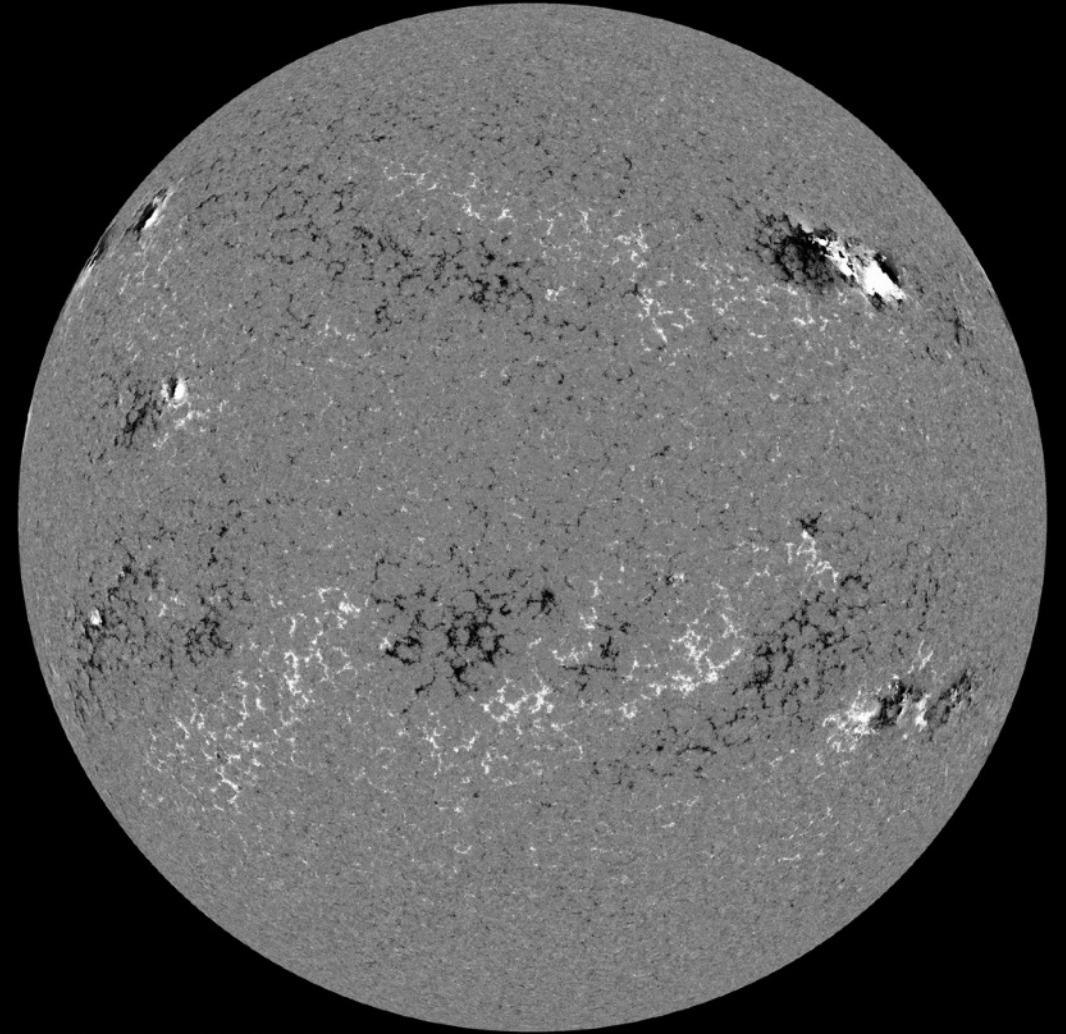
Solar active regions

SDO/HMI White Light 2023-03-01



SDO/HMI Quick-Look Continuum: 20230301_114500

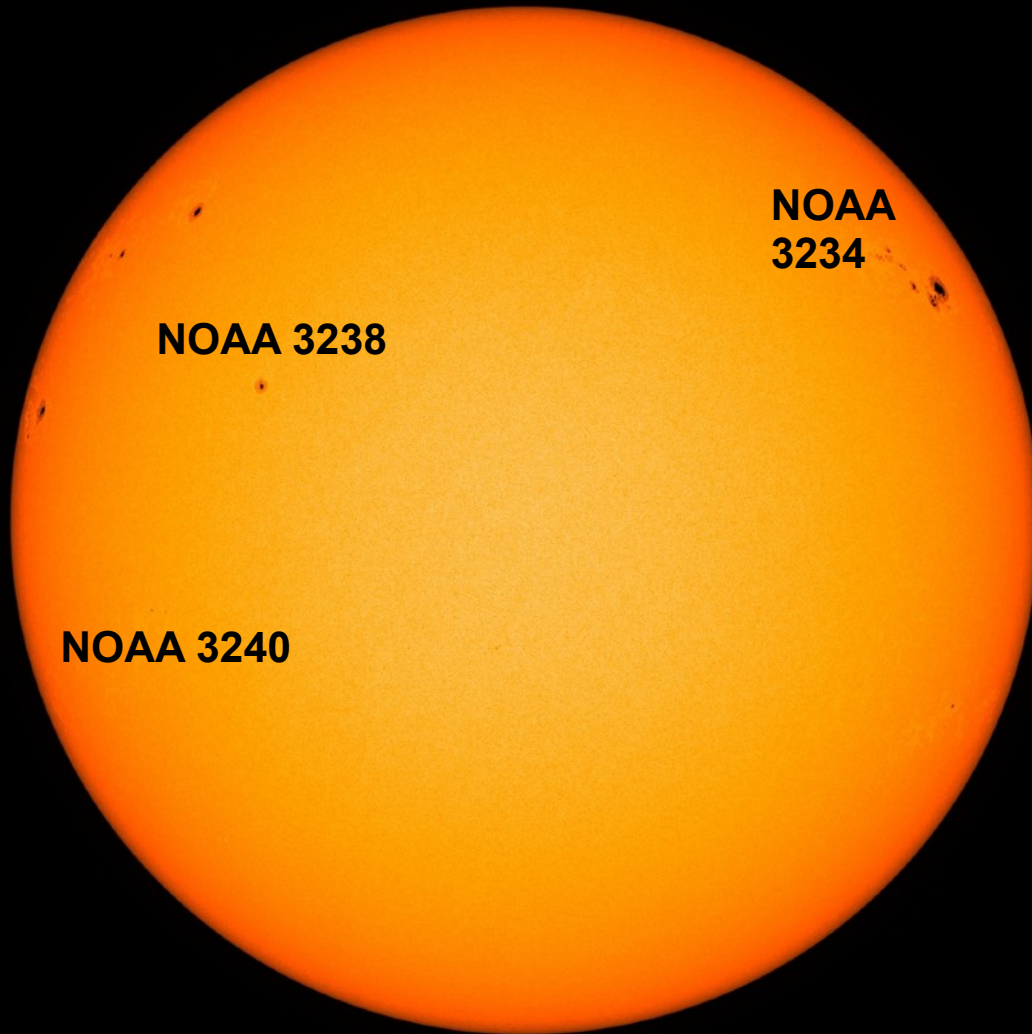
SDO/HMI Magnetogram 2023-03-01



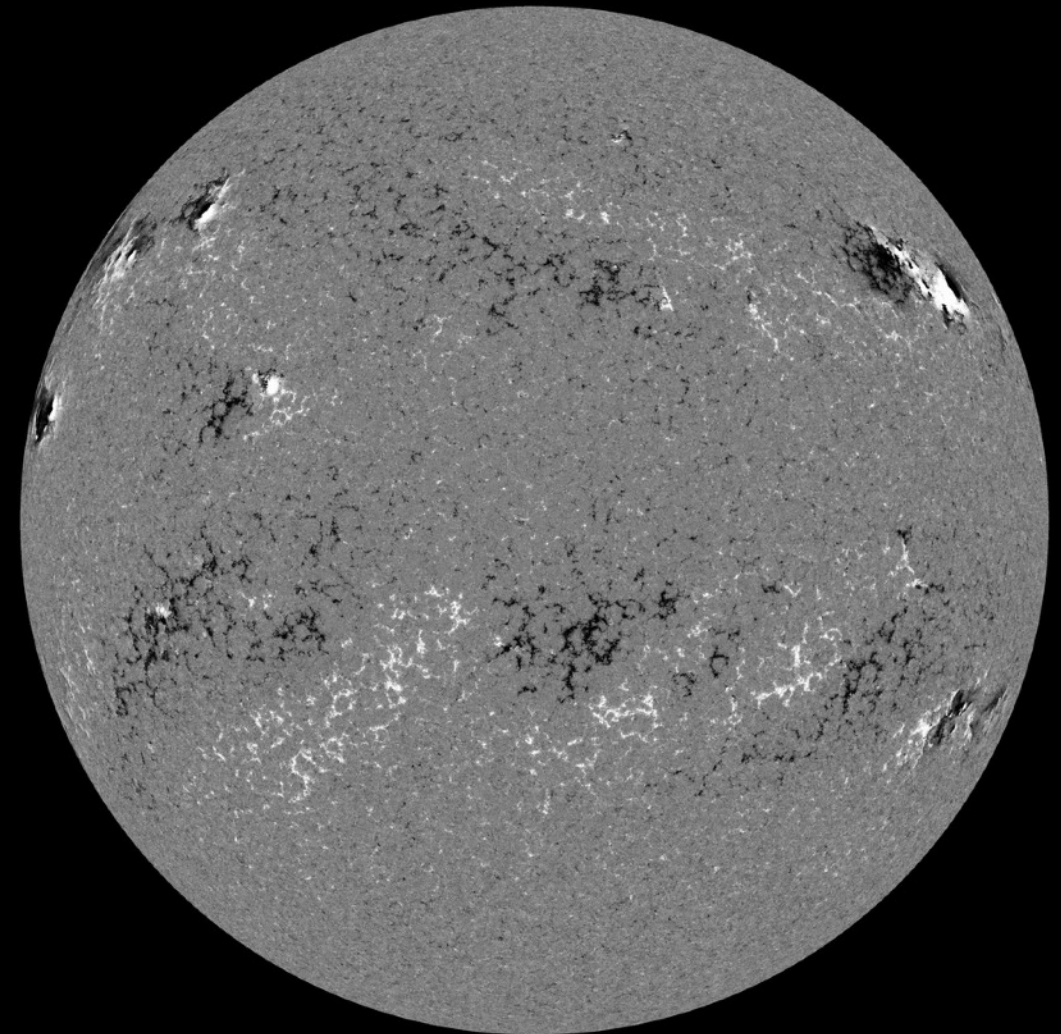
SDO/HMI Quick-Look Magnetogram: 20230301_114500

Solar active regions

SDO/HMI White Light 2023-03-02

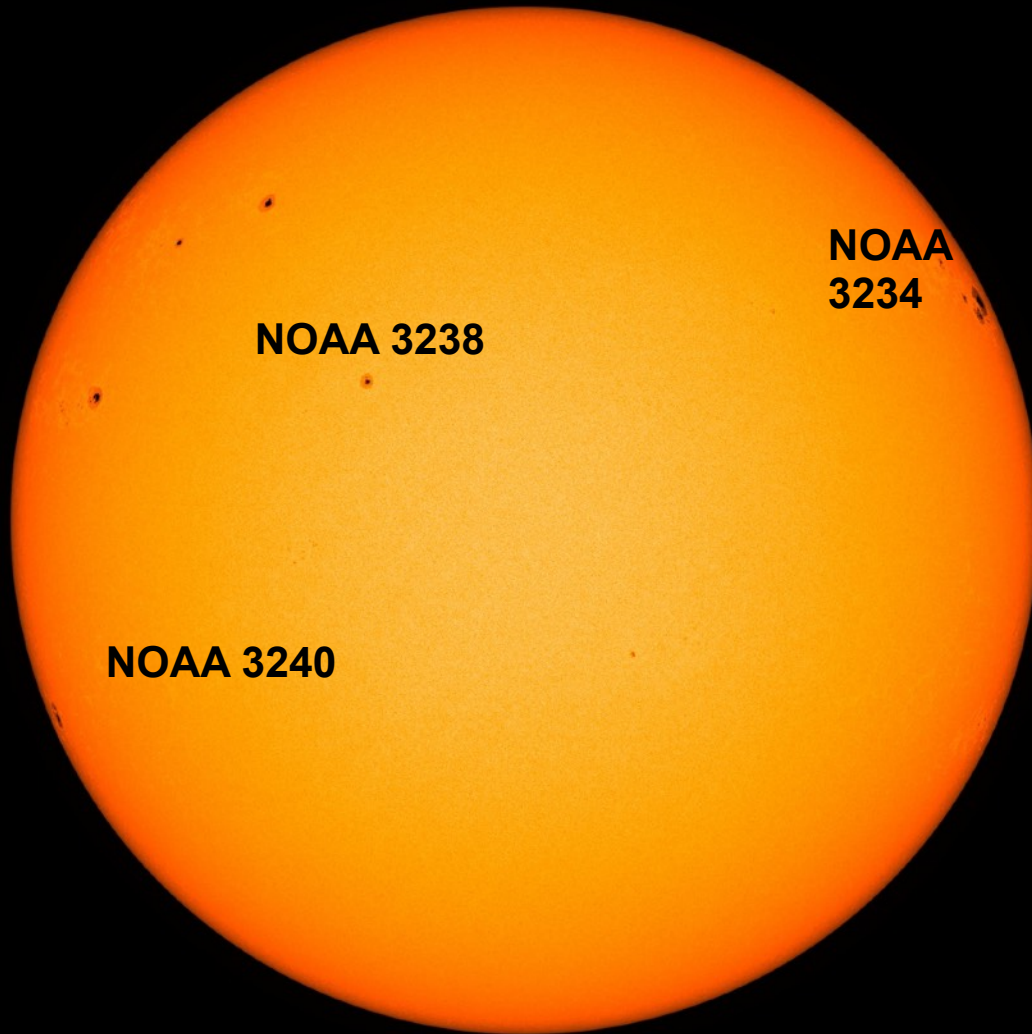


SDO/HMI Magnetogram 2023-03-02

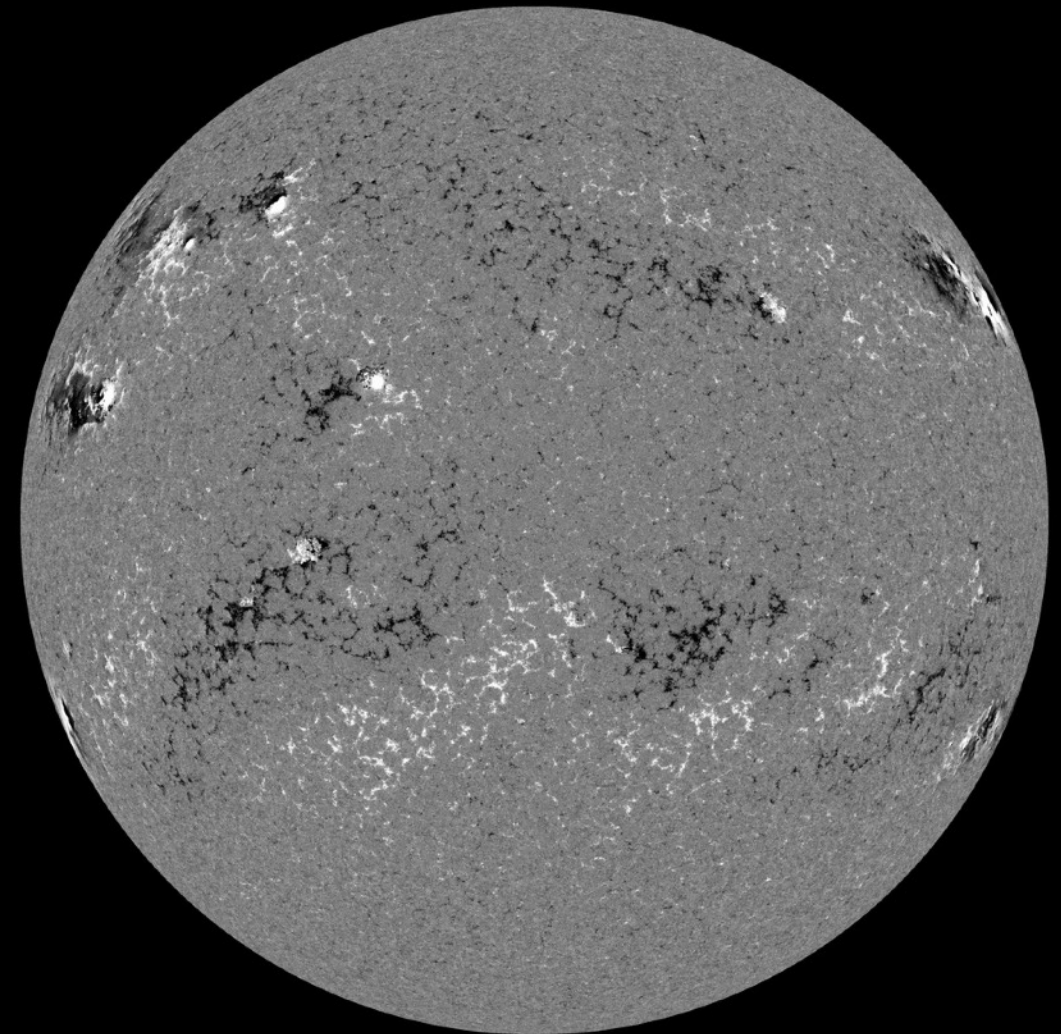


Solar active regions

SDO/HMI White Light 2023-03-03

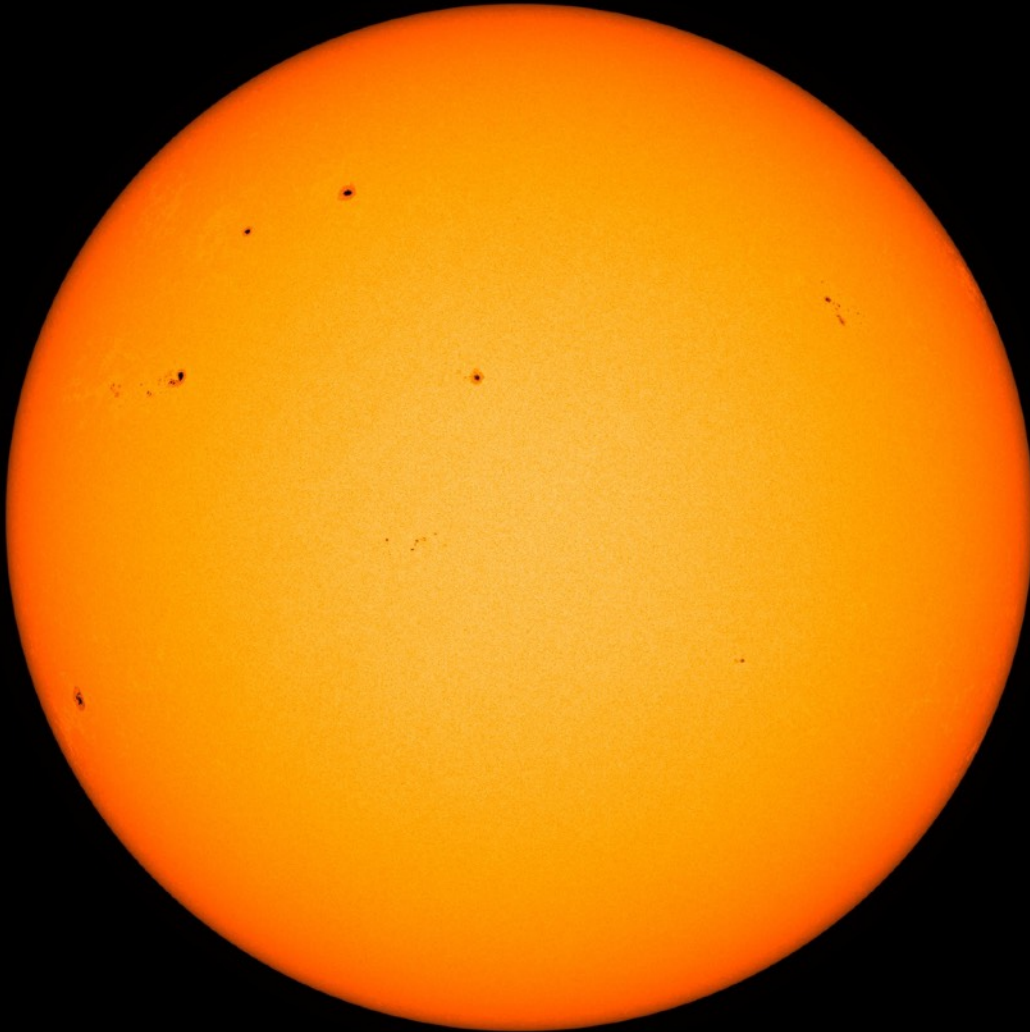


SDO/HMI Magnetogram 2023-03-03



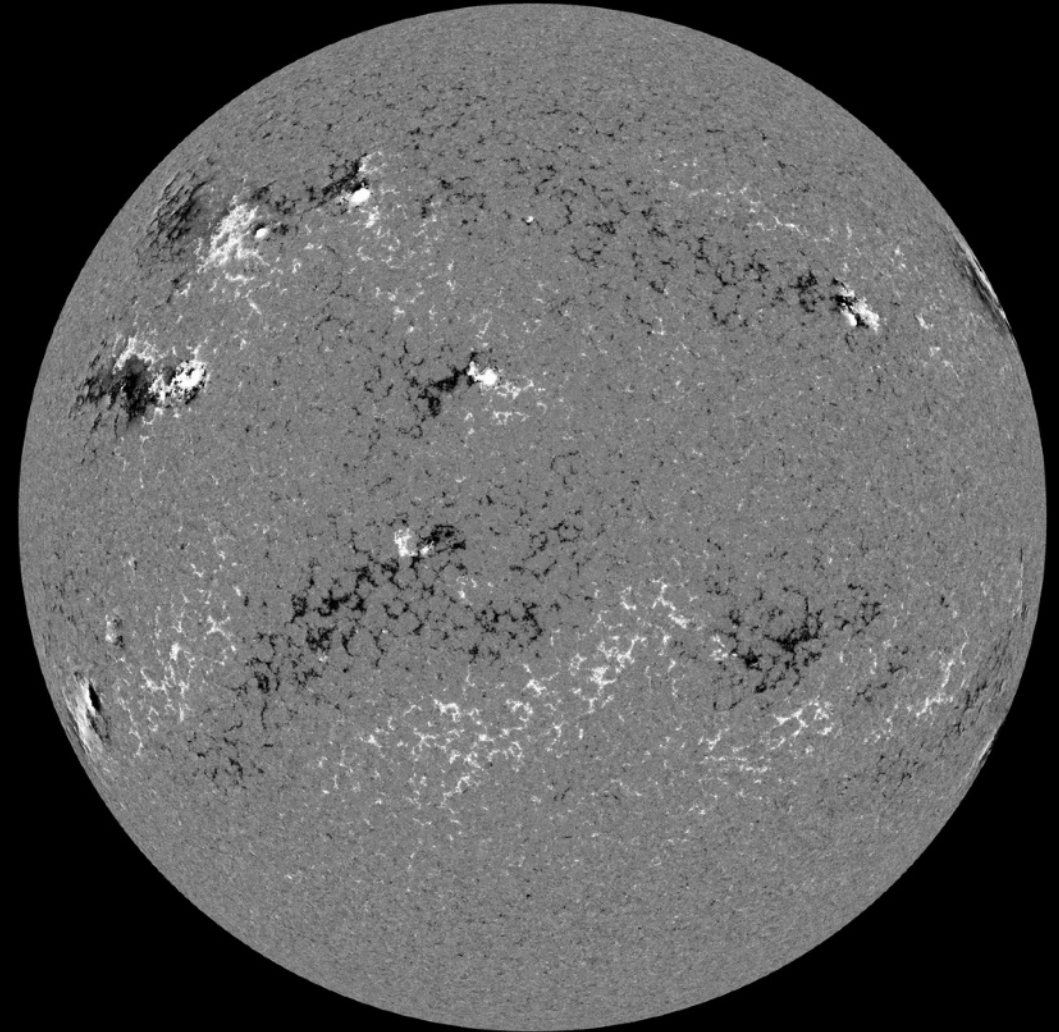
Solar active regions

SDO/HMI White Light 2023-03-04



SDO/HMI Quick-Look Continuum: 20230304_114500

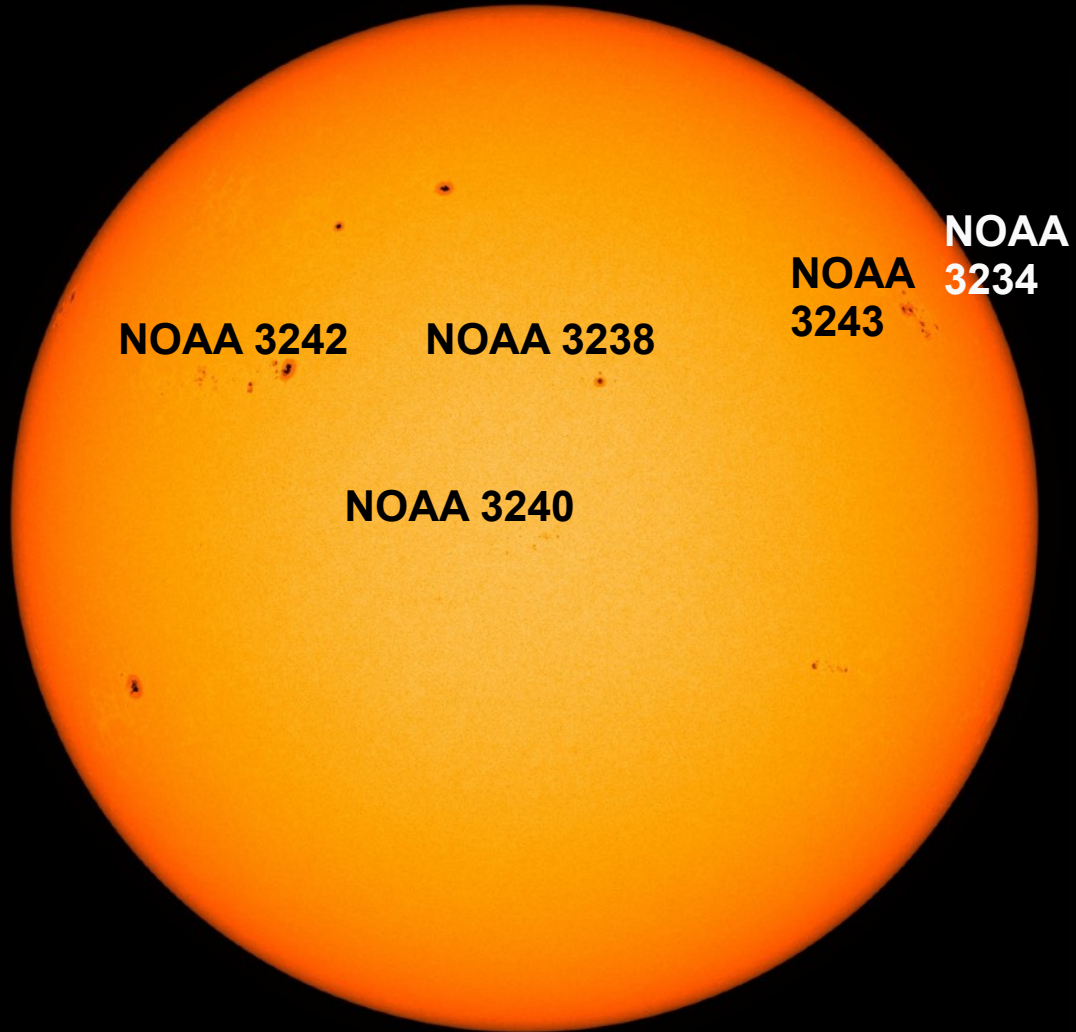
SDO/HMI Magnetogram 2023-03-04



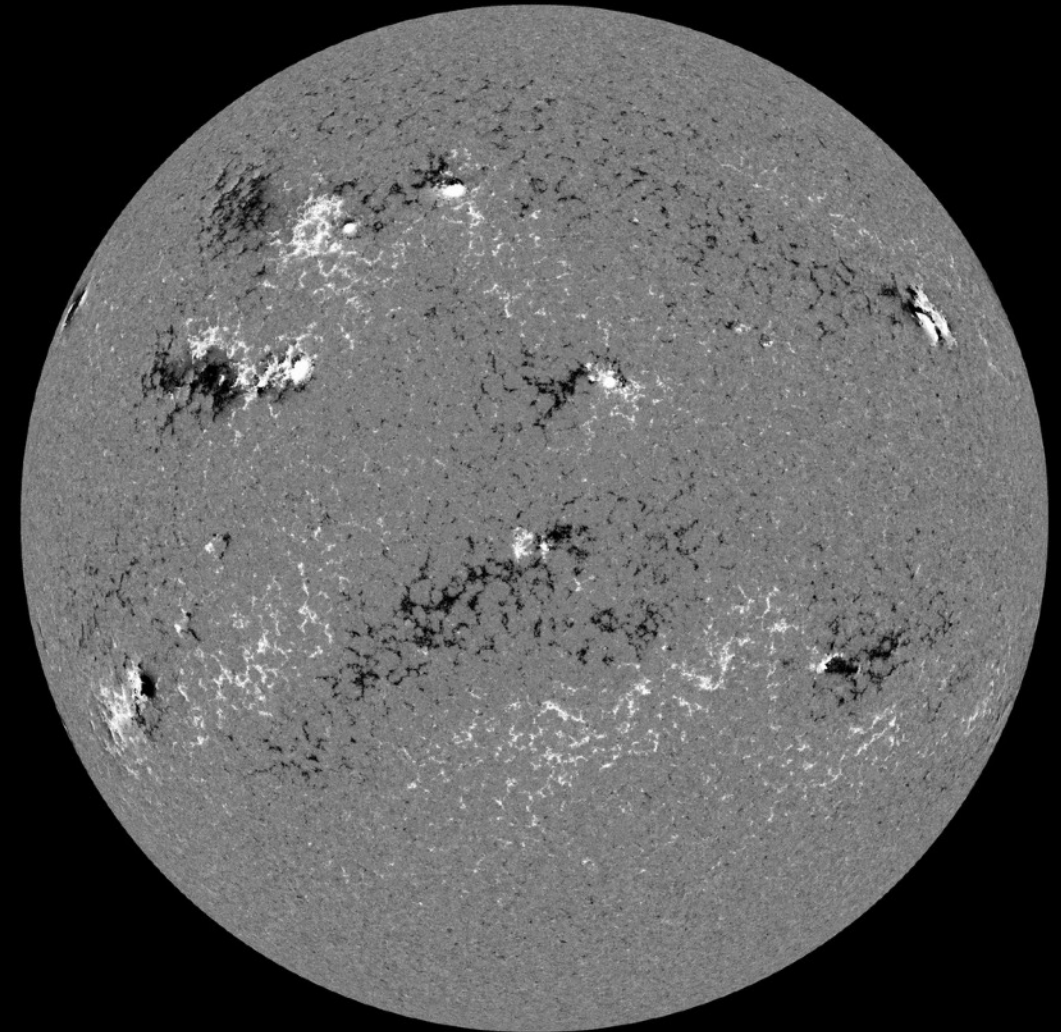
SDO/HMI Quick-Look Magnetogram: 20230304_114500

Solar active regions

SDO/HMI White Light 2023-03-05



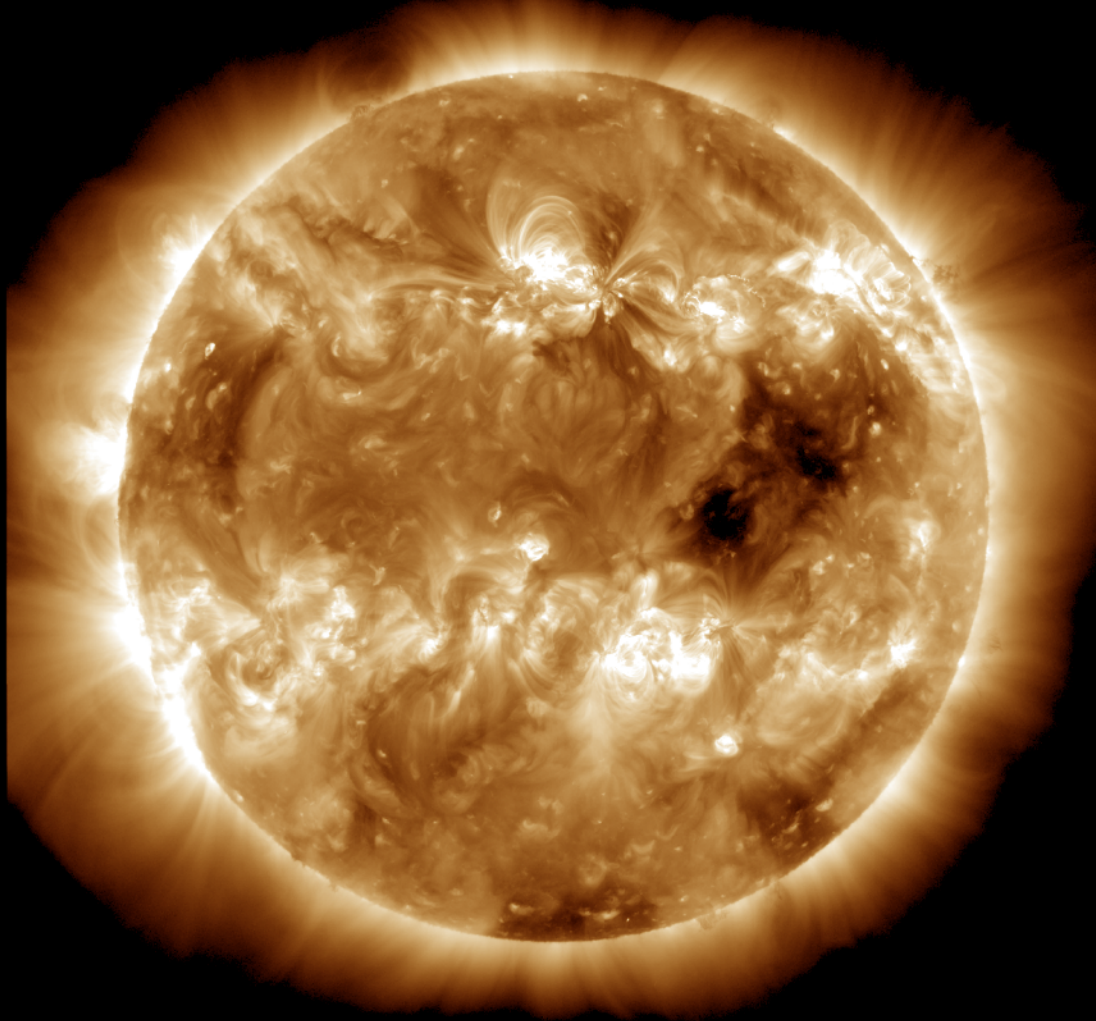
SDO/HMI Magnetogram 2023-03-05



Coronal holes

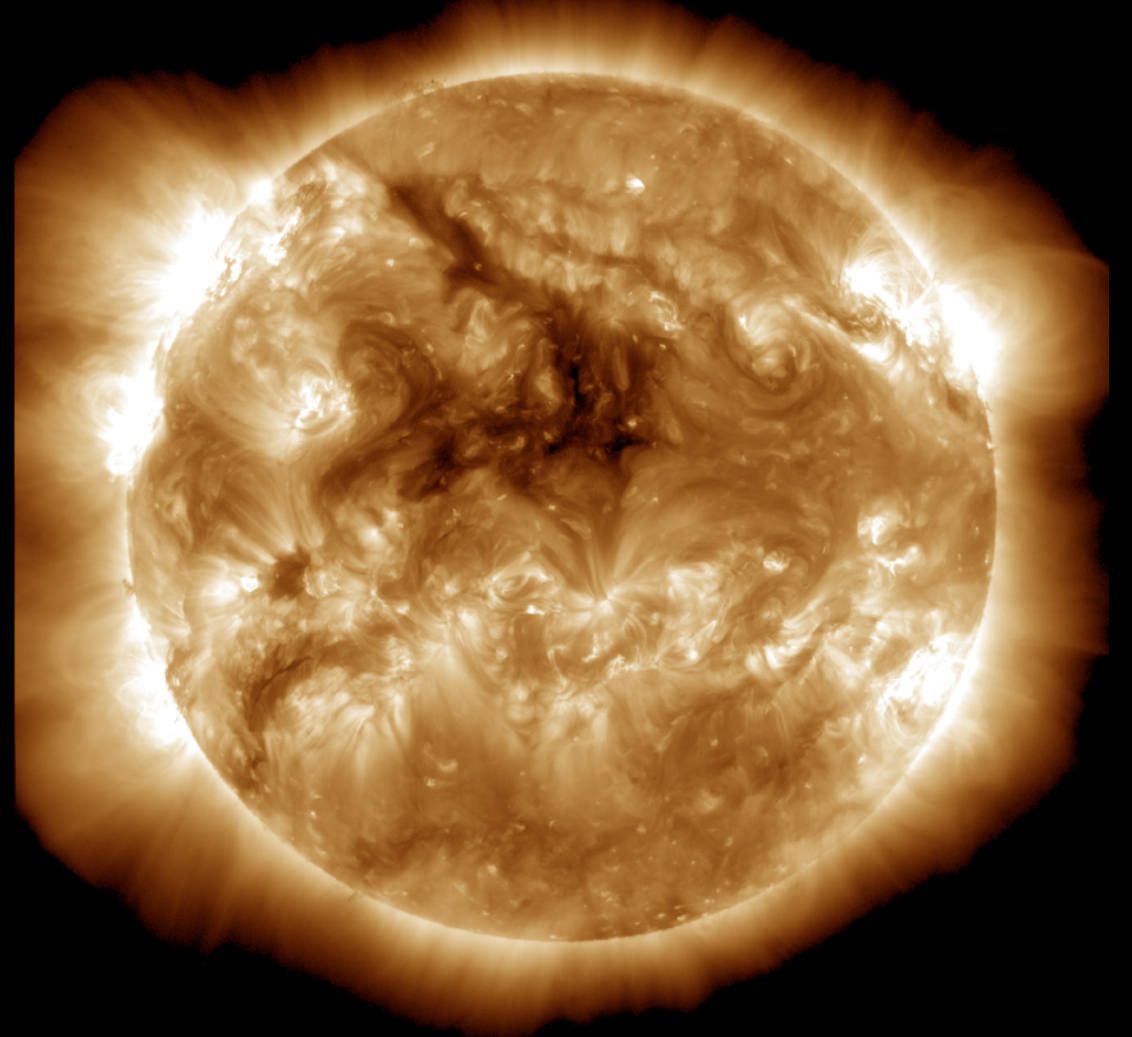
SDO/AIA 19.3 nm 2023-02-26

SDO/AIA AIA 193Å 2023-02-26T12:00:05.844

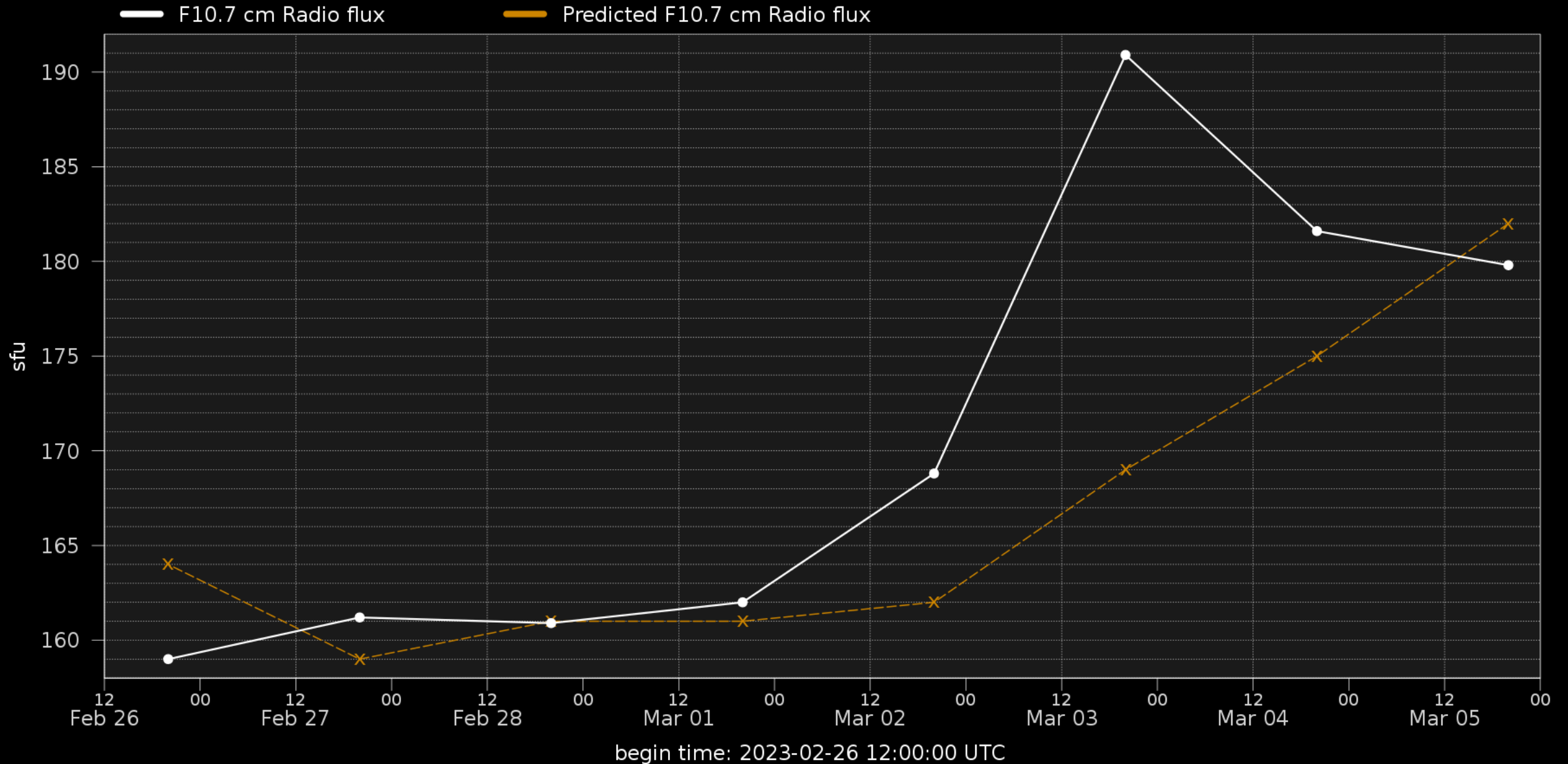


SDO/AIA 19.3 nm 2023-03-02

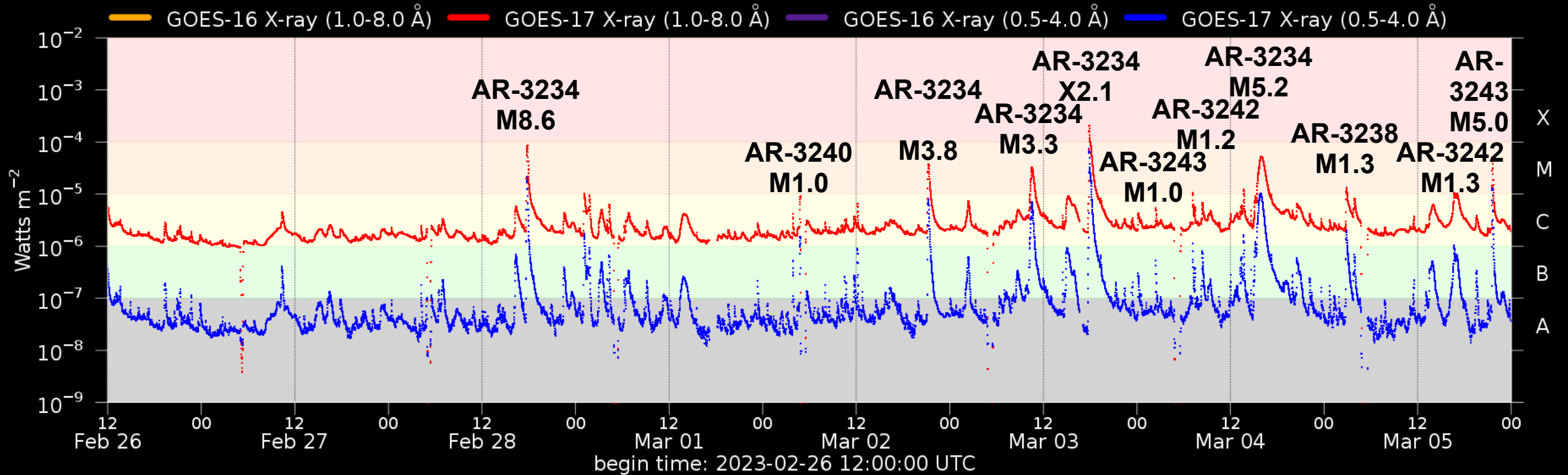
SDO/AIA AIA 193Å 2023-03-02T12:00:05.843



Solar F10.7cm radio flux



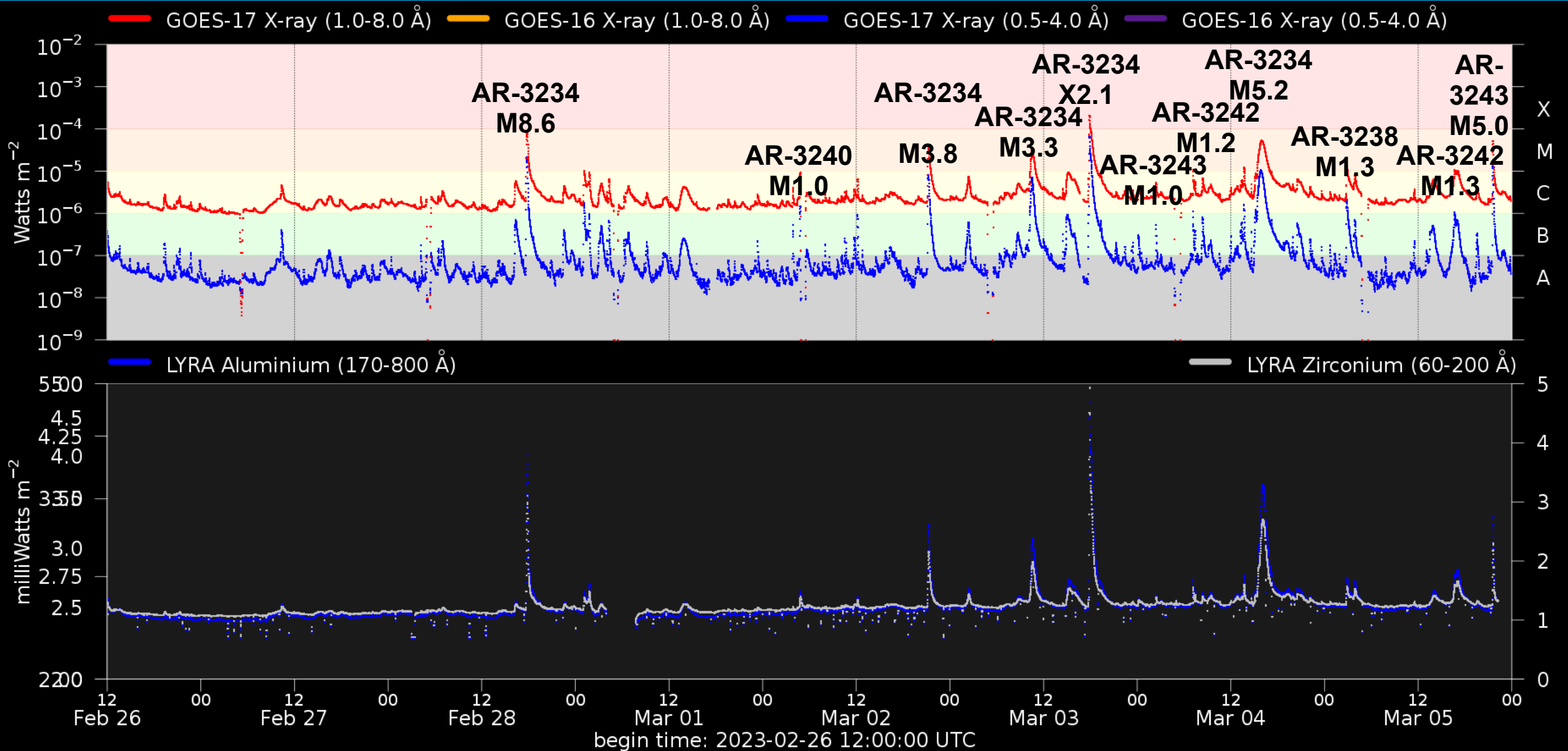
Flaring activity



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

Issue date	2023-02-26	2023-02-27	2023-02-28	2023-03-01	2023-03-02	2023-03-03	2023-03-04	2023-03-05
Probability (%)	99 55 15	95 30 10	95 30 05	95 40 05	90 35 05	85 45 05	99 60 10	99 50 20
Observed (#)	05 00 00	04 00 00	10 02 00	06 00 00	02 02 00	07 01 01	09 02 00	03 02 00

Solar X-Ray and UV flux

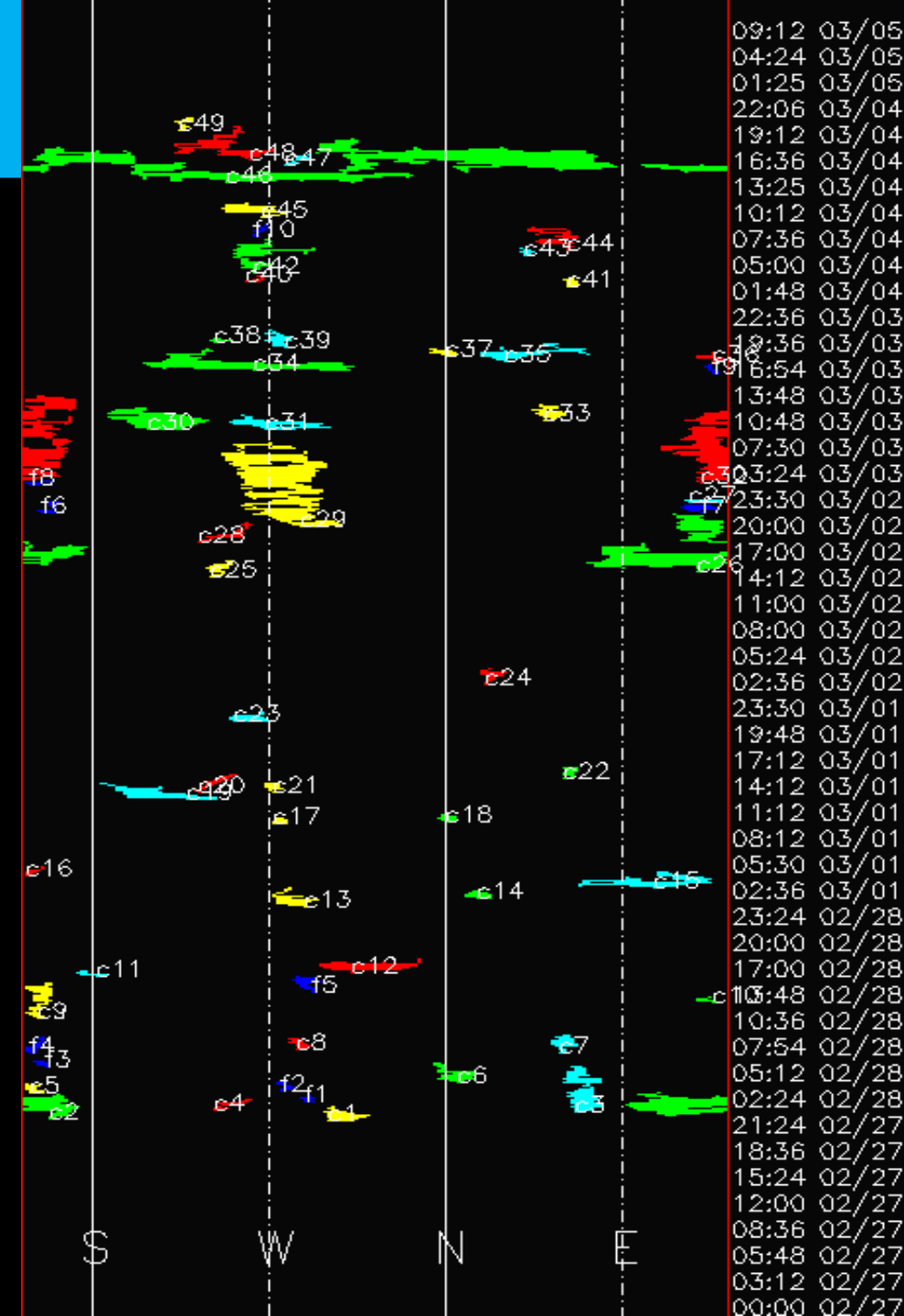


Coronal Mass Ejections

Several coronal mass ejections and flows were observed in the currently available SOHO/LASCO coronagraph imagery and automatically detected by the Cactus tool over the past 24 hours. No clear Earth-directed coronal mass ejections were identified.

Presto Alert (2023 Feb 27 19:57 UTC)

A major geomagnetic storm is currently ongoing, since 06:00 UTC today, February 27. The Kp-NOAA index remains continuously between 6 and 7. The K-Belgium index was 5 until, and it is now showing a value of 6. This geomagnetic storm is due to the arrival of the fast solar wind (with speed up to 880 km/s) that started to increase on February 26, at 21:00 UTC. The solar wind enhancement is believed to be the result of a combination of the expected fast wind from the equatorial coronal hole of negative polarity that transited the central meridian and the expected arrival of the coronal mass ejection observed in SOHO/LASCO on February 25 with the M6.3 flare.



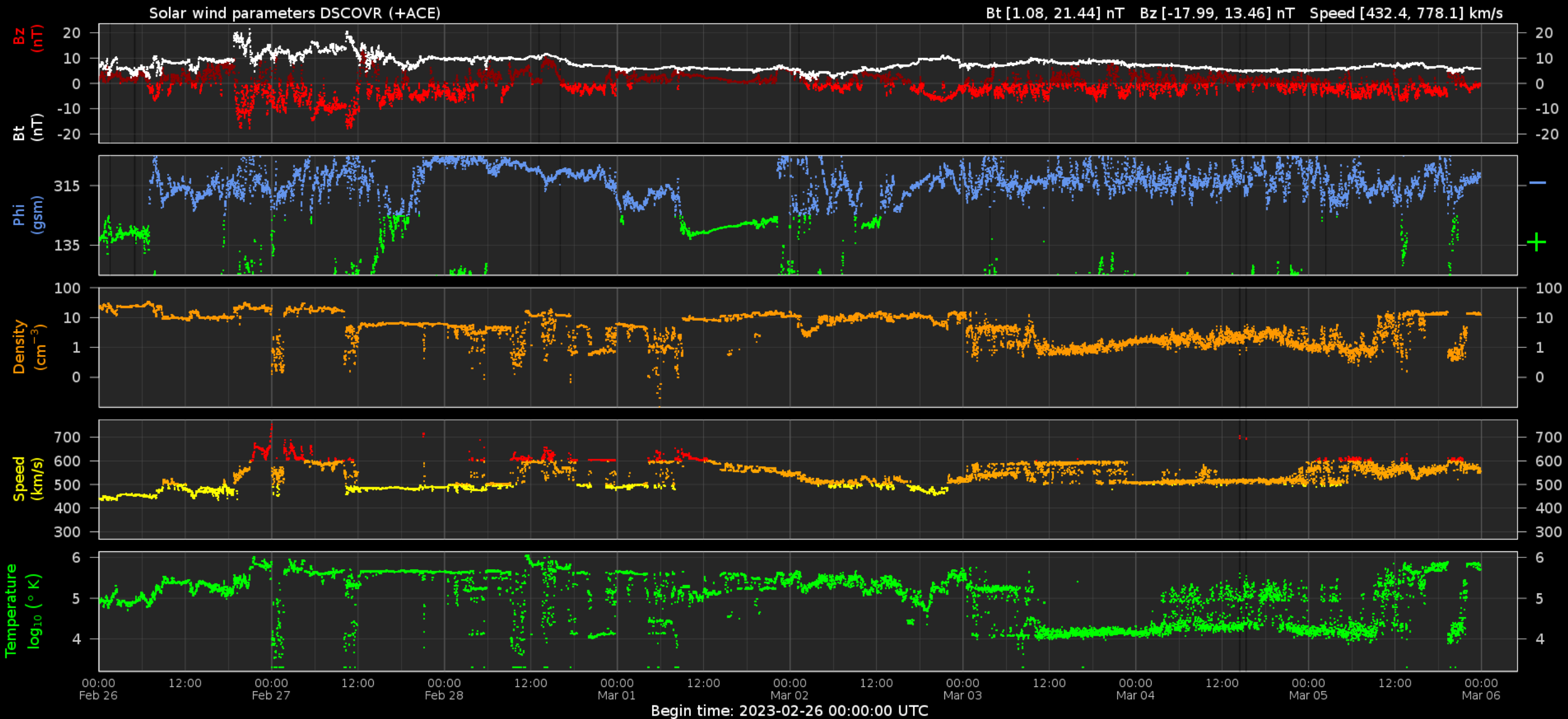
Solar Wind and Geomagnetic Activity



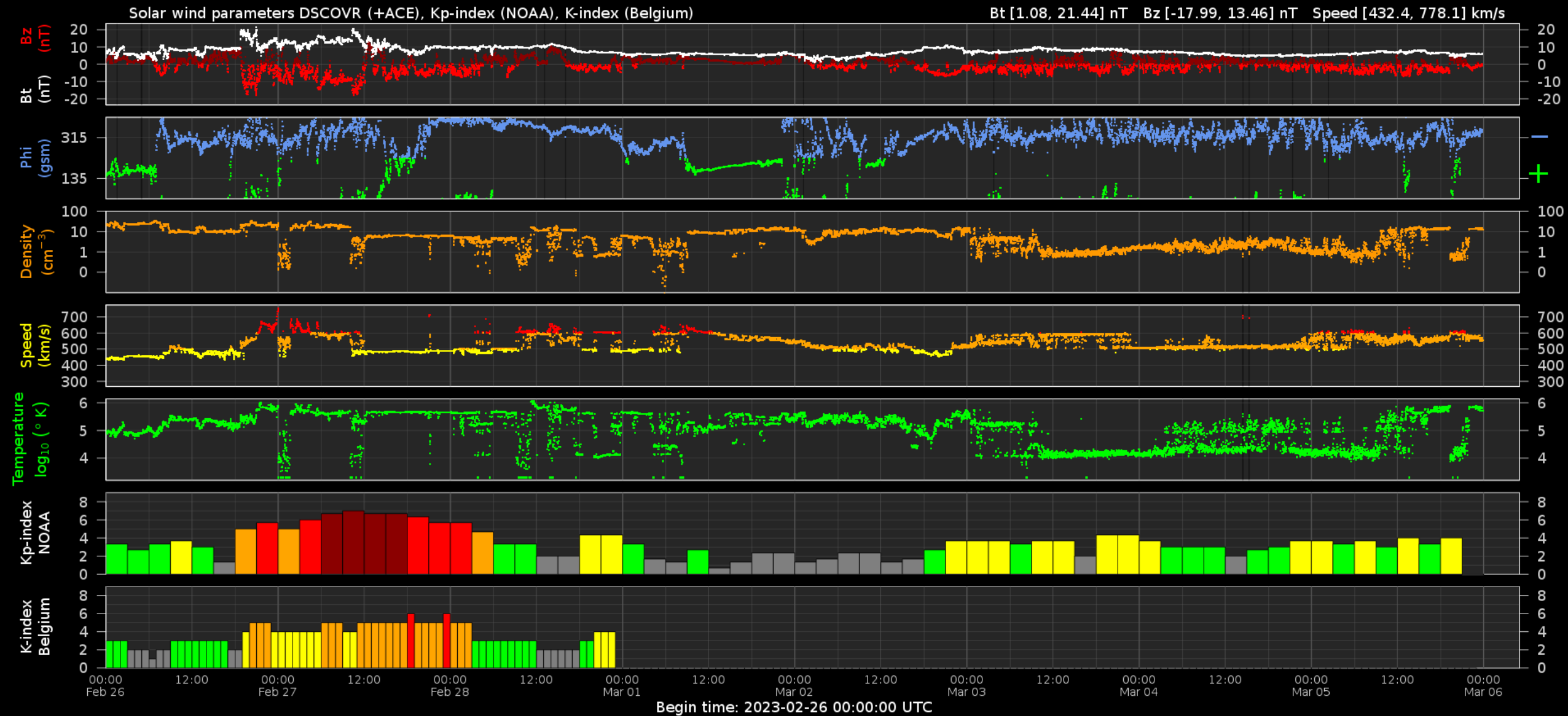
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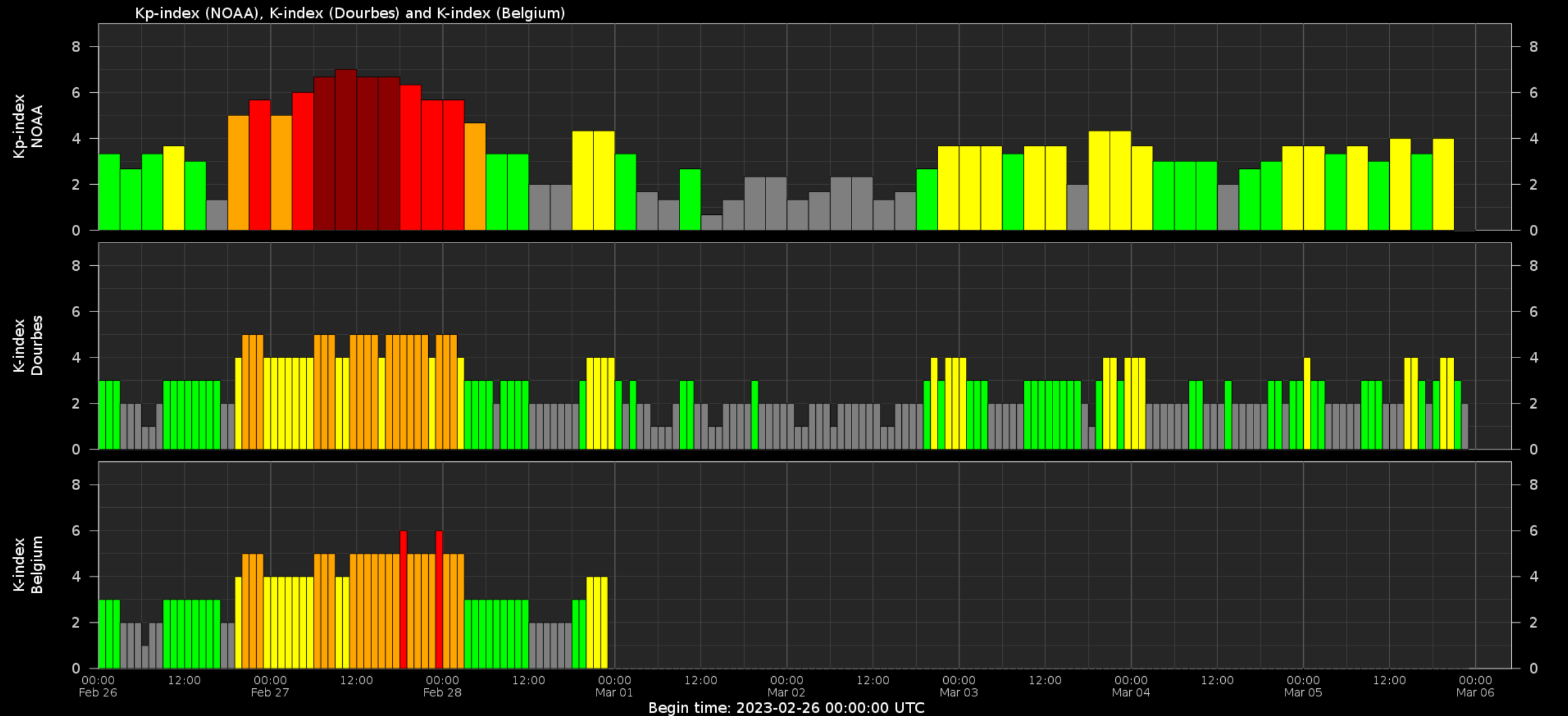
Solar wind parameters



Solar wind parameters & K-indices



Geomagnetic activity (K-indexes)



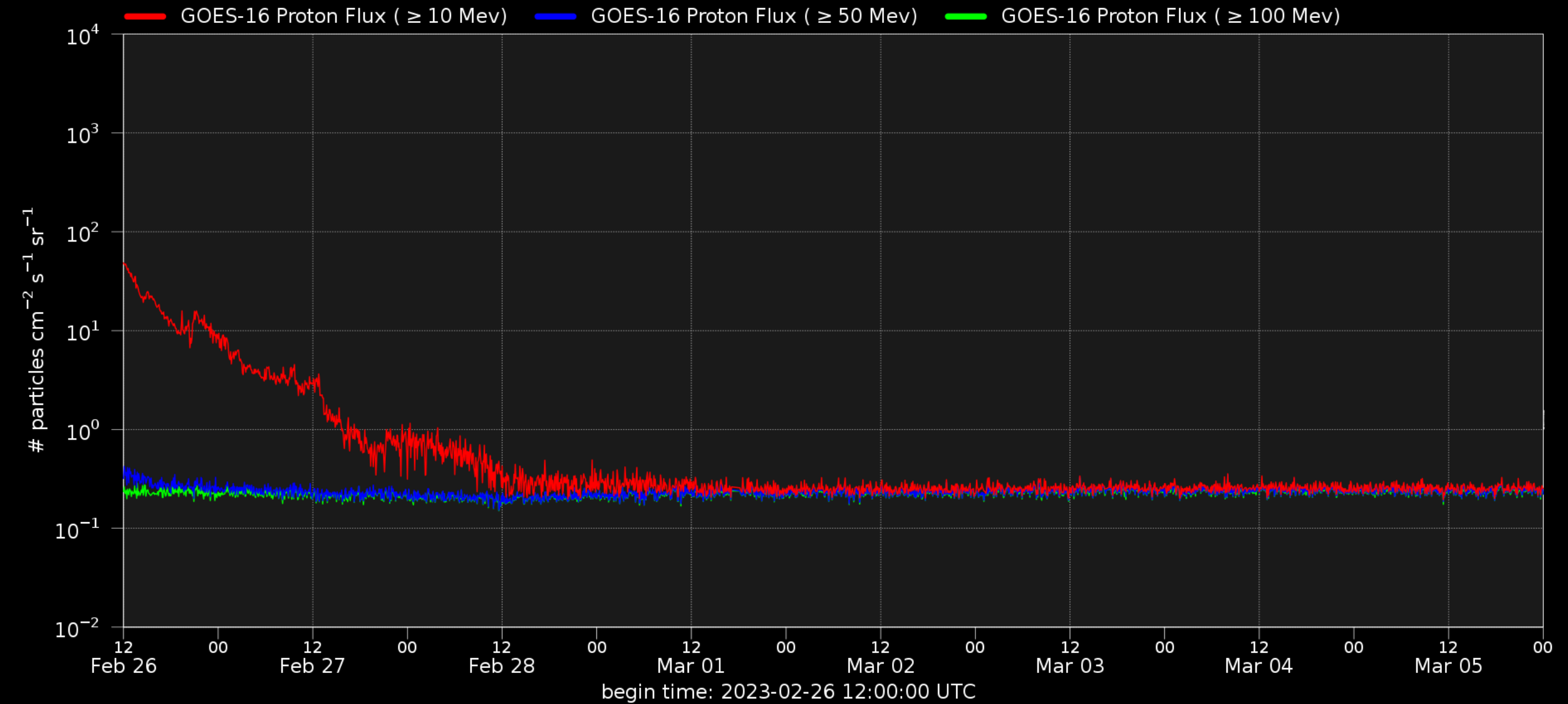
Energetic Particles



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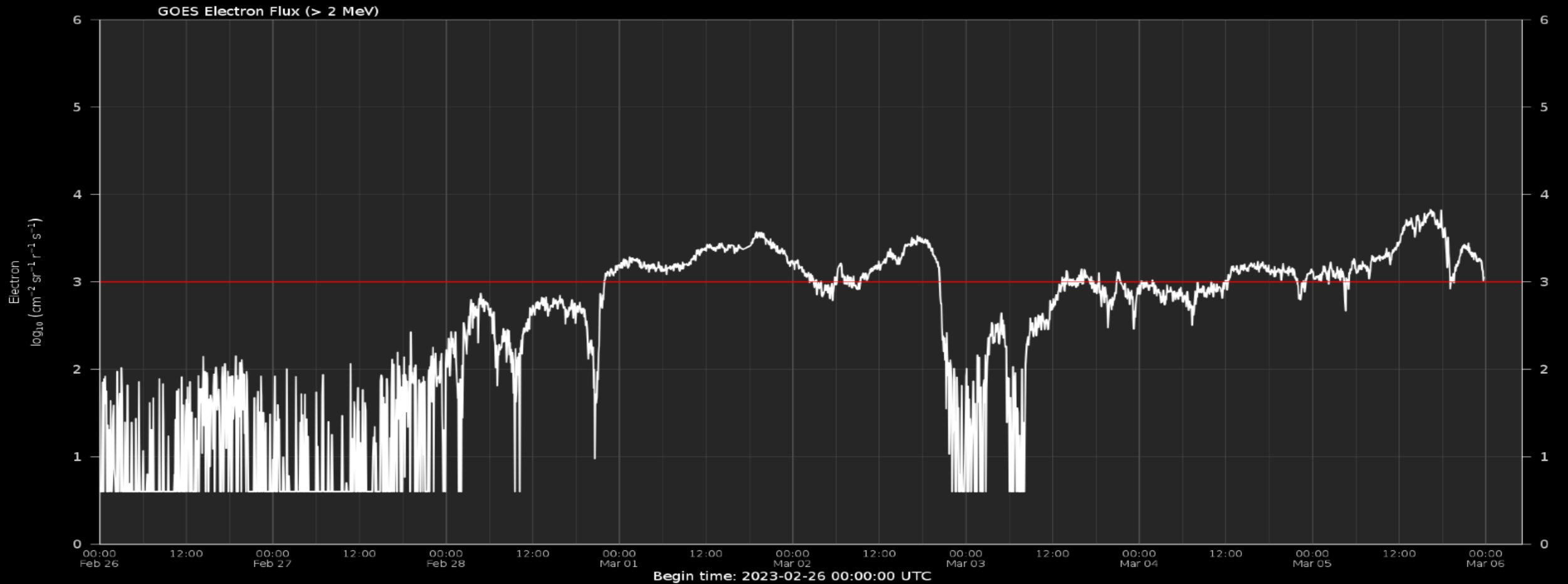
Solar proton flux



Electron flux at GEO

www.stce.be/educational/classification#electrons

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



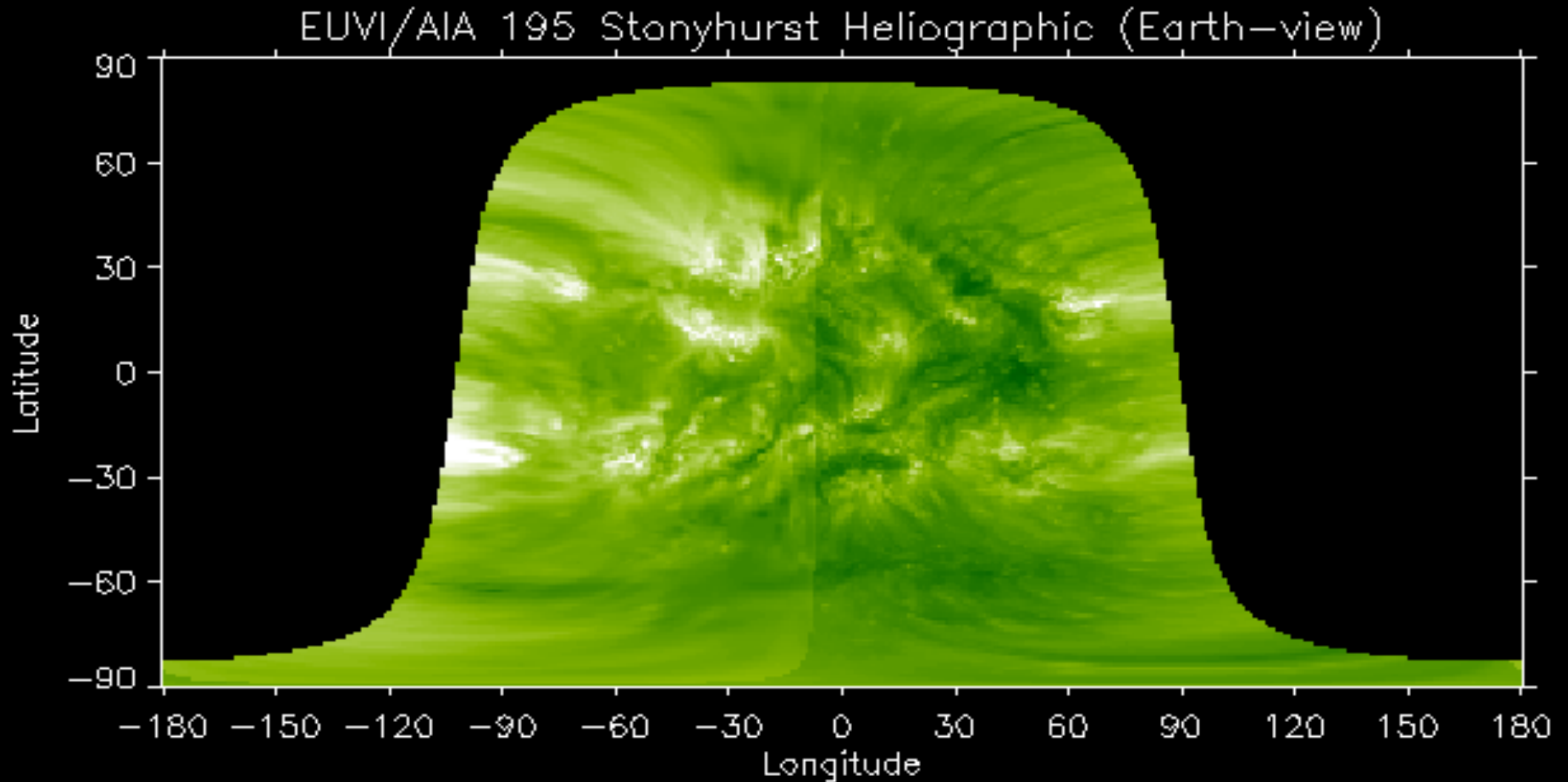
Outlook



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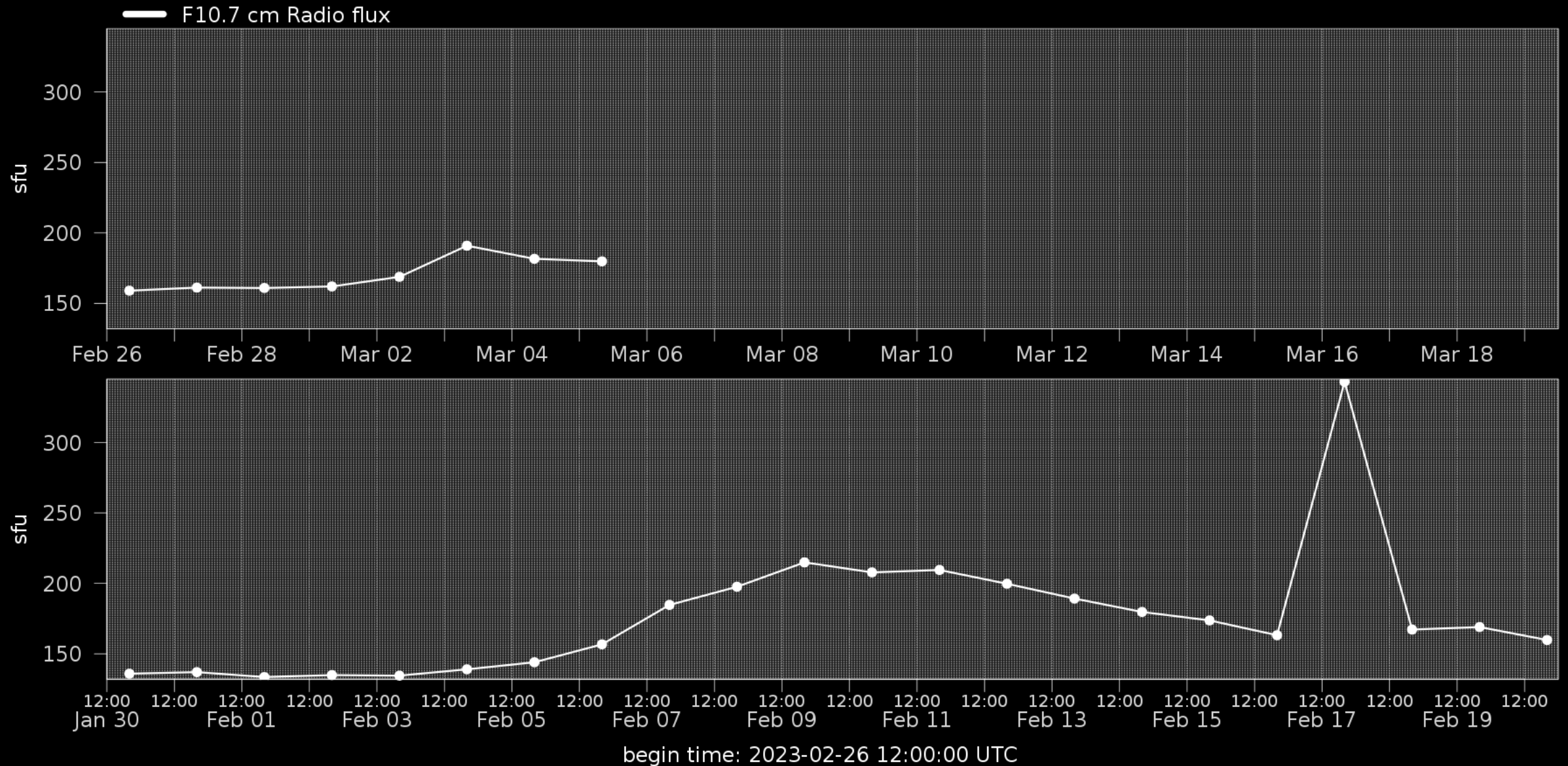
www.sidc.be

Outlook: Solar activity

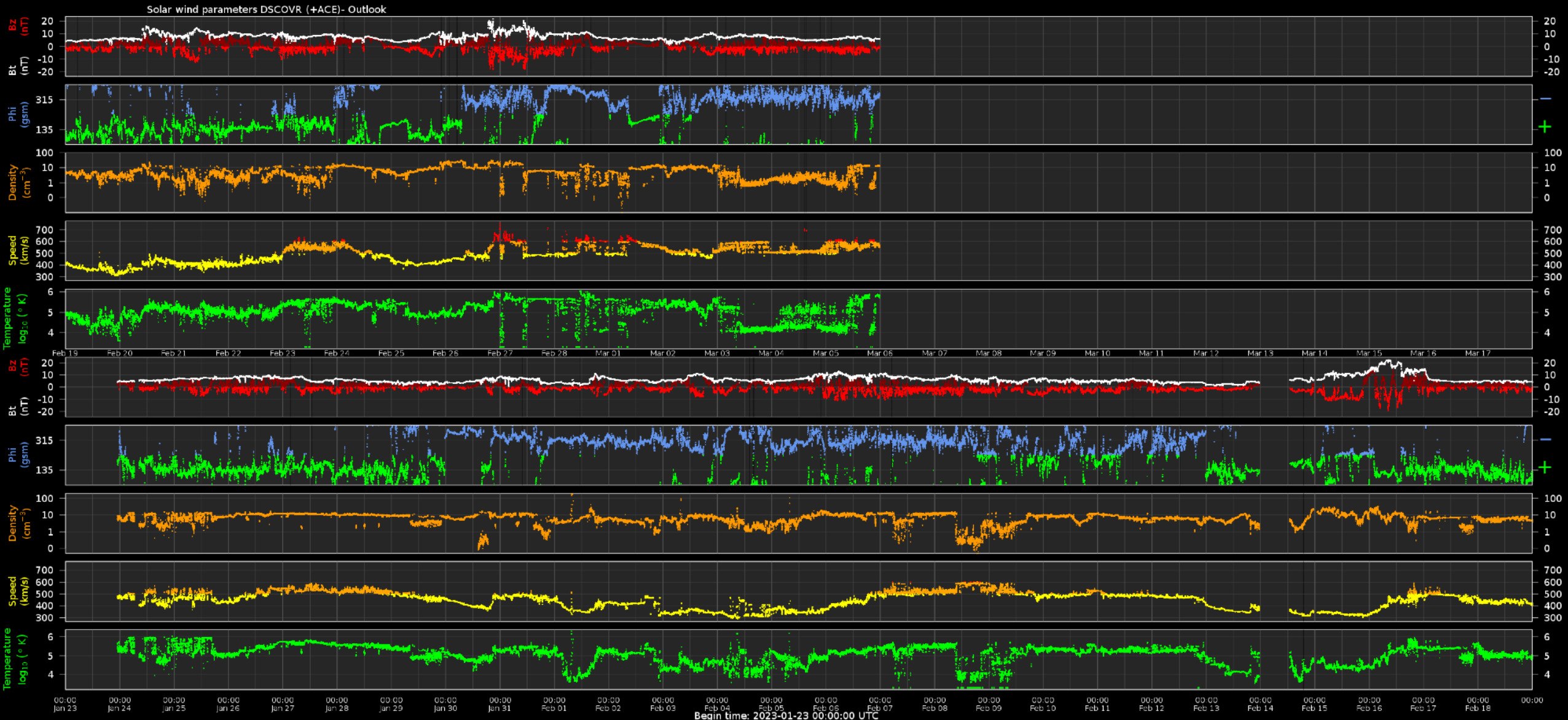


Observation date: 2023/03/05 23:05:00

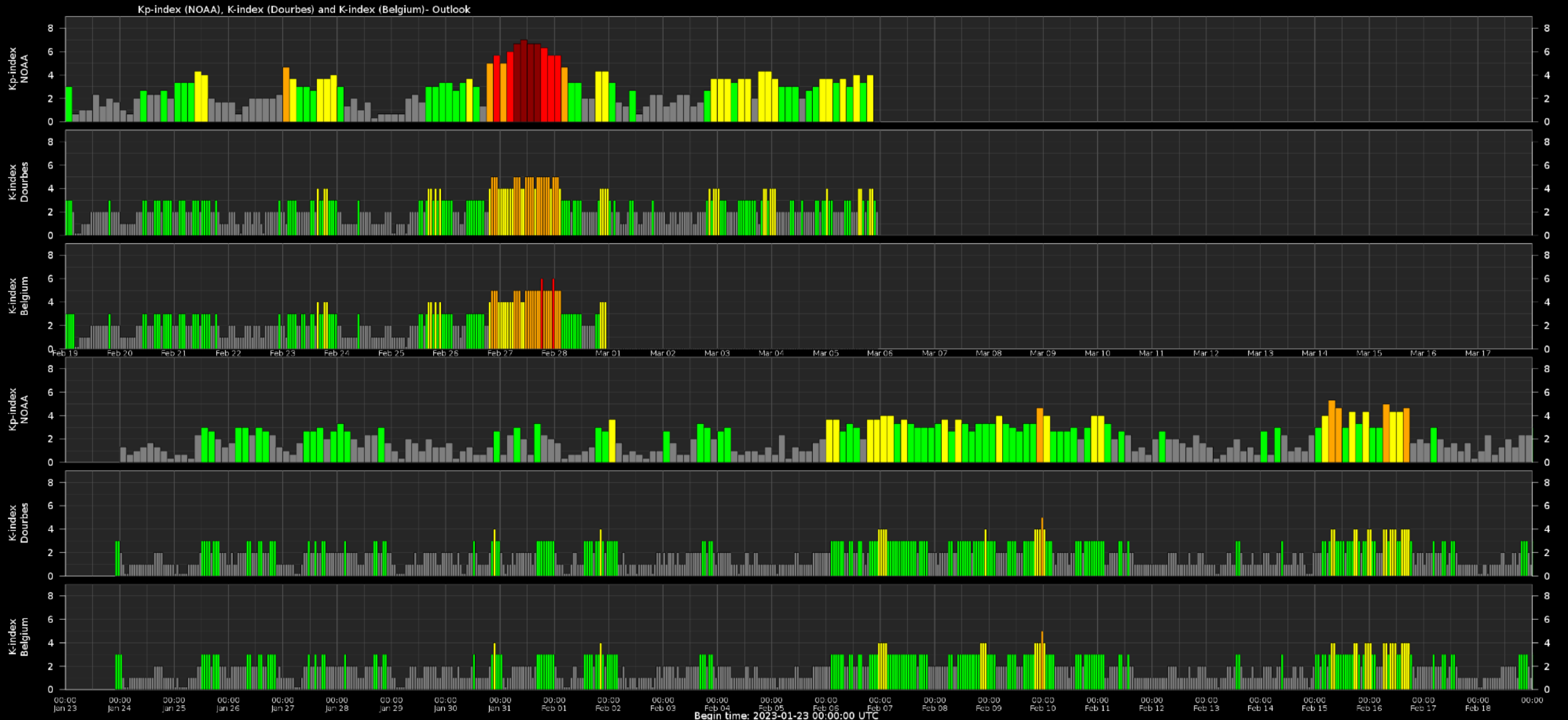
Outlook: Solar F10.7cm radio flux



Outlook: Solar wind parameters



Outlook: Geomagnetic activity



Outlook: Electron Flux at GEO Outlook



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Pecarus related events

- PSD Alert due to the geomagnetic storm with $K_p > 5$
- Scintillation Alert

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