

SIDC Space Weather Briefing

16 May 2021 - 23 May 2021

Luciano Rodriguez
& the SIDC forecaster team



Royal Observatory
of Belgium

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Summary Report

Solar activity from 2021-05-16 12:00 to 2021-05-23 23:59

Active regions	NOAA AR 2822, 2824 (produced M-class flares)
Flares	# C-class flare: 14 # M-class flare: 3 # X-class flare: 0
Coronal Holes	One, negative polarity

Proton flux	Below threshold
Electron flux	Below threshold

Solar wind and geomagnetic conditions

ICME	None
SW Conditions	B : 0.73 - 18.51 nT // Bz: -14.25 nT to 17.79 nT // Speed: 312.3 - 597.6km/s
K-indices	max K-index (Dourbes): 5 max Kp-index (NOAA): 5

All Quiet Alert: Off

Solar Activity

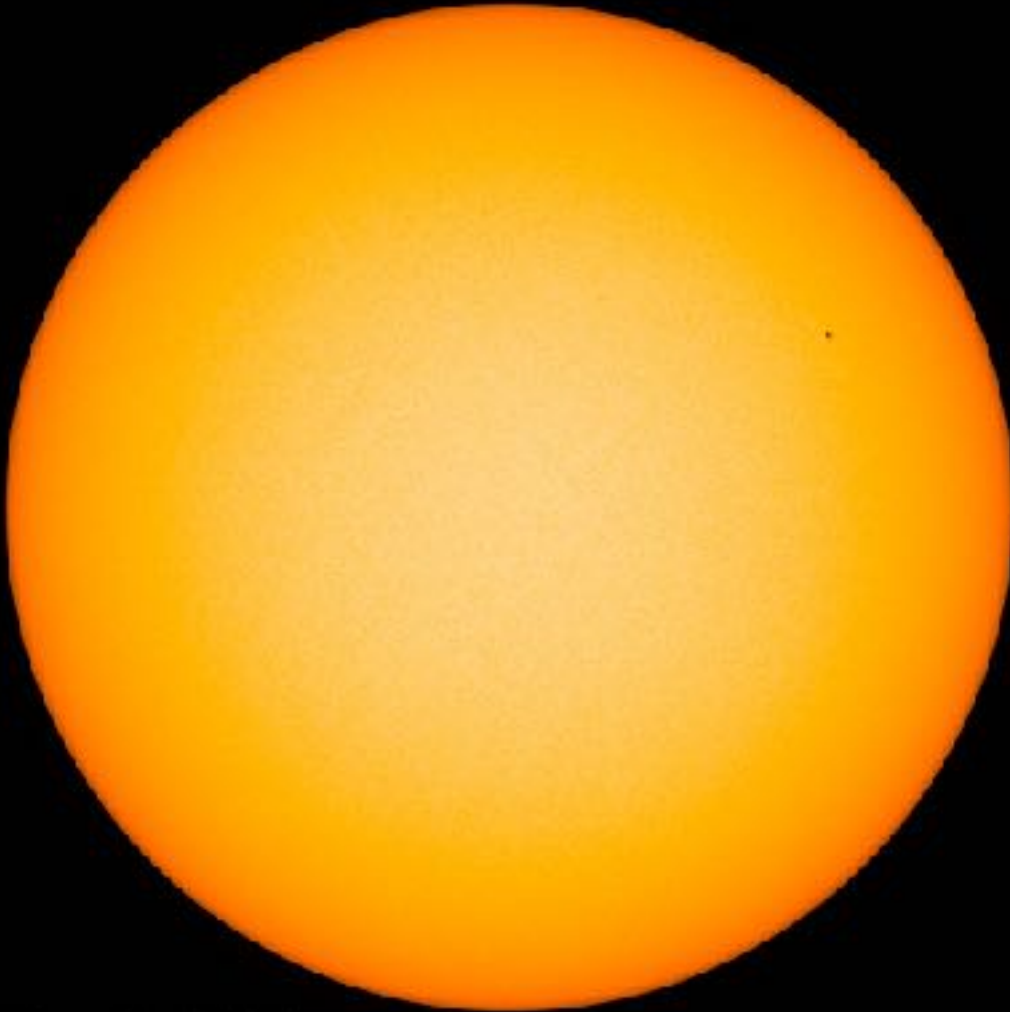


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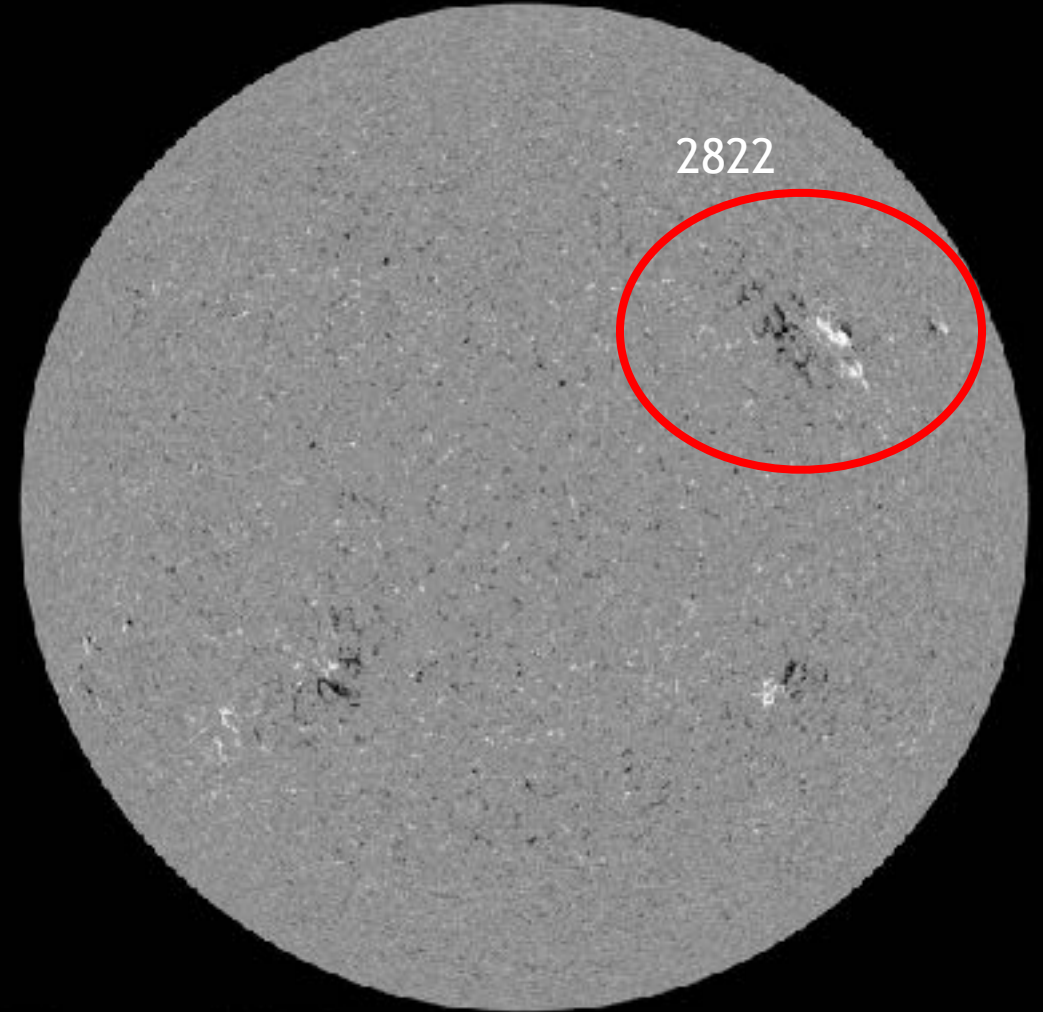
Solar active regions

SDO/HMI White Light 2021-05-16



SDO/HMI White Light 2021-05-16

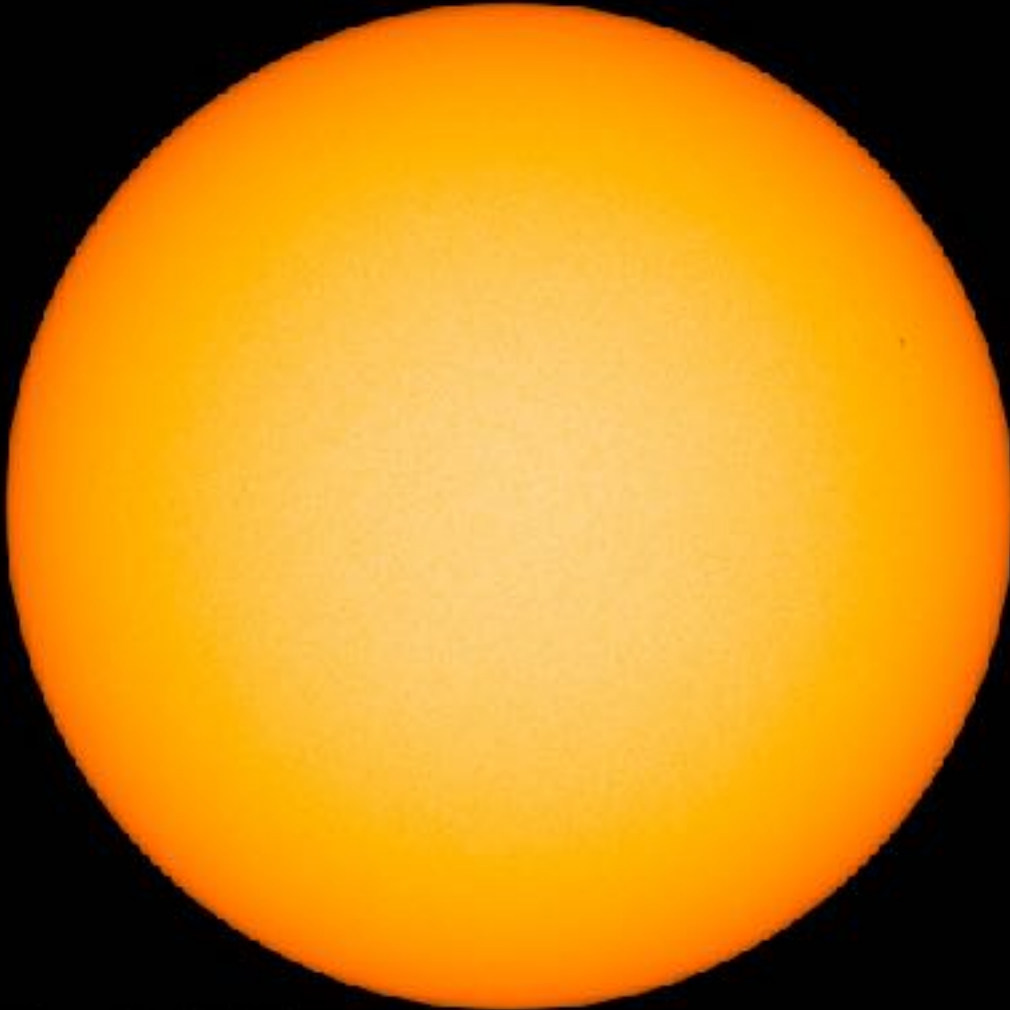
SDO/HMI Magnetogram 2021-05-16



SDO/HMI Magnetogram 2021-05-16

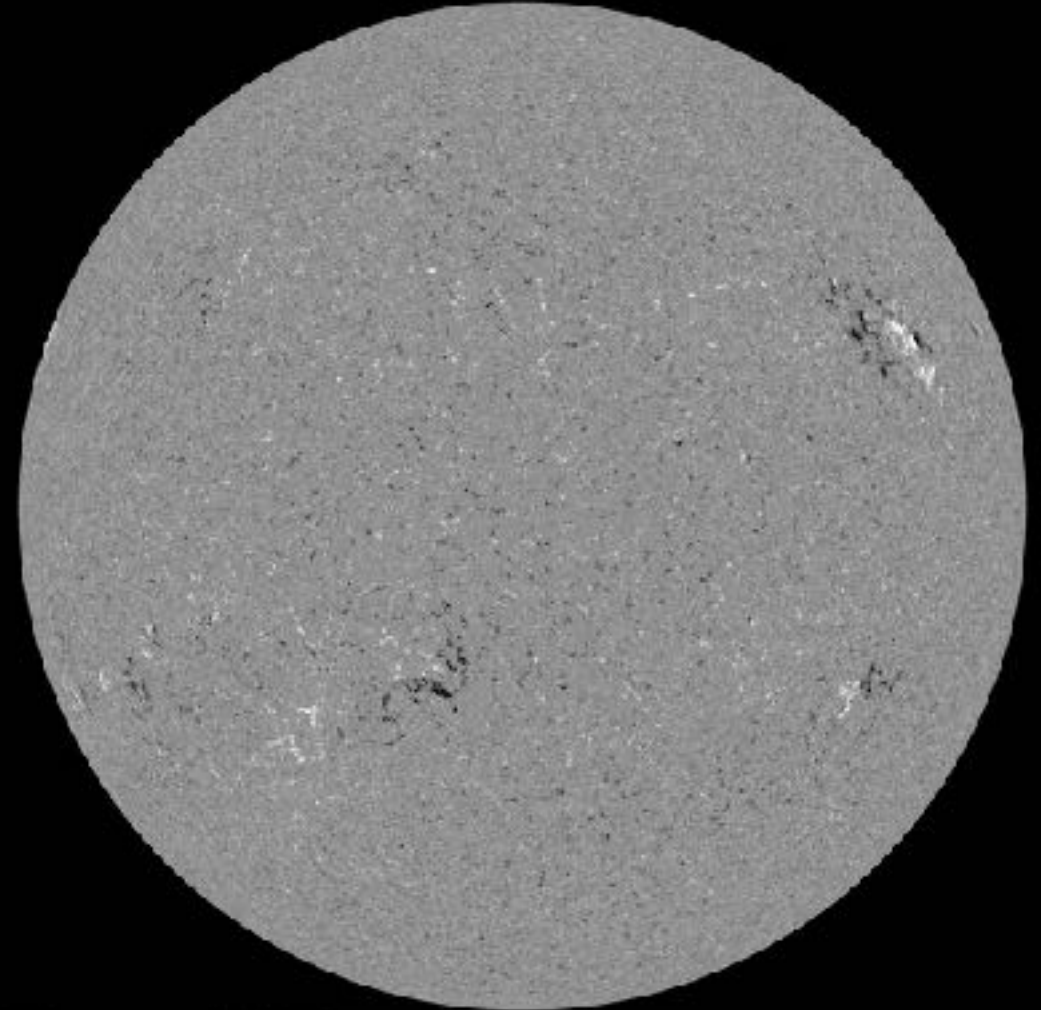
Solar active regions

SDO/HMI White Light 2021-05-17



SDO/HMI White Light 2021-05-17 14:00

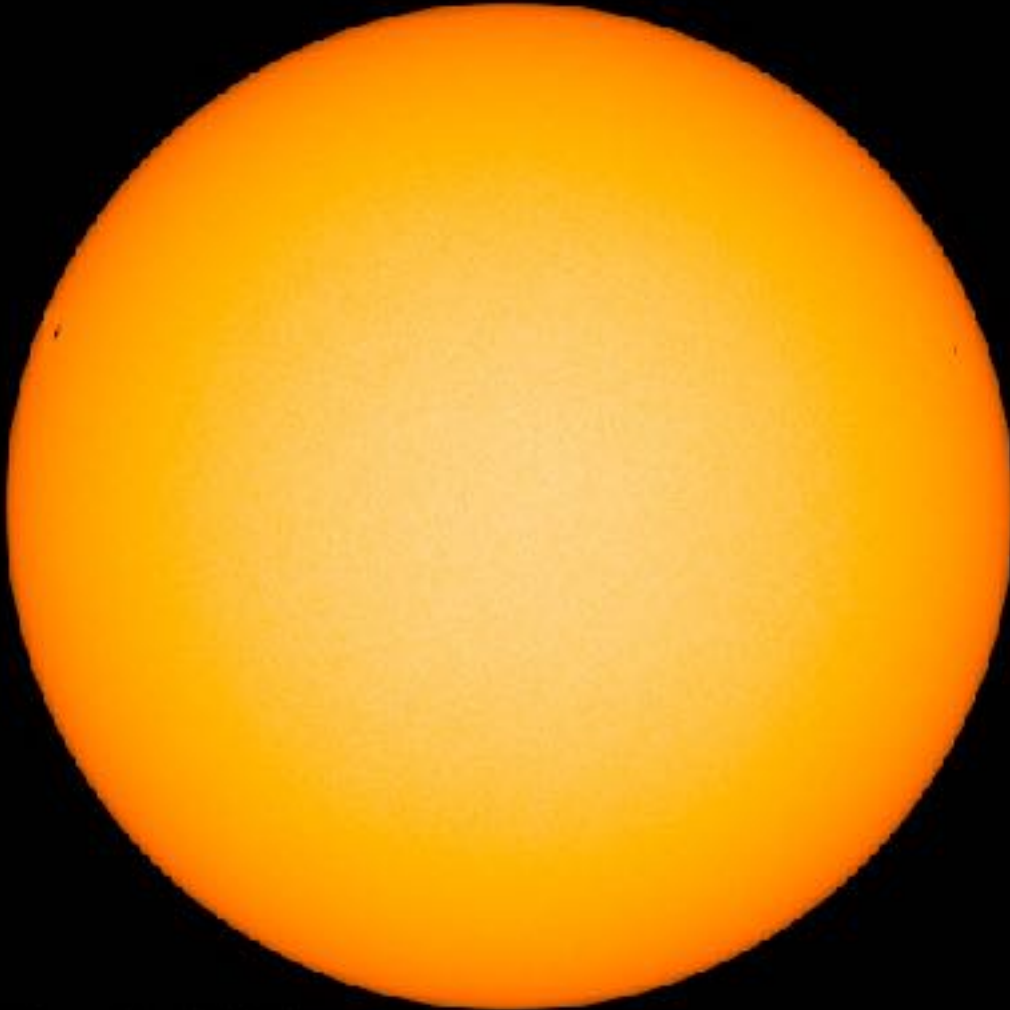
SDO/HMI Magnetogram 2021-05-17



SDO/HMI Magnetogram 2021-05-17 14:00

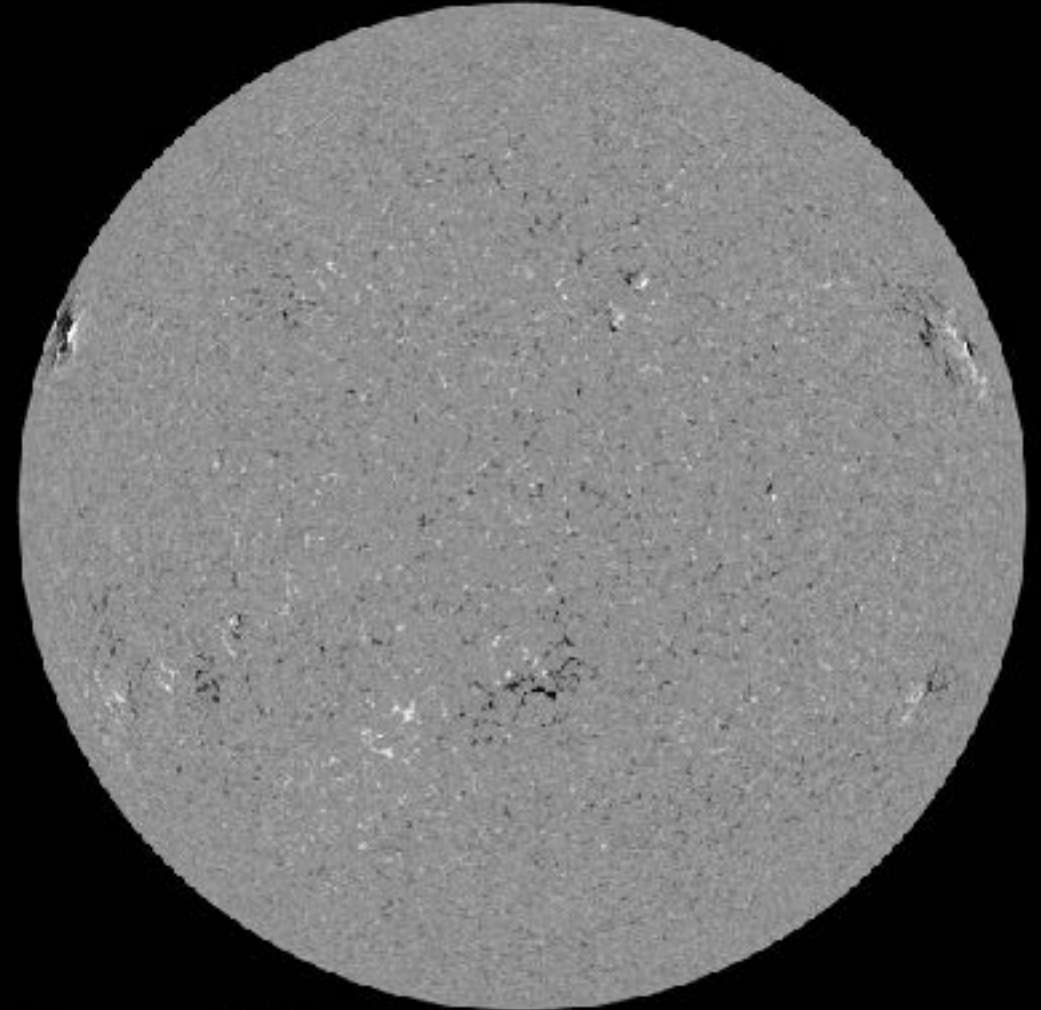
Solar active regions

SDO/HMI White Light 2021-05-18



SDO/HMI White Light 2021-05-18_14500

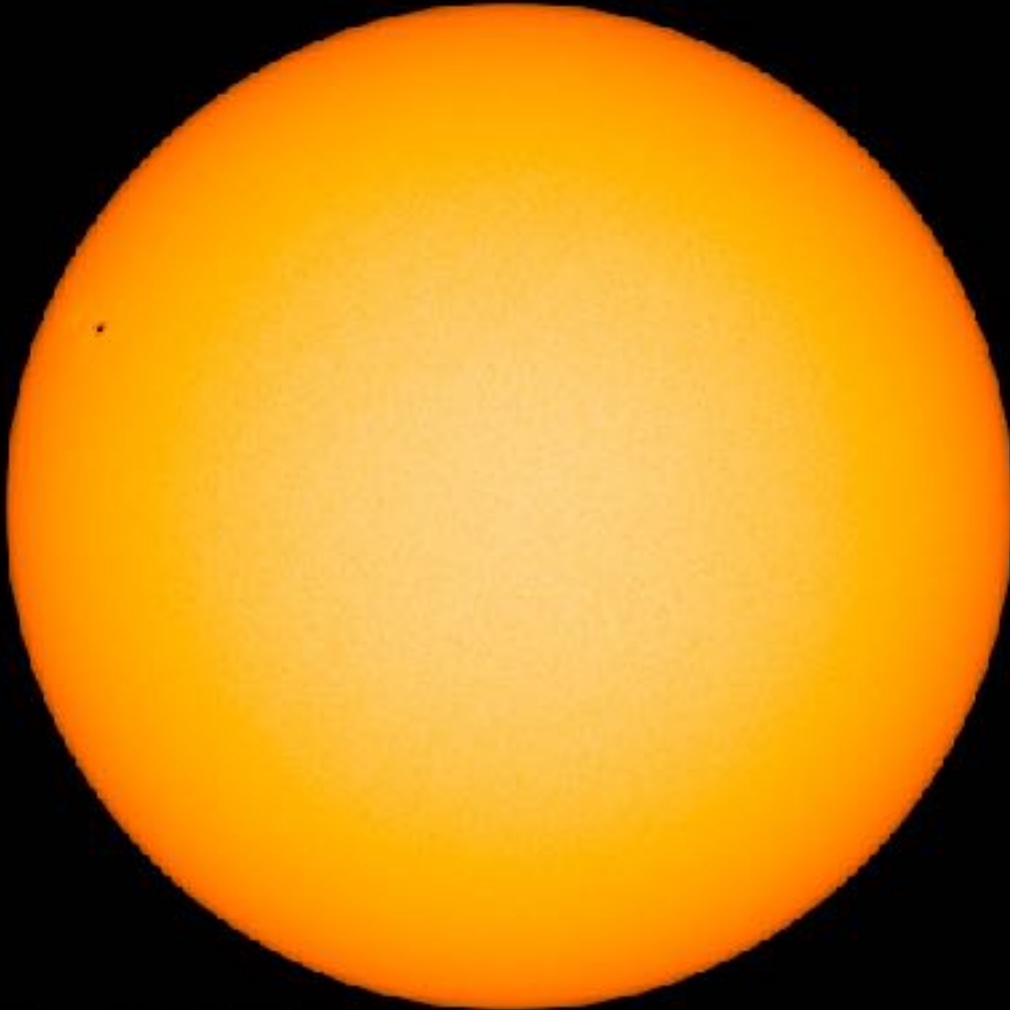
SDO/HMI Magnetogram 2021-05-18



SDO/HMI Magnetogram 2021-05-18_14500

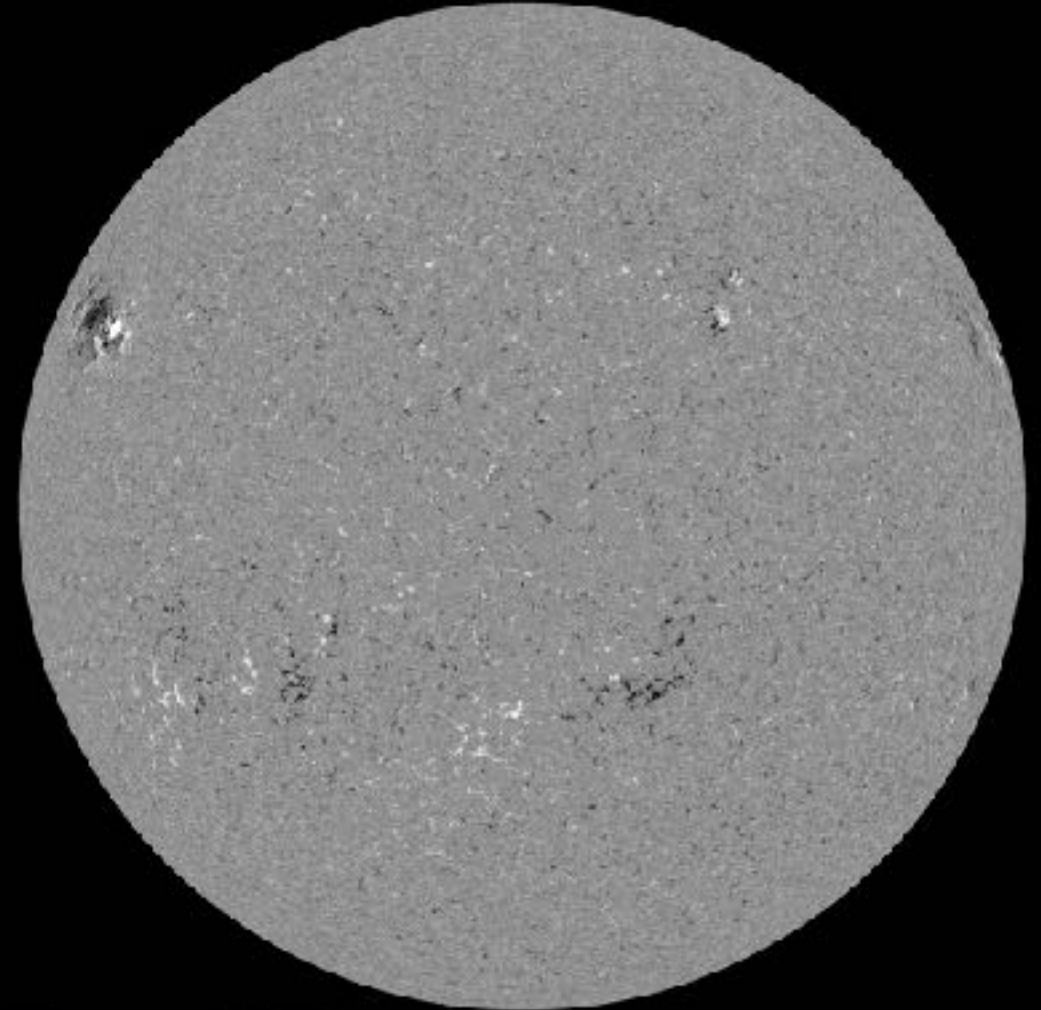
Solar active regions

SDO/HMI White Light 2021-05-19



SDO/HMI White Light 2021-05-19 14:00

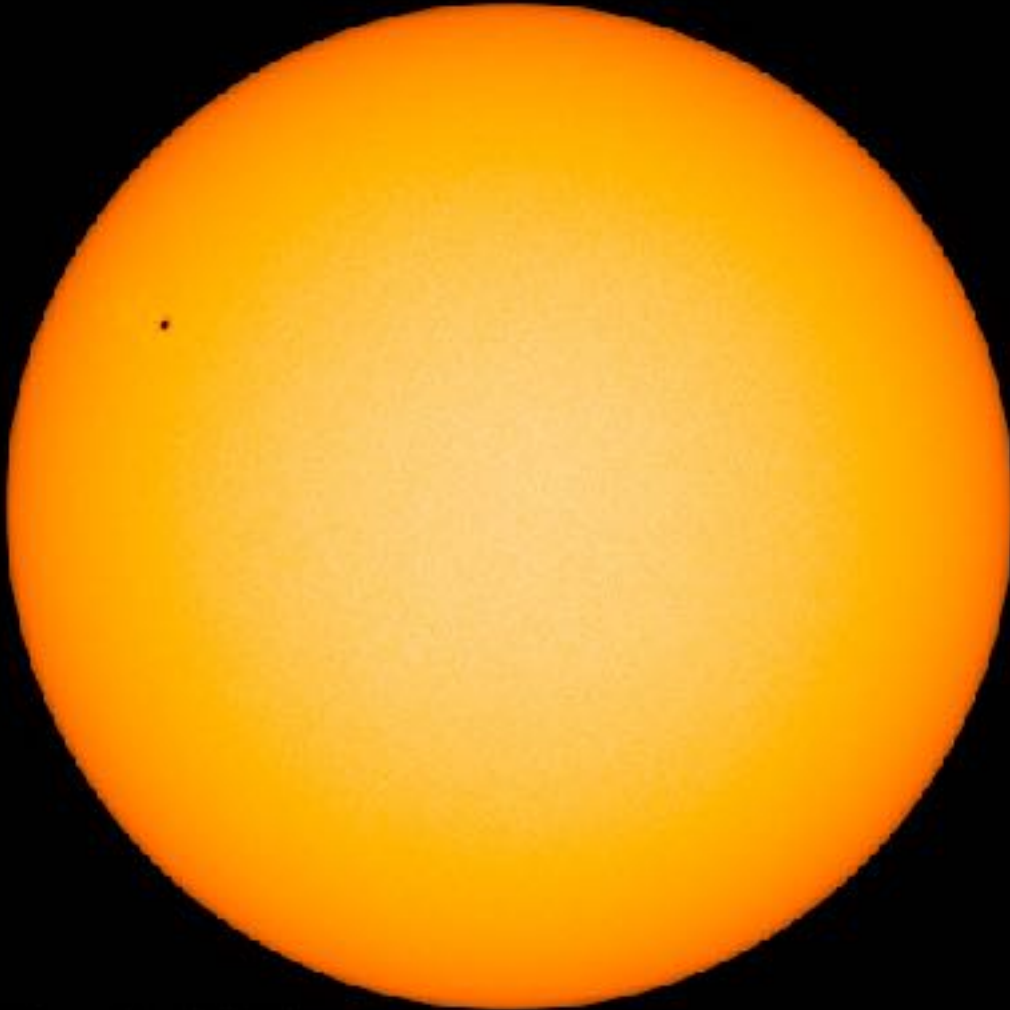
SDO/HMI Magnetogram 2021-05-19



SDO/HMI Magnetogram 2021-05-19 14:00

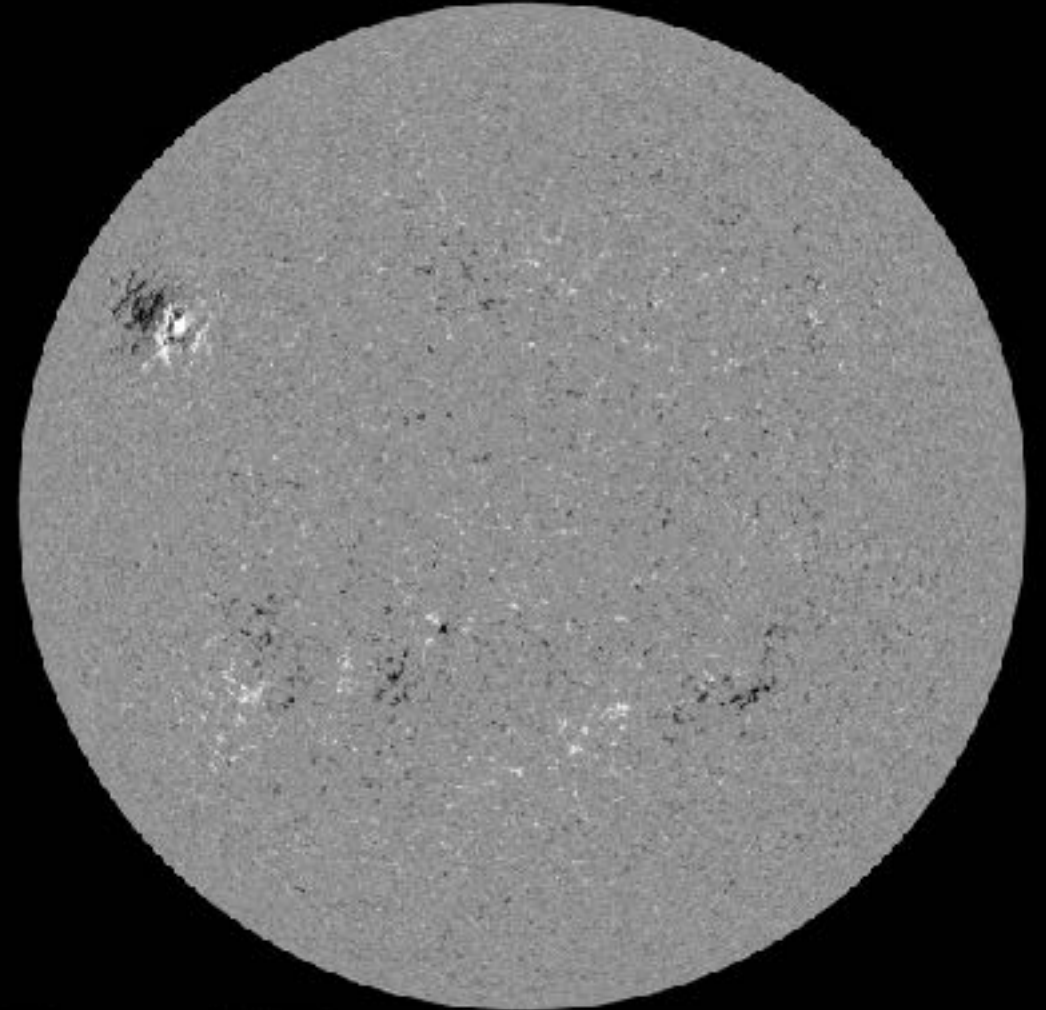
Solar active regions

SDO/HMI White Light 2021-05-20



SDO/HMI White Light 2021-05-20 14:00

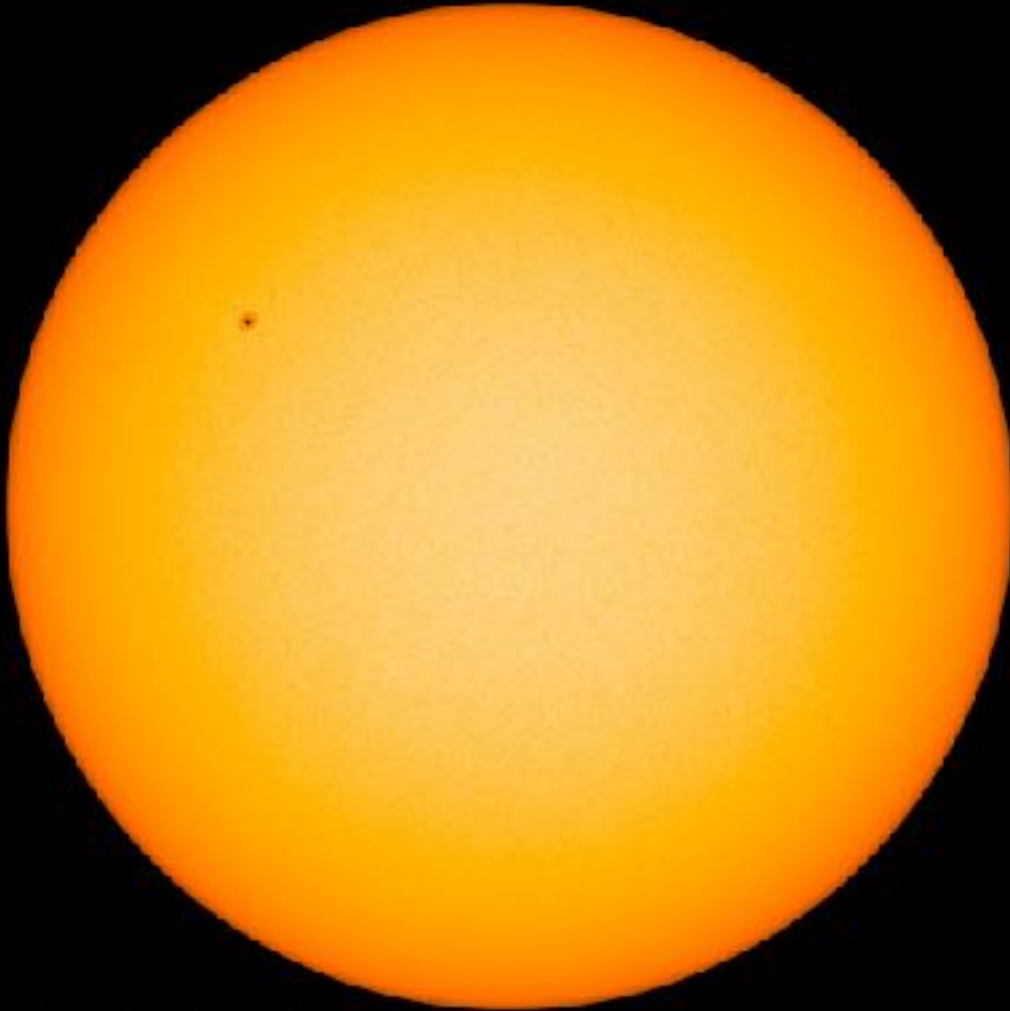
SDO/HMI Magnetogram 2021-05-20



SDO/HMI Magnetogram 2021-05-20 14:00

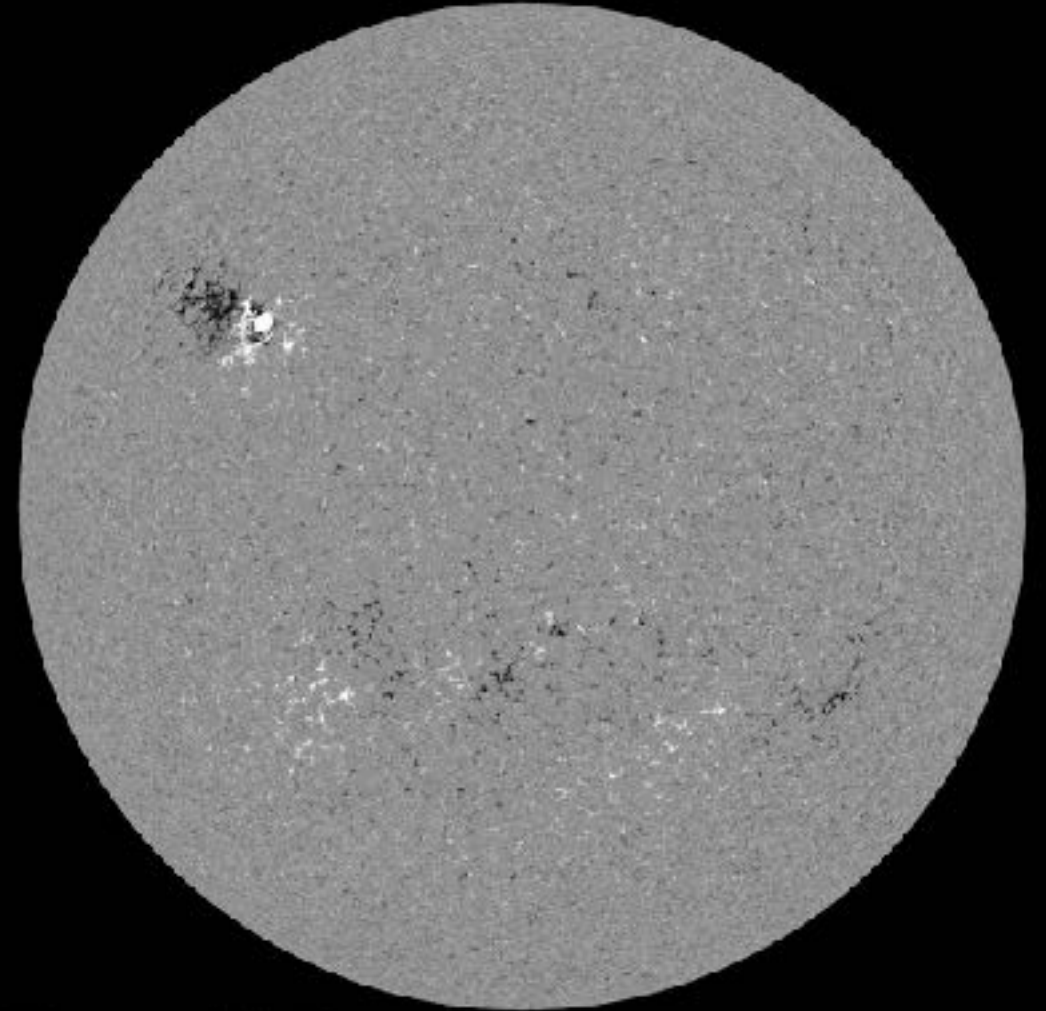
Solar active regions

SDO/HMI White Light 2021-05-21



SDO/HMI White Light 2021-05-21 14:00

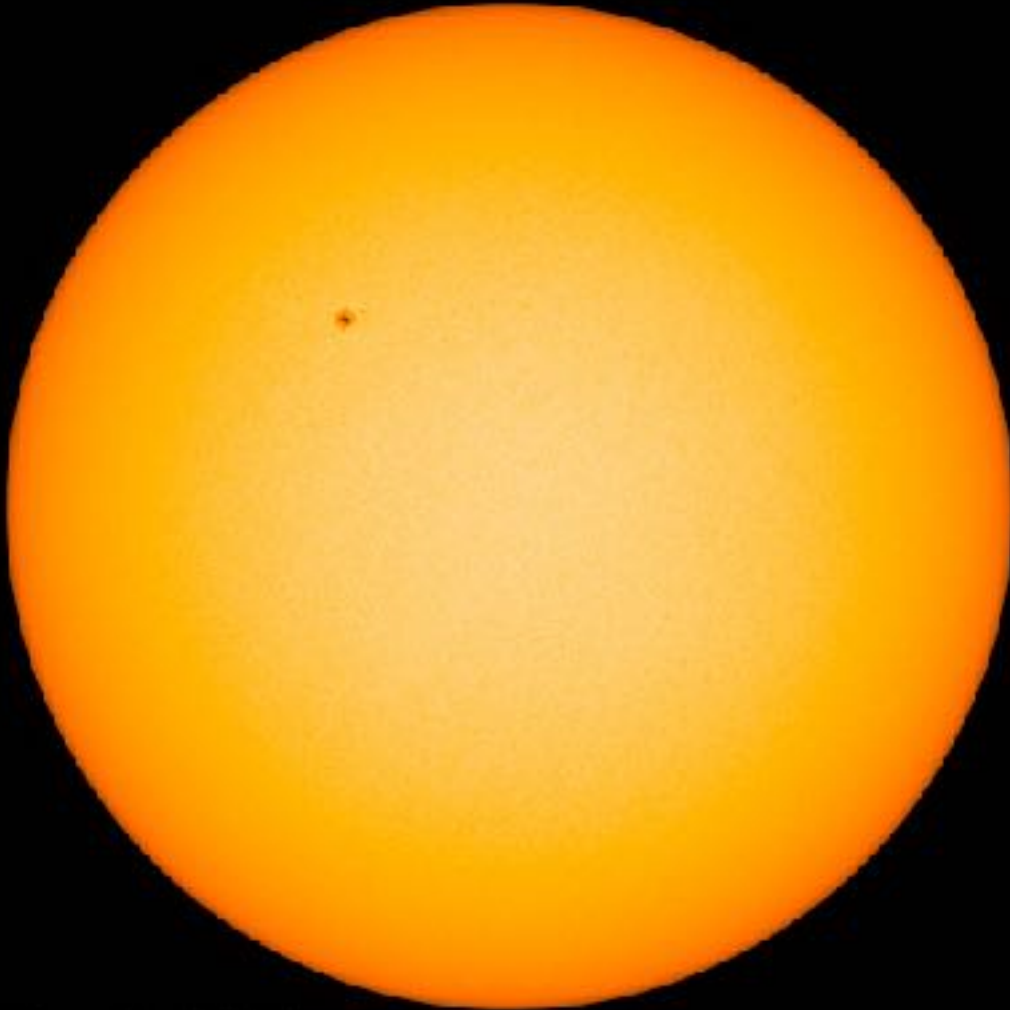
SDO/HMI Magnetogram 2021-05-21



SDO/HMI Magnetogram 2021-05-21 14:00

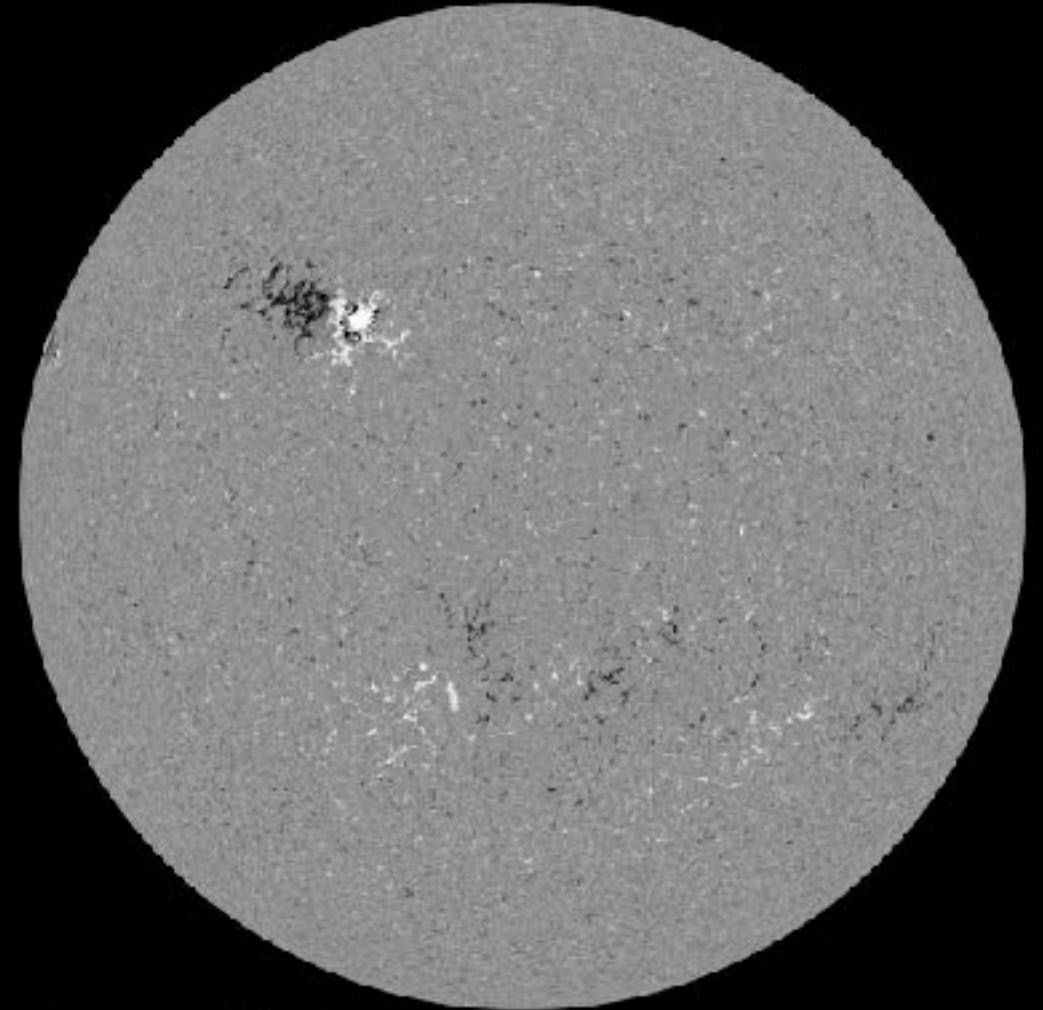
Solar active regions

SDO/HMI White Light 2021-05-22



SDO/HMI White Light 2021-05-22 14:00

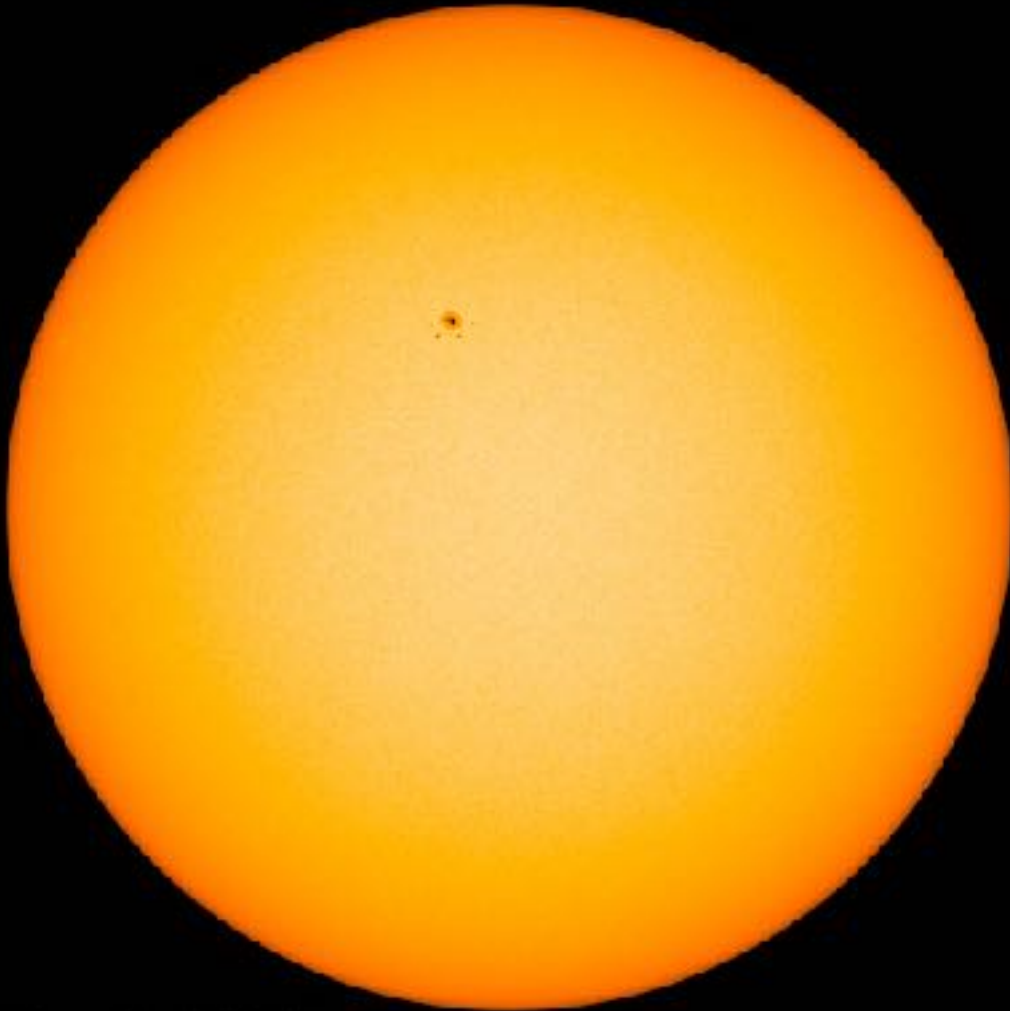
SDO/HMI Magnetogram 2021-05-22



SDO/HMI Magnetogram 2021-05-22 14:00

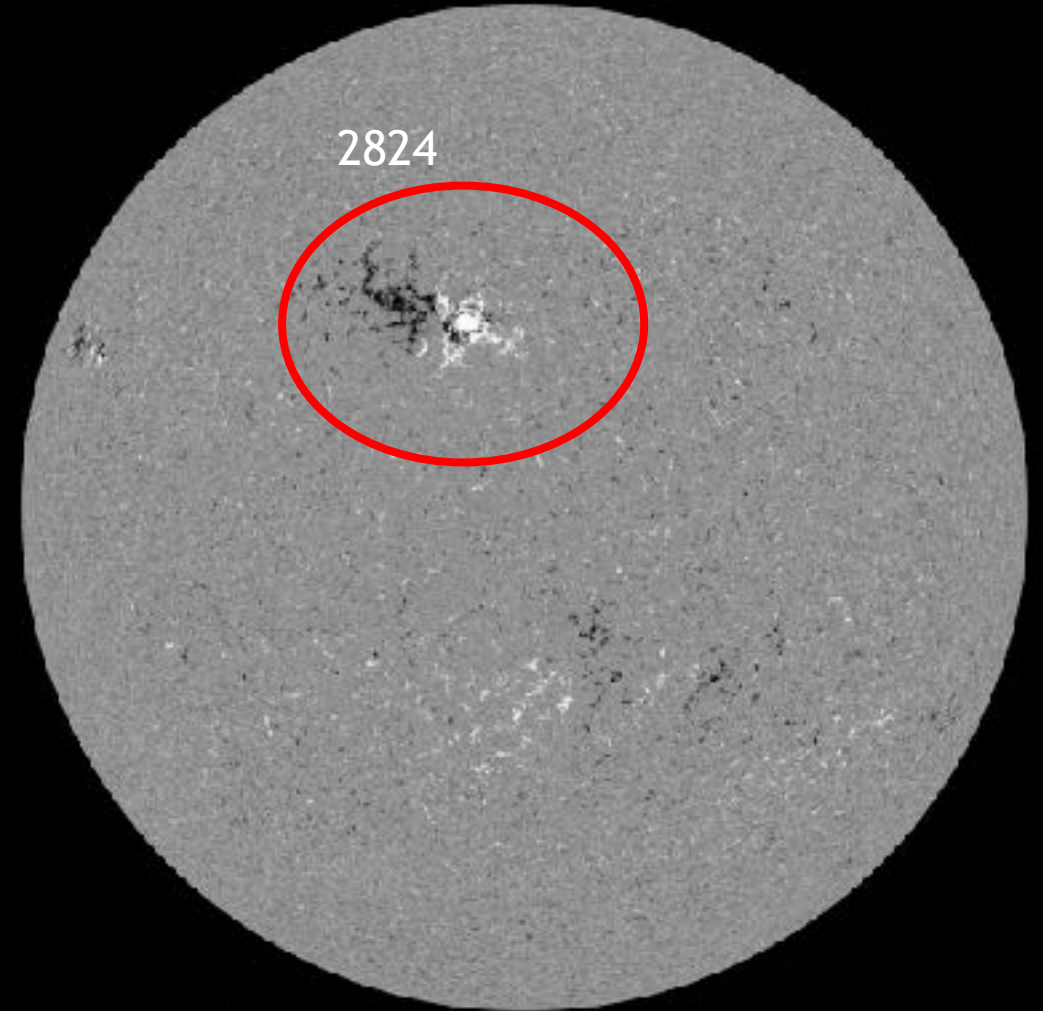
Solar active regions

SDO/HMI White Light 2021-05-23



SDO/HMI White Light 2021-05-23_14:00

SDO/HMI Magnetogram 2021-05-23

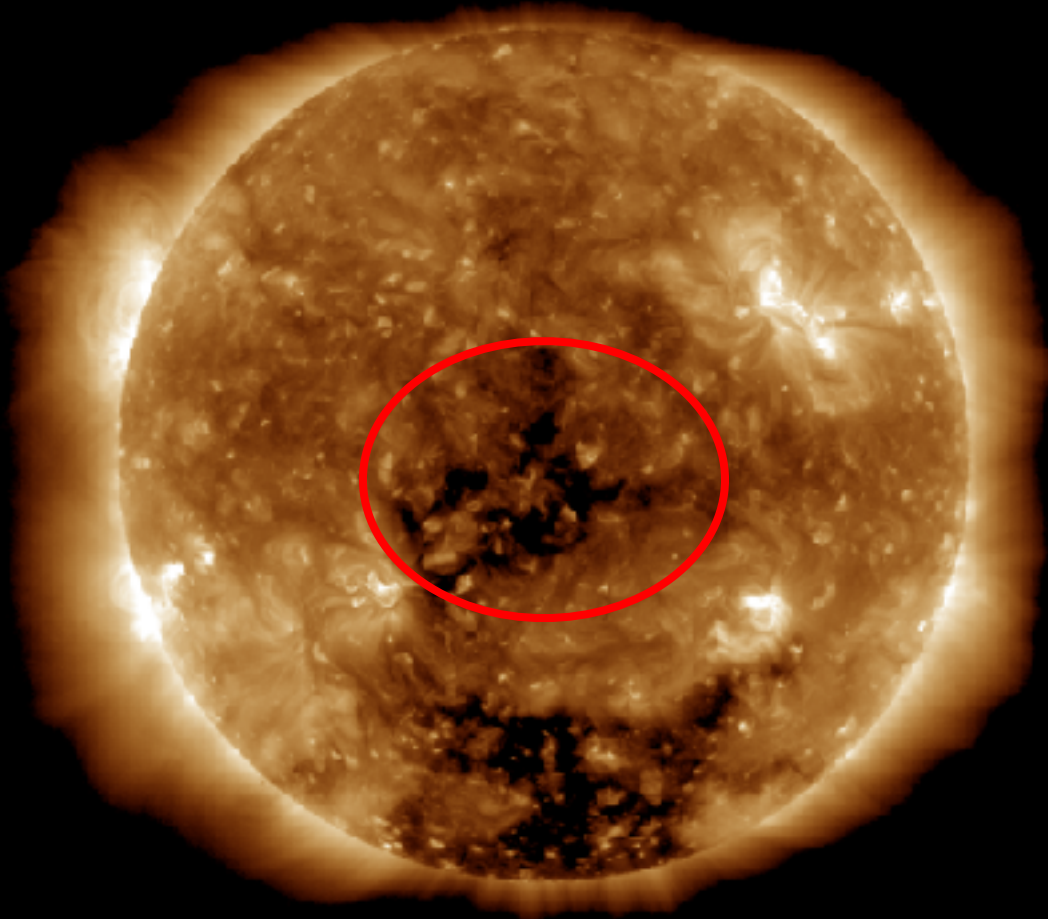


SDO/HMI Magnetogram 2021-05-23_14:00

Coronal holes

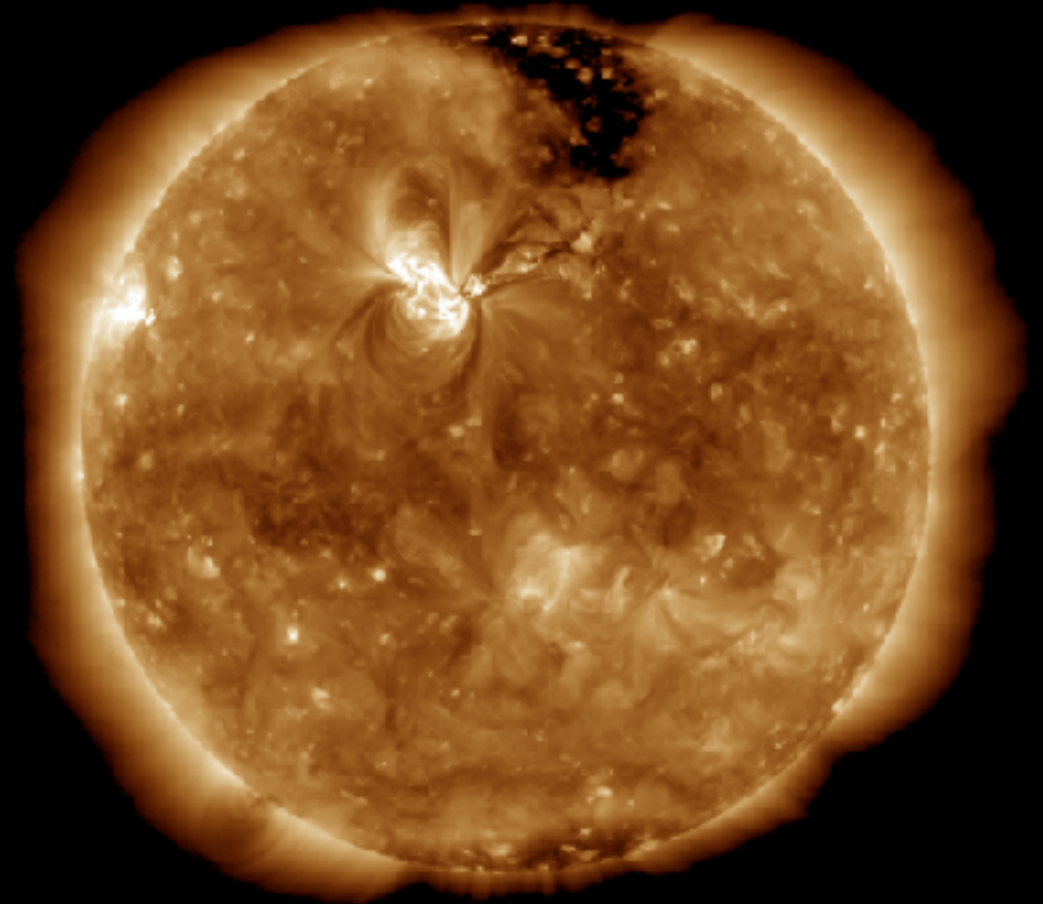
SDO/AIA 19.3 nm 2021-05-16

SDO/AIA AIA_193Å 2021-05-16T12:00:05.842



SDO/AIA 19.3 nm 2021-05-23

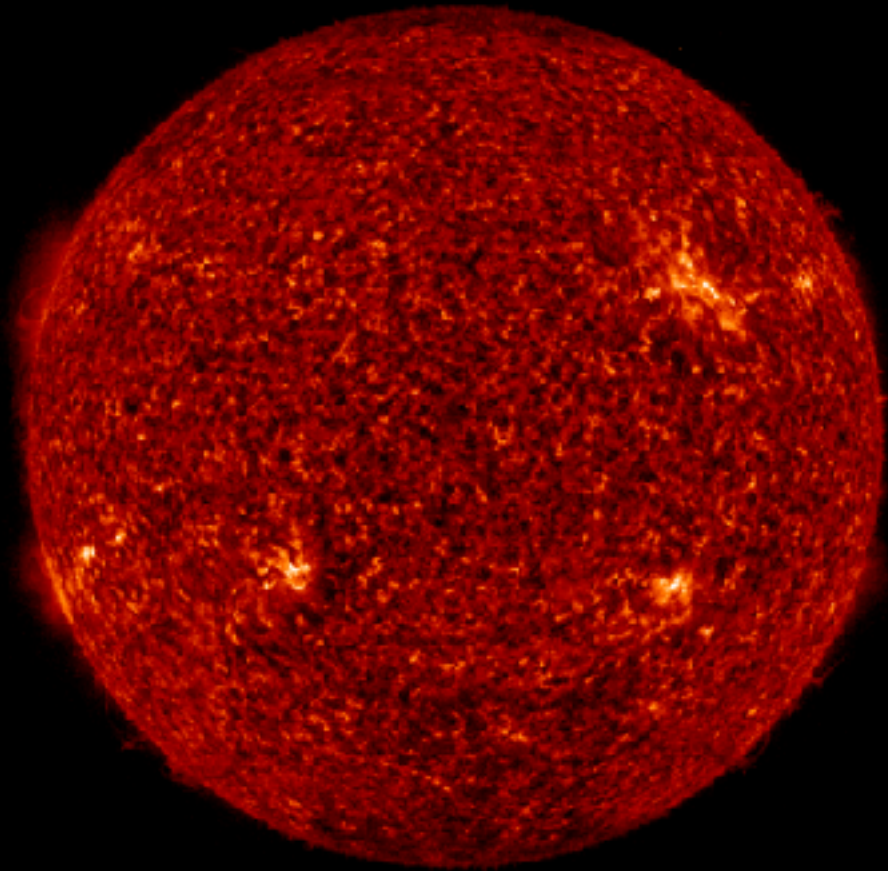
SDO/AIA AIA_193Å 2021-05-23T12:00:05.843



Filaments

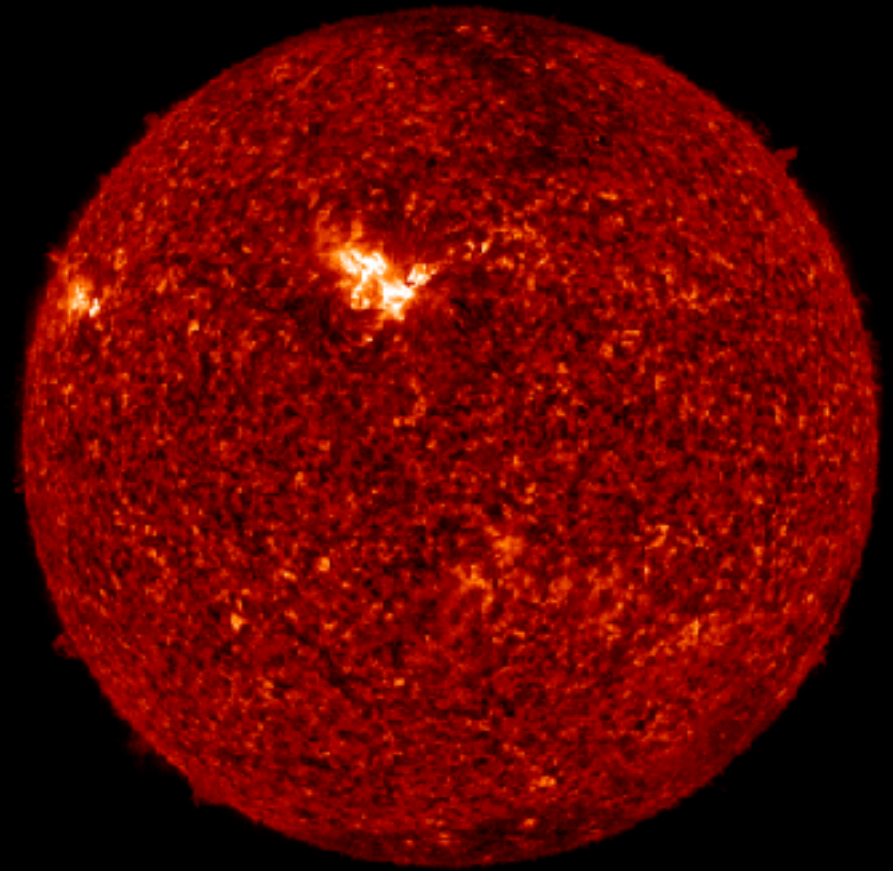
SDO/AIA 30.4 nm 2021-05-16

SDO/AIA AIA 304Å 2021-05-16T12:00:06.580

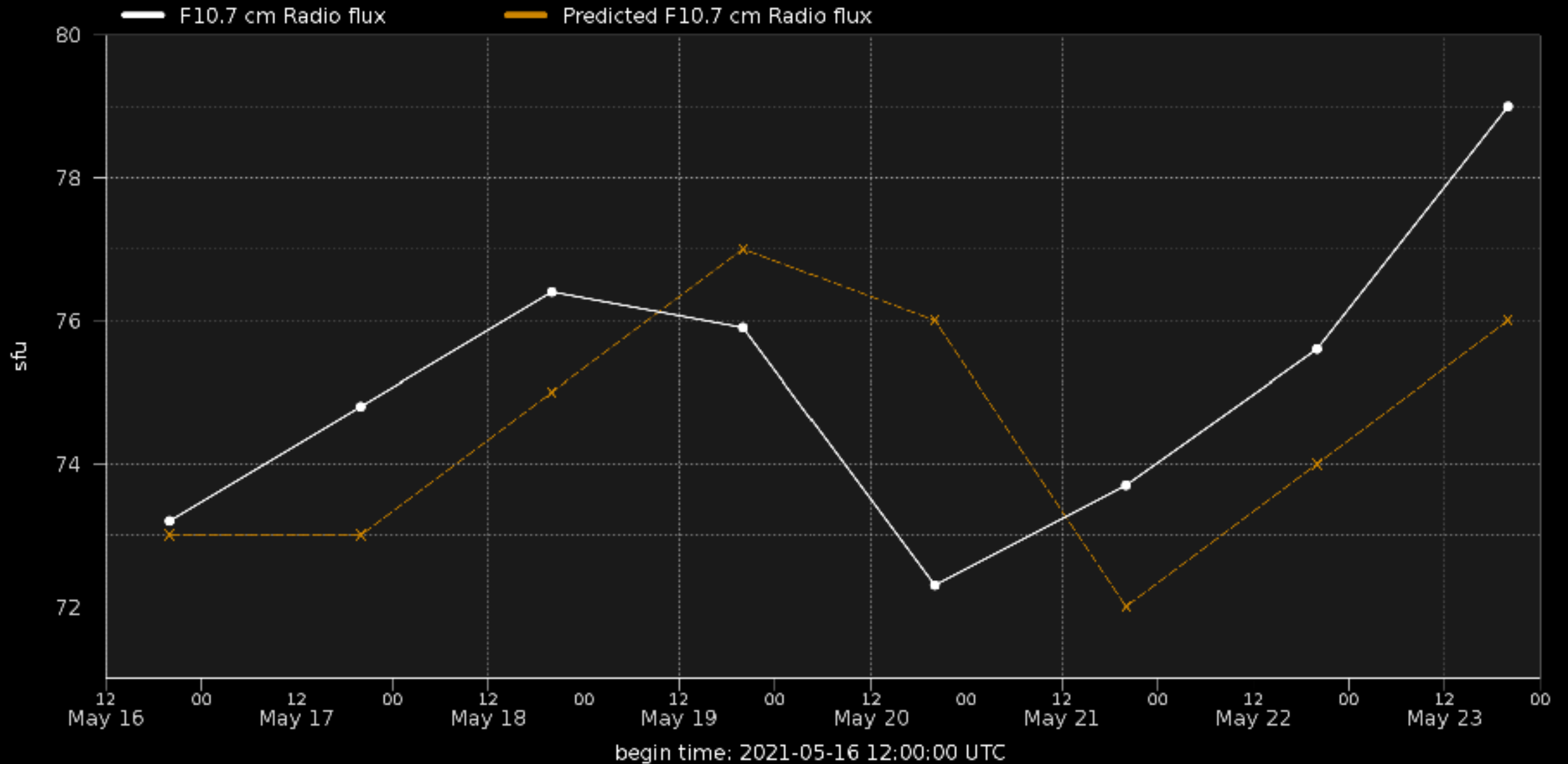


SDO/AIA 30.4 nm 2021-05-23

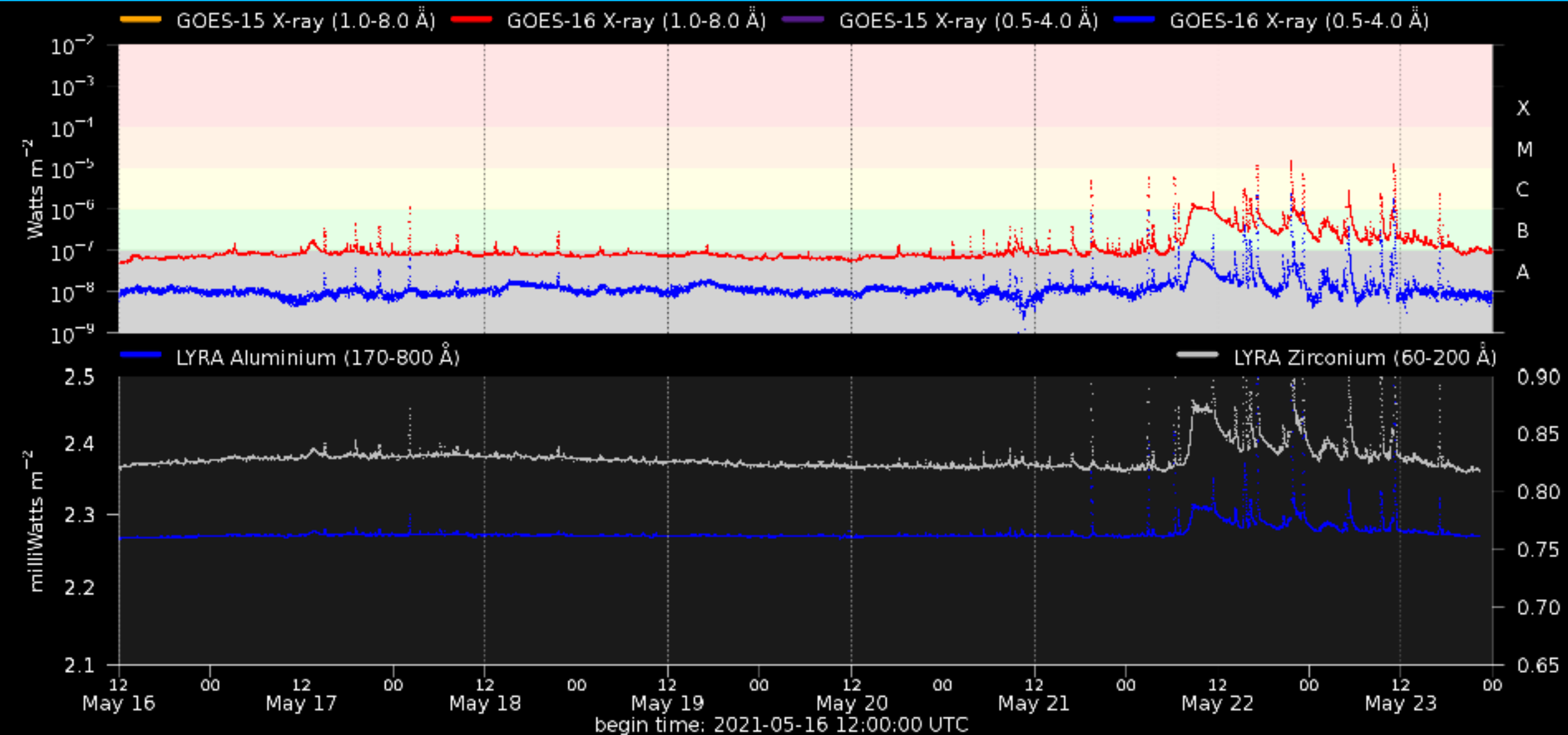
SDO/AIA AIA 304Å 2021-05-23T12:00:06.582



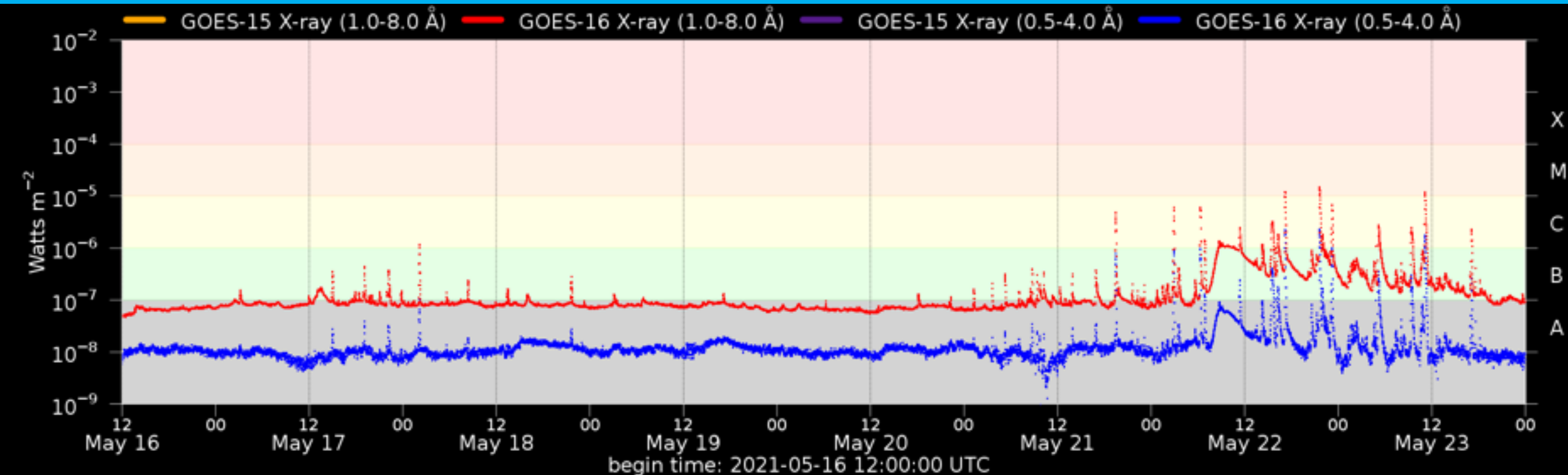
Solar F10.7cm radio flux



Solar X-Ray and UV flux



Flaring activity



Probabilities (%) and occurrences (#) of C/M/X-flares issued at 12:30 and over the next 24h:

Issue date	2021-05-16	2021-05-17	2021-05-18	2021-05-19	2021-05-20	2021-05-21	2021-05-22	2021-05-23
Probability (%)	05 01 01	05 01 01	55 10 01	30 05 01	10 01 01	15 03 01	75 20 01	80 50 15
Observed (#)	00 00 00	01 00 00	00 00 00	00 00 00	00 00 00	05 00 00	08 02 00	00 01 00

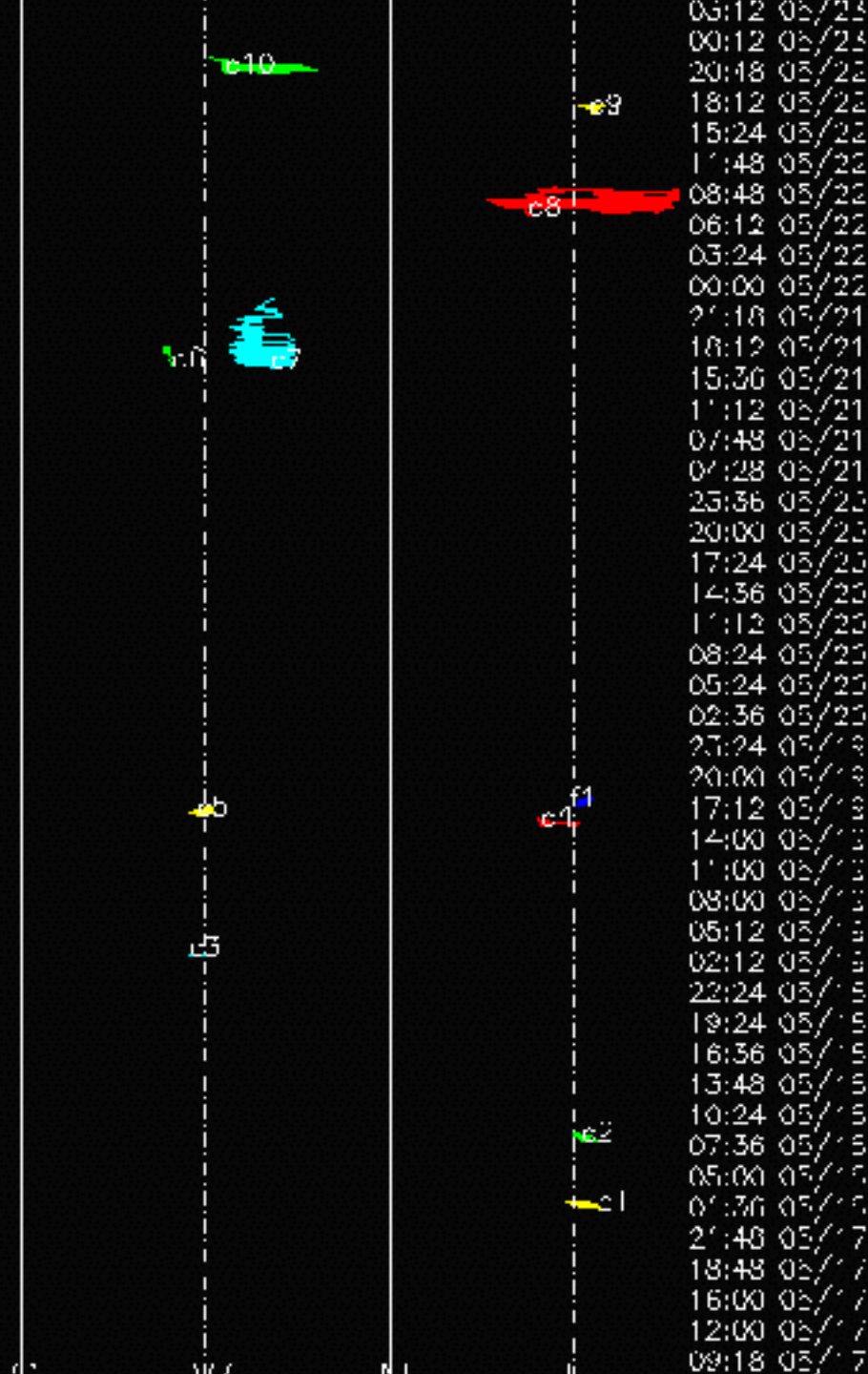
Coronal Mass Ejections

Numerous CMEs erupted from AR 2824, here are the 4 which had an Earth oriented part. They are better seen from COR2, and due to the location of the source region and the signatures in SDO, an Earth arrival could be expected. A CME arrival alert was sent for each. They may interact on the way, so not different arrivals will be seen.

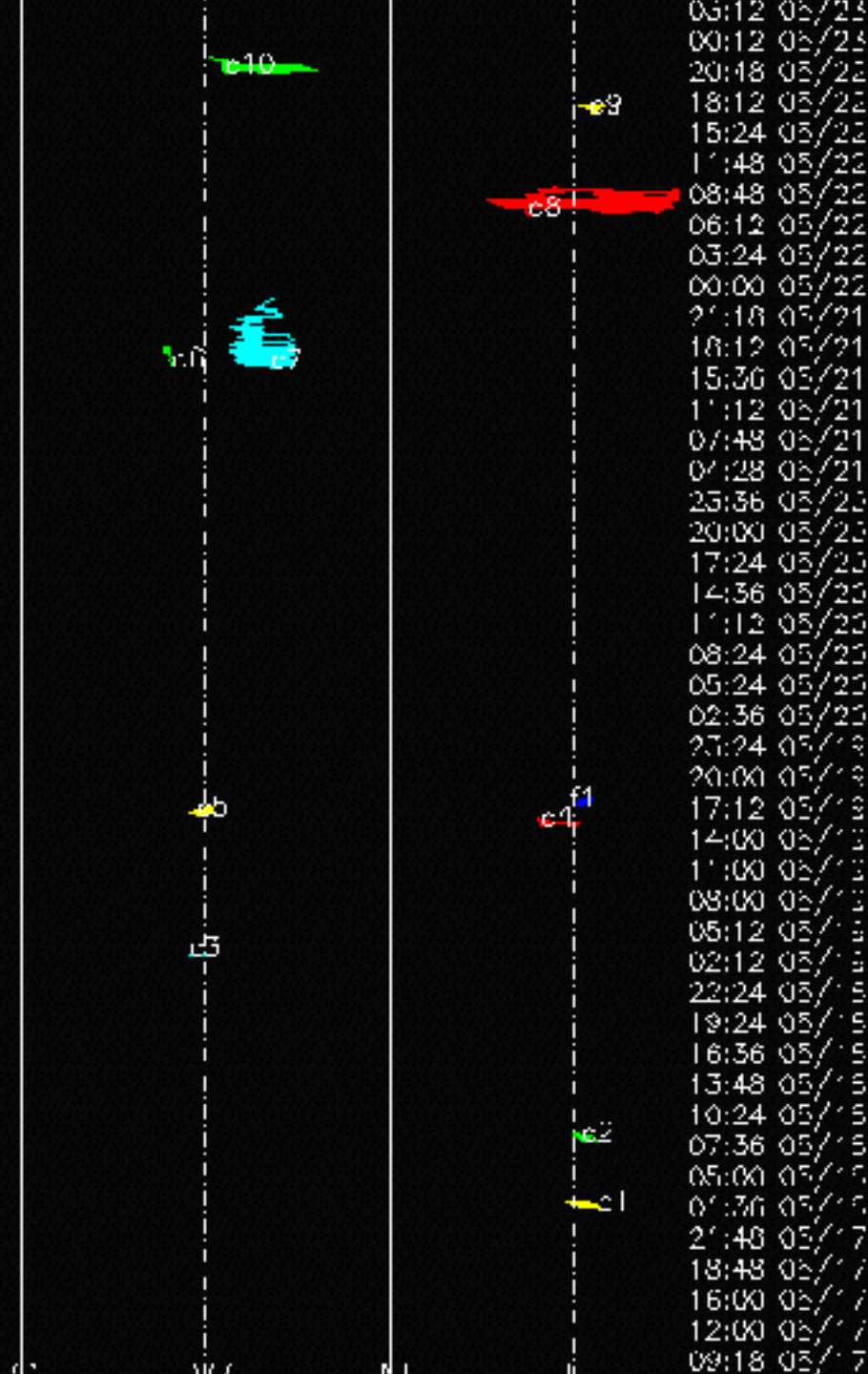
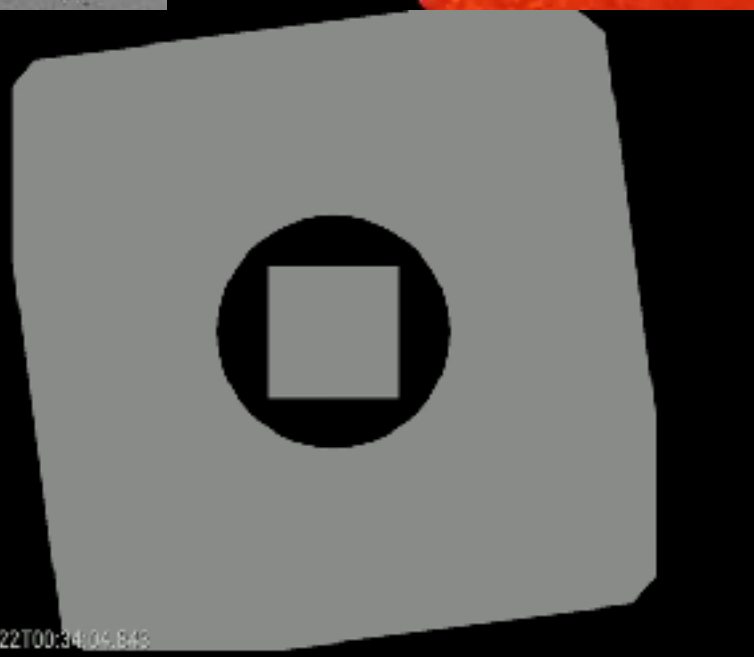
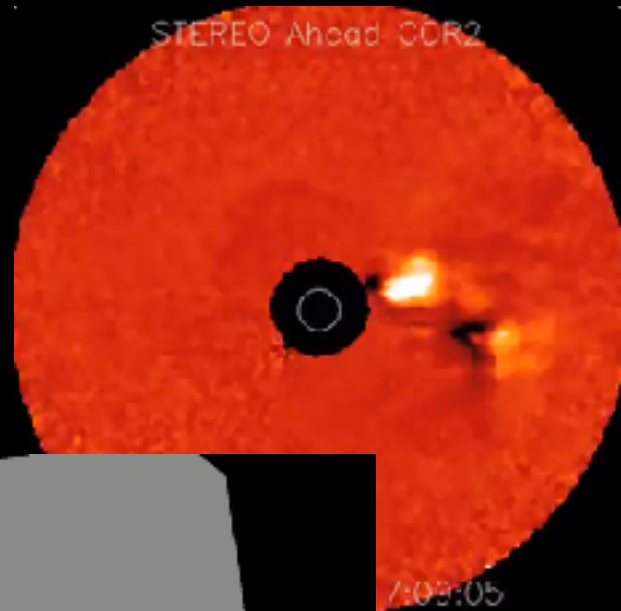
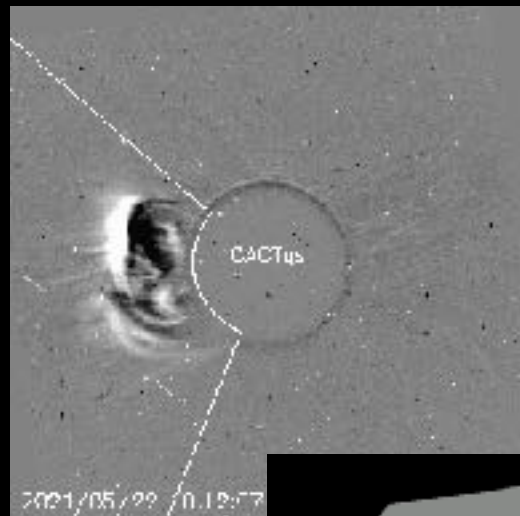
Ursigram from Sunday: Three (partially) Earth directed CMEs erupted on 22 May. Two of them are associated with M-class flares. The first one starting at 09:12 UT (LASCO C2) with 300 km/s and about 90 degrees angular width, expected arrival at 23 UT on 26 May. The second one at 16:23 UT (COR2A), with a speed of 460 km/s and an expected arrival time at 02 UT on 26 May. The last one started at 22:00 UT (COR2A), with a speed of 629 km/s, and expected to arrive at 13 UT on 25 May. The last two were faint in LASCO and better visible in COR2. The speed of the CMEs increased from the first to the third, so they will encounter and interact on their way to the Earth, making accurate arrival time predictions difficult.

The 4th one corresponds to a CME on 23 May at 11:00 UT on COR2A, expected on 26 May at 03 UT, speed 680 km/s.

There more info on the CME list in previweb.



Coronal Mass Ejections



Solar Wind and

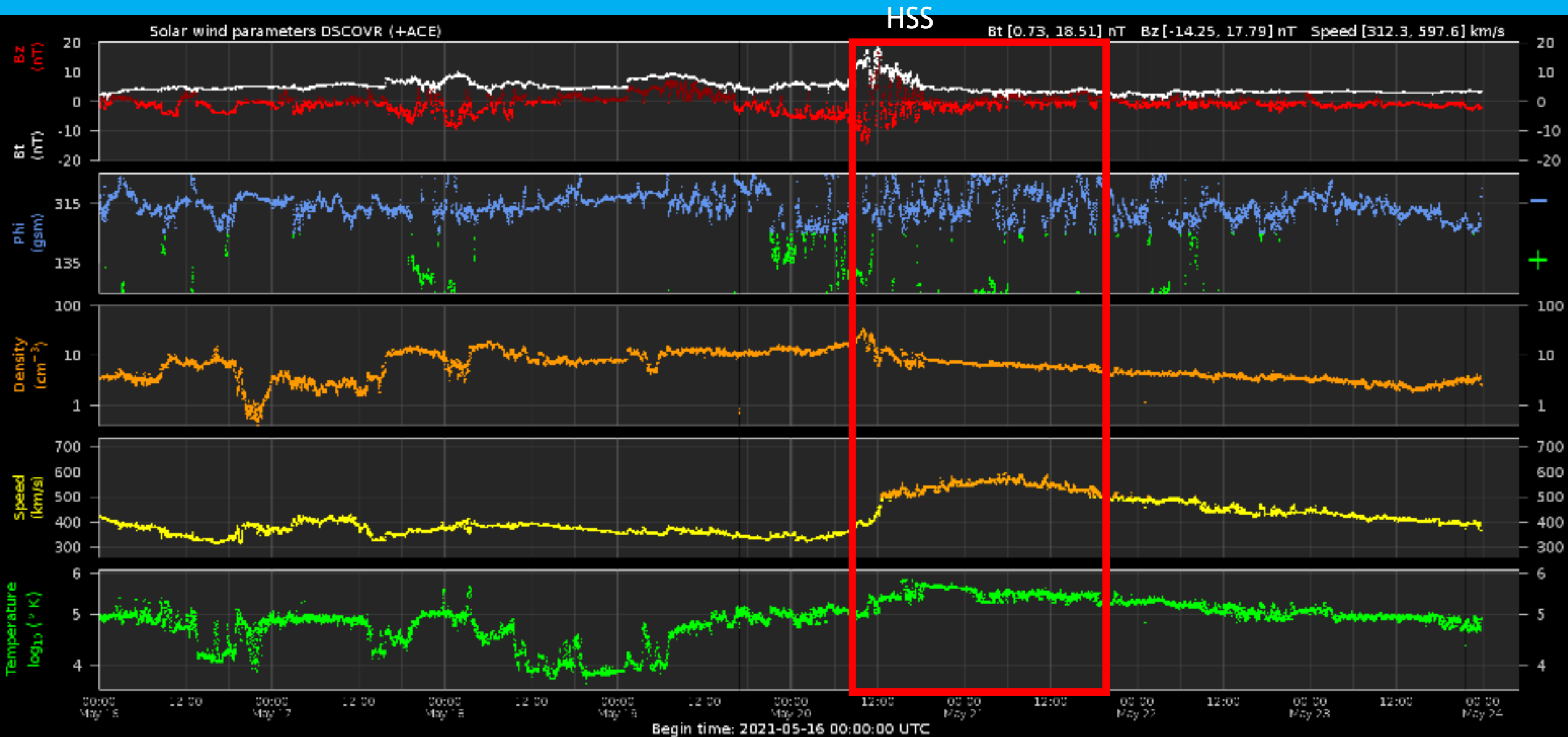
Geomagnetic Activity



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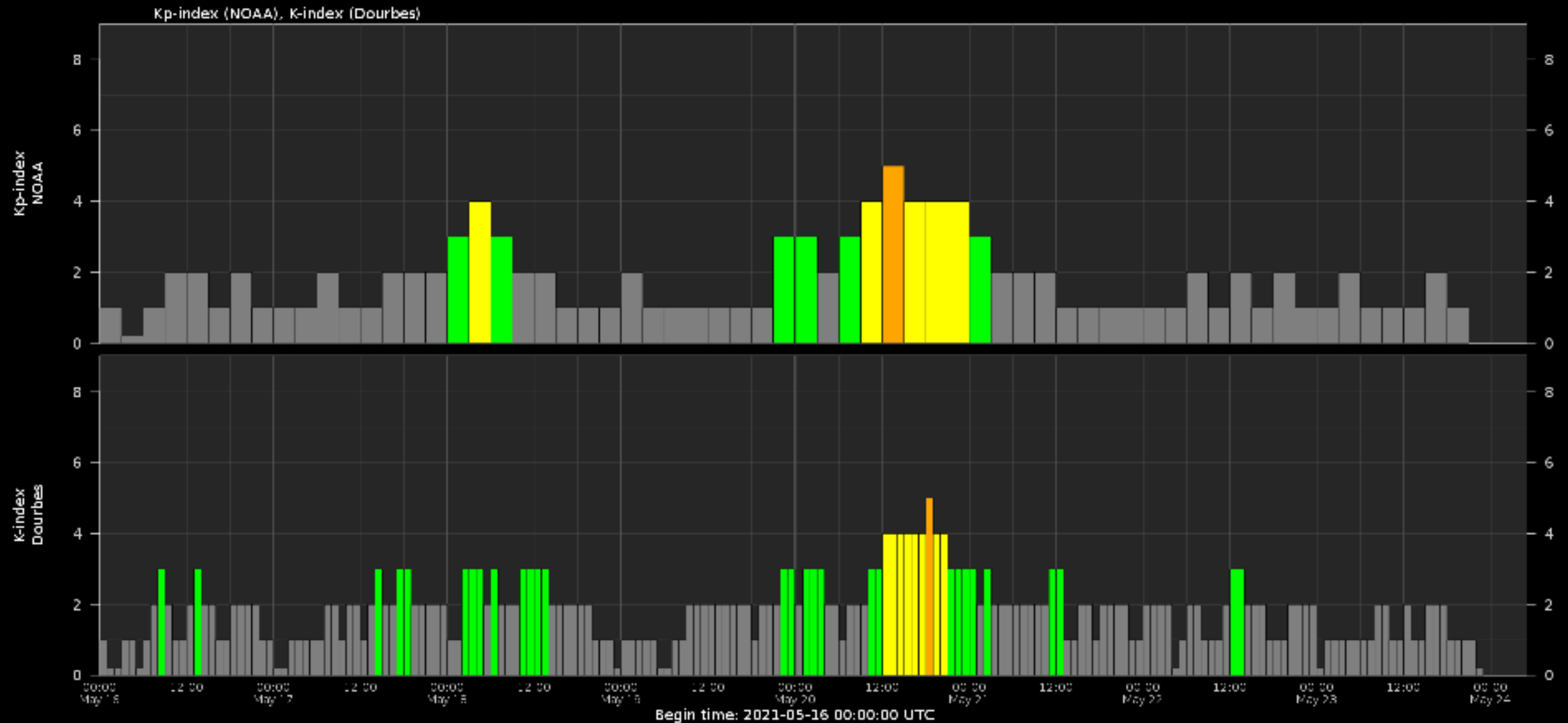
Solar wind parameters



Solar wind parameters & K-indices



Geomagnetic activity (K-indexes)



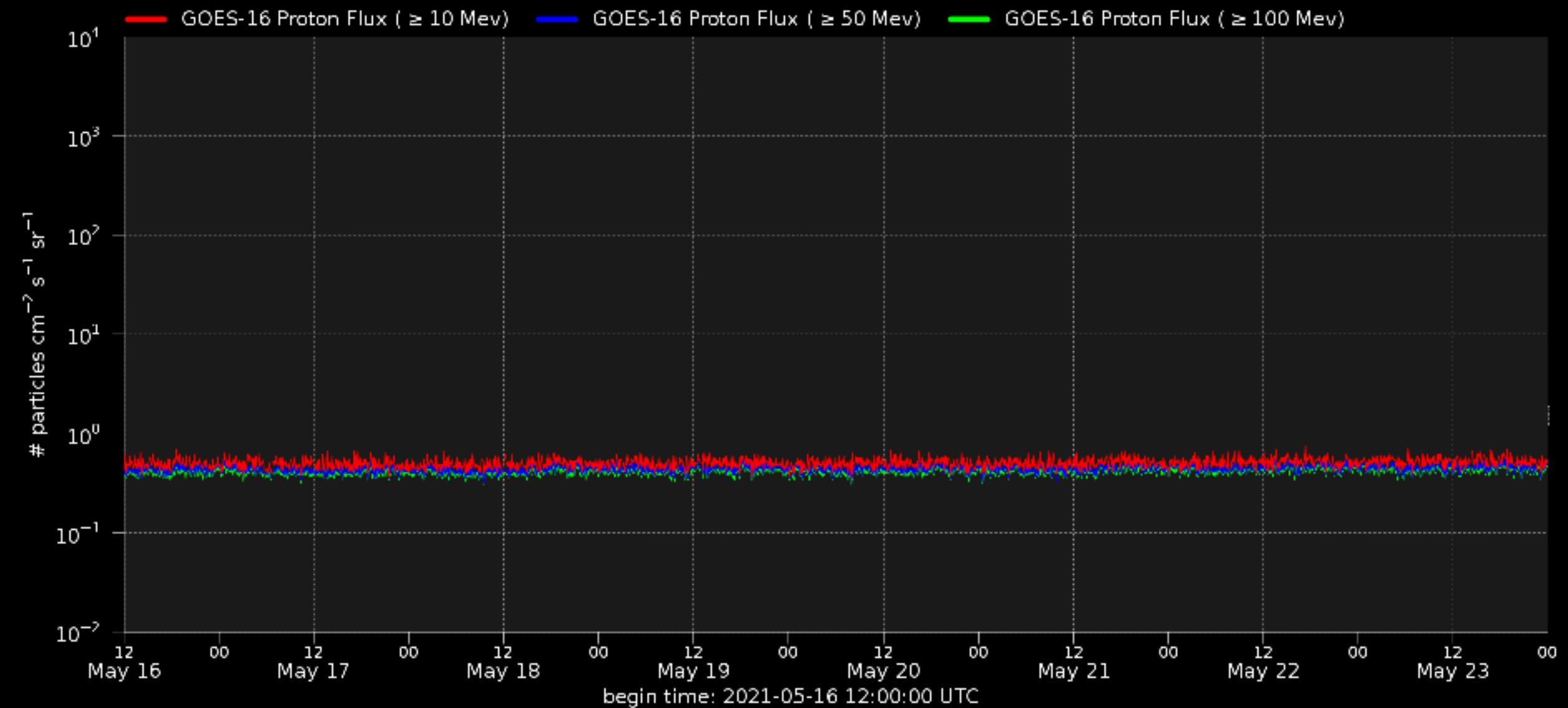
Energetic Particles



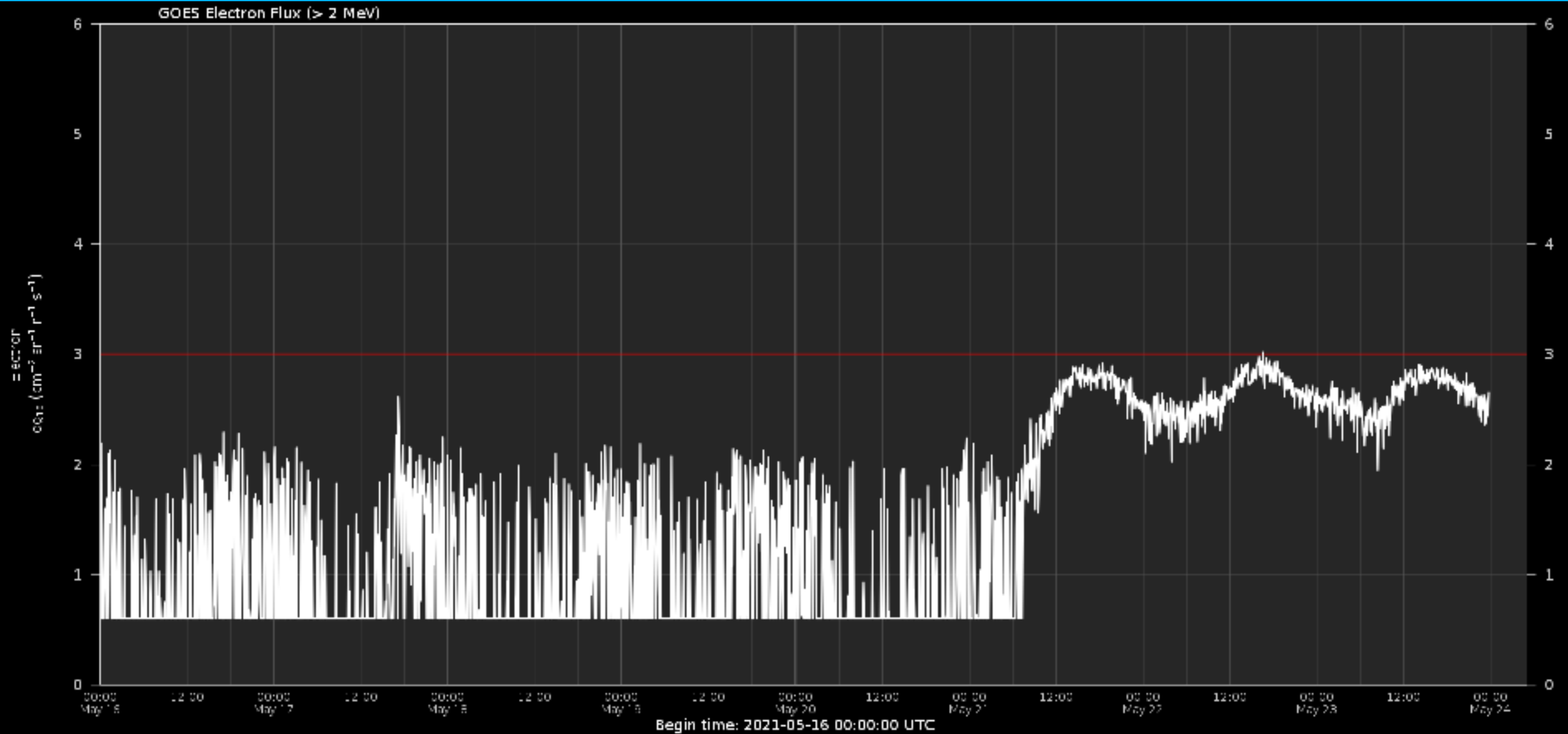
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Solar proton flux



Electron flux at GEO



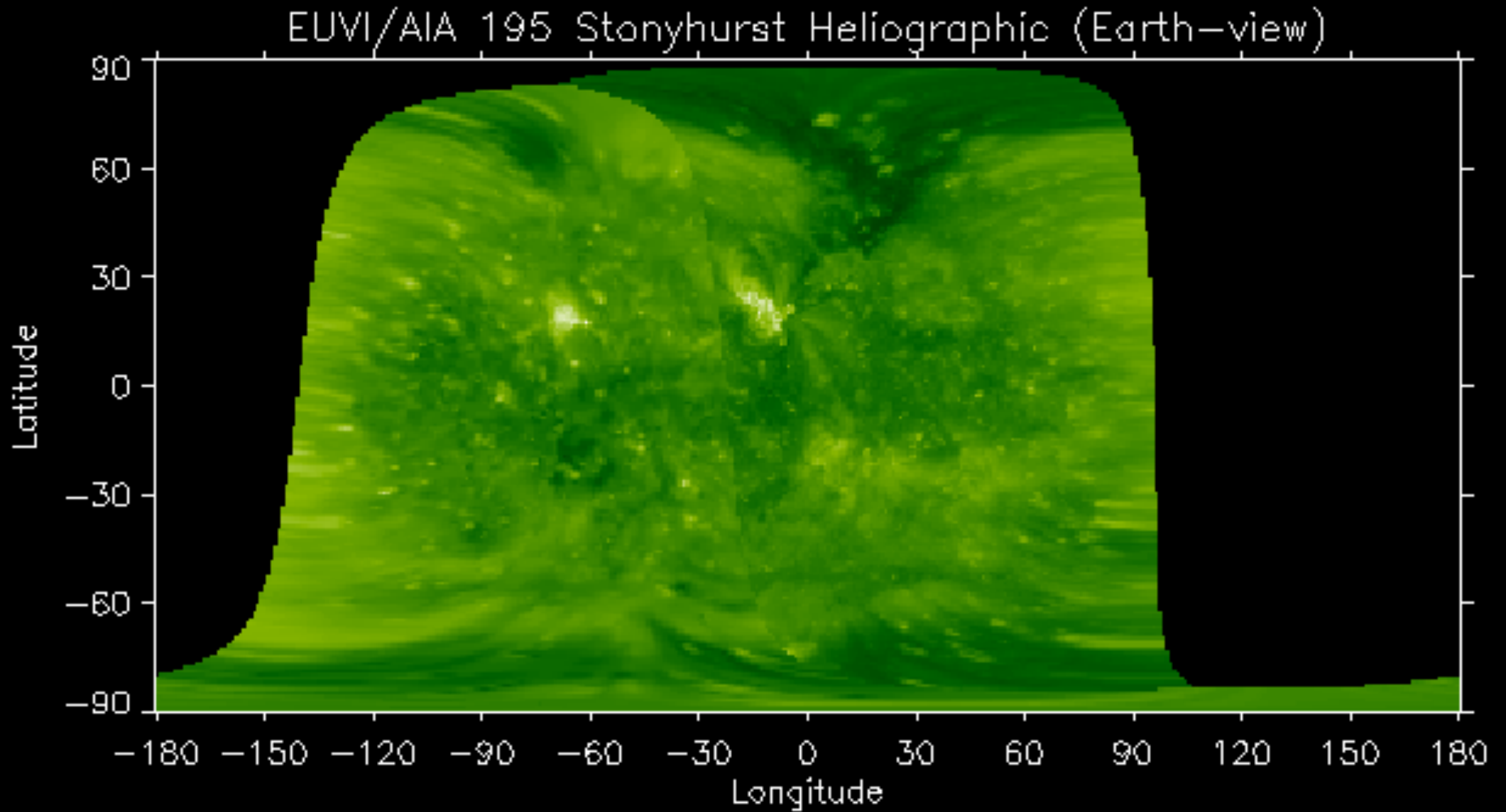
Outlook



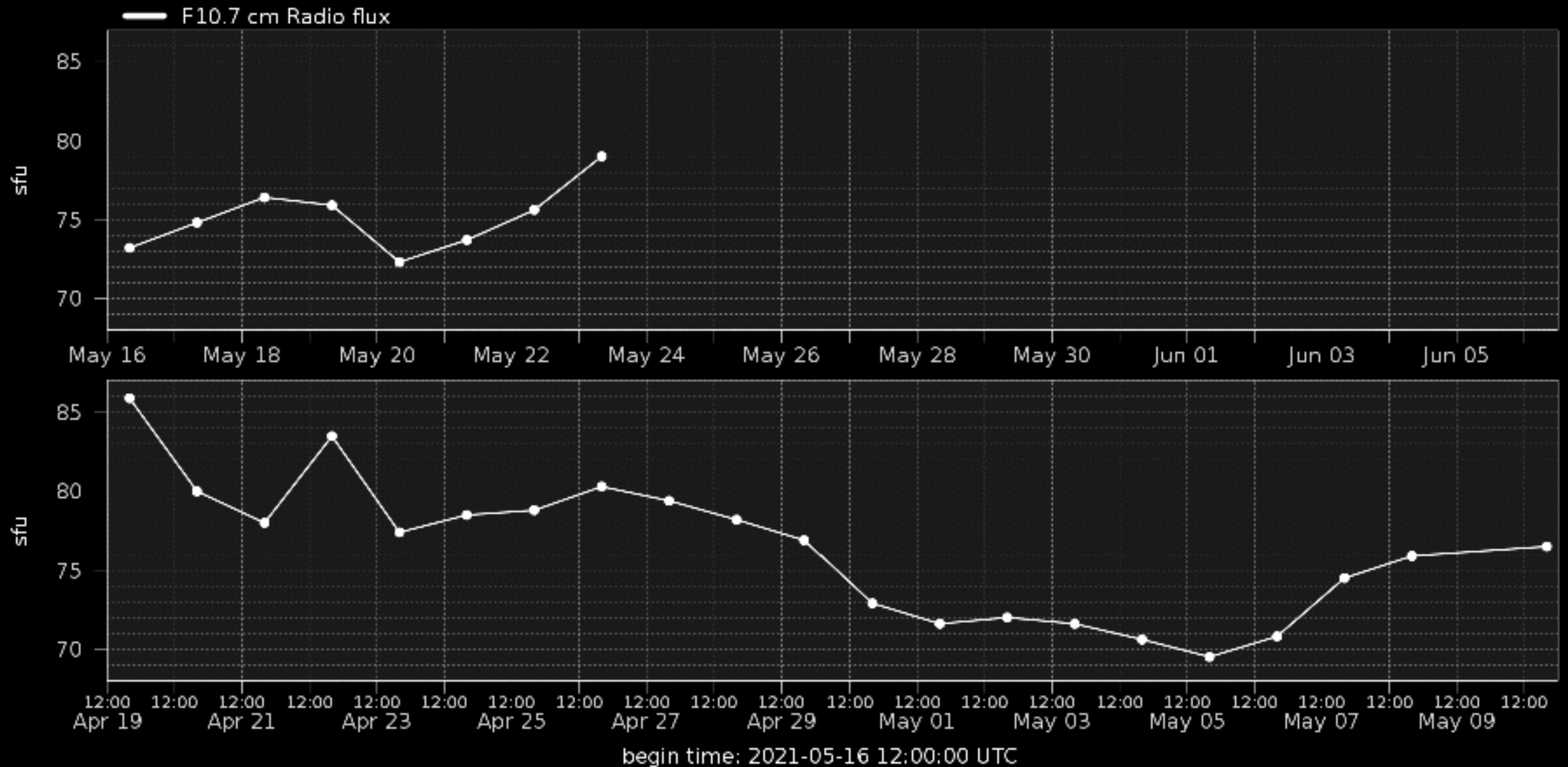
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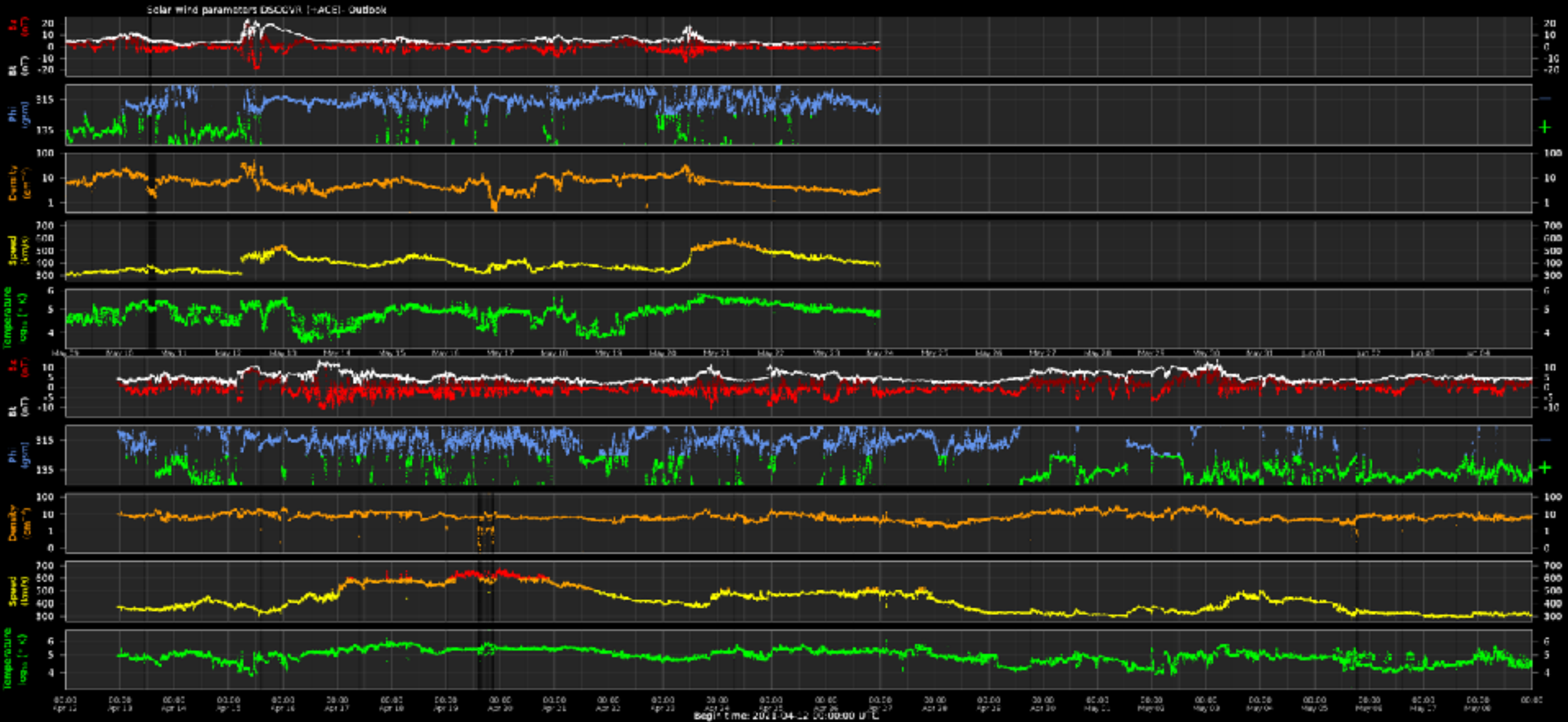
Outlook: Solar activity



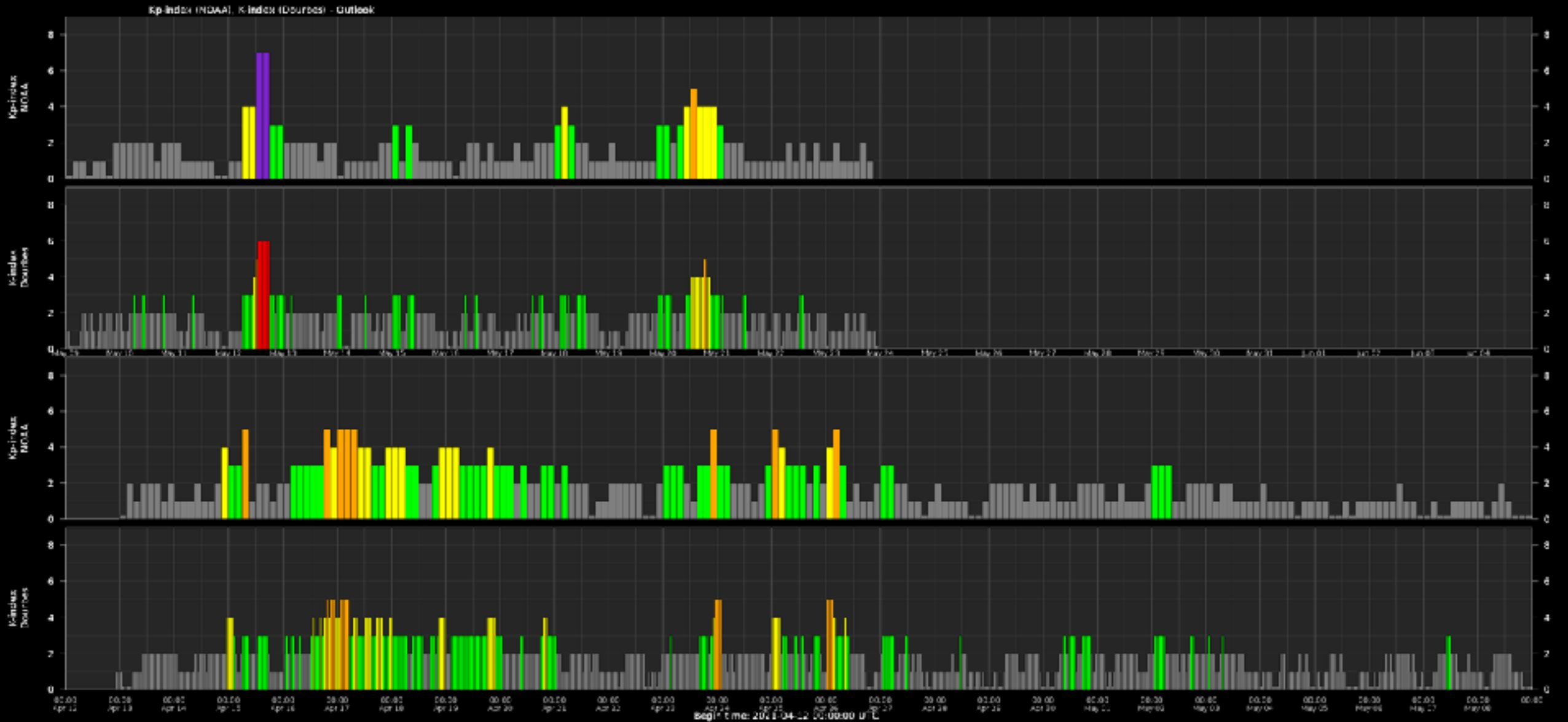
Outlook: Solar F10.7cm radio flux



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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