

# SIDC Space Weather Briefing

18 April 2021 - 25 April 2021

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& the SIDC forecaster team



Royal Observatory  
of Belgium

Solar Influences  
Data analysis Centre  
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# Summary Report

Solar activity from 2021-04-18 12:00 to 2021-04-25 23:59

Active regions	7 ARs (NOAA AR 2814, 2815, 2816, 2817, 2818, 2819 & 2820)
Flares	# C-class flare: 20 # M-class flare: 1 # X-class flare: 0
Filament eruptions	No big filament eruptions
Coronal Holes	One small equatorial coronal hole (negative polarity)

Proton flux	quiet
Electron flux	the greater than 2MeV electron flux was mostly above the 1000 pfu threshold.

Solar wind and geomagnetic conditions

ICME	In situ shock and CME observed on April 24 (22:27 UT)
SW Conditions	B : 0.95 - 11.05 nT // Bz: -10.63 nT to 7.38 nT // Speed: 368.3 - 1153.6km/s
K-indices	max K-index (Dourbes): 5 max Kp-index (NOAA): 5

All Quiet Alert: none

# Solar Activity

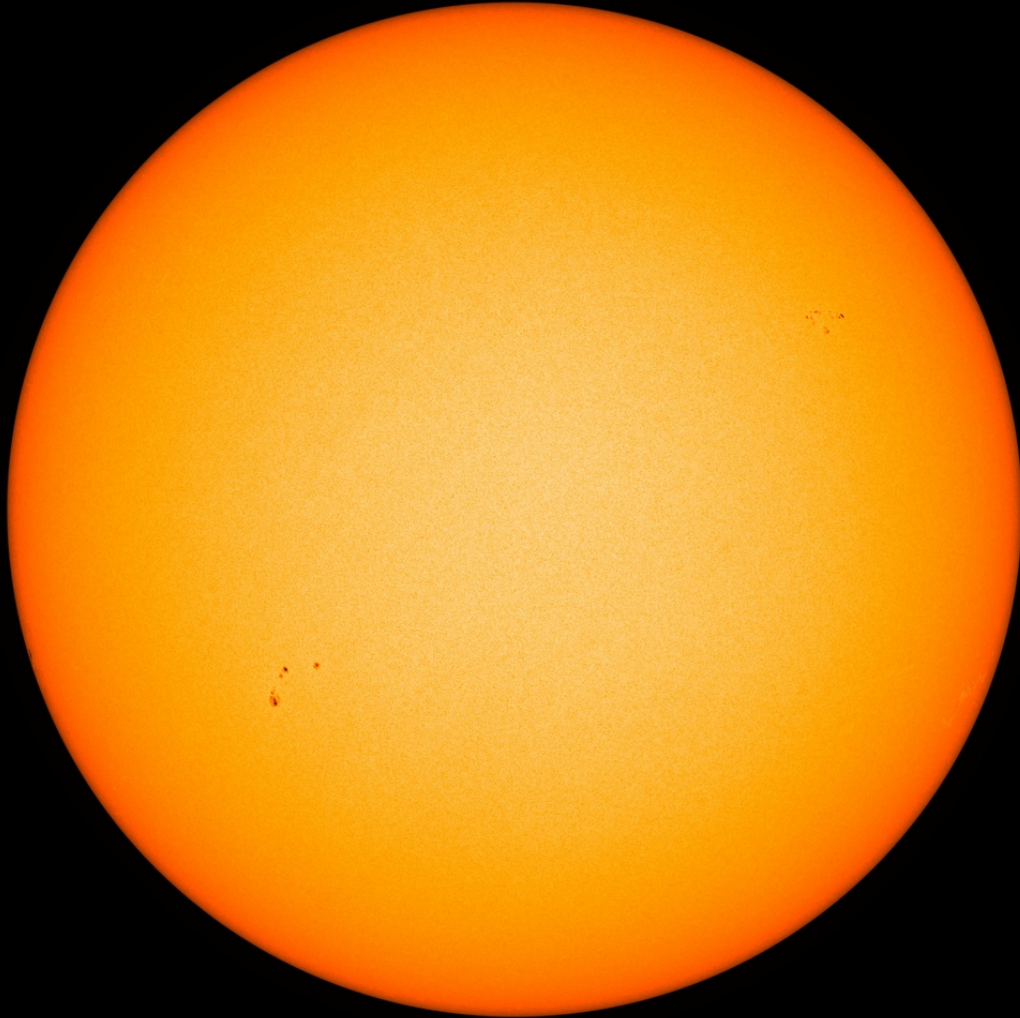


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# Solar active regions

SDO/HMI White Light 2021-04-19



SDO/HMI Quick-Look Continuum: 20210419\_114500

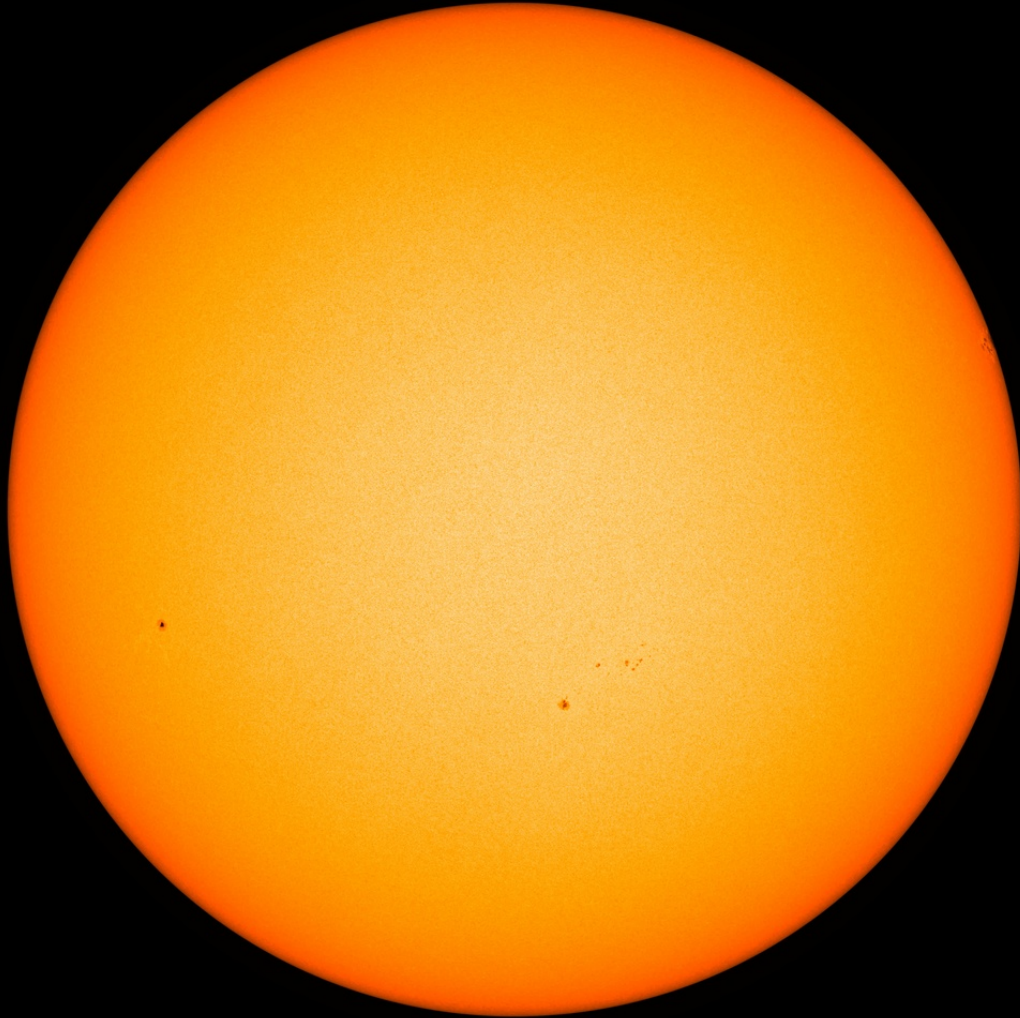
SDO/HMI Magnetogram 2021-04-19



SDO/HMI Quick-Look Magnetogram: 20210419\_114500

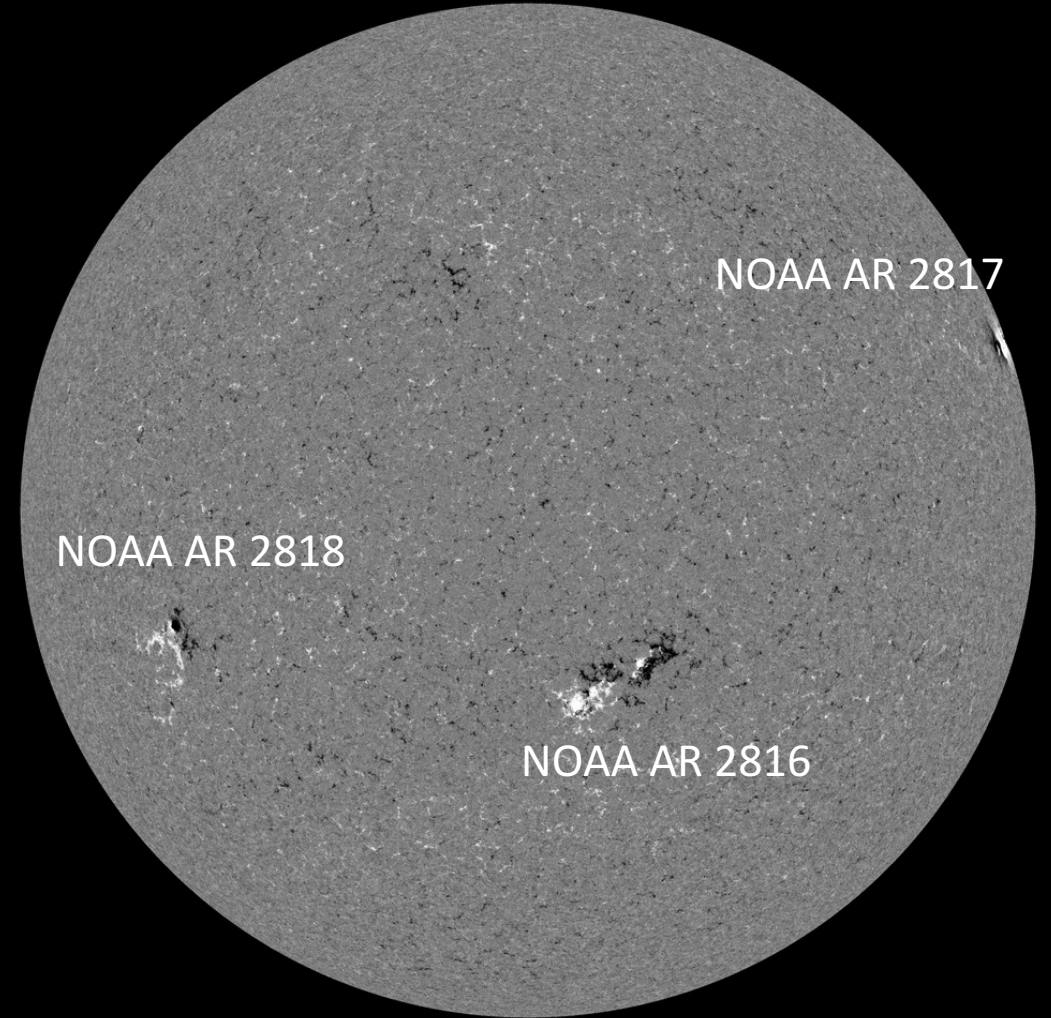
# Solar active regions

SDO/HMI White Light 2021-04-22



SDO/HMI Quick-Look Continuum: 20210422\_120000

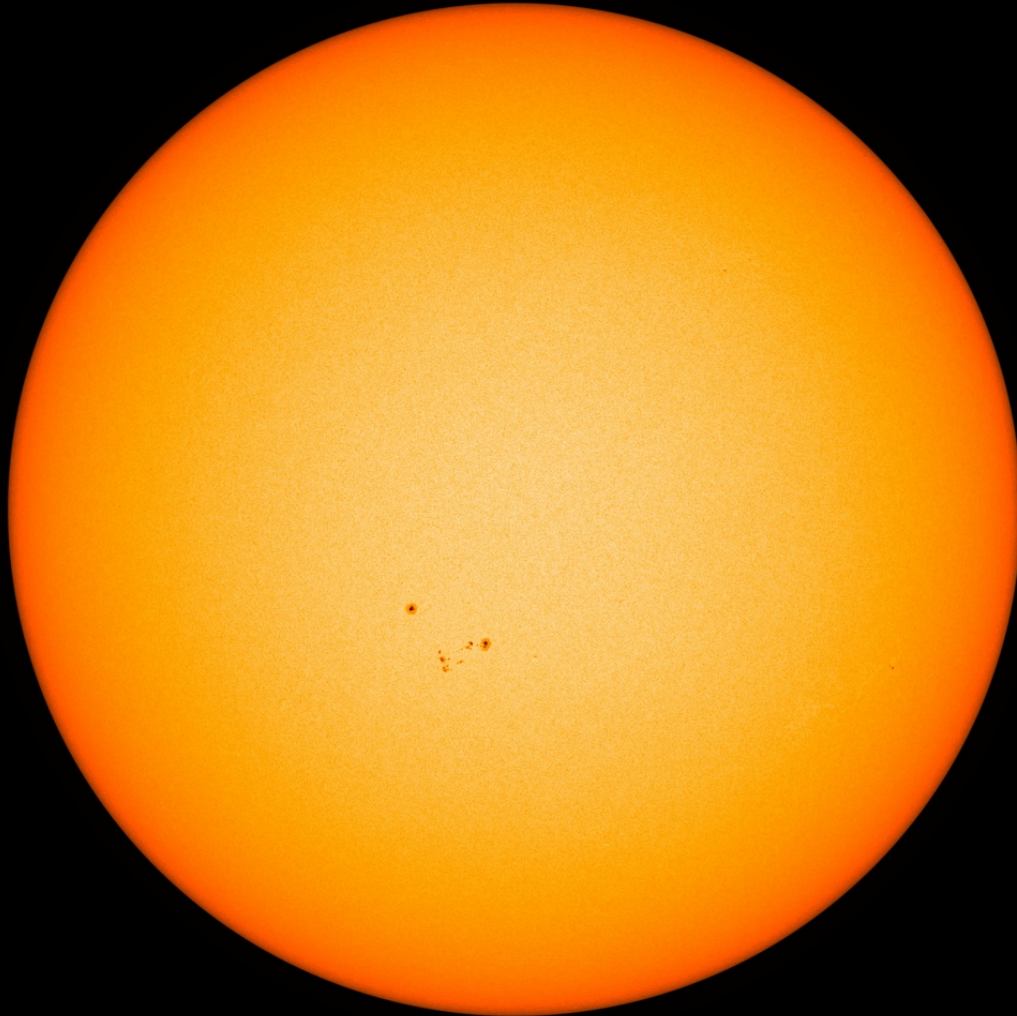
SDO/HMI Magnetogram 2021-04-22



SDO/HMI Quick-Look Magnetogram: 20210422\_114500

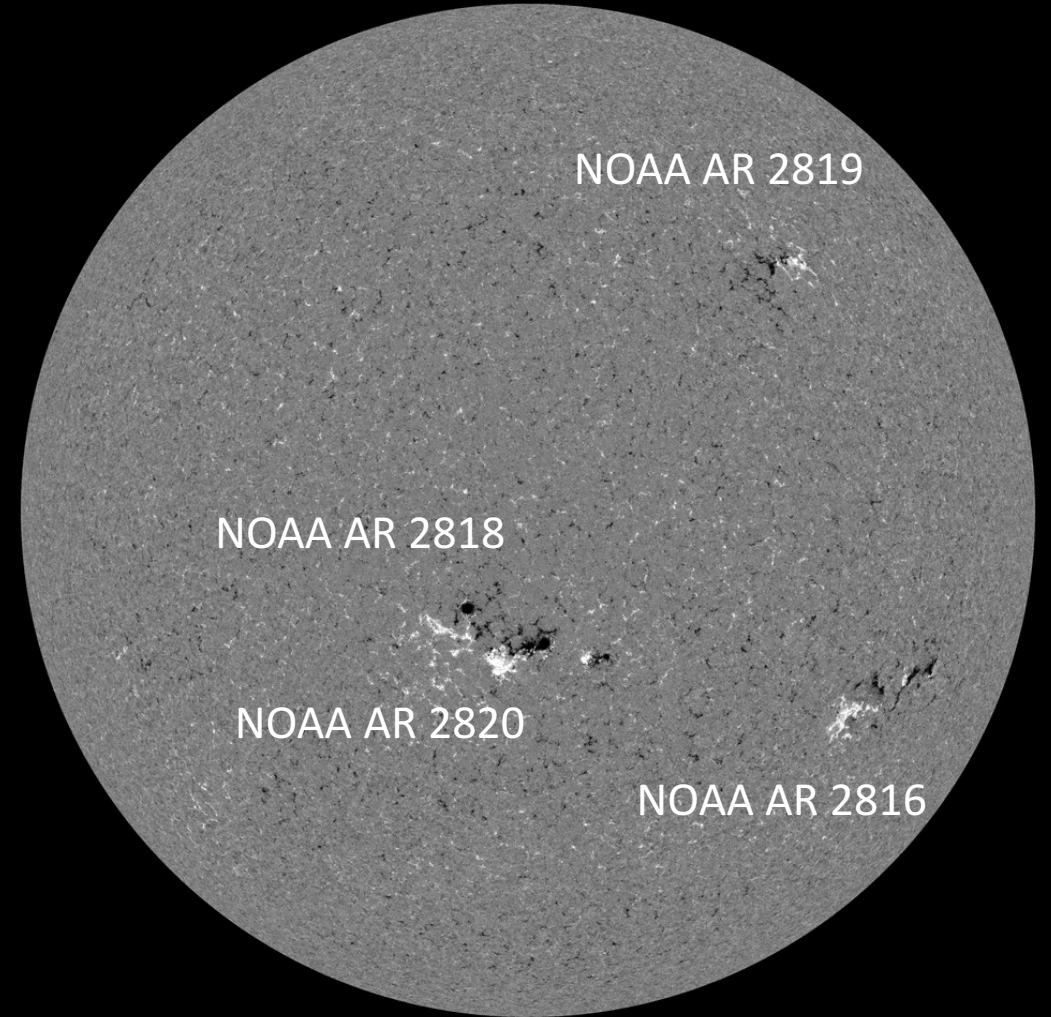
# Solar active regions

SDO/HMI White Light 2021-04-25



SDO/HMI Quick-Look Continuum: 20210425\_023000

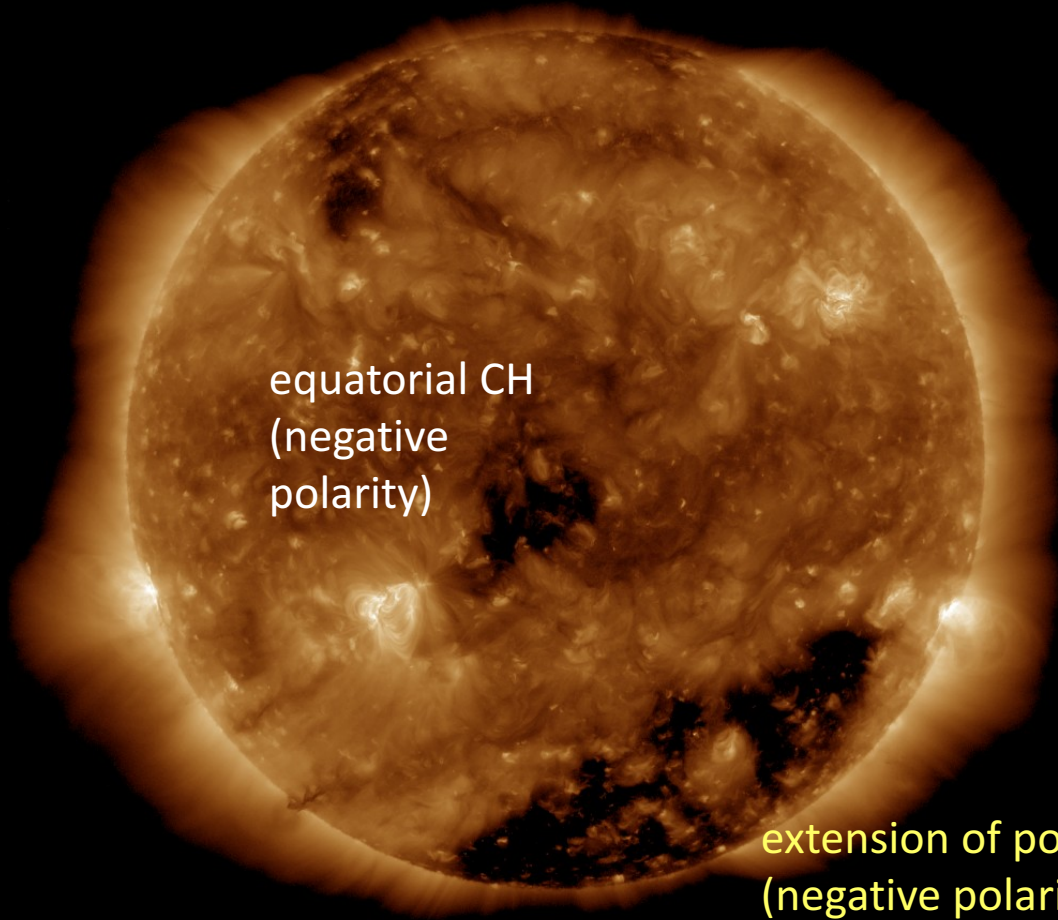
SDO/HMI Magnetogram 2021-04-25



SDO/HMI Quick-Look Magnetogram: 20210425\_114500

# Coronal holes

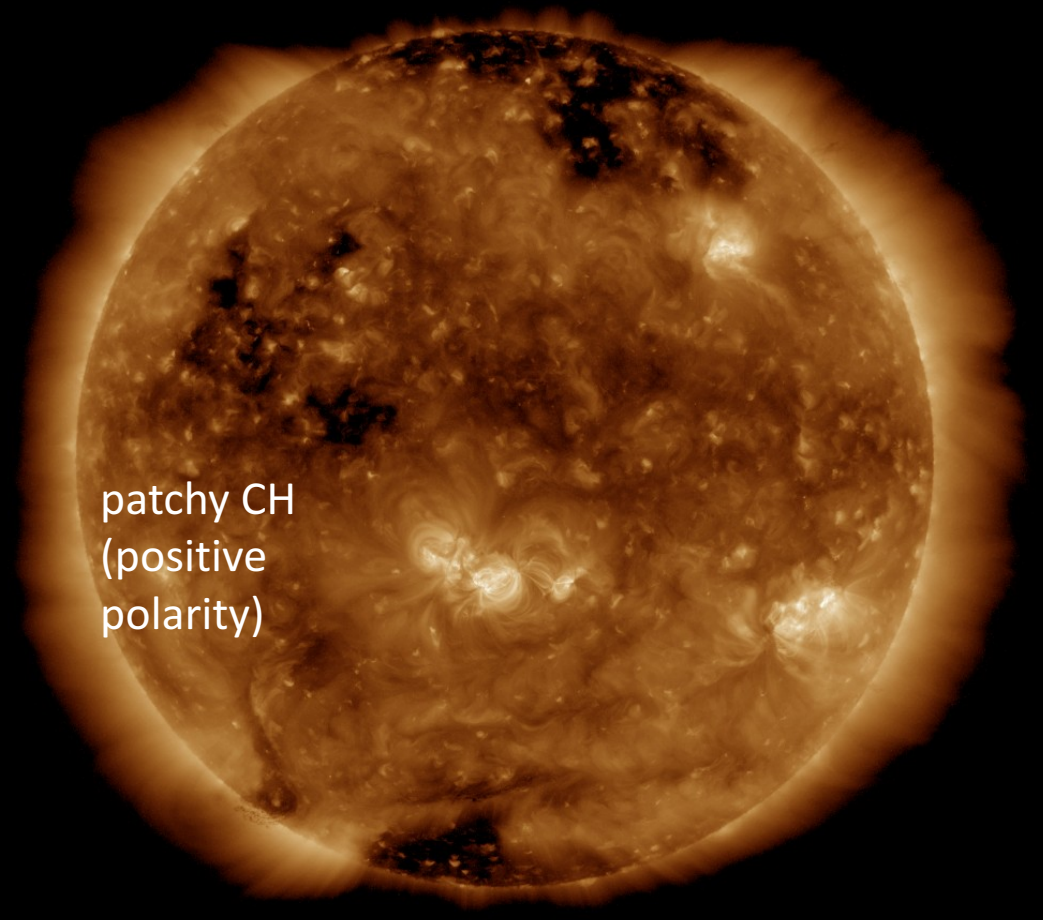
SDO/AIA 19.3 nm 2021-04-18



equatorial CH  
(negative  
polarity)

extension of polar CH  
(negative polarity)

SDO/AIA 19.3 nm 2021-04-25



patchy CH  
(positive  
polarity)

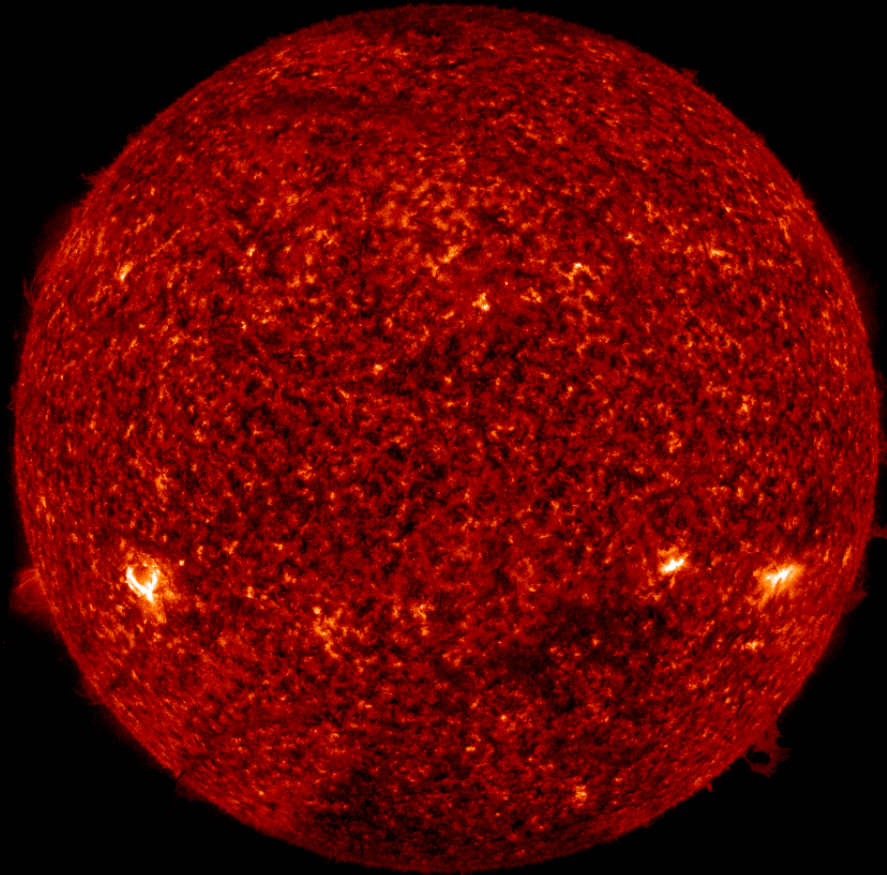
SDO/AIA 193 2021-04-19 18:06:41 UT

SDO/AIA 193 2021-04-25 12:17:41 UT

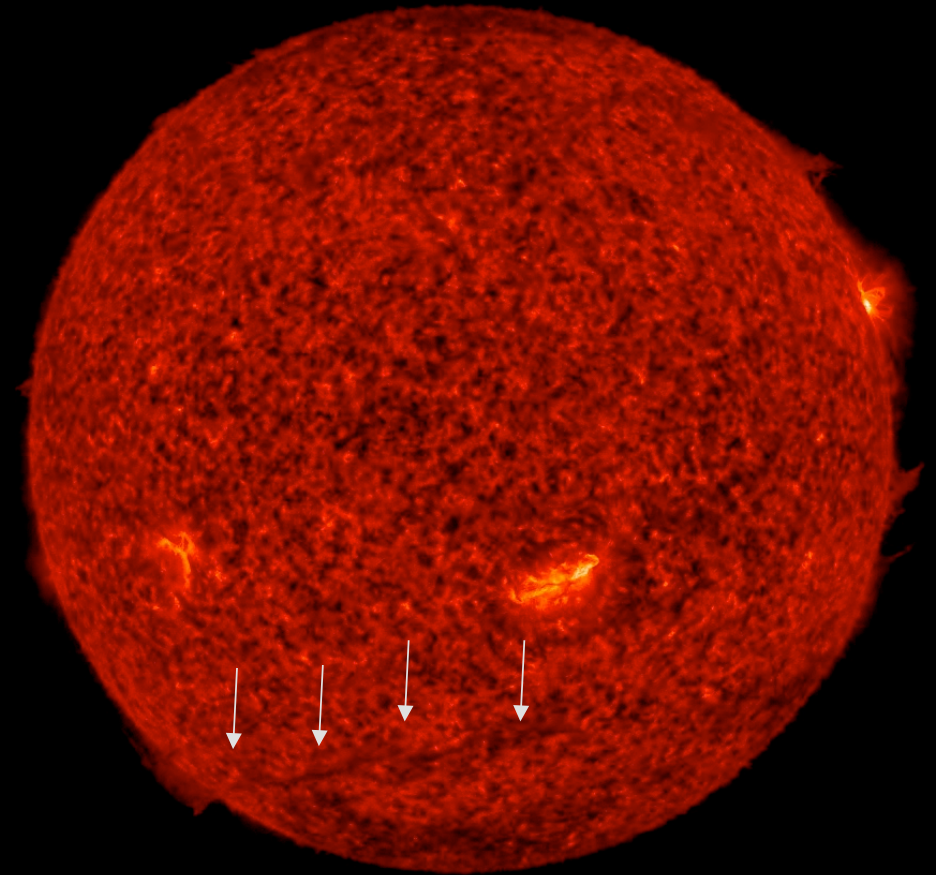
# Filaments & Filament eruptions

SDO/AIA 30.4 nm 2021-04-18

SDO/AIA AIA 304Å 2021-04-18T00:00:06.581



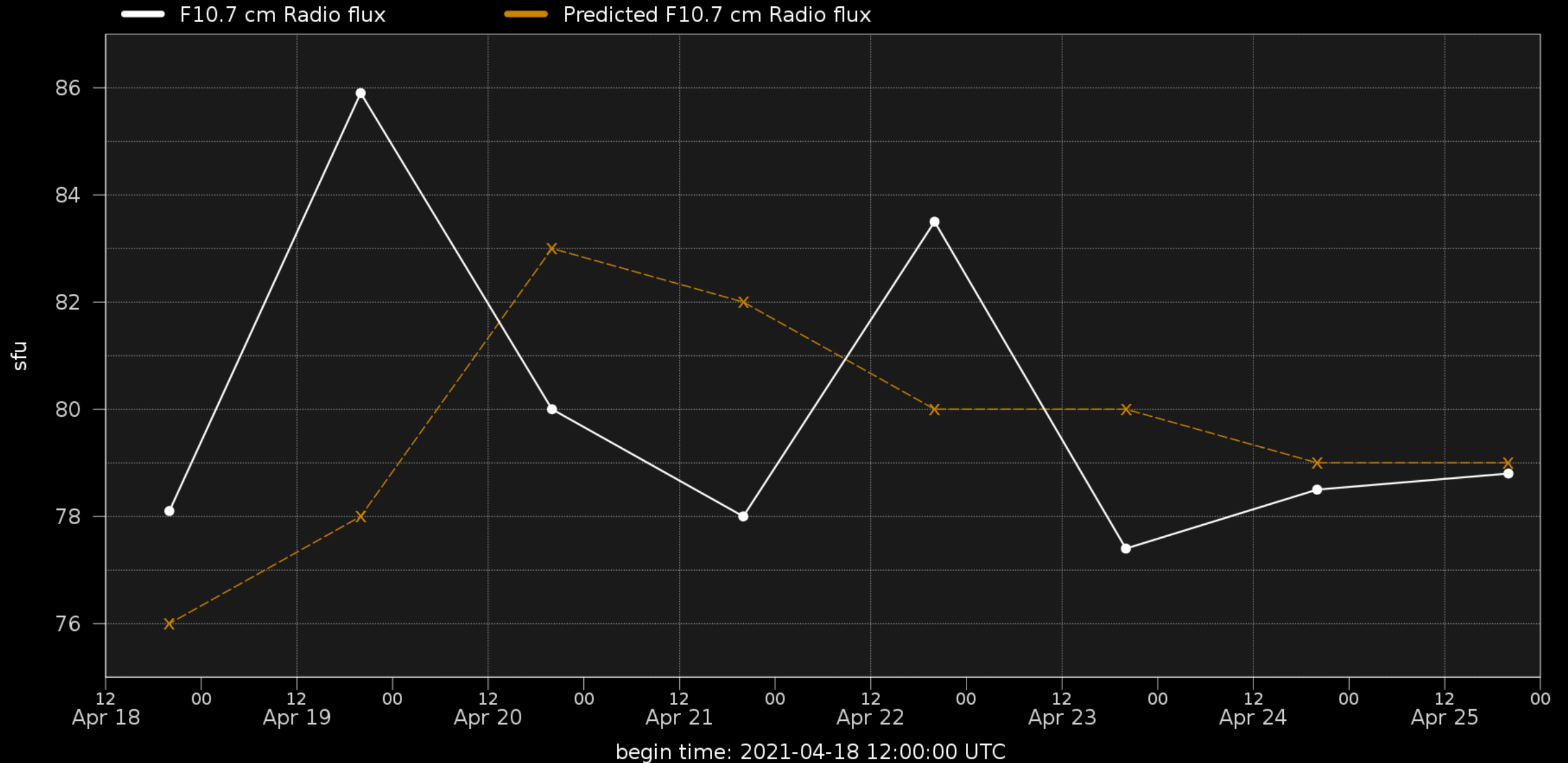
SDO/AIA 30.4 nm 2021-04-25



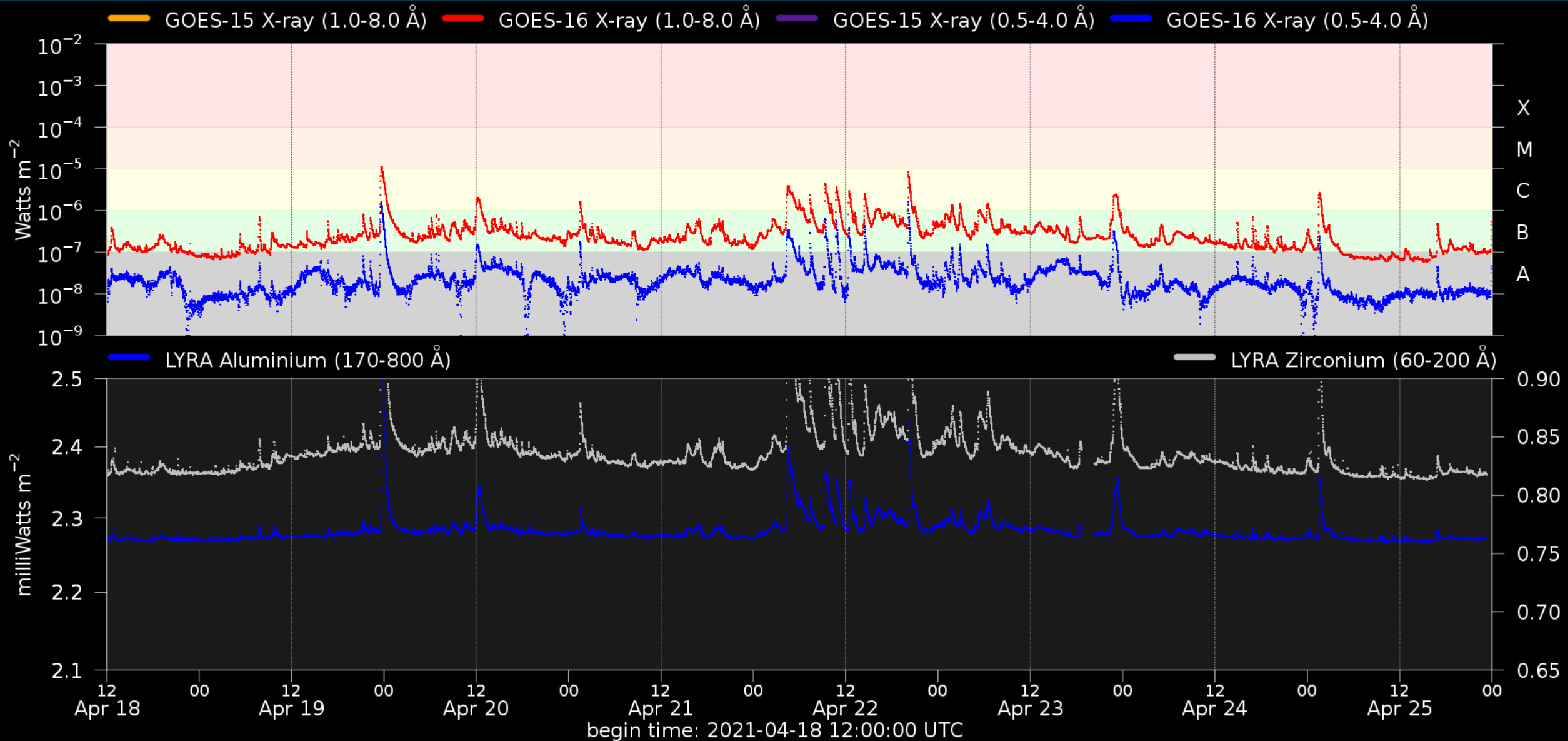
SDO/AIA 304 2021-04-22 18:28:54 UT



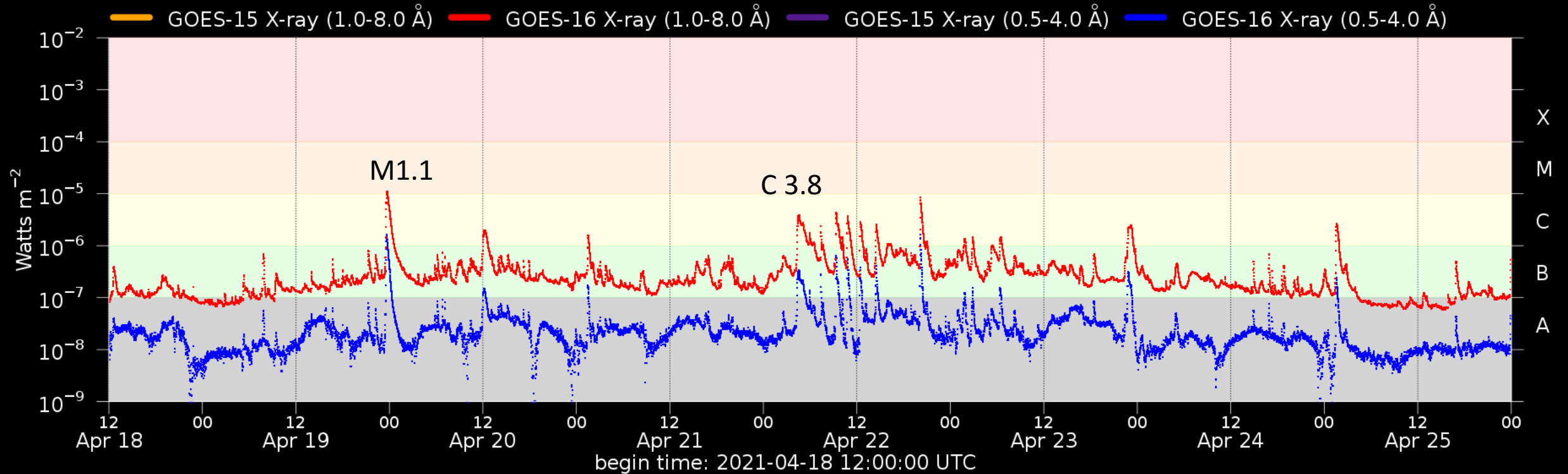
# Solar F10.7cm radio flux



# Solar X-Ray and UV flux



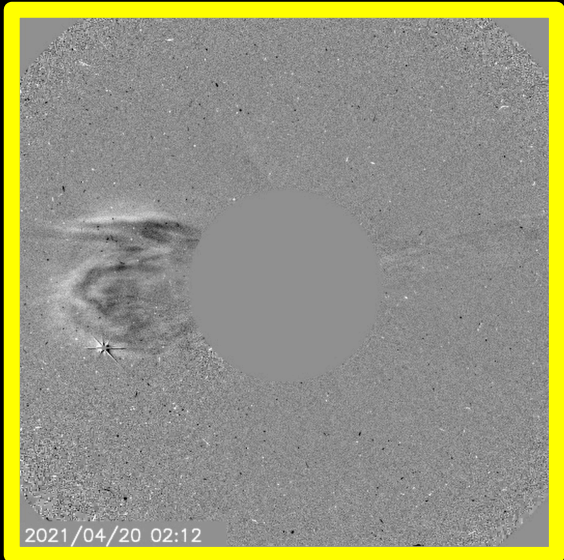
# Flaring activity



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

Issue date	2021-04-18	2021-04-19	2021-04-20	2021-04-21	2021-04-22	2021-04-23	2021-04-24	2021-04-25
Probability(%)	40 01 01	20 01 01	45 10 01	35 01 01	60 05 01	52 05 01	52 10 01	60 05 01
Observed (#)	00 00 00	00 01 00	02 00 00	03 00 00	08 00 00	00 00 00	01 00 00	00 00 00

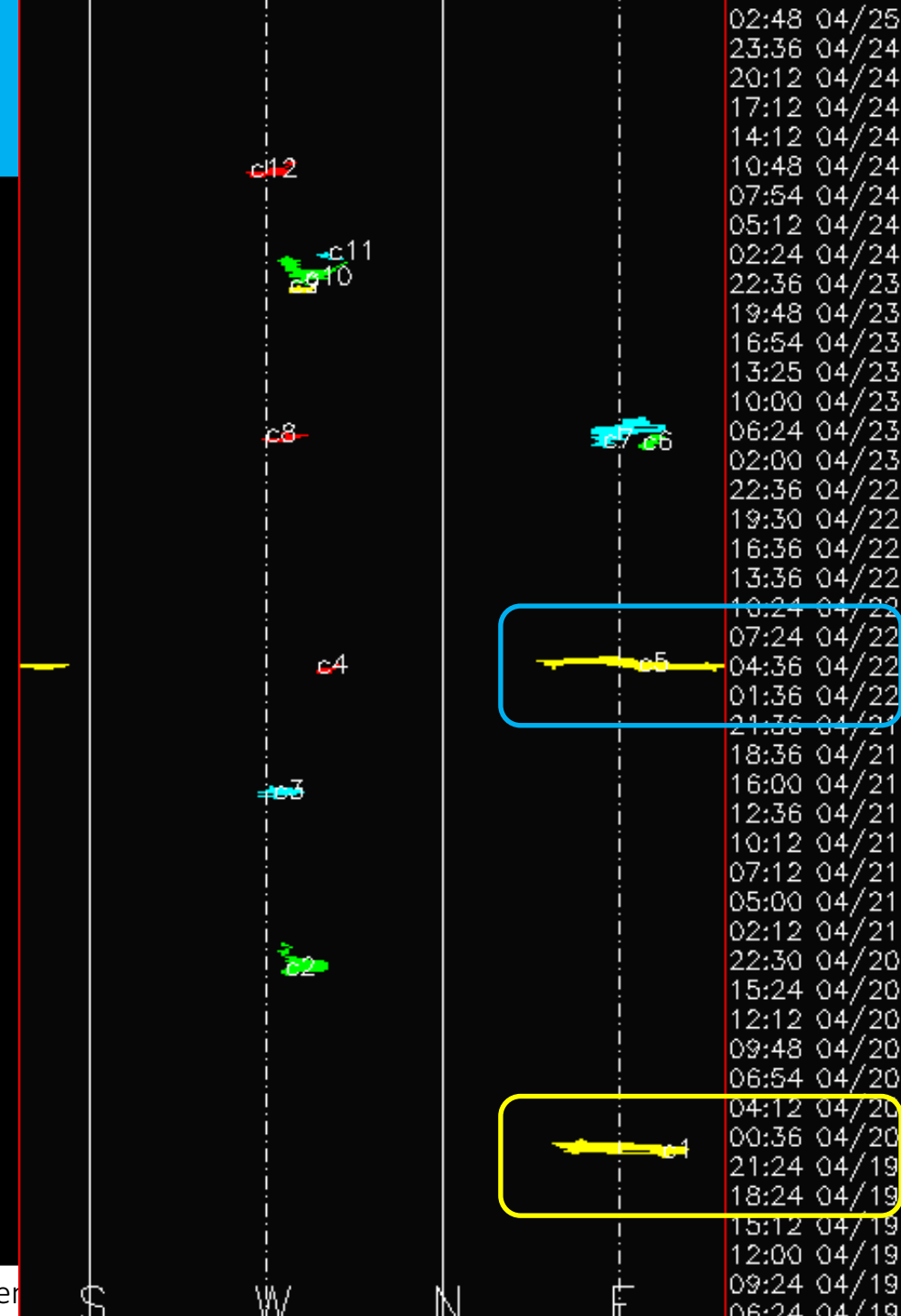
# Coronal Mass Ejections



- Not very wide CME ( $\sim 100^\circ$ )
- vCME  $\sim 500$  km/s
- CME oriented between STEREO A & Earth
- M1.1 flare on April 19 (peaked at 23:42 UT)
- Source region Catania sunspot group 87 (NOAA AR 2816)



- Partial halo CME ( $\sim 160^\circ$ )
- In SOHO/LASCO C2 at 06:12 UT (April 22)
- vCME  $\sim 450$  km/s
- associated with C3.8 flare (peaked at 04:35 UT)
- Source region Catania sunspot group 87 (NOAA AR 2816)



# Solar Wind and

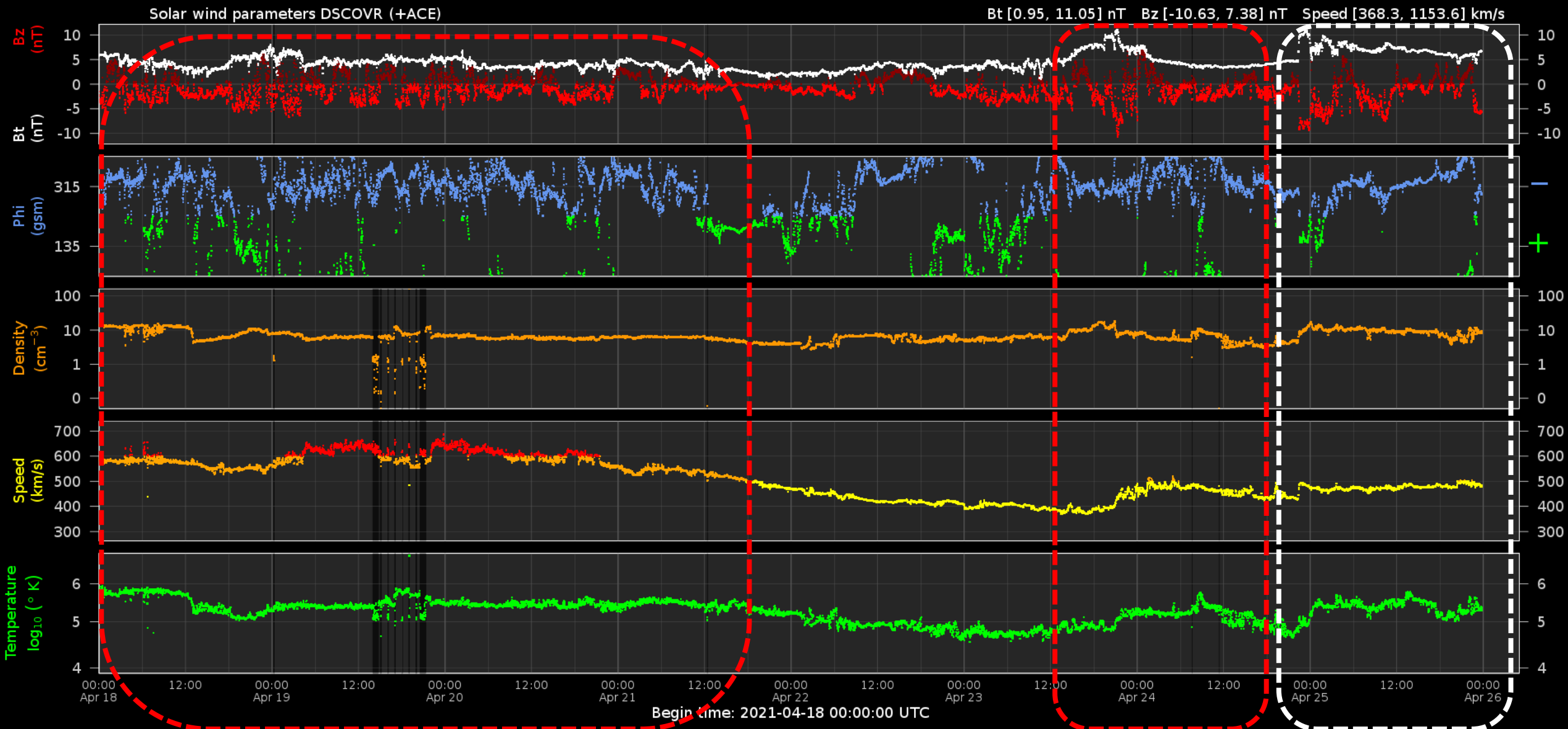
# Geomagnetic Activity



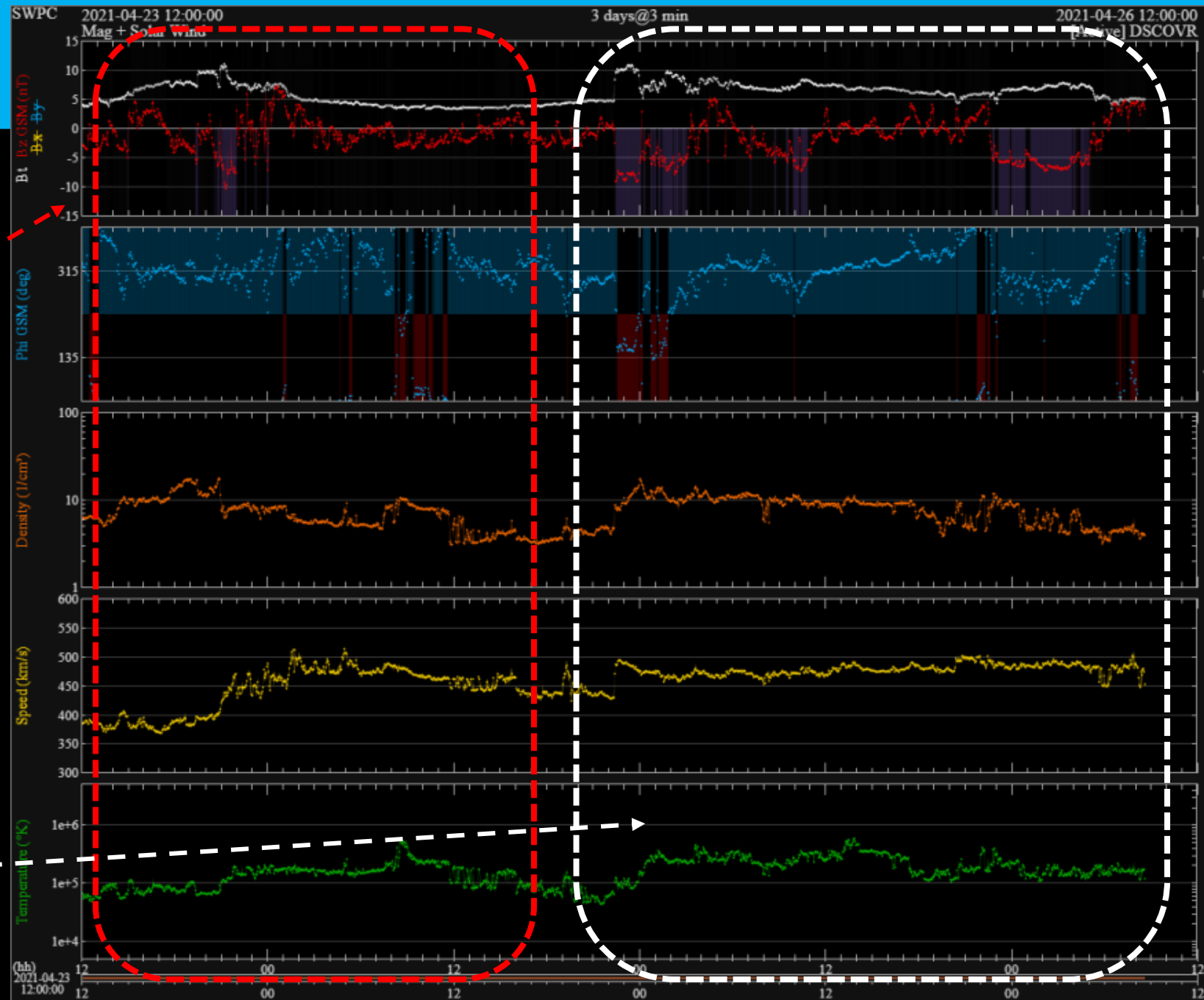
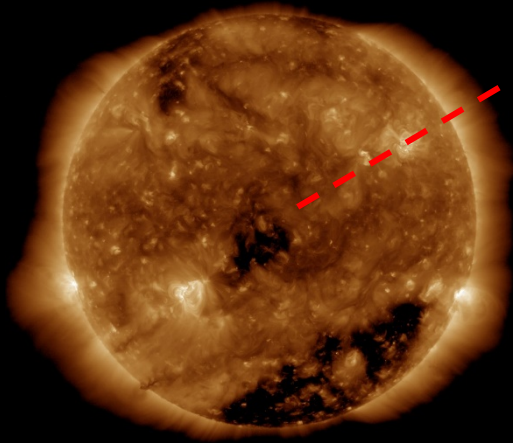
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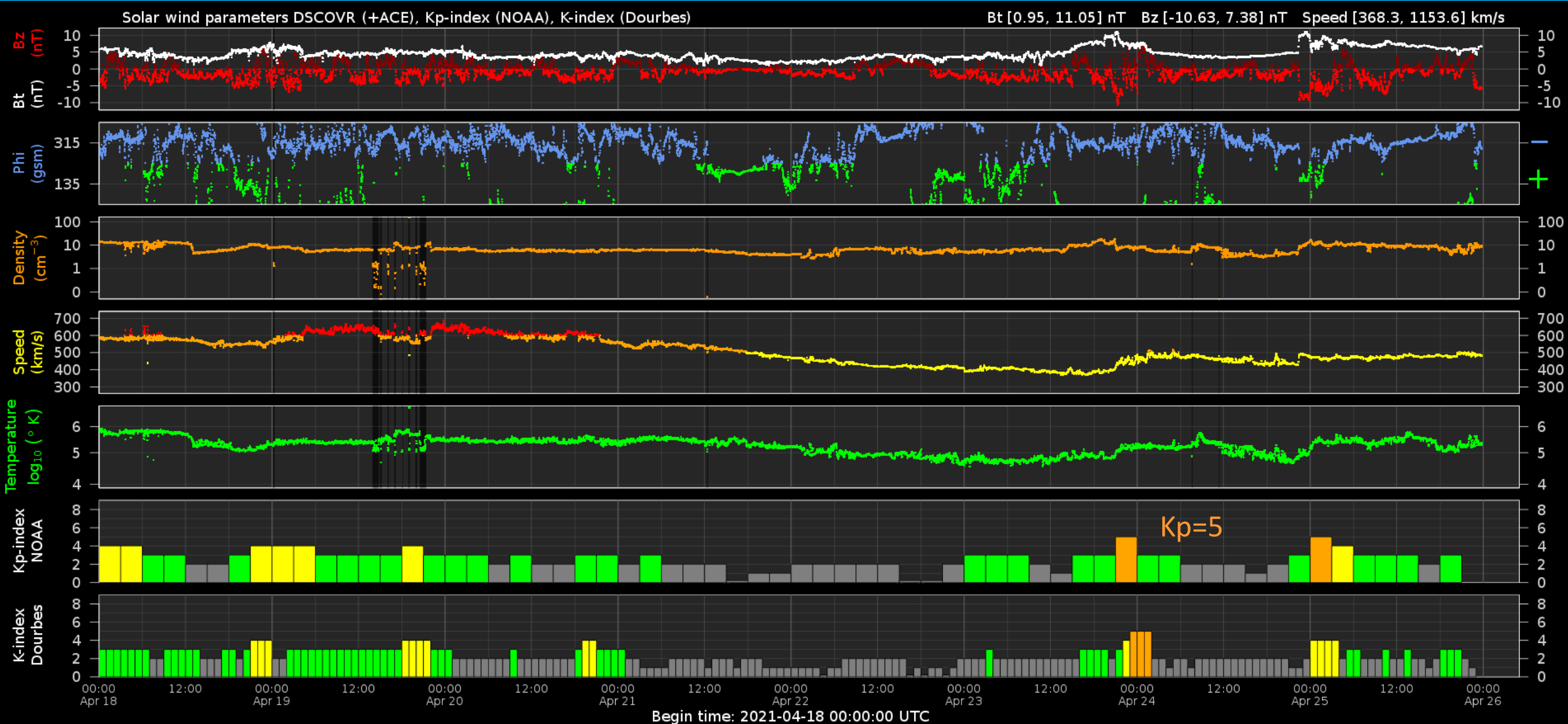
# Solar wind parameters



# In situ shock & CME



# Solar wind parameters & geomagnetic activity (K-indices)





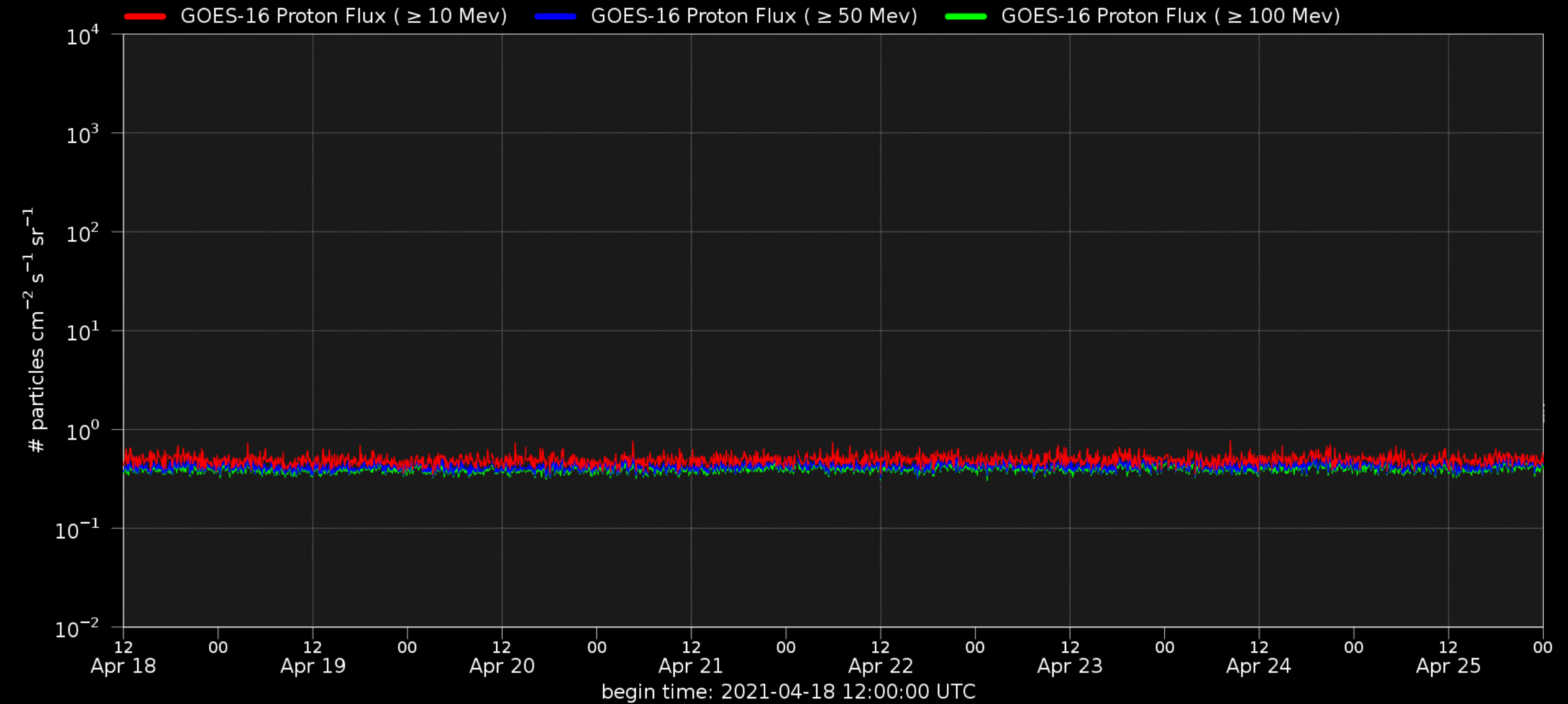
# Energetic Particles



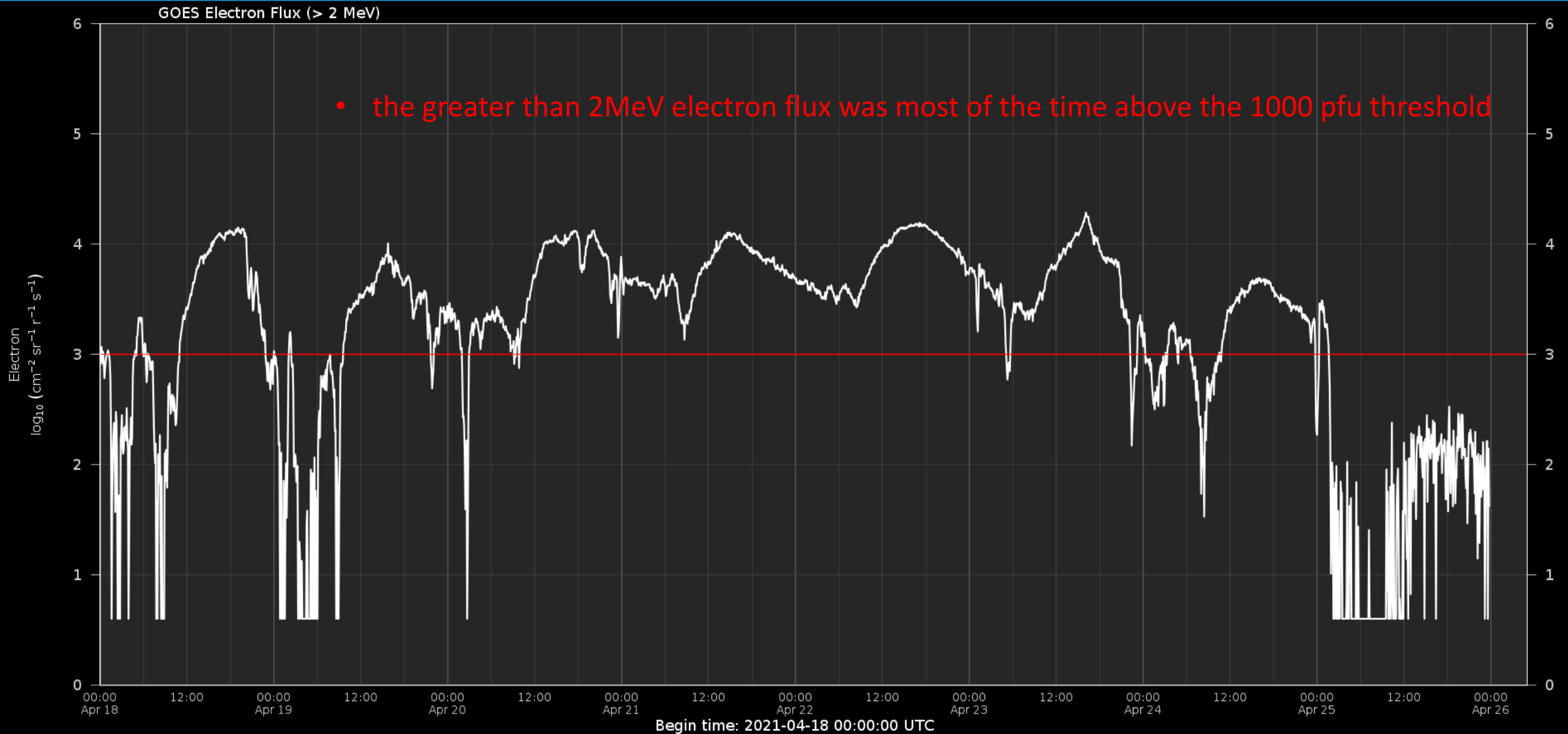
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# Solar proton flux



# Electron flux at GEO



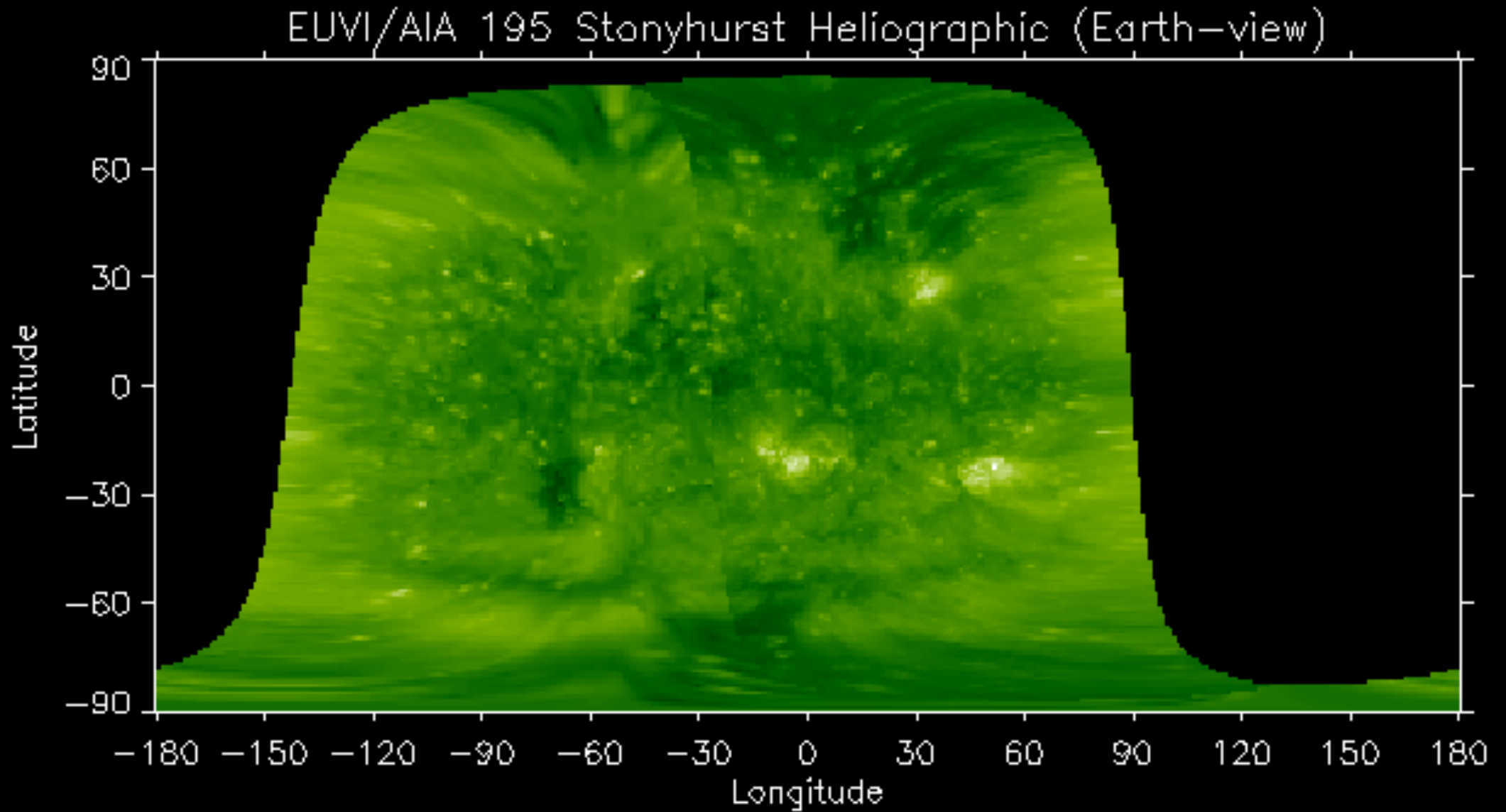
# Outlook



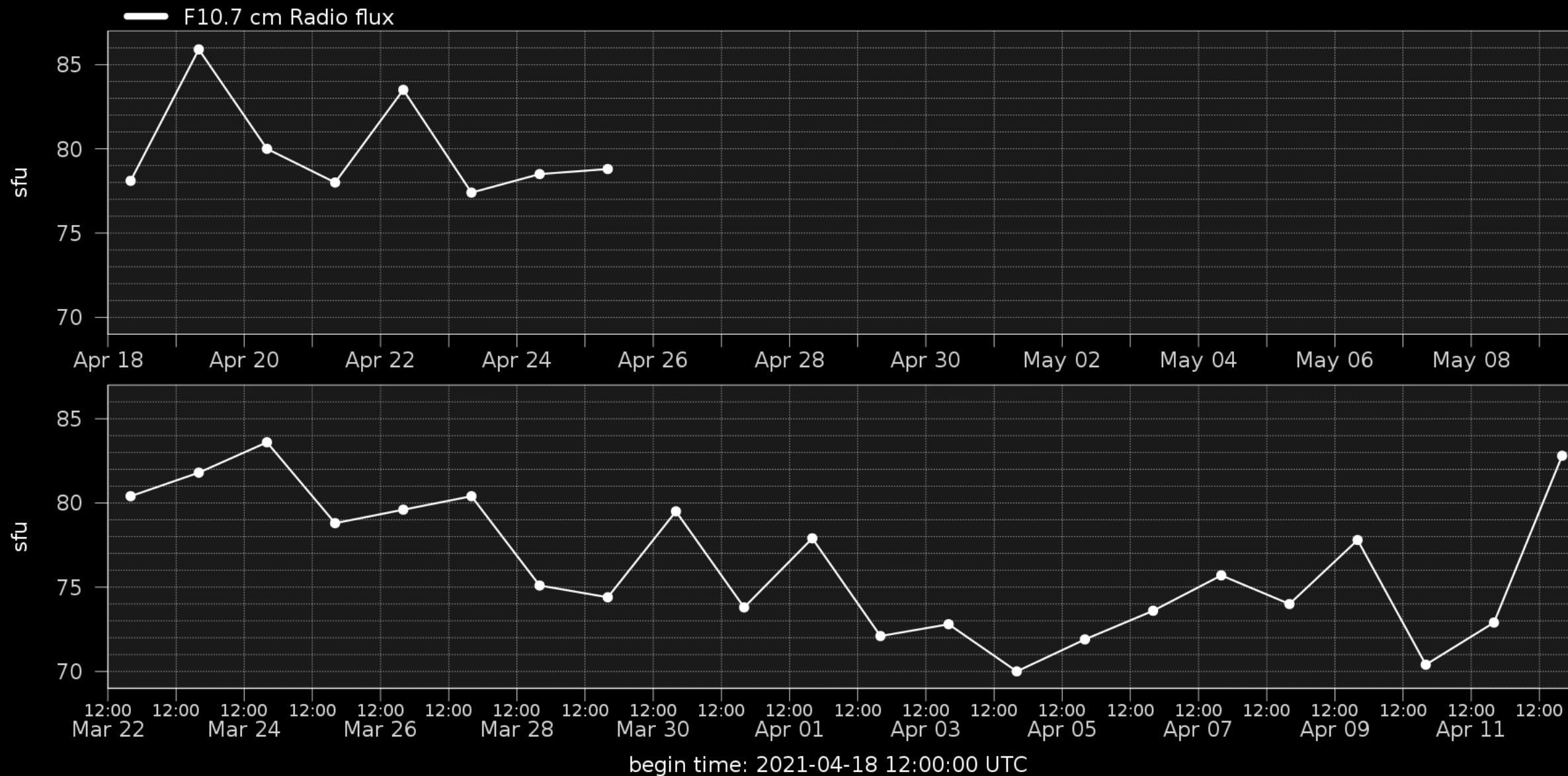
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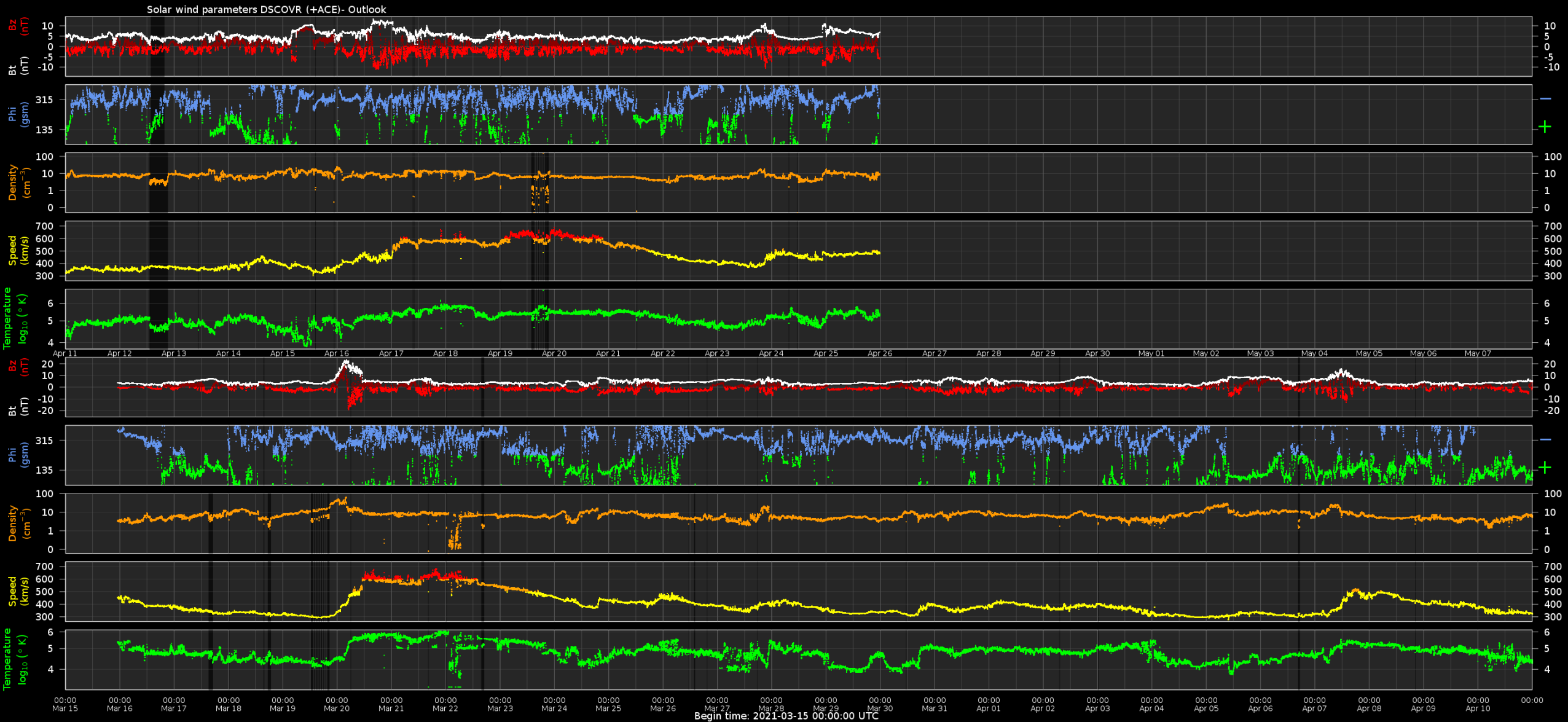
# Outlook: Solar activity



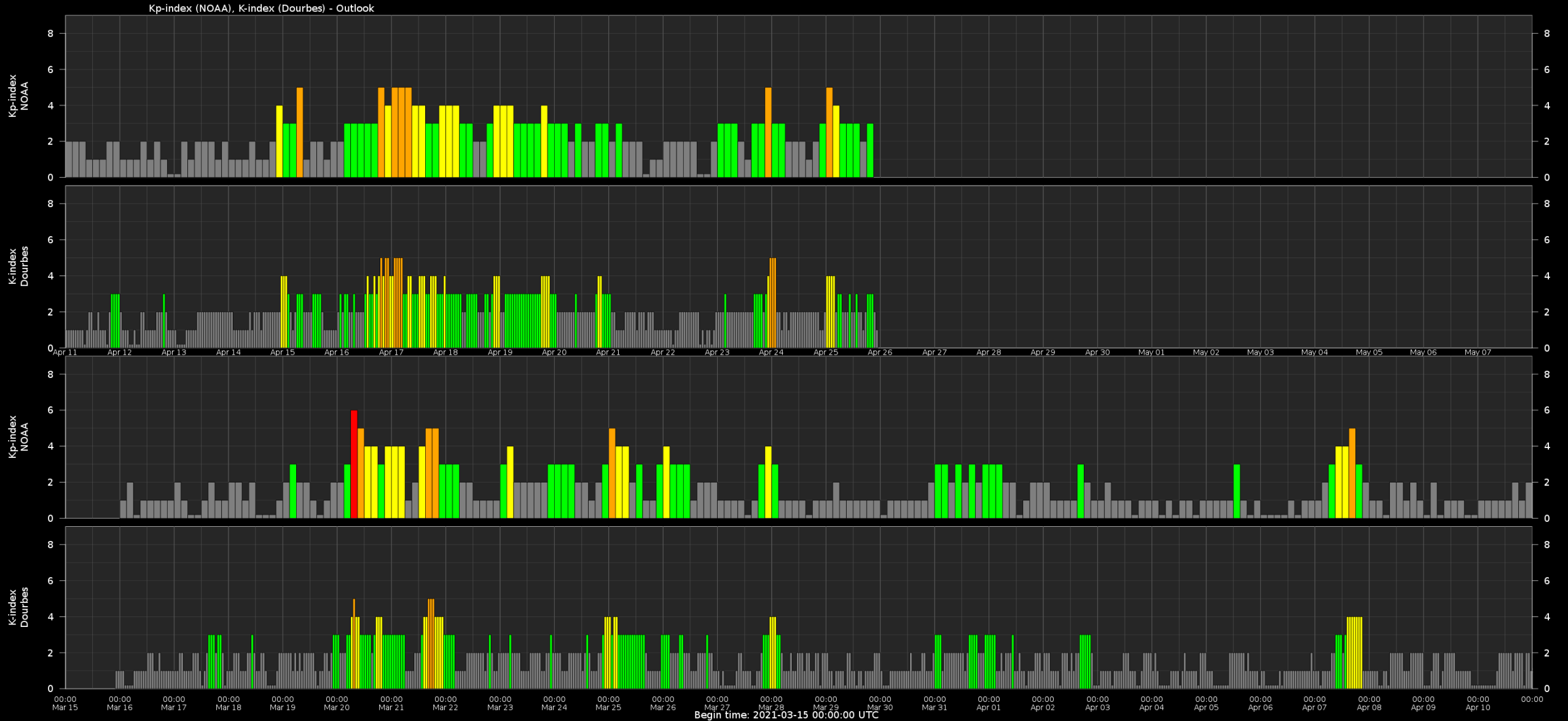
# Outlook: Solar F10.7cm radio flux



# Outlook: Solar wind parameters



# Outlook: Geomagnetic activity





# Outlook: Electron Flux at GEO Outlook



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