

SIDC Space Weather Briefing

21 July 2024-28 July 2024

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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 2024-07-21 12:00 to 2024-07-28 23:59

| | |
|----------------|---|
| Active regions | 20 Active Regions: NOAA AR 3744, 3745, 3747, 3751, 3752, 3754-3757, 3759 - 3769 |
| Flares | # C-class flare: >70 # M-class flare: 28 # X-class flare: 0 |
| Coronal Holes | 1 CH+ |
| CMEs | 3 halo and 1 partial halo CME |

| | |
|---------------|---|
| Proton flux | >10 MeV crossed 10 pfu threshold level on Jul 22-23 |
| Electron flux | Below 1000 pfu threshold level |

Solar wind and geomagnetic conditions

| | |
|------------------------|--|
| ICMEs | 1 ICME arrivals |
| Solar wind conditions | B : 1.28 - 20.51 nT //Bz: -13.62 nT to 15.92 nT //Speed: 246.4 - 612.1 km/s |
| Geomagnetic conditions | max K _{Be} : 4.0, max K _p (NOAA): 4.67, Minor Storm conditions |

All Quiet Alert: All quiet off.

- Solar Activity

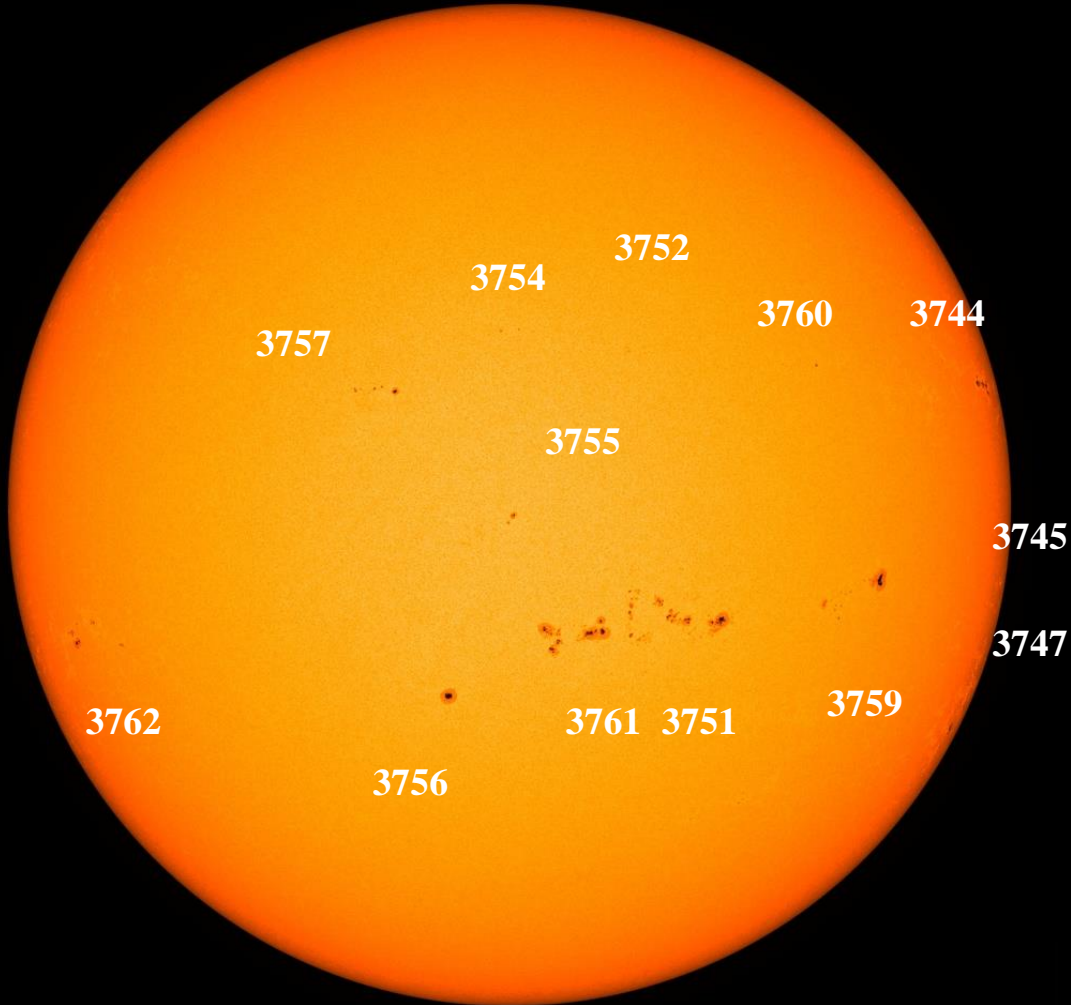


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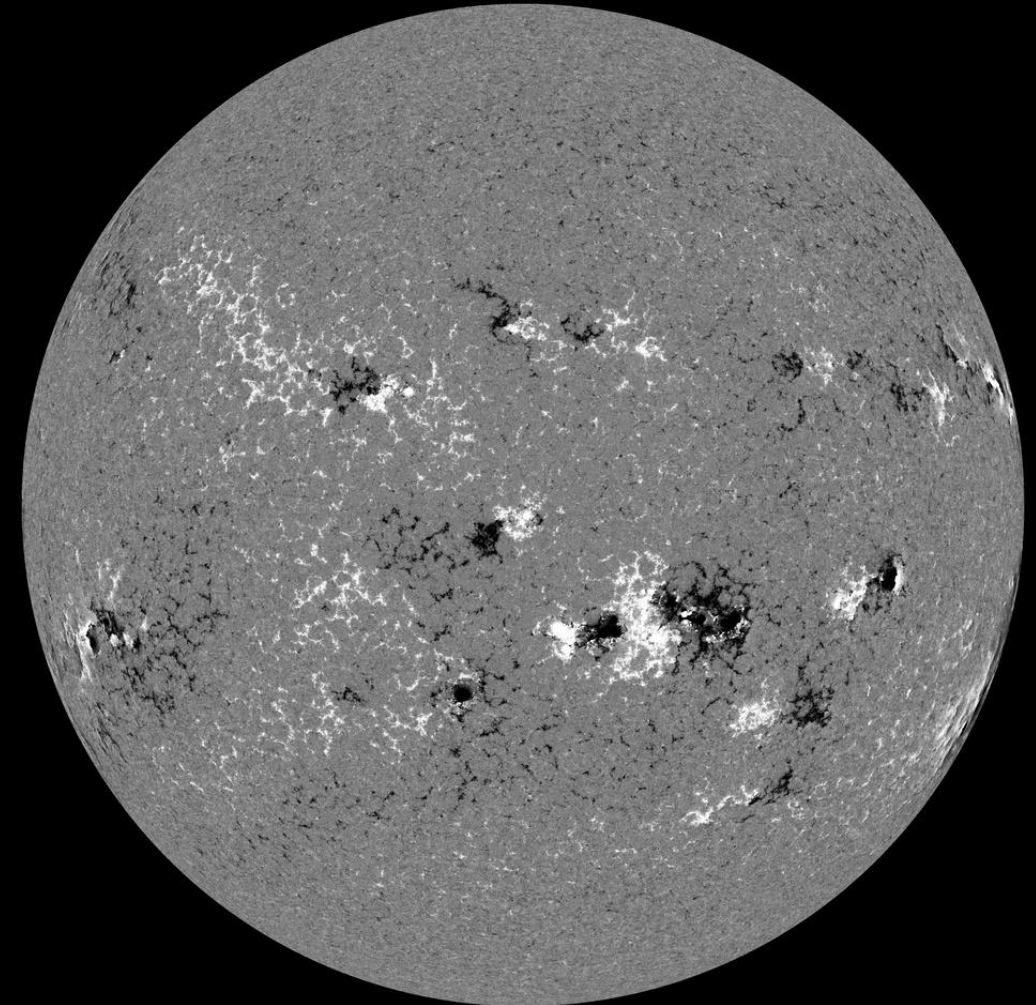
Solar active regions

SDO/HMI White Light 2024-07-21



SDO/HMI Quick-Look Continuum: 20240721_114500

SDO/HMI Magnetogram 2024-07-21

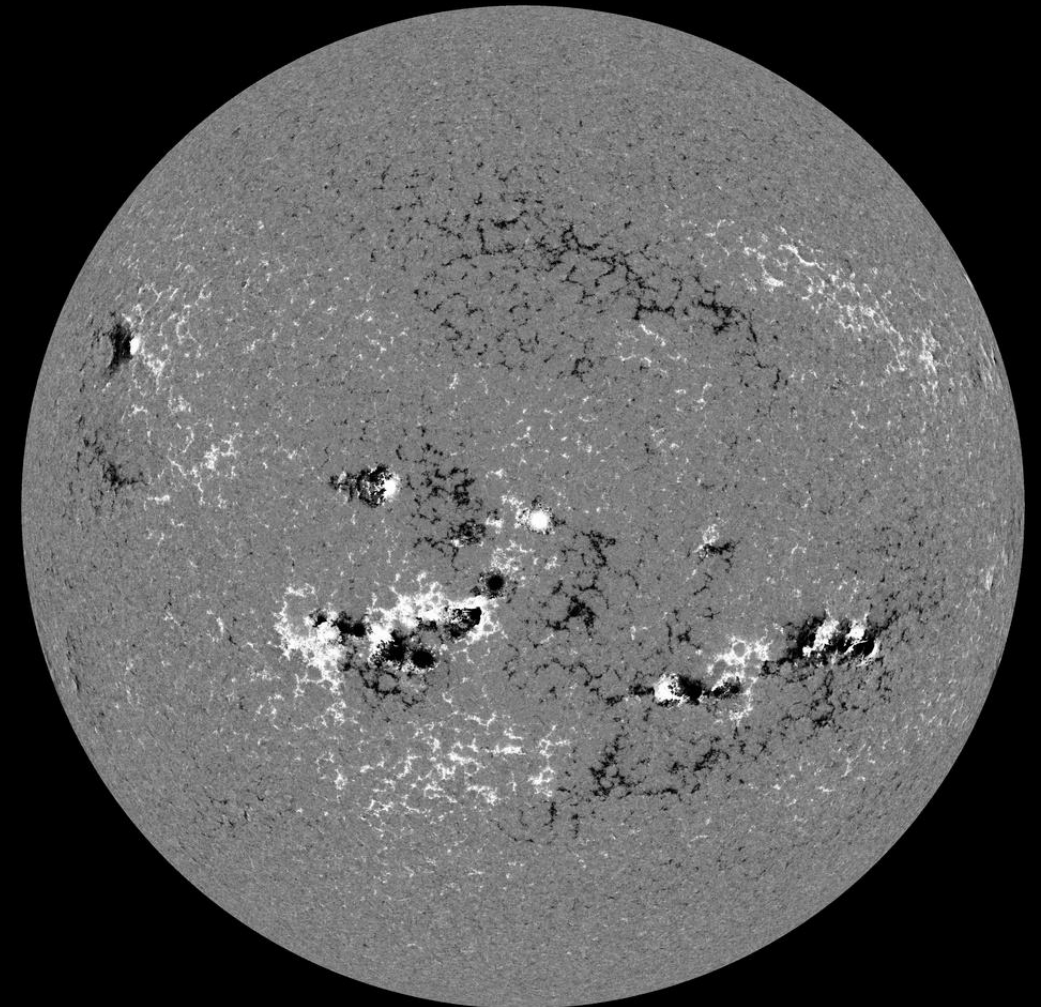
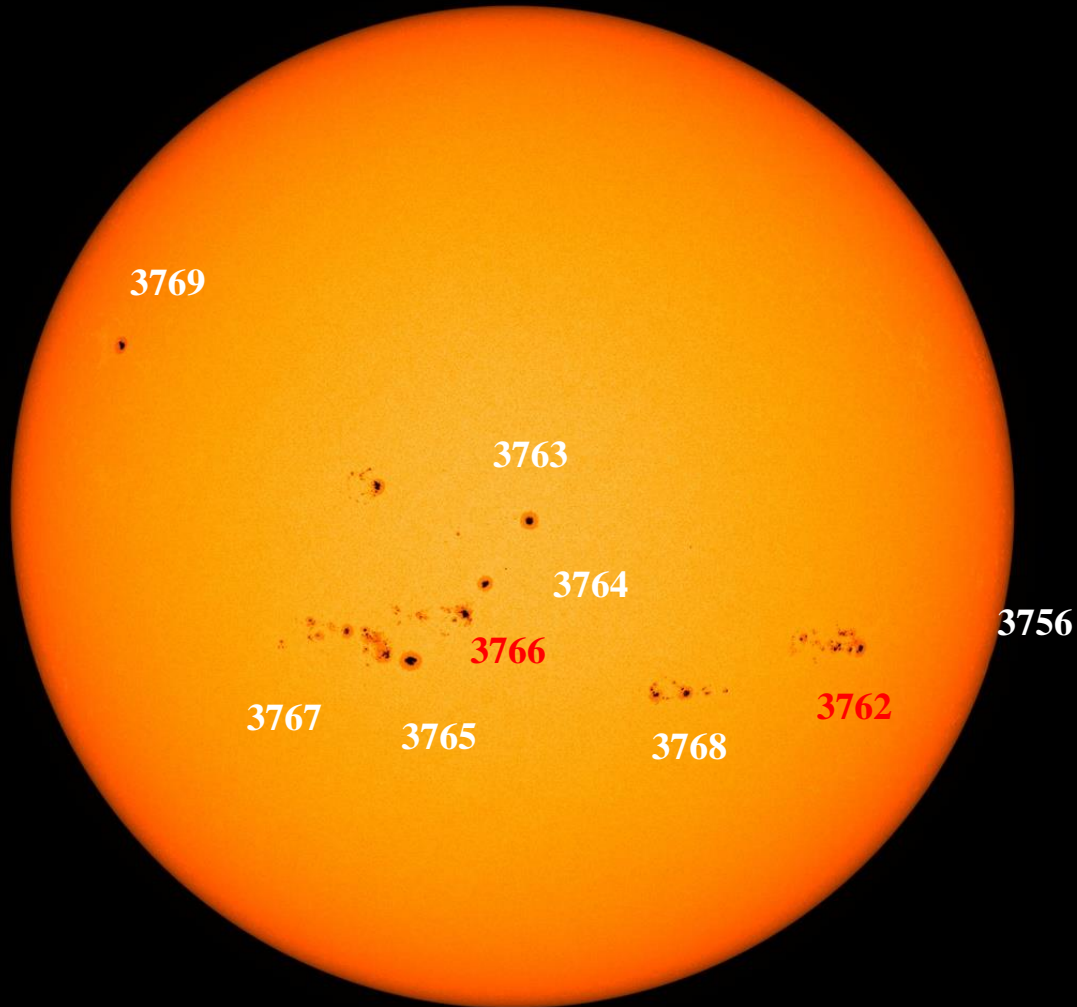


SDO/HMI Quick-Look Magnetogram: 20240721_114500

Solar active regions

SDO/HMI White Light 2024-07-28

SDO/HMI Magnetogram 2024-07-28



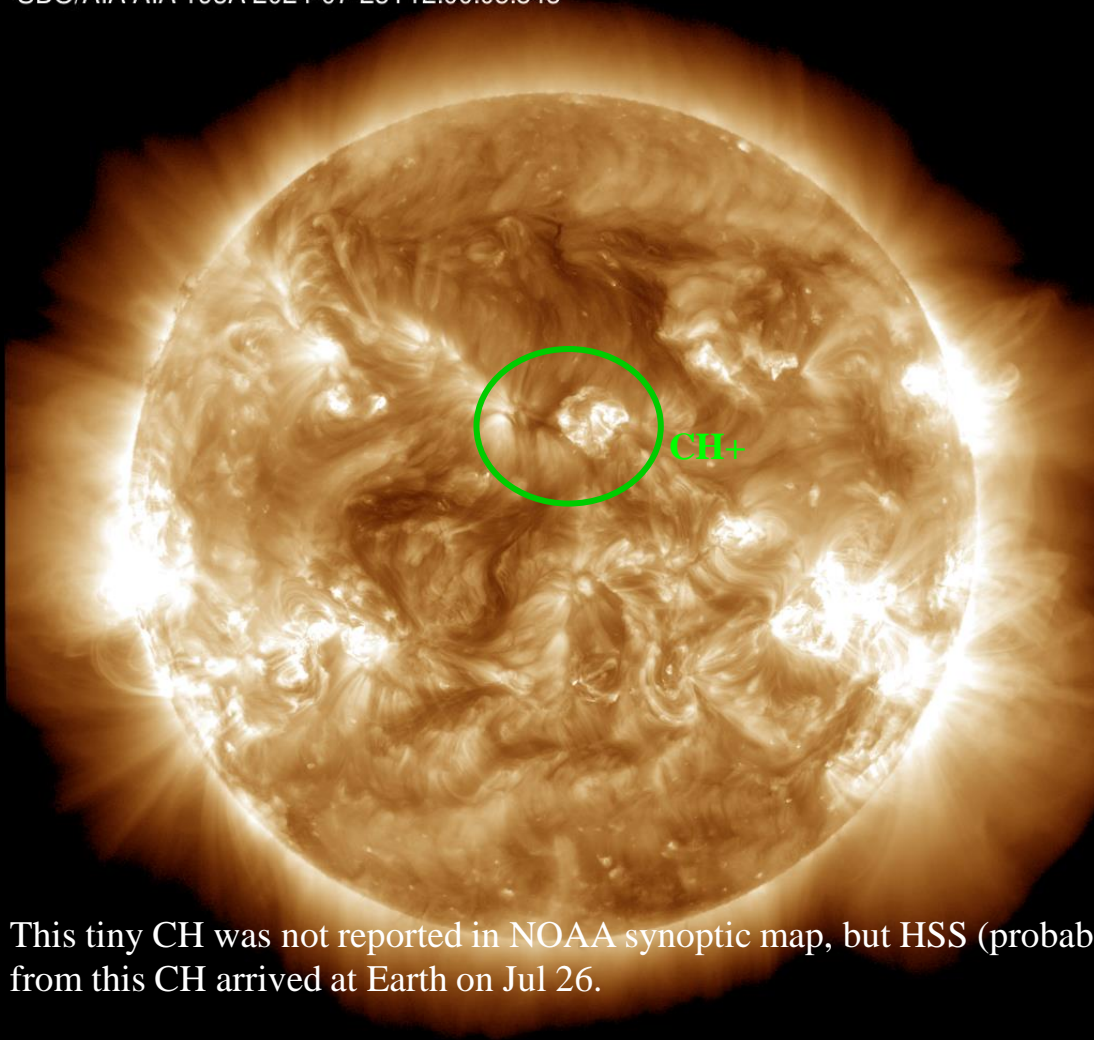
SDO/HMI Quick-Look Continuum: 20240728_114500

SDO/HMI Quick-Look Magnetogram: 20240728_114500

Coronal holes

SDO/AIA 19.3 nm 2024-07-23

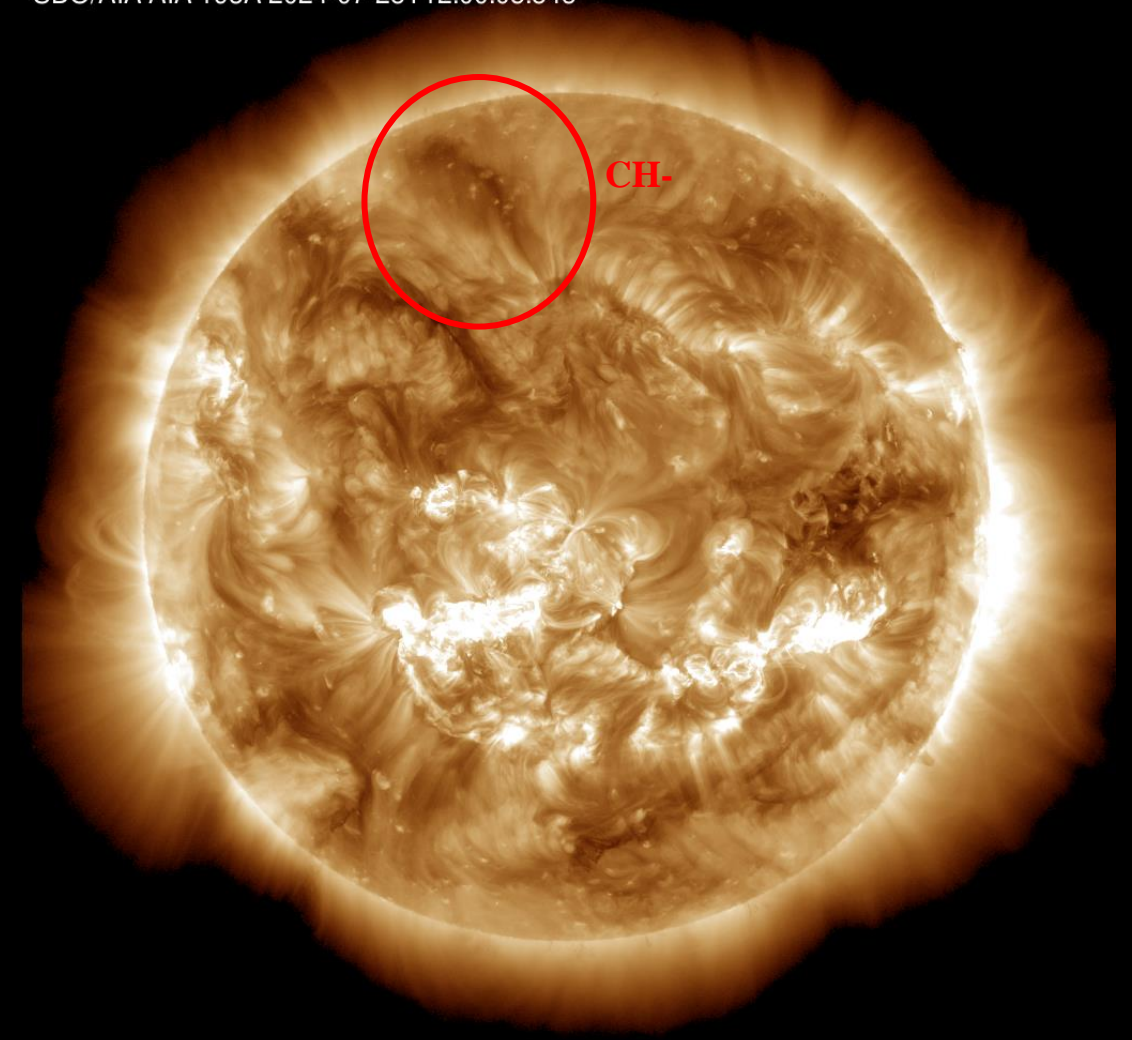
SDO/AIA AIA 193Å 2024-07-23T12:00:05.843



This tiny CH was not reported in NOAA synoptic map, but HSS (probably) from this CH arrived at Earth on Jul 26.

SDO/AIA 19.3 nm 2024-07-28

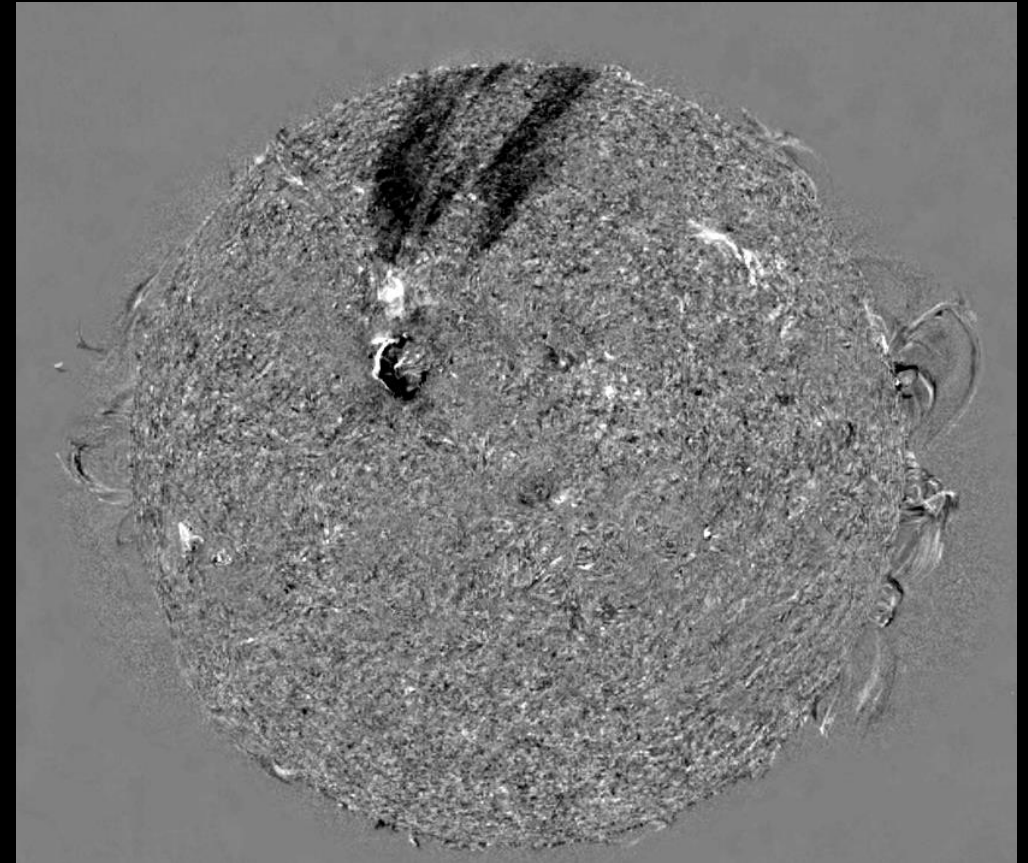
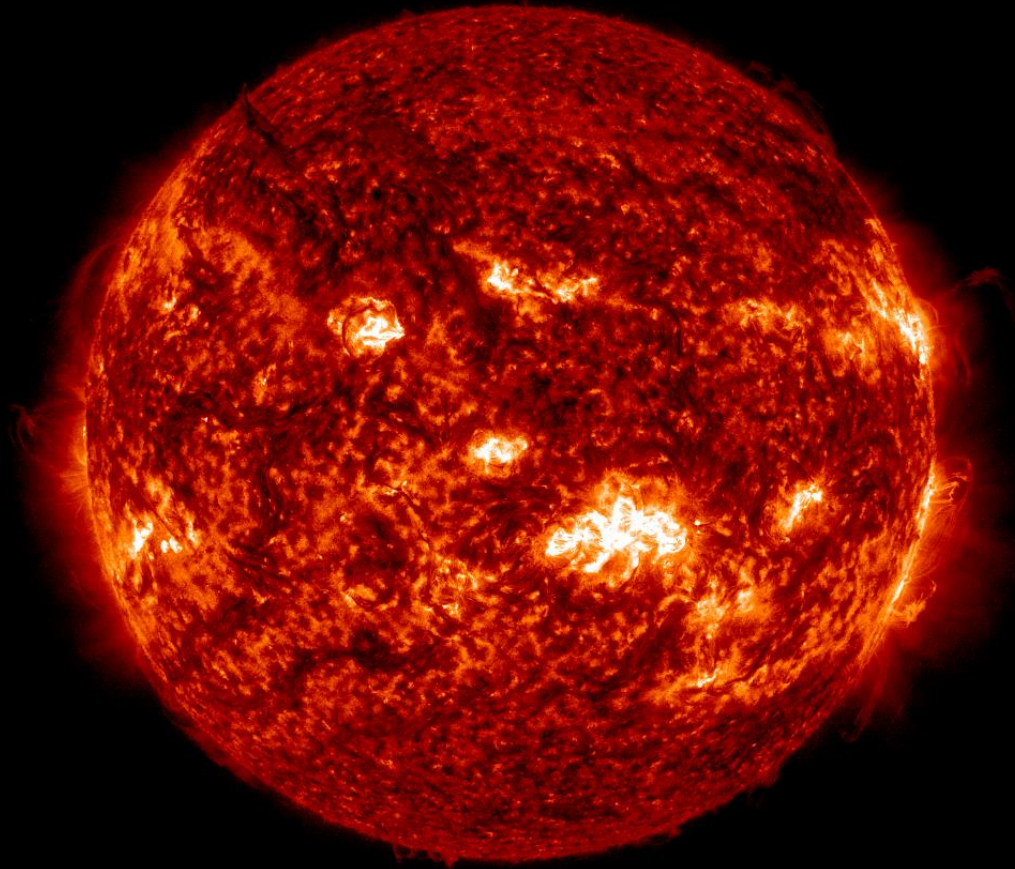
SDO/AIA AIA 193Å 2024-07-28T12:00:05.843



Filaments

SDO/AIA 30.4 nm 2024-07-21

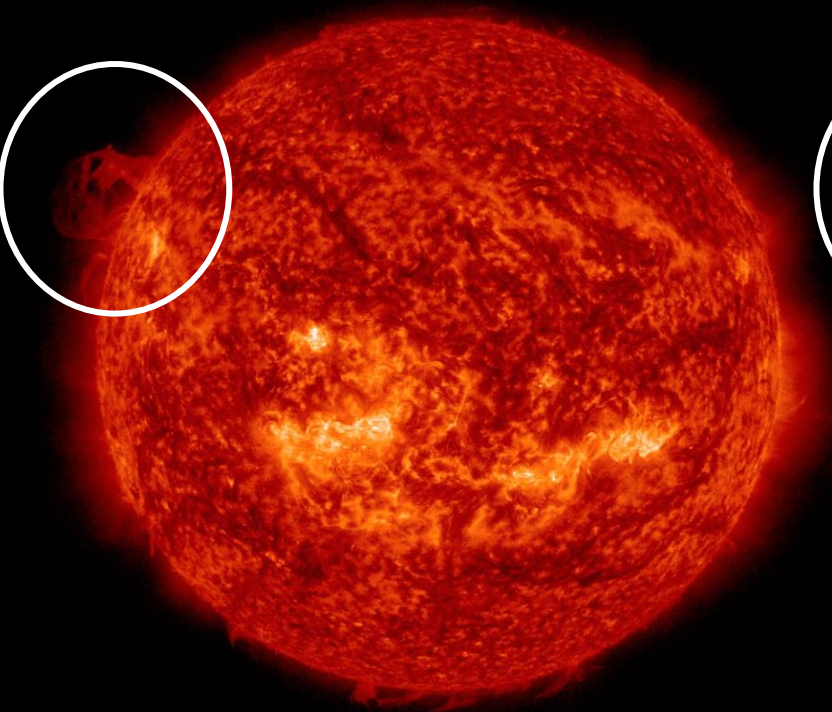
SDO/AIA AIA 304Å 2024-07-21T12:00:06.580



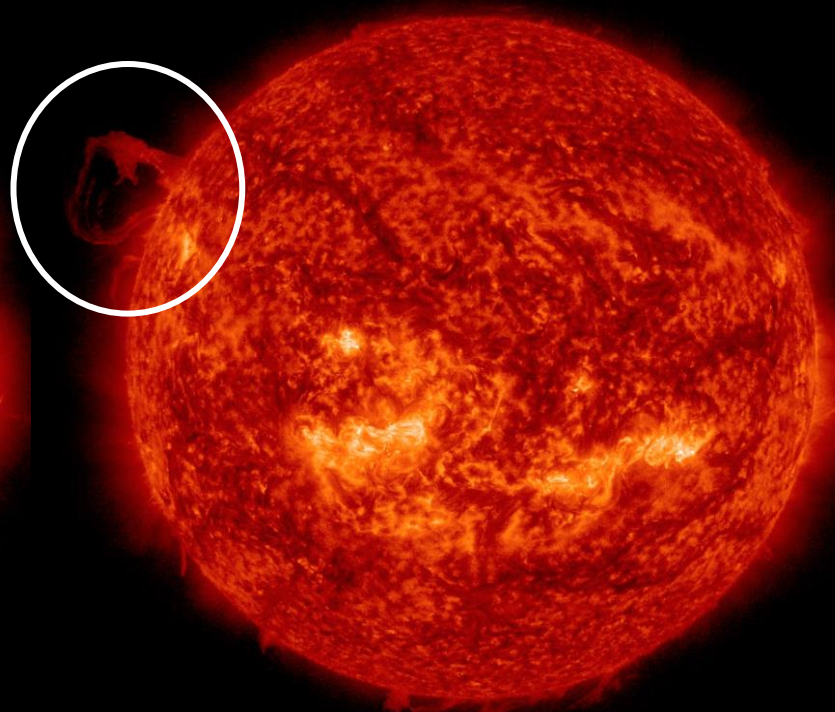
Associated with M1.0 flare from AR 3757 around 16:00 UTC on Jul 21.
CME around 16:28 UTC on Jul 21.

Prominence

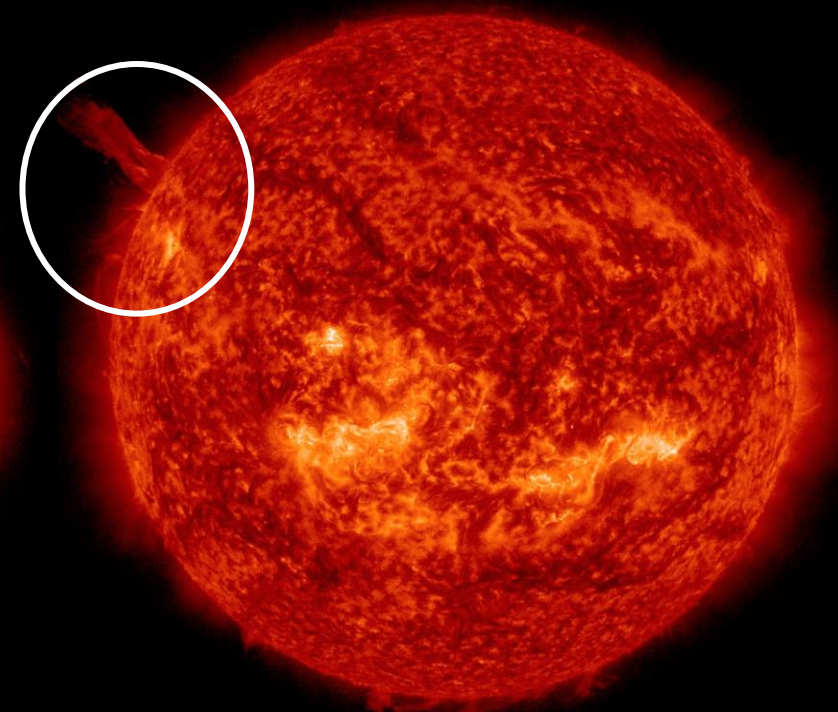
SDO/AIA 30.4 nm 2024-07-28



SDO/AIA 304 2024-07-28 04:48:42 UT



SDO/AIA 304 2024-07-28 04:59:18 UT



/AIA 304 2024-07-28 05:19:18 UT

Associated narrow CME (60 deg), no impact expected.

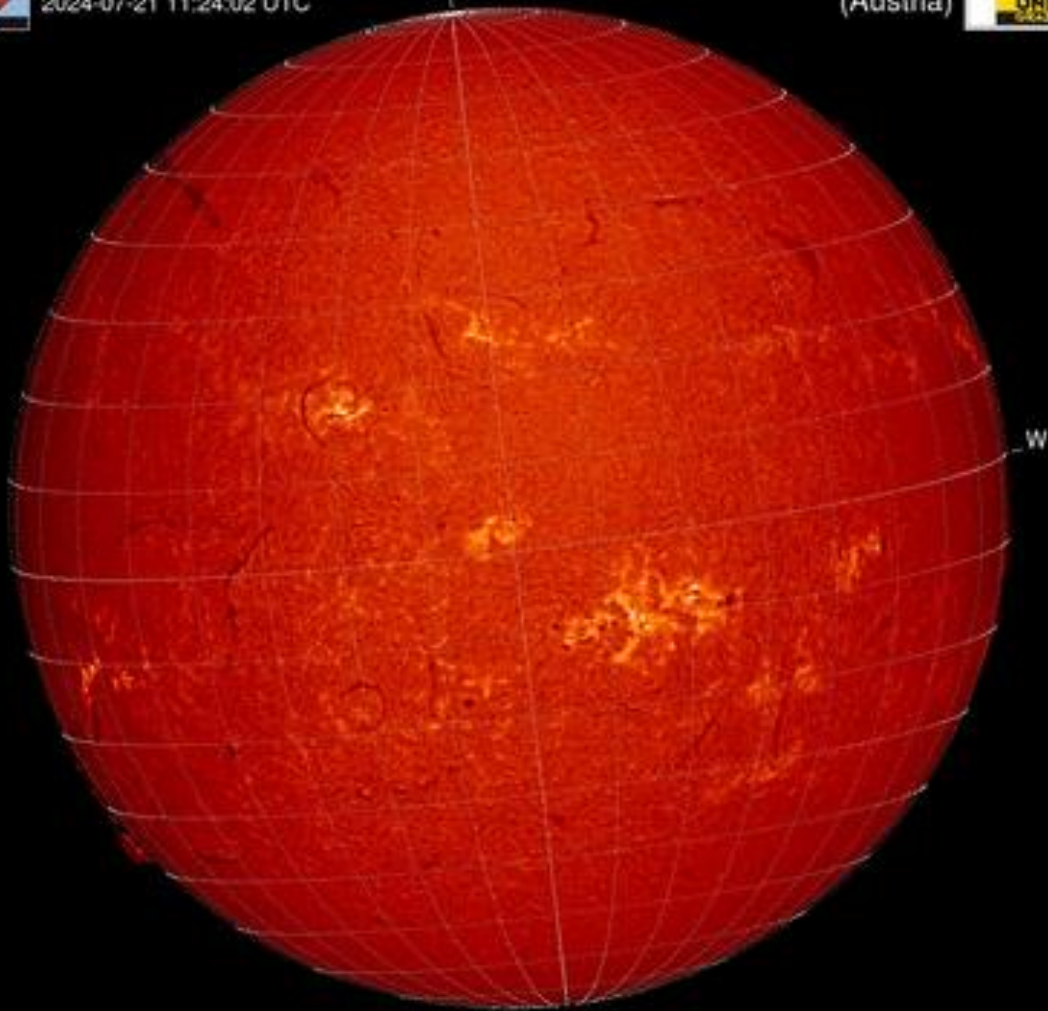
Filaments & Filament eruptions

H-alpha 2024-07-21



Kanzelhöhe Observatory
2024-07-21 11:24:02 UTC

University of Graz
(Austria)

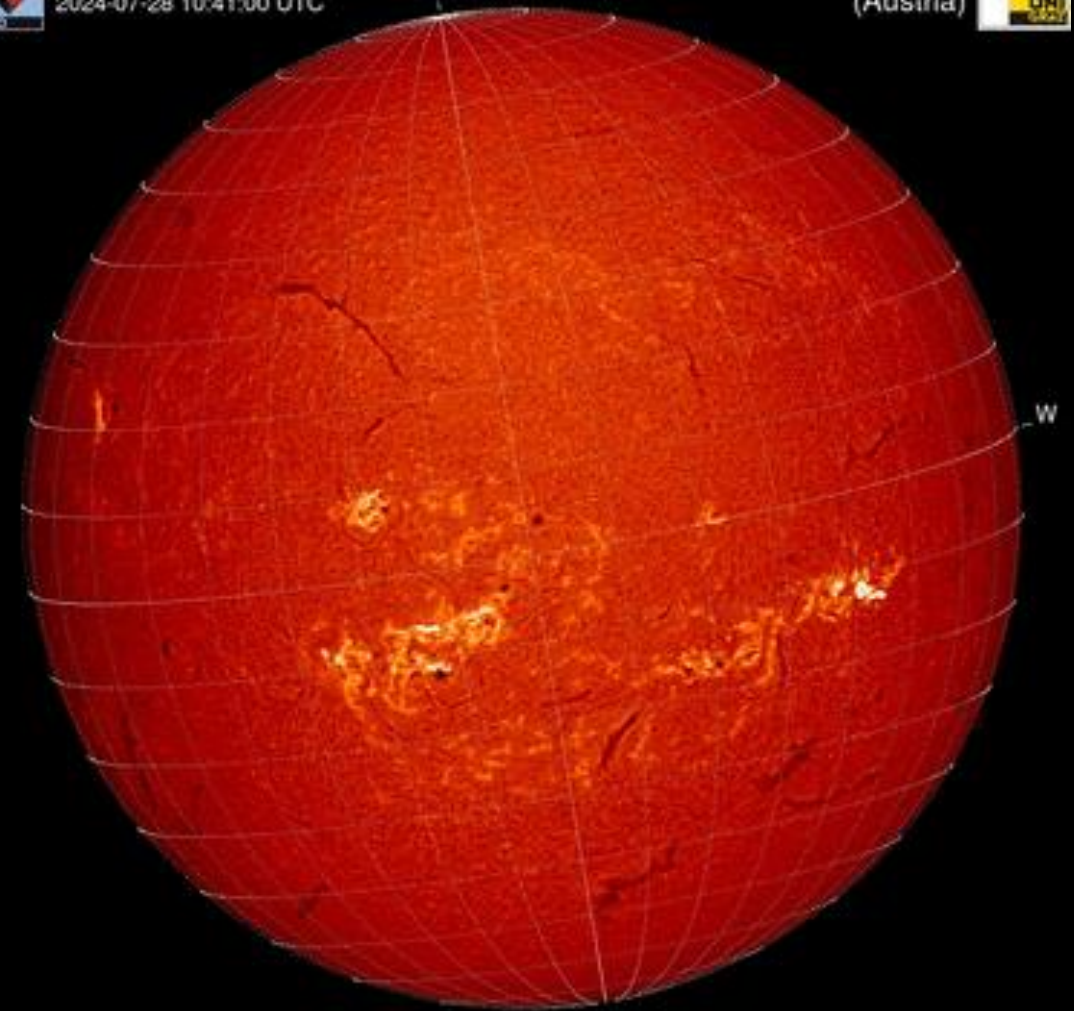


H-alpha 2024-07-28

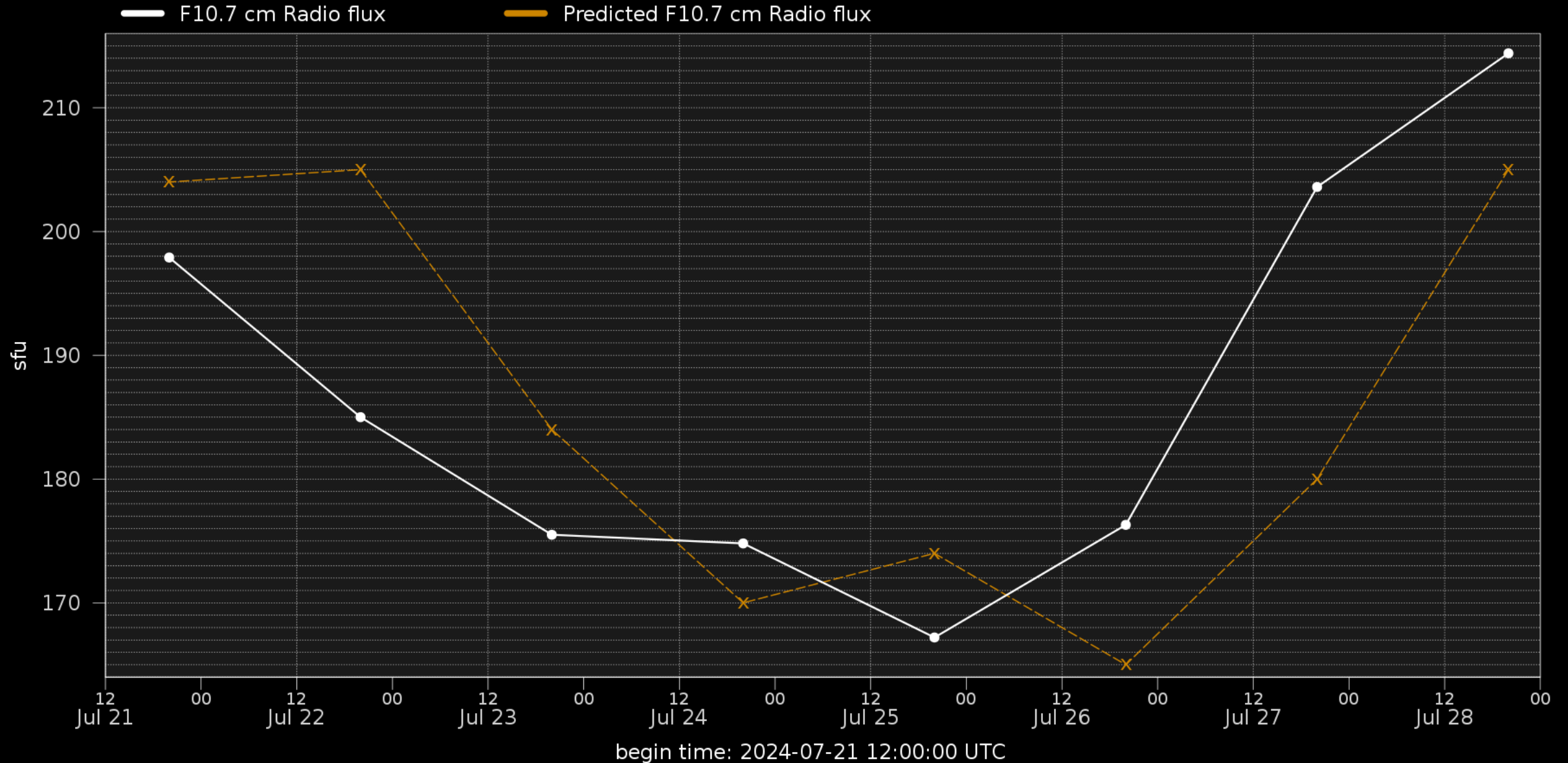


Kanzelhöhe Observatory
2024-07-28 10:41:00 UTC

University of Graz
(Austria)

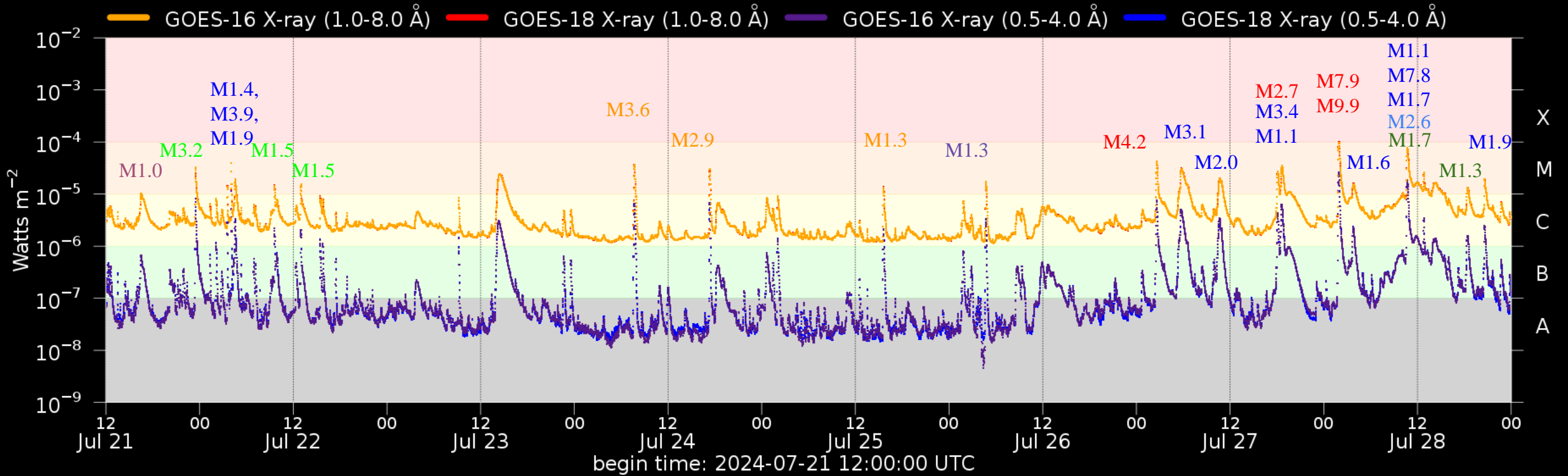


Solar F10.7cm radio flux



Flaring activity

NOAA AR **3744**, **3751**, **3757**, **3761**, **3762**, **3766**, **3767**, **3768**

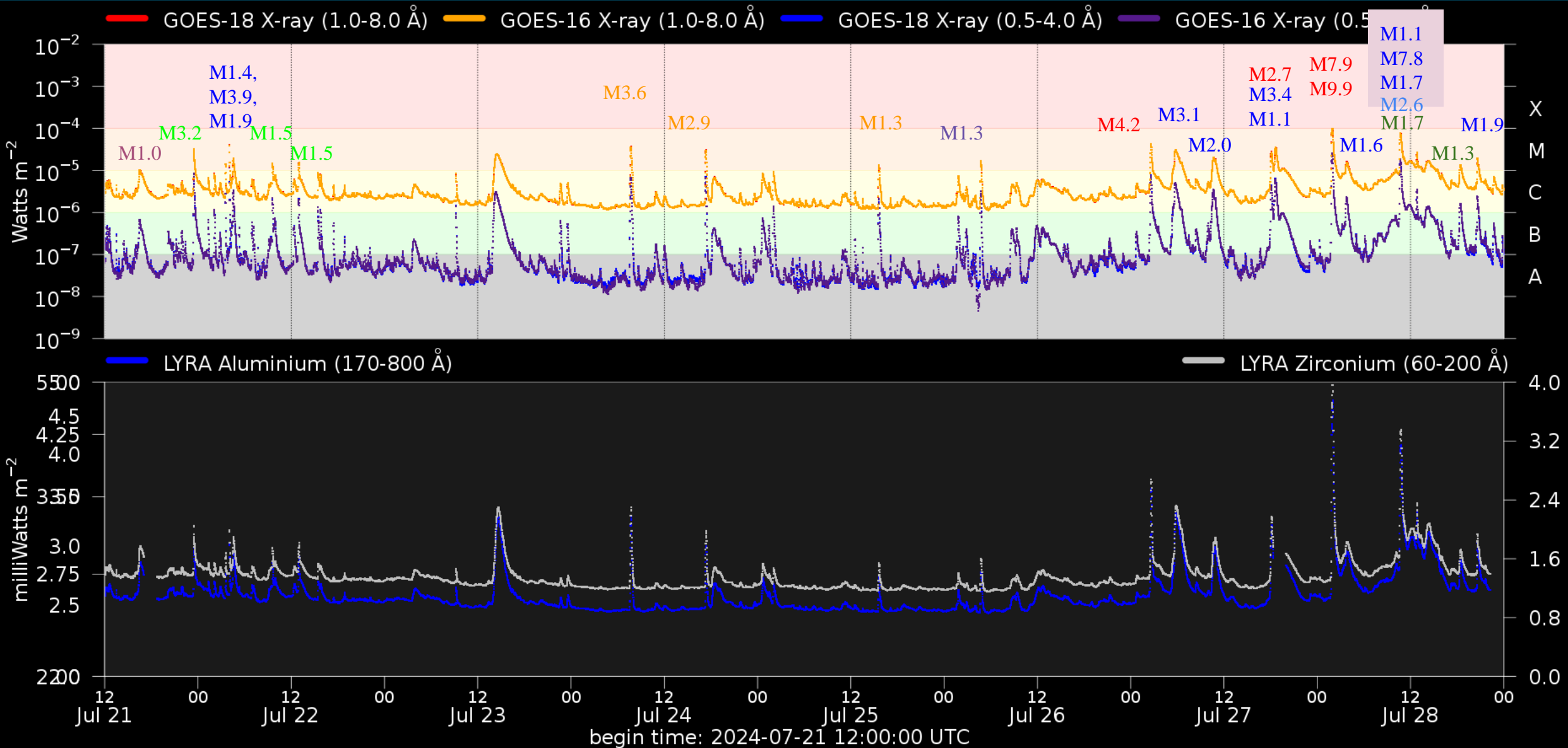


Probabilities (%) and occurrences (#) of C/M/X-flares daily, from noon to noon:

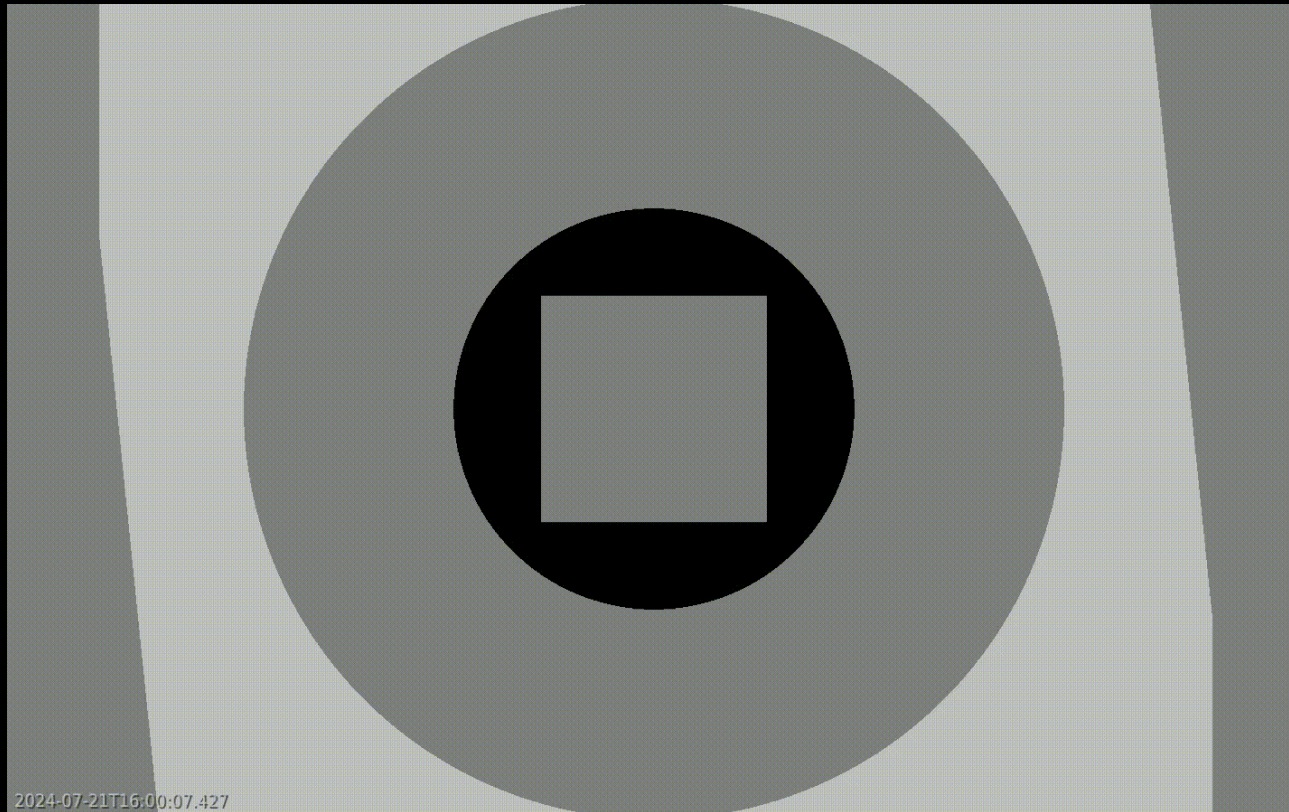
| Issue date | 2024-07-21 | 2024-07-22 | 2024-07-23 | 2024-07-24 | 2024-07-25 | 2024-07-26 | 2024-07-27 | 2024-07-28 |
|-----------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Probability (%) | 99 70 15 | 99 55 15 | 90 50 10 | 90 55 10 | 90 55 10 | 90 60 15 | 90 55 10 | 91 80 45 |
| Observed (#) | 10 06 00 | 06 01 00 | 05 02 00 | 07 01 00 | 08 02 00 | 02 03 00 | 01 05 00 | 02 03 00 |

Solar X-Ray and LYRA

NOAA AR **3744**, **3751**, **3757**, **3761**, **3762**, **3766**, **3767**, **3768**



Coronal Mass Ejections



Halo CME

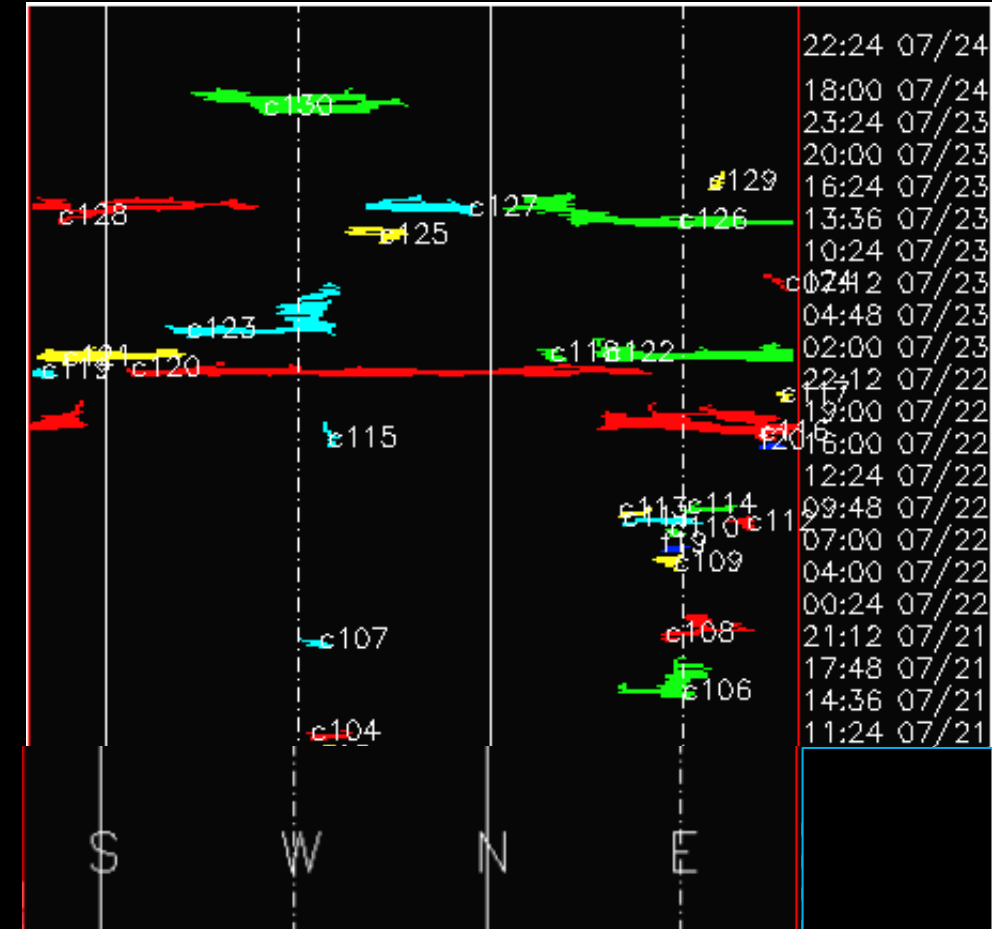
Observation: 16:28 UTC on Jul 21

Associated with M1.0 flare (peak: 16:31 UTC, AR 3757,
and eruption of twisted filament

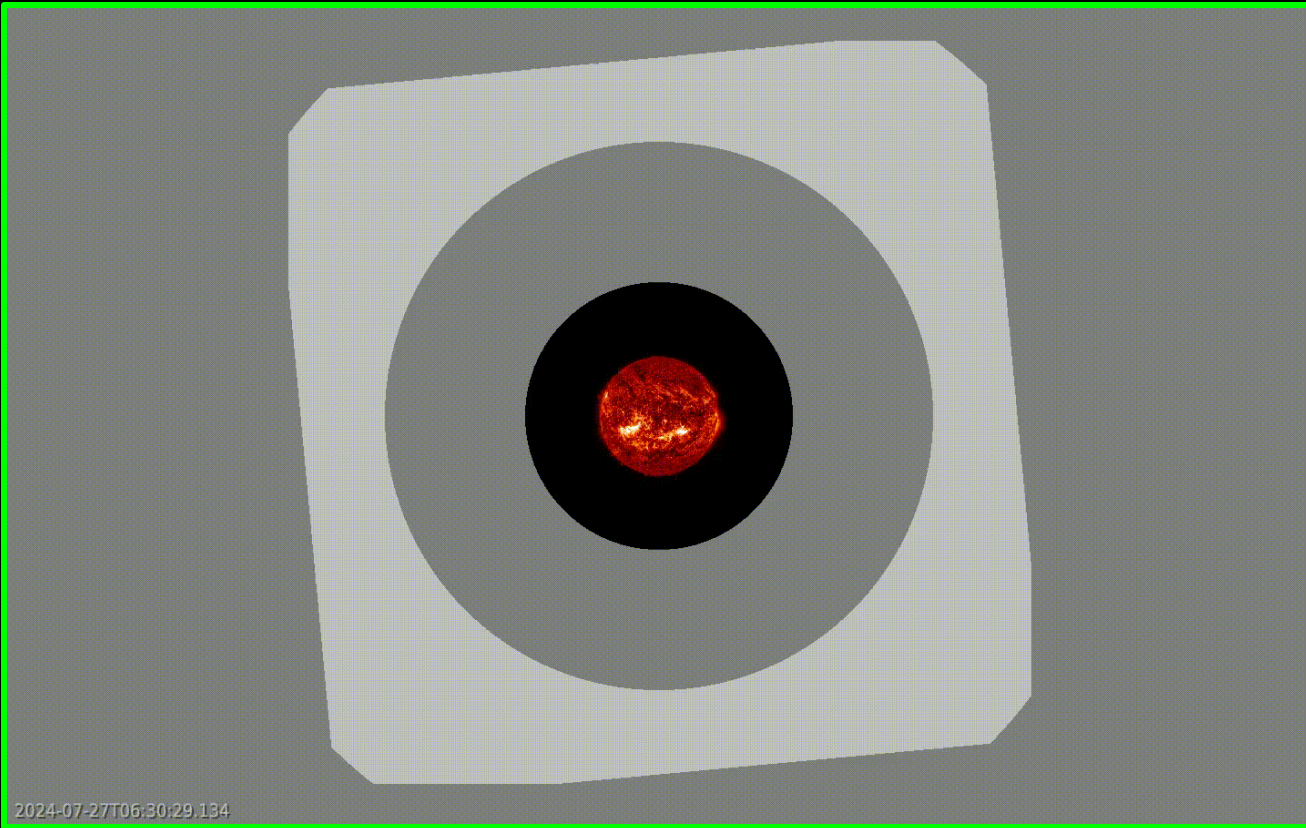
Prediction: Impact on Jul 24T05:00

Arrival: Impact on **Jul 23T19:50**

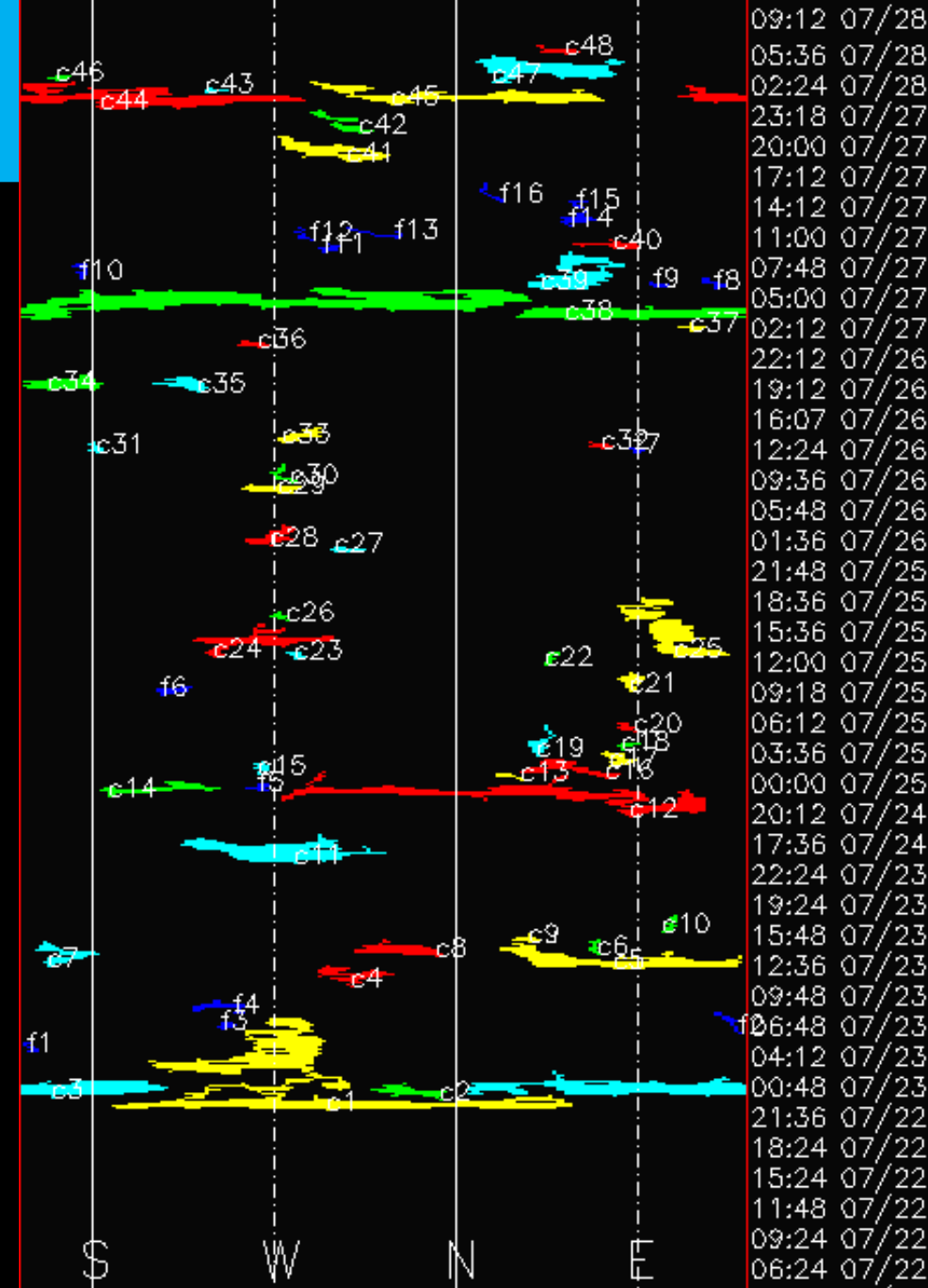
Shock: 19:50 UTC on Jul 23



Coronal Mass Ejections



2024-07-27T06:30:29.134



Halo CME

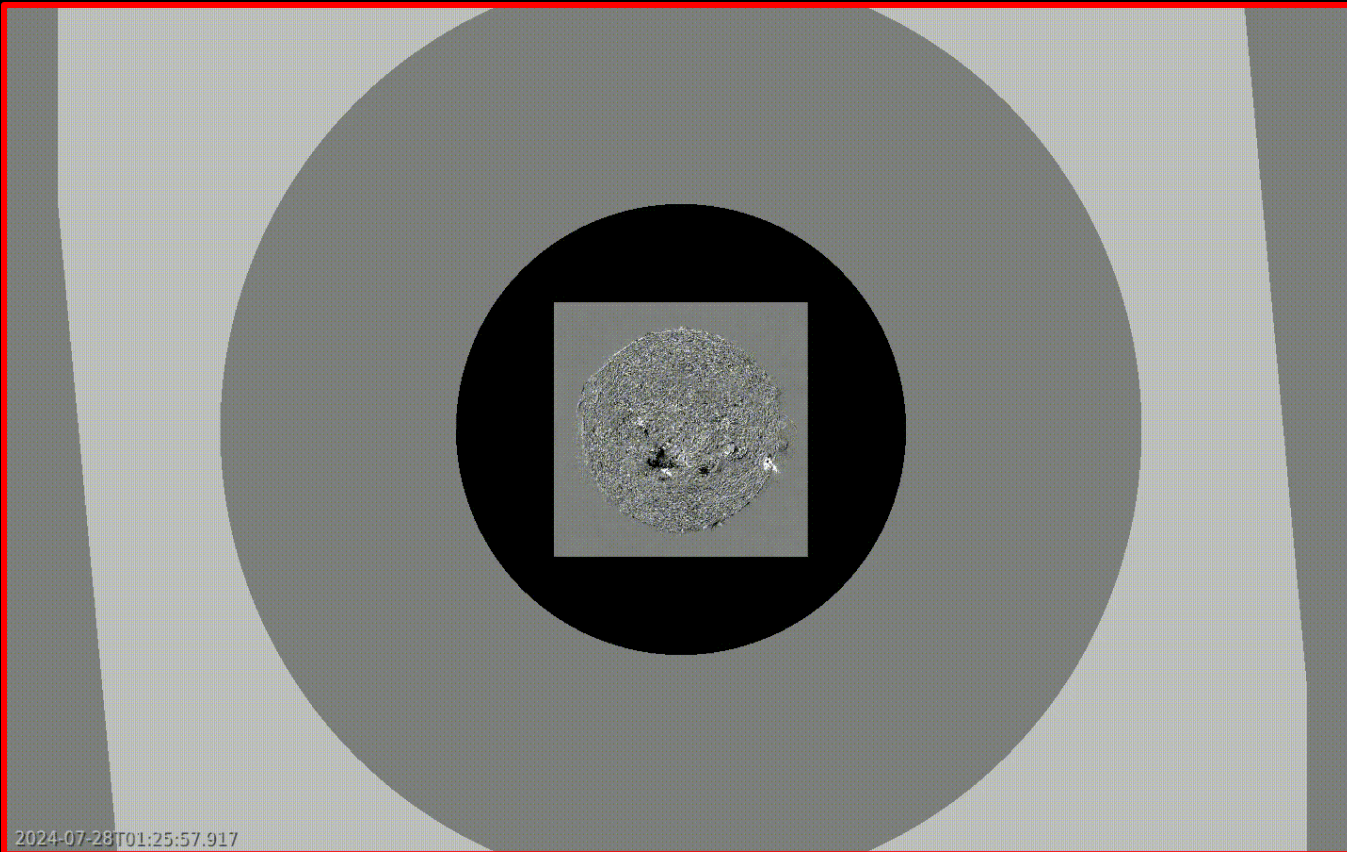
Observation: 06:30 UTC on Jul 27

Associated with M3.1 flare (peak: 05:46 UTC, AR 3762)

Possible associated type IV radio emission from 06:43 UTC Jul 27

Prediction: Impact on Jul 31T04:30

Coronal Mass Ejections



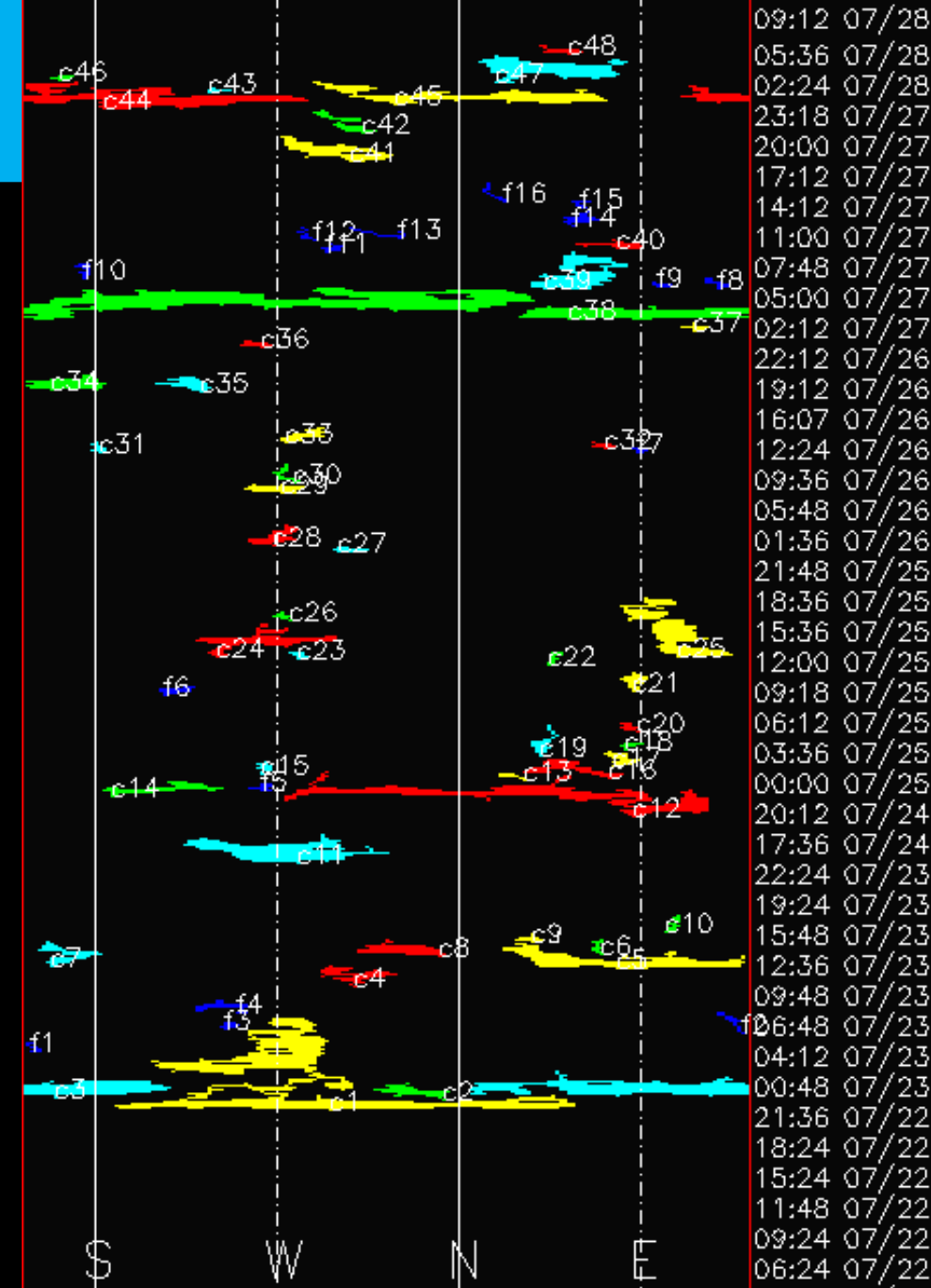
Halo CME

Observation: 02:24 UTC on Jul 28

Associated with M7.8 flare (peak: 01:51 UTC) & M9.9 flare (peak: 01:57 UTC, AR 3766)

Associated type II radio emission from 01:51 UTC Jul 28

Prediction: Impact on Jul 31T20:00



- Solar Wind and

- **Geomagnetic Activity**



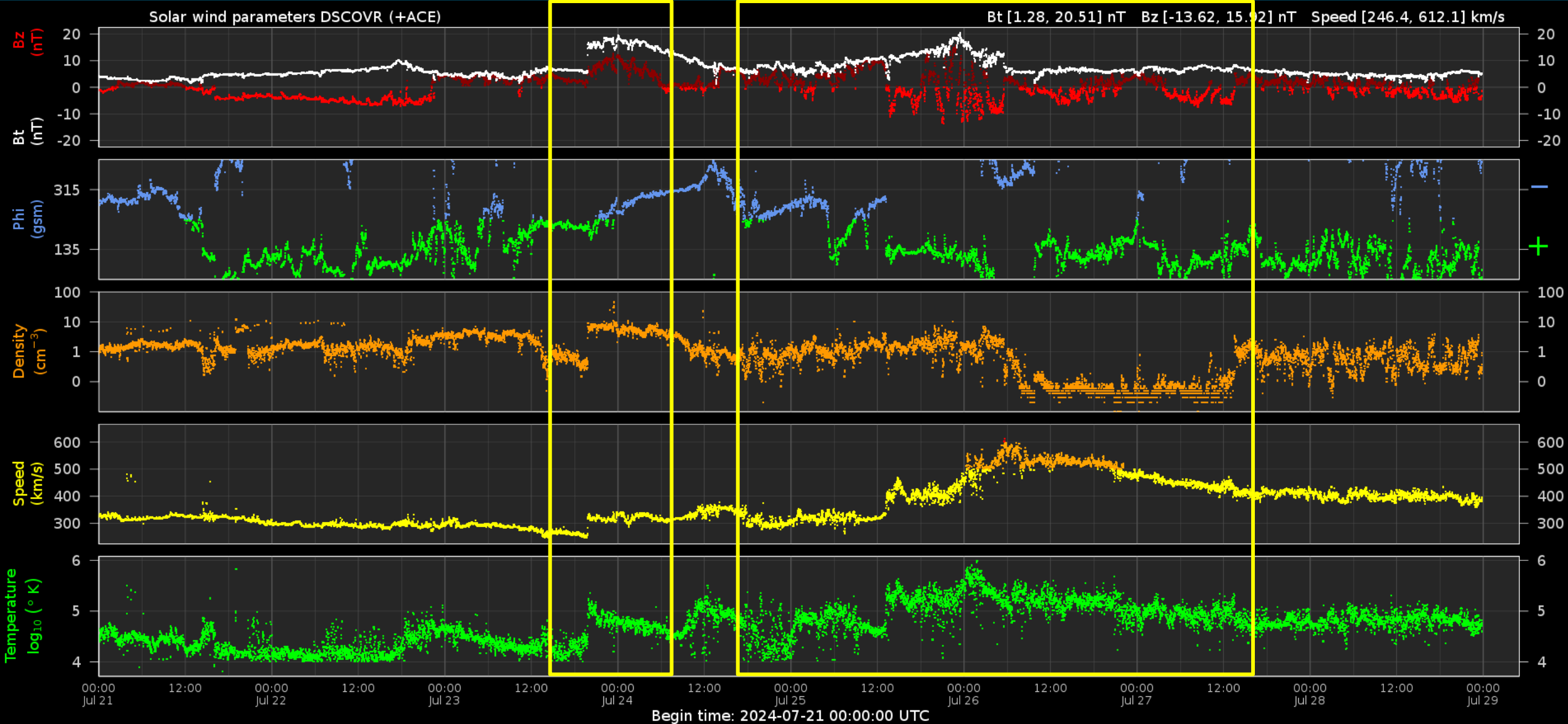
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Solar wind parameters

ICME (CME on Jul 21T16:28)

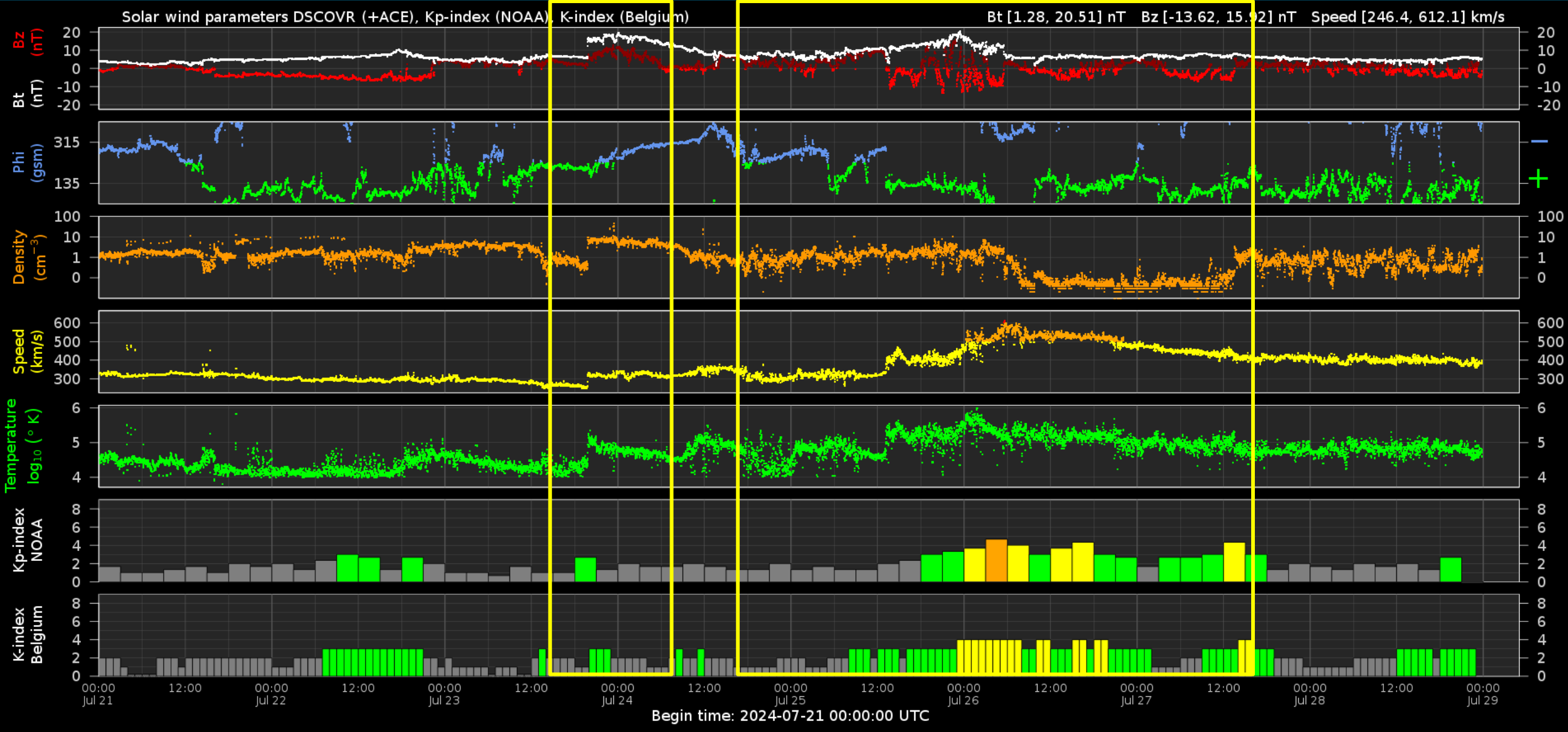
Sector boundary crossing + HSS (CH on Jul 23)



Solar wind parameters & K-indices

ICME (CME on Jul 21T16:28)

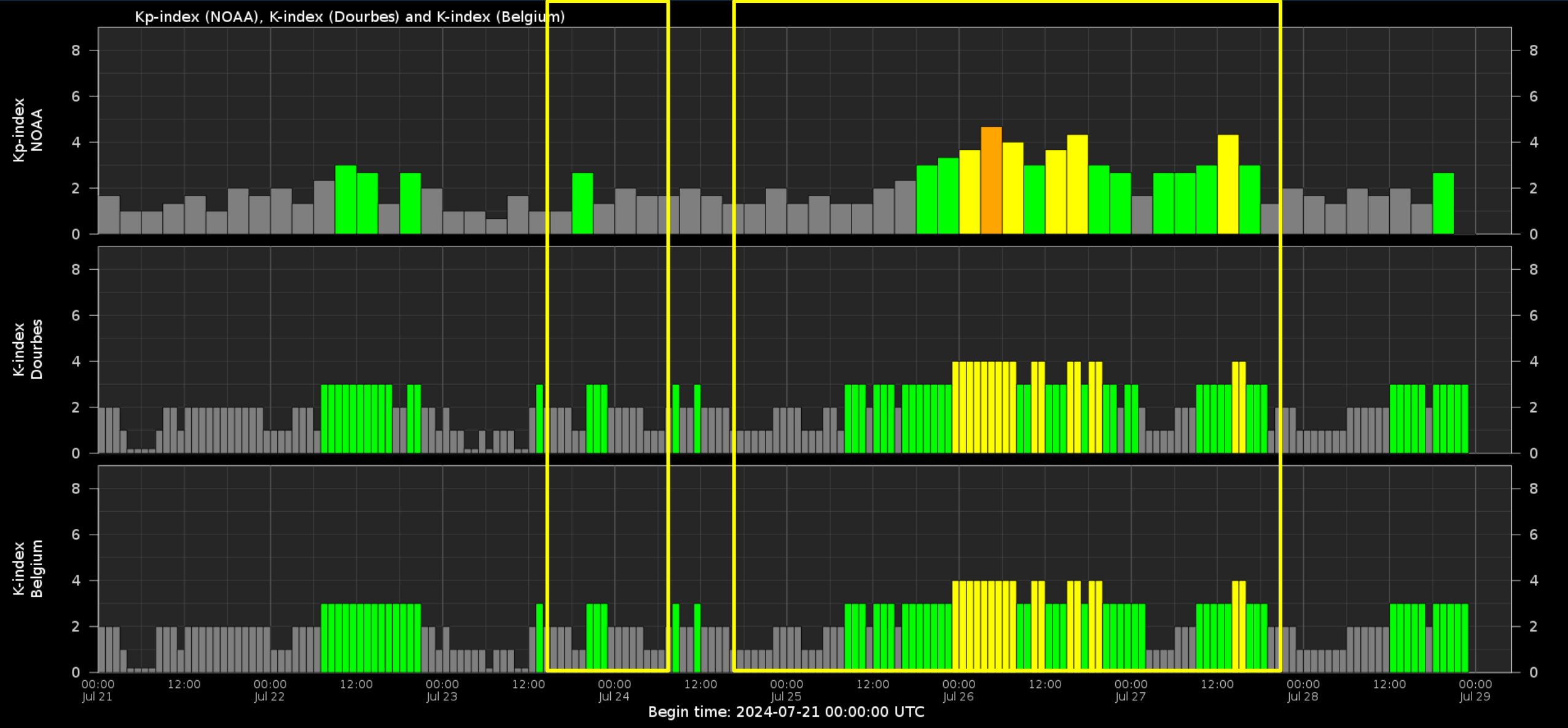
Sector boundary crossing + HSS (CH on Jul 23)



Geomagnetic activity (K-indexes)

ICME (CME on Jul 21T16:28)

Sector boundary crossing + HSS (CH on Jul 23)

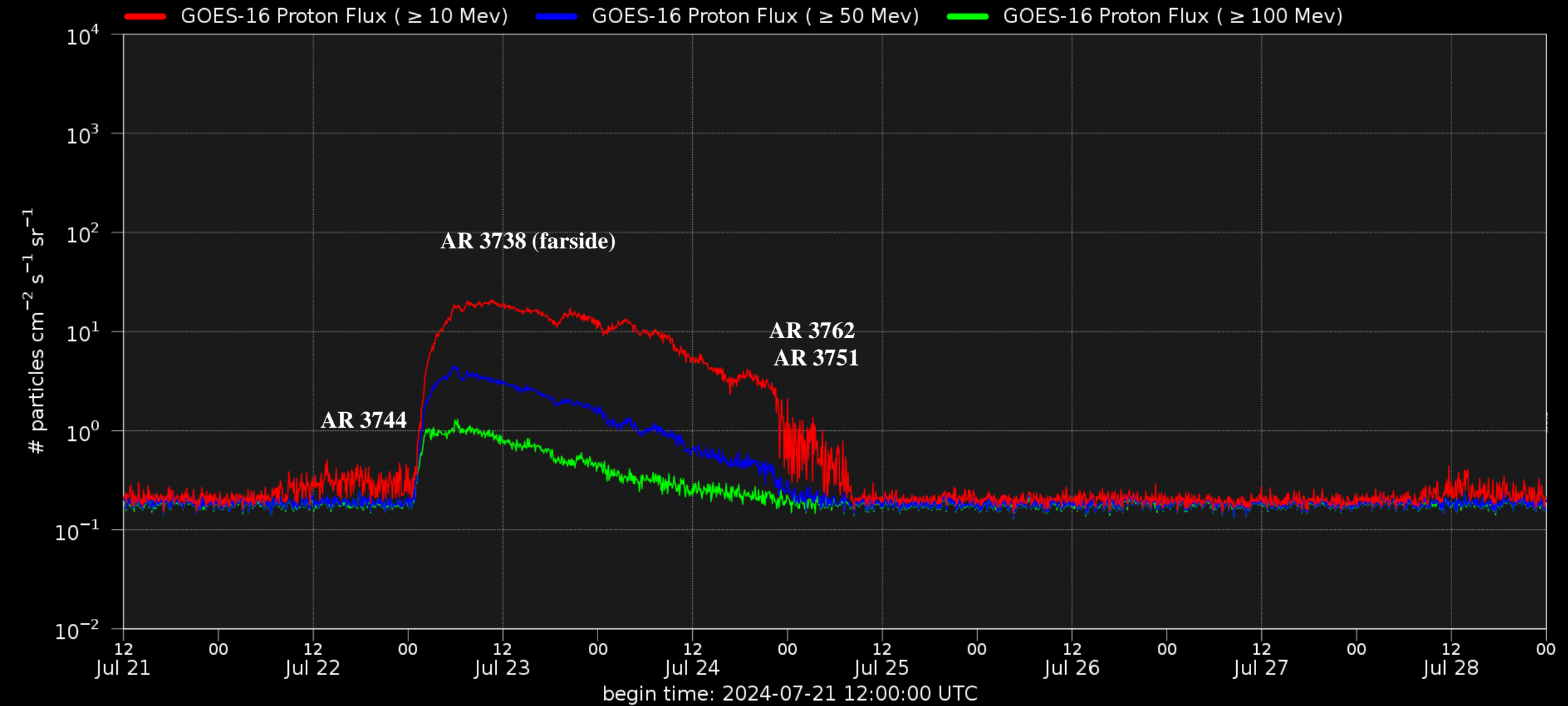


- Energetic Particles



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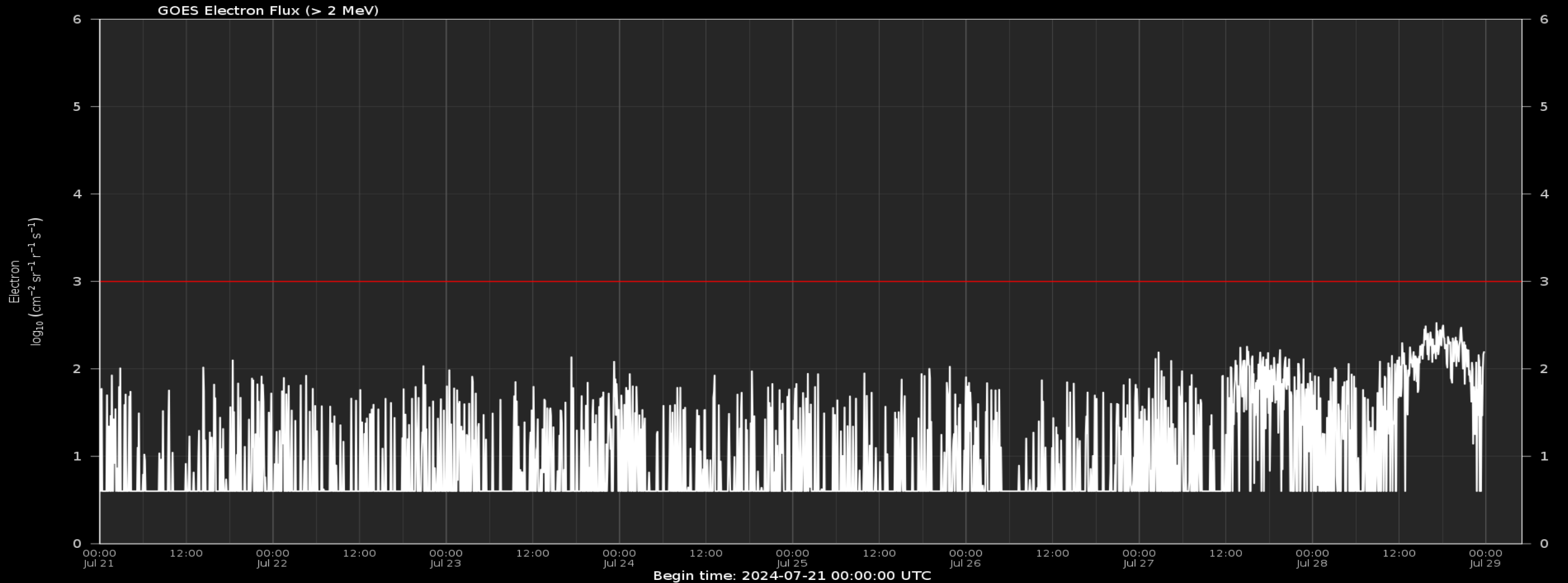
Solar proton flux



Electron flux at GEO

www.stce.be/educational/classification#electrons

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



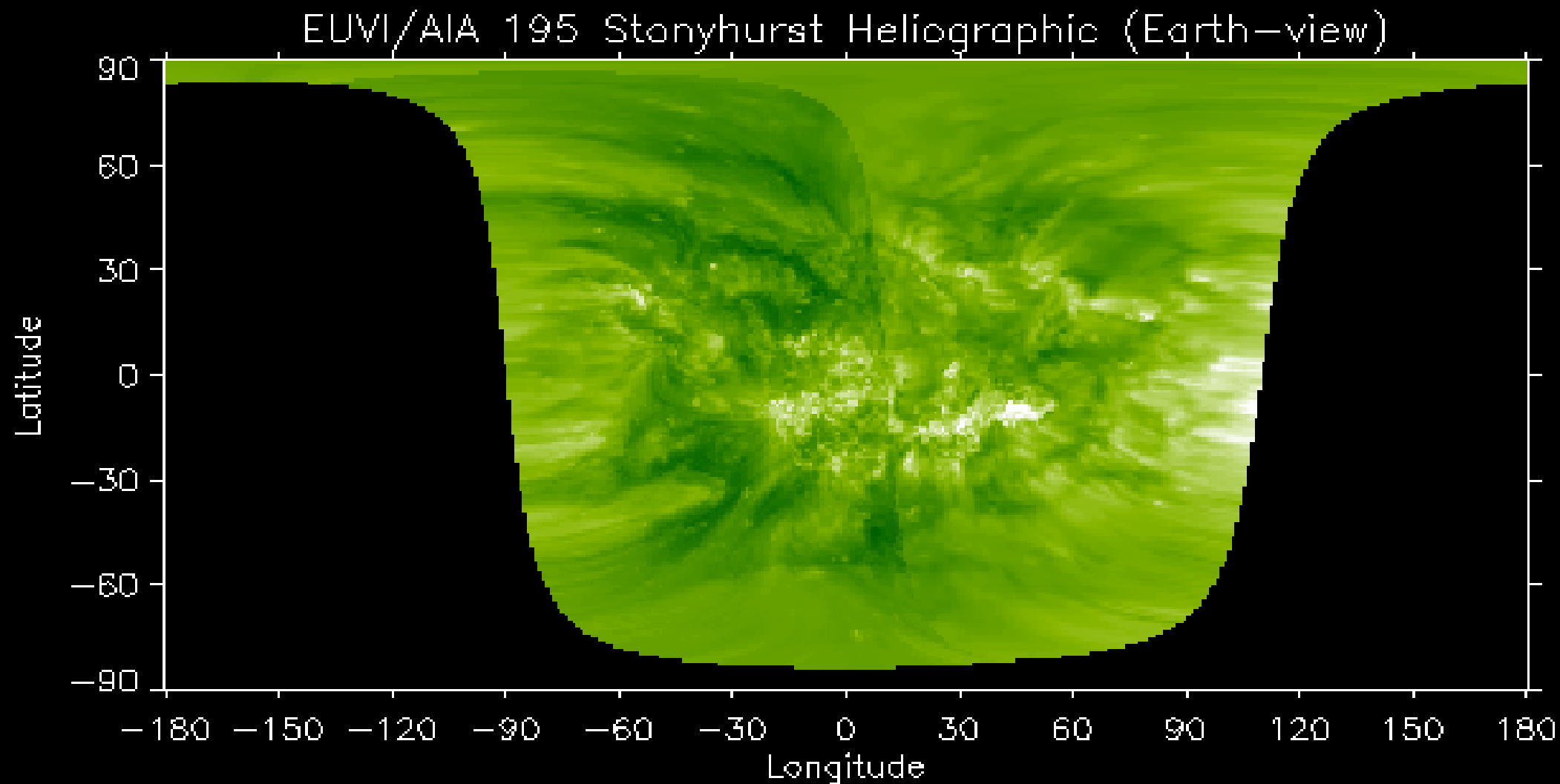
- Outlook



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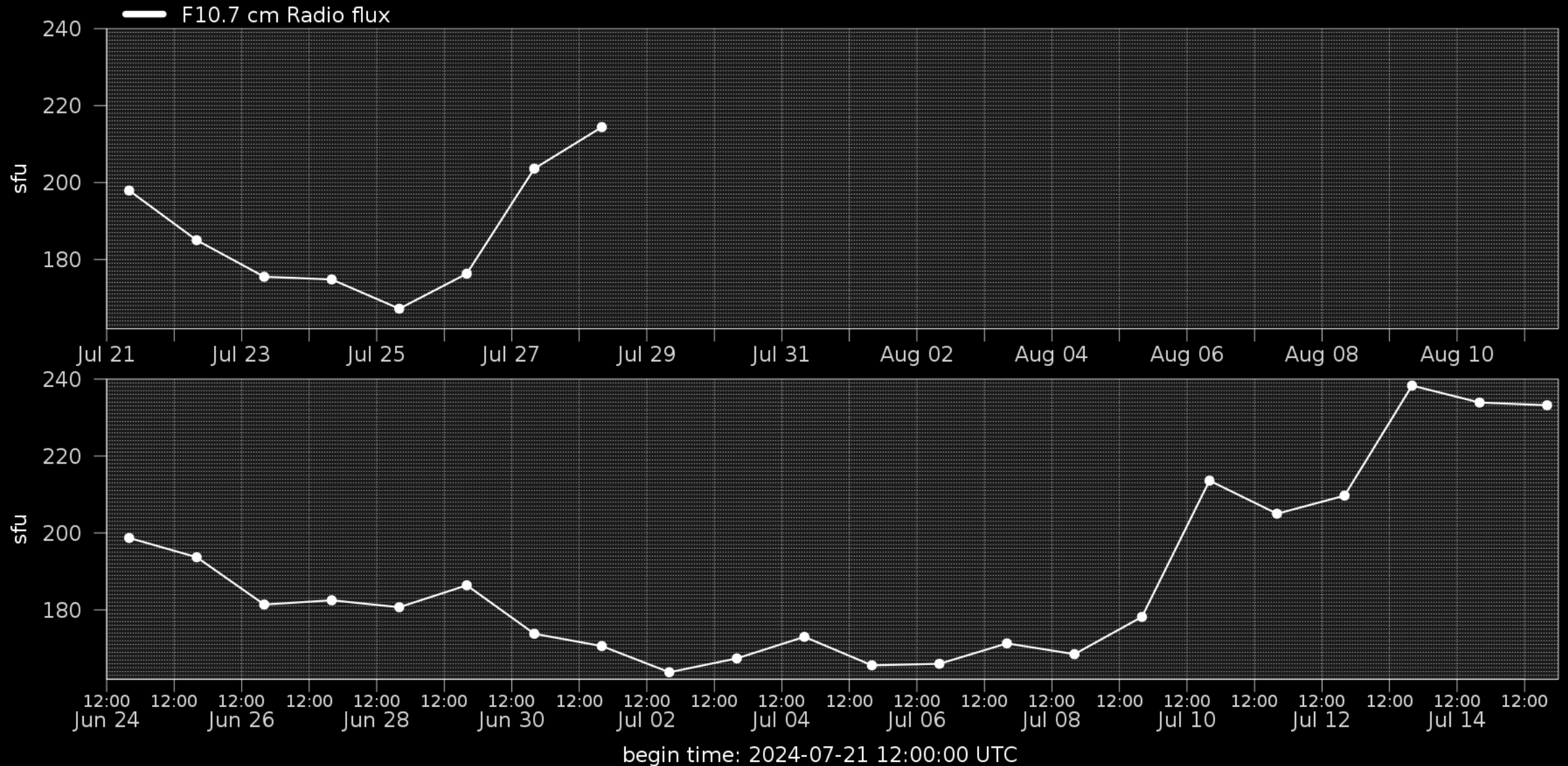
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Outlook: Solar activity

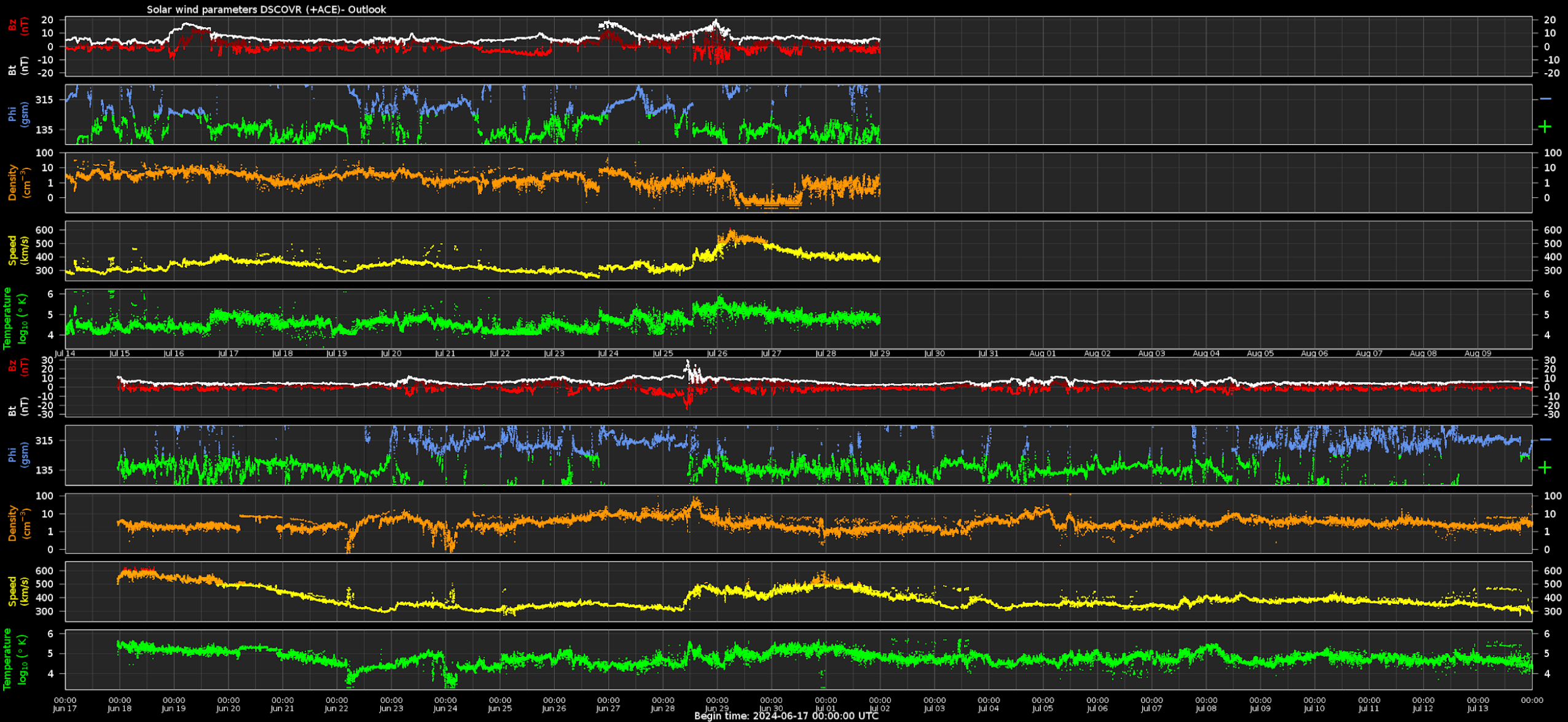


Observation date: 2024/07/28 23:05:00

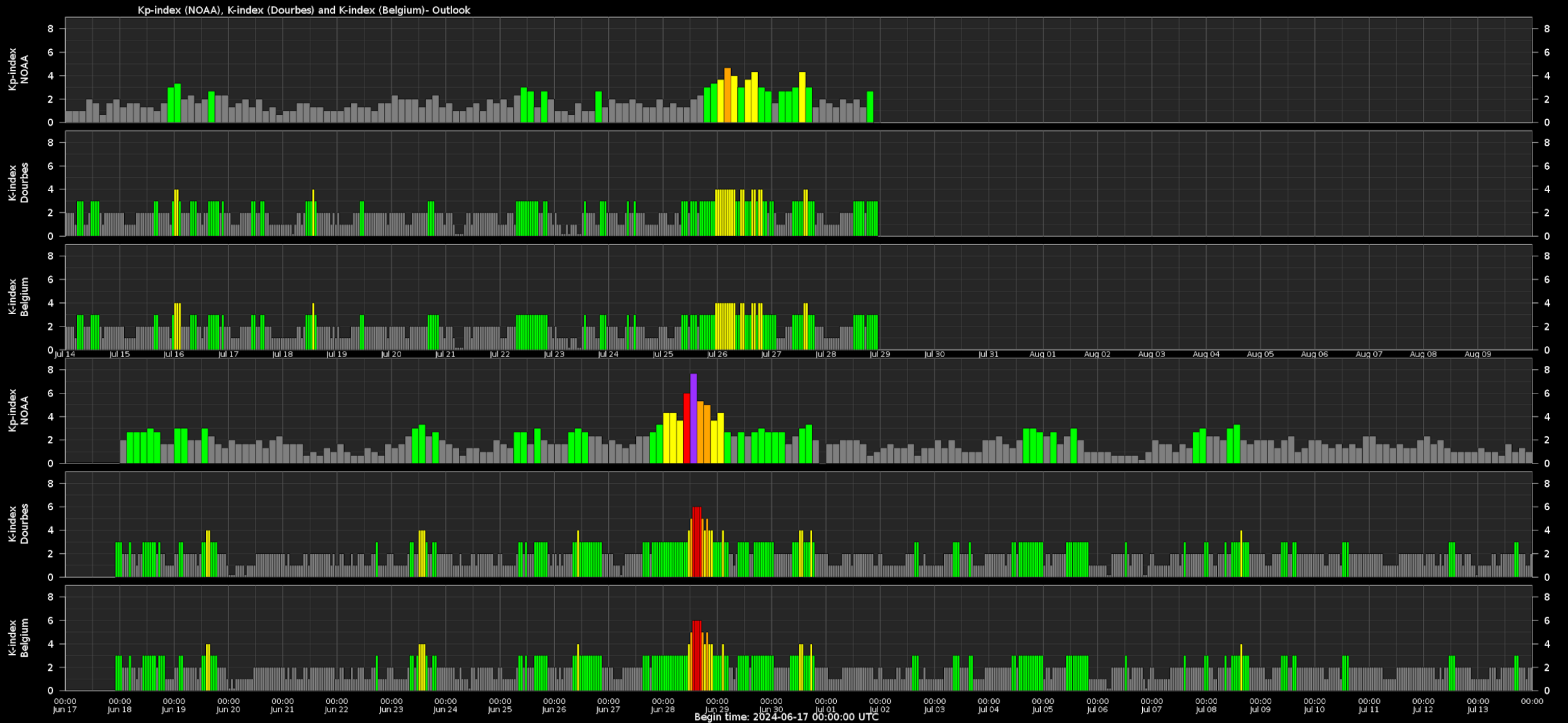
Outlook: Solar F10.7cm radio flux



Outlook: Solar wind parameters



Outlook: Geomagnetic activity



Outlook: Electron Flux at GEO Outlook



- PECASUS



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Pegasus related events

Advisory issued for polar cap absorption, amplitude and phase scintillation.

SIDC Space Weather Briefing

See you at our next briefing!

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