

SIDC Space Weather Briefing

07 May 2023-14 May 2023

Jennifer O'Hara

& the SIDC forecaster team



Royal Observatory
of Belgium

Solar Influences
Data analysis Centre
www.sidc.be

Summary Report

Solar activity from 2023-05-07 12:00 to 2023-05-14 23:59

Active regions	12 Active Regions over the week. NOAA ARs 3296, 3293 and 3294 were most active
Flares	12 M-class flares
Coronal Holes	2 small positive polarity CHs
CMEs	3 CMEs detected with possible Earth directed components

Proton flux	Over 10 pfu threshold for first half of the week
Electron flux	Below 1000 pfu threshold

Solar wind and geomagnetic conditions

ICMEs	Multiple ICME signatures in the solar wind observed: including on May 07, 09 and 12
Solar wind conditions	B : 0.73 - 20.06 nT //Bz: -14.15 nT to 19.09 nT //Speed: 378.9 – 680.4 km/s
K-indices	max K-index (KBel): 5 max Kp-index (NOAA): 5

All Quiet Alert: Not all quiet

Solar Activity

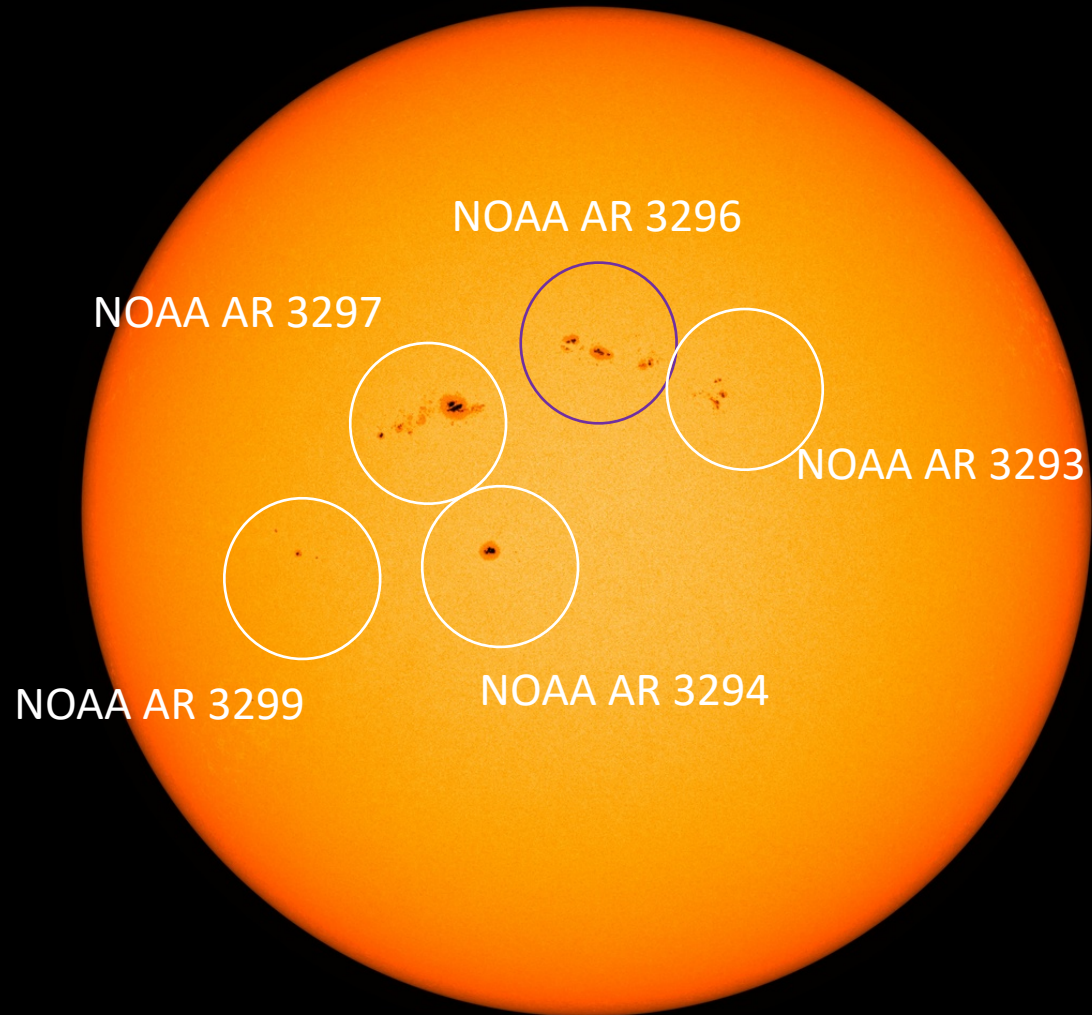


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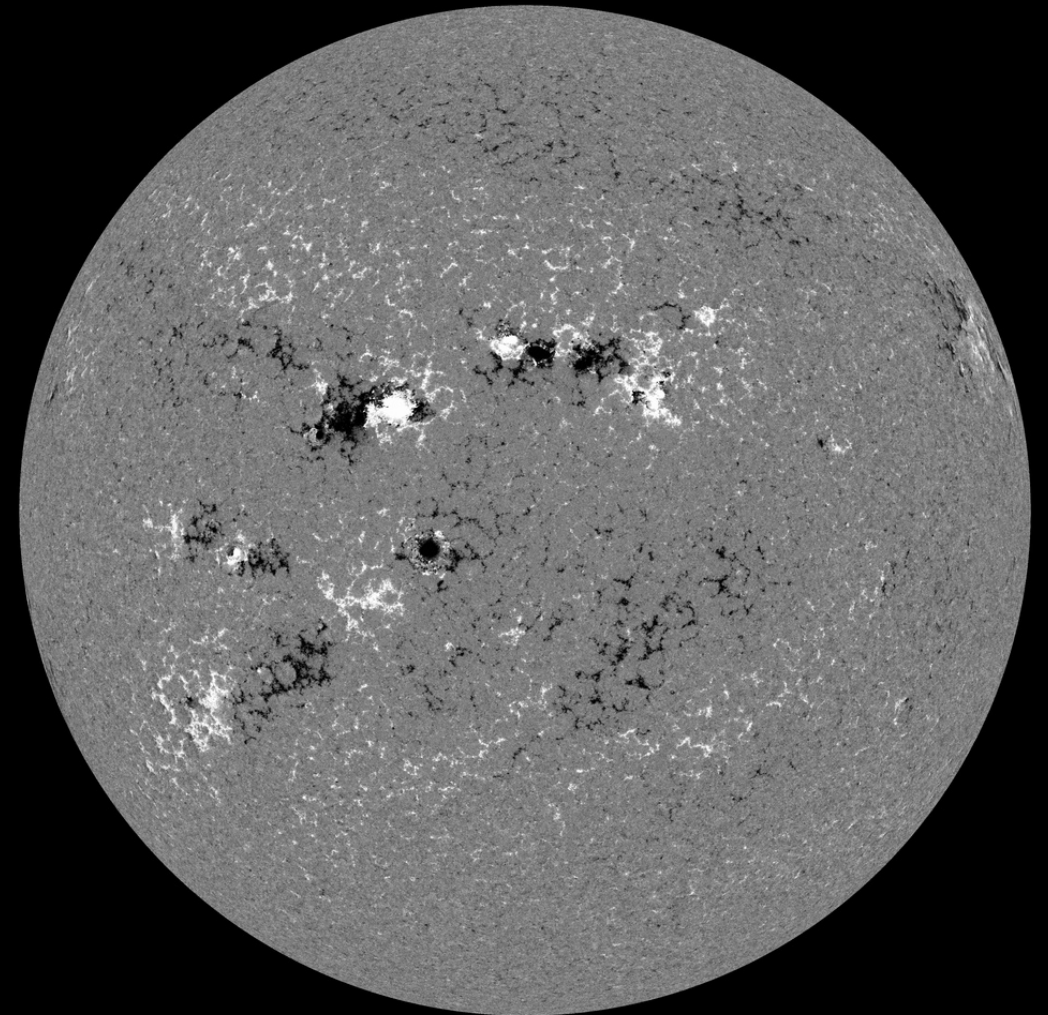
Solar active regions

SDO/HMI White Light 2023-05-07



SDO/HMI Quick-Look Continuum: 20230507_114500

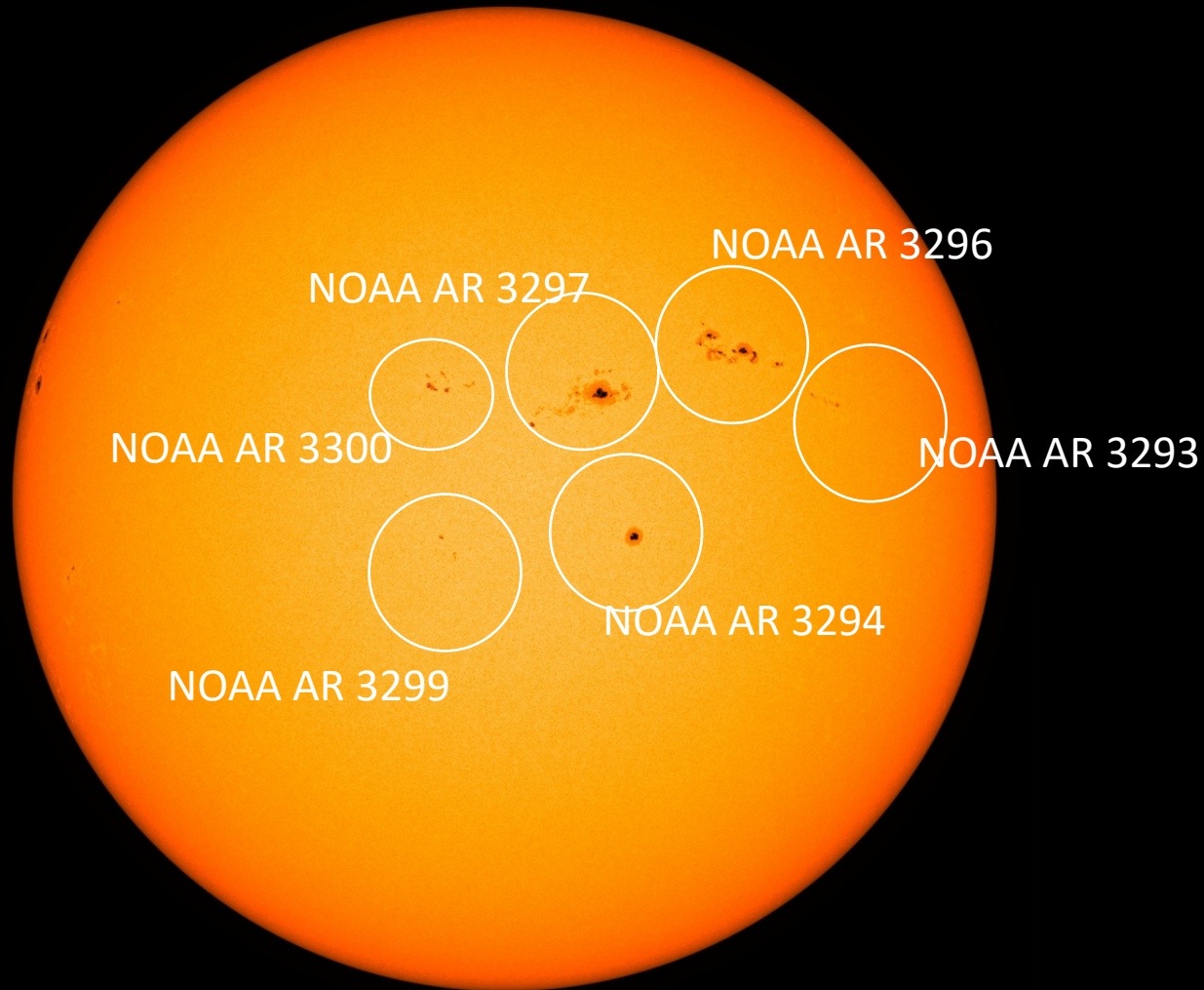
SDO/HMI Magnetogram 2023-05-07



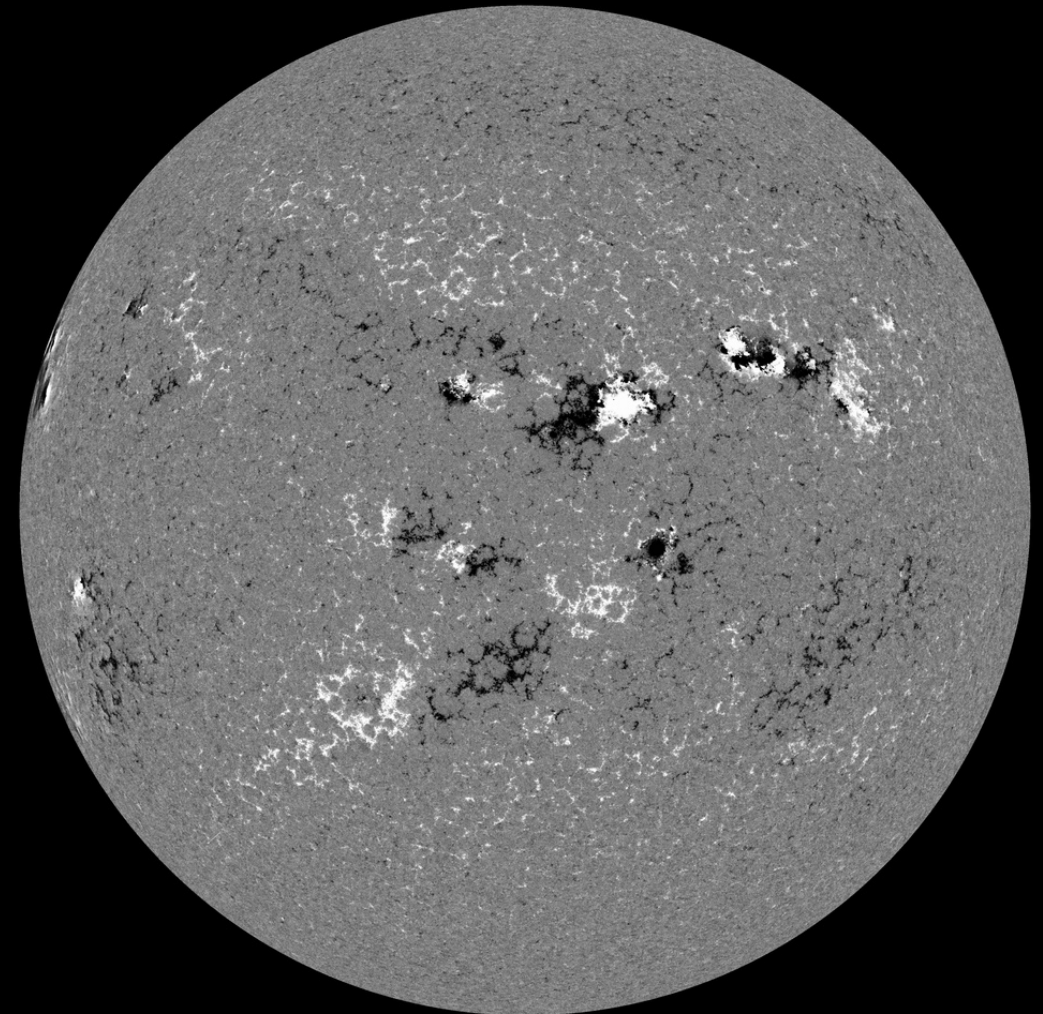
SDO/HMI Quick-Look Magnetogram: 20230507_114500

Solar active regions

SDO/HMI White Light 2023-05-09

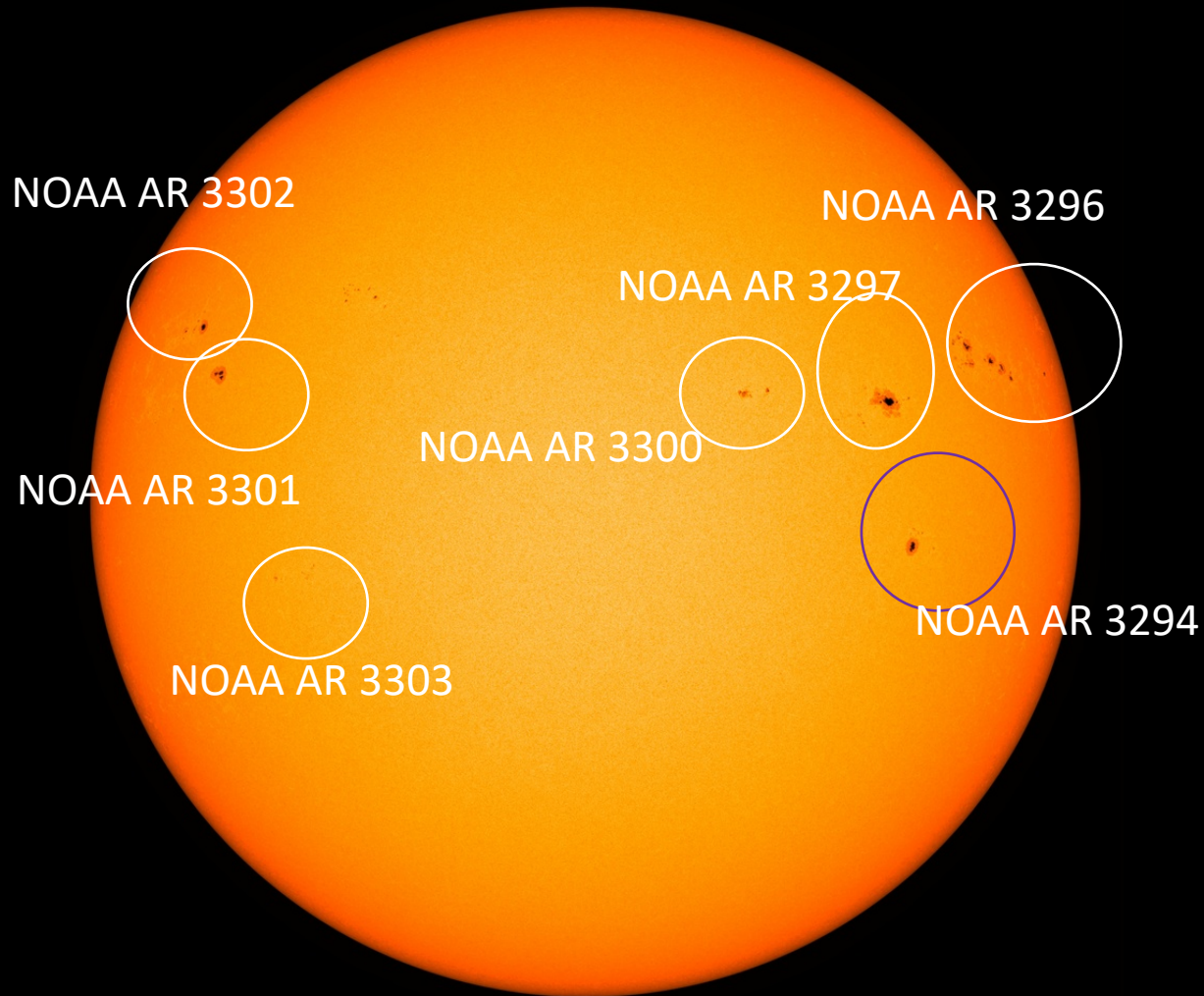


SDO/HMI Magnetogram 2023-05-09

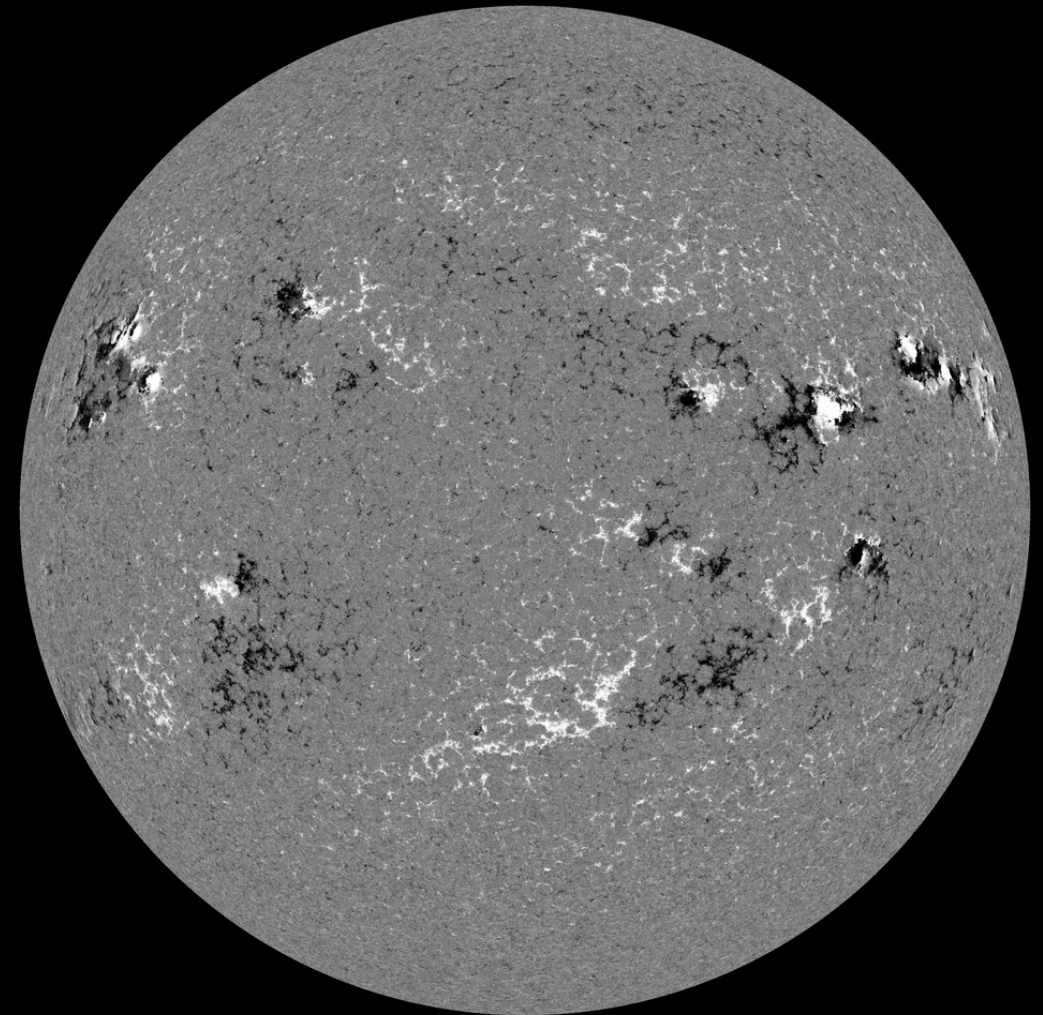


Solar active regions

SDO/HMI White Light 2023-05-11

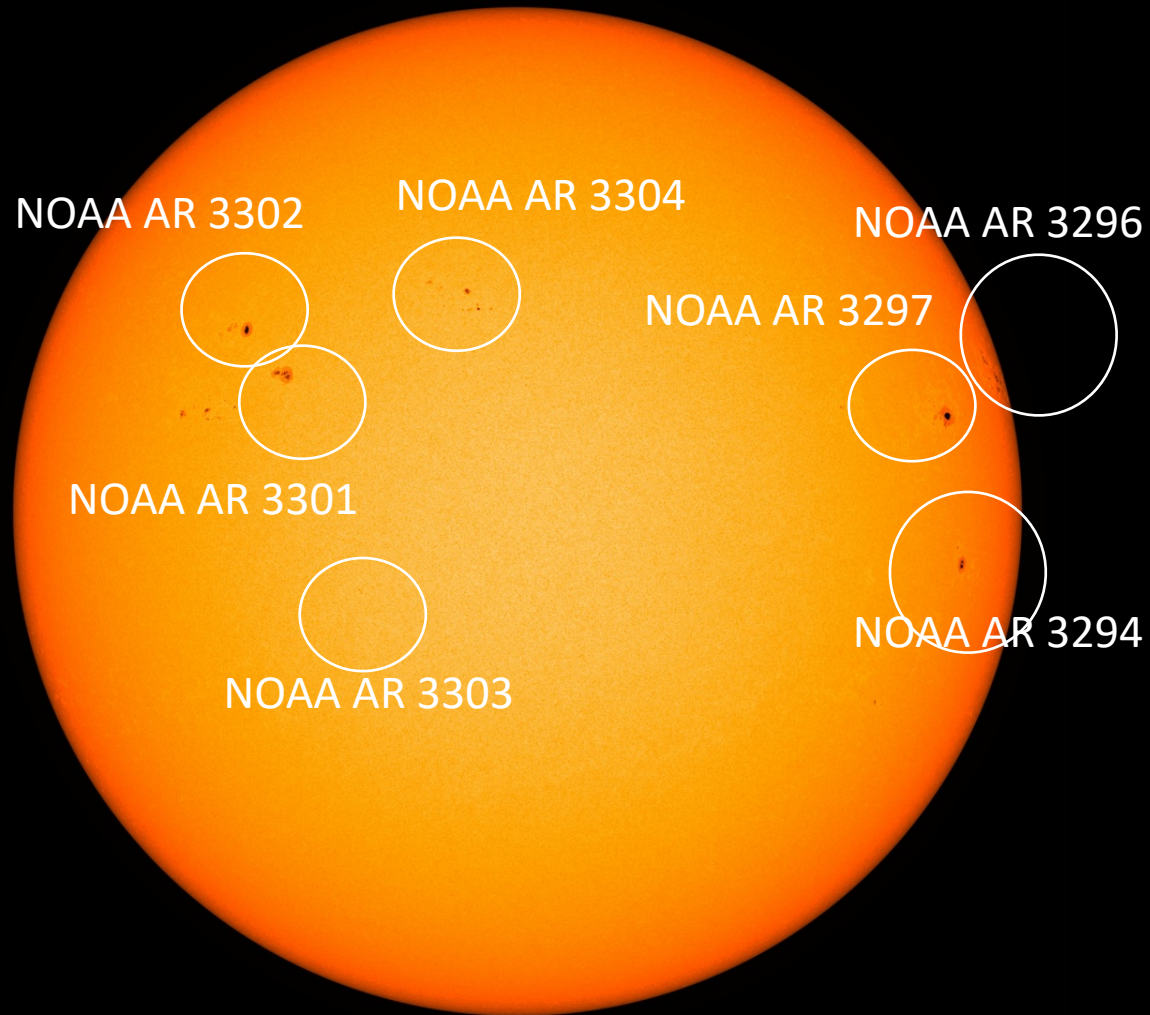


SDO/HMI Magnetogram 2023-05-11

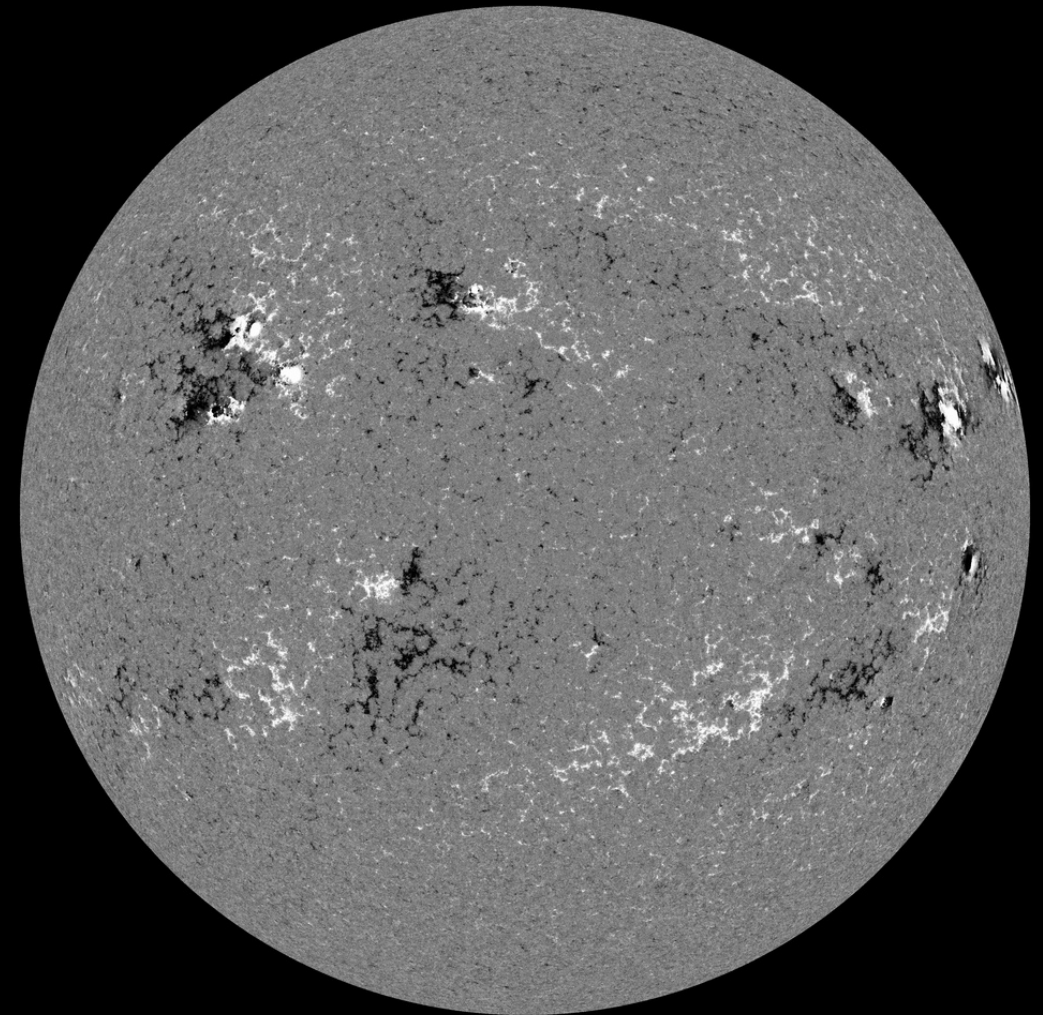


Solar active regions

SDO/HMI White Light 2023-05-13

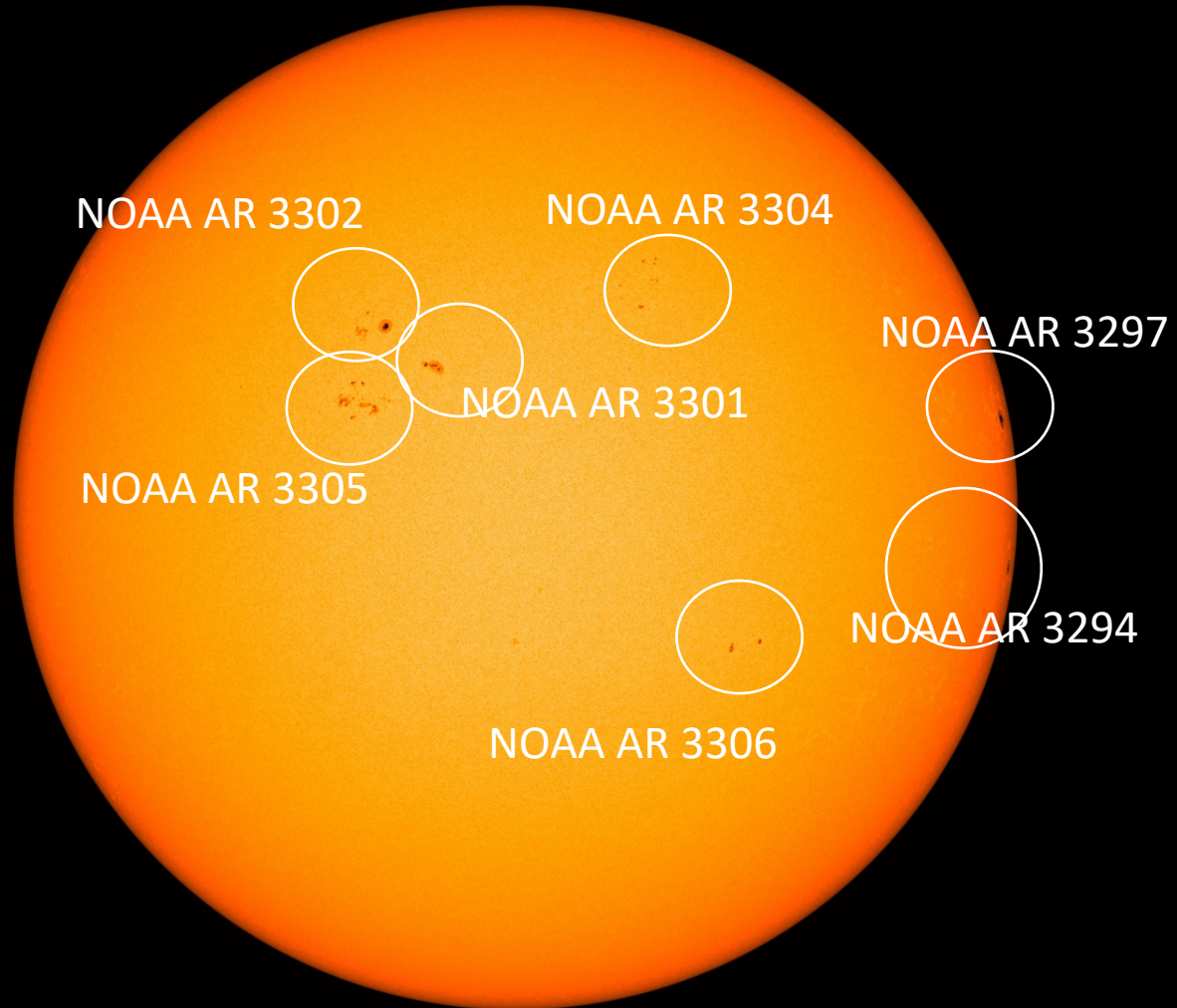


SDO/HMI Magnetogram 2023-05-13

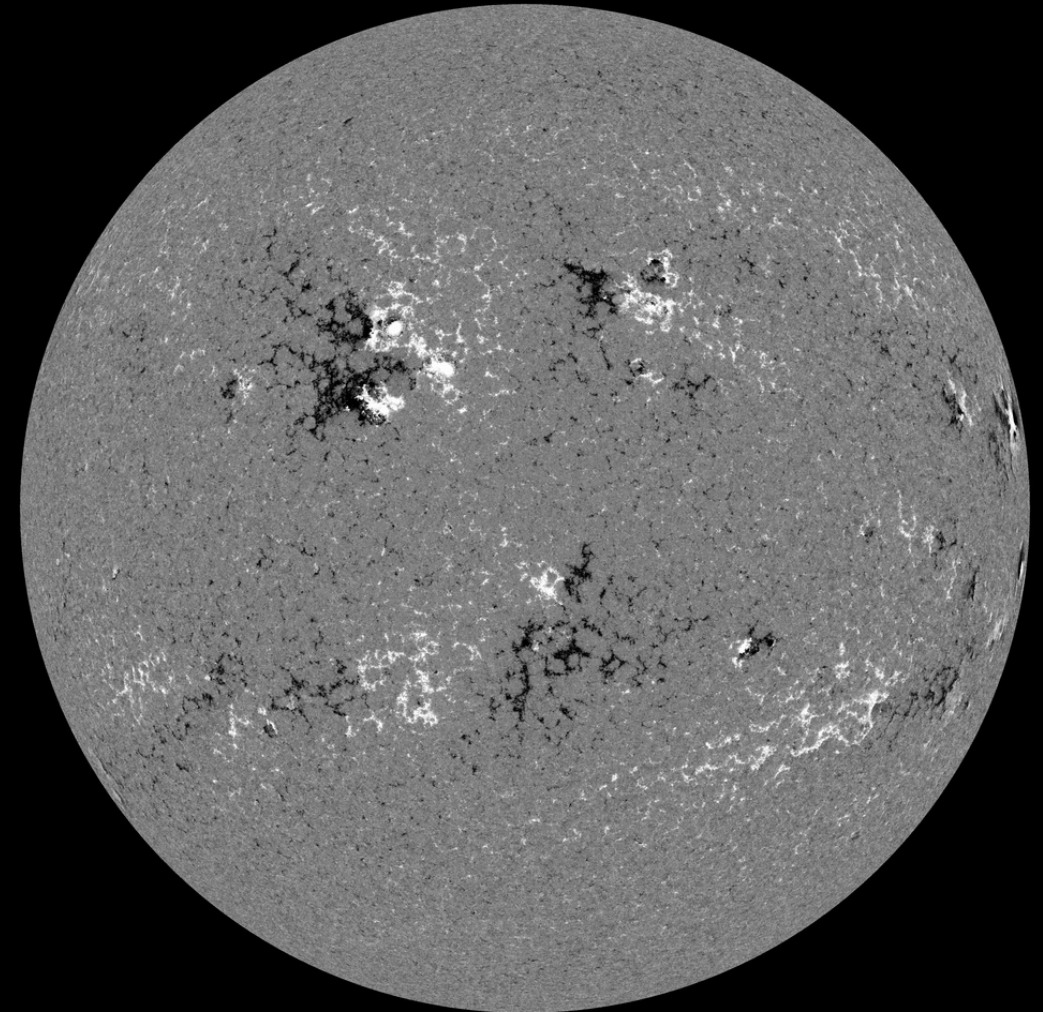


Solar active regions

SDO/HMI White Light 2023-05-13



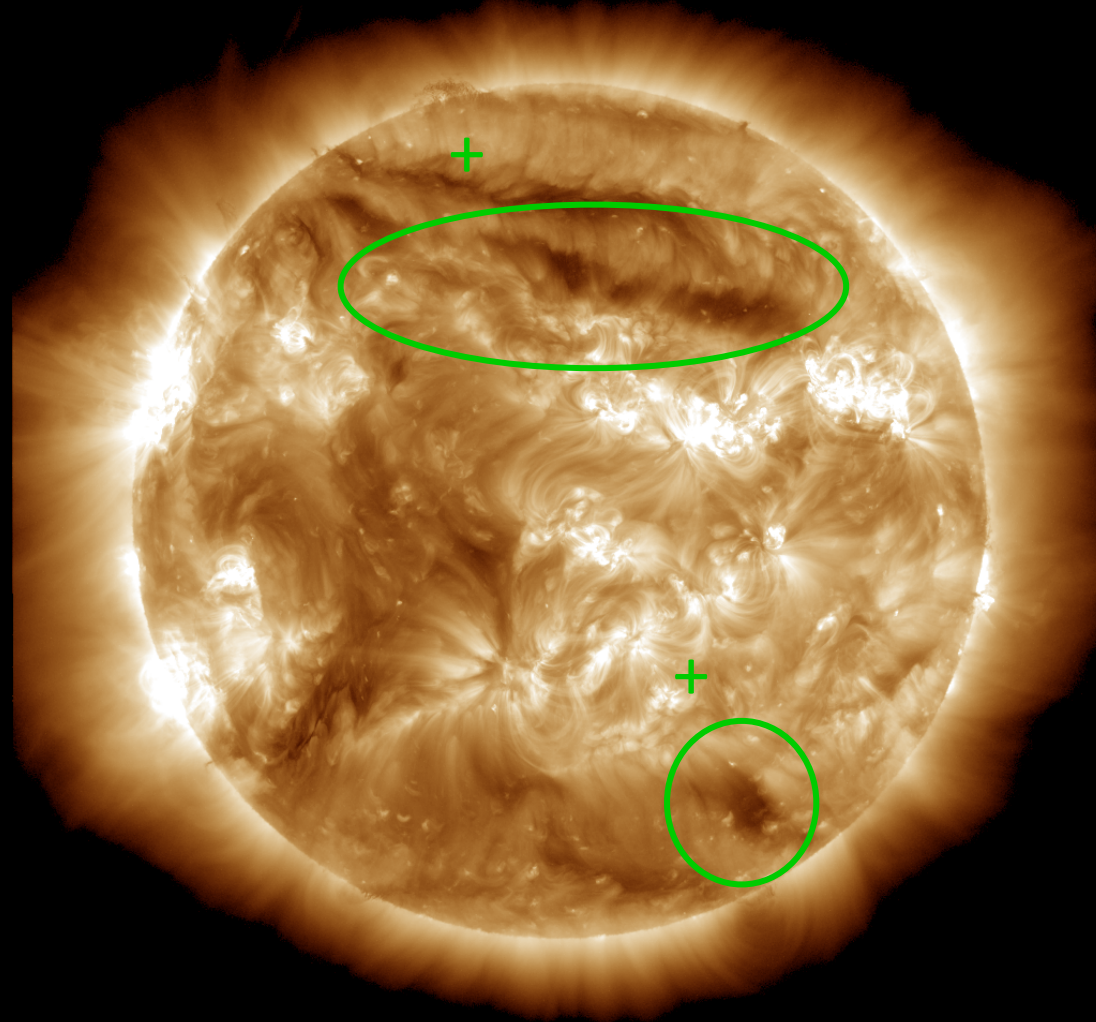
SDO/HMI Magnetogram 2023-05-13



Coronal holes

SDO/AIA 19.3 nm 2023-05-10

SDO/AIA AIA 193Å 2023-05-10T12:00:05.843



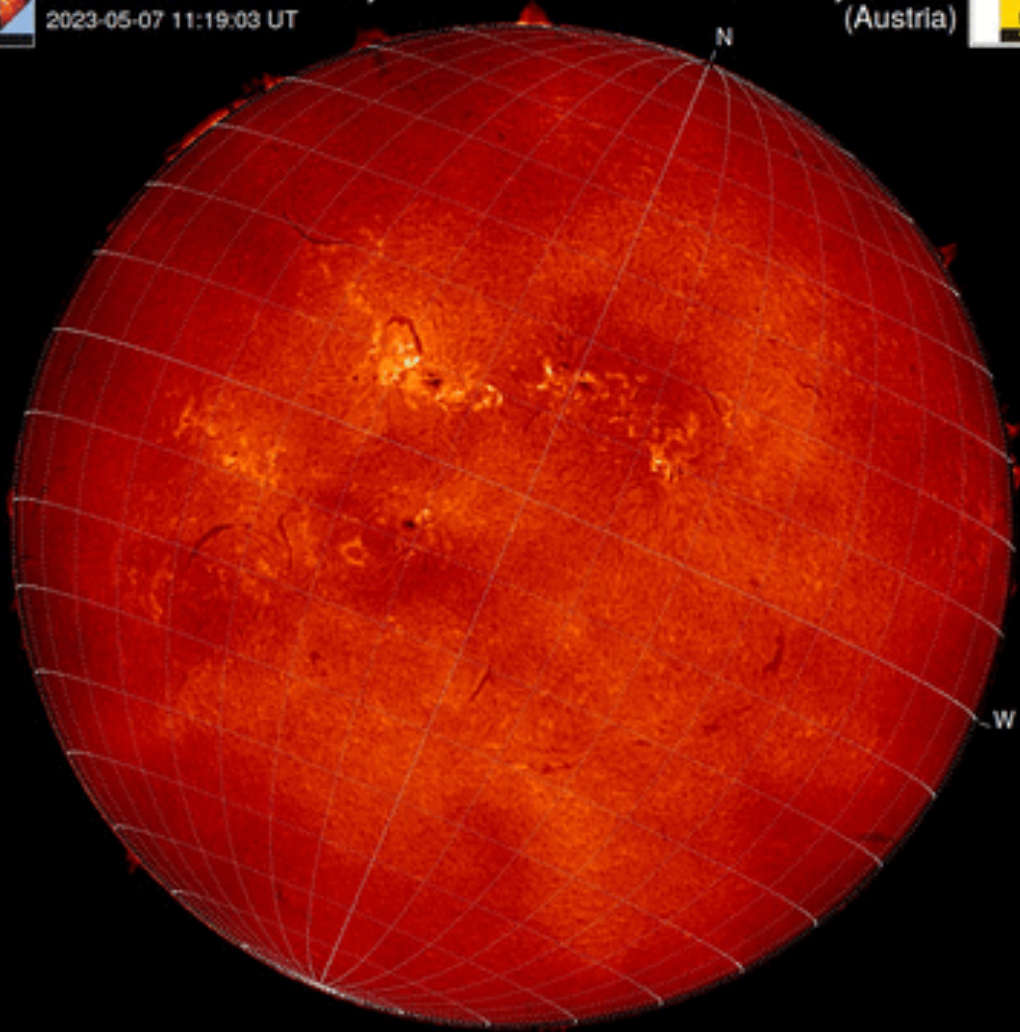
Filaments & Filament eruptions

H-alpha 2023-05-07



Kanzelhöhe Observatory
2023-05-07 11:19:03 UT

University of Graz
(Austria)

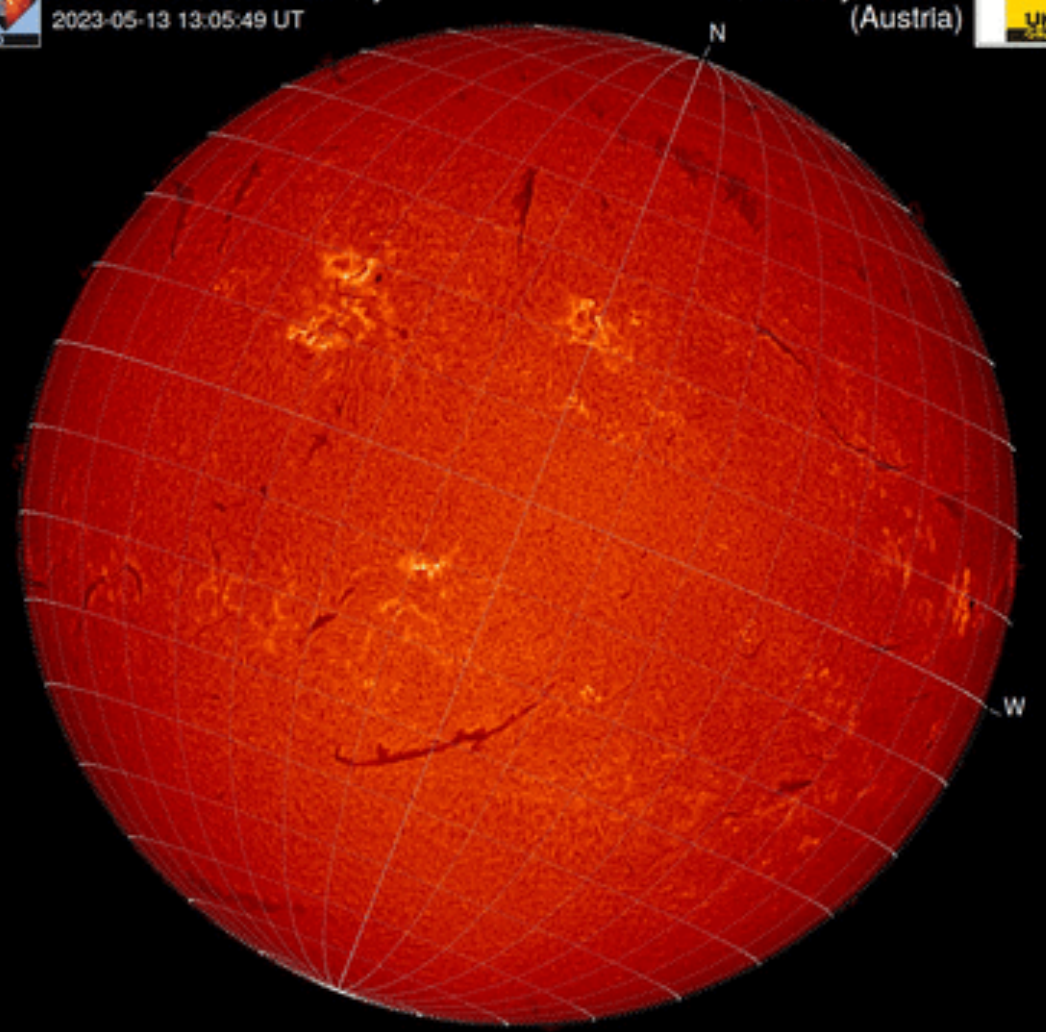


H-alpha 2023-05-13



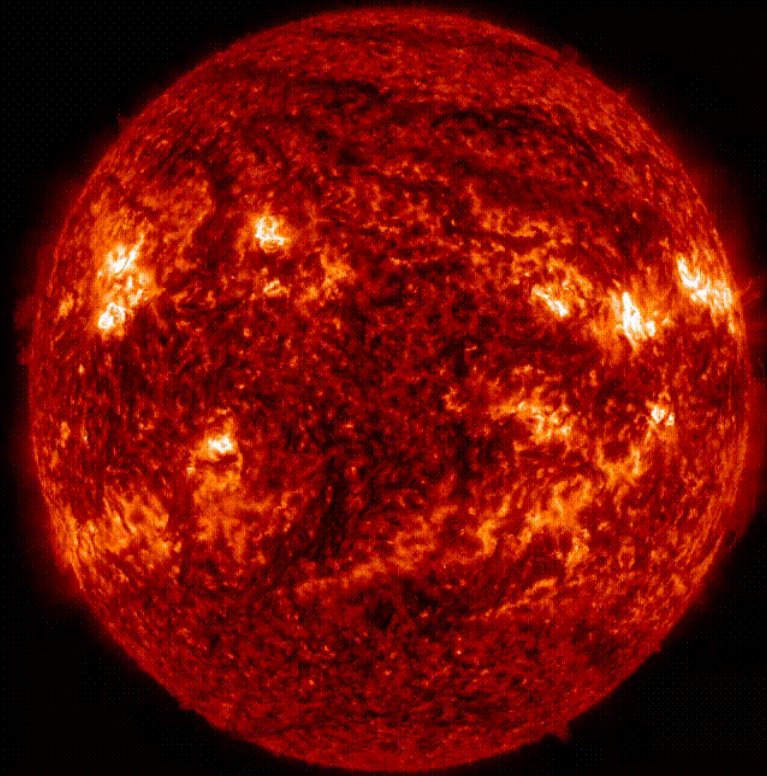
Kanzelhöhe Observatory
2023-05-13 13:05:49 UT

University of Graz
(Austria)



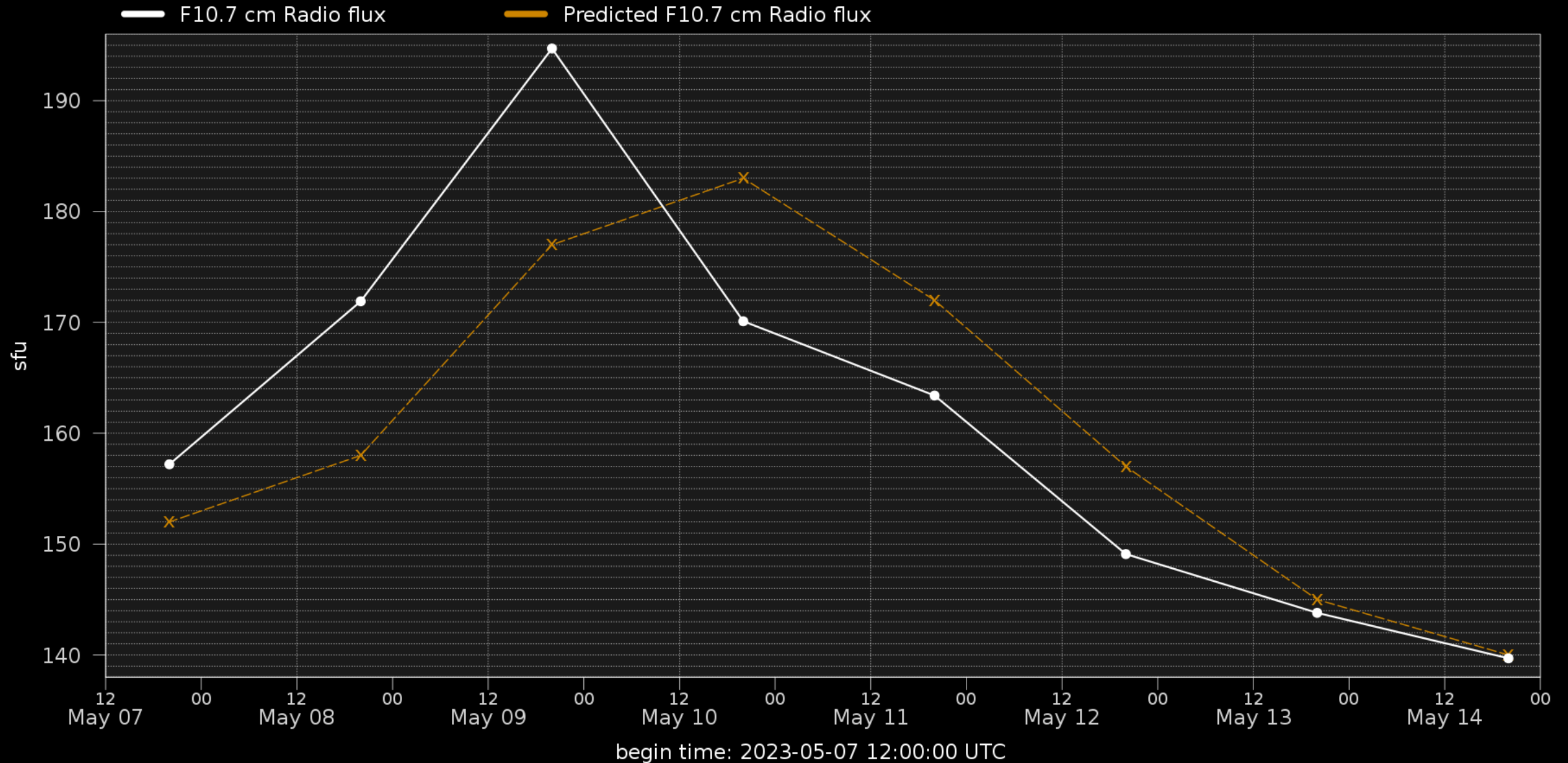
Filaments & Filament eruptions

H-alpha 2023-05-12

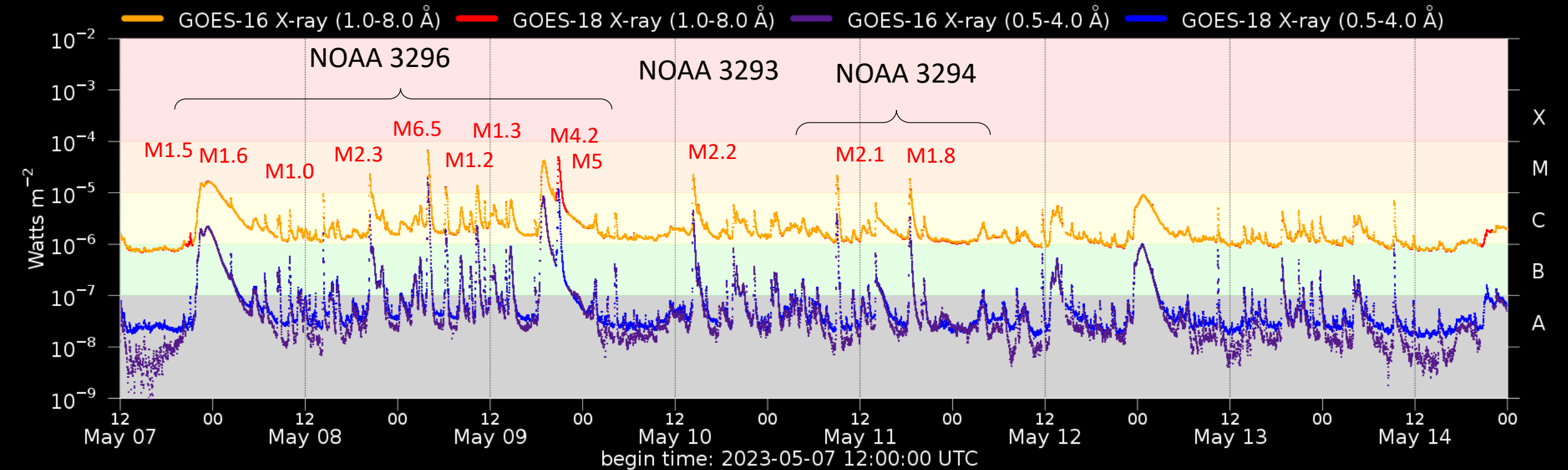


2023-05-12T00:58:17

Solar F10.7cm radio flux



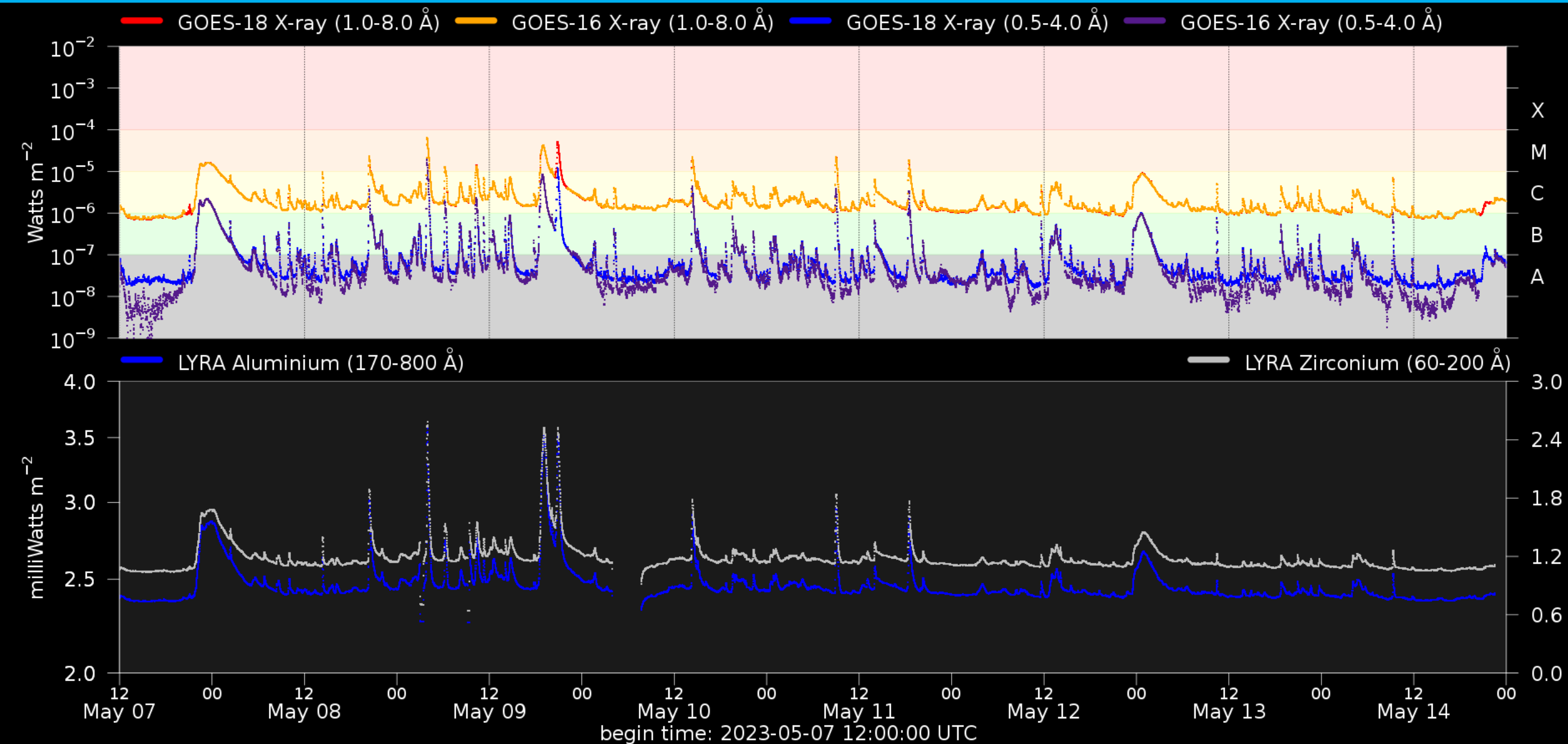
Flaring activity



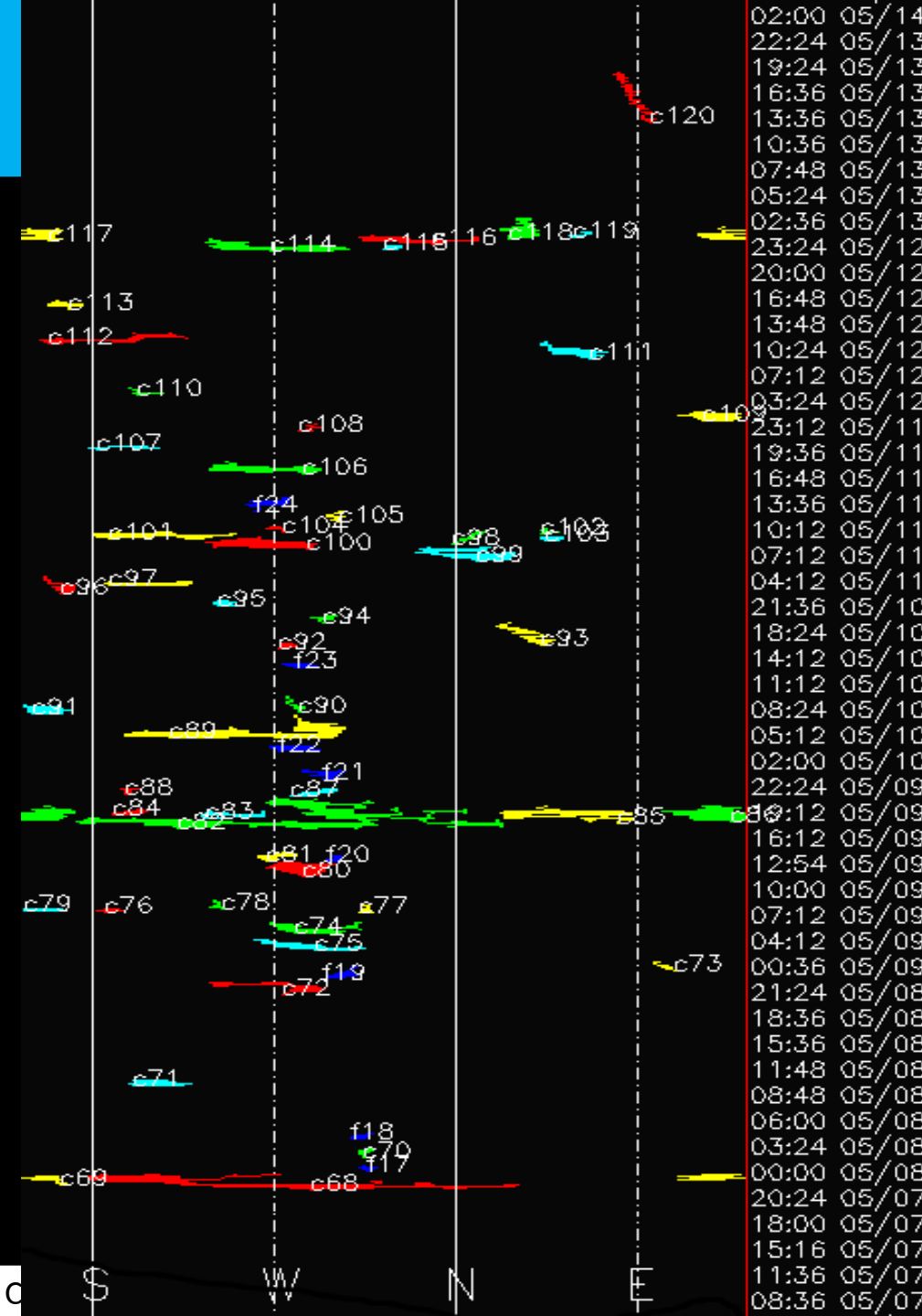
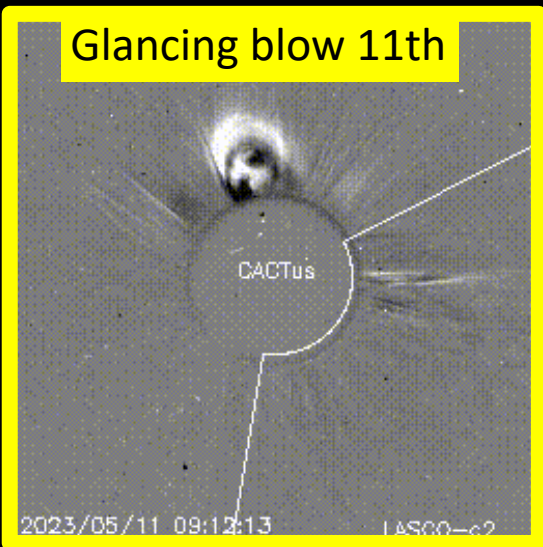
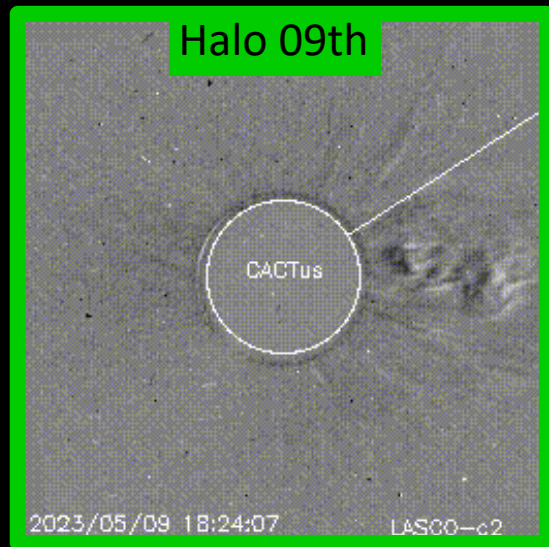
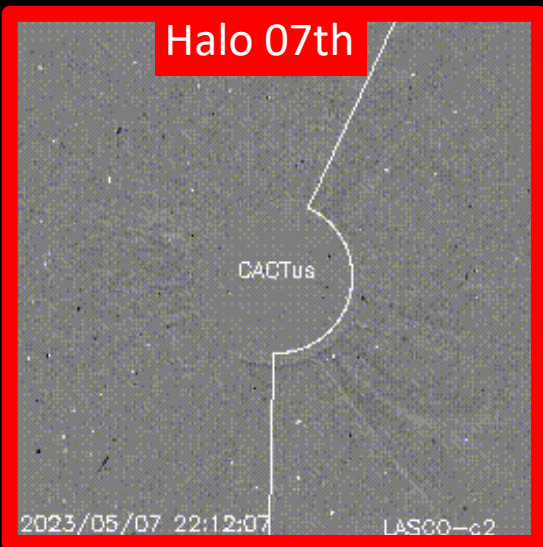
Probabilities (%) and occurrences (#) of C/M/X-flares daily, from noon to noon:

Issue date	2023-05-07	2023-05-08	2023-05-09	2023-05-10	2023-05-11	2023-05-12	2023-05-13	2023-05-14
Probability (%)	95 30 02	99 50 10	99 55 25	99 60 25	95 50 20	95 40 10	95 30 10	95 25 05
Observed (#)	07 03 00	06 04 00	06 02 00	06 02 00	05 01 00	04 00 00	12 00 00	00 00 00

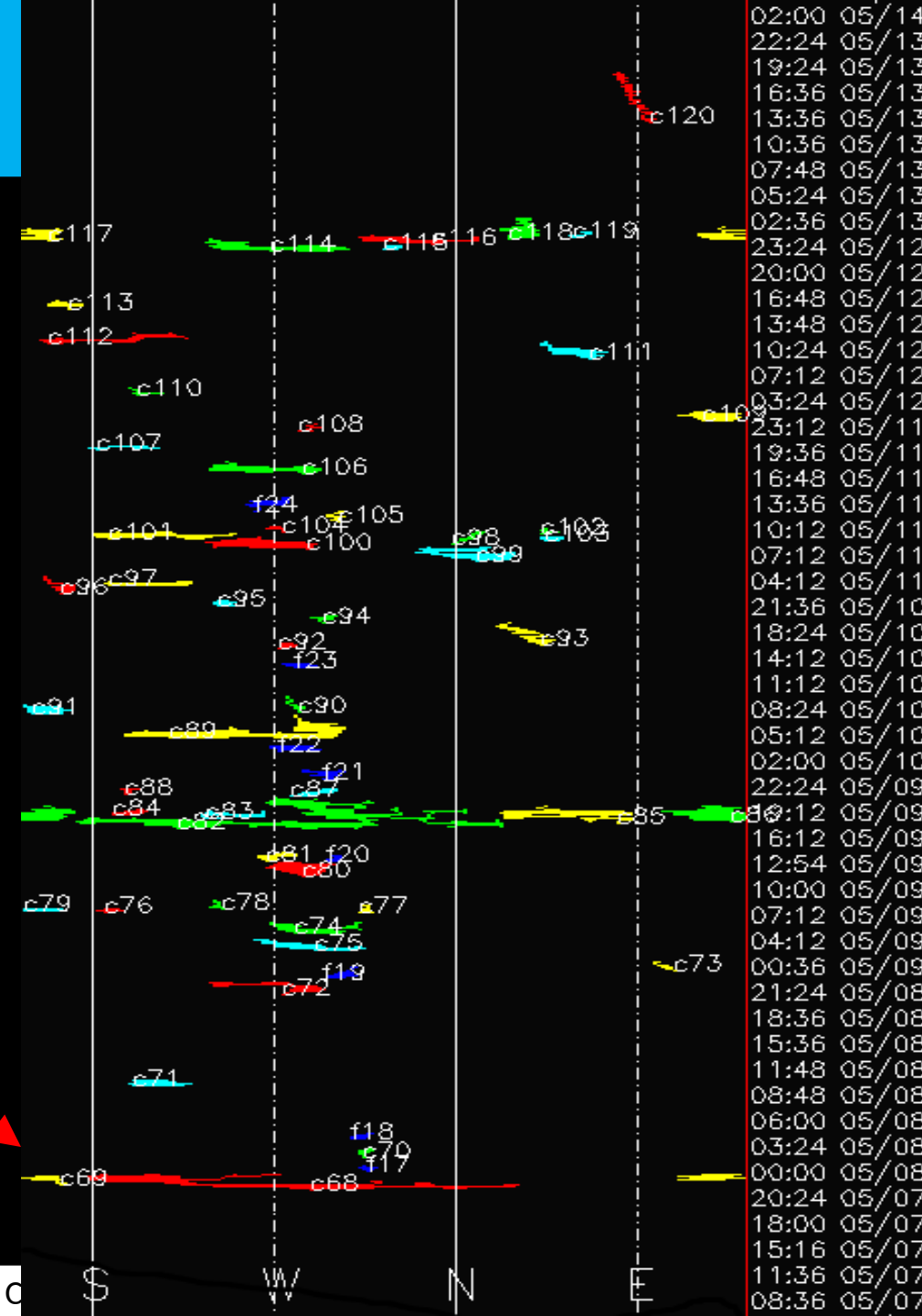
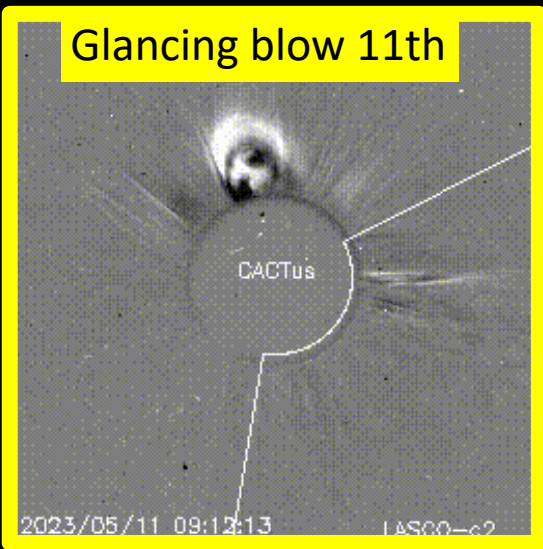
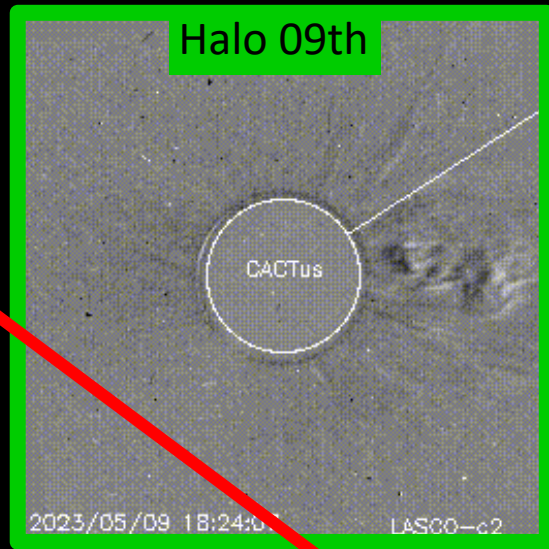
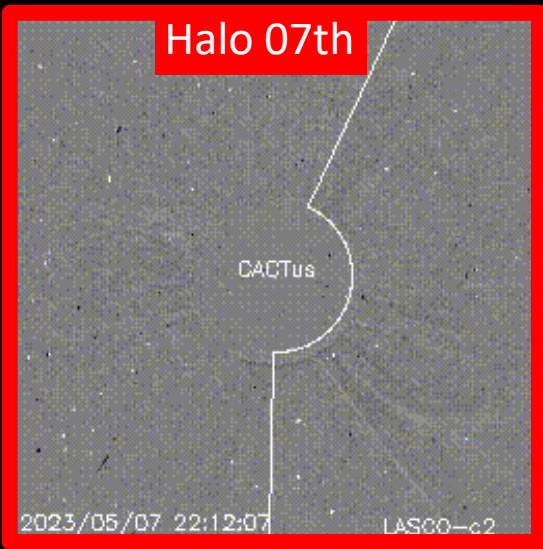
Solar X-Ray and UV flux



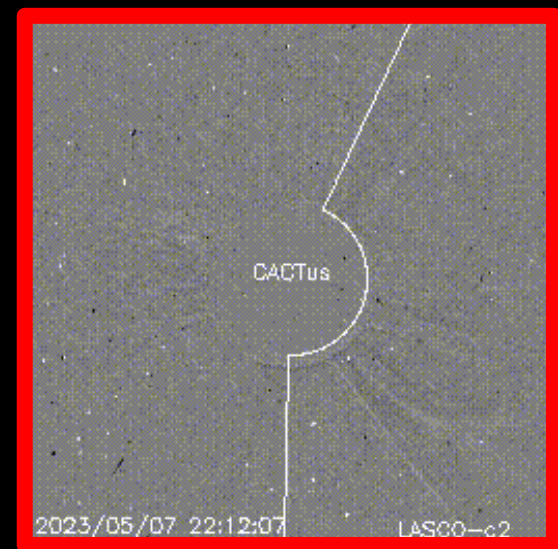
Coronal Mass Ejections



Coronal Mass Ejections



Coronal Mass Ejections



A Halo CME in LASCO C2

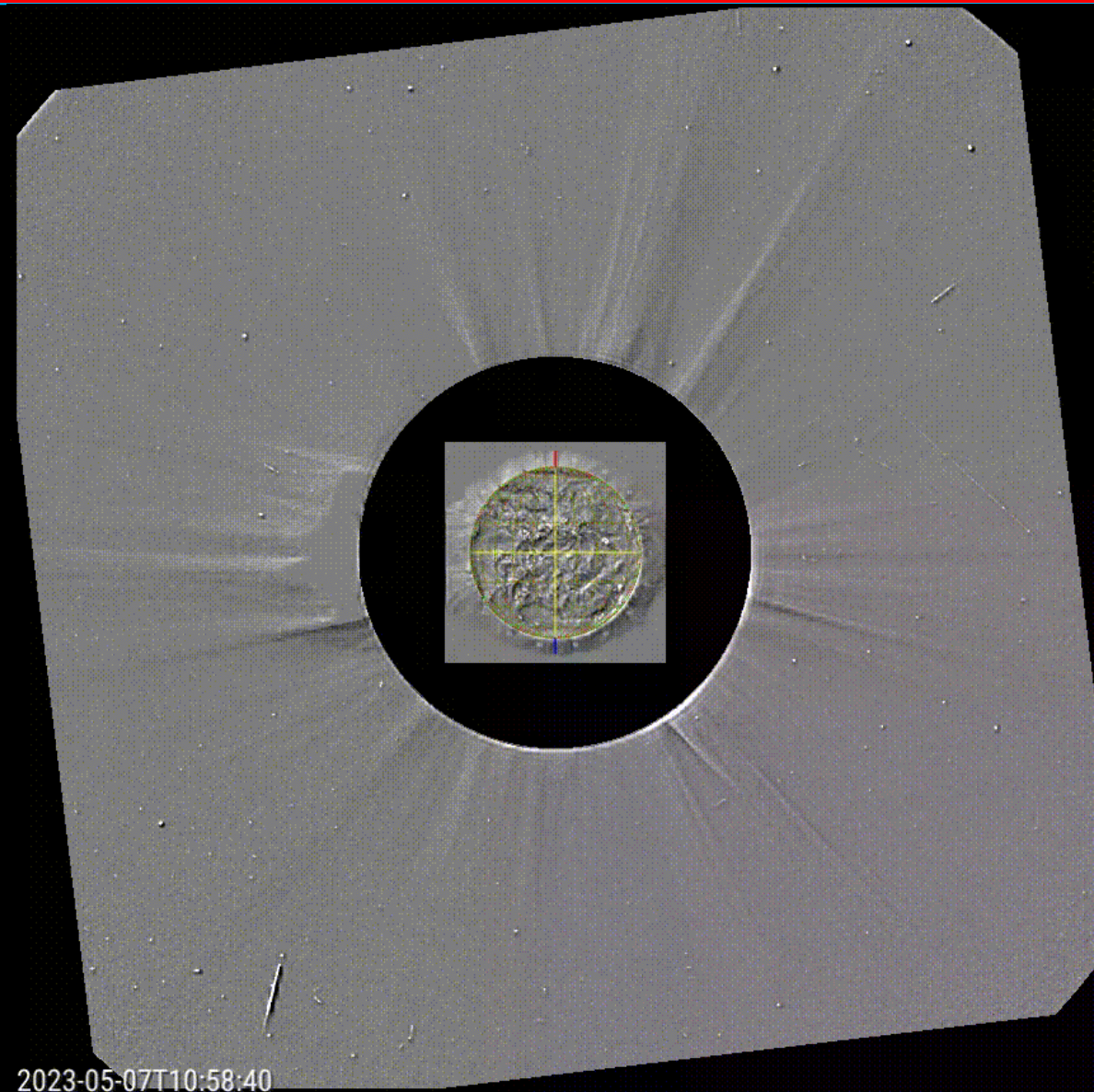
When: May 07 23:25 UTC

Direction: south west.

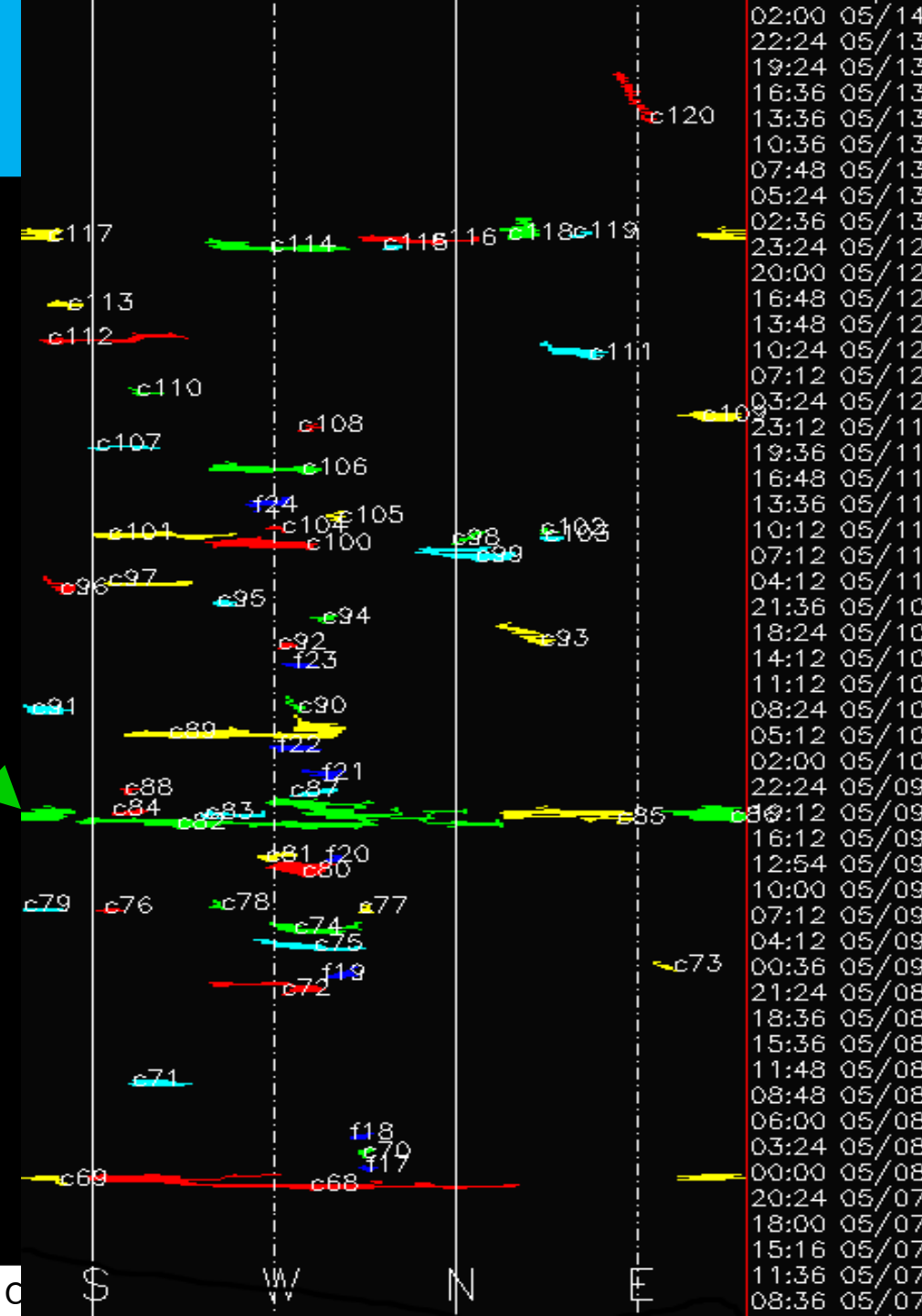
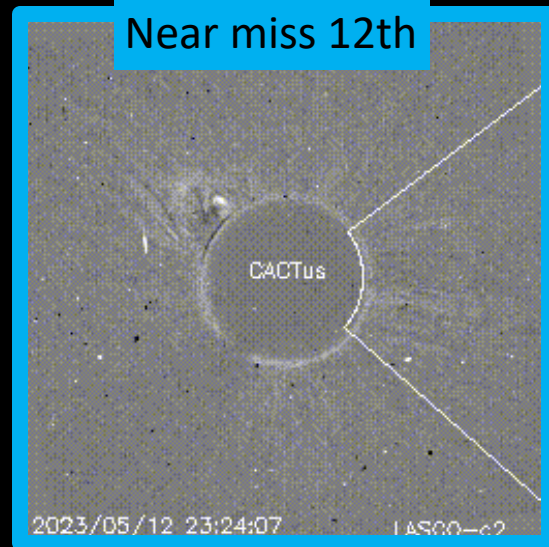
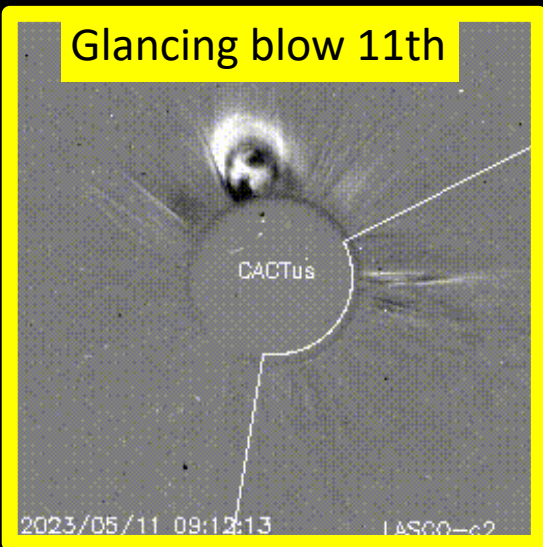
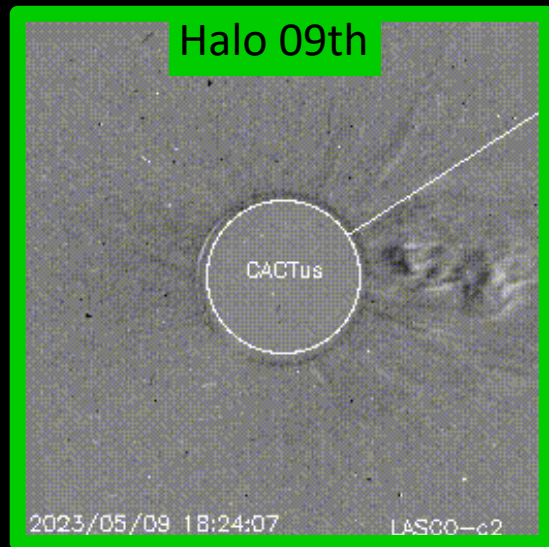
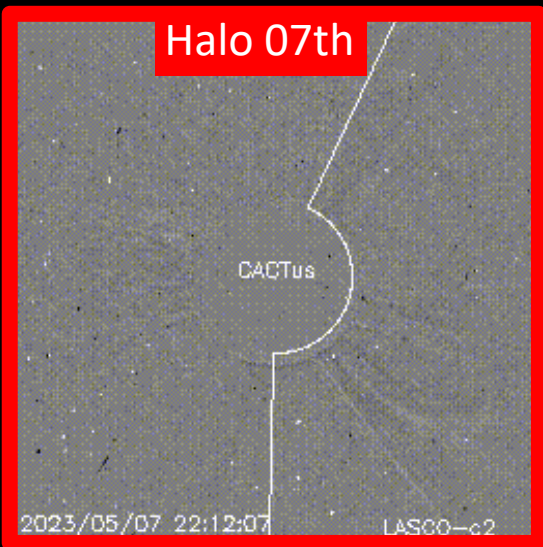
Speed: The initial estimated plane of sky velocity of the CME is around 600 km/s

Prediction: Predicted arrival at Earth on May 10 (possibly arrived on May 09)

The CME was driven by a long-duration M1 flare from NOAA AR 3296 (beta), peak time 22:34 UTC, located near the central meridian close to the disc centre.



Coronal Mass Ejections



Coronal Mass Ejections

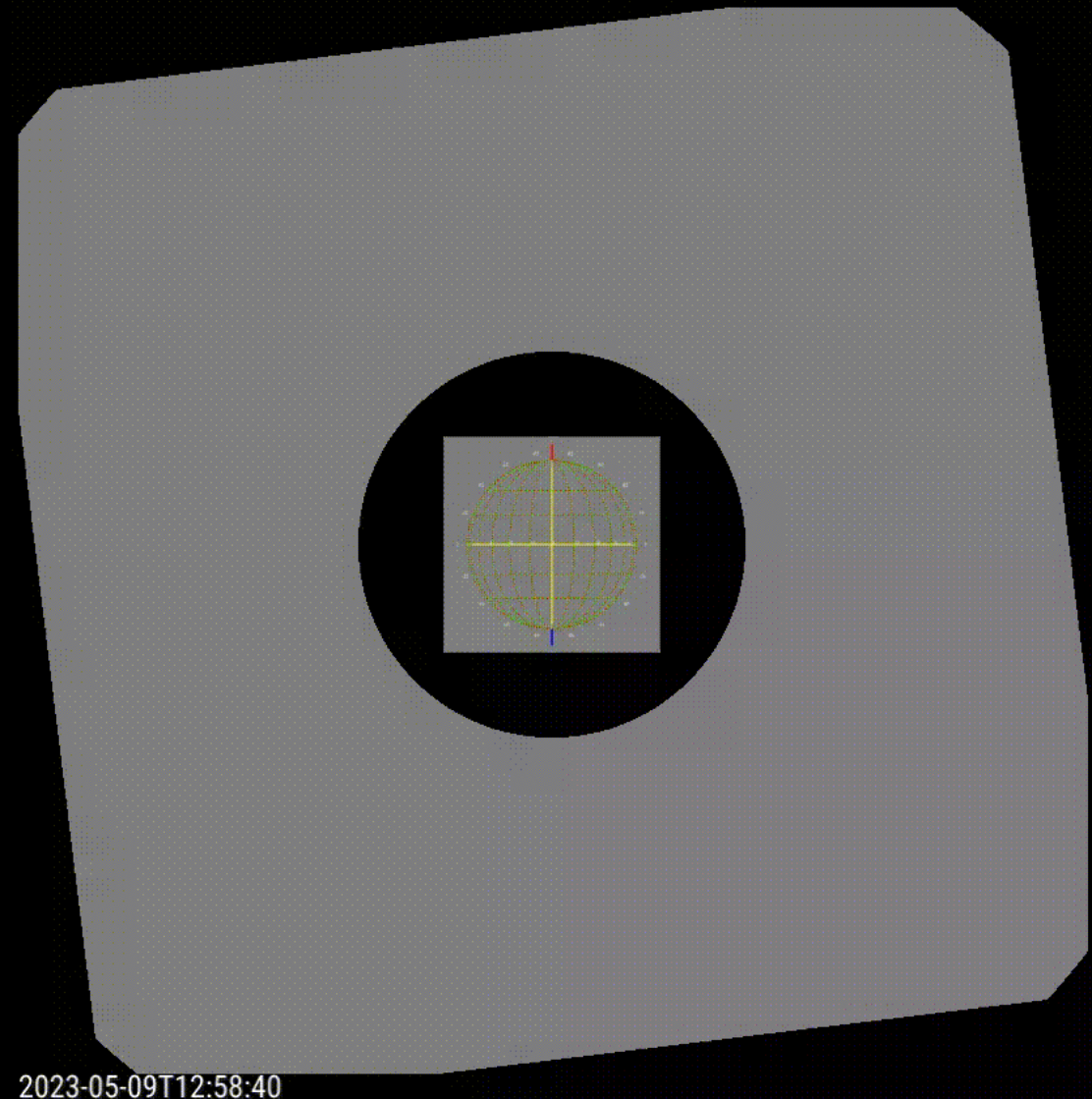
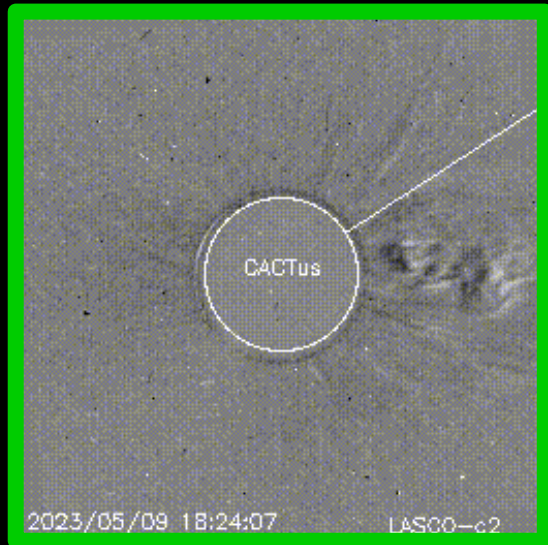
A Halo CME in LASCO C2

When: May 09 19:00 UTC

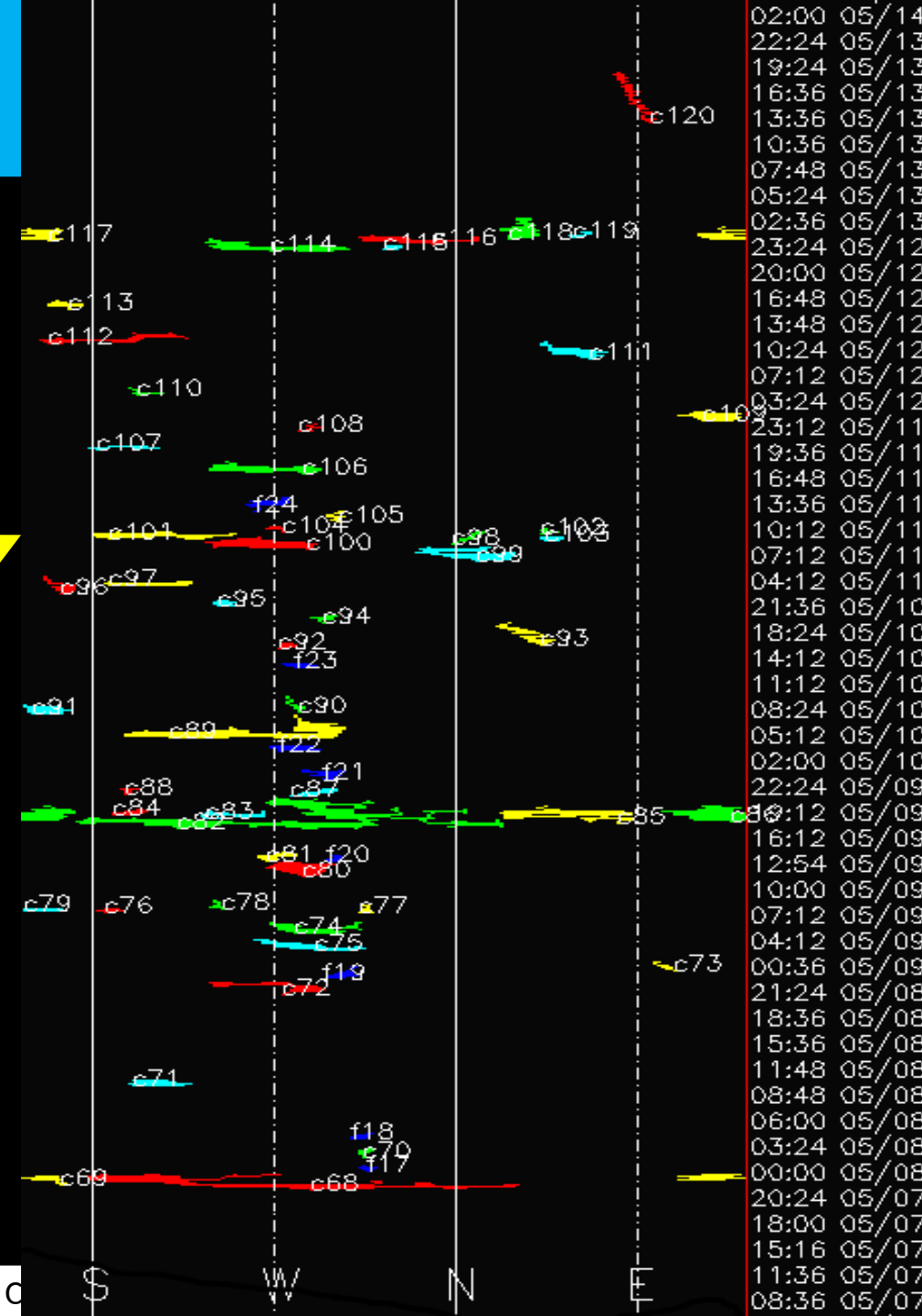
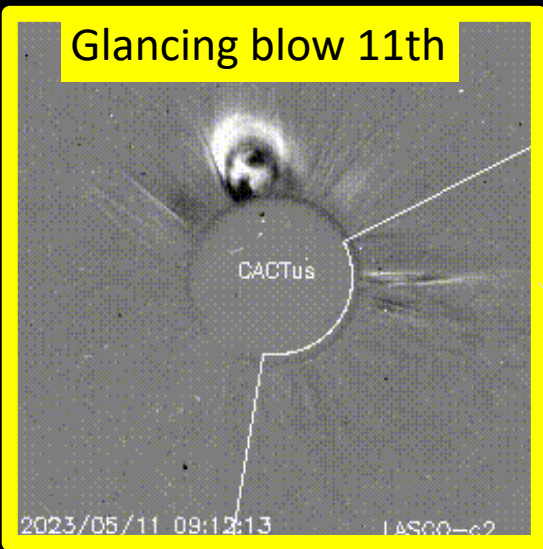
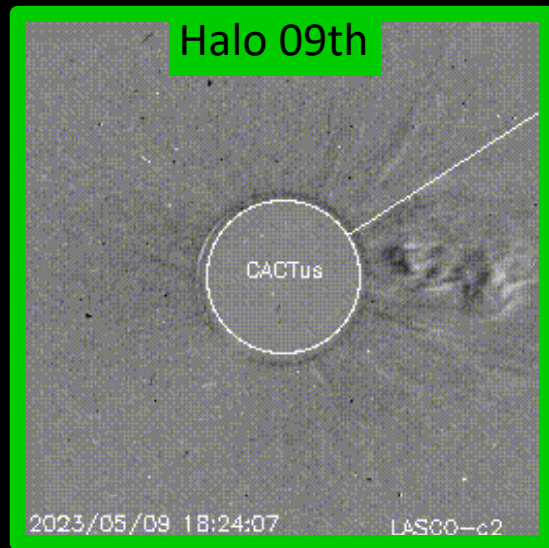
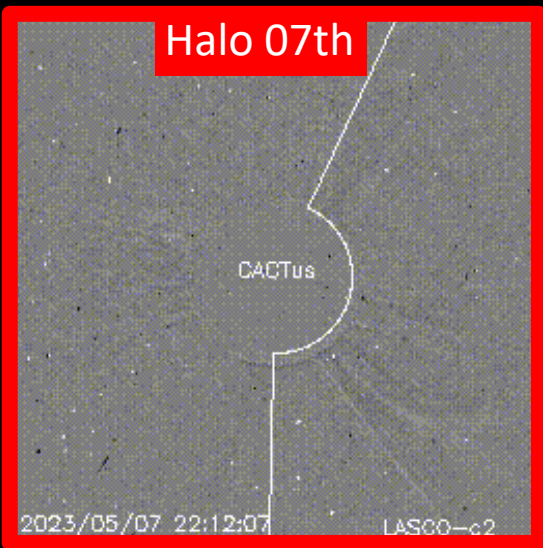
Direction: Mostly to the west.

Prediction: Arrival predicted for May 11 18:00
(possibly arrived on May 12 at 05:48 UTC)

The CME was associated with an M4.2 flare from
NOAA AR 3296, with peak time 18:58 UTC.



Coronal Mass Ejections

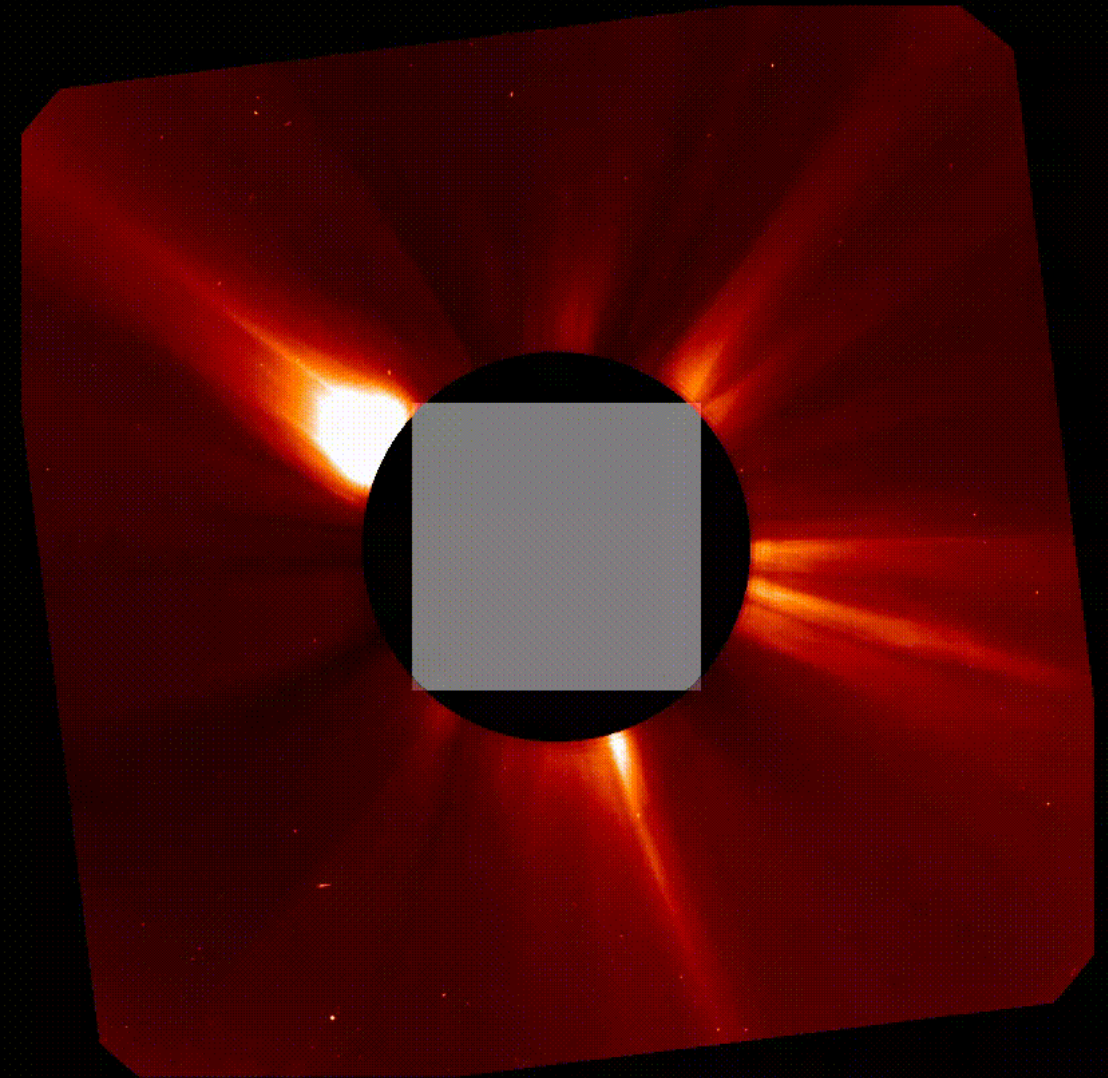


Coronal Mass Ejections

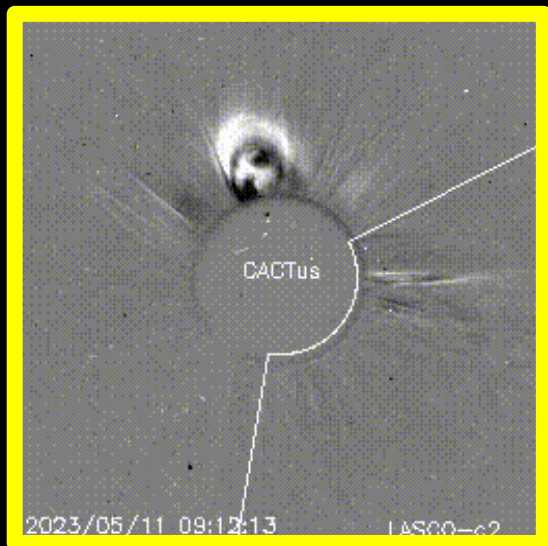
When: May 11 9:30 UTC

Direction: South-west.

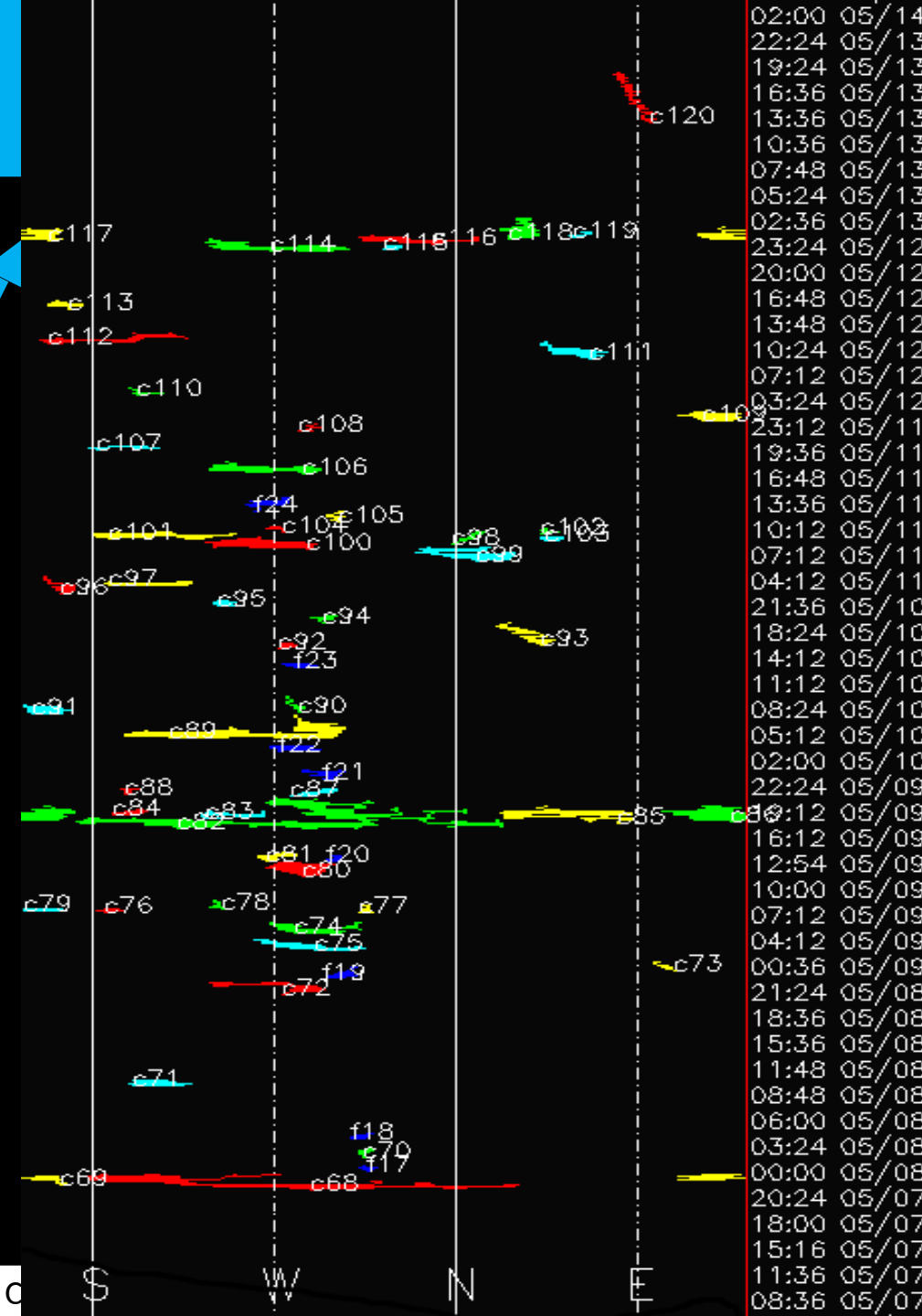
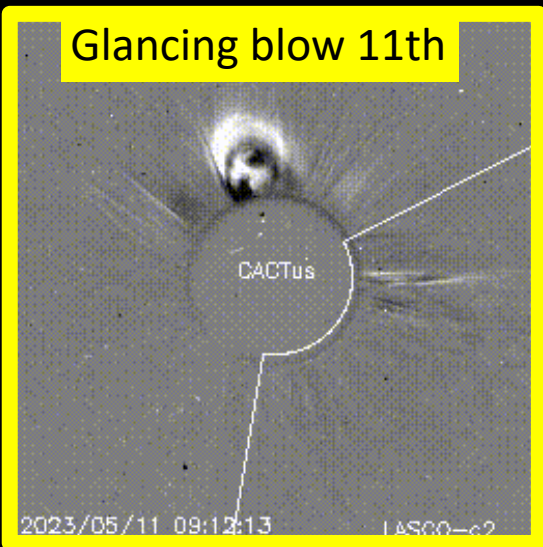
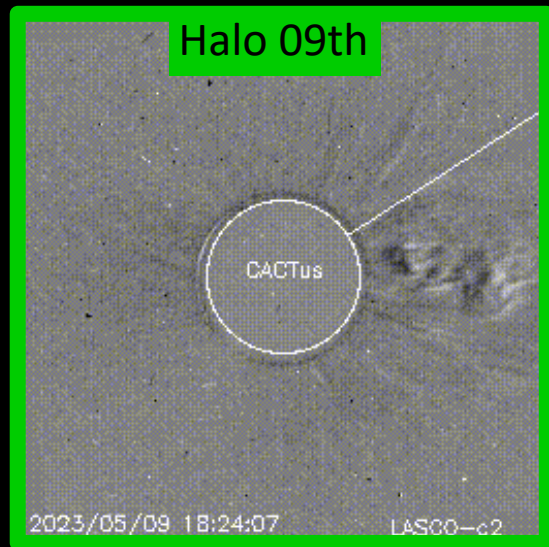
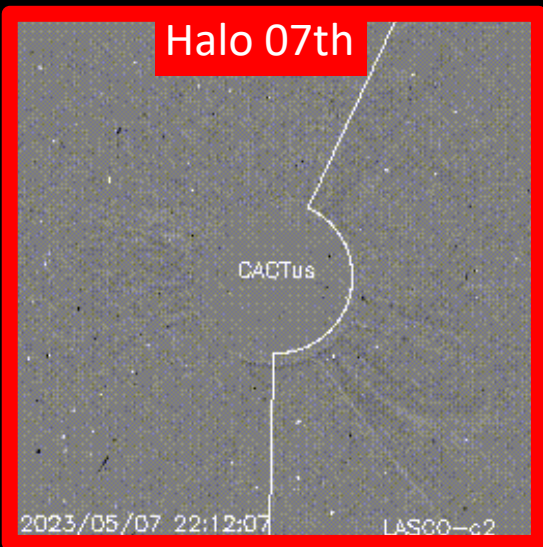
Prediction: Glancing blow (low probability)
predicted 14th from 22:30 UT (not yet
observed to arrive)



2023-05-11T05:04:43



Coronal Mass Ejections



Coronal Mass Ejections

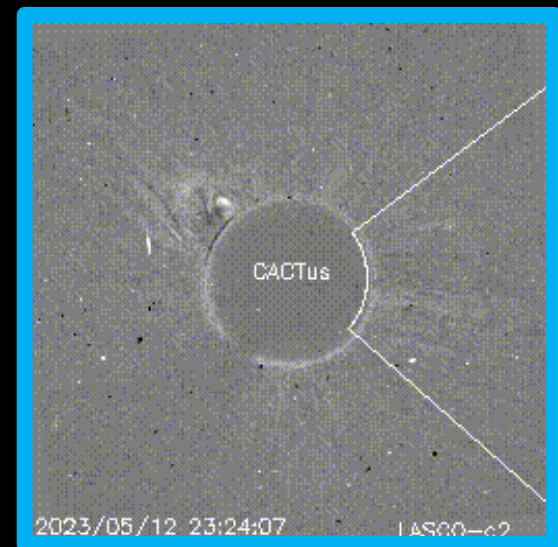
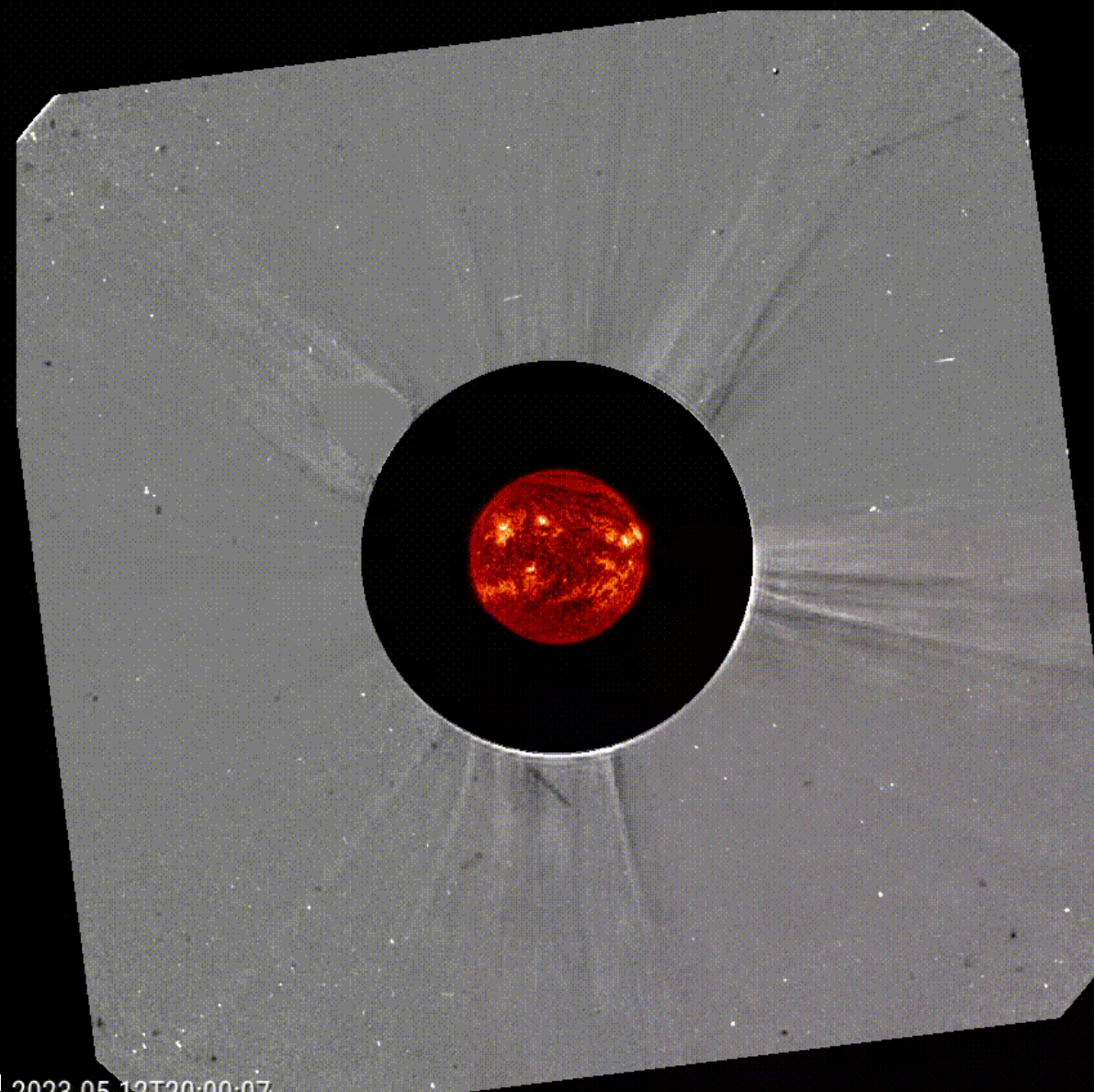
When: May 12 23:24 UTC

Direction: South-west.

Prediction: Expected to miss Earth

Speed: 800 km/s plane of sky

Associated with impressive eruption on West limb following a C9 flare from AR3296 at 23:45 UTC May 12



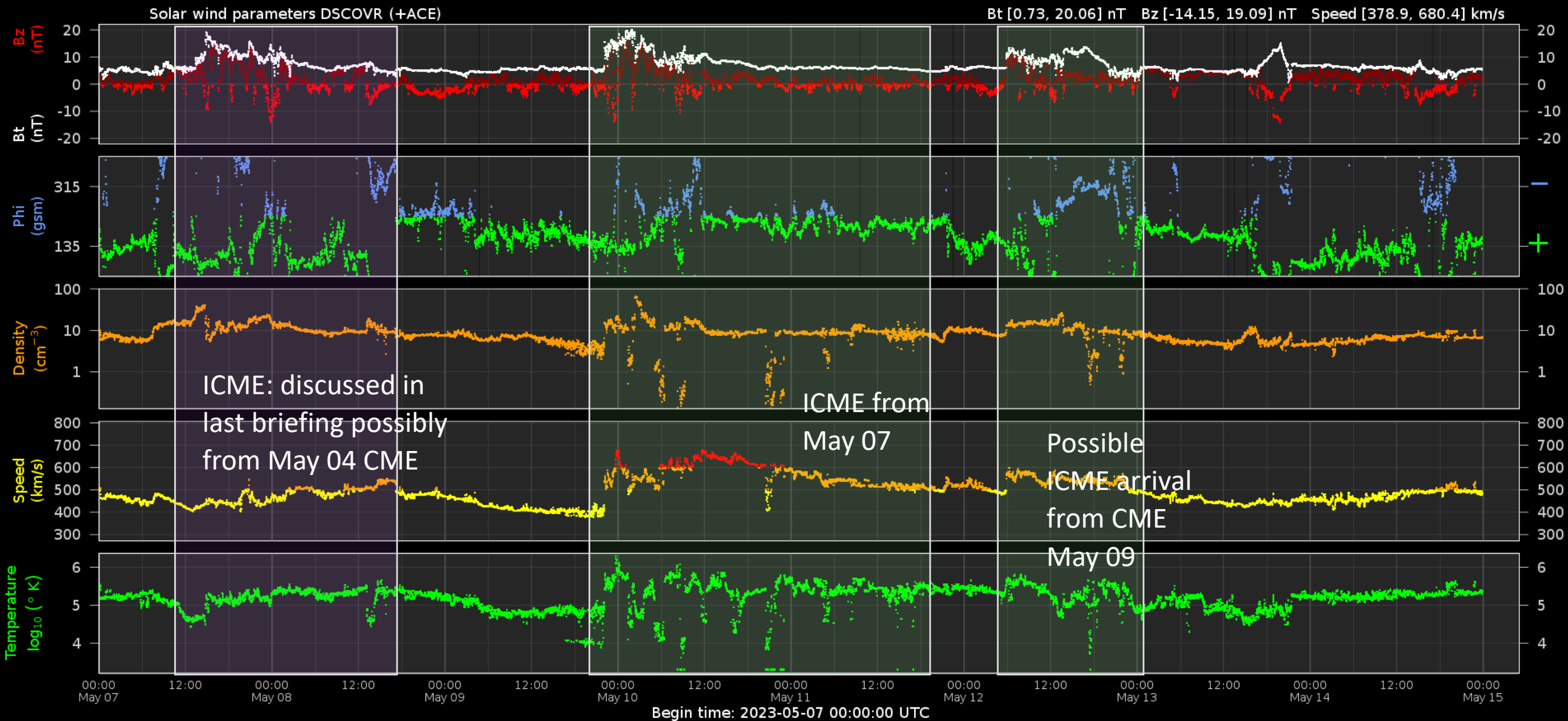
Solar Wind and Geomagnetic Activity



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Solar wind parameters



Solar wind parameters & K-indices



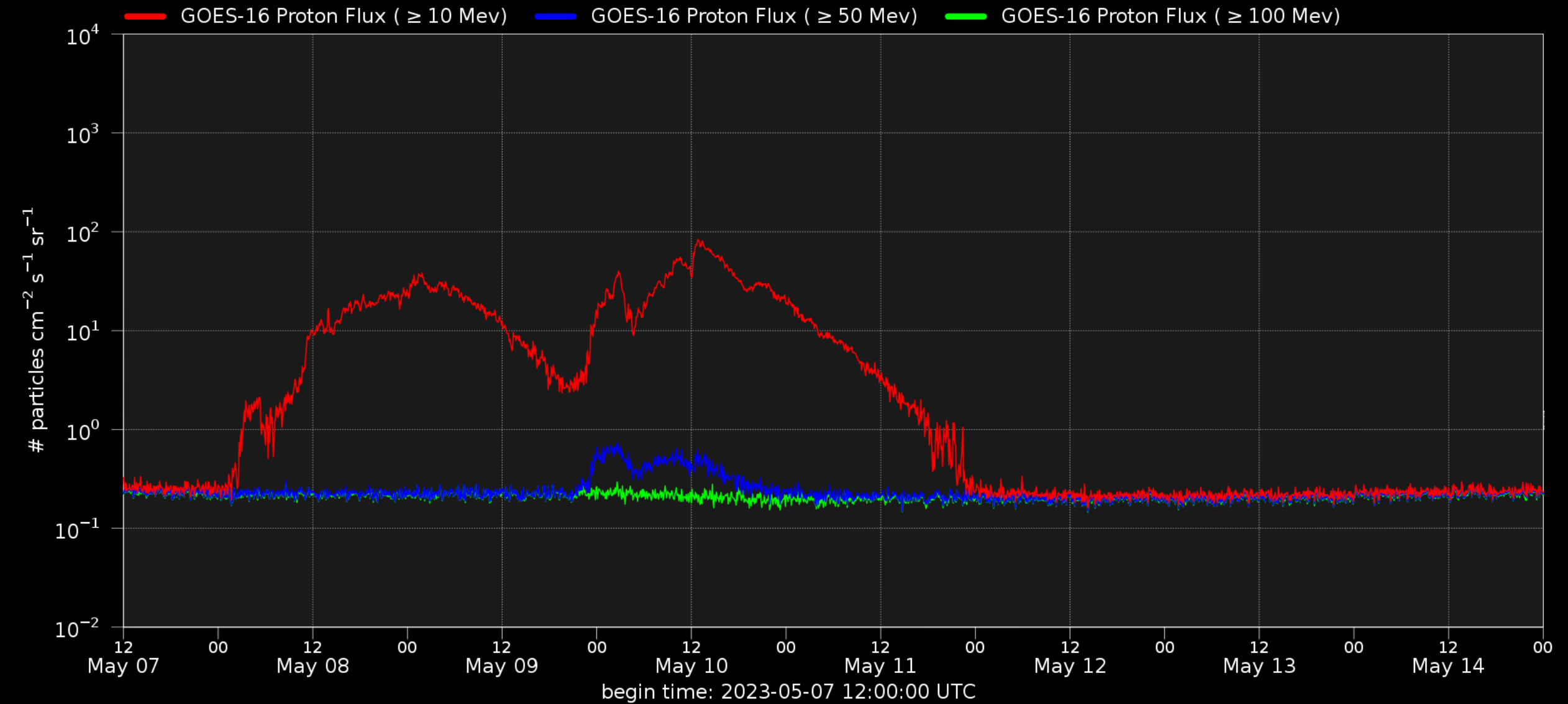
Energetic Particles



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Solar proton flux



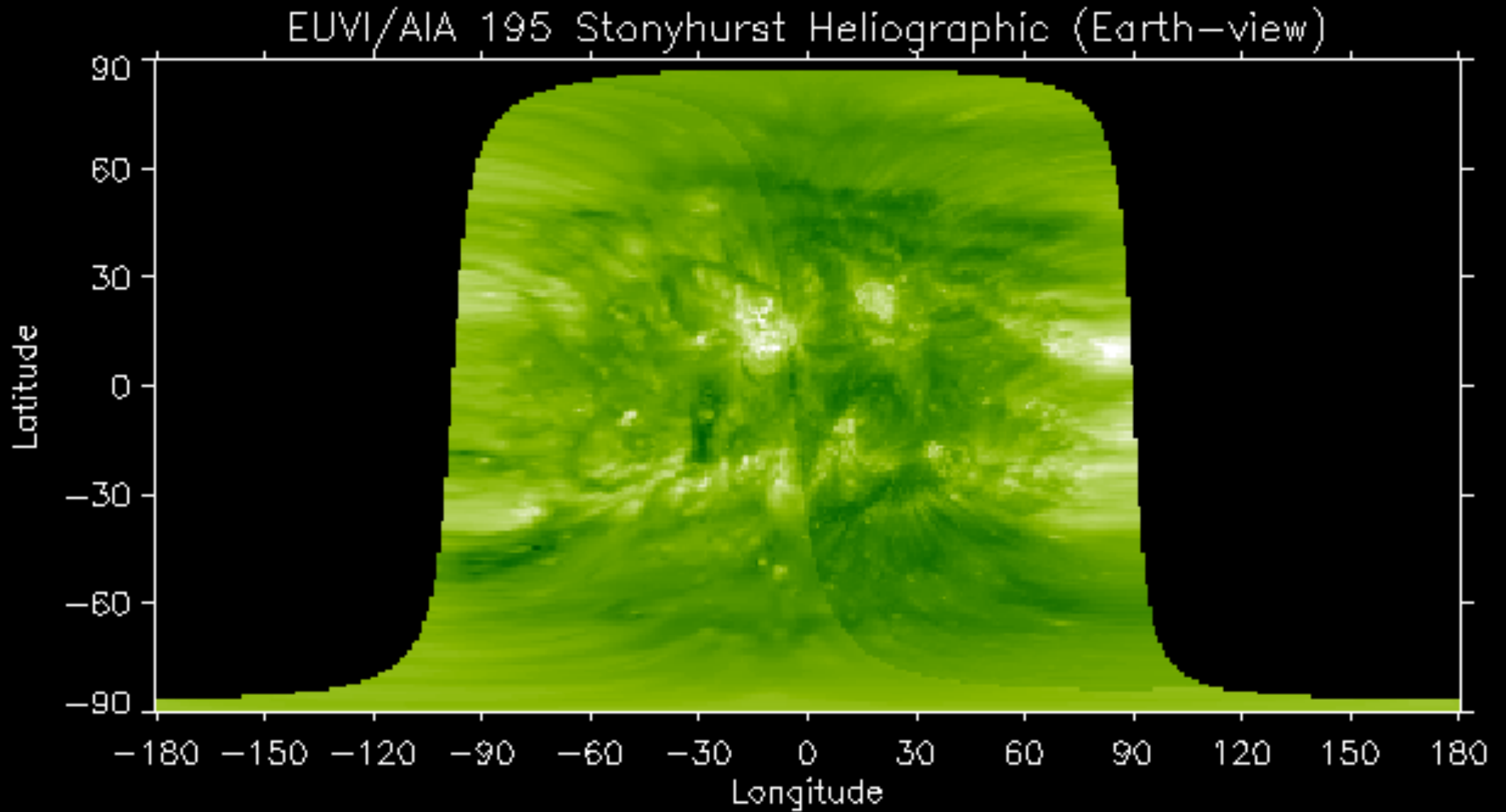
Outlook



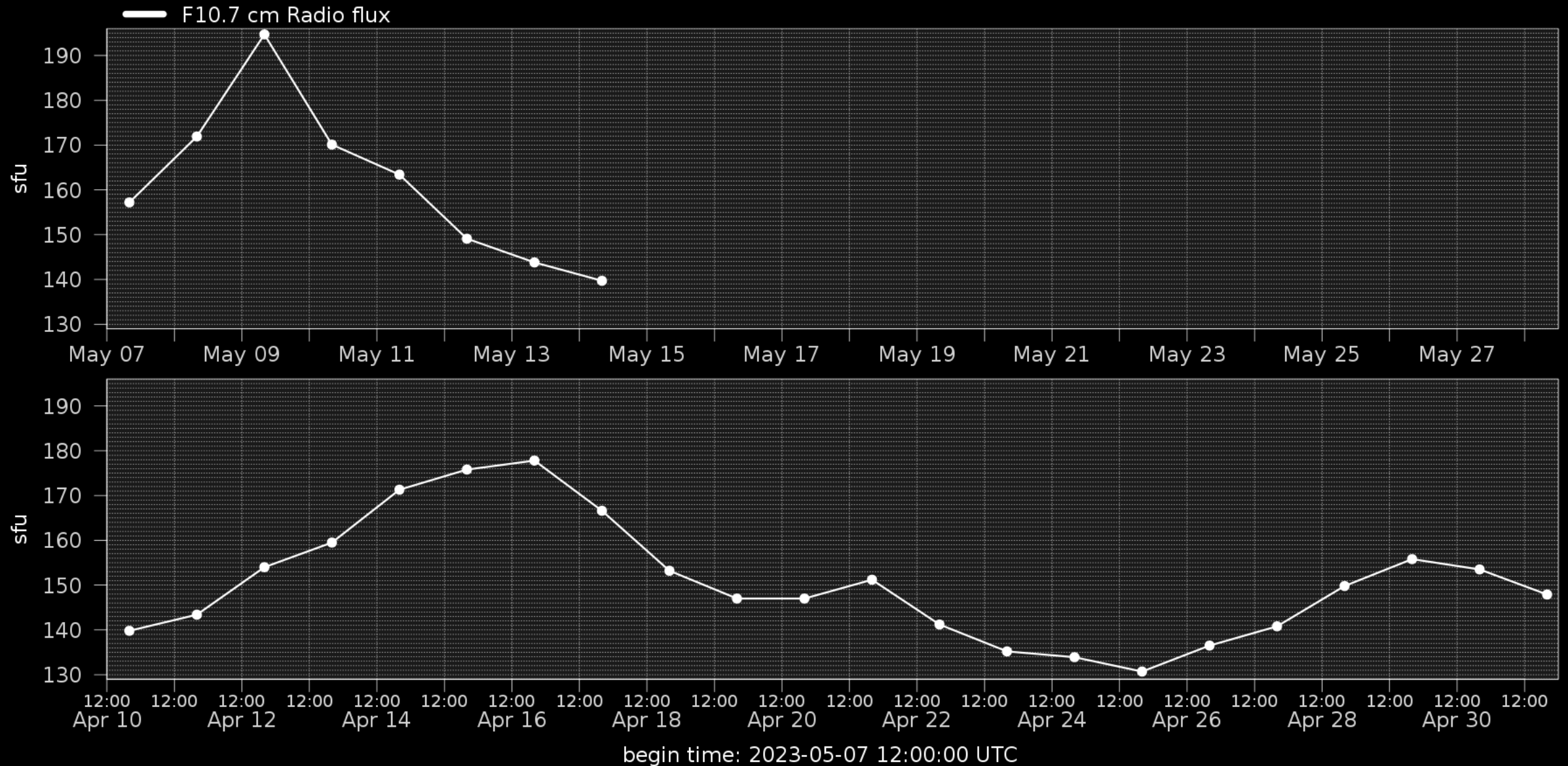
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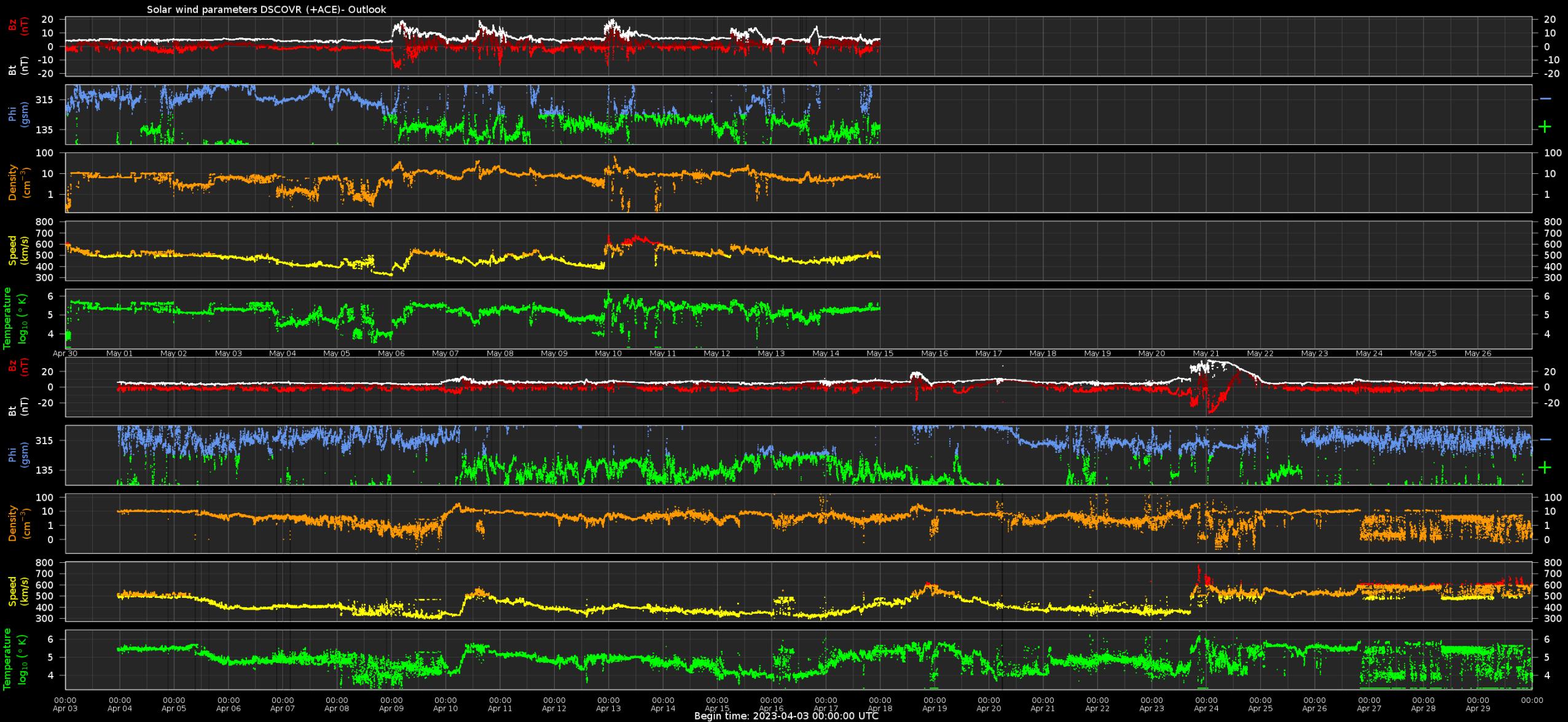
Outlook: Solar activity



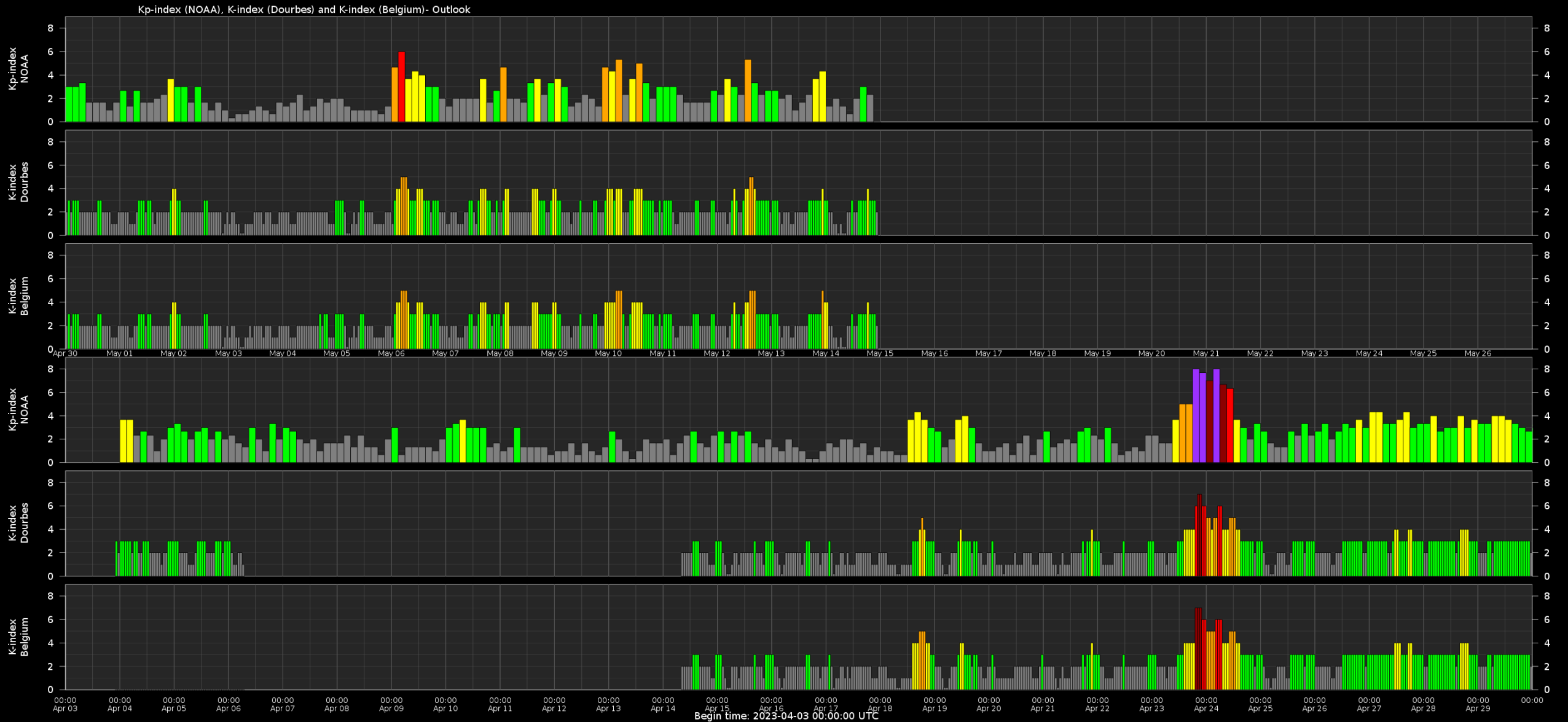
Outlook: Solar F10.7cm radio flux



Outlook: Solar wind parameters



Outlook: Geomagnetic activity



Outlook: Electron Flux at GEO Outlook



SIDC Space Weather Briefing

See you at our next briefing!

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