



# Ruimteweer: Hoe, waarom, en de zonnestorm van 19 januari 2026

Jan Janssens – 23 mei 2026



# Het ruimteweer

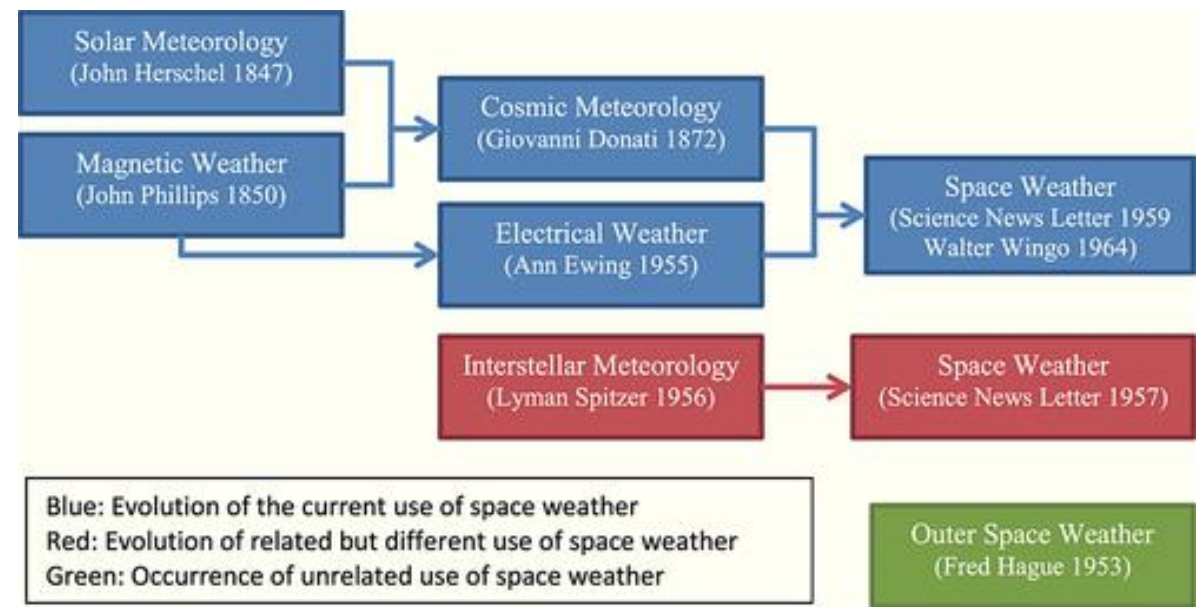
...alle omstandigheden op de zon en in de zonnewind, magnetosfeer, ionosfeer en thermosfeer die de prestaties en de betrouwbaarheid van technologische systemen in de ruimte en op grond kunnen beïnvloeden en die een gevaar kunnen betekenen voor het menselijk leven of de gezondheid.

*NSWP, ESA*

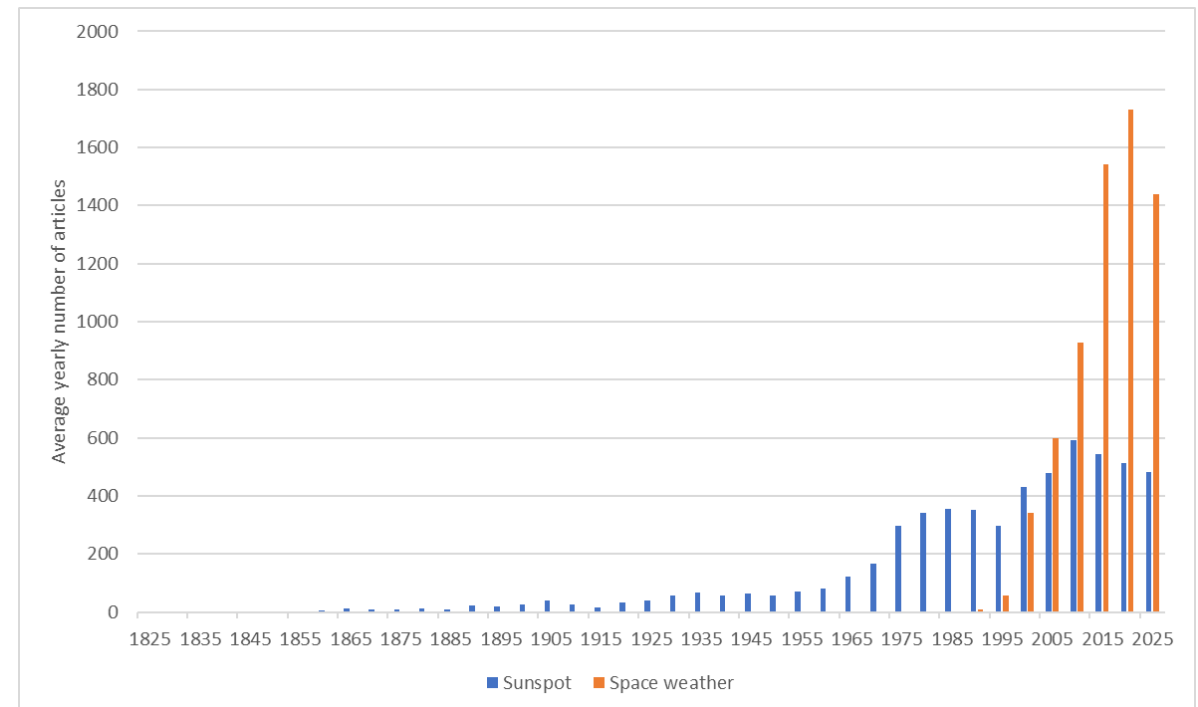


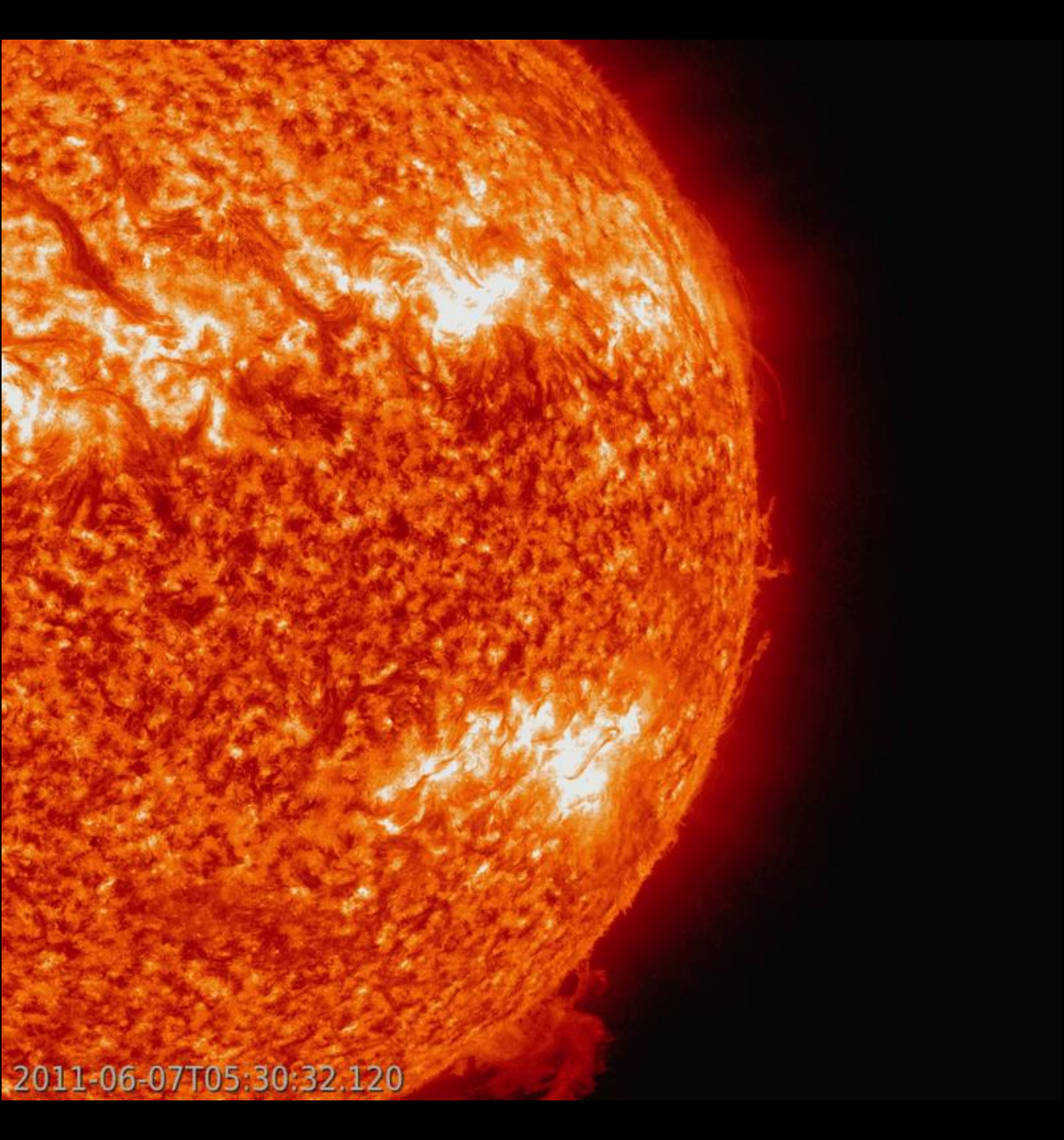
# Recente term

- Eerste gebruik
  - Watson Davis (1957, 1959)
  - Thomas Gold (1959)
- Algemeen gebruik
  - Vroege jaren 1990



Cade & Chan-Park (2015) - *The origin of space weather*  
<https://doi.org/10.1002/2014SW001141>





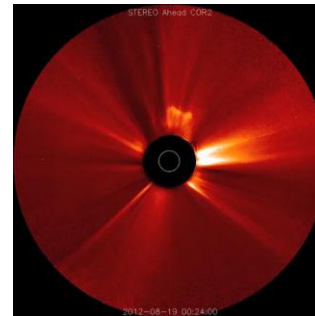
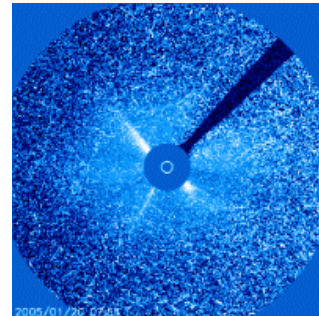
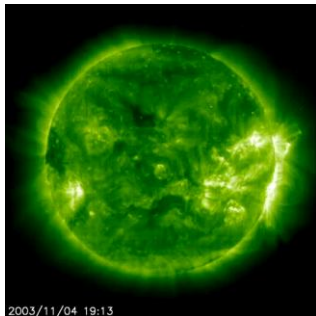
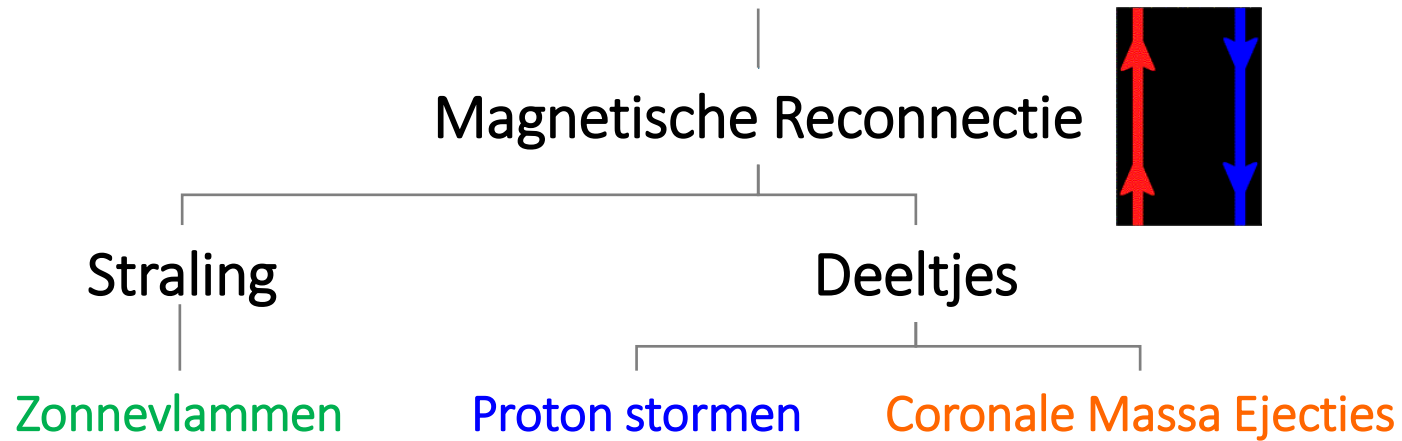
# Het waarom van ruimteweer

Over de oorzaken en gevolgen van verstoord  
ruimteweer



# Verstoord ruimteweer: oorzaken

## Zonnewitbarstingen

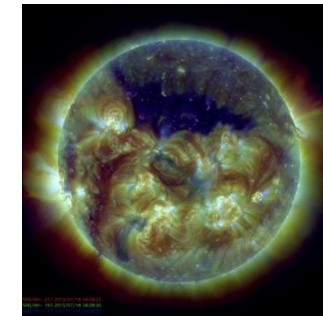


## Corona

Zonnewind

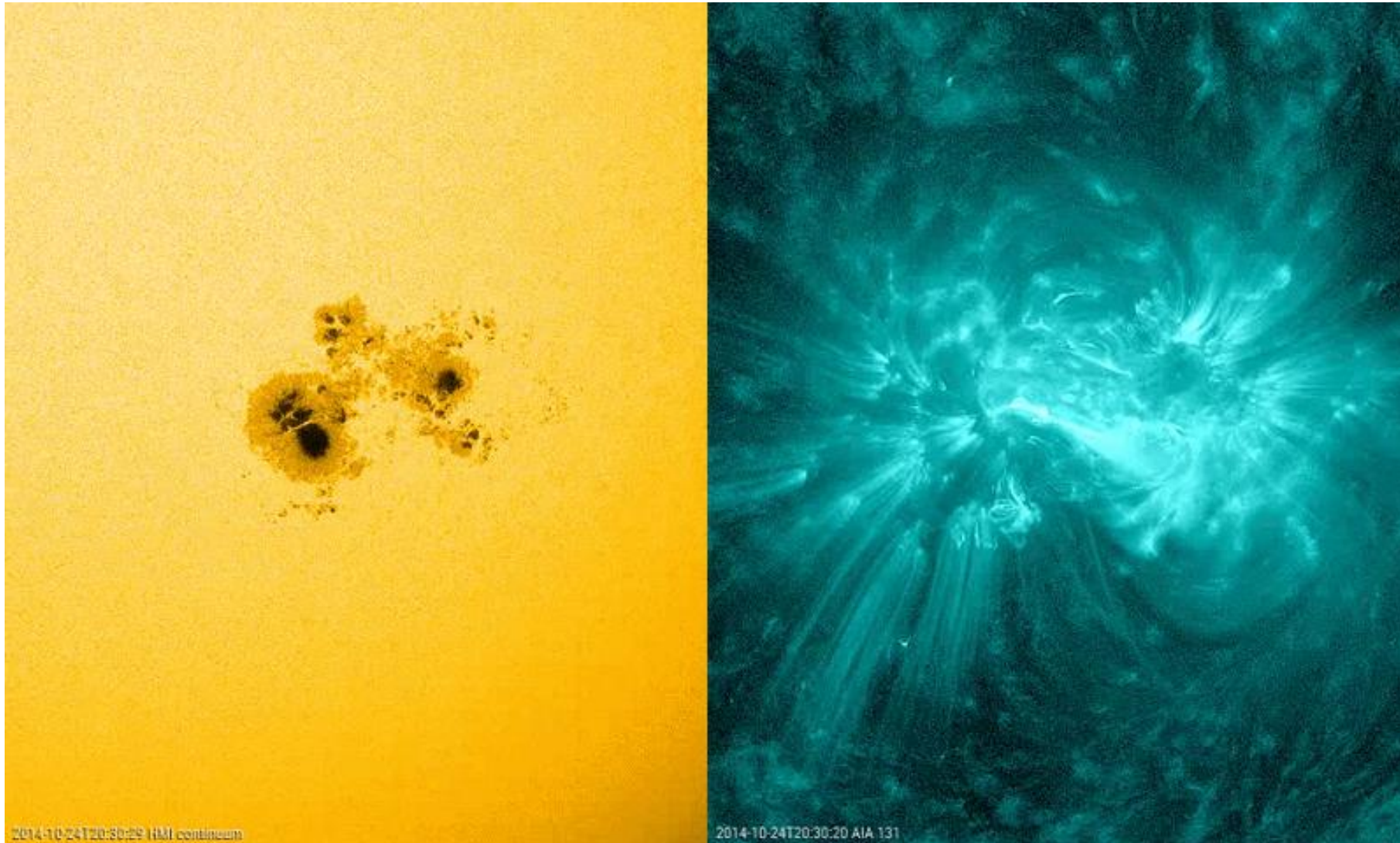
Deeltjes

Coronale Gat



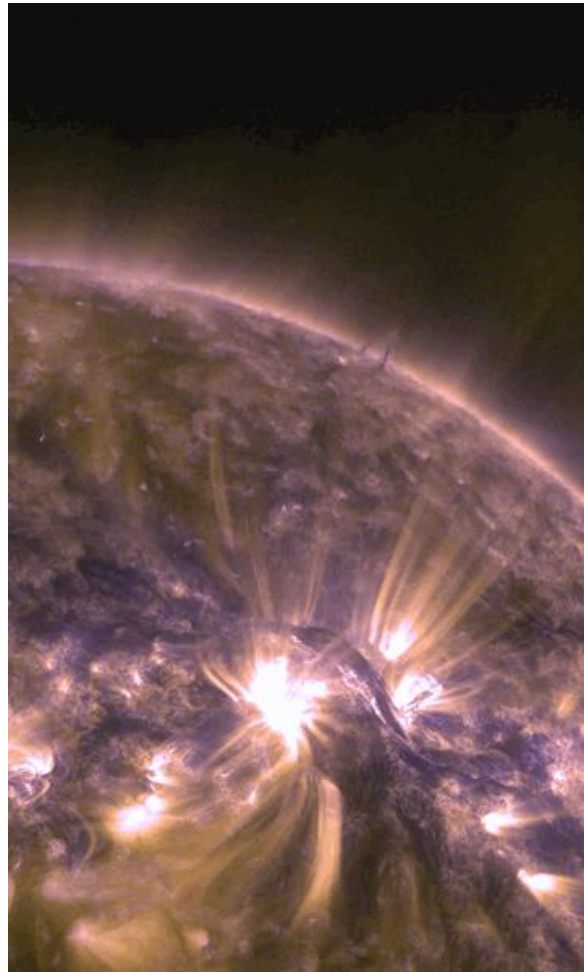
# Zonnevlammen

NOAA 12192 (Oktober 2014)

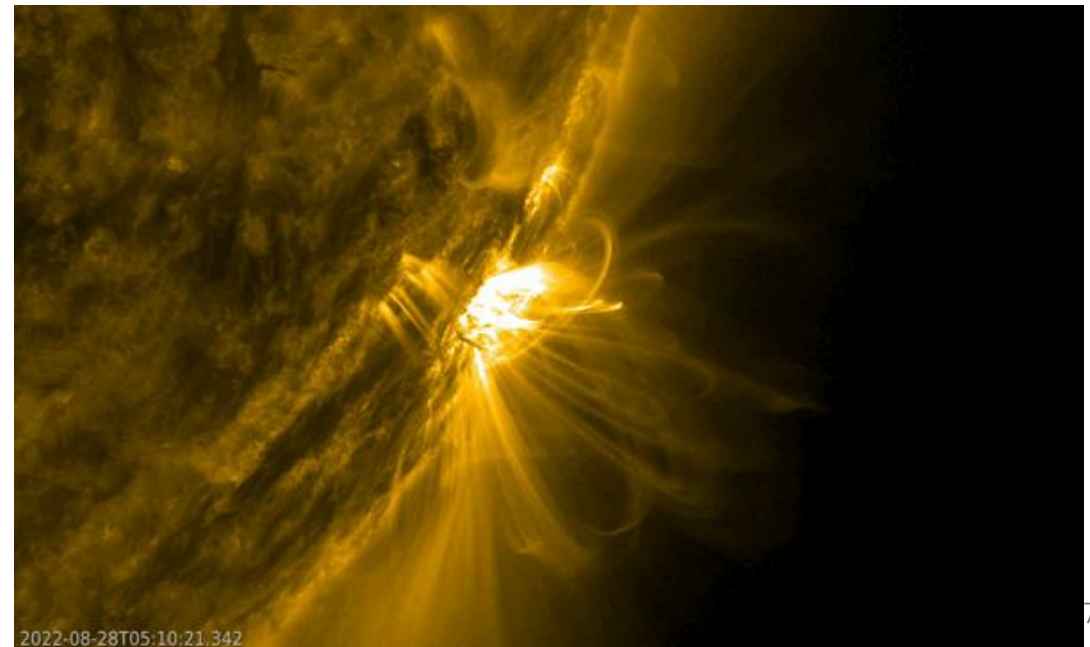
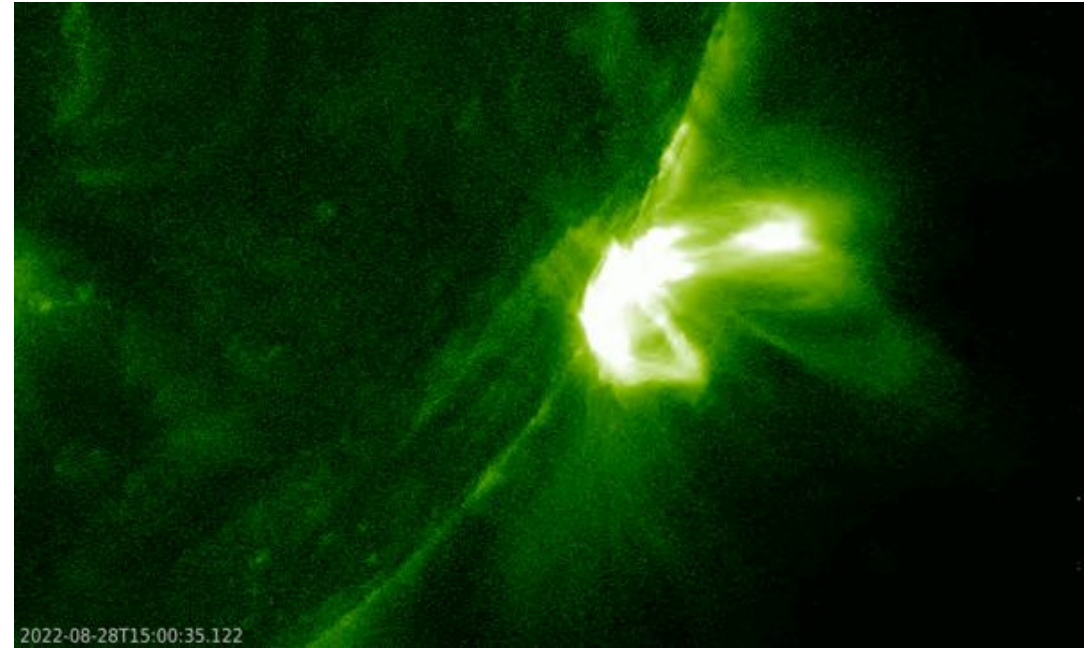


# Zonnevlammen

NOAA 13088 =>

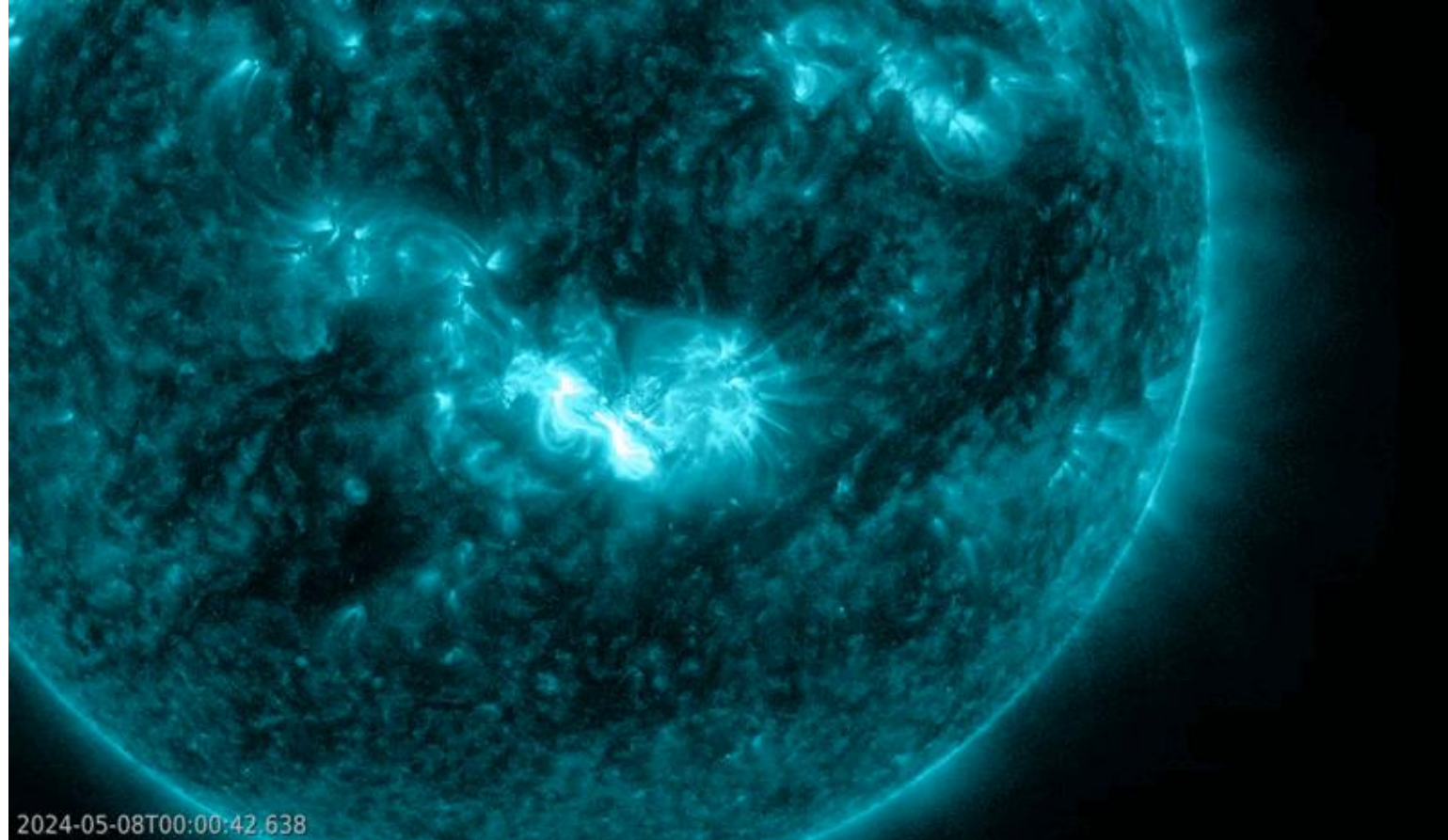
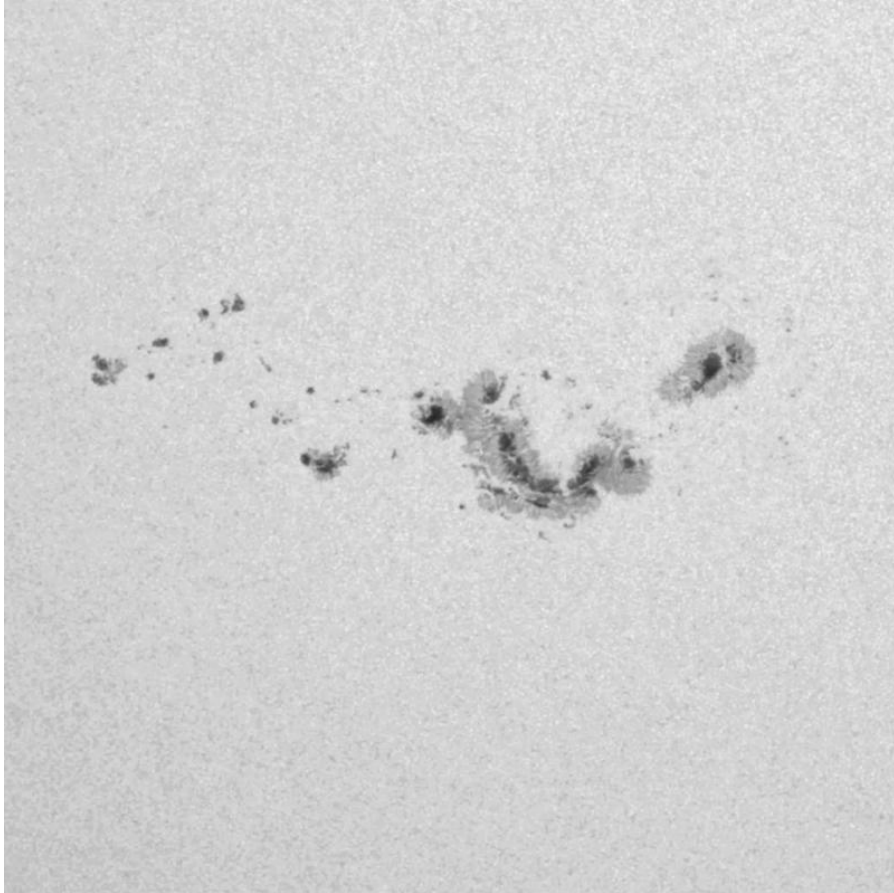


Filament – 24 Feb 2023



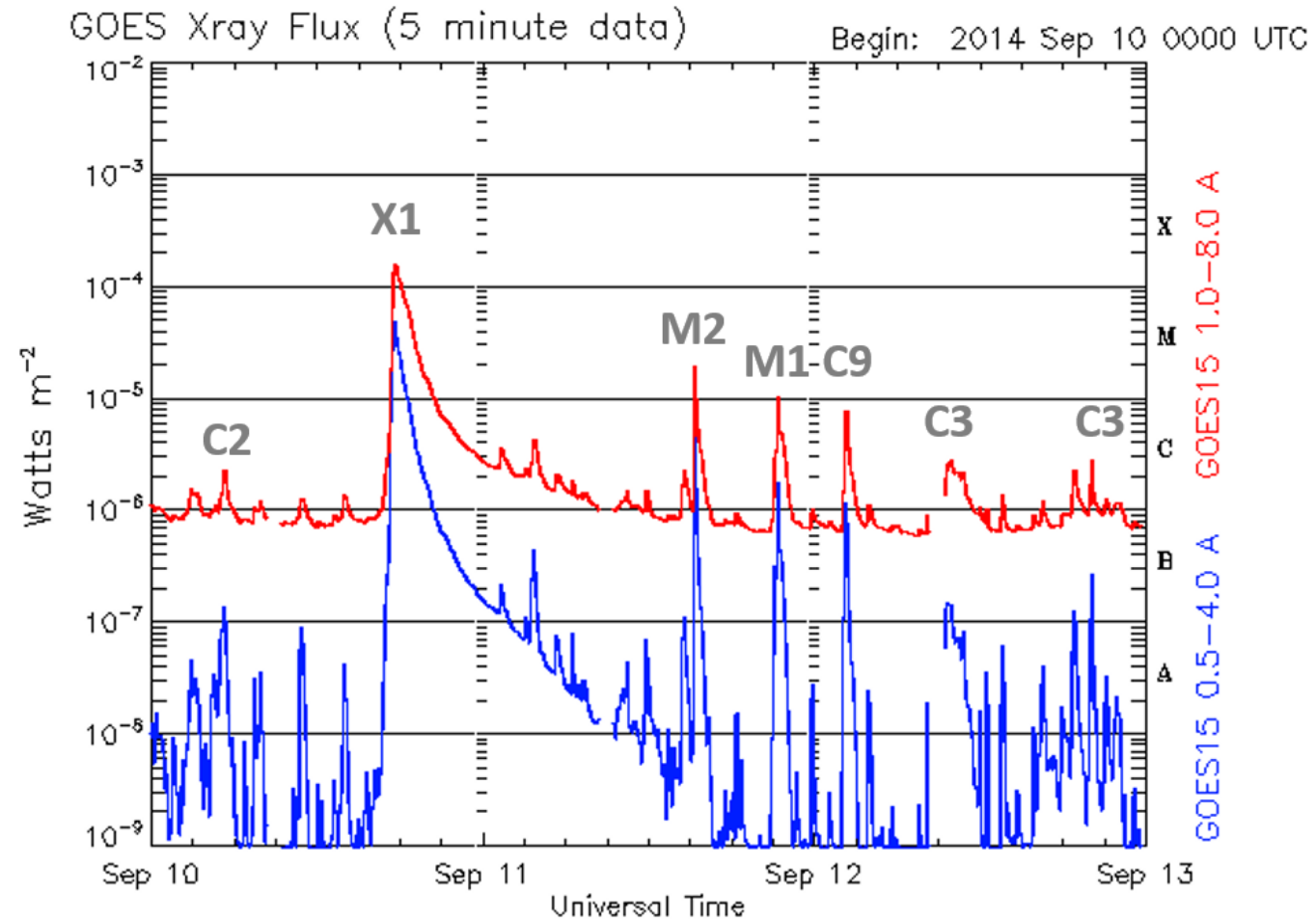
# Zonnevlammen

NOAA 13664 (Mei 2024)



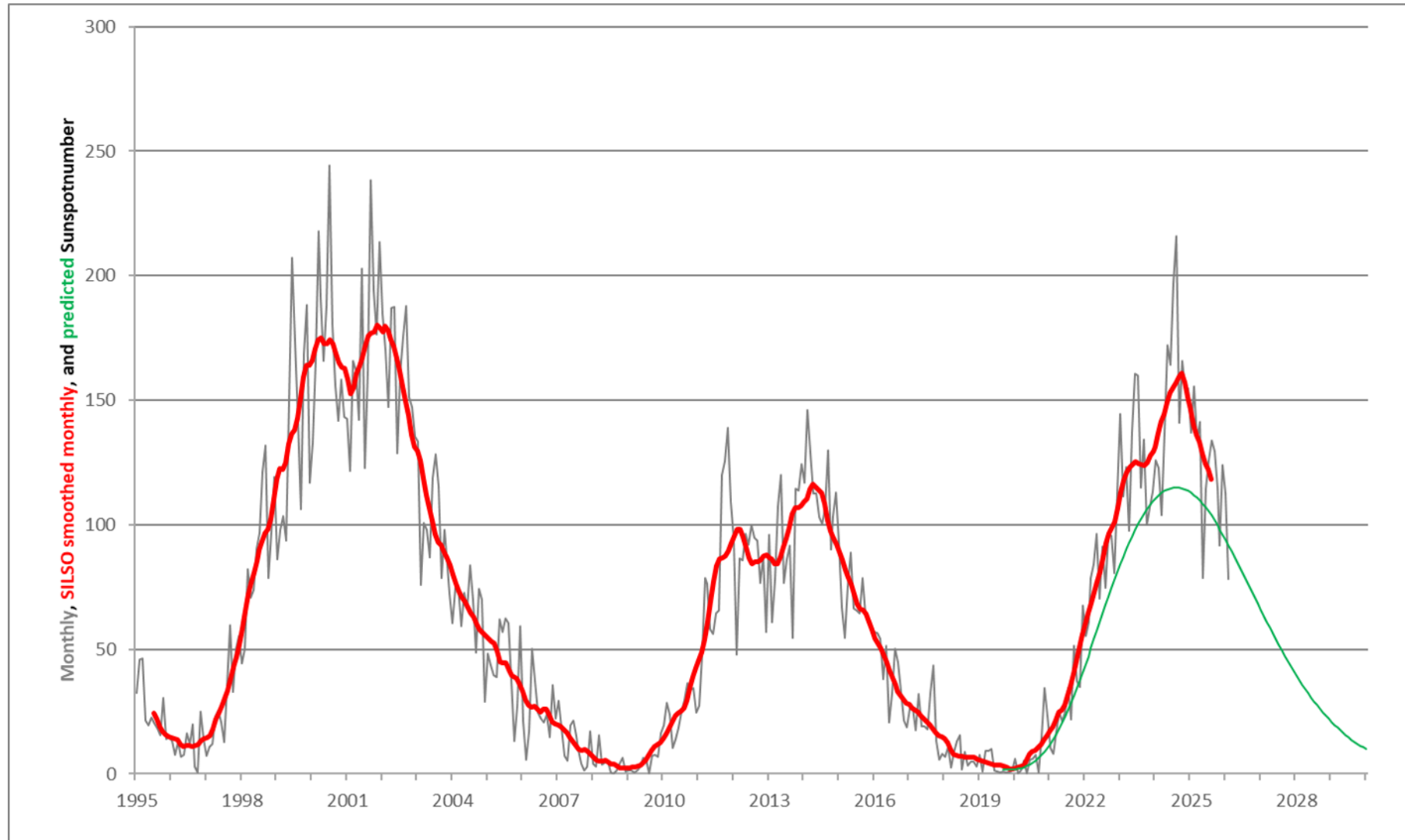
# Zonnevlammen

## Classificatie



# Zonnevlammen

Evolutie met zonnecyclus



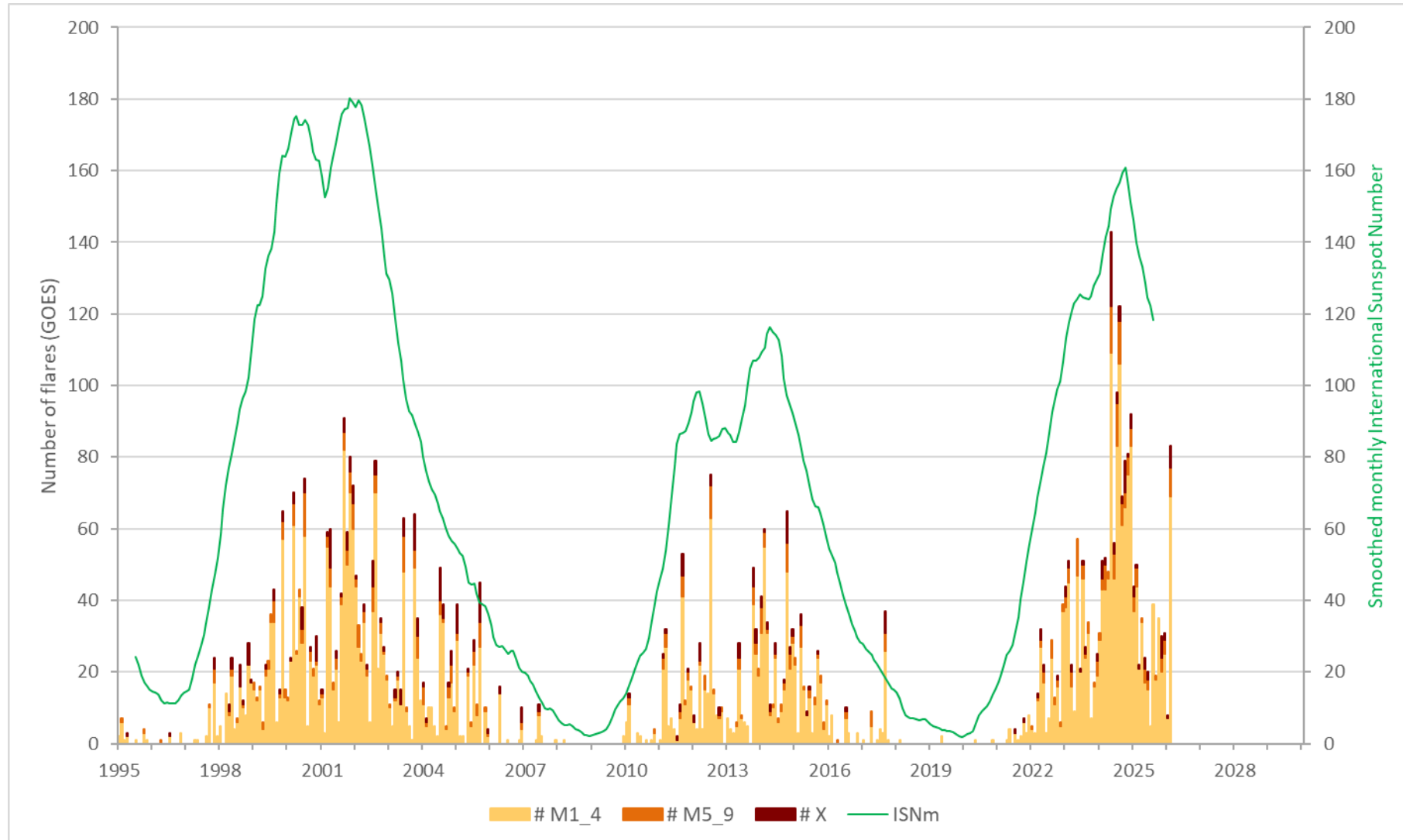
# Zonnevlammen

Evolutie met zonnecyclus



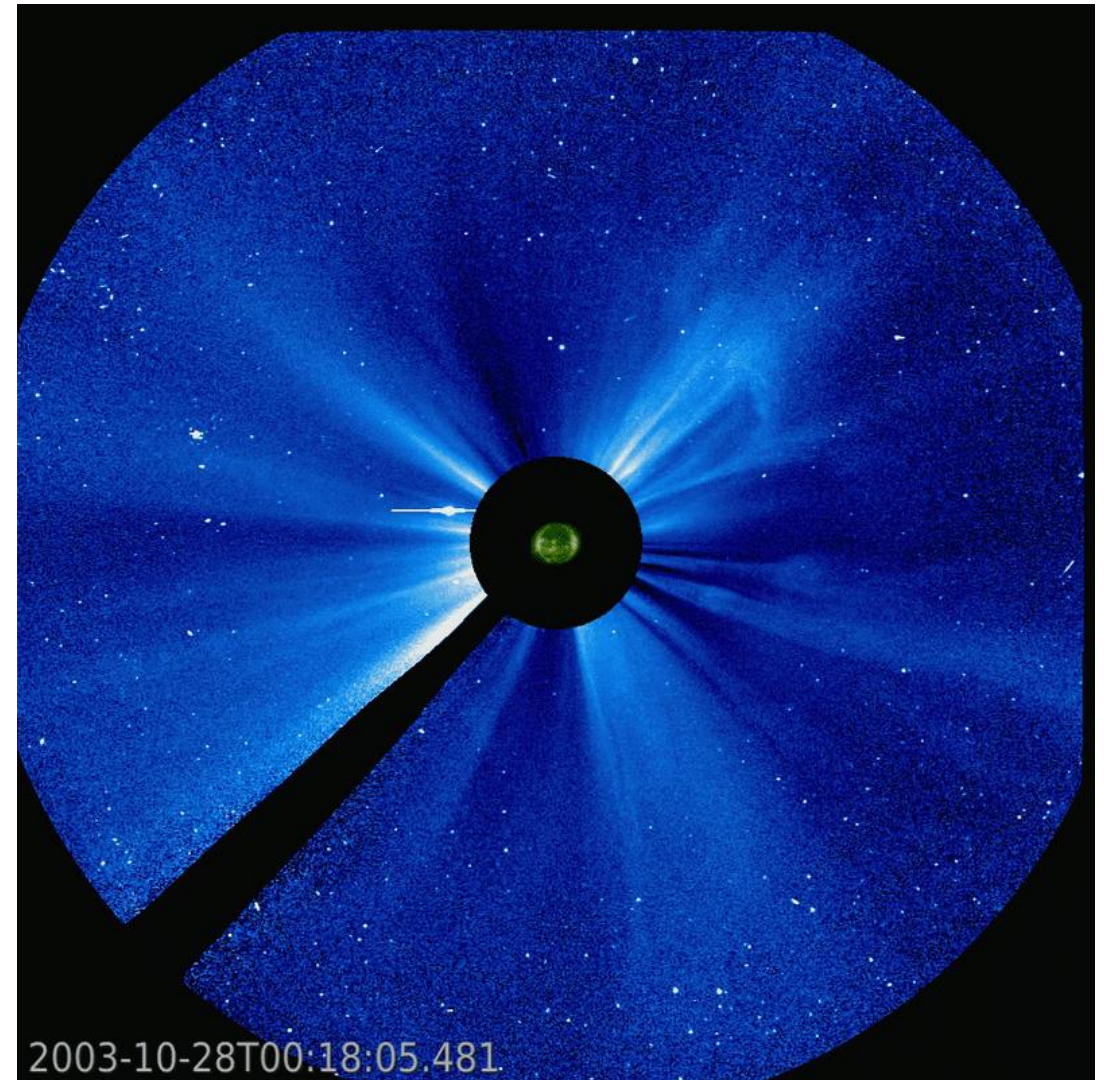
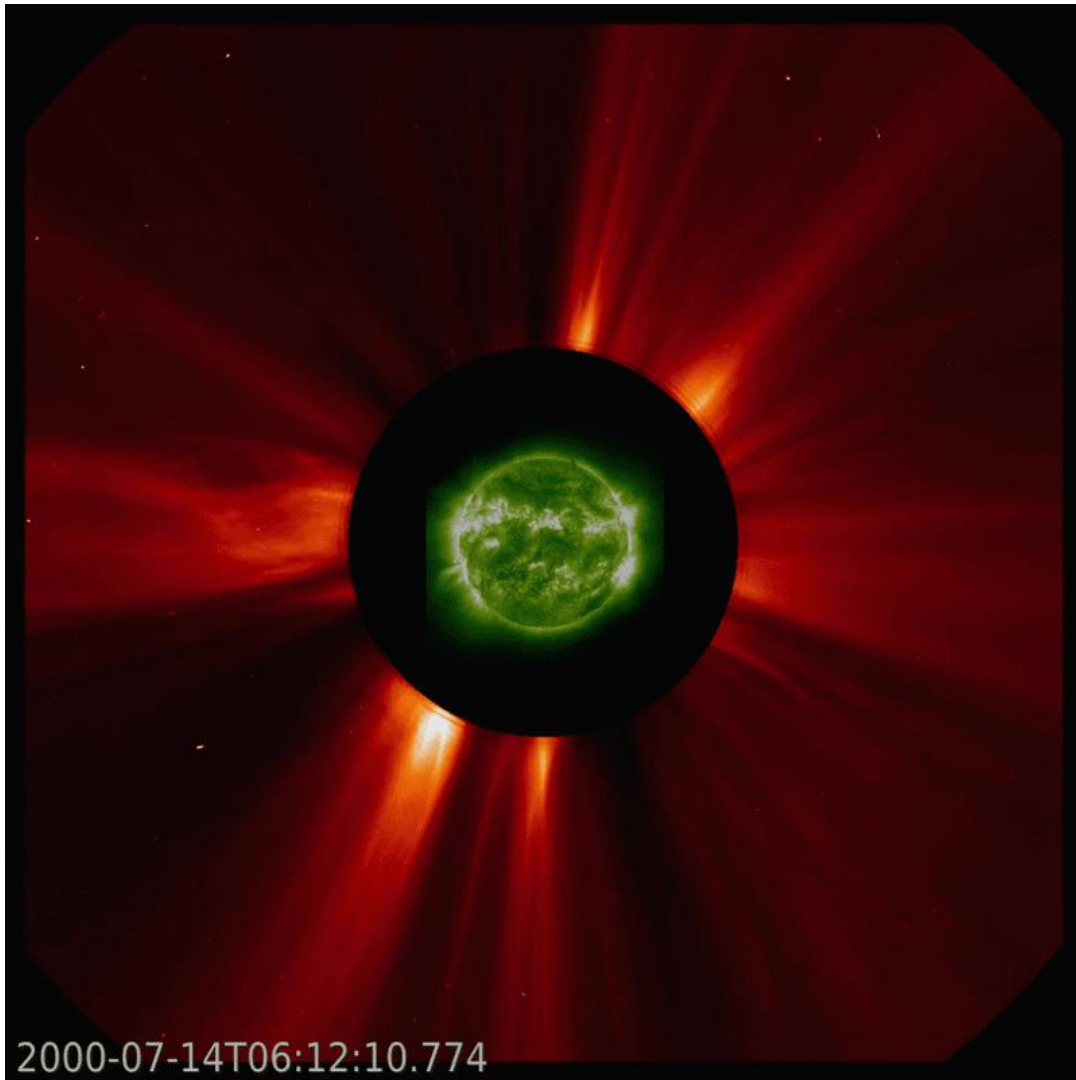
# Zonnevlammen

Evolutie met zonnecyclus



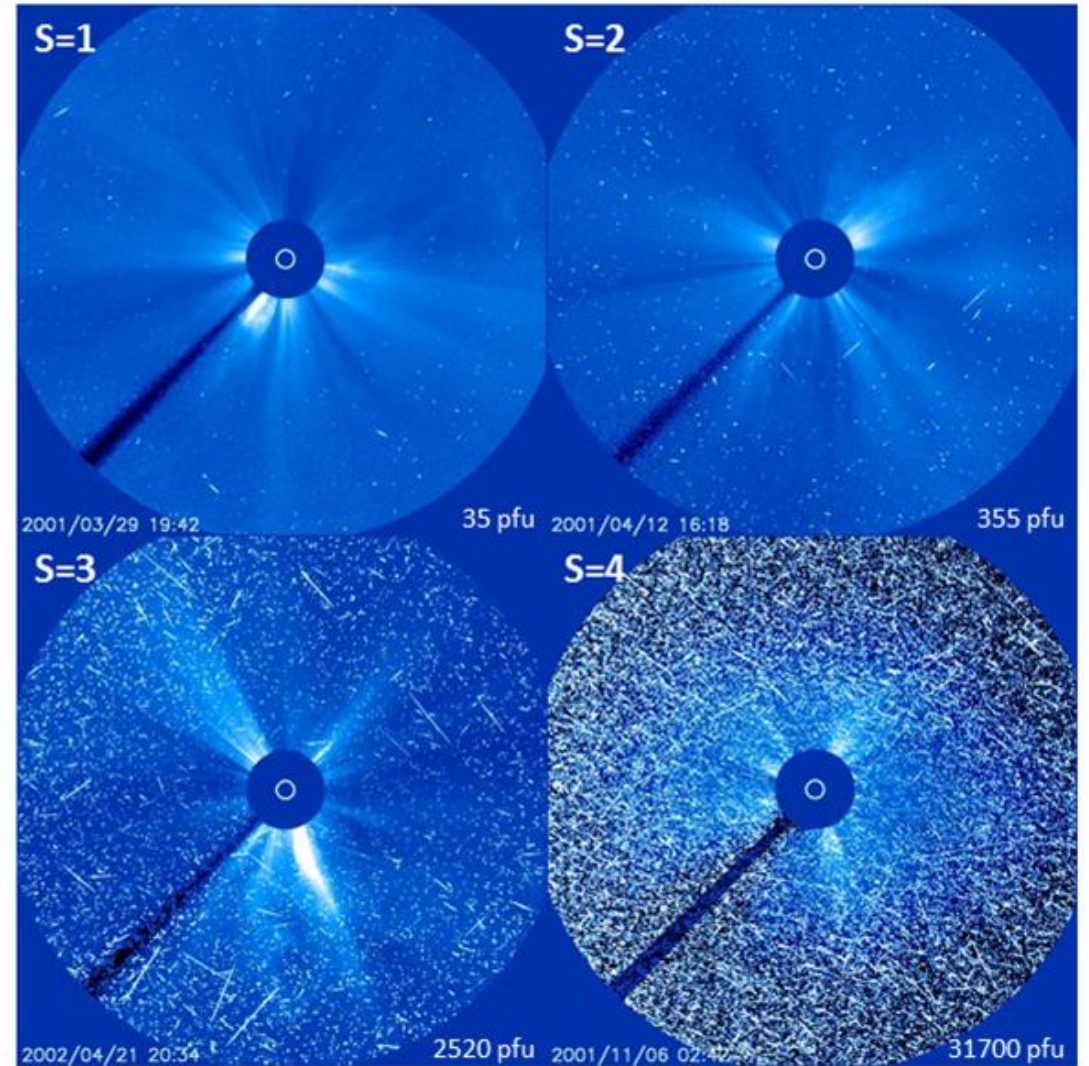
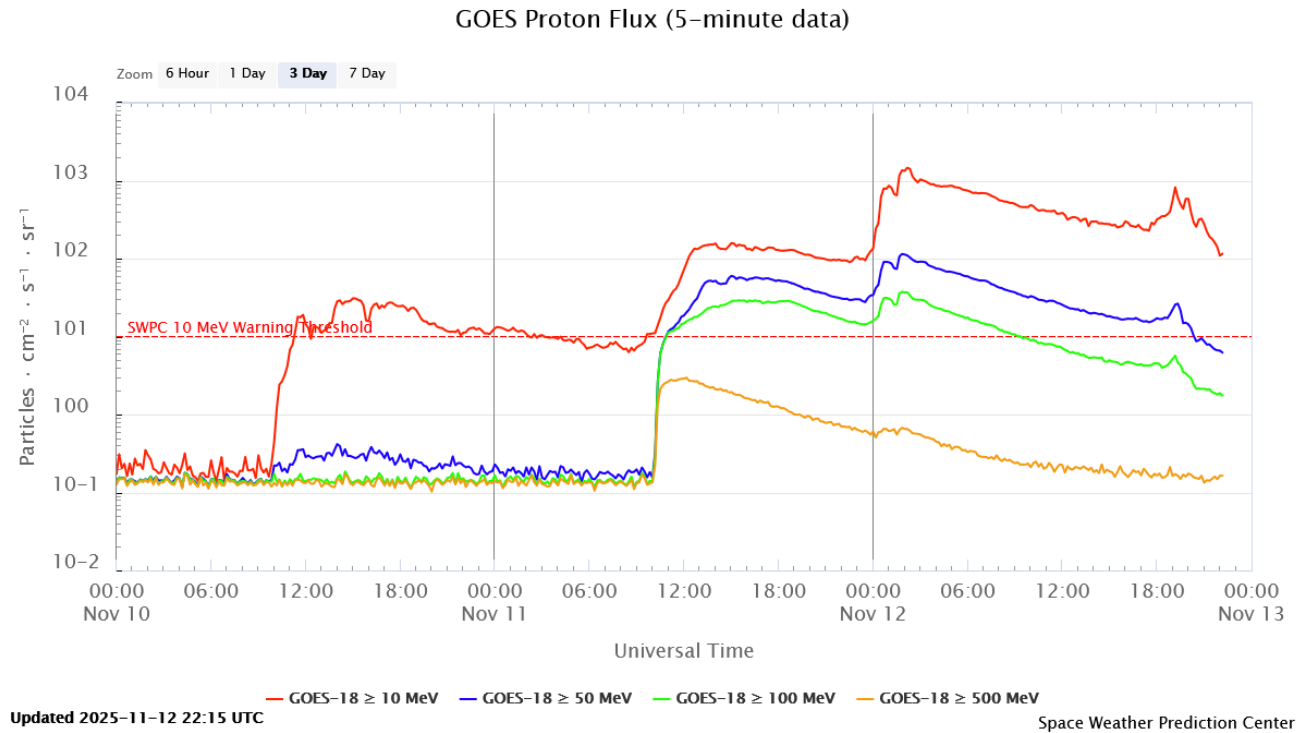
# Proton stormen

Bastille Day & Halloween proton stormen



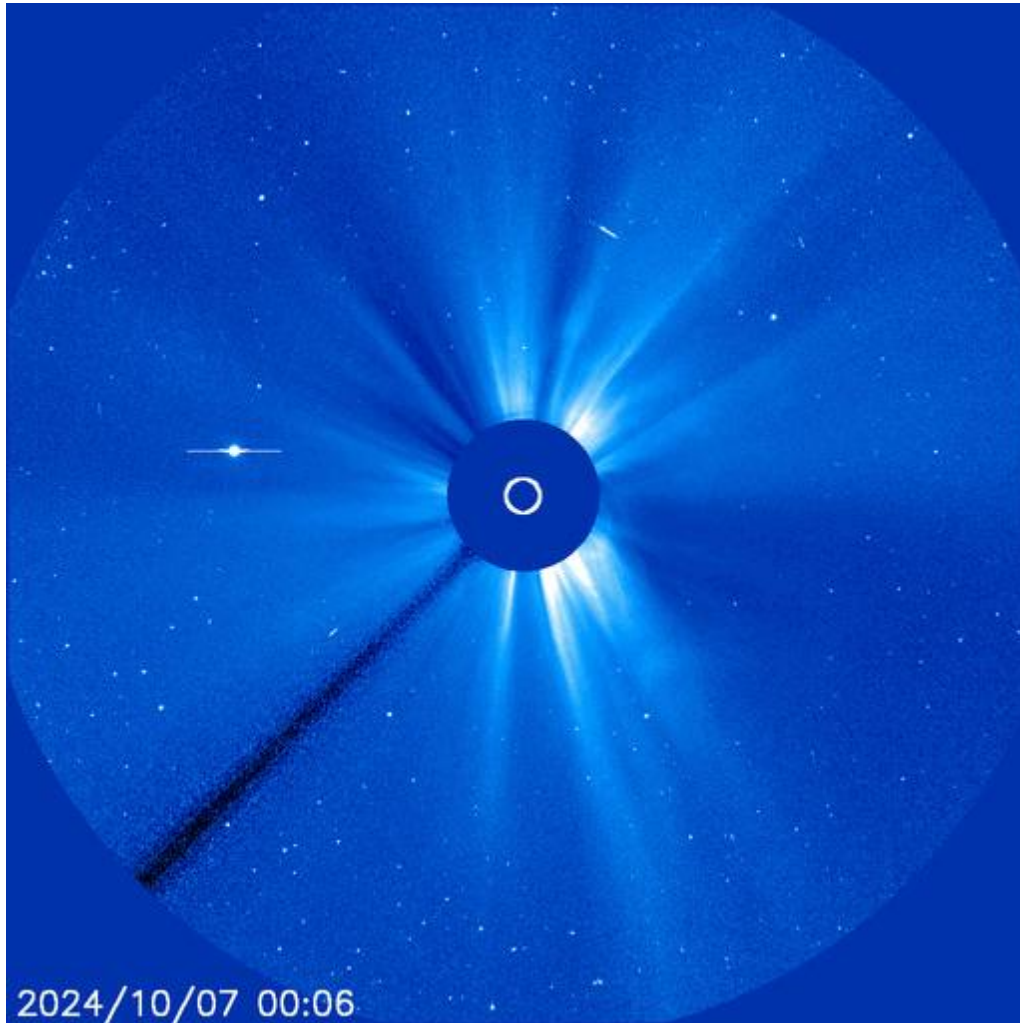
# Proton stormen

## Classificatie

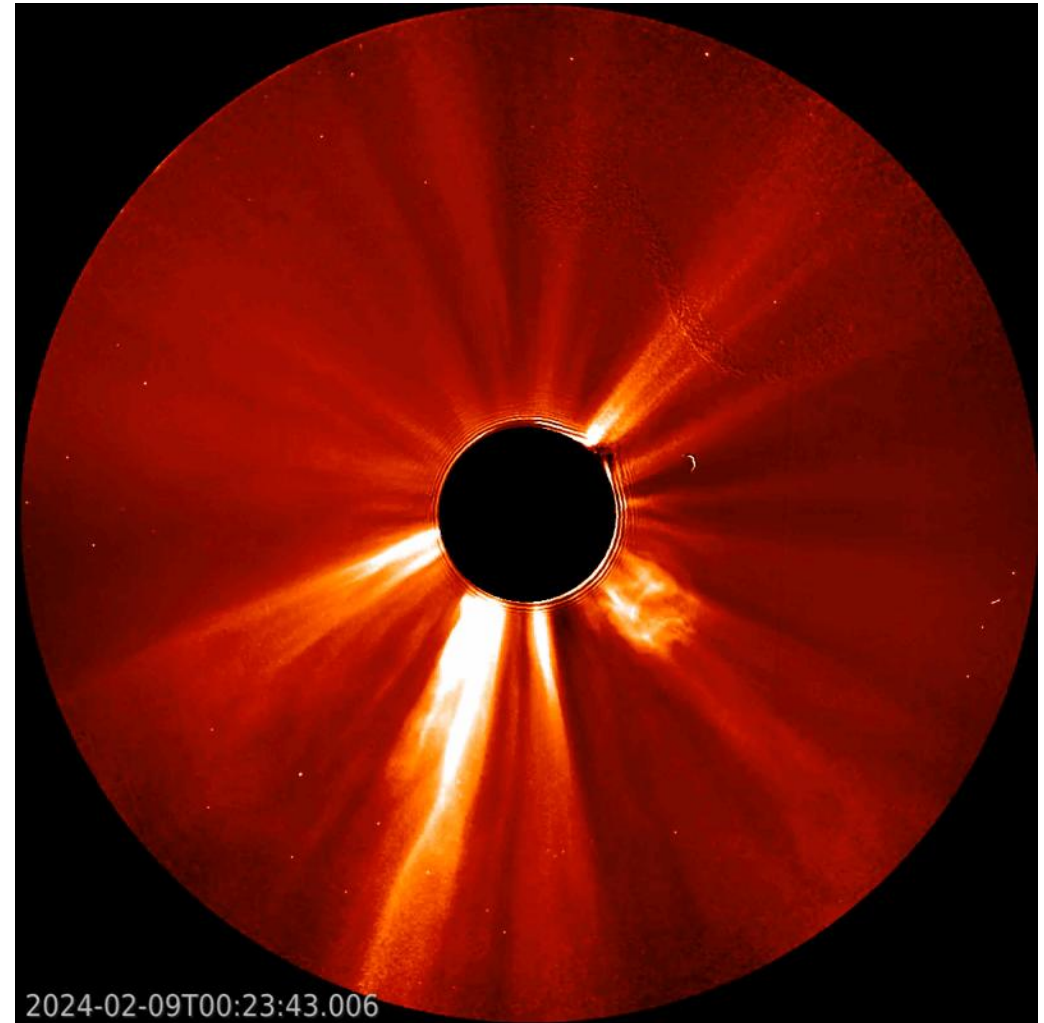


# Coronale massa ejectiones

SOHO/LASCO C2 & C3

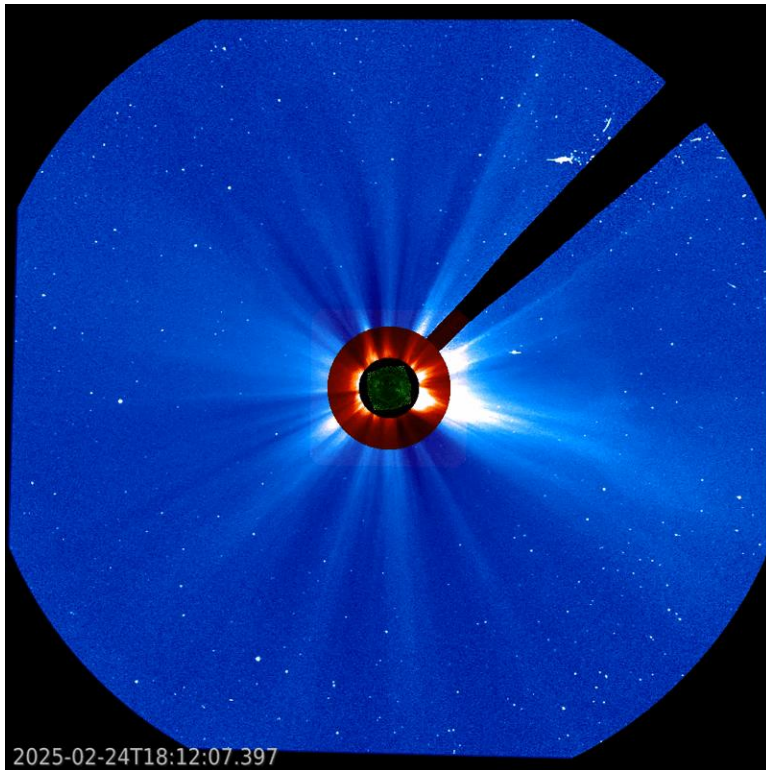


STEREO-A/COR2

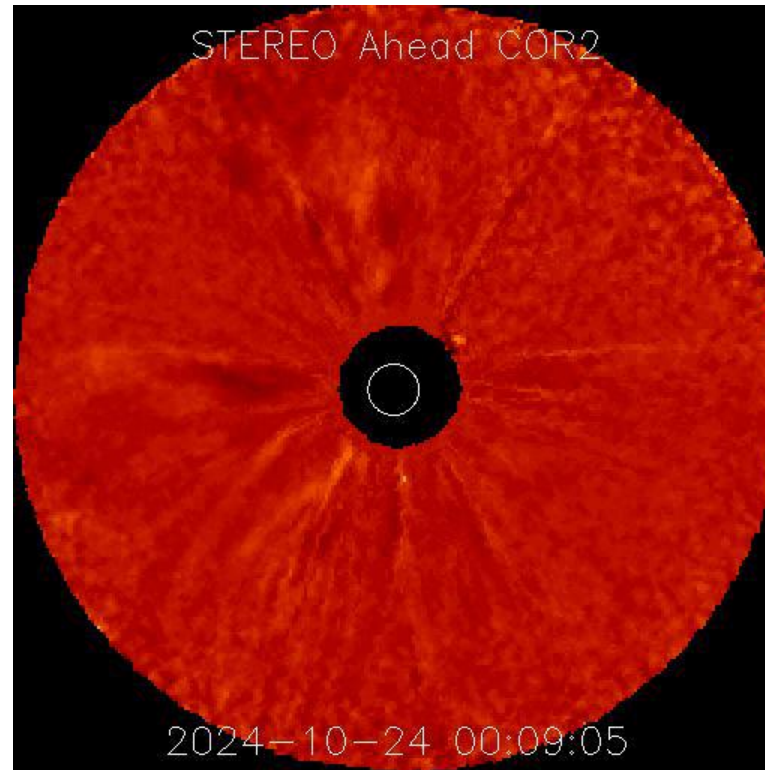


# Coronale massa ejecties

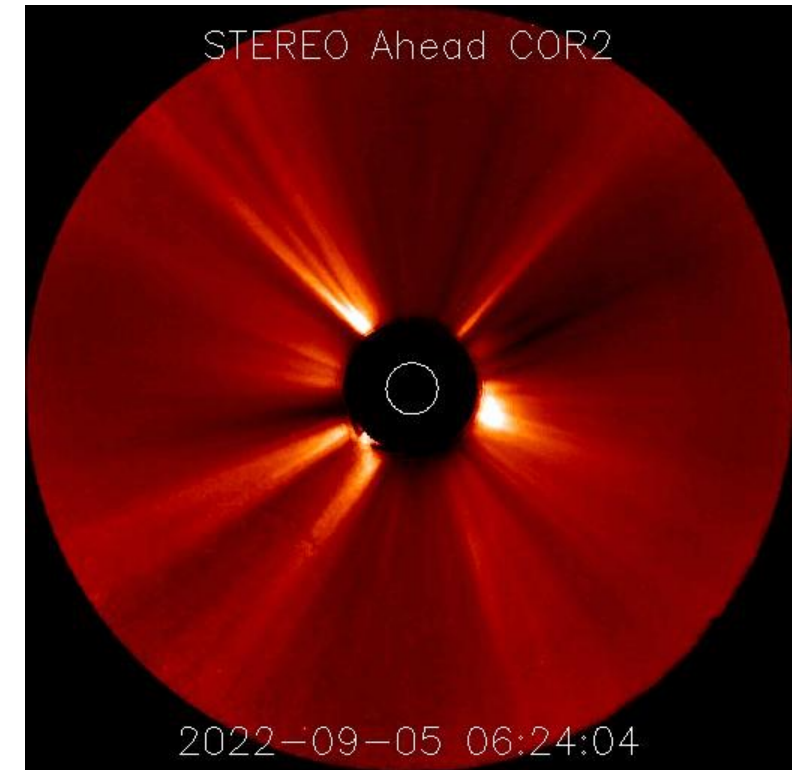
Breedte & symmetrie



Partiële halo CME ( $> 120^\circ$ )



Asymmetrische halo CME

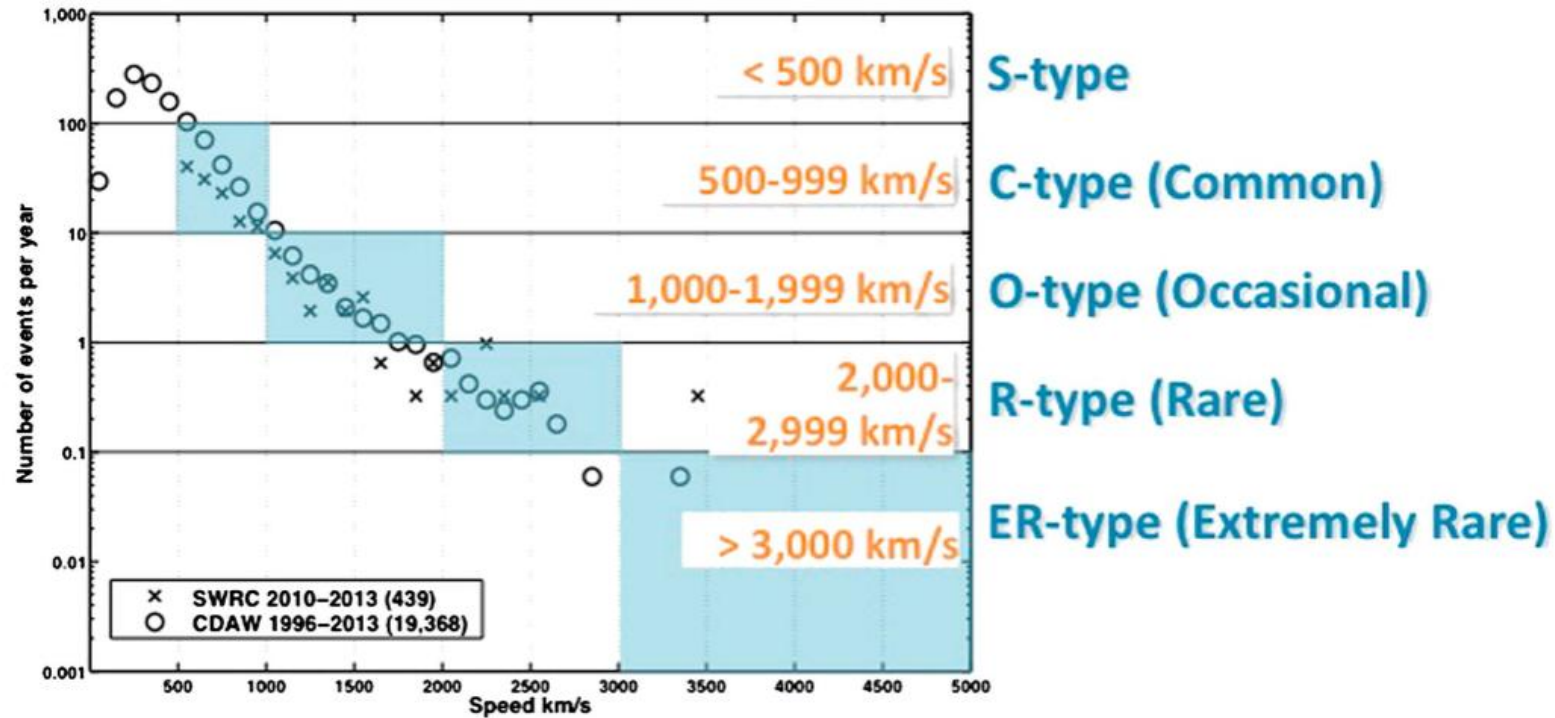


(Symmetrische) halo CME

# Coronale massa ejectiones

Snelheid

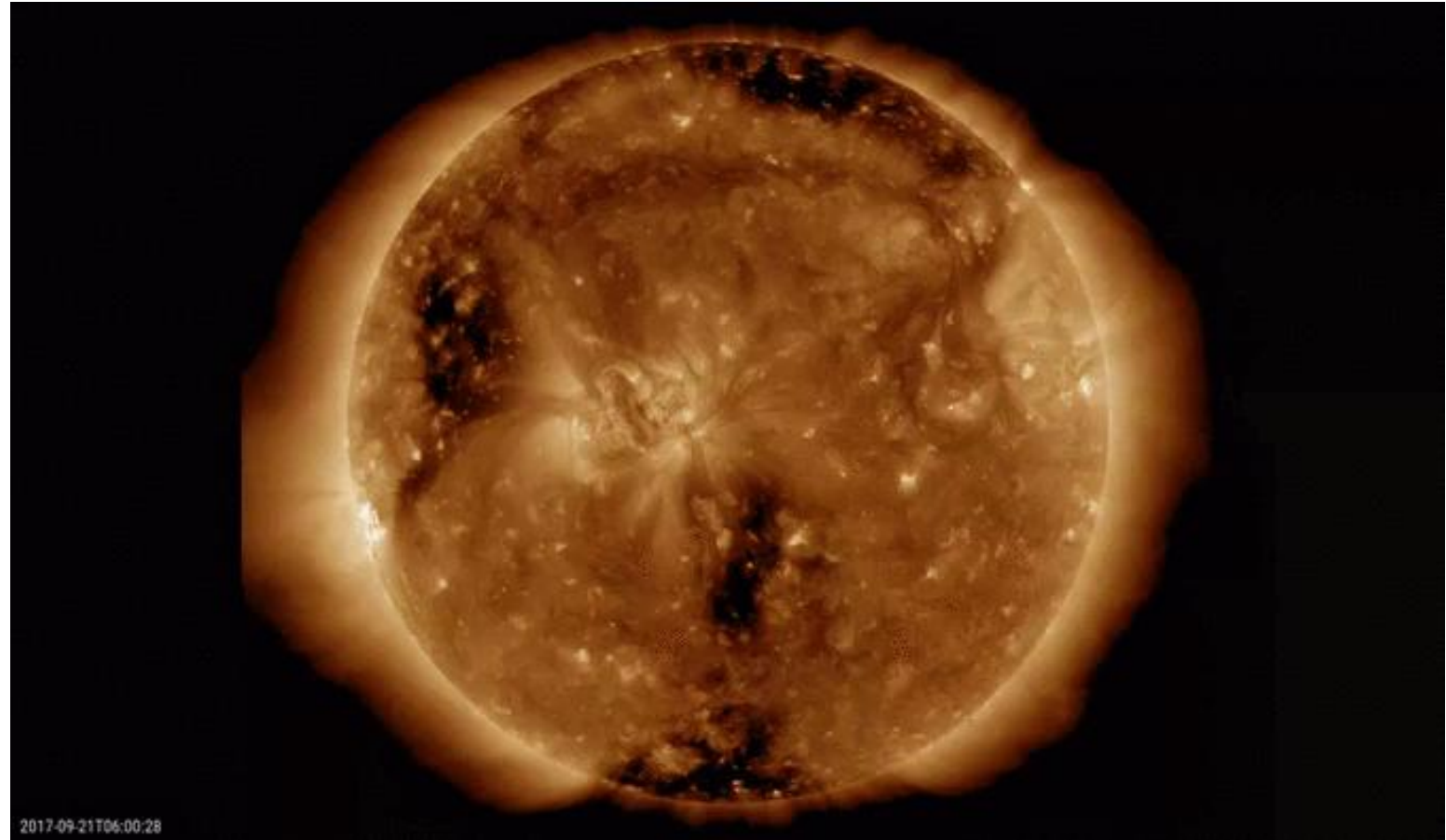
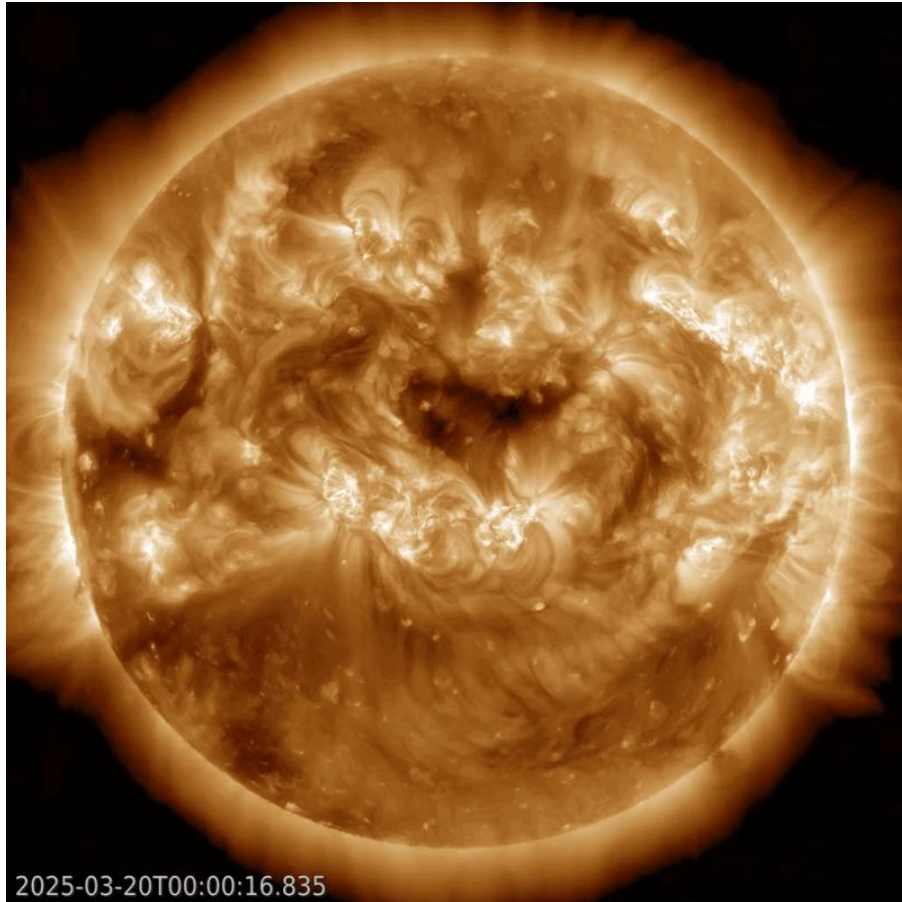
## Space Weather Research Center CME SCORE Scale



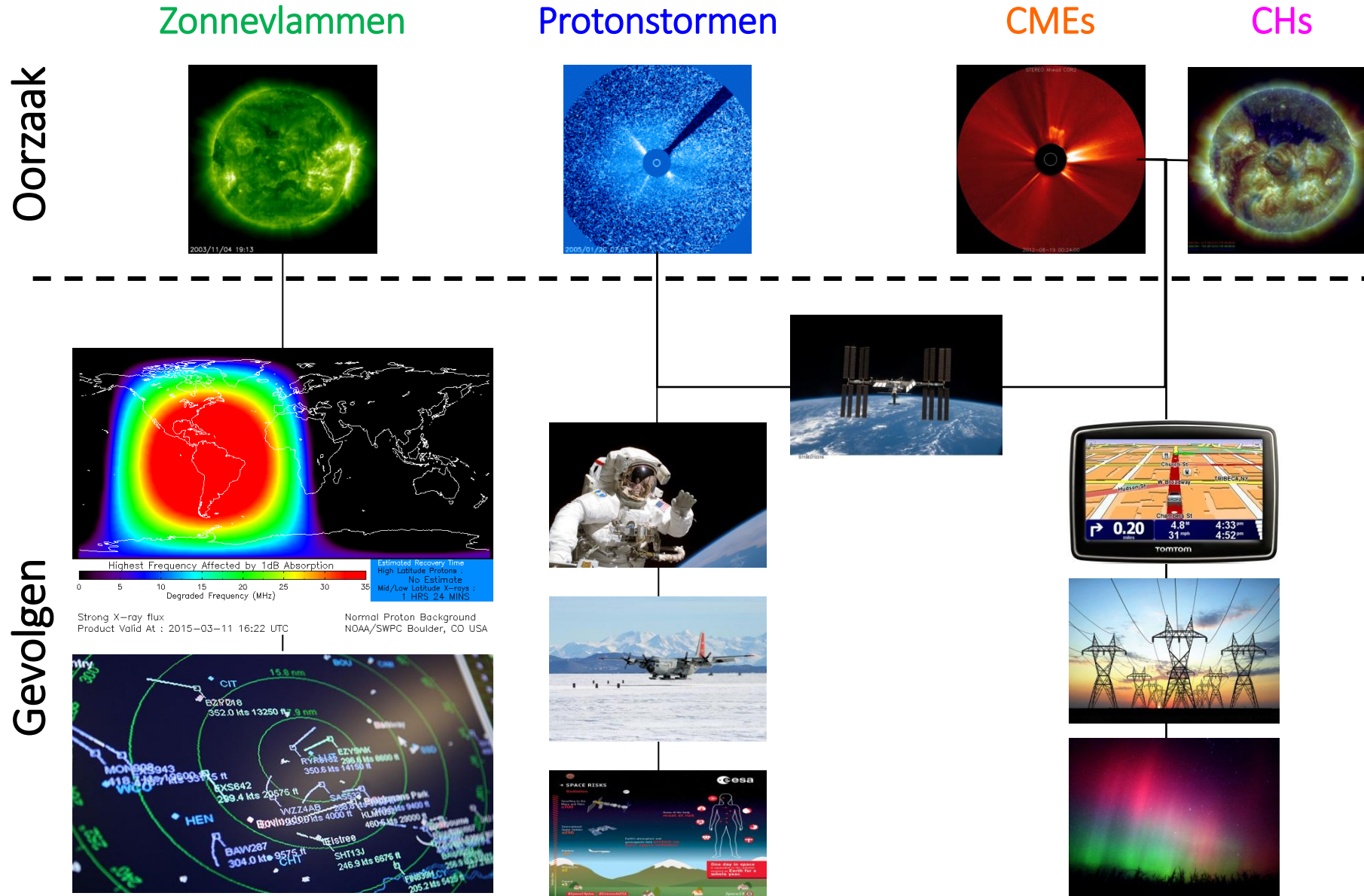
Evans et al. 2015 - <https://doi.org/10.1002/swe.20058>

# Coronale gaten

Non-eruptief




# Verstoord ruimteweer: effecten



# Zonnevlammen – Effecten

14 Dec 2023, 4 Nov 2015, 23 Mei 1967

 **Strongest Solar Flare of this Solar Cycle** Updated 2023 Dec 14 1900 EST

**WHAT: Multiple Aviation Communication Impacts Associated with this Event**

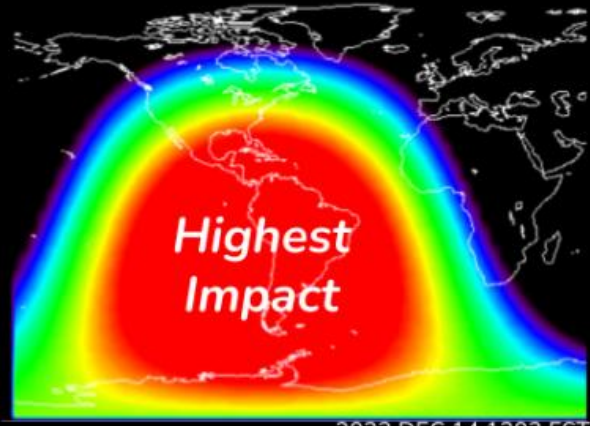
Amazing Event - likely one of the largest solar radio events ever recorded


Radio communication impacts between approximately 1200 - 1400 EST Thu

CWSUs report degraded communications across Nation

- ZKC, ZMP, ZAU, ZNY, ZOB
- "... Never seen anything like this..." - ZOB

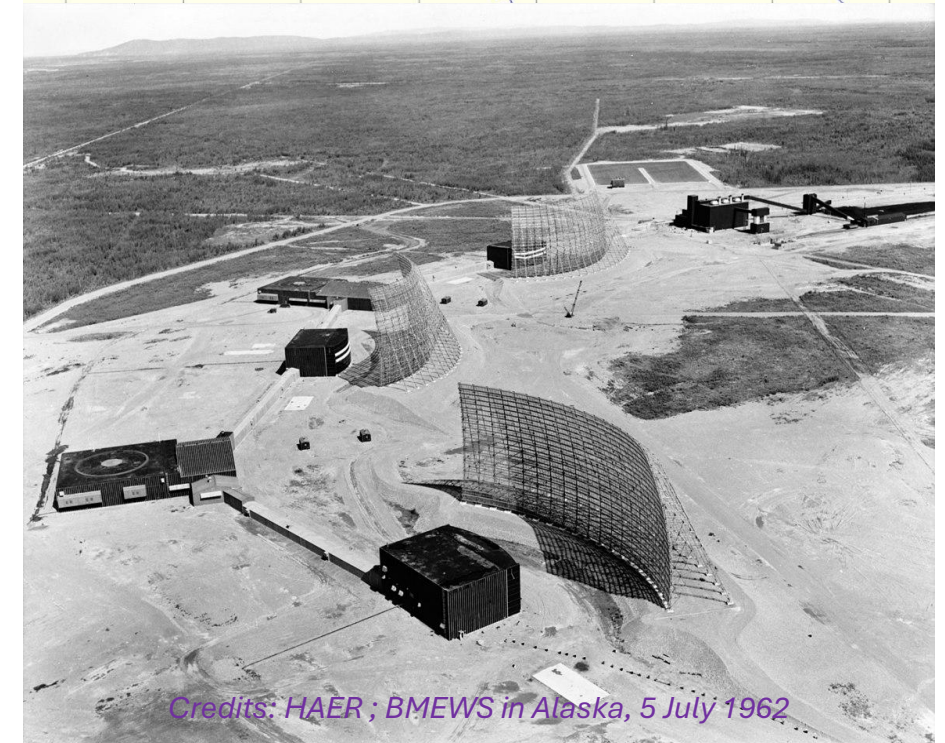
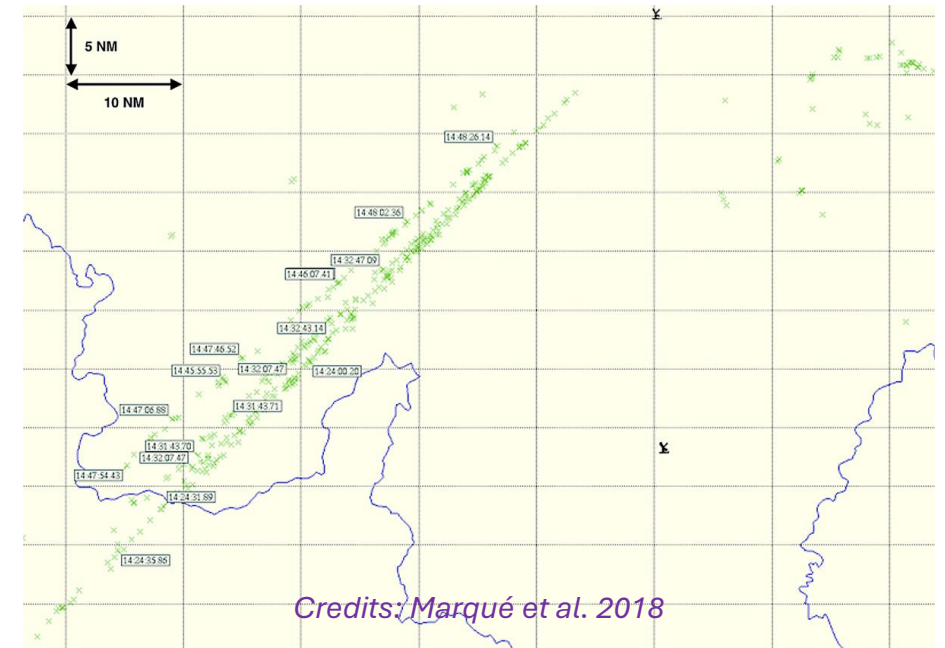
Possible Earth-directed Coronal Mass Ejection (CME) being analyzed



 National Oceanic and Atmospheric Administration U.S. Department of Commerce

*Safeguarding Society with Actionable Space Weather Information*

Space Weather Prediction Center; Boulder, CO



# Proton stormen

1956, 1972, 2014, 2024



## Critics Demand Dulles Explain Policies, Acts

Secretary Faces Questioning by Senators on Sale of Tanks, "Bank of War" Statement, Other Issues

WASHINGTON (AP)—Secretary of State Dulles confronts some of his most outspoken critics today at a public hearing that Sen. George (D-Ok.) said he would get "bipartisanship" on the right track.

Dulles was invited before Senate Foreign Relations Committee for questioning about administration policy toward the "sun-riders" Middle East and ways to counter new Russian economic, political and diplomatic moves.

George, chairman of the committee, said so many questions have been raised in the months since committee members that Dulles may be asked to return Saturday or early next week for further questioning.

"I am glad Mr. Dulles is appearing at an open hearing," George said. "I think it is advisable."

George said he thought the plan "will help get a return of greater measure of bipartisan consultation." He added, "I think it would tend in that direction."



## Ousted Soviet Premier Draws Fire of Leader

Deputy Prime Minister Denounces Malenkov's Administration of Power Ministry as Wasteful

MOSCOW (AP)—The Soviet press today published a direct attack on the ministry of electric power stations that former Premier Georgi Malenkov heads.

The ministry was accused of "procrastination" in a speech to the 20th Congress of the Soviet Communist Party delivered in the Kremlin yesterday by state planning boss and first deputy prime minister Maxim Z. Saburov.

When Malenkov resigned the premiership on Feb. 8, 1955, he publicly confessed he had been inefficient and not sufficiently experienced in administration.

Saburov did not mention Malenkov by name, but he left no doubt that the Soviet government was dissatisfied with the way Malenkov's ministry is being run.

"The ministry of electric power stations," Saburov said, "is procrastinating too much with the putting into operation of new equipment and electric stations. Due to this, one million tons extra in conventional terms of fuel are consumed annually at high prices in electric stations alone."

It was the first high-level

## Missing British Sub Feared Lost, Safe; Search Called Off

Acheron Sighted in Gale-Swept Arctic Sea by Minesweeper; Failure of Communications System Made Contact With Admiralty Impossible; Was Unreported Since Wednesday When It Made Trial Dive

LONDON (AP)—The Admiralty today called off a search for the British submarine Acheron, sighted safe in gale-swept seas after being feared lost for nearly six hours.

The British minesweeper Coquette radioed three hours after the Admiralty reported the Acheron overdue that she had made "visual contact" with the sub.

The Coquette also reported the Acheron, carrying 65 men, and her communications system was out of order. The Acheron then proceeded to Iceland.

The search started after the Acheron failed to make her routine radio report this morning.

Six hours later the Admiralty said: "The Acheron has now accompanied in passing her routine check signal and as a result the search for her has been canceled."

The 1,126-ton Acheron is a sister ship of the Affray, which sank in the English Channel in April 1953, with 73 dead.

## 5 Die, 100 Hurt In Derailment Of P.R.R. Train

Seven Coaches Jump Rails With Train Speeding at 80 Miles Per Hour; Cause Of Accident Unknown

ODENTON, Md. (AP)—Seven cars of a Pennsylvania Railroad passenger train, racing at 80 miles an hour through the flat countryside between Washington and Baltimore, jumped the track last night and three overturned down an embankment. Five persons were killed and more than 100 injured.

Of 20 persons taken to six Maryland hospitals, 39 remained hospitalized today. Scores of others were treated at the scene by dozens of doctors and nurses.

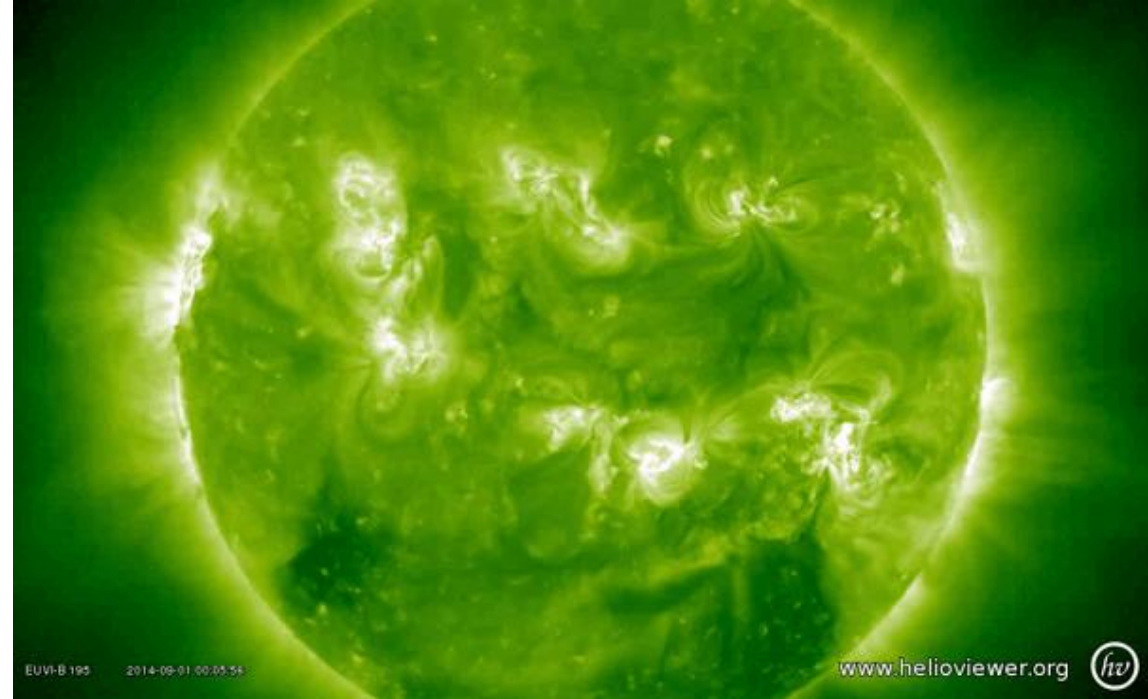
By mid-morning, investigators still had not determined what caused the wreck of the New York-bound train. A Pennsylvania Railroad spokesman said the possibility of faulty air brakes had been ruled out. The engineer said earlier the brakes had appeared to grab suddenly.

"The worst mangled car was the three. Apparently it tipped over just as it started to pass one of the heavy steel girders supporting the overhead electric cables that provide power to the engines."

Boat Crew Off

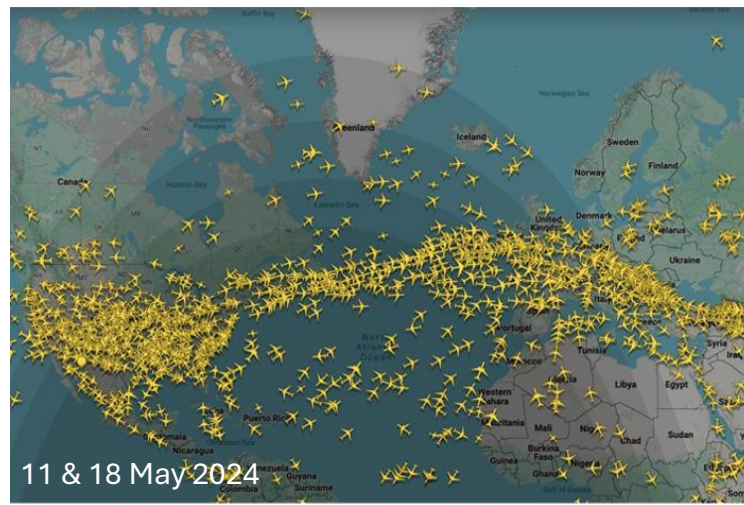
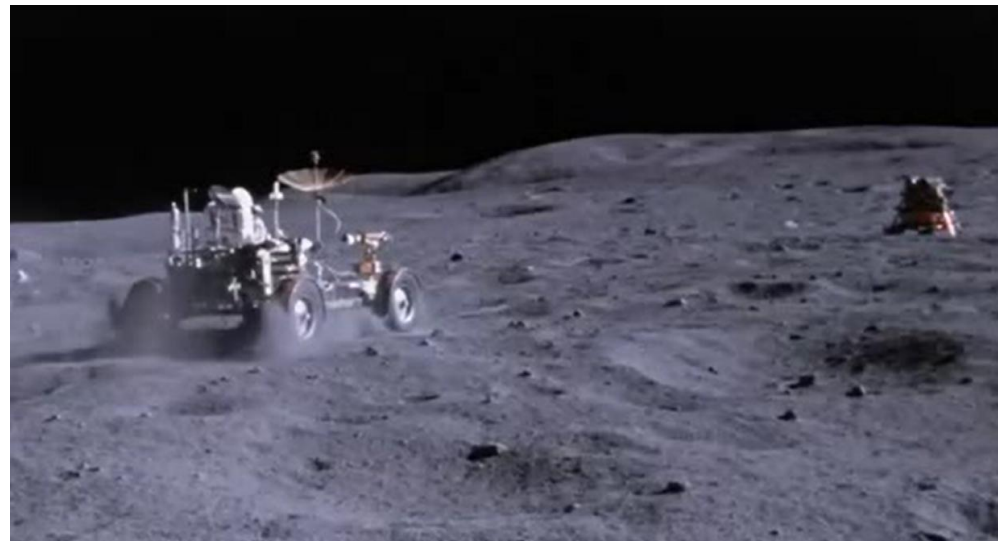
## State Agencies

MIAMI, Fla. (AP)—The Coast Guard today closed today they were working on a bill to put more truth in the

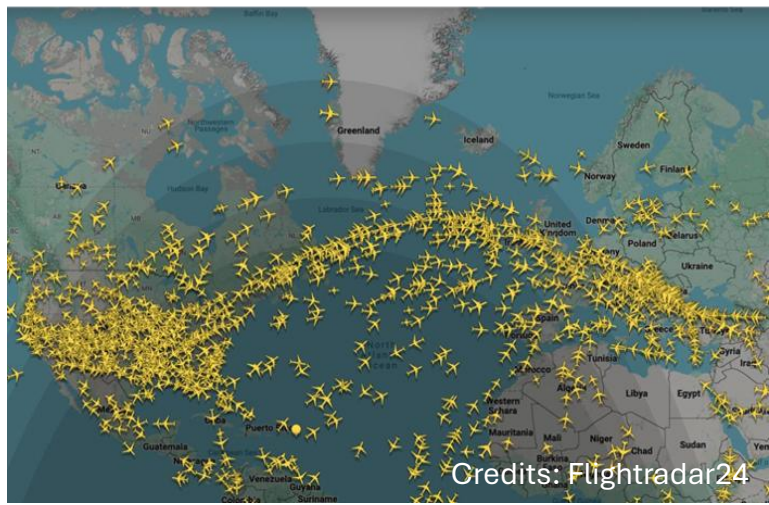


EUUV-B 195 2014-09-01 00:05:54

www.helioviewer.org



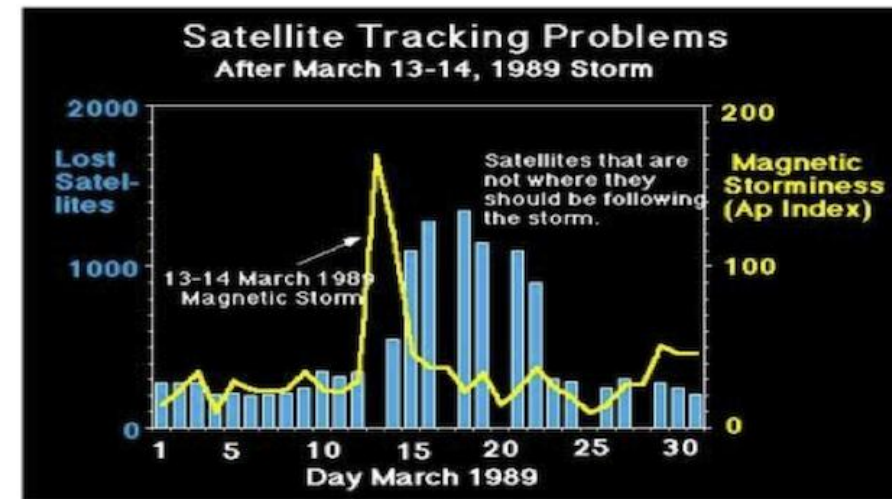
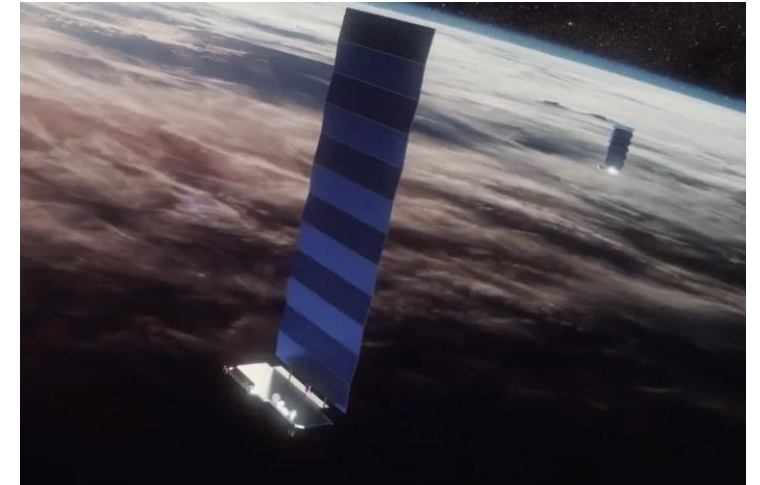
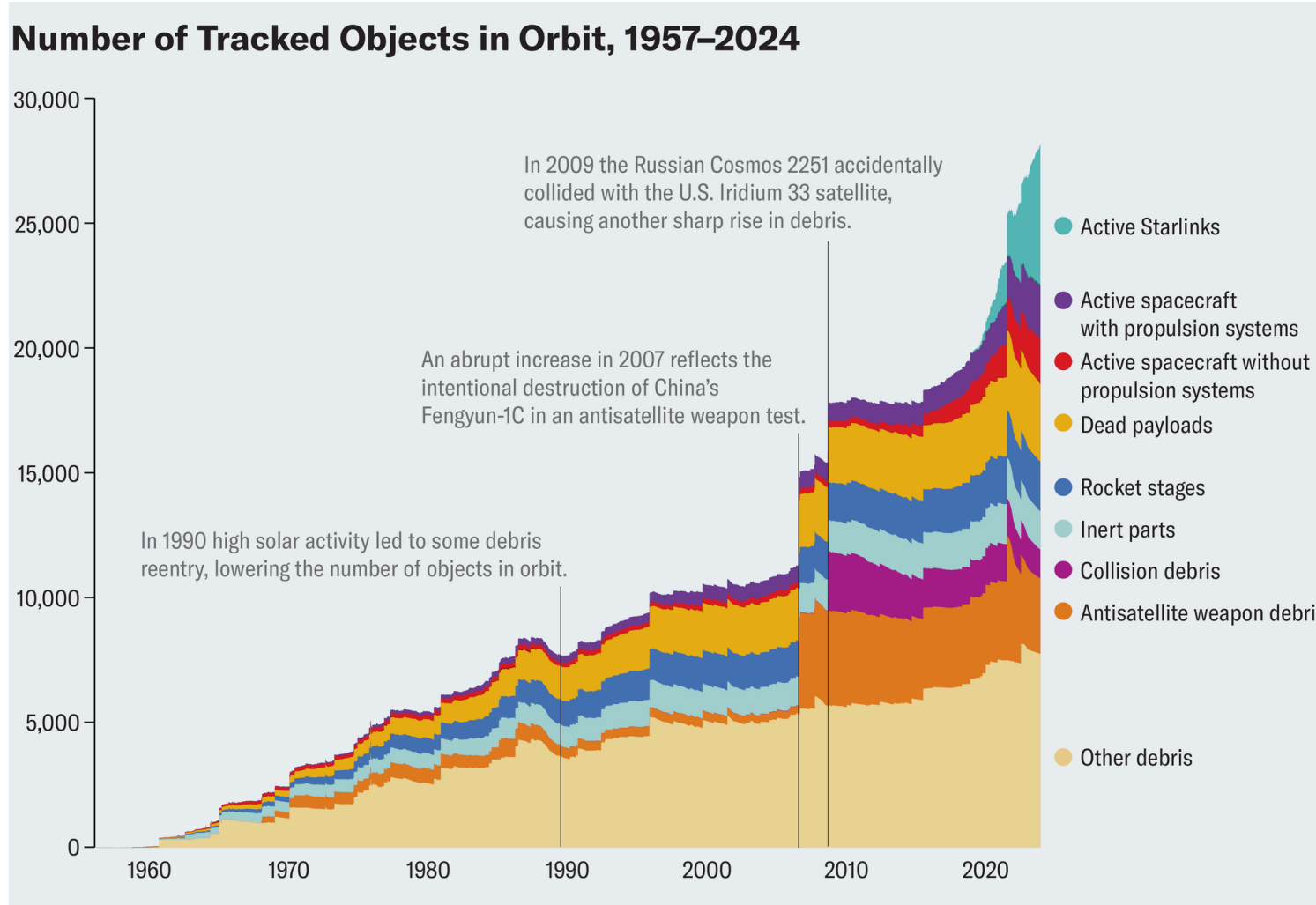
11 & 18 May 2024



Credits: Flightradar24

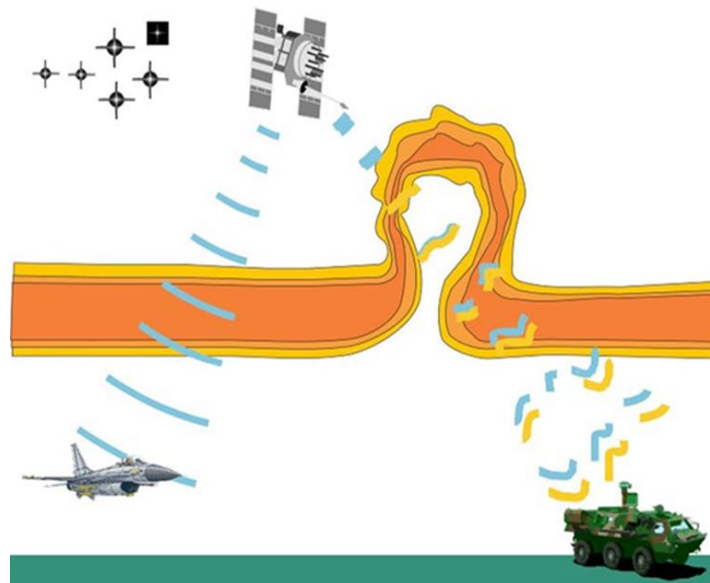
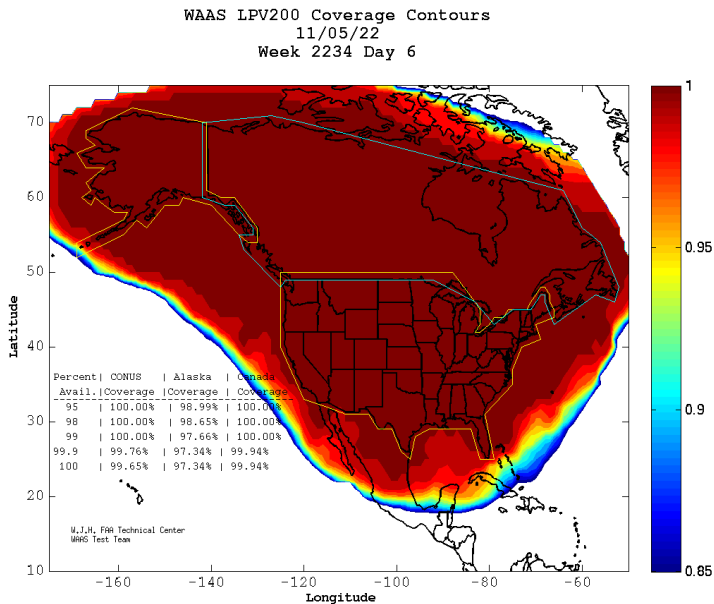
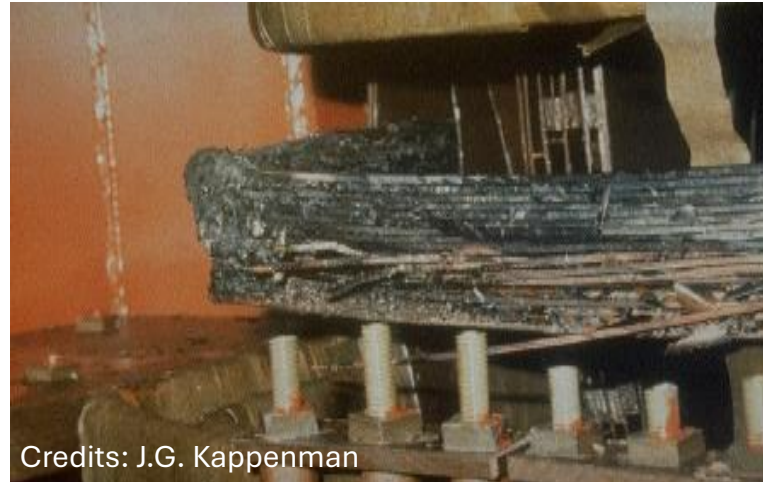
# Coronale massa ejectiones – Effecten (1/2)

Drag, 1989, 2022

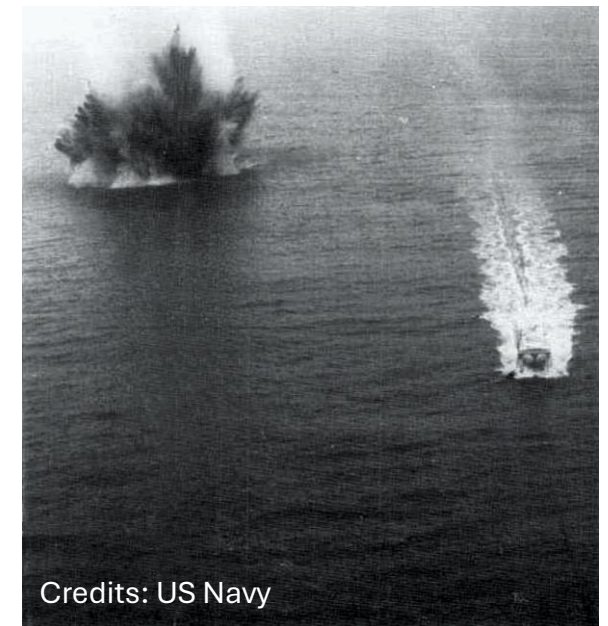


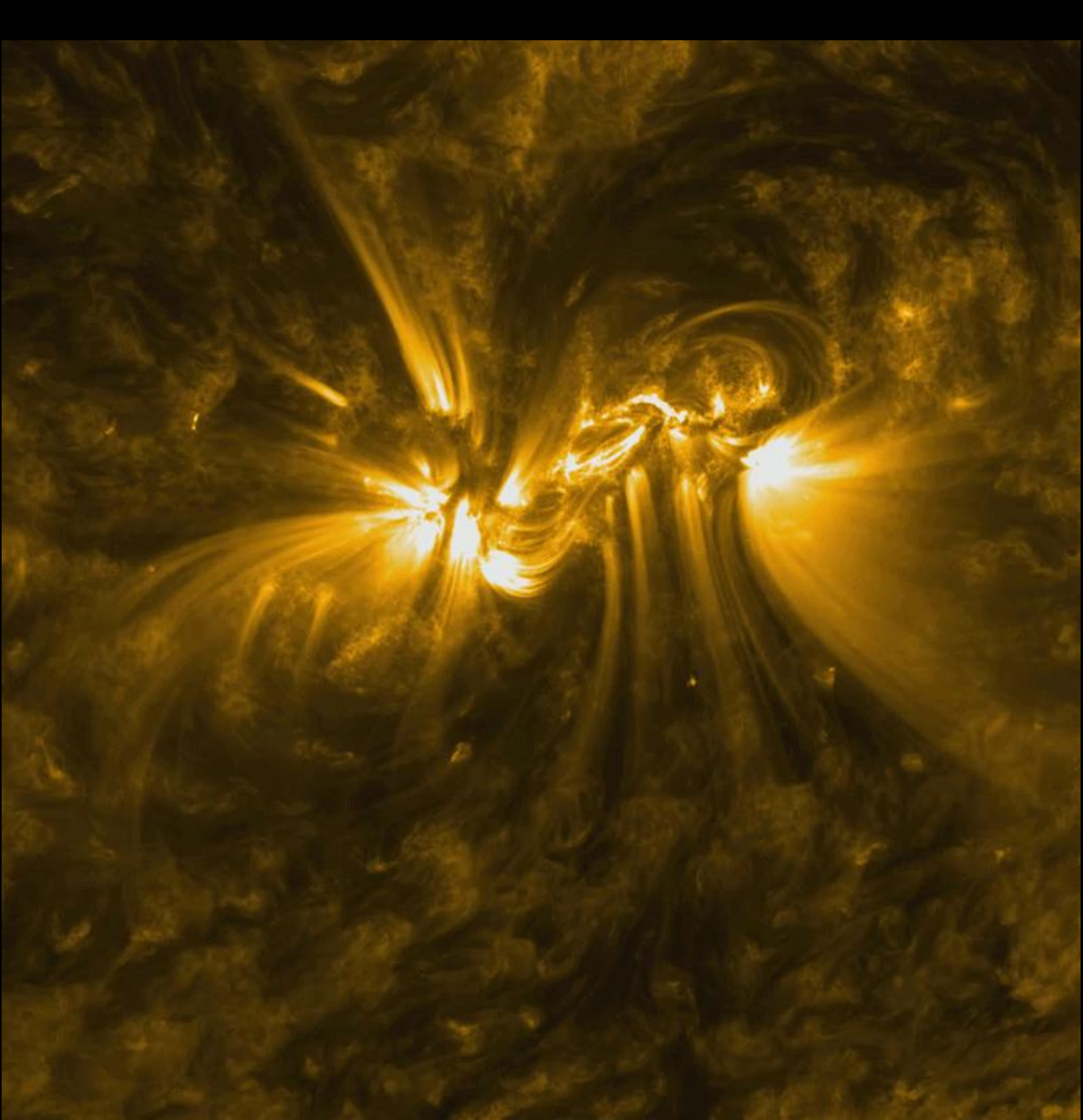
Amanda Montañez; Source: [“Satellite Statistics: Satellite and Debris Population,” Jonathan’s Space Report \(data\)](#)

# Coronale massa ejectiones – Effecten (2/2)



Credits: US Air Force Research Laboratory





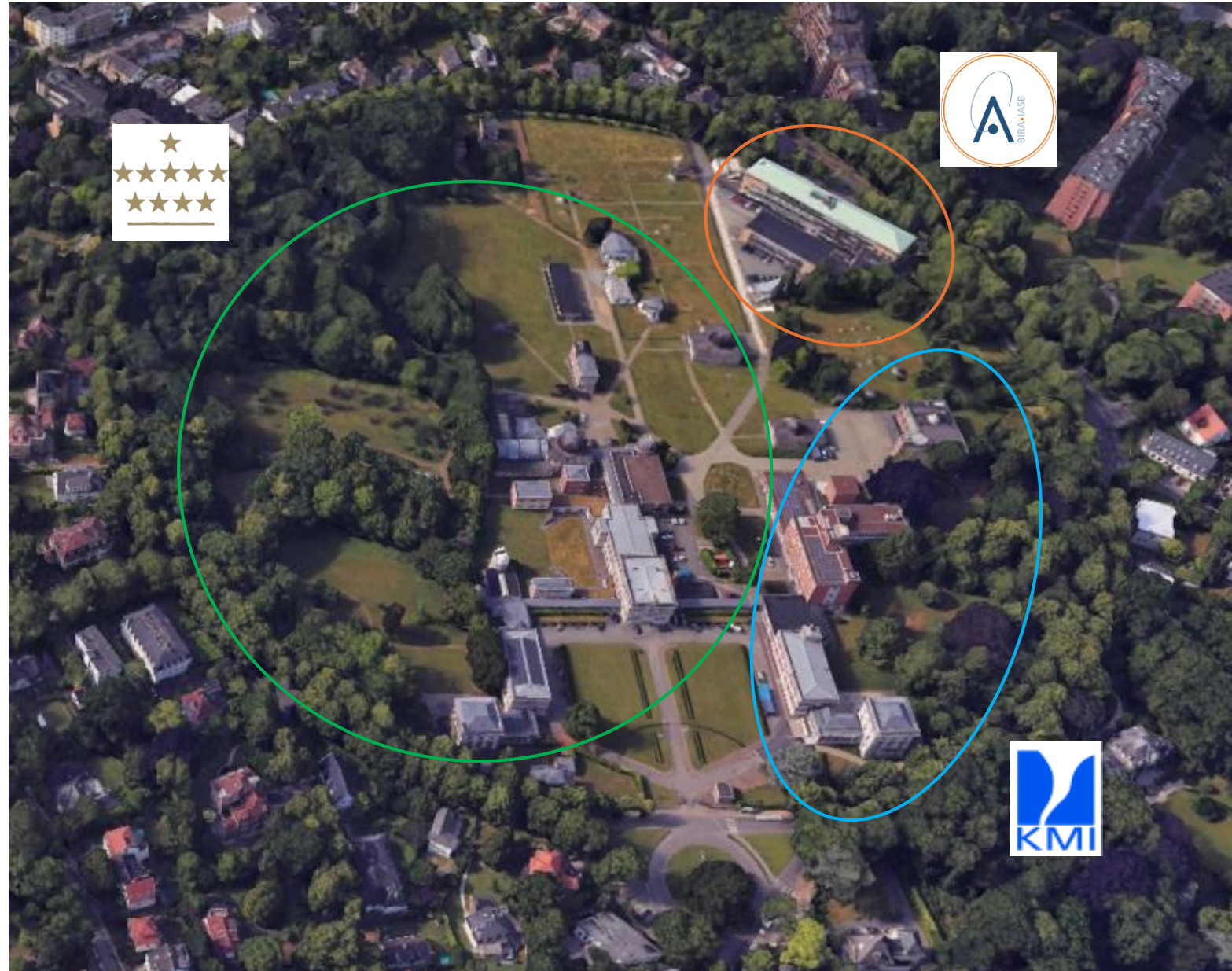
# Het hoe van ruimteweer

Over de opvolging en voorspelling van verstoord  
ruimteweer



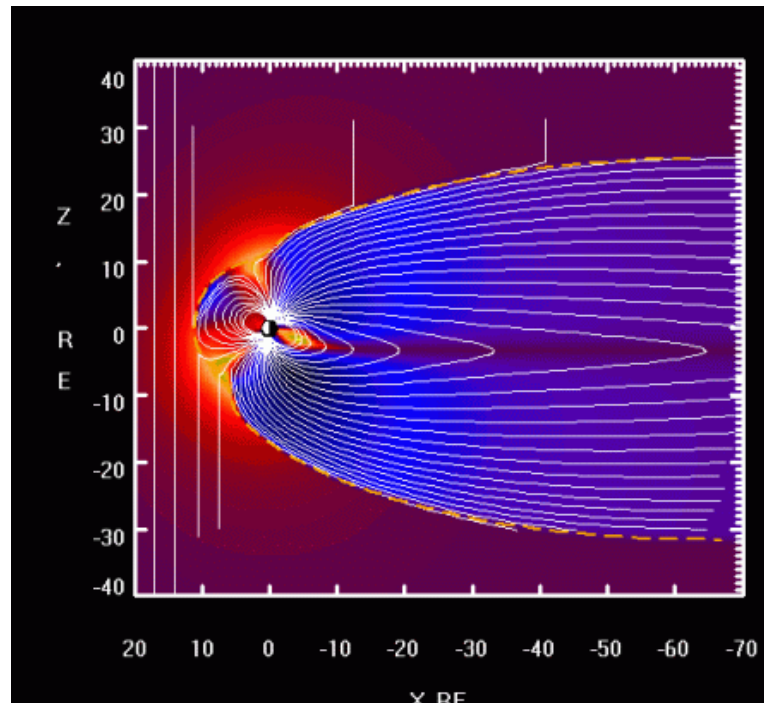
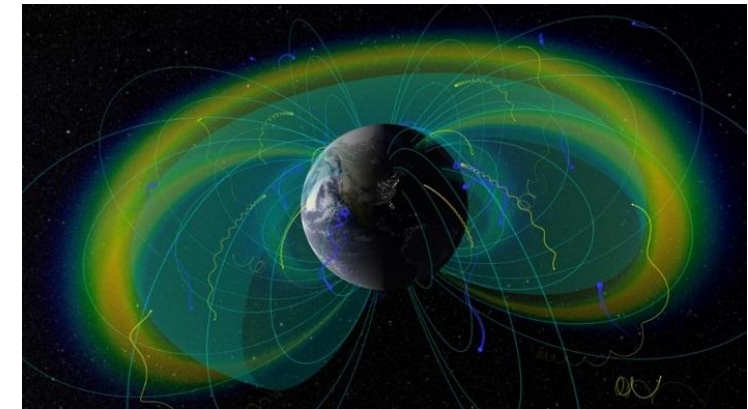
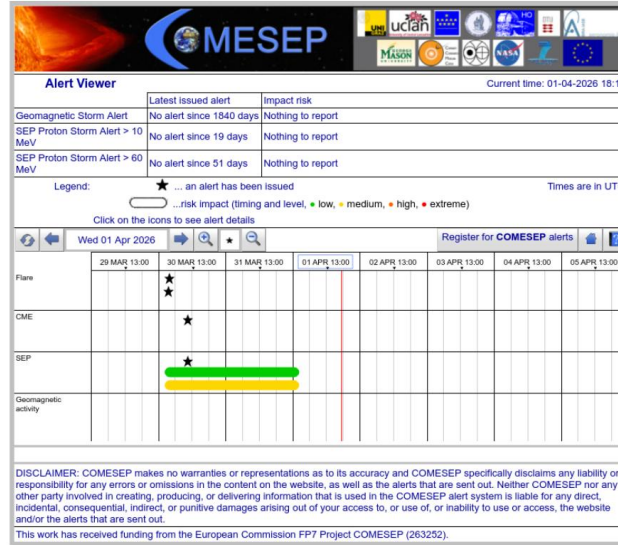
# De Pool Ruimte

- Koninklijke Sterrenwacht van België (KSB)
  - 1826
- Koninklijk Meteorologisch Instituut (KMI)
  - 1913
- Koninklijk Belgisch Instituut voor Ruimte-Aëronomie (BIRA-IASB)
  - 1964



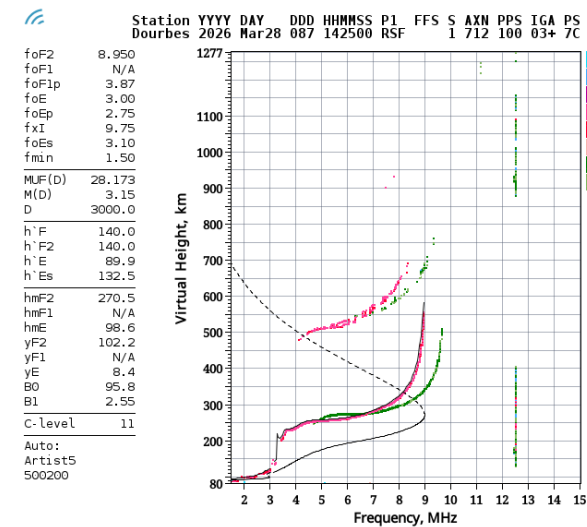
# BIRA-IASB

- Magnetosfeer
  - Aurora
- Energetische deeltjes
  - Proton storm alarm
- Stralingsdosissen
- ...
- SSCC (ESA)
  - Coördinatie ESC
    - Ruimtemissies
    - Extreme SWx situaties
  - Lead R-ESC



# KMI

- Dourbes (1953)
  - Magnetisch veld van de aarde
    - K\_BEL (2021)
  - Ionosfeer (1957)
    - Radio communicatie
      - HF Com
    - GNSS (2009)
      - GPS, Galileo,...
  - Neutron monitor (1965)
    - Hoogenergetische deeltjes
      - Kosmische straling
      - Proton stormen
      - ...



D 100 200 400 600 800 1000 1500 3000 [km]  
 MUF 9.6 9.7 10.1 10.8 11.8 13.2 17.4 28.2 [MHz]  
 db049 2026087142500.rsf / 271f4512h 5 khz 2.5 km / DPS-4D DB049 49 / 50.1 N 4.6 E Dispatcher



# KSB

- SIDC
  - Solar Influences Data analysis Centre
    - OD4: "Zonnefysica en Ruimteweer"
  - Ruimteweercentrum (2000)
    - RWC België (*ISES*)
      - 12-tal voorspellers
      - 24/7
      - Bulletins (dagelijks,...)
      - PRESTO alerts
      - Advisories PECASUS / ICAO
      - Sterk IT ondersteund
        - Dashboards, webpage, tools, Interfaces, Previmaster,...
    - End users i.g.v. extreem SWx
      - NCCN
      - Elia, Eurocontrol, Mil,...
      - PECASUS (2019)
    - SSCC / ESA (2013)
      - S-ESC : lead
        - Ruimtemissies
        - Extreem ruimteweer




**PECASUS DASHBOARD on 2024-05-11 10:00 UTC**

GNSS	Moderate	Severe	Time UTC	Values	Status	Alert	Max-3h values	Max-3h status
<b>Amplitude Scintillation</b>	0.5	0.8	2024-05-11 10:00	0.30	QUIET		0.37	QUIET
<b>Phase Scintillation</b>	0.4	0.7	2024-05-11 10:00	1.17	SEVERE		1.17	SEVERE
<b>Vertical TEC</b>	125	175	2024-05-11 10:00	105.29	QUIET		109.98	QUIET

RADIATION	Moderate	Severe	Time UTC	Flags	Status	Alert	Max-3h flags	Max-3h status
<b>Effective Dose FL ≤ 460</b>	30	80	2024-05-11 10:00	0	QUIET		0	QUIET
<b>Effective Dose FL &gt; 460</b>	/	80	2024-05-11 10:00	0	QUIET		0	QUIET

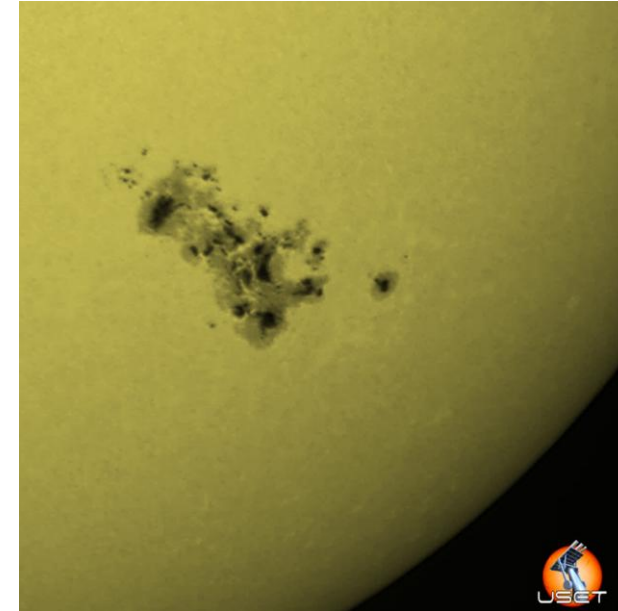
  

HF COM	Moderate	Severe	Time UTC	Values/Flags	Status	Alert	Max-3h values	Max-3h status
<b>Auroral Absorption (AA)</b>	8	9	2024-05-11 10:00	9.0	SEVERE		9.0	SEVERE
<b>Polar Cap Absorption (PCA)</b>	2	5	2024-05-11 10:00	3.96	MODERATE		4.83	MODERATE
<b>Shortwave Fadeout (SWF)</b>	x1.0	x10.0	2024-05-11 10:00	< M5 flare	QUIET		< M5 flare	QUIET
<b>Post-Storm Depression (PSD)</b>	30%	50%	2024-05-11 10:00	2	SEVERE		2	SEVERE

```

:Issued: 2024 May 11 0058 UTC
:Product: documentation at http://www.sidc.be/products/presto
#-----#
# FAST WARNING 'PRESTO' MESSAGE from the SIDC (RWC-Belgium) #
#-----#
Geomagnetic conditions have reached extreme storm levels (NOAA Kp=9) globally and severe storm levels (K_Bel=8) locally starting at 21:00 UTC on May 10. Currently, the North-South component (Bz) is at -48nT (00:43 UTC on May 11) and follows a further decreasing trend. Extreme storm levels are possibly expected to continue in the coming hours.
  
```

- SIDC
  - Solar Influences Data analysis Centre
  - Ruimteweercentrum (2000)
    - RWC België (*ISES*)
    - End users i.g.v. extreem SWx
    - SSCC / ESA (2013)
      - S-ESC : lead
  - SILSO (2013)
    - SIDC (1981)
      - WDC sunspot index
    - USET (1957)
      - WL, H $\alpha$ , Ca K, tekening



Royal Observatory of Belgium

## Solar Influences Data Analysis Center

Home Observations Services Research Activities

**SILSO**  
Sunspot Index and Long-term Solar Observations

World Data Center for the production, preservation and dissemination of the international sunspot number

### SILSO

View Access control Outline Revisions

#### Sunspot number series: latest update

International sunspot number  $S_n$ : last 13 years and forecasts

Legend:  
Daily (yellow bars)  
Monthly (blue line)  
Monthly smoothed (red line)  
SC Predictions (dashed red line)  
CM Predictions (dashed blue line)

March 2026 - April 2026

Legend:  
No valid data (black dots)  
Current average (green line)  
SC (red line)

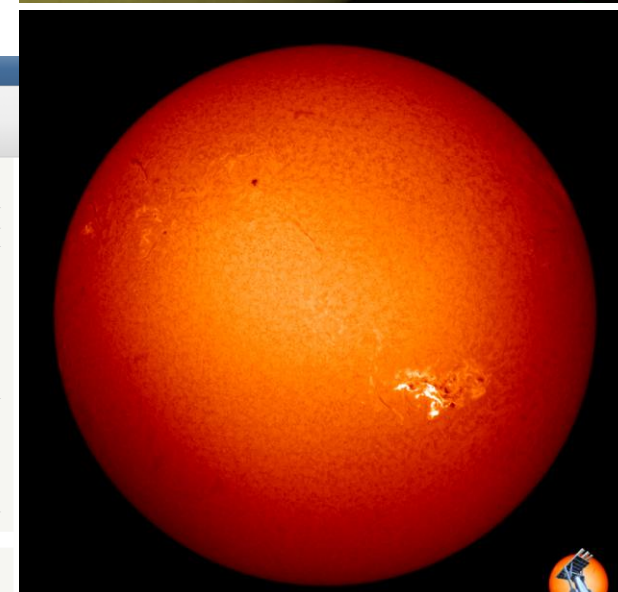
**Latest Sunspot Bulletin**

Daily estimated sunspot number

01 April : 136  
02 April : 150  
03 April : 126

**EISN DATA FILES**

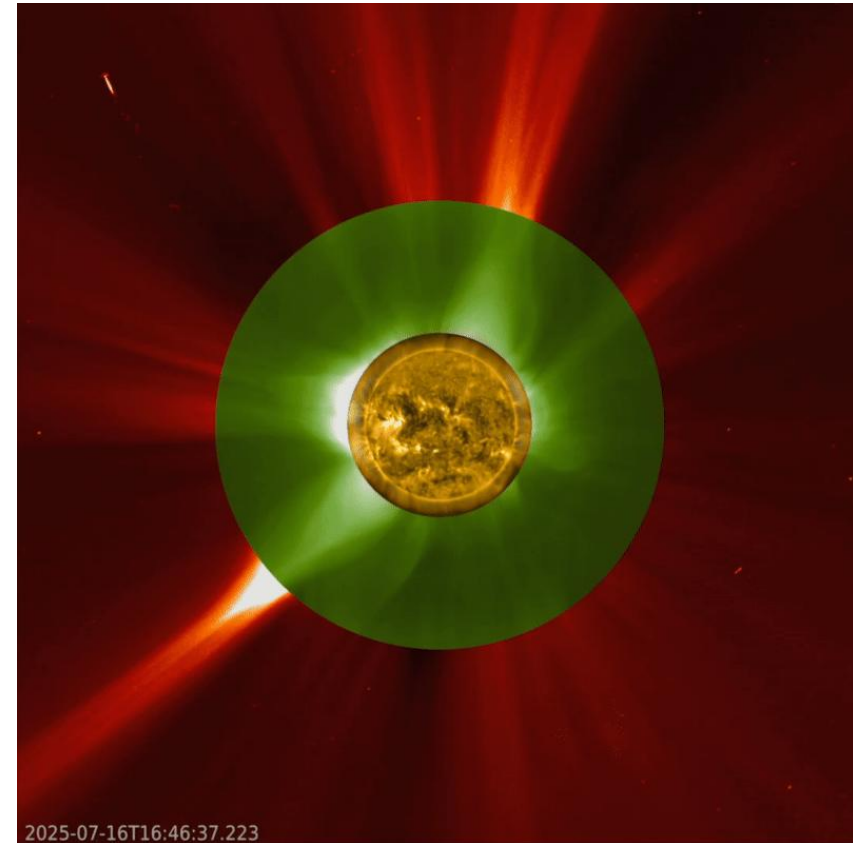
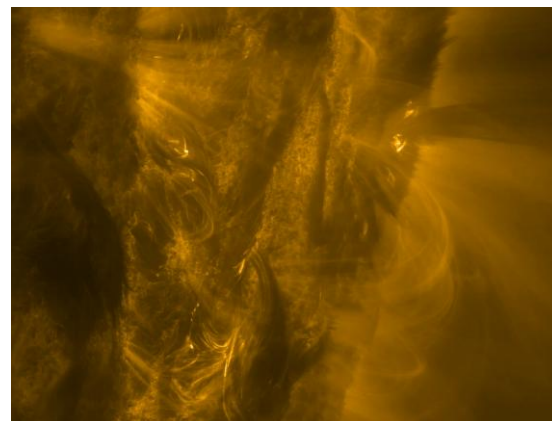
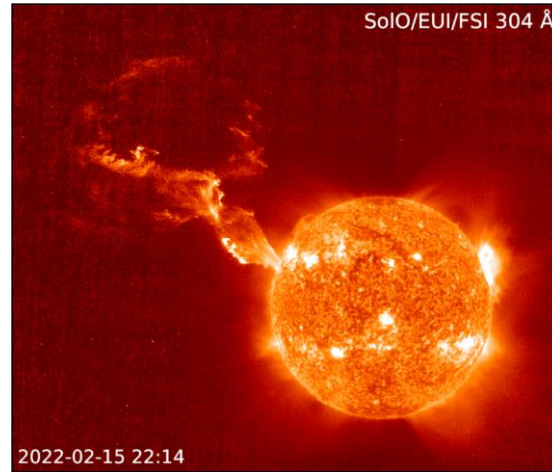
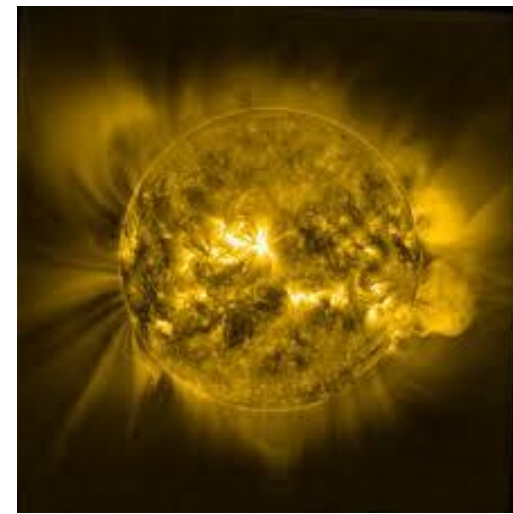
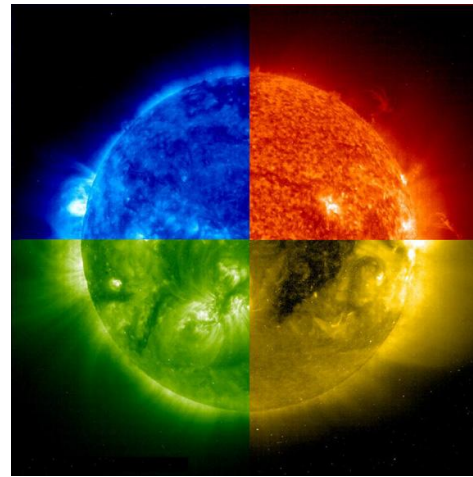
Latest USET observations (ROB, Brussels)  
01/04/2026



# KSB

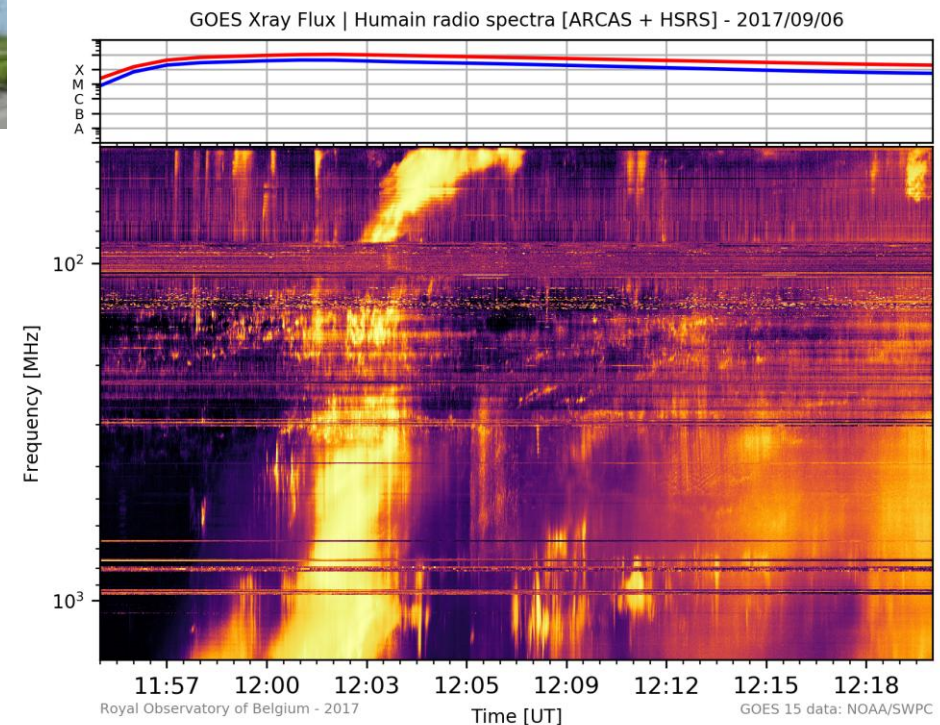
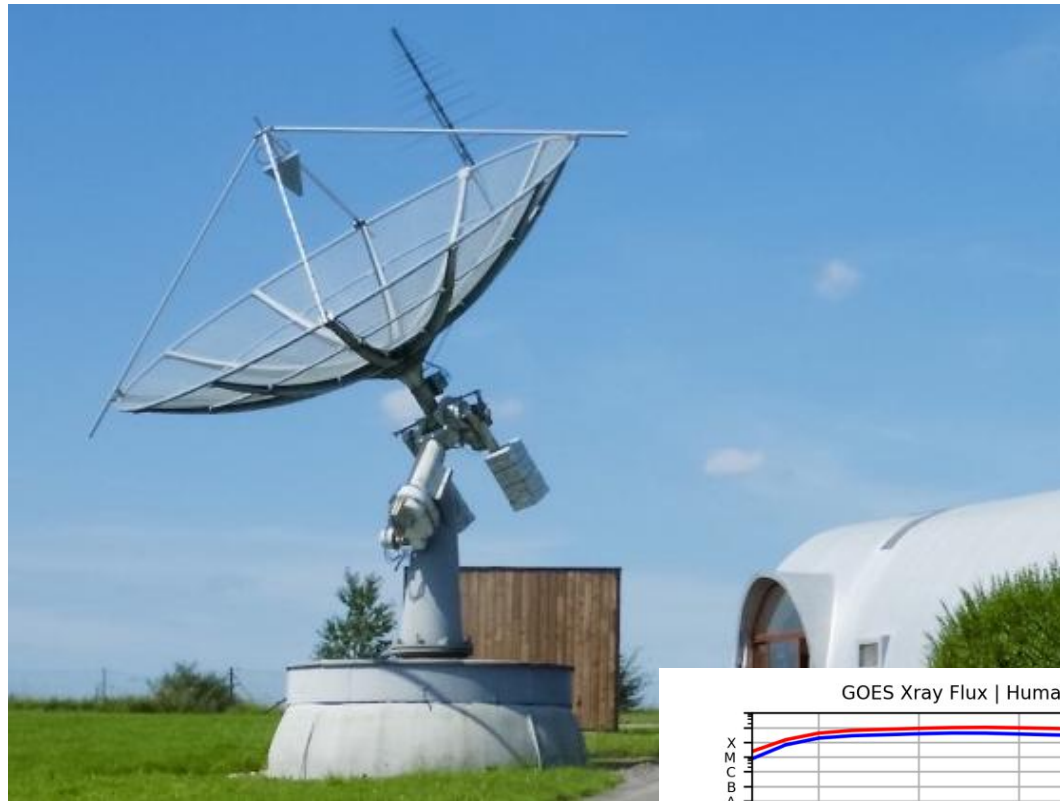
- SIDC

- Solar Influences Data analysis Centre
- Ruimteweercentrum (2000)
  - RWC België
  - End users i.g.v. extreem SWx
  - SSCC / ESA (2013)
    - S-ESC : lead
- SILSO (2013)
  - SIDC (1981)
    - WDC sunspot index
  - USET (1957)
    - WL, H $\alpha$ , Ca K, tekening
- Expertise in EUV telescopen
  - SOHO / EIT (1995), PROBA2 / SWAP (2009), SolO / EUV (2020), Proba-3 / ASPIICS (2024)



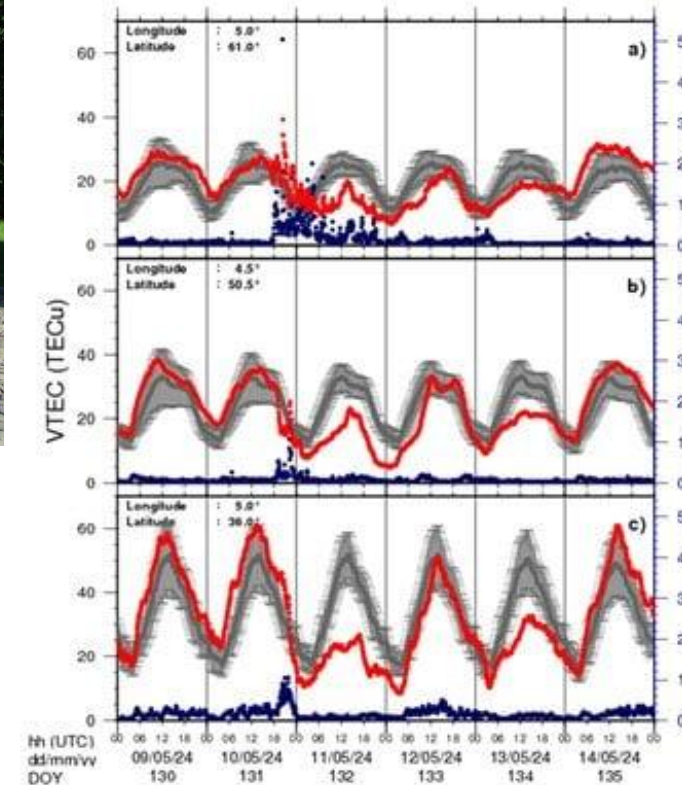
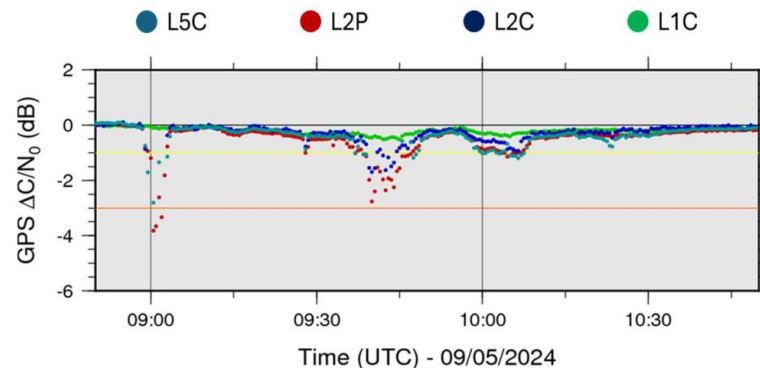
# KSB

- SIDC
  - Solar Influences Data analysis Centre
  - Ruimteweercentrum (2000)
    - RWC België
    - End users i.g.v. extreem SWx
    - SSCC / ESA (2013)
      - S-ESC : lead
  - SILSO (2013)
    - SIDC (1981)
      - WDC sunspot index
    - USET (1957)
      - WL, H $\alpha$ , Ca K, tekening
  - Expertise in EUV telescopen
    - SOHO / EIT (1995), PROBA2 / SWAP (2009), SolO / EUI (2020), Proba-3 / ASPIICS (2024)
  - Humain (1953/2008)
    - Radio waarnemingen zon



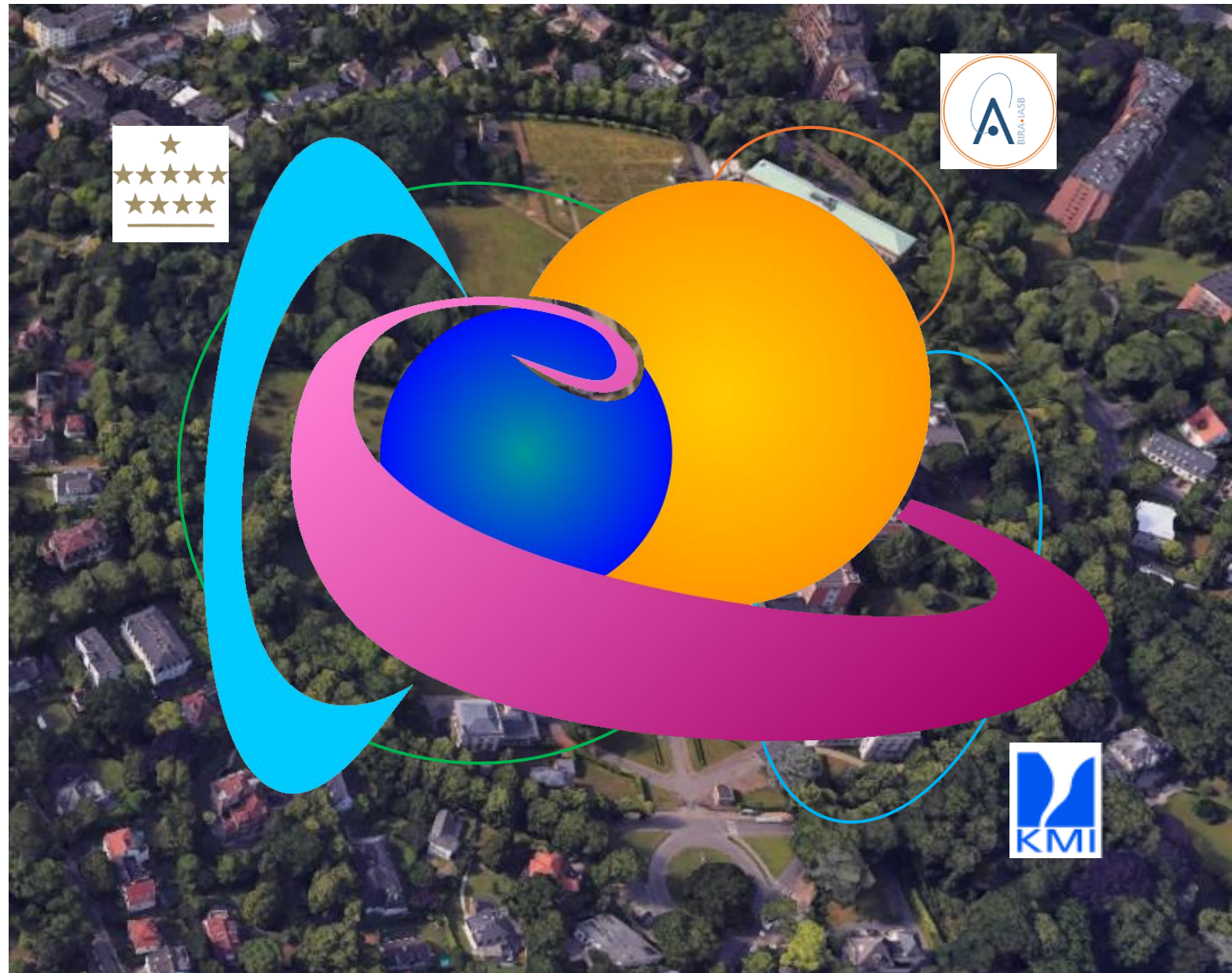
# KSB

- SIDC
  - Solar Influences Data analysis Centre
  - Ruimteweercentrum (2000)
    - RWC België
    - End users i.g.v. extreem SWx
    - SSCC / ESA (2013)
      - S-ESC : lead
  - SILSO (2013)
    - SIDC (1981)
      - WDC sunspot index
    - USET (1957)
      - WL, H $\alpha$ , Ca K, tekening
  - Expertise in EUV telescopen
    - SOHO / EIT (1995), PROBA2 / SWAP (2009), SolO / EUI (2020), Proba-3 / ASPIICS (2024)
  - Humain (1953/2008)
    - Radio waarnemingen zon
- GNSS (1988)
  - Diensten en producten GPS, Galileo, GLONASS



# De Pool Ruimte

- Koninklijke Sterrenwacht van België (KSB)
  - 1826
- Koninklijk Meteorologisch Instituut (KMI)
  - 1913
- Koninklijk Belgisch Instituut voor Ruimte-Aëronomie (BIRA-IASB)
  - 1964



# Het STCE

- Solar-Terrestrial Centre of Excellence

- 22 maart 2006
- "Ruimteweercentrum van België"
- Coördinatie Zon-Ruimte-Aarde
  - Intern
    - KSB, KMI, BIRA-IASB
  - Extern
    - Eindgebruikers, Industrie, Universiteiten, Policymakers,...
    - Brede Publiek

- Public Outreach

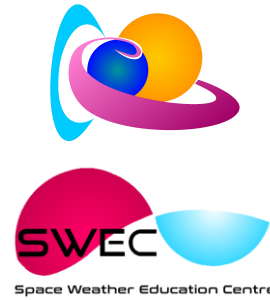
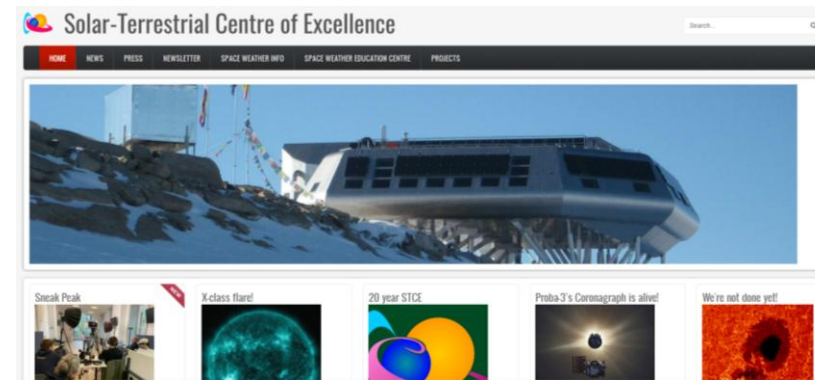
- STCE Nieuwsbrief
- Newsitem/flushes
- Press releases
- Lezingen, artikels, interviews,...
- Organisatie events

- ESWW

- European Space Weather Week (2006-2019)

- SWEC

- Space Weather Education Centre
  - Cursussen, educatief materiaal,...
  - Ook internationaal
    - E-SWAN, ESWW,...



## STCE Newsletter

23 Mar 2026 - 29 Mar 2026



Published by the STCE - this issue : 3 Apr 2026. Available online at <https://www.stce.be/newsletter/>.

The Solar-Terrestrial Centre of Excellence (STCE) is a collaborative network of the Belgian Institute for Space Aeronomy, the Royal Observatory of Belgium and the Royal Meteorological Institute of Belgium.

Content	Page
1. The STCE in 2024	2
2. Sneak peak	3
3. Review of Solar and Geomagnetic Activity	3
4. International Sunspot Number by SILSO	5
5. PROBA2 Observations	5
6. Noticeable Solar Events	7
7. Geomagnetic Observations in Belgium	8
8. Review of Ionospheric Activity	9
9. The SIDC Space Weather Briefing	11
10. Upcoming Activities	11

Final Editor :  
Contact :  
Petra Vanlommel  
R. Van der Linden, General Coordinator STCE,  
Ringlaan - 3 - Avenue Circulaire, 1180 Brussels,  
Belgium



# 2026 – Een feestelijk jaar!...

- *200 jaar Koninklijke Sterrenwacht van België*
  - <https://www.astro.oma.be/>
- *50 jaar Planetarium*
  - <http://www.planetarium.be/>
- *25 jaar SIDC*
  - <https://www.sidc.be/>
- *20 jaar STCE*
  - <https://www.stce.be/>



<https://200year.observatory.be/nl/home2>

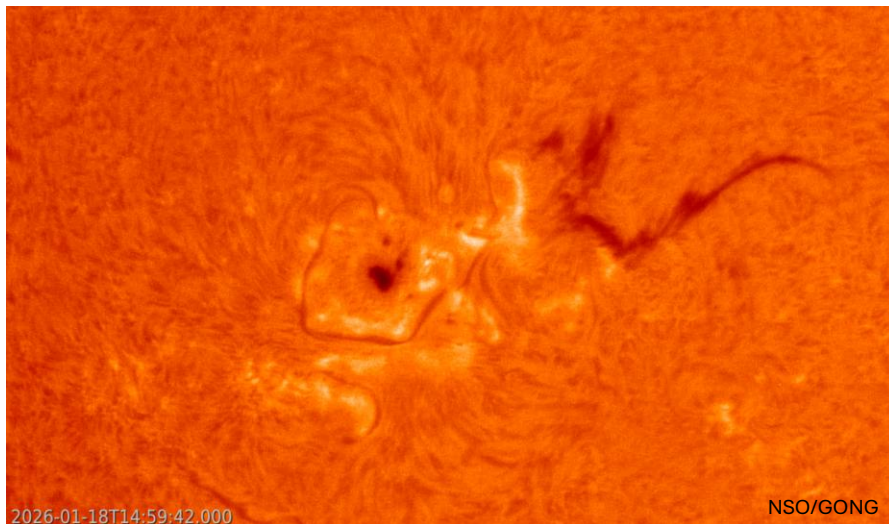
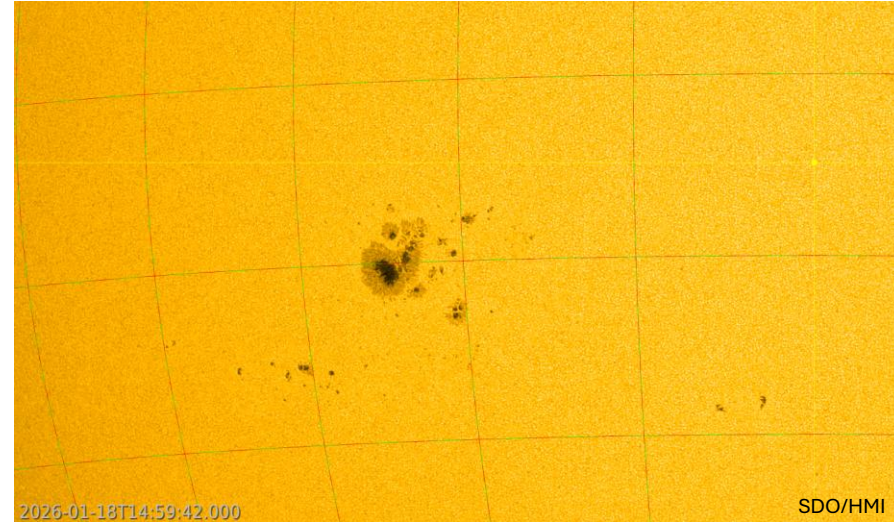
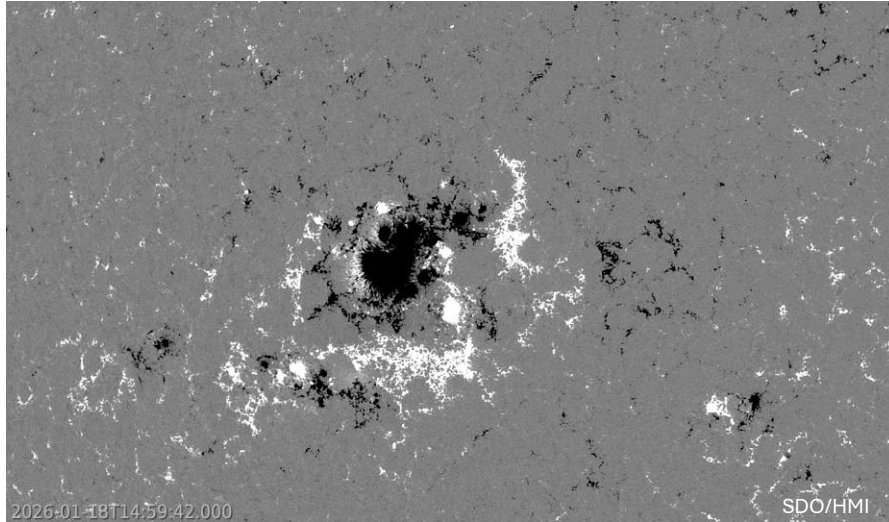


# De verrassende zonnestorm van 19 januari 2026

Over ruimteweervoorspellingen:  
Vallen, opstaan en weer doorgaan



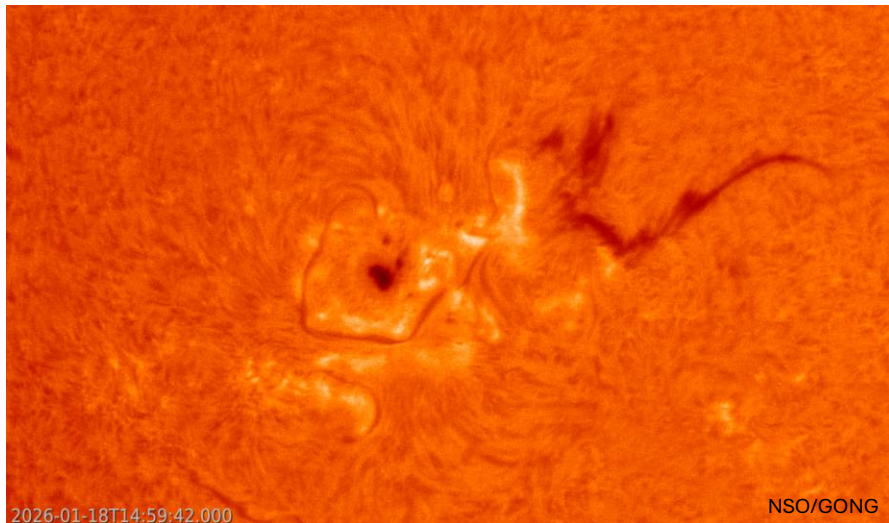
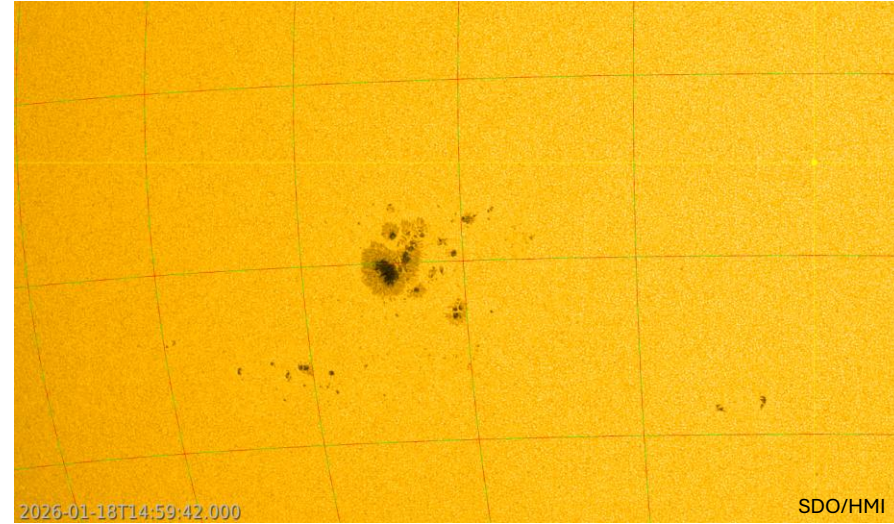
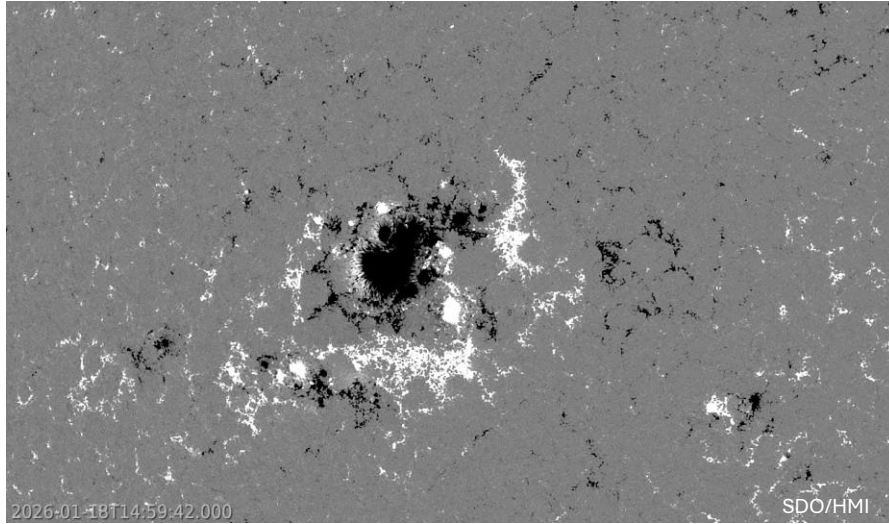
# Zonnevlekkengroep NOAA 4341



- Voorspelling zonnevlammen
  - McIntosh: Dkc (*Dki*)
    - M+ / X: 77% / 22% (48% / 6%)
  - Mount Wilson: Beta Gamma
    - Geen delta
  - Andere
    - Zonnevlam historiek, groep filament,...

<https://www.stce.be/educational/classification>

# Zonnevlekkengroep NOAA 4341

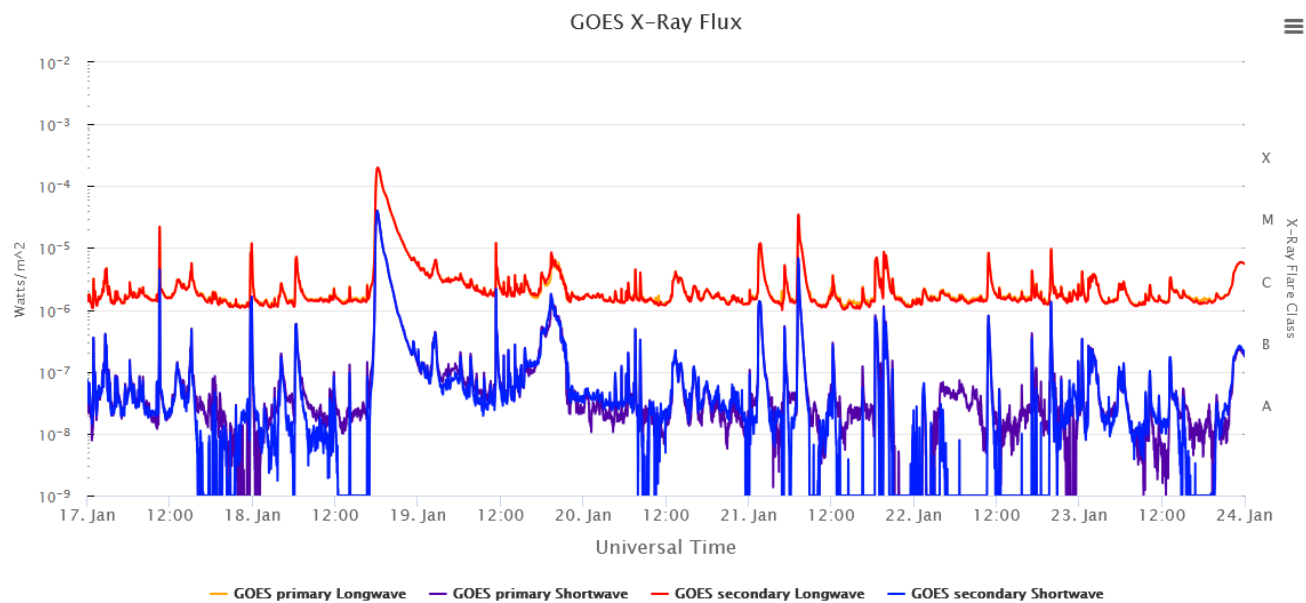


- SIDC SWx voorspeller
  - URSIgram 18 Jan 2026:
    - ... *Solar flaring activity is expected to be moderate over the next 24 hours, with M-class flares very likely and a small chance for X-class flares. ...*

<https://www.stce.be/educational/classification>

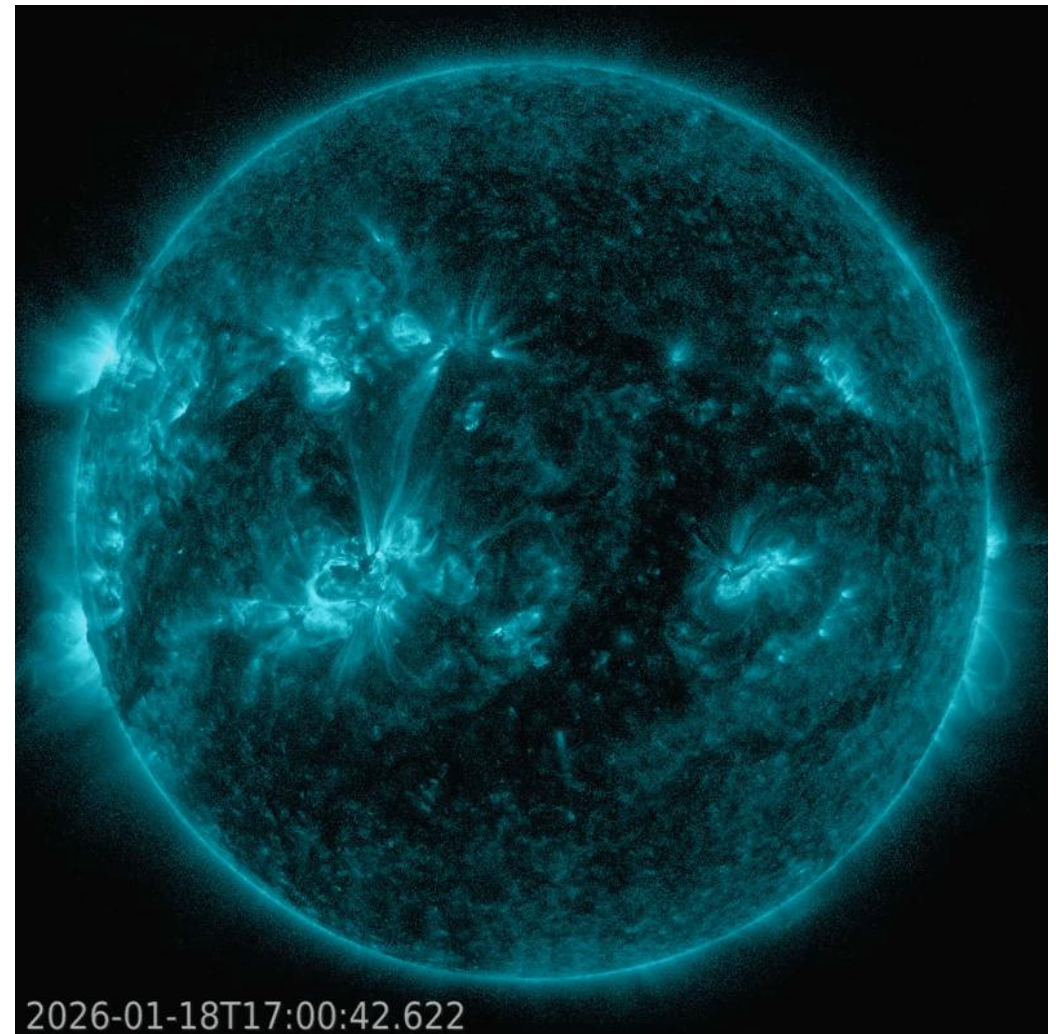
# X1.9 zonnevlam van NOAA 4341 (18 Jan/18:09 UTC ; 3B)

SDO/AIA 131 - EUV



SWx TREC  
Highcharts.com

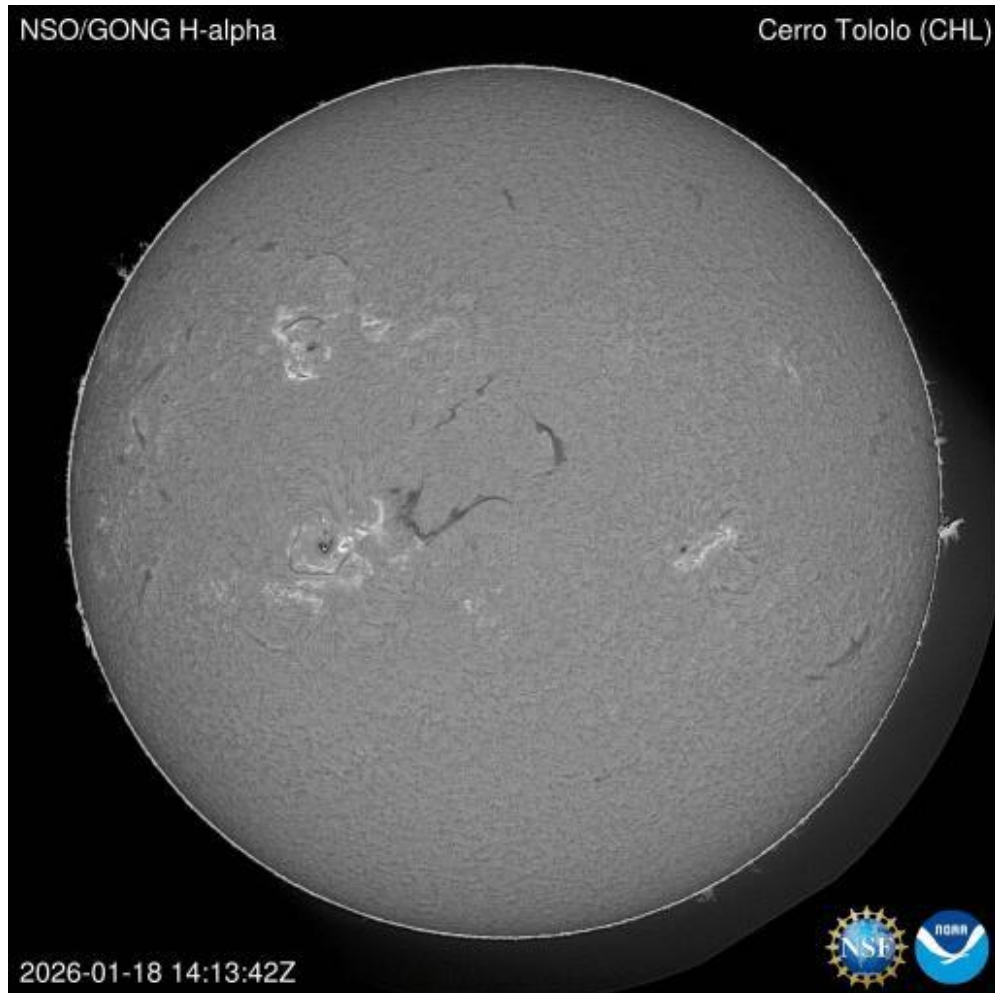
<https://www.stce.be/news/800/welcome.html>



# X1.9 zonnevlam van NOAA 4341 (18 Jan/18:09 UTC ; 3B)

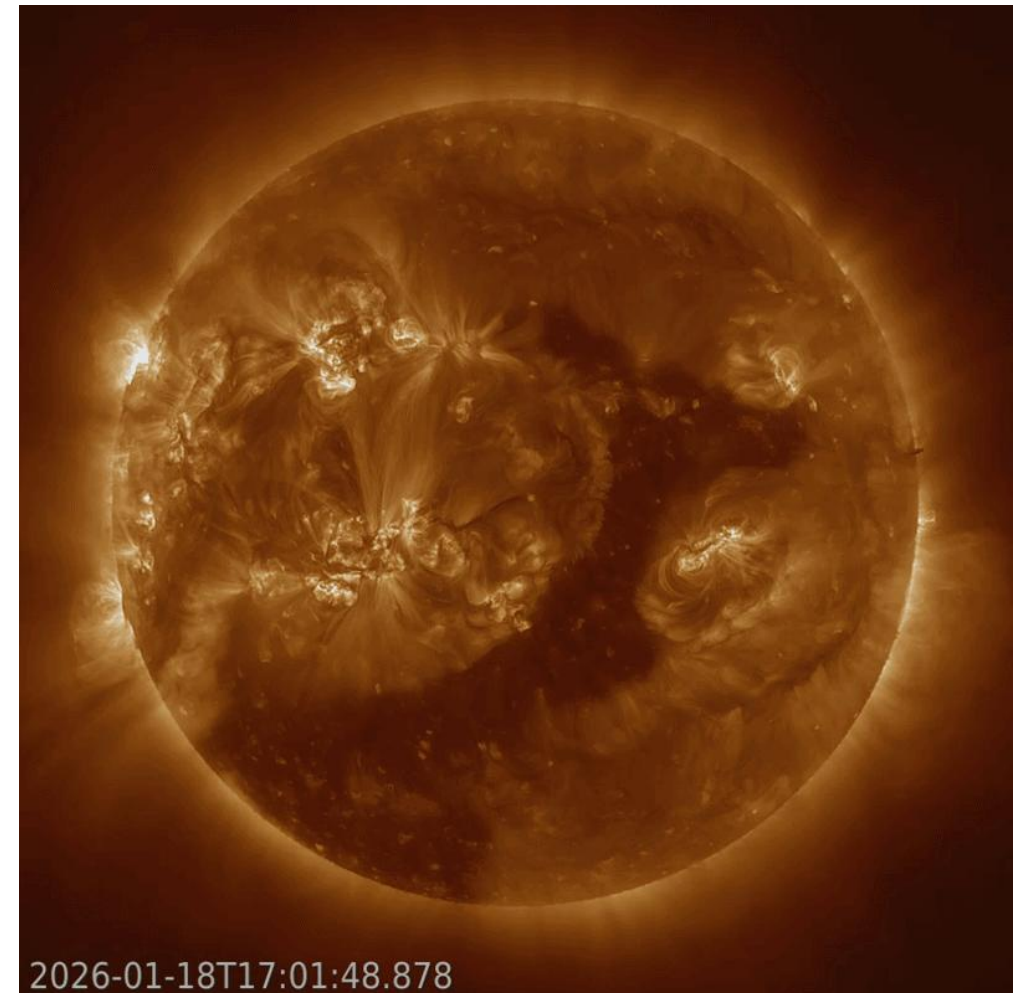
Filamenten zijn "verdwenen"

NSO/GONG – H-alpha



Nabijheid coronaal gat

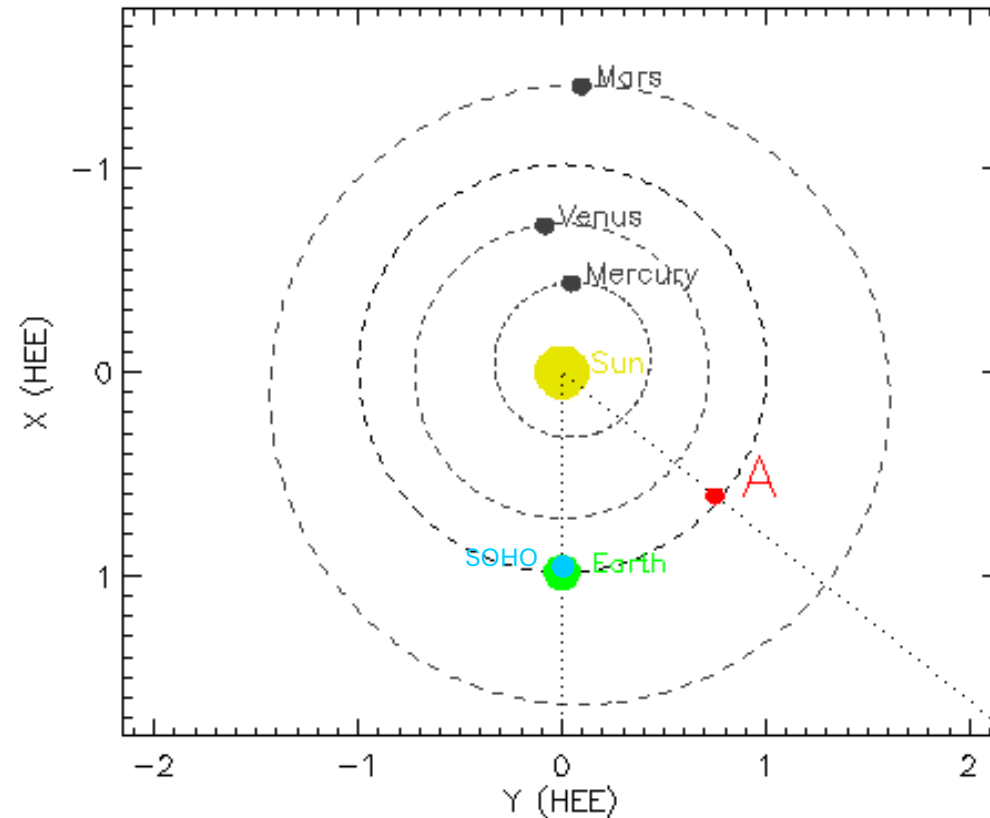
GOES/SUVI 195 - EUV



# Coronale Massa Ejectie (18 Jan/18:09 UTC ; 3B)

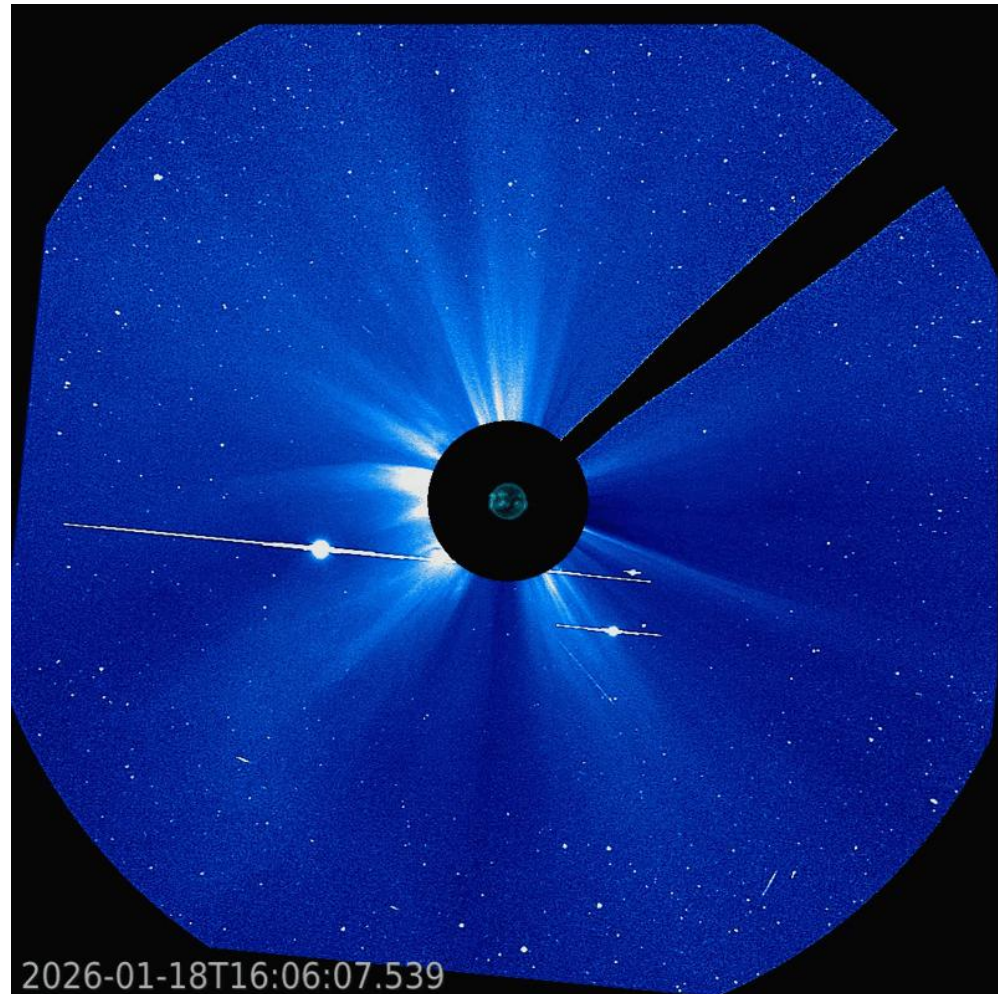
SOHO / LASCO C3

STEREO-A / COR2

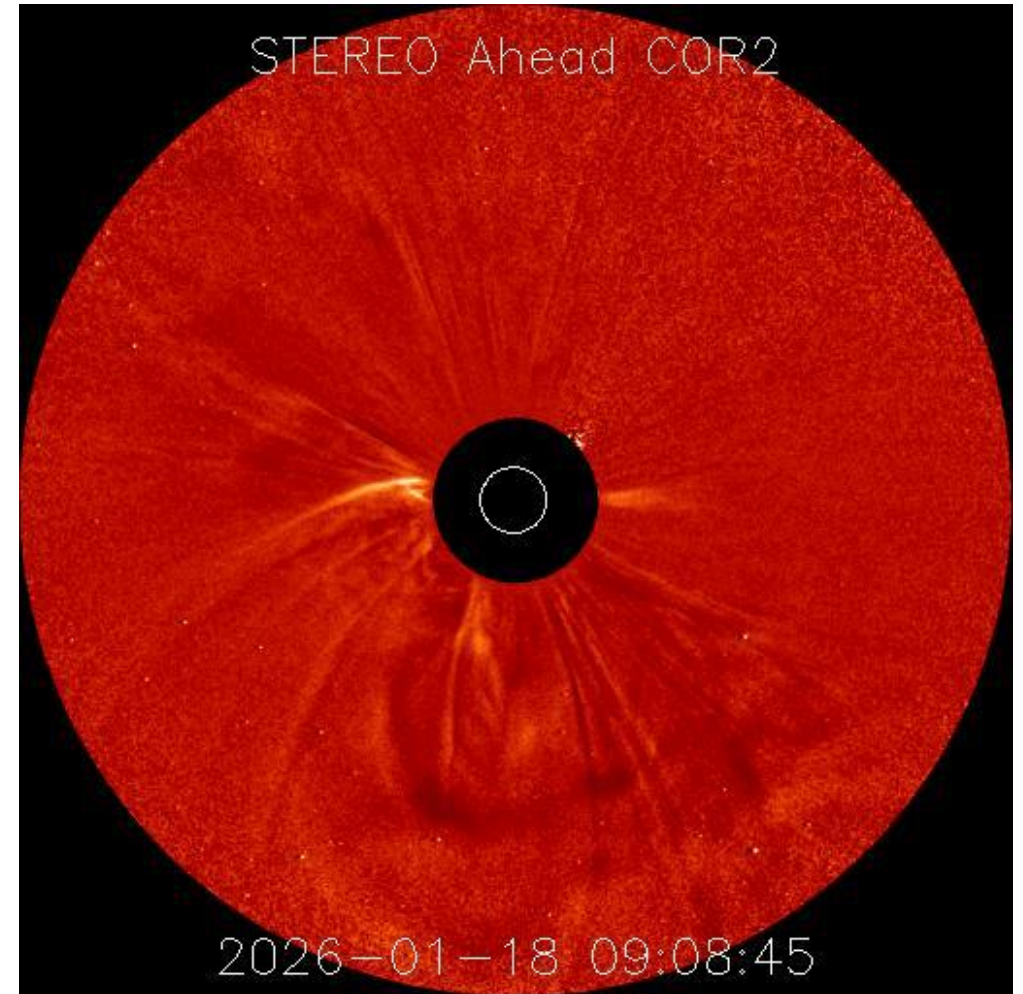


# Coronale Massa Ejectie (18 Jan/18:12 UTC)

SOHO / LASCO C3

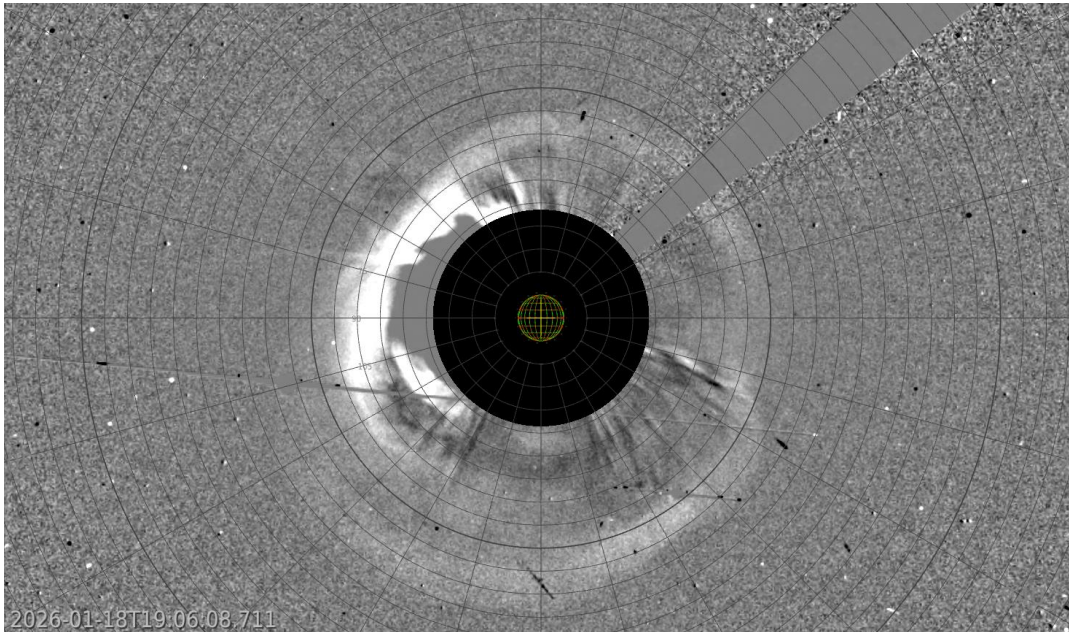


STEREO-A / COR2



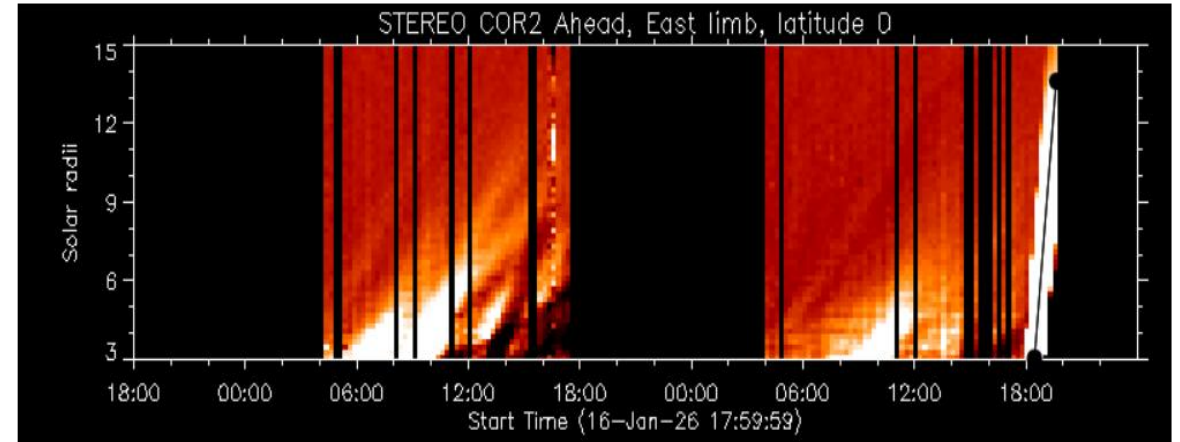
# Coronale Massa Ejectie - snelheid

SOHO / LASCO C3



STEREO-A / COR2

Select the satellite and date:



Speed : 1754 km/s



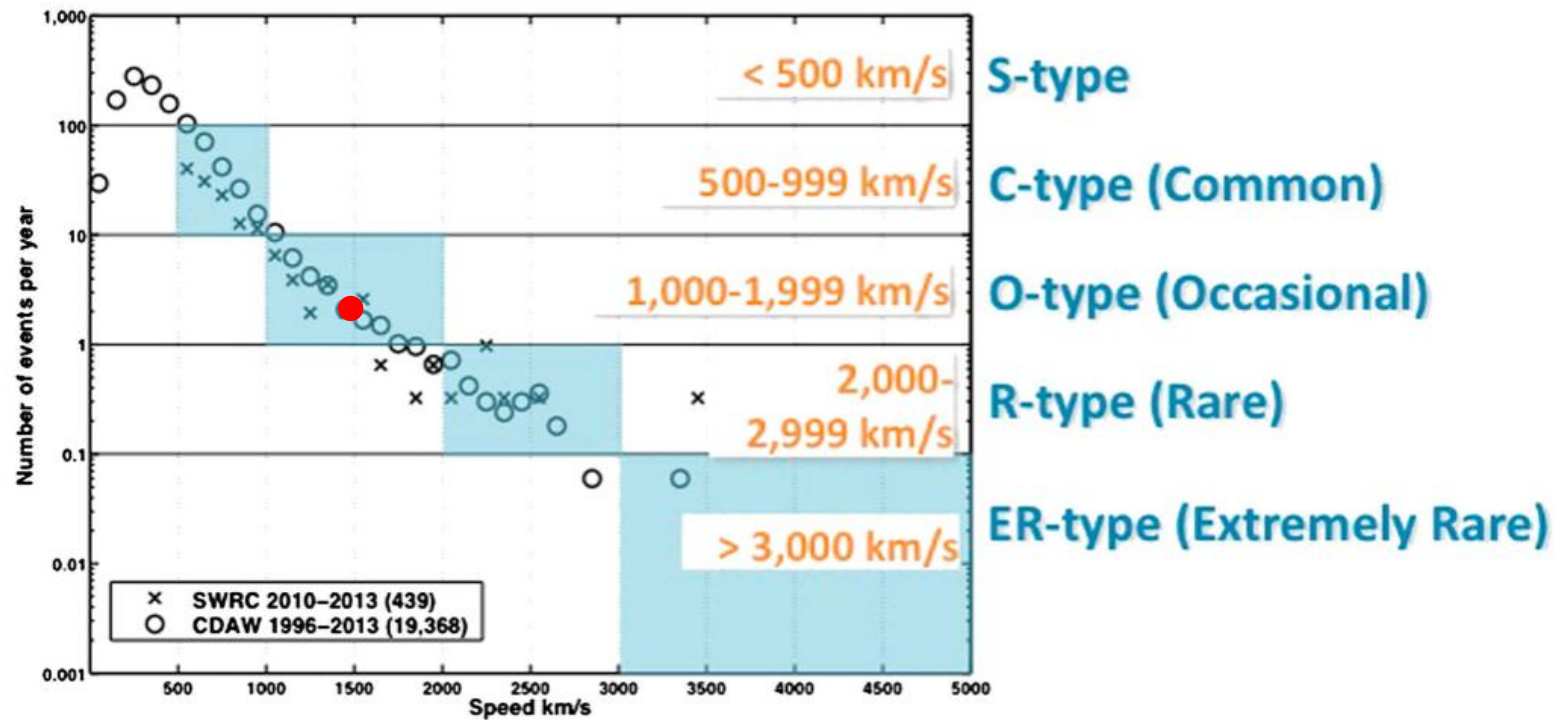
This work has received funding from the European Commission FP7 Project COMESSEP (263252).

- SIDC SWx voorspeller
  - 1000-1500 km/s
  - 1400 km/s

- STEREO-A (ecliptica, meer aarde-gericht)
  - 1600-1900 km/s
  - 1700 km/s

# Coronale Massa Ejectie - snelheid

## Space Weather Research Center CME SCORE Scale



Evans et al. 2015 - <https://doi.org/10.1002/swe.20058>

# CME – Aankomsttijd: (1) Hvar DBM

Basic DBM | **Advanced DBM**

CME start date: Jan 18 2026

CME start time (UTC): 18 h 12 min

$R_0$  - starting radial distance of CME ( $R_s$ ): 20

$v_0$  - speed of CME at  $R_0$  (km/s): 1400

$\Gamma$  - drag parameter ( $10^{-7} \text{ km}^{-1}$ ): 0.2

$w$  - asymptotic solar wind speed (km/s): 450

$R_{\text{target}}$  - target heliocentric distance (AU): 0.98

Calculate Reset!

Drag-Based Model has performed **43** successful calculations (since 26.12.2012).



© Hvar Observatory, 2016

<https://oh.geof.unizg.hr/DBM/dbm.php>

Results | v-R-t plots | Documentation | **1400 km/s**

## Output:

CME arrival at target (date & time): **20.01.2026 at 10h:56min**  
Transit time: **40.75 h**  
Impact speed at target (at 0.98 AU): **701 km/s**

Results | v-R-t plots | Documentation | **1700 km/s**

## Output:

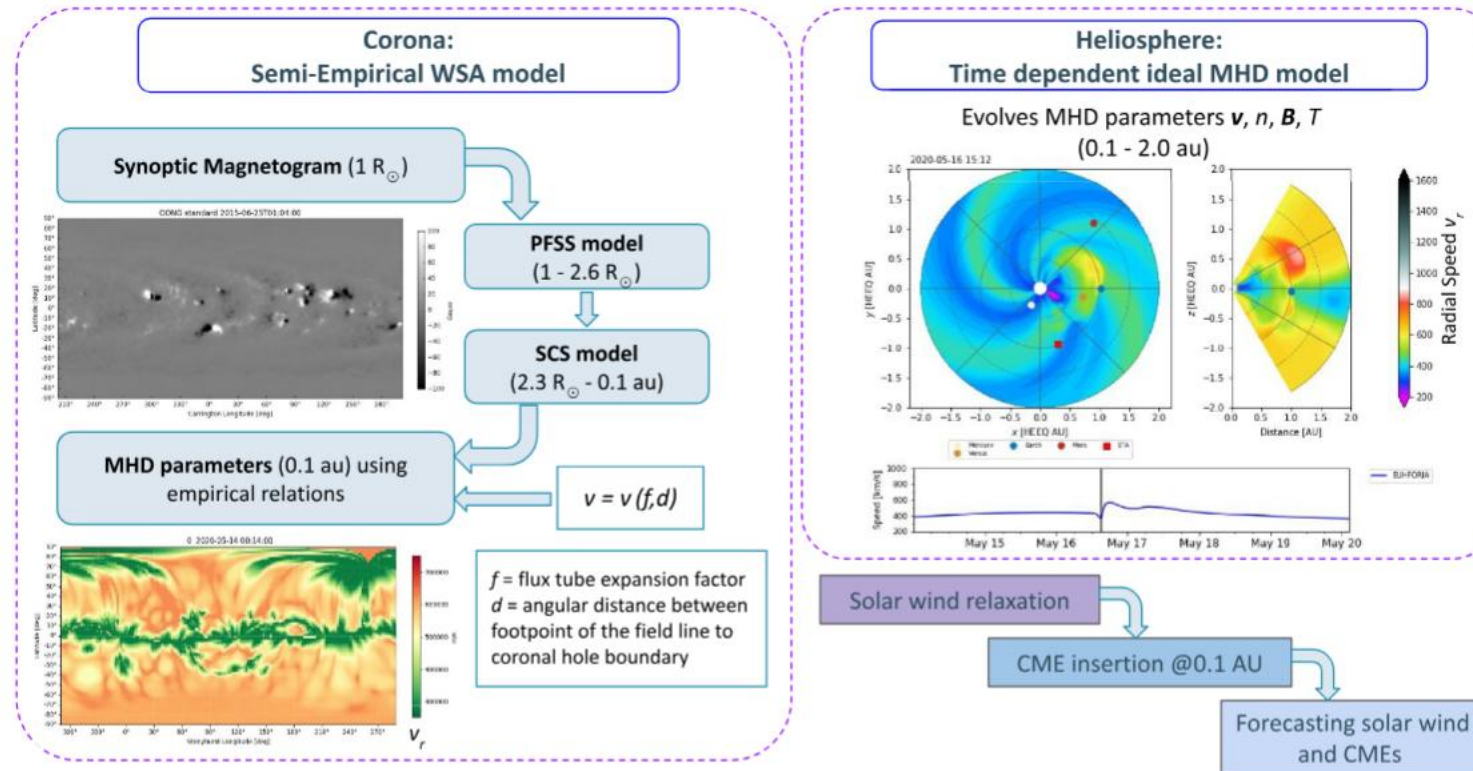
CME arrival at target (date & time): **20.01.2026 at 06h:57min**  
Transit time: **36.76 h**  
Impact speed at target (at 0.98 AU): **740 km/s**

Results | v-R-t plots | Documentation | **1900 km/s**

## Output:

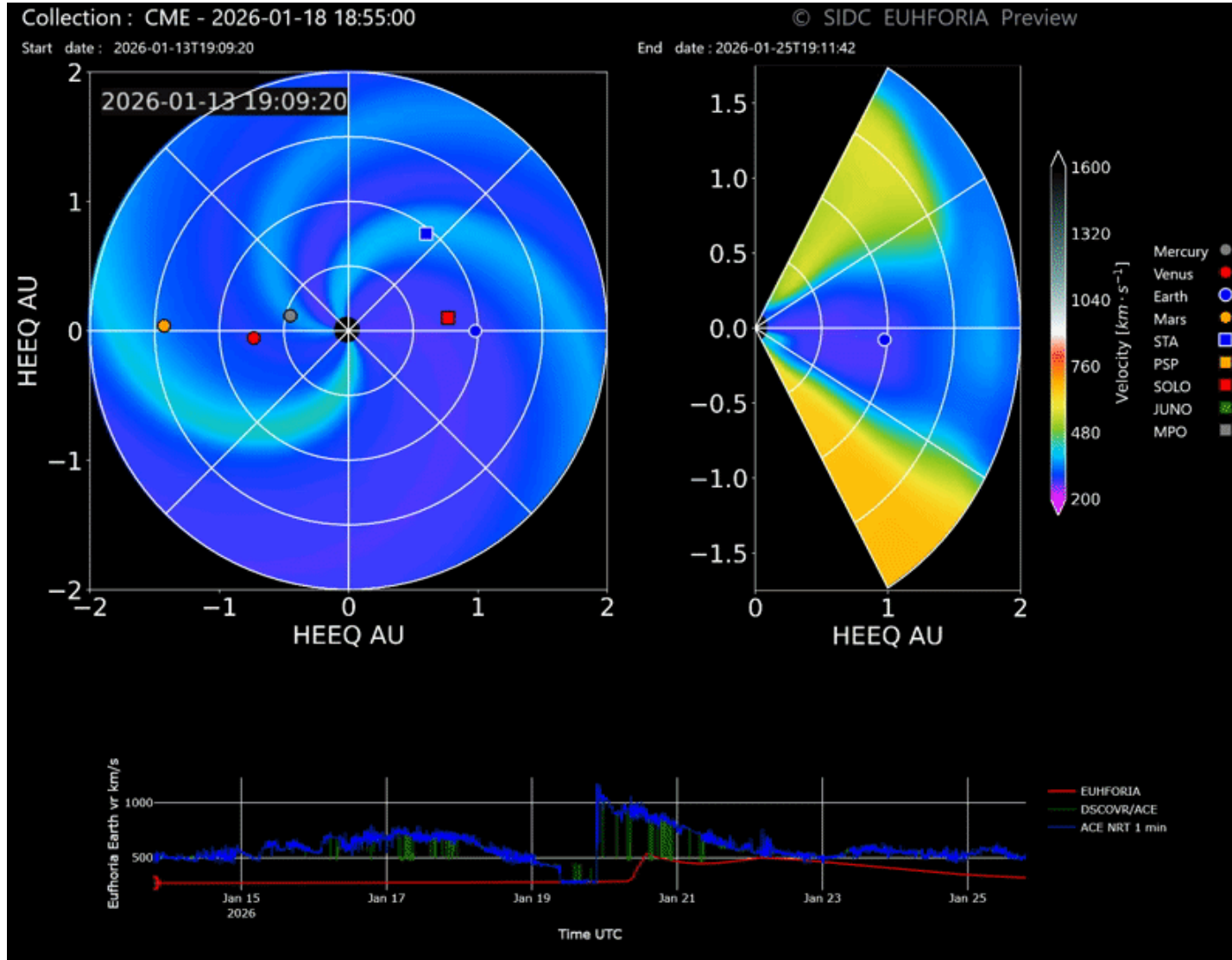
CME arrival at target (date & time): **20.01.2026 at 04h:50min**  
Transit time: **34.64 h**  
Impact speed at target (at 0.98 AU): **764 km/s**

# CME – Aankomsttijd: (2) EUHFORIA



**Figure 1.** Schematic showing the different models within EUHFORIA and the outputs they produce. On the left, the corona is modeled using the semi-empirical Wang-Sheeley-Argé (WSA) model, driven by the synoptic magnetogram maps (e.g., top left figure). WSA model employs the potential field source surface (PFSS) model in the low corona and the Schatten current sheet (SCS) in the upper corona to extrapolate the magnetic field lines up to 0.1 au, and empirical relations to compute MHD parameters at 0.1 au (e.g., bottom left figure). The output of the coronal model is provided as a boundary condition to the 3D time-dependent ideal MHD model of the heliosphere, shown on the right. Figure on the right is an example showing the radial speed ( $v_r$ ) profile in the EUHFORIA domain depicting a propagating CME on a relaxed solar wind background (equatorial and meridional planes containing Earth). The flowchart (bottom right) depicts the chronology of steps involved in a typical EUHFORIA simulation.

# CME – Aankomsttijd: (2) EUHFORIA



- Aankomsttijd
  - 20 Jan – 07:10UTC
    - CME snelheid: 1403 km/s
  - Max. snelheid: 540 km/s
- SIDC SWx voorspeller

## CME arrival alert (see json attachment).

From no-reply-sidc@oma.be  
To SWforecasters@sidc.be  
Date 2026-01-19 15:41

Expected arrival time: 2026-01-20T07:11:00Z

Arrival time uncertainty: 12

Estimated peak K: 7

Peak K uncertainty: 1

Probability of arrival: 85

CME start time: 2026-01-18T18:12:00Z

# CME – Aankomsttijd: (3) Overzicht



Community Coordinated  
Modeling Center

CCMC CME Scoreboard

<https://kauai.ccmc.gsfc.nasa.gov/CMEScoreboard/>

[Login](#)

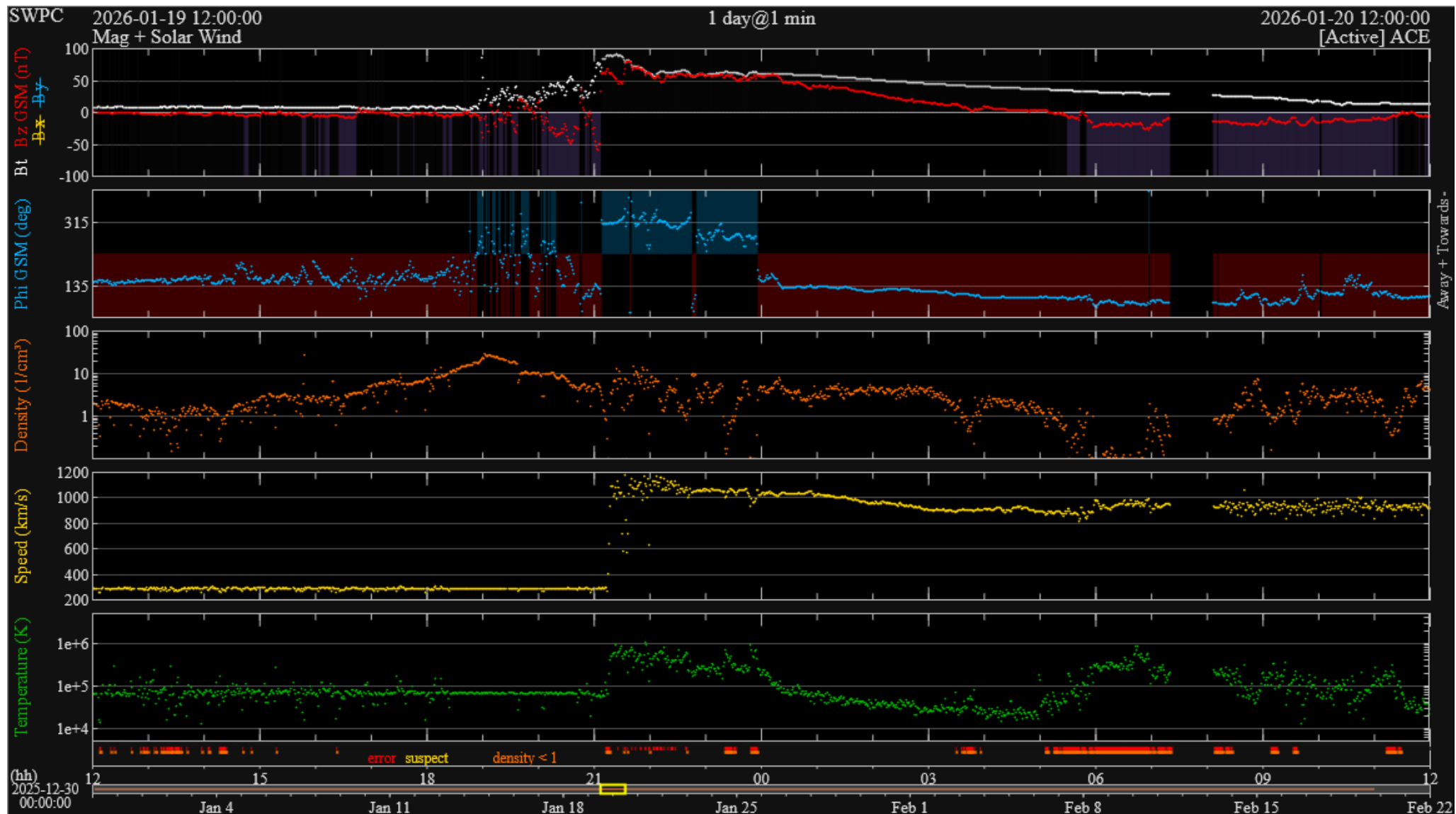
## CCMC CME Scoreboard

The CME Scoreboard is part of the the [CME Arrival Time and Impact Working Team](#) within the COSPAR [International Space Weather Action Teams \(ISWAT\)](#).

Developed by the [Community Coordinated Modeling Center \(CCMC\)](#), the CME Scoreboard serves as a **research-based pre-event forecasting validation platform**.

Instituut	Model	In (18:09UTC)	Aankomst verwacht	Onzekerheid	Kp verwacht
NASA	WSA/ENLIL + Cone	+3.5h	20 Jan / 02:38	+/- 7h	8.0 - 9.0
JHU /APL	EAM	+5.7h	19 Jan / 19:53	-2.5h - +7.5h	
SEPC/NSSC/CAS	Cone + HAF	+8.2h	19 Jan / 22:00		7.0-9.0
KSWC	WSA/ENLIL + Cone	+8.7h	20 Jan / 05:00		
UK Met Office	WSA/ENLIL + Cone	+12.4h	20 Jan / 04:00	+/- 6h	7.0-8.0
ASWO	ELEvo	+15.3h	20 Jan / 02:46	+/- 5.3h	
NOAA/SWPC	WSA/ENLIL + Cone	+16.7h	20 Jan / 01:00		5.0-8.0
<b>SIDC</b>	<b>EUHFORIA + Hvar DBM</b>	<b>+20.5h</b>	<b>20 Jan / 07:11</b>	<b>+/- 12h</b>	<b>6.0-8.0</b>

# CME – Aankomst: 19 Jan / 18:56UTC (ACE/L1)



<https://www.swpc.noaa.gov/products/real-time-solar-wind>

# CME – Aankomst: 19 Jan / 18:56UTC (ACE/L1)



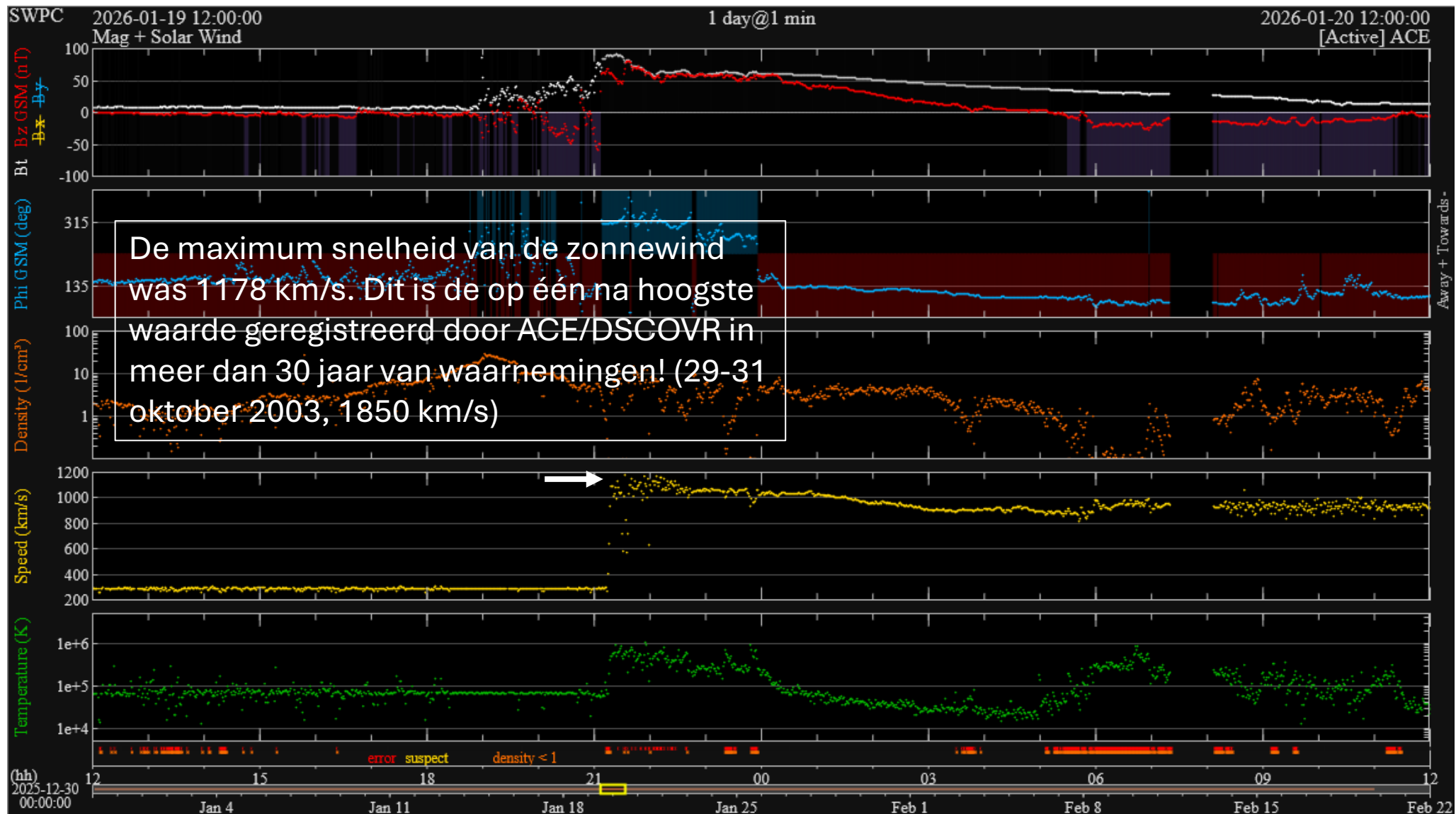
# CME – Aankomst: 19 Jan / 18:56UTC (ACE/L1)



# CME – Aankomst: 19 Jan / 18:56UTC (ACE/L1)



# CME – Aankomst: 19 Jan / 18:56UTC (ACE/L1)



# CME – Aankomst: Waarom zoveel vroeger?

Basic DBM **Advanced DBM**

CME start date: Jan 18 2026

CME start time (UTC): 18 h 12 min

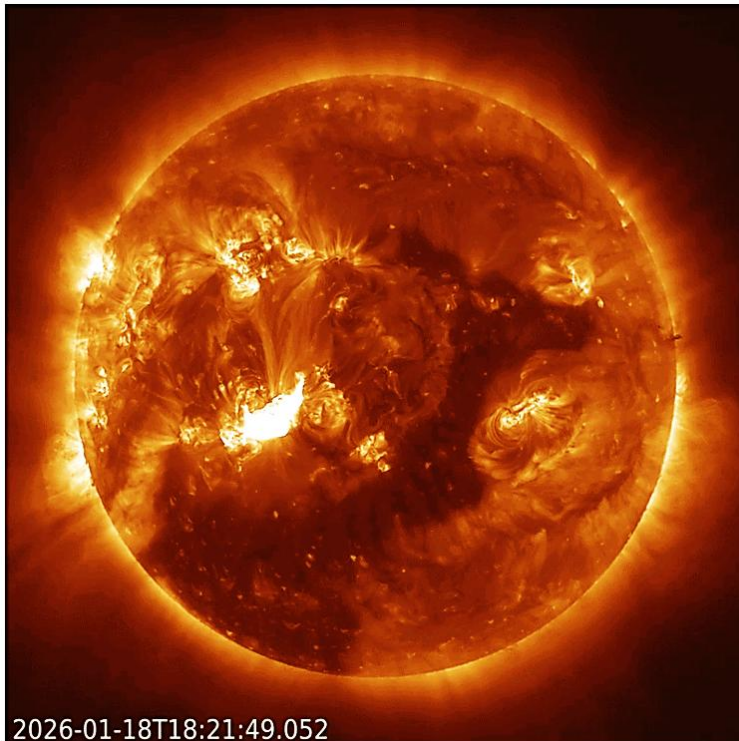
$R_0$  - starting radial distance of CME ( $R_s$ ): 20

$v_0$  - speed of CME at  $R_0$  (km/s): 1900

$\Gamma$  - drag parameter ( $10^{-7} \text{ km}^{-1}$ ): 0.1

$w$  - asymptotic solar wind speed (km/s): 450

$R_{\text{target}}$  - target heliocentric distance (AU): 0.98



- CME snelheid te laag ingeschat
  - Eerder rond 1900 km/s
- Invloed coronaal gat onderschat
  - Pad effenen voor CME

[Results](#) [v-R-t plots](#) [Documentation](#) **1900 km/s**

**Output:** Drag: 0.2

CME arrival at target (date & time): **20.01.2026 at 04h:50min**  
Transit time: **34.64 h**  
Impact speed at target (at 0.98 AU): **764 km/s**

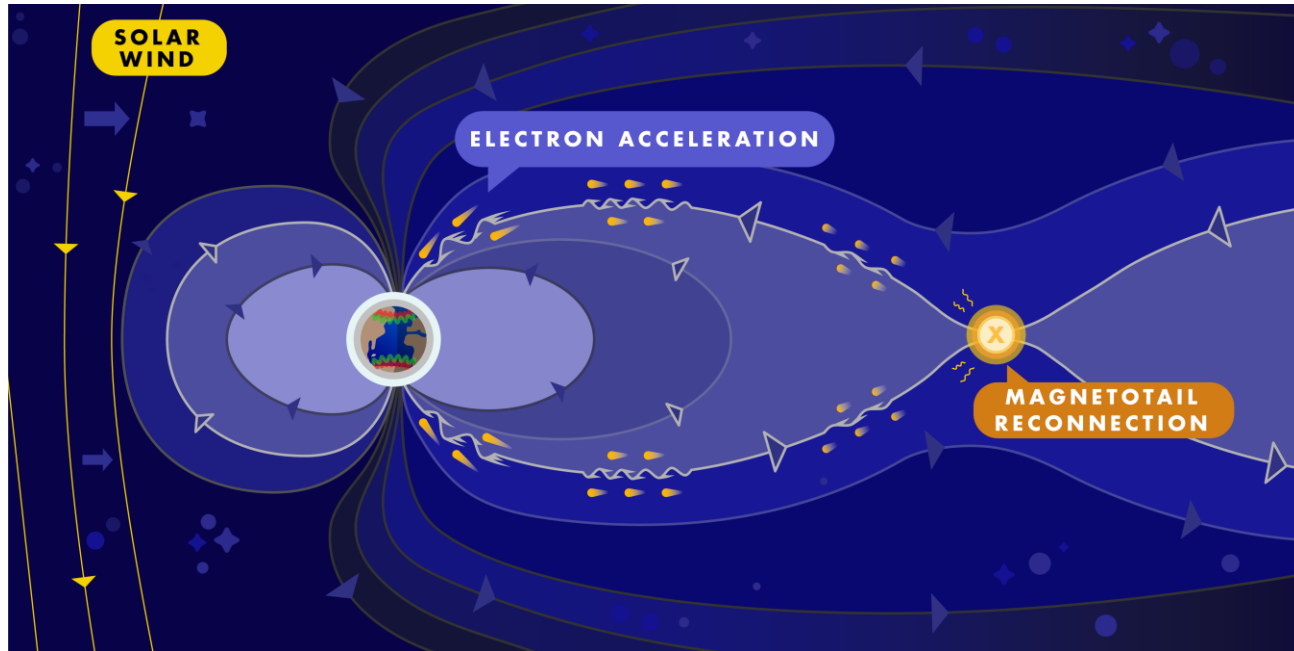
[Results](#) [v-R-t plots](#) [Documentation](#) **1900 km/s**

**Output:** Drag: 0.1

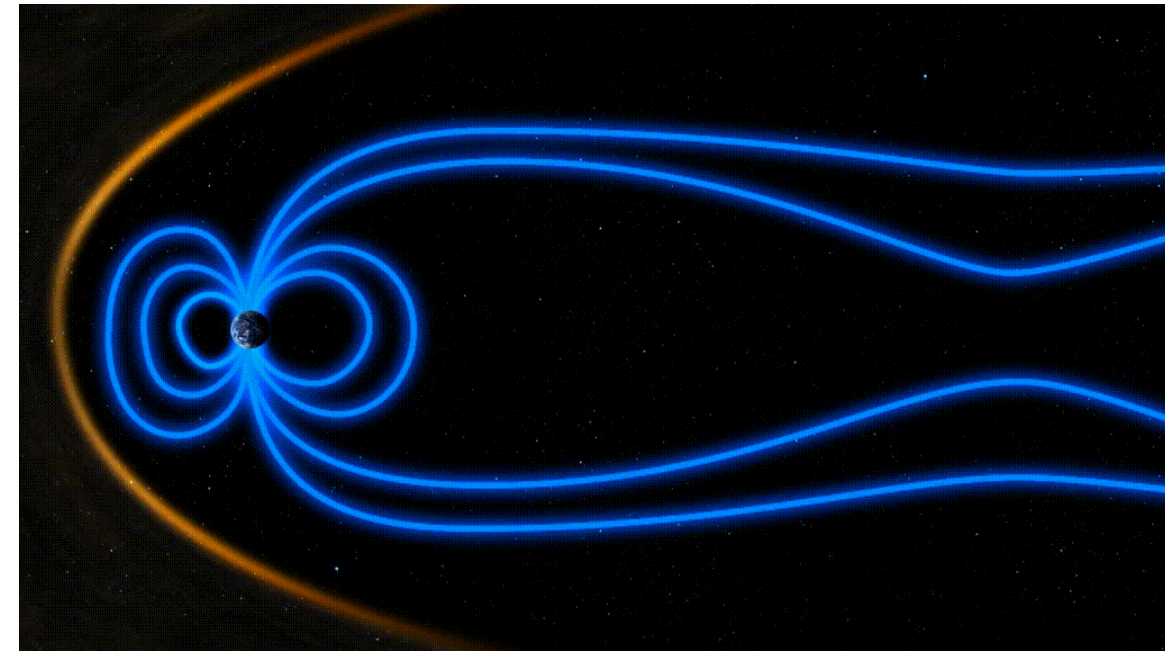
CME arrival at target (date & time): **19.01.2026 at 21h:26min**  
Transit time: **27.24 h**  
Impact speed at target (at 0.98 AU): **1 049 km/s**

# Recept voor een zware geomagnetische storm

$B_z < 0$



© G. G. Howes, University of Iowa, 2021



© ESA / CLUSTER

# Recept voor een zware geomagnetische storm

Bz dient zo negatief mogelijk te zijn

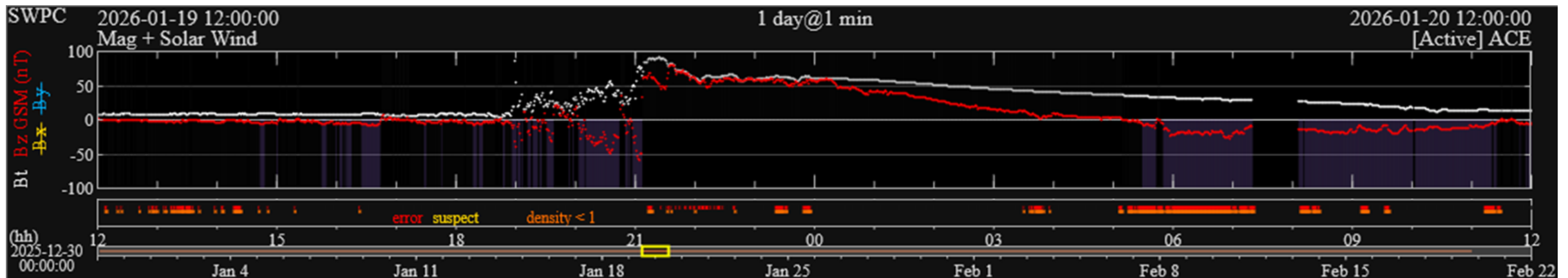
Bz dient zo lang mogelijk negatief te zijn

# Recept voor een zware geomagnetische storm

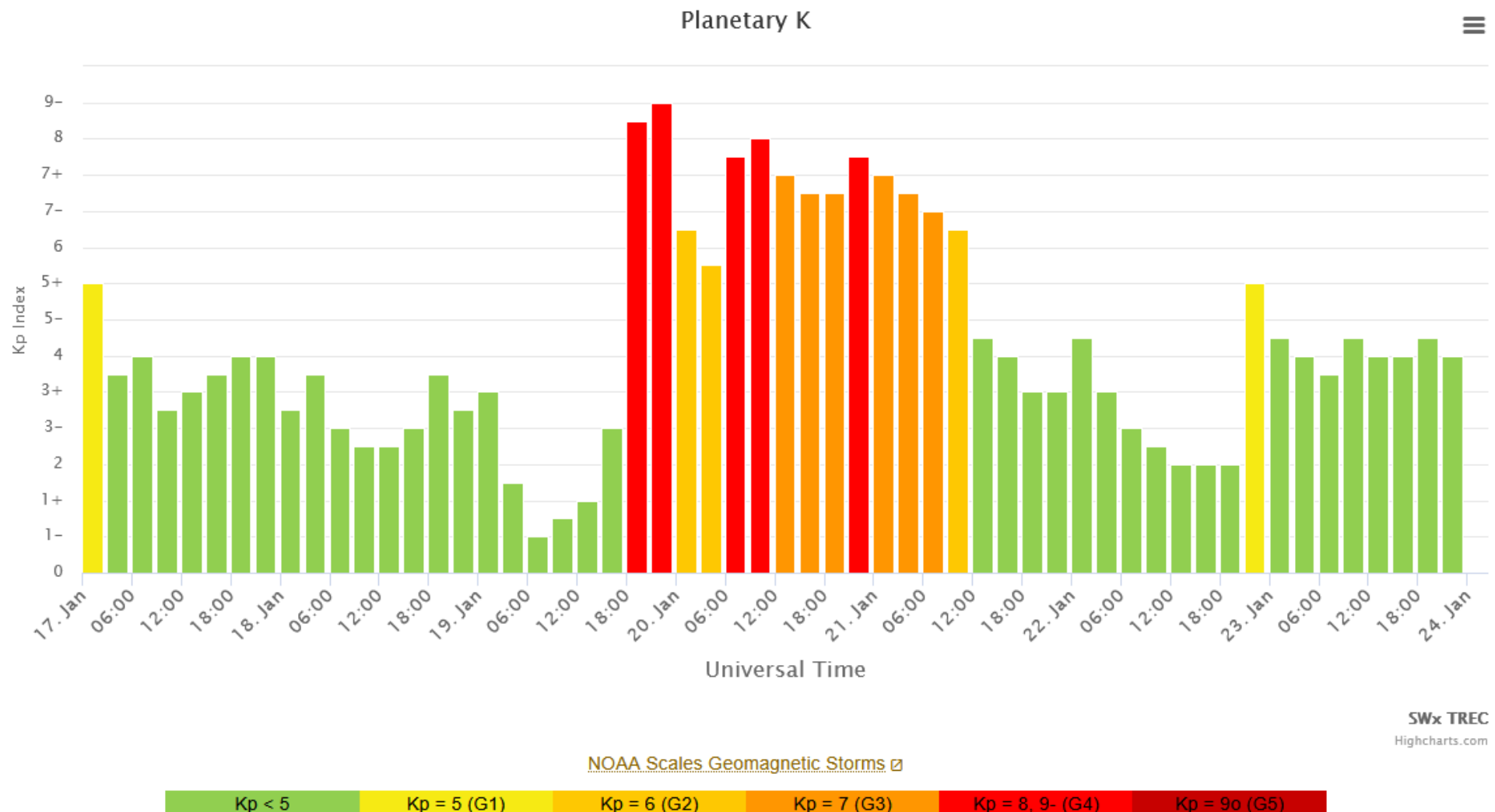
Bz dient zo negatief mogelijk te zijn



Bz dient zo lang mogelijk negatief te zijn



# 19-20 januari - Zware geomagnetische storm



# Aurora boven België



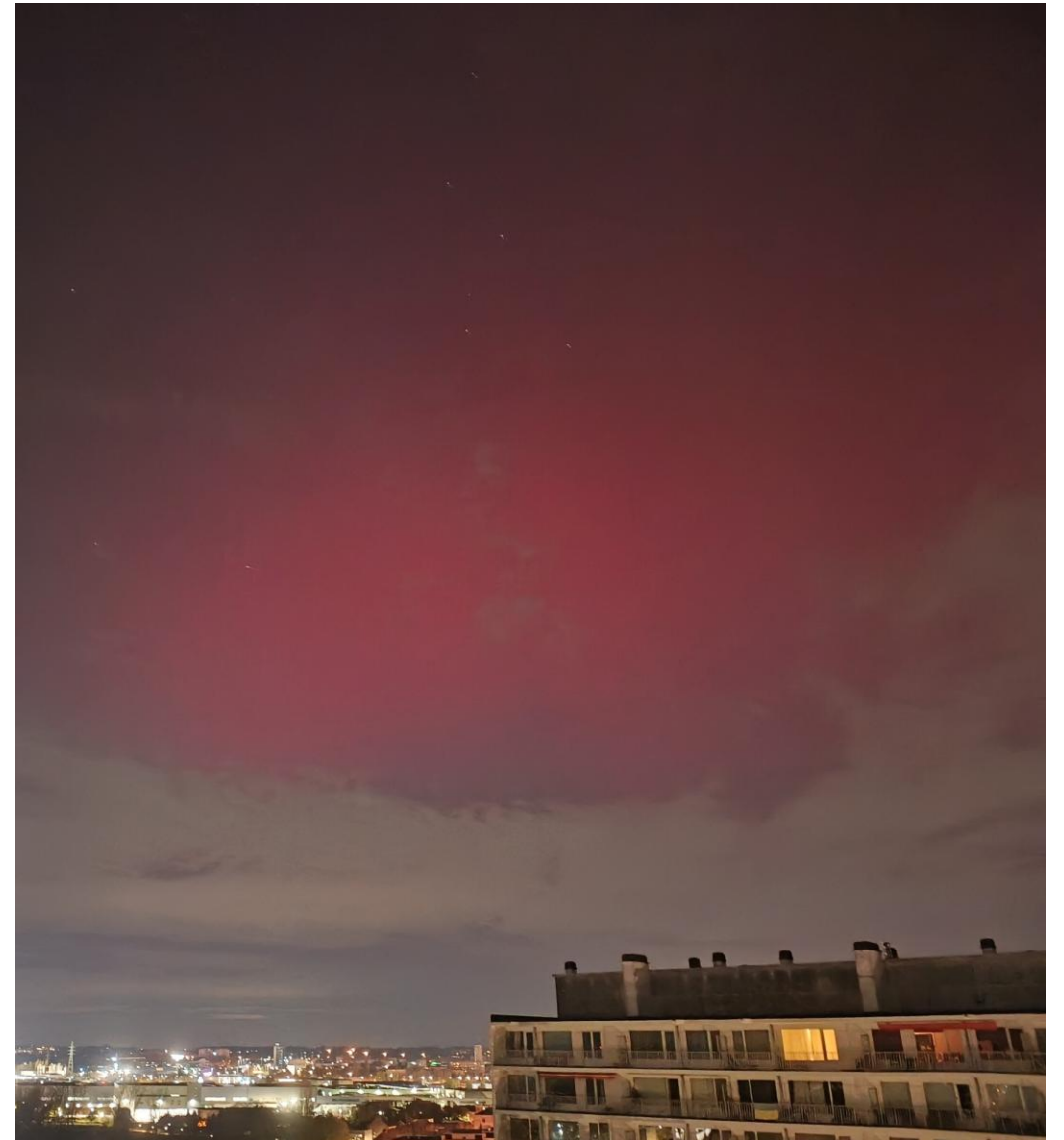
>200 km: Zuurstof: rood

<200 km: Stikstof: blauw

<200 km: Zuurstof: groen

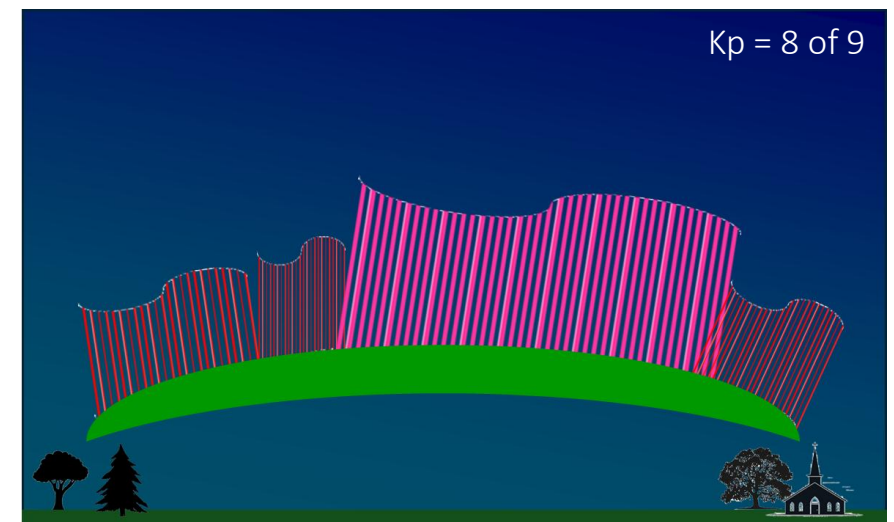
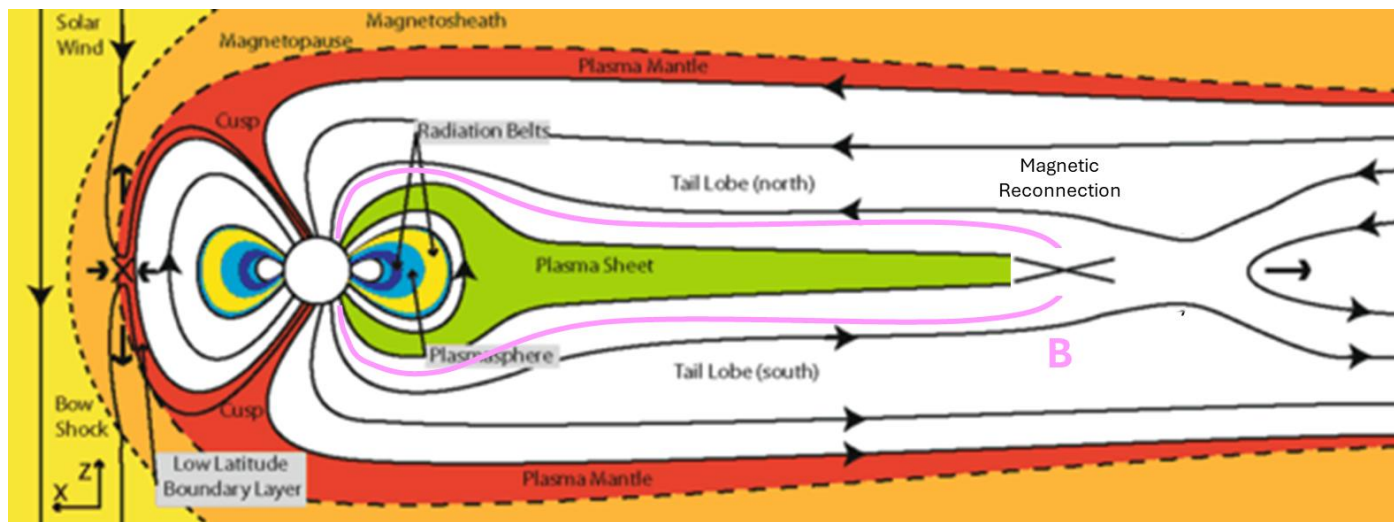
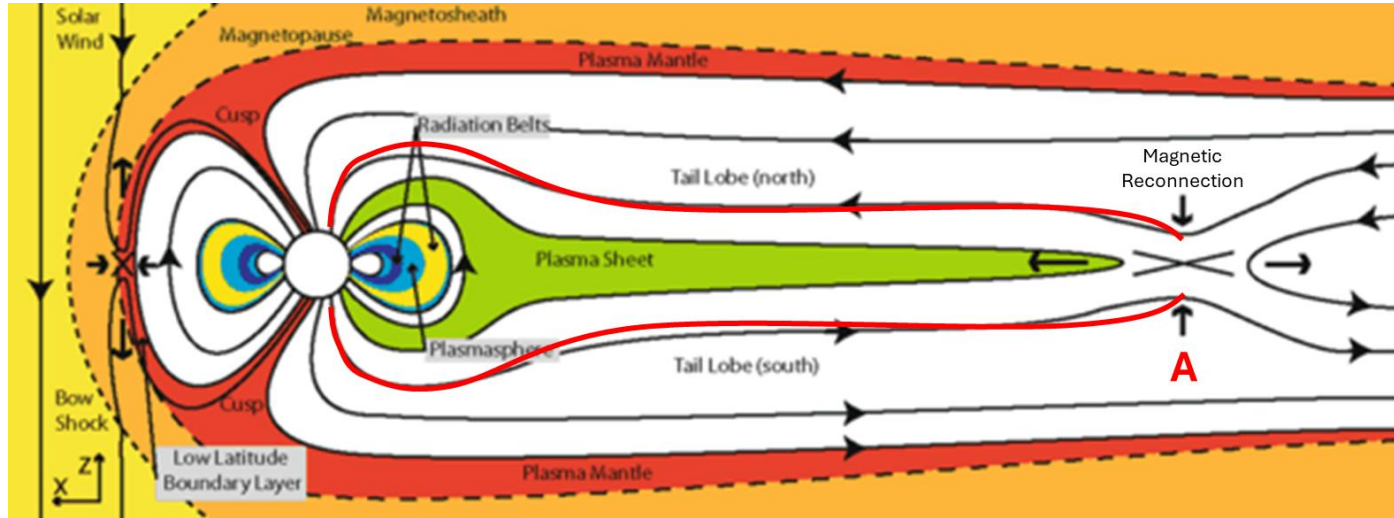
(<100 km: Stikstof: krimson)

© G. Gonzales, Iowa State University, oktober 2003



© Nancy Narang, Brussel, 12 november 2025

# Recept voor aurora boven België

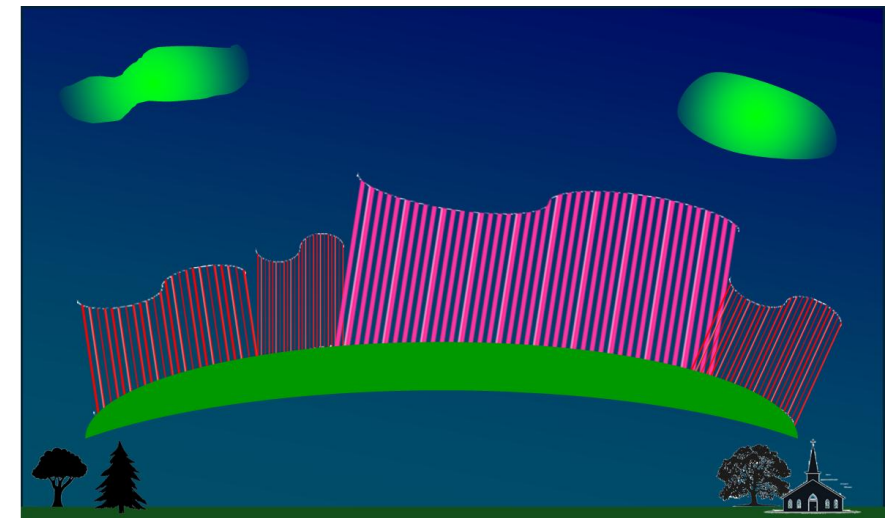
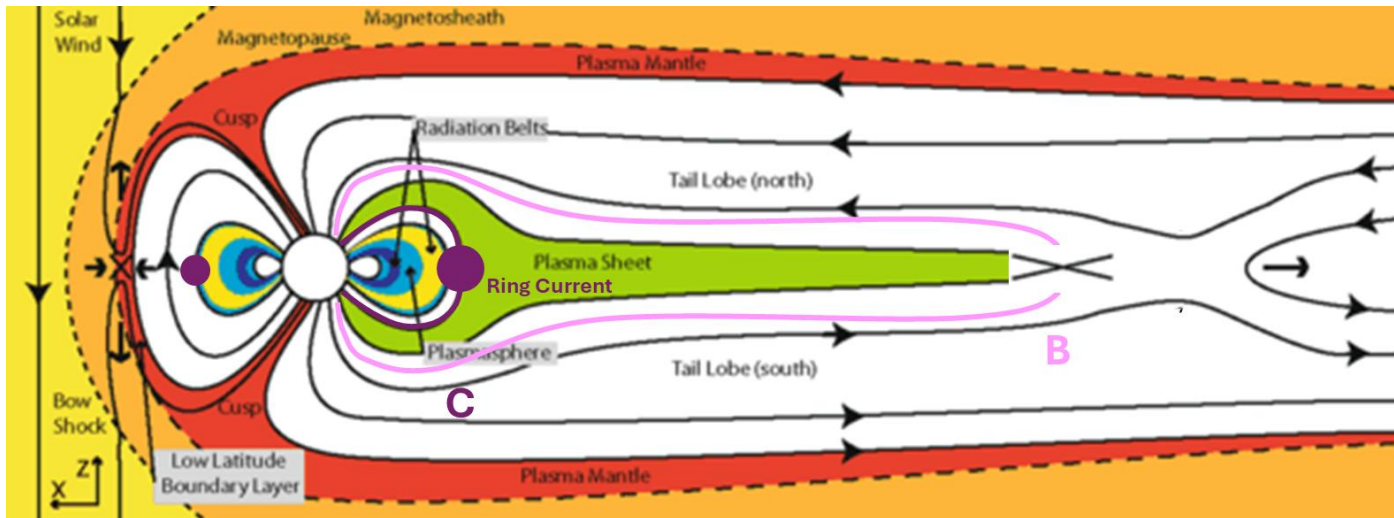
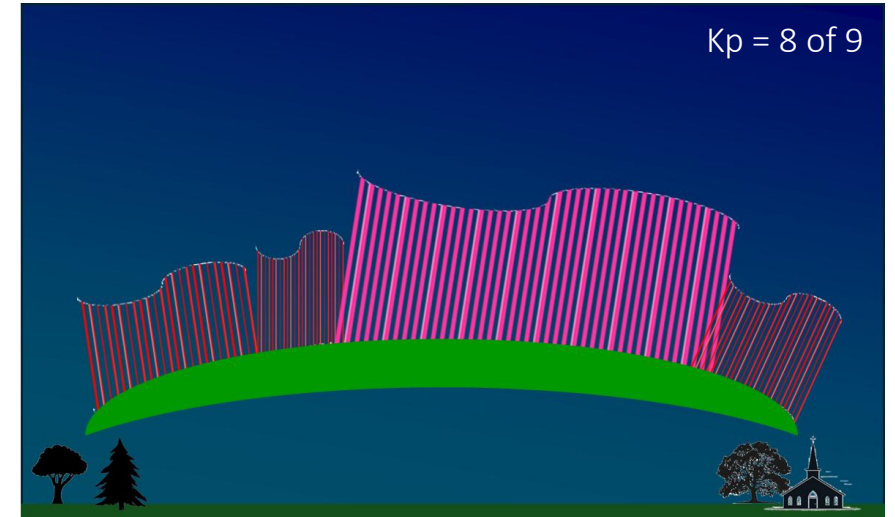
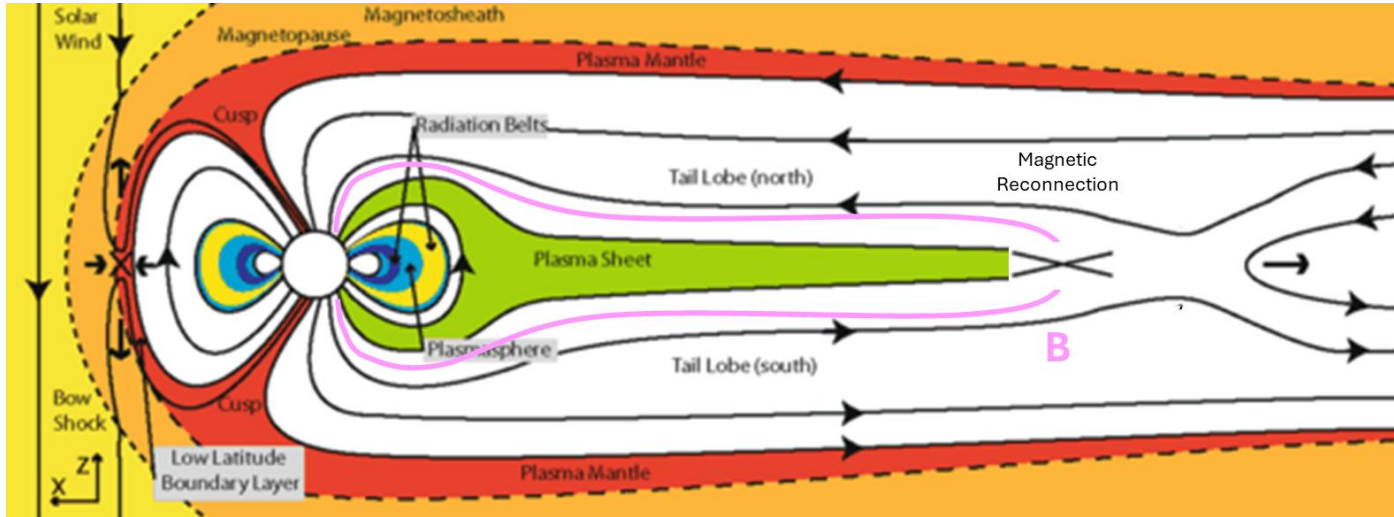


# Poollicht boven België – 19 januari 2026



Credits: Jonas Piontek - <https://www.youtube.com/watch?v=MxM-h5pU9mE> ; STCE newsitem: <https://www.stce.be/news/802/welcome.html>

# Poollicht in België – Proton aurora



# Poollicht boven België – 19 januari 2026



*Thomas Lecocq*



*Jan Janssens*



*Jennifer O'Hara*



*Thomas Lecocq*

# Poollicht boven Nederland – 19 januari 2026



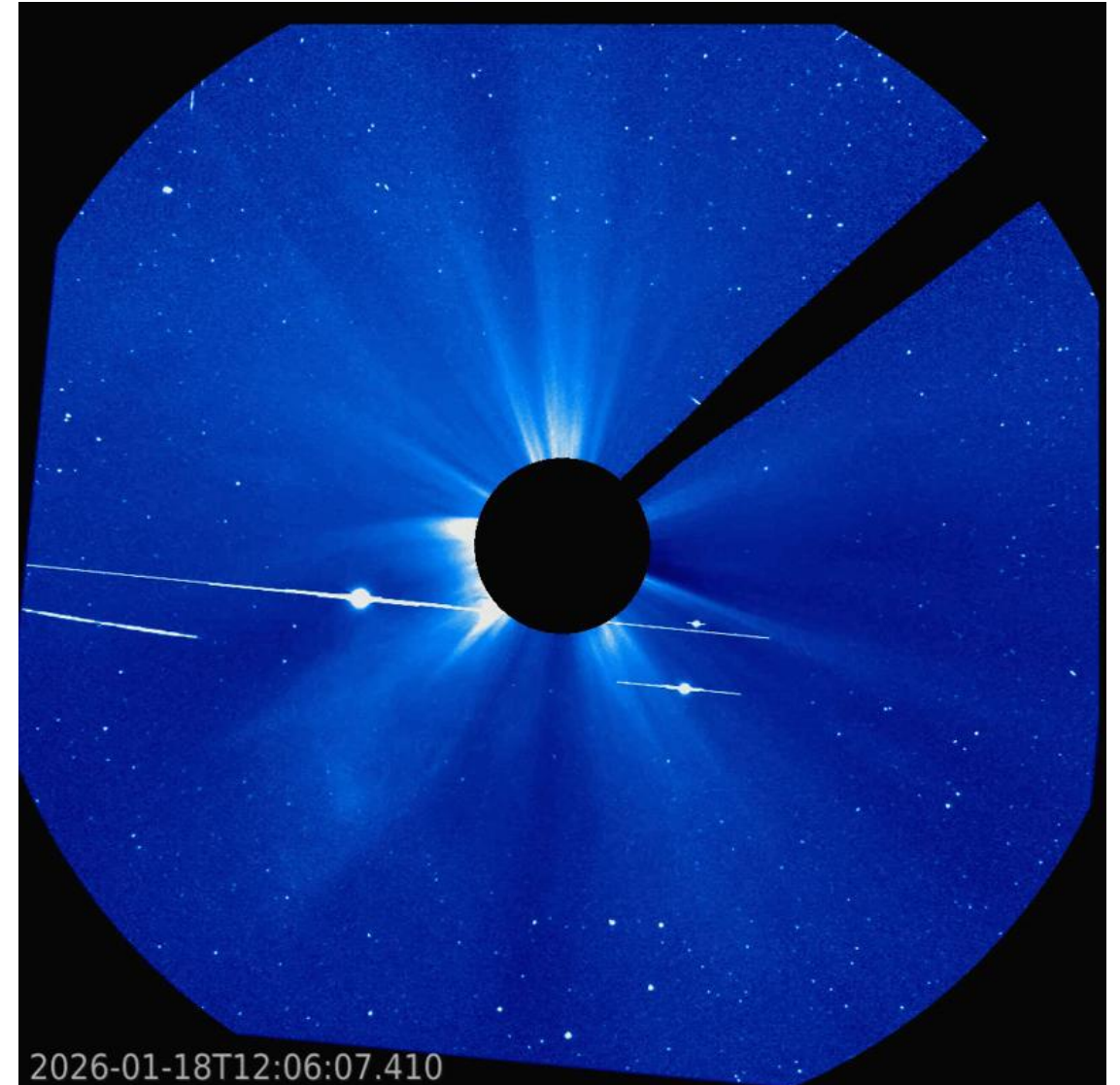
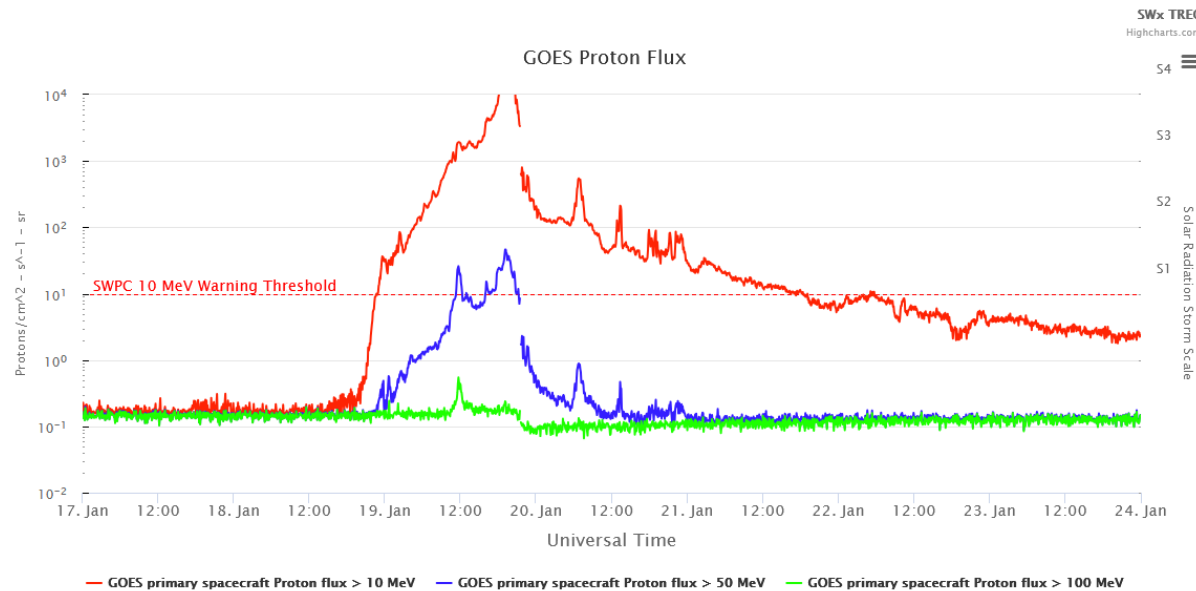
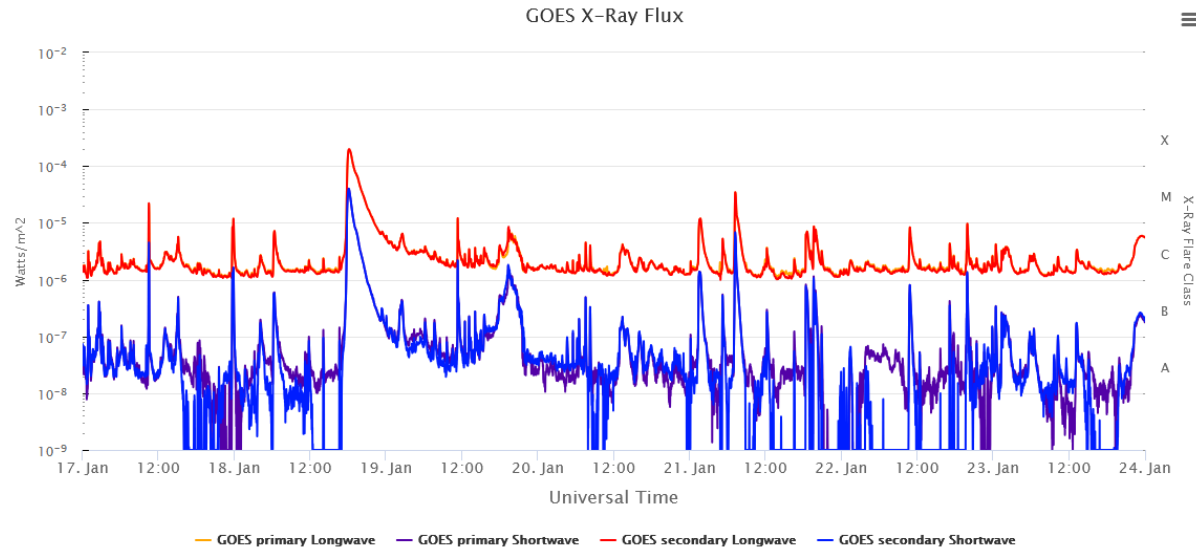
Credits: Samantha Filoso on January 19, 2026 @ Veldhoven, Netherlands



Credits: Richard on January 19, 2026 @ Geleen, Netherlands

<https://spaceweathergallery2.com/index.php?title=aurora>

# Laatste verrassing: Zware proton storm



# Zwaarste proton storm in 20-35 jaar

## NOAA Space Weather Prediction Center

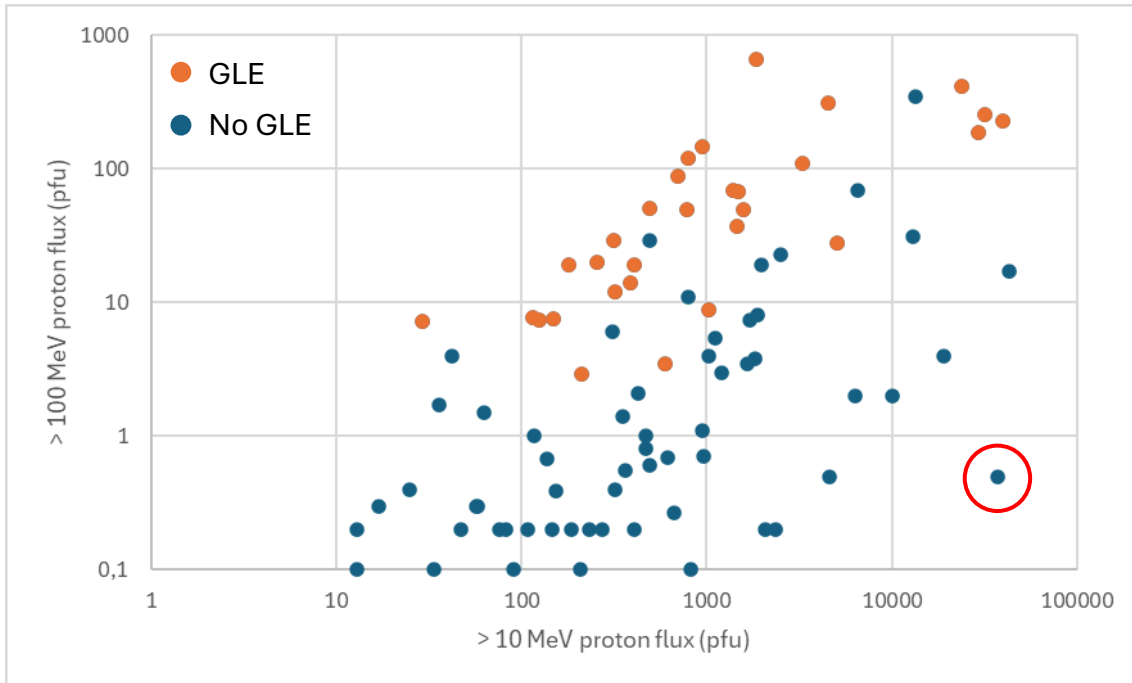
### Solar Proton Events Affecting the Earth Environment

1976 - Present

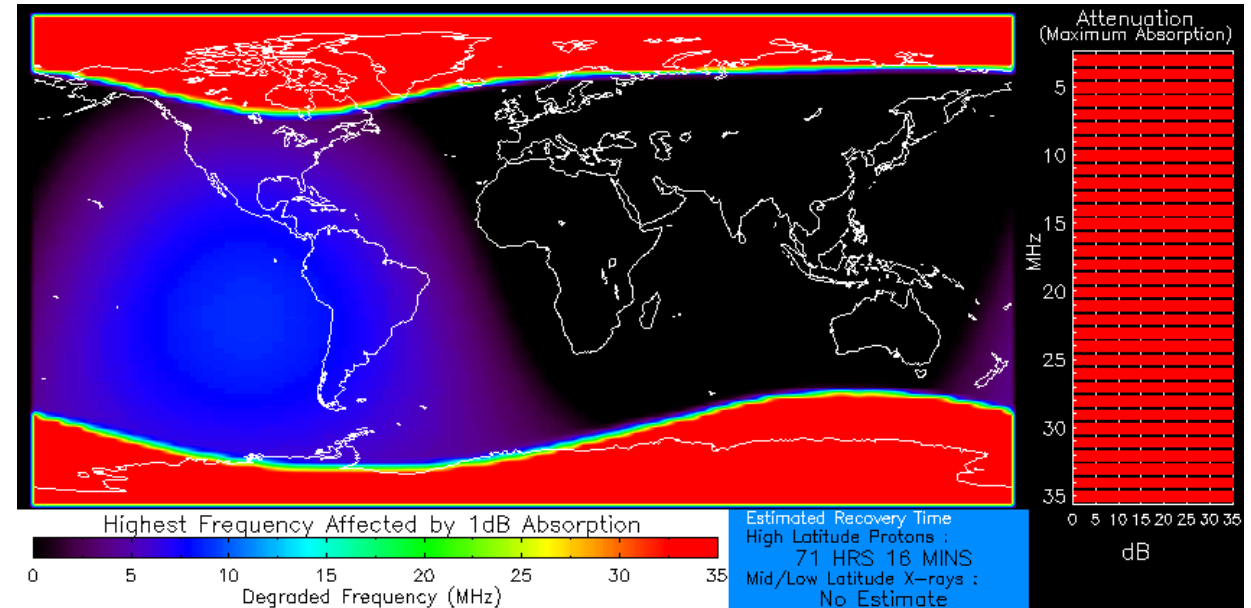
Search for year...  Clear search 1809

Begin Time Yr M/D (UTC)	Maximum Time Yr M/D (UTC)	>10 MeV Maximum (pfu) ▲▼	Region	Location	Flare Maximum (UTC)	Type II Radio Emission	Type IV	Linear Speed ▲▼	Imagery/Misc
1991 03/23 0820	1991 03/24 0350	43,500	6555	S26E28	X9/3B 03/22 2246	Yes	No	N/A	N/A
1989 10/19 1310	1989 10/20 1600	42,200	5747	S27E10	X13/4B 10/19 1306	Yes	Yes	N/A	N/A
2026 01/18 2255	2026 01/19 1915	37,000	14341	S11E24	<a href="#">X1.9/3B 01/18 1809</a>	Yes	Yes	ESP enhanced at CME arrival	<a href="#">Flux Plot</a>
2001 11/04 1705	2001 11/06 0215	31,700	9684	N06W18	X1/3B 11/04 1620	Yes	Yes	1329 km/s	<a href="#">C2</a>
2003 10/28 1215	2003 10/29 0615	29,500	10486	S16E08	X17/4B 10/28 1110	Yes	Yes	2459 km/s	<a href="#">C2 EIT</a>
2000 07/14 1045	2000 07/15 1230	24,000	9077	N22W07	X5/3B 07/14 1024	Yes	Yes	1674 km/s	<a href="#">C2 EIT</a>

# Zware proton storm: vooral HF Com boven polen



*GLE: Ground Level Enhancement*

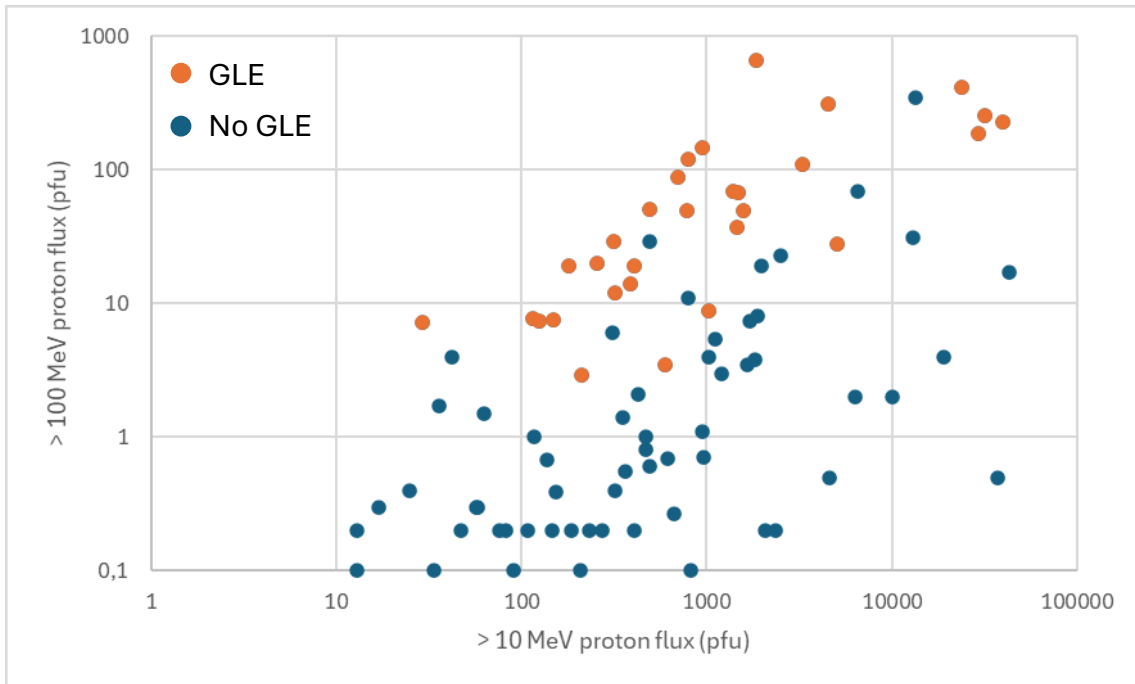


Elevated X-ray flux  
Product Valid At : 2026-01-19 18:43 UTC

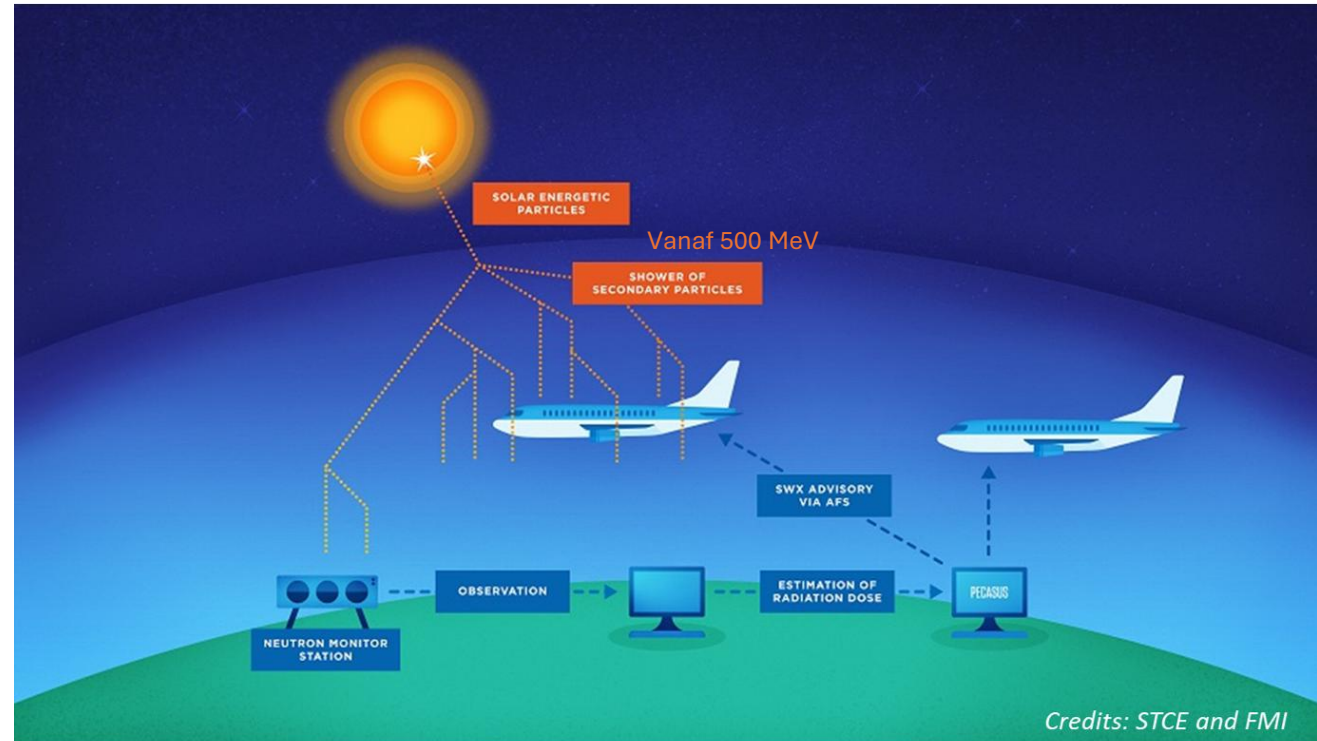
Severe Proton Flux  
NOAA/SWPC Boulder, CO USA

<https://www.swpc.noaa.gov/products/d-region-absorption-predictions-d-rap>

# Zware proton storm: lage extra stralingsdosis



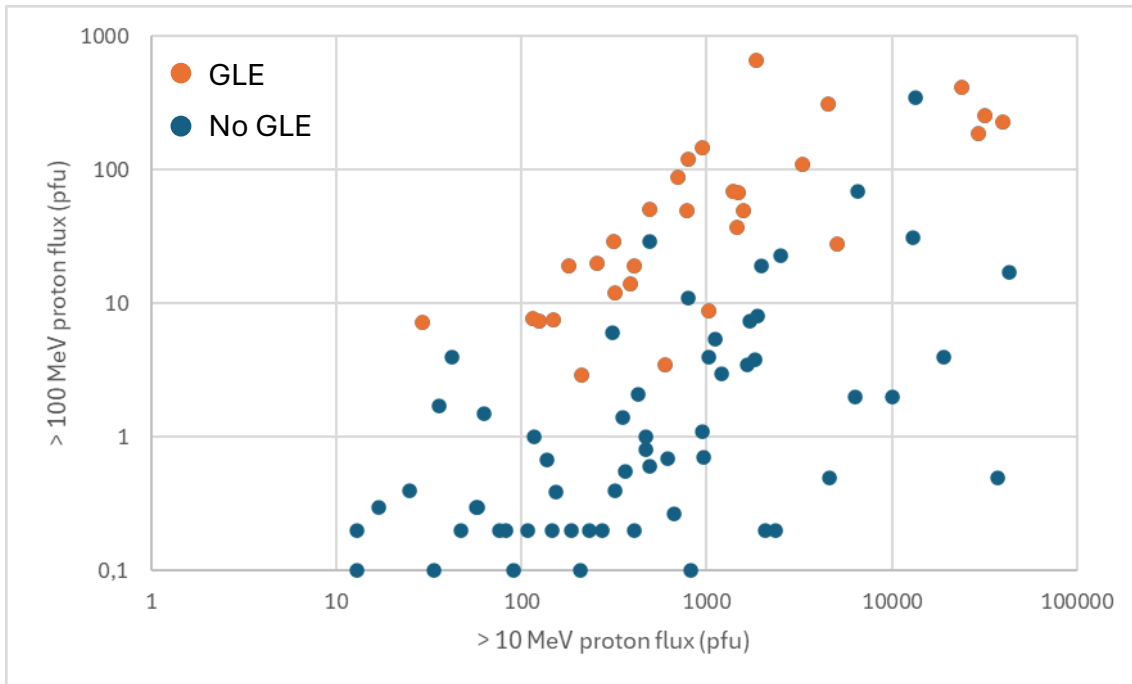
*GLE: Ground Level Enhancement*



*Credits: STCE and FMI*

<https://www.stce.be/news/797/welcome.html>

# Zware proton storm: lage extra stralingsdosis



*GLE: Ground Level Enhancement*

Federated products from the **Seibersdorf Laboratories (SL)**

**AVIDOS**  
AVIATION DOSIMETRY

SEIBERSDORF  
LABORATORIES

### FLIGHT PLANNER

17.01.2026 17:19 (UTC)

KLGA, LGA | La Guardia Airport      VHHH, HKG | Hong Kong International Airport

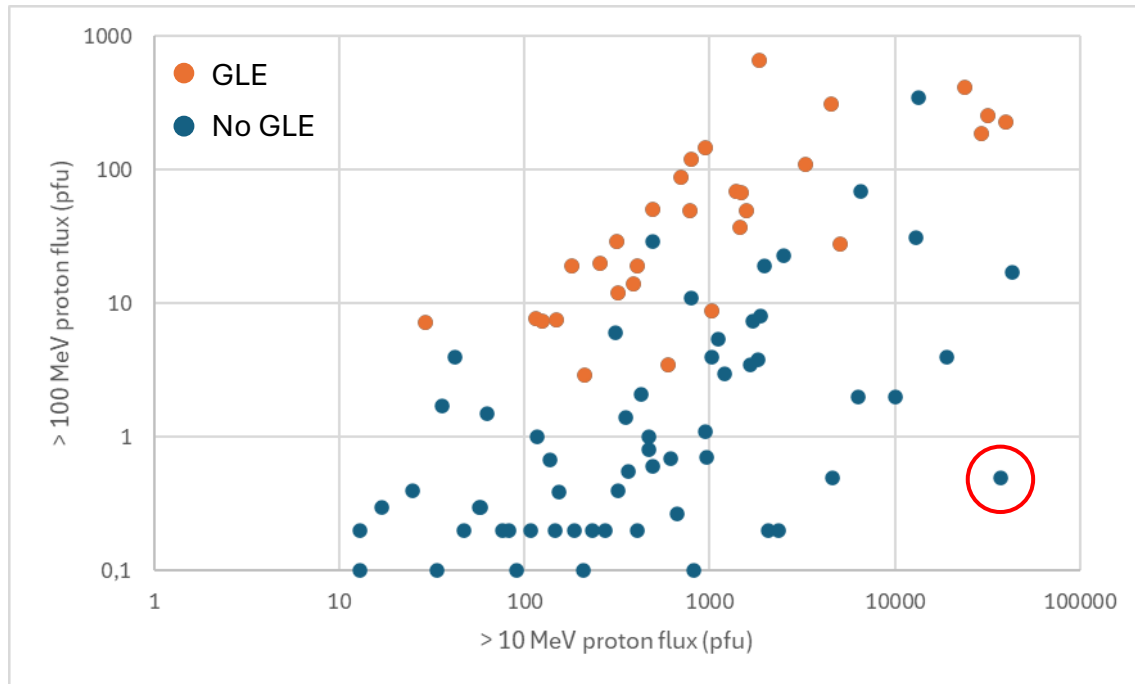
Calculate

49  $\mu\text{Sv}$   
7  
Days On Ground 2400  
Effective Dose

[AVIDOS v3.1] Calculation successful.      No >500MeV SEP event is expected.      GLE Status: QUIET

<https://swe.ssa.esa.int/web/guest/avidos-federated>

# Zware proton storm: lage extra stralingsdosis



*GLE: Ground Level Enhancement*

Federated products from the Seibersdorf Laboratories (SL)

**AVIDOS**  
AVIATION DOSIMETRY

SEIBERSDORF  
LABORATORIES

### FLIGHT PLANNER

19.01.2026 13:00 (UTC)

KLGA, LGA | La Guardia Airport      VHHH, HKG | Hong Kong International Airport

Calculate

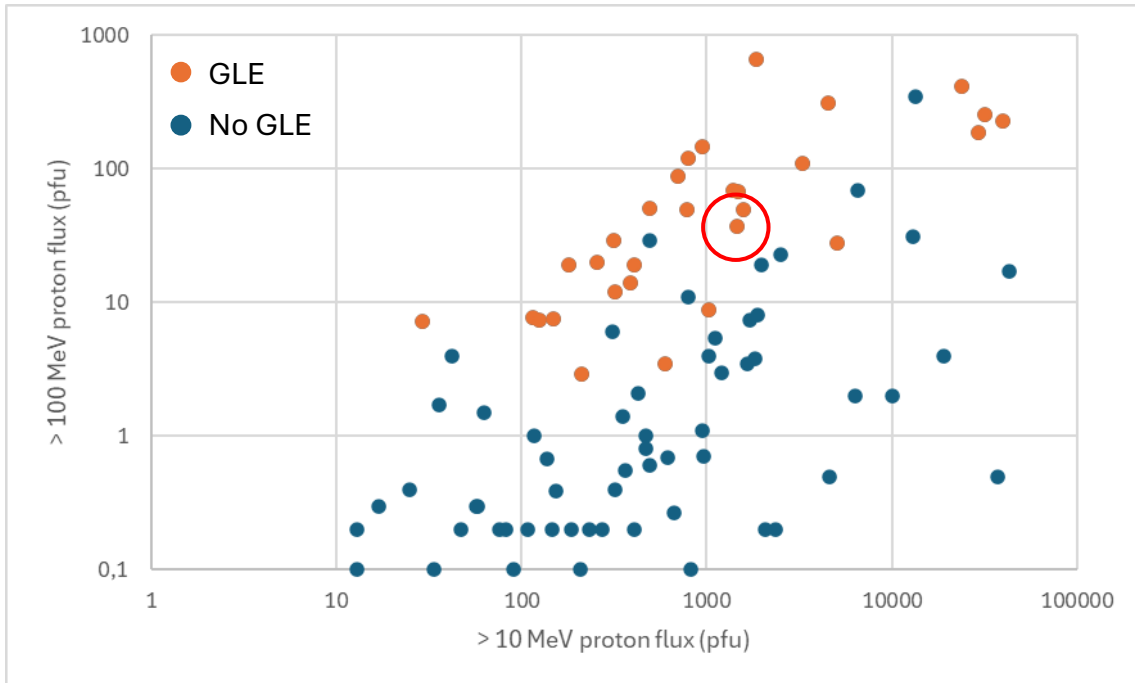
49  $\mu$ Sv  
7  
Days On Ground 2400  
Effective Dose

[AVIDOS v3.1] Calculation successful.      No >500MeV SEP event is expected.      GLE Status 19:19 (UTC)      QUIET

<https://swe.ssa.esa.int/web/guest/avidos-federated>

# Zware proton storm: GLE 11 november 2025

Federated products from the Seibersdorf Laboratories (SL)

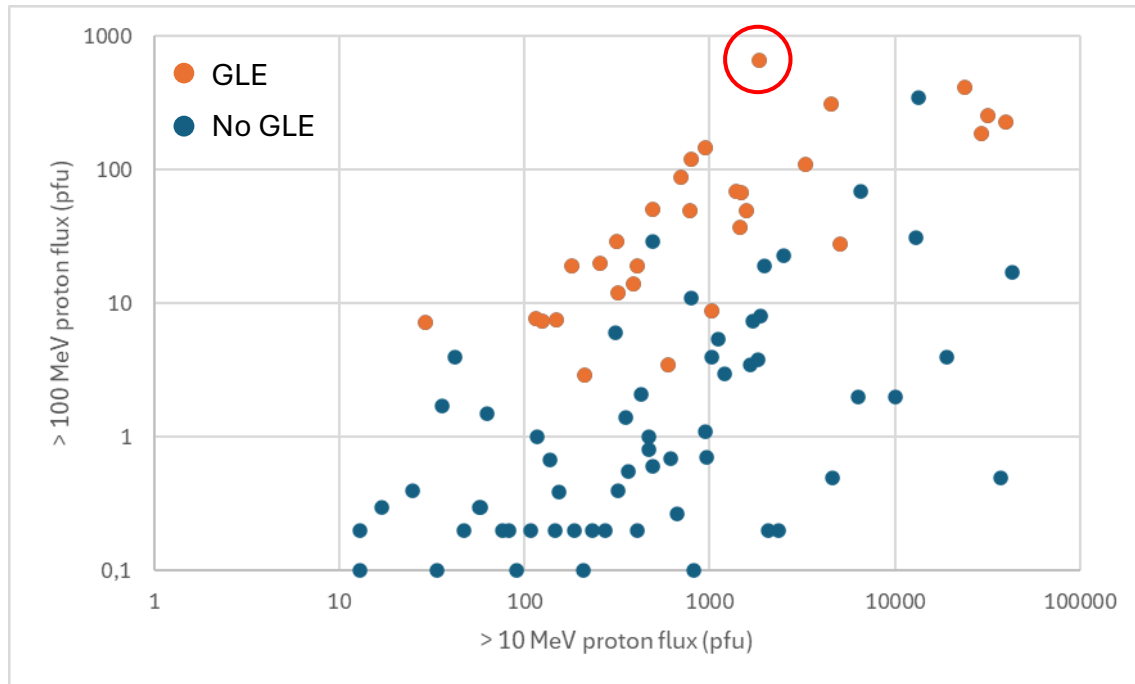


*GLE: Ground Level Enhancement*

The screenshot displays the AVIDOS Flight Planner interface. At the top, it shows the date and time: 11.11.2025 08:00 (UTC). The flight route is from KLGA, LGA | La Guardia Airport to VHHH, HKG | Hong Kong International Airport. A 'Calculate' button is visible. On the right, a circular gauge displays the current radiation dose rate as 187 µSv, with a 'Days On Ground Effective Dose' of 29. The gauge also shows a minimum dose rate of 74 and a maximum of 301. Below the gauge is a world map with a yellow line indicating the flight path from North America to East Asia. At the bottom, a status bar indicates: [AVIDOS v3.1] Calculation successful., No >500MeV SEP event is expected., GLE Status 16:03 (UTC), and QUIET.

<https://swe.ssa.esa.int/web/guest/avidos-federated>

# Zware proton storm: GLE 20 januari 2005



*GLE: Ground Level Enhancement*

Federated products from the Seibersdorf Laboratories (SL)

The screenshot shows the AVIDOS Aviation Dosimetry software interface. At the top, it says 'Federated products from the Seibersdorf Laboratories (SL)'. The main interface is divided into several sections: a 'FLIGHT PLANNER' section with a date and time selector (20.01.2005 05:00 (UTC)), airport selection (KLGA, LGA | La Guardia Airport and VHHH, HKG | Hong Kong International Airport), and a 'Calculate' button; a circular gauge showing 'Effective Dose' (380 µSv) and 'Days On Ground' (58); and a world map with a yellow flight path from the US to Asia. The bottom status bar indicates 'No >500MeV SEP event is expected.' and 'GLE Status: 17:35 (UTC) QUIET'.

<https://swe.ssa.esa.int/web/guest/avidos-federated>



# Vragen?



<https://200year.observatory.be/nl/home2>