

STCE Newsletter

3 Aug 2026 - 9 Aug 2026



Published by the STCE - this issue : 14 Aug 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.

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1. Science captured in a total solar eclipse image

August 12 2026, a date to remember.

People in the zone of totality and on a place where clouds were not blocking the sun's view, could witness a magnificent solar eclipse uplighting the corona.

What can you learn by simply watching a total solar eclipse?

1) The atmosphere of the Sun is structured. Lines become visible, there are areas which appear dark. What you see are magnetic structures made visible by the plasma which sticks to it. Like if the magnetic field is painted with plasma. Dark areas are linked with coronal holes.

2) The solar atmosphere must be extremely hot. It is very much puffed compared with for example the Earth's atmosphere. You see the solar atmosphere reaching out to several solar radii, while Earth's atmosphere is only a thin layer around the globe. This is only possible when the plasma present is very, very hot.

3) If you would compare total solar eclipse images over the years, you would see that the corona changes. This change happens on the rhythm of the solar cycle. In a solar minimum, you would see a nice dipole, while in solar maximum, complicated loop-structures near the solar surface in the proximity of the solar equator are present. These are active regions. Active regions near the limb that reach high enough can be seen in a total solar eclipse image.

Simply watching is indeed a way to do research.

Why is the low corona, the part visible during total solar eclipses important?

It is the birthplace of the solar wind and solar storms.

It is there that the solar wind accelerates. From a few solar radii, the solar wind goes from sub-sonic to super-sonic. This is faster than the typical magneto-acoustic plasma waves. The solar wind is in essence an expanding plasma. The plasma is so hot that it needs to expand according to the laws of physics. This expansion happens radially, away from its source, the Sun, into space. There is no other option for the plasma than to expand radially. On its trip through the heliosphere, it blows over planets and debris. One of the planets is Earth.

It is there that blobs of plasma can escape from the Sun by disconnecting from their magnetic strings that ties them to the Sun. While escaping, they accelerate. Those blobs are Coronal Mass Ejections which can disturb magnetic structures while smashing in on them. One of those magnetic structures is the magnetic field of Earth.

It is possible, although the change is small, that one might catch a plasma blob escaping during a solar eclipse.



Total solar eclipse image by Nikolay Britavskiy.

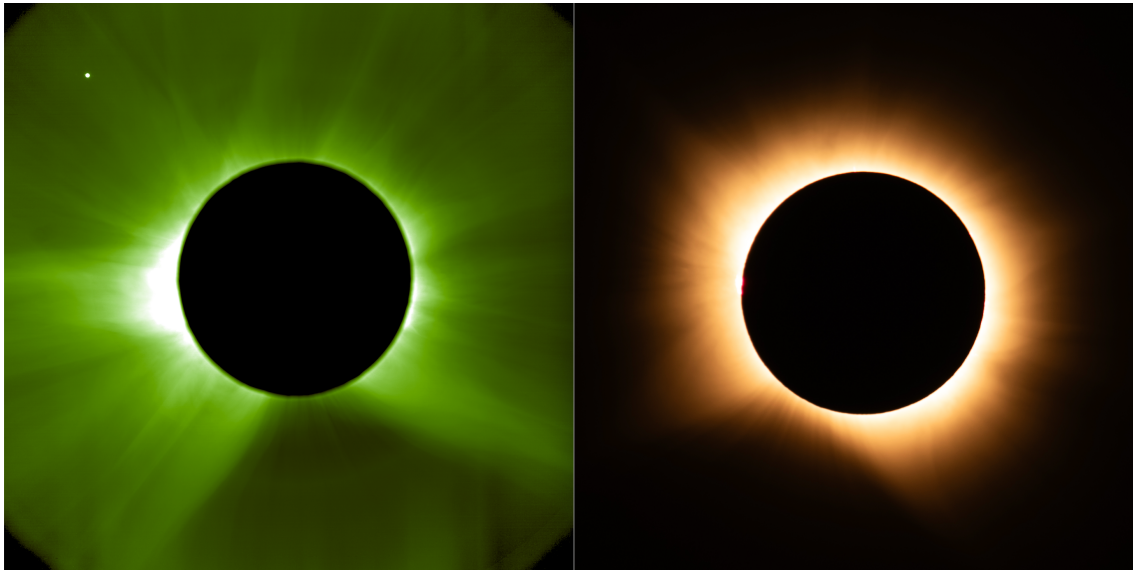


Partial solar eclipse by Emil Kraaikamp: 'The animation is from a few handheld shots with a camera with eclipse glasses in front; it's wobbly, because I did not keep the horizon straight.'

2. ASPIICS preview versus 12 Aug view

The coronagraph ASPIICS onboard Proba-3 photographed the solar atmosphere on July 30. Between July 30 and August 12, the Sun rotated 180 degrees. Since we know that the large-scale magnetic structures in the solar atmosphere will change very little during that period, this image is the mirror image of what we expected to see on August 12.

Do you see the similarities?



Left: Proba-3/ASPIICS on July 30, 2026 (ESA-story: https://www.esa.int/Enabling_Support/Space_Engineering_Technology/How_ESA_mimics_and_models_the_2026_total_solar_eclipse)
 Right: Total eclipse seen from Léon, Spain on Aug 12, 2026 (https://en.wikipedia.org/wiki/Solar_eclipse_of_August_12,_2026)

3. Eclipse viewing in Humain

Wednesday, August 12, 2026 at the radio astronomy station in Humain, Belgium: some impressions.



4. Word Search

This puzzle is a word search puzzle that has a hidden message in it. The theme is "Solar Eclipse". First find all the words in the list. Words can go in any direction and share letters as well as cross over each

other. Once you have found all the words, copy the unused letters starting in the top left corner into the blanks to reveal the hidden message (1 word, 8 letters). This puzzle was created with the Discovery Education online tool at <https://puzzlemaker.discoveryeducation.com/>

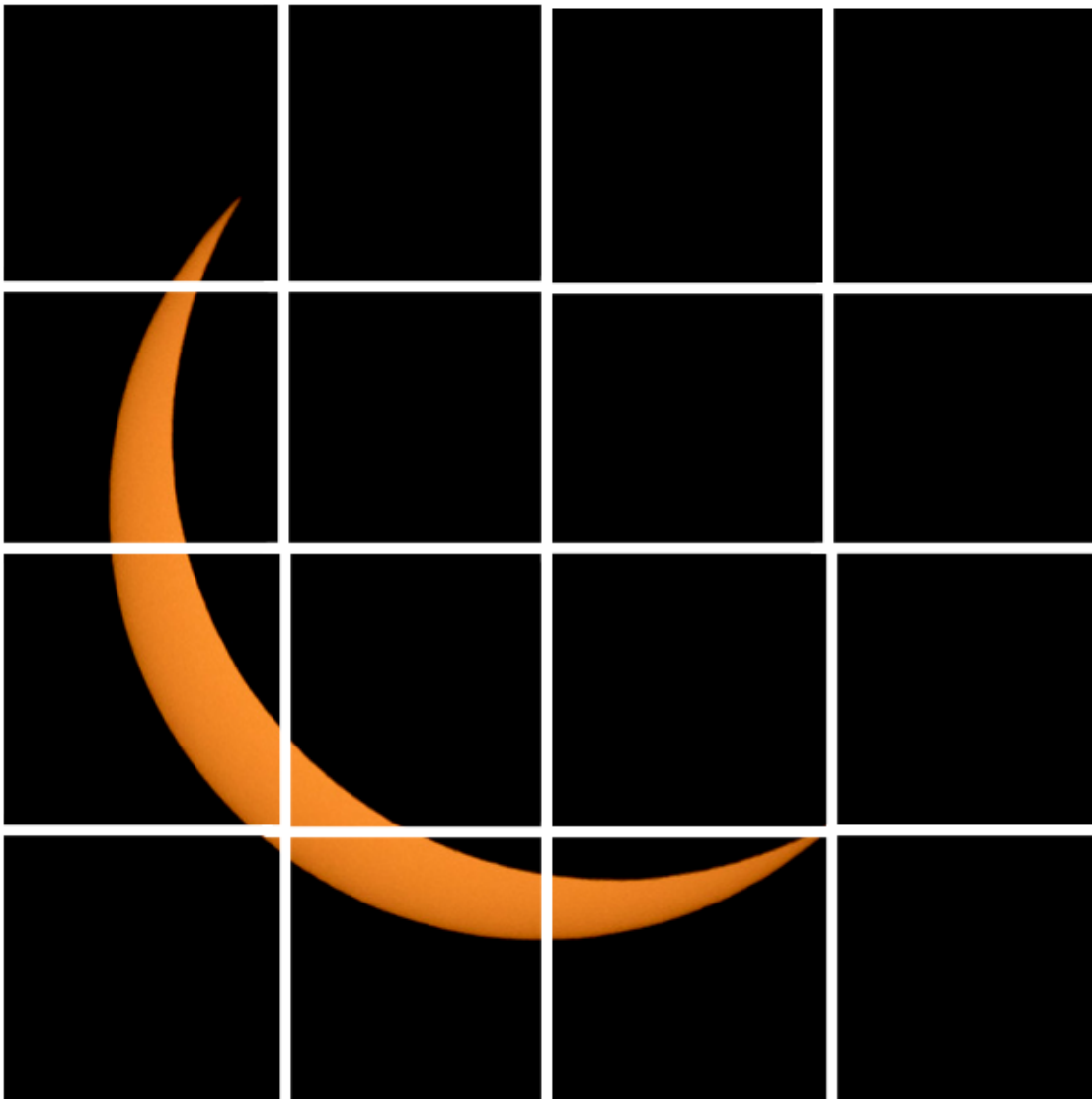
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T L P I E N O U C M B B P R N A O
O A A L K R E O H A Q R T O N M H
T N K I B S N Y I A O H I N J M O
A U C I T T W L E M L T U X A A S
L S T O A R Y O I S A L E H O G O
I C C C R S A N K R A T E S Z G B
T M T E B O E P U R S F H Y N T S
Y P A E N N N N D S M E A E I Y N C
Z D A G C T E A O T D B R T V E U
I D G E N L R O B O O D S P Y C R
S S N H O I N A W O N P I L U S A
G M O H T Y T B L O R A S A X E T
G S N R G R A U M P P P Q N I R I
N I B Y A N A A D K A T H E U C O
P A Z N D S I E U E I T V T S S N
N Y A S G D A R E M A C H S I Z N
S F X U U A R B M U D I R B Y H E

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ANNULAR	BAILYSBEADS	BERKOWSKI
CAMERA	CENTRALPATH	CONTACT
CORONA	CRESCENT	DIAMONDRING
DURATION	EARTH	EYESAFETY
GAMMA	HALLEY	HYBRID
MAGNITUDE	MOON	NODES
OBSCURATION	ORBIT	PARTIAL
PINHOLE	PLANETS	PROBA
PROMINENCE	SAROS	SHADOWBANDS
SOHO	SUN	SUNSPOTS
SYZYG	TOTALITY	UMBRA

Hidden message: _ _ _ _ _



5. Review of space weather

Solar Active Regions (ARs) and flares

Solar flaring activity was low to very low throughout the week. SIDC Sunspot Group 927 (NOAA Active Region 4498) was the most magnetically complex region early in the week, with a Beta-Delta configuration and gradually decayed during the week. Other active regions were simple and either stable or in decay. Several regions rotated onto off the visible disk during the week. By August 09, only two numbered regions remained on the disk, both were simple and quiet. On August 09, a new region emerged near the north-west limb and produced low-level c-class flares.

Coronal mass ejections

Two Coronal Mass Ejections (CMEs) were observed with possible Earth directed components. The first was a CME on August 04, directed to the north-west in SOHO/LASCO-C2 data from 12:00 UTC (SIDC CME 703) and was associated with a dimming near SIDC Sunspot Group 927 (NOAA Active Region

4498). On August 08, a filament erupted in the north-west quadrant resulting in a CME to the north-west in LASCO-C2 data from 03:24 UTC August 08 (SIDC CME 705).

Coronal Holes

SIDC Coronal Hole 171, a small mid-latitude coronal hole with negative polarity, began crossing the central meridian on August 05. On August 08, two coronal holes began transiting the central meridian: SIDC Coronal Hole 177, an equatorial coronal hole with positive polarity, and SIDC Coronal Hole 162, a mid-latitude coronal hole with negative polarity.

Proton flux levels

The greater than 10 MeV proton flux remained below the 10 pfu threshold throughout the week.

Electron fluxes at GEO

The greater than 2 MeV electron flux remained below the 1000 pfu threshold throughout the week. Electron fluence remained at normal levels.

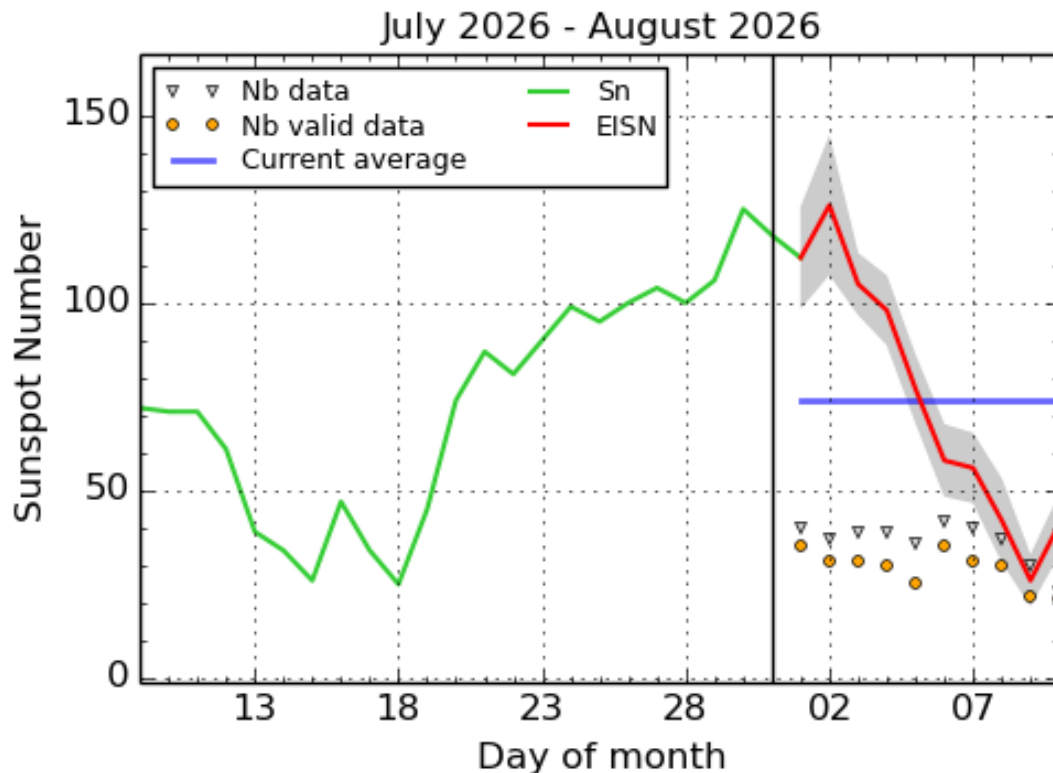
Solar wind

The week began under the waning influence of an ICME that had arrived on August 02. On August 03, the magnetic field and solar wind slowly decreased from a maximum of 21.5 nT and 430 km/s, respectively. Between August 05 and 07, conditions were predominantly characterised by slow solar wind regime. On August 08, an ICME arrived around 05:50 UTC, likely associated with SIDC CME 703. The magnetic-field strength increased to nearly 19 nT at this time and remained around 15 to 17 nT for much of August 09 before decreasing to around 6 nT. Bz reached -17 nT. The solar-wind speed gradually increased from approximately 330 km/s on August 08 and continued to increase to 440 km/s on August 09.

Geomagnetism

On August 03 to 04, conditions remained unsettled to active following the ICME arrival of August 02, with NOAA Kp values between 2 and 4. Conditions were quiet on August 05 to 07, with NOAA Kp and K_{Be} generally between 1 and 2. Activity increased again on August 08, reaching moderate storm levels (NOAA Kp 6-), with minor storm conditions locally (K_{Be} 5) due to the ICME arrival.

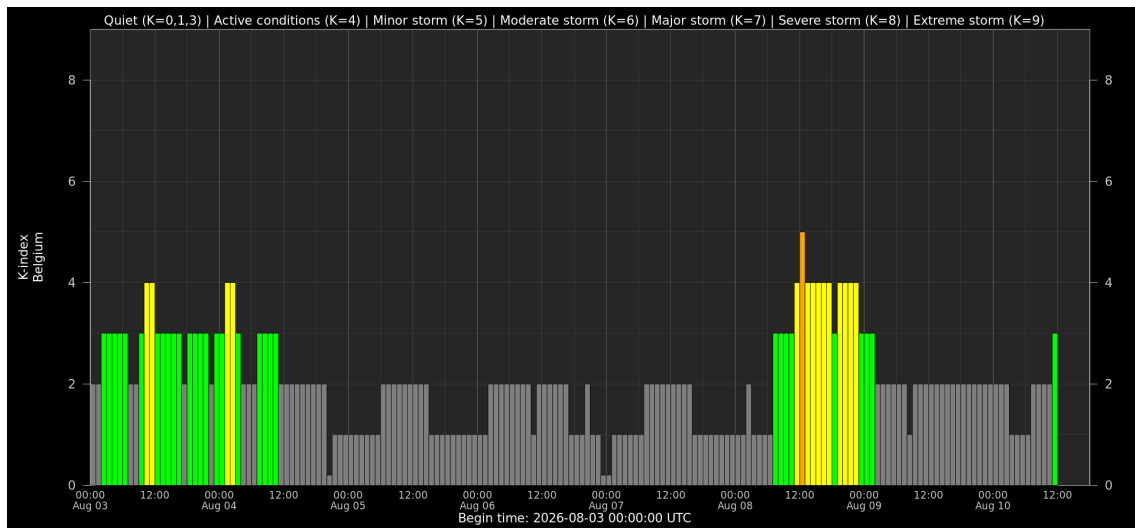
6. International Sunspot Number by SILSO



SILSO graphics (<http://sidc.be/silso>) Royal Observatory of Belgium, 2026 August 10

The daily Estimated International Sunspot Number (EISN, red curve with shaded error) derived by a simplified method from real-time data from the worldwide SILSO network. It extends the official Sunspot Number from the full processing of the preceding month (green line), a few days more than one solar rotation. The horizontal blue line shows the current monthly average. The yellow dots give the number of stations that provided valid data. Valid data are used to calculate the EISN. The triangle gives the number of stations providing data. When a triangle and a yellow dot coincide, it means that all the data is used to calculate the EISN of that day.

7. Geomagnetic Observations in Belgium



Local K-type magnetic activity index for Belgium based on data from Dourbes (DOU) and Manhay (MAB). Comparing the data from both measurement stations allows to reliably remove outliers from the magnetic data. At the same time the operational service availability is improved: whenever data from one observatory is not available, the single-station index obtained from the other can be used as a fallback system.

Both the two-station index and the single station indices are available here: http://ionosphere.meteo.be/geomagnetism/K_BEL/

8. The SIDC Space Weather Briefing

The forecaster on duty presented the SIDC briefing that gives an overview of space weather from August 3 to 9.

The pdf of the presentation: https://www.stce.be/briefings/20260810_SWbriefing.pdf

SIDC Space Weather Briefing

03 August 2026-09 August 2026

Jennifer O'Hara

& the SIDC forecaster team



Solar Influences
Data analysis Centre
www.sidc.be

9. Upcoming Activities

Courses, seminars and events with the Sun-Space-Earth system and Space Weather as the main theme. We provide occasions to get submerged in our world through educational, informative and instructive activities.

* Sep 3, 2026, Watching the Sun: a 200-year journey, guided tour Solar Physics, Ukkel, Belgium - register <https://events.spacepole.be/category/2/>

* Sep 26-27, 2026, Opendoors Space Pole, Ukkel, Belgium

* Oct 12-14, 2026, STCE Space Weather Introductory Course, Brussels, Belgium - register: <https://events.spacepole.be/event/257/> - Fully booked

* Oct 15, 2026, Post Space Weather Introductory Course, Brussels, Belgium - register: <https://events.spacepole.be/event/286/>

* Oct 29- Nov 1, 2026, Prior to ESWW2026 - Space Weather Training Course in Firenze, Italy - Applications closed

* Nov 2-6, 2026, European Space Weather Week, Florence, Italy, <https://esww2026.eswan.eu/>

* Nov 23-25, 2026, STCE course: Role of the ionosphere and space weather in military communications, Brussels, Belgium - register: <https://events.spacepole.be/event/259/>

* Dec 7-9, 2026, STCE Space Weather Introductory Course for Aviation, Brussels, Belgium - register: <https://events.spacepole.be/event/262/>

To register for a course and check the seminar details, navigate to the STCE Space Weather Education Center: <https://www.stce.be/SWEC>

If you want your event in the STCE newsletter, contact us: stce_coordination@stce.be



Space Weather Education Centre