

STCE Newsletter

28 Sep 2026 - 4 Oct 2026



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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.

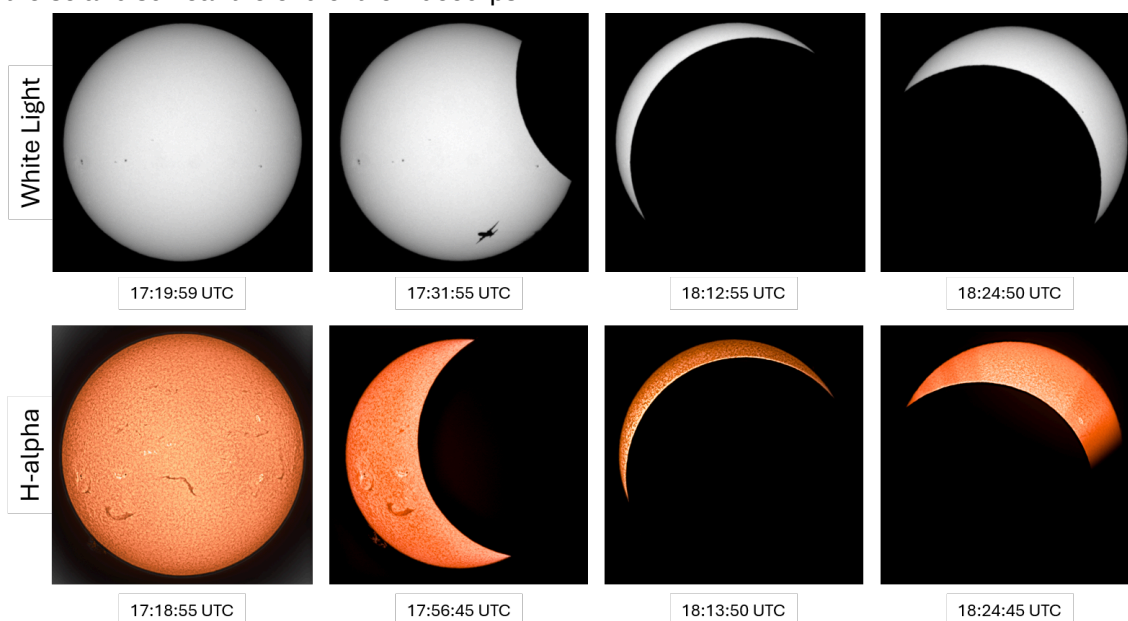
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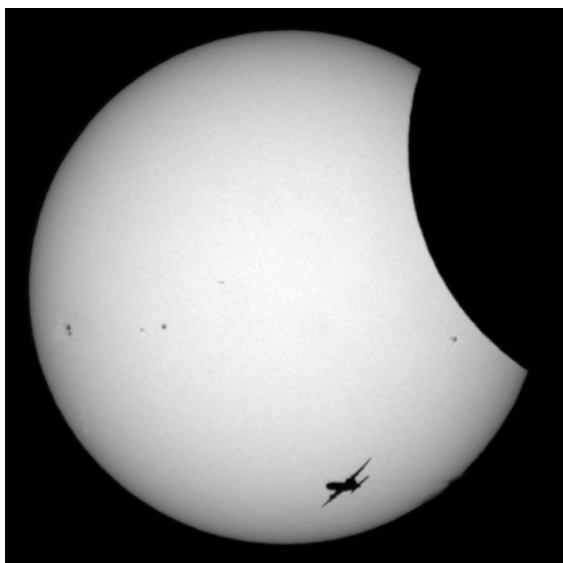
1. The solar eclipse of 12 August

The USET station -the "Uccle Solar Equatorial Table <https://www.sidc.be/uset/>"- of the Royal Observatory in Uccle (Belgium) monitors solar activity by recording full-disc images of the Sun in three wavelengths. One of its telescopes shows the solar surface in white light, while the other two are equipped with narrow band-pass filters to capture the chromosphere (the Sun's inner atmosphere) in the H-alpha line (656.3 nm) and the Ca II K line (393.3 nm).

On August 12th, the station captured a partial solar eclipse. It was the largest solar eclipse visible in Belgium since the total solar eclipse of 1999. For Uccle, a maximum of 91.1% of the solar diameter was covered by the Moon, with the full solar diameter taken as 100%. The Moon began to cover the Sun at 17:18:53 UTC, and maximum coverage occurred at 18:13:41 UTC. The eclipse ended after sunset, so the final phase was not observed from Uccle. The last images were taken at 18:24 UTC. The stills underneath show some key moments of the evolution of the eclipse in white light (top) and H-alpha (bottom). Two videoclips of the eclipse are also available in the online version of this newsitem at <https://www.stce.be/news/837/welcome.html> Buildings and trees near the observatory are hiding a portion of the solar disc near the end of the videoclips.



In H-alpha, a beautiful prominence was visible at the east limb (lower left), while in white light an airplane was captured passing in front of the solar disc during the eclipse. These images are highlighted underneath. The dark spots that can be seen in white light are sunspots, local disturbances of the magnetic field at the solar surface. The reddish colour in the H-alpha images reflects better what can be seen in a typical H-alpha telescope. The dark lines that can be seen are filaments (see images above), and over the lower left solar limb a relatively large prominence can be seen. Solar filaments are clouds of charged particles ("plasma") above the solar surface squeezed between magnetic regions of opposite polarity. Being cooler and denser than the plasma underneath and their surroundings, they appear as dark lines when seen on the solar disc and as bright blobs when seen near the solar limb (then they are called "prominences"). Special filters are required to observe these features, and one such a filter is the Hydrogen-alpha (H-alpha) line in the red part of the solar spectrum.



17:31:55 UTC



18:11:30 UTC

And just to get even more in the "mood", the image underneath was taken by Thomas Lecocq. It shows the setting of the still partially eclipsed Sun as seen from the radioastronomy station in Humain (see this STCE newsitem at <https://www.stce.be/content/eclipse-observations-humain> and the 14 August STCE Newsletter <https://www.stce.be/newsletter/pdf/2026/STCEnews20260814.pdf>). One can easily recognize the main big radio telescope (to the right - <https://www.sidc.be/humain/home>) as well as a few of (the tops of) the smaller SPADE telescopes (<https://www.stce.be/content/first-solar-observations-spade>).



Copyright: Thomas Lecocq

Credits

The USET eclipse images and videoclips were taken by Joan Vandekerckhove and Olivier Boulvin. Sabrina Bechet contributed to the text for this newsitem. Thomas Lecocq has the rights on the eclipse image taken from the Humain radioastronomy station.

2. PROBA2 Observations (28 Sep 2026 - 4 Oct 2026)

Solar Activity

Solar flare activity fluctuated from very low to low during the week.

In order to view the activity of this week in more detail, we suggest to go to the following website from which all the daily (normal and difference) movies can be accessed: <https://proba2.oma.be/ssa>

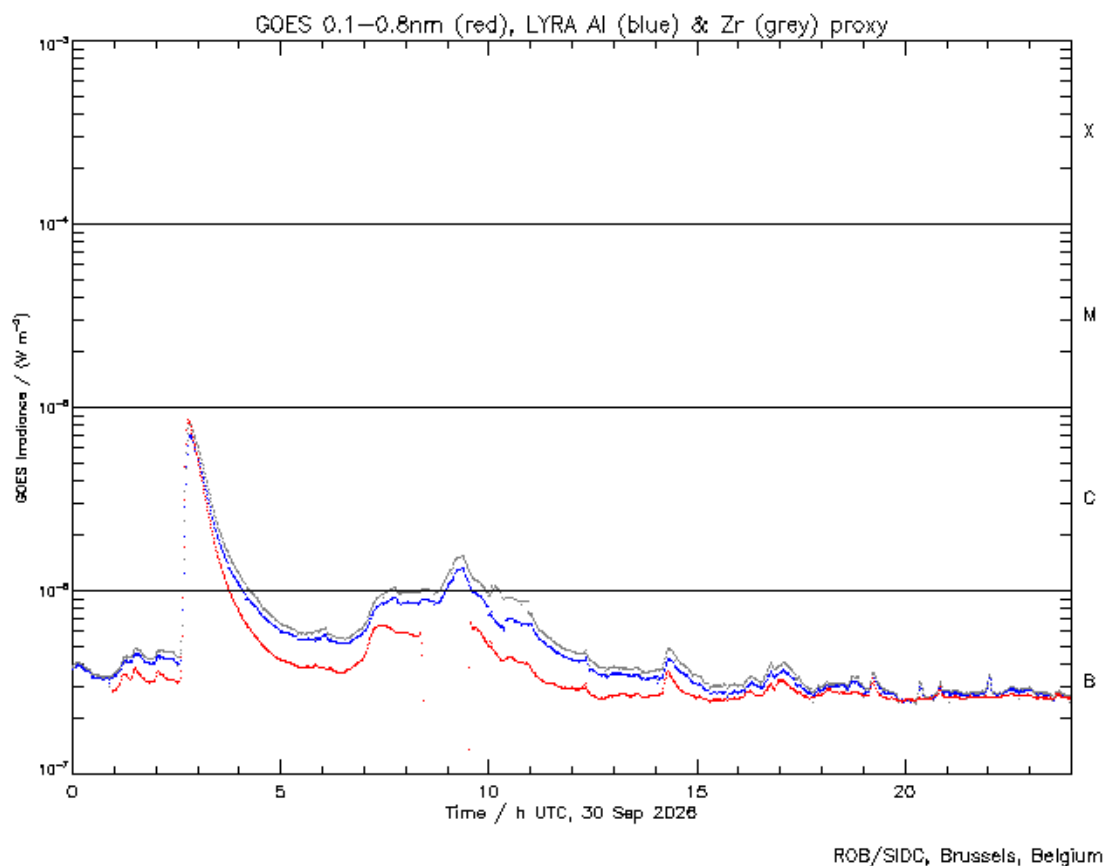
This page also lists the recorded flaring events.

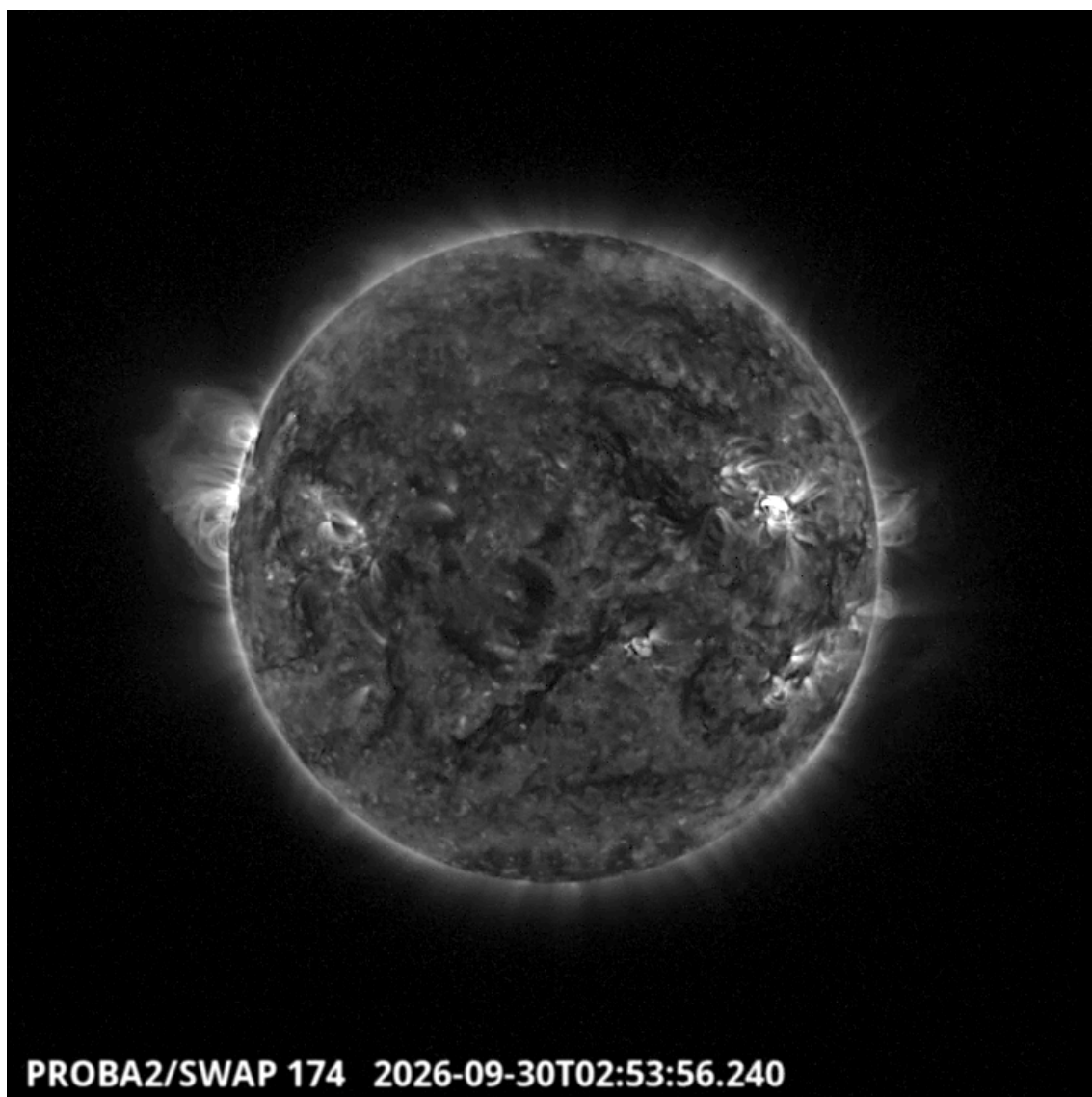
A weekly overview movie (SWAP week 862) can be found here: https://proba2.sidc.be/swap/data/mpg/movies/weekly_movies/weekly_movie_2026_09_28.mp4.

Details about some of this week's events can be found further below.

If any of the linked movies are unavailable they can be found in the P2SC movie repository here: <https://proba2.oma.be/swap/data/mpg/movies/>.

Wednesday September 30





The largest flare of this week was a C8.6, and it was observed by LYRA (top panel) and SWAP (bottom panel). The flare peaked on 2026-Sep-30 at 02:46 UT and occurred in the north-western quadrant of the Sun, originating from active region NOAA4535 (SIDC 962). The event was associated with a narrow coronal mass ejection with a speed of ~400km/s, as well as type II and type IV radio emissions. Find a SWAP movie of the event here: https://proba2.sidc.be/swap/movies/20260930_swap_movie.mp4.

3. Review of Solar and Geomagnetic Activity

Solar Active Regions (ARs) and flares

The solar flaring activity was very low to low. Nine numbered active regions on the visible solar disk produced 8 C-class flares. The largest was a C8.6 flare (SIDC Flare 8631) peaking on Sep 30 at 02:46 UTC originating from SIDC Sunspot Group 962 (NOAA Active Region 4535). During the flare, the photospheric magnetic field of SIDC Sunspot Group 962 had beta-gamma configuration.

Coronal mass ejections

A partial halo coronal mass ejection (SIDC CME 722) was observed in SOHO/LASCO-C2 images on 14:36 UTC, Sep 28. It was associated with a filament eruption on the W hemisphere of the Sun, post eruptive EUV arcades and a coronal dimming. This CME had an angular width of about 200 degrees and a projected speed of about 500 km/s. With the bulk of the mass directed westward, only a glancing blow was expected at the Earth on Oct 02. It arrived late around 01:26 UTC on Oct 03.

Another CME was observed in the SOHO/LASCO C2 images on 03:12 UTC, Sep 30. This CME was associated with a C8.6 flare, which peaked at 02:46 UTC on Sep 30, produced by SIDC Sunspot Group 962 (NOAA Active Region 4535). Type II and type IV radio emissions were detected at 02:52 UTC and 02:56 UTC on Sep 30, respectively. With an angular width of about 70 deg and a projected speed of 450 km/s, this CME was expected to miss the Earth and it didn't arrive at the Earth.

Coronal Holes

SIDC Coronal Hole 179 (recurrent, equatorial and positive polarity, spanning from 15 S to 25 N) crossed the central meridian from Sep 30 to Oct 02. The high speed streams associated with this coronal hole enhanced the solar wind parameters near Earth from Oct 04 until the end of the past week.

SIDC Coronal Hole 182 (equatorial, positive polarity, small) crossed the central meridian on Oct 04.

Proton flux levels

The greater than 10 MeV GOES proton flux was nominal level.

Electron fluxes at GEO

The greater than 2 MeV electron flux measured by satellites GOES-18 and GOES-19, remained mainly above the 1000 pfu until Oct 03.

The 24-hour electron fluence was moderate until Oct 02.

Solar wind

At the beginning of the past week, Earth was embedded in a solar wind with a slow speed below 340 km/s and an interplanetary magnetic field (IMF) up to 7 nT.

An Interplanetary CME (ICME) with a preceding shock was detected at 01:26 UTC on Oct 03. It was associated with SIDC CME 722. The solar wind speed jumped from 271 to 303 km/s, the density from 3 to 16 particles/cm³, the total IMF from 4 to 6 nT. After the shock, the total IMF increased to 9 nT and the North-South component (Bz) decreased to -7 nT.

At the end of the week, Earth was embedded in a high speed stream (HSSs) emanating from SIDC Coronal Hole 179 (recurrent, equatorial and positive polarity) which crossed the central meridian from Sep 30 to Oct 02. The solar wind increased to 645 km/s, the IMF to 22 nT, and the Bz decreased to -20 nT.

Geomagnetism

Geomagnetic conditions became unsettled on Oct 03, both globally and locally. This was due to the arrival of an ICMEs associated with SIDC CME 722.

They evolved on Oct 04 to a moderate planetary geomagnetic storm (NOAA Kp=6, 18:00-21:00 UTC on Oct 04) and a minor storm over Belgium (K_{BEL}=5) due to a high speed stream from the SIDC Coronal Hole 179 (equatorial, positive polarity, recurrent coronal hole) which crossed the central meridian from Sep 30 to Oct 02.

4. The SIDC Space Weather Briefing

The SIDC briefing presented by the forecaster on duty giving an overview of space weather from 28 Sep to 4 Oct 2026: https://www.stce.be/briefings/20260928_SWbriefing.pdf

SIDC Space Weather Briefing

28 September 2026-04 October 2026

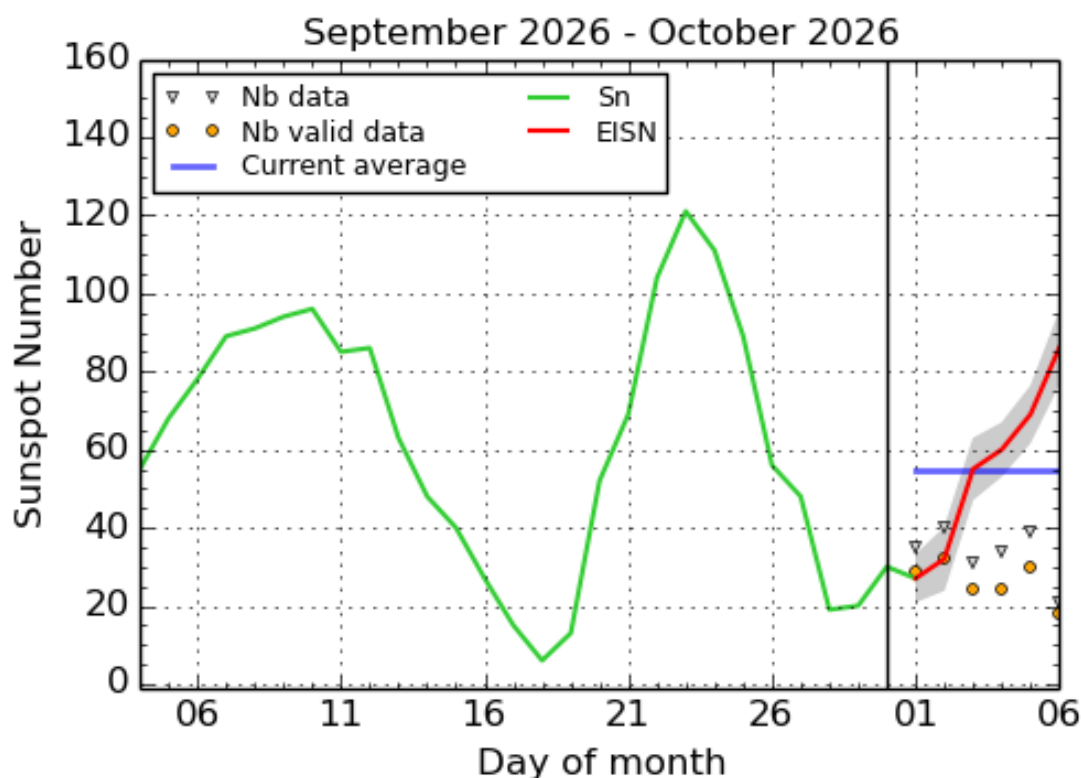
Senthamizh Pavai Valliappan

& the SIDC forecaster team



Solar Influences
Data analysis Centre
www.sidc.be

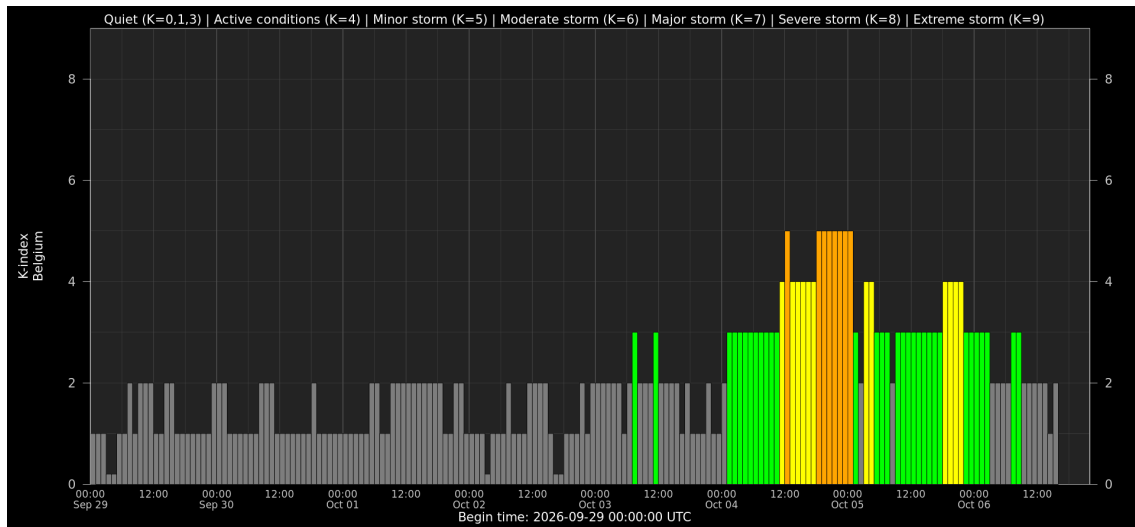
5. International Sunspot Number by SILSO



SILSO graphics (<http://sidc.be/silso>) Royal Observatory of Belgium, 2026 October 6

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.

6. 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/

7. Courses and Events

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.

* 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 16, 2026, Watching the Sun: a 200-year journey, guided tour Solar Physics, Ukkel, Belgium - register <https://events.spacepole.be/category/2/>

* 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 13, 2026, Watching the Sun: a 200-year journey, guided tour Solar Physics, Ukkel, Belgium - register <https://events.spacepole.be/category/2/>

* 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/>

* Nov 30, 2026, Watching the Sun: a 200-year journey, guided tour Solar Physics, Ukkel, Belgium - register <https://events.spacepole.be/category/2/>

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

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 at stce.be](mailto:stce_coordination@stce.be)



Website: <https://www.stce.be/SWEC>