

STCE Newsletter

23 Mar 2026 - 29 Mar 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 STCE in 2024

The STCE Annual Report 2024 is now available at <https://www.stce.be/annualReport>

It is a compilation of the activities done in 2024 within the frame of the Solar-Terrestrial Centre of Excellence (STCE). This report continues the style from the previous editions. Hence, as it is targeting a more general public, it presents only a selection of the 2024-activities in easy-to-digest summaries.

These bite-sized articles emphasize the intense collaboration between the institutes at the Space Pole, as well as with our external partners. Aside the usual topics such as the space weather highlights, public outreach, and listings with conference talks and science papers, it covers also contributions on e.g. the big solar storms in 2024, the launch of the Proba-3 mission, the Mobile Meteor Station for Education and Outreach (MOMSTER), the Quadrennial Ozone Symposium in Boulder (USA), the nowcast of the radiation environment and effects on the Moon (REENOM), ... and much, much more.

We wish you an enjoyable reading experience!



2. Sneak peak

Ever wondered what exactly we do at the STCE?

Yana, Hervé, Marie, Mark and Tobias are here to tell you. After an intense training by The Floor is Yours, they were ready to become real movies stars.

Stay tuned for the final movies in which they explain their STCE work!



3. Review of Solar and Geomagnetic Activity

WEEK 1317 from 2026 Mar 23

Solar Active Regions and Flares

The solar flaring activity of the past week reached moderate levels on 26 and 28 Mar and low levels the rest of the week. The first M-class flare of the week (SIDC flare 7259) was an M3.9 that peaked on 26

Mar at 06:23 UTC and was emitted by SIDC Sunspot Group (SG) 832 (NOAA Active Region [AR] 4403, Alpha magnetic configuration). The second flare (SIDC flare 7282) was an M1.3 that peaked on 28 Mar at 04:14 UTC and was produced by SIDC SG 836 (NOAA AR 4405, Beta magnetic configuration).

Coronal Mass Ejections

A Coronal Mass Ejection (CME) seen in LASCO-C2 images as launched on 22 Mar at 16:00 UTC was caused by a complex filament eruption. Although it did not create a partial halo CME, its northern component delivered a glancing blow at Earth on 25 Mar at 05:55 UTC.

Coronal Holes

SIDC Coronal Hole (CH) 156 (equatorial coronal hole with a positive polarity) started crossing the solar meridian on 25 Mar. Although it did not produce a geo-effective High Speed Stream (HSS), unusually low densities were observed on 28 Mar.

SIDC CH 153 (at the solar south pole with positive polarity) started crossing the solar meridian on 26 Mar. It also does not appear to cause a geo-effective HSS, it might have caused the increased solar wind speed on 29 Mar.

Proton flux levels

The greater than 10 MeV proton flux, as measured by the GOES-19 satellite, was at nominal levels during the past week.

Electron fluxes at GEO

The greater than 2 MeV electron flux, as measured by GOES-19, was above the 1000 pfu alert threshold for almost the entire past week. It reached a peak value of 13 kpfu on 27 Mar at 05:25 UTC.

Solar Wind

At the start of the previous week the Solar Wind (SW) conditions were affected by an HSS that lasted until the second half of 24 Mar. The SW speed reached 700 km/s, the interplanetary magnetic field (B) dropped to 13 nT, and its North-South component (Bz) registered values as low as -12 nT.

On 25 Mar at 05:55 UTC a glancing blow from a CME launched on 22 Mar at 16:00 UTC affected the SW conditions. The SW speed increased from 500 to 630 km/s, B increased to 10 nT, and Bz varied from -8 nT to 8 nT. This effect lasted approximately 16 hours and the SW conditions returned to a slow SW regime until the end of 28 Mar. During that calm period the SW speed varied between 600 and 350 km/s, B ranged between 1 and 8 nT, and Bz between -5 and 7 nT.

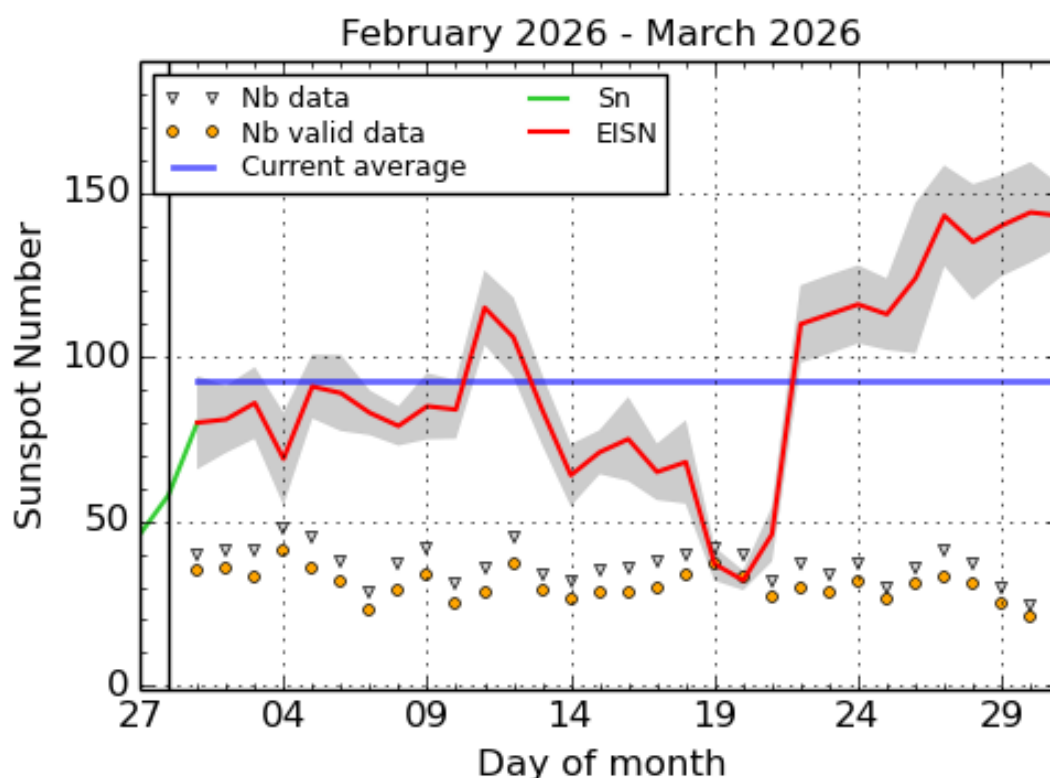
A transient event, probably a combination of enhanced SW speed associated with the crossing of the central meridian of CH 153 and a sector boundary crossing, affected Earth at the very early hours of 29 Mar. The SW speed increased to 450 km/s, B increased to 13 nT, and Bz ranged between -8 and 12 nT.

Geomagnetism

The global geomagnetic conditions reached minor storm levels on 23 Mar (NOAA Kp 5 at 15:00 - 18:00 UTC and 5- at 12:00 - 15:00 UTC) and on 25 Mar (NOAA Kp 5+ at 06:00 - 09:00 UTC) as a result of the HSS that was present at the beginning of last week. They then decreased to quiet to unsettled levels (NOAA Kp 1+ to 3+), until the arrival of the transient event on 29 Mar. The later caused a temporary increase to active levels (NOAA Kp 4- 00:00-06:00 UTC).

The local geomagnetic conditions registered a minor storm on 23 Mar (K BEL 5 at 15:00 - 21:00 UTC) and short intervals of active levels (K BEL 4) on 25, 28, and 29 Mar. The rest of the past week they ranged between quiet and unsettled levels (K BEL 1 to 3).

4. International Sunspot Number by SILSO



SILSO graphics (<http://sidc.be/silso>) Royal Observatory of Belgium, 2026 March 31

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.

5. PROBA2 Observations

Solar Activity

Solar flare activity fluctuated from low to moderate 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 here: <https://proba2.oma.be/ssa>

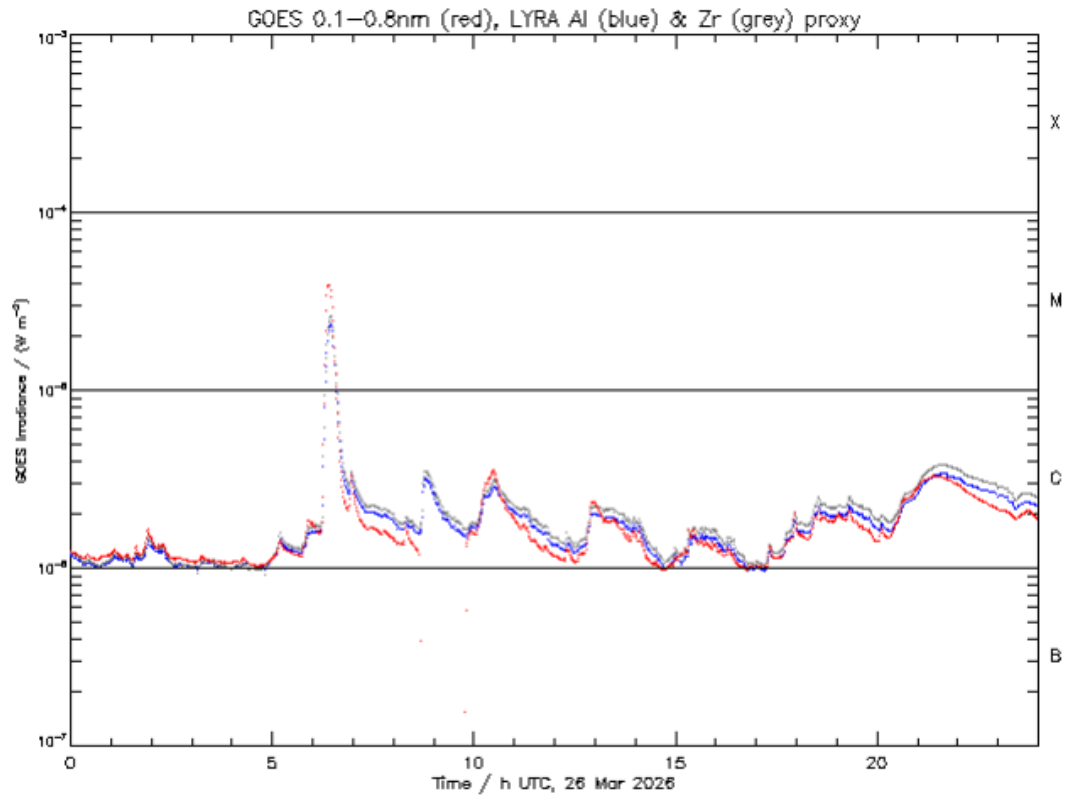
This page also lists the recorded flaring events.

A weekly overview movie can be found here (SWAP week 835): https://proba2.sidc.be/swap/data/mpg/movies/weekly_movies/weekly_movie_2026_03_23.mp4

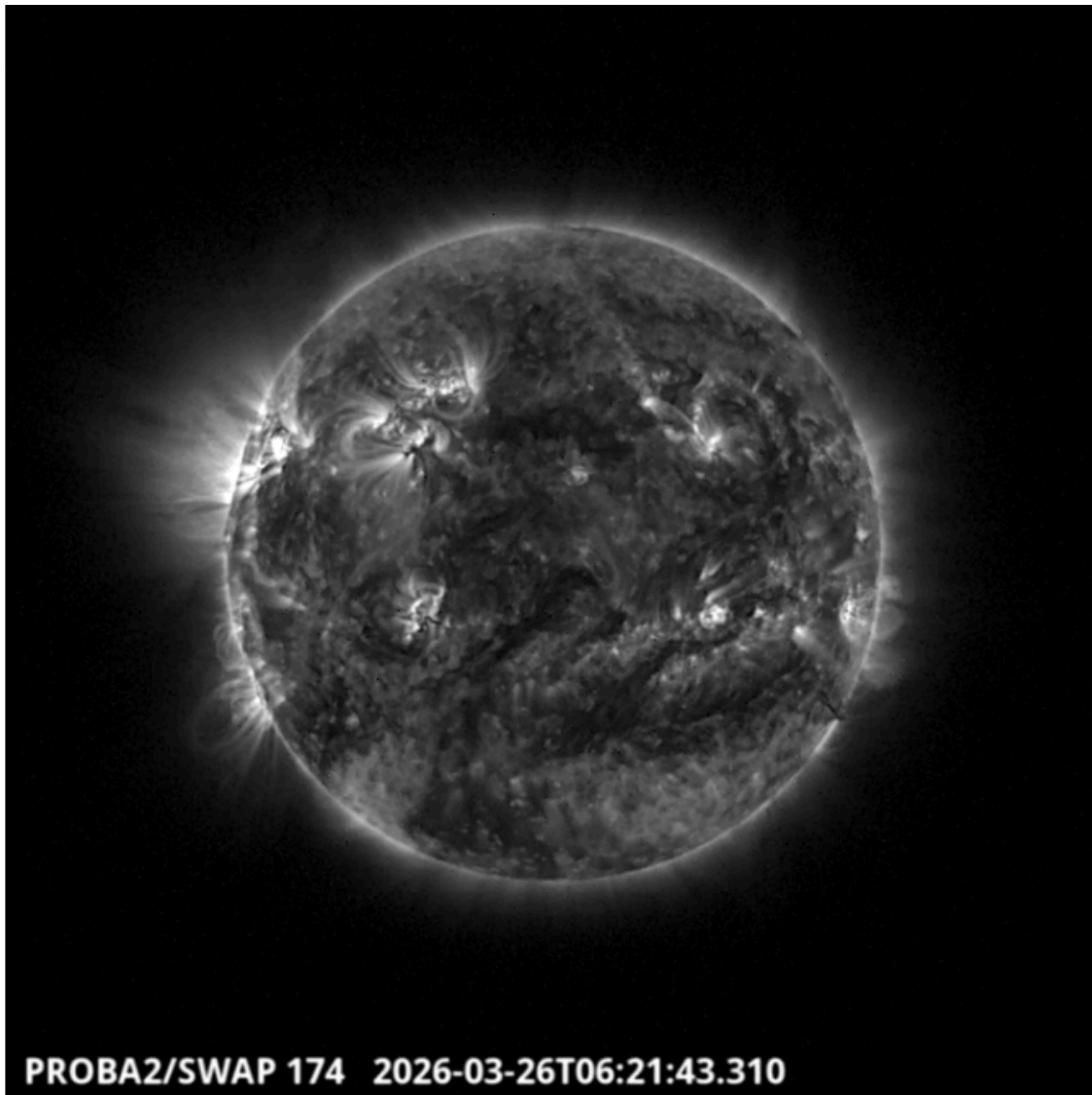
Details about some of this week's events can be found further below.

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/>

Thursday Mar 26



ROB/SIDC, Brussels, Belgium



The largest flare of this week was an M3.9, and it was observed by LYRA (top panel) and SWAP (bottom panel). The flare peaked on 2026-Mar-26 at 06:23 UT and occurred on the North-East part of the solar disk. It originates from active region NOAA4403 (SIDC 832). Find a SWAP movie of the event here: https://proba2.sidc.be/swap/movies/20260326_swap_movie.mp4

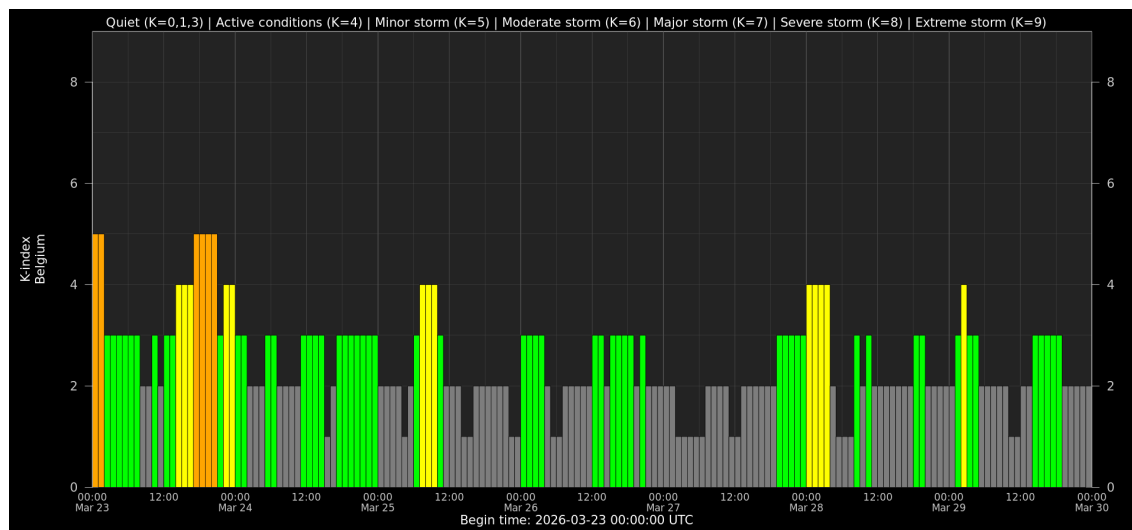
6. Noticeable Solar Events

DAY	BEGIN	MAX	END	LOC	XRAY	OP	10CM	TYPE	Cat	NOAA
26	0611	0623	0631	N13E59	M3.9	1N		III/2II/2	64	4403
28	0216	0416	0535		M1.3				68	4405

LOC: approximate heliographic location
 XRAY: X-ray flare class
 OP: optical flare class
 10CM: peak 10 cm radio flux

TYPE: radio burst type
 Cat: Catania sunspot group number
 NOAA: NOAA active region number

7. Geomagnetic Observations in Belgium

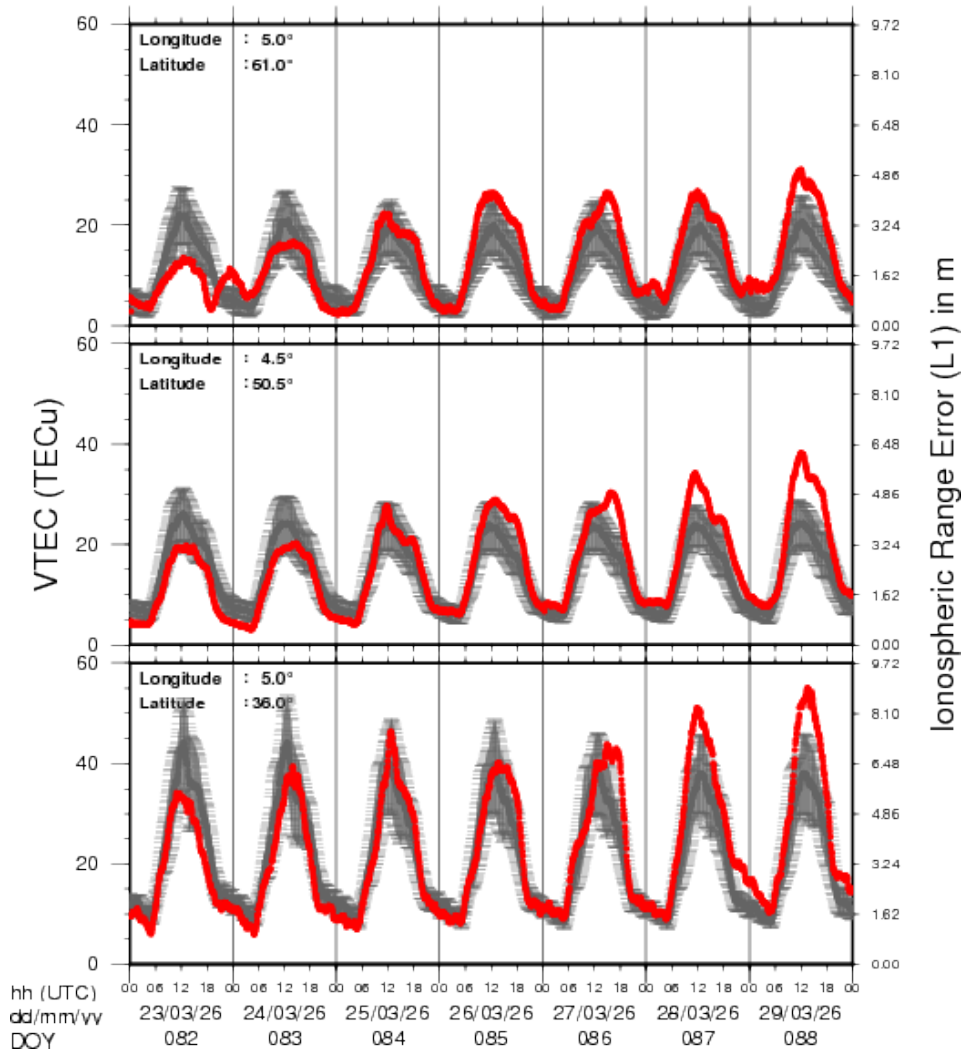


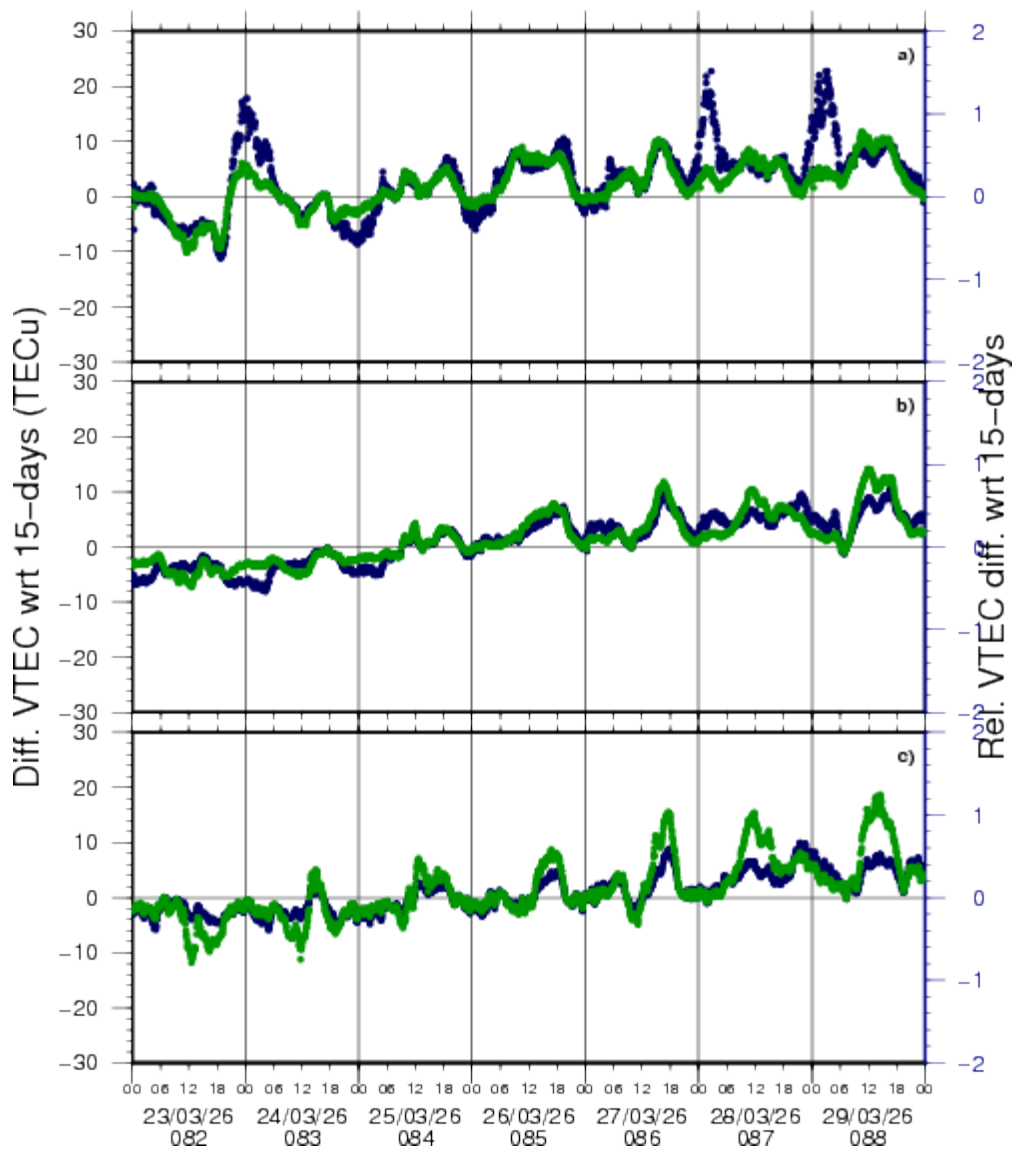
Local K-type magnetic activity index for Belgium based on data from Dourbes (DOU) and Manhay (MAB). Comparing the data from both measurement stations allows to reliably remove outliers from the magnetic data. At the same time the operational service availability is improved: whenever data from one observatory 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. Review of Ionospheric Activity

VTEC Time Series





VTEC time series at 3 locations in Europe from 23 Mar 2026 till 29 Mar 2026

The top figure shows the time evolution of the Vertical Total Electron Content (VTEC) (in red) during the last week at three locations:

- a) in the northern part of Europe(N 61deg E 5deg)
- b) above Brussels(N 50.5deg, E 4.5 deg)
- c) in the southern part of Europe(N 36 deg, E 5deg)

This top figure also shows (in grey) the normal ionospheric behaviour expected based on the median VTEC from the 15 previous days.

The time series below shows the VTEC difference (in green) and relative difference (in blue) with respect to the median of the last 15 days in the North, Mid (above Brussels) and South of Europe. It thus illustrates the VTEC deviation from normal quiet behaviour.

The VTEC is expressed in TECu (with $1\text{TECu}=10^{16}$ electrons per square meter) and is directly related to the signal propagation delay due to the ionosphere (in figure: delay on GPS L1 frequency).

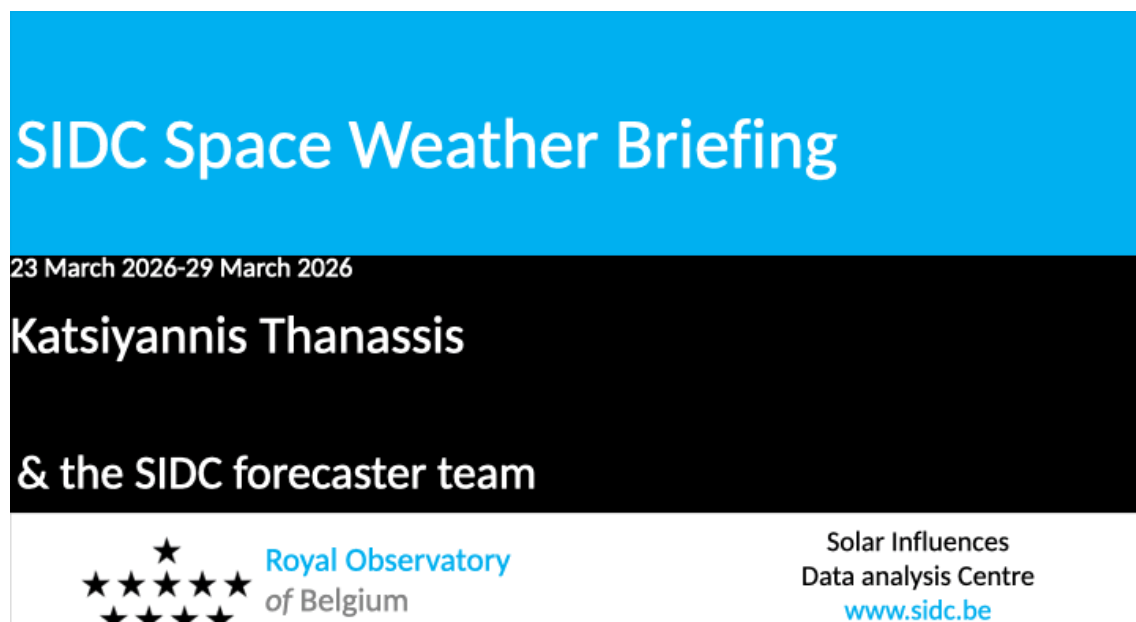
The Sun's radiation ionizes the Earth's upper atmosphere, the ionosphere, located from about 60km to 1000km above the Earth's surface. The ionization process in the ionosphere produces ions and free electrons. These electrons perturb the propagation of the GNSS (Global Navigation Satellite System) signals by inducing a so-called ionospheric delay.

See http://stce.be/newsletter/GNSS_final.pdf for some more explanations; for more information, see <https://gnss.be/SpaceWeather>

9. The SIDC Space Weather Briefing

The forecaster on duty presented the SIDC briefing that gives an overview of space weather from March 23 to 29.

The pdf of the presentation: https://www.stce.be/briefings/20260330_SWbriefing.pdf



The image shows a presentation slide for the SIDC Space Weather Briefing. The slide has a blue header with the title "SIDC Space Weather Briefing" in white. Below the header, on a black background, it says "23 March 2026-29 March 2026", "Katsiyannis Thanassis", and "& the SIDC forecaster team". At the bottom, there are two logos: the Royal Observatory of Belgium logo (a cluster of stars) and the Solar Influences Data analysis Centre logo (with the website www.sidc.be).

10. 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.

* Apr 20-21, 2026, STCE cursus: inleiding tot het ruimteweer, voor leden van volkssterrenwachten, Brussels, Belgium - register: <https://events.spacepole.be/event/260/>

* Jun 15-17, 2026, STCE Space Weather Introductory Course, Brussels, Belgium - register: <https://events.spacepole.be/event/256/>

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

* 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](mailto:stce_coordination@stce.be) at [stce.be](https://www.stce.be)



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