

STCE Newsletter

26 Aug 2019 - 1 Sep 2019



Published by the STCE - this issue : 6 Sep 2019. Available online at <http://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. Is somebody getting nervous?	2
2. Review of solar and geomagnetic activity	2
3. PROBA2 Observations (26 Aug 2019 - 1 Sep 2019)	3
4. The International Sunspot Number by SILSO	5
5. Geomagnetic Observations at Dourbes (26 Aug 2019 - 1 Sep 2019)	6
6. The SIDC space weather Briefing	6
7. Review of ionospheric activity (26 Aug 2019 - 1 Sep 2019)	7

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

1. Is somebody getting nervous?

Today, the Belgian EUI team had its first meeting to talk about PR actions for Solar Orbiter, exactly 5 months before its launch on February 6, 2020.

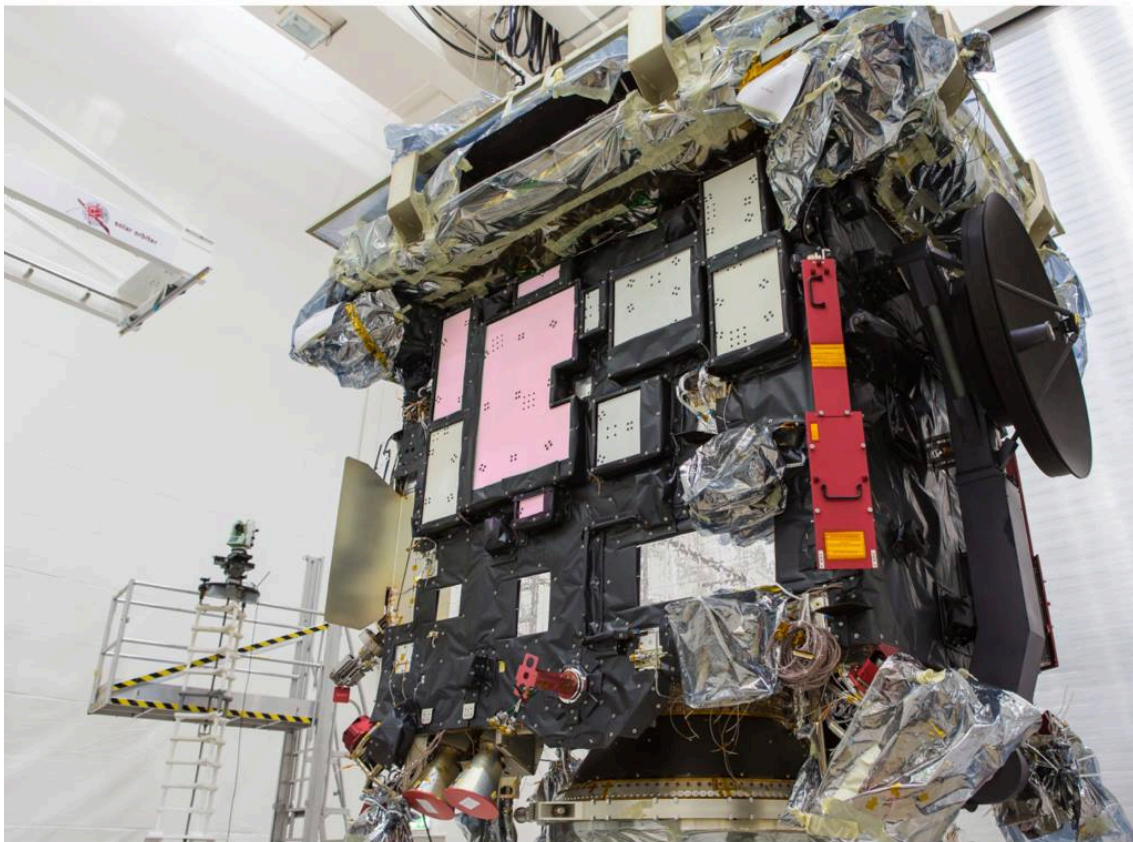
Somewhere mid October, we will have the last chance to see the spacecraft live before it is packed and shipped to the launch basis.

On February 6, 2020, we plan at the STCE a 'Have a nice trip, Solar Orbiter'-party - for those that aren't at the launch basis.

This will be the start of Solar Orbiter's space adventure. We hope that the launch goes well, such that we can look forward to the first light of EUI. A few weeks later, we want to shout very loud and proud: 'It can see! It can see.' Of course, we will throw another party for that occasion.

It starts itching.

These are the EUI radiators, photoshopped to pink. Funky!



2. Review of solar and geomagnetic activity

SOLAR ACTIVITY

No active regions were visible on the solar disc. No flares were observed. No Earth-directed CMEs were ejected and the greater than 10 MeV proton flux was at nominal levels.

An equatorial coronal hole with negative polarity crossed the central meridian on August 25. An equatorial coronal hole with positive polarity crossed the central meridian on August 30.

GEOMAGNETIC ACTIVITY

The fast solar wind from the positive polarity coronal hole reached Earth on August 27. The speed reached almost 550 km/s and was responsible for an active geomagnetic storm.

The fast solar wind from the positive polarity coronal hole reached Earth on August 31 (the solar wind parameters started to increase on August 30). Its speed was close to 700 km/s and its imbedded interplanetary magnetic field reached 11 nT. Between August 30 and September 01, the geomagnetic storm reached active conditions locally ($K_{\text{Dourbes}} = 5$) and became minor storm at planetary levels ($K_p = 6$).

3. PROBA2 Observations (26 Aug 2019 - 1 Sep 2019)

Solar Activity

Solar flare activity remained very 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: <http://proba2.oma.be/ssa>

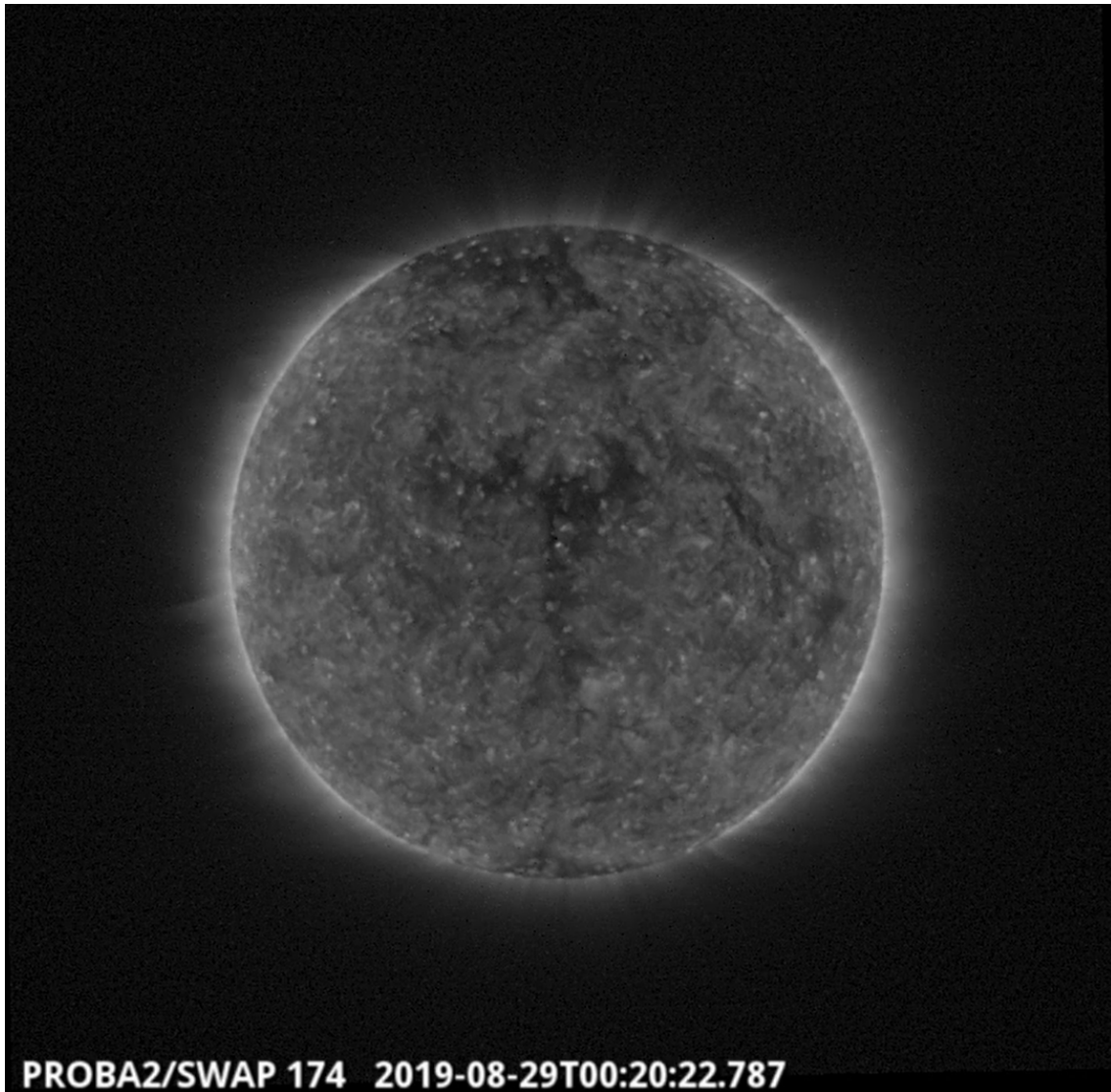
This page also lists the recorded flaring events.

A weekly overview movie can be found here (SWAP week 492): http://proba2.oma.be/swap/data/mpg/movies/weekly_movies/weekly_movie_2019_08_26.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: <http://proba2.oma.be/swap/data/mpg/movies/>

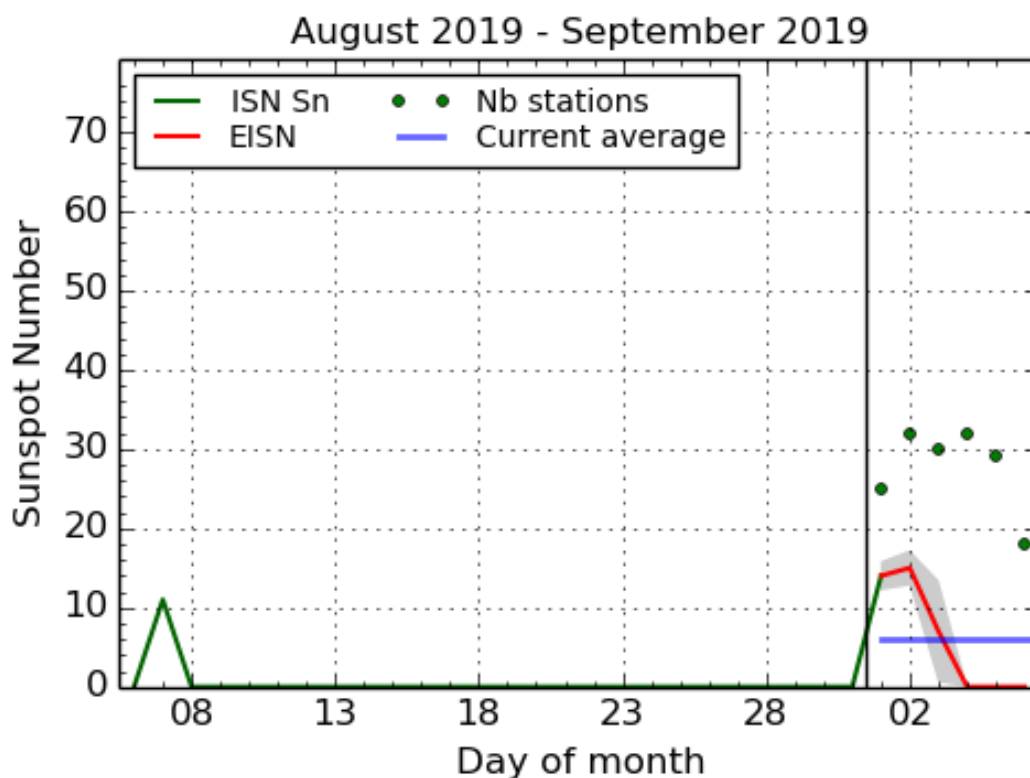
Thursday Aug 29



A large, low-latitude equatorial coronal hole of positive polarity was observed by SWAP as it crossed the central meridian on 2019-Aug-29.

Find a movie of the day here (SWAP movie): http://proba2.oma.be/swap/data/mpg/movies/20190829_swap_movie.mp4

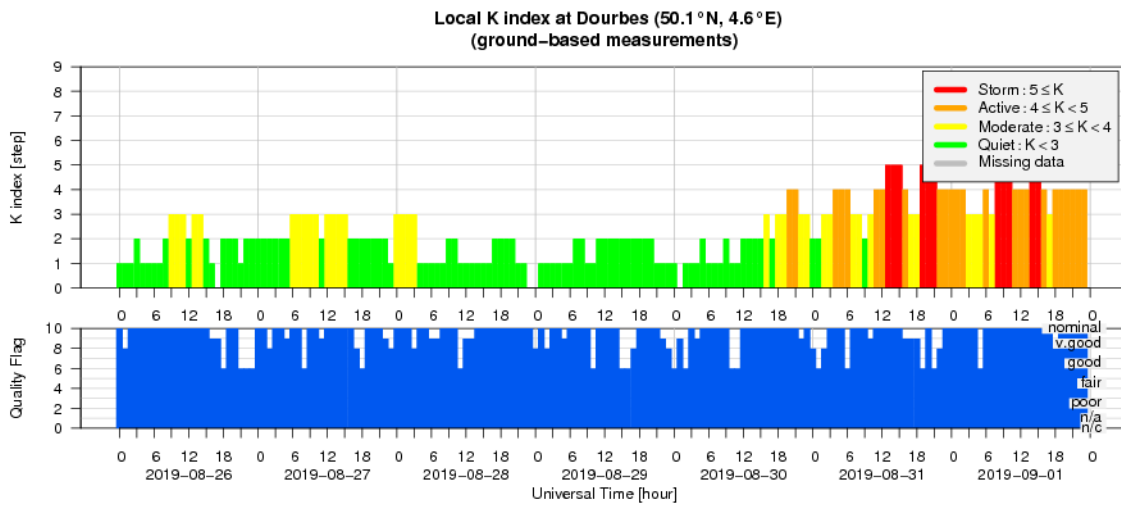
4. The International Sunspot Number by SILSO



SILSO graphics (<http://sidc.be/silso>) Royal Observatory of Belgium, 2019 September 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). The plot shows the last 30 days (about one solar rotation). The horizontal blue line shows the current monthly average, while the green dots give the number of stations included in the calculation of the EISN for each day.

5. Geomagnetic Observations at Dourbes (26 Aug 2019 - 1 Sep 2019)



6. The SIDC space weather Briefing

The Space Weather Briefing presented by the forecaster on duty from August 26 to September 1. It reflects in images and graphs what is written in the Solar and Geomagnetic Activity report.

SIDC Space Weather Briefing

25 August 2019 - 01 September 2019

Matthew J West & Elena Podladchikova
SIDC forecaster team



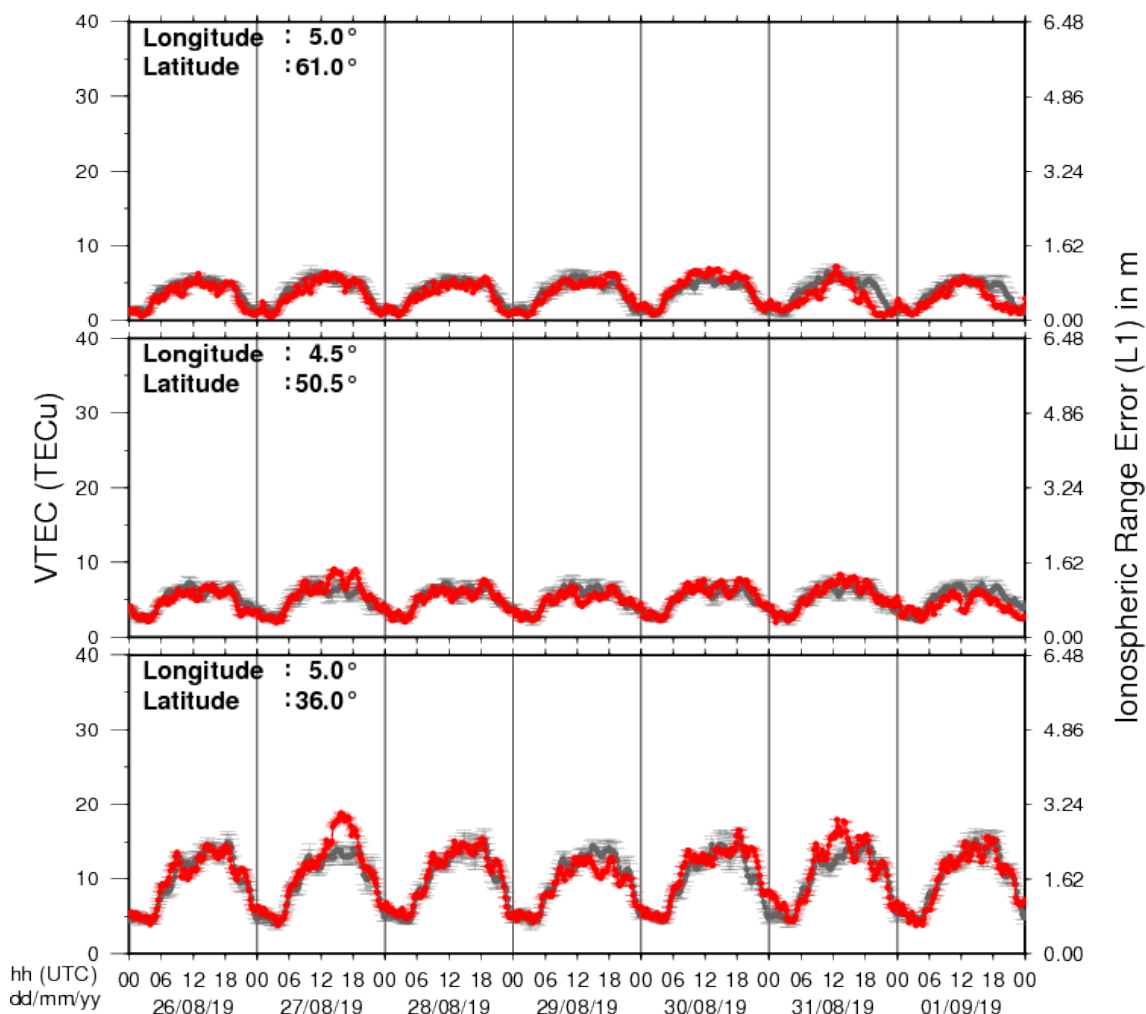
Solar Influences
Data analysis Centre
www.sidc.be

The pdf-version: http://www.stce.be/briefings/20190902_SWbriefing.pdf

The automatically running presentation: http://www.stce.be/briefings/20190902_SWbriefing.ppsm

7. Review of ionospheric activity (26 Aug 2019 - 1 Sep 2019)

VTEC Time Series



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

- in the northern part of Europe (N61°, 5°E)
- above Brussels (N50.5°, 4.5°E)
- in the southern part of Europe (N36°, 5°E)

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

The VTEC is expressed in TECu (with $\text{TECu} = 10^{16}$ 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 detailed information, see http://gnss.be/ionosphere_tutorial.php