

STCE Newsletter

24 Sep 2018 - 30 Sep 2018



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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. Open Doors 2018: an impression

The Open Doors 2018 (<http://www.stce.be/news/439/welcome.html>) took place at the Space Pole during the weekend of 29-30 September. Underneath a few pictures capturing some of the STCE activities during this event, which attracted about 9000 visitors.



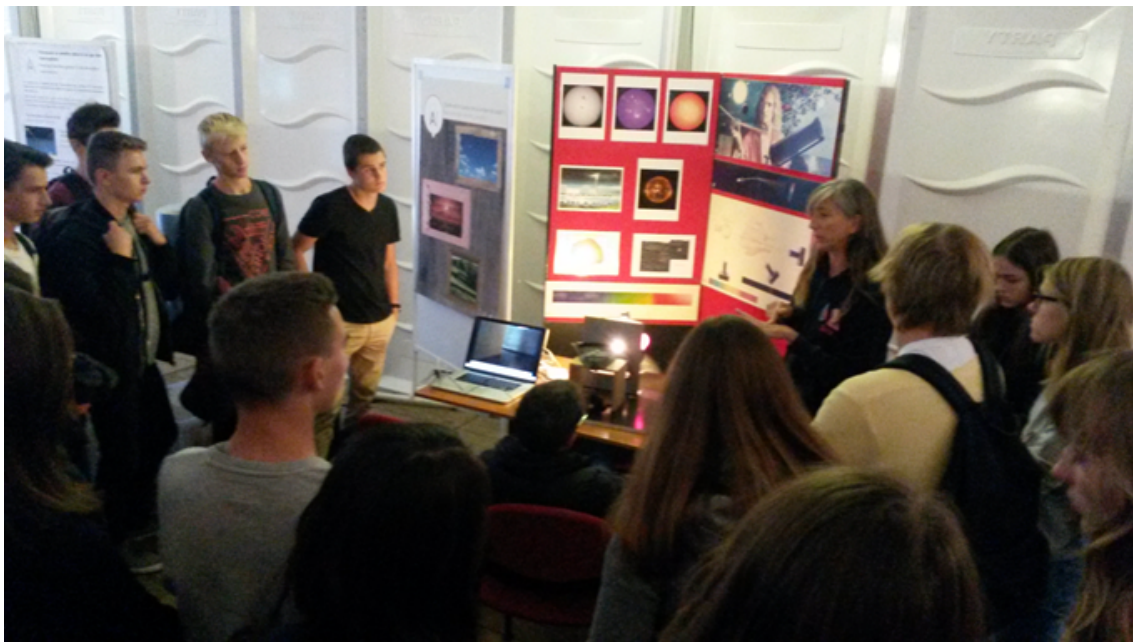
Introducing the visitors to the International Sunspot Number.



The SIDC Regional Warning Center was located next to the Seismology room. Guess which was the most often asked question...



Explaining a group of teenagers the art of sunspot drawing.

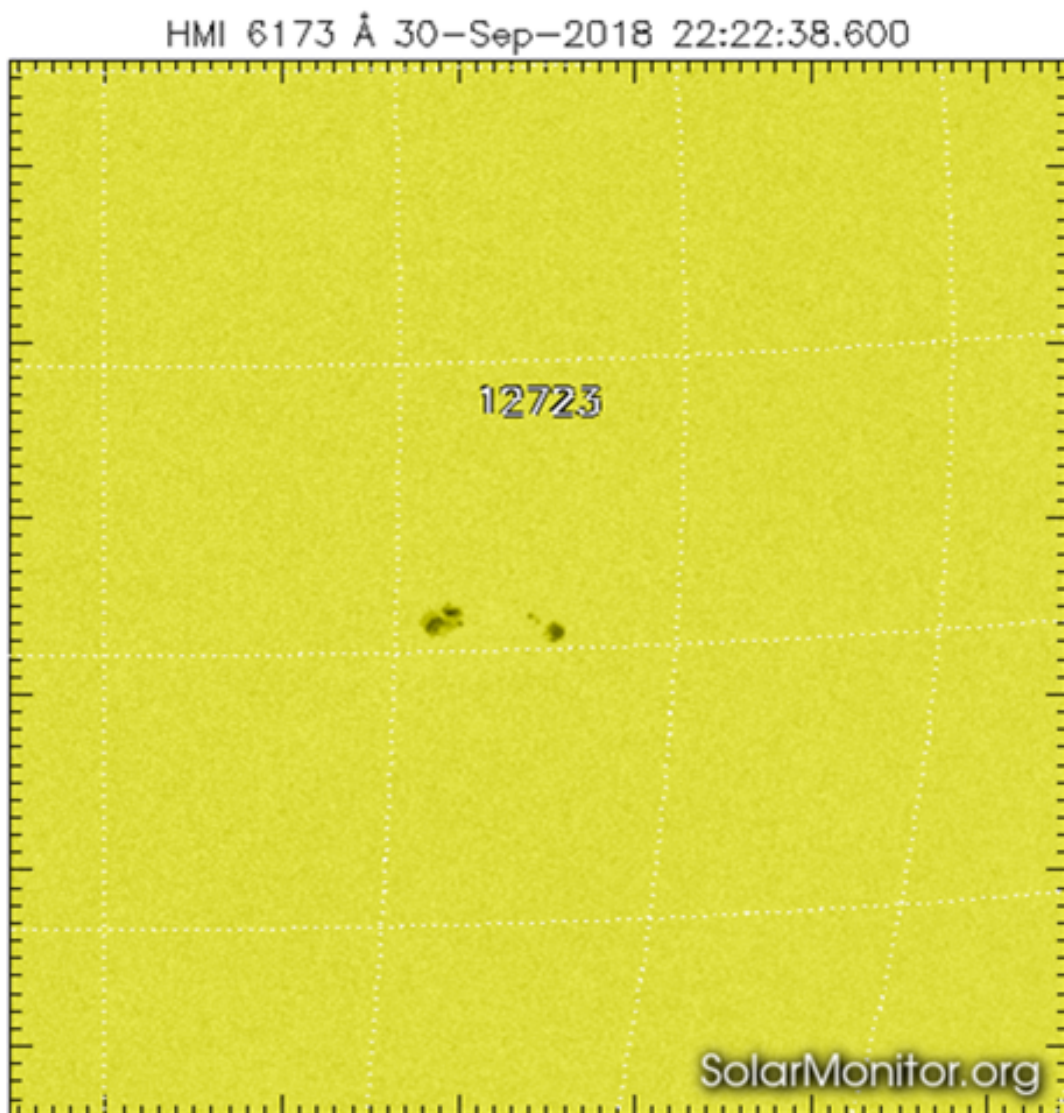


The mysteries of spectroscopy explained to a group of secondary school kids.

2. Review of solar activity

The x-ray flux remained below B-level throughout the week. There were no sunspots on the visible disk for most of the period. Only at the end of the week, a new simple bipolar region emerged near the centre of the disk (NOAA 2723). Proton flux levels were at background values throughout the week.

A filament located around S26E11 erupted in the morning of 27 September, but no associated coronal mass ejection (CME) could be identified in coronagraphic imagery.



3. PROBA2 Observations (24 Sep 2018 - 30 Sep 2018)

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>

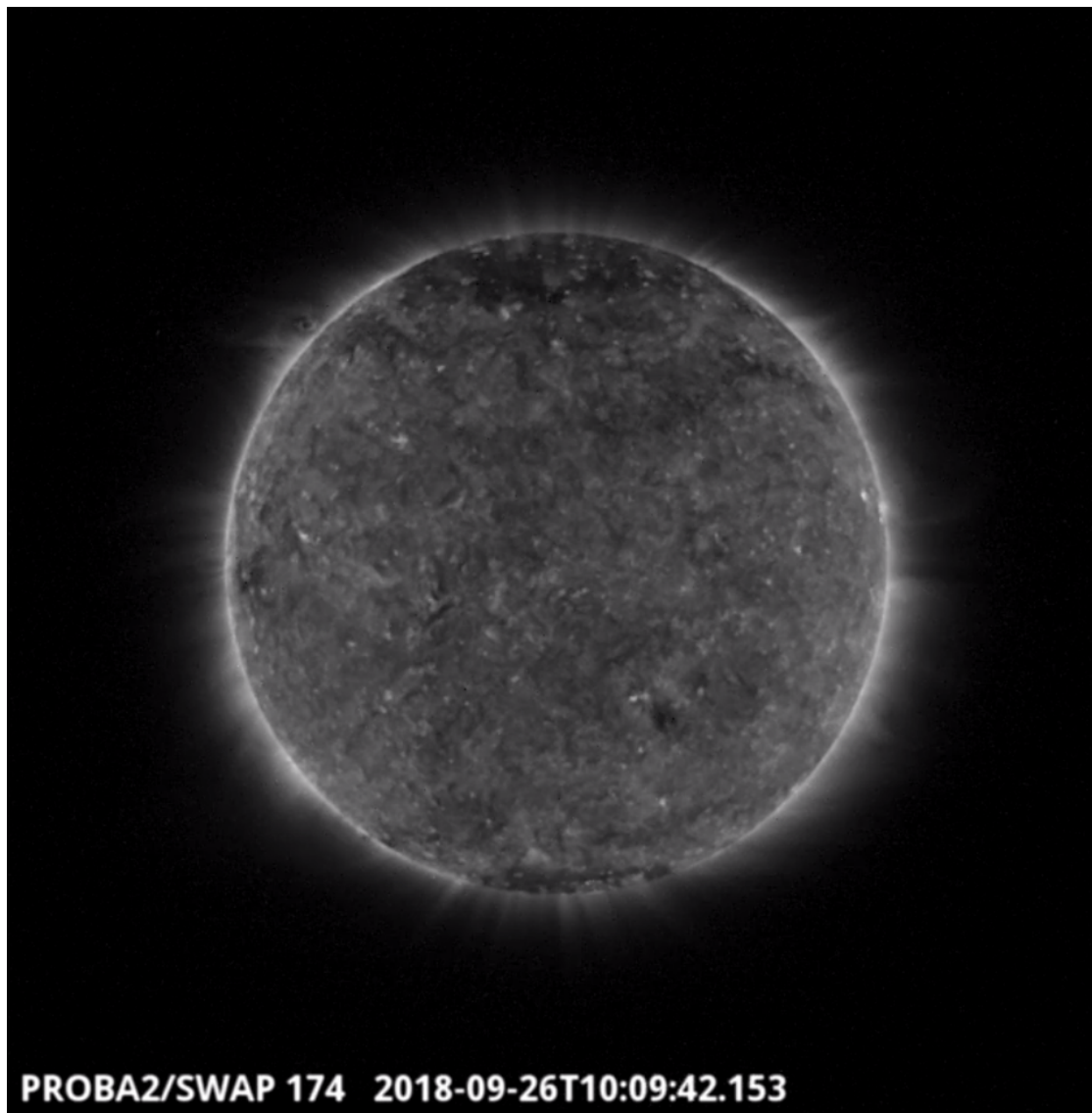
This page also lists the recorded flaring events.

A weekly overview movie can be found here (SWAP week 444): http://proba2.oma.be/swap/data/mpg/movies/weekly_movies/weekly_movie_2018_09_24.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/>

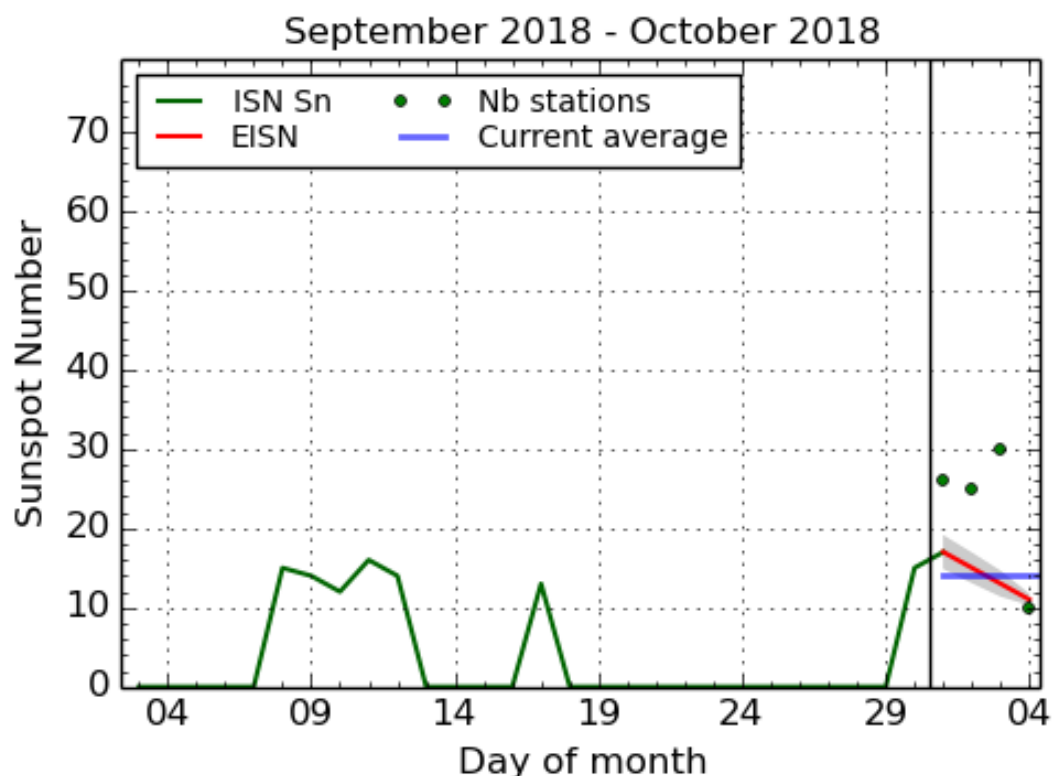
Wednesday Sep 26



On 2018-Sep-26 SWAP observed some rotational flows on the north east limb, shown in the SWAP image above at 10:09 UT.

Find a movie of the event here (SWAP movie): http://proba2.oma.be/swap/data/mpg/movies/20180926_swap_movie.mp4

4. The International Sunspot Number



SILSO graphics (<http://sidc.be/silso>) Royal Observatory of Belgium, 2018 October 4

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.

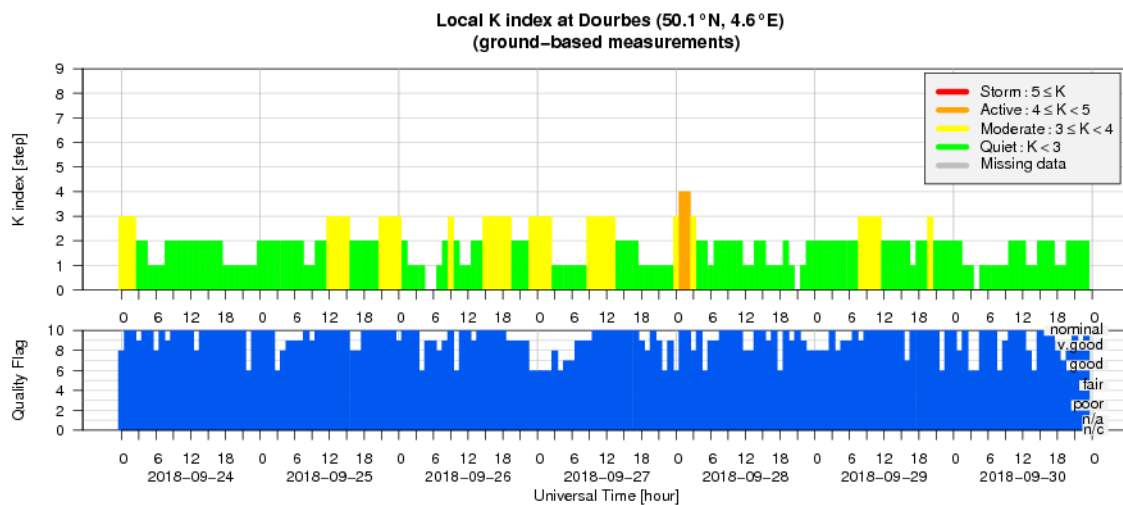
5. Review of geomagnetic activity

Solar wind was slightly elevated for most of the week with solar wind speed between 360 and 500 km/s and total magnetic field reaching peaks near 8 nT. In absence of clearly identifiable coronal hole features near the equator, the transient elevations of essentially slow solar wind were all short lived.

Geomagnetic conditions were quiet to unsettled (both local K Dourbes and NOAA Kp 0-3) with a few isolated active periods (K=4) in the Dourbes measurements.



6. Geomagnetic Observations at Dourbes (24 Sep 2018 - 30 Sep 2018)



7. The SIDC Space Weather Briefing

The Space Weather Briefing presented by the forecaster on duty from 24 till 30 September. It reflects in images and graphs what is written in the Solar and Geomagnetic Activity reports.

SIDC Space Weather Briefing

23 September 2018 - 30 September 2018

Jesse Andries
& the SIDC forecaster team



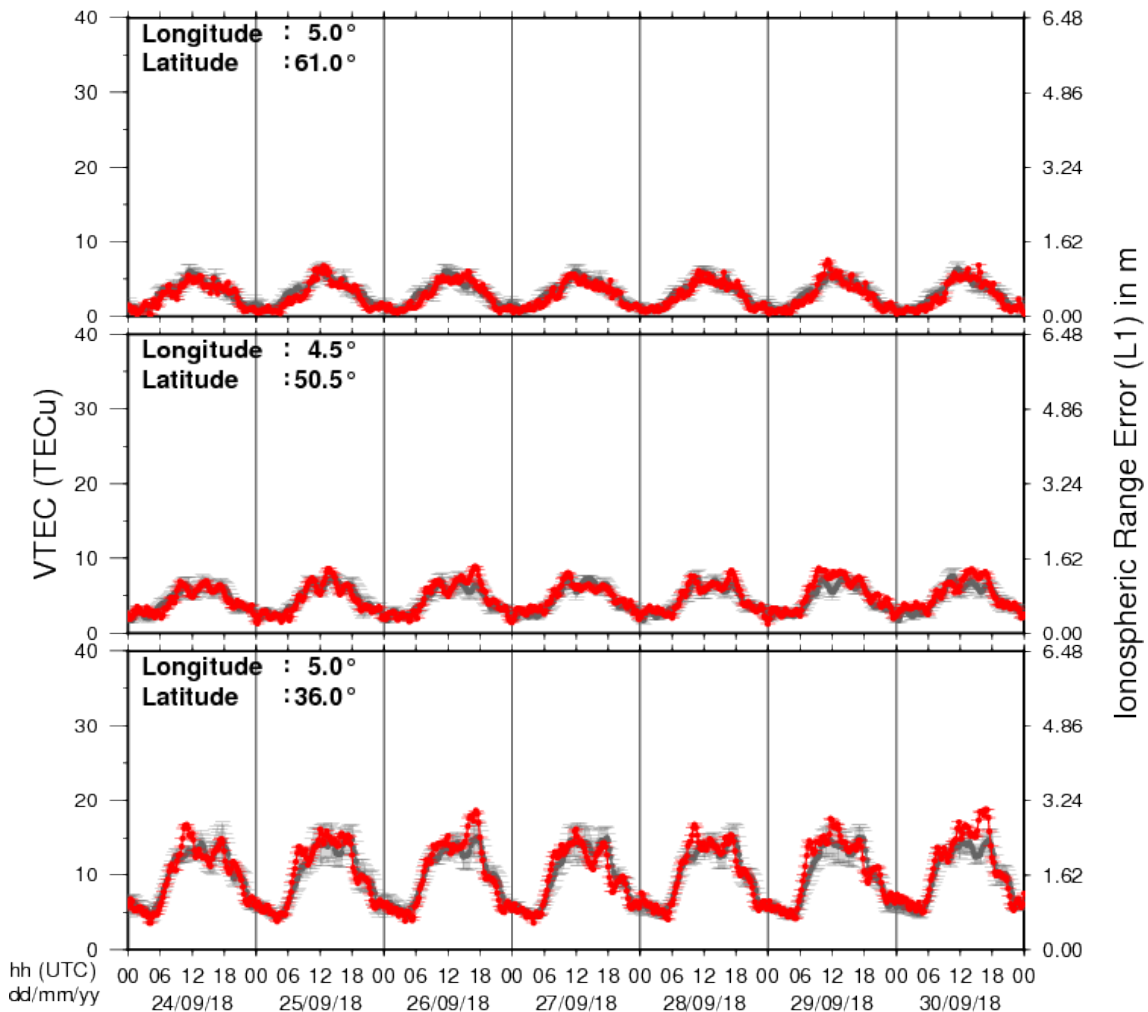
Solar Influences
Data analysis Centre
www.sidc.be

The pdf-version: http://www.stce.be/movies/20181001_SWbriefing_FINAL.pdf

The automatically running presentation: http://www.stce.be/movies/20181001_SWbriefing_FINAL.ppsm

8. Review of ionospheric activity (24 Sep 2018 - 30 Sep 2018)

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