

# STCE Newsletter

4 Feb 2019 - 10 Feb 2019



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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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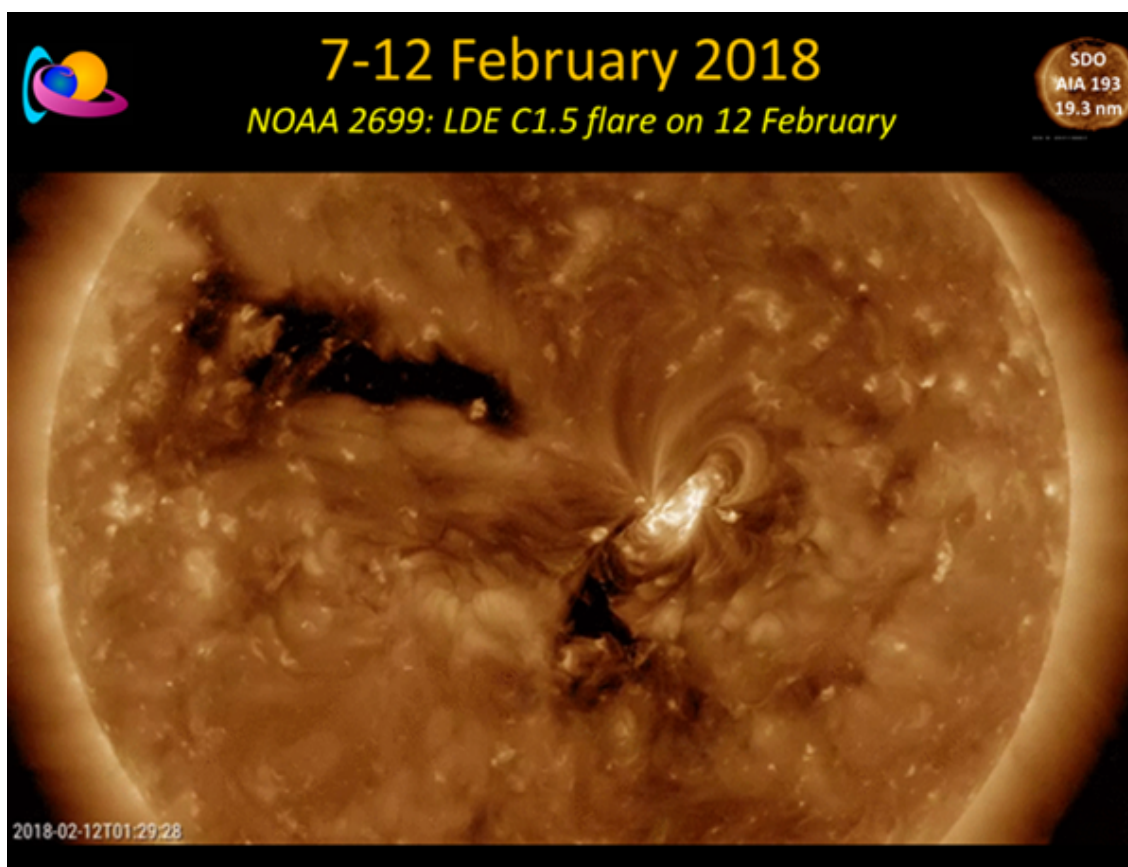
## 1. The best of... 2018!

A compilation of the most memorable space weather moments of 2018 can be found at the STCE's dedicated Solar Cycle 24 page: <http://www.stce.be/highlights>

Using the versatile (J)Helioviewer software (<http://www.jhelioviewer.org/>), a \*\*\*MOVIE\*\*\* was created containing one or more clips of each event. Mostly SDO-images were used, occasionally supplemented with imagery from PROBA2, SOHO, GONG and STEREO.

The movie can be found at <https://youtu.be/wEibWLgPcPA>, whereas the page with the accompanying information is at <http://www.stce.be/news/449/welcome.html>

We wish you a happy viewing!



## 2. ESWW2019 - Call for sessions

The deadline is approaching and almost visible behind the corner of next week: February 20. Don't hesitate to submit a session. You can choose between 3 flavours: service domain plenary, parallel science and research session and parallel open session. When you go to the submission page, you see what is already submitted - please avoid duplication.

More on <http://www.stce.be/esww2019/call4sessions.php>



### **3. Review of solar and geomagnetic activity**

#### **SOLAR ACTIVITY**

The solar activity has been very low: the visible solar disc was spotless, and the X-ray flux remained below B-level.

No Earth directed coronal mass ejection has been observed.

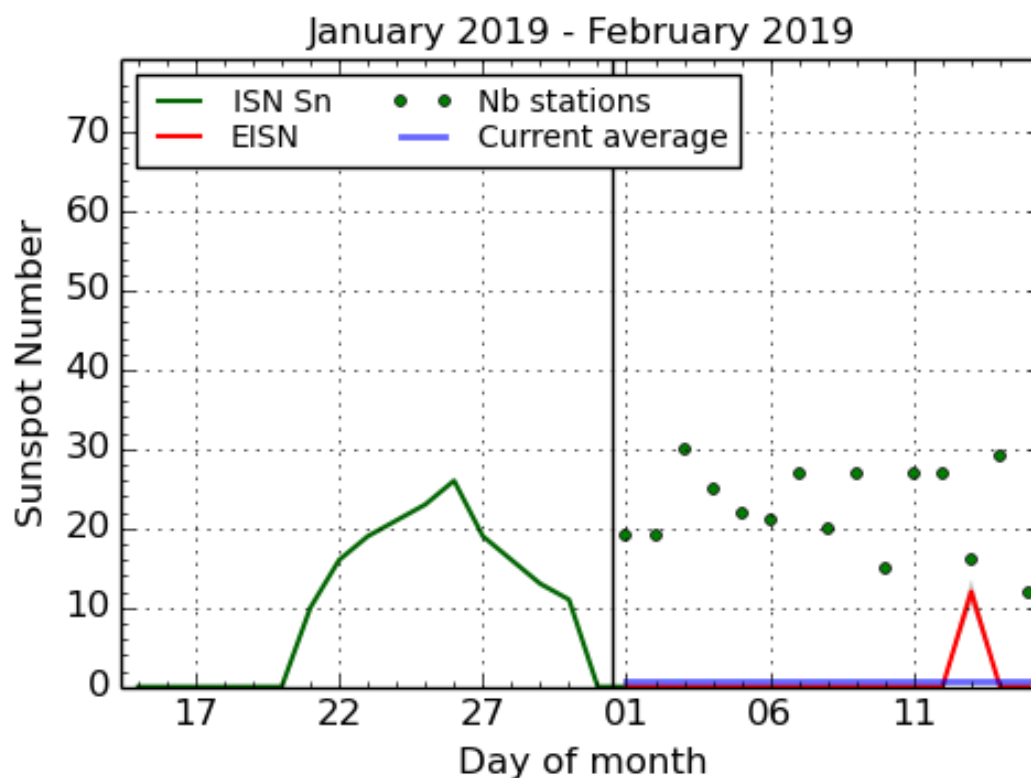
The greater than 10 MeV solar protons flux remained at nominal levels.

#### **GEOMAGNETIC ACTIVITY**

Due to several large and patchy negative polarity coronal holes, the solar wind parameters were slightly enhanced. The solar wind speed ranged between 320 and 560 km/s being most of the period close to 450 km/s. The total interplanetary magnetic field strength was higher than the usual background values but remained, however, below 8.5 nT. The southward magnetic component fluctuated between -7.5 and 6.5 nT.

The geomagnetic conditions were quiet to unsettled with isolated active periods due to the enhanced solar wind conditions.

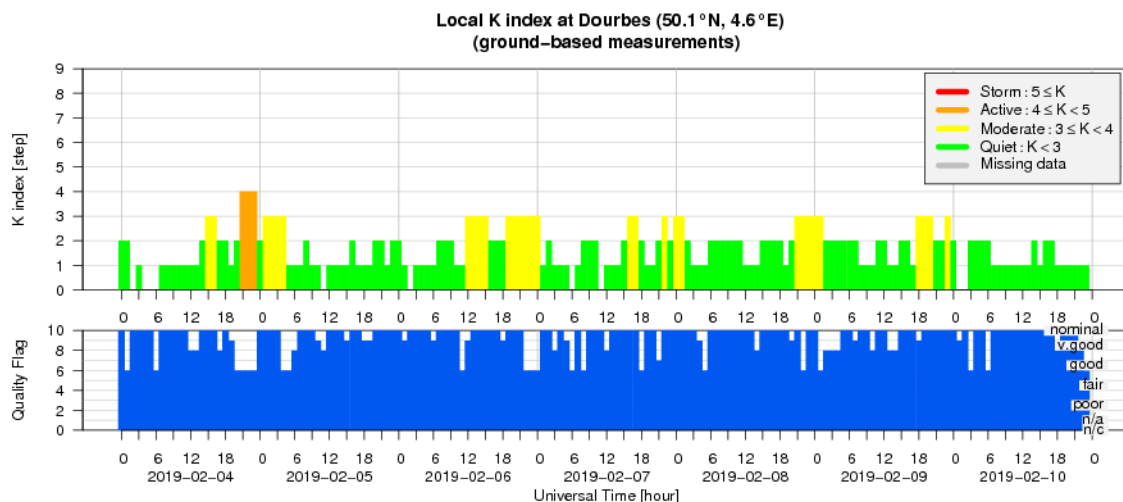
## 4. The International Sunspot Number



SILSO graphics (<http://sidc.be/silso>) Royal Observatory of Belgium, 2019 February 15

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 (4 Feb 2019 - 10 Feb 2019)



## 6. The SIDC space weather Briefing

The Space Weather Briefing presented by the forecaster on duty from Feb 4 to 10. It reflects in images and graphs what is written in the Solar and Geomagnetic Activity report.

# SIDC Space Weather Briefing

03 February 2019 - 10 February 2019

Judith de Patoul  
& the SIDC forecaster team



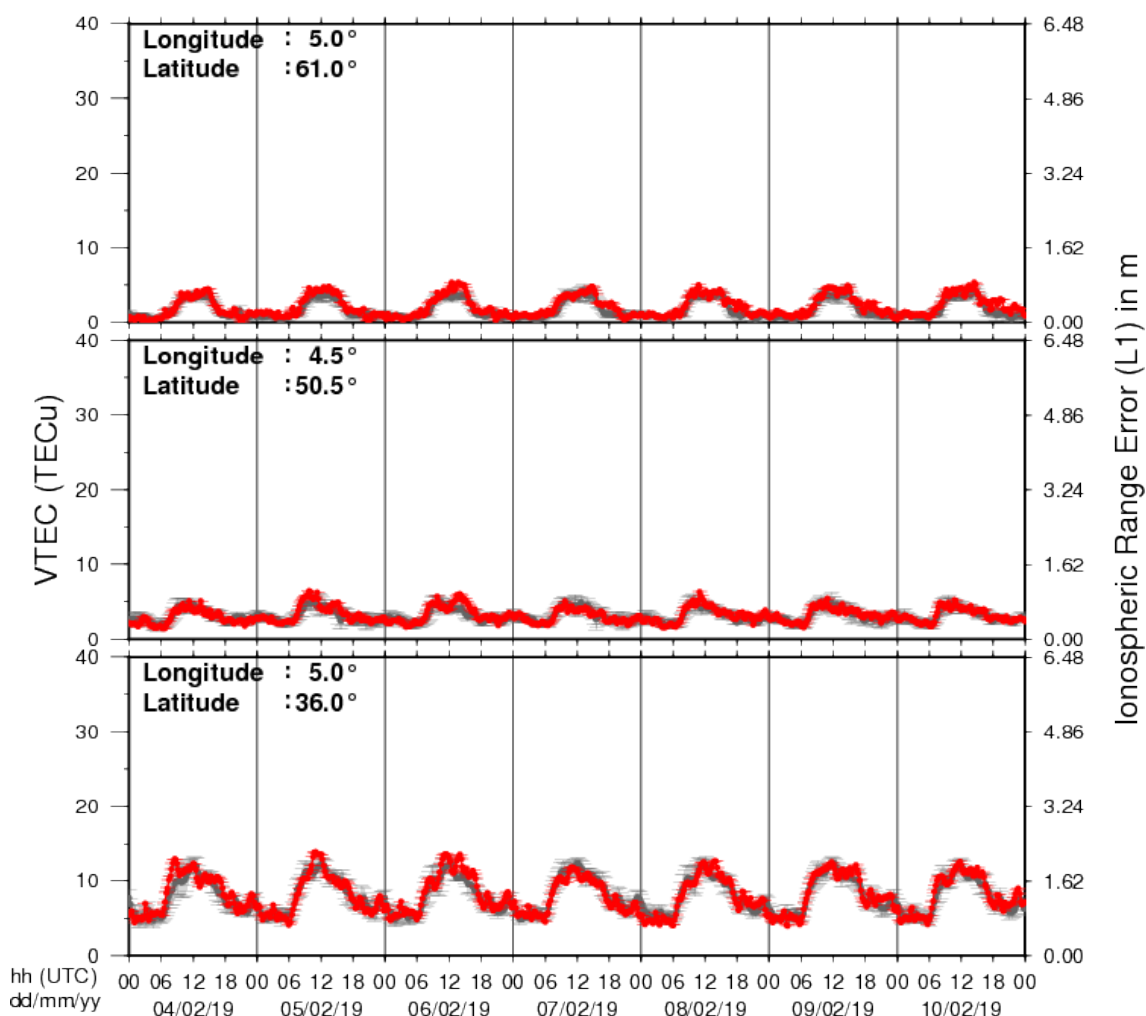
Solar Influences  
Data analysis Centre  
[www.sidc.be](http://www.sidc.be)

The pdf-version: [http://www.stce.be/briefings/20190211\\_SWbriefing.pdf](http://www.stce.be/briefings/20190211_SWbriefing.pdf)

The automatically running presentation: [http://www.stce.be/briefings/20190211\\_SWbriefing.ppsm](http://www.stce.be/briefings/20190211_SWbriefing.ppsm)

## 7. Review of ionospheric activity (4 Feb 2019 - 10 Feb 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:

a) in the northern part of Europe(N61°, 5°E)

b) above Brussels(N50.5°, 4.5°E)

c) 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](http://stce.be/newsletter/GNSS_final.pdf) for some more explanations ; for detailed information, see [http://gnss.be/ionosphere\\_tutorial.php](http://gnss.be/ionosphere_tutorial.php)