

# STCE Newsletter

19 Jun 2017 - 25 Jun 2017



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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. PROBA2 Observations (19 Jun 2017 - 25 Jun 2017)

### 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.

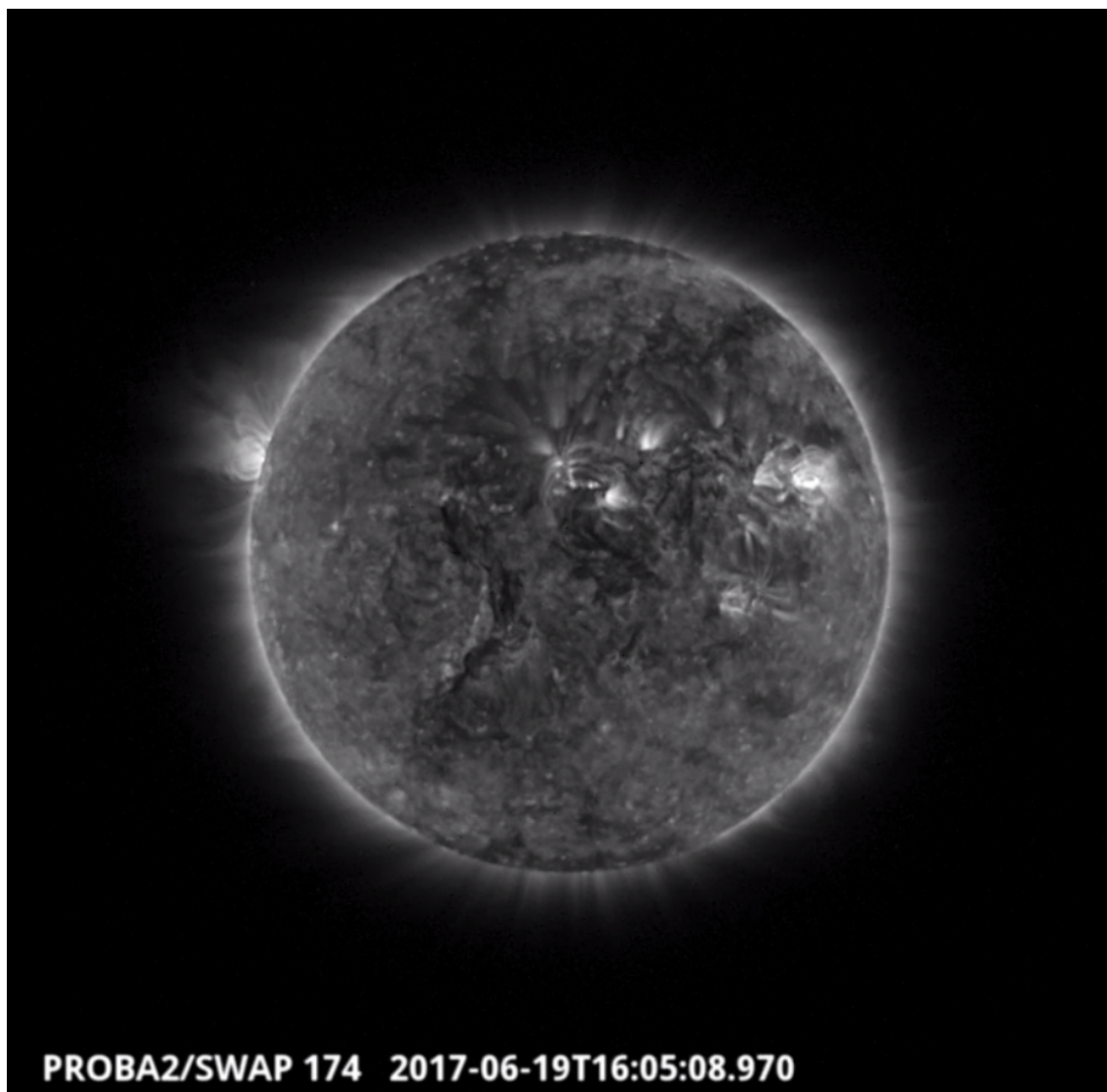
A weekly overview movie can be found here (SWAP week 378):

[http://proba2.oma.be/swap/data/mpg/movies/weekly\\_movies/weekly\\_movie\\_2017\\_06\\_19.mp4](http://proba2.oma.be/swap/data/mpg/movies/weekly_movies/weekly_movie_2017_06_19.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/>

### Monday Jun 19



The largest flare of the week (B5.0) was from NOAA active region 2663 and occurred on 2017-Jun-19 in the north-eastern quadrant of the Sun, as shown in the SWAP image above at 16:05 UT.

Find a movie of the event here (SWAP movie):

[http://proba2.oma.be/swap/data/mpg/movies/20170619\\_swap\\_movie.mp4](http://proba2.oma.be/swap/data/mpg/movies/20170619_swap_movie.mp4)

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

### **SOLAR ACTIVITY**

Over the past week solar activity has been low. No significant flares were recorded. The largest was a B5.0 flare from Active Region (AR) 2663. AR 2663 was most active throughout the week, producing several B-class flares, however the region moved over the west solar limb on 21 Jun 2017. No Earth directed Coronal Mass Ejections (CMEs) were detected. AR 2664 emerged over the east solar limb on 20 Jun 2017 and produced a couple of small eruptions. A small northern coronal hole transited the solar disk throughout the week, the region extended toward lower latitudes, but only increased the solar wind speed at Earth marginally. The greater than 10 MeV proton flux remained at background levels.

### **GEOMAGNETIC ACTIVITY**

Over the past week the solar wind speed fluctuated between 330 and 530 km/s. At the beginning of the week the solar wind speed was in decline before starting to slowly increase again around 23 Jun 2017. The total magnetic field strength has fluctuated between 4 and 10 nT. The Bz component fluctuated between -6 and +7 nT. During this week geomagnetic conditions were mostly quiet to unsettled, where the Kp-index ranged between 0 and 4 (NOAA) and local K-index between 0 and 3 (Dourbes).

## **3. SIDC Space Weather Briefing**

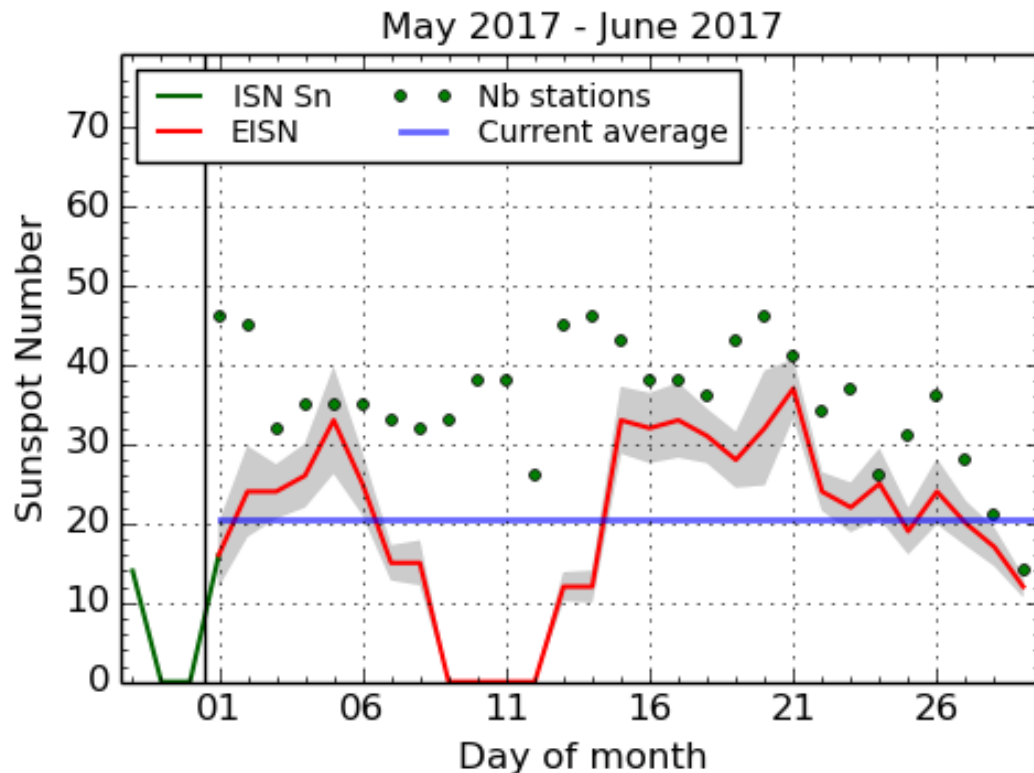
The Space Weather Briefing presented by the forecaster on duty from June 19 to 25 2017. It reflects in images and graphs what is written in the Solar and Geomagnetic Activity report.

C. VERBEECK & M. J. WEST ☀️ 19 JUN - 25 JUN 2017

# WEEKLY FORECASTING BRIEFING

The powerpoint: [http://www.stce.be/newsletter/SWBriefings/SWbriefing\\_20170626.pptx](http://www.stce.be/newsletter/SWBriefings/SWbriefing_20170626.pptx)

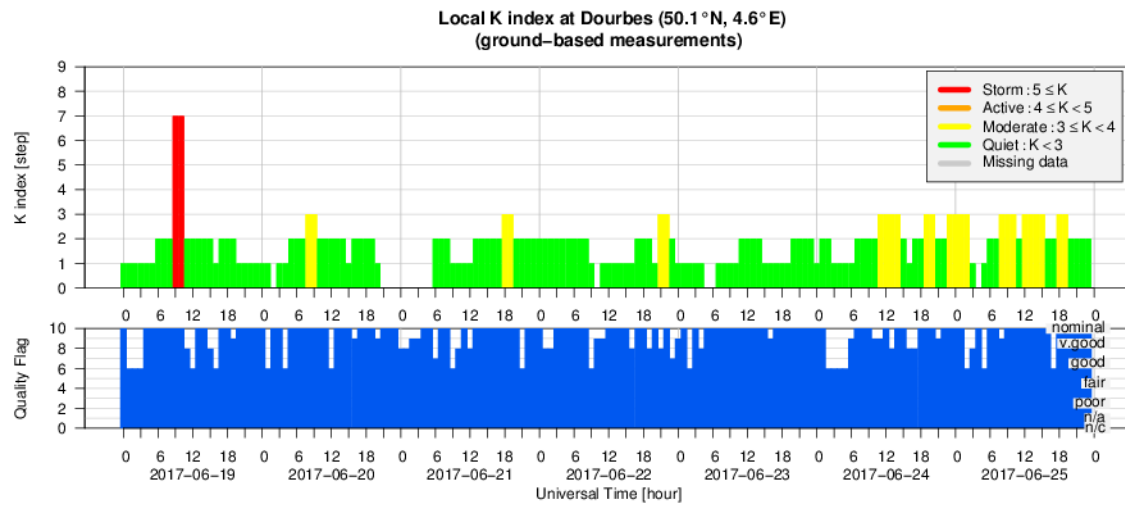
#### 4. The International Sunspot Number



SILSO graphics (<http://sidc.be/silso>) Royal Observatory of Belgium, 2017 June 29

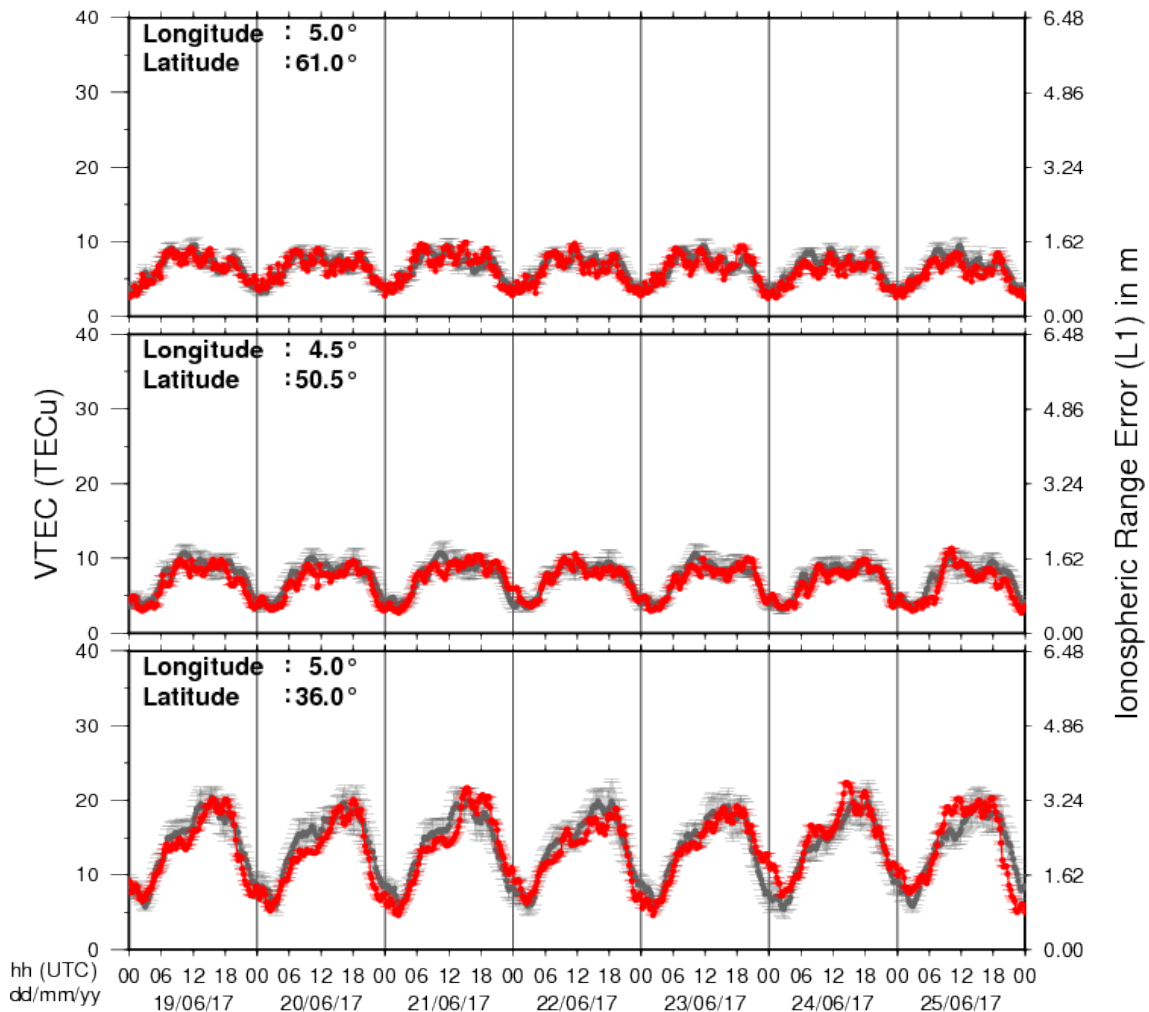
The daily Estimated International Sunspot Number (EISN, red curve with shaded error) derived by a simplified method from real-time data from the worldwide SILSO network. It extends the official Sunspot Number from the full processing of the preceding month (green line). The plot shows the last 30 days (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 (19 Jun 2017 - 25 Jun 2017)



## 6. Review of ionospheric activity (19 Jun 2017 - 25 Jun 2017)

### 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)

## **7. Future Events**

**For more details, see <http://www.spaceweather.eu/en/event/future>**

### **United Nations/United States of America Workshop on the International Space Weather Initiative in Massachusetts (USA)**

Start : 2017-07-31 - End : 2017-08-04

This workshop marks the 10th anniversary of the International Heliophysical Year, which led to the genesis of the International Space Weather Initiative. It is organized jointly by the Office for Outer Space Affairs, the National Aeronautics and Space Administration (NASA) and Boston College to highlight the achievements made over the past ten years and to show-case the worldwide development of science, capacity building, and outreach.

The UN Workshops on ISWI have been aimed at providing a global forum for space weather experts from developed and developing countries, including representatives of the major instrument operators and data providers. In particular the Workshop will focus on recent advances made in scientific research by utilizing ISWI instrument data in conjunction with space mission data in adding significant new knowledge on space weather phenomena near Earth and interplanetary space.

The workshop will begin with a high level international forum on the economic and societal effects of extreme space weather. This forum will include keynote speakers from major international organizations followed by a panel session to discuss issues and policies for acknowledging space weather as a global challenge.

The workshop is also held in preparation for UNISPACE+50 in 2018, the 50th anniversary of the first UN Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE), held in Vienna in 1968. The three components of the Workshop will also help develop a coherent international policy towards an appropriate response to space weather.

Website: <https://iswi2017.bc.edu/>

### **URSI General Assembly in Montreal, Canada**

Start : 2017-08-19 - End : 2017-08-26

For the thirty-second time since the inception of URSI, Radio Scientists from across the world will get together for the URSI General Assembly and Scientific Symposium. This triennial gathering will take place from 19th to 26th of August 2017, in Montreal, Canada. This conference is a unique opportunity to learn about recent advances in all fields of Radio Science, as covered by all ten URSI Commissions.

Among the different sessions, please note:

\* 'Radio Science for Space Weather' Conveners: M. Messerotti, V. Pierrard

\* 'Remote Sensing and Modeling of the Earth's Plasmasphere and Plasmopause' Conveners: A. M. Jorgensen, V. Pierrard, B. Heilig

The abstract deadline is 30 January 2017

Website: <http://www.ursi2017.org>

### **2017 Joint IAPSO-IAMAS-IAGA Assembly in Cape Town, South Africa**

Start : 2017-08-27 - End : 2017-09-01

The Joint IAPSO-IAMAS-IAGA Assembly, endorsed by the University of Cape Town and the South African Department of Science and Technology, will take place from 27 August to 1 September 2017 at the Cape Town International Convention Centre (CTICC). Several IAGA and IAMAS sessions are of Space Weather interests as well as the joint session 'Space Weather throughout the Solar System: Bringing Data and Models together'.

Website:

<http://iapso-iamas-iaga2017.com/index.php>



## **Workshops on Radiation Monitoring for the International Space Station in Torino, Italy**

Start : 2017-09-05 - End : 2017-09-07

The Workshop on Radiation Monitoring for the International Space Station is an annual meeting to discuss the scientific definition of an adequate radiation monitoring package and its use by the scientific community on the ISS. Types of instruments and research topics need to be defined in order to optimise the radiation safety of the ISS crew.

Website: <http://wrmiss.org/>

## **International Workshop on Solar, Heliospheric & Magnetospheric Radioastronomy in Meudon, France**

Start : 2017-11-06 - End : 2017-11-10

Jean-Louis Steinberg has been one of the major pioneers in radioastronomy. Co-founder of the Nançay Observatory, he has actively participated to, and inspired a large number of radio instruments on many international space missions. Jean-Louis Steinberg is the founder of the Space Radioastronomy laboratory of the Paris Observatory in 1963. Later on, this laboratory widened its science interests and became the DESPA (1971) and then the current LESIA (2002) which is one of the major space sciences laboratories in France. The aim of this workshop is to cover the science topics which Jean-Louis Steinberg has promoted during his career, focusing on Solar, Heliospheric & Magnetospheric radioastronomy & physics. This will be done by covering both observations from either ground facilities (NDA, RH, LOFAR, Artemis etc ...) or space missions (ISSEE, Ulysses, WIND, CLUSTER, STEREO, CASSINI, JUNO etc ...) and models/theories. A series of invited talks is also foreseen to cover the new developments in the discipline which may come with the future facilities such as Solar Orbiter, Solar Probe Plus, JUICE, JUNO, LOFAR+, SKA etc ....

This workshop will also be the opportunity to remember both the extraordinary personal & professional lives of Jean-Louis Steinberg especially for new generation of scientists. At the occasion of this workshop it is also expected that the Building 16 (historical Space Sciences building) on the Meudon campus will be renamed "Building Jean-Louis Steinberg".

Website:

<https://jlsworkshop.sciencesconf.org/>

## **European Space Weather Week 14**

Start : 2017-11-27 - End : 2017-12-01

The ESWW is the main annual event in the European Space Weather calendar. It is the European forum for Space Weather as proven by the high attendance to the past editions. The agenda will be composed of plenary/parallel sessions, working meetings and dedicated events for service end-users. The ESWW will again adopt the central aim of bringing together the diverse groups in Europe working on different aspects of Space Weather.

Website:

<http://www.stce.be/esww14/>