STCE Newsletter

15 May 2017 - 21 May 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.

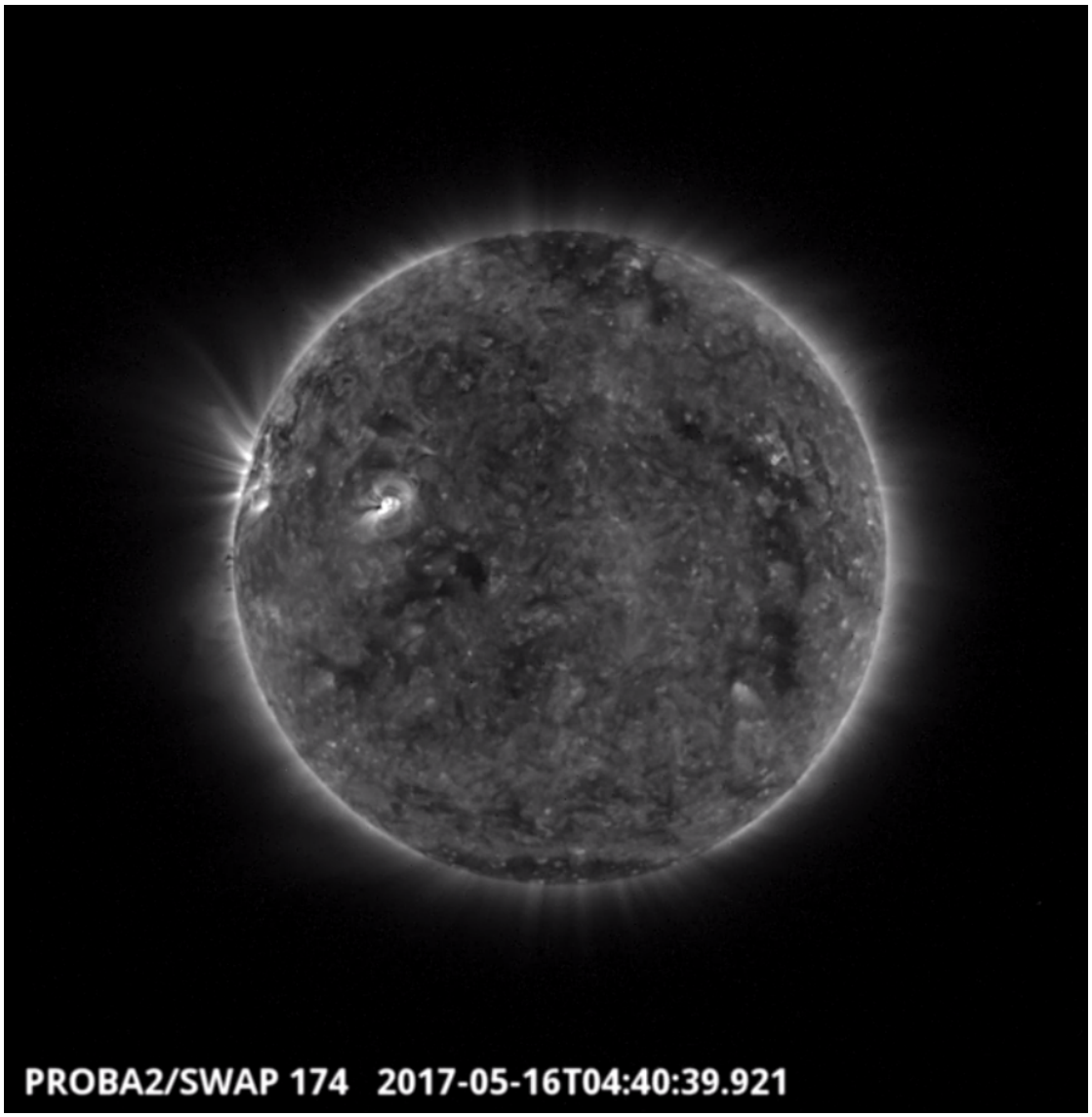
Final Editor : Petra Vanlommel
Contact : R. Van der Linden, General Coordinator STCE,
Ringlaan - 3 - Avenue Circulaire, 1180 Brussels,
Belgium

1. PROBA2 Observations (15 May 2017 - 21 May 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 373):
http://proba2.oma.be/swap/data/mpg/movies/weekly_movies/weekly_movie_2017_05_15.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/

Tuesday May 16



NOAA active region 2657 produced two B-flares during the week, including the largest flare of the week (a B2.2 flare) on 2017-May-16. The active region can be seen in the north-east quadrant of the Sun in the SWAP image above.
Find a movie of the flaring events here (SWAP movie):
http://proba2.oma.be/swap/data/mpg/movies/20170516_swap_movie.mp4

2. Review of solar and geomagnetic activity (15 May 2017 - 21 May 2017)

SOLAR ACTIVITY

The GOES X-ray background was below B1 level throughout the week. The only sunspot regions present were NOAA AR 2656 (alpha, beta), 2657 (alpha) and 2658 (beta), which produced a few low B flares.

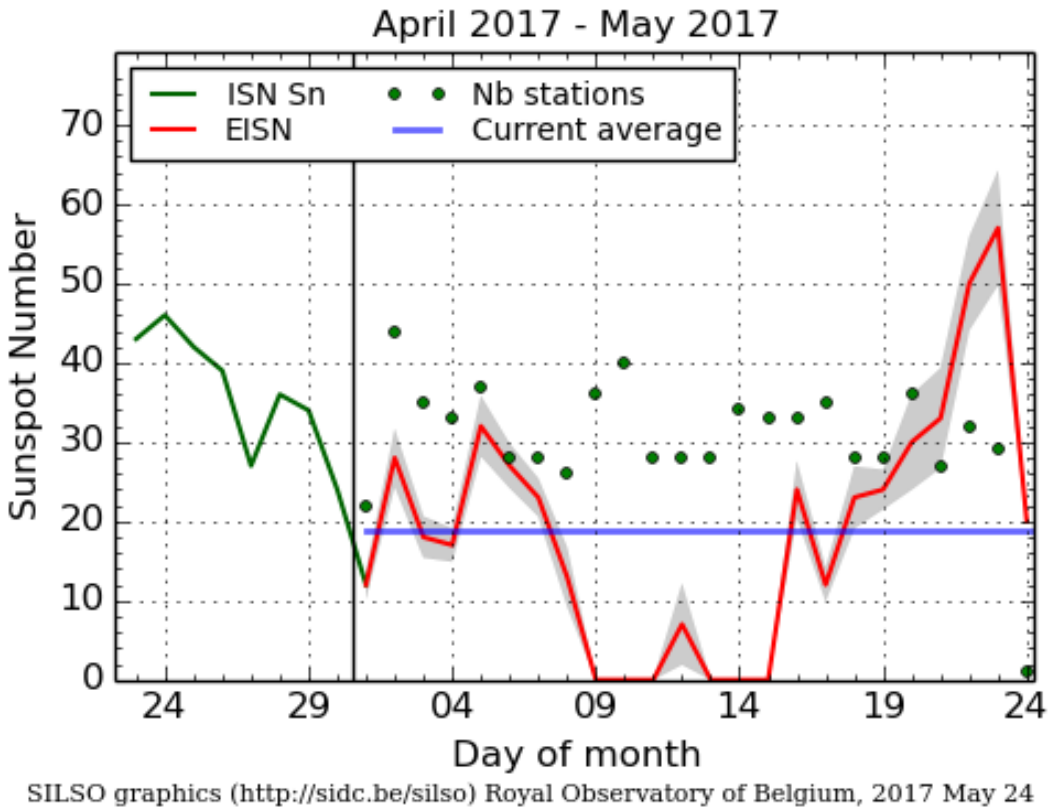
GEOMAGNETIC ACTIVITY

A high speed stream from a positive coronal hole arrived at Earth near midday on May 15, with maximum solar wind speed of about 680 km/s and maximal magnitude of the Interplanetary Magnetic Field (IMF) around 17 nT.
Late on May 17, enhanced IMF and low solar wind temperature were registered, probably due to a glancing blow from the CME of May 13. High speed stream influence waned from May 17 onwards. Since there were no periods with consistent southward Bz, only a few active geomagnetic periods (K Dourbes = 4) were registered. A high speed stream from a negative equatorial coronal hole arrived late on May 18, with maximum solar wind speed of about 750 km/s and maximal magnitude of the Interplanetary Magnetic Field (IMF) around 15 nT. Several intervals with active geomagnetic conditions were recorded.

The SIDC Space Weather Briefing (SWB)

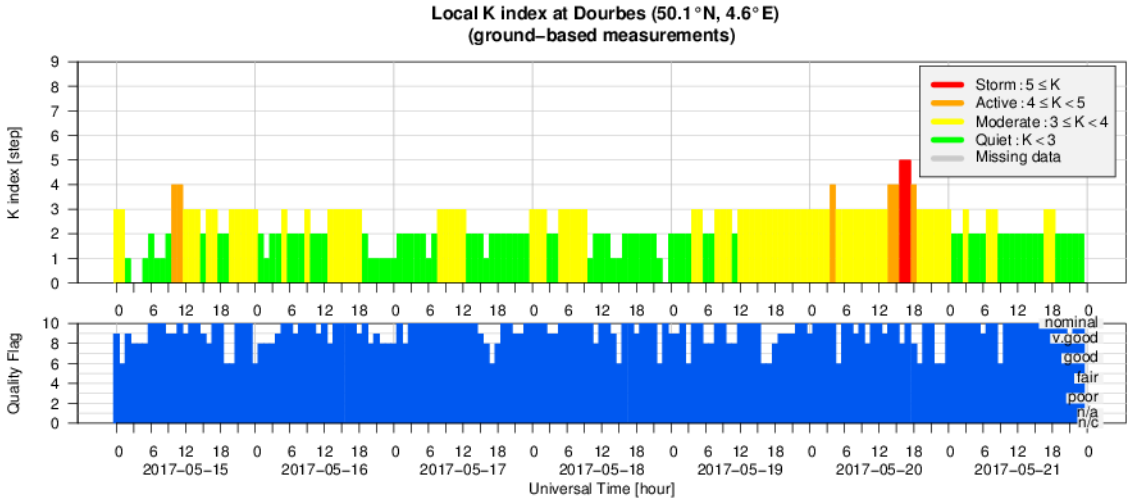
Check SWB movie 1, SDO/HMI - magnetogram + visible light: http://www.stce.be/movies/1JHV_20170522.mp4
Check SWB movie 2, same as movie 1 but now with the JHelioviewer tracking device: http://www.stce.be/movies/2JHV_20170522.mp4
Check SWB movie 3, SDO/AIA: http://www.stce.be/movies/3JHV_20170522.mp4

3. The International Sunspot Number

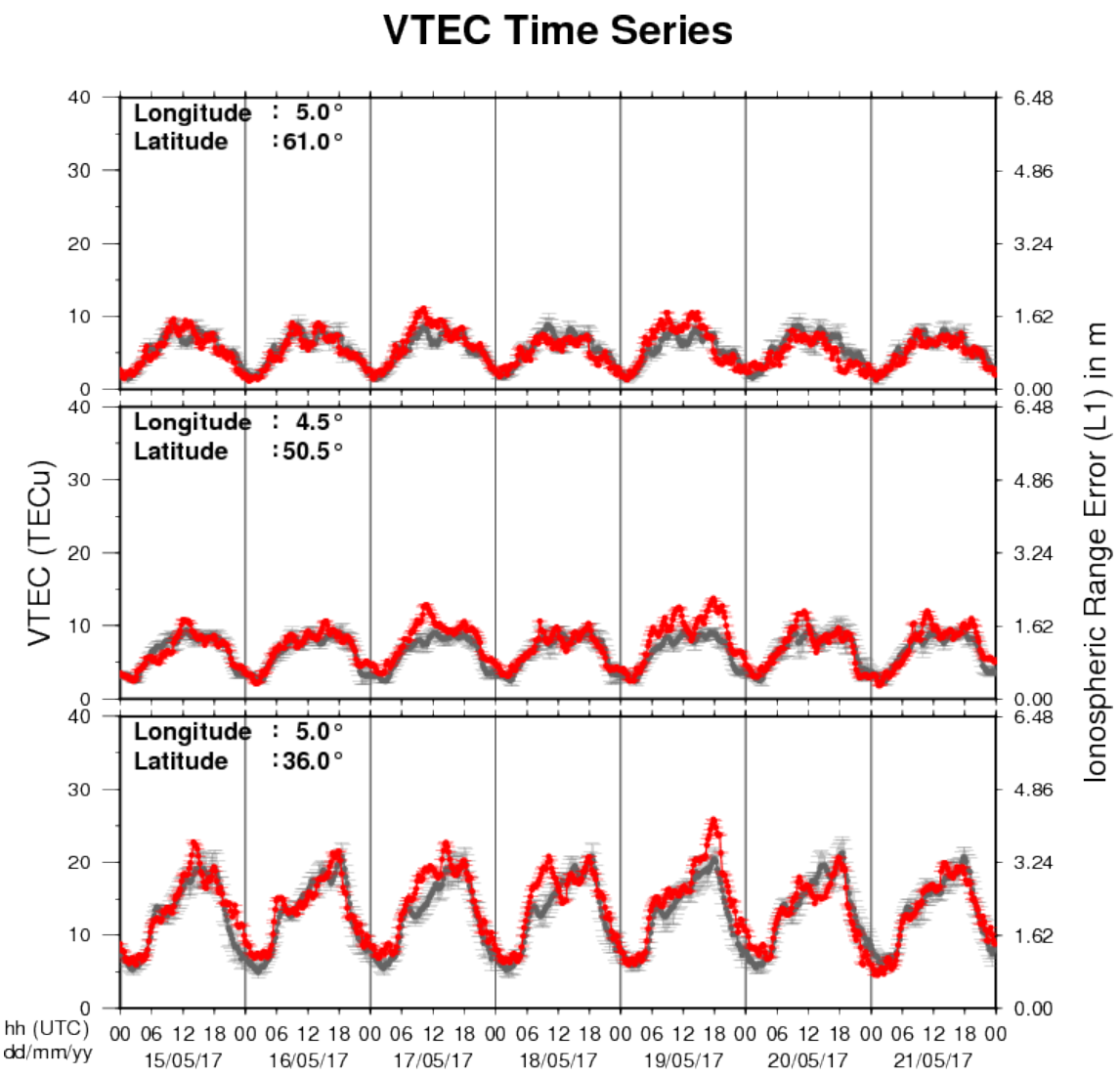


The daily Estimated International Sunspot Number (EISN, red curve with shaded error) derived by a simplified method from real-time data from the worldwide SILSO network. It extends the official Sunspot Number from the full processing of the preceding month (green line). The plot shows the last 30 days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

4. Geomagnetic Observations at Dourbes (15 May 2017 - 21 May 2017)



5. Review of ionospheric activity (15 May 2017 - 21 May 2017)



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 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

6. 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 Plasmapause' 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 Steinbeg has been one of the major pioneers in radioastronomy. Co-founder of the NanÃ§ay Observatory, he has actively participated to, an 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 lifes 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/