

STCE Newsletter

24 Dec 2012 - 30 Dec 2012



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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.

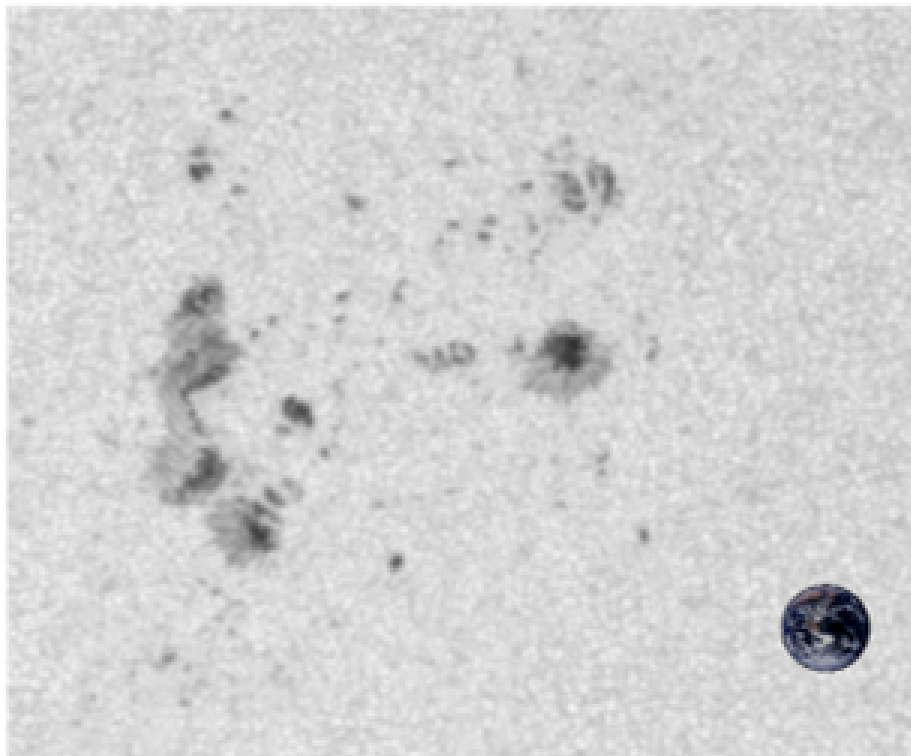
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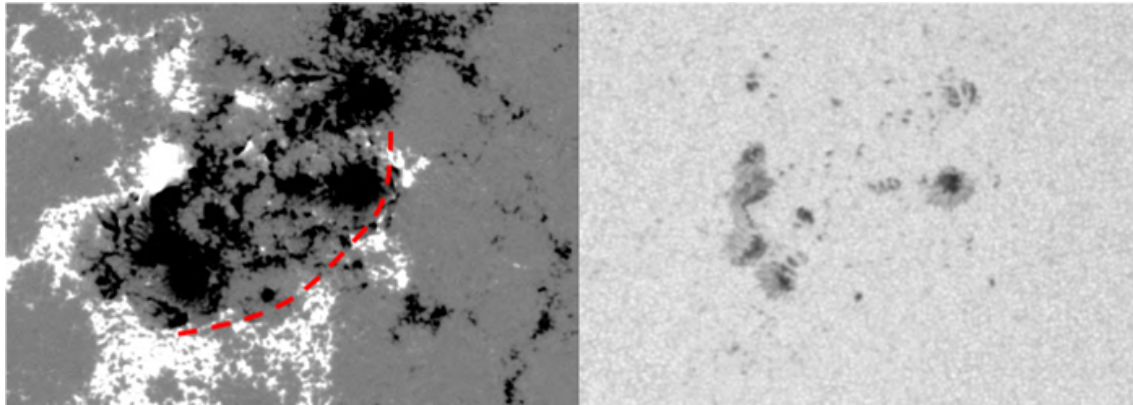
1. A Christmas flare (24 Dec 2012 - 30 Dec 2012)

July 2012 was one of the most active months so far this solar cycle, producing numerous medium and strong solar flares. Unfortunately, since then, solar flare activity has not been particularly exciting. In December, things went from bad to worse, with only a few dozen small ("C") flares and no medium ("M") flares at all. The previous month with no M-flares was December 2010. Also, the last M-flare dates back to 28 November 2012 (M2 in NOAA 1620), and the last extreme flare (X-class) occurred on 23 October 2012 (X1 in NOAA 1598). It seems ages ago!

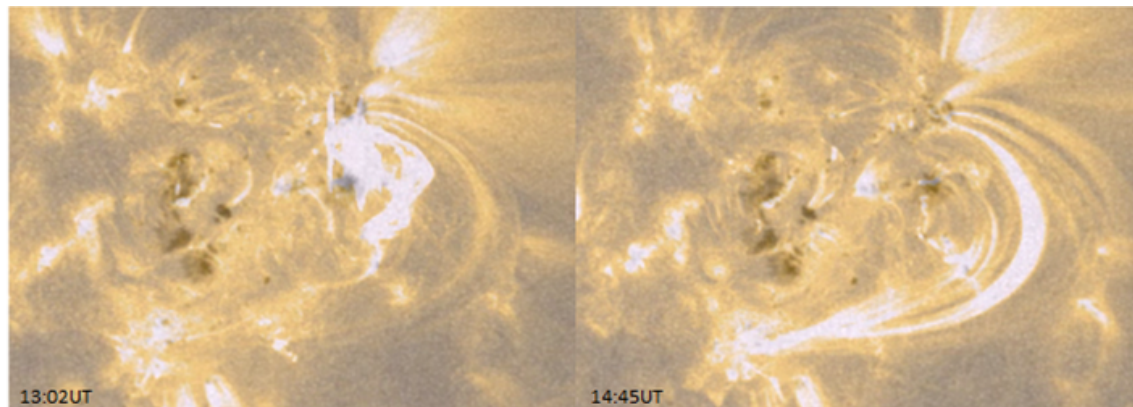
During such gloomy times, even a small flare can make solar observers happy. The Christmas flare in NOAA 1635 was such a fine example. This C4-flare occurred in a modest and not very complex sunspot group. The blue dot on the SDO white light image represents the Earth for comparison.



A short movie at http://www.youtube.com/watch?v=AtYHOIX_UXc was created from SDO-imagery (<http://sdo.gsfc.nasa.gov/>), first showing the active region in white light (SDO/HMI) and then the eruption itself (SDO/AIA-171). The two subsequent clips show the same eruption, but using a transparent layover in white light and a magnetogram. This allows for a better view on which sunspots and magnetic areas were involved in this flare.



Clearly, one can see that the flare took place in the leading (right) part of the sunspot group, along the magnetic inversion line (red dashed - see image above), between negative polarity ("black") sunspots and positive ("white") polarity areas with no or very small sunspots. Interestingly, one foot point of the subsequent coronal loops was anchored in the *trailing* portion of the active region (bottom left, south of the trailing sunspots - see image below), suggesting some magnetic restructuring took place.



2. Review of solar and geomagnetic activity (24 Dec 2012 - 30 Dec 2012)

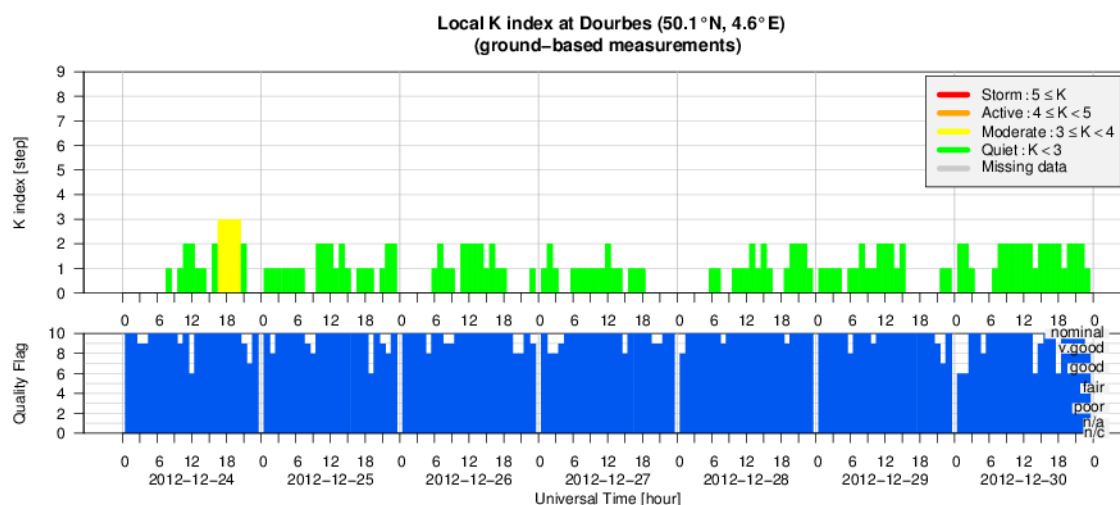
Solar Activity

Solar conditions were quiet. Regular C-class flaring originated from NOAA AR 1635 on Dec 24 and Dec 25, the largest event being a C4.1 flare on Dec 25. One additional flare originated from NOAA AR 1638 on Dec 29.

Geomagnetic Activity

This week was geomagnetically quiet with solar wind speeds on the order of 300 km/s. Towards the end of the week (Dec 30), there was an increase towards 500 km/s.

3. Geomagnetic Observations at Dourbes (24 Dec 2012 - 30 Dec 2012)



4. Future Events

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

2nd annual SWIFF meeting

Start : 2013-01-14 - End : 2013-01-16

SWIFF (Space Weather Integrated Forecasting Framework), a project funded by the European Commission through the Framework Program 7, aims to develop mathematical models and computational methods especially designed to handle the multiple physics and the multiple scales characteristic of space weather phenomena (for more information see). SWIFF Project reaches two years on January 31, 2013. Hence, the aim of the Conference will be to review the progress in those two years and plan for the next last year of activity.

<http://www.swiff.eu/>

Meeting Registration - DEADLINE EXTENDED until December 30: deadlines for meeting registration and abstract submission are now extended until December 30, 2012!

Registration Fee is €, ~140.00, including: access to all sessions, coffee breaks, and the Social Dinner. The Social Activity (visit to the Egyptian Museum) and lunches are not included in the fee. We kindly ask you to pay the registration fee via the on-line form as soon as possible. Late (on-site) registrations and payments will also be accepted (via credit card only), but we kindly ask you to make the fee payment before the deadline of December 30. Official receipts of Registration Fee payments will be provided at the Meeting desk.

During the registration, we ask you to preliminary state if you intend to participate also to the Social Activity and/or to the Social Dinner, just to have a first idea of the total number of people. Payment for the Social Activity (approximately €, ~12, depending on the final number of participants) will be required on-site (by cash only). Receipts will be provided.

For any further information please contact the Scientific Organizing Committee (swiff2_soc@oato.inaf.it) or the Local Organizing Committee (swiff2_loc@oato.inaf.it).

Website:

<http://swiff2.oato.inaf.it/>

Solar ALMA workshop in Glasgow (UK)

Start : 2013-01-14 - End : 2013-01-17

The Atacama Large Millimeter/submillimeter Array (ALMA), an international partnership of Europe, North America and East Asia in cooperation with the Republic of Chile, is the largest astronomical project in existence.

The workshop aims to bring together the ALMA-minded solar community to discuss solar observational issues with ALMA, solar science and planned observations with ALMA, and the planning of solar ALMA observations.

The workshop is hosted by Astronomy & Astrophysics Group, and will take place in School of Physics and Astronomy, University of Glasgow, Room 323, Kelvin Building.

Website:

<http://www.astro.gla.ac.uk/~eduard/solarALMA/>

Understanding the Dynamics of the Sun using Helioseismology and MHD Simulations in NASA Ames Research Center, CA (USA)

Start : 2013-02-04 - End : 2013-02-08

Helioseismology provides tools for imaging structures and mass flows below the solar surface, and is becoming an essential technique for understanding the dynamics of solar activities and developing physics-based forecasts of the solar cycle, emerging active regions and energy release events. A better understanding is needed to unravel the effects of the complex interactions of solar oscillations with the turbulent magnetized plasma on global and local helioseismology diagnostics. These effects are particularly challenging in regions of strong magnetic fields. Numerical simulations of solar MHD waves and turbulent dynamics give important insights into the complicated wave and turbulence physics, and provide synthetic data for verification and validation of helioseismology methods and results.

The goals of this workshop are to discuss and stimulate further development of helioseismology methods, solar interior models, and realistic numerical simulations. These goals are particularly important for analysis of the continuous data flow from the Solar Dynamics Observatory, development and verification of helioseismology methods, and for theoretical interpretation of observations and inversion results.

Website:

<http://sun.stanford.edu/LWS2013/>

Space Climate Symposium-5 in Oulu, Finland

Start : 2013-02-11 - End : 2013-02-15

More information follows later.

Website:

<http://www.spaceclimate.fi/>

AFFECTS User Workshop in Brussels, Belgium

Start : 2013-02-28 - End : 2013-02-28

On February 28th, 2013 the AFFECTS team organises an international user workshop at the Royal Observatory of Belgium in Brussels.

At the workshop there will be a demonstration of all AFFECTS space weather products:

- * Near real time dimming and EIT wave detection
- * 3D CME analysis tool
- * Coronal analysis tool
- * CME & solar wind arrival and impact forecast tool
- * Flare, CME, geomagnetic, auroral, ionospheric forecasts & alerts
- * Forecast of perturbed TEC
- * Solar activity and space weather timelines viewer

To register, please send an e-mail incl. your full name, institution, e-mail and (institutional) address to . Dörte Dannemann

Website:

<http://www.affects-fp7.eu/news-events/user-ws/>

9th GEANT4 space users' workshop in Barcelona, Spain

Start : 2013-03-04 - End : 2013-03-06

Geant4 Space Users' Workshop -G4SUW- is focused on new results on space radiation interaction with components, sensors and shielding analysis, as well as on Geant4-based tools and developments applicable to space missions.

The Geant4 particle transport toolkit is jointly developed by a world-wide collaboration and is intended for a wide range of applications in HEP, medical field, and space physics and engineering. In recent years, space and astrophysics has become a significant user category, with applications ranging from instrument and detector response verification to space radiation shielding optimization, component effects, support of scientific studies, and analysis of biological effects.

Main topics for next G4SUW will include:

- * Single Event Effects (SEE) simulation. Geant4-TCAD coupling.
- * Microdosimetry.
- * Planetary exploration applications.
- * Space electronics and science detectors.
- * Simulation of astronaut radiation hazards.
- * Interfaces and tools to space environment analysis tools such as SPENVIS.
- * Cosmic ray magnetospheric propagation analysis.
- * Large-scale simulations requiring event biasing and/or GRID capabilities.
- * General shielding optimization applications.

Website:

<http://www.inta.es/g4suw2013/index.html>

European Geosciences Union General Assembly 2013 in Vienna, Austria

Start : 2013-04-07 - End : 2013-04-12

The EGU General Assembly 2013 will bring together geoscientists from all over the world into one meeting covering all disciplines of the Earth, Planetary and Space Sciences. Especially for young scientists, it is the aim of the EGU to provide a forum where they can present their work and discuss their ideas with experts in all fields of geosciences. The EGU is looking forward to cordially welcoming you in Vienna.

Website:

<http://www.egu2013.eu/home.html>

Causes and Consequences of the Extended Solar Minimum Between Solar Cycles 23 and 24 (4CESM) in Key Largo, FL (USA)

Start : 2013-04-08 - End : 2013-04-12

The most recent solar minimum, solar cycle 23-24 minimum, was unusually long (266 spotless days in 2008, the most since 1913), and the magnetic field at the solar poles was approximately 40% weaker than the last cycle; and unusually complex (the solar wind was characterized by a warped heliospheric current sheet, HCS, and fast-wind streams at low latitudes: the fast-wind threads the ecliptic more commonly in 2008 than 1996.) This complexity resulted in many effects observed from Sun to Earth, with many observations indicating unusual conditions on the Sun, in the heliosphere, and in the magnetosphere, ionosphere, and upper atmosphere of the Earth.

This remarkable set of conditions provide the scientific community with an exceptional opportunity to assess the nature and structure of a very quiet Sun, and an upper atmosphere relatively devoid of solar influences, helping to provide a better understanding of the relative roles of solar activity and internal variability in the dynamics of the Earth's upper atmosphere and ionosphere. Such an understanding requires a multidisciplinary approach.

The main goal of the conference is to bring together the solar, heliospheric, magnetospheric, upper atmosphere, and ionospheric communities to debate and discuss interdisciplinary work and reach a better understanding of the nature and structure of a very quiet Sun, and of an upper atmosphere

relatively devoid of solar influences, and in doing so, to help clarify the role of solar activity in the dynamics and variability of the Earth's upper atmosphere and ionosphere relative to the internal variations.

Website:

<http://chapman.agu.org/solarminimum/>

NSO Workshop #27: 50 Years of the Seismology of the Sun and Stars in Sunspot, NM (USA)

Start : 2013-05-06 - End : 2013-05-10

In the last 50 years, helioseismology has made significant contributions to the knowledge of the Sun's interior physics and has led the way to asteroseismology. We have now reached an era where more sophisticated questions are being asked to understand the subtle properties of the Sun and other stars due to the synoptic and high-resolution observations available from BISON, GONG and space missions such as SOHO , SDO, CoRot and Kepler.

On this occasion, a workshop on the theme of '50 years of the seismology of the Sun and stars' is being organized to reflect the progress that has been made as well as to focus on future goals. We plan to bring together helio- and asteroseismologists, theorists and observers in a journey that will take us from the interior of the Sun and its magnetism towards the structure of distant stars and activity cycles.

Website:

<http://www.nso.edu/workshops/2013>

ILWS Science Workshop in Irkutsk, Russia

Start : 2013-06-23 - End : 2013-06-29

The 2013 ILWS Science Workshop will take place June 23-29, 2013 in Irkutsk, Russia and will be hosted by the Institute of Solar-Terrestrial Physics of the Russian Academy of Sciences

Website:

http://en.iszf.irk.ru/ILWS_2013

2013 Heliophysics Summer School in Boulder, Colorado (USA)

Start : 2013-07-12 - End : 2013-07-19

Applications are invited for the 2013 Heliophysics Summer School, which will be held in beautiful Boulder, Colorado. We are seeking students and undergraduate level teachers and instructors to join us this coming summer for a unique professional experience. Students and teachers will learn about the exciting science of heliophysics as a broad, coherent discipline that reaches in space from the Earth's troposphere to the depths of the Sun, and in time from the formation of the solar system to the distant future. At the same time, a goal of the Summer School is for the group of instructors to develop materials from Heliophysics that can be applied in their classes.

The Heliophysics Summer School focuses on the physics of space weather events that start at the Sun and influence atmospheres, ionospheres and magnetospheres throughout the solar system. The solar system offers a wide variety of conditions under which the interaction of bodies with a plasma environment can be studied: there are planets with and without large-scale magnetic fields and associated magnetospheres; planetary atmospheres display a variety of thicknesses and compositions; satellites of the giant planets reveal how interactions occur with subsonic and sub-Alfvenic flows whereas the solar wind interacts with supersonic and super-Alfvenic impacts.

Encompassed under a general title of comparative magnetospheres are processes occurring on a range of scales from the solar wind interacting with comets to the interstellar medium interacting with the heliosphere. The school will address not only the physics of all these various environments but will also go into the technologies by which these various environments are being observed. The program is complemented with considerations of the societal impacts of space weather that affects satellites near Earth and elsewhere in the solar system.

The school will be based on lectures, laboratories, and recitations from world experts, and will draw material from the three textbooks Heliophysics I-III, published by Cambridge University Press.

Several teachers along with about 35 students will be selected through a competitive process organized by the UCAR Visiting Scientist Programs. The school lasts for eight days, and each participant receives full travel support for airline tickets, lodging and per diem costs.

Website:

<http://www.vsp.ucar.edu/Heliophysics/>

Space weather summer school in Alpbach, Austria

Start : 2013-07-16 - End : 2013-07-25

The Summer School Alpbach enjoys 36 years of tradition in providing in-depth teaching on different topics of space science & technology, featuring lectures and concentrated working sessions on mission studies in self-organised working groups. 60 young highly qualified European science and engineering students converge annually for stimulating 10 days of work in the Austrian Alps. 4 teams compete to design a space mission judged by a jury of experts. Students learn how to approach the design of a satellite mission and explore new and startling ideas supported by experts. The Summer School 2013 will focus on Space Weather .

The purpose of the Summer School is to foster the practical application of knowledge derived from lectures, to develop organisational and team-work skills and to encourage creativity. Teams will compete to design the best project, judged by an independent jury. The teams themselves are responsible for the selection of the subject of the project and for the team structure and working methods.

Website:

<http://www.summerschoolalpbach.at/>

7th International Workshop on Solar Polarization in Kunming, China

Start : 2013-09-09 - End : 2013-09-14

We gain information about the universe through analysis of the spectra from celestial objects. However, while the intensity spectrum represents a scalar quantity but electromagnetic radiation occurs in the form of transverse waves, the polarized spectrum provides us with a 4-vector, the Stokes vector. The increased amount of information space opens new windows to the universe, in particular for the exploration of magnetic fields. It is well recognized that the magnetic field is a primary agent responsible for structuring and the source of all variability on intermediate time scales, which manifests itself in all forms of solar and stellar activity.

It is therefore not surprising that every year there are many scientific meetings organized with the objective of studying the role of magnetic fields in cosmic objects. What is largely missing in these meetings is however an in-depth investigation of the fundamental aspects of how magnetic fields can be determined by the means of spectro-polarimetry, our main gateway to cosmic magnetism. The primary aim of our series of Workshops is to address these fundamental aspects, with less emphasis on the morphological and physical properties of cosmic magnetic fields.

Website: <http://spw7.yao.ac.cn/>

European Space Weather Week in Belgium

Start : 2013-11-18 - End : 2013-11-22

The 10th Edition of the European Space Weather Week will take place on 18-22nd November 2013 in Belgium. The venue will be confirmed early next year, but mark your calendars now for the 10th Anniversary of this growing European event.

The ESWW will again adopt the central aim of bringing together the diverse groups in Europe working on different aspects of Space Weather . This includes but isn't limited to the scientific community, the engineering community, applications developers, service providers and service end users. The meeting organisation will again be coordinated by the Belgian Solar-Terrestrial Centre of Excellence (STCE), ESA and the Space Weather Working Team. The local organisation will be done by the STCE.

Website: not yet available

40th COSPAR Scientific Assembly in Moscow, Russia

Start : 2014-08-02 - End : 2014-08-10

The 40th COSPAR Scientific Assembly will be held in Moscow, Russia from 2 - 10 August 2014. This Assembly is open to all bona fide scientists.

Website:

<http://www.cospar-assembly.org/>

5. New documents in the European Space Weather Portal Repository

See <http://www.spaceweather.eu/en/repository>

eHEROES - Effects of the ambient solar wind flow on the propagation behavior of (I)CMEs

<http://www.spaceweather.eu/en/repository/show?id=402>