STCE Newsletter

29 Oct 2012 - 4 Nov 2012

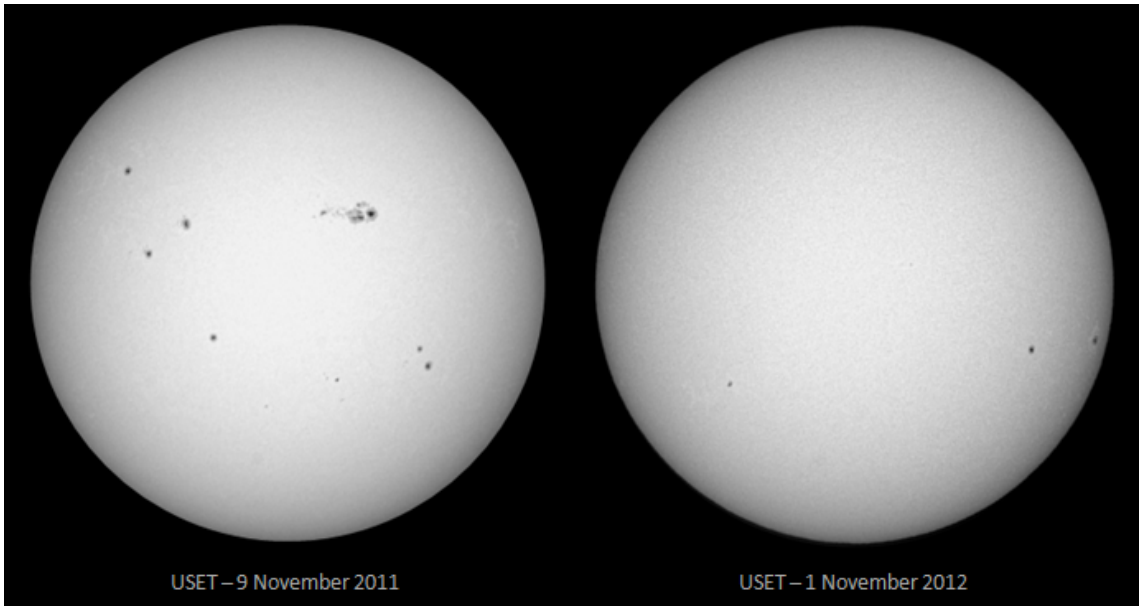
Published by the STCE - this issue : 10 Nov 2012. Available online at http://www.stce.be/newsletter/ .

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.

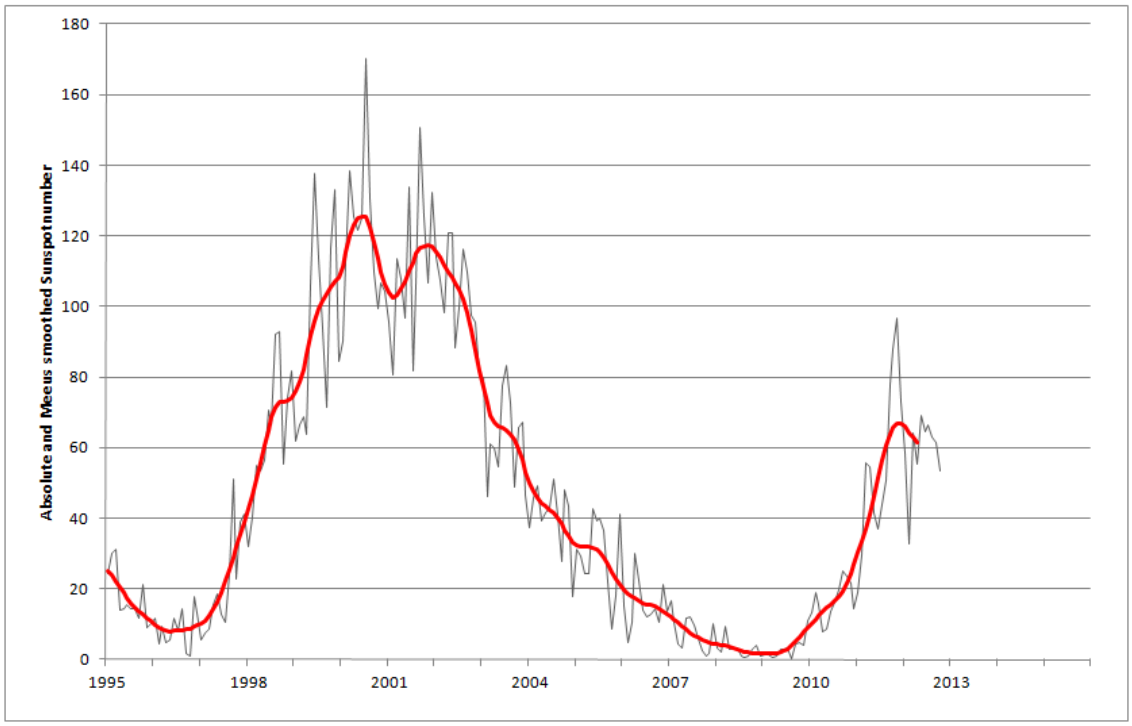
Final Editor : Petra Vanlommel
Contact : R. Van der Linden, General Coordinator STCE,
Ringlaan - 3 - Avenue Circulaire, 1180 Brussels,
Belgium

1. Has SC24-maximum passed? (29 Oct 2012 - 4 Nov 2012)

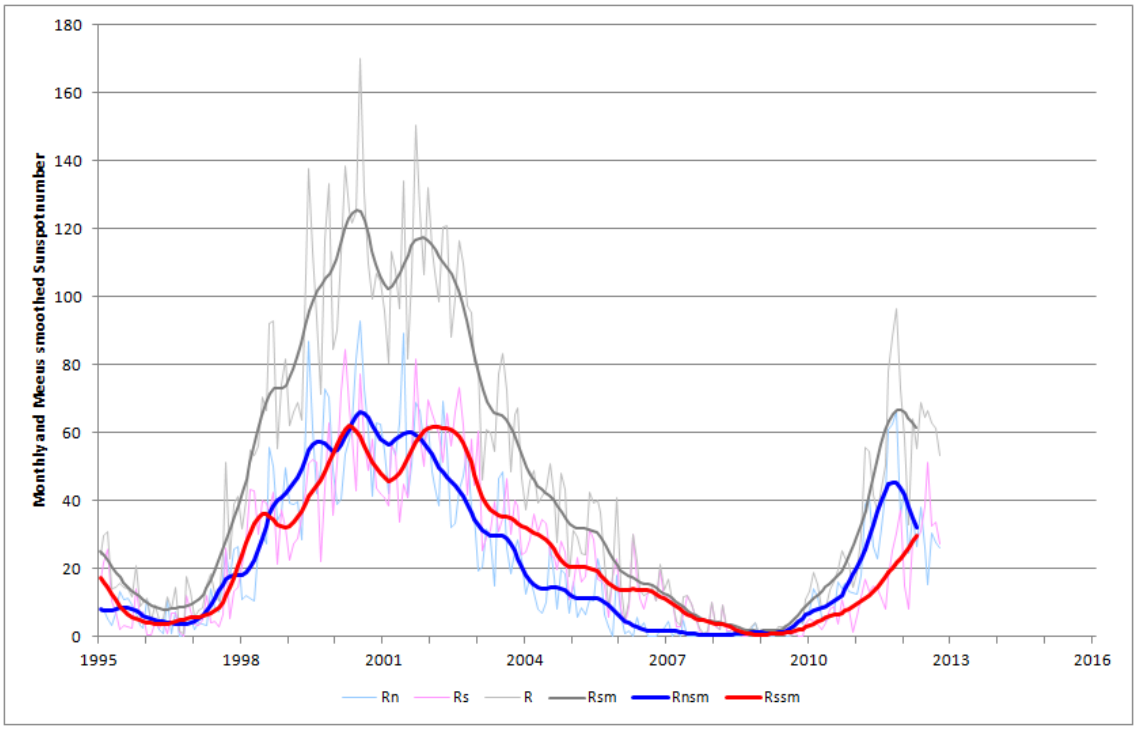
Once again, last week's activity was not particularly exciting: Just a few small single sunspots, that was it! Also, the SIDC (http://www.sidc.be/index.php) announced that the provisional sunspot number for October was 53.3. That is the lowest since February this year. What a difference with the sunspot activity one year ago: Several groups dotted the solar surface during that November month, and also the biggest sunspot group so far this solar cycle (NOAA 1339) made its appearance. Obviously, one wonders if SC24-maximum has already passed.



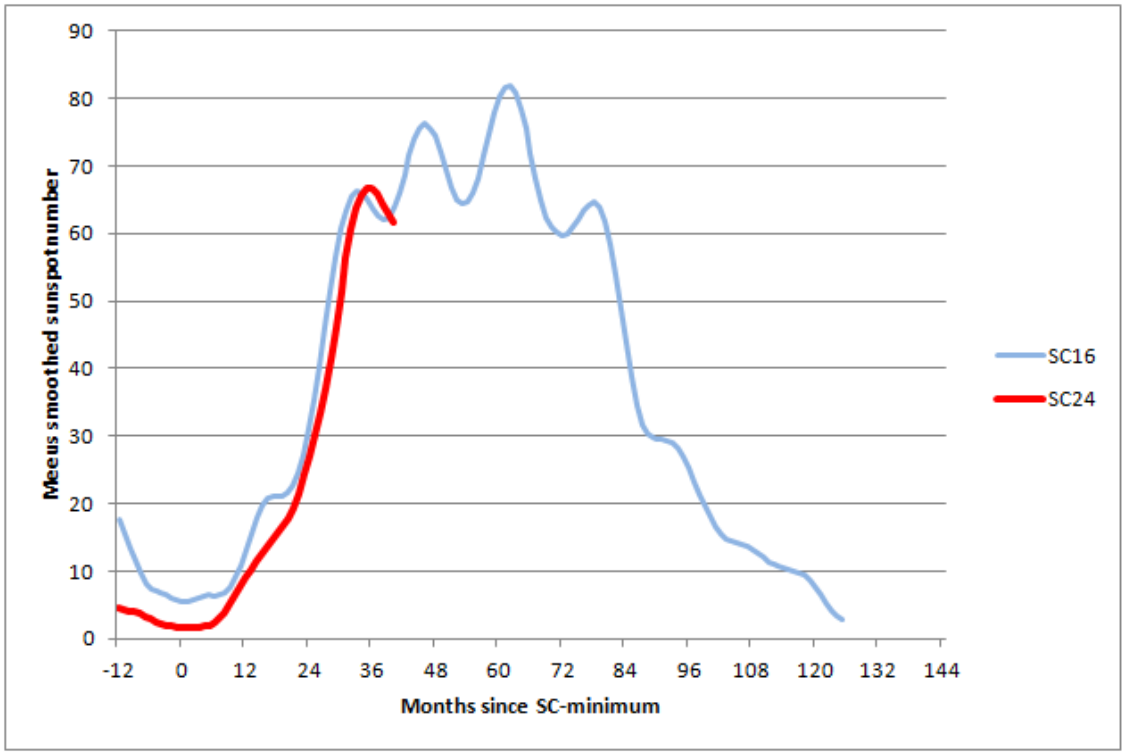
Though the smoothed International Sunspot Number (ISN) shows a maximum late 2011, chances are very low that this is the true maximum of SC24. There are several reasons to come to this conclusion. For example, a maximum late 2011 would mean that the time of rise (i.e. the time needed for a solar cycle to rise from its minimum to its maximum) would only be about 3 years. Such short rise times are usually reserved for very active and short cycles such as SC22 which only needed 37 months to reach its maximum sunspot number of about 160 in October 1989. In contrast, lower amplitude cycles like SC20 in 1969 and SC23 in 2000 needed already more than 4 years to reach their resp. maximum.



One can also see that last year's "maximum" was mainly due to activity on the northern solar hemisphere, which produced most of the big groups and strong flares. Since then, northern activity has subsided somewhat, while that on the southern hemisphere has gradually been increasing. It is reasonable to expect that when the southern sunspot maximum peaks, a new and higher sunspot maximum will occur, and that this might be the true SC24-maximum.

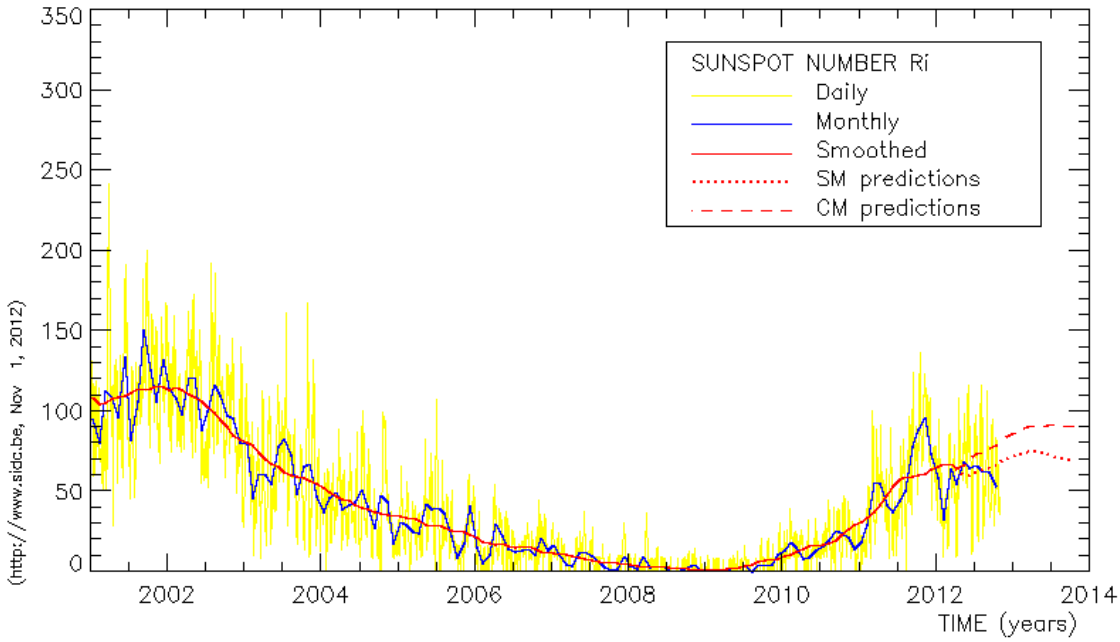


Low amplitude sunspot cycles are also known for a broad maximum with several ups-and-downs. Graph underneath compares the smoothed monthly sunspot number of the ongoing solar cycle with that of SC16. Clearly, one can see that a solar cycle can have multiple maxima, and that the first sunspot peak does not necessarily have to be the highest.



The average latitude at which the sunspot groups appear, is currently also very normal indicating that the true maximum is still to come. The groups on the northern hemisphere appear on the average a few degrees closer to the solar equator than on the southern, consistent with the higher activity that took place on the northern hemisphere late 2011.

All the above arguments are of course only indirect indications for a maximum that has not happened yet. Moreover, solar observers are well aware that the Sun isn't shy of pulling a new trick out of her sleeve. Nonetheless, a SC24-maximum that is yet to come (2013 - see SIDC-prediction charts at http://www.sidc.oma.be/sunspot-index-graphics/sidc_graphics.php) is at the moment a lot more likely than the claim that the maximum took already place (late 2011).



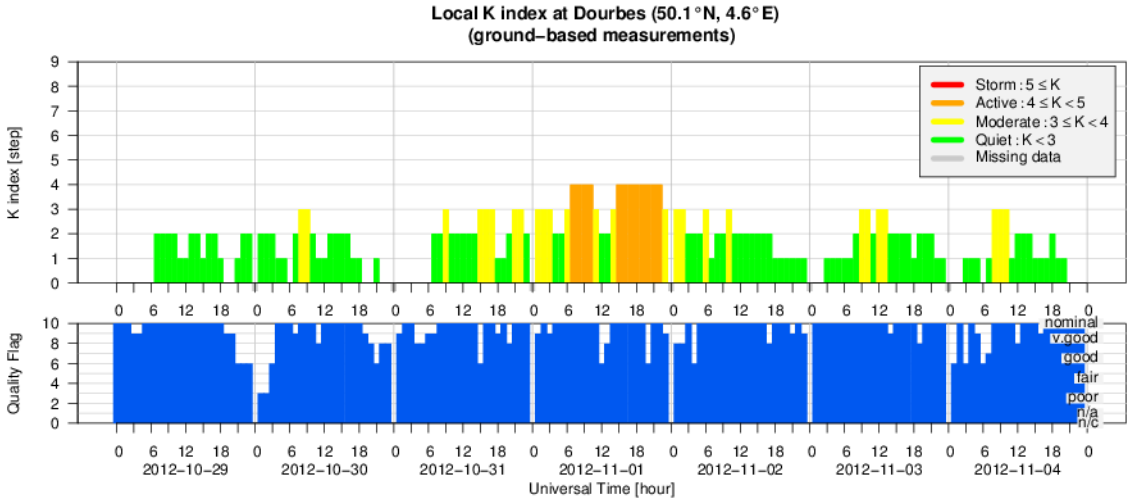
2. Review of solar activity (29 Oct 2012 - 4 Nov 2012)

Solar activity was low with a C1.7 flare being the largest flare of the period (on Oct 28, source NOAA AR 1597 behind the west limb). A weak eruption and CME was observed late Oct 27 in STEREO data, which was probably the source of the magnetic cloud that arrived at Earth on late October 31. The eruption was discussed in the previous weekly bulletin.

3. Review of geomagnetic activity (29 Oct 2012 - 4 Nov 2012)

Geomagnetic activity was very quiet (Kp smaller than 2) in the beginning of the period. A magnetic cloud arrived late October 31. The cloud is possibly linked with the CME eruption of Oct 27. As a consequence of the arrival, the interplanetary magnetic field was pushed southward to -10nT for many hours. As a result, geomagnetic activity was enhanced up till active geomagnetic conditions (Kp =4). From November 2 onwards, we returned to quiet geomagnetic conditions.

4. Geomagnetic Observations at Dourbes (29 Oct 2012 - 4 Nov 2012)



5. Future Events

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

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.
Th 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/

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 . DÃ¶rte Dannemann
Website:
http://www.affects-fp7.eu/news-events/user-ws/

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

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.ynao.ac.cn/

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/

6. New documents in the European Space Weather Portal Repository

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

Solar Orbiter 5 Workshop - Session 3 - Part III: Influence Interplanetary Shock on Heliocentrical Radial Var. of Gradual SEP

Talk in the session Eruptive processes in the solar atmosphere and their manifestations in the heliosphere
http://www.spaceweather.eu/en/repository/show?id=281

SWWT Topical Working Groups 2011 Annual Report

http://www.spaceweather.eu/en/repository/show?id=298

Solar Orbiter 5 Workshop - Poster S1: Synthetic SO/PHI data for Helioseismology

Poster for the Session 1: Solar Magnetism and the Solar Cycle
http://www.spaceweather.eu/en/repository/show?id=299

Solar Orbiter 5 Workshop - Poster S1: SIGMA - a project of a new space mission to measure the magnetic field in the solar corona

Poster for the Session 1: Solar Magnetism and the Solar Cycle
http://www.spaceweather.eu/en/repository/show?id=300

Solar Orbiter 5 Workshop - Poster S1: Software simulator for SO/PHI: SOPHISM

Poster for the Session 1: Solar Magnetism and the Solar Cycle
http://www.spaceweather.eu/en/repository/show?id=301

Solar Orbiter 5 Workshop - Poster S2: SPICE EUV Spectrometer for the Solar Orbiter

Poster for the Session 2: Processes of slow/steady energy release in the solar atmosphere
http://www.spaceweather.eu/en/repository/show?id=302

Solar Orbiter 5 Workshop - Poster S2: Comparison between UV Observations and Numerical Modeling of Quiescent Streamers

http://www.spaceweather.eu/en/repository/show?id=303

Solar Orbiter 5 Workshop - Poster S2: What variability of the solar irradiance would Solar Orbiter observe?

Poster for the Session 2: Processes of slow/steady energy release in the solar atmosphere

http://www.spaceweather.eu/en/repository/show?id=304

Solar Orbiter 5 Workshop - Poster S2: Case study of frequency cut-off related to solar interplanetary Type III bursts

Poster for the Session 2: Processes of slow/steady energy release in the solar atmosphere
http://www.spaceweather.eu/en/repository/show?id=305

Solar Orbiter 5 Workshop - Poster S2: H and He lines emitted by cool coronal loops and prominences

Poster for the Session 2: Processes of slow/steady energy release in the solar atmosphere
http://www.spaceweather.eu/en/repository/show?id=306

Solar Orbiter 5 Workshop - Poster S2: Proton energetics in the solar wind: Helios reloaded

Poster for the Session 2: Processes of slow/steady energy release in the solar atmosphere
http://www.spaceweather.eu/en/repository/show?id=307

Solar Orbiter 5 Workshop - Poster S2: Solar wind manifestations in the variations of Jovian auroral emissions

Poster for the Session 2: Processes of slow/steady energy release in the solar atmosphere
http://www.spaceweather.eu/en/repository/show?id=308

Solar Orbiter 5 Workshop - Poster S2: Properties of Coronal Helium: Results from the HECOR Coronagraph onboard Herschel

Poster for the Session 2: Processes of slow/steady energy release in the solar atmosphere
http://www.spaceweather.eu/en/repository/show?id=309

Solar Orbiter 5 Workshop - Poster S2: Coronal He: Probing capabilities of METIS Coronal Spectrograph

Poster for the Session 2: Processes of slow/steady energy release in the solar atmosphere
http://www.spaceweather.eu/en/repository/show?id=310

Solar Orbiter 5 Workshop - Poster S3: Broad angular spread of energetic particles during the November 3, 2011 SEP event

Poster for the Session 3: Eruptive processes in the solar atmosphere and their manifestations in the heliosphere
http://www.spaceweather.eu/en/repository/show?id=311

Solar Orbiter 5 Workshop - Poster S3: SoFAST: Automated Flare Detection with the PROBA2/SWAP EUV Imager

Poster for the Session 3: Eruptive processes in the solar atmosphere and their manifestations in the heliosphere
http://www.spaceweather.eu/en/repository/show?id=312

Solar Orbiter 5 Workshop - Poster S3: EPT/HET for Solar Orbiter

Poster for the Session 3: Eruptive processes in the solar atmosphere and their manifestations in the heliosphere
http://www.spaceweather.eu/en/repository/show?id=313

Solar Orbiter 5 Workshop - Poster S3: 3D reconstruction of a CME based on spectroscopic and coronagraphic data

Poster for the Session 3: Eruptive processes in the solar atmosphere and their manifestations in the heliosphere
http://www.spaceweather.eu/en/repository/show?id=314

Solar Orbiter 5 Workshop - Poster S3: Type III radio bursts and the X-ray connection

Poster for the Session 3: Eruptive processes in the solar atmosphere and their manifestations in the heliosphere
http://www.spaceweather.eu/en/repository/show?id=315

Solar Orbiter 5 Workshop - Poster S3: Estimating flare acceleration region characteristics from simultaneous X-ray and Radio obs

Poster for the Session 3: Eruptive processes in the solar atmosphere and their manifestations in the heliosphere
http://www.spaceweather.eu/en/repository/show?id=316

Solar Orbiter 5 Workshop - Poster S3: Suprathermal electron production during magnetic reconnection in situ observations

Poster for the Session 3: Eruptive processes in the solar atmosphere and their manifestations in the heliosphere
http://www.spaceweather.eu/en/repository/show?id=317

Solar Orbiter 5 Workshop - Poster S3: Electron acceleration during a failed eruption of a filament

Poster for the Session 3: Eruptive processes in the solar atmosphere and their manifestations in the heliosphere
http://www.spaceweather.eu/en/repository/show?id=318

Solar Orbiter 5 Workshop - Poster S3: Alternating twist in an erupting prominence

Poster for the Session 3: Eruptive processes in the solar atmosphere and their manifestations in the heliosphere
http://www.spaceweather.eu/en/repository/show?id=319

Solar Orbiter 5 Workshop - Poster S3: Spatially resolved polarization of hard X-rays from solar flares

Poster for the Session 3: Eruptive processes in the solar atmosphere and their manifestations in the heliosphere
http://www.spaceweather.eu/en/repository/show?id=320

Solar Orbiter 5 Workshop - Poster S3: The SWA-EAS electron spectrometer

Poster for the Session 3: Eruptive processes in the solar atmosphere and their manifestations in the heliosphere
http://www.spaceweather.eu/en/repository/show?id=321

Solar Orbiter 5 Workshop - Poster S3: Measurements of the magnetic drag force acting on small scale plasma blobs

Poster for the Session 3: Eruptive processes in the solar atmosphere and their manifestations in the heliosphere

http://www.spaceweather.eu/en/repository/show?id=322

Solar Orbiter 5 Workshop - Poster S3: The suprathermal ion spectrograph for the solar orbiter spacecraft

Poster for the Session 3: Eruptive processes in the solar atmosphere and their manifestations in the heliosphere
http://www.spaceweather.eu/en/repository/show?id=323

Solar Orbiter 5 Workshop - Poster S3: Wave amplitudes in the solar wind at 1AU - Implcations for energetic particle transport

Poster for the Session 3: Eruptive processes in the solar atmosphere and their manifestations in the heliosphere
http://www.spaceweather.eu/en/repository/show?id=324

Solar Orbiter 5 Workshop - Poster S3: Multi-spacecraft analysis and modeling of a solar eruption on August 14, 2010

Poster for the Session 3: Eruptive processes in the solar atmosphere and their manifestations in the heliosphere
http://www.spaceweather.eu/en/repository/show?id=325

Solar Orbiter 5 Workshop - Poster S3: The source regions of SEP events detected by widely spaced spacecraft

Poster for the Session 3: Eruptive processes in the solar atmosphere and their manifestations in the heliosphere
http://www.spaceweather.eu/en/repository/show?id=326

Solar Orbiter 5 Workshop - Poster S3: Solar energetic particle 3He-rich events observed by Stereo-A

Poster for the Session 3: Eruptive processes in the solar atmosphere and their manifestations in the heliosphere
http://www.spaceweather.eu/en/repository/show?id=327

Solar Orbiter 5 Workshop - Poster S3: The origins and heliospheric evolution of CMEs on 7 and 14 August 2010 from same source

Poster for the Session 3: Eruptive processes in the solar atmosphere and their manifestations in the heliosphere
http://www.spaceweather.eu/en/repository/show?id=328

Solar Orbiter 5 Workshop - Poster S4: Predicted SPICE spectra of representative solar features

Poster for the Session 4: Data assimilation, visualization and analysis
http://www.spaceweather.eu/en/repository/show?id=329

Solar Orbiter 5 Workshop - Poster S4: The CDPP in the Solar Orbiter era: data dissemination, analysis software, connection MEDOC

Poster for the Session 4: Data assimilation, visualization and analysis
http://www.spaceweather.eu/en/repository/show?id=330

Solar Orbiter 5 Workshop - Poster S4: Instrument Control Unit for EPD

Poster for the Session 4: Data assimilation, visualization and analysis
http://www.spaceweather.eu/en/repository/show?id=331

Solar Orbiter 5 Workshop - Poster S4: Langmuir waves in the heliosphere - Solar Orbiter RPW-TDS instrument

Poster for the Session 4: Data assimilation, visualization and analysis
http://www.spaceweather.eu/en/repository/show?id=332

Solar Orbiter 5 Workshop - Poster S4: Quenching in BGO scintillating crystal of the Solar Orbiter High-Energy Telescope

Poster for the Session 4: Data assimilation, visualization and analysis
http://www.spaceweather.eu/en/repository/show?id=333

Solar Orbiter 5 Workshop - Poster S4: Compatibilityof AC and DC magnetic field measurements in preparation for SO and SP+: LL

Poster for the Session 4: Data assimilation, visualization and analysis
http://www.spaceweather.eu/en/repository/show?id=334

Solar Orbiter 5 Workshop - Poster S4: Solar physics data analysis using SunPy: A walk through eCallisto dynamic radio spectra

Poster for the Session 4: Data assimilation, visualization and analysis
http://www.spaceweather.eu/en/repository/show?id=335

ESWW8 - Advances in GIC Research and Effects Mitigation: A Report from a Workshop at European Space Weather Week 2011

A one-day session and workshop was held on the subject of Geomagnetically Induced Currents (GIC) in electrical power networks at the 8th European Space Weather Week, in Namur, Belgium, on 30th November 2011. We describe the questions that were posed at the workshop and summarise the outcomes of the discussions. Among the conclusions reached were the need for improved Sun to Earth numerical models and the need for continued national and international support for space weather monitoring missions and ground networks of instruments. It was also concluded that there was much scope for improved national and international responses to space weather warnings and the need for collaboration between scientists, industry and governments to achieve this. 1.
http://www.spaceweather.eu/en/repository/show?id=336

Solar Orbiter 5 Workshop - Session 1: Recent observations of the solar magnetic fields with Hinode, Sunrine and SDO

Talk in the session Solar Magnetism and the Solar Cycle
http://www.spaceweather.eu/en/repository/show?id=337