

# STCE Newsletter

15 Apr 2013 - 21 Apr 2013



*Published by the STCE - this issue : 26 Apr 2013. Available online at <http://www.stce.be/newsletter/>.*

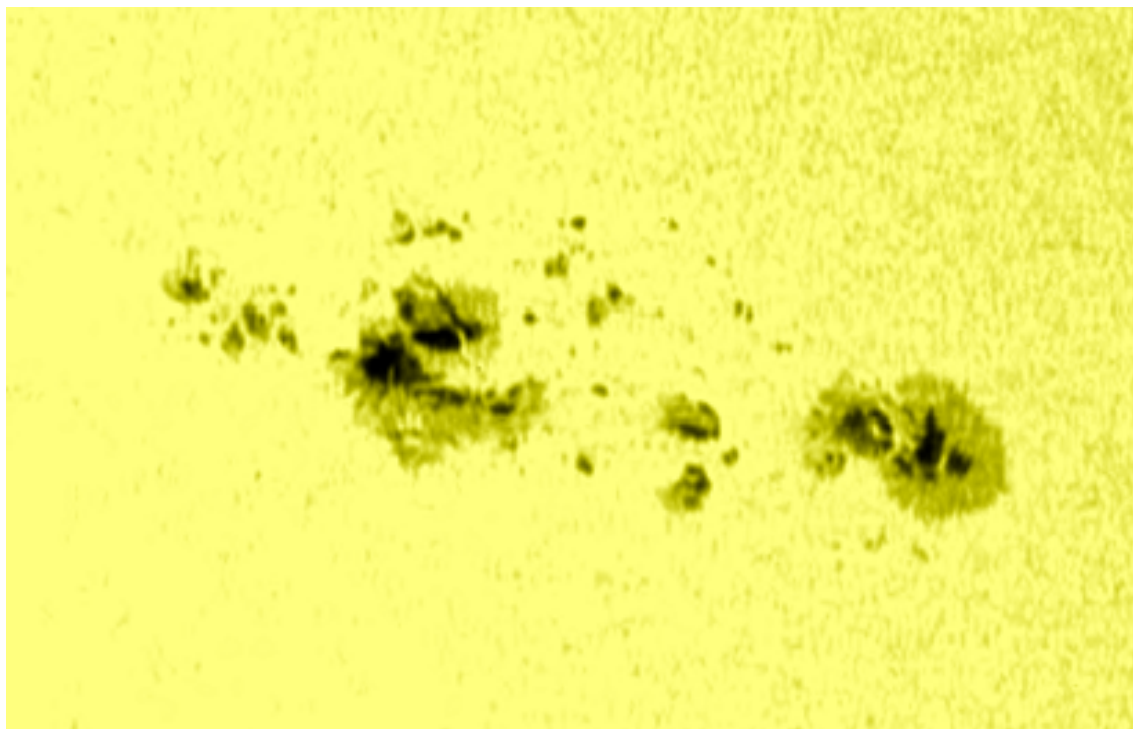
The Solar-Terrestrial Centre of Excellence (STCE) is a collaborative network of the Belgian Institute for Space Aeronomy, the Royal Observatory of Belgium and the Royal Meteorological Institute of Belgium.

<b>Content</b>	<b>Page</b>
1. Birth of a sunspot group (15 Apr 2013 - 21 Apr 2013)	2
2. Review of solar activity (15 Apr 2013 - 21 Apr 2013)	4
3. PROBA2 Observations (15 Apr 2013 - 21 Apr 2013)	6
4. Review of geomagnetic activity (15 Apr 2013 - 21 Apr 2013)	8
5. Geomagnetic Observations at Dourbes (15 Apr 2013 - 21 Apr 2013)	8
6. Review of ionospheric activity (15 Apr 2013 - 21 Apr 2013)	9
7. Future Events	9
8. New documents in the European Space Weather Portal Repository	19

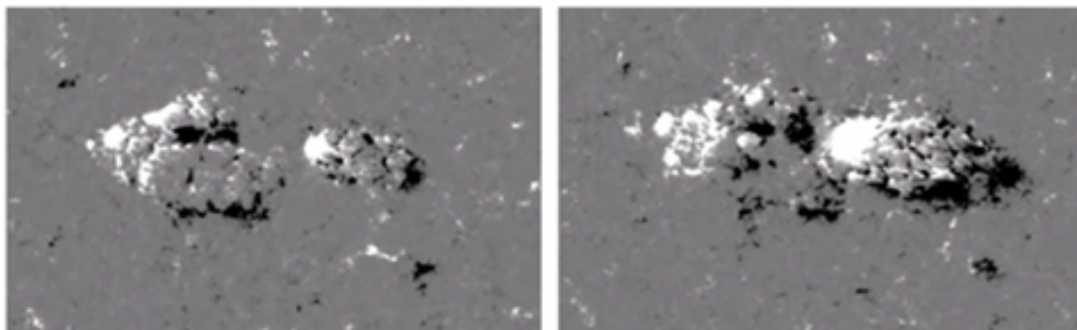
Final Editor : Petra Vanlommel  
Contact : R. Van der Linden, General Coordinator STCE,  
Ringlaan - 3 - Avenue Circulaire, 1180 Brussels,  
Belgium

## 1. Birth of a sunspot group (15 Apr 2013 - 21 Apr 2013)

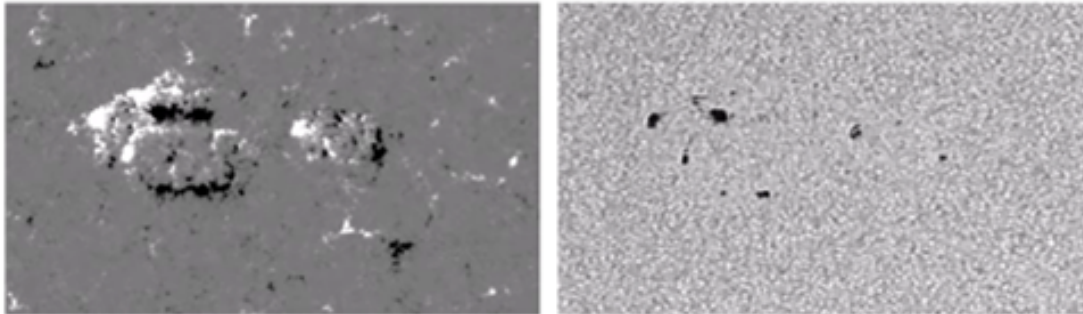
It's always impressive to see sunspots develop from scratch, and cluster into an ominously looking sunspot group. Early on Friday 19 April, magnetic fields pushed through the solar surface and did just that in less than 24 hours. NOAA 1726 was born, and it was a quite large group: In the image underneath, there is room to easily fit 10 Earths between the outer edges of the two main spots!



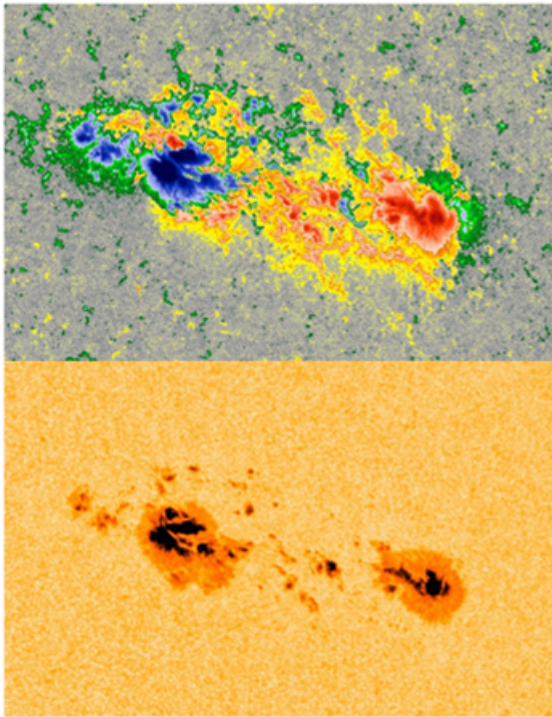
The movie at <http://www.youtube.com/watch?v=QJGjamrmVf4> covers the region's evolution from 19 April at midnight till 20 April at noon. The SDO/HMI magnetograms (<http://sdo.gsfc.nasa.gov/data/> ) clearly show the development of at least 2 magnetic bipolar regions very close to each other. The trailing part of the leading region (right) is bumping into the leading part of the trailing region (left). Because these parts have opposite magnetic polarity, space weather forecasters kept a close eye on this region, as major flares may be produced in such configurations. For example, this was the case with NOAA 1263 on 9 August 2011 producing the strongest X-class solar flare so far this solar cycle.



In white light, it is much harder to distinguish the two regions. Indeed, it is common practice to consider sunspot groups as one group if they are less than 10 degrees in longitude apart from each other. This was certainly the case here, hence NOAA 1726 is visually considered as one group. Note that similar guidelines exist for groups differing less than 5 degrees in latitude. These guidelines are applied with the necessary flexibility though, taking into account the evolution of the region and some other white light properties of sunspot groups, but without the use of magnetograms. That way, the number of sunspot groups remains comparable to those from the beginning of sunspot observations. Indeed, prior to the 20th century, no magnetograms existed and observers had only visual means to distinguish sunspot groups.



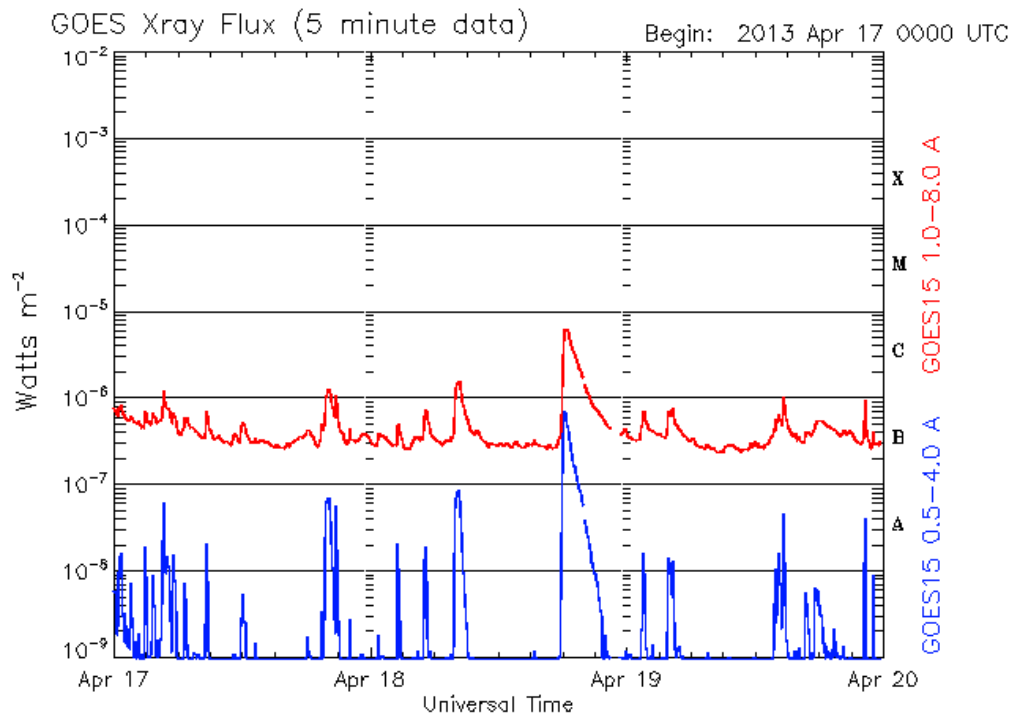
The clip based on SDO/AIA 171 images show a very dynamic region, with continuous magnetic restructuring and the gradual development of bundles of coronal loops between the principal spots of the group. Very quickly, small C-class flares are being produced, mainly near the "collision area" between regions of opposite magnetic polarity. As can be seen in the SDO images underneath (22 April, 07:45UT), a small opposite polarity spot is contained within the penumbra of the main sunspot. The red and blue areas are nearly touching each other, providing the ideal situation for at least medium class solar flares.



## 2. Review of solar activity (15 Apr 2013 - 21 Apr 2013)

During this week 11 Catania sunspot groups were present on the solar disc. The flaring activity was at the low C-class level with 36 C-class flares reported by GOES.

The majority of the flaring activity originated from the Catania sunspot group 51 (active region NOAA 1726). The strongest flare of the week was the long duration C6.5 flare on April 18, which peaked at 18:23 UT. The increase in X-ray radiation is seen in the graph below. The flare originated from the Catania sunspot group 43 (NOAA AR 1719), situated at that moment just behind the west solar limb.



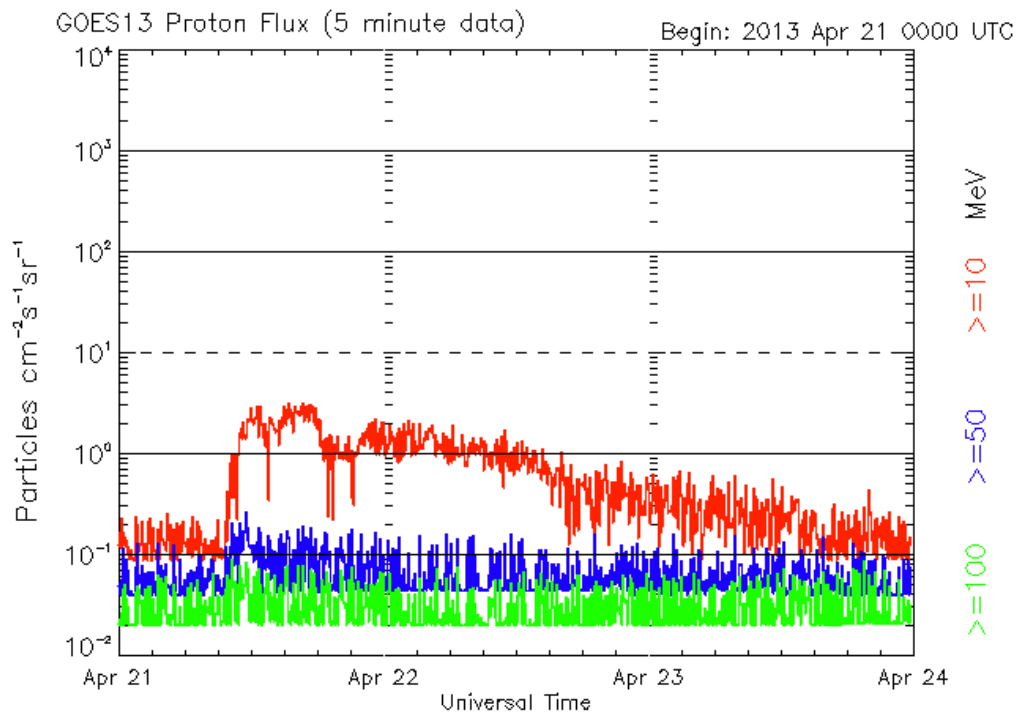
Updated 2013 Apr 19 23:55:11 UTC

NOAA/SWPC Boulder, CO USA

Two partial halo coronal mass ejections (CMEs) were observed this week. The long-duration C6.5 flare reported on April 18 was associated with one partial halo CME. The CME was first seen in the SOHO/LASCO C2 field of view at 18:36 UT, had angular width of about 200 degrees and projected speed of about 570 km/s. The CME was associated with the coronal dimming, EIT-wave and a type II radio burst. Since the CME associated active region was behind the west solar limb the CME did not arrive at the Earth.

The second partial halo CME was observed on April 21. The CME was first seen in the SOHO/LASCO C2 field of view at 07:36 UT, had angular width of about 200 degrees and projected speed of about 750 km/s. The STEREO/SECCHI data showed that the partial halo CME was a backside event associated with the flare at around W135 (45 degrees behind the west limb) as seen from the Earth.

The enhancement of the Proton >10 MeV fluxes which started at about 09:55 UT and did not cross the event threshold, was also associated with this partial halo CME (see GOES proton flux curve below). The CME associated active region was behind the west solar limb and the CME was not expected to arrive at the Earth.



Updated 2013 Apr 23 23:56:02 UTC

NOAA/SWPC Boulder, CO USA

Two low-latitude coronal holes, the first one on the northern hemisphere and the second one on the southern hemisphere, were observed this week. The fast flows associated with the small coronal hole in the northern hemisphere did not arrive at the Earth, and the fast flow associated with the recurrent coronal hole on the southern hemisphere is expected to arrive at the Earth late on April 24.

### 3. PROBA2 Observations (15 Apr 2013 - 21 Apr 2013)

Solar (flaring) activity was low during the entire 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 [http://proba2.oma.be/swap/data/mpg/movies/WeeklyReportMovies/WR160/2013\\_04\\_15\\_12\\_00\\_19\\_2013\\_04\\_22\\_10\\_58\\_31\\_SWAP\\_174\\_\\_AIA\\_304-hq.mp4](http://proba2.oma.be/swap/data/mpg/movies/WeeklyReportMovies/WR160/2013_04_15_12_00_19_2013_04_22_10_58_31_SWAP_174__AIA_304-hq.mp4) (SWAP174/AIA304 combination; HelioViewer.org).

During the week, several interesting events occurred, some of which are presented below.

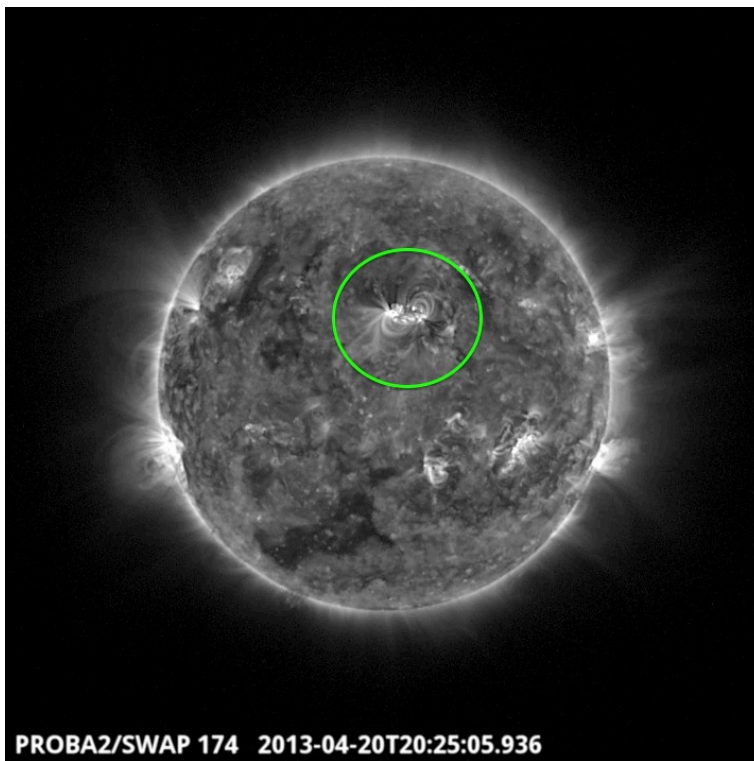
Thursday 18 April:



CME on the west-limb at 18:00UT with nice post-flare loops afterwards  
SWAP difference image (Difference movie: [http://proba2.oma.be/swap/movies/20130418\\_swap\\_diff.mp4](http://proba2.oma.be/swap/movies/20130418_swap_diff.mp4))

<http://proba2.oma.be/swap/>

Saturday 20 April:



Active Region NOAA 1726 began to get more dynamic on 19 April, with several C-class flares. (Movie: [http://proba2.oma.be/swap/movies/20130420\\_swap\\_movie.mp4](http://proba2.oma.be/swap/movies/20130420_swap_movie.mp4))

#### 4. Review of geomagnetic activity (15 Apr 2013 - 21 Apr 2013)

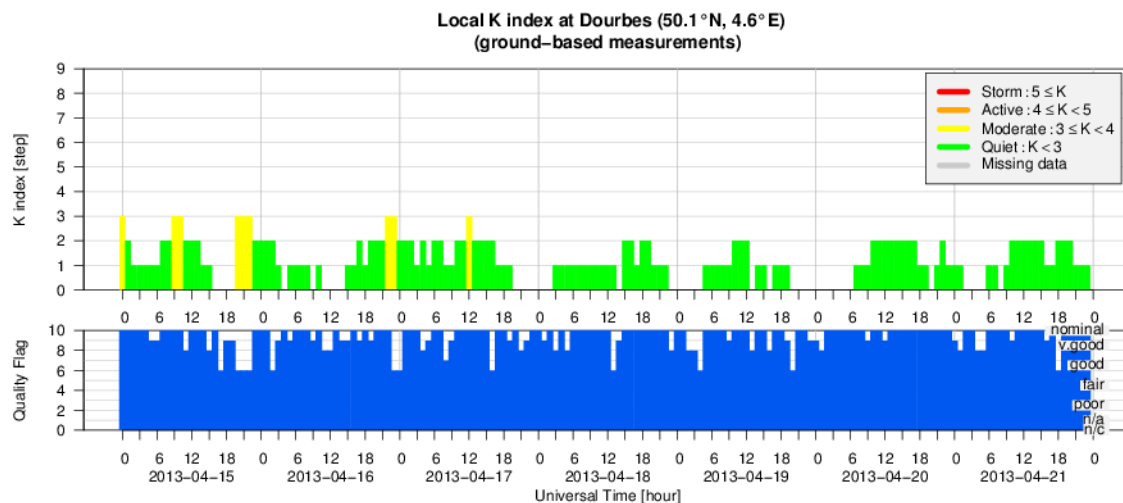
Geomagnetic conditions were quiet this week. The local station at Dourbes reported values up to K=3.

At the beginning of the week Earth was inside the magnetic cloud associated with the halo coronal mass ejection (CME) observed on the Sun on April 11 (shock arrival on April 13 - check <http://stce.be/newsletter/pdf/2013/STCEnews20130418.pdf>). The maximum value of the solar wind speed on April 15 was about 460 km/s. During the rest of the week, the Earth was inside a slow solar wind flow gradually decreasing to a value of about 280 km/s.

The magnetic cloud belonged to the ENW type (left-handed), and therefore did not contain southward interplanetary magnetic field.

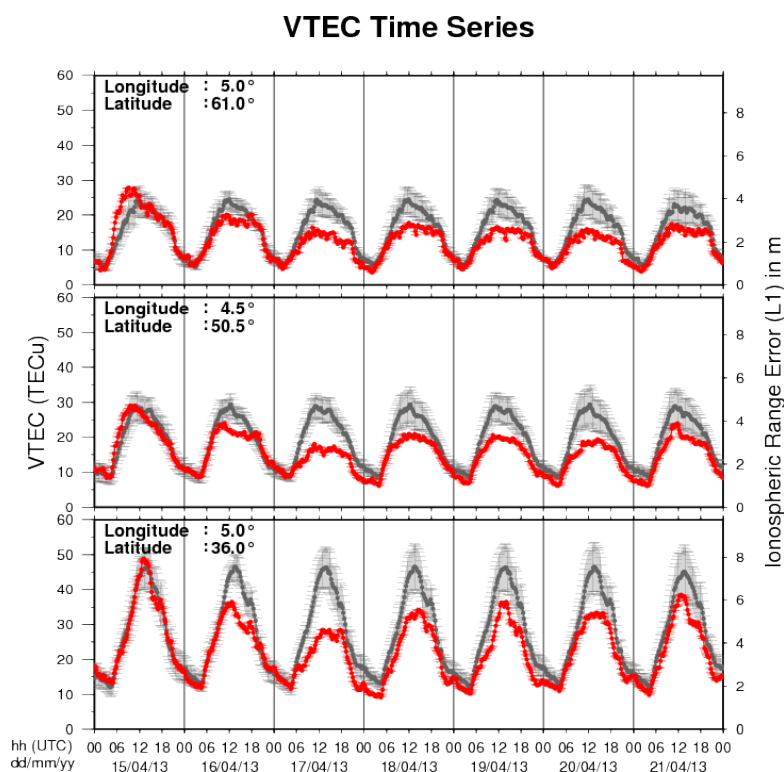
The interplanetary magnetic field (IMF) magnitude had the maximum value of about 13 nT on April 15, when Earth was inside the magnetic cloud. During the rest of the week, the IMF magnitude was stable amounting about 5 nT.

#### 5. Geomagnetic Observations at Dourbes (15 Apr 2013 - 21 Apr 2013)





## 6. Review of ionospheric activity (15 Apr 2013 - 21 Apr 2013)



The figure shows the time evolution of the Vertical Total Electron Content (VTEC) (in red) during the last week at three locations:

- in the northern part of Europe (N61°, 5°E)
- above Brussels (N50.5°, 4.5°E)
- 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>

### Space Weather And Plasma in Space in Tel Aviv, Israel

Start : 2013-04-28 - End : 2013-05-03

Space weather is a new emerging field of space science focused on understanding societal and technological impacts of the solar-terrestrial relations. The Sun has tremendous influence on Earth's

space environment, releases energy in the form of electromagnetic and particle radiation that can damage or destroy satellite, navigation, communication and power distribution systems, influence on atmosphere state, magnetosphere and ionosphere activity. Our workshop IsraSWAPS-2013 will be dedicated to the origin, evolution and predictability of physical processes that lead to the space weather hazards. Particular attention will be devoted to application of plasma physics methodologies and achievements to space weather problems. The meeting will also focus on using of plasma understanding as a test bed for astrophysics and space physics. Contributions in observations, theory, numerical simulations, and experiment are welcome.

Website:

[http://www.tau.ac.il/institutes/advanced/cosmic/Conferences/20013\\_IsraSWAPS/SWAPS-2013.htm](http://www.tau.ac.il/institutes/advanced/cosmic/Conferences/20013_IsraSWAPS/SWAPS-2013.htm)

### **Solar Storms Seminar at IET London, UK**

Start : 2013-04-30 - End : 2013-04-30

The IET will hold its second, case-study driven solar storms seminar on 30th April 2013. The extended title of this seminar is: 'Building a business case to protect and prepare ground based infrastructure against geomagnetic storms'. This is an event for science and business come together to grapple with the challenges of solar storm forecasting to culminate in engineering solutions that can withstand the effects of solar storms.

Website:

<http://conferences.theiet.org/solar-storms/index.cfm?origin=/solar-storms>

### **5th EISCAT\_3D User Meeting in Uppsala, Sweden**

Start : 2013-05-06 - End : 2013-05-08

The 5th EISCAT\_3D User Meeting is intended to focus on data analysis and management, while on Tuesday and Wednesday pre-noon (May 7-8) all science topics to be studied by EISCAT\_3D shall be covered.

Website:

[http://www.space.irfu.se/workshops/EISCAT-3D\\_User2013/](http://www.space.irfu.se/workshops/EISCAT-3D_User2013/)

### **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>

### **AGU Meeting of the Americas, in Cancun, Mexico**

Start : 2013-05-14 - End : 2013-05-17

Welcome to the Meeting of the Americas, a Joint Assembly that covers topics in all areas of the geophysical sciences. Join your colleagues, including Earth and space scientists, educators, students, and other leaders at the Cancun Center in Cancun, Mexico, 14-17 May 2013 as they connect to present groundbreaking research. Sandy beaches and turquoise waters together with Mexican hospitality make this a unique site for another successful Joint Assembly!

Session 'SH10: Solar eruptions from the photosphere to the heliosphere' focuses on observational, modeling and theoretical studies of coronal mass ejections (CMEs) from their formation and initiation

at the Sun to their interaction with the solar wind and other eruptions in the interplanetary medium. We are particularly interested in recent advancements on i) the formation or pre-existence of flux ropes as revealed by numerical simulations and SDO observations, ii) the rotation, expansion, deflection, deformation and deceleration of CMEs as they propagate in the corona and heliosphere as revealed by STEREO, IPS and radio observations and simulations, and, iii) the understanding and predicting of CME geo-effectiveness and how it could be improved by future missions.

Website:

<http://moa.agu.org/2013/scientific-program/sessions/sh10/>

## **6th IAASS Conference "safety is not an option" in Montreal, Canada**

Start : 2013-05-21 - End : 2013-05-23

The sixth IAASS Conference "safety is not an option", organized in cooperation with the International Space Safety Foundation (ISSF), is an invitation to reflect and exchange information on a number of topics in space safety and sustainability of national and international interest. The conference is also a forum to promote mutual understanding, trust, and the widest possible professional international cooperation in such matters. The International Association for the Advancement of Space Safety is a non-profit organisation dedicated to furthering international cooperation and scientific advancement in the field of space systems safety. IAASS is a member of the International Astronautical Federation (IAF), and Permanent Observer at the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS). The association exists to help shape and advance an international culture of space safety (technical, organisational and socio-political) which would contribute to make space missions, vehicles, stations, extraterrestrial habitats, equipment and payload safer for the general public, ground personnel, crews and flight participants. The association also pursues the safeguarding of the on-orbit environment to allow unimpeded access to space by future generations.

Website:

<http://iaassconference2013.spacesafetyfoundation.org/>

## **SPENVIS User Workshop in Brussels, Belgium**

Start : 2013-05-22 - End : 2013-05-24

The SPENVIS User Workshop will be held at the Royal Library of Belgium, Belgium's national and scientific library. It is one of the most important libraries in Europe since its history goes back to the 15th century. It is located in the heart of Brussels at walking distance from the Central Railway Station.

The main objective of this event is to bring the SPENVIS users together to share their experience and to identify their requirements. The workshop will focus on the current and the forthcoming Next Generation SPENVIS systems.

Topics include:

- \* Current and future SPENVIS overview
- \* Space Radiation Models and their accuracy
- \* Space Environment Effects (charging, SEE, degradation, micro-particle impacts)
- \* Geant4 Tools
- \* Educational use of SPENVIS
- \* SPENVIS and other tools

Website:

<http://www.spervis.oma.be/workshop/2013/>

## **2013 UAHuntsville Space Weather Summer School in Huntsville, Alabama, USA**

Start : 2013-05-29 - End : 2013-06-07

Website:

<http://swssuah2013.pbworks.com/w/page/60509553/FrontPage>

## **Meeting on Solar Wind Turbulence in Kennebunkport, Maine, USA**

Start : 2013-06-04 - End : 2013-06-07

Our goal is somewhat different from more familiar conferences and is designed with the SHINE model in mind. We are inviting very few speakers who we are asking to give review and introductory talks for each topic we hope to discuss. Those invited review talks will be largely non-controversial and focus upon agreed-upon results. They are also likely to contain challenges for the participants to explain. Then, the bulk of the time is left unscheduled and we ask the participants to give short, focused talks that lead to discussion and debate on the fundamental aspects of the subject at hand.

We expect that everyone who attends will have ample opportunity to enter into the debate and we hope to stimulate a lively discussion of fundamental physics.

We hope you will join us. Bring multiple 5-minute talks that attempt to make specific points so you can enter into the debate clearly and propel the discussion forward. No one is expected to be given a large block of time to speak. The goal is meaningful and focused debate. Remember, you may not convince everyone, but there will be many participants who want to understand your point of view. Our goal is to debate and illuminate, providing inspiration to all.

Website:

<http://www-ssg.sr.unh.edu/mag/Kennebunkport2013/Kennebunkport2013.html>

### **Space Climate Symposium-5 in Oulu, Finland**

Start : 2013-06-15 - End : 2013-06-19

Space Climate is an interdisciplinary science that deals with the long-term change in the Sun, and its effects in the heliosphere and in the near-Earth environment, including the atmosphere and climate. A special focus will be on studies of the causes, consequences and implications of the present, unusually low solar activity since solar cycle 23 that, most likely, indicates the imminent end of the Modern Grand Maximum of solar activity. Other topics include solar dynamo, solar irradiance variations, solar wind, geomagnetic field and activity, cosmic rays and cosmogenic isotopes, and solar effects on different layers of the atmosphere and on local and global climate, as well as possible solar effects on human health and on the development of human cultures.

Website:

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

### **ISEST (International Study for Earth-Affecting Solar Transients) Workshop in Hvar, Croatia**

Start : 2013-06-17 - End : 2013-06-20

The workshop is to improve the scientific understanding of the origin and propagation of solar transients, and develop the prediction capacity of these transients' arrival and potential impact on the Earth.

This workshop is the activity of the ISEST program in CAWSES-II / Task Group 3. The workshop engages coordinated international activities in observation, theory and modeling, and involves scientists in both developed and developing countries, and provides an online platform for educational opportunities for students.

Website:

<http://spaceweather.gmu.edu/meetings/ISEST/Home.html>

### **SWWT Plenary Meeting**

Start : 2013-06-19 - End : 2013-06-19

The SWWT is a forum open to European experts in a variety of both scientific and application oriented fields relating to space weather. The SWWT plays an important role in advising ESA in space weather strategy and acts as a forum for discussion amongst the European space weather community. The SWWT is responsible for promoting coordinated European space weather activities at both national and industry levels. The SWWT seeks to identify and discuss potential collaborations and/or synergies with other structures or organisations such as the EC FP7 & COST programmes and others.

Each year they organise a Plenary Meeting.

## **Atomic physics, plasma spectroscopy, and space solar physics: Celebrating the achievements of Alan Gabrie at Orsay, France**

Start : 2013-06-20 - End : 2013-06-20

This conference aims at presenting the status of atomic physics, plasma spectroscopy, and solar physics from space, put in the perspective of the achievements made with SOHO and the missions that followed. In addition, our friend and colleague Alan Gabriel will celebrate his 80th birthday. In anticipation of this, it will be an excellent opportunity to celebrate his many (and continuing) contributions to science in various fields. They range from atomic physics and plasma spectroscopy (theta-pinch machine) to solar and space physics - from Skylab, SMM (PI of XRP), Spacelab2, to SOHO (GOLF, CDS, EIT, SUMER ) - as well as science management, including RAL (UK), IAS (France), ESA SSWG (and SSAC), NASA/ESA Solar Orbiter/Sentinels.

Presentations addressing new results in atomic physics, plasma spectroscopy and solar physics are welcome, along with reminiscences related to Alan, which are warmly encouraged.

Website:

<http://www.ias.u-psud.fr/AHG/>

## **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](http://en.iszf.irk.ru/ILWS_2013)

## **Asia Oceania Geosciences Society (AOGS) Annual Meeting in Brisbane (Australia)**

Start : 2013-06-24 - End : 2013-06-28

Asia Oceania Geosciences Society (AOGS) was established in 2003 to promote geosciences and its application for the benefit of humanity, specifically in Asia and Oceania and with an overarching approach to global issues.

Asia- Oceania region is particularly vulnerable to natural hazards, accounting for almost 80% human lives lost globally. AOGS is deeply involved in addressing hazard related issues through improving our understanding of the genesis of hazards through scientific, social and technical approaches.

AOGS holds annual conventions providing a unique opportunity of exchanging scientific knowledge and discussion to address important geo-scientific issues among academia, research institution and public. Recognizing the need of global collaboration, AOGS has developed good co-operation with other international geo-science societies and unions such as the European Geosciences Union (EGU), American Geophysical Union (AGU), International Union of Geodesy and Geophysics (IUGG), Japan Geo-science Union (JpGU), and Science Council of Asia (SCA).

Website:

<http://www.asiaoceania.org/aogs2013/public.asp?page=home.htm>

## **2013 Radiation Belts Workshop at Island of Santorini, Greece**

Start : 2013-06-30 - End : 2013-07-04

The 2013 Radiation Belts Workshop is the first of a series of radiation belt meetings that are planned to be held in the Aegean islands.

As its title conveys, this first workshop includes sessions on radiation belt research and specification. The workshop focuses, in particular, on the properties of low frequency electromagnetic waves and their effects on radiation belts dynamics. The other highlight of the workshop is the ongoing international effort on improvement of the AE9/AP9 Next Generation Radiation Specification Models. These sessions will be complemented with presentations of the progress achieved by a most relevant FP7-Space project titled MAARBLE (Monitoring, Analyzing and Assessing Radiation Belt Loss and Energization).

Website:

<http://www.space.noa.gr/rbw13/>

## **Solar Activity and its Manifestations in the Whole Heliosphere in Logomo, Turku, Finland**

Start : 2013-07-08 - End : 2013-07-09

The goal of the symposium is to present and discuss new results on solar activity and its manifestations in the entire heliosphere, including geospace and other planetary environments. The new space-borne solar observatories (SDO, Hinode, STEREO) have recently made important new discoveries on the dynamics of the magnetized solar atmosphere and solar wind, and on solar eruptive events that are the main driver of variable conditions in geospace and other planetary environments.

We now also better understand the changes of long-term solar activity, from the low levels of 100 years ago to the all-time maximum in the late 1950s, and to the very weak activity of the recent minimum. Although solar and geomagnetic activity during the ongoing cycle 24 has remained abnormally low, the increasing activity after the long solar quiescence has recovered the attention to space weather.

We solicit presentations covering the entire domain from the solar surface (and below) to the heliopause, covering all time scales of variations from a fraction of a second to millenia. The practical aspects of solar-driven variability in space environments (space weather) and the long-term changes in the solar activity and its effects in the heliosphere (space climate) will be covered as well.

Website:

<http://theory.physics.helsinki.fi/~ravainio/ewass-13/>

## **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-Alfvénic flows whereas the solar wind interacts with supersonic and super-Alfvénic 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/>

### **2013 CISM Summer School, in Boulder, Colorado, USA**

Start : 2013-07-22 - End : 2013-08-02

The CISM Summer School is intended to give students a comprehensive immersion in the subject of space weather: what it is, what it does, and what can be done about it. Space weather is many things: beautiful when seen through the eyes of a sun-viewing telescope, fascinating when studied for its alien worlds of magnetic structures and phenomena, awesome when witnessed as a solar eruption or auroral storm, and devastating to the users of services it disrupts. Space weather links the Sun, the Earth, and the space in between in a branching chain of consequences. Weather systems on the Sun can spawn interplanetary storms of colossal size and energy that envelop the whole planet in electrical hurricanes. Such storms attack high-tech, complex, and expensive technological systems that provide much of the infrastructure that allows modern society to function.

Website:

<https://www2.hao.ucar.edu/docs/2013-cism-summer-school>

### **1st SOLARNET - 3rd EAST/ATST meeting in Oslo, Norway**

Start : 2013-08-05 - End : 2013-08-08

The goal of this workshop is to foster collaborations between ground and space solar projects. This workshop is expected

- \* to provide a forum to discuss the use of current and future observational solar facilities, and how to optimise their scientific returns;
- \* to identify the potentially paradigm-shifting observations that will become possible with the next generation ground- and space-based solar telescopes and their advanced instrumentation;
- \* to foster collaborations between researchers working at the development of ground- and space-based projects and creation of synergies between research programs at different wavelength bands.

Website:

<http://folk.uio.no/matsc/oslo-13/info.html>

### **1st SOLARNET Workshop, 3rd EAST/ATST meeting: 'Synergies between ground- and space-based solar research', in Oslo, Norway**

Start : 2013-08-05 - End : 2013-08-08

The goal of this workshop is to foster collaborations between ground and space solar projects. This workshop is expected 1) to provide a forum to discuss the use of current and future observational solar facilities, and how to optimise their scientific returns; 2) to identify the potentially paradigm-shifting observations that will become possible with the next generation ground- and space-based solar telescopes and their advanced instrumentation; 3) to foster collaborations between researchers working at the development of ground- and space-based projects and creation of synergies between research programs at different wavelength bands.

A workshop webpage and more information will follow shortly - the purpose of this pre-announcement is to enable early bookings in your calendar.

## **XIIth IAGA Scientific Assembly in Merida, Yucatan, Mexico**

Start : 2013-08-16 - End : 2013-08-31

The Local Organising Committee and the Mexico National Committee of IUGG have the great pleasure to welcome you to the 11th Scientific Assembly of the International Association of Geomagnetism and Aeronomy (IAGA) which is held in Mérida Yucatán, Mexico from 26 to 31 August 2013 with the motto: "Living on a Magnetic Planet". Our Magnetic Planet Capricious (Changeable or Unpredictable) Field.

In order to increase the visibility and attractiveness of IAGA to young researchers, to motivate them to play active role within IAGA and to create (and enhance) their awareness of IAGA and sense of belonging to IAGA, the first IAGA Summer School will be organized just prior the Assembly. The summer school will provide overview of the activities carried out within all the IAGA divisions, with subjects from paleomagnetism and magnetic anisotropy through observatories and geomagnetic field modeling to ionospheric and aeronomic research. At least 20 young scientists from all around the world will be invited based on the nominations from Working Groups and Divisions. Special call and more information will be published before the end of 2012.

Website: <http://iaga2013.org.mx/>

## **Solar Physics and Space Weather Instrumentation V in San Diego, CA (USA)**

Start : 2013-08-25 - End : 2013-08-29

This conference will focus on instrumentation, observatories, space missions, and programs for observations from the Sun to Earth's upper atmosphere and space environment. The aim is to bring together diverse communities working on all elements of solar physics and space weather instrumentation.

Studying solar phenomena and monitoring space weather requires observations using both space- and ground-based instrumentations covering the different regions of the Sun-Earth system, the Sun, interplanetary medium, magnetosphere, ionosphere, and thermosphere. Papers are solicited concerning all instrumentation-supporting solar physics and space weather. This includes, but is not limited to, concepts, designs, fabrication processes, calibration, data trending, information technologies, solar data mining, instrument modeling, and satellite lifetime prediction modeling. We are also interested in all past, current, and future solar space missions and satellite and ground constellations of space weather instrumentation with a strong focus on Space Situational Awareness.

This conference is intended to provide the solar physics community and that of Earth's space environment with a forum for discussing the latest updates on instrumentation, observation techniques, and programs in their respective fields, and for proposing innovative ideas for future Sun-Earth coordinated observations.

Website: <http://spie.org/op423>

## **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/>



## **2nd UK-Ukraine meeting on Solar Physics and Space Science (UKU SPSS) in Kiev, Ukraine**

Start : 2013-09-16 - End : 2013-09-20

The meeting will cover a broad range of aspects of solar physics, space science and solar-terrestrial relations. We aim to include every side of solar and space research, including observations, theory, and numerical modelling. The main idea behind the meeting is to treat the entire solar-terrestrial domain as one system, rather than each region independently.

The topics to be covered are:

- \* advanced solar observations
- \* waves and flows in the Solar atmosphere
- \* structure and dynamics of solar magnetic fields
- \* connecting analytical theory and modern numerical simulations to observations
- \* new physics in numerical modelling
- \* linking solar interior with heliosphere
- \* particle acceleration in the Sun and heliosphere
- \* non-linear phenomena in space plasmas
- \* physics of magnetosphere and ionosphere

Website:

[http://swat.group.shef.ac.uk/Conferences/Ukraine\\_UK\\_2013/index.html](http://swat.group.shef.ac.uk/Conferences/Ukraine_UK_2013/index.html)

## **Space science training week: data driven modeling and forecasting in Leuven, Belgium**

Start : 2013-09-16 - End : 2013-09-19

This summer school targets to introduce a generation of young researchers (advanced master students, PhDs, and junior postdoctoral researchers) to the diverse aspects of space weather related research.

It will introduce theoretical approaches to space weather and its drivers, present modern solar data analysis tools, and cover state-of-the-art solar and space science simulations. Participants will learn about forecasting aspects and their quality control for space weather events, but also experience hands-on training in scientific proposal writing and receive do-and-don't tips for scientific presentations.

The scientific program is enriched by a public evening lecture on the solar influence on our climate, and the lecturers are invariably expert scientists with international standing.

The school is open to a maximum of 40 participants, and can benefit from its embedding within two international research network activities: an Interuniversity Attraction Pole P7/08 CHARM connecting heliospheric to astrophysical communities with 7 partner institutes, and a European FP7 Project eHeroes with 15 different partner institutes. Participation from outside both network activities is strongly encouraged. Within Belgium, the school links up expertise from universities (KU Leuven, ULB, Gent University) to federal research institutes (the Solar-Terrestrial Centre of Excellence, the Royal Observatory of Belgium and the Belgian Institute for Space Aeronomy).

Website:

<http://stce.be/SpSTraining/>

## **2nd Asian-Pacific Solar Physics Meeting, in Hangzhou, China**

Start : 2013-10-24 - End : 2013-10-26

Initiated by Profs. Fang and Choudhury, the first Asian-Pacific Solar Physics Meeting (APSPM) was held in Bangalore two years ago. During the meeting, a consensus was achieved that it might be a good idea to have the APSPM every three years. Somehow the second APSPM was proposed to be held by mainland China in 2013. APSPM is aimed to exchange the recent research results in solar physics in the emerging asian-pacific region.

Asian-pacific regions are getting more and more active in solar physics, as signified by the construction of big facilities, including the Hinode satellite (Japan), SOXS (India), Chinese Solar Radio Heliograph, and Optical & Near-Infrared Solar Eruption Tracer (ONSET). Therefore, colleagues have agreed to hold regional solar physics meetings regularly. The first Asian-Pacific Solar Physics Meeting (APSPM) was

held in Bangalore during March 22-24 2011. During the meeting, a consensus was achieved that it might be a good idea to have the APSPM every three years. Somehow the second APSPM was proposed to be held by mainland China in 2013. APSPM is aimed to exchange the recent research results in solar physics in the emerging asian-pacific region.

Website:

<http://sdac.nju.edu.cn/~solar/>

### **Helicity Thinkshop on Solar Physics in Beijing, China**

Start : 2013-10-27 - End : 2013-10-31

Magnetic helicity has been intensively studied from observational, theoretical, and many other aspects of solar physics. For this meeting we would like to invite solar physicists who are interested in the observational and theoretical studies of the helicity, to encourage thorough discussions on the relevant hot issues. The 1st Helicity Thinkshop was held successfully in 2009, and now the 2nd one will be held on October 27-31, 2013 in Beijing, China.

Website:

<http://sun.bao.ac.cn/meetings/HT2013/>

### **25th Winter School of Astrophysics: Cosmic Magnetic Fields, in La Laguna, Tenerife, Spain.**

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

Magnetic fields play an important role in many astrophysical processes. But magnetic are difficult to detect and to model or understand, since the fundamental equations describing the behavior of magnetized plasmas are highly non-linear. Hence, magnetic fields are often an inconvenient subject which is overlooked or simply neglected. Such difficulty burdens the research on magnetic fields, which has evolved to become a very technical subject, with many small disconnected communities studying specific aspects and details.

The school tries to amend the situation by providing a unifying view of the subject. The students would have a chance to understand the behavior of magnetic fields in all astrophysical contexts, from cosmology to the Sun. From star-bursting regions to AGNs in galaxies. The school will present a balanced yet complete review of our knowledge. Extensions into the unknown are also important to indicate present and future lines of research.

The Winter School will bring together in a relaxed working atmosphere a number of the leading scientists in this field, PhD students and recent postdocs. The conditions for a successful interaction will be granted, including two special sessions for those students that want to present their own work.

Website:

<http://www.iac.es/winterschool/2013/>

### **7th Hinode science meeting in Takayama, Japan**

Start : 2013-11-12 - End : 2013-11-15

Since its launch in Sep-2006, more than 600 refereed papers have been published based on Hinode observations, presenting many new and important findings to the scientific community. However, due to the unexpectedly low levels of solar activity, until now the focus has mainly been on the more quiescent aspects of the solar cycle. With the solar maximum expected this year, through cooperative observations with SDO, IRIS, and ground based observatories, Hinode observations should lead to our understanding of active Sun phenomena, such as solar flares and CMEs, to be greatly improved. Making Hinode-7 an excellent opportunity to discuss solar activity in the current solar cycle and the related science through the use Hinode data, as well as other solar/space weather data. It will also be interesting to use this meeting to broaden our focus to include the solar-stellar connection as a means to deepen our understanding of solar activity.

Momentum is also gaining for Solar-C, which is being developed as an international collaboration between Japan, US and Europe. To further discuss this mission, the Solar-C science meeting will be held on 11-Nov.

Website:

<http://www.kwasan.kyoto-u.ac.jp/hinode-7/>

## **International CAWSES-II Symposium in Nagoya, Japan**

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

This International CAWSES-II Symposium hosted by SCOSTEP (Scientific Committee on Solar-Terrestrial Physics) will provide an excellent opportunity to discuss the scientific accomplishments of CAWSES-II and look forward to SCOSTEP's future programs at a moment toward the end of its five-year period. The symposium will cover the six major themes of CAWSES-II tasks: 1) What are the solar influences on the Earth's climate?, 2) How will geospace respond to an altered climate?, 3) How does short-term solar variability affect the geospace environment?, 4) What is the geospace response to variable inputs from the lower atmosphere?, 5) Capacity Building, 6) Informatics and eScience. The main functions of CAWSES-II are to help coordinate international activities in observations, modeling, and applications crucial to achieving this understanding, to involve scientists in both developed and developing countries, and to provide educational opportunities for students of all levels. The symposium offers keynotes/lectures that will be interesting for all participants every morning and more specific sessions of presentations in the afternoon. We welcome all those who are involved and/or interested in CAWSES-II to Nagoya in the autumn when we will have the pleasure of being surrounded by beautiful colorful leaves of this season.

Website:

[http://www.cawses.org/CAWSES/leaflet\\_CAWSES-II\\_120229.pdf](http://www.cawses.org/CAWSES/leaflet_CAWSES-II_120229.pdf)

## **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:

<http://www.stce.be/esww10/>

## **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/>

## **8. New documents in the European Space Weather Portal Repository**

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

### **eHEROES - Solar Cycle 24: Zonnecyclus op drift?**

Presentatie over de 24ste zonnecyclus voor leden van de VVS-afdeling ASH Polaris te Herentals in het kader van hun maandelijkse voordrachten. Een basiskennis is vereist. Behandelde onderwerpen zijn zonnevlekken, de zonnedynamo, zonneuitbarstingen, ruimteweer, voorspellingen voor SC24, evolutie van SC24, verwachtingen voor het verdere verloop van SC24.

<http://www.spaceweather.eu/en/repository/show?id=429>

## **Solar Orbiter 5 Workshop - Poster S4: Simulations of Solar Orbiter / Plasma Interactions with the SPIS software**

Poster for the session 4: DATA ASSIMILATION, VISUALIZATION AND ANALYSIS  
<http://www.spaceweather.eu/en/repository/show?id=430>

## **CHARM annual meeting 2013 : The UGent groups**

Presentation given at the first annual meeting of CHARM, an Interuniversity Attraction Poles project lead by the KULeuven. The presentation introduces the university of Gent and its link with CHARM.  
<http://www.spaceweather.eu/en/repository/show?id=431>

## **CHARM annual meeting 2013 : Exospheric Kinetic Model**

Presentation given at the first annual meeting of CHARM, an Interuniversity Attraction Poles project lead by the KULeuven.  
<http://www.spaceweather.eu/en/repository/show?id=432>

## **CHARM annual meeting 2013 : The Solar Wind group at BIRA**

Presentation given at the first annual meeting of CHARM, an Interuniversity Attraction Poles project lead by the KULeuven. The presentation introduces the solar wind group at BIRA-IASB and its link with CHARM.  
<http://www.spaceweather.eu/en/repository/show?id=433>

## **CHARM annual meeting 2013 : The Institute for Computational Cosmology, University of Durham**

Presentation given at the first annual meeting of CHARM, an Interuniversity Attraction Poles project lead by the KULeuven. The presentation introduces the Institute for Computational Cosmology at the university of Durham and its link with CHARM.  
<http://www.spaceweather.eu/en/repository/show?id=434>

## **CHARM annual meeting 2013 : Turbulence/particles feedback loop**

Presentation given at the first annual meeting of CHARM, an Interuniversity Attraction Poles project lead by the KULeuven.  
<http://www.spaceweather.eu/en/repository/show?id=435>

## **CHARM annual meeting 2013 : Interpreting solar coronal images**

Tutorial given at the first annual meeting of CHARM, an Interuniversity Attraction Poles project lead by the KULeuven.  
<http://www.spaceweather.eu/en/repository/show?id=436>

## **CHARM annual meeting 2013 : Science with AMUSE, Coupling codes for Multi-Physics simulations**

Presentation given at the first annual meeting of CHARM, an Interuniversity Attraction Poles project lead by the KULeuven. The presentation introduces the university of Leiden and its link with CHARM.  
<http://www.spaceweather.eu/en/repository/show?id=437>

## **CHARM annual meeting 2013 : Kinetic models for the inner magnetosphere**

Presentation given at the first annual meeting of CHARM, an Interuniversity Attraction Poles project lead by the KULeuven.  
<http://www.spaceweather.eu/en/repository/show?id=438>

## **CHARM annual meeting 2013 : Centre for Mathematical Plasma Astrophysics**

Presentation given at the first annual meeting of CHARM, an Interuniversity Attraction Poles project lead by the KULeuven.

<http://www.spaceweather.eu/en/repository/show?id=439>

### **CHARM annual meeting 2013 : Tutorial Turbulence and Particle Acceleration in Astrophysical Plasmas**

Tutorial given at the first annual meeting of CHARM, an Interuniversity Attraction Poles project lead by the KULeuven.

<http://www.spaceweather.eu/en/repository/show?id=440>

### **CHARM annual meeting 2013 : Fluid and Plasma Dynamics at ULB**

Presentation given at the first annual meeting of CHARM, an Interuniversity Attraction Poles project lead by the KULeuven. The presentation introduces the Université Libre de Bruxelles and its link with CHARM.

<http://www.spaceweather.eu/en/repository/show?id=441>

### **CHARM annual meeting 2013 : Turbulent Modeling Aspects**

Presentation given at the first annual meeting of CHARM, an Interuniversity Attraction Poles project lead by the KULeuven.

<http://www.spaceweather.eu/en/repository/show?id=442>

### **CHARM annual meeting 2013 : Tutorial - 3D Monte Carlo dust radiative transfer**

Tutorial given at the first annual meeting of CHARM, an Interuniversity Attraction Poles project lead by the KULeuven.

<http://www.spaceweather.eu/en/repository/show?id=443>

### **CHARM annual meeting 2013 : Turbulence in the Expanding Solar Wind**

Presentation given at the first annual meeting of CHARM, an Interuniversity Attraction Poles project lead by the KULeuven.

<http://www.spaceweather.eu/en/repository/show?id=444>

### **CHARM annual meeting 2013 : How to choose the best target for the high-resolution payload of Solar Orbiter?**

Presentation given at the first annual meeting of CHARM, an Interuniversity Attraction Poles project lead by the KULeuven.

<http://www.spaceweather.eu/en/repository/show?id=445>

### **CHARM annual meeting 2013 : MHD/Kinetic Modeling**

Presentation given at the first annual meeting of CHARM, an Interuniversity Attraction Poles project lead by the KULeuven.

<http://www.spaceweather.eu/en/repository/show?id=446>

### **CHARM annual meeting 2013 : Using hierarchical Octrees in Monte Carlo radiative transfer simulations**

Presentation given at the first annual meeting of CHARM, an Interuniversity Attraction Poles project lead by the KULeuven.

<http://www.spaceweather.eu/en/repository/show?id=447>

### **CHARM annual meeting 2013 : Solar Wind Unit at BIRA-IASB**

Presentation given at the first annual meeting of CHARM, an Interuniversity Attraction Poles project lead by the KULeuven. The presentation introduces the solar wind unit of BIRA-IASB and its link with CHARM.

<http://www.spaceweather.eu/en/repository/show?id=448>

## **CHARM annual meeting 2013 : Challenges in coupling models and tools - overview**

Presentation given at the first annual meeting of CHARM, an Interuniversity Attraction Poles project lead by the KULeuven.

<http://www.spaceweather.eu/en/repository/show?id=449>