

# STCE Newsletter

29 Apr 2013 - 5 May 2013



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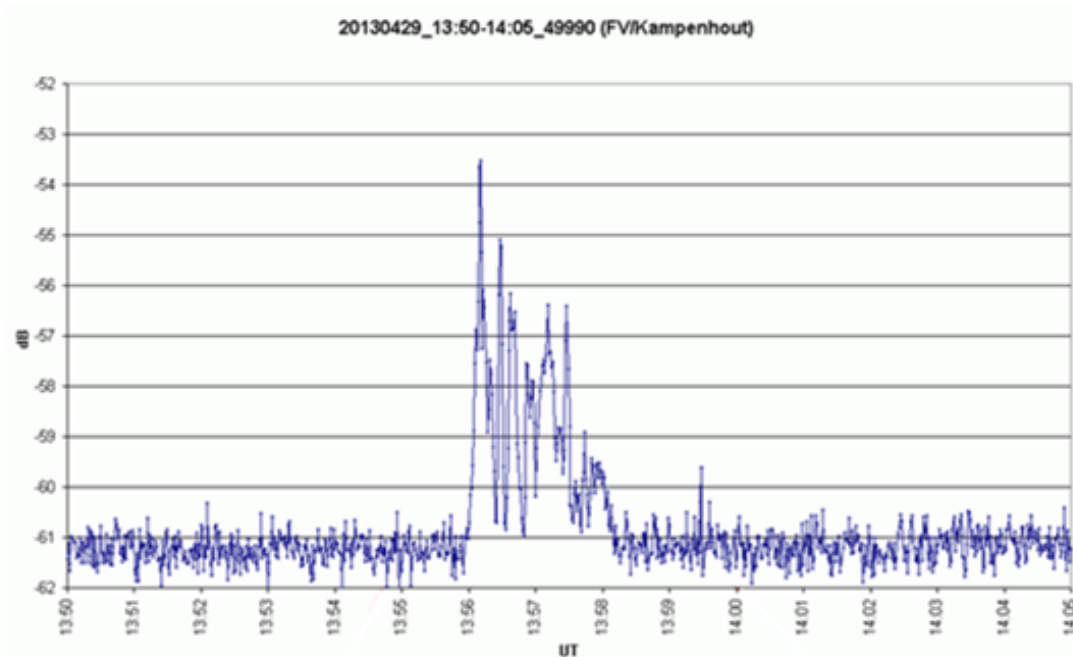
The Solar-Terrestrial Centre of Excellence (STCE) is a collaborative network of the Belgian Institute for Space Aeronomy, the Royal Observatory of Belgium and the Royal Meteorological Institute of Belgium.

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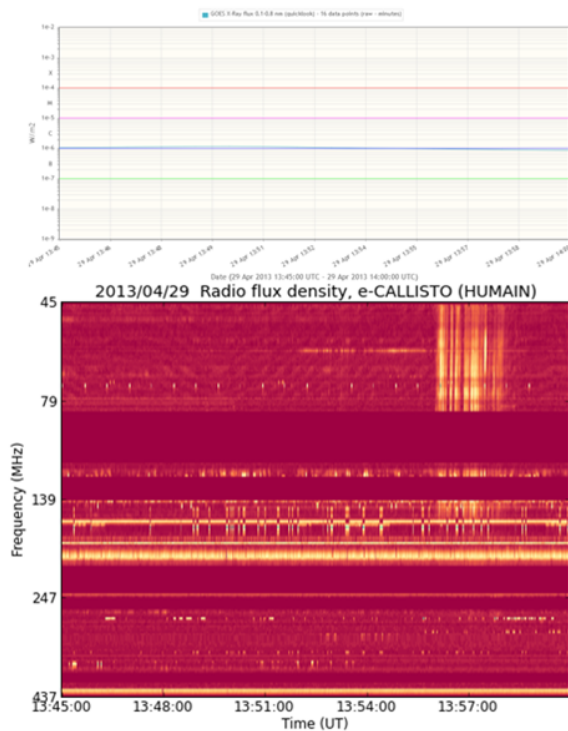
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Belgium

## 1. A peculiar radio burst (29 Apr 2013 - 5 May 2013)

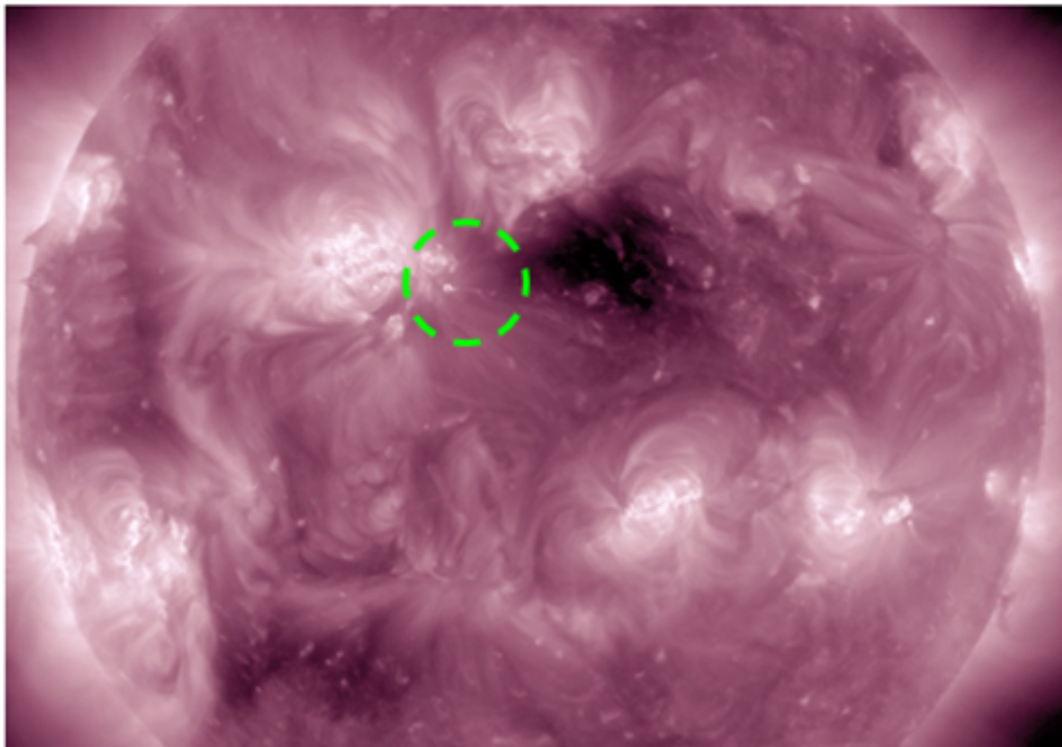
On 29 April, members of the BRAMS network (<http://brams.aeronomie.be/>) observed radio disturbances at 49.97 MHz. BRAMS is short for Belgian Radio Meteor Stations, and consists mostly of Belgian radio amateurs listening for meteor reflections from a beacon signal sent out by the Geophysical Centre of Dourbes. The main purpose is to study features of the meteors and their source-particles.



Solar eruptions often cause radio disturbances and thus prohibit useful radio observations of meteors. Interestingly though, no such solar eruption was observed at that time, as the x-ray flux remained flat at the C1-level (13:45-14:00UT). Alerted by the BRAMS observations, the radiograms from the Humaïn Solar Radio Telescope were checked (<http://sidc.oma.be/humain/>). These confirmed the radio burst at the time it was recorded (13:56-13:58UT), meaning the observation was very real and not caused by some local interference. Analysis of the burst pattern indicated also that it concerned a group of Type III bursts, meaning that it was caused by very fast electrons travelling through the hot solar corona and away from the Sun.



The search for the source of the radio burst without x-ray signature was on! Examination of SDO/AIA imagery (<http://sdo.gsfc.nasa.gov/>) revealed nothing obvious. Only at high temperatures in the corona such as with AIA 211, some activity could be seen near the location of sunspot group NOAA 1731, which was close to the centre of the solar disk. However, there were many other active regions that might be the cause of the observed event, but the brightness of the region in EUV preventing the activity to be seen. Now what?



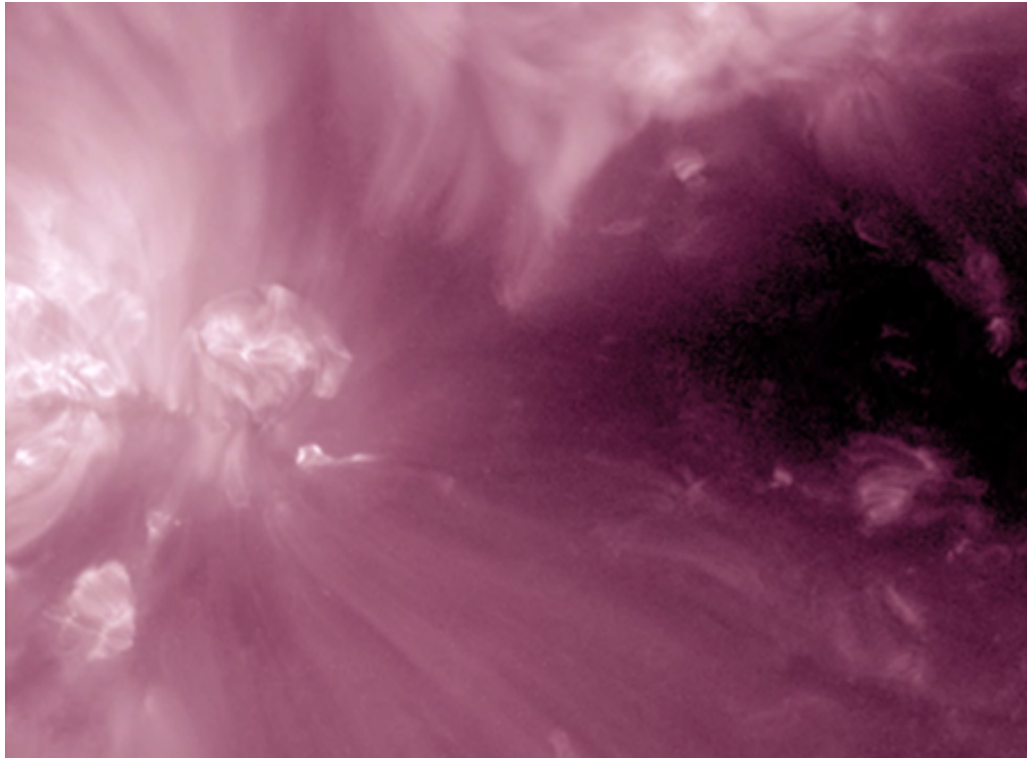
Enter the Nançay Radio Heliograph (<http://www.obs-nancay.fr/en/>). This radio telescope in the centre of France consists of 48 radio telescopes set up in a T-shape with a 3.2 km maximum baseline. Observing at 150.9 MHz, it allows for a 1 arc minute resolution which is enough to accurately pinpoint the radio source on the solar disk, which has a diameter of about 32 arc minutes. Imagery of the Nançay Radio Heliograph left no doubt: From 13:54 till 13:58UT, there was a radio signal near the disk's centre, that was not present before or after that time frame, confirming that the Type III bursts originated from the vicinity of active region NOAA 1731.



Close examination of the EUV and visual imagery revealed that the radio bursts are related to jet-like activity from a tiny region to the southwest (lower right) of NOAA 1731's leading spot. These EUV-jets are also often linked to beams of energetic particles (electrons and Helium isotopes) in situ. Unfortunately, in this case, there was no spacecraft at the right magnetic position to observe these particles.

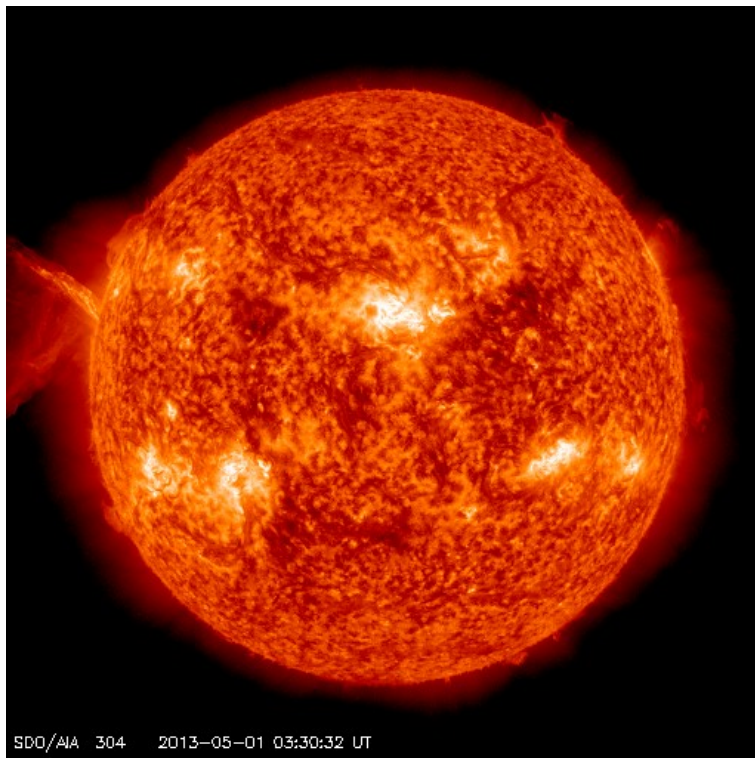
This kind of events has been studied by scientists in the past. In many cases, the ejecta were linked to interaction with a nearby coronal hole, as open magnetic field lines reconnect with a closed magnetic field line of an active region, which can be tiny (a small dipole). Also in this case, there's a coronal hole interacting with the outer edge polarity of a complex active region, confirming the original studies and explanations.

This movie at [http://www.youtube.com/watch?v=\\_RQgih-4xkc](http://www.youtube.com/watch?v=_RQgih-4xkc) shows some of the jet-like structures between 12:30 and 15:30UT.



## 2. The May 1 Back sided event

May 1: back sided flare - enormous mass ejection



Watch the movie

<http://www.youtube.com/watch?v=m6QruufEmoE>

### 3. Space Science Training

Train your space skills at

**KU LEUVEN**

Space science training week:  
data driven modeling and forecasting  
September 16-19, 2013, KU Leuven, Belgium

Register at:  
<http://wis.kuleuven.be/CHARM/events/school/SSTW2013>

SOC  
Prof. Rony Keppens (KU Leuven)  
Dr. Petra Vanlommel (STCE)  
Prof. Giovanni Lapenta (KU Leuven)  
Dr. David Berghmans (ROB)  
Prof. Stefaan Poedts (KU Leuven)  
Prof. Bernard Knaepen (ULB)  
Dr. Dan Seaton (ROB)

Public lecture on Wednesday September 18th at 18:30, STUK  
Prof. Sami Solanki, "The solar influence on our terrestrial environment"  
<http://wis.kuleuven.be/space-evening-lecture>

www.eheroes.eu wis.kuleuven.be/CHARM

<http://wis.kuleuven.be/CHARM/events/school/SSTW2013/>

### 4. Review of solar and geomagnetic activity (29 Apr 2013 - 5 May 2013)

#### Solar Activity

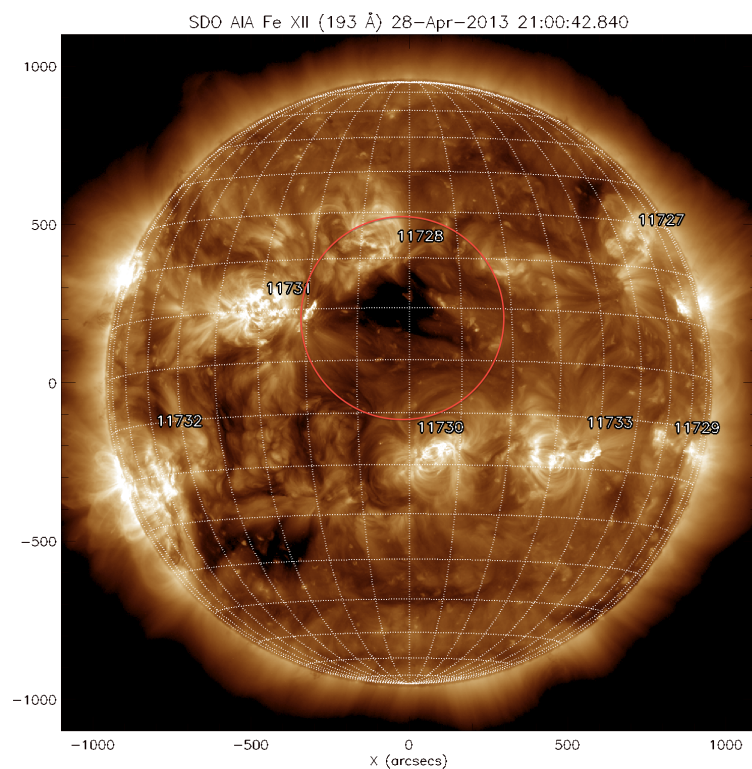
Solar activity was moderate during the week with mostly C class flares and a couple of M class events. In total three regions were monitored for potential M flares, NOAA 1730, NOAA 1731 and NOAA 1739, at the end of the week. The strongest flare was a M5.7 event, which occurred in NOAA AR 1739 on May 3rd (1732 UT peak time), while it was on the East limb.

Only one CME was potentially Earth-directed: it was associated with a M1.1 flare on May 2nd (0510 UT peak time), in NOAA AR 1731, with an estimated arrival at Earth around May 6.

#### Geomagnetic Activity

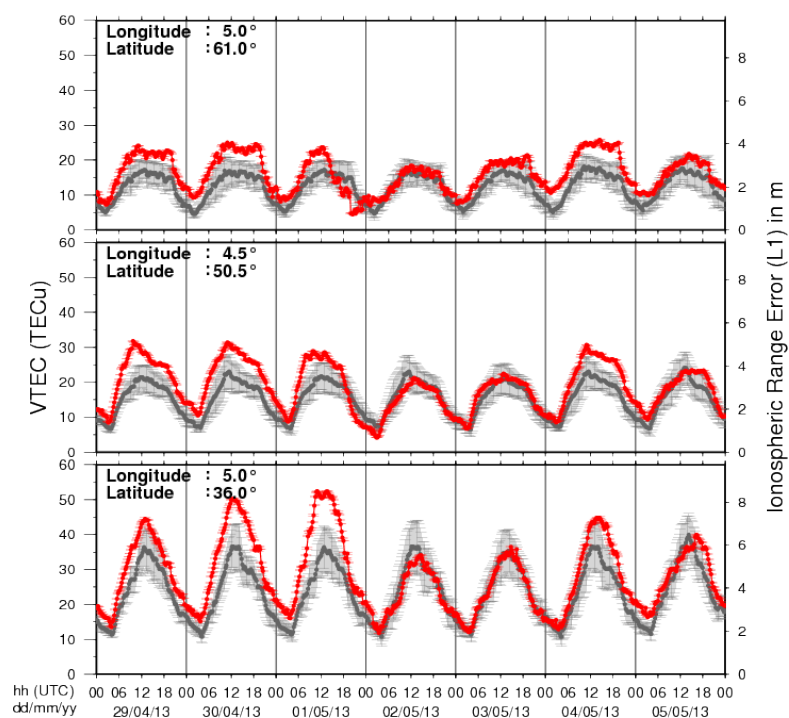
Geomagnetic activity was low most of the week, except a nearly 24 hours period of unsettled to active conditions ( $K=4$ ) at planetary and at local levels ( $K=4$ , in Dourbes), from May 1st, 06 UT till May 2, 06 UT. This was linked to a weak high speed solar wind stream associated with a coronal hole, west of NOAA AR 1731, see the picture beneath.





## 5. Review of ionospheric activity (29 Apr 2013 - 5 May 2013)

### VTEC Time Series





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

a) in the northern part of Europe(N61°, 5°E)

b) above Brussels(N50.5°, 4.5°E)

c) in the southern part of Europe(N36°, 5°E)

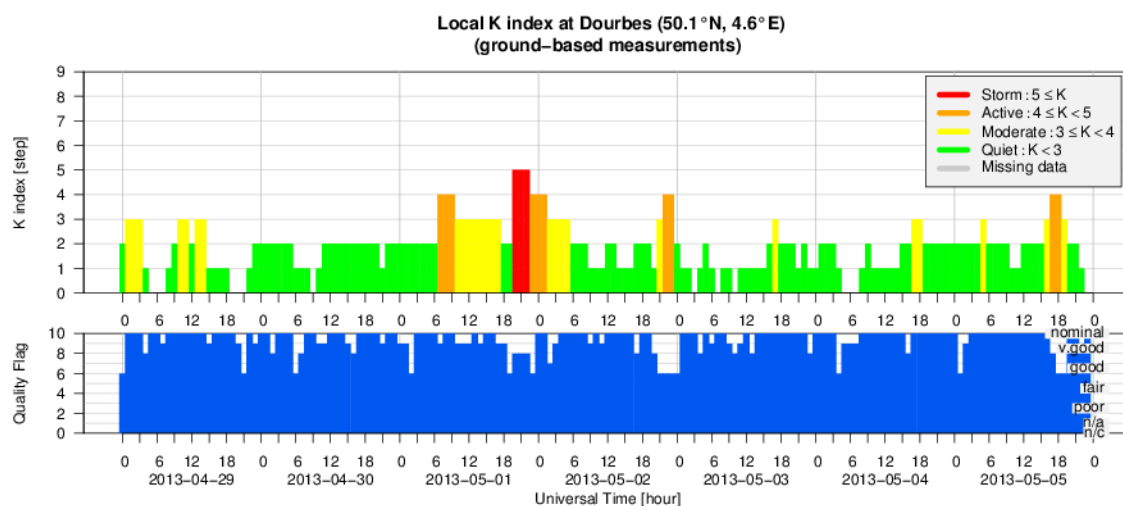
This figure also shows (in grey) the normal ionospheric behaviour expected based on the median VTEC from the 15 previous days.

The VTEC is expressed in TECu (with  $\text{TECu} = 10^{16}$  electrons per square meter) and is directly related to the signal propagation delay due to the ionosphere (in figure: delay on GPS L1 frequency).

The Sun's radiation ionizes the Earth's upper atmosphere, the ionosphere, located from about 60km to 1000km above the Earth's surface. The ionization process in the ionosphere produces ions and free electrons. These electrons perturb the propagation of the GNSS (Global Navigation Satellite System) signals by inducing a so-called ionospheric delay.

See [http://stce.be/newsletter/GNSS\\_final.pdf](http://stce.be/newsletter/GNSS_final.pdf) for some more explanations ; for detailed information, see [http://gnss.be/ionosphere\\_tutorial.php](http://gnss.be/ionosphere_tutorial.php)

## 6. Geomagnetic Observations at Dourbes (29 Apr 2013 - 5 May 2013)



## 7. 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 zonedynamo, 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 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>

### **CHARM annual meeting 2013 : Coronal Rain**

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=450>

### **CHARM annual meeting 2013 : Observations and Modelling of Magneto-acoustic Waves in Solar Sunspots**

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=451>

### **CHARM annual meeting 2013 : 3D simulations of the crab nebula**

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=452>

### **CHARM annual meeting 2013 : #3D Continuum Radiative Transfer Simulations of Galaxies**

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=453>

### **CHARM annual meeting 2013 : Cross-sectional and intensity variations for sausage modes**

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=454>

### **CHARM annual meeting 2013 : Quasi Periodic Pulsations in Solar Flares**

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=455>

### **CHARM annual meeting 2013 : Line-of-sight resolution effects on intensity perturbations by sausage modes**

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=456>

### **Evolution of CMEs in the inner heliosphere - observations versus models**

<http://www.spaceweather.eu/en/repository/show?id=457>

### **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>

## **8. Future Events**

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

### **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.spENVIS.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-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/>

### **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.yao.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/>