# STCE Newsletter

## 3 Jun 2013 - 9 Jun 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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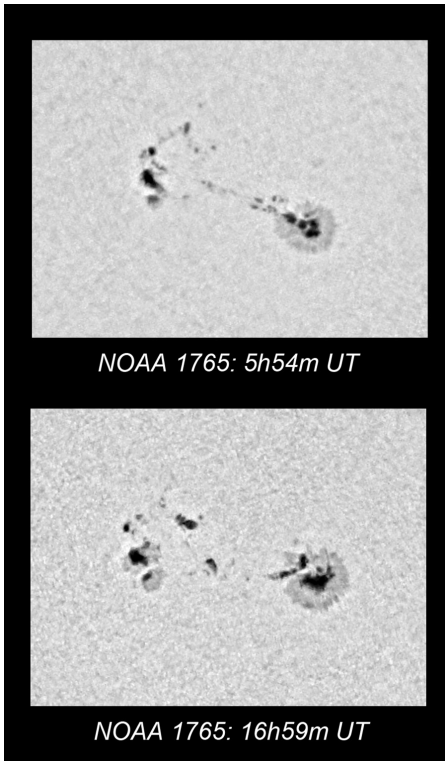
# 1. Recipe for a sunspot group

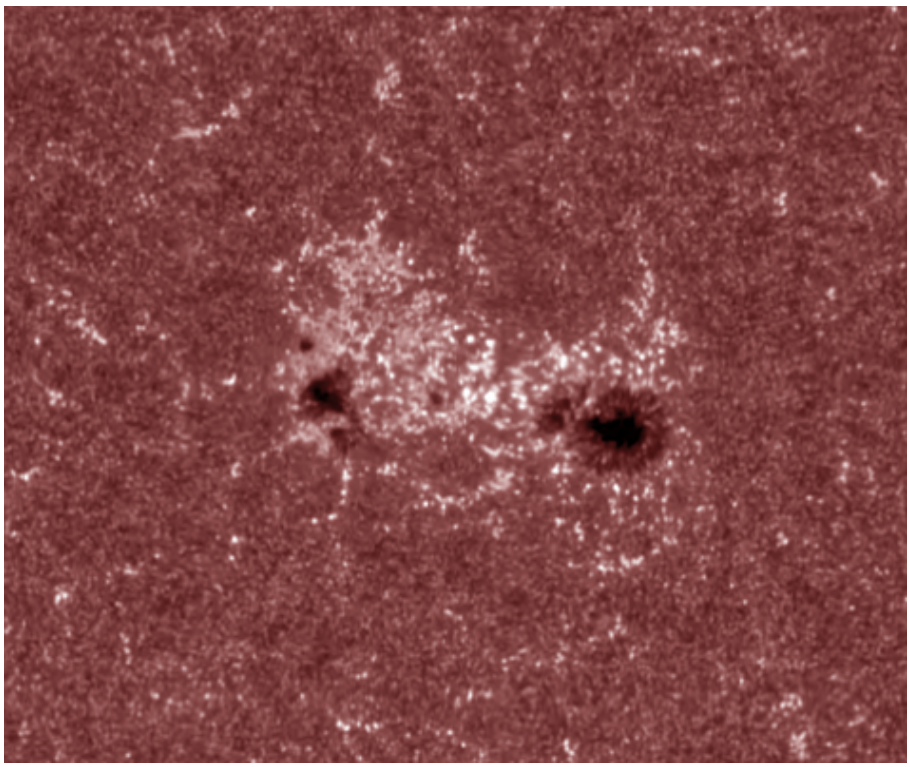
Non-existing on 4 June, a sunspot group rapidly developed during the subsequent days. During the growing process of this group, the main spot offered a substantially different outlook even over the course of just a few hours. This was noticed by several solar observers, who gladly imaged the photogenic sunspot group NOAA 1765. Pictures underneath were taken by Geert Verbanck, member of the Belgian Solar Section (http://www.vvs.be/werkgroepen/werkgroep-zon ), on 7 June with a 13 cm refractor and a Herschel wedge. They show indeed that major changes were taking place, in particular in the leading spot.



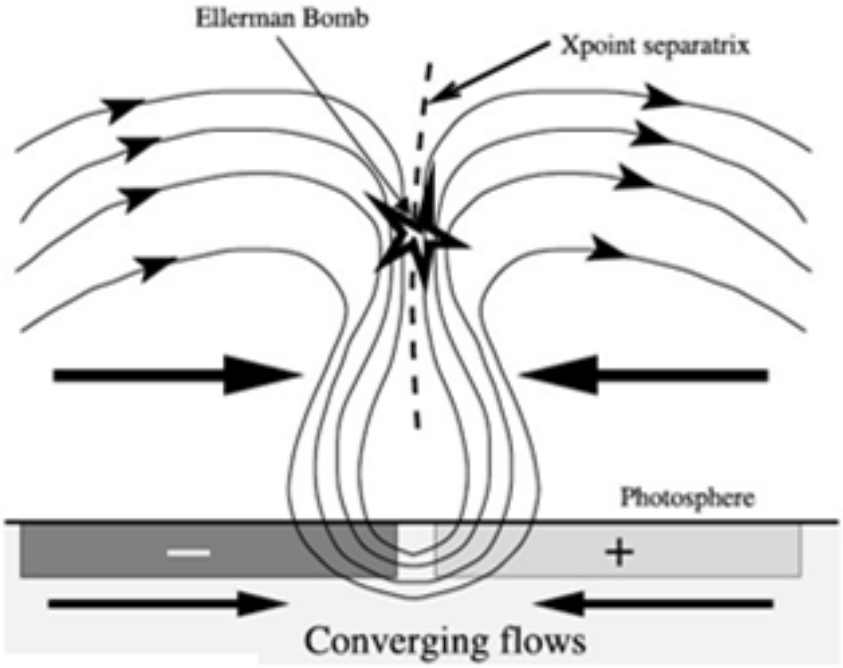
*NOAA 1765: 5h54m UT*

*NOAA 1765: 16h59m UT*

SDO/AIA 1700 (http://sdo.gsfc.nasa.gov/ ) observes the Sun just above the photosphere (the visible solar "surface"), at a height where the temperature reaches its minimum before quickly rising to million degrees in the corona. Being in the upper photosphere, it provides still a good view on the sunspots, but e.g. also on the interaction of the emerging plasma (charged particles) with that present in the Sun's lower atmosphere.

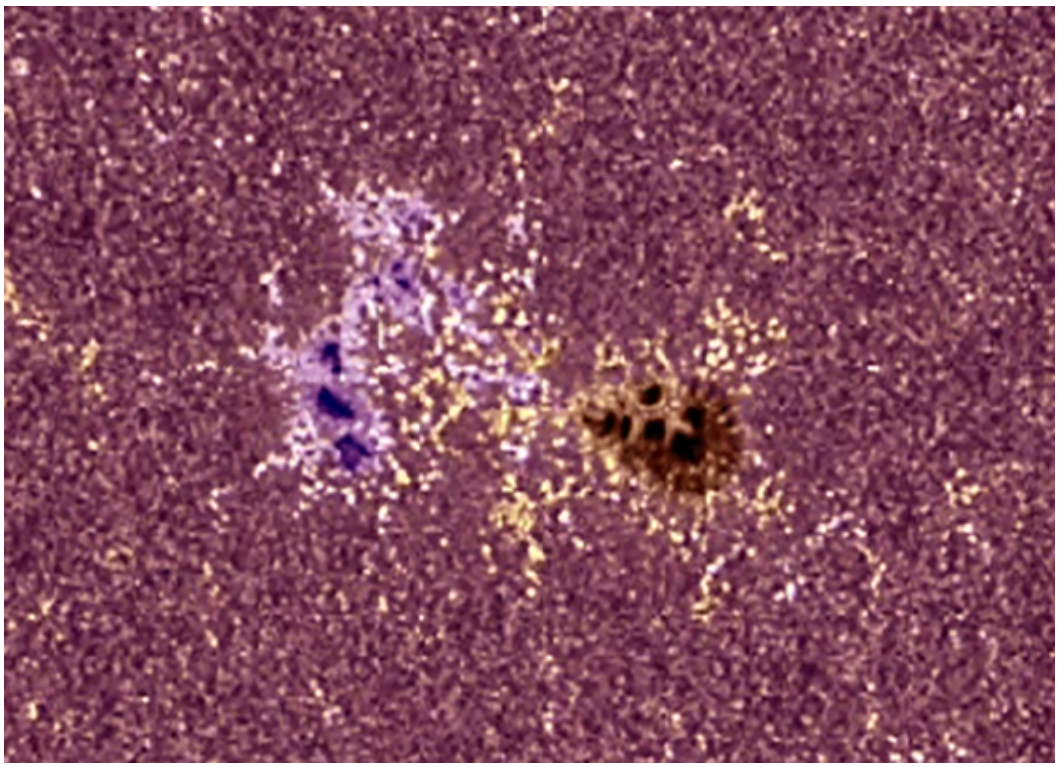


The AIA 1700 image above was taken at noon on 7 June. One has a clear view on the sunspots and on the various magnetic elements. During the early phase of the sunspot group development, somewhat brighter dots near the middle of the sunspot group can be seen. These are possibly Ellerman bombs (see sketch underneath for one of the possible mechanisms). One of the explanations is that as the magnetic flux tube rises through the solar surface, its magnetic elements collide with the pre-existent small scale magnetic field elements. As such, short-lived magnetic reconnections (“short circuits”) occur between small emerging flux tubes of opposite polarity, resulting in the observed small flashes ("microflares"). Further research at higher resolution is required to fully understand this phenomenon.



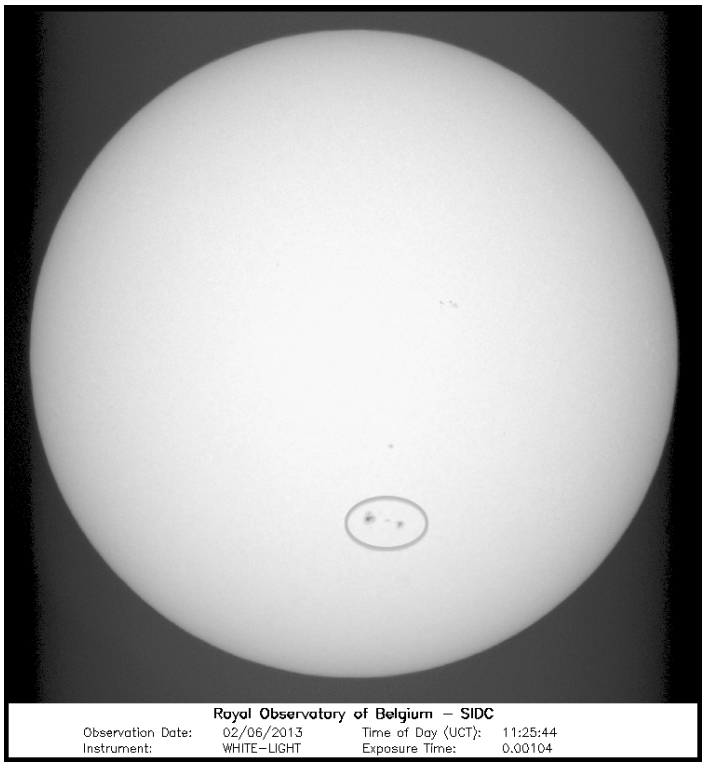

*Georgoulis et al., 2002*

The other (less) bright dots are concentrations of magnetic flux, floating with the bubbly dynamics of the Sun's upper atmosphere. The image underneath shows NOAA 1765 as seen in the light of the AIA 1700 filter, overlaid by a magnetogram: Purple is positive polarity, with magnetic field lines coming out, while yellow is negative polarity, with magnetic field lines returning into the Sun. The bright points clearly correspond to magnetic flux elements. As the main flux tube rises through the photosphere, the main spots are gradually getting composed, which explains the different outlook of the spots that was observed. This movie at http://www.youtube.com/watch?v=wnNb2wTkQmw shows the evolution of the sunspot group from 4 June (noon) till 9 June (noon), first in white light, then in AIA 1700, finally a combination of AIA 1700 with a colorized magnetogram.



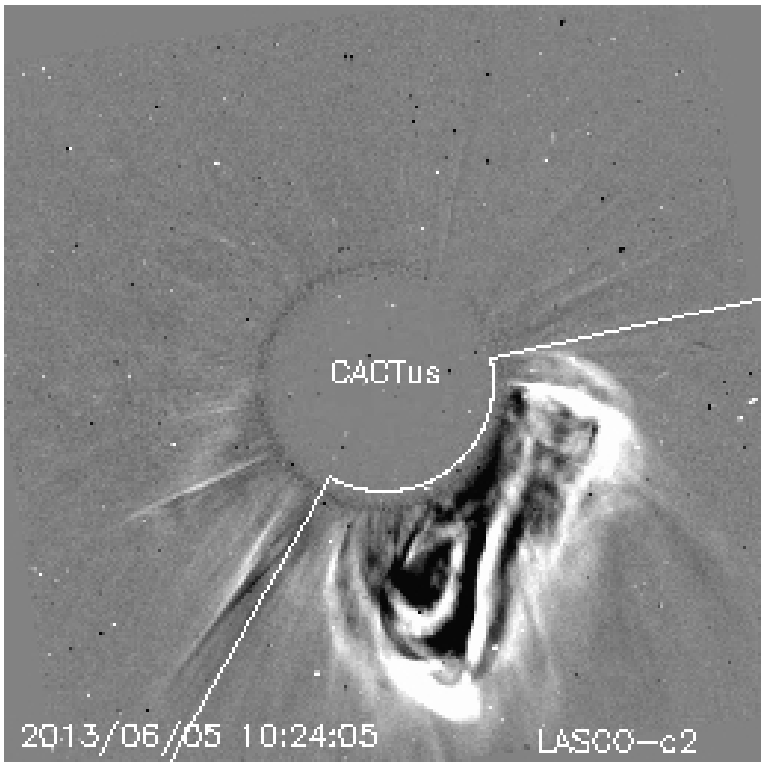
## 2. Review of solar activity (3 Jun 2013 - 9 Jun 2013)

During this week the flaring activity was low with only 8 C-class flares and 2 M-class flares reported by GOES. All the flares originated from the Catania sunspot group 92 (NOAA AR 1762), which had beta-gamma-delta configuration of its photosperic magnetic field throughout three days of the week.

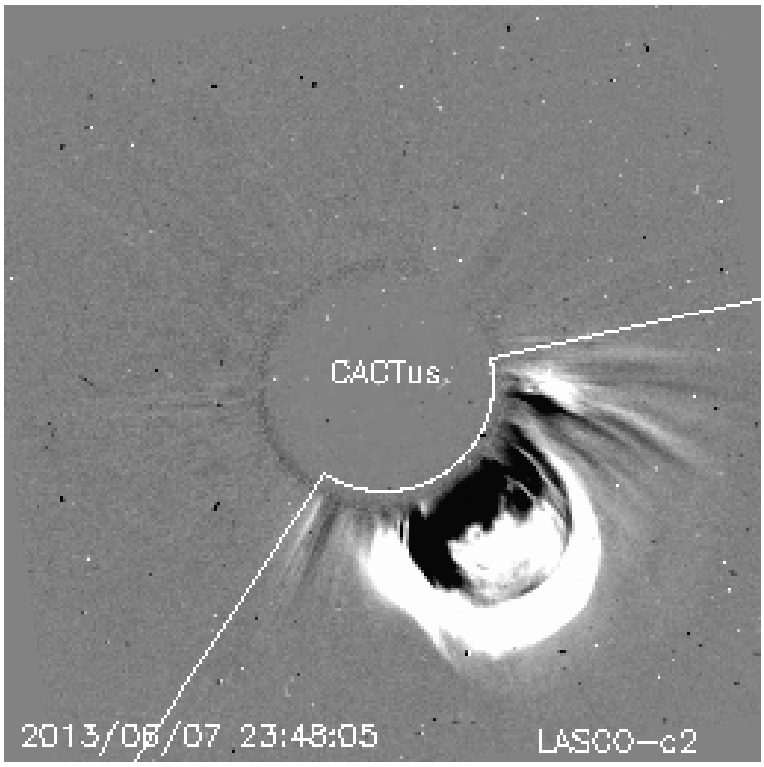



## Partial halo CME's

A partial halo CME was observed on June 5. The CME was associated with the long duration M1.3 flare which peaked at 08:57 UT. Catania sunspot group 92 was the source. The CME was first seen in the SOHO/LASCO C2 field of view at 09:12 UT, had angular width of about 200 degrees and projected speed of 300 km/s. The bulk of the CME mass was directed southward of the Sun-Earth line and the CME did not arrive at the Earth.

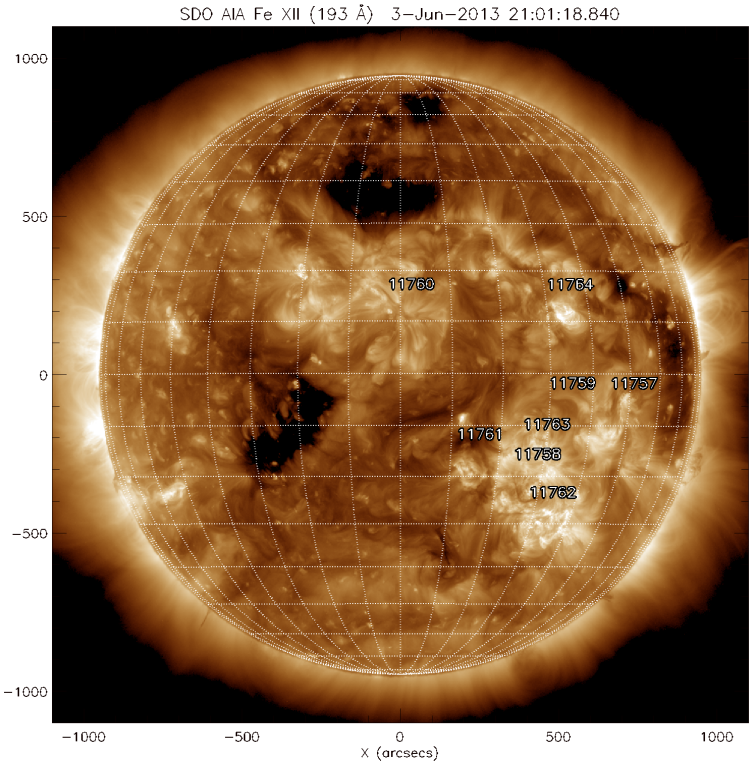



The second partial halo CME observed this week was associated with the M5.9 flare on June 7, peak time 22:49 UT. This was the strongest flare of the week. Catania sunspot group 92, the source group, was at the moment of flaring situated at the south-west solar limb. The CME was first seen in the SOHO/ LASCO C2 field of view at 23:12 UT, had angular width of 150 degrees and a projected speed of 700 km/s. The bulk of the CME mass was directed southward of the Sun-Earth line, similarly to the partial halo CME on June 5.



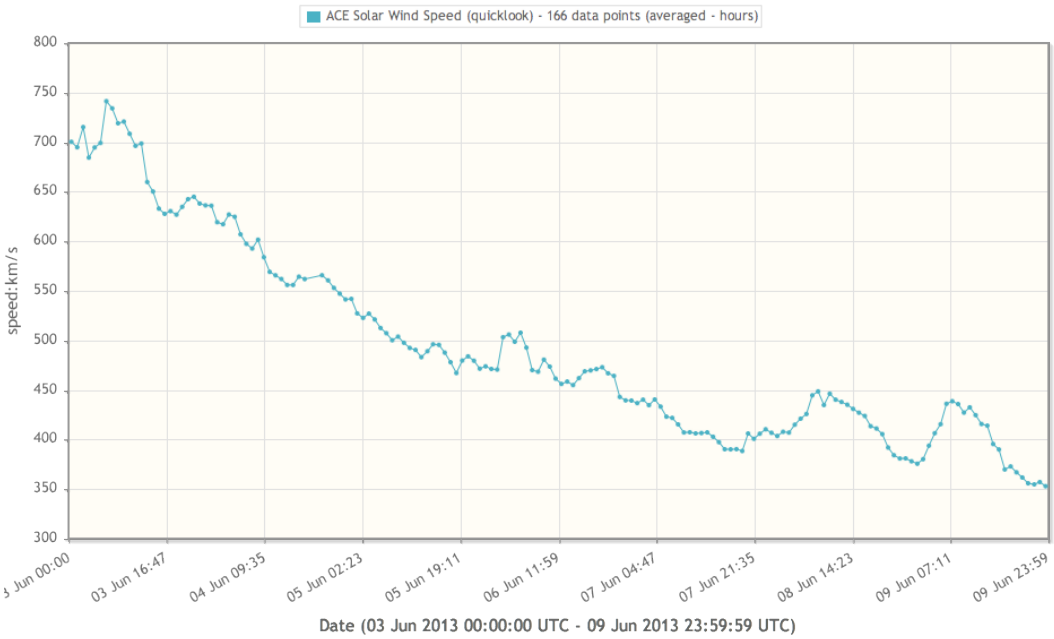

## Coronal holes

One high-latitude coronal hole and one equatorial coronal hole were observed this week. The high-latitude coronal hole in the northern hemisphere reached the central meridian on June 02-03. The fast flow associated with this coronal hole arrived on June 06. The fast flow associated with the equatorial coronal hole did not arrive at the Earth.



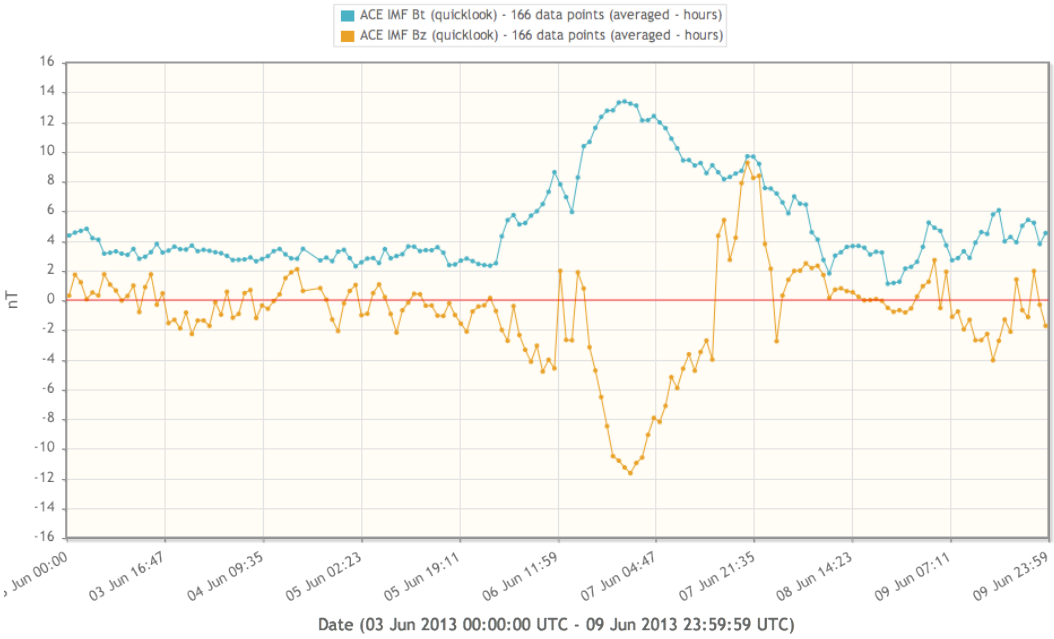

## 3. Review of geomagnetic activity (3 Jun 2013 - 9 Jun 2013)

The geomagnetic conditions were unsettled to quiet until June 06. The local station at Dourbes reported values up to K=3.
At the beginning of the week the Earth was inside the fast solar wind of about 700 km/s. Gradually, the solar wind speed decreased.

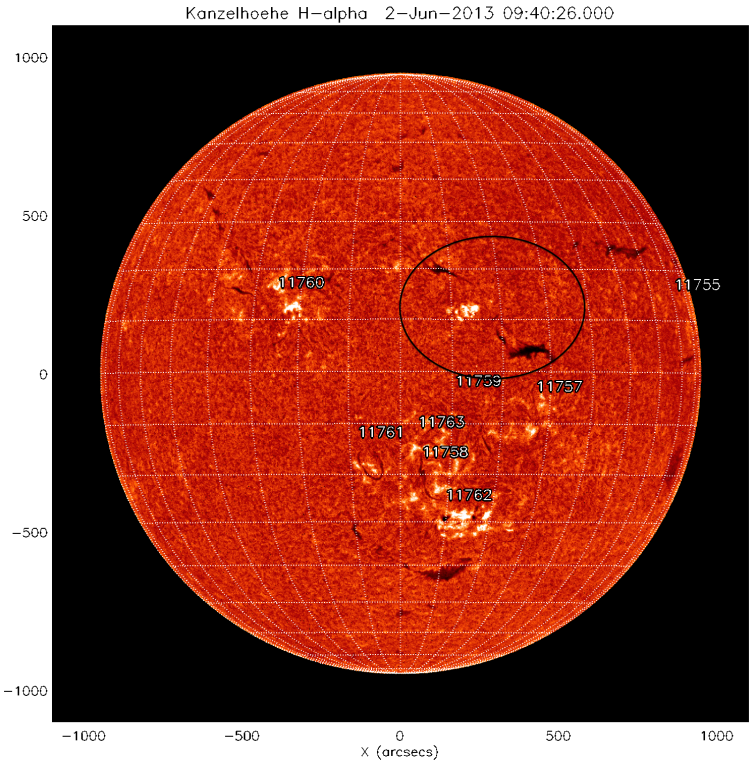


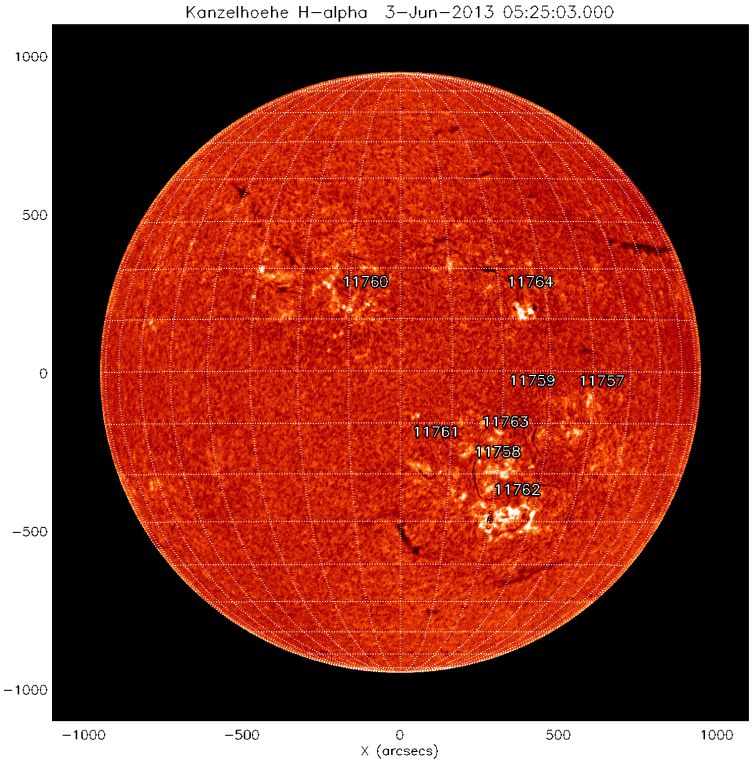
On June 6 the flow from the high-latitude coronal hole in the northern hemisphere arrived at the Earth and induced active to minor storm geomagnetic conditions (Dourbes reported K=5).

A magnetic structure passed ACE on June 6. A rotation in the interplanetary magnetic field is visible: Bz slowly increases from -12nT to 10nT late June 07.




The structure was possibly associated with the plasma eruption at about N10W25 on June 2. A circle is drawn around a filament in an image taken by the H-alpha instrument of Kanzelhoehe. The next day, the filament is not visible any more.




The arrival of the magnetic cloud at Earth caused the continuation of the minor storm geomagnetic conditions during the second half of June 6 and during June 7. The local station at Dourbes reported values up to K=5 and NOAA reported Kp=6.

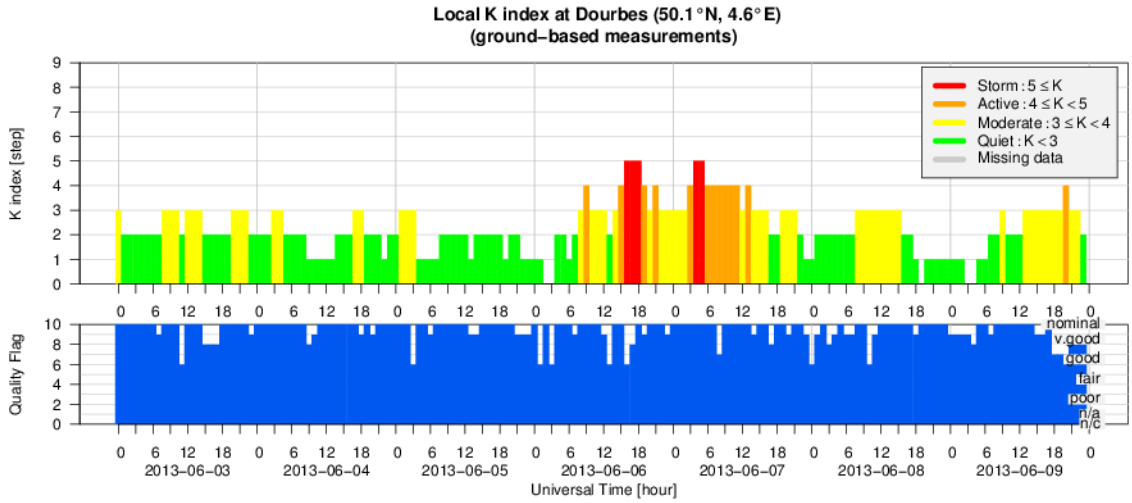
During the rest of the week the geomagnetic conditions were unsettled to active due to occasional negative values of the Bz component. During the rest of the week, the IMF magnitude was stable amounting about 4 nT.

## 4. Noticeable Solar Events (3 Jun 2013 - 9 Jun 2013)

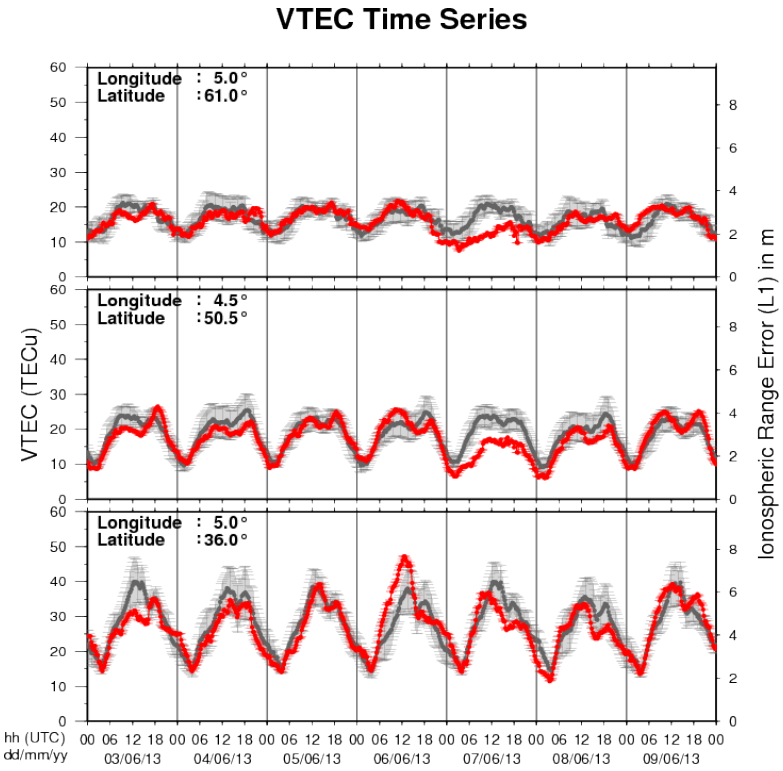
| DAY | BEGIN | MAX | END | LOC | XRAY | OP | 10CM | TYPE | Cat | NOAA |
|---|---|---|---|---|---|---|---|---|---|---|
| 05 | 0814 | 0857 | 0926 | S32W51 | M1.3 | 1F | 79 | III/1IV/1 | 92 | 1762 |
| 07 | 2211 | 2249 | 2304 | | M5.9 | | 160 | VI/1 | 92 | 1762 |

LOC: approximate heliographic location
XRAY: X-ray flare class
OP: optical flare class
10CM: peak 10 cm radio flux
TYPE: radio burst type
Cat: Catania sunspot group number
NOAA: NOAA active region number

## 5. Geomagnetic Observations at Dourbes (3 Jun 2013 - 9 Jun 2013)



# 6. Review of ionospheric activity (3 Jun 2013 - 9 Jun 2013)




The figure shows the time evolution of the Vertical Total Electron Content (VTEC) (in red) during the last week at three locations:
a) in the northern part of Europe(N61°, 5°E)
b) above Brussels(N50.5°, 4.5°E)
c) in the southern part of Europe(N36°, 5°E)
This figure also shows (in grey) the normal ionospheric behaviour expected based on the median VTEC from the 15 previous days.

The VTEC is expressed in TECu (with TECu=10^16 electrons per square meter) and is directly related to the signal propagation delay due to the ionosphere (in figure: delay on GPS L1 frequency).
The Sun's radiation ionizes the Earth's upper atmosphere, the ionosphere, located from about 60km to 1000km above the Earth's surface.The ionization process in the ionosphere produces ions and free electrons. These electrons perturb the propagation of the GNSS (Global Navigation Satellite System) signals by inducing a so-called ionospheric delay.

See http://stce.be/newsletter/GNSS_final.pdf for some more explanations ; for detailed information, see http://gnss.be/ionosphere_tutorial.php

# 7. PROBA2 Observations (3 Jun 2013 - 9 Jun 2013)

Solar (flaring) activity was very low to moderate this week. 2 M level flares occurred, an M1.3 on Wednesday 5th and an M5.9 on Friday 7th, both originating from AR 11762. The latter went behind the West limb during the weekend.

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/WR167-June03to09/2013_06_03_00_00_19_2013_06_09_22_52_55_SWAP_174__AIA_304-hq.mp4 (SWAP174/AIA304 combination; Heliosphere.org).

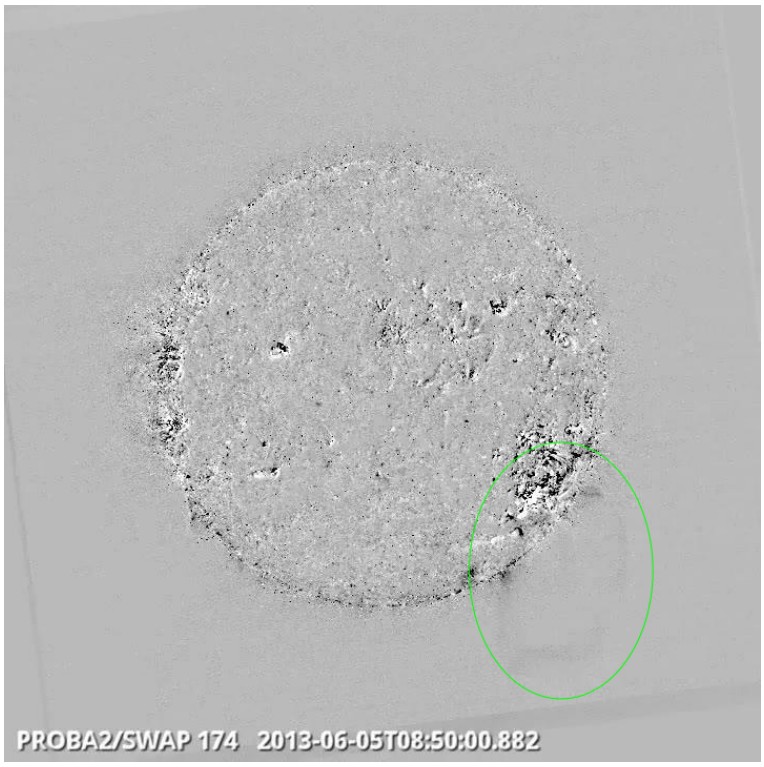
Details about some of this week's events can be found further below.

Tuesday June 4th


Eruption North East limb at 15:30 - SWAP difference image

Find a movie of this event here: http://proba2.oma.be/swap/data/mpg/movies/WeeklyReportMovies/WR167-June03to09/Events/20130604_Eruption_NELimb_1800_swap_diff.mp4 (SWAP difference movie)

Wednesday June 5th



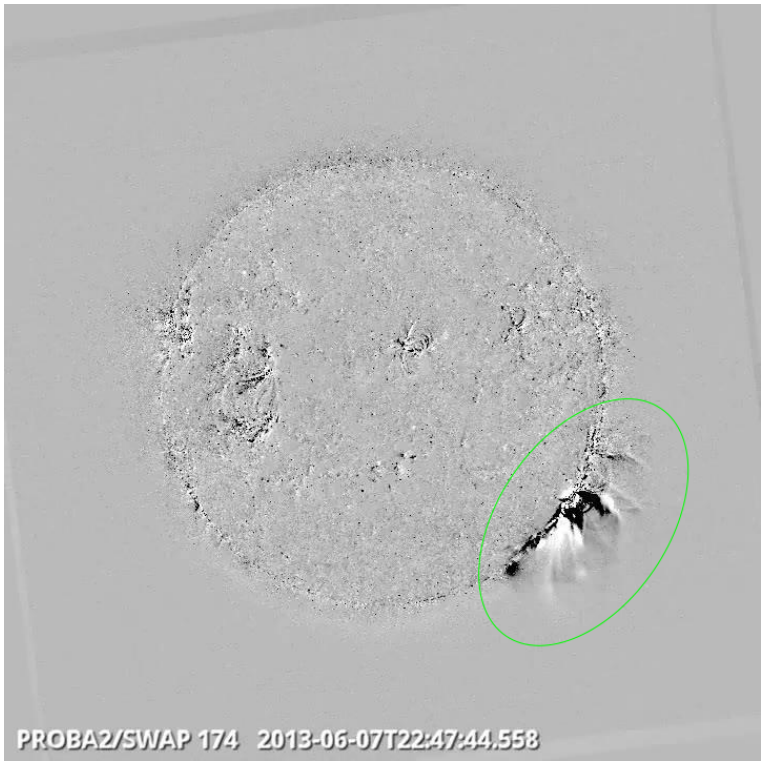
M1.3 flare South West limb at 07:39 - SWAP difference image

Find a movie of this event here: http://proba2.oma.be/swap/data/mpg/movies/WeeklyReportMovies/WR167-June03to09/Events/20130605_M13Flare_SWlimb_0830_swap_diff.mp4 (SWAP difference movie)

Friday June 7th

Prominence Eruption North West limb at 11:27 - SWAP difference image

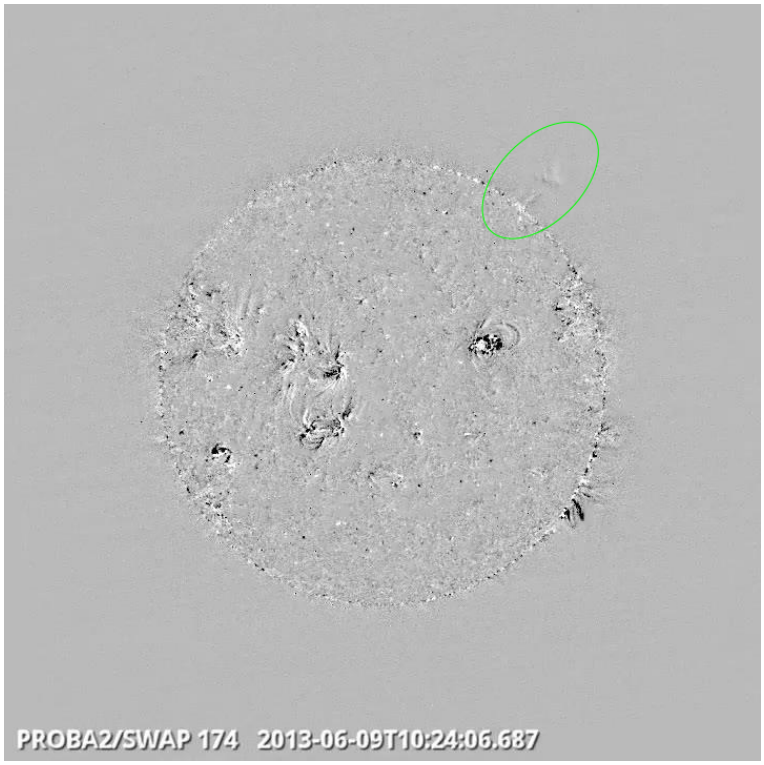
Find a movie of this event here: http://proba2.oma.be/swap/data/mpg/movies/WeeklyReportMovies/WR167-June03to09/Events/20130607_PromEruption_NWlimb_0707_swap_diff.mp4 (SWAP difference movie)



M5.9 flare Eruption South West limb at 22:11 - SWAP difference image

Find a movie of this event here: http://proba2.oma.be/swap/data/mpg/movies/WeeklyReportMovies/WR167-June03to09/Events/20130607_M59_SWlimb_2300_swap_diff.mp4 (SWAP difference movie)

Sunday June 9th



Prominence Eruption North West limb at 10:24 - SWAP difference image.

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

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

### eHEROES : Het voorspellen van zonnevlammen

A workshop on 'How to predict solar flares' given in the frame of PROBA2@school on April 26, 2013 in the school Klein Seminarie, Hoogstraten, Belgium. 3 x 20 students.
http://www.spaceweather.eu/en/repository/show?id=459

### eHEROES : Quiz - PROBA2, zonnevlammen, plasmawolken en ruimteweer

Quiz played at the high school 'Klein Seminarie', Hoogstraten, Belgium during the workshop ruimteweer en PROBA2. The workshop fits in the project PROBA2@school.
http://www.spaceweather.eu/en/repository/show?id=460

### eHEROES : Dissemination - Achievements

Presentation given during the first annual eHEROES meeting on Feb 6 and 7 about the progress in the work package 'Dissemination'.
http://www.spaceweather.eu/en/repository/show?id=462

### COST ES0803 Space weather asset catalogue

http://www.spaceweather.eu/en/repository/show?id=463

### eHEROES : PROBA2 - ontwikkeling, lancering en exploitatie

Workshop given on March 26 at the high school 'Klein seminarie', Hoogstraten, Belgium in the frame of PROBA2@school.

http://www.spaceweather.eu/en/repository/show?id=461

### STCE - La recherche en Antarctique

Presentation, in French given at the open doors of the Space Pole, Brussels, Belgium, 2013.
http://www.spaceweather.eu/en/repository/show?id=464

### STCE - PROBA2 et l'activité solaire

Presentation, in French given at the open doors of the Space Pole, Brussels, Belgium, 2013.
http://www.spaceweather.eu/en/repository/show?id=465

### STCE - Pourquoi mesurer la pesanteur g?

Presentation, in French given at the open doors of the Space Pole, Brussels, Belgium, 2013.
http://www.spaceweather.eu/en/repository/show?id=466

### STCE - Waarom meten we de valversnelling g?

Presentation, in Dutch given at the open doors of the Space Pole, Brussels, Belgium, 2013.
http://www.spaceweather.eu/en/repository/show?id=467

### STCE - La météorologie spatiale

Presentation, in French given at the open doors of the Space Pole, Brussels, Belgium, 2013.
http://www.spaceweather.eu/en/repository/show?id=468

### STCE - Ruimteweer: de impact van zonnestormen op aarde

Presentation, in Dutch given at the open doors of the Space Pole, Brussels, Belgium, 2013.
http://www.spaceweather.eu/en/repository/show?id=469

### STCE - Les grands tremblements de terre dans nos régions

Presentation, in French given at the open doors of the Space Pole, Brussels, Belgium, 2013.
http://www.spaceweather.eu/en/repository/show?id=470

### STCE - Exploration de la planète Mercure

Presentation, in French given at the open doors of the Space Pole, Brussels, Belgium, 2013.
http://www.spaceweather.eu/en/repository/show?id=471

### STCE - Habiter sur Mars?

Presentation, in French given at the open doors of the Space Pole, Brussels, Belgium, 2013.
http://www.spaceweather.eu/en/repository/show?id=472

## 9. Future Events

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

### 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

## 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 MÃ©rida YucatÃ¡n, 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

## 2013 Meeting of the Italian Community in Solar and Heliospheric Physics in Catania, Italy

Start : 2013-09-04 - End : 2013-09-06
The purpose of the meeting is to provide a forum for the italian scientists in the field (some of which are abroad) to consolidate on-going collaborations and establish new ones, for example in future projects such as Solar Orbiter and EST, where several of us are involved.
The meeting is obviously open to scientists from all the countries!
Website:
http://www.oact.inaf.it/weboac/SoHe2013/

## 14th European Solar Physics Meeting in Dublin, Ireland.

Start : 2013-09-08 - End : 2013-09-12
The European Solar Physics Meetings aim to highlight all aspects of modern solar physics, including observation and theory that span from the interior of the Sun out into the wider heliosphere. These meetings provide a broad, yet stimulating, environment for European and international scientists to share their research in solar physics.
The meeting will mostly comprise of contributed talks and poster presentations, with several invited review talks (typically one per session). Posters will be on display for the whole meeting in close proximity to the lecture theatre. Refreshments will be served in the poster viewing area during two dedicated coffee/poster breaks on each full day.
Website: http://www.espm14.ie/

## 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

## 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/

## STEREO/WAVES & WIND/WAVES workshop on Solar Radio Emissions on Santorini, Greece

Start : 2013-10-07 - End : 2013-10-11
The aim of the workshop is to review the "state of the art" theories about generation and propagation of Solar radio burst and discuss the observational constrains and results that have been provided in this area by the WIND & STEREO missions during the last 20 years. Furthermore the STEREO & WIND observations will be put in the context of other missions such as RHESSI and ground based observatories. Finally, the preparation for the future explorations foreseen with Solar Orbiter and Solar Probe Plus will be discussed.
Website:
http://type3stereo.sciencesconf.org/

## 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 Heliogragh, 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

## 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/