

STCE Newsletter

10 Dec 2012 - 16 Dec 2012



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

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

1. The fairest of them all... (10 Dec 2012 - 16 Dec 2012)

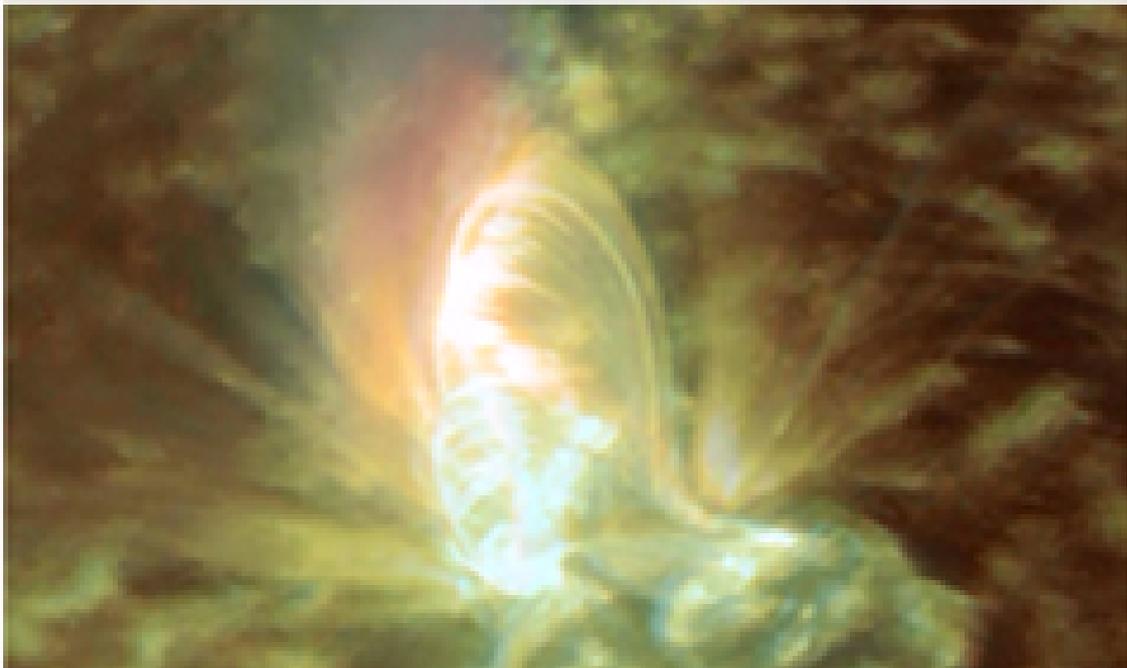
With 2012 nearing its end, it may be a good time to have a quick review of some of the more spectacular events that the Sun produced this year. Though Solar Cycle 24 (SC24) certainly has been weak so far, solar activity was quite interesting at times with the Sun producing some truly amazing events.

A chronological list of 12 of these events can be found underneath. Using Heliviewer and JHeliviewer, a movie at <http://www.youtube.com/watch?v=aO5lZSyYTEM> was created containing a few clips of each event. Usually, SDO-images (<http://sdo.gsfc.nasa.gov/>) were used, occasionally supplemented with imagery from STEREO (<http://stereo.gsfc.nasa.gov/>), PROBA2 (<http://proba2.oma.be/>), SOHO (<http://sohowww.nascom.nasa.gov/>) and GOES/SXI (<http://www.swpc.noaa.gov/sxi/index.html>).

As this concerns punctual events on the Sun, one will not find here clips from the total solar eclipse, the Venus transit, or the ongoing magnetic reversal at the Sun's poles. Even then, it was still quite hard to pick these 12 events from all other eruptions, so no attempt was being made to rank them in another way. We leave it up to the reader to determine which is the fairest of them all.

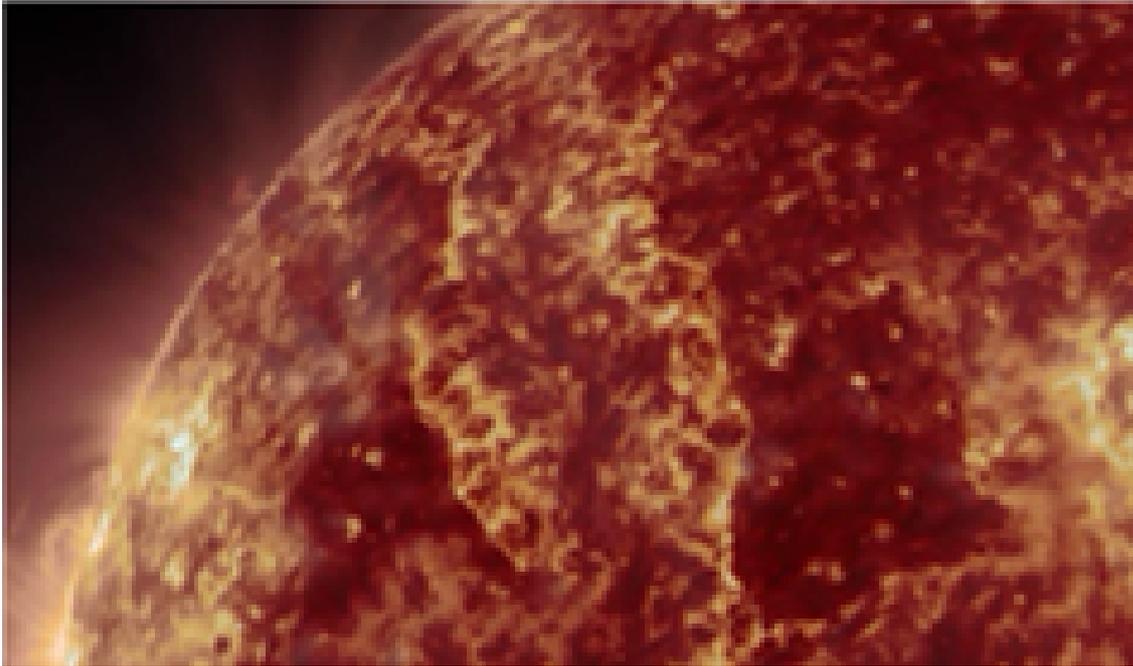
Merry Christmas and a Happy New Year!

Event 1: 19 January 2012 - M3 flare in NOAA 1402



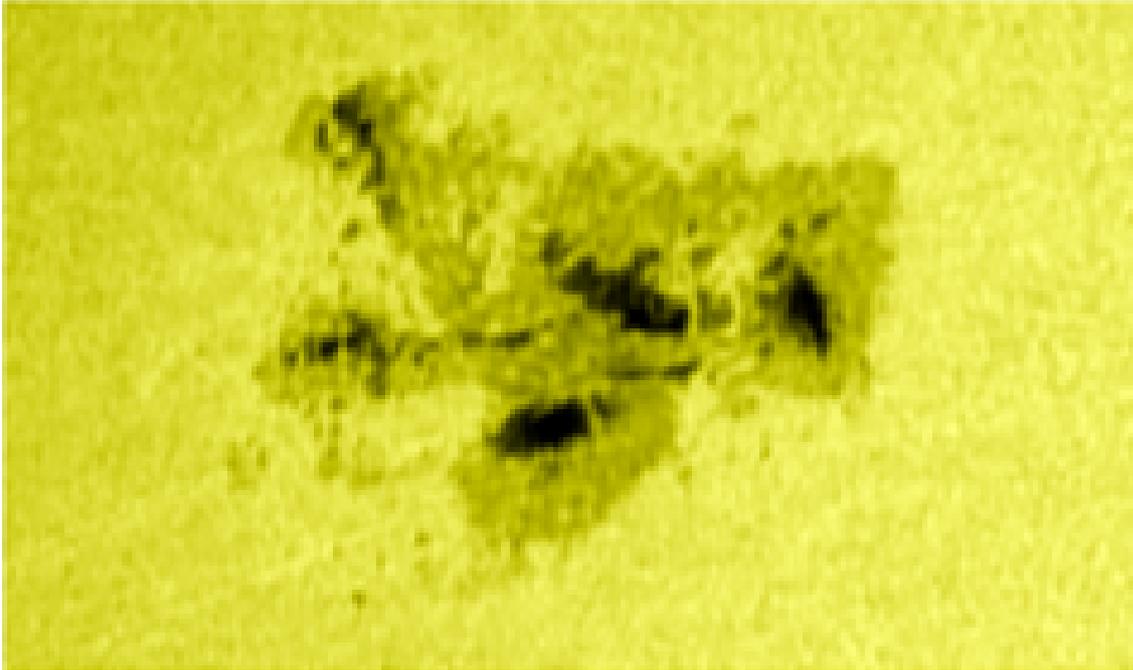
This medium flare had everything: nice coronal loops, a nice cusp (best visible in x-ray), a small proton event, and a full halo Coronal Mass Ejection (CME) that caused a geomagnetic storm on 22 January and that was strong enough to expose some geostationary satellites to the solar wind. NOAA 1402 would repeat itself twice: on 23 January with an M8.7 flare, and a X1.7 flare while rounding the west solar limb. Both events were also accompanied by moderate to strong proton events, and very fast (> 2.000 km/s) CMEs.

Event 2: 24 February 2012 - Filament eruption



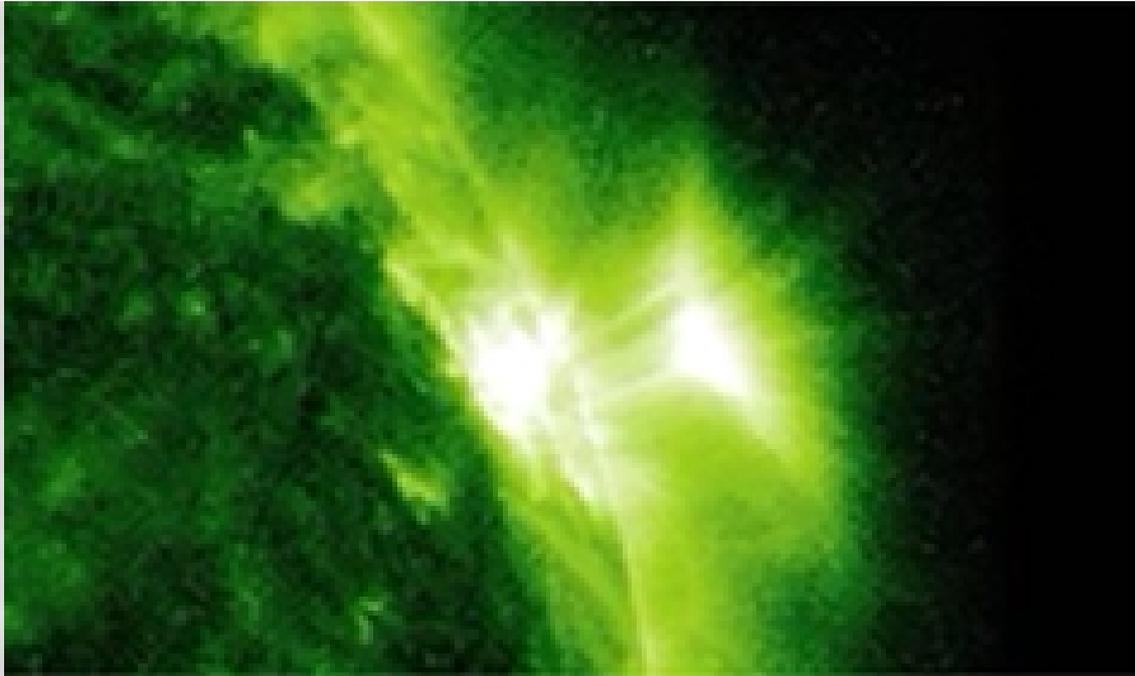
An at least 400.000 km long filament in the northeast solar quadrant erupted in the night of 23-24 February, without leaving an x-ray signature. Usually, a shock wave spreads out from the blast side in a more or less round shape. However in this case, because of the length of the filament, the solar tsunami spread parallel from where the filament originally was located. This "canyon-of-fire" as it was soon dubbed on the internet, raced away with speeds up to 20.000 km/h and swiftly covered a transient coronal hole (dark patch to the lower right of the erupted filament) that was generated earlier by the eruption.

Event 3: 7 March 2012 - X5.4 flare in NOAA 1429



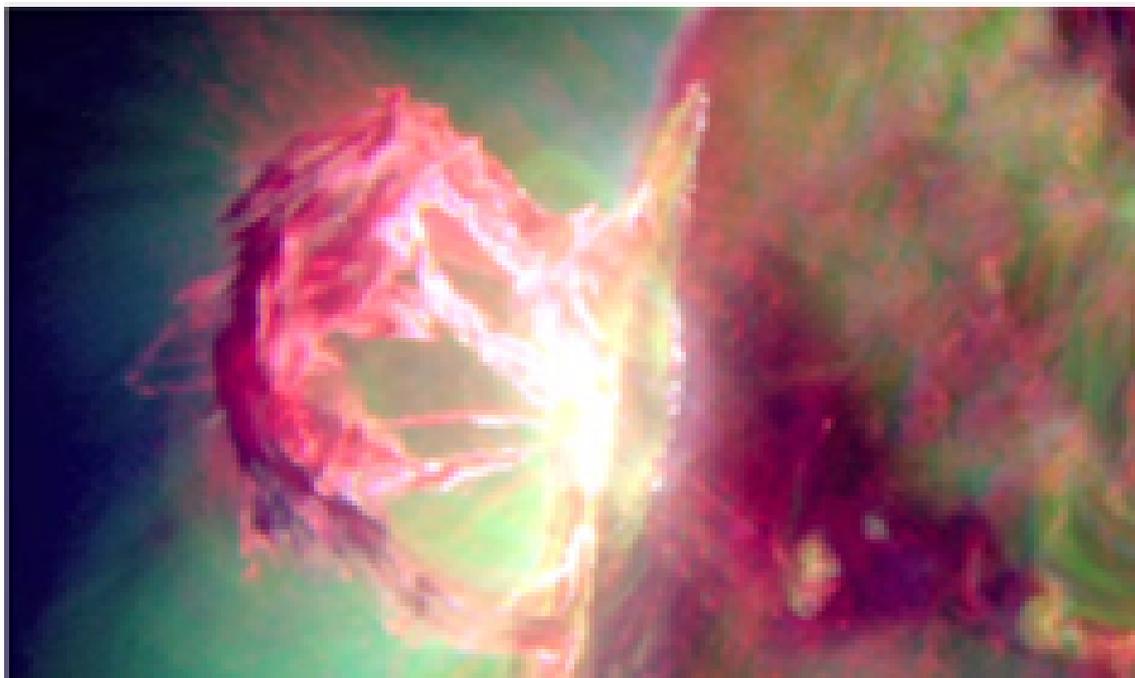
The second largest x-ray flare so far this solar cycle was produced at midnight on 7 March 2012 by NOAA 1429. SDO white light images revealed this X5-flare as a (very rare) white light flare. It was accompanied by the strongest proton storm so far in SC24 ("S3" on the NOAA-scale for radiation storms – See <http://www.swpc.noaa.gov/NOAAscales/index.html>), and caused airlines to detour their polar flights for lack of communication. It was the largest proton signature registered by the Curiosity spacecraft which at that time was en route to Mars (see <http://stce.be/news/154/welcome.html>). A plasma cloud was also ejected straight to Earth (full halo CME) and eventually resulted in a major geomagnetic storm on 9 March.

Event 4: 13 March 2012 - M7.9 flare from NOAA 1429



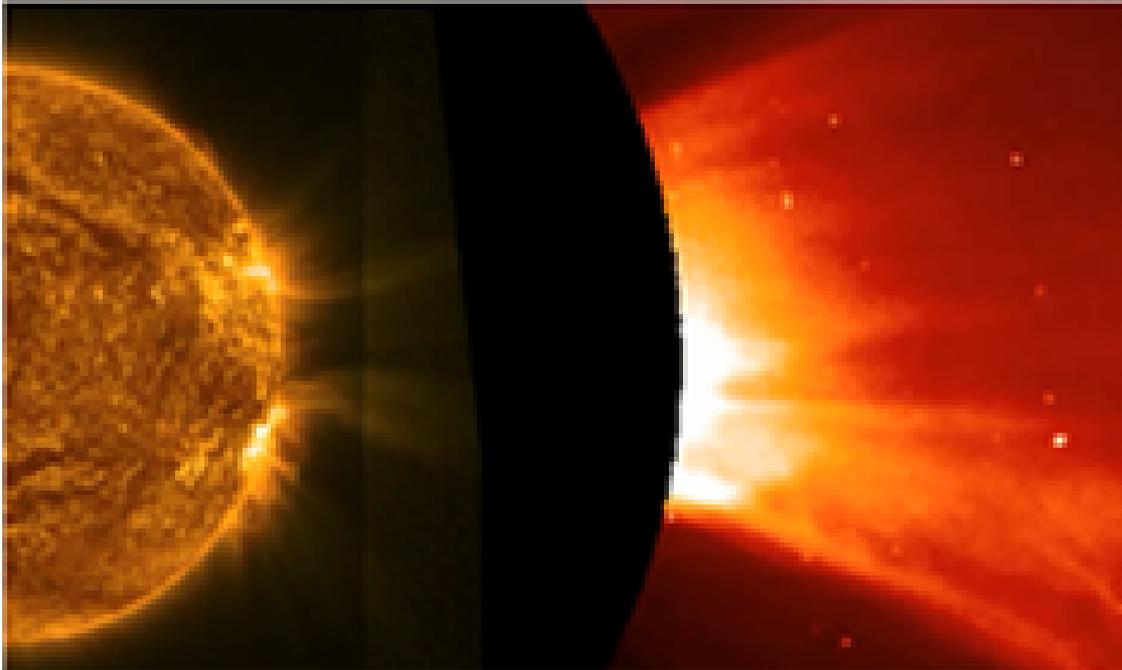
This event took place while NOAA 1429 was rounding the west solar limb. It was particularly impressive in the green light of SDO/AIA 094, reflecting the high temperatures and energy of the event. Though the eruption was not directed towards Earth, the flank of the ejected plasma cloud still sparked a moderate geomagnetic storm on 15 March.

Event 5: 16 April 2012 - M1.7 flare in NOAA 1461



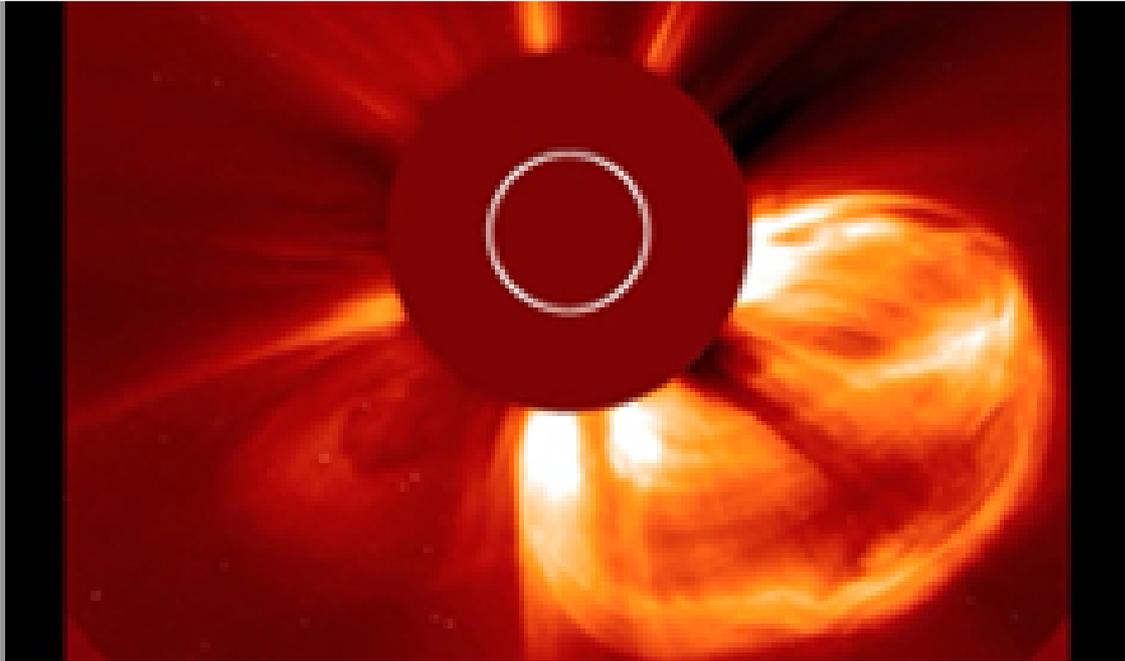
The visually stunning images of this eruption immediately got worldwide media attention, even making it all the way into the CNN Live broadcast (see <http://www.youtube.com/watch?v=7CtZM8rtFQ8>). Apart from the medium strength explosion, there were no space weather related influences for Earth.

Event 6: 8 July 2012 - M6.9 flare in NOAA 1515



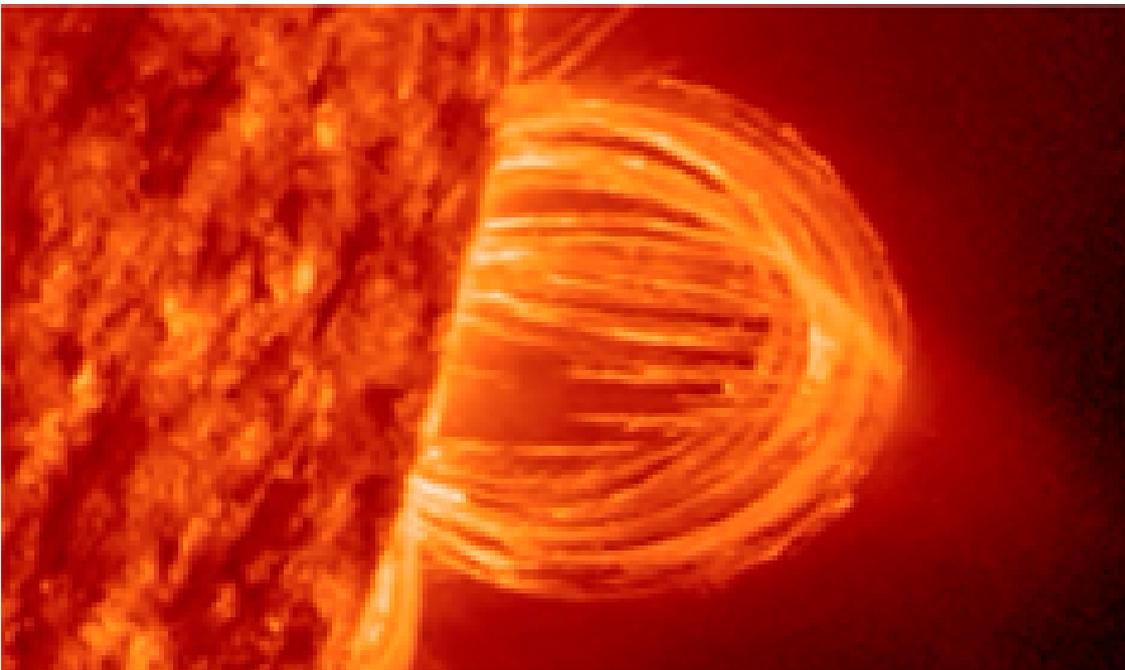
NOAA 1515 was visible on the Sun from 27 June till 9 July 2012. It displayed significant sunspot dynamics, with sunspots continually whirling, splitting and crashing into each other. Hence, it is no surprise that during its transit, this active region produced 30 M-flares and also 1 X-flare (on 6 July). Such a high number of strong flares is a rare "tour-de-force", only performed by the most active sunspot regions. The last M-flare occurred while NOAA 1515 was already very near the west solar limb. The M6.9 flare not only ejected a plasma cloud, but also generated a magnetic reconnection in a trans-equatorial magnetic bridge, promptly inducing another CME. Amazingly, the arch would reshape itself a few hours later and remain visible for another two days – as can be seen in the GOES/SXI clip.

Event 7: 17 July 2012 - M1.7 flare and bright, solid CME



CMEs come in a wide variety of shapes: pistons, light-bulbs, smoke-rings,... : space weather forecasters have seen them all. The 17 July CME is probably one of the more solid and brighter of 2012. It appeared after a long duration M1.7 flare in active region NOAA 1520.

Event 8: 19 July 2012 - M7.7 flare in NOAA 1520



NOAA 1520 was the largest sunspot group during 2012, and the second largest so far this solar cycle. This super group was magnetically not so complex and produced only a handful of strong flares. However, the last one was a real beauty. The post coronal loops from the M7 flare were very round,

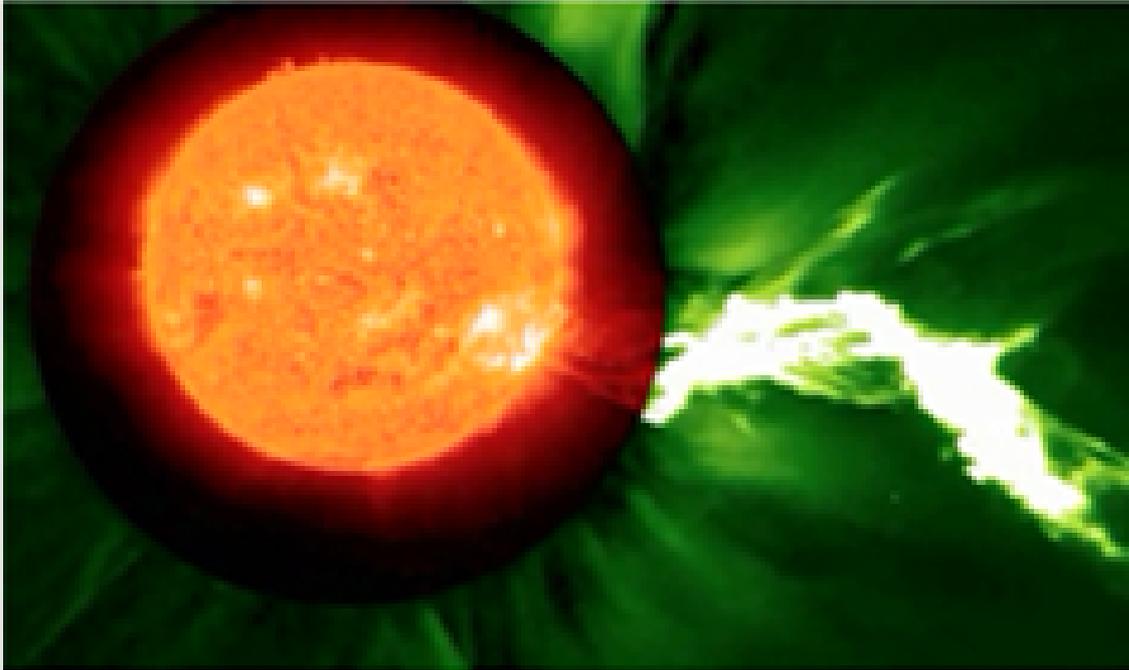
almost as round as the front door of a Hobbit's house! Some even whisper that the Dark Lord was trying to forge another ring, but that's probably an entirely different story...

Event 9: 23 July 2012 - Backside event in NOAA 1520



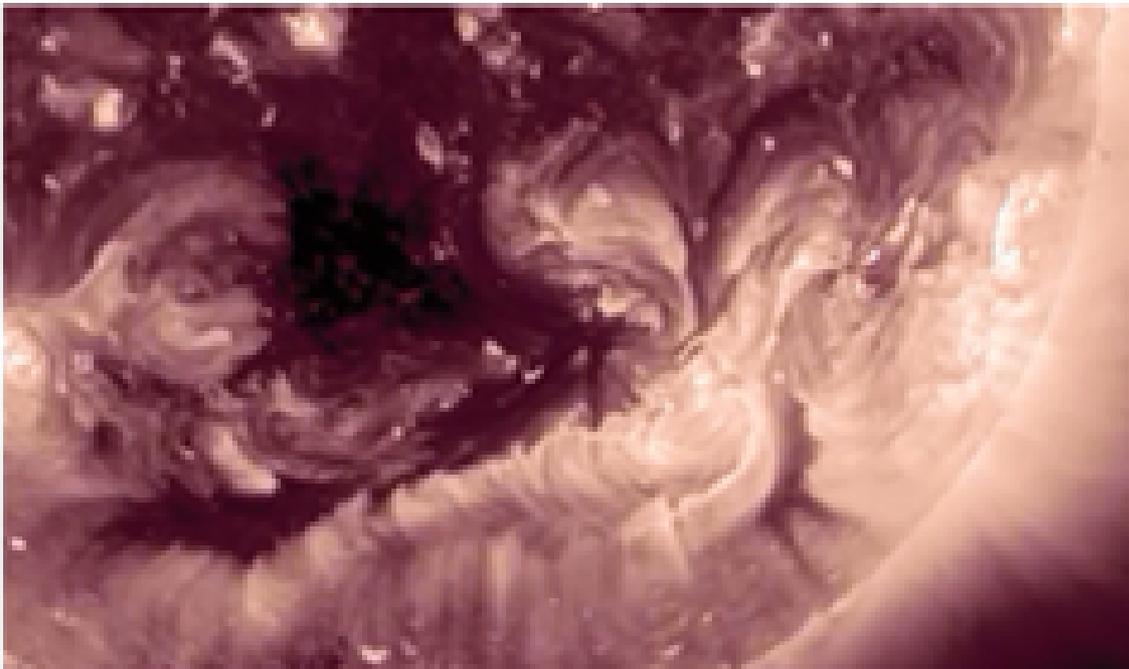
NOAA 1520 continued to be very active. During the early morning hours of 23 July, it produced another strong flare. As the region was already far on the backside of the Sun, this eruption was not visible from Earth, and no x-ray signature was registered by the GOES15 spacecraft. Interestingly, the accompanying proton storm hit not only STEREO-A, but also Earth – again despite NOAA 1520 being already so far behind the Sun's west limb. Even more amazing was that the speed of the CME was estimated to be around 3.400 km/s by SWRC (see: <http://swc.gsfc.nasa.gov/main/20120723-AL-005>), making it one of the fastest CMEs ever observed. The CME arrived at STEREO-A only 19 hours after the eruption, a so-called "fast transit event".

Event 10: 31 August 2012 - Filament eruption



Another magnificent filament eruption occurred on 31 August. This filament was actually making its second appearance, after an earlier and quite dynamic transit during the first half of August. The eruption was accompanied by a C8 flare and a full halo CME causing a minor geomagnetic storm. The core of the ejected filament was not directed towards the Earth, but behind it (see SOHO/Lasco clip).

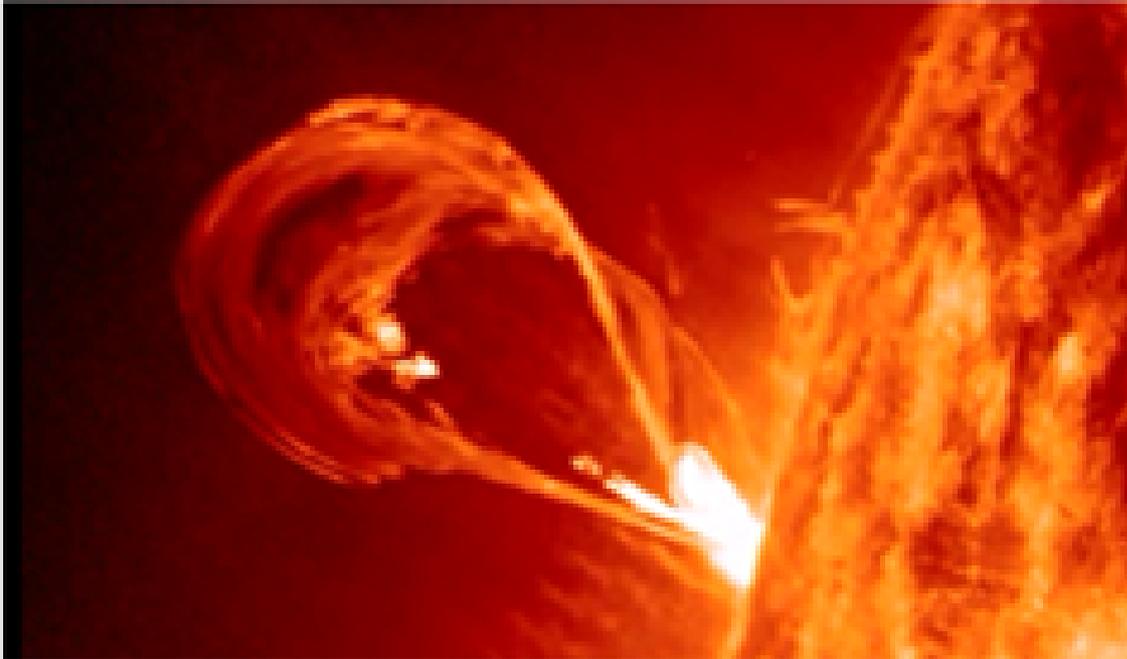
Event 11: 5 October 2012 - A very long duration event



The x-ray signature of this relatively small B7.8 flare lasted 7.5 hours (one of the longest so far this solar cycle), but if one includes the pre-flare reconnection and the post-flare coronal loops development, the

entire event lasted at least 15 hours! The complexity of the event was discussed in a previous STCE Newsletter <http://www.stce.be/news/163/welcome.html> . The ejected plasma cloud sparked a moderate geomagnetic storm on 8 October.

Event 12: 14 October 2012 - The light-bulb plasma

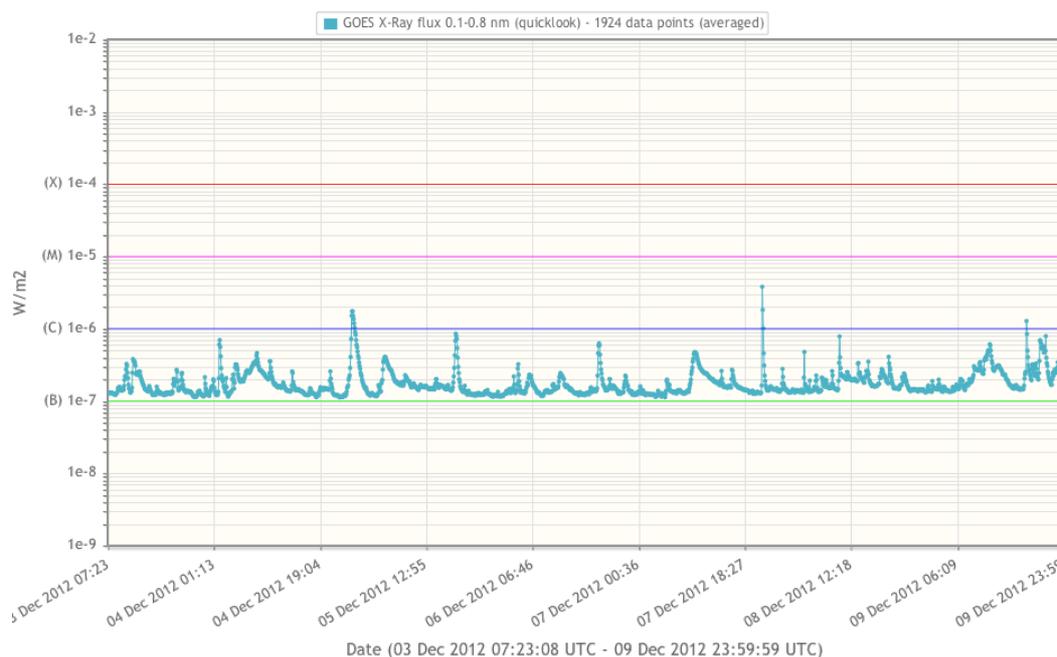


CMEs occasionally have the shape of a light-bulb, post-flare coronal loops usually have not. Therefore, the bright loop of hot plasma that accompanied the C4.8 flare made this eruption quite unusual and at the same also visually attractive. The flare occurred in NOAA 1593, a relatively small sunspot region just behind the northeast solar limb.

2. Review of solar activity (10 Dec 2012 - 16 Dec 2012)

Flares

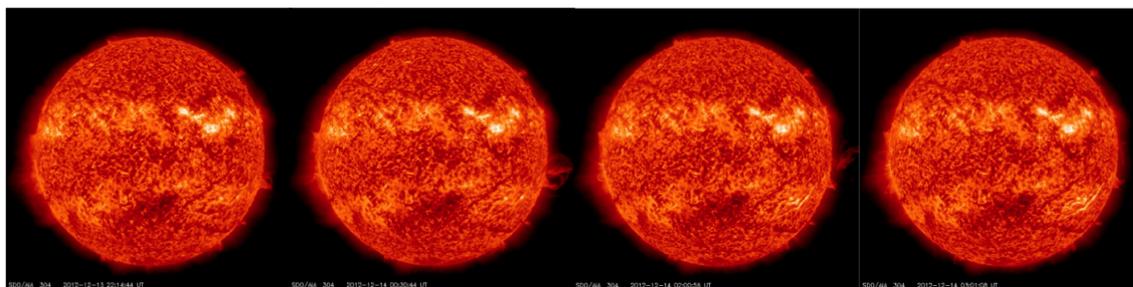
The week was not especially exciting if it concerns flaring activity. The background X-ray radiation stayed at the bottom of the B-level. 3 C-flares occurred. On Dec 10 and 11, NOAA AR 1630 (N19W24) did the flaring honours including a C5.5 flare on Dec 10. On Dec 12, the flare torch was passed to NOAA AR 1629, a neighbouring active region, resulting in a C5.7 flare. A newly emerged sunspot group Catania 47 - NOAA active region 1632, trailing AR 1630 and 1629, wrapped up with a third, moderate C1.2-flare.



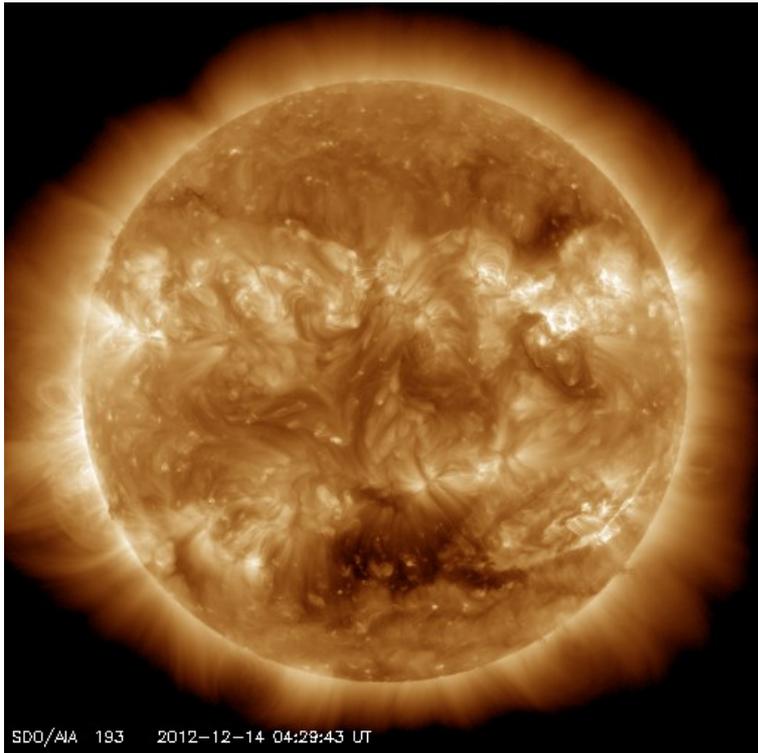
Erupting Filaments

On Dec 10, a filament from behind the east limb erupted. CACTus sent out a Halo CME alert but it was catalogued as back-sided.

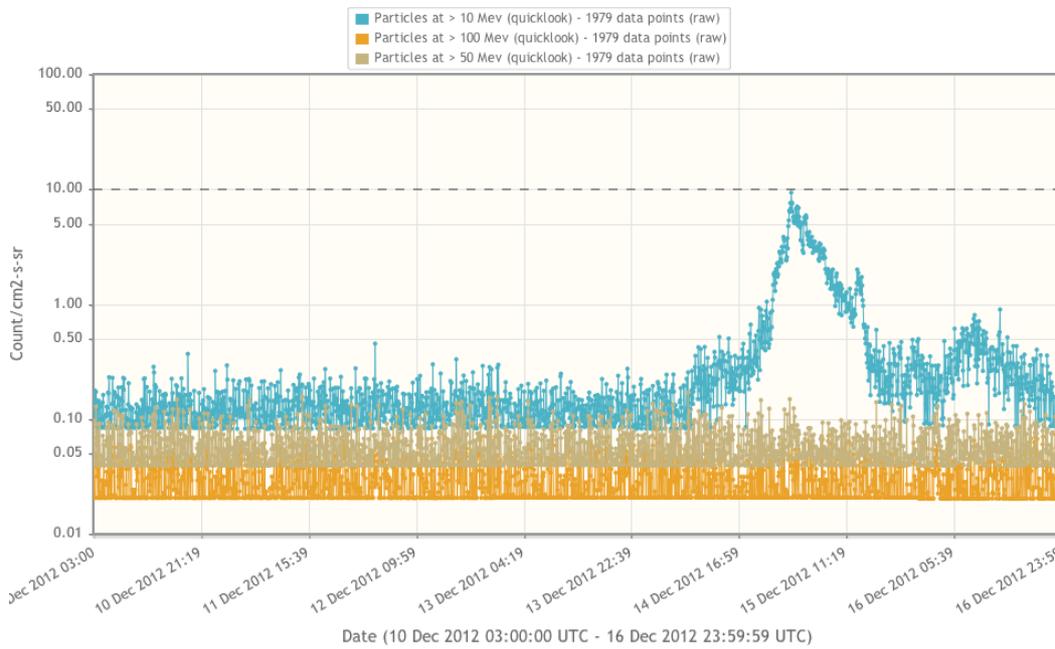
A filament in the SW quadrant of the solar disk erupted late Dec 13-early Dec 14. Images from SDO/AIA 193 and 304 show that the eruption started on Dec 13, 22UT. The lower part, i.e. higher latitude and farther from the west limb, of the filament erupted first. By Dec 14, 3UT the part of the filament situated near the west limb had also erupted.



Post eruption loops were visible from 3:30UT - check the bronze figure below.



The plasma cloud nor the shock preceding the cloud eventually arrived at Earth. From mid Dec 14, the solar proton flux measured by GOES13 rose, peaking just after midnight Dec 14-15 below the threshold level.

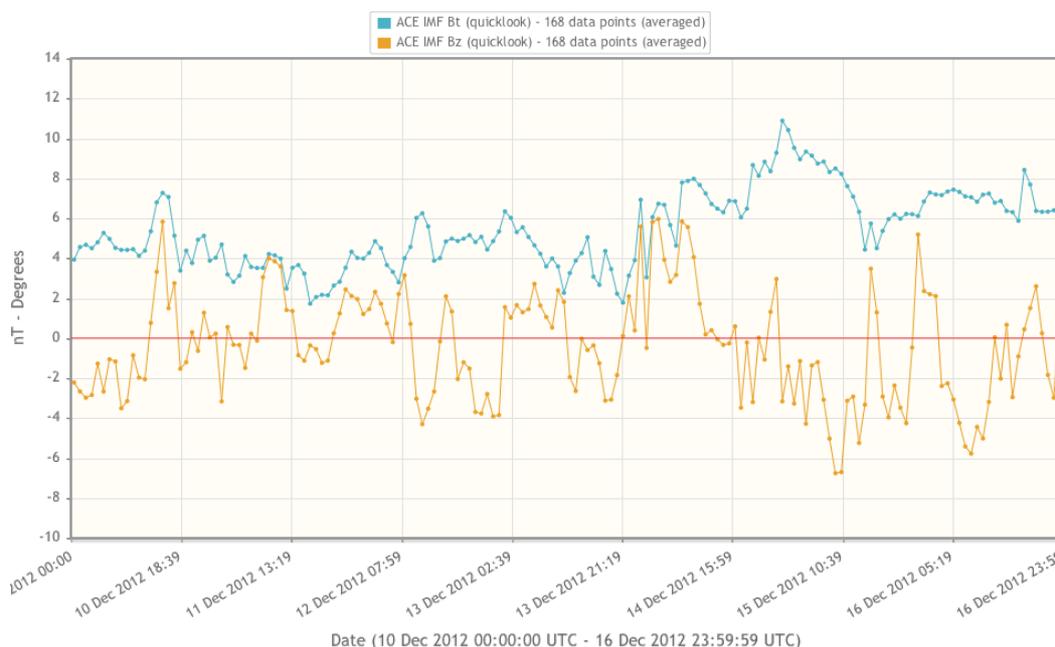


3. Review of geomagnetic activity (10 Dec 2012 - 16 Dec 2012)

The solar wind speed stayed below 350 km/s until Dec 15. From that moment, the speed increased slowly reaching 430 km/s on Dec 16.

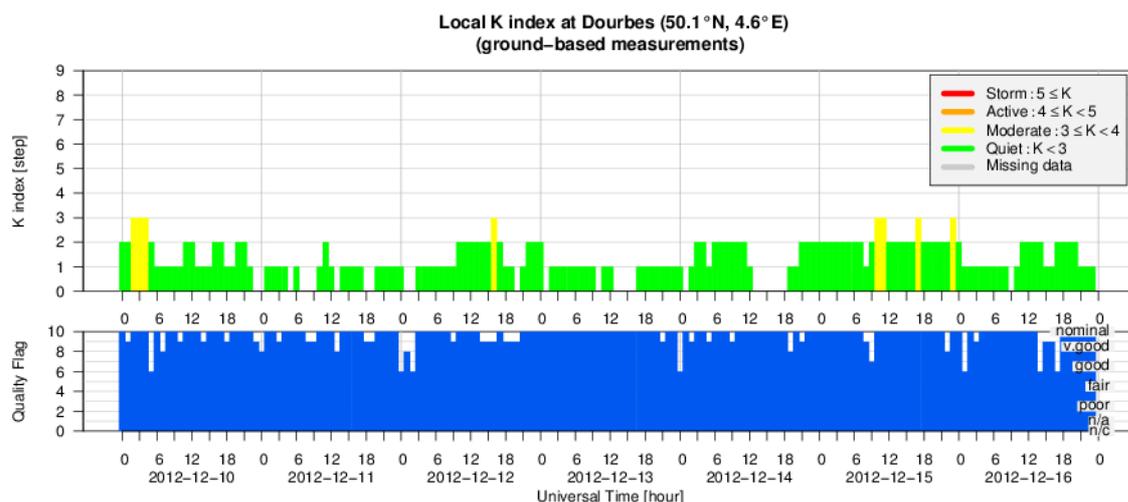


The strength of the magnetic field imbedded in the solar wind was moderate without spectacular peaks.



These solar wind parameters resulted in a geomagnetically quiet week. The highest level of the Kp index denoting the geomagnetic disturbance on the planetary level, was 2. The highest level of the K for Dourbes, Belgium was 3.

4. Geomagnetic Observations at Dourbes (10 Dec 2012 - 16 Dec 2012)



5. PROBA2 Observations (10 Dec 2012 - 16 Dec 2012)

Solar Activity

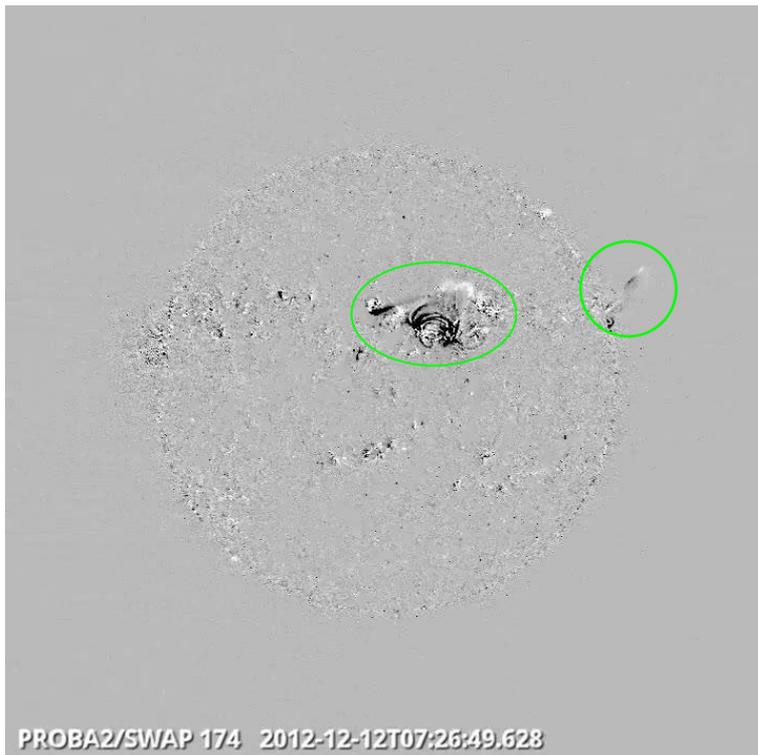
It was - again - a very calm week on the Sun. 7 C-level flares were recorded during the whole week.

In order to view the activity of this week in more detail, we suggest to go to the following website from which all the daily (normal and difference) movies can be accessed: <http://proba2.oma.be/ssa>. This page also lists the recorded flaring events.

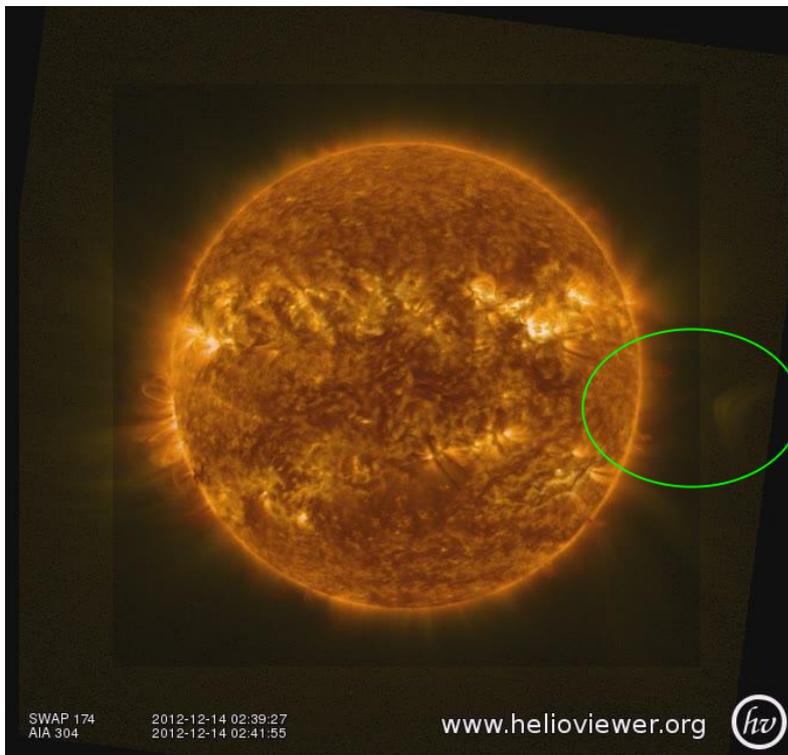
Despite the low level of flaring activity, several interesting events occurred. A movie with this week's filament/prominence activities can be found here: http://proba2.oma.be/swap/data/mpg/movies/campaign_movies/2012_12_10_00_00_19_2012_12_16_22_52_55_SWAP_174__AIA_304-hq%282%29.mp4.

Some of them are presented below:

C5.7 flare eruption 'on disk', eruption on the NNW limb, followed by an eruption on the SE limb (the latter is not visible on this picture, but see movie here: http://proba2.oma.be/swap/data/mpg/movies/campaign_movies/20121212_3Consecutive_Eruptions_swap_diff.mp4)



A complex prominence eruption on the West limb during the night of 13 to 14 December. (heliviewer image; SWAP174 and AIA304 combination).



The large FoV of SWAP shows how far the expelled material can be followed.

A movie of the above event can be found here: http://proba2.oma.be/swap/data/mpg/movies/campaign_movies/2012_12_13_23_00_31_2012_12_14_04_58_43_SWAP_174__AIA_304-hq.mp4.

Barely visible with SWAP, a large filament erupted on Dec 14, around 08:00, North East quadrant. It was quite spectacular in AIA/304 (see helioviewer.org)

6. New documents in the European Space Weather Portal Repository

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

ESWW9-Session0: The future of Space Weather

European Space Weather Landscape: Current Perspectives and Requirements for the Future
<http://www.spaceweather.eu/en/repository/show?id=340>

ESWW9-Session1: EU Space Weather Research in FP7 and in the future

European Space Weather Landscape: Current Perspectives and Requirements for the Future
<http://www.spaceweather.eu/en/repository/show?id=341>

ESWW9-Session1: Introduction to WMO space weather activities

European Space Weather Landscape: Current Perspectives and Requirements for the Future
<http://www.spaceweather.eu/en/repository/show?id=342>

ESWW9-Session1: ESA views on the future SSA-SWE activities in Europe

European Space Weather Landscape: Current Perspectives and Requirements for the Future
<http://www.spaceweather.eu/en/repository/show?id=343>

ESWW9-Session1: NOAA-EU Space Weather Cooperation

European Space Weather Landscape: Current Perspectives and Requirements for the Future
<http://www.spaceweather.eu/en/repository/show?id=344>

ESWW9-Session1: Roadmaps for Future Operational Space Weather Services

European Space Weather Landscape: Current Perspectives and Requirements for the Future
<http://www.spaceweather.eu/en/repository/show?id=345>

ESWW9-Session1: The Solar Tsunami Warning System

European Space Weather Landscape: Current Perspectives and Requirements for the Future
<http://www.spaceweather.eu/en/repository/show?id=346>

ESWW9-Session1: Helio, a new Tool for Space Weather

European Space Weather Landscape: Current Perspectives and Requirements for the Future
<http://www.spaceweather.eu/en/repository/show?id=347>

ESWW9-Session1: Empirical Approach to predict geomagnetic disturbances relevant to GIC

European Space Weather Landscape: Current Perspectives and Requirements for the Future
<http://www.spaceweather.eu/en/repository/show?id=348>

ESWW9-Session2: Lessons learnt from the STEREO Heliographic Imagers: Tracking and Modelling CMEs from Sun to Earth

Innovations and Key Challenges in Space Weather Science
<http://www.spaceweather.eu/en/repository/show?id=349>

ESWW9-Session2: SOHO/UVCS and STEREO comparative Analysis of a CME

Innovations and Key Challenges in Space Weather Science

<http://www.spaceweather.eu/en/repository/show?id=350>

ESWW9-Session2: Studying CME-Dust particle Interactions and their possible Applications to forecasting ICME Geo-Effectiveness

Innovations and Key Challenges in Space Weather Science

<http://www.spaceweather.eu/en/repository/show?id=351>

ESWW9-Session2: Forecasting the High Energy Electron Radiation Belts within the FP7 SPACECAST Project

Innovations and Key Challenges in Space Weather Science

<http://www.spaceweather.eu/en/repository/show?id=352>

ESWW9-Session2: New tools to relate Imagery with in-situ Data and their Application to Space Weather Forecasting

Innovations and Key Challenges in Space Weather Science

<http://www.spaceweather.eu/en/repository/show?id=353>

ESWW9-Session2: NASA GSFC Space Weather Center - Innovative Space Weather Dissemination: web-Interfaces, mobile Applications,...

Innovations and Key Challenges in Space Weather Science

<http://www.spaceweather.eu/en/repository/show?id=354>

ESWW9-Session2: Status of the Kjell Henriksen Observatory (KHO) auroral forecast Service

Innovations and Key Challenges in Space Weather Science

<http://www.spaceweather.eu/en/repository/show?id=355>

ESWW9-Session2: Real-time Scintillation Monitoring at high latitudes

Innovations and Key Challenges in Space Weather Science

<http://www.spaceweather.eu/en/repository/show?id=356>

ESWW9-Session2: The Space Weather Hazard to the UK Electricity Transmission System: A 2012 Update

Innovations and Key Challenges in Space Weather Science

<http://www.spaceweather.eu/en/repository/show?id=357>

ESWW9-Session3A: Space Weather at Mars: a major driver for its climate?

Solar Variability Effects on Climate

<http://www.spaceweather.eu/en/repository/show?id=358>

ESWW9-Session3A: The response of the Troposphere and Surface to the 11-year solar cycle variability in idealized simulations

Solar Variability Effects on Climate

<http://www.spaceweather.eu/en/repository/show?id=359>

ESWW9-Session3A: Cosmic Ray induced aerosol Formation in Earth's Atmosphere

Solar Variability Effects on Climate

<http://www.spaceweather.eu/en/repository/show?id=360>

ESWW9-Session3A: Testing a Link between cosmic rays and cloudiness over daily timescales

Solar Variability Effects on Climate

<http://www.spaceweather.eu/en/repository/show?id=361>

ESWW9-Session3A: Response of the fair weather electrical current to geomagnetic substorms at a desert station in southern Israel

Solar Variability Effects on Climate

<http://www.spaceweather.eu/en/repository/show?id=362>

ESWW9-Session3A: Solar Irradiance in cycle 23: Modelling of TSI and SSI by synoptic intensity observations

Solar Variability Effects on Climate

<http://www.spaceweather.eu/en/repository/show?id=363>

ESWW9-Session3A: What can we learn about the Sun with PREMOS/PICARD?

Solar Variability Effects on Climate

<http://www.spaceweather.eu/en/repository/show?id=364>

ESWW9-Session3B: The deep Project

Coupled Space Weather Modelling

<http://www.spaceweather.eu/en/repository/show?id=365>

ESWW9-Session3B: Increasing the domain size of kinetic simulations: a multi level multi domain method for plasma simulations

Coupled Space Weather Modelling

<http://www.spaceweather.eu/en/repository/show?id=366>

ESWW9-Session3B: A 3D global MHD simulation of the solar wind/Earth's magnetosphere interaction

Coupled Space Weather Modelling

<http://www.spaceweather.eu/en/repository/show?id=367>

ESWW9-Session3B: Coupled Magnetosphere-Ionosphere-Thermosphere-Ring Current modelling with the OpenGGCM

Coupled Space Weather Modelling

<http://www.spaceweather.eu/en/repository/show?id=368>

ESWW9-Session3B: Coupling at the Earth in SWIFF: Ionosphere-Plasmasphere-Polar Wind-Radiation Belts

Coupled Space Weather Modelling

<http://www.spaceweather.eu/en/repository/show?id=369>

ESWW9-Session3B: Test particle simulations of solar energetic particle propagation for Space Weather

Coupled Space Weather Modelling

<http://www.spaceweather.eu/en/repository/show?id=370>

ESWW9-Session3B: Coupled global modelling of SEP acceleration in a coronal CME/Shock and subsequent interplanetary transport

Coupled Space Weather Modelling

<http://www.spaceweather.eu/en/repository/show?id=371>

ESWW9-Session3B: SEP simulations in SEPServer - How to deal with scale separation of 13 orders of magnitude

Coupled Space Weather Modelling

<http://www.spaceweather.eu/en/repository/show?id=372>

ESWW9-Session3B: Satellite Orbits and ATMOP: improving thermospheric density modelling through data assimilation

Coupled Space Weather Modelling

<http://www.spaceweather.eu/en/repository/show?id=373>

ESWW9-Session4A: Overview of space weather impacts on satellites

Spacecraft Operations and Space Weather

<http://www.spaceweather.eu/en/repository/show?id=374>

ESWW9-Session4A: The Space Environment - A satellite's manufacturer perspective

Spacecraft Operations and Space Weather

<http://www.spaceweather.eu/en/repository/show?id=375>

ESWW9-Session4A: Effects of solar activity on ESA's Science and Earth Observation Missions

Spacecraft Operations and Space Weather

<http://www.spaceweather.eu/en/repository/show?id=376>

ESWW9-Session4A: Commercial Development of MEO: An Insurance Perspective

Spacecraft Operations and Space Weather

<http://www.spaceweather.eu/en/repository/show?id=377>

ESWW9-Session4A: Calculation of the Satellite Surface Charging using forecasted low energy Electron Fluxes

Spacecraft Operations and Space Weather

<http://www.spaceweather.eu/en/repository/show?id=378>

ESWW9-Session4A: NASA GSFC Space Weather Center operational Experiences over the past several major solar Events

Spacecraft Operations and Space Weather

<http://www.spaceweather.eu/en/repository/show?id=379>

ESWW9-Session4B: Space Weather in the Solar System

Space Weather in the Solar System

<http://www.spaceweather.eu/en/repository/show?id=381>

ESWW9-Session4B: Plasma Interactions with Ganymede, Europa, Callisto and Jupiter: the prospects for ESA's JUICE Mission

Space Weather in the Solar System

<http://www.spaceweather.eu/en/repository/show?id=382>

ESWW9-Session4B: Solar Energetic Particles and associated phenomena in Radio and EUV Wavelengths

Space Weather in the Solar System

<http://www.spaceweather.eu/en/repository/show?id=383>

ESWW9-Session4B: The origins and heliospheric evolution of CME's on 7 and 14 August 2010 originating from the same solar region

Space Weather in the Solar System

<http://www.spaceweather.eu/en/repository/show?id=384>

ESWW9-Session4B: Dications and thermal ions in planetary atmospheric Escape

Space Weather in the Solar System

<http://www.spaceweather.eu/en/repository/show?id=385>

ESWW9-Session4B: Prediction of ICME Arrival at Mars

Space Weather in the Solar System

<http://www.spaceweather.eu/en/repository/show?id=386>

ESWW9-Session4B: Comparative planetology Study of extreme solar events: Mars, Venus, Titan, Earth

Space Weather in the Solar System

<http://www.spaceweather.eu/en/repository/show?id=387>

ESWW9-Session5: Advanced methods to model and predict space weather effects - Summary of Progress

COST ES0803 Final Results

<http://www.spaceweather.eu/en/repository/show?id=388>

ESWW9-Session5: Solar activity and its evolution across the corona

COST ES0803 Final Results

<http://www.spaceweather.eu/en/repository/show?id=389>

ESWW9-Session5: Solar activity impact on the Earth's upper atmosphere

COST ES0803 Final Results

<http://www.spaceweather.eu/en/repository/show?id=390>

ESWW9-Session5: Space Weather Challenges of the Polar Cap Ionosphere

COST ES0803 Final Results

<http://www.spaceweather.eu/en/repository/show?id=391>

ESWW9-Session5: Verification of space weather models

COST ES0803 Final Results

<http://www.spaceweather.eu/en/repository/show?id=392>

ESWW9-Session5: Progress in space weather modelling in an operational environment

COST ES0803 Final Results

<http://www.spaceweather.eu/en/repository/show?id=393>

ESWW9-Session5: Recommendations for space weather products and services in Europe

COST ES0803 Final Results

<http://www.spaceweather.eu/en/repository/show?id=394>

ESWW9-Session5: Where communication and space weather meet

COST ES0803 Final Results

<http://www.spaceweather.eu/en/repository/show?id=395>

ESWW9-Session5: Networking for space weather outreach activities: the Planeterrella example

COST ES0803 Final Results

<http://www.spaceweather.eu/en/repository/show?id=396>

ESWW9-Session4A: Variability of Trapped and Transient Radiation Environment on Highly Elliptical high inclination (Molniya) or

Spacecraft Operations and Space Weather

<http://www.spaceweather.eu/en/repository/show?id=397>

ESWW9-Splinter: European Space Weather Business Group

ESWW9 Splinter wrap up

<http://www.spaceweather.eu/en/repository/show?id=398>

eHEROES - Dissemination

Presentation given at the conference 'Solar and Heliospheric influences on the geospace', Bucharest, Romania in the session 'Education, dissemination, outreach'

<http://www.spaceweather.eu/en/repository/show?id=399>

eHEROES - De Zon, het weer en PROBA2

A presentation given for the members of the public observatory 'Armand Pien', Gent: 60 participants.

<http://www.spaceweather.eu/en/repository/show?id=400>

eHEROES - Is het SC24 maximum voorbij?

On October 27, this Dutch presentation was given about Solar Cycle 24 for a group of amateur astronomers, namely the Workgroup Sun of the VVS and the NVWS, 20 people.

<http://www.spaceweather.eu/en/repository/show?id=401>

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

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

7. Future Events

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

2nd annual SWIFF meeting

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

SWIFF (Space Weather Integrated Forecasting Framework), a project funded by the European Commission through the Framework Program 7, aims to develop mathematical models and computational methods especially designed to handle the multiple physics and the multiple scales characteristic of space weather phenomena (for more information see). SWIFF Project reaches two

years on January 31, 2013. Hence, the aim of the Conference will be to review the progress in those two years and plan for the next last year of activity.

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

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

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

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

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

Website:

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

Solar ALMA workshop in Glasgow (UK)

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

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

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

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

Website:

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

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

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

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

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

Website:

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

Space Climate Symposium-5 in Oulu, Finland

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

More information follows later.

Website:

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

AFFECTS User Workshop in Brussels, Belgium

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

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

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

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

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

Website:

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

9th GEANT4 space users' workshop in Barcelona, Spain

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

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

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

Main topics for next G4SUW will include:

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

Website:

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

European Geosciences Union General Assembly 2013 in Vienna, Austria

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

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

Website:

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

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

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

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

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

The main goal of the conference is to bring together the solar, heliospheric, magnetospheric, upper atmosphere, and ionospheric communities to debate and discuss interdisciplinary work and reach a better understanding of the nature and structure of a very quiet Sun, and of an upper atmosphere relatively devoid of solar influences, and in doing so, to help clarify the role of solar activity in the dynamics and variability of the Earth's upper atmosphere and ionosphere relative to the internal variations.

Website:

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

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

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

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

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

Website:

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

ILWS Science Workshop in Irkutsk, Russia

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

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

Website:

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

2013 Heliophysics Summer School in Boulder, Colorado (USA)

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

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

future. At the same time, a goal of the Summer School is for the group of instructors to develop materials from Heliophysics that can be applied in their classes.

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

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

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

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

Website:

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

Space weather summer school in Alpbach, Austria

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

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

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

Website:

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

7th International Workshop on Solar Polarization in Kunming, China

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

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

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

aim of our series of Workshops is to address these fundamental aspects, with less emphasis on the morphological and physical properties of cosmic magnetic fields.

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

European Space Weather Week in Belgium

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

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

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

Website: not yet available

40th COSPAR Scientific Assembly in Moscow, Russia

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

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

Website:

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