STCE Newsletter

16 Jan 2012 - 22 Jan 2012

Published by the STCE - this issue : 27 Jan 2012. Available online at http://www.stce.be/newsletter/ .

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

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

1. Press release, Jan 24, 16:00LT

Because of the recent mediastorm about the solar activity of January 23, we sent the following message to the press.

The solar activity of January 23 was high, but not extreme.

On January 23, at 04:59 (local time), a light flash - also called a flare - of class M8.7 was seen on the Sun. Solar light arrives already after 8 minutes on Earth. Light flashes with this intensity occur around 2 times per month. Solar M-flares occurred several times the last months. Since the solar activity is increasing, we expect more solar flares the coming months and years. The impact of such a solar flare on communication on the day side of Earth is moderate.
Around 05:00, an increased stream of protons near Earth was measured. The level of the proton stream crossed the storm threshold. Today, January 24, we see a small decrease of the flux of the most powerful particles. An event of this size occurs around 1 time per year. The storm impacts satellites. Polar flights might be rescheduled.
Again around 05:00, a plasma cloud was seen. The mass moved into the direction of Earth with an estimated speed of 1400 km/s - and not the 2200 km/s as stated on some websites. The cloud will pass above Earth, causing a glancing blow. Satellite data confirm that the shock has arrived near Earth, i.e. 15:30. We don't expect big geomagnetic disturbances, only a minor geomagnetic storm. The chance for aurora in Belgium is almost zero.

2. Solar activity of Jan 23

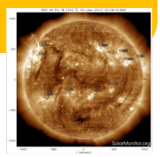
The Sun has again an activity revival since Jan 16, not an extra ordinary revival, but high. No records were broken. There was a series of plasma ejections, not straight to Earth, but glancing blows from above. The most dangerous aspect up to now is the ongoing proton event.
For aurora-watchers: the chance for aurora in Belgium is very small.

The event of Jan 23 was the strongest of the last days. The Sun showed off with a combination of three sorts of energy releases. Speaking in terms of x-ray radiation, the Jan 23 flare reached the M8.3 level. The speed of the mass ejection of Jan 23 was relatively speaking high compared to the ones of the previous days: 1400 km/s compared with 700 km/s at most. What differs from the previous mass ejections, is that the component that intersects with the ecliptic - and pass along the Earth - is stronger. The event triggered a proton storm: particles with relativistic speeds fly through space into the direction of Earth. They harm satellites, eventually disrupting their pointing, attacking their solar cells, ... Those particles can intrude the Earth's magnetosphere through the north/south polar door. This is the strongest proton storm since May 2005. At this very moment (Jan 23, 20:00UT), the proton event continues.

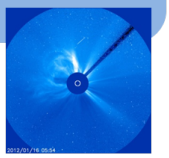
The ejected mass did not yet arrive at Earth. At arrival, the magnetosphere might be disturbed. We speak about a geomagnetic storm causing unwanted effects on satellites and their performances. A geomagnetic storm can alter also the features of the ionosphere, a layer which is crucial for signals transmitted to satellites or from an earth transmitter to an earth receiver. This list of failures is not exhaustive. However, we don't forecast an extra ordinary geomagnetic show. For Belgium, this means that the chance for aurora is almost nihil.

With the figures below, you can reconstruct what kept us busy since Jan 16. Orange stands for events on the solar disk, blue stands for the situation a few solar radii away from the Sun, while green describes the situation near Earth.

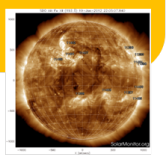
N34E86 – NOAA 1402
•C6.5 flare, peak at 04:44UT
•Coronal Dimming
•Post-eruption loop arcade



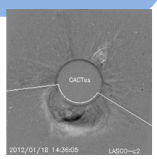
•360° wide - full halo CME
•LASCO C2 FOV at 03:48UT
•Bulk flies to the NE, above the ecliptic
•731 km/s



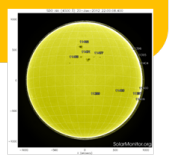
N23E16 – NOAA 1399
•B9.6 flare, peak at 12:30UT
•Coronal Dimming
•Post-eruption loop arcade
•Filament eruption near the disk centre



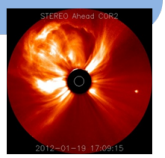
•142° wide – faint partial halo CME
•LASCO C2 FOV at 12:24UT
•Bulk flies southward of the ecliptic
•286 km/s, seemed to accelerate in a wider view.



N23E22 – NOAA 1402
•M3.2 flare, peak at 16:05UT
•Coronal Dimming
•Post-eruption loop arcade
•Filament eruption around 13:58UT



•360° wide – strong full halo CME
•LASCO C2 FOV at 15:24UT
•Bulk flies northward of the ecliptic
•651 km/s

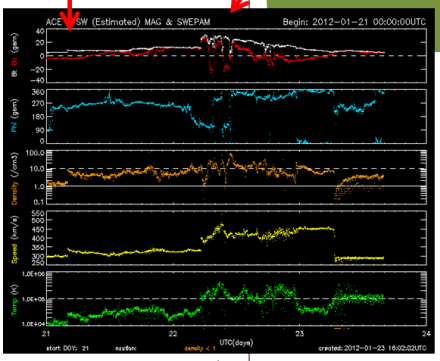


Jan 16 → Jan 18 → Jan 19

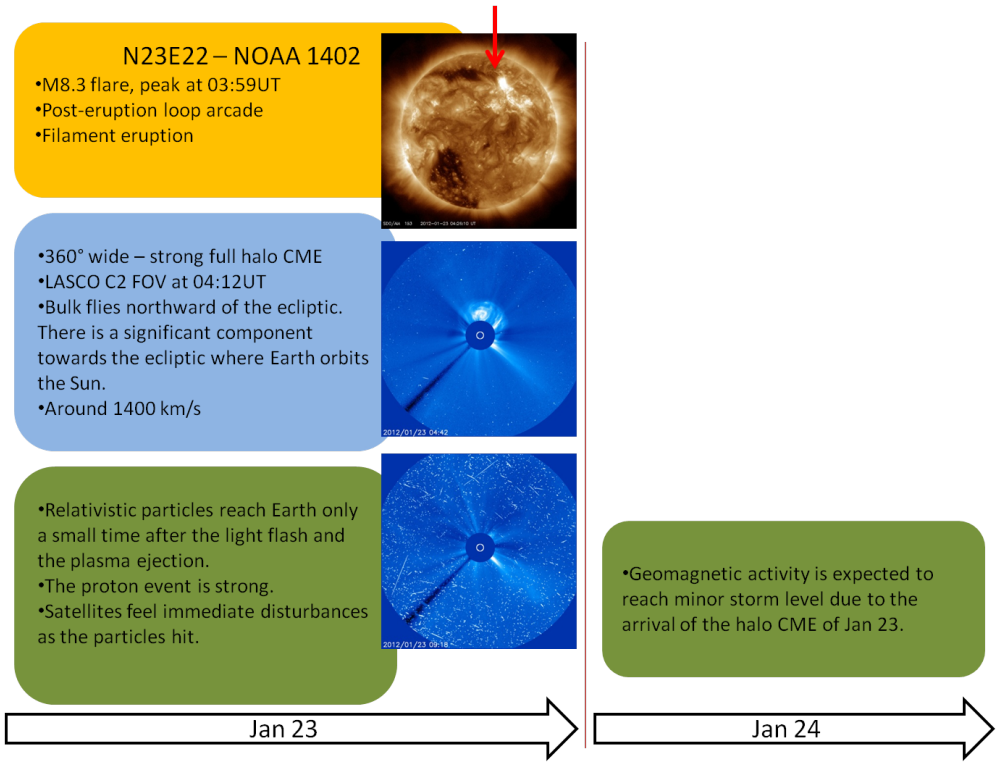
•Particles with relativistic speed arrive at the Earth.
•The plasma ejection of Jan 19 pushes these particles direction Earth.
•The storm level of the proton flux is not reached.

•Passage of small shock at 1 hour distance from Earth (L1 point).
•This is a glancing blow of the Jan 16 solar plasma ejection.
•A global magnetic storm did not occur. Locally, the K rose up to 4.

•Passage of large shock , followed by a sheath region and a plasma cloud at 1 hour distance from Earth (L1 point)
•The plasma cloud was probably a combination of the Jan 18 and 19 solar plasma ejection.
•A moderate magnetic storm occurred: K=4 or 5.



Jan 20 → Jan 21 → Jan 22



Some facts

Solar flare
* a brightening of a part of the solar disk - a light flash.
* Travels at the speed of light - it takes 8 minutes to bridge the distance between the Sun and the Earth. All radiation has the same speed.
* Intensity is an attribute of a flare. Compare it to light bulbs that shine more intense then others.
* A flare has no weight.
* A flare has no direction. Of course, when a flare occures behind the Sun, we don't see it.
* The earth's atmosphere protects us against harmfull solar radiation.
* The earth's atmosphere is transparant for visible light - otherwise it would be dark on Earth.

Plasma ejection - coronal mass ejection, CME
* This is plasma, solar mass that is ejected from a source in the corona of the Sun. The corona is the solar atmosphere.
* It's a tsunami/gas blob running over the solar wind.
* We attribute weight and velocity to a plasma ejection, i.e. kinetic energy.
* Plasma is ejected in a direction. A halo CME is a CME thrown in the direction of the Earth.
* It takes a plasma cloud around 3 days to bridge a distance Sun - Earth. The speed varies for CME to CME.
* The earth's magnetosphere is our magnetic shielding against plasma ejections and the solar wind.
* When a CME bumps on the earth's magnetosphere, a geomagnetic storm can occur.
* Aurora is an effect of a geomagnetic storm.

Proton storm
* These are fast particles blown away from the Sun.
* It takes them 30 minutes to 1 hour to bridge a distance Sun - Earth. Their speed differs from event to event.

* They are tide to the interplanetary magnetic field. The Sun is the source of these radial magnetic field lines.
* As a consequence of their stickiness to magnetic field lines, they travel in a direction.
* If they stick to an earth magnetic field line, they propagate along it to the earth poles.

3. Review of solar activity (16 Jan 2012 - 22 Jan 2012)

Solar activity was dominated by Catania sunspot groups 20 and 21 (NOAA ARs 1401 and 1402 respectively), which produced numerous C-class flares and three M-class flares (two in Catania sunspot group 20 and one in Catania sunspot group 21). The first two M-class flares (on January 17 and 18) were confined, and the M3.2 flare on January 19 was associated with a full halo CME (see below).

Three halo CMEs were detected by SOHO/LASCO during the week. A full halo CME was detected on January 16, first appearing in the LASCO C2 field of view at 03:12 UT and moving at a speed around 500 km/s (according to the CACTus software). The CME was associated with the C6.5 flare peaking at 04:44 UT in Catania sunspot group 21 (NOAA AR 1402) situated at N34E86, coronal dimmings and a post-eruption loop arcade detected by SDO/AIA. Due to the position of the CME source region near the solar limb, the bulk of the CME was not directed at the Earth. Only the CME-driven shock arrived at the Earth on January 21 (see below).

A partial halo CME was detected on January 18, first appearing in the LASCO C2 field of view at 12:12 UT. The CME had angular width around 140 degrees and moved at the speed around 720 km/s. The CME was associated with the coronal dimmings and filament eruption near the solar disk center, and a post-eruption arcade in Catania sunspot group 16 (NOAA AR 1399), as observed by SDO/AIA starting around 10:13 UT. A B9.6 flare peaking at 12:30 UT associated with this eruption was detected by GOES. The bulk of the CME material was moving southward of ecliptic. This CME probably interacted with the full halo CME erupted on January 19, and the joint interplanetary disturbance arrived at the Earth on January 22 (see below).

A full halo CME was detected on January 19, first appearing in the LASCO C2 field of view at 15:24 UT and moving at the plane-of-the-sky speed around 1300 km/s. The CME was associated with coronal dimmings, filament eruption and a post-eruption arcade in and around Catania sunspot group 21 (NOAA AR 1402), as observed by SDO/AIA starting around 13:58 UT. An M3.2 flare peaking at 16:05 UT associated with this eruption was detected by GOES. The bulk of the CME material was moving northward of the ecliptic plane. This CME probably interacted with the partial halo CME erupted on January 18, and the joint interplanetary disturbance arrived at the Earth on January 22 (see below).

The flux of solar protons at energies above 10 MeV started to rise on January 19, probably in association with the propagating interplanetary shock wave driven by the full halo CME erupted on January 19. The proton flux remained significantly above the background level, although below the event threshold, until the end of the week.

4. Review of geomagnetic activity (16 Jan 2012 - 22 Jan 2012)

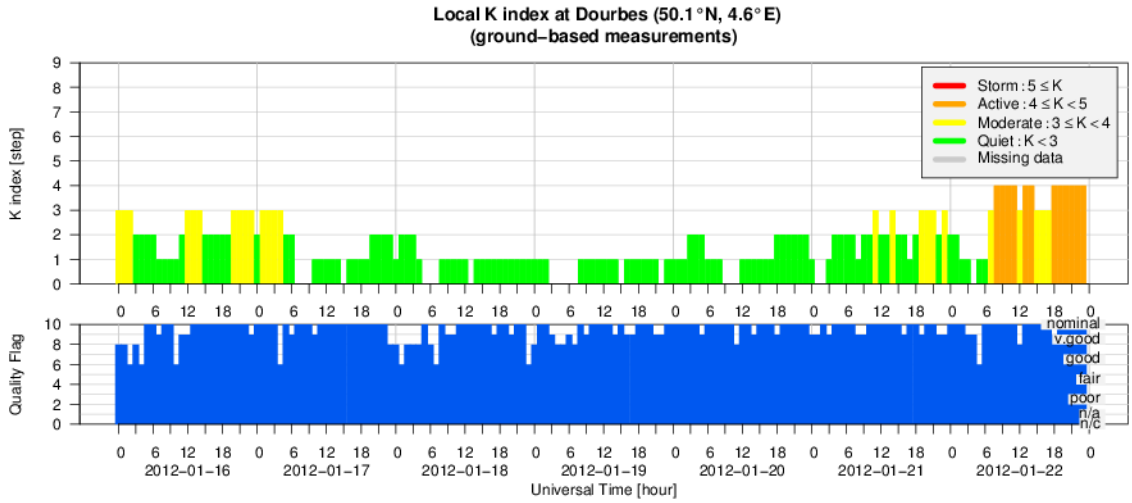
On January 16 the Earth passed through the interaction region between a slow and a faster sold wind flow. The faster solar wind flow originated from a narrow low-latitude coronal hole. Although the interplanetary magnetic field (IMF) magnitude reached 15 nT, the geomagnetic conditions were quiet due to relatively low solar wind speed (up to 520 km/s) and fluctuating north-south IMF component. On January 17-20 the Earth was inside a slow solar wind flow, and geomagnetic conditions remained quiet.

An interplanetary shock wave was detected by ACE at 04:00 UT on January 21. The shock was most probably associated with the full halo CME observed on the Sun on January 16 (see above). No ICME

material was detected. Due to low downstream solar wind speed, no geomagnetic disturbance resulted from the shocked solar wind flow.

Another interplanetary shock wave was detected by ACE at 05:15 UT on January 22. The proton flux peaked at the shock arrival, but did not reach the event threshold. The shock was driven by the complex ICME resulting from halo CMEs observed on the Sun on January 18 and 19 (see above), which interacted on their way to the Earth. The peak solar wind speed was moderate (around 480 km/s), but the IMF magnitude reached 33 nT in the sheath region between the shock and the ICME. The north-south IMF component Bz was fluctuating in the post-shock sheath, resulting only in active geomagnetic conditions (K = 4). The ICME had only a glancing blow at the Earth, with ICME material arriving late on January 22 and on January 23. The IMF magnitude already decreased at that time, resulting only in minor geomagnetic storm conditions (K = 5) as reported by NOAA and IZMIRAN.

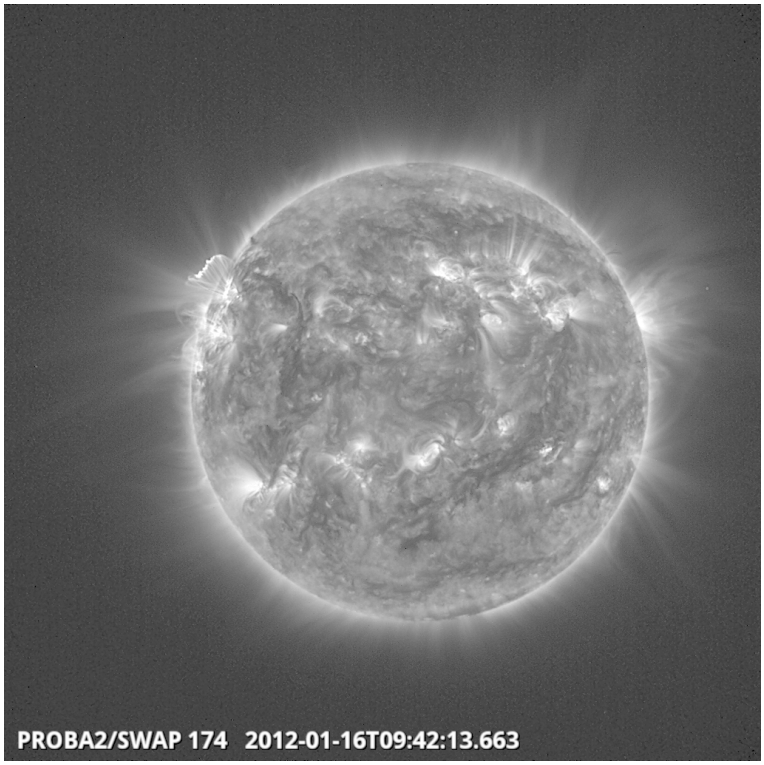
5. Geomagnetic Observations at Dourbes (16 Jan 2012 - 22 Jan 2012)



6. PROBA2 Observations (16 Jan 2012 - 22 Jan 2012)

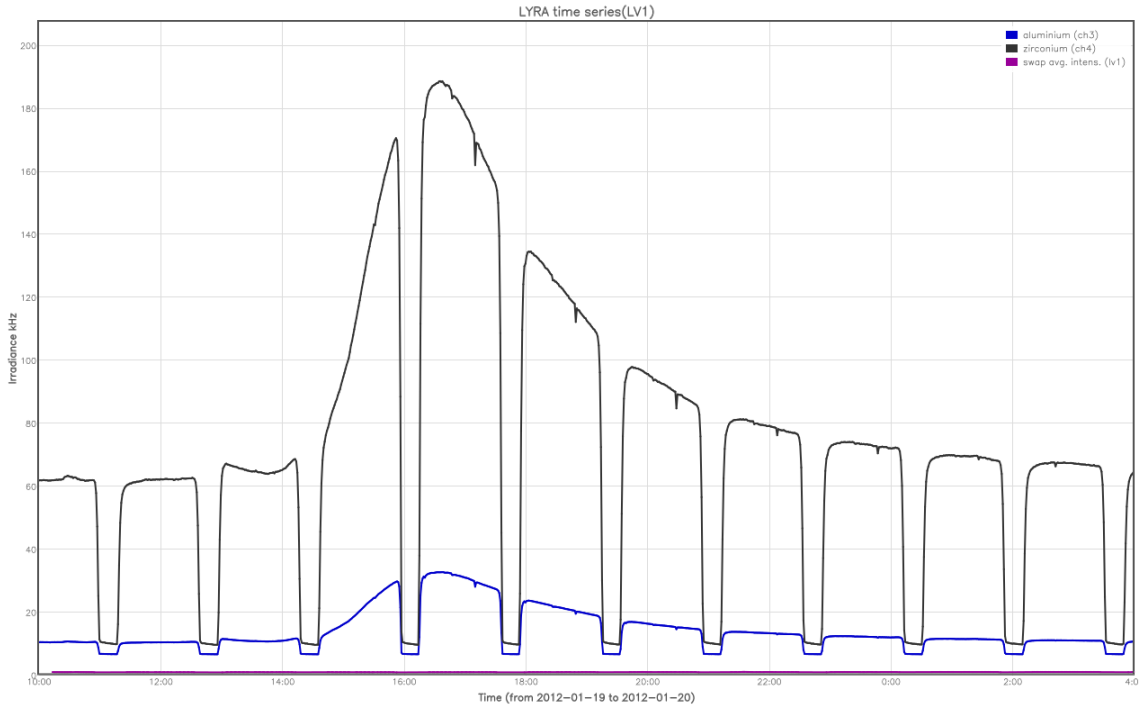
This week, AR 1401 and 1402 were responsible for the most interesting solar events. In particular, SWAP and LYRA observed the following solar events:

On Mon 16th, on the North East limb:

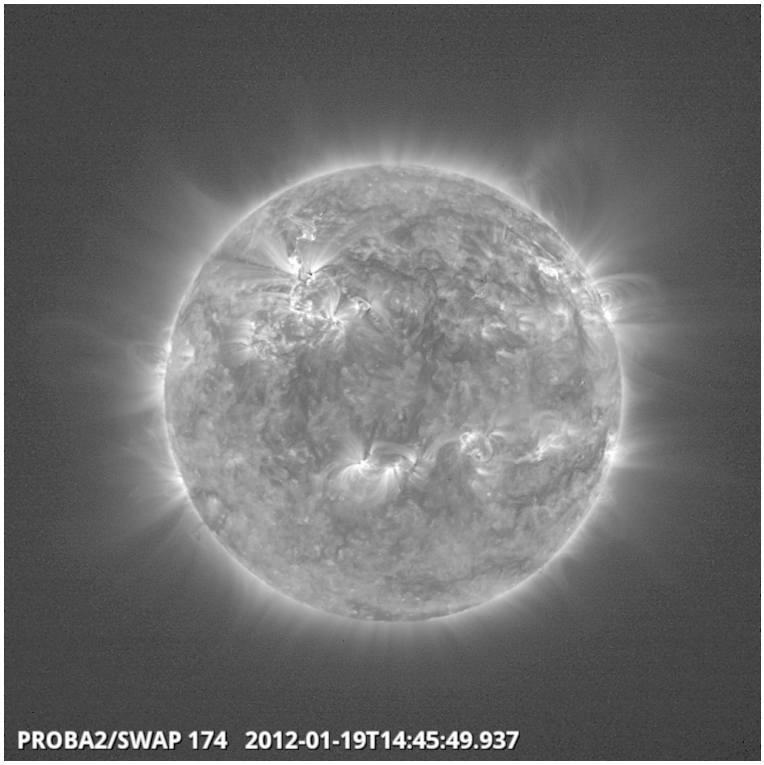


http://proba2.oma.be/swap/data/qlviewer/2012/01/16/swap_01139815518897_9842084c.png

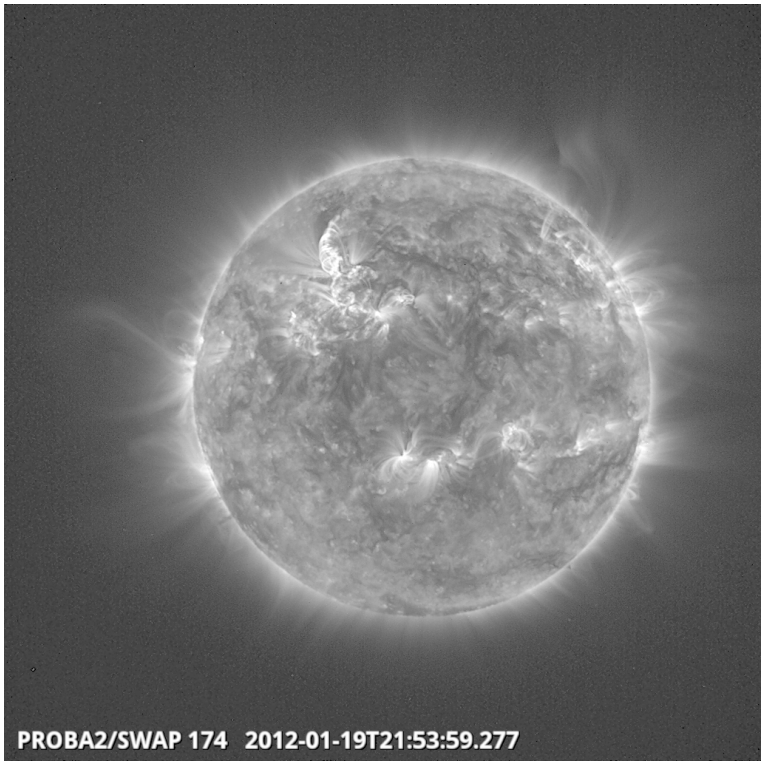
On Thu 19th: long-duration M2.6 flare and arcade build-up, associated with a CME (with limited geomagnetic effects observed on 22nd).



LYRA data related to the long M2.6 flare on Thu 19th.



http://proba2.oma.be/swap/data/qlviewer/2012/01/19/swap_01144360657033_a1be1357.png

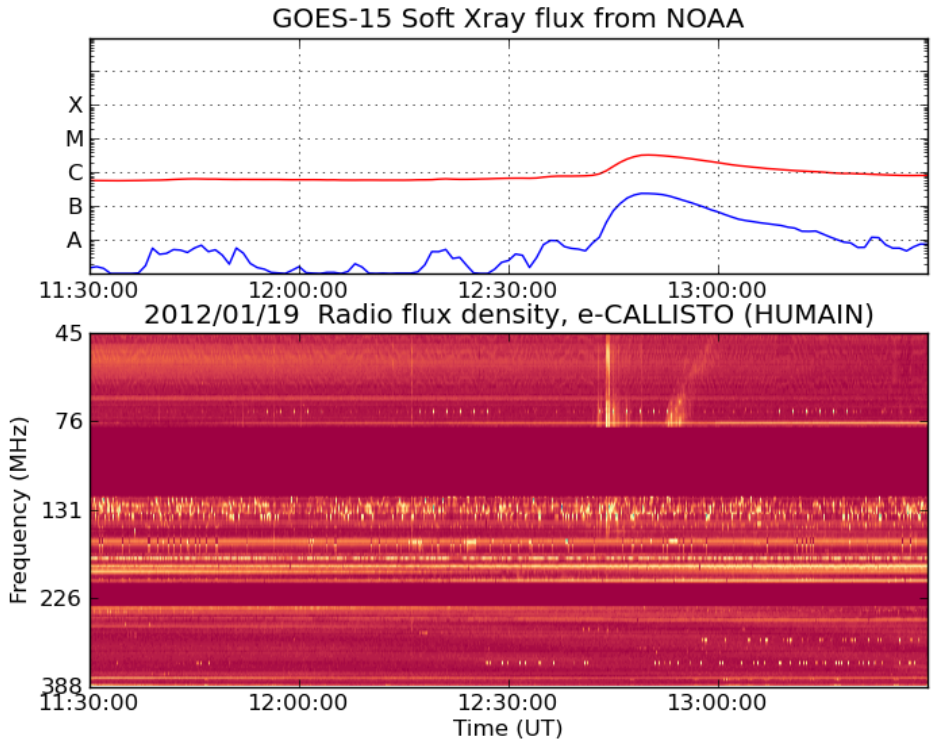


http://proba2.oma.be/swap/data/qlviewer/2012/01/19/swap_01144781547493_52ea663a.png

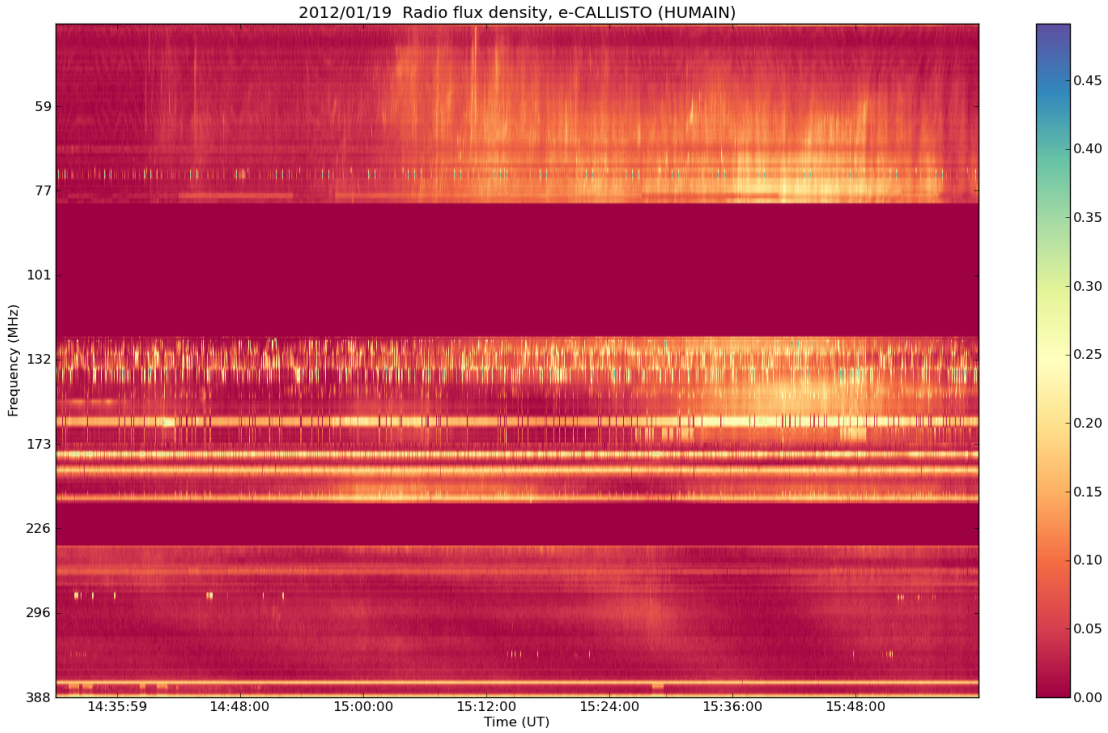
7. Humain Observations (16 Jan 2012 - 22 Jan 2012)

Radio events on 19 January 2012

The radio activity on 19 January 2012 was particularly strong.
First radio event is classical case of flare associated type III and type II radio bursts.
The metric type III bursts observed at about 12:45 UT are indicating the impulsive phase of the GOES C3.2 class flare (flare start and peak time were 12:41 and 12:50 UT, respectively).
Type III bursts are closely followed by the metric type II burst - signature of the coronal shock wave. The Humain spectrum shows well defined harmonic band. The fundamental band was observed by other spectrometers in the frequency range of 40 - 20 MHz.



The second radio event of 19 January 2012 was a strong radio continuum associated with the GOES M3.2 class flare (flare start and peak time 13:44 and 16:05 UT, respectively). The flare was accompanied with a HALO CME driving the shock wave which produced strong and long lasting interplanetary type II radio burst and later on small geomagnetic storm on 22 January 2012.



8. Future Events

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

From the Heliosphere into the Sun in Physikzentrum Bad Honnef, Germany

Start : 2012-01-31 - End : 2012-02-03
This meeting is dedicated to the processes in the solar wind and corona in the light of the upcoming Solar Orbiter mission. Over the last three decades there has been astonishing progress in our understanding of the solar corona and the inner heliosphere driven by remote-sensing and in-situ observations. This period of time has seen the first high-resolution X-ray and EUV observations of the corona and the first detailed measurements of the ion and electron velocity distribution functions in the inner heliosphere. Today we know that we have to treat the corona and the wind as one single object, which calls for a mission that is fully designed to investigate the interwoven processes all the way from the solar surface to the heliosphere.
Website: http://www.mps.mpg.de/meetings/heliocorona/

SWIFF1-CPA20, Plasma Astrophysics, acquired knowledge and future perspectives in Leuven, Belgium

Start : 2012-02-20 - End : 2012-02-24
This meeting will combine a historic overview on (Flemish) scientific achievements made in plasma-astrophysics, together with a state-of-the-art, international viewpoint on modern algorithmic developments for space plasmas. The meeting intentionally coincides with celebrating the 20 year existence of the Centre for Plasma Astrophysics (Department of Mathematics, K.U.Leuven), along with the upcoming emeritus status of its founder, Prof. Marcel Goossens. At the same time, the first annual progress meeting of the FP7-project SWIFF (space weather integrated forecasting framework), coordinated by Prof. Giovanni Lapenta, will provide the most updated account of modern, algorithmic-computationally driven research efforts in space plasma modeling. The weeklong event will serve to

survey acquired knowledge, identify modern challenges barely researched by theoretical approaches, and stimulate new collaborations on both historic as well as contemporary open questions.
The meeting objective is to, on the one hand, present the space weather integrated forecasting framework (SWIFF) progress to the wider scientific community, and provide an opportunity for cross-fertilization of related international efforts on multi-physics modeling. As ongoing FP7 project, its annual meeting allows to present the first achieved milestones to scientific peers. Part of the programme will be filled in through an open call for also project-external contributions, and the remainder will concentrate on the achievements in the various work packages. The final two days shift the objective from future developments to acquired knowledge and achievements made as a result of 20 years of Centre for Plasma Astrophysics (K.U.Leuven) initiated research, ending with an international tribute to its founder. In the last two days, we foresee a programme of invited international speakers whose research has benefitted from K.U.Leuven collaborations, along with a contemporary contribution from current staff members.
Website: https://wis.kuleuven.be/cpa/SWIFF1-CPA20/

Sustainability of Space Activities: International Issues and Potential Solutions in Strasbourg (France)

Start : 2012-02-21 - End : 2012-02-23
Each year, the International Space University (ISU) organizes a three day symposium addressing a topical theme from an interdisciplinary and international perspective. These symposia attract an audience of around 200 members of the space sector from agencies, industry and academia worldwide.
Our next annual symposium, the sixteenth in a series, will address the risks faced by spacecraft and crew due to various natural and human generated threats. Looking beyond the current situation we ask what can be done to mitigate the threats in order to assure long-term sustainability of space activities particularly through increased co-operation between nations.
The scope of the Symposium will be in line with the main objective of the UN COPUOS Working Group on the subject established in early 2010, that is, “to examine and propose measures to ensure the safe and sustainable use of outer space for peaceful purposes, for the benefit of all countries”.
Website: http://www.isunet.edu/index.php/symposium/isu-symposium-16-final-program

SDO-4/IRIS/Hinode Workshop: 'Dynamics and energetics of the coupled solar atmosphere', in Monterey, CA.

Start : 2012-03-12 - End : 2012-03-16
An overarching theme of the meeting is to cover how different regions in the solar atmosphere are coupled, with a particular focus on the chromosphere, the region where most of the non-thermal energy in the solar atmosphere is deposited. The meeting will focus on quiescence, i.e., the non-flaring, non-eruptive state of the atmosphere in coronal holes, quiet Sun and active regions.
The major goals of this meeting are:
* Provide an overview of recent insights in how different regions in the solar atmosphere are coupled and energized with a focus on how magnetic flux, mass and energy are transported through the atmosphere. This will be done by confronting recent advanced numerical models with state-of-the-art high resolution observations.
* Provide the community with an overview of outstanding challenges, such as the heating of the chromosphere, its connection to the corona, the role and interpretation of chromospheric magnetism in revealing the connectivity and energy deposition in the low solar atmosphere, and the relative role of waves and braiding in the heating of coronal plasma.
* Prepare the community to fully exploit the novel diagnostic capabilities that will be provided by future missions such as the Interface Region Imaging Spectrograph (IRIS) small explorer, due for launch in late 2012, ESA's Solar Orbiter, or Japan's Solar C mission. This will be done in part by providing tutorial and discussion sessions on optically thick chromospheric diagnostics (including spectropolarimetry) which are a major part of the diagnostic capabilities of both missions, and in part by illustrations of how detailed comparisons between synthetic observables from numerical models and observations lead to physical insights.

Site: http://sdo4.lws-sdo-workshops.org/

EGU General Assembly in Vienna, Austria

Start : 2012-04-22 - End : 2012-04-27
The EGU General Assembly 2012 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 the EGU appeals to provide a forum to present their work and discuss their ideas with experts in all fields of geosciences. The EGU is looking forward to cordially welcome you in Vienna.
Space weather related sessions:
Impact of solar and geomagnetic variabilities on the Earth's lower,middle and upper atmospheres (Thierry Dudok de Wit, Jean Lilensten, F.-J. Lübken, M. Kaufmann and P. Preusse)
This interdisciplinary session focuses on the multiple impacts of solar activity on climate variability. The session will address both forcing mechanisms such as solar spectral irradiance, geomagnetic perturbations and galactic cosmic rays, and the response of the upper, middle and lower atmosphere. Special attention will be payed to the solar flares and geomagnetic storms as well as to the role of the long-term trends of the solar activity, in particular, in global climate changes and modern global warming. Papers involving the physical processes in the ionosphere and stratosphere will be welcome in the first place. The objective is to go beyond correlation analyses and gain a better quantitative understanding of the different contributions of solar variability to the terrestrial environment.
More information: http://meetingorganizer.copernicus.org/EGU2012/provisionalprogramme/CL
Space Weather and its Effects on Terrestrial and Geo-Space Environments: Science and Applications (Viviane Pierrard (BIRA-IASB, Belgium), Hanna Rothkaehl (Space Research Centre PAS, Poland), Norma Crosby (BIRA-IASB, Belgium)
This session gathers together scientists with expertise in various fields of solar-terrestrial physics that deal with the effects of space phenomena on different levels of geo-space. Effects range from those observed on spacecraft related activities all the way down to Earth, including technological systems, human health and the Earth's climate. We welcome contributions (theoretical and observational) as well as applied (effects on terrestrial and geo-space environments), on all aspects of space weather. Contributions related to the ESA Space Situational Awareness (SSA) programme, or the EU FP7 programme, are very welcome. We look forward to a dynamic and interdisciplinary session.
Website: http://meetings.copernicus.org/egu2012/

26th NSO Workshop: 'Solar Origins of Space Weather and Space Climate: Connecting the Interior to the Corona'

Start : 2012-04-30 - End : 2012-05-04
As the impact of space weather and climate on daily life is becoming more important, it is timely to discuss the latest reseach on the solar origin of these phenomena. Recent advances in helioseismology have demonstrated that subsurface dynamics are closely associated with aspects of solar activity from the long-term timing of the solar cycle to the short-term eruption of solar flares. The advent of synoptic vector magnetic field measurements is opening up a new path for research on active regions, flares and CME's. Coronal magnetic field measurements should become available in the next 5-10 years, supplying another physical constrain on space weather events.
Website: http://www.nso.edu/general/workshops/2012/

Annular solar eclipse

Start : 2012-05-20 - End : 2012-05-20
For more information: http://eclipse.gsfc.nasa.gov/SEgoogle/SEgoogle2001.html

HELAS-5: The Modern Era of Helio- and Asteroseismology

Start : 2012-05-20 - End : 2012-05-25
Helioseismology and asteroseismology are the only means to investigate the interior of the Sun and stars. They are crucial for understanding the structure and evolution of stars, which produce all chemical elements in the universe heavier than helium, and which host and influence planets which may carry

life. Understanding the physics of the Sun's interior is essential for understanding the solar dynamo and consequently for predicting solar magnetic activity, which has a severe impact on the operation of space missions. Understanding the interior of the stars is essential for understanding those astronomical objects that host and influence planets. With the suite of the latest instruments and missions, e.g. BiSON, GONG, SOHO, SDO, Hinode and Picard for solar exploration and MOST, CoRoT, Kepler, BRITE, SONG for stellar and exoplanetary research, the precision on the seismically determined quantities, e.g. flows in the solar interior or the ages and radii of stars will be greatly improved. This will allow creating new knowledge in solar physics and astrophysics and therefore makes the proposed conference particularly timely.
Website: http://www.esf.org/index.php?id=9140

Workshop on Coronal Magnetism at Boulder, Colorado (USA)

Start : 2012-05-21 - End : 2012-05-23
The purpose of this workshop is to foster the development of tools to interpret current and future measurements of coronal magnetic fields in order to improve our understanding of the Sun and the sources of Space Weather. This is motivated by the anticipated rapid growth over the next decade in our remote sensing capabilities of the coronal plasma. These new capabilities can only be exploited with improvements in our ability to model the polarized radiative transfer through the coronal plasma and by coupling information on the coronal magnetic field and plasma conditions with models extending to the near Earth environment.
This workshop will include a wide variety of subjects including, but not limited to, instrumentation, the interpretation of polarimetric signals in EUV and UV emission lines, techniques to mitigate the effects of line-of-sight integration effects of the optically thin corona such as tomographic inversions and forward modeling, models of the polarized radiative transfer at radio wavelengths, extrapolation and MHD modeling of coronal magnetic fields, as well as discussions on how to move forward with coupling these inferences of the coronal plasma with models of heliospheric structure and Space Weather prediction.
Website: http://www.hao.ucar.edu/CoronalMagnetismWorkshop/index.php

Heliophysics Summer School in Boulder, Colorado

Start : 2012-05-31 - End : 2012-06-07
The 2012 Heliophysics Summer School will focus on the science underlying current and future heliophysical missions, including but not limited to MMS, Themis, RBSP, IRIS, SDO, and Solar Probe Plus. After providing students with broad overviews of the solar atmosphere, the solar wind, the Earth’s magnetosphere, and ionosphere, the course will cover the basic concepts and unanswered questions pertaining to magnetic reconnection, shocks, plasma instabilities, turbulence, and heating, and the manner in which these concepts and questions affect our understanding of phenomena such as substorms, radiation belt and chromospheric dynamics, solar wind turbulence and particle heating, and heliospheric shocks.
Link: http://www.vsp.ucar.edu/Heliophysics/summer-about-over.shtml

Los Alamos Space Weather Summer School

Start : 2012-06-04 - End : 2012-07-27
The Los Alamos National Laboratory established a summer school in 2011 dedicated to space weather, space science and applications. Every year we solicit applications for the Los Alamos Space Weather Summer School. This summer school is sponsored by IGPP (Institute of Geophysics and Planetary Physics) and PADSTE (Principal Associate Directorate for Science, Technology and Engineering), and PADGS (Principal Associate Directorate for Global Security) and has been established to bring together top space science students with internationally recognized researchers at LANL.
Website: http://www.swx-school.lanl.gov/

First European School on: Fundamental processes in Space Weather in Spineto, Italy

Start : 2012-06-04 - End : 2012-06-09

The Space Weather Integrated Forecasting Framework network (http://www.swiff.eu) organizes in June 2012 the “First European School on Fundamental processes in space weather, a challenge in numerical modeling”. The School will focus on the theoretical study of Space plasmas, in particular on those systems where a continuous energy injection flow leads to a self-consistent coupling of the large scale, low frequency motions with the small scale, high frequency fluctuations including kinetic effects. Progress in this field heavily relies on numerical simulations that, as a matter of fact, are nowadays more similar to laboratory experiments than to theoretical exercises. This is true in terms of planning efforts in the preparatory phase, of manpower required, of data analysis and cost. The understanding of these processes represents a fundamental step for the future of Space Weather models.
Website: http://www.df.unipi.it/~califano/SWIFF_School/EU_School_on_Space_Weather_fundamental_plasma_processes.html

Space Weather Effects on Humans: in Space and on Earth in Moscow, Russia

Start : 2012-06-04 - End : 2012-06-08
During the last thirty years there has been steady progress in our understanding of the influence that space weather has on the state of human health both in Space and at Earth. This development is mainly based on research conducted on humans onboard space stations and spacecrafts, as well as on ground based observations and experimental studies simulating conditions in space. This interdisciplinary field of research requires a wide exchange of expertise in various topics. Only with a global approach it will be possible to establish a mutual understanding, in regard to defining the current state of this research problem as well as identifying what should be pursued in future research activities.
Website: http://swh2012.cosmos.ru/

Toulouse Space Show (France)

Start : 2012-06-25 - End : 2012-06-28
Toulouse will host the most important players in the global aerospace industry, particularly those focusing on space applications. It will provide the opportunity to meet with more than 1000 experts, service providers, clients, users, researchers and students from all over the world.
Website: http://www.toulousespaceshow.eu/tss12/en/

Solar Information Processing Workshop (SIPWork VI), at Montana State University, Bozeman

Start : 2012-06-25 - End : 2012-06-29
You will have a noticed the slight re-branding of these workshops from ‘Image’ to ‘Information’ processing. We think it is time to expand the attention of these workshops to discuss more generally how information about the Sun can be derived, stored, shared, transformed and analyzed using appropriate techniques from many other disciplines. We will still be covering image processing and computer vision techniques applied to solar physics, but we will also be including other topics such as machine learning, data mining and new computing strategies. The re-branding simply acknowledges and makes explicit what the community has been doing to determine the physics of the Sun.
Link: http://www.sipwork.org/

European Week of Astronomy and Space Science in Rome, Italy

Start : 2012-07-01 - End : 2012-07-06
We have the pleasure to invite you in July 2012 to attend the European Week of Astronomy and Space Science, the now classical Ewass meeting, formely known as Jenam. In 2012, the meeting will take place in Rome, Italy, at the Pontificia Università Lateranense.
Website: http://www.ifsi-roma.inaf.it/ewass2012/

BUKS2012 in Fodele Beach, Crete, Greece

Start : 2012-07-04 - End : 2012-07-07

The Sun is the most important astronomical object for humankind with solar activity having a direct impact on Earth. From a fundamental point of view the Sun offers an exceptional physics laboratory where the interactions of the astrophysical plasma and the magnetic field can be studied in detail.
The BUKS workshops on MHD waves and oscillations of the solar atmosphere is organised by the following research groups from Belgium, Spain and the UK:
* The Centre for Plasma Astrophysics, Katholieke Universiteit Leuven, Belgium
* The Solar Physics & Space Plasma Research Centre, University of Sheffield, UK
* The Solar & Magnetospheric Theory Group, University of St Andrews, UK
* The Centre for Fusion, Space & Astrophysics, University of Warwick, UK
* The Solar Physics Group, Universitat de les Illes Balears, Spain
* The Astrophysics Research Centre, Queen's University Belfast, UK
BUKS2012 will also honour the contributions of Prof Marcel Goossens to the field of MHD waves and offer an opportunity to celebrate his 65th birthday.
Website: https://habu.pst.qub.ac.uk/groups/buks2012/

CISM Summer School in Boulder (USA)

Start : 2012-07-16 - End : 2012-07-27
The CISM Space Weather Summer School is a 2-week intensive program targeted to first-year graduate students but also attended by undergraduates and space weather professionals. The daily schedule includes morning lectures, followed by afternoon laboratory sessions where students further explore the day's topics using CISM model simulations, observational data, and sophisticated visualization tools. CISM is making the laboratory materials publicly available for use by others, for example to supplement lecture courses or for student independent study. The deadline for applications is May 1.
Website: http://www.bu.edu/cism/SummerSchool/overview.html

International Radiation Symposium in Berlin (Germany)

Start : 2012-08-06 - End : 2012-08-10
The IRC's International Radiation Symposium 2012 provides a forum for the scientific community to exchange recent results and evolving ideas relevant to many areas of atmospheric radiation. Quadrennially convened, the IRS assembles a global network of scientists and students engaged in studies pertaining to the Earth-atmosphere-Sun system, and encourages international cooperation in radiation research crucial to understanding and predicting Earth's dynamic climate and habitability. The IRC invites you to Berlin and welcomes your participation in this endeavor.
Website: http://irs2012.org/

63rd International Astronautical Congress in Naples, Italy

Start : 2012-10-01 - End : 2012-10-05
At the forthcoming 63rd International Astronautical Congress in Naples a special session on the theme 'Effects of Space Weather on GEO Satellites' will be held as part of the 25th Symposium on Space Policy, Regulations and Economics.
This session will discuss case histories and mechanisms of effects of space weather on GEO satellites, models for prediction, and mitigation approaches. We would like to invite you to consider submitting abstracts for this session.
The call for papers can be found at The deadline for abstract submission is 29 February 2012.
http://www.iafastro.org/docs/2012/iac/IAC2012_CallForPapers.
Website: http://www.iac2012.org/

Total solar eclipse

Start : 2012-11-13 - End : 2012-11-13
For more information: http://eclipse.gsfc.nasa.gov/OH/OH2012.html#SE2012Nov13T

Tracing the Connections in Solar Eruptive Events in Petaluma, CA, USA

Start : 2012-11-30 - End : 2012-12-05

The overarching objective of the conference is to examine the connections amongst the phenomena that lead to solar eruptive events. The current state of themes includes:
* Measuring the Coronal Magnetic Field;
* Connections to, and Reactions of, the Large-Scale Corona;
* Large-scale Magnetic Connectivity of Active Regions;
* Transfer of Energy to, and Storage of Energy in, the Corona;
* The High-Energy Particle - Flare - CME connection.
Working groups will address topics such as:
* Energy Transfer throughout a Solar Eruptive Event;
* Global Energetics of an Ensemble of Events;
* Coronal Influences to the Lower Atmosphere;
* CME Initiation and Type II Bursts;
* The Release of Energetic Particles in the Low Corona;
* Flows vs. Waves;
* Microflares/Nanoflares.
Website: http://hessi.ssl.berkeley.edu/petaluma/index.shtml

Earth-Sun System Exploration 5 in Kona, Hawai'i USA

Start : 2013-01-13 - End : 2013-01-19
Information coming soon!
Website: http://sd-www.jhuapl.edu/Aurora/ESSE/index.html

Annular solar eclipse

Start : 2013-05-10 - End : 2013-05-10
For more information: http://eclipse.gsfc.nasa.gov/SEplot/SEplot2001/SE2013May10A.GIF

Hybrid solar eclipse

Start : 2013-11-03 - End : 2013-11-03
For more information: http://eclipse.gsfc.nasa.gov/SEplot/SEplot2001/SE2013Nov03H.GIF

9. New documents in the European Space Weather Portal Repository

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