STCE Newsletter

5 Mar 2012 - 11 Mar 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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1. Review of solar activity (5 Mar 2012 - 11 Mar 2012)

Solar activity during the week was dominated by Catania sunspot group 65 (NOAA AR 1429) that produced three X-class flares, twelve M-class flares, and numerous C-class flares. Other active regions observed during the week did not produce any flares above the M-level.

An X1.1 flare was detected by GOES peaking at 04:09 UT on March 5 at N17E52. It was accompanied by coronal dimmings and a post-eruption arcade observed by SDO/AIA and a full halo CME first detected by the SOHO/LASCO coronagraph at 04:00 UT. Its projected plane of the sky speed was around 1300 km/s. The CME-associated interplanetary disturbance arrived at ACE on March 7 (see below). This eruption was also associated with a strong radio flux in the metric range.

An X5.4 flare was detected by GOES peaking at 00:24 UT on March 7 at N17E27, and an X1.3 flare peaked at 01:14 UT (during the declining phase of the X5.4 flare). According to the SDO/AIA data, each flare was accompanied by coronal dimmings, an EIT wave and a post-eruption arcade, indicating the eruption of two CMEs, and both flares were accompanied by type II radio bursts. The X5.4 flare was accompanied by a full halo CME first appearing in the LASCO C2 field of view at 00:24 UT and propagating at a speed around 2300 km/s. The X1.1 flare was accompanied by another full halo CME first seen in the SOHO/LASCO C2 field of view at 01:36 UT and propagating at a similar speed. The interplanetary disturbance associated with the first halo CME (or perhaps with the ICME resulting from the interaction of the two halos) arrived at ACE on March 8-9 (see below).

An M6.3 flare was detected by GOES peaking at 03:53 UT on March 9 around N15W03. SDO/AIA data show the associated coronal dimmings, EIT wave and a post-eruption arcade, indicating the eruption of a CME. The associated full halo CME was detected by SOHO/LASCO first appearing in the LASCO C2 field of view at 04:14 UT and propagating at a speed around 750 km/s. The associated ICME was detected by ACE on March 12 (see below).

An M8.4 flare was detected by GOES peaking at 17:44 UT on March 10 at N17W24. The flare was accompanied by coronal dimmings, an EIT wave and a post-eruption arcade observed by SDO/AIA, and a full halo CME first detected in the SOHO/LASCO C2 field of view at 18:00 UT. STEREO/SECCHI COR2 data indicate that the bulk of the CME material was directed northward of the ecliptic plane. The CME plane-of-the-sky speed measured in the LASCO data was around 1040 km/s. The corresponding ICME arrived at the Earth in the afternoon on March 12 (see below).

A partial halo CME first appearing in the LASCO C2 field of view above the south limb at 08:29 UT on March 9 was a backside CME according to the STEREO/SECCHI COR2 data.

The SEP flux at energies above 10 MeV started to rise since around 00:00 UT on March 5 due to the halo CME on March 4, and later increased also due to the CME on March 5, although remaining below the 10 pfu event threshold until March 7. Protons from these CMEs were delayed due to the eastern position of the CME source region.

The SEP flux at energies above 10 MeV started to rise again shortly before 02:00 UT on March 7 and crossed the event threshold shortly before 06:00 UT. The contemporary rise of the proton flux at energies above 50 and 100 MeV indicates that the protons were mostly accelerated at the CME-driven shock associated with the (either of) the two halo CMEs on March 7. Contributions from the interplanetary shocks detected on March 7 (most probably associated with the halo CMEs on March 4 and 5, see below) are not excluded.

The SEP flux continued to increase, with the proton flux at energies above 100 MeV crossing the SEP event threshold (10 pfu) around 10 UT on March 7. The SEP flux peaked at the arrival of the interplanetary shock on March 8. After that the proton flux started to decrease. The flux at energies above 100 MeV went below the 10 pfu event threshold early on March 9, and the flux at energies above 50 MeV - around

noon on March 10. The proton flux above 10 MeV remained above the event threshold until the end of the week.

2. Review of geomagnetic activity (5 Mar 2012 - 11 Mar 2012)

In the beginning of the week, the Earth was inside a slow solar wind flow, and geomagnetic conditions were quiet. The interplanetary magnetic field (IMF) magnitude increased on March 6, but due to low solar wind speed the geomagnetic conditions remained quiet.

An interplanetary shock was detected at 03:35 UT by ACE and at 03:47 by SOHO/CELIAS on March 7. It was most probably associated with the halo CME erupted on March 4. The solar wind speed remained low (around 420 km/s) but the IMF magnitude reached 18 nT, with the north-south IMF component Bz negative during extended intervals. This resulted in geomagnetic storm conditions during the most of the day, with the Kp index estimated by NOAA reaching 6. Since around 09:00 UT on March 7 and until 16:00 UT on March 9, the real-time plasma measurements by ACE became corrupted by the on-going major SEP event.

Another possible interplanetary shock was detected by SOHO/CELIAS around 12:00 UT on March 7, most probably associated with the halo CME observed on March 5. The IMF magnitude in the post-shock solar wind flow did not increase enough to strengthen the ongoing geomagnetic storm.

An interplanetary shock wave was detected on March 8 at 10:45 UT (by ACE) and at 10:53 (by SOHO/CELIAS). This shock was driven by the ICME (interplanetary CME) associated with the full halo CME observed on March 7. The IMF magnitude increased from around 12 to 25 nT, and then further up to 40 nT but the Bz component was directed predominantly northward. This only resulted in two intervals of Kp = 5 and another two intervals of Kp = 4 as estimated by NOAA.

Around 00:00 UT on March 9, the IMF magnitude in the ICME increased again, and this time the IMF Bz component was directed predominantly southward. This resulted in another geomagnetic storm (Kp = 5-6 as estimated by NOAA). Around 08:18 UT the solar wind speed suddenly increased up to around 950 km/s. Together with still negative (southward) IMF Bz component, this led to strengthening the ongoing geomagnetic storm, with Kp reaching 7 during two intervals (as estimated by NOAA). No obvious CME was detected by SOHO or STEREO coronagraphs in association with this very fast solar wind interval.

The ICME flow was over early on March 10. Geomagnetic conditions became quiet and remained quiet until the end of the week.

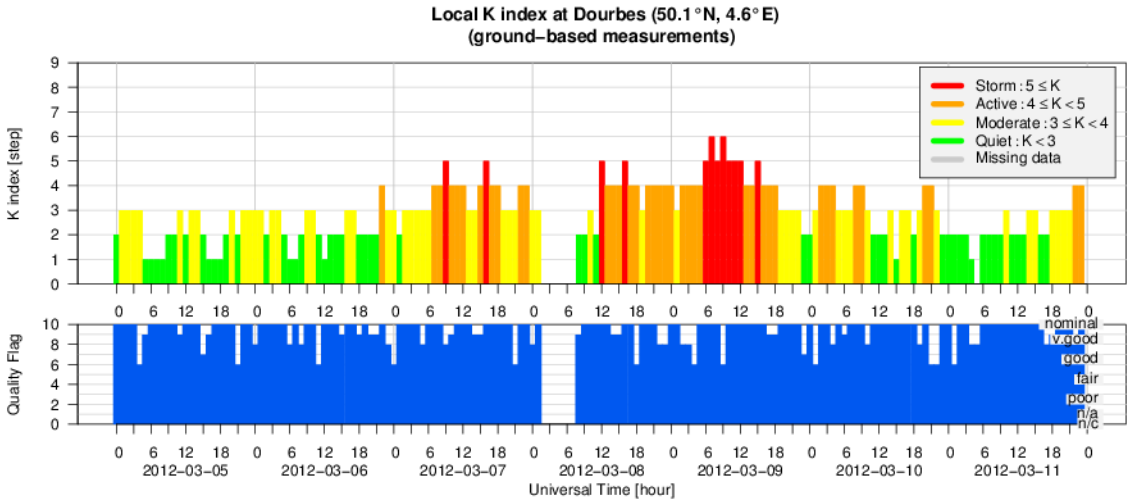
3. Noticeable Solar Events (5 Mar 2012 - 11 Mar 2012)

DAY	BEGIN	MAX	END	LOC	XRAY	OP	10CM	TYPE	Cat	NOAA	NOTE
5	0230	0409	0443	N17E52	X1.1	2B	12000		65	1429	
5	1910	1916	1921	N14E44	M2.1	1B	0		65	1429	
5	1927	1930	1932	N14E44	M1.8	1B	0		65	1429	
5	2226	2234	2242	N16E43	M1.3		0		65	1429	Location taken from SolarSfot Events
6	0022	0028	0031	N16E41	M1.3	SN	0		65	1429	
6	0136	0144	0150	N16E41	M1.2		0		65	1429	Location taken from SolarSoft Events
6	0401	0405	0408	N16E39	M1.0	1N	0		65	1429	

6	0752	0755	0800	N17E40	M1.0	0		65	1429	Taken from SolarSoft Events
6	1223	1241	1254	N18E36	M2.1 1N	0		65	1429	
6	2104	2111	2114		M1.3	0		65	1429	Active region derived from the SDO/EVE SAM data.
6	2249	2253	2311		M1.0	0		65	1429	
7	0002	0024	0040	N17E27	X5.4 3B	7200	II/2 IV/2 V/2	65	1429	
7	0105	0114	0123	N22E12	X1.3 SF	0	II/2	65	1429	Location reported by NOAA (AR 1430) seems incorrect
9	0322	0353	0418	N15W03	M6.3	0	III/1 V/2 II/2	65	1429	Location taken from SolarSoft Events
10	1715	1744	1830	N17W24	M8.4	460		65	1429	Location taken from SolarSoft Events

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

4. Geomagnetic Observations at Dourbes (5 Mar 2012 - 11 Mar 2012)



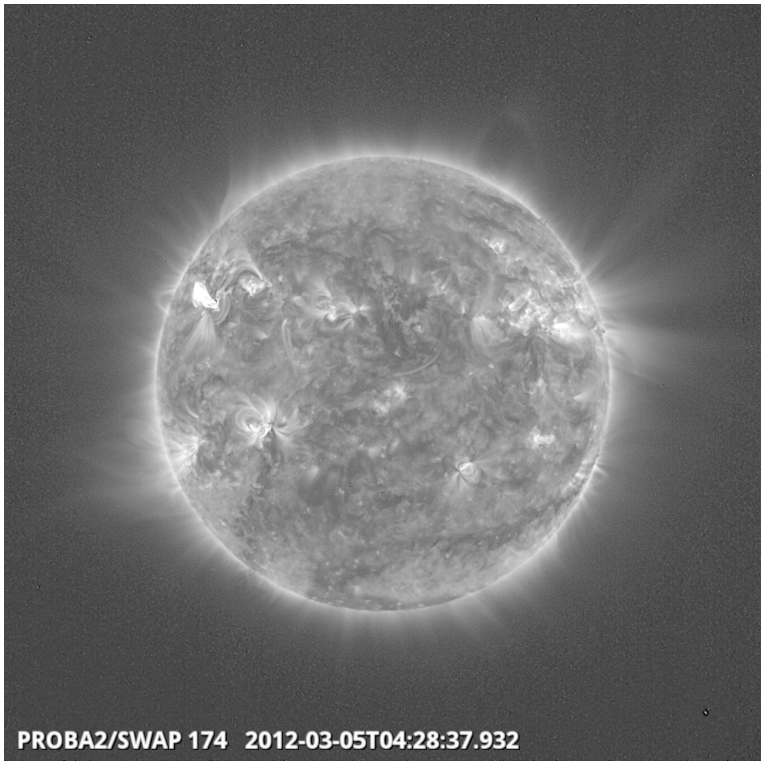
5. PROBA2 Observations (5 Mar 2012 - 11 Mar 2012)

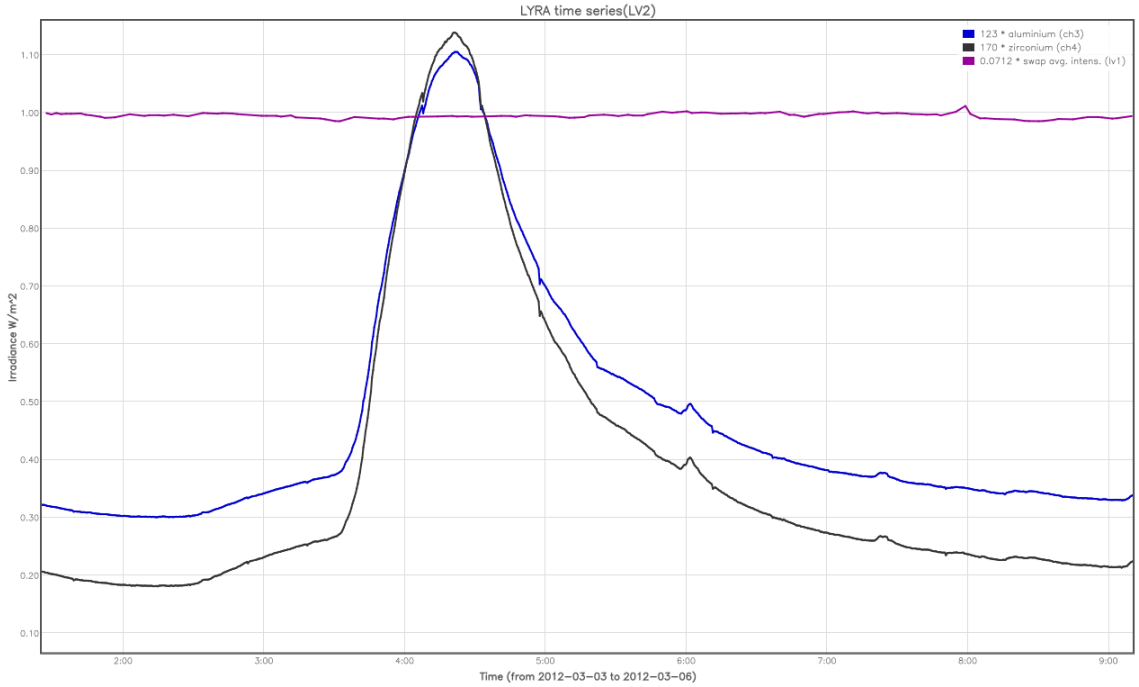
In total there were 3 X-flares and 12 M-flares (as well as numerous C-flares) last week. All were detected by SWAP and LYRA.

Below are presented the SWAP images and LYRA curves related to the most energetic flares of this week, i.e.

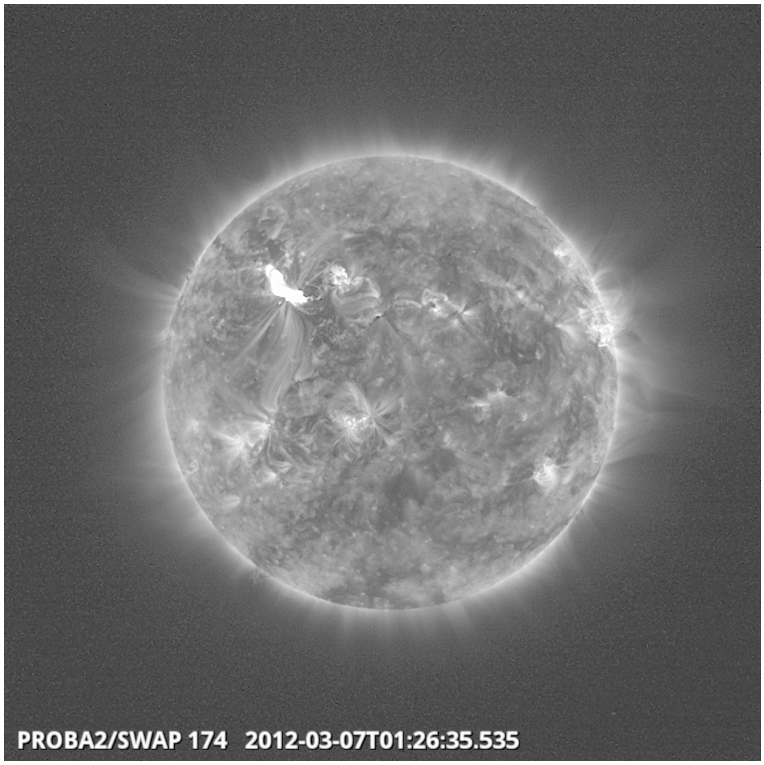
- X1.1 from Mon 05
- X5.4 from Wed 07
- M8.4 from Sat 10

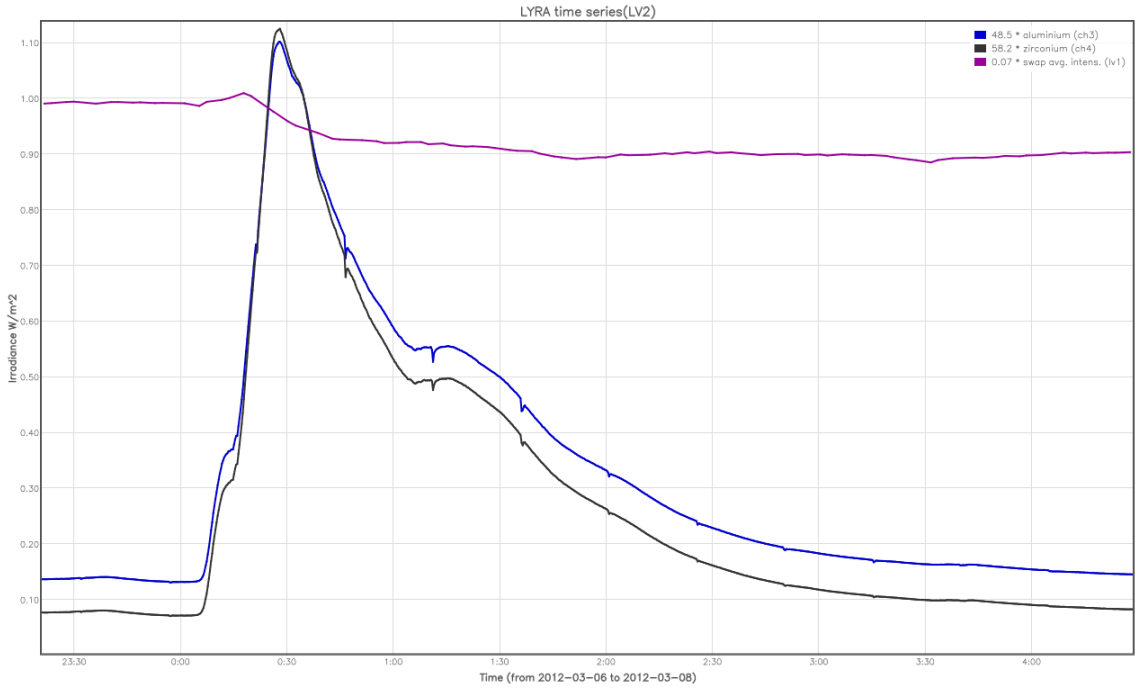
X1.1 Flare on Mon March 05; 04:28



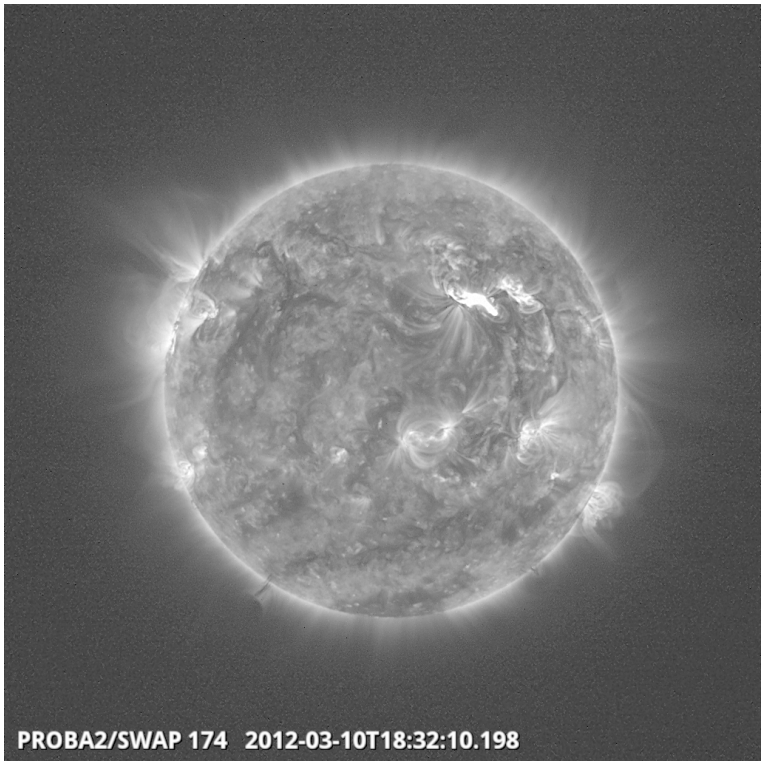


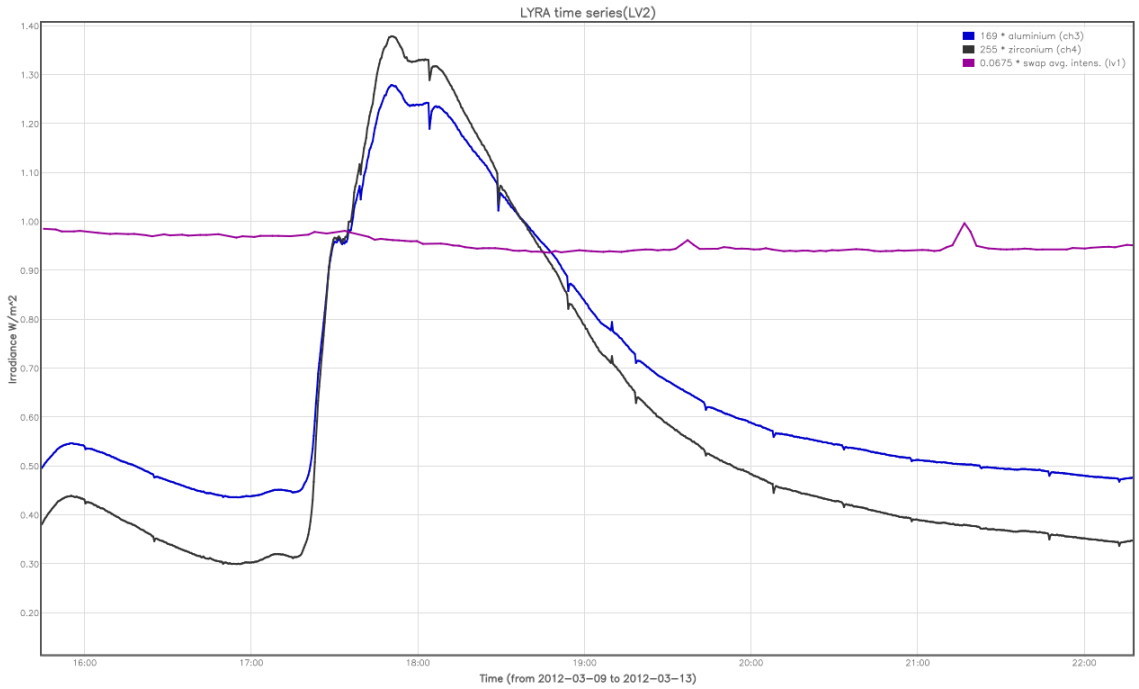
X5.4 Flare on Wed March 07; 00:02





M8.4 Flare on Sat March 10; 17:15


PROBA2/SWAP 174 2012-03-10T18:32:10.198


LYRA time series(LV2)
169 * aluminium (ch3)
255 * zirconium (ch4)
0.0675 * swap avg. intens. (lv1)
Irradiance W/m^2
1.40
1.30
1.20
1.10
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
16:00
17:00
18:00
19:00
20:00
21:00
22:00
Time (from 2012-03-09 to 2012-03-13)

6. Future Events

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

Spectroscopy of the Dynamic Sun

Start : 2012-04-18 - End : 2012-04-20
We are hosting a conference celebrating the careers of Prof. George Doschek from NRL and Prof. Tetsuya Watanabe from NAOJ focussing on the topic of Spectroscopy of the Dynamic Sun.
George Doschek has played a major part in space solar spectroscopy for many decades. Following a key role in exploiting Skylab data, he made huge contributions to the design and build of instruments on board the P78-1, Yohkoh and Hinode missions, being US PI for the Hinode EIS. His knowledge of spectroscopy is recognized and respected internationally and he has published very many papers on high temperature solar plasmas.
Tetsuya Watanabe is a leading spectroscopist in Japan. Following work with stellar atmospheres, he has been involved from the start of Japanese space solar physics with significant roles in the Bragg spectrometers the Tansei 4, Hinotori and Yohkoh missions. He is Japanese PI for Hinode EIS. He has published extensively on solar X-ray and EUV spectra.
This conference will focus on recent results using spectroscopy to probe fundamental questions in solar physics.
Website:
http://msslxr.mssl.ucl.ac.uk:8080/SolarB/spectrosun/index.jsp

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. LÃ¼bken, 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/

NOAA Space Weather Workshop in Boulder (USA)

Start : 2012-04-24 - End : 2012-04-27
Space Weather Workshop is an annual conference that brings industry, academia, and government agencies together in a lively dialog about space weather . What began in 1996 as a conference for the space weather user community, Space Weather Workshop has evolved into the Nationâ€™s leading conference on all issues relating to space weather .
The conference addresses the remarkably diverse impacts of space weather on todayâ€™s technology. The program highlights space weather impacts in several areas, including communications, navigations, spacecraft operations, aviation, and electric power. The presentations and discussions at the Space Weather Workshop also focus on identifying the highest priority needs for operational services that can guide future research and identifying new high-value capabilities that can be transitioned into operations. The conference fosters communication among researchers, space weather service providers, and users of space weather services.
Researchers have the opportunity to discuss relevant research in many areas of the space environment. Recent progress in large-scale modeling efforts will be featured; while new developments in Sun-to-Earth coupled modeling systems will also be a highlight.
Website:
http://www.swpc.noaa.gov/sww/

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/

Advances on space radiation and plasma environment monitoring, data analysis and flight opportunities workshop in Noordwijk, NL

Start : 2012-05-09 - End : 2012-05-11
The workshop on 'Advances on Space Radiation and Plasma Environment Monitoring, Data Analysis Methods and Flight Opportunities Workshop' is the forth of a series of workshops proposed under the auspices of the Space Environments and Effects Network of Technical Competences established to further cooperation in Europe.
The number of flying or ready to fly European radiation and plasma instruments has increased significantly since the last SEENoTC workshop on the subject in 2008 and a round-table at CNES in 2009. Research programmes have also made good progresses in investigating innovative technologies and new concepts designs which will allow a substantial reduction of mass, power and data rate budgets compared to traditional instrumentation, whilst providing equivalent or higher detection efficiency. With many future missions in Navigation, Telecommunications, Exploration, Science, GMES domains flying in severe radiation environments and carrying highly sensitive components and systems, the need for such radiation instrumentation is increasing. Accurate measurements of the Space Environment plays also a crucial role in improvement of radiation enviroment models and the development of the space weather services required by the Space Situational Awareness programme.
The intention of this workshop is to provide a venue for discussing the latest developments on space plasma and radiation environments and effects instrumentation, to examine possible flight opportunities for such instruments, and to establish the necessary technical and management steps necessary to

ensure collaboration on future data analyses, databases, data sharing, and lessons learned from flight experience. It will also allow further discussion and capture of explicit experiment needs and further the harmonization of cooperation on instrument development, flight plans and data exploitation.
Website:
http://www.congrexprojects.com/12C16

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 Earthâ €™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 â€œFirst European School on Fundamental processes in space weather , a challenge in numerical modelingâ€. 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/

Remote Sensing of the Inner Heliosphere 2011 in Aberystwyth, UK

Start : 2012-06-06 - End : 2012-06-10
We announce the 'Second Remote Sensing of the Inner Heliosphere Workshop' to be hosted by Aberystwyth University and held in Aberystwyth, Wales, UK, 06-10 June 2011. The workshop aims to gather experts from the various fields of remote-sensing observations of the inner heliosphere , including white-light, EUV, and radio observation, together with modellers in order to tackle key outstanding science issues, establish closer working relations, and devise the best ways to move the field forward. In addition, the science learned from remote-sensing observations is key to improving our capabilities

of space weather forecasting. The workshop also aims to look at ways in which we can more easily and efficiently share and access the various types of data between individual groups and sub-communities, ways in which we model the inner heliosphere looking at the advantages and disadvantages of the available modelling, updates on present and future remote-sensing capabilities - including those on the STEREO /SDO/Solar Orbiter/Solar Probe+ Missions, and progress on use of the LOw Frequency ARray (LOFAR) and Murchison Widefield Array (MWA) radio arrays - pathfinders for the Square Kilometre Array (SKA) - linking remote-sensing observations of the inner heliosphere with those closer-in to the Sun as well as with in-situ measurements, and investigating further the ways in which these data sets all complement each other and are necessary to gain knowledge and understanding of the fundamental physical processes that occur within the inner heliosphere .
Website:
http://heliosphere2011.dph.aber.ac.uk/

Solar Wind 13

Start : 2012-06-17 - End : 2012-06-22
The Thirteenth International Solar Wind Conference, organized by the University of Alabama in Huntsville's Center of Space Plasma and Aeronomic Research (CSPAR) and the the University of California, Berkeley's Space Sciences Laboratory, will take place at Sheraton Keauhou Resort on Big Island, Hawaii, USA, from 17 to 22 June 2012. Please note that scientific sessions will start on Monday 18 June.
The conference will conform to the traditional solar wind themes, addressing the current state of knowledge in the relevant fields of solar and heliospheric physics. In particular, the conference will focus on the physics ofthe corona, the origin and acceleration of the solar wind , its dynamical interactions throughout the heliosphere and the interstellar medium and its boundaries. The program will be composed of both invited lectures and contributed talks and posters.
Website: http://www.sw13.org/

SHINE Conference 2012 in Wailea Maui, Hawaii

Start : 2012-06-25 - End : 2012-06-29
SHINE stands for Solar Heliospheric and INterplanetary Environment. It is an affiliation of researchers within the solar, interplanetary, and heliospheric communities, dedicated to promoting an enhanced understanding of the processes by which energy in the form of magnetic fields and particles are produced by the Sun and/or accelerated in interplanetary space and on the mechanisms by which these fields and particles are transported to the Earth through the inner heliosphere .
SHINE research focuses in particular upon the connection between events and phenomena on the Sun and their relation to solar wind structures in the inner heliosphere . The goal of SHINE activities is to enrich and strengthen both physical understanding and predictive capabilities for these phenomena.
Website:
http://shinecon.org/Current%20Meeting.htm

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/

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 UniversitÃ 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/

23rd NASA Space Radiation Investigatorsâ€™ Workshop in Durham, North Carolina (USA)

Start : 2012-07-08 - End : 2012-07-11
The 23rd Annual NASA Space Radiation Investigatorsâ€™ Workshop will be held July 8â€“12, 2012, at the Washington Duke Inn, Durham, North Carolina. The purpose of this workshop is to provide an opportunity for active researchers in the NASA Space Radiation Program to share the results of their work and to explore new directions for research that may benefit the NASA program. The workshop format will include plenary sessions, poster sessions, and a poster contest to recognize and honor student investigators. In addition, there will be special sessions on space physics and technology allowing opportunities for a comprehensive discussion on NASAâ€™s overall space radiation protection goals.
Principal investigators receiving NASA funds (including those from the NASA /DOE joint program and the NSBRI) are required to attend; principal investigators funded by the Department of Energy are strongly encouraged to attend. Although attendance at the workshop is by invitation only, other scientists with a legitimate interest in space radiation research are also welcome. If you wish to attend, please send your requests directly to . Requests should be accompanied by an explanation of your relationship to the Space Radiation Program and the type of contribution you wish to make.
Website:
http://www.dsls.usra.edu/meetings/radiation2012/

ESOF 2012 in Dublin, Ireland

Start : 2012-07-11 - End : 2012-07-15
From 11th-15th of July 2012 international researchers, policy makers, business leaders and global media will gather in the Convention Centre in Dublin, Ireland to take part in the Euroscience Open Forum (ESOF), 2012. A science conference like no other, ESOF 2012 is unique in representing the largest convergence of the Sciences, Humanities and Culture in Europe in 2012. Some of the keynote speakers at ESOF 2012 will include Craig Venter, Rolf-Dieter Heuer, Charles Bolden, Mary Robinson, and Bob Geldof.
Website: http://www.esof2012.org/

39th COSPAR Scientific Assembly

Start : 2012-07-14 - End : 2012-07-22

The 39th COSPAR Scientific Assembly will be held at the Global Education Centre, 2 Infosys Training Centre Mysore, Karnataka India from 14 - 22 July 2012. This Assembly is open to all bona fide scientists.
Website:
http://www.cospar-assembly.org/

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/

Asia Oceania Geosciences Society (AOGS) Assembly in Singapore

Start : 2012-08-13 - End : 2012-08-17
An international body established since 2003, the Asia Oceania Geosciences Society (AOGS) aims to promote geosciences and advance its applications for the benefit of humanity in Asia and Oceania.
Sessions:
* Atmospheric Sciences
* Biogeosciences
* Hydrological Sciences
* Ocean Sciences
* Planetary Sciences
* Solar & Terrestrial Sciences
* Solid Earth Sciences
* Interdisciplinary Working Groups
Website:
http://www.asiaoceania.org/aogs2012/public.asp?page=home.htm

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

Start : 2012-08-13 - End : 2012-08-16
You will have a noticed the slight re-branding of these workshops from â€˜Imageâ€™ to â€˜Informationâ€™ 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/

XXVIII IAU General Assembly in Beijing, China

Start : 2012-08-20 - End : 2012-08-31
In August 2012 China will for the first time host the General Assembly of the International Astronomical Union in Beijing. This triennial gathering of astronomers from around the world to discuss and debate the most recent discoveries about the universe is an important part of the vitality of our science. Astrophysics remains one of the most exciting areas of human endeavor, and the venue of the Beijing GA will be equally impressive: the new China National Convention Center that is housed in the Olympic Park in a beautiful, spacious building and area that is full of amenities for conference participants and visitors.
The contributions of Chinese astronomy to human knowledge and our understanding of the cosmos have been of historical significance, from the earliest to modern times. GA participants will have an opportunity to experience the wide range of astronomical activities now taking place in China that include new projects, facilities, and institutes. They will also report on, and hear, the latest research results from every field of astronomy. An exciting scientific programme is being developed that will hold the interest of everyone. I am pleased to welcome all Union members and invited guests to join us in Beijing for what will be a memorable General Assembly.
Website:
http://www.astronomy2012.org

International Meteor Conference in La Palma, Spain

Start : 2012-09-20 - End : 2012-09-23
Every year, the International Meteor Organization (IMO) organizes the International Meteor Conference (IMC). This conference deals with all aspects of meteor observation as well as the underlying physics and is aimed at both amateurs and professionals.
The International Meteor Organization (IMO) will hold the 31st annual International Meteor Conference (IMC) on La Palma, Canary Islands, Spain, from 20 till 23 September, 2012. The conference will be organized by the Astro Travels agency in collaboration with the Cabildo of La Palma island authority which will sponsor this event.
Website:
http://www.imo.net/imc2012/

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/

Space Weather and Challenges for Modern Society in Oslo, Norway

Start : 2012-10-22 - End : 2012-10-24
2012 â€“ 2013 is expected to be years with high solar activity. This can trigger larger solar storms which can generate geomagnetic induced currents (GIC) on the earth. GIC can affect the normal operation of specific industrial operations and critical infrastructure (e.g power grids, telecom, navigation systems, etc).
During space weather events, like solar storms, electric currents in the magnetosphere and ionosphere experience large variations, which manifest also in the earth's magnetic field. These variations induce currents (GIC) in conductors operated on the surface of the earth. Electric transmission grids and buried pipelines are common examples of such conductor systems. GIC can cause problems, such as increased corrosion of pipeline steel and may disturb and possible damaged high-voltage power transformers

and it can also have damaging effects on communication systems, navigation systems and oil and gas operations.
Vulnerable industries are the oil and gas industry, railways, telecommunication industry, navigation industry and not at least the society, which is very vulnerable concerning short or long term interruption of critical infrastructure.
The conference will focus on increasing the general knowledge of solar storms, space weather and GIC and the possible consequences for different industries and critical infrastructure, and look into reasonable means of protection, and consider possible early warning solutions.
More information:
http://www.tiems.info/images/stories/tiems%202012%20oslo%20conference%20call%20for%20papers.pdf

Ninth European Space Weather Week in Brussels, Belgium

Start : 2012-11-05 - End : 2012-11-09
We are pleased to announce that the Ninth European Space Weather Week will take place at the AcadÃ©mie Royale de Belgique, Brussels, Belgium between 5 and 9 November 2012.
This meeting is being jointly organised by the Solar-Terrestrial Centre of Excellence (STCE), ESA , the SWWT and the COST ES0803 communities. The local organisation is done by the STCE. This event will continue to build on the advances made during the first eight European Space Weather Weeks held between 2004 and 2011.
Website:
http://www.sidc.be/esww9/

International Symposium on Solar-Terrestrial Physics in Pune, India

Start : 2012-11-06 - End : 2012-11-09
The International Symposium on Solar-Terrestrial Physics will be held during November 6 - 9, 2012 at the Indian Institute of Science, Education and Research, Pune, India. This meeting under the aegis of the SCOSTEP is expected to draw leading scientists from around the world in the increasingly important, interdisciplinary fields of Solar activity and its impact on geospace and life on the Earth. With major observational solar facilities being planned in India, this meeting is especially pertinent in the Indian context.
The meeting is expected to involve professional scientists as well as graduate students, and will have a mixture of invited and contributed talks and posters. There will also be a one-day tutorial for the benefit of young people beginning work in the field of solar-terrestrial physics.
Website:
http://www.iiserpune.ac.in/~isstp2012/

Eclipse on the Coral Sea: Cycle 24 Ascending

Start : 2012-11-12 - End : 2012-11-16
As we emerge from one of the deepest and longest solar minima on record, with a new and powerful eye on the Sun -SDO- we invite all those with an interest is solar activity to gather in beautiful Palm Cove, Australia to review and assess our current knowledge and understanding of our magnetic star , and to experience the awe and wonder of a total solar eclipse on November 14, 2012.
Website:
http://moca.monash.edu/eclipse/

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