

STCE Newsletter

9 Jul 2012 - 15 Jul 2012



Published by the STCE - this issue : 19 Jul 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.

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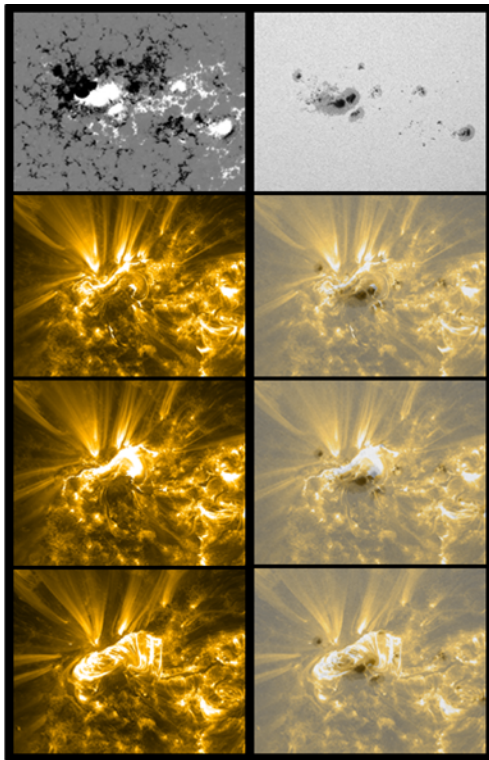
1. X1 flare in NOAA 1520 (9 Jul 2012 - 15 Jul 2012)

In the afternoon of July 12, 2012, the complex and up-to-then relatively quiet sunspot group NOAA 1520 all of a sudden produced an extreme solar flare.

The X1.4 flare started at 15:37UT, reached its peak at 16:49UT, and ended at 17:30UT, making it a long duration event. It is only the 14th X-class flare recorded so far in solar cycle 24 (SC24). Being already in the 42nd month, this is a low number of X-flares compared to the previous solar cycle 23 (22) or to SC22 (73, and already past its cycle maximum!). The 12 July flare and subsequent coronal mass ejection (CME) showed some interesting features.

Location of the solar flare

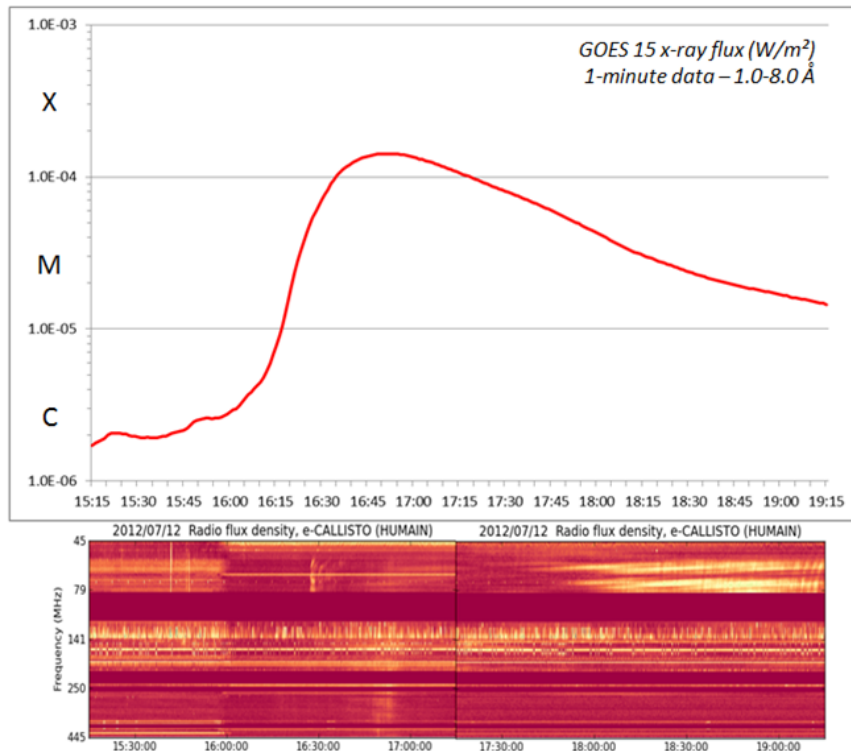
Figure underneath shows the outlook of NOAA 1520 on the day of the flare, as imaged by the SDO-instruments (<http://sdo.gsfc.nasa.gov/>). The top 4 images are taken at 16:30UT, the third pair at 16:45UT (peak), and the bottom pair at 18:55UT. A movie showing the evolution of the event in H-alpha and EUV can be found at <http://www.youtube.com/watch?v=CwQFedmo9t4>



NOAA 1520 is the 2nd biggest group (after NOAA 1339) of the ongoing SC24, which -so far- has developed only five groups that exceeded 1000 MH in sunspot area. The group is very complex, and the magnetogram shows several areas of mixed magnetic polarity quite close together. In the SDO/AIA171 images, one can see that filaments have formed along the inversion line (transition zone from one polarity to another) to the right, top and left of the main spot (see top 4 images). It is also there that the solar flare developed: mostly to the left from the filament structures, but partially also covering the upper half of NOAA 1502's main spot. This can be seen in the right series of images, where the SDO/HMI Continuum has been laid over the AIA images. Notice also the delicate post-flare coronal loops visible in the bottom pair of images.

Radio-observations of the flare

The Humain radio-telescope (<http://sidc.oma.be/humain/index.php>) was also monitoring the Sun at the onset of the flare. The figure underneath shows the evolution of the x-ray flux from 15:15UT till 19:15UT. Below this graph is the radiospectrogram from the Humain radio-telescope for the same period. It shows two features.

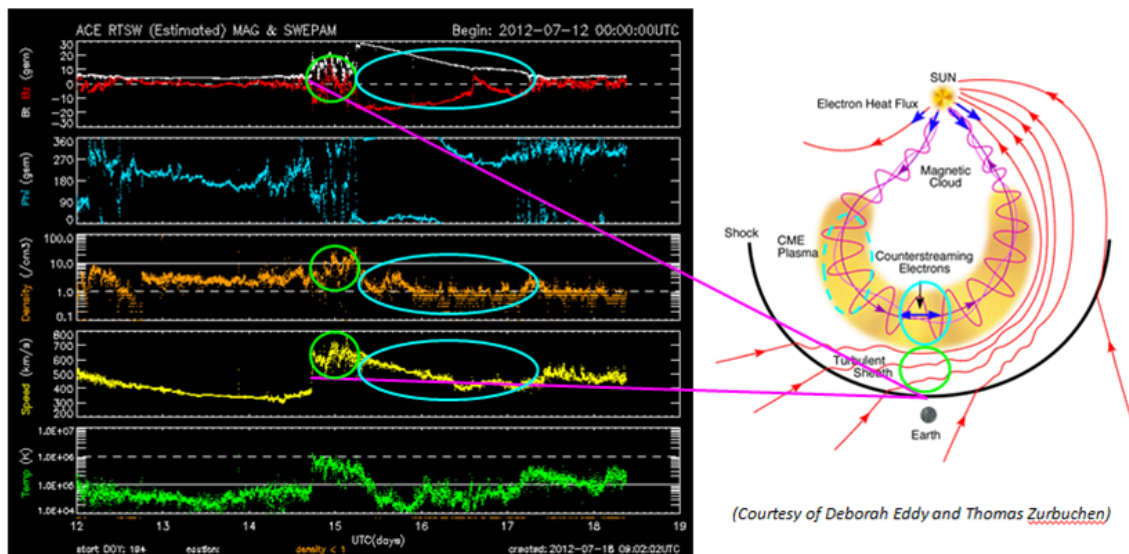


First, a type II radio-burst can be seen around 16:30UT. This type of burst is thought to be excited by magnetohydrodynamic (MHD) shockwaves associated with Coronal Mass Ejections (CME) traveling through the corona. From the frequency-drift, one can calculate the speed of the shock. In this case, NOAA calculated this to be at over 1200 km/s. Even more interesting is that the observed shock and resulting radio-burst occurred well before the peak of the x-ray flux around 16:50UT.

The second feature is the bright radio emission continuum that can be seen starting around 17:45UT and lasting for several hours. This is a type IV radio burst and it often accompanies a type II radio burst. Type IV bursts are believed to be generated by the emission of electrons trapped in post-flare loops (see above). Sometimes, also a frequency drift is observed which in turn is linked with the formation of the loops at successively higher altitudes.

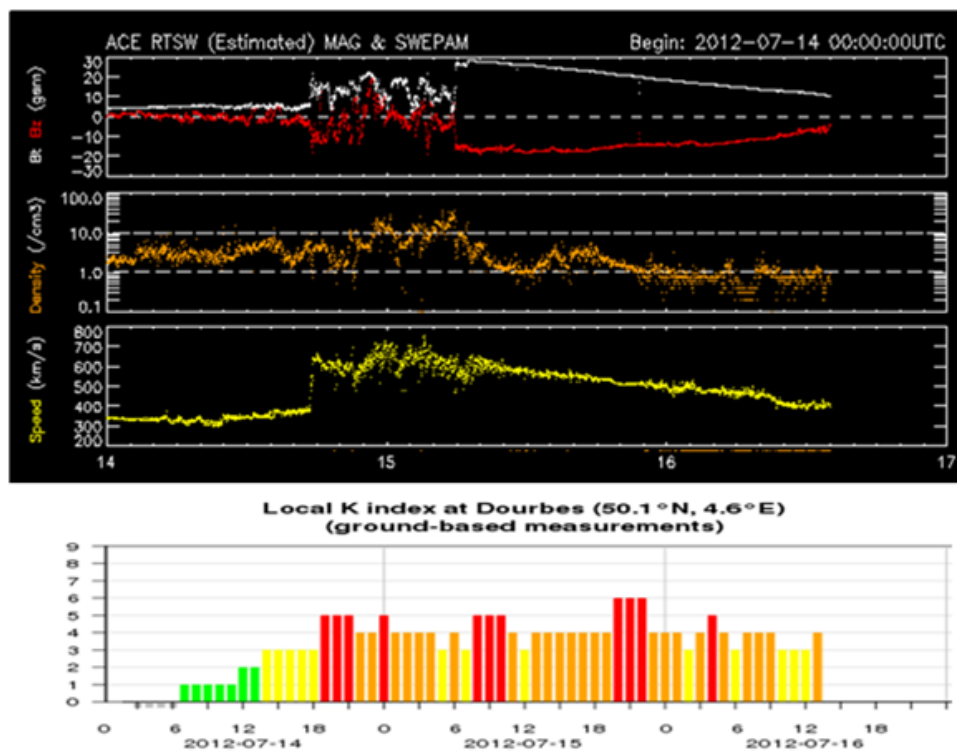
Geomagnetic effects from the CME

The Advanced Composition Explorer (ACE - http://www.swpc.noaa.gov/ace/MAG_SWEPAM_3d.html) continuously measures the solar wind at 1.5 million km in front of the Earth. As such, it recorded the arrival of the shock preceding the CME on 14 July at 17:28UT.



The measurements of the magnetic field strength and speed show a typical CME signature. Figure above shows the constitution of the disturbance and how it influenced earth's environment. The arrival of the shock is marked by a sudden increase in solar wind speed (yellow) and magnetic field strength (white and red). Then follows a region which is also not part of the CME. It is actually an accumulation of solar wind particles swept up between the shock and the real CME, something similar to the folding of a table cloth when quickly moving his hand on it. The passage of this turbulent region is characterized by rapidly varying intensities of wind speed, density (orange) and magnetic field strength. Earth was in this region for nearly 12 hours: from July 14th at about 18:00UT till July 15th at 06:00UT. Only then arrived the true CME, which was in this case a low density and low temperature (green) plasma cloud with a gradually decreasing field strength and wind speed. Remarkably, the passage of this CME lasted almost 1.5 days till late July 16th, and displayed a very monotone evolution of the cloud's parameters. The reason for this might be that Earth did not pass through the front of the CME, but through its flank.

As the moderately strong magnetic field was oriented southward, Earth suffered from a major geomagnetic storm. This was recorded by the Dourbes Geomagnetic Observatory (http://gpsweather.meteo.be/geomagnetism/ground_K_dourbes). The storm was not strong enough to create aurora visible from Belgium. Nonetheless, polar lights were seen as far south as Wales and The Netherlands (low above the horizon).

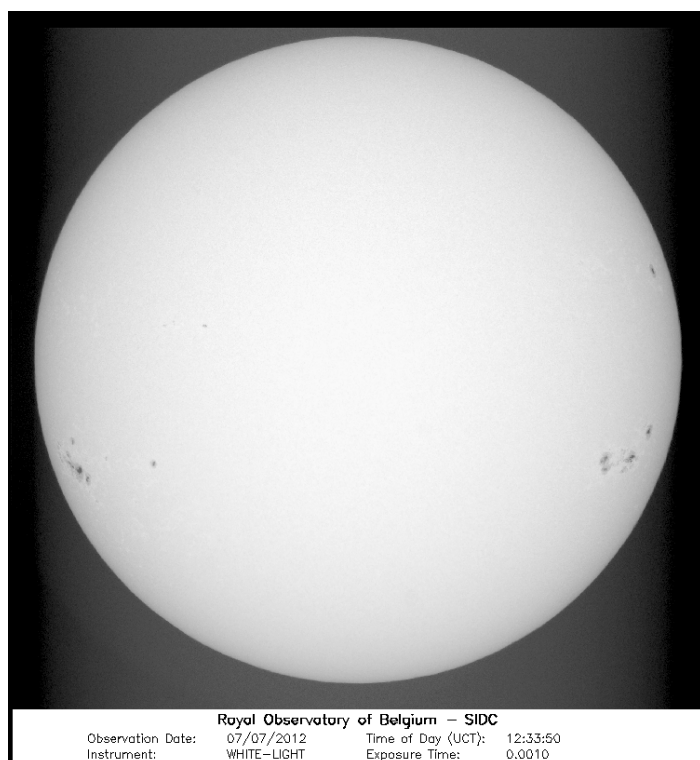


2. Review of solar activity (9 Jul 2012 - 15 Jul 2012)

Solar activity was dominated in the beginning of the period by NOAA 1515, which was then already on the west limb. Soon however, it was the conglomerate of NOAA 1519, 1521 and especially 1520 determining the solar activity, producing several minor M-flares. On Thursday July 12, NOAA 1520 produced an X1.4 flare. The associated CME arrived on July 14th evening.

Proton levels were high in the beginning of the week in the aftermath of the X-flare of the previous period. A new injection of particles was triggered by the X1.4 flare of July 12, the proton flux levels remained above the event threshold until Sunday July 15th.

Departing sunspot group NOAA 1515 (right) and freshly new NOAA 1520 (left) can be seen together on this image made by the White Light telescope of the Uccle Solar Equatorial Table.



3. Noticeable Solar Events (9 Jul 2012 - 15 Jul 2012)

| DAY | BEGIN | MAX | END | LOC | XRAY | OP | 10CM | TYPE | Cat | NOAA | NOTE |
|-----|-------|------|------|--------|------|----|------|-----------------------|-----|------|------------------------|
| 12 | 1537 | 1649 | 1730 | S15W01 | X1.4 | 2B | 800 | CTM/1 II/2 IV/2 | | 1520 | seen in Humain data |
| 9 | 2303 | 2307 | 2311 | | M1.1 | | 0 | | | 1520 | |
| 10 | 0458 | 0514 | 0531 | | M1.7 | | 0 | | | 1520 | |
| 10 | 0605 | 0627 | 0647 | S17E30 | M2.0 | 1F | 0 | | | 1520 | |
| 14 | 0451 | 0458 | 0505 | S22W36 | M1.0 | SF | 0 | | | 1521 | |

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. PROBA2 Observations (9 Jul 2012 - 15 Jul 2012)

Solar Activity

This week, the Sun's activity level was alternating between *moderate* and *low*, with a *high* on Thursday (X1.4 flare). All higher level activity originated from the adjacent active regions NOAA 1520 and NOAA 1521.

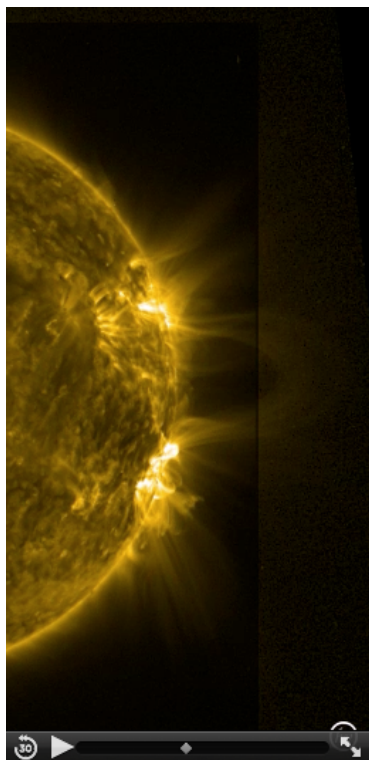
In order to view the activity of this week in more detail, we suggest to go to the following website from which all the daily (normal and difference) movies can be accessed: <http://p2web.oma.be/ssa>. This page also lists the recorded flaring events.

At the beginning of the week, the highly active and complex sunspot region NOAA 1515 crossed the West limb producing a series of spectacular eruptions.

A movie, spanning 1 week of activity on the west limb centered around July 9th, mainly generated by NOAA 1515, can be found here: http://proba2.oma.be/swap/data/mpg/movies/campaign_movies/20120705_20120712_SWAP_HV.mp4. The movie was generated with HelioViewer, using (colored) SWAP images.

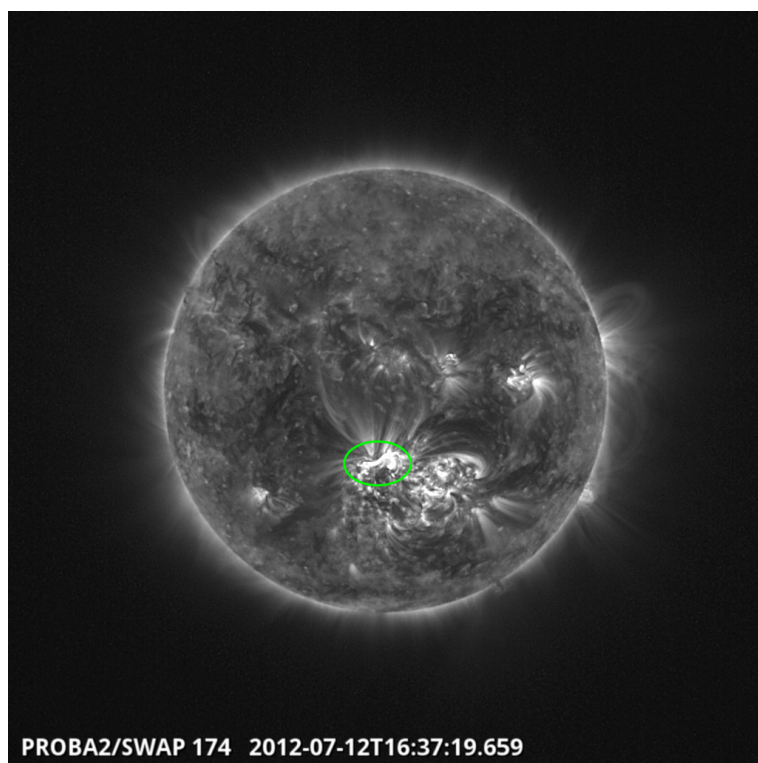
For comparison purposes, the same SWAP movie was generated with the addition of the SDO AIA image sequence (see here: http://proba2.oma.be/swap/data/mpg/movies/campaign_movies/20120705-20120712_AIA_171_SWAP_174-hq.mp4), thereby showing the differences in the field of view (FOV) of both instruments, and revealing the usefulness of the additional FOV range of SWAP.

One illustrative frame of this 'composite' movie is shown below:

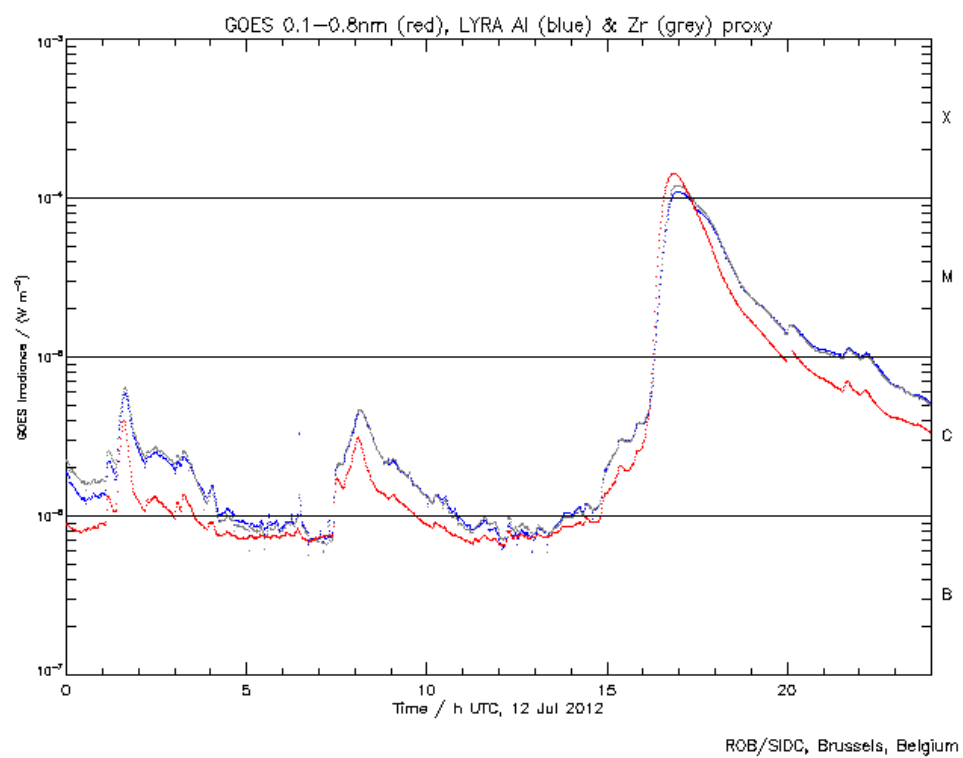


The SWAP image and the LYRA/GOES curves below show the main event of this week's solar activity, the X1.4 flare.

SWAP Image - X1.4 flare on Thursday 12/07; at 16:37



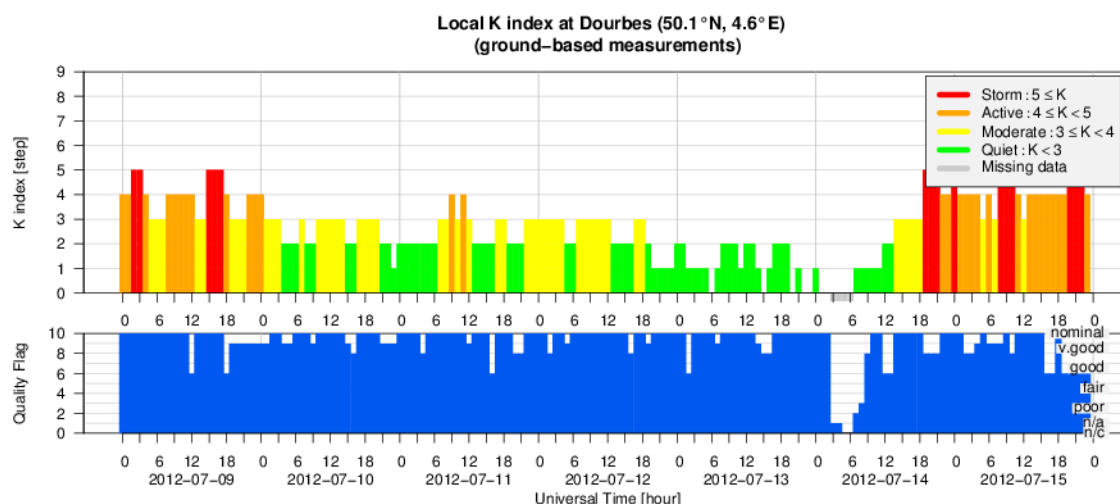
LYRA/GOES Curves - X1.4-flare on Thursday 12/07



5. Review of geomagnetic activity (9 Jul 2012 - 15 Jul 2012)

The solar wind speed was moderate in the first half of the period (~500 km/s) but periods of southward oriented magnetic field resulted in intermittent episodes of (NOAA estimated) Kp=5 on July 9. After that geomagnetic activity decreased to Kp=1 from July 12 evening till July 14 evening when the CME from the X1.4 flare arrived and produced 36 hours of Kp=5 or 6.

6. Geomagnetic Observations at Dourbes (9 Jul 2012 - 15 Jul 2012)



7. New documents in the European Space Weather Portal Repository

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

STCE annual meeting 2012 - Highlights, opportunities and challenges

The 'Highlights, opportunities and challenges' presented during the STCE annual meeting 2012.
<http://www.spaceweather.eu/en/repository/show?id=212>

8. Future Events

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

IGS Workshop 2012 in Olsztyn, Poland

Start : 2012-07-23 - End : 2012-07-27

The Department of Astronomy and Geodynamics of the University of Warmia and Mazury (UWM) is hosting the 2012 IGS Workshop.

This workshop will be composed of plenary sessions with invited oral presentations, and afternoon sessions composed of poster sessions and IGS Working Group splinter meetings. For this workshop we are soliciting abstracts for the poster sessions.

The key dates for this workshop are as follows:

- * Poster Abstract Submissions: March 25 - April 30, 2012.
- * Registration: March 25- May 28, 2012.
- * Hotel Reservations: March 25- May 28, 2012.
- * Workshop: July 23 - July 27, 2012.

Website:

http://www.uwm.edu.pl/kaig/igs_workshop_2012/

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 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/>

Hinode-6 in St. Andrews, UK

Start : 2012-08-14 - End : 2012-08-17

There will be 7 sessions, with 2 invited speakers per session. The following speakers have been invited to Hinode-6:

Website:

<http://www-solar.mcs.st-and.ac.uk/~hinode6/Hinode-6/Welcome.html>

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>

Fermi Solar Data Analysis Workshop in Greenbelt, MD (USA)

Start : 2012-08-22 - End : 2012-08-23

We are pleased to announce the Fermi Solar Data Analysis Workshop to be held at Goddard Space Flight Center on August 22-23, 2012. Although primarily an Astrophysics observatory, the Fermi Gamma-ray Space Telescope, and its Gamma-ray Burst Monitor (GBM) and Large Area Telescope (LAT), provide unique capabilities in the 8 keV - 300 GeV band to monitor and study both the quiescent and flaring Sun. Fermi has already made many observations of solar X-ray and gamma-ray emissions, and many more can be anticipated during the next few years with the peak in solar activity expected in 2013.

This workshop is meant to be informal and interactive. It will start with reviews of X-ray and gamma-ray solar studies to date, including results already obtained with the Fermi observatory. Extensive tutorials will be given on both GBM and LAT data analysis techniques, with time set aside for hands-on practice on your own laptop. We invite all of those interested in learning more about Fermi's Solar capabilities, and interested in interacting with experts in the field, to attend this 2-day workshop.

Website:

http://fermi.gsfc.nasa.gov/science/mtgs/workshops/da2012_solar/

SOLSPANET-1: First Solar and Space Weather Network of Excellence summer school and workshop in Tbilisi (Georgia)

Start : 2012-08-27 - End : 2012-09-21

The Solar and Space Weather Network of excellence will hold its first Summer School and Workshop in Tbilisi Georgia. The meeting will focus on the first results achieved within the network and is also open to the wider international scientific community involved in solar and space weather modeling, monitoring and forecasting activities.

The Summer school will be open to all early-stage researchers from the SOLSPANET member groups as well as to other young scientists from institutes active in solar and space weather studies.

The week of September 17-21 will be dedicated to the International SOLSPANET-1 workshop. The workshop is also devoted to the memory of the great Georgian scientists, professors Rolan Kiladze and Avtandil Pataraya.

Scientific topics will include:

- * Monitoring of precursors for solar flares and CMEs- solar weather
- * MHD waves in non-equilibrium medium
- * Numerical and observational studies of CMEs
- * CME manifestation in the decametre wavelength band
- * Impact of space weather on terrestrial life and technological systems
- * Advanced computational tools and knowledge base for better solar and spaceweather forecasting

Website:

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

International School of Space Science on "Astrophysical and Space Plasmas" in L'Aquila, Italy

Start : 2012-09-02 - End : 2012-09-08

The International School of Space Science of the Consorzio Interuniversitario per la Fisica Spaziale organizes a Course on "Astrophysical and Space Plasmas", to be held in L'Aquila, Italy, September 02-08, 2012, and directed by A. Ferrari, M. Tavani, B. Coppi and R. Rosner.

The aim of the Course is to present a comprehensive discussion of the plasma processes relevant to the astrophysical context, from low energy phenomena in planetary systems to the very high energy objects recently discovered through X and gamma ray observatories.

Introductory lectures will be dedicated to an analysis of observations available from ground and space observatories enlightening the thermal and non-thermal plasma processes necessary for their interpretation. At the same time the theoretical tools, analytical and numerical, necessary for their interpretation will be presented from an institutional point of view. Finally current models of the astrophysical objects and phenomena will be discussed with particular attention to the critical points with the objective of selecting new research lines.

Website:

<http://www.cifs-iss.org/>

TRANSMIT Summer School 2012 in Neustrelitz, Germany

Start : 2012-09-10 - End : 2012-09-14

The Summer school is part of the training program of the Marie Curie Initial Training Network TRANSMIT, funded by the European Commission. Young scientists involved in TRANSMIT shall be trained and educated for being aware and getting basic understanding of ionospheric threats in different fields of application. Awareness and knowledge of ionospheric threats is the starting point of subsequent work to reduce or mitigate them in practical applications.

Well recognized experts in their fields will give lectures to better understand/learn about:

- * Physical nature of ionospheric perturbations at all scales
- * Ionospheric impact on radio wave propagation
- * Detection/Monitoring of ionospheric perturbations
- * Estimation the degree of ionospheric perturbation
- * Mitigation techniques for avoiding threats in technical systems

It is expected that lectures and discussions at the summer school will help in particular early stage researchers to improve their scientific work.

Website:

<http://www.transmit-ionosphere.net/>

Fifth Solar Orbiter Workshop in Brugge, Belgium

Start : 2012-09-10 - End : 2012-09-14

We are pleased to announce that the fifth Solar Orbiter Workshop will take place in Brugge, Belgium from Monday September 10 to Thursday September 13. Friday September 14 will be dedicated to a Science Working Team (SWT) meeting. The workshop will focus on the science questions addressed by this exciting and recently approved mission, which is a partnership between ESA and NASA . The scientific synergy of Solar Orbiter with Solar Probe Plus and other missions will also be highlighted.

Website:

<http://www.stce.be/solarorbiter5/>

International School of Astrophysics 'F. Lucchin' in Vulcano, Sicily (Italy)

Start : 2012-09-17 - End : 2012-09-22

The School of Astrophysics 'Francesco Lucchin' is addressed to PhD students in Astronomy and Physics, as well as to interested young researchers. The school aims at providing a comprehensive background in Astronomy and Astrophysics, from both a theoretical and an observational point of view.

The main purpose of the school is to provide common cultural ground on hot topics of research, both observational and theoretical, to young astronomers. This will reveal the potential links between the various projects in which the PhD students and young researchers are involved, and encourage collaborative research for the future.

The school is open to students and young researchers of all backgrounds (experimental, observational, theoretical).

The topics of the school are:

* The Sun: a Plasma Physics Laboratory (Chair: Francesca Zuccarello)

* Formation of the solar system: clues from exploration (Chair: Priscilla Cerroni)

Website:

<http://www.iasf-roma.inaf.it/IAPS/AstroSchool/>

International Space Weather Initiative (ISWI) School, in Bandung, Indonesia

Start : 2012-09-17 - End : 2012-09-26

The International Space Weather Initiative (ISWI) is a program of international cooperation to advance the space weather science by a combination of instrument deployment, analysis and interpretation of space weather data from the deployed instruments in conjunction with space data, and communicate the results to the public and students. ISWI is a follow-up activity to the successful IHY 2007, but focusing exclusively on space weather. The goal of the ISWI is to develop the scientific insight necessary to understand the science, and to reconstruct and forecast near-Earth space weather. This includes instrumentation, data analysis, modeling, education, training, and public outreach. ISWI has conducted many programs not only to popularise space science all over the world but also to create favorable conditions for joint research and training in some sort of global framework. In the framework of IHY and ISWI, some research groups have been established in several countries. In order to establish the strong space research group, particularly in Asia-Oceania countries, a training to the young students and researchers is necessary. In the framework of this program, the Space Science Center of National Institute of Aeronautics and Space (LAPAN) is honored to host the 2012 ISWI and MAGDAS School in Space Science, the school to young solar physicists and geophysicists, to be held on 17-26 September 2012 in Bandung Indonesia.

Website:

<http://iswimagdas2012.dirgantara-lapan.or.id/>

In-situ Heliospheric Science Symposium in Maryland, MD (USA)

Start : 2012-09-18 - End : 2012-09-20

In-situ observations by spacecraft provide [note in no particular order] the ground truth for comparison and constraining models, have transformed our ideas of the heliosphere, provide a natural laboratory for plasma physics, have challenged our pre-conceived ideas, and have discovered completely unexpected phenomena. This workshop will focus on in-situ observations of the heliosphere made by the unprecedented suite of instruments currently returning observations, including the STEREO spacecraft, near-Earth spacecraft (ACE, WIND, SOHO) and the Voyager spacecraft that are probing the region approaching the heliopause. It is a follow on from the ACE/WIND/STEREO ... workshop held in Kennebunkport in June 2010. The program will include an overview of recent results from current missions, invited presentations, and splinter sessions with a heavy emphasis on discussion. These sessions will focus on the solar cycle variations, solar wind, solar energetic particles, suprathermal ions, coronal and interplanetary transients, and anomalous and galactic cosmic rays.

Website:

<http://stereo.ssl.berkeley.edu/meetings/Sept.2012meeting/>

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/>

RADECS 2012 in Biarritz, France

Start : 2012-09-24 - End : 2012-09-28

The 21st European Conference on RADIATION AND ITS EFFECTS ON COMPONENTS AND SYSTEMS will be held in Biarritz, France, on September 24-28, 2012.

The aim of RADECS conferences is to provide an annual European forum for the presentation and discussion of the latest advances in the field of radiation effects on electronic and photonic materials, devices, circuits, sensors, and systems. The scope of the conference encompasses technological processes and design techniques for producing radiation tolerant systems for space, aeronautical or terrestrial applications, as well as relevant methodologies for their characterization and qualification. The conference features a technical program, an Industrial Exhibit, and one day meeting on ground effects offered on September 24 (RADGROUND). The technical program includes oral and postersessions.

The areas of interest for contributions to be submitted to RADECS 2012 include, but are not limited to:

- * Basic mechanisms of radiation effects in electronic and optical materials
- * Space, atmospheric and terrestrial environments
- * Radiation effects on electronic and photonic devices, circuits and systems
- * Radiation effects on sensors and emerging devices
- * Technology and design hardening
- * Radiation hardness assurance
- * Irradiation facilities and testing

Website: <http://radecs2012.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/>

UN/Ecuador Workshop on the International Space Weather Initiative in Ecuador

Start : 2012-10-08 - End : 2012-10-12

Initiated in 1990, the United Nations Basic Space Science Initiative (UNBSSI) has contributed to the international and regional development of astronomy and space science through annual workshops organized under the umbrella of the United Nations, focusing specifically on the International Heliophysical Year 2007 (IHY, 2005-2009) and the International Space Weather Initiative (ISWI, 2010-2012). UNBSSI has led to the establishment of planetariums, astronomical telescope facilities, and IHY/ISWI instrument arrays worldwide, particularly in developing nations. ISWI is envisioned to continue the tradition of IHY in the worldwide deployment of space weather monitoring instrument arrays. To date, ISWI contributes to the observation of space weather through 18 instrument arrays with close to 1000 operating instruments in more than 100 nations supported by designated national ISWI coordinators.

The first workshop on ISWI was held in Helwan, Egypt and hosted by the Helwan University, Egypt, in 2010, particularly for the benefit of nations in Western Asia. In 2011 the United Nations/Nigeria Workshop

on ISWI was hosted by the Centre for Basic Space Science of the University of Nigeria at Nsukka, Nigeria, particularly for the benefit of nations in Africa. The third ISWI workshop will be hosted by Ecuador in 2012 for the region of Latin America and the Caribbean.

Website:

<http://iswieuador.epn.edu.ec/>

Space Weather and Challenges for Modern Society in Oslo, Norway

Start : 2012-10-22 - End : 2012-10-24

2012 - 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 possibly damage 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.

Website:

<http://www.tiems.info/about-tiems/oslo-conference-2012.html>

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 Académie 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 in Palm Cove, Queensland (Australia)

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 in 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>

EC Space Conference in Larnaca, Cyprus

Start : 2012-11-15 - End : 2012-11-16

The European Commission will organise the 'Let's embrace space - FP7 Space Conference 2012', in cooperation with the Cypriot EU Presidency, on 15 and 16 November 2012 in Larnaca, Cyprus.

This scientific conference will present the current status and results of the 3rd call of FP7 space research, and also discuss future options for European research in the space field. In doing so, the conference will aim at demonstrating the evolution and use of space tools for a sustainable economic and environmental development in a European and global context.

Website:

<http://www.fp7-space.eu/news-119.phtml>

Solar Physics with Radio Observations in Aichi, Japan

Start : 2012-11-20 - End : 2012-11-23

Nobeyama Radioheliograph (NoRH) has been observing the Sun since 1992. This year is the 20th year of science operation. Instruments are still in good shape and producing images of the Sun every day with the same quality as the beginning. Due to the nature of the instrument and long and uniform observations, data can be used for wide variety of solar physics and also for solar terrestrial physics. To mark the 20 years of operation, we will organize a symposium to summarize what has been done with NoRH and to discuss what we should do in the future. Papers to be presented in the meeting will be mainly concerned with the results from NoRH and future plans.

Website:

<http://st4a.stelab.nagoya-u.ac.jp/SPRO2012/>

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>

Chapman Conference on Fundamental Properties and Processes of Magnetotails in Reykjavik, Iceland

Start : 2013-03-10 - End : 2013-03-15

Spacecraft observations have established that all magnetized planets in our solar system interact strongly with the solar wind and possess well-developed magnetotails. Magnetotails are the site for many dynamic processes critical to the circulation of mass, energy and magnetic flux. The great differences in solar wind conditions, planetary rotation rates, ionospheric conductivity, and physical dimensions from Mercury's small magnetosphere to the giant magnetospheres of Jupiter and Saturn provide an outstanding opportunity to extend our understanding of the influence of these factors. Therefore, this Chapman conference will provide a forum in which various communities can come together and discuss recent achievements of observational, theoretical, and modeling studies with the objective to develop a deeper understanding of fundamental properties and processes of planetary magnetotails through a comparative examination.

Annular solar eclipse

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

For more information:

<http://eclipse.gsfc.nasa.gov/SEplot/SEplot2001/SE2013May10A.GIF>

IAU Symposium: Nature of prominences and their role in space weather in Paris, France

Start : 2013-06-10 - End : 2013-06-16

Topics:

- * Prominences : formation, dynamics
- * Prominence plasma properties, including prominence seismology
- * Magnetic field : measurements, topology, support
- * Large-scale patterns and cyclic evolution
- * Prominence destabilization, CMEs, reconstruction in 3D
- * ICMEs in the heliosphere, magnetic clouds; their impact on the Earth environment
- * Stellar quiescent and eruptive prominences and stellar CME
- * Requirements for future instrumentation and prospects for future missions

Website:

<http://www.iau.org/science/meetings/future/symposia/1065/>

Hybrid solar eclipse

Start : 2013-11-03 - End : 2013-11-03

For more information:

<http://eclipse.gsfc.nasa.gov/SEplot/SEplot2001/SE2013Nov03H.GIF>