STCE Newsletter

6 Apr 2015 - 12 Apr 2015

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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.

Content	Page
1. NOAA 2321: one, two or three groups?	2
2. PROBA2 needs you	6
3. PROBA2 Observations (6 Apr 2015 - 12 Apr 2015)	7
4. Review of solar activity	9
5. Noticeable Solar Events (6 Apr 2015 - 12 Apr 2015)	11
6. Review of geomagnetic activity	11
7. Geomagnetic Observations at Dourbes (6 Apr 2015 - 12 Apr 2015)	13
8. Review of ionospheric activity (6 Apr 2015 - 12 Apr 2015)	14
9. Future Events	15
10. New documents in the European Space Weather Portal Repository	21

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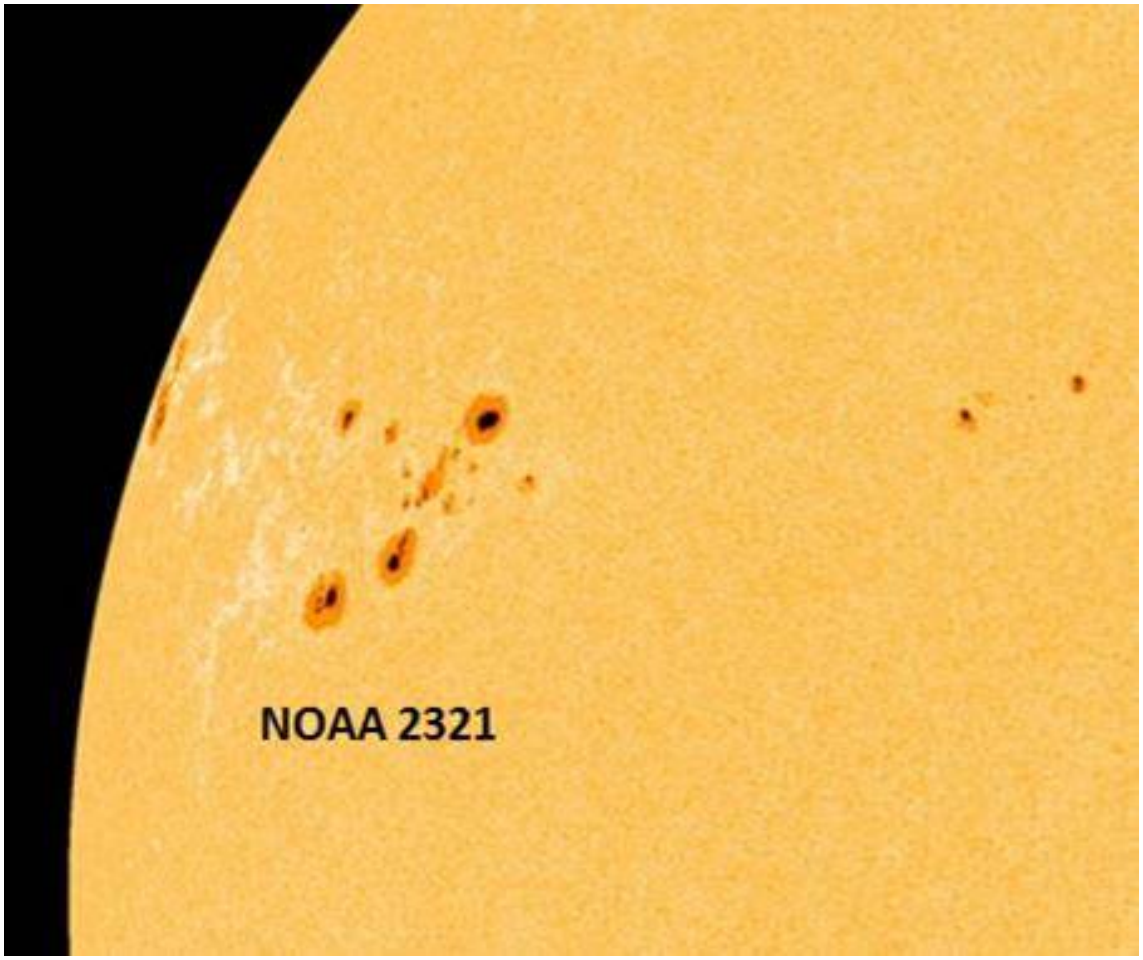
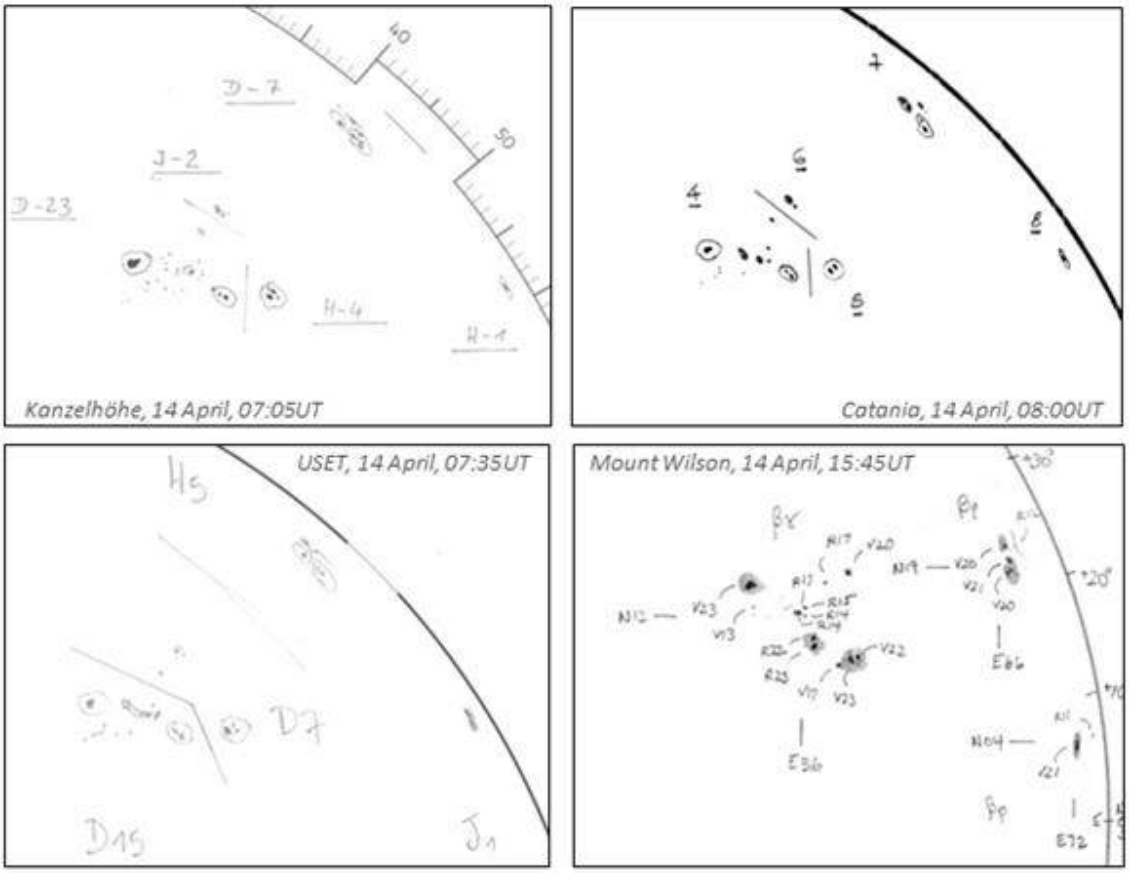
1. NOAA 2321: one, two or three groups?

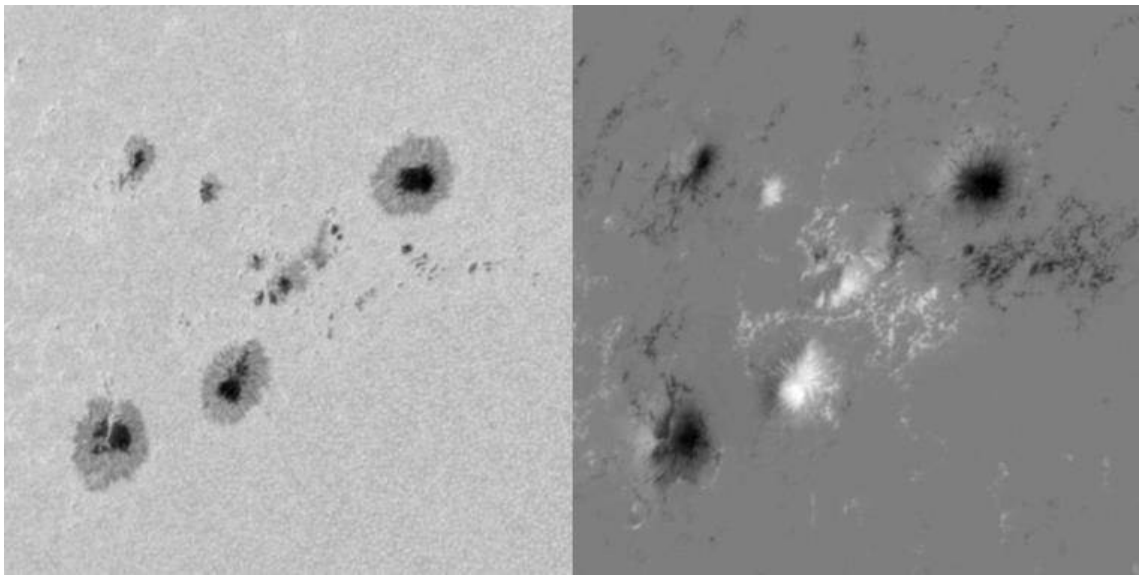
At the end of a rather dull week, a cluster of sunspots appeared from behind the northeast limb. The active region was numbered NOAA 2321, had a sunspot area of about 4 times the surface area of the Earth, and produced an M1 flare on 12 April.



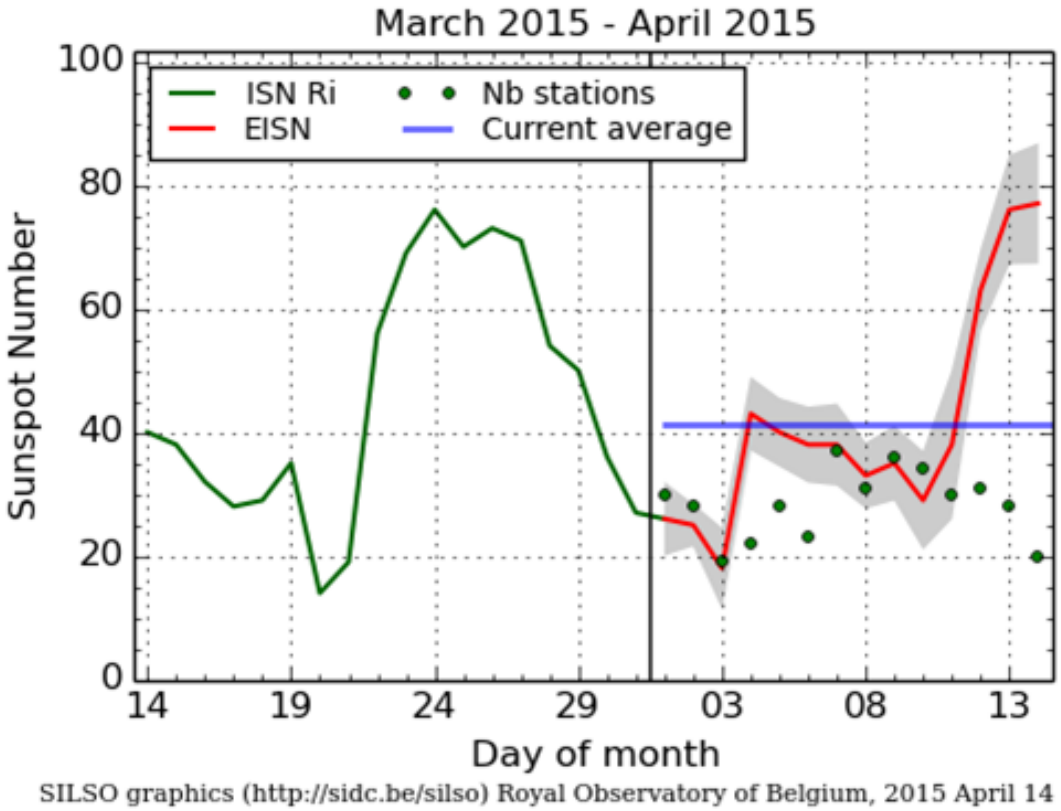
Solar observers had a hard time deciding if this concerned one sunspot group, or two or three closely packed sunspot regions. NOAA, ASSA and Mount Wilson classified this as one group, USET as two groups, and Catania, Kanzelhöhe and STAR as three groups. This becomes clear in a comparison of drawings made on 14 April by Kanzelhöhe, Catania, USET and Mount Wilson (see Note 1).



A senior observer from SILSO commented that he was also in favor of splitting in three groups: "... I would separate the spot in the northeast, with a doubt about separating the double big spot in the southeast. ... This big clustering is an example of the few complex groupings appearing during each solar cycle. ... Such tricky cases are always associated with a tight clustering of groups sitting next to each other, i.e. when the separation between spots of different groups is equal or less than the dimension of each group. ..." A comparison of an SDO "white light" image with a magnetogram (14 April, 05:12UT) reveals the magnetically very complex situation (see Note 2).



SILSO also comments that "... As splitting can make a large difference in the sunspot number, the choice of splitting can considerably raise the level of the sunspot index. This is reflected by the steep rise of the estimated international sunspot number (EISN) over the past 2 days, as can be seen in the graph underneath. However, as this involves only a few cases per cycle, which have an influence over less than 13 days, the impact is limited with respect to the overall envelope of the solar cycle."



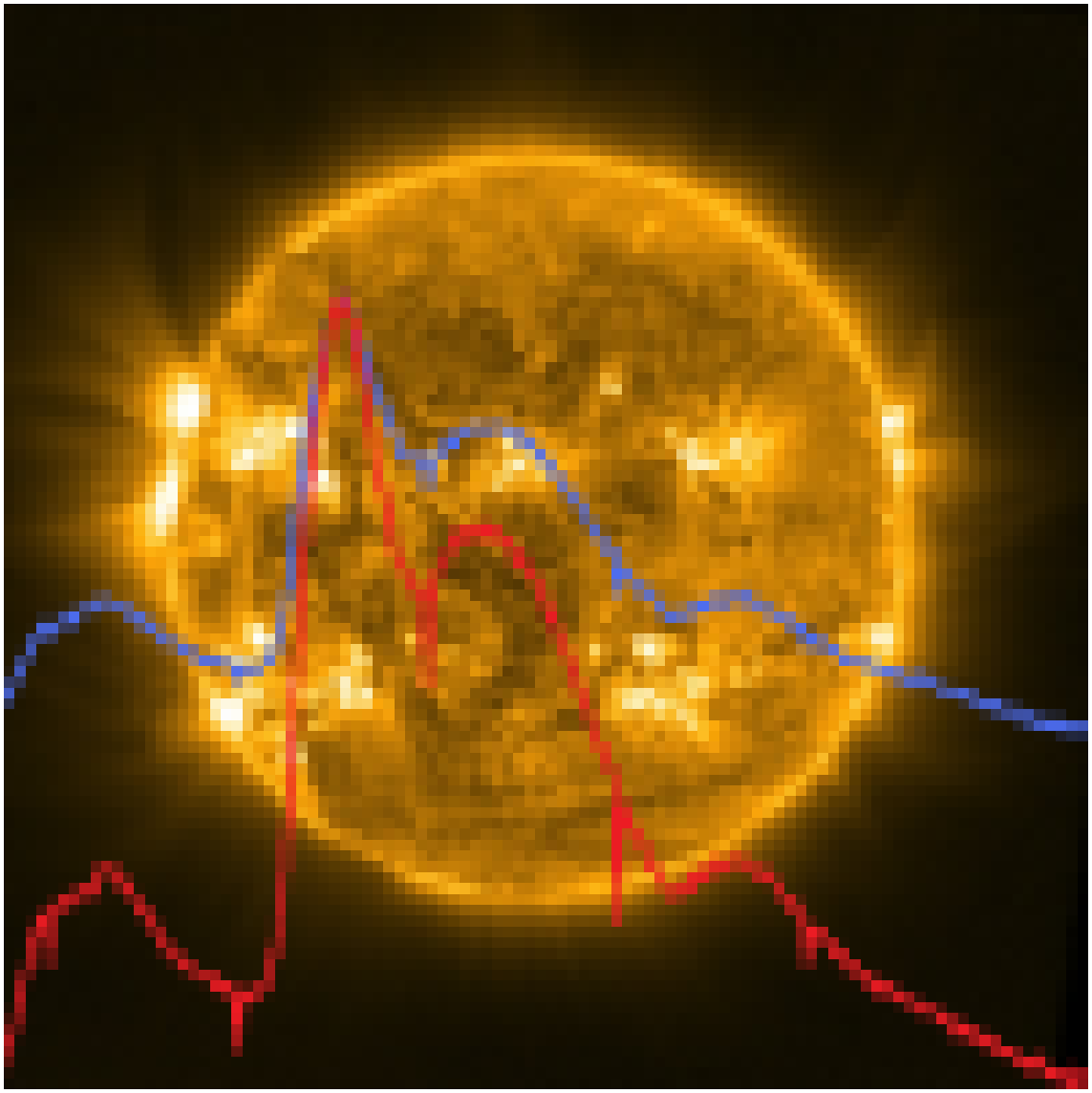
Note 1: Never mind the annotations on the drawings. These concern sunspot group classifications, number of sunspots, specific group numbers, location of the sunspot group, and specific magnetic information on the sunspots.

Note 2: Solar observers are not allowed to use magnetograms when they are splitting or counting sunspot groups. That way, their obtained sunspot numbers remain comparable to those from let's say prior to 1900, when no such magnetic observations were available. Of course, magnetograms can be used when it comes to magnetic classifications or solar flare predictions.

Credits - Data and imagery were taken from NOAA (http://www.swpc.noaa.gov/products/solar-region-summary), ASSA (http://www.spaceweather.go.kr/assa), USET (http://www.sidc.be/uset/), Catania (http://web.ct.astro.it/sun/draw.jpg), Kanzelhöhe (http://cesar.kso.ac.at/), STAR (http://www.solen.info/solar/index.html), Mount Wilson (http://obs.astro.ucla.edu/images/cur_drw.jpg), Debrecen (http://fenyi.solarobs.unideb.hu/DPD/), SDO (http://sdo.gsfc.nasa.gov/) and SILSO (http://sidc.oma.be/silso/).

2. PROBA2 needs you

Sixth Call for PROBA2 Guest Investigators



The PROBA2 PI-team welcomes research proposals for the sixth round of its Guest Investigator program for research based on SWAP and LYRA data analysis by scientists outside the SWAP and LYRA PI-teams. We encourage in particular early-career post-docs and PhD students to apply, although more senior guest investigators' proposals are also welcome. In this round we anticipate funding for around six guest investigators or teams who will visit the PROBA2 Science Center at the Royal Observatory of Belgium, in Brussels, between August 2015 and April 2016.

Selected proposers will be invited to spend a few weeks with the PI teams to obtain expert knowledge on the instruments, to participate in the daily commanding of the SWAP and LYRA instruments according to the needs of their data analysis proposal, and to conduct their research. Guest investigators may be reimbursed for travel, accommodation and living expenses up to a maximum of 5000 euro. Limited support to present the results at an international conference (during the visit at P2SC) can also be considered.

During the selection process, special consideration will be given to early-career scientists and PhD students, collaborative research teams with members from more than one research institute (funding above the 5000 euro level may be approved for such teams), and to proposals addressing research topics to which SWAP and LYRA are particularly well-suited.

More details about the application process can be found here:

http://proba2.oma.be/SixthGICall

or by emailing: swap_lyra@oma.be

Deadline: Proposals must be received by May 31, 2015

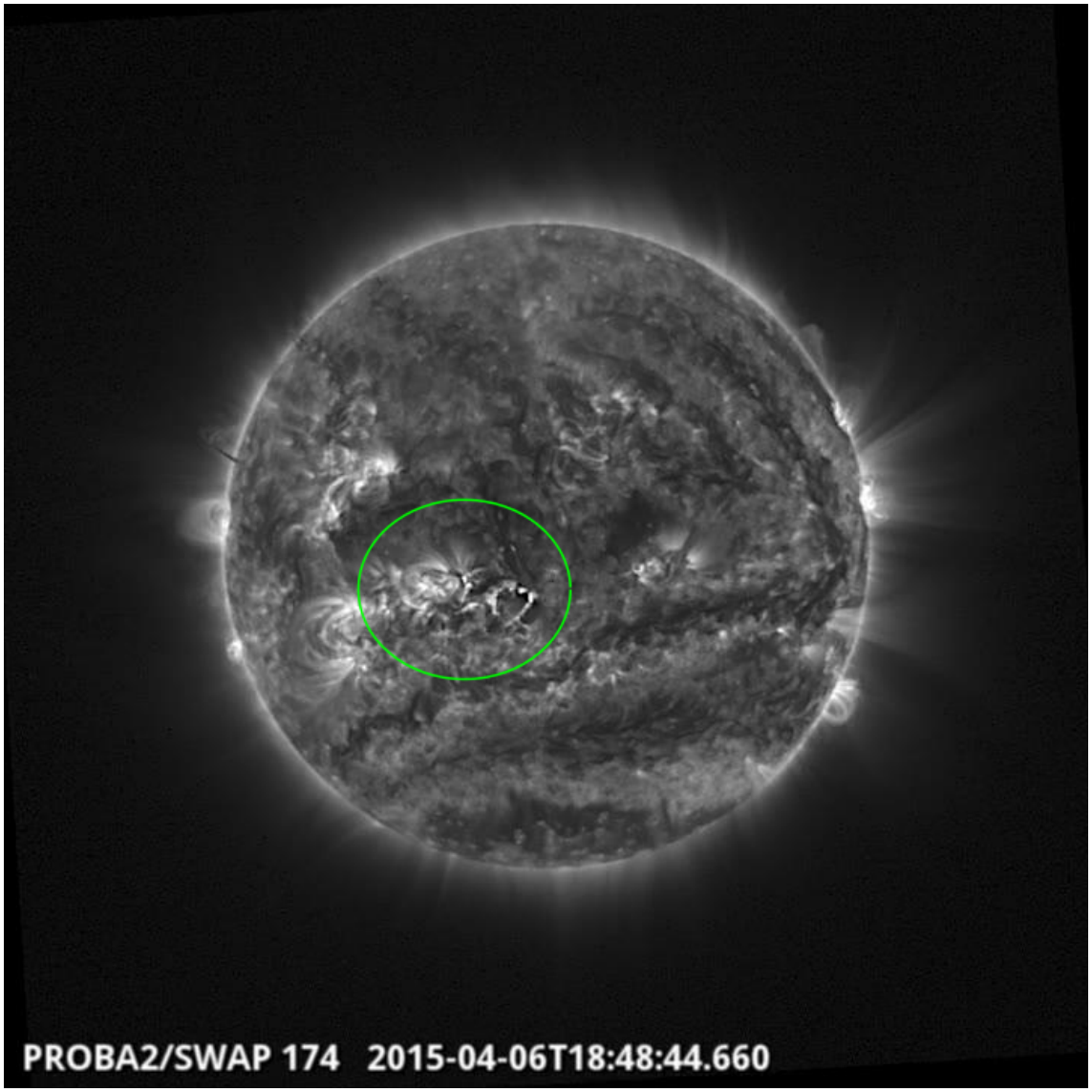
The PROBA2 team

3. PROBA2 Observations (6 Apr 2015 - 12 Apr 2015)

Solar Activity

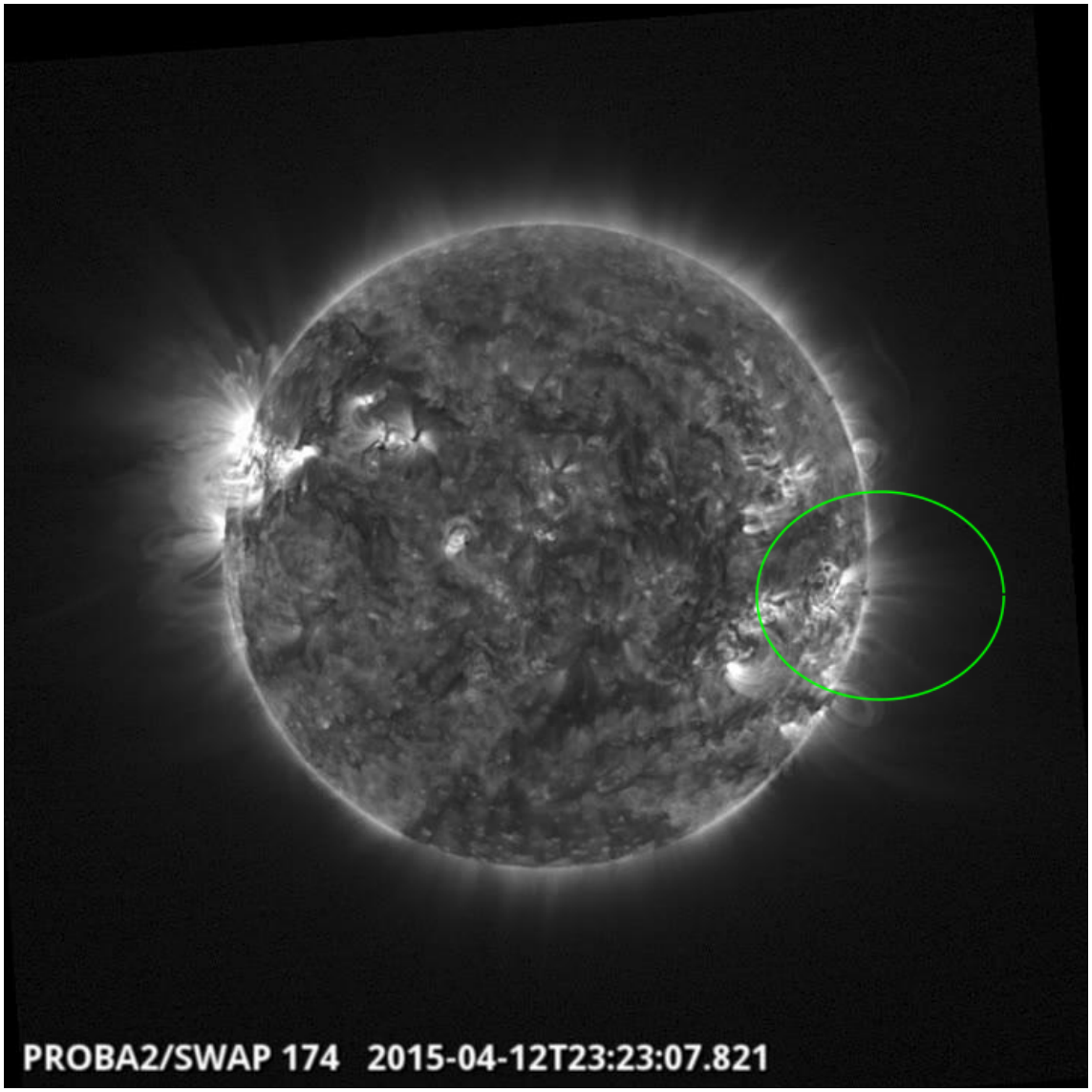
Solar flare activity fluctuated between low and moderate during the week.
In order to view the activity of this week in more detail, we suggest to go to the following website from which all the daily (normal and difference) movies can be accessed:
http://proba2.oma.be/ssa
This page also lists the recorded flaring events.
A weekly overview movie can be found here (SWAP week 263).
http://proba2.oma.be/swap/data/mpg/movies/weekly_movies/weekly_movie_2015_04_06.mp4
Details about some of this week's events, can be found further below.

Monday Apr 06



There was an eruption located close to disk centre @ 18:48 UT See the above SWAP image.
Find a movie of the events here (SWAP movie)
http://proba2.oma.be/swap/data/mpg/movies/20150406_swap_movie.mp4

Sunday Apr 12

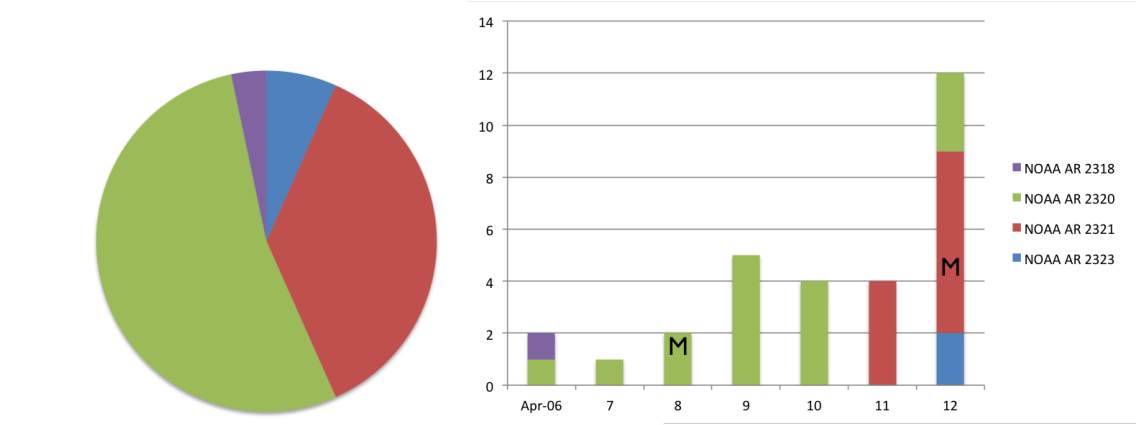


There was an eruption on the West limb @ 23:23 See the above SWAP image.
Find a movie of the events here (SWAP movie)
http://proba2.oma.be/swap/data/mpg/movies/20150412_swap_movie.mp4

4. Review of solar activity

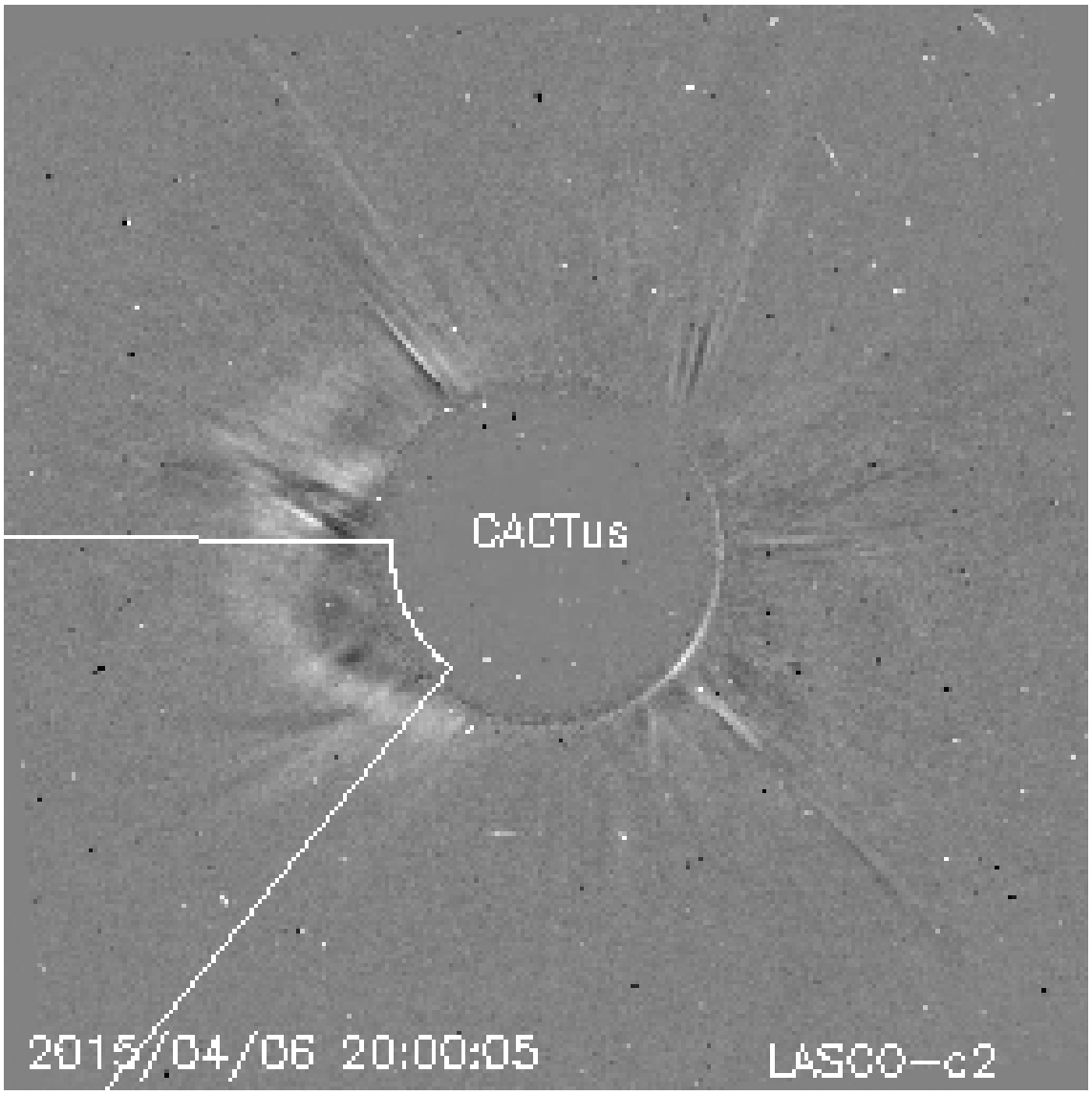
A total of 28 C flares and 2 M flares were observed during the week. The week was kicked-off by NOAA AR 2318. This active region was further on very quiet. Beta-delta region NOAA AR 2320 took over duty producing twelve C-flares and one M-flare from April 6 to 10. On April 11, beta-gamma region AR 2321 produced four C flares. On April 12, AR 2320 continued with C-flares as in the previous days together with AR 2321 which even released an M-flare. Beta region AR 2323 joined the club of C-flaring regions that day.

Distribution of >B flares, April 6 – 12, 2015



The left chart gives an overview of the total number of flares per NOAA AR region for the indicated week. The right chart gives an overview of the flaring activity per NOAA AR per day.

AR 2320 released a C3.0 flare peaking at 19:06 UT on April 6, which was associated to a dimming, an EUV wave, a CME and a Type II radio burst. The CME was first observed by LASCO C2 at 19:24 UT and had an angular extent of about 140 degrees. The plane-of-sky speed derived by CACTUS was 339 km/s, while the Type II burst corresponds to a speed of 691 km/s.



5. Noticeable Solar Events (6 Apr 2015 - 12 Apr 2015)

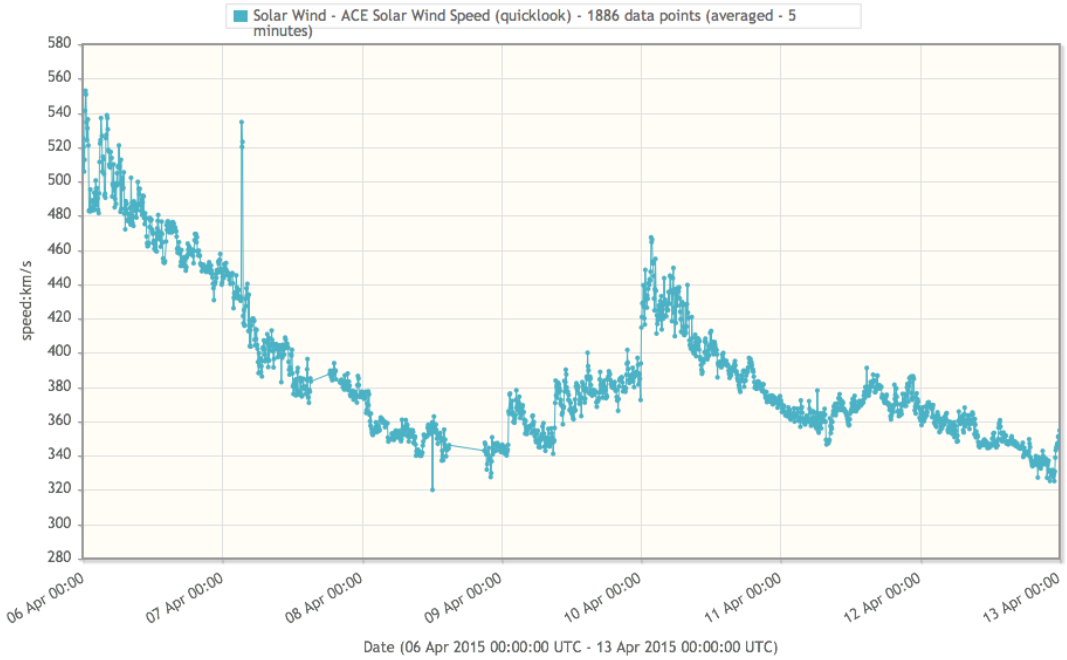
DAY	BEGIN	MAX	END	LOC	XRAY	OP	10CM	TYPE	Cat	NOAA
08	1437	1443	1447	S14W4	M1.4	1B	110	III/1	22	2320
12	0851	0950	1044	N13E62	M1.1	SF	160	V/2III/2		2321

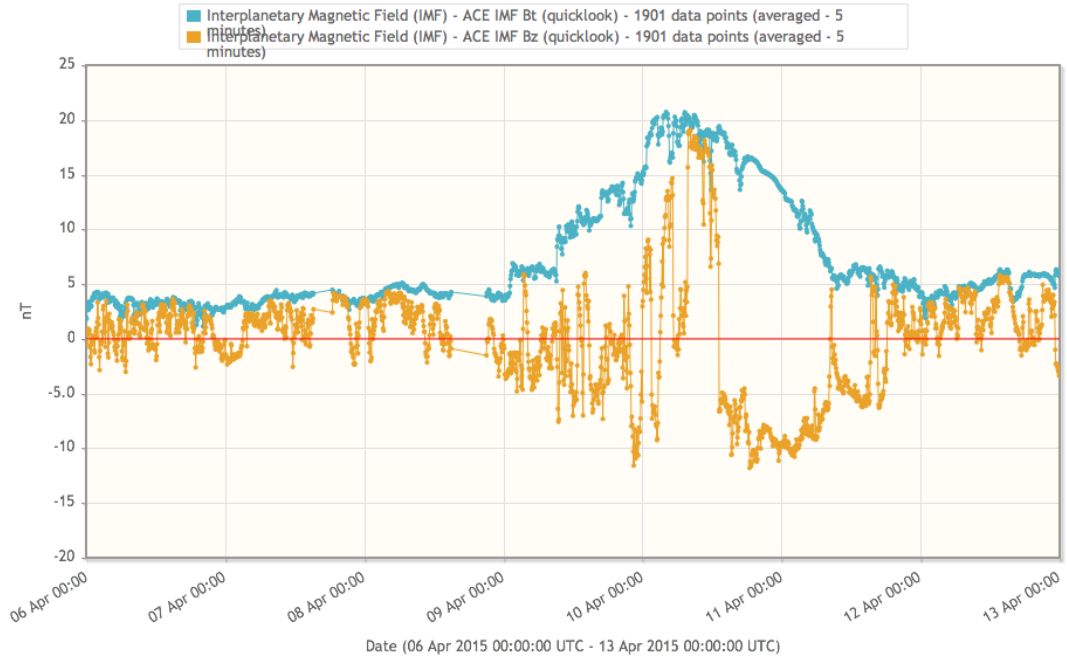
LOC: approximate heliographic location
XRAY: X-ray flare class
OP: optical flare class
10CM: peak 10 cm radio flux
TYPE: radio burst type
Cat: Catania sunspot group number
NOAA: NOAA active region number

6. Review of geomagnetic activity

The solar wind speed observed by ACE gradually decreased from about 610 to 340 km/s from April 6 to 8, while the magnitude of the Interplanetary Magnetic Field (IMF) varied between 1 and 6 nT.

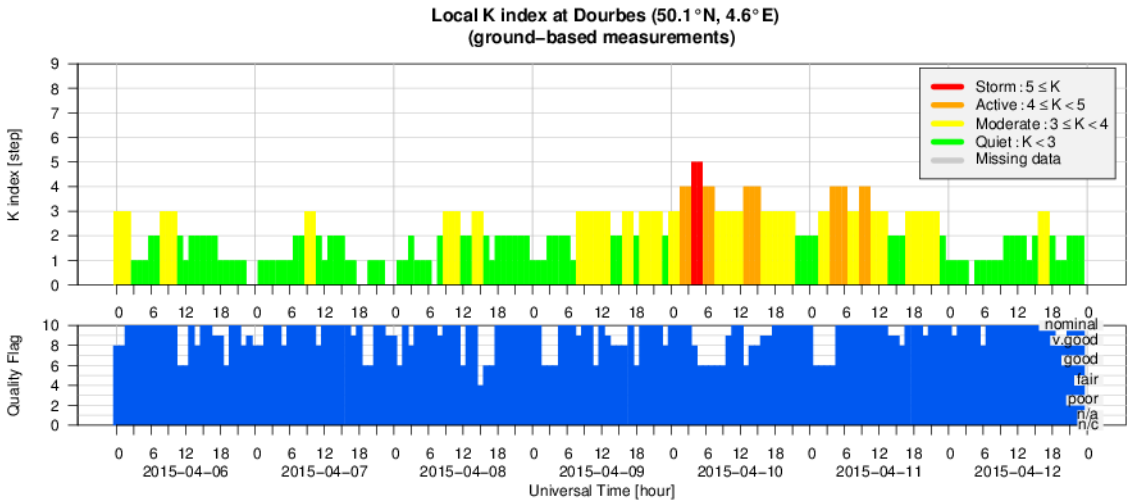
A small disturbance in the solar wind was observed by ACE around 01:10 UT and a second one around 09:12 UT on April 9. These disturbances were possibly linked to the CME of April 6. The solar wind speed increased from about 340 to a maximal value of 490 km/s, while the magnitude of the IMF rose from 6 to 20 nT.
Bz was below -5 nT between 22:00 (on April 9) and 00:00 UT (start April 10), and between 01:30 and 02:45 UT on April 10, with a lowest Bz value of -12 nT.



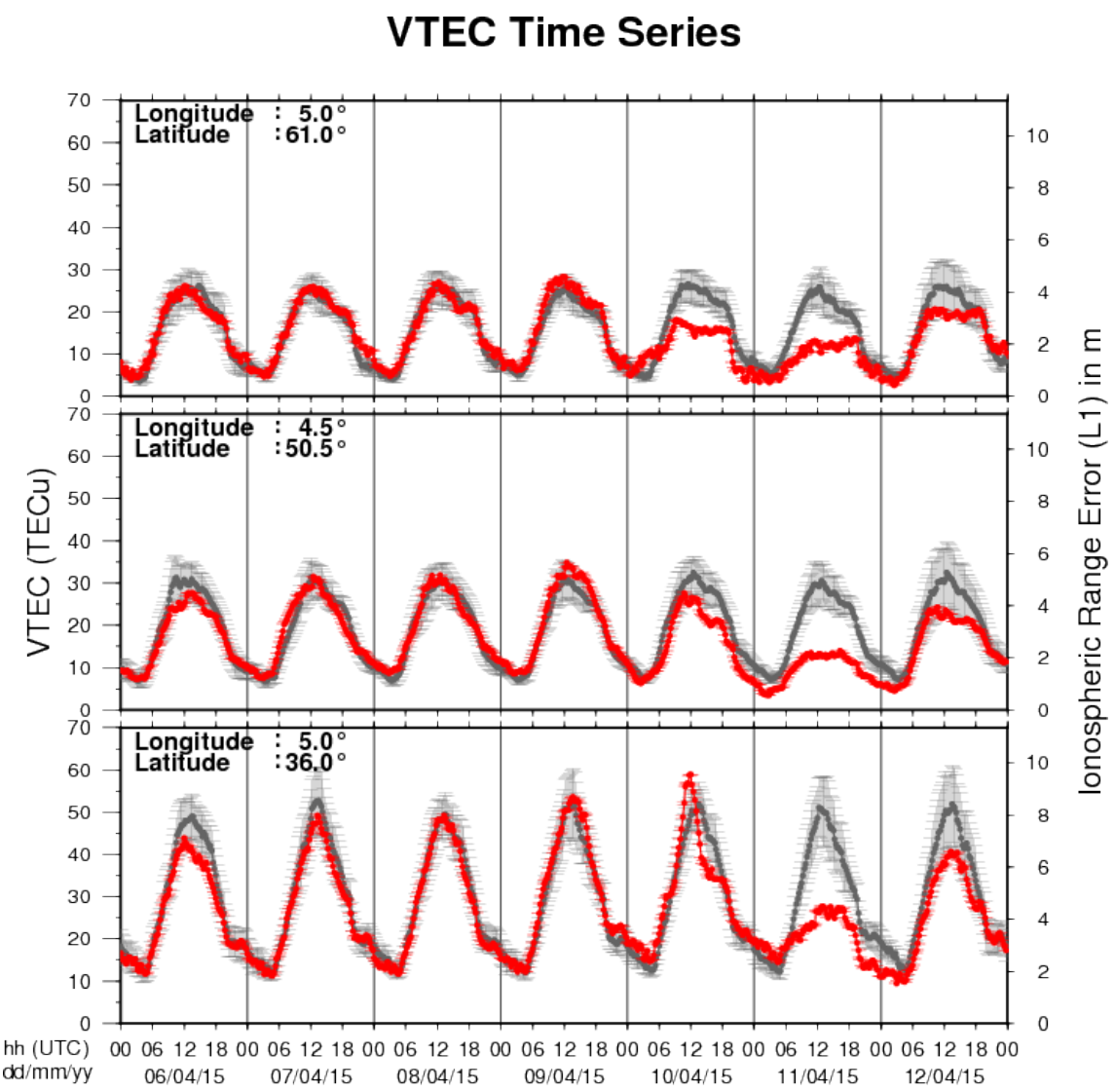


K Dourbes registered a minor geomagnetic storm (K Dourbes equals 5) between 4h and 6h UT, while NOAA Kp reached 5 between 0h and 3h UT; 6 between 3h and 6h UT; and again 5 between 6h and 9h UT. Quiet (K Dourbes less than 4) to active (K Dourbes equals 4) geomagnetic conditions prevailed on April 11, while April 12 saw only quiet geomagnetic levels.

7. Geomagnetic Observations at Dourbes (6 Apr 2015 - 12 Apr 2015)



8. Review of ionospheric activity (6 Apr 2015 - 12 Apr 2015)



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

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

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

9. Future Events

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

VarSITI-SCOSTEP conference in Kazrin and Tel Aviv, Israel

Start : 2015-04-28 - End : 2015-05-01
At present, solar researches and study of active late-type stars achieve a significant advance thanks new observational facilities and progress of the theory. The problems of an evolution of activity at the billion year-time-scales start to be discussed. Superflares were detected on stars younger than the Sun, and the frequency of superflares occurrence was evaluated. The first hypotheses were proposed for evaluation of flare activity level and expected stellar wind fluxes at the epoch when the regular cycle on the Sun was only established. Now it is a time to discuss further directions of perspective investigations which are essential for evaluation of space factor affecting on geo- and bio-sphere in those epochs and space weather forecast.
Website:
http://www.tau.ac.il/institutes/advanced/cosmic/Conferences/2015-VarSITI_Superflares/VarSITI-2015_ISR.html

Space Weather And Plasma in Space in Kazrin and Tel Aviv, Israel

Start : 2015-05-02 - End : 2015-05-08

Science from an Operational Mission: An L5 Consortium Meeting, in London, UK

Start : 2015-05-11 - End : 2015-05-14
Objectives for the meeting include:
* Agreeing the continuing need for an operational mission to L5
* Confirm good science can be achieved from an operational mission
* Discuss the instrumentation to be included within the spacecraft
* Demonstrate to key stakeholders that there is a global interest and need for an Operational Mission to L5
Website:
http://www.metoffice.gov.uk/conference/L5-Consortium-workshop

UKMHD 2015 in Newcastle upon Tyne, UK

Start : 2015-05-14 - End : 2015-05-15
The annual UKMHD meetings are the premier gathering of the magnetohydrodynamics (MHD) community in the UK, held since 1978. The 2015 meeting will be hosted by the Solar Group in the Department of Mathematics and Information Sciences at Northumbria University.
The meeting brings together astrophysical, laboratory and industrial MHD research communities in the UK. It is the forum where recent progress is reported and future directions in the various aspects of MHD are discussed through invited and contributed talks, poster presentations and scheduled discussion sessions.
Invited speakers are drawn from different areas of MHD to celebrate the breadth of applications in the UK, and this year include Professor Alan Hood (University of St Andrews), Dr Andrew Hillier (DAMTP, Cambridge University), Dr Joanne Mason (Exeter University) and Dr Ken McClements (UK Atomic Energy Authority, Culham).
Website:
https://sites.google.com/site/ukmhd2015/home

URSI AT-RASC 2015 in Gran Canaria, Spain

Start : 2015-05-18 - End : 2015-05-22
URSI AT-RASC 2015 will be the first edition of the newly established triennial URSI Atlantic Radio Science Conference as one of the URSI Flagship Conferences. AT-RASC 2015 will have an open scientific program composed of submitted papers within the domains covered by all ten Commissions of URSI.
Website: http://www.at-rasc.com/

Heliospheric Imaging - A new era of space science and space weather observations in GÃ¶ttingen, Germany

Start : 2015-05-19 - End : 2015-05-22
The HELCATS project (see http://www.helcats-fp7.eu/) is providing revolutionary new insights into solar wind structure through combining the comprehensive analysis of heliospheric imaging observations from the NASA STEREO spacecraft, in concert with associated remote-sensing and in-situ measurements, with a thorough assessment of appropriate techniques and models. The project recognises that the advent of wide-angle imaging of the inner heliosphere has revolutionised the study of transient and quasi-stationary structures in the solar wind, in particular Coronal Mass Ejections (CMEs) and Co-rotating Interaction Regions (CIRs). Prior to the development of wide-angle imaging of the inner heliosphere, signatures of such solar wind features could only be observed within a few solar radii of the Sun, and in the vicinity of a few near-Earth and interplanetary probes making in-situ measurements of the solar wind. Heliospheric imaging has, for the first time, filled that vast and crucial observational gap.
We will debate, in particular, the emotive issue of how we associate CMEs with related phenomena observed, for example, on the Sun or in-situ. How do we define (without bias and the need for assumptions such as the relationship between flares and CMEs), a standard set of 'rules', both temporal and spatial, for making such associations? Such standards are crucial when forward and backward-projecting data.
Website:
http://www.affects-fp7.eu/helcats-meeting/

MHD waves and instabilities in the solar atmosphere in Budapest, Hungary

Start : 2015-05-25 - End : 2015-05-29
25-27 May 2015: BUKS 2015 - MHD waves: Observational aspects from ground to space - MHD waves: Theory - where are we? - MHD instabilities
27-28 May 2015: Ruderman Honorary meeting - Theory of linear MHD waves - MHD waves instabilities - Non-linear waves in plasmas
29 May 2015: Joint BUKS/Ruderman's conferences excursion - Boat excursion to Szentendre, Visegrad and Esztergom
Website:
http://swat.group.shef.ac.uk/Conferences/BUKS_2015/index.html

Solar Influences on the Magnetosphere, Ionosphere and Atmosphere in Sunny Beach, Bulgaria

Start : 2015-06-01 - End : 2015-06-05
Check the website for more information.
Website:
http://ws-sozopol.stil.bas.bg/

Los Alamos Space Weather Summer School, in Los Alamos, NM, USA

Start : 2015-06-01 - End : 2015-07-24
The Space Weather Summer School at Los Alamos National Laboratory, established in 2011 under the founding Director Josef Koller, is 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 and supported by a number or organizations at LANL. This year our top sponsors include the Los Alamos Institute of Geophysics, Planetary Physics and Signatures (IGPPS) and the Laboratory Directed Research and Development Office (LDRD). The summer school brings together top space science students with internationally recognized researchers at LANL in an educational and collaborative atmosphere.
Website:
http://www.swx-school.lanl.gov/

RadioSun4 Workshop & Summer School in Irkutsk, Russia

Start : 2015-06-08 - End : 2015-06-12
The RadioSun Workshop and Summer School 2015 is the fourth international academic seminar supported by the International Research Staff Exchange Scheme of the Seventh Fromework Programme of the European Union (FP7-IRSES-295272-RADIOSUN). The aims of this project are to establish close research interaction and collaboration between the key EU and non-EU research groups involved in the research of the Sun in the radio band; qualitatively advance our knowledge of the physical processes operating in the solar atmosphere, the basic mechanisms responsible for its evolution and dynamics and its effect on the Earth; and provide younger researchers with extensive training in relevant research techniques and with universal transfer.
Website:
http://www2.warwick.ac.uk/fac/sci/physics/staff/research/davidpascoe/radiosun

Solar dynamo frontier workshop in Boulder, CO (USA)

Start : 2015-06-09 - End : 2015-06-12
The last five years have seen substantial progress in our understanding of the solar dynamo, fueled by continuing advances in observations and modeling. With the launch of NASA's Solar Dynamics Observatory (SDO) in 2010 came an unprecedented window on the evolving magnetic topology of the Sun, highlighting its intricate 3D structure and global connectivity. The Helioseismic Magnetic Imager (HMI) instrument on SDO in particular has provided potentially transformative yet enigmatic insights into the internal dynamics of the solar convection zone that underlie the dynamo. Attempts to detect subsurface convective motions from helioseismic inversions have yielded only upper limits on the large-scale convective amplitude, challenging our understanding of global solar convection. Yet, potential signatures of giant cells have been detected in photospheric Dopplergrams. Estimates of the meridional flow from HMI and complementary instruments (SOHO/MDI and GONG) have been equally tantalizing and enigmatic. Several disparate techniques, including local and global helioseismic inversions and correlation tracking of surface features, have yielded evidence of a multi-cellular meridional flow but they differ on the detailed flow structure and amplitude. This multi-cellular meridional flow has potentially profound implications for flux-transport dynamo models that previously assumed a very different structure with a single circulation cell per hemisphere.
Website:
https://www2.hao.ucar.edu/Workshop/Solar-Dynamo-Frontiers

National Astronomy Meeting 2015 in Llandudno, UK

Start : 2015-07-05 - End : 2015-07-09
We would like to invite you to submit contributed abstracts to the parallel session "The science of space weather: progressing our understanding" at the 2015 UK National Astronomy Meeting from 5-9 July (http://nam2015.org). The abstract-submission deadline is 1 April 2015. Observers, modellers, and theoreticians are all welcome. We also welcome participation from end users interested in how the science of space weather is advancing.
The science of space weather: progressing our understanding
The goal of this session is to provide an opportunity to discuss the scientific research that underpins space weather and how a new generation of operational space weather measurements could best be utilised to further progress our understanding. Specific topics are likely to include 1) gaps in our understanding of space weather and how to resolve them, 2) new space and ground-based data that

are needed, 3) new science that can be carried out with the operational space weather measurements being planned today.
This session is motivated by the fact that the UK has a strong heritage in the science of the coupled Sun-Earth system, from both an observational and theoretical perspective. This research is increasingly being applied to the area of space weather monitoring and forecasting, a topic that is now nationally recognised as an important natural hazard for the UK (highly ranked in the National Risk Register) and the subsequent opening of the Met Office Space Weather Operations Centre in 2014.
Up until now, both the research and the space weather monitoring and forecasting have utilised mainly data from instrumentation (both space- and ground-based) designed to answer pertinent scientific questions, though some operational instruments (e.g. the X-ray and particle detectors on NOAA's GOES spacecraft) are also widely exploited for scientific use. However, there is now growing interest in deploying more instruments, in space and on the ground, designed to support operational space weather services. Such operational measurements can facilitate new science, as demonstrated by the extensive research use of GOES data, but it is important that the limitations imposed by operational needs are discussed.
Website: http://nam2015.org/

CISM Space Weather Summer School in Boulder, CO, USA

Start : 2015-07-13 - End : 2015-07-24
The CISM Summer School is intended to give students a comprehensive immersion in the subject of space weather: what it is, what it does, and what can be done about it. Space weather is many things: beautiful when seen through the eyes of a sun-viewing telescope, fascinating when studied for its alien worlds of magnetic structures and phenomena, awesome when witnessed as a solar eruption or auroral storm, and devastating to the users of services it disrupts. Space weather links the Sun, the Earth, and the space in between in a branching chain of consequences. Weather systems on the Sun can spawn interplanetary storms of colossal size and energy that envelop the whole planet in electrical hurricanes. Such storms attack high-tech, complex, and expensive technological systems that provide much of the infrastructure that allows modern society to function.
Website:
https://www2.hao.ucar.edu/Events/2015-CISM-Summer-School

Loops7: Heating of the Magnetically Closed Corona in Cambridge, UK

Start : 2015-07-21 - End : 2015-07-23
The conference will review past and recent achievements, as well as future challenges in the field of solar coronal loop physics.
Website:
http://www.damtp.cam.ac.uk/user/astro/cl7/index.html

Heliophysics Summer Schoool 2015: Seasons in Space: Cycles of variability of Sun-Planet systems, in Boulder, CO, USA

Start : 2015-07-28 - End : 2015-08-04
Heliophysics is all of the science common to the field of the Sun-Earth connections. This fast-developing field of research covers many traditional sub-disciplines of space physics, astrophysics, and climate studies. The NASA Living with a Star program, with its focus on the basic science underlying all aspects of space weather, acts as a catalyst to bring the many research disciplines together to deepen our understanding of the system of systems formed by the Sun-Earth connection.
Website:
http://www.heliophysics.ucar.edu/

34th International Cosmic Ray Conference (ICRC) in The Hague, The Netherlands

Start : 2015-07-30 - End : 2015-08-06

The 34th International Cosmic Ray Conference (ICRC) will be held from July 30 to August 6, 2015, in The Hague, The Netherlands. It is an important and large conference in the field of Astroparticle Physics. The ICRC covers: cosmic-ray physics, solar and heliospheric physics, gamma-ray astronomy, neutrino astronomy, and dark matter physics.
Website: http://icrc2015.nl

SOLARNET III / HELAS VII: The Sun, the stars, and solar-stellar relations, in Freiburg (Germany)

Start : 2015-08-31 - End : 2015-09-04
The purpose of this conference is to discuss the latest questions and results in solar and stellar physics. Solar and stellar seismology will be one particular focus but contributions on all aspects of solar-stellar relations will be welcome. We aim to establish links and synergies between the day- and night-time fields of astrophysics.
Website:
http://www.iac.es/congreso/solarnet-3meeting/

1st Joint Solar Probe Plus-Solar Orbiter Workshop, in Florence (Italy)

Start : 2015-09-02 - End : 2015-09-04
The Workshop will address how the joint exploration of the corona and inner heliosphere will lead to advances in our understanding of coronal heating and solar wind acceleration, the magnetic and plasma structure of the heliosphere, and the acceleration of energetic particles at shocks and flares. The workshop will inspire research that will make use of SO and SPP observations within the context of the NASA Heliophysics Observatory System and identify key areas for preparatory research. Synergistic observations from other ground based and space based assets will also be addressed.
Website:
http://www.solarprobeplus.org/2015/

International Workshop and School on Solar System plasma in Mamaia, Romania

Start : 2015-09-06 - End : 2015-09-13
The International Workshop and School on solar system plasma turbulence, intermittency and multifractals (STORM 2015) focus on the quantitative experimental, theoretical and numerical investigation of turbulence, intermittency, fractal/multifractal features, waves and coherent structures interaction, criticality and non-linear cross-scale coupling. As widely documented by in-situ satellite measurements and remote or ground-based observations, turbulence, intermittency and dynamical complexity are quite ubiquitous processes observed in the dynamics of solar, planetary and interplanetary plasmas, as well as in the dynamical evolution of proxies linked to magnetospheric and ionospheric variability.
Unfolding the spatio-temporal structure of magnetic field and plasma fluctuations from experimental observations and numerical simulations provides further insight on the structure of plasma turbulence and intermittency. On the theoretical side, the understanding of such complex dynamical behavior cannot be simply surmised from the basic fluid/kinetic equations, but instead requires novel theoretical, experimental and data analysis approaches. The workshop is a forum to present and discuss latest results in these fields. The purpose of the school is to give to a young audience of Graduate, Ph.D. students, and postdoc scientists, which ideally represents the next generation of scholars in the physics of space plasmas, an overall view of both theoretical and data analysis tools apt to fully exploit unique and unprecedented observations that will be provided by future upcoming mission like Solar Orbiter and Solar Probe Plus.
Website:
http://www.spacescience.ro/conferences/storm2015/

RADECS-2015 in Moscow, Russia

Start : 2015-09-14 - End : 2015-09-18

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 Exhibition, and one day tutorial or "short course" on radiation effects. The technical program includes oral and poster sessions and round tables.
Website:
http://www.radecs2015.org/

Heliospheric physical processes for understanding Solar-Terrestrial Relations in L'Aquila, Italie

Start : 2015-09-21 - End : 2015-09-26
A good understanding of solar-terrestrial processes is fundamental to modelling the influence of solar variability on the Earth's environment and climate. To capture all the physical aspects of the solar wind-magnetosphere-ionosphere-atmosphere interaction, and also the impact of solar variability on climate, the Sun-Earth system has to be studied as a whole. The main purpose of this school is to provide graduate, PhD students and also young post-doc researchers with a global view of the main physical processes by which solar variability affects the Earth's environment. In addition, an overview of different data analysis and methods for describing solar-terrestrial relations will be given. The school will provide a mix of lectures and activities requiring students participation.
Website:
http://www.cifs-isss.org/

Ground-based Solar Observations in the Space Instrumentation Era in Coimbra, Portugal

Start : 2015-10-05 - End : 2015-10-09
This CSPM-2015 scientific meeting will cover various aspects of solar dynamic and magnetic phenomena which are observed over the entire electromagnetic spectrum: white-light, Hα, Ca II, and radio from ground and in a variety of other wavelengths (white light, UV and EUV, and X-rays) from space. Emphasis will also be placed on instrumentation, observing techniques, and solar image processing techniques, as well as theory and modelling through detailed radiative transfer in increasingly realistic MHD models. The long-term (cyclic) evolution of solar magnetism and its consequence for the solar atmosphere, eruptive phenomena, solar irradiation variations, and space weather, will be in focus. Here, special attention will be devoted to the long-term observations made in Coimbra and also to the results of the SPRING / SOLARNET and SCOSTEP VarSITI studies. In particular, the weak solar activity during the current solar maximum will be discussed. Finally, since this meeting is organised around the 90th anniversary of performing the first spectroheliographic observations in Coimbra, a session will be specially dedicated to new solar instruments (both ground-based and space-borne) that will give access to unexplored solar atmospheric features and dynamic phenomena over the coming years.
Website:
http://www.mat.uc.pt/~cspm2015/

Third Remote Sensing of the Inner Heliosphere and Space Weather Applications Workshop in Morelai, Michoacan (Mexico)

Start : 2015-10-19 - End : 2015-10-23
The workshop aims to gather experts from the various fields of remoteÂ sensing observations of the inner heliosphere, including whiteÂ light, EUV, and radio observation, together with modellers in order to tackle key outstanding science and spaceÂ weather operational issues, establish closer working relations, and devise the best ways to move the field forward as a whole. In addition, the science learned from remote Âsensing observations is critical to improving our capabilities of spaceÂ weather forecasting. The workshop 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 subÂcommunities and to officially launch the IPS Common

Data Format v1.0 (IPSCDFv1.0) now in use. It also aims to allow investigations into ways in which we model the inner heliosphere looking at the advantages and disadvantages of the available modelling, updates on present and future remoteÂsensing capabilities, 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. These are critical processes that are key to both Heliophysics science as well as to spaceÂweather operations and forecasting.
Website:
http://www.sciesmex.unam.mx/workshop2015/

2015 Sun-Climate Symposium in Savannah, Georgia, USA

Start : 2015-11-10 - End : 2015-11-13
Observations of the Sun and Earth from space have revolutionized our view and understanding about impacts of solar variability and anthropogenic forcing on Earth climate. For more than three solar cycles since 1978, the total and spectral solar irradiance (TSI and SSI) and global terrestrial atmosphere/surface have been observed continuously, enabling unprecedented quality data for Sun-climate studies. The primary objective of this symposium is to convene climate scientists, solar physicists, and experimentalists together for a better understanding how Earth climate system changes and responds to solar variability.
Website: http://lasp.colorado.edu/home/sorce/news-events/meetings/2015-sun-climate-symposium/

41st COSPAR Scientific Assembly in Istanbul, Turkey

Start : 2016-07-30 - End : 2016-08-07
The 41st COSPAR Scientific Assembly will be held in Istanbul, Turkey from 30 July - 7 August 2016. This Assembly is open to all bona fide scientists.
Website:
https://www.cospar-assembly.org/

10. New documents in the European Space Weather Portal Repository

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

STCE - De verschillende vormen van zonneactiviteit en hun invloed op de mens en zijn technologie

e Zon, Helios, Sol, ... er bestaan vele namen voor die gele bol die dagelijks ons hemelgewelf doorkruist en onze warmte- en lichtbron bij uitstek is. Dankzij satellietwaarnemingen hebben we onze ster leren kennen als een dyna- misch en explosief hemelobject dat aan de basis ligt van het zogenaamde ruimteweer dat een belangrijke impact heeft op onze technologie. Bijdrage aan een editie 'Zonnestormen en hun impact op elektrische netten' van het Revue E tijdschrift - 130ste jaargang - nr 2-2014(juin/juni 2014)
http://www.spaceweather.eu/en/repository/show?id=566

STCE - Earth’s magnetosphere and ionosphere

The Earth’s magnetic field creates a cavity in interplanetary space, called the magnetosphere. Physical processes in this region of space determine how mass and energy from the solar wind reach the ionosphere, the partially ionized upper atmosphere. Magnetosphere and ionosphere are strongly coupled. Together, they modulate the impacts of solar activity on man and technology. This paper presents a brief overview of the magnetosphere-ionosphere system under quiet conditions, followed by a summary of the most important dynamic effects during disturbed conditions. Contribution to the edition 'Zonnestormen en hun impact op elektrische netten' van het Revue E tijdschrift - 130ste jaargang - nr 2-2014(juin/juni 2014)
http://www.spaceweather.eu/en/repository/show?id=567

STCE - The Geomagnetic Field: an Actively Changing Global Phenomenon

The Earth’s magnetic field varies on a wide range of timescales, from long time trends caused by internal processes to rapid fluctuations caused primarily by solar events. Nowadays, the magnetic field is continually being monitored by worldwide networks of observatories. Different indices have been developed to characterise the magnetic activity, and various services exist to alert users in case of a magnetic disturbance. Contribution to the edition 'Zonnestormen en hun impact op elektrische netten' van het Revue E tijdschrift - 130ste jaargang - nr 2-2014(juin/juni 2014)
http://www.spaceweather.eu/en/repository/show?id=568

SOLSPEC - On solar radius measurements during the rising phase of solar cycle 24

Presentation given at the workshop Six Years of SOLAR/SOLSPEC mission on ISS - Achievements and prospects.
http://www.spaceweather.eu/en/repository/show?id=569

SOLSPEC - The COSIR Model and the Solar Cycle 24

Presentation given at the workshop Six Years of SOLAR/SOLSPEC mission on ISS - Achievements and prospects.
http://www.spaceweather.eu/en/repository/show?id=570

SOLSPEC - The future life of SOLAR ISS data, long term preservation and distribution

Presentation given at the workshop Six Years of SOLAR/SOLSPEC mission on ISS - Achievements and prospects.
http://www.spaceweather.eu/en/repository/show?id=571

SOLSPEC - B.USOC SOLAR Operations, Concept and Services

Presentation given at the workshop Six Years of SOLAR/SOLSPEC mission on ISS - Achievements and prospects.
http://www.spaceweather.eu/en/repository/show?id=572

SOLSPEC - General description of SOLAR/SOLSPEC

Presentation given at the workshop Six Years of SOLAR/SOLSPEC mission on ISS - Achievements and prospects.
http://www.spaceweather.eu/en/repository/show?id=573

SOLSPEC - History of the SOLSPEC instrument

Presentation given at the workshop Six Years of SOLAR/SOLSPEC mission on ISS - Achievements and prospects.
http://www.spaceweather.eu/en/repository/show?id=574

SOLSPEC - SOLAR/SOLSPEC IR status

Presentation given at the workshop Six Years of SOLAR/SOLSPEC mission on ISS - Achievements and prospects.
http://www.spaceweather.eu/en/repository/show?id=575

SOLSPEC - SORCE - Spectral Irradiance Monitor

Presentation given at the workshop Six Years of SOLAR/SOLSPEC mission on ISS - Achievements and prospects.
http://www.spaceweather.eu/en/repository/show?id=576

SOLSPEC - Seven years of SOLAR/SOLSPEC on ISS

Presentation given at the workshop Six Years of SOLAR/SOLSPEC mission on ISS - Achievements and prospects.
http://www.spaceweather.eu/en/repository/show?id=577

SOLSPEC - Comparison of SOLSPEC and SORCE SOLSTICE in the Ultraviolet

Presentation given at the workshop Six Years of SOLAR/SOLSPEC mission on ISS - Achievements and prospects.
http://www.spaceweather.eu/en/repository/show?id=578

SOLSPEC - Absolute radiometry, status of our knowledge Sovim on SOLAR_ISS

Presentation given at the workshop Six Years of SOLAR/SOLSPEC mission on ISS - Achievements and prospects.
http://www.spaceweather.eu/en/repository/show?id=579

SOLSPEC - workshop presentation

Presentation given at the workshop Six Years of SOLAR/SOLSPEC mission on ISS - Achievements and prospects.
http://www.spaceweather.eu/en/repository/show?id=582

SOLSPEC - Using SSI to understanding the effect on stratospheric ozone

Presentation given at the workshop Six Years of SOLAR/SOLSPEC mission on ISS - Achievements and prospects.
http://www.spaceweather.eu/en/repository/show?id=580

SOLSPEC - The Future of SSI UV Measurements with the Dual Solar Spectral Irradiance Monitor on the ESA-CAS Small-size Mission SU

Presentation given at the workshop Six Years of SOLAR/SOLSPEC mission on ISS - Achievements and prospects.
http://www.spaceweather.eu/en/repository/show?id=581

SOLSPEC - Impact of the solar rotational cycle on middle atmospheric ozone

Presentation given at the workshop Six Years of SOLAR/SOLSPEC mission on ISS - Achievements and prospects.
http://www.spaceweather.eu/en/repository/show?id=583