

STCE Newsletter

8 Dec 2014 - 14 Dec 2014



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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. PROBA2 Observations (8 Dec 2014 - 14 Dec 2014)

Solar Activity

Solar flare activity fluctuated between low and moderate during the week.

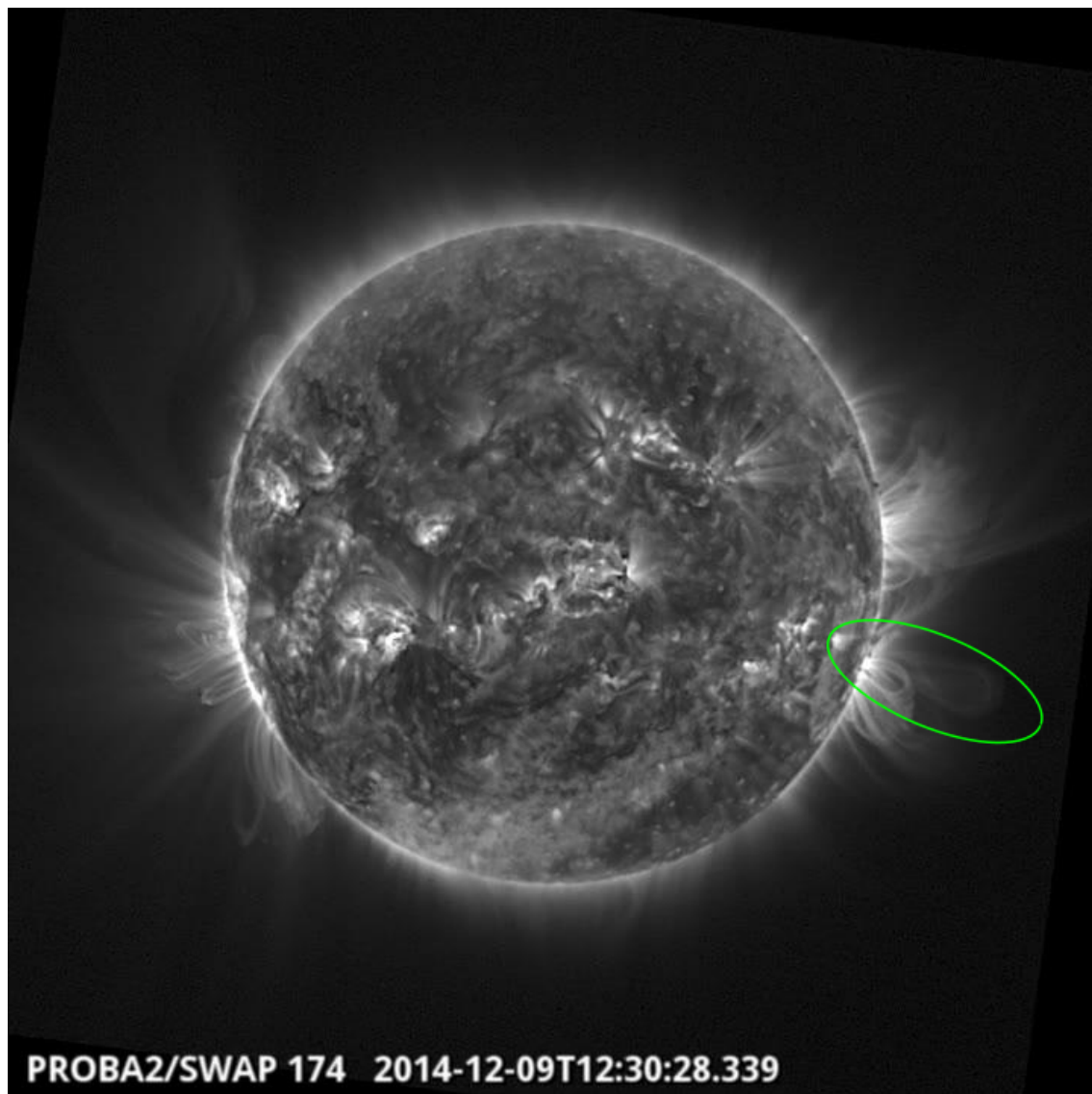
In order to view the activity of this week in more detail, we suggest to go to the following website from which all the daily (normal and difference) movies can be accessed: <http://proba2.oma.be/ssa>
This page also lists the recorded flaring events.

A weekly overview movie can be found here (SWAP week 246).

http://proba2.oma.be/swap/data/mpg/movies/weekly_movies/weekly_movie_2014_12_08.mp4

Details about some of this week's events, can be found further below.

Tuesday Dec 09

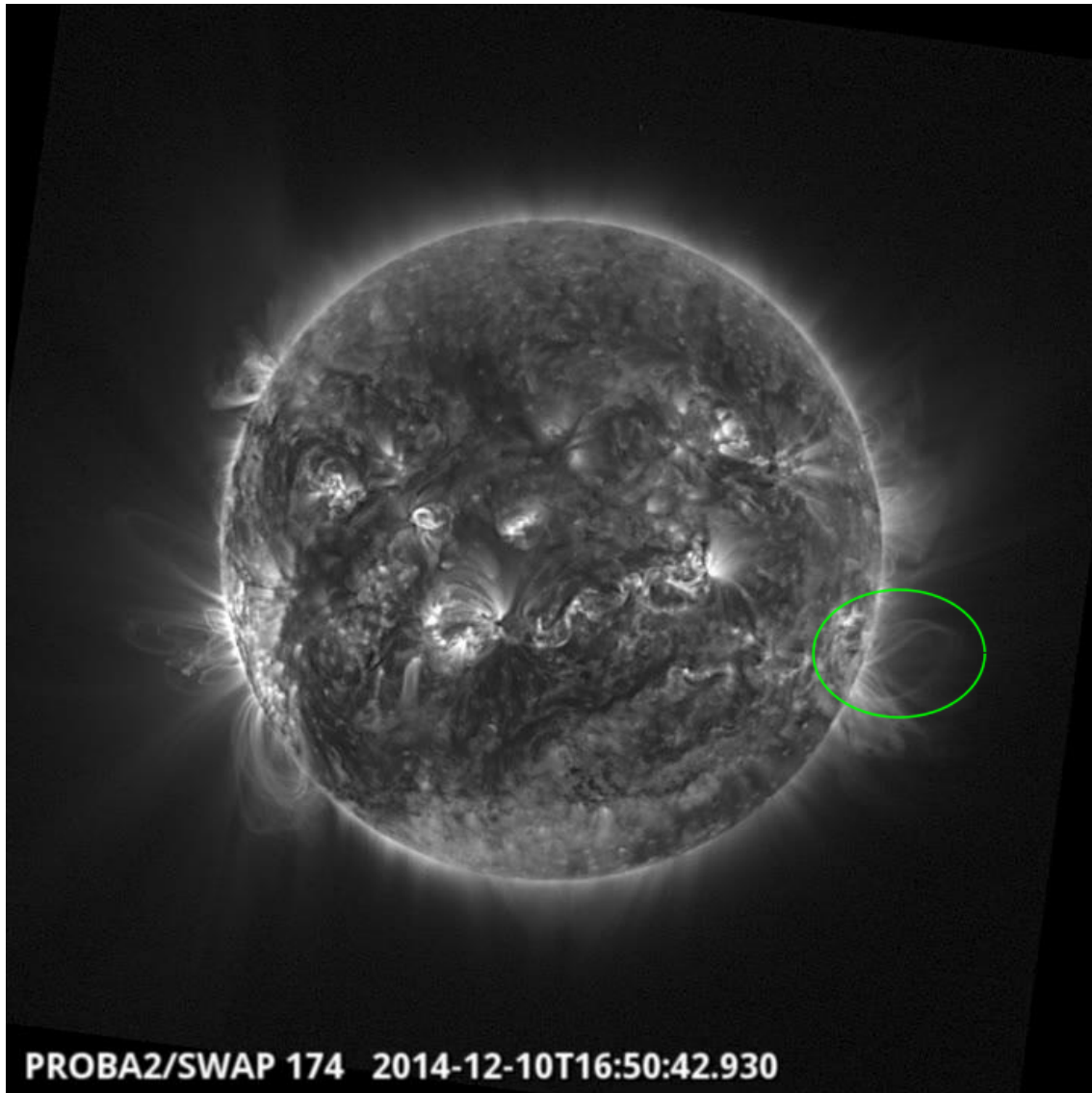


Eruption on west limb @ 12:30 SWAP image

Find a movie of the event here (SWAP movie)

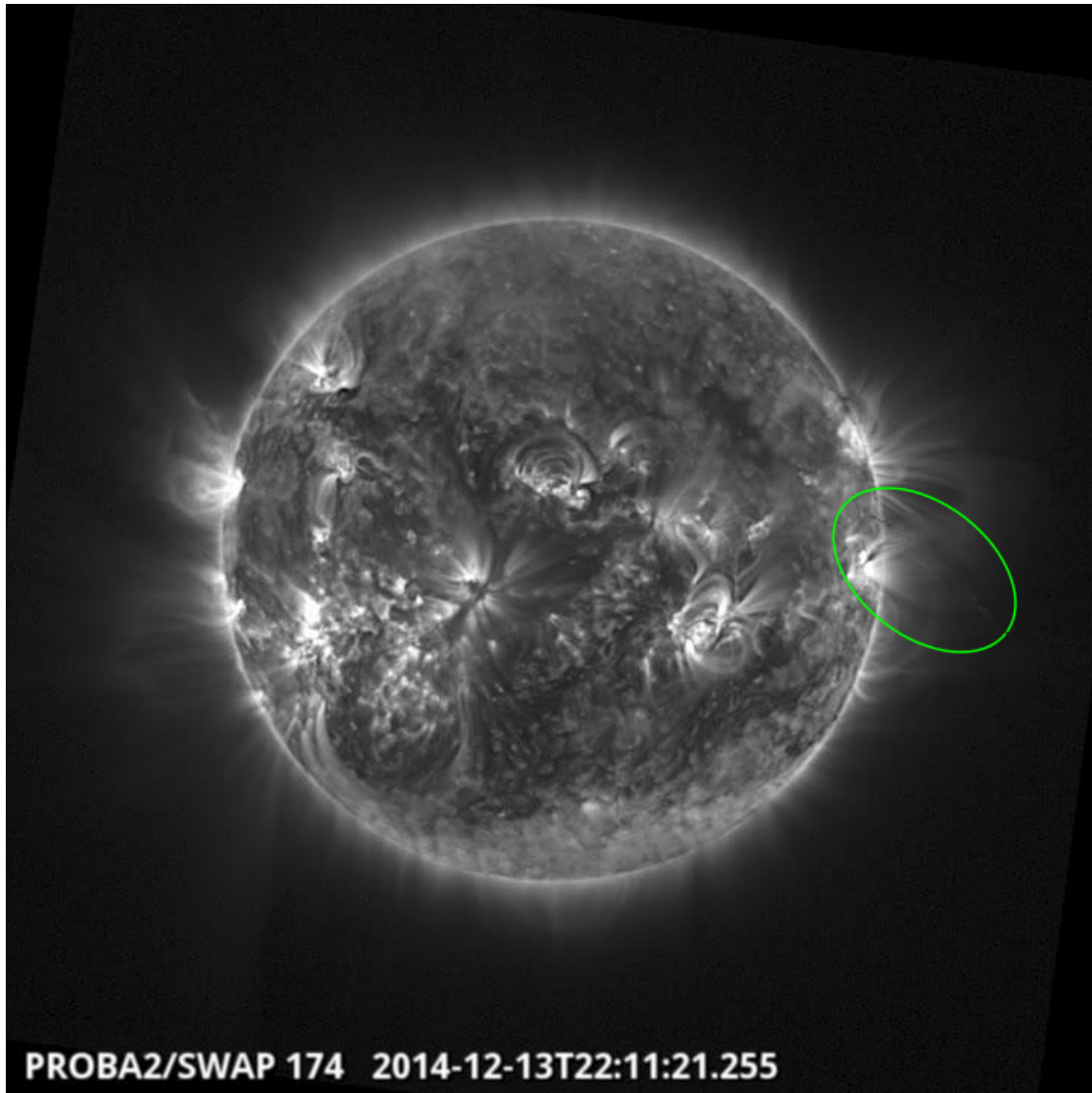
http://proba2.oma.be/swap/data/mpg/movies/20141209_swap_movie.mp4

Wednesday Dec 10



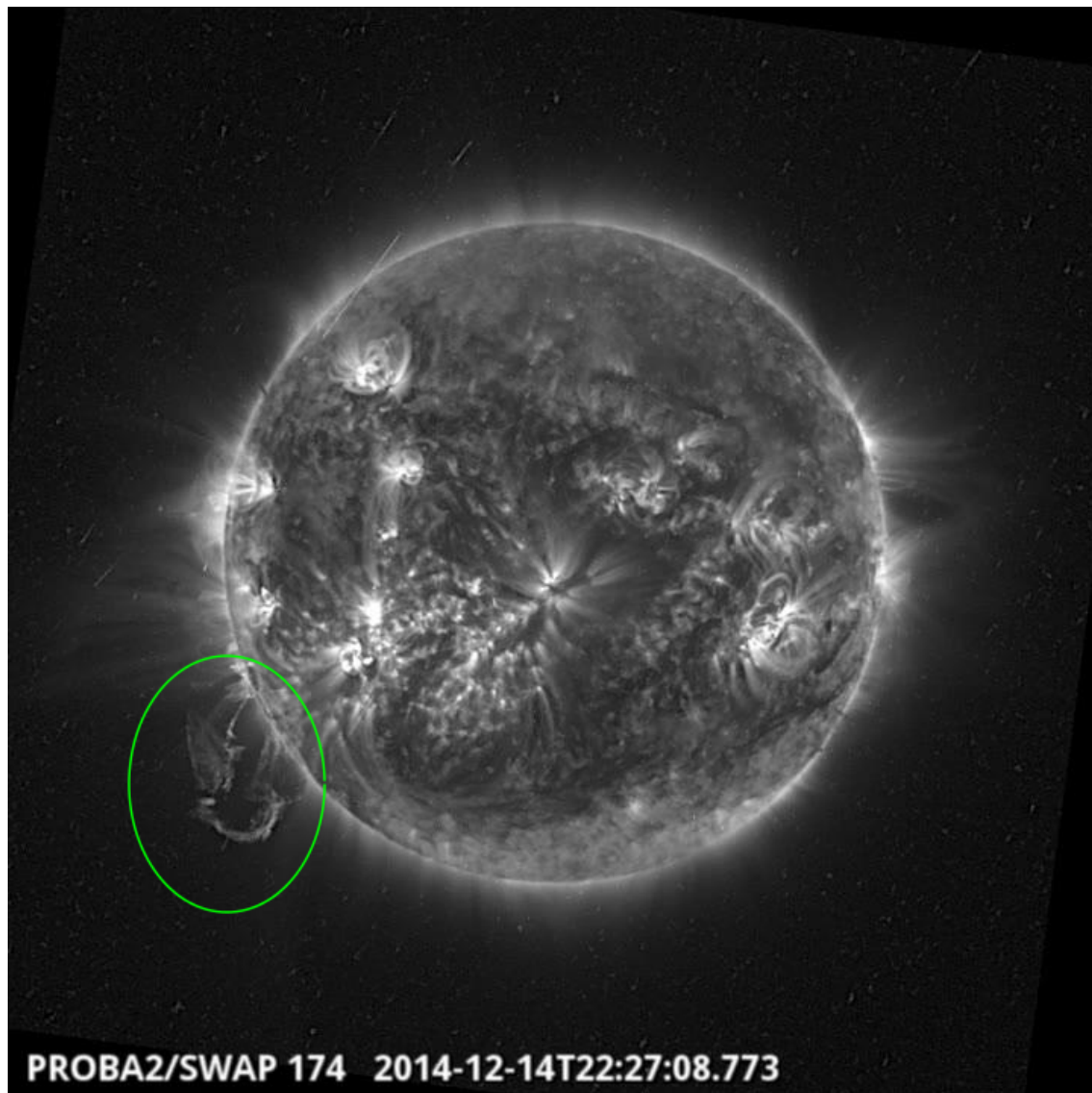
Eruption on the west limb @ 16:50 SWAP image
Find a movie of the event here (SWAP movie)
http://proba2.oma.be/swap/data/mpg/movies/20141210_swap_movie.mp4

Saturday Dec 13



Eruption on the west limb @ 22:11 SWAP image
Find a movie of the event here (SWAP movie)
http://proba2.oma.be/swap/data/mpg/movies/20141213_swap_movie.mp4

Sunday Dec 14



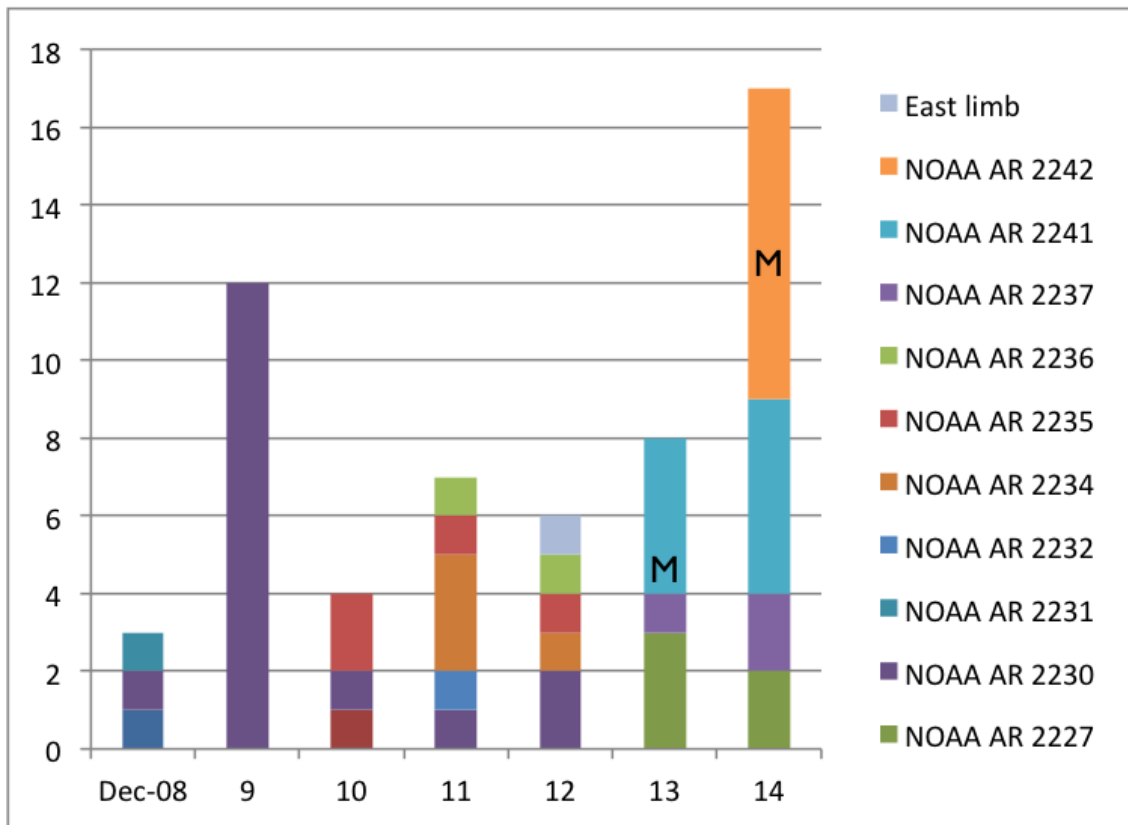
Eruption on the west limb @ 22:27 SWAP image

Find a movie of the event here (SWAP movie)

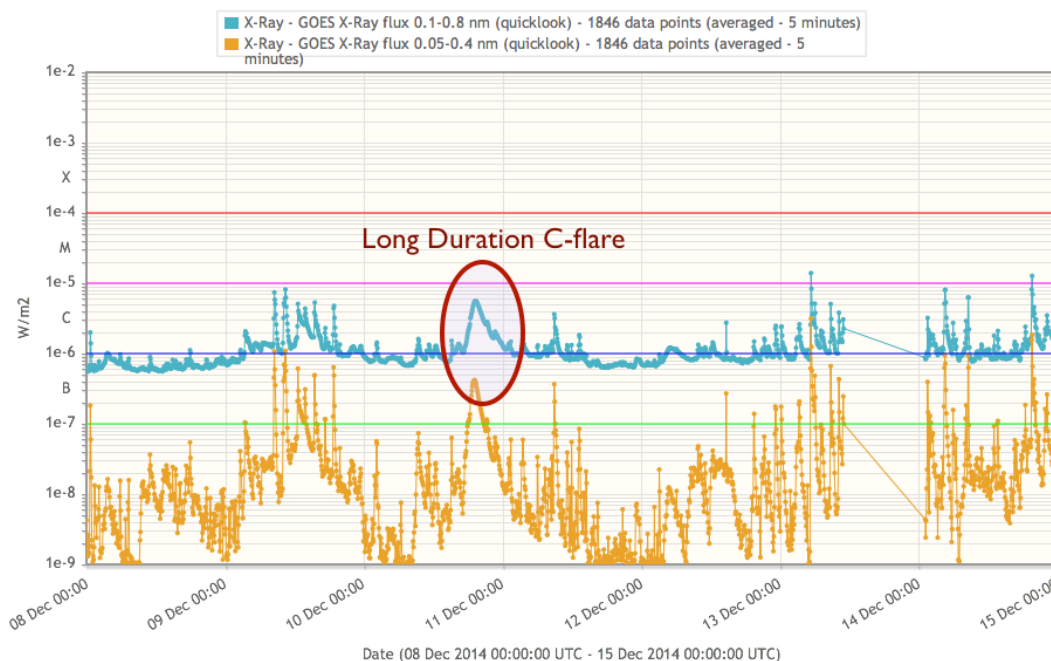
http://proba2.oma.be/swap/data/mpg/movies/20141214_swap_movie.mp4

2. Review of solar activity

Many C-class (55 counted in total) and two M-class flares were observed from December 8 to 14. In the beginning of the week, NOAA 2230 was the main player with 17 C-flares, of which the C8.6 and C8.5 flares on December 9 were most noteworthy. The last two days, NOAA 2241 and 2242 produced the each the most and strongest flares.



The M-class flare (M1.5 on December 13, M1.6 on December 14) originated from NOAA 2241 and 2242 respectively. The M1.6 flare was accompanied by a radio type II burst at 19:29 UT, with a shock speed of 1028 km/s (estimation of Palehua station).



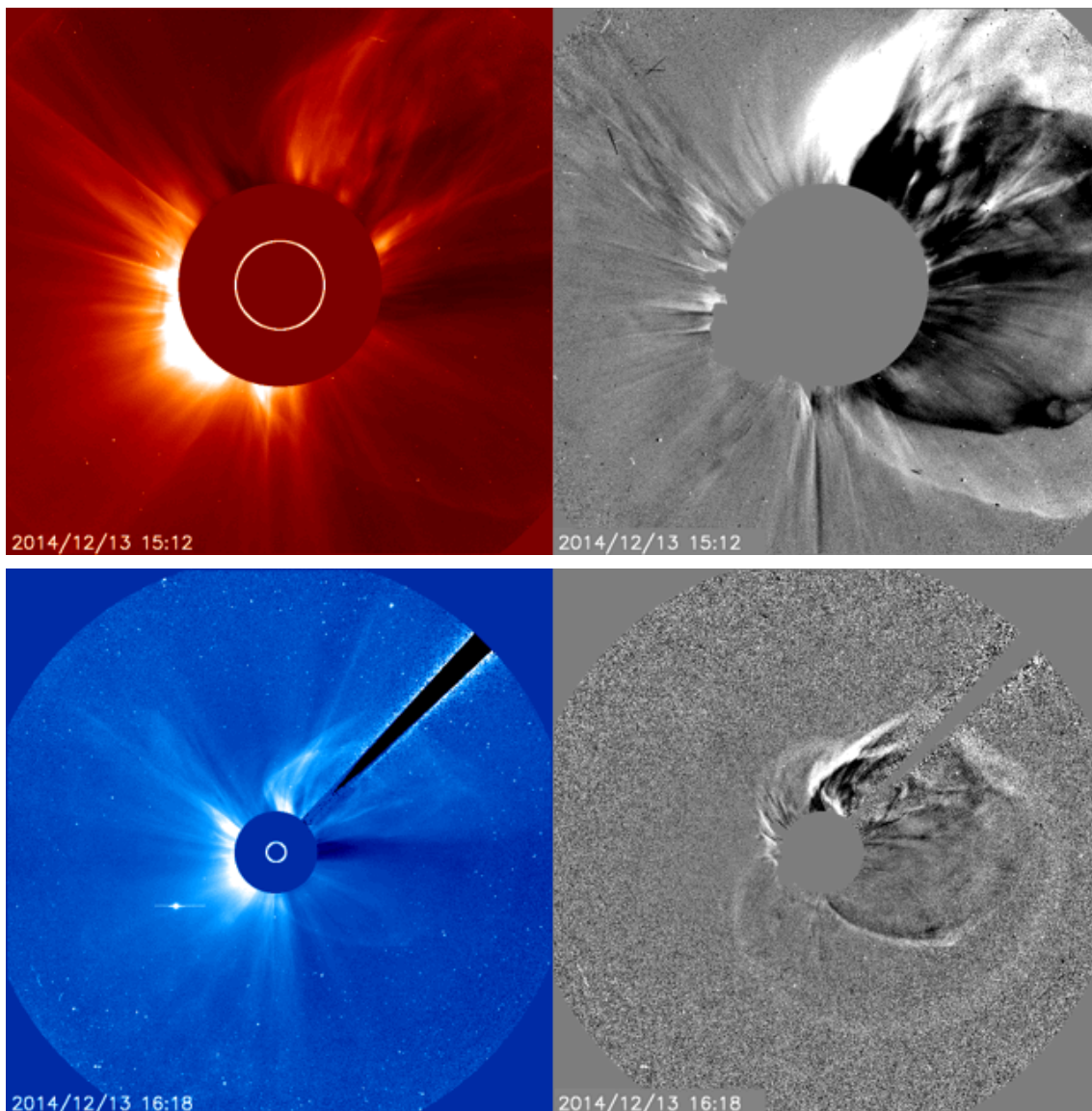
A long duration event occurred on December 10, but without any effect on Earth.

A large filament erupted on December 12, accompanied by a CME heading mostly to the North (first measurement at 4:14 UT in LASCO-C2 imagery), without any significant component in the ecliptic plane.

A proton enhancement occurred, starting somewhere at the end of December 13, but without crossing the event threshold near Earth. The timing can not be determined exactly due to a data gap in the proton flux data from ACE and GOES.

The protons are seen as the several white dots in the blue image SOHO/LASCO C3 below.

Probably the same activity caused a proton event measured at STEREO A. A possible explanation causing this proton event, is the backside activity starting at 14:20 UTC on December 13 from a region near E150S20 (old NOAA region 2222).



Strong flaring occurred at that moment, accompanied by a halo CME seen by SOHO/LASCO C2 and C3 (see image above), travelling away from Earth and a type II radio burst. NOAA 2227 was approaching the

West limb (right as seen from Earth) and flaring activity from this region might also have contributed to the enhancement of the proton flux, though flaring mostly occurred after the start of the proton enhancement.

3. Noticeable Solar Events (8 Dec 2014 - 14 Dec 2014)

DAY	BEGIN	MAX	END	LOC	XRAY	OP	10CM	TYPE	Cat	NOAA
13	0513	0520	0525		M1.5					2241
14	1925	1933	1939	S19E44	M1.6	SF		VI/2II/2		2242

LOC: approximate heliographic location

XRAY: X-ray flare class

OP: optical flare class

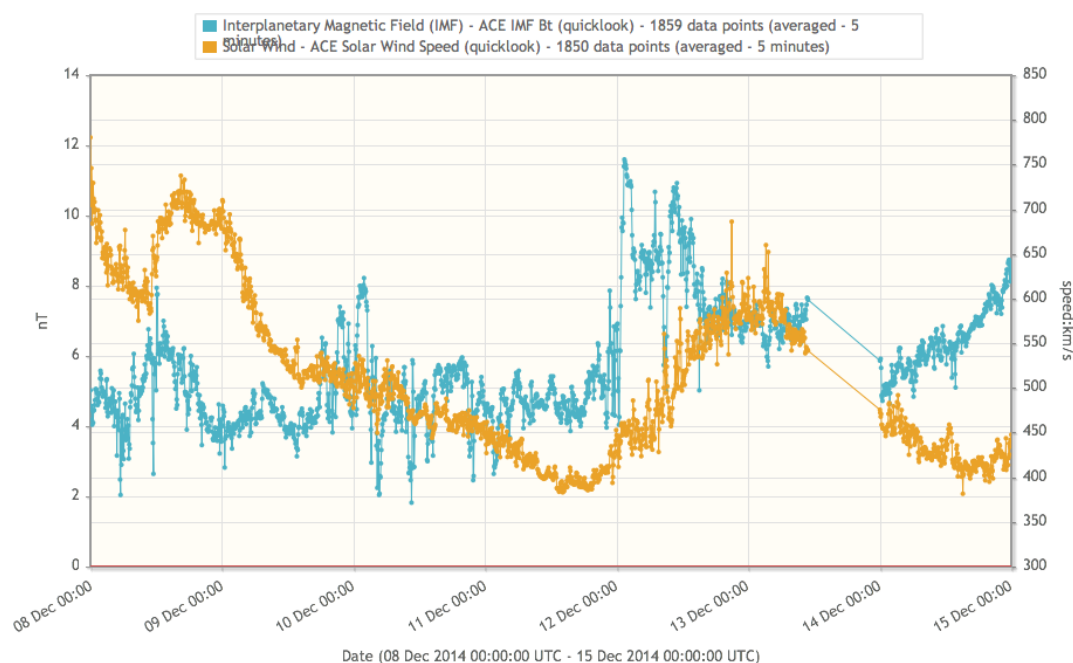
10CM: peak 10 cm radio flux

TYPE: radio burst type

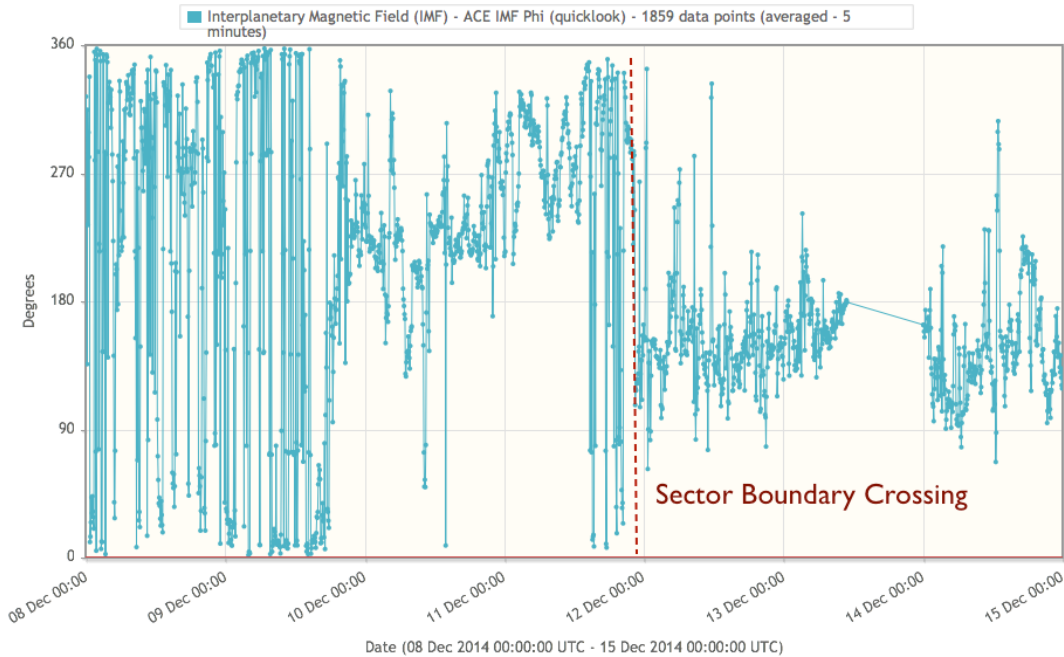
Cat: Catania sunspot group number

NOAA: NOAA active region number

4. Review of geomagnetic activity



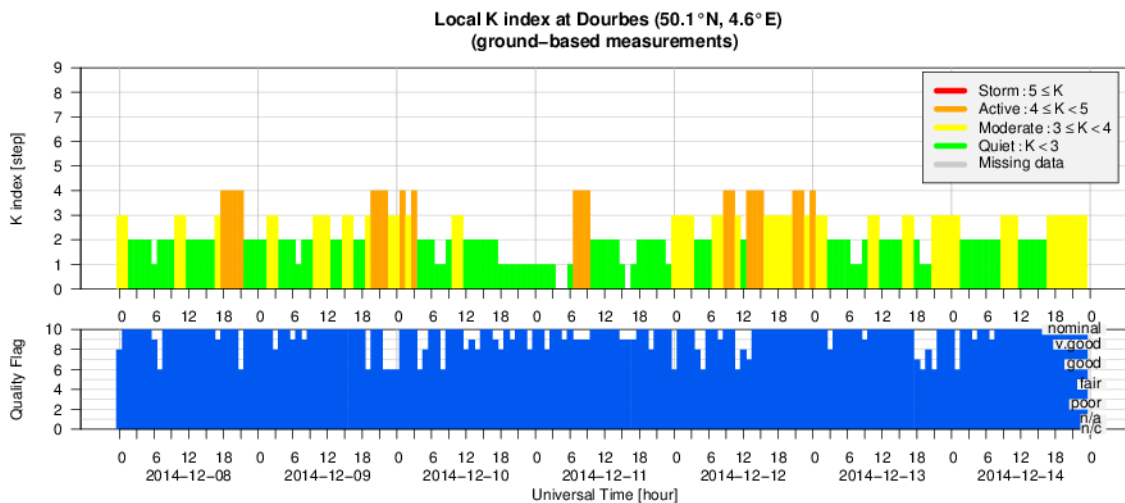
The first day the Earth was under the influence of a fast solar wind. The solar wind speed then declined from about 800 to 400 km/s on December 11. The magnitude of the Interplanetary Magnetic Field (IMF) was stable around 5nT.



At a sector boundary crossing near 23 UT on December 11: inward pointing (Bx,By) with phi roughly between 270 and 360 degrees to outward pointing (Bx,By) with phi roughly between 90 and 180 degree. The IMF magnitude went to about 10 nT, while the solar wind speed increased again to maximally 700 km/s. The change in solar wind conditions were also due to the influence of a coronal hole high speed stream.

Geomagnetic conditions were quiet to active; the local K at Dourbes ranged from 1 to 4 and NOAA estimated KP even reached K=5 at one time slot around noon on December 12. Several time slots of active conditions occurred due to the mainly negative Bz component.

5. Geomagnetic Observations at Dourbes (8 Dec 2014 - 14 Dec 2014)



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

7. Future Events

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

Conference on Sun-Climate Connections (SCC 2015) in Kiel, Germany

Start : 2015-03-16 - End : 2015-03-19

This international conference will provide an overview of our current understanding of Sun-Climate Connections starting at processes on the Sun itself over space weather and solar wind towards solar influence on the upper atmosphere down to the ocean. It will also provide insights into the heatedly debated role of the Sun in climate change. In four sessions the various contributions of solar variability influence on Earth's climate will be presented and discussed by bringing together solar physicists, space scientists, atmospheric scientists, climate modellers, and paleoclimatologists.

We expect contributions from scientists participating in SCOSTEP/ROSMIC, SPARC-SOLARIS/HEPPA, the EU cost network TOSCA, as well as any other interested scientists. The conference will last three full days, beginning Monday morning, 16 March 2013. The programme will consist of invited and keynote lectures, a few contributed oral presentations and ample time dedicated to poster sessions. The fourth day will be devoted to public outreach activities as well as panel discussions.

Website: <http://scc.geomar.de/>

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/>

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 of 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/>

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 School 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>

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, H α , 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/>

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/>

8. New documents in the European Space Weather Portal Repository

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

STCE - Les éruptions solaires: quand notre astre se fâche

Presentation, in French, given at the open doors of the Space Pole, Belgium, 2014
<http://www.spaceweather.eu/en/repository/show?id=552>

eHEROES - Zonnestormen tijdens Zonnecyclus 24

Lecture focusing on the effects of space weather, extreme space weather during SC24, and the space weather forecasting at the Space Pole (RWC Brussels). The lecture was given to the Public Observatory Beisbroek / COZMIX in Beisbroek, Brugge, Belgium. Solar amateur astronomers and public audience, in Dutch, about 35 attendees.

<http://www.spaceweather.eu/en/repository/show?id=554>

ESWW11 - Flaring activity in NOAA 2158

This presentation was given during the "ESWW11 – Forecaster Forum" splinter on 18 November 2014. It focuses on the forecast and evaluation of the flaring activity in sunspot group NOAA 2158 (September 2014). There were about 70 attendees (scientists).

<http://www.spaceweather.eu/en/repository/show?id=555>