

European Space Weather Portal – recent developments

Stijn Calders & Michel Kruglanski
SWWT Plenary - 13 June 2012

Outline

- SWWT pages
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- Recent articles in
Journal of Space Weather and Space Climate
- STCE newsletter
- Future space weather events
- EU Framework Programme 7
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SWWT pages

The ESA Space Weather Working Team (SWWT)

Submitted by Stijn Calders on Tue, 08/25/2009 - 09:47.

Introduction

The SWWT is a forum open to European experts in a variety of both scientific and application oriented fields relating to space weather¹.

The SWWT plays an important role in advising ESA¹ in space weather¹ strategy and acts as a forum for discussion amongst the European space weather¹ community.

The SWWT is responsible for promoting coordinated European space weather¹ activities at both national and industry levels.

The SWWT seeks to identify and discuss potential collaborations and/or synergies with other structures or organisations such as the EC FP7 & COST programmes and others.

Download the Terms of Reference

The SWWT consists of members of the space weather¹ community, a Steering Board approved by the community and an elected Chair. SWWT membership is open to representatives of any European university, institute or company, or international organisation currently undertaking space weather¹ related activities or affected by space weather¹. The SWWT meet at approximately 6-monthly intervals.

The SWWT Steering Board acts as an executive group and consists of:

- The SWWT Chair
- European experts in areas of scientific, technical and strategic importance covering the full range of space weather¹ field
- ESA¹ representatives will participate to Steering Board meetings in the context of observers, as will representatives of national and European funding agencies supporting significant space weather¹ activities.

This Steering Board is tasked to synthesize the roadmap and recommendations from the SWWT for presentation to agencies and other concerned parties, as appropriate.



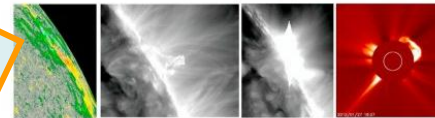
Credits: ESA¹

SWWT Topical Group "Drivers of Space Weather", Subgroup "Solar Magnetic Energy"

Submitted by Stijn Calders on Wed, 05/23/2012 - 09:23.

Solar storms (Solar Flares, CMEs, SEP Events) are a result of a conversion of stored magnetic energy. Stretching, twisting and folding of the magnetic field increase the energy.

Solar Storm 27 January, 2012



SDO HMI/AIA 193 and SOHO LASCO C2

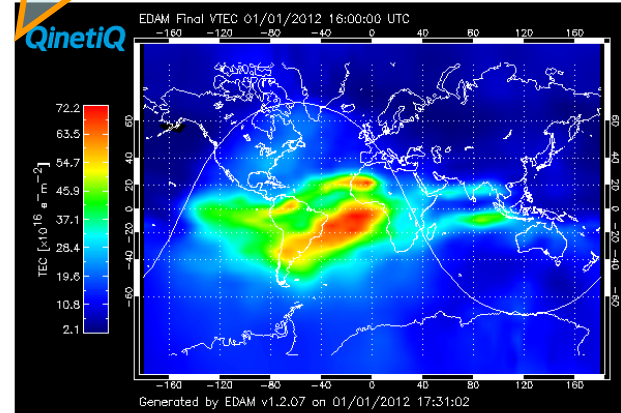
SWWT Topical Group "Ionospheric Effects"

Submitted by Stijn Calders on Mon, 03/26/2012 - 10:43.

Mission Statement

The ionosphere is a critical part of the propagation medium for many types of radio transmissions. Ionospheric reflections of High Frequency (HF, 2-30 MHz) transmissions allow communications over long distances without using relay stations or satellite links. Furthermore, HF radar allows surveillance beyond the line of sight. Higher frequency radio signals propagate through the ionosphere allowing satellite telecommunication links and satellite navigation. However, the varying characteristics of the ionosphere can cause significant disturbances in the radio signals (i.e. phase and amplitude scintillation) and cause errors or breaks in the respective services.

The Ionospheric Effects Topical Group is a forum for discussion and exchange of information, ideas and thoughts regarding ionospheric modelling, observation and mitigation techniques. The group also addresses topics related to ionospheric services for the end user community; these include new approaches for warning users when conditions in the ionosphere may compromise the integrity of services based on trans-ionospheric radio signals.



Map of total electron content produced by the Electron Density Assimilative Model (EDAM). Supplied to ESA as part of the MONITOR programme.

Thank you!

UAH – Space Weather Service

UAH-Space Weather Service

[View](#)

[Dev load](#)

[Dev render](#)

[Edit](#)

[Outline](#)

[Track](#)

[Translation](#)

Submitted by [Consuelo Cid](#) on Wed, 03/05/2008 - 16:00.

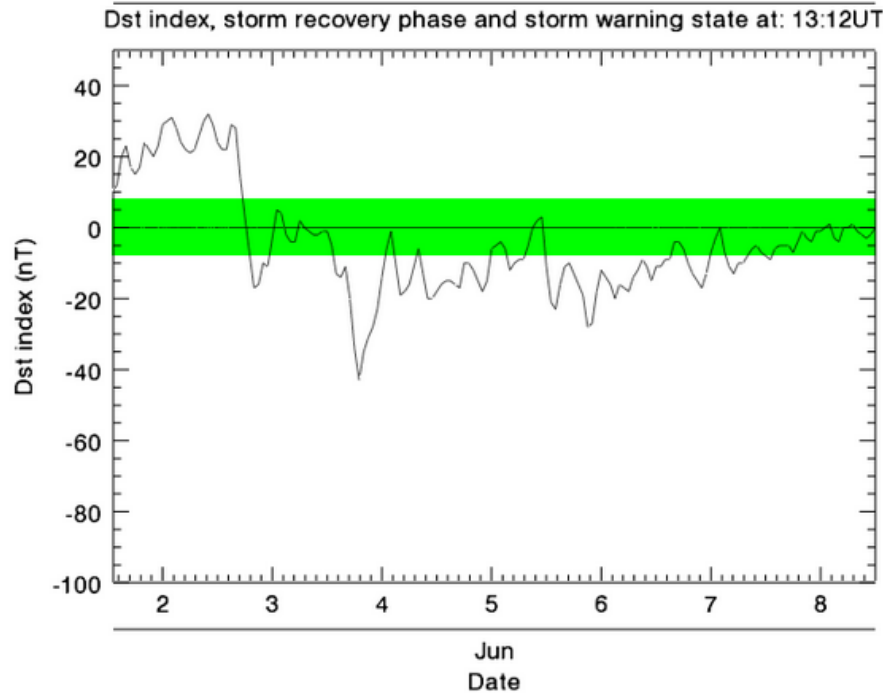


Universidad
de Alcalá

The UAH-Space Weather Service (UAH-SWS) has been developed based on the scientific models published in international journals by researchers of the University of Alcalá. It offers a warning of severe geomagnetic disturbances. The UAH-Space Weather Service (UAH-SWS) has been developed based on the scientific models published in international journals by

researchers of the UAH. It is a double service:

1. it offers a warning of severe geomagnetic disturbances; and
2. it provides an estimation of the time remaining for the magnetosphere to recover quiet time conditions.



Journal of Space Weather & Space Climate

Recent articles

- **Solar wind drivers of geomagnetic storms during more than four solar cycles**

Authors: Ian G. Richardson and Hilary V. Cane.

Journal of Space Weather and Space Climate Vol. 2 , page A01

Published online: 17/05/2012

Keywords: Solar wind ; Interplanetary Coronal Mass Ejection (CME) ; Storm ; Stream ; Solar cycle.

- **Near-earth solar wind flows and related geomagnetic activity during more than four solar cycles (1963–2011)**

Authors: Ian G. Richardson and Hilary V. Cane.

Journal of Space Weather and Space Climate Vol. 2 , page A02

Published online: 17/05/2012

Keywords: Stream ; Solar cycle ; Interplanetary Coronal Mass Ejection (CME) ; Interplanetary medium.

- **Retrieval of thermospheric parameters from routine ionospheric observations: assessment of method's performance at mid-latitudes daytime hours**

Authors: A.V. Mikhailov, A. Belehaki, L. Perrone, B. Zolesi and I. Tsagouri.

Journal of Space Weather and Space Climate Vol. 2 , page A03

Published online: 06/06/2012

Keywords: 0358: thermospheric dynamics ; 7949: ionospheric storms ; 2841: topside ionosphere ; 2427: ionosphere/atmosphere interactions ; 0394: ionosphere: instruments and techniques.

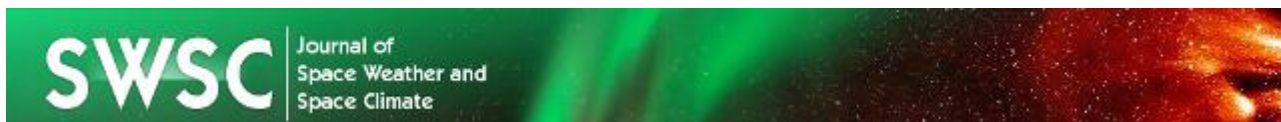
- **Evaluation of the DTM-2009 thermosphere model for benchmarking purposes**

Authors: Sean L. Bruinsma, Noelia Sánchez-Ortiz, Estrella Olmedo and Nuria Guijarro.

Journal of Space Weather and Space Climate Vol. 2 , page A04

Published online: 06/06/2012

Keywords: density modeling ; temperature modeling ; satellite drag ; orbit determination.





<http://www.spaceweather.eu/stce/newsletter>

STCE newsletter

With proud we announce the release of our STCE News Letter that will be issued on a weekly basis.

The STCE stands for Solar-Terrestrial Centre of Excellence. The centre assembles the sciences from the Sun, passing the heliosphere towards the Earth related to space weather. Applications and services in this field are also a core business. The STCE reinforces the common solar-terrestrial activities of the Belgian Institute of Space Aeronomy, the Royal Observatory of Belgium and the Royal Meteorological Institute.

Latest release

1. **Venus transit, June 6 - Proba2 and SDO are being prepared**
2. **Review of solar activity (21 May 2012 - 27 May 2012) - moderate flares, a small proton event and 2 mass ejections, not directed to Earth**
3. **Review of geomagnetic activity (21 May 2012 - 27 May 2012) - A shock arrival and a fast coronal hole wind stream, inducing local active geomagnetic conditions**
4. **Geomagnetic Observations at Dourbes (21 May 2012 - 27 May 2012)**
5. **Future Events**
6. **New documents in the European Space Weather Portal Repository**

Archive

- [2012 June 2](#)
- [2012 May 25](#)
- [2012 May 10](#)
- [2012 May 4](#)
- [2012 April 27](#)
- [2012 April 20](#)
- [2012 April 13](#)
- [2012 April 6](#)
- [2012 March 29](#)
- [2012 March 23](#)
- [2012 March 15](#)
- [2012 March 9](#)
- [2012 March 2](#)
- [2012 February 23](#)
- [2012 February 16](#)
- [2012 February 9](#)
- [2012 February 2](#)
- [2012 January 27](#)
- [2012 January 20](#)
- [2012 January 12](#)
- [2012 January 6](#)
- [2011 December 29](#)
- [2011 December 22](#)
- [2011 December 15](#)
- [2011 November 17](#)

Future space weather events

Title	Start Date	End Date
Solar Wind 13 in Hawaii, USA	17-Jun-2012	22-Jun-2012
Toulouse Space Show (France)	25-Jun-2012	28-Jun-2012
SHINE Conference 2012 in Wailea Maui, Hawaii	25-Jun-2012	29-Jun-2012
European Week of Astronomy and Space Science in Rome, Italy	01-Jul-2012	06-Jul-2012
International Summer School "Solar Astrophysics: Modern trends and techniques" in Bogota, Colombia	03-Jul-2012	19-Jul-2012
BUKS2012 in Fodele Beach, Crete, Greece	04-Jul-2012	07-Jul-2012
23rd NASA Space Radiation Investigators' Workshop in Durham, North Carolina (USA)	08-Jul-2012	11-Jul-2012
ESOF 2012 in Dublin, Ireland	11-Jul-2012	15-Jul-2012
39th COSPAR Scientific Assembly in Karnataka, India	14-Jul-2012	22-Jul-2012
CISM Summer School in Boulder (USA)	16-Jul-2012	27-Jul-2012

1 2 3 4 next > last >>

- 36 future events
- You can see them also in your favourite RSS feed/calendering software (e.g. Thunderbird)
- Please send input to webmaster@spaceweather.eu

EU Framework Programma 7



List of current FP7 Space Weatherⁱ projects

1. **AFFECTS** (Advanced Forecast For Ensuring Communications Through Space)
2. **ATMOP** (Advanced Thermosphereⁱ Modelling for Orbit Prediction)
3. **COMSESP** (COronal Mass Ejections and Solar Energetic Particles: forecasting the space weatherⁱ impact)
4. **ECLAT** (European Clusterⁱ Assimilation Technology)
5. **eHEROES** (Environment for Human Exploration and RObotic Experimentation in Space)
6. **ESPAS** (Near-Earth Space Data Infrastructure for e-Science)
7. **HESPE** (High Energy Solar Physics Data in Europe)
8. **PLASMON** (A new, ground based data-assimilative model of the Earth's Plasmasphereⁱ - a critical contribution to Radiation Belt modeling for Space Weatherⁱ purposes)
9. **POPDAT** (Problem-oriented Processing and Database Creation for Ionosphereⁱ Exploration)
10. **SEPSERVER** (Data Services and Analysis Tools for Solar Energetic Particle Events and Related Electromagnetic Emissions)
11. **SIDER** (Radiation shielding of composite space enclosures)
12. **SOTERIA** (Solar-TERrestrial Investigations and Archives) (*Project website: <http://soteria-space.eu/>*)
13. **SPACECAST** (Protecting space assets from high energy particles by developing European dynamic modelling and forecasting capabilities)
14. **SWIFF** (Space Weatherⁱ Integrated Forecasting Framework)

See also

- **CORDIS**: Community Research and Development Information Service
- Research and Innovation: **Participant Portal**
- **FP7 Space** on Enterprise and Industry portal

Catalogue of European Space Weather assets

The information showed here is collected in the framework of the EU COST ES0803 Action through a web interface at <http://www.spaceweathercatalogue.eu/>. In the spirit of a COST Action, the information is available without restriction to the whole community. In addition to the browse function, a [pdf version](#) of the catalogue is available. This document is updated every day. The pdf version contains bookmarks and internal as well as external links, similar to the functionality of the resource browse window.

If your asset is not listed, please register it at <http://www.spaceweathercatalogue.eu/index.php?page=add&action=add>

Type: *

- model
- data
- instrument
- service

Domains:

If nothing is selected, all domains will be included in the result

→ CAPTCHA

Name	Description	
BAS global dynamic radiation belt model	The BAS global dynamic radiation belt model calculates the energetic electron flux in the Earth's radiation belts. It can also be used to forecast changes in the radiation belts using a time series of Kp and data from the GOES satellites. It covers a region from L=2-7 and energies of 0.1-5 MeV. It is being developed as part of the FP7 SPACECAST project.	website
Celeste3D	Kinetic plasma simulation tool.	
CLUSTERING BASED MODEL – A pre-process to obtain a forecast curve for the ionospheric critical frequency foF2	Cluster analysis is used to classify monthly medians of the ionospheric critical frequency foF2 data for 13 stations in Europe during the period 1958-1998. The algorithm used agglomerates the data consisting of 4801 samples of daily variations into 6 sets of sizes ranging from 1334 to 431 samples, characterized mainly by R12 and seasons. Any dependency on the geomagnetic coordinates was investigated and the dependency on the calendar year by a dependency on R12 was identified, hence over looking any possible dependency on atmospheric conditions [Mizrahi et al., 2002]. The work aims to be a pre-process to obtain a forecast curve for the ionospheric critical frequency foF2.	website