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### 1. Hot News

- A first draft version of the AFFECTS website is now online. The URL is: [www.affects-fp7.eu](http://www.affects-fp7.eu).
- The AFFECTS video trailer is now available at the following link: <http://www.astro.physik.uni-goettingen.de/~bothmer/AFFECTS/>. A small update including telecommunication issues will be available soon.
- The prototype of a *Space Weather Report* is currently under development in cooperation with Media Group RTL Germany.
- The “embrace space” iPhone App will be updated soon integrating all project partners.
- The *IAU symposium 286* “Comparative solar minima”, held at Mendoza, Argentina, on October 3-7, 2011, was attended by Volker Bothmer.
- The University Göttingen project CGAUSS – Coronagraphic German and US Solar Probe Plus Survey – as German contribution to the wide-field camera WISPR on NASA’s Solar Probe Plus Mission has been approved for funding by the German Aerospace Center (DLR).
- Activities for sub L1 space weather measurements achieved through solar sail technologies have started (VB attended the space weather WG by invitation).
- AFFECTS has been presented also at the *EU Russian Open Days* symposium on October 24-25, 2011 (by Volker Bothmer).
- The final Dst index is now available up to December 31<sup>st</sup>, 2008 at the *Kyoto World Data Center for Geomagnetism* website (<http://swdcwww.kugi.kyoto-u.ac.jp/>). Dr. Masahito Nose, who is responsible for its update, has promised that it will be extended to at least December 31<sup>st</sup>, 2010 in the nearest future.

### 2. News from the European Commission

- The EC meeting SSA Dialogue took place in Brussels on October 25<sup>th</sup> and 26<sup>th</sup> (several AFFECTS members participated, VB, NJ, TB, RVdL).



### 3. Status of Deliverables

Until October 31<sup>st</sup> the following deliverables were due and have been submitted:

- D1.1: Definition of internal document templates (Lead: UGOE, Status: completed)
- D1.2: Kick-Off Meeting documentation (Lead: UGOE, Co-Lead: DLR, Status: completed)
- D1.3: Provision of online Wiki-interface (Lead: UGOE, Co-Lead: DLR, Status: under completion)
- D2.4: Online provision of L1 solar wind, geomagnetic indices data base (Lead: DLR, Status: completed)
- D2.5: Provision of a web-interface for AE activity monitor and local indices database (Lead: UoT, Status: completed)
- D5.1: System architecture document (Lead: DLR, Status: under completion)

### 4. Status of Work Packages

#### 4.1 WP1: Management

In WP1 Dr. Volker Bothmer as coordinator together with Dörte Dannemann from the University's EU Office manage the project. The Work Package includes all administrative tasks, e.g. the design of document templates and the organization of the project's kick-off meeting and the first Steering Committee meeting in November. All dissemination activities (such as the creation and distribution of a newsletter and the creation of the project website) are cumulated in WP1 as well.

The appropriate management actions formulated in the DoW have been jointly undertaken in collaboration with DLR Neustrelitz. The beneficiaries have correctly received funding based on the financial time schedule. The project kick-off meeting was held on March 22-23, 2011 at the Astrophysics Institute, Georg-August-University Göttingen. It was followed by a press release by the University released on May 11, 2011 (see Press & Media). The AFFECTS project has thereafter received excellent media coverage in the course of the NASA press release on the spectacular solar eruption on June 7, 2011.

Deliverables D1.1 (project document templates) and D1.2 (Kick-off meeting documentation) have been completed. A project trailer of 2 min. on the AFFECTS project has been compiled (see Hot News). A small update and a voice over will follow soon. A project website has been set up at <http://www.affects-fp7.eu> and is currently under development, including a Wiki for project document exchange.

#### 4.2 WP2: Data, Calibration, Maintenance and Instrumentation

One key function within the project is assurance that data from the wealth of instruments at our disposal flows to the members for further processing and subsequent dissemination. This function is the responsibility of WP2 for the entire duration of the project. During the early phases of the project several data transfer engines have to be established (although some existed before), while later the prime task is to maintain the data transfer, identifying failures and correcting them at short notice.

At project start up, it became apparent that the "one-stop-shop" paradigm was a feature project members wanted, and this was realized by maximizing use of

The screenshot shows the AFFECTS website interface. The main content area is titled "AE Index" and contains text explaining the Auroral Electrojet Index. Below this, there are sections for "global activity index Kp" and "local activity indices". A table at the bottom lists local activity indices for different locations.

Location	Coordinates	Indices
Longyearbyen (auroral zone - high latitude)	78°N, 15°E	<a href="#">latest_k_hr2a.txt</a>
Tromsø (auroral zone)	70°N, 19°E	<a href="#">latest_k_tr2a.txt</a>
Dombås (sub-auroral zone)	62°N, 9°E	<a href="#">latest_k_dob1a.txt</a>

Fig. 1: SWACI website



the SWACI database facility operated by DLR (Fig. 1). During the first 9 months of AFFECTS, either pointers to data locations or the data themselves have been incorporated into SWACI. In cases where various means of data acquisition have been possible, these have been assessed and the most reliable and rapid solutions selected. Information currently available from summer 2011 – Deliverable 2.4 – includes solar wind parameters and global geomagnetic indices (e.g. Ae and Kp). Local geomagnetic indices (e.g. k and The University of Tromsø's own activity index) at selected stations from within the polar cap and southward through Scandinavia are also now available – Deliverable 2.5. Although due to be delivered at the end of 2011, GNSS and ground-based ionospheric data are already being delivered, as soon as they are available, to the SWACI database – Deliverable 2.6. These data are currently being post-processed (an on-going task) to provide information on, for example, positioning errors during periods of high solar activity.

#### **4.3 WP3: Early Warning System**

In this work package, eruptions on the Sun are monitored in order to provide an early warning whenever the Earth is expected to encounter space weather conditions within the hours and days to follow. Automatic detection software for solar events such as X-ray flares and coronal mass ejections (CMEs) will be used as input for models further along the chain from Sun to Earth. This project is led by the Royal Observatory of Belgium (ROB), which has a long operational tradition in providing daily space weather forecasts. ROB will be assisted by the US-based NOAA Space Weather Prediction Center, AFFECTS partner and one of the leading space weather institutes worldwide. Both institutes operate 24/7 to provide forecasts, alerts, watches, and warnings to a worldwide customer base. In both forecast centres the Early Warning System developed in AFFECTS will be integrated into the operational activities.

At the AFFECTS kick-off meeting in March 2011, an inventory was made of models and algorithms, as well as their inputs and outputs. The main conclusion was that AFFECTS geomagnetic and ionospheric space weather alerts and forecasts would benefit from improved flare and CME detection and parameter estimation. Consequently, ROB will focus on these two topics. Added value will be provided by a dimming and EUV wave detector and ROB's commissioned extension of the radio observatory in Humain, Belgium.

#### **4.4 WP4: Forecasting Tools and Modelling**

SRI has developed software for Dst, ap and Kp forecasting with 3 hours lead time and is currently modifying it to use available real-time data. Presentations were given by Parnowski and Polonskaya at 4 national to international level conferences in Ukraine and by Parnowski in June 2011 on an invited STCE seminar in Brussels.

DLR started analysing solar driven perturbations of the ionospheric total electron content (TEC). A first presentation was given by Heidenreich and Jakowski in May 2011 at the AGU Chapman Conference in Charleston. The aim of the analysis is to develop a perturbation model and derive a forecast of ionospheric perturbations.

#### **4.5 WP5: Forecast System Ionosphere, User Interfaces**

An ionospheric forecast system matching the needs of the users and implementing the objectives of the AFFECTS proposal is developed in WP5. It aims to provide ionospheric predictions up to 24 hours in advance.

Momentarily, the DLR is developing a system architecture document for the forecast system ionosphere, describing input, output and interfaces for all software modules being applied.

#### **4.6 WP6: Data and Product Dissemination, Product Sustainability**

The objective of this work package is to provide overall space weather data and in particular early warnings and forecasts to end users, the scientific community and to the general public.



Furthermore, the organisation of a user workshop is planned. WP6 will start in September 2012 – which means that we will include this WP in a later newsletter.

## 5. Featured Beneficiary

In each newsletter we will introduce one beneficiary, starting with the coordinator, the Georg-August-University Göttingen, and followed by ROB, SRI NASU-NSAU, FHG, UoT, DLR and ASTRIUM ST. The National Oceanic and Atmospheric Administration (NOAA in Boulder, USA) and the Planetarium Hamburg (Germany) as external collaborators will also have the opportunity to present themselves.

### 5.1 Georg-August-University Göttingen (UGOE)



Founded in 1737, the **University of Göttingen** is a research university of international renown with strong focuses in research-led teaching. The university is distinguished by the rich diversity of its subject spectrum particularly in the humanities, its excellent facilities for the pursuit of scientific research, and the outstanding quality of the areas that define its profile. In 2007 the Georg-August-University achieved success in the *Initiative of Excellence*

of the German Federal and State Governments with its institutional strategy for the future entitled “Göttingen. Tradition – Innovation – Autonomy”. This distinguishes Göttingen as one of the nine German universities officially rated as holding the potential for global visibility and a place amongst the foremost institutions of higher education.

The **Institute for Astrophysics** in Göttingen is the only university institute in the state of Lower Saxony where teaching and research in astronomy and astrophysics is performed. The scientific research areas cover the fields of solar physics, stellar astrophysics, galactic and extragalactic astrophysics, and cosmology.

Space and ground-based solar physics and the origins of solar and stellar activity are key research areas of the Institute for Astrophysics at the Georg-August University Göttingen. The Institute’s long tradition in ground-based observations, based on leading involvement in the Gregory, THEMIS, VTT telescope projects on Tenerife, has now been extended to space activities through leading involvement at Co-I and G-I level in the SOHO, STEREO, Proba 2 and Solar Orbiter and Solar Probe Plus missions. The institute’s participation is led by **Dr. Volker Bothmer** based on his leading research roles and expertises. It is expected that undergraduate and graduate students will help actively fulfil the project goals. The Institute’s infrastructure offers a unique research environment through state of the art soft- and hardware equipment and an excellent administrative infrastructure.



Göttingen’s Institute for Astrophysics with the Cassegrain Telescope on its roof terrace



Dr. Volker Bothmer, Project coordinator

For more information about the Georg-August-University Göttingen and the Institute for Astrophysics please visit the following websites: <http://www.uni-goettingen.de/en/1.html> and <http://www.uni-goettingen.de/en/203293.html>.



## 6. Press & Media

- Press Release: *Göttingen Astrophysicists develop European Space Weather Early Warning System*, Link: <http://www.uni-goettingen.de/en/press-release-goettingen-astrophysicists-develop-european-space-weather-early-warning-system-11052011/215809.html>

## 7. Collaborations

In the future this section will present established collaborations with institutions, organizations, and other FP7 projects.

## 8. Announcements and Upcoming Events

- The **Eight European Space Weather Week** (ESWW8) will take place from Nov. 28<sup>th</sup> to Dec. 2<sup>nd</sup> in Namur, Belgium. Registration is still possible [here](#). Please visit the conference website for more information (<http://sidc.oma.be/esww8/index.php>). Furthermore “AFFECTS – Objectives and Synergies” has been accepted for oral presentation in Session 2: Building the European SSA Space Weather Framework (Date: 11/29/2011, Time: 4:30pm).
- During ESWW8 the AFFECTS consortium will hold its first **Steering Committee meeting**. The meeting will take place on Tuesday, Nov. 29<sup>th</sup> at 8pm. The venue and a detailed agenda will be circulated closer to the event.
- The **3<sup>rd</sup> IAGA Symposium** on “Heliospheric Physics during and after a deep solar minimum” will take place from November 13<sup>th</sup> to 17<sup>th</sup> in Luxor, Egypt. More information is available on the conference website: <http://iswi.cu.edu.eg/>.