SWWT Plenary meeting

Friday, 27 November 2015, 14:30 to 16:00

Room Permeke, Kursaal, Ostend, Belgium

Participants = 31

Agenda

1. Welcome and Introduction (Stefaan Poedts)
2. The SSA Programme and SWE Segment status + view towards Period 3 (Jussi)
3. SSA SWE service network overview and development within Period 2 (Alexi)
4. Short SWWT Topical Working Groups reports (TWP leaders):
   - Drivers of Space Weather - Solar Magnetic Topology (H. Lundstedt)
   - Drivers of Space Weather - Solar Storms (N. Vilmer)
   - Ground Effects (A. Viljanen)
   - Atmospheric Effects (S. Bruinsma)
   - Ionospheric Effects (M. Angling)
   - Spacecraft, Launcher and Aircraft Environments (S. McKenna-Lawlor)
   - Education, Outreach and Emerging Markets (P. Vanlommel)
   - Space Weather Forecast (L. Trichtchenko)
5. Reports on national activities and perspectives (all members)
6. H2020: COMPET-5 call and other SWE related calls (Stefaan and Alexi)
7. Report on the outcomes of the June WMO congress (Mauro)
8. SB membership renewal 2016 and potential proposal for further adoption as SSA technical advisory group.
9. Action Item Review (S. Poedts)
10. Any other business

Minutes

Welcome and Introduction (Stefaan Poedts)

SP welcomes everybody and apologizes for the fact that the plenary meeting was shifted to Friday afternoon this year, instead of the usual Wednesday afternoon. This happened beyond our power and was the result of too many parallel session that had to planned in for ESWW12. SP promises that next year he will not accept this anymore and insist on a Plenary SWWT meeting during the week.

The SSA Programme and SWE Segment status + view towards Period 3 (Jussi)

We are in SSA Period 2 at the moment. Period 3 to be decided in MC in 2016. SSA System 2016 contains 5 SWE Expert Service Centres, incl. the new Heliospheric Weather ESC. Software in the SWE data centre is maintained by external contract. SSCC now has over 40 products installed and running and involves 34 teams spread over whole Europe.

SSA Period 3 will involve developments in several of these service systems. The federated approach will be continued. All teams doing SWE in Europe will be (further) involved but it is not clear yet who will do the actual operational services in the end. ESA is not planning to set up an ESA data processing facility, and will do only level 1 data processing in the data centre(s). ESA plans to have a significant programme of key algorithm development (cf. User requirements for accuracy and timeliness) and foresees the establishment of new ESCs. SSCC would evolve and would involve new functions and become a centre for the provision of tailored services, monitoring and maintenance tasks, alerts and warnings for severe SWE conditions. Also a transition towards operational services with ESC support is foreseen for the SSCC.

The SWE data centre hosts the SWE tools and applications and the SWE service portal. Foreseen enhancements in P#: complementing thematic data centres in Member States (federated data archive), data processing of SSA sensor systems, enhancements for transition towards operational system. THE SSA portal will also be enhanced in P3: enhanced data visualization and analysis tools, advanced user authorization, enhanced tailoring and customization. Sensor systems will continue to use data from existing sources (ground based and space borne). Activities in p3: enhancements of ground based measurements networks, SLAs with data provisions, Proba-2 mission extension, operation of the first hosted payload missions (NGRM, SOSMAG) and enhancement of the SWE space segment (hosted payload missions, first dedicated SSA SWE mission). Key measurements include the L1 mission and maybe a new element: a L5 mission (Solar monitoring and in-site data away from the Sun-Earth line (ASEL mission). List of payload instruments includes: solar corona modeling, heliospheric imaging, solar disc magnetic field, EUV imaging, in-situ measurements (SW, magnetic field, charged particles, hot plasma). Mission phases in P3: A.B1, B2, Readiness for C/D. It is crucial that the USA does a L1 mission, only then ESA can focus on an L5 mission.

Ongoing technology developments include prototyping new instrument technologies where the focus is on operational instruments for SWE observations, looking for flight opportunities for instruments and

development of GS technologies for advanced data processing (VSWMC part 2 is about to start, start foreseen before X-mas) .

Accurate SWE forecasting is a key challenge and SWE segments activities also support scientific developments. See also slides JPL (Annex 1).

SSA SWE service network overview and development within Period 2 (Alexi)

AG gave some more detail on the SWE network developments. The mains aims include to continue to operate and develop the SWE services at the SWE Coordination Centre, to further develop the concept of Expert Service Centres and evolve them towards SWE services, to expand the range of products available through the ESCs via the SWE portal, to strengthen the links with the user communities (= key task of the SSCC), establish new ESC focusing on Heliospheric Weather, and further develop the SWE Data Centre infrastructure to provide improved product access and additional data browsing capabilities supporting users and developers.

A total of 34 teams are involved in the ESCs and approximately 140 products are expected by the end of 2016. The ESCs will also review the roadmaps. Thematic workshops will be organized in the spring of 2016 at ESOC to identify the key assets/expertise/development requirements. See also slides AG (Annex 2).

Short SWWT Topical Working Groups reports (TWP leaders):

Drivers of Space Weather - Solar Magnetic Topology (H. Lundstedt)

Henrik has medical problems and did not send in a report.

Drivers of Space Weather - Solar Storms (N. Vilmer)

See Annex 3: slides of NV

A session (Session 4) was organized on Tuesday and Wednesday with 3 hours of talks and also posters.

Ground Effects (A. Viljanen)

No news/report?

Atmospheric Effects (S. Bruinsma)

See slides in Annex 4.

There are 3 events to report: Swarm, GOCE reentry and LEO drag.

Ionospheric Effects (M. Angling)

Matthew send in a report (slides) by email. See slides in Annex 5.

Spacecraft, Launcher and Aircraft Environments (S. McKenna-Lawlor)

See slides in Annex 6.

Education, Outreach and Emerging Markets (P. Vanlommel)

This is a topical group in support of space weather dissemination and communication.

Note:
Emerging markets mean that as soon as a new field of space weather pops up, it is placed in this topical group until it is mature enough to be a topical group on its own. This topical group has the expertise to spread the news to the SW community on a new emerging market.

The goals of this topical group are:

SW community building: this is about the actors that we already **know**

- strengthen a particular community
- link these communities with each other: put them on speaking levels.

Reach out to others than the known SW community: raise awareness (spread the news), educate and possibly build and pave the road to involvement. It concerns a particular content and a particular SW community. The SW message should be tailored to a target group to attract the attention.

Concrete:

1) ESWW offers a platform and different formats to meet and discuss. It differs from other conferences because the content is given 100% by the participants.
   We have formats in all sorts of flavours and colours: formal sessions, informal working meetings, business meetings, logistics for spontaneous meetings, archive of all contributions, … Next to the offered platform, SWWT organises educational and community building activities, e.g. ESWW tutorial.
2) We will coordinate our space weather events and forecast press communication in the future with Met Office. This can be coordinated on the level of SWWT. This is a task of this topical group.

Space Weather Forecast (L. Trichtchenko)

LT sent a report on the outcomes from the Forecaster Forum:

Attendance was great, countless (there were no time to count, my guess is > 40). Several events were discussed as well as several types of the forecasts. First, we have learned how to use type II, III, IV signatures in the forecasts with several nice examples from November 4 (thanks, Jasmine and SIDC group).

Then we were amused with the really good performance of Spanish forecasts of June 22-24 event, especially in regard to the index developed specifically for GIC characterization (thanks, Consuelo).

DIAS showed the results of forecasts of several events with really good set of questions to be resolved (thanks, Ioanna).

The Canadian RWC showed their example of forecasting of the event in November (Thanks, Donald). The deficiency in developing forecast of solar wind speed seems to be resolved for the particular time shown, thanks to comment from Nick Arge. Apparently it was due to errors in GONG data.

There were two case presentations from UK Met Office with no one to present, but, nevertheless, we have looked through them and have found several interesting points (thanks), such as low performance of ENLIL during time of complex events (HSS+CME+).

The outline of developing services for radiation alerts has been done by L. Dorman (Israel).

Several ***conclusions*** were:

1. More funding and people support are needed for operational forecast (□).
2. Needs for the real time solar radio data to support situational awareness and post analysis are quite clear.
3. Need more robust models of complex events (CME on top of HSS/CIR and interacting with another couple of CMEs, the situation is quite usual in real life).
4. Need to move into forecast of IMF! (my suggestion)

For next year, please, bring events for discussions taking into account interest of your users as well. A bit more advanced and coordinated efforts would be good.

Reports on national activities and perspectives (all members)

LT reported that in Canada recently got a totally new government (as of the beginning of November). The Canadian Space Agency has a new President for almost a year and the situation is more stable. The plans for operational satellite on HEO orbit (so-called PCW mission) are still existing, also currently with the Department of National Defense. Environment Canada (under the new name Environment Canada and Climate Change) is still participating in the planning of the mission (for met payload), as well as CSA (for space weather payload), while Natural Resources Canada has dropped its participation about a year ago. Canadian Space Weather Forecast Centre (of Natural Resources Canada) is continuing its operations without much new to say.

SML reported that in Ireland is preparing for a first spacecraft and Space Weather might be the main theme. The mission would be for at least 2 years maybe 3, Low-Earth Orbit (650 km), and will test some technologies in space (magnetometer, high energy particle detector,…). Phase A will start in the beginning of 2016. It will be 50 kg with 20 kg payload included. There is a call for instrument proposals. Unfortunately Ireland is not member of SSA so this is not a SWE payload opportunity at first sight. But it needs to be investigated.

MM mentioned that in Italy there is the Space Weather Italian Community starting up activities since October 2014. There is also an initiative to develop micro-satellites, located in the science park in Trieste.

LE reported that in Sweden the space activities where assessed. The Swedish will continue space weather activities for the next 5 years. On the 4th of November there was a radar failure which is being investigated. It could be related to a SWE event. There was no SEP event but a strong radio burst on the Sun, stronger than the radar system, just before sunset and the radars where pointed to it. There were also some geomagnetic effects that same day. To be continued.

NV reported that in France at the Paris observatory has a new activity called, Environment Spatial de la Tère (ESTER). There was a meeting in Paris on Weather from Earth to Space with a discussion (with people from MetOffice) on space weather. Also, a report will be delivered by the end of December on space weather in France and hopefully with the conclusion that France will participate in SSA P3 again.

H2020: COMPET-5 call and other SWE related calls (Stefaan and Alexi)

- H2020 contains Competitiveness of European Space Sector: Technology and Science (COMPET calls):
    - H2020 – COMPET – 2016: Scientific Instrumentation
    - H2020 – COMPET – 2017: Space Weather
- European Fund for Strategic Investments, COSME, Horizon 2020 (see Annex 7)
- CIP01- 2017 on prevention…
- SEC (security) in March 2016 (space radiation)

Report on the outcomes of the June WMO congress (Mauro)

Due to absence of NV and RVdL, MM gave a short presentation on this subject. The congress took place in May and June and discussed the need to deliver SWE products and services to the society and in particular in support to global air navigation. It resulted in Resolution 38: four-year plan for space weather, which invites the space agencies to maintain or implement the capability to observe space weather phenomena from space, incl. observations at Lagrangian points. The plan itself addresses observation, data exchange, development of services, training and education. It aims to provide a framework for coordinated SWE activities.

As concerns specifically the support to global aviation, it is anticipated that the SWE would rely on e.g. two world SWE centers supported by a number of RWCs which all have to be coordinated. An action is

planned in 2016 to analyze the functions required from such centres, their recommended numbers, and their required competencies, in order to help ICAO to designate such centres. WMO suggest that SWE services use the same data services and standards as meteorology when relevant. They focus on operational services, not on development of such services.

See also slides MM in Annex 8.

SB membership renewal 2016 and potential proposal for further adoption as SSA technical advisory group.

SP commented that SB membership should be renewed as not all SB members seem to be motivated to attend the SB meetings. An invitation will be sent to confirm commitment of SB members.

The SWWT may become a technical SSA advisory group. The relation between the URG (User Representative Group) and the SWWT is somehow artificial. There is certainly an overlap. URG met only a few times and SWWT met more regularly. For ESA the SWWT is more valuable. The URG nomination is through the delegates. The SWWT SB should consist of active members who participate in the discussions.

The leaders of the TWGs should automatically become member of the SB.

The SB agreed on the following actions related to this:

AI SB 2015-2/1: SP and AG to review the ToR to include the TWG leaders to the SB

AI SB 2015-2/2: SP to send email to the SB asking for commitment for next few years.

Action Item Review (S. Poedts)

Action M35/1 is done. Everybody can search the database after registering at the space weather portal. AG actually demonstrated this during the meeting. The link to the Space Weather Assets Database is under the button 'Documents' in the LHS column. This action is thus closed.

Any other business

Nothing came up.

The meetings closed at 16:00.