

WORLD METEOROLOGICAL ORGANIZATION

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COMMISSION FOR BASIC SYSTEMS - COMMISSION FOR AERONAUTICAL METEOROLOGY

INTER-PROGRAMME COORDINATION TEAM ON SPACE WEATHER

(ICTSW)

SECOND MEETING

NAMUR, BELGIUM, 2 DECEMBER 2011

FINAL REPORT



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1. OPENING OF THE MEETING

The second meeting of the Inter-Programme Coordination Team on Space Weather (ICTSW) was convened on Friday 2 December at 1:15 pm in Namur, Belgium, on the occasion of the Eighth European Space Weather Week. In the absence of the two co-chairs, the meeting was chaired by Jérôme Lafeuille (WMO Secretariat).

J. Lafeuille welcomed the participants (See Annex 1) with particular consideration for the persons joining the group for the first time. The team was pleased to note that DLR, represented by Norbert Jakowski, was preparing to join the team and it was agreed that WMO should encourage such participation and reiterate its call to WMO Members to nominate representatives in ICTSW.

Action 2.1: WMO to send out a circular letter to WMO Members reporting on the first year's achievements of ICTSW and reiterating the invitation to nominate qualified representatives for ICTSW.

The agenda was adopted (See Annex 2) with a point on COPUOS under Any Other Business.

2. DEVELOPMENT OF AN INITIAL OPERATIONAL CAPABILITY (IOC)

2.1 Criteria for IOC product selection

The group reviewed the selection criteria for the initial product portal and was generally supportive of this approach, with the following recommendations:

- Qualifying products as “Operational” in the WMO context generally implies product maturity, validation, continuity of production and timely availability (depending on the production cycle). Since few Space Weather products might be formally validated at the moment, the selection should not be limited to “operational products” but could include “pre-operational” products as well, provided that their validation or non-validation status is clearly indicated. It is expected that the “pre-operational” status would be only a temporary stage, the objective being to evolve to an operational status within a certain time frame, to be determined.
- For the proposed product categories “storms” should be replaced by “conditions”, or “state”, or “irregularities” in order to be more open.
- “Radiation belt electrons” should be replaced by “Magnetospheric particles”
- “Solar protons” should be replaced by “Solar energetic particles”
- “Radio-communication” and “Navigation” do not cover the whole spectrum of ionospheric applications. It is suggested to have a broader definition, including e.g. radar remote-sensing.
- The sub-categories should be defined in a more homogeneous way. At the moment, one category is broken down by application (communication/ navigation), another one by area (global/regional), another one by physical objects (protons/ electrons), and another one by time scale (current, forecast, long term forecast).
- If the criteria have to be followed, they should read “shall” instead of “should”.

Action 2.2: Revise the selection criteria as recommended by ICTSW-2.

2.2 Guidance on harmonized metadata

The team concurred with the objective to use a harmonized metadata template to facilitate discovery and use of the portal products. Furthermore, we should follow relevant international standards as far as possible.

The template proposed by WMO, which is based on the WMO Core metadata profile and ISO 19115, contains relevant and sufficient descriptors for a first level characterization of the products for the purpose of the portal. An advantage of following the WMO metadata profile would be to enable registering the products with ISO compliant XML metadata records. There is concern, however, that neither the “Topic Category” nor the “Geographic Bounding Box” would be adequate for Space Weather products and their spatial domain. This information could only be accommodated using keywords and an appropriate reference system, to be defined.

An alternative would be to follow a metadata standard used in the Space Weather community. ISES has defined a number of codes and formats, but no particular metadata standard. The Space Physics Archive Search and Extract ([SPASE](#)) model is a candidate, since it contains a wide range of appropriate descriptors and related tools. On the other hand, while the SPASE metadata structure is well adapted to support Space Weather data exchange within the scientific community, there is no evidence that it is used outside this community and would be searchable by non-specialist users.

As concerns the high-level information to be displayed with the products on the initial portal, there is virtually no difference between the fields required by the WMO metadata profile and the SPASE profile. When it comes to encoding the full metadata in XML, however, the two approaches differ significantly in structure and in syntax. The group discussed ways and means to combine these two approaches, wondered about the feasibility of pursuing the two approaches in parallel, recognized the need for additional advice, and agreed the following action:

Action 2.3: WMO, ESA, other volunteers to investigate the differences between the WMO Core metadata profile and the SPASE metadata model, and recommend an approach, for instance we could explore the feasibility to use SPASE descriptors as extensions of the WMO metadata standard.

2.3 Candidate products

It was noted that some centres were issuing composite products aggregating the output of several sources, which would be a nice way to illustrate the cooperative dimension of our effort. No opinion was expressed on the proposed products but other centres including DLR, NASA/GSFC, ROB, wished to propose candidate products.

Action 2.4: ICTSW members to submit candidate products, using the proposed template. Due date: 19 December.

2.4 Web portal implementation aspects

The portal strawman was presented, and it was clarified that ultimately the portal should not contain the products themselves, nor the direct links to the products, but links pointing to selected parts of the agencies’ catalogues. In doing so the agencies would retain full visibility and control on their products.

In other words:

- each centre would maintain a “local portal” with links to the selection of its own products

- all the “local portals” would be structured along the same product categories and sub-categories as the central portal hosted on the WMO website,
- the central portal would contain links pointing to the various categories inside the local portals
- all the local portals would be given a stable and generic address in order to facilitate maintenance on the central portal and reduce the risk of broken links.

2.5 Way forward to an IOC

It is agreed to proceed with the actions above (selection criteria, candidate products with metadata, local portals) with the aim to have a preliminary version for demonstration mid-January.

2.6 Open issues and next steps

The choice of the metadata standard remains an open issue.

Still to be decided is also whether the ISES warning centres would register in the WMO Information System (WIS) as a whole, or individual centres register separately at their convenience. This would depend on the standards to be complied with.

3. SPACE WEATHER OBSERVATION CAPABILITIES

3.1 Typology of space- and surface-based instruments

The draft typology proposed by WMO is a good starting point. ESA (Alain) will compare with the typology used in the SSA programme and provide feedback. The US (Jim) will compare with recent work done on their side and provide feedback. The typology should be stabilized quickly since it will be used to structure the gap analysis.

Action 2.5: To provide feedback on the proposed instrument typology. Due date: 18 December.

3.2 Inventory of space-based observing capabilities

An inventory of space-based instruments for Space Weather was circulated by WMO, with indication of the instrument type (without normalized classification), the satellites and the expected operation time frame. This is extracted from a database, and other fields can be displayed, such as the status (operational, demonstration, etc.).

It was noted that the NASA RBSP mission and the ESA SREM instrument should be added. All members were invited to provide feedback.

Action 2.6: All members to provide WMO with feedback on the inventory of space-based capabilities (corrections, missing elements). Due date: 9 January 2012.

3.3 Inventory and evaluation of observing capabilities by theme

The group endorsed the organization proposed by the co-chair (X. Zhang) to review the observing capabilities by theme. The timeline, however, was not found realistic. A proposed target date is 15 January for the draft gap analysis.

3.4 Way forward towards an initial Statement of Guidance

The group took note of the tentative outline, with the understanding that the structure could be changed if relevant. A proposed target date for the Statement of Guidance is end of January.

3.5 Open issues and next steps

The progress on the Gap Analysis and the Statement of Guidance will be reported to the Commission for Basic systems (CBS) at its fifteenth session in September 2012.

4. ANY OTHER BUSINESS

- COPUOS Working Group on Long-term Sustainability of Outer Space Activities

Jim Head reported that the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS) had established a Working Group on Long-term Sustainability of Outer Space Activities with four sub-groups, one of them being dedicated to Space Weather. The Terms of Reference of this sub-group specified the intention to avoid any duplication with existing bodies. The question was thus raised of how this new group should most efficiently interact with the ICTSW.

A member of the Office of Outer Space Activities (OOSA), Prof. Hans Haubold, is member of ICTSW precisely to ensure proper linkage between COPUOS and ISWI, on one hand, and WMO/ICTSW, on the other hand. As a measure of reciprocity, it was suggested that the WMO Secretariat be invited to participate in the sub-group. Several ICTSW members (J. Head, R. van der Linden, and the co-chair T. Onsager) are currently members of this COPUOS sub-group and will also ensure that there is no duplication.

It is expected that the two groups will reinforce each other, assuming that the scope of this COPUOS working group is more oriented towards regulatory and policy aspects than technical and operational aspects.

A Space Weather workshop will be held in Vienna on 9 February on the occasion of the 49th Scientific and Technical Sub-Committee (STSC) of COPUOS.

Action 2.7: J. Head to circulate the Terms of Reference of the Space Weather sub-group of the COPUOS Working Group on Long-term Sustainability of Outer Space Activities.

5. CONCLUSION

J. Lafeuille thanked the Royal Observatory of Belgium for arranging the venue and all participants for their contribution. The meeting was closed at 3:45 pm.

ANNEX 1:

LIST OF PARTICIPANTS

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ANNEX 2:

AGENDA

1. OPENING OF THE MEETING

Introduction and welcome
Adoption of the agenda

2. DEVELOPMENT OF AN INITIAL OPERATIONAL CAPABILITY (IOC)

2.1 Criteria for IOC product selection
2.2 Guidance on harmonized metadata
2.3 Candidate products
2.4 Web portal implementation aspects
2.5 Way forward to an IOC
2.6 Open issues and next steps

3. SPACE WEATHER OBSERVATION CAPABILITIES

3.1 Typology of space- and surface-based instruments
3.2 Inventory of space-based observing capabilities
3.3 Inventory and evaluation of observing capabilities by theme
3.4 Way forward towards an initial Statement of Guidance
3.5 Open issues and next steps

4. ANY OTHER BUSINESS

- COPUOS working group on Long Term Sustainability of Outer Space Activities

5. CONCLUSION

ANNEX 3:

LIST OF ACTIONS

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Action 2.2: Revise the selection criteria as recommended by ICTSW-2.

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