WORLD METEOROLOGICAL ORGANIZATION

INTER-COMMISSION COORDINATION GROUP ON THE WMO INTEGRATED GLOBAL OBSERVING SYSTEM

TASK TEAM ON WIGOS METADATA

Sixth Session

Zurich, Switzerland, 27-29 November 2017

FINAL REPORT

DISCLAIMER

Regulation 42

Recommendations of working groups shall have no status within the Organization until they have been approved by the responsible constituent body. In the case of joint working groups the recommendations must be concurred with by the presidents of the constituent bodies concerned before being submitted to the designated constituent body.

Regulation 43

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EXECUTIVE SUMMARY

The Sixth session of the Inter-Commission Coordination Group on the WMO Integrated Global Observing System (ICG-WIGOS) Task Team on WIGOS Metadata (TT-WMD-6) was held at Zurich, Switzerland, from 27 to 29 November 2017. The session took place at the headquarters of MeteoSwiss, at the kind invitation of the government of Switzerland, and was co-chaired by Mr J. Klausen (Switzerland) and Mr K. Monnik (Australia), co-Chairs TT-WMD.

The session reviewed and took into account, the relevant outcomes of the sixth session of ICG-WIGOS and of the sixty-ninth session of the Executive Council (EC-69).

The session was briefed with actual feedback from various user communities on the implementation and use of the WIGOS Metadata and the OSCAR/Surface. It reviewed the WIGOS Metadata Standard and its representation model, and discussed the status of OSCAR/Surface and its machine-to-machine interface. The progress on guidance material related to WIGOS Metadata and OSCAR/Surface was reviewed as well as the recent and future training activities.

The session agreed on a set of conclusions, recommendations (mostly addressed to ICG-WIGOS) and actions that are described in Appendix II. Which is structured according to the agenda items of this TT-WMD 6th session.

GENERAL SUMMARY

1. ORGANIZATION OF THE SESSION

1.1. Opening of the session

1.1.1. The sixth session of the Inter-Commission Coordination Group on the WMO Integrated Global Observing System (ICG-WIGOS) Task Team on WIGOS Metadata (TT-WMD-6) was held at the headquarters of MeteoSwiss, Zurich, Switzerland, at the kind invitation of the government of Switzerland, from 27 to 29 November 2017. Mr Jörg Klausen (Switzerland) co-Chair TT-WMD, opened the session at 09:00 hours on Monday, 27 November 2017 and welcomed the participants to the MeteoSwiss, wishing a pleasant and efficient session.

1.1.2. Mr Steve Foreman, Chief, WIS Data Representation, Metadata & Monitoring Division, WMO Secretariat, expressed the gratitude to MeteoSwiss, on behalf of the WMO Secretary-General Prof. Petteri Taalas, for hosting the session at Zurich. He highlighted three things that the participants should have in mind during the discussions: why we need WIGOS metadata and the WIGOS Metadata Standard (WMDS), to whom the metadata is targeted, in order to make sure it is practical and usable, and how to make things living in the long term, i.e. how to maintain the WMDS.

1.1.3. The list of participants is given in Appendix I.

1.1.4. TT-WMD-6 adopted the Agenda for the meeting, which is reproduced at the beginning of this report.

1.1.5. TT-WMD-6 agreed on its working hours and adopted a tentative work plan for consideration of the individual agenda items.

2. REPORT OF THE CO-CHAIRS

2.1. Mr Klausen briefed the session on the activities most relevant to TT-WMD, that happened since the last session (TT-WMD-5) which was held at Geneva, Switzerland, 5-7 December 2016.

2.2. WIGOS Station Identifiers (WSIs) have been implemented in the WIGOS Metadata Representation (WMDR) schema;

2.3. Highlighted the list of Members that we know who have started working with OSCAR/Surface;

2.4. Mentioned that there is a need for a clarification on the transition phase for the WSIs, and this should be a request to ICG-WIGOS;

2.5. Another challenge related to the WSIs is how to make the assignment of WSIs more flexible, e.g. by using the "issuer of identifier" for WMO Programmes such as the Global Atmosphere Watch Programme (GAW), the Global Cryosphere Watch Programme (GCW), the marine observations programmes under the Joint Commission for Oceanography and Marine Meteorology (JCOMM), etc.

2.6. A question from OSCAR/Surface is about what to do when the name of a station changes, should the "old" name still be kept after being updated?

2.7. The scope of WIGOS requires the engagement of all the non-NMHSs contributors to the international exchange of observations;

2.8. A training course survey revealed uneven knowledge/understanding of WIGOS metadata and its implementation;

2.9. The issue of accuracy and maintenance of WIGOS metadata should be raised to ICG-WIGOS, as an activity for the Regional WIGOS Centres (RWCs);

2.10. The ToRs of TT-WMD should be reviewed for the update of the WMDS, the WMDR, the OSCAR/Surface and the related guidance material.

3. RELEVANT OUTCOMES OF ICG-WIGOS-6 AND EC-69

3.1. Mr Luis Nunes, WIGOS Scientific Officer, WMO Secretariat, summarized the relevant resolutions of ICG-WIGOS-6:

3.1.1. Some flexibility for external partners to provide WIGOS metadata will be required and strict enforcement of the WMDS must not become a barrier to the contribution of useful data – examples of JCOMM data contributors where full compliance is unlikely to be achieved;

3.1.2. The ICG-WIGOS Task Team on WIGOS Data Partnerships (TT-WDP) and TT-WMD were requested to develop guidance that balances the full compliance target with real-world practicality.

3.1.3. The research community tends to rely on different file formats from those stipulated in WMO regulatory and guidance material, so conversion tools are needed to convert formats.

3.1.4. Regarding the further development of OSCAR/Surface, ICG-WIGOS requested:

- Implementation of a machine-to-machine interface for OSCAR/Surface by April 2017,
- Quantitative monitoring information from the WDQMS to be integrated in OSCAR/Surface,
- Inclusion of indicators measuring the degree of compliance of a station metadata,

3.1.5. TT-WMD is requested to advise on a seamless linkage between WIGOS and WIS metadata

3.1.6. TT-WMD should continue and finalize its work during 2017, and a new Task team on OSCAR Development will be established by ICG-WIGOS-7.

3.2. Mr Nunes also summarized the relevant resolutions of sixty-ninth session of the Executive Council (EC-69):

3.2.1. EC-69 adopted the updated Appendix 2.4 and the attachment to Appendix 2.4 of the *Manual on WIGOS* (WMO-No. 1160), with effect from 1 January 2018;

3.2.2. Decided that the attachment to Appendix 2.4 will be extracted from the Manual and be processed separately as a stand-alone document and that its code tables be moved into the *Manual on Codes* (WMO-No. 306);

3.2.3. Noted that entries in Table 1 on the topic of atmospheric composition were not mature enough to publish formally and that ongoing maintenance of the code tables would be simpler and more reliable if they were placed in a simpler tree structure on codes.wmo.int.

3.2.4. Decided to approve the code tables specified in the annex to resolution 10 (EC-69) for inclusion in the Manual on Codes, Vol. I.3 and to publish the code tables on http://codes.wmo.int.

3.2.5. Decided to adopt the initial version of the *Guide to WIGOS* with effect from 1 July 2018 and requested ICG-WIGOS to finalize the initial Guide with additional guidance material.

4. FEEDBACK FROM THE VARIOUS COMMUNITIES

4.1. WMO Radar Database (follow-up from the Radar metadata Workshop)

4.1.1. Mr Ercan Buyukbas (Turkey) explained the background of the WMO Radar Database (WRD); It was mentioned that the WRD keeps the history of changes, based on tables of changes; The Turkish State Meteorological Service (TSMS) is working towards having the WRD fully compatible with WMDS and with the European Programme for operational weather radars OPERA; TSMS is implementing recommendations from the Workshop on weather radar metadata, Locarno, Switzerland, 19-21 June 2017, as well as from the Inter-Programme Expert Team on Operational Weather Radars (IPET-OWR);

4.1.2. As an example of the issue with the accuracy of metadata, the recorded height of 155 for a Radar was mentioned - should it be 15.5m or 155 feet? Such issues need to be discovered by systematic scrutiny of the information recorded in WRD and then resolved at the source.

4.1.3. There are new (fixed) radar stations being installed on sea, e.g. C-band on oil platforms;

4.1.4. There is a concern that many Members consider their WMO responsibility only to be for their NMHSs, and not for the whole country - PRs not fully understanding the scope of their mandate;

4.1.5. Any opportunity should be used to raise awareness and to deliver training on WMDS and OSCAR/Surface – there is a need to empower and resource the Regions in this respect;

4.1.6. Some actions from the Locarno Workshop need follow-up, such as to review of mapping metadata databases, including cross-check with needs from other ground-based remote sensing, and to generate examples of WMDS for weather radars (Switzerland, Finland, Croatia, Turkey).

4.1.7. Information on the use of radio frequencies was seen as very important for WMDS and OSCAR/Surface.

4.2. Wind profilers, ceilometers

4.2.1. Mr Dominique Ruffieux (Switzerland) provided information about the Radar Wind Profiler (RWP) activities within the Commission for Basic Systems Expert Team on Surface Based Observations (CBS ET-SBO), following a questionnaire circulated in 2014 on use of wind profilers and their characteristics (metadata) – it may have been too complicated because there were few (quality) responses to that part.

4.2.2. About 50 metadata items defined by the radar group - most included in WMDS; They did a cross-check between terms in the different standards.

4.2.3. They found 80% overlap of the RWP metadata fields with the WMDS fields, the other 10% were in RWD but not OSCAR/WMDS, and 10% were in OSCAR/Surface but not in RWP; The 20% difference will be impacted by the classification of the parameters as Mandatory or Optional.

4.2.4. It was mentioned that there is a EUMETNET list of ceilometers with basic metadata in it and that metadata was proposed to be uploaded centrally, i.e. metadata from weather radars, ceilometers and wind profilers should be handled consistently as from a "radar" grouping. The WRD could include the RWPs but there is a need to clarify the governance – a recommendation should be made to ICG-WIGOS;

4.2.5. Filling the OSCAR/surface with more than 40 metadata parameters is a major challenge for the RWPs. The option of having EUMETNET E-Profile Programme to input metadata on behalf of Members was raised.

4.2.6. It was suggested the information on RWP should be added to WRD.

4.3. ET-WDC and GAW community

4.3.1. Mr Klausen briefed the session on the feedback from the Commission for Atmospheric Sciences' Open Programme Area Group Expert Team on World Data Centers (CAS OPAG ET-WDC);

4.3.2. The strong recommendation from the GAW community to building a federated system of WDCs was emphasized; The development of the concept includes links to the WIS/GISCs and its implementation will support the WMDS and the WMDR;

4.3.3. Sharing of chemical composition metadata is done via the GAWSIS (Global Atmosphere Watch Station Information System) that share the same architecture and same data base as OSCAR/Surface.

4.4. JCOMM communities (SOT, VOS, etc)

4.4.1. Mr Joe Swaykos (USA) reported on the Joint Commission's for Oceanography and Marine Meteorology related activities where the issue of competing resources (e.g. IT staff) priorities between implementation of BUFR and implementation of the WMDS was raised; Another possible issue related to metadata is about some proprietary metadata, e.g. from manufacturers;

4.4.2. The results of the review of the WMDS by the various JCOMM groups/teams, including possible proposals for additional metadata elements is going to be analyzed and the final consolidated results will be submitted to TT-WMD by Mr Swaykos in early 2018;

4.4.3. The issue of WIGOS Metadata profiles was discussed: where do we draw the line between the "core" (WMDS) and the community profiles? It was highlighted that the WDMS is broad, so very specific detailed metadata should not be added to WMDS - the WMDR's capability for extensions could be used for those community specific fields.

4.4.4. Information management best-practices were referred, such as retaining level 0 data so that observations can be re-processed if a problem with a downstream algorithm is found to be faulty/improved. Documentation of such algorithms is key to enable such re-processing.

4.5. GCW

4.5.1. Ms Rodica Nitu, Programme Manager Global Cryosphere Watch, WMO Secretariat, provided feedback from the GCW community activities related to WIGOS Metadata, particularly about the review of the observed variables list;

4.5.2. She mentioned the need to know what is the domain for each of the observed variables – the session agreed to put back the context/domain path into the list of variables that is being reviewed by an ad hoc group including the CBS Inter-Programme Expert Team on Observing Systems Design and Evolution (IPET-OSDE), TT-WMD and the CAS Task Team on Atmospheric Chemistry Vocabulary (TT-ACV);

4.5.3. Ms Nitu informed the session that concrete proposals, based on the GCW experts review of the WMDS, including definitions of cryosphere variables will be submitted to TT-WMD tentatively in February 2018.

4.5.4. It was also mentioned the need (beyond GCW) to be able to link sites into a "super-site" (in the same way that radio astronomy interferometry sites would need to be linked) – the current definition and name of a “site” in the context of cryosphere is subject to revision.

4.6. Hydrology

4.6.1. Mr Tony Boston (Australia) briefed the session on the related activities of the hydrology community, in particular he mentioned the evolution of the WMO Hydrological Observing System into a version-2 (WHOS-2) the implementation of which is expected for middle 2018;

4.6.2. There will be a way to connect the hydrologic metadata to OSCAR/Surface using WMDS “format”; Mr Silvano Pecora (Italy) should be contacted for the OSCAR/Surface related subjects with respect to the WHOS-2.

4.6.3. TT-WMD-6 welcomed the work of the Arctic-HYCOS project on ‘Arctic-HYCOS station attributes’. When these are finalised along with their definitions, they need to be mapped to existing WIGOS metadata standard elements and considered by TT-WMD.

4.7. AMDAR

4.7.1. Mr Dean Lockett, Scientific Officer, WMO Secretariat, provided, via teleconference, information on the development of the WIGOS metadata framework for aircraft-based observations (ABO) and its implementation in OSCAR/Surface;

4.7.2. He showed the results of mapping the WMDS fields against the ABO metadata elements with the obligations considered for each ABO system, from an ABO perspective; The session agreed that the tables with the mapping results should be reviewed offline;

4.7.3. Regarding the WSI for aircrafts it was said that the operator of the aircrafts should state which IDs they want/will use for the future; As long as there is a lookup table linking the WSI to other Aircraft operator ID – this is the same as naming it “the WIGOS ID” or the “primary key”; They want to define a "primary" identifier for aviation use - the one that should be used for all observations from a single airframe…

4.7.4. The offer from ET-ABO to contribute to the further development of the Guide to WIGOS, in relation to the WIGOS metadata, was acknowledged and welcomed.

4.8. Climate (long-term observing stations)

4.8.1. Mr Peer Hechler, Scientific Officer, WMO Secretariat, introduced via teleconference, the requirement of register/identify the WMO recognized long-term observing stations in the WIGOS Information Resource (WIR), using the WMDS and OSCAR/Surface; He provided some background information about the recognition process that is supported by Cg-17 and EC-68 decisions, which aims to encourage long term stations and emphasize their importance; 60 stations have been recognized, 26 more are under review and there is a call of new nominations - expected around 200 stations to be recognized over the next two years. It was mentioned that there is a review cycle of 10 years, and it was suggested to have three different levels of certificates, e.g. bronze, silver and gold certificates;

4.8.2. The session noted that some of the long-term observing stations have not in the past exchanged metadata internationally, and so do not yet have WIGOS metadata records in OSCAR/surface;

4.8.3. The session discussed how to flag those stations in relation to metadata; It was proposed and agreed that the metadata element “Network affiliation” should be used by Members to submit an affiliation, and then an approval request would be sent automatically to the Secretariat (Mr Hechler) for follow-up with the process, At least one observed variable must have been measured for the whole period; Mr Klausen informed that this procedure could be quickly implemented in OSCAR/Surface;

4.8.4. The session also agreed that WIGOS metadata should be inserted and maintained in OSCAR/Surface, for those recognized long-term observing stations.

4.9. Space-based observations

4.9.1. Mr Guillaume Aubert, EUMETSAT, informed that the unavailability of his team to review and contribute to the WMDS and to the WMDR have been recently overcome; He is planning to work with the Coordination Group for Meteorological Satellites (CGMS) to review the WMDS by middle 2018; He is also planning that his team will review the WMDR/XML schema by middle 2018;

4.9.2. The session considered that OSCAR/Space is the natural home for the WIGOS metadata for space-based observations, but currently it does not support ingestion of the metadata according to the WMDS; It was agreed to consult with other teams, such as the Inter-Programme Expert Team on Satellite Utilization and Products (IPET-SUP) for more information about the future plans of OSCAR/Space.

4.10. Expert Team on Surface-Based Observations

4.10.1. Mr Karl Monnik (Australia) co-Chair TT-WMD, briefed the session on the feedback from the CBS Expert Team on Surface-Based Observations (ET-SBO) related to WIGOS Metadata and OSCAR/Surface;

4.10.2. The participants were also invited to review the contents of Doc.4.10 submitted to session, which includes detailed feedback and recommendations, and report to Secretariat any comments and suggestions;

4.10.3. The session agreed to consult with IPET-OSDE for the required accuracy of key metadata for different application areas;

4.10.4. It was recognized that Regional WIGOS centres should check the available metadata in OSCAR/Surface against reality and prompt Members to improve it as needed;

4.10.5. The session also agreed that updates in metadata for real time data exchange should be made in less than a week following an operational change; It was noted that OSCAR/Surface is designed with monthly resolution of metadata.

5. REVIEW OF THE WIGOS METADATA STANDARD

5.1. Relationship between WIGOS and WIS metadata

5.1.1. Mr Foreman (Secretariat), introduced document 5.1 which emphasizes the differences between WIS and WIGOS metadata and he mentioned the following aspects:

- the rules for Members to organize their datasets only apply to data being exchanged in real-time data, for others types of data Members are free to organize their datasets the way they want;
- for the “abstract”, which is one of the mandatory WIS metadata, there is a recommendation that the keyword should include the stations, e.g. through using WIGOS IDs;
- there is no way to know which parameters are contained in the reports exchanged via the WIS;
- the WIS monitoring is done every three months, over a two weeks period; The one made in October is called the “annual monitoring”;

- either WIS or WIGOS metadata should develop a way to describe the schedule of international exchange;
- the GISCs don't archive observations, only the NWP centres do archive all the observations that they receive; also the satellite agencies do that for their observations;

5.1.2. The session concluded that:

- WIS is not able to provide the schedule of international reporting for individual variables;
- there is already the possibility of using the WIGOS ID and the fileID to link OSCAR/Surface and WIS. The Members are responsible to provide the links (URLs) in OSCAR/Surface pointing to the corresponding WIS metadata;
- the OSCAR/Surface development team is requested to add a field for a link to WIS metadata as well as a checkbox to allow indication of reporting schedules which are for international exchange.

5.2. WIGOS Station Identifiers

5.2.1. Mr Monnik briefed the participants on the status of the WSIs implementation; It was mentioned that only JCOMM Operations Centre (JCOMM-OPS) assigns and manages the WSIs globally, for all others observing systems/networks that is up to the Members;

5.2.2. ICAO and GAW stations currently depend on specific station identifiers (4 letter identifier for a station e.g. LSZH for Zurich Airport and the three letter identifier for a GAW station) is used in data messages (e.g. METAR). Further discussion will be needed with these communities to investigate a method to align with WSI.

5.2.3. There is a concern that PRs are not authorizing WSIs for stations that they do not operate; The session discussed approaches of how to deal with the cases when the PR of a country/territory does not reply to a request for a WSI and it was suggested that WMO/co-sponsored Programmes could be allowed to issue WSIs without the involvement of a PR, e.g. by using the "Issuer of Identifier" assigned to that programme; The current procedure is that, e.g. for a GAW affiliation of a station, the responsible station manager goes to GAWSIS and assigns a 3-letter GAW identifier, which is considered in OSCAR/Surface as a program-specific identifier. For a WSI, this then needs to be issued by the PR of the country;

5.2.4. The session recommended that the NFPs for WIGOS and the NFPs for OSCAR/Surface of the same Member, should work together to develop their national policy for assignment of WSIs, including to facilitate the issuing of WSIs for non-NMHS stations;

5.2.5. Guidelines to identify issues with creating and transitioning to WIGOS station identifiers, including guidance on international organizations issuing identifiers and for non-NMHS stations, will need to be developed. It seems unavoidable that multiple WSI will be associated with a single station.

5.3. Changes/updates and additional elements

5.3.1. The session agreed that the (operating) radio frequencies of observing systems should be an additional sub-element under Instrument Specifications, category "Instruments and Methods of Observation" of the WMDS;

5.3.2. A new metadata element, named "Stations/platforms cluster", was agreed to be added to the WMDS to indicate that a station/platform is part of a grouping of stations/platforms, which is identified by a name and a description. This can apply to GCW super stations or a cluster of station around a geographic or functional location such as an airport.

5.3.3. Another new element agreed to be added to the WMDS was the "Schedule of International Exchange", to allow distinction if/when observations are made/not made available internationally. This should be associated with the observed variable.

5.3.4. The session recognized and agreed to keep the different names used for the station/platform identifier, as "WIGOS Station Identifier" both in OSCAR/Surface and in the Guide to WIGOS, while the corresponding element in the WMDS is "Station/platform Unique Identifier";

5.3.5. It was restated that element 3-05 “Station Model” should be dropped out of the WMDS.

5.4. Changes/updates to code tables

5.4.1. The session acknowledged the work that is being done in the context of an ad hoc group, including representatives of TT-WMD, IPET-OSDE and TT-ACV, towards the harmonization of the list of observed variables, related to code table 1-01 of the WMDS; It was agreed to identify which variables are already in use by OSCAR/Surface against the wider list under discussion by the ad hoc group;

5.4.2. The session approved the updated versions of the code table 1-02 “Measurement Units”, as well as code tables 4-03-01 through 4-03-04 related to Topography or bathymetry;

5.4.3. The metadata element 1-04 “Spatial extent”, which describes the geometry of the observation, was agreed to be have a code table, instead of allowing free text input;

5.4.4. The metadata element 4-05 “Site information” (category 4 environment) was agreed to have a code table named “Direction of view for picture”, instead of allowing free text input;

5.4.5. The latest version of the Code table 5-02 “Measurement/observing method” was agreed to be circulated among TT-WMD members for review.

6. STATUS AND DEVELOPMENT OF THE WIGOS METADATA EXCHANGE MODEL

6.1. Dr Klausen briefed the session on the status of development of the WMDR in an IT cloud type system that allows for a collaborative work with automatic versioning (subversion repository owned by the Secretariat - Steve Foreman);

6.2. The session recognized with concern the limited human resources currently working on this topic, basically only Dr Klausen, since the identified experts seem to be all too busy; Mr Aubert mentioned that EUMETSAT may start contributing to this effort;

6.3. The case of observations related to the same variable and same instrument but being used for various reporting formats/schedules, e.g. air temperature for synoptic and for aeronautical is dealt with by WMDR under the “deployment” and the schedule of reporting;

6.4. The current version of the schema does not deal with historical changes regarding territory/country, although OSCAR/Surface will keep all the previous metadata.

6.5. The next candidate release of the schema, 1.0RC7, will be compatible with the changes to the WMDS approved by this session.

7. OSCAR/Surface

7.1. Operational status and change requests

7.1.1. Ms Lucia Cappelletti (Switzerland) delivered a presentation on the operational status of OSCAR/Surface;

7.1.2. The exchange of information between OSCAR/Surface and the WIGOS Data Quality Monitoring System (WDQMS) was discussed and the session requested the OSCAR/Surface development team to add a new field to capture the real performance of a station/platform, as produced by the WDQMS;

7.2. Functionalities of the API (machine-to-machine interface)

7.2.1. Mr Klausen introduced the document 7.2 and mentioned that there are 7 requirements for the REST API (Representational State Transfer – Application Program Interface);

7.2.2. A recommendation to Members should be that they should keep track of changes on their metadata to facilitate which elements need to be updated in OSCAR/Surface;

7.2.3. In the current test version of the API there are two buttons to send XML files to OSCAR/Surface: one for the NFPs (managing individual stations), the other one for global data centres, such as JCOMM-OPS, WRD (managing global networks);

7.2.4. There is a tentative launch date for the test version to become available, 12th December 2017 – so far it has been tested only by MeteoSwiss; The Secretariat has a list of identified testers;

7.2.5. The session recognized that developing countries will benefit from less complex tools to deal with OSCAR/Surface, but also recognized the need for resources to develop such "intermediate tools", e.g. for converting flat files or spreadsheets into the WMDR XML;

7.2.6. The ambition is to have the XML schema ready for users from May 2018.

8. GUIDANCE MATERIAL

8.1. Mr Monnik referred to the initial Guide to WIGOS, in which the guidance for exchanging WIGOS metadata will be developed as soon as the XML schema is finalized; All the remaining WMDS elements are to be implemented either in phase II (2017–18) or in phase III (2019–20), however, a Member may make these elements available before then.

8.2. The session recommended that the Guide to WIGOS should be used for the training events on WIGOS Metadata and OSCAR/Surface; It was noted that section 3.3.5. "Stations on ice", has not yet been drafted;

8.3. The "templates" for various types of systems that allow to generate XML files should be included in the Guide; Such guidance should be drafted as a new section 3.4 to be named "Representing the WIGOS Metadata in a standard format" to describe the XML schema;

8.4. The session agreed on the need for a revision of the definitions, notes and examples included in the WMDS, to ensure consistency with the Guide to WIGOS;

8.5. The session recalled that proposals for adding new code tables to WMDS, or changes to the existing ones, should be submitted to TT-WMD for approval;

8.6. All the corrections/updates/additions related to WIGOS Metadata will be collected for the next edition of the Guide; For example, a recommendation to include the highest frequency of reporting observing schedules should be included in the Guide; The GAWSIS and other machine sources of metadata should be mentioned in the Guide; The Guide also needs to be revised in terms of the implementation phases for the WMDS.

9. TRAINING EVENTS ON WMDS AND OSCAR/SURFACE

9.1. Mr Nunes briefed the session on the training activities for OSCAR/Surface, essentially at Regional level, and other related events during 2017 against the general plan of events; He also listed the events being tentatively scheduled for 2018, which will all depend on the Members availability to host the classroom part of the training events.

9.2. Some of the target regions and communities mentioned as possible priorities for the coming events were: RA V, RA I, the GAW and other research communities.

10. CONCLUSIONS AND RECOMMENDATIONS

10.1. The conclusions, recommendations and actions from this session, based on the results of discussions described above are summarized in Appendix II.

11. ANY OTHER BUSINESS

11.1. Nothing to report.

12. CLOSURE OF THE SESSION

12.1. Mr Klausen and Mr Monnik, co-Chairs TT-WMD thanked all participants for their attendance and for the relevant contributions, including the secretariat staff support, and closed the session at 16:30 hours, on 29 November 2017.

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Appendix I

LIST OF PARTICIPANTS

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Appendix II

Conclusions, Recommendations and Actions of TT-WMD-6

Agenda Item 2 - Report of the Co-Chairs

1. Recommendation:
ICG-WIGOS to provide clarification about the transition phase for WIGOS Station Identifiers; The session recommends that, in order to engage all the non-NMHSs contributors to WIGOS, a more flexible way of assigning WIGOS SIs should be adopted, e.g. “issuer of identifier” field could be delegated to Programmes/Network, instead of using Member countries’ code, for certain Programmes.
2. Recommendation:
The issue of the accuracy and maintenance of WIGOS metadata should be clearly considered, e.g. to be placed under the responsibility of Regional WIGOS Centres (RWCs).

Agenda Item 4 – Feedback from the Various Communities

3. Recommendation:
To consider ways to improve the PRs’ understanding of the scope of their mandate, which covers all observing networks including those outside the NMHS, particularly in relation to WIGOS and WIGOS metadata.
4. Recommendation:
To consider how to empower and resource the Regional Associations to allow them to raise awareness and to deliver training on the WIGOS Metadata Standard (WMDS) and OSCAR/Surface.
5. Recommendation:
To consider inclusion, by CBS, of Wind Profilers (WPs) metadata into the WMO Radar Database (WRD), as the operational authoritative source of metadata for Radars and WPs, while clarifying the governance of such expansion.
6. Conclusion:
It is recognized that several Members and Programmes, such as those under JCOMM, are facing competing resources priorities, e.g. between migration to BUFR and implementation of the WMDS.
7. Conclusion:
The scope of WMDS is broad, so very detailed metadata specific to a particular observing system should not be added to the WMDS, but rather specified within that community as an extension of the WIGOS metadata; Where to draw the line between the WMDS and the WIGOS metadata profiles/extensions is a case-by-case issue. The WIGOS Metadata Representation (WMDR) – MD exchange model and schema - could be used for such community specific fields.
8. Conclusion:
In the case of radio frequencies (used for sensing and for data communications) it was agreed to include them explicitly as part of element 5-03 Instrument Specifications.
9. Action:
TT-WMD (JCOMM representative) to review the specific metadata fields identified by JCOMM networks and to consider their inclusion or not as new additional elements of the WMDS - tentatively within one month.
10. Action:
Léa Freydier to put the domain of observation together with the list of variables being discussed with IPET-OSDE and TT-ACV, since there is a need to know what is the context of each variable, e.g. “ice on the ground” versus “ice on sea water” – deadline ASAP.
11. Action:
GCW community to review and complete the definitions of the GCW related variables - tentatively by February 2018.
12. Recommendation:
In developing WHOS-2, expected for middle 2018, the connection to OSCAR/Surface using the WMDR should be ensured; The OSCAR/Surface development team should work with CHy experts, e.g. Silvano Pecora.

13. Action:
TT-WMD-6 welcomed the work of the Arctic-HYCOS project on 'Arctic-HYCOS station attributes'. When these are finalised along with their definitions, they need to be mapped to existing WIGOS metadata standard elements and considered by TT-WMD.
14. Action:
TT-WMD co-Chairs and Secretariat to review the updated table of Attachment D.1, provided as part of document 4.7 submitted to the session – deadline February 2018.
15. Conclusion:
The session agreed with the 2nd recommendation from ET-ABO, i.e. to accept their offer to contribute a section on Aircraft Based Observations metadata to the Guide to WIGOS.
16. Recommendation:
The list of stations that have been recognized by WMO as long term observing stations should be available from OSCAR/Surface; The session recommended that the long term observing stations will be considered as "network affiliation" and that stations submitted by Members to such affiliation in OSCAR/Surface would create a request to be sent to Secretariat for follow-up on the approval process.
17. Actions:
To work with the Coordination Group for Meteorological Satellites (CGMS) towards further review of the WMDS – EUMETSAT representative, by middle 2018;
EUMETSAT to review the WMDR (Exchange model and XML schema), by middle 2018.
18. Conclusion:
OSCAR/Space is the natural home for metadata related to space-based observations, but currently it does not support ingestion of the metadata according to the WMDS – clarification is needed on the future plans of OSCAR/Space – IPET-SUP may provide more information about this.
19. Action:
TT-WMD to check with IPET-OSDE about the required accuracy of key metadata for requirements of observations from different application areas (Rolling Review of Requirements – RRR – process) – deadline February 2018.
20. Recommendation:
TT-WMD reviewed the contents of Doc.4.10 submitted by ET-SBO and responded as follows:

i. proposed that metadata should be updated on a monthly basis for international purposes;
ii. a document summarising the assumptions made in the conversion from Vol. A to OSCAR/Surface should be provided as part of support documentation;
iii. considering that many NMHS staff entering metadata will be from a non-English heritage, that WMO consider making OSCAR/Surface available in multiple languages;
iv. observations metadata for lightning networks provide a unique challenge in terms of the WMDS;
v. OSCAR/Surface should consider some basic real time quality control of user input fields;
vi. the WIGOS Guidance document should indicate the acceptable accuracy for fields such as latitude, longitude, elevation and dates;
vii. guidance needs to be provided concerning the acceptable or minimal metadata required for third party sites, particularly where data is provided for gratis.

Agenda Item 5 – Review of the WIGOS Metadata Standard
21. Conclusions:
WIS is not able to provide the schedule of international reporting – one of the main reasons is that there is no way to know which parameters are contained in the reports exchanged, therefore, a metadata element is needed in the WMDS to capture that.
22. Recommendation:
It is recommended to include a field in OSCAR/Surface to accommodate the link pointing to the corresponding WIS metadata which will include the "fileID" in the URLs; Members are responsible to provide and insert them into OSCAR/Surface.
23. Conclusions:
One new element was agreed to be added to the WMDS: "Schedule of International Exchange".
One new element previously agreed to be added was now specified how to be included as part of the next edition of the WMDS: "Stations/platforms cluster".

One existing element 3-05 “Station Model” was agreed to be eliminated from WMDS.
24. Recommendation:
The NFPs for WIGOS and OSCAR/Surface should work together to develop their national policy for assignment of WIGOS Station Identifiers including the facilitation of issuing WIGOS Station Identifiers for non-NMHS stations at national level.
25. Action:
Code table 1-01 “Observed variable” is being reviewed for consistency with other communities, via an ad hoc group which includes representatives from TT-WMD, IPET-OSDE and TT-ACV. MeteoSwiss to check the variables in use by OSCAR/Surface against the extended list under discussion – deadline ASAP.
26. Conclusions:
The following revised code tables were approved: 1-02 “Units”; Code tables under 4-03 “Topography or Bathymetry”.
“Geometry of observation” agreed to have a new code table.
Code table 5-02 “Method of Observation” to be circulated for further review by TT-WMD.

Agenda Item 6 – Status and development of the WIGOS Metadata Exchange Model
27. Recommendation:
The session recommends ICG-WIGOS to consider the lack of human resources with expertise in data modelling for the further development and finalization of the WMDR.
28. Conclusion:
The next candidate release 1.0RC7 of the XML schema will be compatible with the new proposed changes of the WMDS, including the fields to capture the instruments frequencies.

Agenda Item 7 – OSCAR/Surface
29. Action:
The OSCAR/Surface development team is recommended to add one or more additional fields, which will be needed to capture the output from the WDQMS, i.e., to reflect the real performance of the stations. The details are still to be discussed with the TT-WDQMS – deadline February 2018.
30. Conclusion:
The session acknowledge the following milestones planned in relation to the XML schema and the API: December 2017 = tentative date for the test versions to become available; May 2018 = ambition date to have the first versions ready for users.
The session recognized that developing countries will benefit from less complex tools to deal with OSCAR/Surface, but additional human resources will be needed to develop “intermediate tools”, e.g. for converting XLS/flat files into XML.

Agenda Item 8 – Guidance Material
31. Recommendation:
The section 3.3.5. of the Guide to WIGOS about “Stations on ice” needs to be drafted – it is already part of the Guide, but having no content.
A new section 3.4 “WIGOS Metadata exchange format” should be drafted and included in the Guide to describe the WMDR and the XML schema and to provide guidance on how to use it.
The current edition of the Guide itself should be revised in terms of the WMDS implementation phases, and all the machine sources of metadata, e.g., GAWSIS, WRD, should be mentioned.
32. Action:
TT-WMD to review the definitions of the metadata elements of the WMDS, as well as their notes and examples – deadline March 2018.

Agenda Item 9 – Training Events on WMDS and OSCAR/Surface
33. Recommendation:
ICG-WIGOS members are invited to consider hosting OSCAR/Surface training events in their Regions and countries, with priority for RA I (two events, one in English and one in French), RA II/RA V, RA IV (in Spanish).

Agenda Item 10 – Conclusions and Recommendations

34. Recommendation:

Since the launch of OSCAR/Surface in 2016, and following the regional workshops and training events, mainly in 2017, more and concrete feedback has been received from the various “WIGOS communities”.

ICG-WIGOS is recommended to consider extending the TT-WMD mandate and reviewing its Terms of Reference, e.g. to include the revision, improvement and further development of the WMDS and its representation model, as well as corresponding guidance material, taking into account the feedback being received and expected for 2018.

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