

WORLD METEOROLOGICAL ORGANIZATION

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

TASK TEAM ON WIGOS DATA QUALITY MONITORING SYSTEM *First Session*

Geneva, Switzerland, 13-15 December 2016

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

In the case of a recommendation made by a working group between sessions of the responsible constituent body, either in a session of a working group or by correspondence, the president of the body may, as an exceptional measure, approve the recommendation on behalf of the constituent body when the matter is, in his opinion, urgent, and does not appear to imply new obligations for Members. He may then submit this recommendation for adoption by the Executive Council or to the President of the Organization for action in accordance with Regulation 9(5).

© World Meteorological Organization, 2017

The right of publication in print, electronic and any other form and in any language is reserved by WMO. Short extracts from WMO publications may be reproduced without authorization provided that the complete source is clearly indicated. Editorial correspondence and requests to publish, reproduce or translate this publication (articles) in part or in whole should be addressed to:

Chairperson, Publications Board
World Meteorological Organization (WMO)
7 bis, avenue de la Paix
P.O. Box No. 2300
CH-1211 Geneva 2, Switzerland

Tel.: +41 (0)22 730 84 03
Fax: +41 (0)22 730 80 40
E-mail: Publications@wmo.int

NOTE:

The designations employed in WMO publications and the presentation of material in this publication do not imply the expression of any opinion whatsoever on the part of the Secretariat of WMO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

Opinions expressed in WMO publications are those of the authors and do not necessarily reflect those of WMO. The mention of specific companies or products does not imply that they are endorsed or recommended by WMO in preference to others of a similar nature which are not mentioned or advertised.

This document (or report) is not an official publication of WMO and has not been subjected to its standard editorial procedures. The views expressed herein do not necessarily have the endorsement of the Organization.

CONTENTS

[AGENDA](#)

[Executive Summary](#)

[General Summary](#)

[List of Participants \(Appendix I\)](#)

[Outcomes from the Breakout Groups \(Appendix II\)](#)

[TT-WDQMS Action Plan \(Appendix III\)](#)

AGENDA

1. [ORGANIZATION OF THE SESSION](#)
 2. [GUIDANCE FROM ICG-WIGOS-5 AND CBS-16](#)
 3. [REVIEW OF THE TERMS OF REFERENCE OF TT-WDQMS](#)
 4. [REVIEW OF THE WDQMS CONCEPT AND ITS MAIN FUNCTIONS](#)
 5. [WDQMS PILOT PROJECT WITH NWP CENTRES](#)
 6. [WDQMS DEMONSTRATION PROJECT IN RA I](#)
 7. [UPDATE/FURTHER ELABORATION OF THE WDQMS CONCEPT AND ITS MAIN FUNCTIONS](#)
 8. [THE WDQMS IN THE CONTEXT OF REGIONAL WIGOS CENTRES](#)
 9. [EXTENSION OF THE WDQMS TO ALL COMPONENTS OF THE GOS](#)
 10. [APPROACHES TO INTEGRATE ALL WIGOS OBSERVING COMPONENTS IN WDQMS](#)
 11. [WORK PROGRAMME/ACTION PLAN OF TT-WDQMS](#)
 12. [ANY OTHER BUSINESS](#)
 13. [CLOSURE OF THE SESSION](#)
-

EXECUTIVE SUMMARY

The first session of the Inter-Commission Coordination Group on the WMO Integrated Global Observing System (ICG-WIGOS) Task Team on WIGOS Data Quality Monitoring System (TT-WDQMS-1) was held at Geneva, Switzerland, from 13 to 15 December 2016. The session was chaired by Mr S.Goldstraw (United Kingdom of Great Britain and Northern Ireland), Chair TT-WDQMS.

The session reviewed and took into account, the guidance and relevant outcomes of the fifth session of ICG-WIGOS and from the sixteenth session of the Commission for Basic Systems (CBS-16). It also considered the relevant outcomes of the sixty-eighth session of the Executive Council (EC-68).

The session reviewed the terms of reference of TT-WDQMS. It also reviewed the WDQMS concept and its main functions, having recognized the need to make the WDQMS interoperable with OSCAR/Surface, but agreed that they are two different systems. It also agreed to introduce the notion of Global WIGOS Centres (GWC) into the structure of WDQMS. It recognized the monitoring files operationally available every 6 hours from ECMWF, NCEP, JMA and DWD, as a major outcome of the pilot project with NWP centres. It assessed the results of the demonstration project in RA I as beneficial for the consolidation of the WDQMS concept, and acknowledged that most incidents raised were related to issues with metadata in OSCAR/Surface; another conclusion was that neither the training to participating Members nor the duration of the demonstration project were enough. The need for WDQMS National Focal Points was recognized. The order of the GOS observing systems to be included in the next development steps of WDQMS Demonstration and Pilot projects was agreed and the need to organize a dedicated Workshop to discuss the approaches to integrate all WIGOS observing components in the system was underlined. Finally the session drafted the work programme/action plan of TT-WDQMS ([Appendix III](#)).

GENERAL SUMMARY

1. ORGANIZATION OF THE SESSION

1.1. Opening of the session

1.1.1. The first session of the Inter-Commission Coordination Group on the WMO Integrated Global Observing System (ICG-WIGOS) Task Team on WIGOS Data Quality Monitoring System (TT-WDQMS-1) was held at Geneva, Switzerland, from 13 to 15 December 2016. The session was chaired by Mr Stuart Goldstraw (United Kingdom of Great Britain and Northern Ireland), Chair TT-WDQMS. He opened the session at 09:00 hours on Tuesday, 13 December 2016, and he welcomed the participants to Geneva, Switzerland.

1.1.2. Mr Peiliang Shi, Director in charge of the Observing and Information Systems Department, WMO Secretariat, welcomed the participants to Geneva, on behalf of the WMO Secretary-General Prof. Petteri Taalas.

1.1.3. Mr Shi underlined the importance of the work of this team, as a relevant part of the WIGOS Pre-operational phase; He recalled the two previous workshops in preparation of this Task Team, all meetings were held in December (this seems to be the "Monitoring month"); According to the agenda, the session will be very busy, starting by revising the WDQMS concept and then looking into the future.

1.1.4. He mentioned the need to be ambitious but also the need to prioritize; He noted with appreciation the interest of the Numerical Weather Prediction (NWP) centres in the WDQMS and their participation in the demonstration project in RA I, including a wide spectrum of interest from various Members.

1.1.5. Mr Shi recalled that the Secretariat is here to support the experts, and that more staff may be assigned to help if needed; He wished you a good meeting and also a happy new year to all.

1.1.6. The list of participants is given in [Appendix I](#).

1.2. Adoption of the agenda

1.2.1. TT-WDQMS-1 adopted the [Agenda](#) for the meeting, which is reproduced at the beginning of this report.

1.3. Working arrangements

1.3.1. TT-WDQMS-1 agreed on its working hours and adopted a tentative work plan for consideration of the individual agenda items.

2. GUIDANCE FROM ICG-WIGOS-5 AND CBS-16

2.1. Mr Luis Nunes, WIGOS Scientific Officer, WMO Secretariat, summarized the relevant guidance from the fifth Session of ICG-WIGOS (25-28 January 2016):

2.1.1. ICG-WIGOS expressed its appreciation of the significant contributions made by the European Centre for Medium-Range Weather Forecasts (ECMWF), the United States National Centres for Environmental Prediction (NCEP) and The European Meteorological Services Network (EUMETNET) to the WDQMS.

2.1.2. ICG-WIGOS reiterated the importance to WIGOS of this system, but they also expressed its concern about the complexity of the development; They proposed to simplify the graphical representation of the WDQMS presented by the Secretariat.

2.1.3. ICG-WIGOS agreed that any duplication with other similar systems should be avoided, instead, synergies should be exploited and that lessons learned from the GCOS Lead Centres, JCOMM Ops and other related systems should be taken into account; It further agreed that WDQMS has a large potential to demonstrate WIGOS benefits.

2.1.4. ICG-WIGOS was informed that by the end of 2016, the functional specifications and the pilot components would have been developed and they noted that the plan for the WDQMS was to integrate existing monitoring centres into the overall system architecture and to not establish new entities for those functions that are already taken care of.

2.1.5. They also noted that WDQMS is one of the WMO activities that would require significant continued contribution from all technical commissions and challenges were mentioned related to the contribution from Global Cryosphere Watch (GCW).

2.1.6. ICG-WIGOS decided to establish a WIGOS Editorial Board (WEdB), as well as a Task Team on the WIGOS Data Quality Monitoring System (WDQMS), a Task Team on WIGOS Data and Partnerships (TT-WDP) and a Task team on OSCAR Development (TT-OD), while the Task Team on WIGOS Metadata (TT-WMD) should be closed by the end of 2016.

2.2. Mr Nunes also summarized the relevant guidance from the sixteenth session of the CBS-16 (21-29 November 2016):

2.2.1. It recommended EC-68 to adopt the initial version of the Guide to WIGOS, which includes guidance on observing network design of relevance to TT-WDQMS, particularly Principles 6 (Achieving Homogeneity in Observational Data) and 8 (Designing Reliable and Stable Networks).

2.2.2. It also recommended EC to adopt the New Guide to Aircraft-Based Observations.

2.2.3. And it endorsed the Regional Basic Observing Network (RBON) concept, in which items 2.5 (Monitoring of RBON) and 2.6 (Management of RBON) are relevant to TT-WDQMS.

2.3. Additionally, Mr Nunes mentioned the relevant guidance from the sixty-eighth session of the Executive Council (EC-68, 15-24 June 2016):

2.3.1. EC-68 endorsed the Concept Note on establishment of WMO Regional WIGOS Centres (RWC), which includes performing the monitoring and incident management (WDQMS) and follow-up with data providers in case of data availability or data quality issues, as a mandatory function of the future RWCs.

2.4. In the follow-up discussions it was mentioned that data quality monitoring functions in the new Guide on Aircraft Based Observations (ABO) fits well in the WDQMS. It was agreed that OSCAR/Surface and WDQMS are two independent systems, although they need to be linked together. The current concept of the WDQMS was recognized to be complex, but the benefits of it must be promoted for a broad acceptance. On the other hand, WDQMS provides information on how well WIGOS is performing.

3. REVIEW OF THE TERMS OF REFERENCE OF TT-WDQMS

3.1. The session reviewed the Terms of Reference (ToRs) of the TT-WDQMS:

3.1.1. ToR (a) – the initial concept has been developed and its implementation is an ongoing activity; Mr Goldstraw suggested we should involve WMO Regional Offices in this effort. On the other hand, the concept is fixed for the Global Observing System (GOS), but not for the other observing systems. The need to agree on the next steps and also to be realistic about the possible achievements, was recognized.

3.1.2. ToR (b) – the meaning of “interoperable” is still not fully understood, since it is still not clear how and how often the stations status should be retrieved from the monitoring system and pasted into OSCAR/Surface database. It was agreed that the final result of putting both systems (WDQMS and OSCAR) working together should provide more benefits to Members, than having them as independent systems.

3.1.3. ToR (c) – the evaluation function may change according to the environment of particular systems; This means that the demonstration and pilot projects need to be planned properly, according to the resources.

3.1.4. ToR (d) – it was suggested that the Monitoring Web-tool could be used by ICG-WIGOS members to follow the developments and results of WDQMS.

3.1.5. ToRs (e) and (f) – the TT-WDQMS action plan should include the review of the Manual on WIGOS, in what regards the WDQMS related provisions and notes. Additional material may be required to be developed on the role/functions of NWP Centres and RWCs. The need to have good guidance on the various official languages was noted.

4. REVIEW OF THE WDQMS CONCEPT AND ITS MAIN FUNCTIONS

Note: This item was covered by discussions under items 6, 7 and 8.

5. WDQMS PILOT PROJECT WITH NWP CENTRES

5.1. Mrs Cristina Prates (ECMWF) delivered a presentation on the developments and status of the WDQMS Pilot Project with the Global NWP Centres:

5.1.1. The Japan Meteorological Agency (JMA) and the German Meteorological Service (Deutscher Wetterdienst, DWD) have joined the pilot project in 2016; The Meteorological Service of Canada is willing to join as well, and they just need to start producing monitoring results according to the agreed formats.

5.1.2. Guidelines for data file exchange are available on the ECMWF wiki page, as well as the data flagging system (Levels 0 = used/not used; 1 = quality issue/others; 2 = rejected/etc).

5.1.3. The quality monitoring (QM) reports for surface stations (every 6h) include Station and variable ID, as well as a Quality flag and the O-B (observed minus background) residuals; For upper-air stations (every 6h) includes also the layers Surf/Trop/Stra and then the layer quality flag as well as the average and standard deviation for O-B residuals.

5.1.4. The Traditional Alphanumeric Codes (TAC) reports are prioritized over the Binary Universal Form for the Representation (BUFR) reports.

5.1.5. The differences between NWP centres showing large O-B values could be due to different models, not to the observation.

5.1.6. The case of a station with a 10hPa bias, in both ECMWF and JMA monitoring reports, is an example of an issue in pressure observations at that site.

5.1.7. Future challenges include: stations reporting but not described in OSCAR; who should monitor the NWP centres; standardize the content of NWP QM reports (e.g. METARs are included in NCEP's files, PILOT and TEMP SHIPS are included in JMA's files); extend to other components of the GOS (SHIPS, BUOYS, TEMP SHIPS?).

5.2. At the follow-up discussion it was recognized that many data availability issues are still due to BUFR coding and transmission; It was suggested to adopt the following nomenclature: "native BUFR" vs "TAC converted BUFR". It was noted that the EUMETNET Quality Monitoring Portal (QMP) relies on NWP just for quality, it relies on DWD's database of observations for the data availability and timeliness checks.

5.2.1. It was suggested that the "starting point" of the flags levels should be named "All data supplied to the Data Assimilation System (DA)", not just "All data supplied".

5.2.2. The observing systems to be included next in the WDQMS monitoring pilot project was briefly discussed, but a breakout group was agreed to be a better approach for discussing this, noting that for precipitation amounts the NWP monitoring is not the best approach.

5.2.3. The need to establish the references for data quality was mentioned.

5.2.4. It was agreed that a "Global WIGOS Centre" should compare results from various NWP centres monitoring reports – as an example, the WDQMS monitoring Web-tool was mentioned.

5.3. Mr Timo Proescholdt delivered a presentation on the WDQMS Web-tool:

5.3.1. The WDQMS Web-tool is publicly available, although not advertised and runs by itself.

5.3.2. The developments and procedures to be implemented in the Web-tool in the near future include: quality tab that will show the results based on the O-B departures from the NWP Centres monitoring files, and retrieving schedules from OSCAR/Surface.

5.3.3. The Web-tool provides weekly reports on the station status, that could be inserted into OSCAR/Surface, as well as monthly reports on country status that could be inserted into the Country Profile Data Base (CPDB).

5.4. At the follow-up discussion it was recognized the need to develop "business rules" on how to aggregate the quality information in order to make it available to Members, including inserting it into OSCAR/Surface.

5.4.1. The quality of metadata was briefly discussed and it was noted that currently, this responsibility is with WMO Secretariat, but in the near future it will be part of the RWC operations.

5.4.2. The question of metadata consistency for the use of NWP centres, was raised, as there is more than one source, OSCAR/Surface and metadata contained in BUFR reports.

6. WDQMS DEMONSTRATION PROJECT IN RA I

6.1. Mr Henry Karanja (Kenya) introduced the national report from Kenya presenting their perspectives regarding the results and lessons learnt during the Demonstration Project in RA I:

6.1.1. Mr Karanja informed that Kenya Meteorological Department (KMD) is willing to continue running the demonstration project; Regarding the Kenyan RBSN/RBCN stations the PR of Kenya will make a decision on which should remain or be removed from the RA I list.

6.1.2. Regarding the issues on updating the stations in OSCAR/Surface, particularly the fields related to Network/Programme affiliation, such as the stations migrated from Vol.A that are affiliated with GOS, the best practices should cover how to deal with that in a simple way.

6.1.3. It was recognized that most of the incidents raised by KMD were related to metadata issues, either to observing schedule or to station height, or to both.

6.1.4. An open issue is how to ensure that updates to the incident tickets are not forgotten.

6.1.5. The session agreed on the need to have National Focal Points (NFPs) for WDQMS.

6.2. Mr Emanuel Kidebwana from the Tanzania Meteorological Agency (TMA) introduced the national report from Tanzania.

6.2.1. Some benefits from this demonstration project to the TMA were mentioned, in particular the internal re-organization of the activities related to monitoring, such as the setup of a national "service desk" for WDQMS. The demonstration project also triggered an internal project for the installation of reliable Internet connection at the stations.

6.2.2. Mr Kidebwana suggested that support should be provided to TMA, including resources in case of difficulties to solve technical issues; Also suggests that the Incident Management System (IMS) should automatically identify the incidents and send alerts to the respective NFPs.

6.2.3. More training, for using the monitoring tools, was mentioned as needed to be delivered to the NMHSs staff involved. The development of use cases was mentioned as beneficial for improved training on the tools, but also the long-term experience is relevant to have skilled staff. This means that future training on the tools should be carefully planned.

6.3. During the follow-up discussions, the problem of incident tickets remaining open for long time was addressed and the creation of a "List of known problems" was suggested. It was recognized that having incidents raised is already a step forward, it shows that some monitoring actions are going on.

6.3.1. It was agreed that the demonstration project has not run for long enough to deal with the quality issues, it only allowed to deal with data availability issues, since during the short period of the demonstration project dedicated to the quality issues, the performance of stations was good.

6.3.2. It was mentioned that data quality issues are different from the observing instruments issues, which are mostly dealt with by the IMSs that exists at national level. The subtleties of instruments faults cannot be addressed by the global monitoring of WDQMS.

6.3.3. It was mentioned that OSCAR/Surface should allow to recognize from which stations data should not be expected, regardless of the reasons.

6.3.4. It was suggested to have a summary of the stations performance for the whole time of the demonstration project, which could be made based on the ECMWF results.

6.3.5. The possible future automation of raising incident tickets and sending alerts should be carefully planned, to avoid having a large number of false alerts; On the other hand, the tools should be always available with results for people to use – a more effective system should be a combination of automatic and interactive procedures.

6.3.6. The definition of a “silent station” was discussed; Although it may be considered as a station from which data is expected to be reported but not received, an action was suggested to review the existing definition of silent station; It was also suggested that the initial task of any RWC should be to consolidate the list of stations to be monitored.

6.3.7. The session was informed of the plans to run a WIGOS workshop to discuss the development of a RWC in pilot mode for East Africa, tentatively to be held in Tanzania.

7. UPDATE/FURTHER ELABORATION OF THE WDQMS CONCEPT AND ITS MAIN FUNCTIONS

7.1. Mr Luis Nunes (WMO Secretariat) introduced a draft revised diagram of the WDQMS components and process.

7.2. In the follow-up discussion some questions were raised and suggestions were made:

7.2.1. Metadata management is not in the scope of the WDQMS.

7.2.2. In the diagrams shown, each arrow/process should be clearly described.

7.2.3. The RWCs have to have access to the data (via WIS) as part of the evaluation function to investigate BUFR and TAC issues; It was recognized that the issue identification is part of the Evaluation function, not part of the IM function.

7.2.4. It was mentioned that the escalation procedures should depend on the severity of the incidents and that communicating issues to data users is not needed unless they remain for sufficient time. The IMS are not designed for catastrophic events, but for the routine operations.

7.2.5. The Global WIGOS Centres could include running and maintaining a specific monitoring portal providing global reference results.

7.2.6. In case of issues that users need to be made aware of, alerts should be sent to them, instead of just waiting the users to access the monitoring results.

7.2.7. The new IMS that EUMETNET is planning to implement could be a robust solution to be used as a good example for RWCs.

7.2.8. The description of the WDQMS, needs to be drafted, should become an attachment to the Manual on WIGOS.

Four breakout groups were established during the session, with the following tasks (outcomes are described in [Appendix II](#)):

7.3. Other systems to be considered for inclusion on WDQMS - Lars Peter Riishojgaard, Tim Oakley, Charles Paterson, Cristina Prates, Dean Lockett, Stefan Klink (7 Jura).

7.4. Business rules: Going from issues to incidents; including aggregation of monitoring statistics – Yukinari Ota, Tanja Kleinert, Estelle Grüter, Pei Chong, Emanuel Kidebwana, Henry Karanja, Luis Nunes (7 Lake).

7.5. RA I Demonstration Project – Lessons Learnt – Lars Peter Riishojgaard, Luis Nunes, Emanuel Kidebwana, Henry Karanja, Charles Paterson, Pei Chong, Cristina Prates, Tanja Kleinert, Estelle Grüter, Yukinari Ota (7 Jura).

7.6. Description of WDQMS as a diagram – Stefan Klink, Dean Lockett, Tim Oakley (7 Lake).

8. THE WDQMS IN THE CONTEXT OF REGIONAL WIGOS CENTRES

8.1. Mrs Tanja Kleinert (Germany) introduced the document “Draft Guidance on Quality Monitoring and Incident Management for Regional WIGOS Centres”.

8.1.1. This guidance covers the QM and IMS for the land stations of the GOS.

8.1.2. It was mentioned that the further development of the document should include a description of the quality reports, as well as an expanded list of possible causes for issues/incidents, including the case when the issue is caused by the NWP model.

8.1.3. The expansion of the QM reports, produced by NWP Centres, in order to include timeliness, was mentioned but it was recognized that further discussion, including with WIS, and development is needed on how to collect and process the information to compute it; It was mentioned that there are requirements for timeliness available in the OSCAR database.

8.1.4. It was also mentioned that the feedback to OSCAR/Surface on the performance status of the stations is an important function to be described.

8.1.5. The session agreed that it is essential to use harmonized vocabulary; The terms uncertainty, trueness and accuracy were mentioned; The document needs an annex with the vocabulary.

8.1.6. In the last paragraph of Section 2.3 a sentence should be added to remind Members about the need to edit/update their WIGOS metadata in OSCAR/Surface.

8.1.7. The relation between incident tickets issued by a RWC and the incident management systems in place at national level, should be described as part of the process.

8.1.8. The diagram describing the IMS cycle should be changed to include the log of known issues, as well as the Evaluation function.

8.1.9. The session agreed that the future WDQMS monthly performance reports will supersede the current lead centres reports. The reports could be automated and could also include more detailed results as currently available in the semester reports.

8.1.10. Currently, the lead centre for upper-air observations (ECMWF) produces results by standard level; The monthly reports will evolve as the Members request for more information; These should also include assessment of the metadata quality.

8.1.11. The performance targets in the document reflect approximately what is stated in the OSCAR/Requirements, but we should also follow the Regional Aspects of the Manual on GOS.

8.2. Mr Stefan Klink (Germany) delivered a presentation on the RA VI pilot project "RWC in a nutshell".

8.2.1. He briefly described the project plan and calendar, and mentioned that training on the use of the EUMETNET QMP has started in December 2016, and the operations should run during the first half of 2017.

9. EXTENSION OF THE WDQMS TO ALL COMPONENTS OF THE GOS

9.1. This item was mostly covered by discussions under items 5, 7 and 8; Particular relevant are the details captured in the outcomes of breakout group 2 ([Appendix II](#)); Below are just a few additional important remarks mentioned in the session:

9.2. The monitoring of the space-based systems needs to be considered at a later stage of the WDQMS development.

9.3. The observations from the Automated Shipboard Aerological Programme (ASAP) should also be included in the monitoring together with the other type of radiosoundings – this activity could be taken by a separate RWC.

9.4. ICG-WIGOS should be asked to provide clarity about what is meant by item (f) of the roadmap for the WDQMS under the Plan for the WIGOS Pre-operational Phase (PWPP), which says: "Mechanisms for routine reporting of monitoring results to EC, Regional Associations and Members by end of 2017"

10. APPROACHES TO INTEGRATE ALL WIGOS OBSERVING COMPONENTS IN WDQMS

10.1. It was agreed that the integration of the non-GOS, i.e. all the other component and co-sponsored observing systems into the WDMQS should be discussed at a dedicated workshop, as planned in item (d) of the WDQMS roadmap, under the PWPP.

11. WORK PROGRAMME/ACTION PLAN OF TT-WDQMS

11.1. The session discussed and drafted the Action Plan for TT-WDQMS for the period from January 2017 to December 2018, as described in [Appendix III](#).

12. ANY OTHER BUSINESS

12.1. The session agreed on having teleconference meetings approximately every month.

13. CLOSURE OF THE SESSION

13.1. Dr Riishojgaard thanked the Chair and all the participants, on behalf of the WMO Secretary-General. He mentioned his confidence that this group will successfully accomplish the tasks ahead and expressed his best wishes for the Winter break to all participants.

13.2. Mr Goldstraw, expressed his appreciation to the participating experts who contributed significantly to the discussions and the conclusions. He then closed the session at 16:30 Thursday 15 December 2016.

LIST OF PARTICIPANTS

Mr Stuart GOLDSTRAW	Met Office FitzRoy Road EX1 3PB EXETER Devon United Kingdom of Great Britain and Northern Ireland Tel: +44 1392 88 5603 Fax: info not provided Email: stuart.goldstraw@metoffice.gov.uk
Mr Henry N. KARANJA	Kenya Meteorological Service Ngong Road P.O. Box 30259 00100 NAIROBI, Kenya Tel: +25 4203 876 955 Fax: +25 4722 364 465 Email: hkaranja@meteo.go.ke hkaranja2001@yahoo.com
Mr Stefan KLINK	Deutscher Wetterdienst (DWD) Frankfurter Strasse 135 D-63067 OFFENBACH AM MAIN, Germany Tel: +49 69 8062 4492 Fax: +49 69 8086 3410 Email: stefan.klink@dwd.de
Mr Robert GRUMBINE	Environmental Modeling Center National Centers for Environmental Prediction 5830 University Research Court College Park, Maryland (MD) 20740, USA Tel: +1 (301) 683-3747 Fax: +1 (301) 683-3703 Email: robert.grumbine@noaa.gov
Mr Yukinari OTA	Japan Meteorological Agency 1-3-4 Otemachi, Chiyoda-ku, Tokyo Japan Tel: + 81 3 3212 8341 Fax: info not provided Email: y.otta@met.kishou.go.jp
Mrs Cristina PRATES	ECMWF Shinfield Park RG2 9AX READING, United Kingdom of Great Britain and Northern Ireland Tel: +44 118 949 9420 Fax: +44 118 986 9450 Email: cristina.prates@ecmwf.int
Mrs Estelle GRÜTER	Federal Department of Home Affairs FDHA Federal Office of Meteorology and Climatology MeteoSwiss, Operation Center 1 P.O. Box 257 CH- 8058 Zürich-Flughafen, Switzerland Tel.: +41 (0) 58 460 92 68 Fax: +41 (0) 58 460 90 01 Email: estelle.grueter@meteoswiss.ch
Mr Emanuel KIDEBWANA	Tanzania Meteorological Agency Forecasting Service, P.O. Box 3056 Dar es Salaam, Tanzania. Tel: +255 758 948 689 Fax: info not provided Email: emanuel.kidebwana@meteo.go.tz e.kidebwana@gmail.com

Mrs Tanja KLEINERT	Deutscher Wetterdienst (DWD) Frankfurter Strasse 135 D-63067 OFFENBACH AM MAIN, Germany Tel: +49 69 8062 4492 Fax: +49 69 8086 3410 Email: Tanja.Kleinert@dwd.de
Ms Chong PEI	China Meteorological Administration (CMA) Beijing, China Tel.: info not provided Fax: info not provided Email: pcaoc@cma.gov.cn
Mr Charles PATERSON	Environment and Climate Change Canada, Meteorological Service of Canada, Atmospheric Monitoring and Data Services, 4905 Dufferin St, Toronto, Ontario M3H 5T4, Canada Tel: +1 416 739 4485 Fax: info not provided Email: charles.paterson@canada.ca

WMO SECRETARIAT	7 bis, avenue de la Paix CH-1211 Geneva 2 Switzerland
Mr Peiliang Shi	Director, WMO Information System Branch, WIS Director in charge of the Observing and Information Systems Department Tel.: +41 22 730 82 19 Fax: +41 22 730 80 21 Email: pshi@wmo.int
Dr Lars Peter Riishojgaard	WIGOS Project Manager Tel.: +41 22 730 8193 Fax: +41 22 730 80 21 Email: lriishojgaard@wmo.int
Mr Luis Nunes	WIGOS Project Office Tel: +41 22 730 81 38 Fax: +41 22 730 80 21 Email: lnunes@wmo.int
Mr Timo Pröschooldt	WIGOS Project Office Tel: +41 22 730 8176 Fax: +41 22 730 80 21 Email: tproescholdt@wmo.int
Mr Etienne Charpentier	Chief, Observing Systems Division (OSD) Tel.: +41 22 730 8223 Fax: +41 22 730 8478 E-mail: echarpentier@wmo.int
Dr Steve Foreman	Chief, WIS Data Representation, Metadata & Monitoring Division Tel.: +41 22 730 8171 Fax: +41 22 730 80 21 Email: sforeman@wmo.int
Mr Dean Lockett	Observing Systems Division (OSD), Observing and Information Systems Department Tel: +41 22 7308323 Fax: +41 22 7308021 Email: dlockett@wmo.int

Mr Tim Oakley	GCOS Implementation Manager Global Climate Observing System (GCOS) Tel: +41 22 730 8068 Fax: +41 22 730 8052 E-mail: toakley@wmo.int
----------------------	---

Outcomes from the Breakout Groups

1. Other systems to be considered for inclusion on WDQMS:

Proposed 'systems' for next phase of WDQMS Demonstrations/Pilot Projects.

Systems, Timeline, Monitoring Centers (appropriate, more than one, resourced), Evaluation and Incident Management, Benefit & Priority?

Considered: Rainfall/Precipitation; Surface Marine; Solar Radiation; Complete SYNOP Parameters; Radiosonde; CLIMAT; Aircraft Observations; Weather Radars; Wind Profiler Radars; Snow depth (GCW); GAW.

- GOS Surface – Regional

Finish the work on Land Surface Pressure and include Timeliness.
Add Air Temperature

- GOS Radiosondes – Regional (RA-VI)

Extension of what is already in place for Kenya and Tanzania (RA1 Project)
Temperature, Humidity, Wind (Layers)

Availability, Timeliness and Quality (TAC-TEMP, TAC-BUFR, TAC-BUFR(TAC))

Extension of what is already in place for Kenya and Tanzania (RA1 Project)

Monitoring Centers – EUMETNET plus ECMWF, NCEP, JMA, DWD feed to WDQMS

Evaluation and incident management resource – EUMETNET

Other Regions will be added.....

Timeline: 3 Regional WC monitoring Radiosonde by the end of 2017.

- GOS Ocean – Global/Regional

Surface Pressure, Sea Surface Temperature, Waves

Availability, (Timeliness) and Quality

Monitoring Centres – ECMWF, NCEP.....

Evaluation and Incident Management – JCOMM-OPS

Timeline – Monitoring statistics in WDQMS by the end of 2017. JCOMM-OPS buy-in and member TT-WDQMS.

- GOS Aircraft – Global/Regional

Temperature, Wind and Humidity

Availability, Timeliness and Quality

Monitoring Centres – ECMWF, NCEP, CMC.....

Evaluation and Incident Management – CBS-Lead Centre (NOAA)

Timeline – NCEP Meeting (Feb 2017); Lead Centre role and QM function. ET-ABO (May 2017). Monitoring statistics in WDQMS by the end of 2017.

- CLIMAT Messages from GSN & RBCN

Availability of Monthly (Daily) CLIMAT Messages (TAC and BUFR)

Monitoring from GSN Monitoring/Analysis Centres (DWD, JMA, NCEI)

Evaluation/Incident Management resource – GCOS Network Manager + CBS Lead Centres for GCOS

2. Business rules: Going from issues to incidents; including aggregation of monitoring statistics:

Summary of the outcome when an issue becomes an incident:

- It only becomes an issue and therefore later on maybe an incident if all of the contributing monitoring centers show an issue with that specific data set
- This issue will be recorded in an issue list. In order to define clear criteria to decide if an issue becomes an incident the table in Tanja's document should be adapted to take into account the possible impact of this issue. Following criteria should help to define that potential impact
 - o Priority -> i.e. if the issue concerns only one a few or all "stations" (or platforms or ... -> a generally valid term has to be found))
 - o the application area which is concerned
 - o urgency (e.g. if a station in the Bahamas is concerned during Hurricane season)
- Although if above mentioned criteria show that an issue becomes an incident an evaluation by the RWC has to be carried out before the according member is contacted.

Besides there was also a request that the RWC have to come up with an agreement with the according members.

Tour de table where people see open issues (since I/we didn't have a clear idea at the very beginning of our task) :

Topics which should be clarified can roughly be put into the two categories mentioned below:

A) Definition of specific business rules regarding specific matters:

- Criteria/business rules when an issue turns into an incident
- In case
- o 1 station is concerned
 - o A few stations are concerned
 - o All stations of a country are concerned
- Define criteria regarding how long to keep an incident open and what a possible follow up could be (e.g. "list of problems")
 - o How long do we keep an incident 'open'?
 - o What can be done if an incident isn't to be solved in a short time (i.e. silent stations) -> passing on into another list or something similar?
 - o How critical has an incident be to be kept open?
 - o Can an incident be cancelled (≠ closed)?
 - How to 'aggregate' the information coming from the different monitoring centers i.e. in which case an issue will be raised (e.g. it will only become an issue if all contributing monitoring centers show an issue)
 - Which input (besides the monitoring centers) might be accepted as well? Any criteria to define them?
 - Define who should be allowed to raise
 - o An issue (-> everybody?)
 - o An Incident (-> only the RWC's?)
 - Homogenize the output of the monitoring centres (e.g. right now centres reporting 'silent' stations are not necessarily stations which don't report but just not might be assimilated according to applied filters etc) -> there needs to be a clear definition on what stands for what -> a set of flags should be defined which has to at minimum to be implemented by the contributing monitoring centers

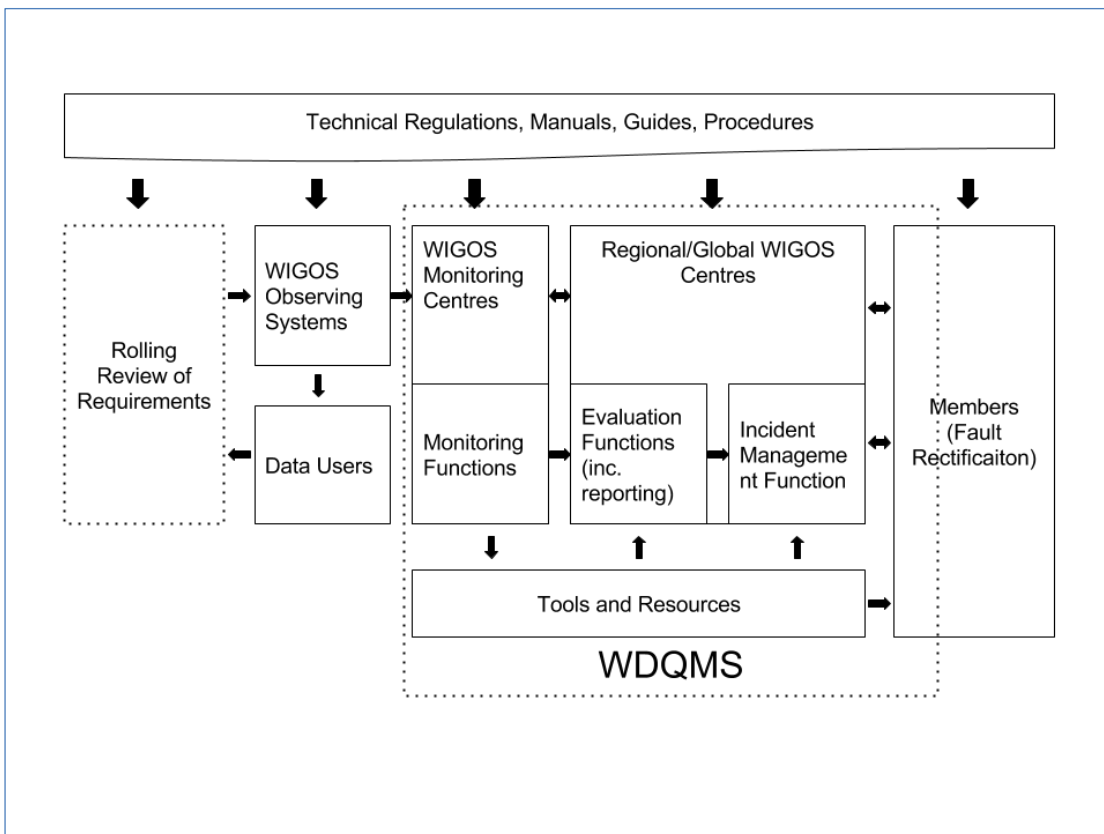
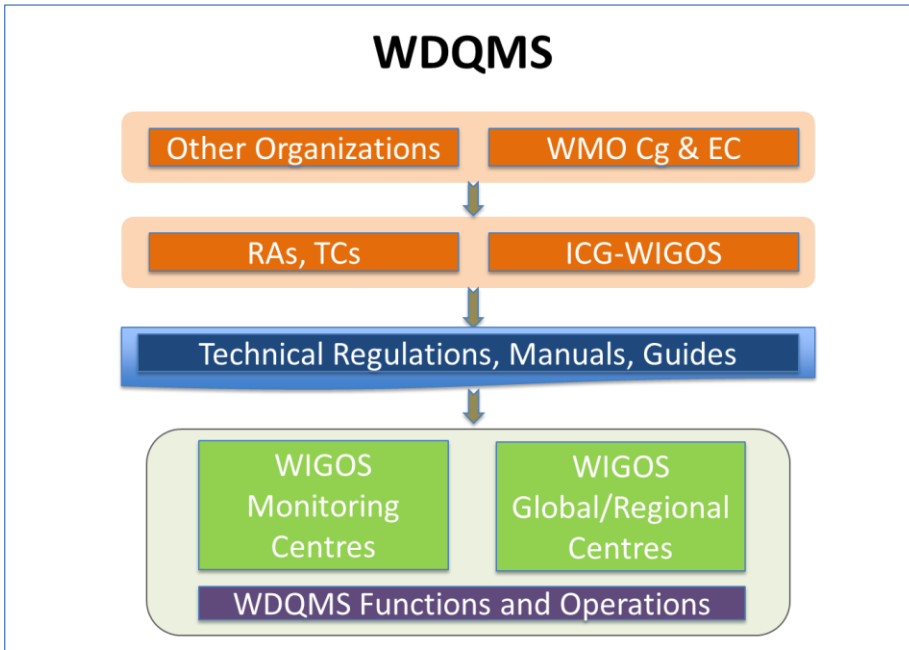
B) Definition of the process

- Definition of the responsibilities of the three levels (GWC, RWC and members, others?)
- How do these three levels interact with each other? -> going through examples representing different use cases could be helpful to come up with a definition -> only to be discussed to the extent it's still in the scope of WDQMS.

3. RA I Demonstration Project – Lessons Learnt

- Need for a better understanding about the best products for the monitoring function; importance of terminology;
- We have to know which are the stations to monitor:
 - o A stations Master File before the start of the Pilot project;
- The tools for monitoring quality are mature enough; We didn't look enough to the quality issues;
- Demonstration project was too short, it should be extended;
- More countries could be asked to join the demonstration project (Uganda, Burundi, Ethiopia, Djibouti, Rwanda, Soudan) – KMD and TMA should deliver training to them;
- We need guidance/examples for the quality issues;
- Describe meaning of all of the monitoring results; The products should have the same conditions amongst NWP centres;
- Regarding O-B harmonization should be achieved between NWP centres – differences should be documented in the guidance;
- NCEP should follow the agreed procedures (LP will talk to them);
- Most of the silent stations are in the RBSN, but due to national data policy they are not being exchanged; The PR of Kenya should contact the President of the Regional Association;
- Kenya and Tanzania to informally contact their colleagues to see who will be interested;
- WMO to contact the PR of Kenya to monitor more countries;
- How long the issues and incidents will remain open/in progress, and when the escalation procedure should be initiated, needs to be defined;
- Establishment of a national service desk for WDQMS - This will help keep the stations running and to ensure the data quality; other participating countries are recommended to do the same;
- Recommend that Tanzania be kept under pressure to keep doing the monitoring and follow-up actions;
- The future IMS should be more automated:
 - o Summary updated automatically,
 - o Some fields in the tickets should be automated: date, time, organization, ticket number, name (according to login);

4. Description of WDQMS as a diagram



TT-WDQMS ACTION PLAN FOR THE PERIOD JANUARY.2017 TO DECEMBER.2018

Version	Date	Comments
0	15/12/2016	TT-WDQMS-1

No	Task	Deliverable/Activity	Deadline (if not stated end of month)	Responsible	Status*	Comment
1	To continue the demonstration project in RA I					To gather sufficient information about the quality of pressure measurements and radiosonde observations
2	Explore the establishment of a pilot project for East Africa					
3	Support the RA VI pilot project					
4	Expand the monitoring capabilities of the NWP pilot project					complete the pressure monitoring functionality, including the input and the display, as well as aggregation rules
5	Add 2m air temperature to the NWP monitoring files					
6	Develop the monitoring and evaluation functionalities for the radiosonde observations					
7	Update the guidance document (Tanja) with the outcomes of TT-WDQMS-1					Including the aggregation of monitoring results
8	Produce version 1.0 of the Users Guide of the monitoring Webtool					
9	Define the QM reports for EC, RAs and TCs					

10	Describe the benefits of WDQMS					
No	Task	Deliverable/Activity	Deadline (if not stated end of month)	Responsible	Status*	Comment
11	Undertake the Workshop with for JCOMMOPS, GAW, GCOS, GCW and hydrology components of WIGOS					
12	To propose the necessary amendments to the Manual on WIGOS					
13	Produce material to the Guide to WIGOS					
14	Extend the monitoring to the surface marine observations					
15	Extend the monitoring to the aircraft observations					
16	Extend the monitoring to the climate observations (CLIMAT)					
17	Develop the generic description of WDQMS including the responsibilities at global, regional and national levels with diagrams					
18	Propose the WDQMS outputs that could be recorded in OSCAR/Surface					

* STATUS column entries will be one of the following descriptors, as determined by the Chair TT-WDQMS based on consultation with the responsible party (in each case, elaborative comments can be added after the standard descriptor or in the "Comment" column):

Completed	Under-Stress	Overdue
-----------	--------------	---------