**WORLD METEOROLOGICAL ORGANIZATION**

**INTER-COMMISSION COORDINATION GROUP**

**ON THE WMO INTEGRATED GLOBAL OBSERVING SYSTEM**

**Fifth Session**

***Geneva, Switzerland, 25-28 January 2016***

**FINAL REPORT**



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**Executive Summary**

The Fifth Session of the Inter-Commission Coordination Group on the WMO Integrated Global Observing System (ICG-WIGOS-5) was held at the WMO Secretariat in Geneva, Switzerland, from 25 to 28 January 2016. The session was co-chaired by Dr Sue Barrell (Australia), Co-Chair of ICG-WIGOS and Vice President of CBS, and Prof Bertrand Calpini, Co-Chair of ICG-WIGOS and President of CIMO.

ICG-WIGOS reviewed the progress towards the implementation of WIGOS achieved by the Technical Commissions (TCs) and the Regional Associations (RAs). Further, it reviewed outcomes from ICG-WIGOS Task Team meetings, and WIGOS-relevant workshops. In this regard, ICG-WIGOS expressed its appreciation of the progress achieved and thanked all involved experts and contributors ([see Item 4](#Item_4)).

ICG-WIGOS further discussed the progress made in the five key priority areas established by Cg-17 for the WIGOS Pre-operational Phase (2016-2019), including the concept development for Regional WIGOS Centres ([see Item 5](#Item_5)). Based on its deliberations, ICG-WIGOS formulated its recommendations on a further elaboration of the draft Plan for the WIGOS Pre-operational Phase (PWPP) to be submitted to EC-68 for approval ([see Item 7](#Item_7)).

Finally, ICG-WIGOS considered its future working structure and developed its Future Work Programme and Action Plan (see [Appendix II](#Appendix_II)).

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**General summary**

**1.** **ORGANIZATION OF THE SESSION**

**1.1 Opening of the meeting**

1.1.1 The Fifth Session of the Inter-Commission Coordination Group on the WMO Integrated Global Observing System (ICG-WIGOS-5) was held at the WMO Secretariat in Geneva, Switzerland, from 25 to 28 January 2016. The session was co-chaired by Dr Sue Barrell (Australia), Co-Chair of ICG-WIGOS and Vice President of CBS, and Prof Bertrand Calpini, Co-Chair of ICG-WIGOS and President of CIMO. The Co-Chairs welcomed the participants to the meeting, and expressed their wishes for a successful session.

1.1.2 On behalf of the Secretary-General of WMO, Dr W. Zhang, Director of the Observing and Information Systems, opened the session and welcomed the participants to Geneva. He highlighted the main goals of the meeting, especially the development of the draft Plan for the WIGOS Pre-operational Phase to be submitted to EC-68 for approval. He further underlined that the main emphasis during this phase would be on regional and national WIGOS implementation activities. However, the technical work led by technical commissions will also have to continue throughout the financial period in order both to further develop the WIGOS regulatory and guidance material and to support the regional and national implementation efforts. At the end of his opening statement, he assured the participants of full support to their work by the WMO Secretariat.

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

**1.2 Adoption of the agenda**

ICG-WIGOS adopted the [Agenda](#AGENDA) for the meeting, which is reproduced at the beginning of this report.

**1.3 Working arrangements**

1.3.1 ICG-WIGOS agreed on its working hours and adopted a tentative work plan for consideration of the individual Agenda Items.

1. **REPORT FROM THE CO-CHAIRS**
   1. Dr Barrell identified the following key objectives for ICG-WIGOS-5: 1) To review the progress made during the WIGOS Implementation Phase; 2)To review the early progress made on the WIGOS Pre-operational Phase activities and shape their further development; 3) To consider key activities and working mechanisms required to address the five priority areas for the WPP; 4) To provide input to the deliverables to EC-68.
   2. Further, Dr Barrell stressed the importance of the existing WIGOS Framework that will continue to evolve and strengthen during the Pre-operational Phase. While some of the priority areas were addressed during the WIGOS Implementation Phase in 2012-2015, especially the Technical Regulations, the metadata standard, the WIGOS Information Resource, and the initial regional planning efforts, other aspects are now in need of further development, i.e. observational data quality monitoring and national planning efforts. However, the framework put in place during the Implementation Phase provides a solid foundation on which these elements can be developed during the next phase.
   3. Support for some of the other WMO priorities, e.g. capacity development and improved governance, are addressed both implicitly and explicitly in the overall WIGOS framework, and WIGOS will seek to ensure a fully integrated approach to both within its efforts to support also the service priorities, especially GFCS, DRR, Polar and High Mountain Activities, and Aviation.
   4. In his statement, Prof Calpini focused on those activities that would require significant continued contribution from all technical commissions, i.e. the development of the necessary guidance material; the WIGOS Information Resource, including SORT; the WIGOS Data Quality Monitoring System; and quality assurance work with Partners related to crowdsourcing and big volume data.
   5. Prof Calpini also emphasized the importance of the implementation of WIGOS at the national level, and the associated challenges for the NMHSs. Many of these will need to establish national requirements and priorities; familiarize themselves with the WIGOS Technical Regulations; perform a critical analysis of their capabilities and existing gaps in their systems, processes, staff, networks, governance, and compliance with WMO regulatory material. They will need to define expected outcomes and milestones for their national implementations, define key performance indicators; establish governance mechanisms and formalize key partnerships. All of these tasks will require strong support from the respective Regional Association and its subsidiary working bodies.
   6. As part of this Agenda Item, ICG-WIGOS reviewed the status of the actions from its last meeting (Appendix II of the Final Report from ICG-WIGOS-4). The summary of this discussion is as follows.

* Action No. 13 (6.1.1.4): a new deadline was agreed, i.e. March 2016;
* Action No. 14 (6.1.1.5): Little progress made so far; however, the effort will continue; a joint project will be considered;
* Action No. 23 (6.3.2): ICG-WIGOS suggested that a short WIGOS Newsletter article should be dedicated to the relationship between WIGOS and WIS. The President of RA I reiterated his standing request that during any WIGOS-related event in Region I, the status of the WIS implementation should also be discussed;
* Action No. 28 (7.1.2): due to time constraints and schedule conflicts for several core participants the workshop had to be postponed and is now planned to be held in 18-21 May 2016;
* Action No. 31 (7.1.5-6): No Circular Letter by SG sent; however, a good progress achieved; ICG-WIGOS requested to maintain emphasis on radio-frequency issues, specifically as concerns frequency bands used by weather radars;
* Action No. 47-48 (8.1.4): ICG-WIGOS requested D/OBS to give high priority to this issue in the future;
* Action No. 54 (8.4.2): ICG-WIGOS requested D/OBS to ensure WIGOS representation in the RA IV Hurricane Committee meeting in 2016 (USA, 21-26 April 2016).
  1. At the end of the discussion on the Action Plan, the Co-Chairs and the presidents of technical commissions expressed their concern about the absence of the presidents of regional associations due to a conflict with the ongoing meeting of the WMO Bureau. The Secretariat was requested to avoid temporal overlap with other high-level WMO meetings for future sessions of ICG-WIGOS. (See also 10.1)

1. **RELEVANT DECISIONS AND GUIDANCE FROM Cg-17 AND EC-67**
   1. Dr L. P. Riishojgaard, PM/WIGOS, briefed the session on the guidance and recommendations received from Cg-17 and EC-67 regarding the implementation of WIGOS.
   2. The subsequent discussion focused mainly on the development of national WIGOS partnerships, and experiences gained, specifically regarding data sharing and data policy. In some cases national legislation or national policies will dictate the limits to what can and what cannot be shared. However, there are also purely technical problems to be solved, e.g. regarding compatibility of systems, interoperability of data and consistency of data quality. The need for WMO guidance on data management, data exchange and working with partners was again emphasized by the group.
2. **PROGRESS TOWARD IMPLEMENTATION OF WIGOS**
   1. **REVIEW OF WIGOS ACTIVITIES AND OUTCOMES FROM wmo TECHNICAL COMMISSIONS**
      1. The representatives from each of the WMO Technical Commissions presented their brief reports. The reports were focused on: 1) Key relevant WIGOS activities, including any major outcomes and achievements; 2) WIGOS activities planned or considered for 2016 by the TC; 3) Major open issues and recommendations to ICG-WIGOS. The brief summary of this briefing could be as follows.
      2. ***CIMO:*** The main highlights of the report were: (i) the partnership with ISO, (ii) further development of the new International Cloud Atlas, (iii) the OSCAR development and operational deployment, and (iv) inter-comparisons of sensors and observing methods.
      3. ***CBS:*** CBS/OPAG-IOS and IPET-WIFI are focused mainly on the development of the relevant technical regulations and related guidance material, in particular as concerns WIGOS metadata, observational data quality monitoring, OSCAR, Observing Network Design (OND) Principles, RBON concept development, and the integration of satellite observations in all WIGOS component observing systems. The group was informed about the tentative plan to terminate IPET-WIFI and to integrate its activities into ICG-WIGOS and its task teams (to be confirmed by CBS/MG in February 2016). This development was welcomed by ICG-WIGOS.
      4. ***CHy:*** Information was provided about the development of the WMO Hydrological Observing System ([WHOS](http://www.wmo.int/pages/prog/hwrp/chy/whos/index.php)**), which** is a portal to the online data repositories of those National Hydrological Services (NHS) and National Meteorological and Hydrological Services (NMHS) around the world that have agreed to publish historical and/or real-time observations without restrictions or cost. It represents the hydrological component of the WMO Integrated Global Observing System (WIGOS). The CHy President also presented the plans for the near future, in particular regarding the development of a fully WIGOS-WIS compliant services-oriented framework linking hydrological data providers and users through a hydrologic information system enabling data registration, data discovery, and data access. The challenge will be to convince NHS/NMHS to move forward on the WIGOS and WIS implementations to become WIGOS and WIS compliant, as there are some reservations about this in the hydrological community. A specific challenge would be to get NHSs to provide their WIS and WIGOS metadata to WIS/GISCs and OSCAR/Surface, respectively. The President of CHy, with assistance provided by the Secretariat, was requested to take appropriate action to ensure that this happens. The President of CHy stressed the importance of the next session of CHy, in December 2016, as a key opportunity to reach out to its community in relation to WIGOS and requested assistance from PM/WIGOS through high quality communications material including demos, videos etc.
      5. ***CAS:*** The representative provided a briefing regarding the CAS link to the OSCAR development: Since OSCAR/Surface has been developed around the second generation of GAWSIS, the integration of GAW into WIGOS at the metadata level is achieved as a matter of course. Regarding the role and implementation of the new RWCs, some concerns were raised from CAS about the possibility of unnecessary duplication of effort, in particular with respect to the existing GAW monitoring centres. The need for outreach material that can be shared with partners, in particular to focus on 'what's in it for them', was stressed. The WIGOS Project Manager assured the plan was to integrate existing monitoring centres into the overall WDQMS system architecture and to not establish new entities for those functions that are already taken care of.
      6. ***CAgM:*** In his briefing, the CAgM President provides examples of collaboration with other technical commissions, for instance with CAS on the measurement of fluxes and with CIMO on precipitation measurements using simple rain gauges in RA I. He also emphasised the need to reflect a strong 'services-oriented' role in WIGOS implementation plans.
      7. ***CCl:*** The representative from CCl reported on progress achieved in the Climate Data Management System, Guidelines on implementing and maintaining effective observing networks for climate services, and other WIGOS-related areas. The need for improved collaboration and coordination with other TCs was raised as an issue that needs to be addressed.
      8. ***JCOMM:*** The JCOMM Co-President gave an overview of the JCOMM contribution to the WIGOS implementation, chief among which is the JCOMMOPS contribution to the population with metadata of OSCAR/Surface, and to the machine-to-machine metadata ingest development. One of the remaining challenges is that the ocean observing systems metadata collected routinely by JCOMMOPS will need to be expanded in order to fully comply with the WIGOS Metadata Standard. A JCOMM Catalogue of Best Practices and Standards has been developed and is now available at: [www.oceandatapractices.net](http://www.oceandatapractices.net/) as a contribution to SORT.
      9. ***CAeM:*** The CAeM representative highlighted in his presentation existing opportunities for increased collaboration with other technical commissions, in particular in areas such as space weather, volcanic ash, and weather radars.
      10. ***GCOS:*** The GCOS Secretariat Director provided information about the development of a new GCOS Implementation Plan. The issue of governance of the GCOS Reference Upper Air Network (GRUAN) and its potential formal recognition as a WIGOS component were discussed briefly; however, at this point there is no clear view on whether a more formal governance mechanism is needed or what would be the best way to establish such a mechanism.
   2. **REVIEW OF WIGOS ACTIVITIES AND OUTCOMES FROM wmo REGIONAL ASSOCIATIONS**
      1. Representatives from all WMO Regional Associations presented their short reports. The briefings were focused on: 1) Key relevant WIGOS activities, including any major outcomes and achievements; 2) WIGOS activities planned or considered for 2016 by the RA; 3) Major open issues and recommendations to ICG-WIGOS. Brief summaries of the reports follow below.

4.2.2 ***RA I***: The outcomes from the WMO RA-I Workshop on WIGOS (English-speaking countries) held in Namibia, November 2015 were presented, along with some of the key actions, namely: 1) To organize Workshop on WIGOS (French speaking countries) in I. Q 2016; 2) To organize technical workshops on AWS networks in Region I in 2016; 3) To consider two national WIGOS pilot projects on RWCs: one for an English-speaking country (South Sudan was proposed), and one for a French-speaking country (to be identified during the RA I WIGOS workshop for French-speaking Countries in 2016); 4) To investigate the current functionality of the RICs in the Region and - based on the findings - draft a proposal on how to improve a current situation. Several issues facing the RA-I Members were identified, e.g. the “Minamata Convention on Mercury” eliminating the use of mercury; the lack of access to calibration facilities for instrumentations; the general low level of compliance with WMO Technical Regulations; the overall lack of observational capabilities within some countries in the Region, e.g. South Sudan; the need for establishing RWCs in each sub-region.

4.2.3 ***RA II***: The current status of the WIGOS implementation and the activities planned for 2016-2019 were presented. The main objective will be to continue with the implementation as specified in the Region II WIGOS Implementation Plan (R-WIP-II), including the Pilot Projects identified in the Plan. An additional focus area will be the collaboration with RA V on implementing two joint WIGOS projects proposed on satellite and radar data, respectively.

4.2.4 ***RA III***: A presentation on WIGOS-related activities in Region III with a special focus on the WIGOS-SAS Project was given by the regional representative. ICG-WIGOS agreed that it is a very promising project and recommended that there should be a special focus on the project in an issue of the WIGOS Newsletter, showcasing it as an example for other Regions or sub-Regions to follow. The lack of full integration of the marine observing systems under the WIGOS umbrella was indicated as an issue of major concern for the Region; it was proposed that an approach similar to the SAS project should be undertaken to improve the level of integration and, ultimately, the availability of such observations to Members in the Region. A similar suggestion was also made in relation to atmospheric chemistry observations.

4.2.5 ***RA IV***: The outcomes from the RA-IV WIGOS Implementation Workshop (Caracao, December 2015) were presented. The procurement, installation and maintenance of AWS networks were found to be problematic for several of the NMHSs in this Region, where AWS networks are often provided by multilateral lending or donor agencies and/or regional organizations through projects developed with little or no initial input from the NMHSs concerned. ICG-WIGOS was informed that CIMO has been working with HMEI on the AWS related “Tender Specifications Initiative” to assist Members in this regard. Concerning the otherwise very successful regional weather radar mosaic one outstanding issue is a lack of data over certain areas of the Spanish-speaking part of Region IV (Central America). Even though radars exist in countries such as in Mexico and El Salvador, they are not used in the regional radar mosaic due to data availability/compatibility issues.

4.2.6 ***RA V***: The outcomes from the Joint RA-II/RA-V Workshop on WIGOS for Disaster Risk Reduction (DRR) (Indonesia, October 2015) were presented. The major outcome of the Workshop is contained in the "Jakarta declaration" which includes a proposal for the development of two WIGOS projects spanning a group of 14 countries in Southeast Asia across the Regions II and V. One of the projects is related to strengthening the regional network of weather radars and to develop regional radar mosaics, and the other is related to improving the access to and ability to use high-resolution satellite data provided by the next generation of geostationary meteorological satellites. ICG-WIGOS appreciated the effort and agreed that is this should be seen as a good example of collaboration and coordination between two Regions in project development and data sharing.

4.2.7 ***RA VI***: The President of RA VI provided a presentation focusing on the outcomes from the RA-VI WIGOS Workshop held in Belgrade, Serbia, in November 2015. It was pointed out that emphasis on communications and outreach activities is still needed in order to explain and promote WIGOS to the PRs in the Region as well as to the private sector. Technical support from a broad group of Members for the implementation of OSCAR/Surface will be needed. In this regard, the contributions made by Switzerland and Germany were much appreciated. Another outcome from the RA-VI Workshop was that the main tasks and functionalities for the RWCs had been identified; however, it was stressed that wherever possible existing resources, mechanisms and infrastructure should be used for their implementation. For Region VI in particular, the possible involvement and role of EUMETNET should be carefully considered. ICG-WIGOS encouraged Region VI to proceed with its pilot implementation of an RWC, presumably as virtual centres with distributed roles and responsibilities among different NMHSs.

* 1. **REVIEW OF OUTCOMES FROM icg-wigos TASK TEAMS AND WORKSHOPS**

**4.3.1 REVIEW OF OUTCOMES FROM TT-PWPP-2**

4.3.1.1 The session was informed about the most important outcomes from the Second Session of the ICG-WIGOS Task Team on the Plan for the WIGOS Pre-operational Phase (TT-WPP-2) (Geneva, September 2015).

4.3.1.2 In the follow-up discussion, several issues were raised, e.g. the need for guidance on how to establish partnerships at the national level; how to implement OSCAR/Surface as a national observing station database if the Member decides to do so; the future working structure of ICG-WIGOS;

4.3.1.3 Even though TT-PWPP had recommended to assign lower priority to the development of the Standardization of Observations Review Tool (SORT), ICG-WIGOS reiterated the general requirement for such a tool and requested D/OBS to bring this to the attention of EC-68 in order to gain support of EC for its further development and to guarantee resources needed. ICG-WIGOS was of the opinion that even though SORT would meet a requirement for the organization as a whole rather than being specific to just WIGOS, it would be important that WIGOS take the lead in its development and that it retain an ownership stake in the system. Finally it was proposed to organize a dedicated SORT development workshop.

**4.3.2 REVIEW OF OUTCOMES FROM THE FOURTH SESSION OF THE TASK TEAM ON WIGOS METADATA (TT-WMD-4)**

4.3.2.1 The main outcomes from the Fourth Session of the ICG-WIGOS Task Team on WIGOS Metadata (TT-WMD-4, Turkey, October 2015) were reviewed.

4.3.2.2 Based on the available information on the current status of the WIGOS metadata standard, of its formal representation and encoding, and of OSCAR/Surface, ICG-WIGOS expressed its opinion that Volume A and other relevant databases such as GAWSIS could now be migrated into OSCAR/Surface. However, an OSCAR User Manual and additional training of users are now urgently needed in order to ensure a successful transition to OSCAR/Surface for the Members.

**4.3.3 WIGOS SPACE 2040 WORKSHOP**

4.3.3.1 The initial draft Vision for the WIGOS Space-based component in 2040, developed during the Workshop, was presented to ICG-WIGOS. The session recalled the request from EC-66 to CBS to lead the development of a “Vision for WIGOS in 2040”, with involvement of the other technical commissions and to submit such a vision to Cg-18 in 2019 for approval.

4.3.3.2 ICG-WIGOS agreed that the Vision for the Space-based component should reflect the expectation that new and more efficient observing solutions will be provided from the space, and that it should specify how to arrive at an appropriate balance between space-based and surface-based observing systems. It should also reflect the requirements for surface-based support of the space-based systems for calibration and validation, ground truth, etc.

**4.3.4 REVIEW OF OUTCOMES FROM THE WDQMS WORKSHOP**

4.3.4.1 ICG-WIGOS reviewed the outcomes from the Second WIGOS Workshop on Quality Monitoring (QM) and Incident Management (IM) (Geneva, December 2015), including the current status of the WIGOS Data Quality Monitoring System (WDQMS) concept with the description of functionalities of its three main components. ICG-WIGOS expressed it appreciation of the significant contributions made by ECMWF, NCEP and EUMETNET.

4.3.4.2 ICG-WIGOS reiterated the importance to WIGOS of this system, but the group also expressed its concern about the complexity of the development. The possible relationship to other WIR components (in particular OSCAR/Surface) and the potential operational roles of the RWCs were also discussed. ICG-WIGOS further agreed that any duplication with other similar systems should be avoided; instead, synergies should be exploited wherever and whenever possible.

1. **PLANNING THE PRIORITY ACTIVITIES FOR THE WIGOS PRE-OPERATIONAL PHASE**
   1. **National WIGOS implementation**
      1. The outcomes from TT-PWPP-2 were presented in detail, including the proposed overall timeline for the national WIGOS implementations. ICG-WIGOS confirmed its reservations regarding the development of a template for the National WIGOS Implementation Plans (N-WIP). It was suggested instead that guidance material on national implementation of WIGOS should be developed. This material should describe how to develop a holistic national approach, and it should suggest diagnostic tools, readiness checklists, examples and case studies to be used by the Members. The guidance material should be structured around the ten Key Activity Areas (KAAs) of the WIP, with additional elements as required, including in relation to data guidance. The WIGOS-PO was requested to start working on developing this new material.
      2. Dr Barrell presented her graphical representation of national readiness (see Annex to this paragraph) with three levels ranging from 1) “WIGOS uptake” through 2) “WIGOS Ready” up to 3) “WIGOS open” to include all national partners. The goal would be to have majority of Members to level 1 (“WIGOS Uptake”) by EC-68 and all Members at level 2 (“WIGOS Ready”) by Cg-18.
      3. In the follow-up discussion, a couple of important issues were raised, e.g. the engagement with national partners as a critical element of WIGOS, noting that WIGOS Ready status will enable practical integration of partners' observations, and the need for e-learning modules and training packages to be developed for the Regional Training Centres in collaboration with the DRA Education and Training (ETR) Office.
      4. The general push toward shortening WMO constituent bodies sessions (regional associations and technical commissions) should be weighed very carefully against their critical role in outreach and communication with Members and partners as well as the opportunity they represent for demonstrating to Members how to use the basic tools of WIGOS (OSCAR/Surface, WDQMS, etc.). Support and communications/outreach material for engaging partners also outside the NMHSs should be developed.
      5. Requests for having all technical WIGOS tools (such as OSCAR, WDQMS, etc.) and related guidance material and user manual(s) available in all WMO languages were voiced several times and by several members of the group. ICG-WIGOS requested D/OBS and PM/WIGOS to bring this issue to the attention of EC-68.
      6. With a reference to TT-PWPP-2, Mike Manore, an invited expert from Canada, presented a proposal for a new ICG-WIGOS Task Team on WIGOS Data and Partnership (TT-WDP) to be established, including a suggested timeline for a two-phased approach to developing the relevant guidance material (1. Guidance on Data Partnerships; 2. Guidance on Data Management and Data Stewardship), a proposed scope and proposed membership. ICG-WIGOS welcomed a suggestion from the GEO Secretariat to include a GEO representative in the membership of the Team.
      7. ICG-WIGOS stressed the sensitivities around matters of data policy and licencing; and it was agreed that the TT-WDP should be very explicit in stating that the team will not be prescriptive on matters regarding national data policies, but that it will rather seek to improve our understanding of the implications for WIGOS of existing data policies and offer guidance to Members on how best to treat external data.
      8. It was further emphasized that the subject matters to be dealt with by TT-WDP are of very broad interest across WMO, and it was therefore recommended that links be established to various existing bodies and ongoing activities (e.g. with CIMO on matters of data quality; with CCl/ IPET-CDMP; with CBS regarding the WIGOS Observing Network Design (OND) Principles). The need for the resulting guidance material to be made available in all WMO languages was underlined again here.
      9. Regarding the membership of the TT-WDP, several suggestions were made, including the inclusion of a satellite expert. It was noted that once the Terms of Reference would be finalized, others might want to make further recommendations. Regarding the proposed Co-Chair for Phase 2 (Data Management and Data Stewardship), it was noted that this expert also chairs the broader CBS/OPAG-ISS; this would help ensure that the respective scopes and schedules of the two activities are aligned to take advantage of the upcoming CBS session in November 2016. It was noted that the timeline for this priority area should be updated accordingly.
      10. The session endorsed the establishment of the Task Team; it requested WIGOS-PO to finalize the Terms of Reference and to circulate them for review by ICG-WIGOS.
   2. **WIGOS Regulatory Material complemented with necessary guidance material to assist Members with the implementation of the WIGOS technical regulations**

5.2.1 A brief document on the further development of WIGOS regulatory and guidance material during the Pre-operational Phase, including the timeline for critical activities and milestones was presented.

5.2.2 ICG-WIGOS considered how to establish the process for reviewing draft text developed by the Secretariat and/or relevant TC experts for updating WIGOS regulatory material and for new guidance material. In this regard, ICG-WIGOS decided to terminate TT-WRM and to establish a small WIGOS Editorial Board; R. Stringer, chair, TT-WRM, was suggested as one co-chair. V. Kurz, chair, CIMO Editorial Board, was proposed as the other co-chair to ensure liaison with CIMO. The third team member will be proposed by the WIGOS-PO. WIGOS-PO was requested to draft Term of References and submit to co-chairs for consideration.

5.2.3 A presentation on the WIGOS Station Identifiers (IDs) and relevant draft guidance was delivered. WIGOS station identifiers provide an essential link between observations and the metadata describing the environment in which they were made. Using the WIGOS station identifiers eliminates the need to transfer all the station metadata along with the observed value itself. Although the Manual on WIGOS defines the structure of WIGOS station identifiers, it does not explain how these should be allocated. The draft guidance on WIGOS station identifiers is also available at <http://wis.wmo.int/page=WIGOS-Identifiers>.

5.2.4 The implications of the new WIGOS Station IDs were discussed after the presentation. There are constraints to be taken into account since a number of Members still have limited capabilities to use table driven code forms, upon which the WIGOS Station IDs are specified. It was noted that there are some technical problems to be solved.

5.2.5 In order to make progress with the draft guidance material on WIGOS station IDs, ICG-WIGOS requested WIGOS-PO to arrange for its review and incorporation into the initial Guide to WIGOS in due course. In this regard, ICG-WIGOS agreed that all WIGOS-related guidance material should be made available in one place, and that an overall Guide to WIGOS is the best option, rather than a collection of individual Web-links.

5.2.6 ICG-WIGOS further noted that IPET-MDRD had been asked to provide links from WIS metadata records for a dataset to the metadata for the observations that were used to create the dataset. This would require a “resolvable URL” (that is, a permanent URL that would always point to the WIGOS metadata record for the station). ICG-WIGOS requested the OSCAR project manager to propose a technical solution to allow that to be achieved.

5.2.7 ICG-WIGOS asked the Task Team on WIGOS Metadata in collaboration with IPET-MDRD to further develop WIGOS identifiers to meet the requirements for exchange of WIGOS metadata between Members, and to include these in the detailed definition of the data representation for WIGOS metadata.

* 1. **Further development of the WIGOS Information Resource (WIR), with special emphasis on the operational deployment of the OSCAR databases**

5.3.1 The current status and planning for the development of the WIR, including all its components, and the operational deployment of OSCAR/Surface were presented.

5.3.2 ICG-WIGOS noted that there were three significant aspects to OSCAR/Surface being declared operational: (1) Elevating the metadata in OSCAR to the level reference data (entries would no longer be removed or modified without the permission of their owners), (2) the transfer of the publication of Volume A from the traditional method to being exported from OSCAR in a “Vol. A legacy format”, and (3) the provision of a mechanism for updating metadata in OSCAR via automated transfer from existing databases operated by the Members themselves.

5.3.3 ICG-WIGOS concurred with the view presented by the Secretariat that OSCAR/Surface was now sufficiently mature as a metadata repository for it to be declared operational. ICG-WIGOS asked the OSCAR development team to make the necessary preparations to declare OSCAR/Surface operational on 2 May 2016, and to issue appropriate notices to Members, including in the [Operational Newsletter](http://www.wmo.int/pages/prog/www/ois/Operational_Information/index_en.html) of the [WWW Operational Information Service (OIS)](http://www.wmo.int/pages/prog/www/ois/ois-home.html).

5.3.4 On the topic of exporting Volume A from OSCAR, ICG-WIGOS noted that Members would need considerable time, and test data, to ensure that their IT systems could operate using the information in the Volume A legacy format. It therefore decided that the export format and test data should be made available as early as possible for Members to use to adjust their operational procedures.

5.3.5 Members already running their own electronic metadata repositories will want to transfer updates to the contents of these systems onto OSCAR in an automated fashion. MeteoSwiss and DWD were testing a pilot for such automated exchange. The intention was to replace the format used in the pilot with the data representation of WIGOS metadata being developed by TT-WMD and IPET-MDRD, but such a representation was only expected to become stable by May 2016. ICG-WIGOS recommended that Members should be informed that a pilot machine-to-machine interface had been developed, and that Members were welcome to experiment with this, but that interested Members should be warned that additional work would be needed to convert any development done during the experimental phase to work also with the final version of the data representation.

5.3.6 The President of CHy requested that demonstrations of OSCAR/Surface and WDQMS be made available during the CHy-15 Session in December 2016.

* 1. **Development and implementation of the WIGOS Data Quality Monitoring System (WDQMS)**

5.4.1. The current status and planning for the development of the WDQMS was presented. ICG-WIGOS was informed that by the end of 2016, the functional specifications and the pilot components would have been developed. The potential relationship with the other WIR component was also presented.

5.4.2 ICG-WIGOS agreed that lessons learned from the GCOS Lead Centres, JCOMMOPS and other related systems should be taken into account: It further agreed that WDQMS has a large potential to demonstrate WIGOS benefits.

5.4.3 Regarding the roadmap for the further development, it was requested that this cover the whole Pre-operational Phase and not only 2016, with clearly specified responsible bodies. Further, it was proposed to simplify the graphical representation of the WDQMS presented by the Secretariat.

* 1. **Concept development and initial establishment of Regional WIGOS Centres**
     1. The current RWC concept was presented. This revised concept is based on the initial version discussed during TT-PWPP-2, with a key feature being the specification of a small set of mandatory functions and a wider range of optional functions. Additional input was provided by the RA-VI Workshop on WIGOS held in Belgrade November 2015. During this Workshop and during a subsequent bilateral meeting between DWD experts and the WIGOS PO, a more detailed concept for a pilot implementation of an RWC in Region VI had been developed. This could potentially serve as a role model also for other Regions, noting that each of the regions differ in relation to their capacity and mix of capabilities.
     2. ICG-WIGOS appreciated the progress achieved in the development. It was reiterated that already existing structures and mechanisms should be considered when implementing WIGOS at the regional and national levels, including their potential roles in RWCs. Every effort must be made to avoid any duplication with the Terms of References for already existing WMO Centres; instead, possible synergies with them must be exploited.
     3. ICG-WIGOS also emphasised the need to take into account differences in languages, time zones and implementation capability within each region in determining the appropriate establishment and models of operation of RWCs, including potentially sub-regional RWCs, within each region.
     4. ICG-WIGOS agreed with the proposed functionalities of the RWCs; the need to involve them in regional capacity development activities and in providing support to WDQMS was particularly emphasized.
     5. ICG-WIGOS further agreed that the relevant WIGOS working body in the Region should be involved in the process of establishing the RWC and have responsibility defined by the Region once it has become operational.
     6. The representatives of RA III expressed their views on how to move forward with the concept of an RWC. Instead of an RWC being established thorough a single general process, it could be a more gradual approach via nominating “Lead Centres” for a specific functions, e.g. WDQMS. In any case, the respective RA should decide on its own mechanism for how to establish its RWC(s). A key principle should be to build on existing facilities and structures as much as feasible.
     7. ICG-WIGOS requested the WIGOS-PO to finalize the concept note, as guidance to RAs, outlining the basic principles and providing a clear specification of mandatory and optional functions; however, there was a clear understanding that the Regions differ and that a generic concept will have to be adjusted further in order to address specific needs and circumstances of the respective Region.
     8. ICG-WIGOS requested all P-RAs to present at ICG-WIGOS-6 their proposed regional concepts for establishing and operating RWCs in their respective Region, including governance, reflecting their needs, priorities and existing capabilities/facilities.

1. **COLLABORATION AND ENGAGEMENT WITH CROSS-CUTTING WMO PRIORITIES**
   1. **Global Framework for Climate Services (GFCS)**
      1. Mr. F. Lucio, D/GFCS Office delivered a general overview presentation on the implementation of the Global Framework for Climate Services (GFCS). The role of WIGOS and its contribution to the Observation and Monitoring Pillar was identified, e.g. in promoting and improving observing standards, sharing experiences and best practices on data processing, quality control, data management, data exchange, observing system/data integration.
      2. ICG-WIGOS welcomed this concrete proposal for the specific contribution of WIGOS to the Observations and Monitoring Pillar of GFCS. In this regard, the need for synergy, enhanced collaboration and coordination was reiterated. It was pointed out the success of this will depend on the establishment of practical working arrangements and appropriate mechanisms for GFCS and WIGOS to work together. The opportunity to work together on some current GFCS pilot projects was recognized as being an important first step in this direction. In this regard, D/GFCS Office and PM/WIGOS were requested to jointly propose a way forward. PM/WIGOS was further requested to report to ICG-WIGOS-6 on progress achieved.
      3. ICG-WIGOS agreed that EC-68 should provide guidance on the future relationship between WIGOS and GFCS, and their collaboration. ICG-WIGOS also requested D/OBS and D/GFCS Office to work toward a stronger and more focused Secretariat coordination between these two WMO strategic priorities.
   2. **Global Cryosphere Watch (GCW)**
      1. The GCW achievements, such as the development of design principles, sites/stations concept, site selection procedures, and minimum requirements for CryoNet Sites were presented. The meeting was informed that 36 proposed sites were under evaluation. A GCW website had been established (<http://globalcryospherewatch.org/>). There are certain pending tasks, such as an update of the GCW relevant technical regulations in the Manual on WIGOS, including site/station selection criteria, and completion of evaluation/assessment and site/station selection.
      2. Several challenges were mentioned, such as developing regional working structures; operationalizing GCW and establishing closer links between the operational and research communities; provision of CryoNet Sites/Stations metadata to OSCAR/Surface, and GCW contribution to the WIGOS Data Quality Monitoring System.
      3. The meeting was informed about the upcoming RA II Cryonet Workshop.
   3. **Global Earth Observation System of Systems (GEOSS)**
      1. The representative from the GEO Secretariat made a presentation about the ongoing and evolving collaboration between GEOSS and WIGOS.
      2. ICG-WIGOS acknowledged the benefits of the collaboration with GEO and noted that there is good potential for its enhancement, particularly at a national level, where the close engagement of WMO, NMHSs and their national communities would provide practical national context and outreach. It welcomed the proposals for WIGOS contribution to several GEOSS tasks, such as: GD01: Advancing GEOSS Data Sharing principles; GD03: Global Observing and Information Systems; GD05: GEOSS Satellite Earth Observation Resources; GD06: GEOSS in situ Earth Observation Resources; GD08: SBAs processes: Systematic determination of user needs / observational gaps; and GD10: Radio Frequency Protection.
      3. ICG-WIGOS was of the opinion that GEO could do more for WIGOS, to promote WIGOS and give it more visibility. A substantial amount of capacity development is being undertaken by WIGOS and by WMO in general, and most of this is relevant also to GEO.
      4. ICG-WIGOS suggested that a summary of the WIGOS Side Event at GEO-XII in Mexico City could be posted on the WIGOS webpage and perhaps also published in the WIGOS Newsletter.
2. **DELIVERABLES TO EC-68**

***Roadmap and timelines for WIGOS Pre-operational Phase***

* 1. ICG-WIGOS expressed its satisfaction with the graphical representation of the deadlines for the key tasks and activities specified in the draft Plan for the WIGOS Pre-operational Phase. It was agreed that this would be updated accordingly reflecting changes in the draft Plan, taking into account the updated timelines for each of the five priority areas based on the recommendations made by ICG-WIGOS (listed above under Agenda Item 5).

***Draft Plan for WIGOS Pre-operational Phase***

* 1. ICG-WIGOS considered the structure of the draft Plan (PWPP) to be submitted to EC-68. It agreed that the plan discussed during PWPP-2 should constitute the core document; the current WIGOS framework Implementation Plan (WIP) should be included as an Appendix to the Plan.
  2. The draft submitted to ICG-WIGOS-5 should be updated reflecting the outcomes and recommendations from the session; significant changes should be highlighted in colour rather than in track changes.
  3. ICG-WIGOS requested D/OBS to work with D/DRA on presenting the PWPP at 16-RA-II (February 2017).

***Governance and Management Structure***

* 1. ICG-WIGOS discussed various aspects and objectives of the WIGOS Pre-operational Phase, and what type of governance would be most appropriate to lead this phase to a successful conclusion. After intensive discussion, ICG-WIGOS agreed on the following proposal to be submitted to EC-68 for consideration.
  2. ICG-WIGOS welcomed the opportunity to strengthen the role of EC in the governance of ICG-WIGOS, especially as WIGOS progresses through its pre-operational phase and focusses increasingly on implementation at a national level, supported by well-coordinated regional mechanisms.
  3. ICG-WIGOS agreed that there was a continued need for technical leadership of WIGOS through its pre-operational phase, as key technical components are finalised, guidance material developed and support provided to Members for training and implementation activities.
  4. The group recognised that joint EC and technical commission leadership of WIGOS would send a strong message to Members concerning WMO's commitment to both the technical and the management aspects of the implementation of WIGOS.
  5. ICG-WIGOS recommended that EC-68 appoint three co-chairs to jointly share leadership of ICG-WIGOS: The First Vice-President of WMO (EC representative), a representative of CBS and a representative of CIMO. The remaining membership of ICG-WIGOS will stay as decided by EC-67.
  6. ICG-WIGOS recommended that the roles of its Co-chairs should be as follows:
* The First Vice President of WMO will provide leadership on matters associated with the implementation of WIGOS at regional and national levels, and will work closely with P-RAs and PRs to champion a strong and sustained commitment to WIGOS implementation; he will also lead the work toward finding a permanent place for WIGOS in the WMO structure once the Pre-operational Phase has come to end in 2019;
* The two technical commission co-chairs, nominated by the Presidents of CBS and CIMO respectively, will provide leadership on ongoing and future development of regulatory and guidance material and on all matters associated with the specification, development and implementation of technical components of WIGOS, in particular the WIR, OSCAR and WDQMS, with attention to the integration needs of all component observing systems, calling on participation by relevant experts from all technical commissions.
  1. The WIGOS PO was requested to prepare revised draft Terms of Reference of ICG-WIGOS to be submitted to EC-68.

1. **PTC-2016 FOLLOW-UP on BIG DATA**
   1. The subject was presented by D. Grimes, President of WMO. He recalled the decision by Cg-17 (Resolution 65 (Cg-17))[[1]](#footnote-1) to undertake a review of the challenges and risks, opportunities and benefits related to big data, crowd-sourced data, social media as well as emerging and future data sources, and their potential impact on Members, as the basis for production of a guidance material for Members; He further recalled that the Council had requested the Commission for Basic Systems, in coordination with other technical commissions, in particular the Commission for Hydrology, to undertake this review, and that it had decided to establish an Executive Council Task Team on Data Policy and Emerging Issues.
   2. The President voiced his opinion that Members must be encouraged to think about related challenges (such as data storing and archiving, processing in a short time, exchanging the information, extracting relevant and useful information from the data, and in delivering to users only the components relevant to them) as well as about opportunities to access and utilize these data, and to manage the complexity of processing, use, distribution and security as well as laws concerning privacy and propriety.
   3. The Secretariat had been requested to initiate a Survey with several key questions on this issue, e.g. quality, distribution and other aspects of “big data” (challenges and opportunities); how it will change their working practices and every-day operation; how they see benefits of “big data”.
   4. The role to be played by WIGOS should be considered. There are challenges and opportunities associated with dealing with “big data players” such as Google, IBM, Amazon and Apple; there is a need to think about new concepts of non-traditional “participants” in partnerships. PM/WIGOS was requested to contribute to the EC-68 document on this issue.
   5. ICG-WIGOS agreed that its TT-WDP will monitor the material coming forward from the Technical Commissions, as part of the essays Mr Grimes assigned to the PTC and President of CBS in particular, and that TT-WDP would reflect relevant aspect of the essays in its activities and in the development of guidance material.
2. **FUTURE WORK PROGRAMME AND ACTION PLAN OF ICG-WIGOS; REVIEW OF TORs**
   1. ICG-WIGOS considered its future working structure. It decided to close down two task teams, namely TT-WRM and TT-WQM, and to establish the following new Teams: a) WIGOS Editorial Board (WEdB); b) a Task Team on the WIGOS Data Quality Monitoring System; c) a Task Team on WIGOS Data and Partnership. Regarding TT-WMD it was decided to keep the team active until the end of 2016 and then to establish a new Task team on OSCAR Development.
   2. In this regard, ICG-WIGOS requested WIGOS-PO to draft corresponding TORs and provide them to the co-chairs for consideration. Further, potential/proposed members of the respective TTs should be contacted by WIGOS-PO to verify their availability and willingness to contribute to the work of the TT.
   3. ICG-WIGOS agreed that a letter of acknowledgement should be sent to members of those TTs that were now closed down to express appreciation of their contributions.
   4. ICG-WIGOS considered the steps and tasks to be undertaken during the next inter- sessional period; in this regard, it developed its Future Work Programme and Action Plan, which is reproduced in Appendix II.
3. **ANY OTHER BUSINESS**
   1. ICG-WIGOS repeatedly expressed its request that any future ICG-WIGOS session should be scheduled so as not to overlap with any other high-level meetings in the Secretariat. Further, the duration of the meeting should be extended to five days. ICG-WIGOS welcomed an offer by D/OBS that the representatives of RAs and TCs could be accompanied by their respective advisors.
   2. ICG-WIGOS further requested that the following items be included in the Agenda for ICG-WIGOS-6: a) an update of the implementation of WIS; b) an update on the WIGOS-SAS Project; c) further development of WIGOS communications material; d) WMO Space Weather, and e) a presentation on JCOMMOPS. In this regard, ICG-WIGOS was informed that ITU had accepted to include Space Weather in the Agenda for the coming WRC.
   3. ICG-WIGOS noted the need expressed by both regional association and technical commission representatives for communications material that could be shared with external partners, prepared in a way that they can understand and relate to, and requested D/OBS and PM/WIGOS to include this in the suite of communications material to be prepared.
   4. ICG-WIGOS requested D/OBS and PM/WIGOS to consider possibilities for increased engagement of RA II in the WIGOS planning.
4. **CLOSURE OF THE SESSION**
   1. The session closed on Thursday, 28 January 2016, at 12:30 hours.

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**Appendix I**

**LIST OF PARTICIPANTS**

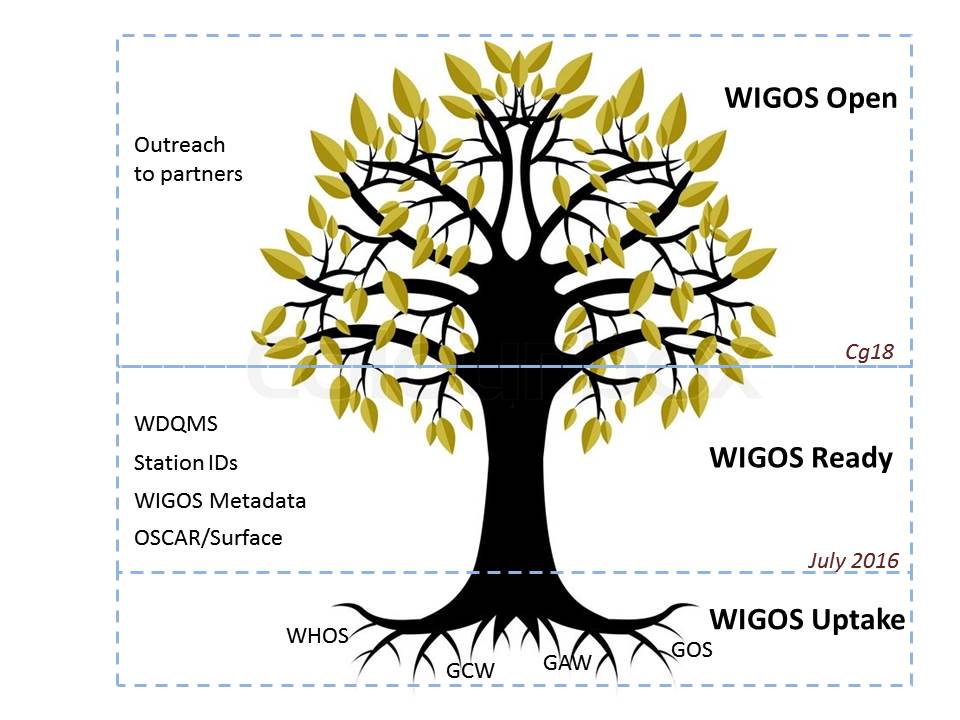
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**Annex to 5.1.2**

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**Appendix II**

**FUTURE WORK PROGRAMME AND ACTION PLAN OF ICG-WIGOS AND TASK TEAMS**

**I. Actions from ICG-WIGOS-4 (pending and those with deadline after ICG-WIGOS-5, such as EC-68, Cg-18, ongoing)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Action[[2]](#footnote-2)** | **Action/Activity** | **Deadline** | **Responsible** | **Status[[3]](#footnote-3)** | **Comment** |
| 1. No.3   (5.1.3) | Develop a set of guidelines to be incorporated in an initial Guide to WIGOS | EC-68 | TT on “WIGOS Guide”;  TCs, consultant(s)  (WIGOS-PO) | On-track |  |
| 1. No.4   (5.1.4) | Synchronise revisions of the WIGOS and GOS Manuals, leading ultimately to phasing out of the Manual on the GOS | Cg-18 | WIGOS-PO, C/OSD | On-track |  |
| 1. No.5   (5.1.4) | Review and update Volume II, Regional Aspects, of the Manual on the GOS | Cg-18 | IPET-WIFI/SG-RM  (WIGOS-PO, C/OSD) |  |  |
| 1. No.7   (5.2.2) | Develop guidance material to assist Members with implementation of WMDS | EC-68 | TT-WMD  (WIGOS-PO) | On-track |  |
| 1. No.8   (5.2.2) | Develop requirements and an application schema for the implementation of and the exchange of WIGOS metadata | 30 June 2016 | IPET on “Implementation of WMDS and Exchange of WMD” | On-track |  |
| 1. No.13   (6.1.1.4) | Organize a meeting of the OBS Dept. and GFCS Office to enhance internal coordination and collaboration and explore the synergy between WIGOS and GFCS during their respective further development and implementation efforts | New deadline: March 2016 | D/OBS and D/GFCS Office |  |  |
| 1. No.14   (6.1.1.5) | Acknowledge formally the role of WIGOS as a fundamental contributor to the Observation and Monitoring Pillar of GFCS, recognizing that WIGOS provides the governance, management and interoperability framework that will enable the integration of all observations relevant to the delivery of climate services | On-going | IBCS  (D/GFCS Office) |  | See General Summary, 2.6 |
| 1. No.15   (6.1.1.5) | Articulate clearly GFCS observational data requirements and made them available to WIGOS as they are developed | On-going | IBCS  (D/GFCS Office) | On-going |  |
| 1. No.21   (6.2.4) | Support provided for the meeting of IPET-WIFI/SG-OSCAR | July 2016 | WIGOS-PO |  |  |
| 1. No.22   (6.2.5) | Arrange for the Circular Letter by SG to all Members in a copy to their National Focal Points for Vol. A on termination of Vol. A and its replacement by OSCAR/Surface tentatively by 1 July 2016, including the request to update Vol. A, and to participate in testing of OSCAR/Surface | June 2016 | WIGOS-PO | On-track |  |
| 1. No.23   (6.3.2) | Better coordinate activities in the Secretariat, how to assist Members with implementation WIGOS, WIS, GFCS, DRR in a holistic way using the regional working structures, including the existing WMO Regional Offices, regional economic groupings, and other partnerships | On-going | D/OBS, D/WIS, D/DRA, D/WDS, D/GFCS | On-going | See also Action No. 37 (2.6) below under II. New actions from ICG-WIGOS-5 |
| 1. No.27   (6.4.3) | Develop guidance on the integration of externally-sourced data with high-level principles and strategies within the broader WMO context. | Progressively from 2016 | TT-WDG  (CBS and CCl & all relevant TCs)  (WIGOS-PO) |  |  |
| 1. No.30   (7.1.4) | Contribute to the further development of: a) WDQMS, including incident management; b) guidance on the integration of observations from partner networks; c) Guide to WIGOS; d) OSCAR; e) RWC | On-going | Chair, CBS/OPAG-IOS  (WIGOS-PO) | On-going |  |
| 1. No.31   (7.1.5-6) | Distribute Circular Letter by SG (to all WMO Members) on the critical importance of radio frequency protection for meteorological purposes, negative implications and challenges, urging Members to engage with their national regulatory authorities, and participate at all relevant ITU meetings, including the World Radio-communication Conference 2015 (WRC-15). | 31 July 2015 | SG-RFC  PM/WIGOS |  | See General Summary, 2.6 |
| 1. No.32   (7.2.2) | Organize the AWS workshops (covering a whole life cycle of an AWS network) in RA III, IV (depending on the funds available) | 30 June 2016 | PM/WIGOS |  |  |
| 1. No.35   (7.3.2) | Ensure that WIGOS is represented at all CAeM events to enhance communication and coordination with an aviation community | On-going | PM/WIGOS | On-going |  |
| 1. No. 37   (7.5.2) | Develop guidance on long-term recognition and support of GAW stations by NMHSs | Progressively from 2016 | CAS |  |  |
| 1. No. 38   (7.5.2) | Establish coordination mechanisms for direct involvement of GAW related stakeholders outside NMHSs | Progressively from 2016 | CAS |  |  |
| 1. No. 40   (7.7.2) | Communicate WIGOS and WHOS socio-economic benefits for developing countries | On-going | CHy-AWG | On-going |  |
| 1. No.41   (7.7.2) | Work with NHSs on adopting the principles of water data sharing, the use of web services, and for fully contributing to WHOS | On-going | CHy-AWG | On-going |  |
| 1. No. 42   (7.9.1) | Ensure that GCOS requirements on ECVs are captured in the RRR and in the OSCAR/Requirements database | 30 June 2016 | D/GCOS; PM/WIGOS | On-track |  |
| 1. No.43   (7.10.2) | Assist and provide support for addressing, as appropriate, the GCW recommendations | In due-course/  On-going | PM/WIGOS | On-going |  |
| 1. No.45   (8.1.3) | Assist and provide Secretariat support on the establishment of Regional WIGOS Centres in RA I; | On-going | PM/WIGOS | On-going |  |
| 1. No.46   (8.1.3) | Ensure close collaboration with ASECNA in the implementation of WIGOS and WIS | On-going | PM/WIGOS; D/WIS | On-going |  |
| 1. No.47   (8.1.4) | Ensure close coordination of implementation WIGOS and WIS in RA I | On-going | D/OBS | On-track | See General Summary, 2.6 |
| 1. No.48   (8.1.4) | Ensure representation of WIGOS at WIS events in RA I, and vice versa | On-going | D/OBS |  | See General Summary, 2.6 |
| 1. No.49   (8.2.2) | Promote WIGOS in the RA II and help to increase the motivation of some Members to be more active in the WIGOS implementation | On-going | D/OBS, PM/WIGOS |  |  |
| 1. No.50   (8.2.3) | Provide Secretariat support and assistance to strengthen the governance and oversight of the WIGOS implementation in the RA II | On-going | D/OBS, PM/WIGOS | On-going |  |
| 1. No.52   (8.3.1) | Provide Secretariat support (technical guidance and resources, depending on their availability) for an initial phase of the SAS Project | On-going | WIGOS-PO | On-going |  |
| 1. No.53   (8.4.1) | Promote WIGOS in the RA IV and assist in enhancing collaboration and cooperation among stakeholders involved in observations. | On-going | D/OBS, PM/WIGOS | On-going |  |
| 1. No.54   (8.4.2) | Ensure OBS Department representation in the RA IV Hurricane Committee meeting to promote WIGOS in RA IV | 15 April 2015 | D/OBS, PM/WIGOS |  | See Action No. 38 (2.6) below under II. New actions from ICG-WIGOS-5 |
| 1. No.55   (8.5.2) | Identify effective ways to accelerate the establishment and activation of working bodies following the RA sessions | On-going | D/OBS and D/DRA | On-going |  |
| 1. No.57   (8.6.4) | Collaborate with the European Commission representative for Copernicus on drafting MoA | On-going | D/OBS, PM/WIGOS | On-going |  |
| 1. No.58   (8.7) | Ensure more examples of success stories/show cases, experiences, lessons learned, and transfer knowledge be available for more efficient WIGOS communications and outreach | On-going | WIGOS-PO | On-going |  |
| 1. No.59   (9.1) | Develop guidance and tools to assist Members in planning their national WIGOS implementation | 31 December 2016 | ICG-WIGOS  (WIGOS-PO) | On-track |  |
| 1. No.60   (9.1) | Provide assistance and support for updating the R-WIPs addressing the decision of Cg-17 | On-going | WIGOS-PO | On-going |  |

**II. New actions from ICG-WIGOS-5**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Action[[4]](#footnote-4)** | **Action/Activity** | **Deadline** | **Responsible** | **Status[[5]](#footnote-5)** | **Comment** |
| 1. (2.6) | Review the status of the WIS implementation in RA I at any WIGOS-related event in the Region | On-going | D/OBS, PM/WIGOS |  |  |
| 1. (2.6) | D/OBS to ensure WIGOS representation in the [RA IV Hurricane Committee](http://www.wmo.int/pages/prog/www/tcp/hc-38-docplan.html) meeting to promote WIGOS in RA IV in 2016 (USA, 21-26 April 2016) | April 2016 | D/OBS |  |  |
| 1. (4.1.4) | Stimulate NHSs to provide their WIS and WIGOS metadata to WIS/GISCs and OSCAR/Surface, respectively | On-going | P/CHy supported by WIGOS-PO |  |  |
| 1. (4.1.4) | Provide high quality communications material including demos, videos etc. to CHy-15 | Dec 2016 | PM/WIGOS |  |  |
| 1. (4.2.4) | Include a special focus on the WIGOS-SAS Project in an upcoming issue of the WIGOS Newsletter to showcase it as an example for other Regions to follow | July 2016 | PM/WIGOS |  |  |
| 1. (4.2.5) | Collaborate with CIMO working with HMEI on the AWS related “Tender Specifications Initiative” | On-going | PM/WIGOS |  |  |
| 1. (4.3.1.3) | Bring SORT to the attention of EC-68 in order to gain support of EC for its further development and to guarantee resources needed | EC-68 | D/OBS |  |  |
| 1. (4.3.1.3) | Consider the possibility of organizing a dedicated SORT development workshop | Dec 2016 | PM/WIGOS |  |  |
| 1. (5.1.1) | Develop guidance material on national implementation of WIGOS | Dec 2016 | PM/WIGOS |  |  |
| 1. (5.1.5) | Bring the request for having all technical WIGOS tools (such as OSCAR, WDQMS, etc.) and related guidance material and user manual(s) available in all WMO languages to the attention of EC | EC-68 | D/OBS and PM/WIGOS |  |  |
| 1. (5.1.6) | Include a GEO representative and a satellite expert in the membership of TT-WDP | In due-course | PM/WIGOS |  |  |
| 1. (5.1.10) | Finalize the Terms of Reference of TT-WDP and circulate them for review by ICG-WIGOS | March 2016 | PM/WIGOS |  |  |
| 1. (5.2.2) | Draft Terms of Reference of the WIGOS Editorial Board and submit to ICG-WIGOS Co-chairs for consideration | Feb 2016 | WIGOS-PO |  |  |
| 1. (5.2.5) | Arrange for review of the draft guidance on the WIGOS station IDs and for incorporation into the initial Guide to WIGOS in due course | EC-68 | WIGOS-PO |  |  |
| 1. (5.2.6) | Propose a technical solution to the request made by IPET-MDRD to provide links from WIS metadata records for a given dataset to the observational metadata used to create it | In due-course | PM/WIGOS |  |  |
| 1. (5.2.7) | Further develop WIGOS identifiers to meet the requirements for exchange of WIGOS metadata between Members, and to include these in the detailed definition of the data representation for WIGOS metadata | In due-course | TT-WMD |  |  |
| 1. (5.3.3) | Make the necessary preparations to deploy OSCAR/Surface operationally on 2 May 2016, and issue appropriate notices to Members, including in the Operational Newsletter of the WWW Operational Information Service (OIS) | April 2016 | PM/OSCAR |  |  |
| 1. (5.3.6) | Provide demonstrations of OSCAR/Surface and WDQMS at the CHy-15 | Dec 2016 | WIGOS-PO |  |  |
| 1. (5.4.3) | Develop the roadmap for WDQMS for the entire Pre-operational Phase | EC-68 | WIGOS-PO |  |  |
| 1. (5.5.7) | Finalize the RWC concept note, outlining the basic principles and providing a clear specification of mandatory and optional functions | EC-68 | WIGOS-PO |  |  |
| 1. (5.5.8) | Deliver presentations on a proposed regional concept for establishing and operating RWCs in the respective Regions, including governance, reflecting their needs, priorities and existing capabilities/facilities | ICG-WIGOS-6 | Presidents of RAs |  |  |
| 1. (6.1.2) | Propose a way forward for working together on some current GFCS pilot projects and to report to ICG-WIGOS-6 on progress achieved | ICG-WIGOS-6 | D/GFCS Office and PM/WIGOS |  |  |
| 1. (6.1.3) | Formulate a request to EC-68 for guidance on the future relationship between WIGOS and GFCS | EC-68 | PM/WIGOS |  |  |
| 1. (6.1.3) | Work toward a stronger and more focused Secretariat coordination between these two WMO strategic priorities | On-going | D/OBS and D/GFCS Office |  |  |
| 1. (7.4) | Present the PWPP at RA II-16 | 16-RA-II | D/OBS with D/DRA |  |  |
| 1. (7.10,   7.11) | Submit the governance related recommendation from ICG-WIGOS to EC-68 | EC-68 | D/OBS |  |  |
| 1. (8.4) | Contribute to the EC-68 document on “Big Data” | EC-68 | PM/WIGOS |  |  |
| 1. (9.2) | Draft TORs of the Task Teams (TTs) and provide them to co-chairs for consideration | March 2016 | PM/WIGOS |  |  |
| 1. (9.2) | Contact proposed/potential members of the respective TTs to verify their availability and willingness to contribute to the work of the TT | March 2016 | PM/WIGOS |  |  |
| 1. (10.1) | Schedule any future ICG-WIGOS session so as not to overlap with any other high-level meetings in the Secretariat | In due-course | D/OBS |  |  |
| 1. (10.1) | Consider the possibly of reverting to full five-day sessions of ICG-WIGOS | In due-course | D/OBS |  |  |
| 1. (10.2) | Include the proposed Items listed in 10.2 in the Agenda for ICG-WIGOS-6 | In due-course | PM/WIGOS |  |  |
| 1. (10.3) | Include communications materials for external audiences (i.e. non-NMHS) in the suite of communications material to be prepared | On-going | D/OBS and PM/WIGOS |  |  |
| 1. (10.4) | Consider possibilities for increased engagement of RA II in the WIGOS planning | On-going | D/OBS, PM/WIGOS |  |  |

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1. Reference is made to Emerging data challenges for WMO stakeholders (agenda item 9.1 of Cg-17); [WMO-No. 1157](http://library.wmo.int/pmb_ged/wmo_1157_en.pdf)) [↑](#footnote-ref-1)
2. With the reference to the paragraph of the General Summary, Final report from ICG-WIGOS-4 [↑](#footnote-ref-2)
3. Status column entries will be one of the following descriptors: **Completed; On-Track; Overdue** [↑](#footnote-ref-3)
4. With the reference to the paragraph of the General Summary, Final report from ICG-WIGOS-5 [↑](#footnote-ref-4)
5. Status column entries will be one of the following descriptors: **Completed; On-Track; Overdue** [↑](#footnote-ref-5)