WORLD METEOROLOGICAL ORGANIZATION

REGIONAL ASSOCIATION VI (EUROPE)

Working Group on Technology Development and Implementation (WG-TDI)

First Meeting

DWD, Offenbach, 6-7 November 2014

MEETING REPORT

Link to meeting documentation:
ftp://ftp.wmo.int/Documents/PublicWeb/dra/eur/WG-TDI_2014/1st_meeting/

February 2016

1. Opening

1.1 The first meeting of the RA VI Working Group on Technology Development and Implementation (WG-TDI/1) was held at the Deutscher Wetterdienst (DWD), Offenbach, Germany, from 6 to 7 November 2014. Mr Hans Joachim Koppert, Head of the weather forecast division of DWD, opened the meeting.

1.2 Round tabe introduction of the participants: Eight members of the WG, four advisers and two representatives from WMO attended the meeting. The list of participants is given in **Annex 1.**

1.3 The WG Chair, Dr Dieter Schröder, DWD, conducted the meeting.

1.4 The proposed agenda included a videoconference with the WMO Secretariat on WIS issues, participated by Mr Peilang Shi, Mr David Thomas and Mr Steve Foreman, and was scheduled for the second day of the meeting. Additionally, a tour of the computing center was also suggested for the second session. The meeting adopted the agenda as shown in **Annex 2.**

1.5 The overview of RA VI organizational structure in form of a short briefing was given by Mr Milan Dacic, Chief of WMO Regional Office for Europe.

2. Input of the Technical Commissions of WMO

2.1 Report of the CBS Extraordinary Session relevant to WG-TDI

2.1.1 Dr Dieter Schröder presented the Results of the CBS Extraordinary Session (Asunción, Paraquay, 8 to 12 September 2014). It included the results which are of relevance to WG-TDI; Results from OPAG-ISS, as it affects GTS (GTS Infrastructure, Data Representation and Codes; and WIS and RMDCN); and Results from OPAG IOS, due to its connection to WIGOS.

2.1.2 The GTS is and will remain a key component in WIS, despite the development of new technological possibilities. It is a reliable backbone communication that will still be used. The Manual on GTS will be reduced to Volume I, Volume II is deprecated.

2.1.3 The Manual on Codes has received several amendments:

- BUFR and GRIB2
- Aviation codes will be represented using XML (AvXML). This represents all aviation XML and a fruit of the cooperation between ICAO and WMO. This will at some point replace the traditional TAC codes in aviation.
- There are new guidelines on data modeling that outline how to model data using XML.
- The WMO logical data model "METCE"
- The collaboration of ICAO and WMO has produced the ICAO Meteorological Exchange Model (IWXXM). It was developed by the TT (Task Team) AvXML.

2.1.4 New technologies in aviation are being developed in the SES (Single European Sky) initiative. The new architecture for data exchange is called SWIM and we must ensure that SWIM and WIS are compatible. SESAR is a project that's working on this issue and OPAG-ISS has been tasked with a proposal to increase compatibility between the two systems. Goals are SWIM transparancy and SWIM-WIS adapters. An expert task team should be created in orde rto accomplish this task.

2.1.5 The final migration date for migration to TDCF is/was Nov 2014. Nonetheless, CBS acknowledges that several traditional codes are still on the market. The community should be guided to migrate from TAC to TDCF. Final migration activities should not all take place immediately within this month, as this would create problems for operational applications. Althoug the final date is Nov 2014, a three-month transition phase will be allowed in which both code forms are allowed. As an incentive to support migration activities, IPET DRMM will report the migration

status to the PR (Permanent Representative) of the WMO members. Each member state is invited to submit its own report. The RAs will play an important role in the migration. It is important for CBS to incentivize and monitor the migration to TDCF.

2.1.6 TAC will no longer be maintained by WMO after the cutoff date. GTS centers will no longer allowed to exchange TAC. No center will be required to produce information in TAC for exchanging data on GTS.

2.1.7 ICAO will require longer to migrate and will communicate to WMO when it is possible for it to switch to TCDF. It plans to migrate to AvXML from 2016-2019.

2.1.8 RMDCN-NG (Regional Meteorological Data Communication Network Next Generation) is a core network of WMO Information System (WIS). TT RMDCN will coordinate intensely with RA VI members. The next generation is more flexible than the old RMDCN and allows internet connections, allowing RMDCN to spread to new areas. We hope that it will reach the entire community.

2.1.9 The new Manual on WIS and Guide to WIS were accepted. These provide instructions on how to set up new WIS centers. The details on metadata, procedures, capacity building, etc. are covered in these documents. Auditing procedures for GISCs (Global Information System Centre) and DCPCs (Data Collection or Production Centre), including use cases and test cases, are clearly described. The community was grateful to see these processes described in such detail because, although they are a lot of work, the work is clear and validated by WMO. In our region there should be no difficulties, because our centers have high qualities, but this quality must be maintained.

Discussion

2.1.10 The discussion following the Chair's report on CBS Extraordinary Session were in light of validation of the migration from TAC to TDCF, the period during which this validation is envisaged, and the possible need by the RA VI centers for support in their technical development to operate DCPC/NC centers (in form of seminar). Two-month migration period is envisaged during which the centers should provide both codes and ask users for feedback. It is concluded that the WIS documentation, and the capacity development mechanisms at the WIS centers are well established, and should be sufficient for centers to perform their tasks. Nevertheless, if the Raporteur on WIS, Mr Antonio Vocino noticed a need, or lack of capacities, such an activity could be planned as a corrective measure. It is noted that the support of the Regional Office for Europe is important in terms of seeking the endorsement by the top level bodies in RA VI, the PRs, and the WMO for the role of the WIS focal points, whose tight integration into the process is essential.

2.2 WIGOS Framework and Implementation Activities (including the Asunción results)

2.2.1 Mr Lars Peter Riishojgaard, WMO WIGOS Project Manager, introduced the WIGOS framework and implementation activities, as well as the report of the CBS Extraordinary Session relevant to WIGOS.

2.2.2 WIGOS is the WMO's foundation for meeting the observation needs for its members. It is a framework for integrating WMO observing systems, and observation components of co-sponsored systems, under one umbrella. Together with WIS, WIGOS is a contribution to GEOSS. It does not compete with GOS, GAW, GCOS and similar organizations, but should support these activities. WIGOS is an attempt at modernization. It coordinates observation systems and the exchange of observation data.

2.2.3 The basis for WIGOS is that the mandate of NMHS has expanded in recent decades. The emphasis has expanded from ordinary weather observation to monitoring climate, air quality, water resources, state of the oceans, etc. Simultaneously, new observation and communication technologies have become available. Through close cooperation with the NWP and data assimilation community who are in position to give guidance on observing system network design

(through evaluation of the impact of observation sets or even single observations for NWP model skill).

2.2.4 The WIGOS Framework Implementation Plan (WIP), as a dri contains useful information about key activity areas that drive WIGOS. Collaboration between observing systems is a crucial goal, as well as their design and implementation. To this end, guidelines for standardization, data and metadata management and delivery, archival and retrieval, communication, etc. are provided.

2.2.5 WIGOS is currently in its four-year implementation phase, which should last until 2015. Key deliverables expected for the Seventeenth WMO Congress are WIGOS Part of WMO technical regulations; Draft manual on WIGOS; Metadata standards; Regional implementation plans (similar to WIP but tailored to each region); and Vision for preoperational phase (2016-2019). Material for quality management and guidance will follow.

2.2.6 The implementation plans will be published using a top-down approach. Although some member states have already made their own WIGOS implementation plans, WIGOS itself will foster regional before national implementations.

2.2.7 Each region has drafted its WIGOS implementation plan (R-WIP). These plans have been supported by regional (or sub-regional, in the case of Africa) WIGOS workshops. Regions II-VI have approved their R-WIP plans, and Region I will approve its R-WIM at its Regional Associations session in February 2015.

2.2.8 An R-WIP is developed by identifying implementation activities for the each of the ten WIGOS Key Activity Areas, and aligning these with the major regional, subregional and national priorities and ongoing activities. as well as with the global WMO goals. Concrete projects should be formulated within the R-WIPs to ensure that action is taken.

2.2.9 For each member state, WIGOS can have a different meaning. Not all key activity areas are relevant everywhere. The N-WIGOS (national WIGOS) plans should be aligned with local needs. WIGOS is especially relevant for less-developed countries that do not have unified observation strategies. NMHS benefit from WIGOS due to increased visibility and observation sharing.

2.2.10 ICG-WIGOS (Inter-Commission Coordination Group for WIGOS) oversees the implementation and representation of technical commissions and regional associations. It is composed of three TTs: Regulatory Material; Metadata; and Quality Management (observational data quality).

2.2.11 Documents from each TT are forthcoming. Regulatory material will be submitted soon for ratification, metadata specifications are currently being produced. The quality management is trying to modernize NWP observation quality monitoring within the WMO so that PRs receive observational data quality information in a more modern fashion. Further planning will take place at a workshop this year.

Report of the CBS Extraordinary Session relevant to WIGOS

2.2.12 The CBS considered and recommended to Congress to approve the Draft Regulatory Material and the Manual on WIGOS. The draft WIGOS metadata standards were noted and should be incorporated into the Guide to WIGOS. Also, the draft WIGOS Station Identifiers were presented at CBS. This is a new identification system for observation stations outside of WMO GOS, and GAW, identifiers, etc. It should prevent different communities from developing disparate, incompatible identifiers. It should also address the long lasting problem of lacking WMO identifiers for countries with a high number of observational assets.

2.2.13 The draft metadata standard has been subject to controversial discussion as to what elements should be mandatory, what optional and what conditional. Conditional elements in this case are elements that are mandatory, but only under conditions in which they can occur (e.g.

snow cover in regions where snow occurs). All metadata also should contain a timestamp to ensure transparency of the temporal relevance of metadata.

2.2.14 The new station identifiers uses surrogate keys - no implicit meaning is contained in the identifier. They must be unique and independent of the observation types. The system should be capable of including all existing station identifiers and not run out of keys in the future. Further information will hopefully be available on the second day, as the person who works directly with that will be asked to given the presentation remotely.

2.2.15 Another undergoing initiative is related to the integration of RBSN (Regional Basic Synoptic Network) and RBCN (Regional Basic Climate Network) into a new RBON (Regional Basic Observation Network).

2.2.16 The schedule in Asuncion was tight – four working days, which allowed little time for detailed discussion of single issues, regardless of their relevance. Certainly some topics would have deserved more discussion (e.g. new station identifiers, metadata).

Conclusion

2.2.17 WIGIOS will not resolve all the problems in current national, and regional observing systems and networks. Nevertheless, it started to lay down the framework, which will allow all to adreess these problems in much more coordinated, sustainable, efficient and effective way. The global aspects of the WIGOS implementation proceeds as planned, so it will deliver to Congress expected outcomes. The regional implementation is following closely behind as well.

2.3 Report from the CIMO Meeting (St. Petersburg, July 2014)

2.3.1 MR Volker Kurz, Head of the IOS, DWD, and Head of the Editorial Board of CIMO Guide, delivered a report on the main findings from the CIMO Meeting, held in St. Petersburg in July 2014.

2.3.2 Commission for Instruments and Methods of Observations (CIMO) has contributed to the WIGOS implementation in the following: *(a)* Global improvement in the quality and tracability of observations through development and implementation of WIGOS-related standard and recommended practices and procedures, which is done by developing standards, recommended practices and procedures, and in close collaboration with other technical commissions and organizations; *(b)* Provision of the technical guidance and assistance to Members and Regional Associations helping them to achieve compliance with WIGOS Technical Regulations; *(c)* Update, harmonization and development of WIGOS regulatory and guidance material; *(d)* Ensuring Regional Instrument Centres (RICs), Regional Radiation Centres (RRCs), and Regional Marine Instrument Centres (RMICs) provide services to Members in support of WIGOS implementation.

2.3.3 Special emphasys was given to the work of the Regional Instrument Centers, and their role in securing that services to all members are provided through guidance and assistance in making all the measurements comparable. In this respect, the initiatives from the RIC Slovenia are welcomed. It is also stated that Germany is considering becoming part of the regional instrument centers in collaboration with others, and that it is ready to share the burdain.

2.3.4 To reach global improvement in the quality and traceability of observations, several tasks are pointed out, including the continuing improvements of the CIMO guide, metadata specifications, and collaboration with ISO. It should all be done through participation and active engagement in ICG WIGOS, and its TT-WRM, which develops WIGOS-related WMO Technical Regulations, and TT-WMD, which develops WIGOS Core Metadata Standard).

2.3.5 CIMO recongnized that the Regional Associations in their WIGOS Implementation plans stressed the importance of empowering the RICs to fulfill their mandates, and to enhance their support to members. With this regard it is reiterated that traceability of observations to international standards is essential for achieving the full potential of WIGOS. Hence, strengthening the capabilities of the RICs is critically important to WIGOS, in particular to those countries that do not have the calibration laboratories. CIMO encouraged the members to support fully their RICs, or

possibly RICs in the neighboring countries. The progress in training provided by Regional Training Centers (RTCs) and RICs is appreciated by CIMO.

2.3.6 In view of the strong expectations by Members for strengthened support from the RICs, the Commission expressed its concern with the lack of information regarding the status and capabilities of some RICs. It requested the WMO Secretariat to seek clarification from all Members hosting RICs on their plans and willingness to provide their facilities to Members according to the agreed responsibilities of RICs.

2.3.7 The CIMO Guide has been updated, and the provisional 2014 edition was approved and submitted to Congress. It incorporates numerous updates, including the special attention given to the space based observations comprising a new Part in the text. The Guide is available on the WMO/IMOP website. Translation of the CIMO Guide into the UN languages is a high priority and is currently in progress. However, the translations are delayed by several years.

2.3.8 CIMO agreed so-called “fast-track” changes for the future versions of the Guide, which will not be published, but rather available as electronic update to the official editions (made available every year or every two years). This will increase the speed of change adoptions.

2.3.9 CIMO contributed material from the CIMO Guide to the WIGOS Manual and Technical Regulations, rather than keeping it separate. This creates a more seamless integration of CIMO/WIGOS documentation and simultaneously reduces complexity, data gaps and redundancy. This makes maintenance of the Guide much easier.

2.3.10 Material in manuals is mandatory for Members, and should be implemented, whereas guides are non-obligatory, and describe how the goals set in the Manual may be achieved. Mechanisms exist to ensure the consistency between the material in the guide and manual, or technical regulations. This is an on-going activity in TT-WRM (Task Team on WIGOS Regulatory Material), and will last for at least next four years. Aftewards, maintaining this material will become a regular activity – not requiring such a large effort as in the beginning.

2.3.11 The ICA (International Cloud Atlas) needs to be reworked. For example, identifying types of clouds by satellites requires some guidance material. Revision and update of the ICA is on its way, and the first step is to publish the PDF version of the existing Atlas. The Secretary-General has been asked to identify required funds so that this can be done by the end of 2015. Apparently the publication is the larger problem, then the raw material.

Discussion

2.3.12 The discussions stressed again the importance the RIC centers have for Members, and welcomed the willingness of DWD to contribute to the RIC initiative, and to the TT-RIC, both woth calibration laboratories as well as with human capital.

2.3.13 In response to the question on possible changes to the 2014 Provisional CIMO Guide, it was stated that the dialogue on this version of the Guide is now closed. Acknowledging that the guide is not perfect, it is concluded that the new changes at this point in time would delay the publishing of the guide for at least a year. The fast-tracked updates would be the propoer forum for such changes. Fast-tracked changes are automatically made public and will automatically be addressed in appropriate discussions in the future.

2.3.14 The problem of translations is recognized, where the on-going translation is performed on the Guide, which is four years old. There is no foreseeable solution to this problem at the moment, unless substantial financial resources are activated.

3. Contribution of the Task Teams – Reports and future plans

3.1 Task Team on WIGOS Implementation (TT-WIGOS)

Main Goals of the Work Program

3.1.1 The WG TDI Vice-Chair, and the TT-WIGOS Leader Mr Ercan BÜYÜKBAŞ presented the work plan of the task team, together with the overall goals and the kye activities proposed for the year 2015.

3.1.2 WIGOS is important because NMHS have different external conditions, resources and priorities, whereas they all have a need for high quality observation that they can use for fulfilling their missions. WIGOS attempts to homogenize the data they produce and facilitate its exchange.

3.1.3 Priorities of the WIGOS Implementation TT:
- Determine conditions of preexisting observation networks and cooperate with existing organizations and initiatives
- Match observation networks against needs of members
- Develop standards together with other related organizations
- Facilitate service amongst and between members
- Proactively identify and handle future challenges

Tasks to be tackled in 2015

3.1.4 Key activities for 2015:

- First activity: Perform a study to evaluate WIGOS Implementation Plan
- Second activity: Conduct survey among members on current situation, needs and future plans. Focal point members are addressed. The survey can be conducted using OSCAR.
- Document results frequently on webpage
- Third activity: Workshop/seminar to assist members in developing their own N-WIP (possible by Webex, preferable in person).

Discussion

3.1.5 The question was raised on who would be invited to the workshop/seminar planned for 2015. It was responded that it would be preferably face-to-face meeting of all RA VI members, provided that the WMO can offer its support. It would be motivating for members to use WIGOS, and to obtain external observations. Otherwise, it should be a Webex meeting. The Secretariat responded that it was unknown at that moment whether the event could be financially supported, and that the Webex would be preferred in general. Nevertheless, this kind of meetings is planned where cost-sharing between WIGOS and Regional Office for Europe would be possible, and WIGOS would have an interest, and would contribute staff either way. It was stressed that the Webex is more effective for ongoing cooperations. For the establishment of new ones, the PRs would be the target audience and it would be more effective that the people see each other in person. It's crucial to get the correct audience there. Policymakers? Technical people? Etc.

3.1.6 It was discussed that not only NMHS are relevant for WIGOS. Other organizations in each country would need to come to the table. On a national level it's possible for a host country to invite relevant organizations from their country. The WMO cannot support intracountry partnership events, but a regional meeting where a host country benefits by inviting other domestic partners. This may serve as a planted seed for future cooperations.

3.1.7 A concrete plan for the seminar planned in 2015 should be presented to Riishojgaard and Dacic so that they can evaluate the feasibility for financial support. A personal meeting to establish cooperations would be preferable to a Webex seminar. The event should then take place next year. This plan should be as specific as possible, so that the correct audience comes to the meeting.

3.1.8 The meeting discussed the finalization of the list of the TT-WIGOS members, and agreed that the TT-WIGOS Leader will come back to the Chair with the revised and complete list of the TT experts.

3.1.9 The meeting rasied the question on the TT-WIGOS Term of Reference, whether it exists, is it approved, and whether the presented goals of the TT-WIGOS is already approved and by which body. This includes the employed tools to reach presented goals and targets, the revew and update of the Regional WIGOS Implementation Plan, and review of the observing system requirements of the Members based on their National WIGOS Implementation Plans (N-WIP). The Leader of TT-WIGOS responded that the TOR for the TT was submitted to the MG during its meeting in Tallinn. Based on this TOR the presented goals and proposed key activities were proposed.

3.1.10 **Decisions/Actions related to TT-WIGOS:**

Action	Resp. person	Date
Review and study the Regional WIGOS Implementation Plan (R-WIP including its sub-components)	TT-WIGOS Leader	2015
Perform Web-based Survey (keep the interface simple) to understand the current situation, needs and future plans	TT-WIGOS Leader	2015
Prepare short proposal for WIGOS event/workshop to support Members National WIP (goals, aims, duration, requirements … etc.) and submit to WMO Secretariat	TT-WIGOS Leader	February 2013
Consider supporting the above WIGOS event/workshop in RA VI (all WIGOS focal points)	WMO Secretariat Milan Dacic and Lars Peter Riishojgaard	February 2013
Review the List of Nominated experts from Tallin (name by name) and send the final list of experts for all TT	WG TDI Leader and all Core members	ASAP
Address a letter/email to all members of the TTs in order to reconfirm their participation	WMO / TT-WIGOS Leader	ASAP
Present the final list of the TT-WIGOS members	TT- WIGOS Chair	ASAP

3.2 Task Team on Regional Instrument Centres (TT-RIC)

Introduction of the TT and Achievements already reached

3.2.1 The TT-RIC Rapporteur Mr Drago Grošelj presented the recent activities of the Regional Instrument Centers in RA VI, together with the plan of activities for the intersessional period.

3.2.2 Several capacity building and dissemination activities took place in the last 2 years: RIC Ljubljana provided traceability of reference standards for NMHS of Serbia, which is tracable to RIC Slovenia. Both services benefit this cooperation, as the accreditation bodies frequently require interlaboratory comparisons. For that purpose bilateral interlaboratory cooperation is established, and work perforemed on a yearly basis.

3.2.3 RIC Toulouse organized interlaboratory comparison with two DWD laboratories (in Hamburg and Munich) in the field of pressure and relative humidity, and the agreement between these laboratories is on a very high level. Results were published at the TECO 2014 conference in St. Petersburg.

3.2.4 International workshop on Metrology for Meteorology and Climate was conducted in Brdo, Slovenia, September 15-17, 2014. This was the final event of the MeteoMET Project, which dealt with tracability, harmonization of data, etc. More info: http://www.mmc-2014.org/. Members are adviced to use available results from this project.

3.2.5 RIC Ljubljana implemented activity “Assistance and calibration and maintenance of hydro-meteorological instruments” within the project "Building resilience To Disasters in the Western Balkans and Turkey”, initially providing the traceability for transfer standards of two calibration kits, which were dispatched thereafter to beneficiaries in Montenegro, Bosnia and Herzegovina, Kosovo[1], Albania, and the former Yugoslav Republic of Macedonia.

3.2.6 Regarding the members of the TT-RIC, the Rapporteur will make consultations with the proposed additional members, and will send the consolidated list to the WG TDI Chair and the WMO Secretariat (ROE) for their further issuing of an official letter to the respective PRs and selected experts.

3.2.7 The proposal of the TT-RIC Rapporteur is that at least two members from RICs and two members from NMHSs constitute the task team. Therefore he urged the Meteo France to consider nominating one of its experts to participate in the work of the TT-RIC. Mr Laurent Perron, Rapporteur on DPFS, agreed to consult the colleagues at Meteo France.

Tasks to be tackled in 2015

3.2.8 There is a plan to organize an Inter-Laboratory Comparisons (ILC) during the following work period, umong the RICs, and all the NMHSs in RA VI. NMHSs involved in ILC should cover transportation expenses for calibration kit shipment to next NMHS. There are three RICs in RA VI (RIC Toulouse, RIC Ljubljana, and RIC Bratislava), and up to 25-30 NMHS laboratories able to perform such an ILC. The main question to be discussed in the TT-RIC will be the goal of particular RICs, namely, what transfer standards will be included in their work (working with regular instruments within the AWSs, or with state-of-the-art instruments). There are pros and cons in either of the two, which relate to improved calibration and measurement capabilities of a laboratory, and possible future commercialization consequences, on the other hand. The ILC process may last approximately two years. If the secondary transfer standards are chosen for the ILC, there is already sufficient instrumentation.

3.2.9 The Questionairre will be sent, together with the ILC Protocol, to the PRs requesting the information on wheather the particular NMHS is capable to participate in the ILC, and if the NMHS is willing to participate in the comparison. Based on the response the final estimate of the duration and requirements will be done.

3.2.10 The Survey will be conducted in RA VI, in order to establish a database with all the information on calibration and measuring capabilities of the NMHSs. The open question is where the database will be stored and who will maintain it. [one possibility is to make use of the Country Profile Data Base at the WMO https://www.wmo.int/cpdb, or the WMO/Regional Office for Europe web site http://www.wmo.int/eur].

3.2.11 Based on the Questionairre and the Survey, TT-RIC shall consider the dissemination of the calibration kits to NMHSs, which requires so.

3.2.12 The TT-RIC team will soon discuss the possible option to continue the collaboration within the MeteoMET-2 project, under the overarching hiaerchy of the National Metrology Institutes.

Discussion

3.2.13 It was underlined that the members of the TT should be happy to be part of the team and that the focal points are informed. The proposed colleague from RIC Toulouse will be asked and her participation officially confirmed if she wishes so.

3.2.14 The WG Chair stressed that It isimportant to act quickly in planning the ILC intercomparison, otherwise the window of opportunity will close. TT Rapporteur responded that the contacts already exist, and that it should work out.

[1] This designation is without prejudice to positions on status, and is in line with UNSCR 1244 and the ICJ Opinion on the Kosovo Declaration of Independence

3.2.15 TT Rapporteur raised the issue of WMO regulations regarding the collaboration with the instrument manufacturer in the intercomparison experiment. WMO/ROE will enquire and come back with the recommendation on the issue, if applicable.

3.2.16 **Decisions/Actions related to TT-RIC:**

Action	Resp. person	Date
Ask for confirmation from the possible new TT-RIC expert members (stands for all TTs) and send the consolidated list of the TT experts.	TT-RIC Rapporteur (all TT Leaders and Rapporteurs)	ASAP (end November 2014)
Upon the confirmation from the possible new TT-RIC (and other TTs) expert members, send the official letter informing the PRs (cc-ied TT Leaders/Rapporeurs, experts) of the official membership to the team	WMO RA VI	ASAP
The Questionnaire will be sent, together with the ILC Protocol to the PRs requesting the information on wheather the particular NMHS is capable to deal with the ILC, and if they are willing to participate in the comparison.	TT-RIC Rapporteur	2nd quarter 2015 (April/May)
Conduct the Survey in RA VI, on calibration and measuring capabilities of the NMHSs (tuned with the METEOMET-2 Project activities)	TT-RIC Rapporteur	2nd quarter 2015 (April/May)
Consider to store and maintain the responses to the Survey and Questionairre, either at the WMO Country Profile Data Base https://www.wmo.int/cpdb, or at the WMO/Regional Office for Europe web site http://www.wmo.int/eur].	WMO/ROE	ASAP
Consult the HMEI contact person, and Roger Atkinson at the WMO to clarify issues regarding the engaging of the instrument manufacturer to collaborate with the RICs.	WMO/ROE	ASAP
The calibration kits can be distributed based on capability and interest on the side of the NMHS (based on the interest expressed in the survey).	TT-RIC	Continuned act.

3.3 Task Team on Migration to Table Driven Code Form (TT-MTDCF)

Introduction of the TT and Achievements already reached

3.3.1 Mr Alexander Kats, ROSHYDROMET, and TT-MTDCF Leader, presented the main goals of the Task Team work program, the previous and present TT-MTDCF members, achievements already reached, the work in progress, and the tasks to be tackled in 2015.

3.3.2 The main goals of the TT-MTDCF work program are to coordinate and supervise the migration to TDCF in RA VI, and to support RA VI members in the migration to TDCF. The task team performs other miscellaneous tasks related to problems occurring on the fly, and also promotes the use of WMO TDCF.

3.3.3 In its coordination role the TT maintains regular communication with national focal points, and monitor the RA VI migration to TDCF through collecting the progress and problem reports from the focal points. This monitoring is based on verbal communication with the focal points. TT takles

the occurring problems in GRIB1 to GRIB2 migration, and advice, in coordination with the CBS and WMO, on how to solve these problems.

3.3.4 Within its support to RA VI members in migration to TDCF, the TT provide a review and update of the Regional Plan for the migration to TDCF in RA VI, help the National Centres to develop and update their national migration plans, and advice them on all aspects related to the migration to TDCF. The TT organizes training events and workshops on TDCF, and hands-on support to countries experiencing technical complications in migrating to TDCF. The TT further develops encoder-decoder software (e.g. synop2bufr) and guide members in using these tools.

3.3.5 As for the membership to the TT-MTDCF, for a long time the task team was lead by Dr Eva Červená, Czech Republic, who put a substantial effort to facilitate the migration to TDCF, especially in respect to traditional observations. Dr Červená is still willing to help the TT.

3.3.6 From the previous nominated team group only two members remaind as officially nominated: Mrs Sibylle Krebber, Germany, and Mr Alexander Kats, Russian Federation. For other previous members their respective PRs did not submit the official nominations. It was underlined that the final official composition of the TT-MTDCF expert team is to be finalized as soon as possible.

3.3.7 The TT Leader expressed his trust that strong links will be maintened with the European members of the CBS Inter-Programme Expert Team on Data Representation Maintenance and Monitoring (IPET-DRMM), and several informal participants, which will provide important contribution to the TT-MTDCF.

3.3.8 The TT already managed to validate the samples, and support Belarus in their migration of CLIMAT data to BUFR. Transmission to GTS started in September 2014.

Work in progress

3.3.9 The work in progress is related to: (a) Validation of samples and support to Ukraine in their migration of SYNOP data to BUFR. Test transmissions to Moscow RTH are on going; (b) Validation of samples and support to Armenia in their migration of CLIMAT data to CREX or BUFR. Test transmission has started in September 2014; (c) Support to Kazakhstan in migration of TEMP data to BUFR. Test transmission is on going. (d) Auxiliary software tools for compiling CREX or BUFR message is being developed and tested; (e) Survey on the actual migration status in RA VI. It is done with a help of the RTH Moscow, based on the actual BUFR data recived by RTH Moscow.

Possible support from the WG Chair and WMO/ROE

3.3.10 The ECMWF TDCF validator service is no more active on the ECMWF web site. It could be useful for the TT-MTDCF to have this tool still active. The WG Chair Mr Dieter Schroeder, who is also a member of the Technical Advisory Commetee (TAC) of ECMWF, could act in this regard upon the request of the TT-MTDCF.

3.3.11 There is a Google Group set up for the CBS, and there is a need to organize similar group for RA VI Task Teams.

3.3.12 The meeting supported the use of an ECWMF BUFR Wiki page, and the EUMETNET offered to help in tracing back the source of incorrect BUFR messages if those are coming from the EUMETNET members. The problem underlined of different locations between the SYNOP form and when encoded to BUFR. EUMETNET is reporting this to the countries on quarterly basis, but the feedback is rather low.

3.3.13 The status on BUFR implementation is presented in table form for RA VI Members as a result of the survey based on data recived by RTH Moscow in early October 2014. The intention was to distribute the table to focal point and ask for comments. It was discussed wheather

publishing of a consolidated table for the whole RA VI, and its broader visibility, could contribute as a motivating factor to RA VI Members to intensify the work on MTDCF.

3.3.14 The need for a regional workshop on MTDCF was discussed, and possibilities of organizing dedicated missions to countries expressing their needs to promote quicker migration towards TDCF.

3.3.15 **Decisions/Action s related to TT-MTDCF:**

Action	Resp. person	Date
Communicate the preliminary table on migration to TDCF in RA VI produced by data received by Moscow RTH to EUMETNET and ECMWF for validation, and produce consolidated table.	TT-MTDCF Leader	ASAP
Publish the consolidated table on the WMO Web site.	ROE	As the table becomes available
Write a letter to Focal Points asking their opinion on the need for a targeted workshop on MTDCF, and possible country missions, including estimate of the resource requirements.	TT-MTDCF Leader	November 2014
Seek the official approval of the PR of Serbia for Mr Perisa Sunderic to participate in TT-MTDCF.	ROE	ASAP

3.4 Task Team on RMDCN (TT-RMDCN)

3.4.1 Mrs Ilona Glaser, DWD, TT-RMDCN Leader, presented the ToR for the first TT-RMDCN established in 2009, and concluded that all the goals of the first TT were reached.

3.4.2 The last meeting the RMDCN Operation Committee (ROC) in October 2014, proposed new roles of the ROC as a single point where all usergroups of RMDCN meet (ECMWF, RA VI, WMO), and that part of the old TT-RMDCN ToR is moved to Expert Team on WIS-GTS Communication Techniques and Structure (ET-CTS).

3.4.3 New ToR for the ROC include: monitoring the operation of the RMDCN; controlling interfaces with the GTS; investigating the options to improve the reliability, security and performance of the network; assisting in the implementation of connection to the RMDCN; reviewing the performance and the evolution of the RMDCN and making proposals to RA VI and CBS; reviewing new technologies and making proposala to RA VI and the CBS to improve the RMDCN; assisting RA VI and the CBS with possible changes in the RMDCN; reporting to the RA VI and the CBS on the operation of the RMDCN and propose options to improve it.

3.4.4 The new terms of reference for ROC, its membership, and the reporting flow structure from the ROC towards ET-CTS, TT-RMDCN and ECMWF was presented. It is concluded that the benefits of this new organization is the better recognition of the role of the RMDCN as WIS Core Network, clear visibility of the parenting bodies (ECMWF, RA VI, WMO). In addition, both regional and the global aspects of RMDCN are covered. This new working and reporting structure will be submitted through the WG TDI Chair to the RA VI Management Group, with a request for approval by the RA VI.

3.4.5 The RA VI MG decided that there is still a need to keep the TT-RMDCN in order to simplify the organizational and management of RMDCN. The ToR for the new TT-RMDCN was updated, and include: monitoring the migration to RMDCN-NG in RA VI; activation of DMVPN backup for RMDCN-NG connections in RA VI; helping RA VI members dealing with RMDCN problems, support the trouble shooting communication with ECMWF and RMDCN-NG provider (Interoute Communication Ltd); informing RA VI members not connected to the RMDCN-NG yet about new

connection types and advicing in the connection process; contributing to the multicast and IPv6 issues on the RMDCN-NG; liasing with ET-CTS; providing input to ROC for further development of the RMDCN-NG and discussion of problems in RA VI.

3.4.6 TT member list was presented with six potential members, three of which already agreed to participate. Further consultations need to be made with potential candidates from Czech Republic, and ECMWF.

Achievements already reached

3.4.7 Alrerady achieved in the RA VI is that the migration has been finished, except for Lebanon, where it is an on-going process expected to be finalized by the end of 2014. Contributing in assistance to memberts on the multicast and IPv6 issues is ongoing process, as is in ET-CTS, as well.

Tasks to be tackled in 2015

3.4.8 Activation of DMVPN backup for RMDCN-NG connections in RA VI: getting in touch with the RA VI sites without DMVPN backup, and depending on the feedback provide advice/support.

3.4.9 Inform RA VI members who are not connected to the RMDCN-NG yet about new connection types and provide advice on the connection process. The following are the countries not yet connected to RMDCN-NG: Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Cyprus, Georgia, Kazakhstan, Malta, Monaco, Montenegro, Republic of Moldova, Syrian Arab Republic, Ukraine.

3.4.10 Inform all interested countries about new connection types Iron-A and Iron-B offering lower cost sollutions to realize connection to RMDCN-NG (Internet VPN to Interoute GW to RMDCN-NG).

3.4.11 Input to ROC for further development of the RMDCN-NG and discussion of problems in RA VI.

3.4.12 There is no particular need for a dedicated meeting for the TT-RMDCN. The communication will be performed mainly via email, teleconferences or videoconferences, if required. In addition, the reporting to ROC will be done on the occasion of the yearly ROC meetings.

Discussion

3.4.13 The discussion developed on the cost problems some countries from RA VI may have in connection to the RMDCN and the backup sollution. It was agreed to put up a document, which will summarize the existing backup options, including cost requirements in order to inform the poterntial users.

3.4.14 It was stressed that it is necessary to preserve in the WMO official documents the connections diagram depicting the meteorological telecommunication network in RA VI.

3.4.15 The discussion further developed on the way of communicating the new technical initiatives and proposed/adopted sollutions. Whether the web site dissemination of information is sufficient or it has to be formally communicated through traditional WMO channels of communication in order to be mandatory for the Members. It was replied that the manual on WIS already contains relevant information.

3.4.16 **Decisions/Actions related to TT-RMDCN:**

Action	Resp. person	Date
The new working and reporting structure (ROC, TT-RMDCN) to be submitted to the RA VI Management Group, with a request for approval	WG TDI Chair	9-10 April 2015

by the RA VI.		
Final check with the potential candidates from the TT-RMDCN list which has not yet confirmed their readiness to participate	TT-RMDCN Leader	ASAP
Create a document, which will summarize the existing RMDCN-NG backup options, including the cost requirements as information to a poterntial user.	TT-RMDCN Leader	2015

4. Contribution of the Rapporteurs

4.1 Rapporteur on DPFS

4.1.1 Mr Laurent Perron, MeteoFrance, Rapporteur on DPFS, presented the Draft RA VI Report on Regional Aspects of the DPFS (Data-Processing and Forecasting System), which contains information on the current status in RA VI.

4.1.2 The WG TDI is invited to consider the information and suggest possible corrections and improvements.

4.1.3 The content of the Report coveres the following: Global model operated in RA VI; Limited area model in RA VI; Online severe weather information exchange; European radar data exchange; European lightning networks; Hydrological and meteorological model coupling; and Environmental emergency response RSMCs with atmospheric modeling capability.

4.1.4 Support is needed for the description of particular chapters. The rapporteur for ISS East will establish contacts with the met services to receive information about the current and pre-/semioperational modeling activities. Various participants offered information about global and limited area models, as well as forecasting activities from their countries.

Discussion

4.1.5 Discussions were in line of the rapid development of the scene in DPFS and a need to reflect these changes adequately – a paper once a year may not make sence in this respect.

4.1.6 It is concluded that the information relevant to DPFS from each member state should be provided directly to Mr Perron, so that he could distribute the first draft of the Report by the end o March 2015.

4.1.7 **Decisions/Action s related to DPFS:**

Action	Resp. person	Date
Information relevant to DPFS from each member state should be provided directly to Mr Perron, so that he could distribute the first draft of the Report by the end o March 2015.	Rapporteur on DPFS	End of March 2015

4.2 Rapporteur on WIS

4.2.1 Mr Antonio Vocino, CNMCA - Italian Air Force National Meteorological Centre, Rapporteur on WIS, has presented the WIS implementation in RA VI background information, the ToR of the Rapporteur on WIS, priority activities with a plan, nd key issues requiring imiidiate action.

4.2.2 Rapporteur underlined the need to monitor the implementation of WIS, in particular operationalization of the planned NCs and DCPCs, in order to meet the deadlines ion 2015. WMO country profile database (CPDB) should be used as a basic source of information on WIS

implementation by Members. The WIS NC/DCPC Focal Points should be responsible to keep the information up to date.

4.2.3 The Rapporteur on WIS ToR comprises drafting: status report on the implementations of the current WIS requirements; Assessment of WIS operation in RA VI; and Evaluation of future WIS requirements for AR VI. Priorities under these ToR are related, inter alia, to inquiring on how many sountries participate in WIS, what is the present knowledge, what is the status of WMO CPDB related to WIS, what are the results of the WIS operational monitoring in RA VI, what are the WIS related requirements from RA VI, review of new ideas from Members for further development of WIS, etc.

4.2.4 The Activity Plan for tasks according to the ToR is presented with a proposal to implement the Plan through web-based survies, strong interactions with GISCs and DCPCc Focal Points, and through collection of ideas, concepts and service requirements received by the WIS Focal Points.

4.2.5 It is underlined that strong support from the GISCs is crucial. In addition, communication from WMO to PRs may prove beneficial. It is requested to consider financial support to the Rapporteur for 2 trips (3days) per year and participation to one workshop (presumably in 2016).

4.2.6 Immidiate actions are: Contact the WIS Focal Points; Perform a general survey on the status of implementation; Draft SWOT analysis of WIS operations in RA VI; and Report to the WG TDI Chair.

Discussion

4.2.7 It was stressed that a rapporteur who is independent of GISC is important in order to have a good overview of the entire process. Being known and respected by the WIS FPs is important so RA VI should strengthen his role in this capacity.

4.2.8 The WMO representatives present in Geneva stated that there is a standard survey, which can be shared with the Rapporteur on WIS, and that translations to appropriate languages may be very helpful. They aslo supported empowering the RA VI Rapporteur in his role through including him in the relevant correspondence, but also through coordinating with the other relevant activities in the WMO (WWW, WIGOS, etc.), providing full WMO support to Mr Vocino.

4.2.9 **Decisions/Actions related to WIS:**

Action	Resp. person	Date
Perform a Web-based Survey on the status of WIS implementation.	Rapporteur on WIS	1st half of 2015

4.3 Presentation on WIGOS Identifiers from WMO Secretariat (Mr Steve Foreman)

4.3.1 Through teleconference the meeting was connected to the WMO Secretariat and the presentation on WIGOS Identifiers was remotely done by Mr Steve Foreman, WMO Chief of WIS Data Representation, Metadata & Monitoring Division.

4.3.2 The rationale for new station identifiers is presented. WWW uses 5 characters, 2 of which define the geographical area. The remaining 3 can be used to identify a station in that region. Some regions have simply run out of identifiers. Furthermore, the labeling system should be able to encompass non-NMHS operated stations.

4.3.3 New station identifiers are build following several principles:

- No meaning is encoded in the station identifier.
- All observations must be associated with a station identifier
- Each identifier must be unique across all stations, everywhere.

- Existing systems should be able to be absorbed into the new system.
- The system should be extensible without having to deprecate the old identifiers.

4.3.4 The proposed structure will be able to encode at least 7e+12 unique keys.

4.3.5 WMO will allocate the issuer of identifier, which is part of the key, and member states are then responsible for issuing unique keys for their stations. The station operator commits to maintain WIGOS metadata and follow technical regulations. On each level of the hierarchy, issued key parts must be unique. Not only NMHS can issue identifiers – manufacturers can also do it too, and other possibilities will be available in the future.

Discussion

4.3.6 The question was wheather the same identifier could be used for station that delivers different types of observations. Only one identifier will be provided, whereas in the WIGOS metadata the types of available observations would be cataloged.

4.3.7 The question of what constitutes a station is still a hot topic in the OSCAR development team. For example, some physical stations are comprised of different instrument sets operated by different organizations. The principle of having 1 identifier per station is good and agreed upon, but the precise definition of a station is not yet there.

4.4 **Rapporteur on ISS East**

4.4.1 Rapporteur on Information Systems and Services ISS-East, Mr Leonid Bezruk, ROSHYDROMET, Russian Federation, presented some examples falling under the ToR for the Rapporteur on ISS-East.

4.4.2 As in introduction the meeting was reminded that the CBS reconfirmed that the GTS remains the key component of the WIS, and that an up-to-date description of the connectivity between centres is important for efficient and effective operation of the GTS. The CBS also recommended that WMO-№386 Manual on the GTS, Volume II should be discontinued and replaced by web-based documentation that should be rewiewed and updated as required. The CBS further regretted the low level of availability of information from some areas, in particular the upper air information, and urged Members whose stations were labeled by the monitoring as under-reporting to identify the reasons for this and rectify them if possible.

4.4.3 In order to determine deficiencies in data dissemination/collection, monitoring has been carried out in October 2014, in the area of responsibility of RTH Moscow and RTH Sofia. The table was displayed showing how timely and reliable the transmission of data was, and how the observations are made. The regional network operates reliably – each NMC distributes bulletins showing null data if observations are missing. Nonetheless, the high percentage of null bulletins shows that in several places observations are not conducted properly. The overall percentage of successful delivery was above 94%, which is considered acceptable, but it is commented that better results could have been expected.

4.4.4 Furthermore, the monitoring of the incoming upper air observations revealed that significant number of countries did not perform these observations at all. This is considered the greatest deficiency for RA VI. The stations singled out in this respect were: Azerbaijan (UBBB), Moldova (LUKK), FYR Macedonia (MJSK), and Syria (OSDI). It could be considered that some of these NMHSs need support from the WMO Members, or other parties to maintain their upper air observations.

4.4.5 The following stations were identified as stations with irregular delivery of data: Cyprus (LCLK), and Romania (YRBK).

4.4.6 It could be concluded that upper air observations do not cover the entire RA VI region. For the SYNOP data, for September 2014 Albania did not submit any data, and Syria does not transmit data regularly due to known reasons. As for Albania, some bulletins are reported, followed by the

dissemination of a duplicate bulletin filled with null data. This has the effect that data is effectively deleted from databases remotely.

4.4.7 Due to reporting problems several discrepancies can be found between Volume 2 and the current situation in RA VI. The documentation should be changed accordingly to reflect reality, and it is a possible matter of discussion on the WG-TDI.

4.4.8 The transition to RMDCN-NG as a basis for GTS in RA VI is nearly completed. Nevertheless, Rapporteur was not able to find any information on it at http://rmdcn.ecmwf.int/ on the state of the connection to the RMDCN-NG, e.g. Lebanon (Beirut), UAE (Abu Dhabi), and Jeddah.

4.4.9 The need for monitoring and reporting of cases of disruption of connection under the RMDCN is underlined, as it happened in more then 20 situations in two months of monitoring. Support in these cases has to be maintained. Provision of this support in Russian is also requested and promised, but not implemented yet. Good practice of the RMDCN portal should be continued and maintained. [TT-RMDCN Leader will follow up with the ROC on the mentioned incidents, and the Russian language support.]

4.4.10 WIS Implementations: The manual requires that GISC maintains the exchange of global data, but regional data exchange has been neglected by CBS, so that the situation is partially undefined. Regional data exchange needs to relate to the backup procedures, including bilateral data exchange. WIS could be of assistance in this regard.

4.4.11 Much work is needed to align the documentation with the current situation. This should be jointly discussed with TT-RMDCN Leader and RTH Sofia. The catalog of meteorological bulletins (Volume C1) must be maintained in the area of responsibility of RTH Moscow and other centers. Support for monitoring in the transition period to TDCF will be provided by RTHs Sofia and Moscow. It is proposed that observational data should be monitored on a per-bulletin basis. The proposal should be discussed at the WG level.

Discussions

4.4.12 The discussion were in line with the problems identified by Rapporteur ISS-East, in particular on the ROC position with regard to the above issues (e.g. support in Russian language) with RMDCN, wherby TT-RMDCN Leader will follow up on these issues with ROC. Chair concluded that these issues are to be followed in the SWOT analysis for RA VI, and with the direct discussion between the Rapporteurs on WIS and ISS-East.

4.4.13 Regarding the missing bulletins and problems with the headers from Albania, Rapporteur on WIS stated that the originating center name might be modified per request by GTS, which could explain why data from certain centers never arrives. Additionally, GISC Rome pushes data to GISC Moscow. If this is not included in the monitoring, it could explain the lack of messages received from Albania. RTH Rome is performing the conversion of SYNOP messages to BUFR, and this is not a formal commitment. The originating center name was changed (from L to Z) due to this transformation, which is done. A. Vocino was supprised that RTH Moscow is not receiving these data, since the RTH Rome is pushing these data towards the GISC Offenbach, and as a backup also towards the GISC Moscow. Rapporteur on WIS stated that, as Albania is not yet nominated its principal GISC, it could be included in the responsibility of Rome rather than Sofia, which would streamline this due to communication reasons.

4.4.14 Rapporteur ISS-East responded that thanks to delivery of data from Albania through GTS, it was discovered that the data were available, but they were not included in Volume C1. That is the reason why in the routing tables the data are not available and the monitor was not able to reflect its presence (including the different headers then those expected).

4.4.15 On the joint activities between the TTs under the WG TDI, the list of activities is presented.

4.4.16 **Decisions/Actions related to ISS East:**

Action	Resp. person	Date
Lacking service of RMDCN in Russian language will be followed-up in the ROC Committee by I.Glaser. New status report will be acquired and communicated to the current group.	TT-RMDCN Leader	(ROC meeting in 2015)
The missing countries on the RMDCN portal should be identified/documented	TT-RMDCN Leader	On-going
Include the WIS problems in the SWOT analysis	Rapporteur on WIS	Q2 2015
The proposal of data monitoring on per-bulletin basis will be followed up. This could take place on a WMO rather than a regional level. No decision can be made without discussion within RA VI. Contact/support with the TT-MTDCF	TT-MTDCF Leader Chair submission to MG?	?

5. Working mechanisms (round table discussion)

5.1 The working arragements for the WG and TT will be based on email communication until the WMO make a decision on the ICT collaboration platform, which will be used in the future. The WMO will explore the possibility of using different platforms, which will be open and accessible to users outside of the WMO.

5.2 Reporting: The meeting agreed that the TT Leaders and Rapporteurs submit written reports to the WG Chair in the first quarter of 2015.

6. Closure

6.1 Any other business: Workshop: Severe weather forecasting – nowcasting techniques. The chair has proposed reserving financial resources for a workshop on nowcasting techniques. Several tools have been developed using sophisticated techniques (e.g. fuzzy logic) that assist forecasters in critical weather situations. DWD has a non-operational, research-based automated warning generation system. It has shown some difficulties, so that the Chair suggested holding the workshop after the resolution of these issues. This would make it possible to discuss a mature system with operational status.

6.1.1 Date and venue for the next meeting: The date and venue of the Second Meeting of the Working Group on Technology Development and Implementation is decided to be 23-24 September 2015, in Turkey.

ANNEX I

FIRST MEETING OF WG-TDI

DWD, Offenbach, 6-7 November 2014

LIST OF PARTICIPANTS

1. WG Members

Mr Dieter Schröder, Chair	dieter.schroeder[at]dwd.de
Mr Ercan Büyükbaş, Vice-Chair, TT-WIGOS Leader	ebuyukbas[at]mgm.gov.tr
Mr Alexander Kats, TT-MTDCF Leader	alexander.kats[at]cao-rhms.ru
Mr Drago Groselj, TT-RIC Leader	drago.groselj[at]gov.si
Ms Ilona Glaser, TT-RMDCN Leader	Ilona.Glaser[at]dwd.de
Mr Laurent Perron, Rapporteur on DPFS	laurent.perron[at]meteo.fr
Mr Leonid Bezrouk, Rapporteur ISS-East	bezrouk[at]mecom.ru
Mr Antonio Vocino, Rapporteur on WIS	vocino[at]meteoam.it
Ms Sybille Krebber, TT-MTDCF Member	sibylle.krebber[at]dwd.de

2. NMHS

Mr Hans-Joachim Koppert, DWD	hans-joachim.koppert[at]dwd.de
Mr Daniel Lee, DWD	daniel.lee[at]dwd.de
Ms Olga Petrova, Roshydromet	olpetrova2004[at]yandex.ru

3. EUMETNET

Mr Stefan Klink	stefan.klink[at]dwd.de

4. WMO Secretariat

Mr Milan Dacic	mdacic[at]wmo.int
Mr Lars Peter Riishojgaard	lriishojgaard[at]wmo.int

ANNEX II

FIRST MEETING OF WG-TDI

DWD, Offenbach, 6-7 November 2014

AGENDA

1. **Opening**
2. **Input of the Technical Commissions of WMO**
3. **Contributions of the Task Teams – Report and future plans**
4. **Contributions of the Rapporteurs**
5. **Working mechanisms**
6. **Closure**