W O R L D   M E T E O R O L O G I C A L   O R G A N I Z A T I O N

REGIONAL ASSOCIATION VI

WORKING GROUP ON
TECHNOLOGY DEVELOPMENT AND IMPLEMENTATION (WG-TDI)

Task Team on WIGOS Implementation Plan (TT-WIGOS) 1st Meeting

Ankara, Turkey

10 – 11 June 2015

REPORT

EXECUTIVE SUMMARY

During the 16th session of Regional Association-VI (RA-VI) held in Helsinki in September 2013, Working Group on Technology Development and Implementation (WG-TDI) was re-established with a key task for following WIGOS issues in RA-VI including review, update and implement the Regional WIGOS Implementation Plan in Region-VI (R-WIP-VI).

A task team (TT-WIGOS) was established from the nominated experts of member countries under the WG-TDI to perform the required tasks for the WIGOS implementation in RA-VI. On the other hand, a sub-task team on radar data exchange (TT-RDE) was established to carry out the tasks for exchanging the radar data in Region-VI.

The first face to face meeting of the Task Team on WIGOS Implementation Plan in Region VI (TT-WIGOS) and Task Team on Radar Data Exchange (TT-RDE) was held with the participation of WG-TDI Chair, Dr. Dieter SCHROEDER and the members of the task teams from 10 to 11 June 2015, in Ankara, Turkey.

During the meeting, a brief information on the organizational structure, duties, responsibilities, capabilities, authorities and activities of Turkish State Meteorological Service was given to the participants by highlighting the relations between the applications in Turkey and WIGOS concept.

The meeting considered the purpose, concept, management, implementation and expected benefits of WIGOS in RA-VI.

The meeting also reviewed the establishment process and composition of TT-WIGOS and TT-RDE, and discussed the future needs for task teams.

The terms of references for task teams, existing status of R-WIP-VI and key activity areas were reviewed and discussed.

The meeting also addressed issues related to exchange of radar data in RA-VI.

A draft web based survey platform for collecting the existing status of Members on observing systems and WIGOS implementation was demonstrated.

How to develop cooperation mechanisms with the other related bodies was discussed based on the example of the relations with EUMETNET.

The meeting discussed the concept and potential participants of the proposed WIGOS workshop for RA-VI to be held in November 2015.

The meeting was closed after giving the information on the next WG-TDI meeting in Istanbul in September 2015 and making the general discussions on WIGOS Implementation in RA-VI.

AGENDA

1. ORGANIZATION OF THE SESSION

1.1 Opening of the Session
1.2 Adoption of the Agenda
1.3 Working Arrangements for the Session

2. BRIEF INTRODUCTION ON TURKISH STATE METEOROLOGICAL SERVICE (TSMS)

3. WIGOS IN RA-VI

3.1 WIGOS Concept in General
3.2 General Overview of the TT- WIGOS and TT-RDE
3.3 Discussion on the TORs for TT-WIGOS and TT-RDE
3.4 Basic Review of WIGOS Implementation Plan
3.5 Demonstration of Web Based Survey on WIGOS in RA-VI

4. DISCUSSION ON RADAR DATA EXCHANGE IN RA-VI

4.1 Weather Radars and Radar Products
4.2 Radar Data Formats
4.3 Existing Radar Data Exchange Initiatives
4.4 Proposed Sub-Regional and Regional Applications in RA-VI

5. COOPERATION WITH OTHER RELATED BODIES

6. DISCUSSION ON PROPOSED WIGOS WORKSHOP IN 2015

7. GENERAL OVERVIEW

8. CLOSURE OF THE SESSION

GENERAL SUMMARY

1. ORGANIZATION OF THE SESSION

1.1 Opening of the Session

1.1.1 The first face to face meeting of the Task Team on WIGOS Implementation Plan in Region-VI (TT-WIGOS) and Task Team on Radar Data Exchange (TT-RDE) was held at Turkish State Meteorological Service (TSMS) Headquarters in Ankara, Turkey at the kind invitation of the Permanent Representative of Turkey with WMO. The session was opened on Wednesday, 10 June 2015 at 9:30, by the Deputy Director General of TSMS, Mr. Ali KARATAŞ. He welcomed all the participants to the meeting and expressed his pleasure to host such an important activity in Ankara. The list of participants is given in Annex-I.

1.1.2 After opening of the session, Chair of WG-TDI, Dr. Dieter SCHROEDER, welcomed the participants and managed a round table introduction phase for the members of the task teams. He stressed the importance of WIGOS for Region VI, the task teams for that issue and such meetings as well.

1.2 Adoption of the Agenda

The meeting adopted the Agenda as submitted above.

1.3 Working Arrangements for the Session

The working hours and tentative timetable for the meeting were agreed upon.

2. BRIEF INTRODUCTION ON TURKISH STATE METEOROLOGICAL SERVICE (TSMS)

2.1.1 The leader of TT-WIGOS, Mr. Ercan BÜYÜKBAŞ, made a brief presentation on the organizational structure, duties, responsibilities, capabilities, authorities, activities, products and services of Turkish State Meteorological Service by highlighting the relations between the applications in Turkey and WIGOS concept.

2.1.2 Existing observing network of TSMS including surface observing stations, marine observing stations, upper air observing stations, remote sensing systems of weather radars, lightning detection systems and satellite ground receiving station were demonstrated. On the other hand, as a good application example for developing or least developed countries, information on future projects for enhancement and modernization of existing observing network was submitted.

2.1.3 The relations between the implementation of observing systems in Turkey and WIGOS concept were discussed. The special law which authorized TSMS to control and integrate all observing systems whoever operates in Turkey. The application of this law was explained to the participants to give a similar application view for other countries.

3. REVIEW WIGOS IN RA-VI

The meeting noted that implementation of WIGOS will be one of the strategic key priorities of WMO for the next intersessional period. The meeting stressed that TT-WIGOS will have an important role for a successful implementation of WIGOS in Region-VI. This is why a well-established task team to assist the Members for understanding the WIGOS concept and implementation of WIGOS plan in national level is necessary. The key activities should be determined and carried out before the next session of RA-VI.

3.1 WIGOS Concept in General

3.1.1 The WIGOS concept as a framework which will integrate WMO observing systems and contributions to co-sponsored observing systems for planning, operating and delivering observations to meet user needs, to enable more efficient and effective service delivery was considered.

3.1.2 The purpose, components, inclusions, challenges and advances of WIGOS were highlighted. In addition, future vision and key activity areas, benefits for users and Members and governance structure were reviewed and discussed.

3.2 General Overview of the TT-WIGOS and TT-RDE

3.2.1 Information on the establishment, composition and purpose of the task teams (TT-WIGOS and TT-RDE) was given to the participants.

3.2.2 The meeting was informed that in total 99 experts were nominated for 3 working groups (Working Group on Technology Development and Implementation, WG-TDI; Working Group on Climate and Hydrology, WG-CH; Working Group on Service Delivery and Partnership, WG-SDP) established during the 16th session of Regional Association-VI (RA-VI) held in Helsinki in September 2013.

3.2.3 It was pointed out that 19 out of 51 experts nominated for WG-TDI were related to WIGOS issues while remaining 32 experts were related to WMO Information System (WIS) issues. On the other hand, it was noted that 10 out of those 19 experts were nominated from Turkey, and only 9 experts were from the other countries.

3.2.4 By considering the memberships of some of those 9 experts in the other task teams established under WG-TDI, there were only a few members for TT-WIGOS and it was agreed during the first meeting of WG-TDI held in Offenbach in November 2014 that some new members were needed for TT-WIGOS to carry out the duties efficiently. A task team with the possible nominated experts was established, and with the appreciated support of the WG-TDI Chair, Mr. Simon GILBERT from United Kingdom was added to the team.

3.2.5 The meeting was informed that, by considering the importance of exchanging radar data for meteorological services, a special sub-task team was decided to be established for carrying out the tasks regarding radar data exchange issues in Region VI. The task team on radar data exchange (TT-RDE) was proposed to established under the leadership of Dr. Ferenc DOMBAI from Hungary with two members from Turkey. Unfortunately, RA-VI secretariat informed that Mr. DOMBAI was not in charge in Hungarian Meteorology Service anymore. Then, with the appreciated support of Mr. Milan DACİC from WMO secretariat, Mr. Istvan SEBOK, remote sensing division manager of Hungarian Meteorology Service, was offered to participate in the team, and Mr. SEBOK accepted this offer to become new TT leader. Furthermore, one of the members of TT-RDE, Mr. Oğuzhan ŞİRECİ from Turkey, has taken unpaid leave for 1 year and Mr. Alper ÇUBUK was added to team to substitute him.

3.2.6 The meeting agreed that new members, to represent whole region based on the evaluation of sub-regions and to strengthen the teams as well, are needed for both task teams. It was concluded that the new experts should be added to the teams for enhancing them. The process of finding additional TT members should be supported by WMO secretariat.

3.3 Discussion on the TORs for TT-WIGOS and TT-RDE

The meeting was informed about the proposed tasks and duties of the task teams. It was agreed that these draft terms of references (TORs) should be reviewed during the next WG-TDI meeting and each task should be assigned to a certain member or members. The meeting noted that there is a special task team for Regional Instrument Centers (RICs) and the tasks regarding RICs should be followed by that task team. The proposed TORs for TT-WIGOS and TT-RDE are given below:

3.3.1 To review and update WIGOS Implementation Plan (WIP) for RA VI to ensure the efficient application in the Region;

3.3.2 To determine the needs of the existing Regional Observation Networks for upgrading, enhancing and operating them by considering the requirements of Members;

3.3.3 To assist RA VI Members to develop their national WIPs through:
i) developing mechanisms for efficient cooperation with focal points
ii) organizing workshops and preparing guidance document

3.3.4 To establish concrete tools for the cooperation with the other related bodies (technical commissions of WMO, WGs of the other RAs, EUMETNET, etc.);

3.3.5 To develop mechanisms for efficient use of RICS through:
i) reviewing the capacities and needs of RICs
ii) improving the cooperation among RICs

3.3.6 To integrate the Quality Monitoring and control activities of the members by:
i) establishing a QM process in which the RA VI members can participate in the further development of the RA VI WIP,
ii) implementing real-time (quality) monitoring in coordination with EUMETNET & EUCOS QM portal,
iii) developing real-time monitoring and reporting capabilities; incorporating existing EUMETNET & EUCOS monitoring portal,

3.3.7 To realize WIGOS via regional observation networks through:
i) reviewing the regional observation networks (weather radars, wind profilers, lightning detection systems, etc.)
ii) developing mechanisms and guidance for improving the existing ones and establishing new regional observation networks
iii) developing tools for the exchange of data of regional observation networks

3.3.8 To follow new developments and technologies on observing systems for implementing in RA VI;

3.3.9 To review the existing reference documents (CIMO Guide 8, Technical Regulations-WMO 49, etc.);
i) developing recommendations for determining technical requirements and siting conditions of the observation systems
ii) analyzing the common problems of Members due to the rapid urbanization around the observation networks, and developing solution algorithms

3.3.10 To prepare a report for the radar data exchange among the Members in Region VI.

3.4 Basic Review of WIGOS Implementation Plan (R-WIP-VI)

The meeting noted that WIGOS Implementation Plan for RA-VI (R-WIP-VI) reviewed and updated based on the discussions during the workshop held in Madrid, May 2013 was submitted to the 16th session of RA-VI and adopted in Helsinki, September 2013. This plan was reviewed in general by highlighting the key activity areas, components and main topics, management bodies of WIP, and improvements achieved and the special tools developed for the implementation. It was agreed that WIP should be reviewed and discussed in detail during the next WG-TDI meeting in Istanbul and WIGOS workshop in Belgrade.

3.5 Demonstration of Web Based Survey on WIGOS in RA-VI

The meeting was informed that a web based survey is proposed to be applied to gather the information about the existing situation and future plans on observing networks of Member countries as well as information on WIGOS implementation on national level. Mr. Özden TÜTEN presented the draft survey prepared based on the related WMO documents. The meeting concluded the survey should be reviewed in detail by the other members of the WG-TDI, task teams, WIGOS Project Office and WMO secretariat and improved with necessary amendments before issuing.

4. DISCUSSION ON RADAR DATA EXCHANGE IN RA-VI

The meeting noted that weather radars are getting more important as the unique instruments of early warning systems against meteorological hazards to get real time and high resolution data from large scale areas. This is of special importance and TT-RDE should pay much attention to the data exchange. The task team should be strengthened with new members. The presentation on radar data exchange prepared by the members of TT-RDE, Mr. Alper ÇUBUK and Mr. Cihan GÖZÜBÜYÜK, was presented by Mr. Alper ÇUBUK. The issues stated in the presentation were reviewed and discussed.

4.1 Weather Radars and Radar Products

4.1.1 The meeting was informed that weather radars have been used to locate air mass and potential precipitation, to determine its motion, to estimate the precipitation type (rain, snow, hail, etc.). They are capable of detecting the motion of rain droplets in addition to the intensity of the precipitation. The radar data can be analyzed to determine the structure of storms and their potential to cause severe weather and hazards.

4.1.2 It was stated that there are different types of classification for weather radars based on frequency (S-Band, C-Band, X-Band, etc.), transmitter (klystron, magnetron, solid state, etc.), radial velocity measurement capability (Doppler, non-Doppler), polarization (single, dual).

4.1.3 It was highlighted that several radar products such as Plan Position Indicator (PPI), Range Height Indicator (RHI), Constant Altitude Plan Position Indicator (CAPPI) Maximum Reflectivity (MAX), Surface Rainfall Intensity (SRI), Vertically Integrated Liquid (VIL), Echo Top Height (ETH), Echo Base Height (EBH), Volume Velocity Processing (VVP), Shears, Shearline, Height of Maximum Intensity (HMI) can be generated by using the basic radar parameters of Rainfall Rate-R (mm/hr), Logarithmic Reflectivity-Z (dBZ), radial velocity-V (m/sec), Spectral Width-W (m/sec). In addition, dual polarization parameters of Differential Reflectivity-ZDR (dB), Specific Differential Phase-KDP (Degree/km), Differential Phase Shift-ΦDP (Degree) can provide invaluable information for generating radar products particularly for hydrometeor classification and quantitative precipitation estimation.

4.1.4 The radar products generated can be used for different applications such as nowcasting, warning, aviation meteorology, hydrology, disaster management, numerical models, and research.

4.2 Radar Data Formats

The meeting was informed that there are some common data exchanging formats such as JPEG, GIF, TIFF, GeoTIFF, NEXRAD, BUFR, OdimHDF (Opera Data Information Model) which can be used for exchanging radar data in Region VI. It was agreed that this issue will be discussed in detail during the next meetings of TT-RDE.

4.3 Existing Radar Data Exchange Initiatives

The meeting was informed that there are already some initiatives and tools developed for radar data exchange in different regions particularly in Region VI. On the other hand, radar manufacturers have developed their own operational software and tools for radar data exchange and composite product generation.

4.3.1 One of the important global tools as a basis for radar data exchange is WMO Radar Database (WRD) developed and operated by TSMS in cooperation with WMO to collect and present the metadata of current operational weather radars. WRD has been presenting a comprehensive web-based database for radar network planning information and resource allocation for all members, assisting a wide spread international exchange of radar data, gathering radar information to protect radio-frequency spectrum allocation, presenting common issues/problems and potential solutions gathered by questionnaire.

4.3.2 There are 2 international radar data exchange initiatives already running in Europe region. One of them is a EUMETNET programme as Operational Programme for the Exchange of Weather Radar Information (OPERA). The objectives of OPERA are to provide a European platform wherein expertise on operationally-oriented weather radar issues is exchanged, and to develop, to generate and to distribute high-quality pan-European weather radar composite products on an operational basis. As of today, products of 213 radars can be displayed under OPERA.

4.3.3 OPERA BUFR, Compositing Software, BUFR exchange software and HDF5 exchange software have been developed under OPERA Program for generating products and enabling data exchange.

4.3.4 The other sub-regional project is BALTRAD which aims to create a sustainable weather radar network for the Baltic Sea Region, operating in real-time, with high quality data, and with demonstrated value to forecasters and decision-makers. BALTRAD provides free software for radar data exchange.

4.3.5 The meeting was informed that there are also bilateral or multilateral radar data exchange examples successfully implemented in Region VI. During 2014 Sochi Winter Olympics, radar data were supplied by TSMS to Hydro meteorological Center of Russia. Russia also received Ukrainian Radar data during that event, and generated composite radar products for the eastern Black sea.

4.4 Proposed Sub-Regional and Regional Applications in RA-VI

4.4.1 The meeting agreed that an international radar data exchange policy should be developed. Thereby RA-VI should base its work on this subject on the outcomes of the WMO CBS OPAG on IOS (i.e. global) workshop on radar data exchange (held in Exeter in 2013) and any subsequent recommendations made by this group. These outcomes and recommendations also set the framework for the following concrete statements 4.4.2 to 4.4.6.

4.4.2 The meeting noted that there is a potential need for establishing 1 or 2 international centers in addition to OPERA and BALTRAD to cover the Region on sub-regional basis for radar data exchange and processing, and radar products generation as well.

4.4.3 It was concluded that "raw data" should be defined for a common use. Exchanging radar data should be structured and developed in raw data basis while generating radar products shall be the responsibility of partner countries.

4.4.4 For all radars in the network, native raw data format and supported exchanging format should be included in the WRD.

4.4.5 The meeting noted that neighbour countries should be encouraged and given assist to exchange radar data directly with each other.

4.4.6 The meeting agreed that annual workshops/events should be organized for data quality and data exchange.

5. COOPERATION WITH OTHER RELATED BODIES

5.1 The meeting noted that a strong and continuous cooperation with other related bodies such as EUMETNET, EUMETSAT, technical commissions of WMO is needed for the efficient implementation of WIGOS on national, regional and global level. It was agreed that proper mechanisms should be established for that purpose.

5.2 Mr. Stefan KLINK gave a presentation about the EUMETNET Observations Programme, thereby touching on the high-level Observation Goals, the structure of the Programme and its main tasks. He presented the Observations Programme Service E-AMDAR (delivering aircraft based observations) and the project OPERA (dealing with exchange of information on weather radar networks and the exchange of radar data) in more detail. This was motivated by the fact that WMO Secretariat and EUMETNET had formally agreed on a closer collaboration on extending the AMDAR programme and on defining rules and procedures for the exchange of radar data.

6. DISCUSSION ON PROPOSED WIGOS WORKSHOP IN 2015

6.1 The meeting was informed that a WIGOS workshop for Region VI is proposed to be organized in November 2015 in Belgrade. It was concluded that such a workshop with the participation of related experts can extremely contribute to the successful implementation of WIGOS in Region VI.

6.2 The meeting agreed that focal points, local experts, members of TT-WIGOS, TT-RDE and TT-RICs, WIGOS Project Manager, AMDAR Project Manager, related experts of CIMO and CBS, representative of other related bodies such as EUMETNET should participate in the workshop.

6.3 The meeting noted that following issues should be highlighted in the concept of workshop:

a) What is WIGOS?

b) What kind of benefits shall members get from WIGOS?

c) How about situation of the implementation of WIGOS in national, sub-regional and regional level?

d) Demonstration of WIGOS tools such as OSCAR and WRD.

e) Evaluation of WIGOS tools by Members to give contribution for improving them.

f) WIGOS metadata concept.

g) Status of existing observing networks of Members, and future plans for the modernization and enhancement of them (as a side event).

h) Evaluation of the draft WIGOS survey prepared by TT-WIGOS.

i) Preparation of a template for the implementation of WIP in national level.

7. GENERAL OVERVIEW

7.1 Although some members of the teams have not participated in the meeting, it was a successful and important meeting as giving the opportunity to the members of the teams to meet face to face for the first time.

7.2 Main tasks, composition structure, weakness, challenges, advantages and needs of the task teams were reviewed and discussed.

7.3 It was agreed that the list of focal points for WIGOS should be completed by the WMO secretariat as soon as possible, and personnel communication channels should be established by TT-leader and WMO secretariat among the task team members and focal points as well.

7.4 Task teams should be enhanced and strengthened with new members by considering the representation of sub-regional levels. The support from WMO secretariat and other members of WG-TDI are highly appreciated for that issue. The meeting noted with appreciation that some initiatives have already been started by Mr. Milan DACIC to nominate some additional experts for TT-WIGOS and TT-RDE. WG-TDI Chair, Dr. Dieter SCHROEDER and Mr. Stefan KLINK will also contact potential experts to support the task teams.

7.5 The meeting concluded that a database of experts on observing networks and systems should be established by TT-leader and WMO secretariat for the efficient exchange of information concerning the implementation of WIGOS (e.g. communication of “best practices”).

7.6 The meeting noted that the relation and cooperation between the TT-RICs and TT-WIGOS should be discussed in next WG-TDI meeting.

7.7 The meeting noted that it would be very useful to contact with the well known radar experts and related WMO offices how to plan and implement radar data exchange issue in Region VI. This task will be under responsibility of TT-leader.

7.8 The meeting noted that a strong and continuous cooperation with other related bodies such as EUMETNET, EUMETSAT, technical commissions of WMO is needed for the efficient implementation of WIGOS in national, regional and global level. It was agreed that proper mechanisms should be established for that purpose. Regarding cooperation with EUMETNET it is suggested that Mr. Stefan Klink takes on responsibility for bringing in relevant expertise on a case by case basis. For future activities of TT-WIGOS he should identify potential experts in the EUMETNET Obs Programme, suggest their invitation to chairman TT-WIGOS and coordinate with EUMETNET Members whether they can send the experts to TT-WIGOS meetings or whether they can make available the resources at all.

7.9 The meeting concluded that it would be very beneficial to invite the members of the task teams for the next WG-TDI meeting to be held in İstanbul, in September 2015.

8. CLOSURE OF THE SESSION

8.1 The meeting thanked TSMS for its hospitality and for the excellent facilities it had put to the disposal of the meeting.

8.2 The session closed on Thursday 11 June 2015 at 13:00 hours

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