

DATA BUOY COOPERATION PANEL

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ITEM: 11.5

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WMO INTEGRATED GLOBAL OBSERVING SYSTEM (WIGOS)

(Submitted by the Secretariat)

Summary and purpose of the document

This document provides information on the outcome and guidance from the WMO Sixteenth Congress with regard to the implementation of the WMO Integrated Global Observing System (WIGOS) during the period 2012 to 2015, and proposes the role that the DBCP should play in this regard in line with the legacy recommendations from the JCOMM Pilot Project for WIGOS.

ACTION PROPOSED

The Panel will review the information contained in this report and comment and make decisions or recommendations as appropriate. See part A for the details of recommended actions.

References

1. [Cg-XVI/APP PINK 11.3 – WMO Integrated Global Observing System \(WIGOS\)](#)
2. Abridged Final Report of the [Extraordinary](#) Session of the Commission for Basic Systems (WMO-No. 1070) (Windhoek, 17–24 November, 2010)

- Appendices:**
- A. Legacy Recommendations of the JCOMM Pilot Project for WIGOS
 - B. Preliminary draft Terms of Reference for an International Forum of Users of Satellite Data Telecommunication Systems
 - C. Proposed workplan leading to the establishment of an international Forum of Users of Satellite Data Telecommunication Systems
 - D. Resolution 11.3/1 (Cg-XVI) – Implementation of WIGOS

-A- DRAFT TEXT FOR INCLUSION IN THE FINAL REPORT

11.5.1 The Secretariat reported on recent developments with regard to the WMO Integrated Global Observing System (WIGOS), in particular decisions of the WMO Sixteenth Congress with regard to WIGOS Implementation during the next financial period (2012-2015) referring to Resolution 11.3/1 (Cg-XVI) – Implementation of WIGOS (Appendix D).

11.5.2 Cg-XVI reaffirmed its support for JCOMM's project-oriented approach to address specific, defined, and time-bound activities, such as the JCOMM Pilot Project for WIGOS that was successfully completed in 2011. Congress appreciated the excellent cooperation developed between CIMO and JCOMM in the development of the JCOMM Pilot Project for WIGOS through the participation of CIMO in the Joint WMO-IOC Steering Group for the IOC Ocean Data Portal (ODP) and the JCOMM Pilot Project for WIGOS. This effort resulted in the proposal for the establishment of a network of WMO-IOC Regional Marine Instrument Centres (RMICs), agreed through Recommendation 1 (JCOMM-III). Congress adopted Resolution 3.1.4/3 – Designation of Regional Marine Instrument Centres.

11.5.3 The Panel discussed the role of the DBCP with regard to the integration of marine meteorological and other appropriate oceanographic observations into WIGOS. In particular, the Panel reviewed the outcome and legacy recommendations (Appendix A) of the JCOMM Pilot Project for WIGOS and the role that the DBCP should play in this framework and the WIGOS Implementation Phase (2012-2015). The Panel agreed with the following:

- (i.) Referring to legacy recommendation 2, the Panel noted that the work of the consultant (see DBCP-26 final report paragraph 11.5.3, and Annex XIII), Mr David Meldrum, to review WMO and IOC Publications regarding instrument practices related to buoy measurements had not started yet due to the change of position of Mr Meldrum and his recent recruitment by the IOC on a temporary basis. The Panel noted with appreciation that the *“Sea Surface Salinity Quality Control Processes for Potential Use on Data Buoy Observations”* has been reviewed and endorsed by the Task Teams on Instrument Best Practices and Drifter Technology Development, and on Data Management respectively, and published as DBCP Technical Document No. 42.
- (ii.) Referring to legacy recommendation 3, the Panel recalled the discussion under agenda item 9.5, and invited its members to make sure that instrument/platform metadata related to buoy observations are properly collected and made available through the appropriate channels, taking particular attention to SST and SSS data (**action; Panel members; ongoing**).
- (iii.) Referring to legacy recommendation 4, the Panel agreed to contribute to the development of JCOMM guidelines for marine instrument intercomparisons through the Pilot Project on Wave Measurement Evaluation and Testing (PP-WET), and the Task Team on Instrument Best Practices and Drifter Technology Development (TT-IBP), and liaise with the JCOMM Observations Coordination Group (OCG) as appropriate (**action; TT-IBP; DBCP-28**);
- (iv.) Referring to legacy recommendation 5, the Panel noted that through WMO Resolution 3.1.4/3 (Cg-XVI), and IOC Resolution XXVI-9, both WMO and IOC endorsed the process for the adoption of WMO-IOC Regional Marine Instrument Centres (RMICs) as documented in JCOMM Technical Report No. 53. They also decided to establish RMICs for the WMO Regional Association IV and the Asia Pacific Region at the NOAA National Data Buoy Centre (NDBC, Bay St Louis, USA), and the SOA National Centre for Ocean Standards and Metrology (NCOSM, Tianjin, China) respectively. Both Organizations recognized that the RMICs help improving adherence and traceability of ocean observations and associated metadata to high level standards for instruments and methods of observation on a regional basis.

The Panel also noted the successful outcome of the JCOMM Marine Instrumentation workshop for the Asia Pacific Region (Tianjin, China, 11-13 July 2011) organized and hosted by the NCOSM (see summary of outcome in doc 11.2, Appendix A, item (xii)). The Panel noted with appreciation the plan to establish an RMIC in Morocco, including organization of a marine metrology workshop in 2012. The Panel thanked USA, China, and Morocco for their contributions in this regard, and encouraged DBCP members from these respective regions to use the RMIC facilities as appropriate, and participate at future workshops (**action; Members; ongoing**).

The Panel invited its members to use the facilities offered at the WMO-IOC Regional Marine Instrument Centres (RMICs) in the view to ensure better traceability of buoy observations to international standards (**action; Panel members; ongoing**);

- (v.) Referring to legacy recommendation 6, the Panel invited the buoy manufacturers to participate in the HMEI (**action; manufacturers; asap**);
- (vi.) Referring to legacy recommendation 9, the Panel invited its members to make sure that discovery metadata about buoy observational data-sets are properly compiled and made available through the Ocean Data Portal (ODP) and the WMO Information System (WIS) using the required ISO-19115 profiles (**action; Panel members; ongoing**).
- (vii.) Referring to legacy recommendation 11, the Panel invited its members to comply with the WMO Quality Management Framework (QMF) and quality management principles (**action; Panel members; ongoing**);
- (viii.) Referring to legacy recommendation 12, the Panel noted that Cg-XVI supported establishment of an International Forum of Users of Satellite Data Telecommunication Systems (Forum) covering a wide user base, and to address remote data communication requirements - including tariff negotiations as needed - for automatic environment observing systems coordinated through WMO and partner organizations such as IOC and FAO. Cg-XVI requested the WMO Secretariat to approach the partner organizations, and coordinate with the Argos Joint Tariff Agreement (JTA) with the view to establish such a Forum during the next intersessional period. Cg-XVI emphasized that such a forum should not only consider tariff negotiations but should take a very broad view of available technologies, options and prices as well as cooperative mechanisms through the Data Collection Platform (DCP) services of meteorological satellites.

In particular, there was concern during Cg-XVI that data from many Antarctic stations funded by research agencies are not available in real-time and, therefore, are not available to NWP systems. Cg-XVI noted that the high communication cost involved in using Iridium satellites is also a limiting factor. Cg-XVI requested the Executive Council, and the Secretary-General, in collaboration with the Commission for Basic Systems (CBS) and the Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM) to investigate possible ways to reduce such costs through an international forum of users of satellite data telecommunication systems. It was also recognized that the WMO Information System (WIS) would provide a suitable environment for collection and dissemination of data from research observing stations.

It should be noted that, once established the Forum shall report to the executive bodies of the co-sponsor Organizations through mechanism defined by each Organization. Regarding the WMO side of the governance, it was proposed to place the forum under the responsibility of the CBS who shall also coordinate closely on related issues with JCOMM. The forum would be reporting to the WMO Executive Council through the CBS.

Draft Terms of Reference for the forum were proposed by the 12th Session of the CBS

Management Group (CBS-MG-XII, Geneva, Switzerland, 13-16 July 2011). CBS-MG-XII requested the Secretariat to approach the partner Organizations (i.e. IOC, FAO) in the view to refine the draft terms of reference (Appendix B).

CBS-MG-XII reviewed and endorsed a proposed workplan leading in principle to the formal adoption of the forum in 2013 (Appendix C). To realize this, the Secretariats of the co-sponsor Organizations will work together in the view to set up an organizing committee, refine the draft terms of reference for the forum, and organize an *ad hoc* workshop in late 2012.

The Panel invited the satellite data telecommunication system operators used for the collection of buoy observations to participate in the international forum of users of satellite data telecommunication systems for environmental use once established (***action; satcom operators; DBCP-28***);

- (ix.) Referring to legacy recommendation 14, the Panel recalled the discussion under agenda item 6.4, and agreed to continue developing its Capacity Building activities as mean of realizing the JCOMM PANGEA concept;

-B- BACKGROUND INFORMATION

1. Vision

1.1. The WMO Sixteenth Congress (Cg-XVI) agreed with the WIGOS vision specified in the WIGOS Development and Implementation Strategy (WDIS¹) that calls for an integrated, coordinated and comprehensive observing system to satisfy, in a cost-effective and sustained manner, the evolving observing requirements of Members in delivering their weather, climate, water and related environmental services. WIGOS will enhance the coordination of WMO observing systems with those of partner organizations for the benefit of society.

1.2. Further, WIGOS will provide ***a framework for enabling the integration and optimized evolution of WMO observing systems***, and of WMO's contribution to co-sponsored systems. Together with the WMO Information System (WIS), this will allow continuous and reliable access to an expanded set of environmental data and products, and associated metadata, resulting in increased knowledge and enhanced services across all WMO Programmes.

1.3. The WIGOS vision provides ***a roadmap to guide the orderly evolution of the WMO observing systems operated by Members into an integrated system***. Establishing the effective and sustained organizational, programmatic, governance and procedural structures is needed for a common standardization process facilitating interoperability of WIGOS observing components, and for implementation of quality management procedures. It will enable those user requirements for various application areas to be met at national, regional and global levels.

2. Benefits

2.1. Cg-XVI agreed that WIGOS will significantly enhance observing capabilities of Members by maximizing their administrative and operational efficiencies, through ***a more coordinated, collaborative and cost-effective approach to the planning and operation of an integrated global observing system***.

1: ftp://ftp.wmo.int/Documents/SESSIONS/Cg-XVI/English/DOCs/d11-3_WIGOS_en.doc, Appendix F

3. **Implementation**

3.1. Cg-XVI stressed the importance of ***the development of an implementation plan for the evolution of WIGOS beyond 2015*** including ***technical guidance on*** how to ***design, develop and implement integrated national observing systems*** to provide comprehensive observations in response to the needs of all WMO Members and Programmes.

3.2. Cg-XVI decided that the WIGOS implementation be undertaken in ***an active and prudent manner*** in the sixteenth financial period and will focus on a framework for improved governance, management, integration and optimization of the multiple observing systems coordinated by WMO, so as to achieve a smooth transition, and no effort should be spared to make WIGOS operational by 2016.

3.3. Cg-XVI requested the Secretary-General to provide ***documentation on the benefits, efficiency and cost-effectiveness of WIGOS***, as well as ***guidance on the implementation activities by Members***, to be available also to funding agencies, such as the World Bank and EU to gain their support.

Appendices: 4

APPENDIX A

LEGACY RECOMMENDATIONS OF THE JCOMM PILOT PROJECT FOR WIGOS

The legacy recommendations below, agreed by the joint Steering Group for the IODE Ocean Data Portal and the JCOMM Pilot Project for WIGOS, are based on the Pilot Project achievements, identified pending issues, and lessons learned:

- (x.) The type of governance existing between WMO and IOC through JCOMM should be preserved, and the JCOMM activities related to marine meteorology and other appropriate oceanographic observations should play an active role in the WIGOS implementation phase, and eventually become part of WIGOS once it becomes operational.
- (xi.) WMO and IOC Publications should be regularly reviewed based on the proposed methodology (Annex VII of the Project Report). This should be done by addressing harmonization of standards related to (i) Quality Control, (ii) the collection of instrument/platform metadata, (iii) instrument practices and intercomparisons, and (iv) satellite data telecommunication issues.
- (xii.) WMO and IOC should act pro-actively to facilitate the collection, distribution (including in real-time, and through dedicated servers), and discovery of instrument/platform metadata. In particular, the depth of the SST (Sea Surface Temperature) and SSS (Sea Surface Salinity) measurements should be reported as accurately as possible for use in satellite products as appropriate.
- (xiii.) JCOMM should develop guidelines for marine instrument intercomparisons, publish them as JCOMM Technical Report, and provide input to the CIMO Guide accordingly.
- (xiv.) JCOMM should further develop the network of WMO-IOC Regional Marine Instrument Centres (RMIC) in all regions, promote their activities, conduct training workshops, and instrument intercomparisons.
- (xv.) The cooperation with the manufacturers should be strengthened through HMEI.
- (xvi.) IODE should continue the development of the IODE ODP and interconnect with the WIS as a WIS DCPC.
- (xvii.) IODE should seek interoperability of the ODP with other (non IODE) ocean related data centres.
- (xviii.) JCOMM should work to increase the amount of oceanographic and marine meteorological data provided by data centres to the ODP and WIS.
- (xix.) WMO and IOC should promote the IODE/JCOMM Standards process, seek harmonization of standards between WMO and IOC, and make sure that processes are documented.
- (xx.) JCOMM should promote quality management in compliance with the WMO Quality Management Framework (QMF).
- (xxi.) WMO and IOC should promote establishment of an international forum of users of satellite data telecommunication systems.
- (xxii.) JCOMMOPS, which is providing support for the implementation, and monitoring of marine observing networks on a day to day basis should be strengthened.
- (xxiii.) The JCOMM PANGEA concept should be supported to enhance partnership between

developed and developing countries with regard to data use and implementation of ocean observing networks.

- (xxiv.) JCOMM should communicate information – based on this project report – about the benefits to various communities of the integration of marine and other appropriate oceanographic observations into WIGOS.
- (xxv.) JCOMM should be promoting pilot activities to evaluate how *in situ* and satellite based observing systems complement each other; in the view to make recommendations for the optimization of the *in situ* networks.

Proposed future workplan, responsibilities, and costing based on the Pilot Project legacy recommendations are provided in the Annex of the Project Report. About \$95k would be required each year to support the proposed activities, and an additional \$10k to recruit a consultant who would compile a document on guidelines for marine instrument intercomparisons.

APPENDIX B

PRELIMINARY DRAFT TERMS OF REFERENCE FOR AN WMO-IOC-FAO INTERNATIONAL FORUM OF USERS OF SATELLITE DATA TELECOMMUNICATION SYSTEMS

The International forum of users of satellite data telecommunication systems is an entirely self-funded body jointly sponsored by the World Meteorological Organization (WMO), the Intergovernmental Oceanographic Commission of UNESCO, and the Food and Agriculture Organization (FAO) of the United Nations in the view to address the requirements of the three Organizations for the collection in real-time of environment data from remote observing platforms. It ensures proper coordination amongst the users of satellite data telecommunication systems in order to represent their collective interests with the satellite operators.

The forum shall:

1. Review available technologies, share experiences, and address the following requirements in the view to document capabilities, and identify strengths and weaknesses of the different satellite data telecommunication systems to address the requirements of specific uses.
 - Global and regional coverage;
 - Network services and data access technology;
 - Data transmitter technology, including radio-frequencies, interface programming, and electric power consumption;
 - Data transmission rates;
 - Data transmission quality;
 - Real-time capability and data timeliness;
 - Location capability;
 - One-way vs. two-way data communication;
 - Ground segment data processing, quality control, and distribution requirements;
 - Data collection, and ground segment data processing pricing;
 - Etc.
2. If appropriate, propose common approaches for specific user needs, and identify the best and more cost-effective satellite data telecommunication systems options to be used for the relevant observing platforms;
3. Make proposals for establishing cooperative mechanisms through the Data Collection Platform (DCP) services of meteorological satellites;
4. Engage negotiations with satellite data telecommunication system operators for
 - Inclusion of specific user requirements in their respective development programmes;
 - Pricing of data telecommunication services. In particular, specific tariff negotiating schemes such as the existing Argos Joint Tariff Agreement (JTA) will be managed through the forum as sub-programmes;
5. Engage negotiations with the manufacturers of platform transmitters for the inclusion of specific user requirements in future models of the transmitters;
6. Review and agree on its operating principles. The operating principles define the aims and principles of the forum; the roles and responsibilities of the stakeholders and the Secretariats of the co-sponsors; the Terms of Reference of the Executive Committee; the structure and frequency of meetings; and their desired outcome; as well as the reporting procedure of the forum;

7. Elect a Chairperson, and vice-Chairperson from its participants;
8. Elect an Executive Committee, chaired by the forum's Chairperson, and including the vice-Chairperson, and stakeholder representatives;
9. Report through the Chairperson to the Executive Bodies of the Co-Sponsor Organizations, and submit its recommendations as appropriate for their agreement;

Decisions shall be agreed unanimously by the Forum. If decisions cannot be agreed unanimously, they will be deferred to the Executive Committee for further discussion and decision.

Membership:

Membership is open to all representatives of the co-sponsors stakeholders. Invitations to participate in the forum are issued by the Secretariats of the co-sponsors to their respective Members/Member States, as well as to their relevant programmes and bodies. Representatives of the satellite data telecommunication providers, and the platform transmitter manufacturers can participate in the forum as observers. Representatives of the Secretariats of the co-sponsors participate as ex-officio members of the forum.

These Terms of Reference are agreed upon by the Executive Bodies of the Co-sponsors.

APPENDIX C

PROPOSED WORKPLAN LEADING TO THE ESTABLISHMENT OF THE FORUM

Step	Action	Date/Deadline	By
1	Approach Co-sponsors in the view to agree on the draft Terms of Reference for the forum; and plan/organize an <i>ad hoc</i> workshop for the establishment of the informal forum.	Aug.-Dec. 2011	IOC, WMO Secretariats
2	Approach operators of satellite data telecommunication systems and platform transmitter terminal, identify contact points, and discuss/negotiate the level of their contributions/participation	Aug.-Dec. 2011	Secretariats ²
3	Approach users of satellite data telecommunication, inform them about the forum, and seek their participation in the forum and the <i>ad hoc</i> workshop	July-Dec. 2011	Secretariats ²
4	Setup an organizing committee of the <i>ad hoc</i> workshop with Terms of Reference	Jan. 2012	Secretariats ²
5	Negotiate with potential hosts, and propose a venue for the <i>ad hoc</i> workshop	Mar. 2012	Organizing Committee
6	Propose agenda and documentation plan for the <i>ad hoc</i> workshop	Apr. 2012	Organizing Committee
7	Inform the joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM) about developments regarding the forum, and seek further guidance	May 2012	Secretariats of WMO and IOC
8	Issue invitation letters for the <i>ad hoc</i> workshop	June 2012	Secretariats ²
9	Coordinate documentation plan with contributors	June-Sep. 2012	Secretariats ²
10	Inform the WMO Commission for Basic Systems (CBS) about developments regarding the forum, and seek further guidance	Sep./Oct. 2012	WMO Secretariat
11	<i>ad hoc</i> workshop tasked to: <ul style="list-style-type: none"> • Propose operating principles, including Terms of Reference of the forum's Executive Committee • Adjust draft Terms of Reference, • Elect an interim Executive Committee, • Review current satellite data telecommunication issues, • Identify areas where progress/proposals can be made • Refine the workplan for formal adoption of the forum by the Executive Bodies of the co-sponsor Organizations 	Nov. 2012	Organizing Committee and the Secretariats ²
12	Terms of Reference of the forum submitted to the parent Organizations Executive Bodies for approval and formal establishment of the forum	2013	Executive Bodies of WMO,IOC,FAO
14	Plan for the first meeting of the forum	2013/2014	Interim Executive Committee,

² : Secretariats of WMO, IOC, FAO

			and the Secretariats ²
14	First official meeting of the forum	2014	Interim Executive Committee, and the Secretariats ²

APPENDIX D

Resolution 11.3/1 (Cg-XVI)

IMPLEMENTATION OF THE WMO INTEGRATED GLOBAL OBSERVING SYSTEM (WIGOS)

THE CONGRESS,

Noting:

- (1) Article 2 of the Convention of the World Meteorological Organization,
- (2) Resolution 30 (Cg-XV) – Towards enhanced integration between WMO observing systems,
- (3) Resolution 14 (EC-LXII) – Implementation of the WMO Integrated Global Observing System (WIGOS),
- (4) WMO Strategic Plan,

Considering:

- (1) The greater vulnerability of society to extreme weather events and climate change and the need for more extensive and advanced information for WMO Members so that they can continue to improve service quality and to extend further service delivery,
- (2) The benefits that can be realized through a more coordinated, collaborative and cost-effective approach to the planning and operation of an integrated global observing system,
- (3) With satisfaction the progress achieved in the planning for the implementation of WIGOS (2007-2011),
- (4) The importance of WIGOS to the development and implementation of the GFCS and the Global Cryosphere Watch (GCW),

Appreciating:

- (1) The important contributions Members, international partner organizations and programmes make towards observing the Earth system,
- (2) The relevant work undertaken by Members, the Executive Council, the regional associations, the technical commissions, the EC Working Group on the WMO Integrated Global Observing System and the WMO Information System and the Secretary-General on the development and implementation of the WIGOS initiative launched by the Fifteenth Congress,

Recognizing that:

- (1) WIGOS and WIS are strategic priorities of the Organization to improve Members' capabilities to effectively provide in a timely fashion a wide range of high quality data, products and services,
- (2) WIGOS will enable the evolution and integration of the observing system components of WMO and enhance collaboration with its partner organizations and programmes,
- (3) WIGOS will improve WMO Members' ability to meet expanding national mandates and achieve higher visibility of NMHSs with other environment related agencies,

- (4) WIGOS will provide a framework for improved collaboration and coordination between NMHSs and relevant national and regional organizations,
- (5) WIGOS will enable WMO Members to better respond to natural hazards, improve environmental monitoring, and adapt to climate change and man-made environmental impacts, especially in developing and Least Developed Countries,
- (6) WIGOS will lead to cost-effectiveness and enhancing observing capabilities of Members,
- (7) WIGOS is a necessary prerequisite to allow WMO Members to realize the Organization's Strategic Thrusts,

Decides to implement the WMO Integrated Global Observing System (WIGOS);

Decides further that implementation activities will be undertaken during the next financial period as one of the major efforts of the Organization with the goal that WIGOS should become operational from 2016 onwards;

Requests:

- (1) The Executive Council to:
 - (a) Monitor, guide and support the implementation of WIGOS;
 - (b) Establish an Inter-Commission Coordination Group on WIGOS (ICG-WIGOS);
- (2) Regional associations to:
 - (a) Develop their regional WIGOS implementation plans;
 - (b) Coordinate WIGOS implementation activities with WIS in their operating plan and work programme;
 - (c) Promote capacity building and outreach activities to assist Members in the implementation of WIGOS;
- (3) Technical commissions to:
 - (a) Guide the technical aspects of WIGOS implementation;
 - (b) Incorporate WIGOS implementation activities in their operating plan and work programme;
 - (c) Provide technical guidance and advice to Members and the regional associations on WIGOS;
 - (d) Develop guidance for the design and evolution of observing components of WIGOS,
 - (e) Develop standards to support WIGOS in collaboration with partner organizations and programmes;
 - (f) Update WMO Regulatory Material, including development of the Manual on WIGOS;

- (g) Provide the technical lead for WIGOS through the Commission for Basic Systems (CBS) and the Commission for Instruments and Methods of Observation (CIMO);
- (4) Urges Members to:
- (a) Evolve their observing systems to become their national components of WIGOS;
 - (b) Coordinate their WIGOS and WIS implementation activities;
 - (c) Provide experts to participate in the WIGOS related work of technical commissions;
 - (d) Provide resources to help support the implementation of WIGOS;
 - (e) Support regional and global WIGOS implementation activities;
 - (f) Keep the Secretary-General informed about their WIGOS implementation activities;
 - (g) Share relevant experience and cooperate with one another in implementing WIGOS, including assistance to Members with specific WIGOS-implementation needs;
- (5) Requests the Secretary-General to:
- (a) Ensure management of, and within available resources provide support to the WIGOS implementation;
 - (b) Establish a WIGOS Project Office;
 - (c) Support the review and update of WMO Regulatory Material, including the development of the Manual on WIGOS;
 - (d) Coordinate and collaborate WIGOS activities with UN organizations and other relevant international organizations and programmes;

Invites partner organizations to collaborate with WMO on the implementation of WIGOS.

Note: This resolution replaces Resolution 30 (Cg-XV), which is no longer in force.