

**DEVELOPMENT OF AN OVER-ARCHING
WIGOS DEVELOPMENT AND IMPLEMENTATION PLAN**

***Status of WIGOS/WIS Pilot Project on Integration of
Marine Meteorology and other appropriate Oceanic Observations into WIGOS***

(Submitted by the Secretariat)

Summary and Purpose of Document

This document provides for background information and status regarding the proposal for development of the integration of marine meteorological and other appropriate oceanic observations into the WMO global observing systems (JCOMM Pilot Project for WIGOS). A Pilot Project plan proposal (Appendix) has been drafted by the Secretariat and will be discussed by the JCOMM Management Committee at its 6th Session, Paris, France, 3-6 December 2007.

ACTION PROPOSED

The Working Group is invited to consider the above information when elaborating a WIGOS Development and Implementation Plan.

APPENDIX: Proposal - Draft Pilot Project Plan for the Integration of marine meteorological and other appropriate oceanic observations into the WMO global observing systems (JCOMM Pilot Project for WIGOS)

- References:**
1. Cg-XV, PINK 7.4(3), Evolution of NMHSs and WMO, Towards Enhanced Integration between the WMO Observing Systems.
 2. Res. 2/4 (EC-LIX) — Executive COUNCIL WORKING GROUP on the WMO Integrated Global Observing System (WIGOS) and the WMO Information System (WIS).
 3. Towards Enhanced Integration between the WMO Observation Systems (Revised EC-TT/WIGOS Doc. 3, submitted by Jim Rasmussen 15 July 2007)

DISCUSSION

Status of WIGOS/WIS Pilot Project Proposal on Integration of Marine Meteorology and other appropriate Oceanic Observations into WIGOS

Background

1. Fifteenth Congress (Geneva, May 2007), when discussing the concept of integration between WMO Observing Systems, agreed that planning and implementation of the integration process should proceed in phases defined by the annual meetings of the Council in order to assure oversight, review and direction. The process foreseen is one where planning and implementation of an integrated WMO observing system and of the WIS would culminate with Cg-XVI (2011) adopting improvements towards strengthening the WMO programme structure and the system of technical commissions, which would be positioned to extend the benefits of the integration into the service and application components of the overall WMO Programmes at both the national and international levels. Congress also agreed that several "Pilot Projects", as proposed by the EC Task Team, should be designed to test concepts, identify problem areas, and to help in elaborating the Plan. It recommended that possible candidate Pilot Projects include:

- (a) Integration of WWW/GOS and GAW
- (b) Initiation of a Global Hydrologic network addressing a GCOS requirement
- (c) Elaborating the underpinning/crosscutting role and responsibilities of the Instruments and Methods of Observation Programme
- (d) Integration of AMDAR into the WMO global observing systems
- (e) Integration of marine meteorological and other appropriate oceanic observations into the WMO global observing systems

2. EC-LIX (Geneva, May 2007) established an Executive Council Working Group on the WMO Integrated Global Observing System (WIGOS) and the WMO Information System (WIS) with terms of reference as follows:

- (1) Provide advice and guidance in the preparation of an over-arching WIGOS Development and Implementation Plan;
- (2) Refine the WIS Development and Implementation Plan and ensure coordination between WIGOS and WIS plans to allow for an integrated WMO end-to-end system of systems;
- (3) Monitor the development and implementation of WIGOS and WIS through a "rolling review" mechanism;
- (4) Monitor WIGOS/WIS "Pilot Projects", as identified by Cg-XV, to test concepts, identify problem areas, and to help in elaborating the Development and Implementation Plan

Proposal on the Integration of marine meteorological and other appropriate oceanic observations into the WMO global observing systems

3. The CBS Management Group at its seventh session, held in Geneva, from 18-20 June 2007 addressed the topic of WIGOS and decided that the CBS through the OPAG-IO should take a leading role within CBS in the technical development and planning of integrated observing systems with a view to a cost-effective and flexible system of systems that can meet in an optimal way the requirements of all WMO Programmes.

4. At its Second Session, Geneva, 9-13 July 2007, the CBS Expert Team on the Evolution of the Global Observing System (ET-EGOS) was invited to address the objectives of the integration process as laid down by Congress with a view of providing guidance for the development of concepts and plans for Pilot projects. Four potential Pilot Projects for the integration of marine measurements into the GOS have been identified (WIS interoperability, Satellite data telecommunication, business case for wave observations, and integration of best practices and standards).

5. Informal discussions that followed with the JCOMM Co-Presidents and Programme Area Coordinators suggest that it would be preferable to initially stress the first and fourth pilot projects, i.e. promoting (i) interoperability of ocean data systems with the WMO Information System (WIS) in close cooperation with the ocean community, and (ii) the documentation and integration of best practices and standards being used amongst the meteorological and oceanographic communities. In tackling the latter, progress will also be made in achieving compliance with the WMO Quality Management Framework (QMF).

6. The sixth JCOMM Management Committee is planned in Paris, 3-6 December 2007. The Management Committee will consider the benefits available through WIGOS and discuss the proposed Pilot Project (having combined the two pilots detailed above under a single umbrella project), its implications on the work of the Operations and Data Management Programme Areas and provide guidance on the proposed organization of the activity.

7. The Pilot Project should be organized under a small Steering Team that will:

- (a) Produce a Pilot Project Plan for review. The Project Plan will also be available to discussion during the EC WG on WIGO/WIS. The Project Plan should support the high level WIGOS/WIS goal to establish a comprehensive, coordinated, and sustainable system of WMO observing systems with ensured access to its component observing systems' data and products through interoperable arrangements.
- (b) Following approval by the JCOMM Management Committee and the EC WG on WIGO/WIS the JCOMM Pilot Project Steering Team will work with the WMO Secretariat to facilitate implementation of the Plan to enhance delivery of good quality marine meteorological and other oceanic data from GOOS for availability to user communities.

8. The Management Committee will be invited to review and update the draft Pilot Project plan provided in the Appendix.

**Proposed Pilot Project Plan for the
Integration of Marine Meteorological and other appropriate
Oceanic Observations into the WMO Global Observing Systems**

(JCOMM Pilot Project for WIGOS)

*(draft to be reviewed/amended/approved by
JCOMM Management Committee at its sixth meeting (MAN-VI),
Paris, France, 3-6 December 2007)*

1. Background

Assisted by Cg-XV, the high level WIGOS/WIS goal is to establish a comprehensive, coordinated, and sustainable system of observing systems with ensured access to its component observing systems' data and products through interoperable arrangements. WIGOS is the system of observing systems and WIS provides the access through the interoperable arrangements. WIGOS/WIS will address all WMO Programme requirements, ensure availability of required information, meet data quality standards, and facilitate access in real/quasi-real time as well as to archived information. The JCOMM Pilot Project for WIGOS will make an important contribution in the development of WIGOS/WIS.

2. Scope and deliverables

2.1 Scope

The JCOMM Management Committee, following guidance from the WMO Executive Council Working Group on the WMO Integrated Global Observing System and the Information System (WIS) (EC-WG/WIGOS-WIS), will draft and finalize the Pilot Project plan and establish a Steering Team for coordinating and facilitating the development and implementation of the JCOMM Pilot Project for WIGOS (including relevant WIS items).

This will of course require coordination with appropriate WMO Programmes (MMOP, IMOP, WWW) and Technical Commissions (CBS, CIMO).

In addition, this will require coordination between (i) JCOMM, its Observations Programme Area (OPA), its Data Management Programme Area (DMPA), the JCOMM Management Committee, and their Expert Teams and Panels, and the IOC of UNESCO through (ii) the International Oceanographic Data and Information Exchange (IODE).

Coordination with the IOC-WMO-ICSU-UNEP Global Ocean Observing System and its GOOS Scientific Steering Committee (GSSC) will also be required.

Progress will be reported to the JCOMM Management Committee and to the WMO EC Working Group on WIGOS-WIS.

2.2 Deliverables

2.2.1 The Pilot Project will promote (i) interoperability of marine data systems with the WMO Information System (WIS) in close cooperation with the IOC ocean community, and (ii) the documentation and integration of best practices and standards being used amongst the meteorological and oceanographic communities, and (iii) establish compliance with the WMO Quality Management Framework (QMF).

2.2.2 The first activity will provide access to meteorological and oceanographic data to serve a number of applications, including climate in an integrated way via the WIS; hence facilitating access to well documented and standardized data.

2.2.3 The second activity will define common standards for instruments and methods of observations as well as subsequent organization and handling of the data to serve the applications with consistent and better quality data being fed into models.

2.2.4 The third activity will result in the coordinated development of cost-effective Quality Management Systems by Members. At different levels of the data production line, there will be better, timelier data, minimized duplication, and an operational data delivery system. This will be achieved through the compilation of regulatory documentation.

3. Pilot Project approach, roles and responsibilities

3.1 Cooperation with the ocean community

Operational models of the interior of the oceans have been significantly improved with the success of the Argo Pilot Project deploying an increasing number of instruments and having lately attained the 3000 float target. A number of countries are now engaged in combining multi-level atmospheric and oceanographic models and installing real-time modelling functions. With this ability, the oceanographic community is seeing important advantages to becoming involved in making, reporting and using ocean observations in real-time. The ocean observing components of JCOMM that are not currently reporting onto the GTS will be encouraged to submit their data in real time through the WIS (this should be easier to realize than with the current GTS because of a more variety of available formats and the possibility of the WIS to consider specific data exchange policies). As well, we can expect the importance of historical data to modelling will increase since it is through these that studies can be made of past conditions. As well, the high resolution, high quality delayed mode data reach data centres in the ocean community and these data will be important for hindcasting conditions or improving the forecasts of operational models that used real-time data only.

The following aspects will have to be considered for the Pilot Project:

- 1) Providing access through the WIS to historical and recent data holdings in ocean data centres. This links to the JCOMM End to End Data Management (E2EDM) effort and one could consider that this has already started. However, substantial effort remains to integrate the various sources of *in situ* and satellite data (e.g. Argo, OceanSITES, GHRSSST, XBT, Ocean carbon, sea level stations, satellite altimetry data, etc.).
- 2) The ocean community will contribute to the Pilot Project through interoperable arrangements with the WIS but at the same time may develop specific data systems under the auspices of the IOC.

3.2 Benefits

There are clear advantages for the ocean community to participating in the Pilot Project and providing interoperability with the WIS by:

- Improving their visibility with the National Meteorological and Hydrological Services (NMHS) while keeping their independence regarding parallel data systems their put in place;

- Gaining better access to meteorological and climate data thanks to direct WIS access. It would have been very difficult to access some of these data outside of the scope of the Pilot Project;
- Solidifying the links between meteorological and oceanographic data centres;
- Accessing more, and better data of known quality obtained through consistent instrumentation meeting standards agreed upon between both the meteorological and oceanographic communities.

At the same time, there will be advantages for the WMO and NMHS:

- Gaining better access to oceanographic data to feed into operational and research applications
- WIS will provide for multi-disciplinary access to data
- Enhancing NMHS cooperation with the oceanographic centres nationally or worldwide.

3.3 Pilot Project Steering Team

The development of the Pilot Project will be coordinated by a Steering Team, providing liaison with appropriate WMO Programmes (IMOP, WWW, GOS) and Technical Commissions (CBS, CIMO), with the JCOMM Observations Coordination Group and appropriate expert teams, the JCOMM Data Management Coordination Group and appropriate expert teams, the JCOMM Management Committee, the WMO EC-WG on WIGOS-WIS, and the IOC and IODE. It will be responsible for:

- a) Producing/refining the Pilot Project Plan
- b) Promoting the continued development and implementation of a sustained and coordinated global ocean observing system
- c) Coordinating and promoting the development, documentation, and integration of best practices for the different components of the marine observing and data systems
- d) Coordinating and promoting the development of interoperability arrangements between different components of the marine data system, and the provision of the real time and delayed mode observational data through the WIS
- e) Coordinating and promoting the development, documentation, and integration of QMS at the required levels of the data production line from marine observations to the delivery of data and products
- f) Seeking resources to be committed to the Pilot Project
- g) Guiding the implementation of the plan and working with the WMO and IOC Secretariats to facilitate its implementation

Possible Members of the Steering Team are (for discussion by JCOMM MAN-VI):

- JCOMM OPA Coordinator - *Mike Johnson*
- JCOMM DMPA Coordinator - *Bob Keeley*
- JCOMM ET-DMP Chair - *Nick Mikhailov*
- IODE Co-Chair - *Greg Reed, or his representative*
- IODE Representative - *(Ms) Lesley Rickards*
- SISMER and SeaDataNet - *Loic Petit de la Villeon*
- JCOMM DBCP Chairperson - *David Meldrum*

- JCOMM SOT Chairperson - *Graeme Ball*
- Representative from WMO Secretariat
- Representative from IOC/UNESCO Secretariat
- Representative of CBS
- Representative of CIMO
- Other Members as required

3.4 Roles

The role of bodies and expert teams as well as those of the Members and the Secretariat are defined in the table below:

Body	Role(s)
EC-WG/WIGOS-WIS	Overall vision and guidance
JCOMM MAN	Guidance to the PP Steering Team
JCOMM OCG	Coordinate and promote the development, documentation, and integration of best practices and QMS Ensure the flow of the data to the WIS
JCOMM DMCG	Coordinate and promote development of interoperability arrangements Coordinate and promote development, documentation, and integration of data management best practices and QMS
JCOMM ETDMP	Propose practical steps regarding the development of interoperability arrangements and implementation of QMS
JCOMM ETMC	Coordinate and promote development, documentation, and integration of QMS regarding delayed mode marine data and Marine Climatological Summaries
Observing Panels (DBCP, SOT, GLOSS, Argo)	Draft/update/compile best practices Promote best practices and QMS Provide for observational data to the WIS
GOOS	Assist in the integration of best practices and QMS
GSSC	Assist in the integration of best practices
IOC IODE	Assist in the development of interoperability arrangements Assist in the integration of best practices Assist in the development and integration of QMS
Secretariat	Commit resources to the Pilot Project Support the Steering Team Follow up implementation of the project plan
Members	Provide expertise Commit resources to the Pilot Project Continue to develop, implement, and sustain the observing systems in a coordinated way and following recommended best practices Implement QMS at required levels of the data production line Provide the observational data through the WIS

4. Schedule

Proposed Schedule and Actions (depending on resources allocation):

- i. Sixth Session of the JCOMM Management Committee, 3-6 December 2007. Draft proposal presented for discussion.
- ii. IODE/JCOMM Forum on Oceanographic Data Management and Exchange Standards, Ostend, Belgium, 21-25 January 2008. Draft proposal presented for discussion.
- iii. Third session of the JCOMM Data Management Coordination Group, Ostend, 26-28 March 2008. Draft proposal presented for discussion.
- iv. March/April 2008. Consultations with the steering teams and reports on progress and proposed strategy by the pilot project. Consolidated report by the Secretariat for review by the EC WG WIGOS/WIS and guidance by EC LX (June 2008);
- v. July 2008: Consultations with the Management Committee and the pilot Project steering team to incorporate EC LX guidance and decisions into their final plans;
- vi. Oct/Nov 2008: discussion with the Data Buoy Cooperation Panel at its Twenty-fourth Session (South Africa). Expected outcome: progress regarding integration of best practices and standards regarding buoy observations;
- vii. End 2008: discussion with the JCOMM Ship Observations Team at its fifth Session. Expected outcome: progress regarding integration of best practices and standards regarding ship observations;
- viii. Third Session of JCOMM, fall 2009. Expected outcome: formal endorsement from JCOMM and Resolution.
- ix. Twentieth Session of IODE, mid 2009. Expected outcome: formal endorsement from IODE and Resolution.
- x. Implement the projects by November 2010 reporting to the JCOMM Management Committee and EC WG and finally Cg-XVI (May 2011).

5. Estimated Costs

The Pilot Project Steering team will have to meet at least once a year during three years. Experts will have to attend specific meetings in order to promote the Pilot Project (e.g. SeaDataNet, DMAC, IODE). Experts will have to visit key data centres in order to explain the Pilot Project requirements and provide assistance regarding the implementation of the interoperable arrangements. A consultant will be required to assist in the production of relevant documentation for the Pilot Project.

No funds have been allocated yet.

Resources will have to be identified to meet the costs. Below are initial estimates.

Item	Yearly	Total 3 years
Meetings of the Steering Team (10 people meeting once a year)	CHF 20 000	CHF 60 000
Experts attending specific meetings or visiting data centres on behalf of the Pilot Project (5 missions per year)	CHF 10 000	CHF 30 000
Consultant (one person x month per year)	CHF 15 000	CHF 45 000
Total	CHF 45 000	CHF 135 000

It is important to note that the costs outlined above do not cover the costs of software or hardware that will be required by individual contributors. In the end, it is the identification and use of such funds that will allow the linking of data collections across organizations to accomplish the goals of the Pilot.
