

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

**Description of the Functions and Structure
of the Observing and Information Systems Department**

(Submitted by the Secretariat)

Summary and Purpose of Document

This document outlines the planned WMO Secretariat structure necessary to respond to the approval by the Fifteenth WMO Congress of the WMO Strategic Plan for 2008 and Beyond in which two major Expected Results are integration of observing systems within the WIGOS concept and development of the WMO Information System (WIS).

The Working Group is informed about the new WMO Secretariat structure, as planned by the WMO Secretary General, related to WIGOS/WIS activities. The working group may wish to note the proposal for extra-budgetary resources to support required tasks.

APPENDIX: Summary of the Observing and Information Systems (OBS) Department;

- 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).

WMO Integrated Global Observing Systems (WIGOS)

1. The WMO Integrated Global Observing Systems (WIGOS) is a comprehensive, coordinated and sustainable system of observing systems. WIGOS is based on all WMO Programme observational requirements. It ensures availability of required information and facilitates access in real and quasi-real time to all required information. Additionally, it affords high data quality standards and benefits from archiving and technological innovations.

2. As a system of systems, WIGOS encompasses four broad objectives: to improve management and governance of component systems; to increase interoperability between the various systems with particular attention given to complementarity between the space-based and *in-situ* components; to address atmospheric, oceanic and terrestrial including hydrological domains; and to ensure that broader governance frameworks (e.g. inter-agency co-sponsorship of systems) and relationships with other international initiatives are respected, sustained and strengthened.

3. The components of WIGOS (surface and space-based) include: WWW'S Global Observing System (GOS); Global Atmosphere Watch (GAW); BSRN radiation networks; marine meteorological observations from ships including VOS and ASAP; moored and drifting buoy arrays; the climate components of atmospheric, oceanographic and terrestrial observing systems contributing to GCOS; AMDAR; and regional, river basin and global hydrological networks (WHYCOS and GTN-H).

4. The Fifteenth WMO Congress (Cg-XV) decided to establish WIGOS through enhanced integration amongst all WMO observing systems. Cg-XV agreed that integration, in the context of WMO global observing systems, should be defined as establishment of a comprehensive, coordinated and sustainable system of observing systems, ensuring interoperability between its component systems, and aiming to:

- Address in the most cost-effective way all of the WMO Programme requirements with a view to reducing the financial load on Members and maximizing administrative and operational efficiencies;
- Ensure the availability of the required information produced within the various WMO observing systems (e.g. GOS, GAW, etc.), and the WMO components of co-sponsored systems (e.g. GCOS, GOOS etc.) with particular emphasis on information generated by satellite, radar, wind-profilers, aircraft systems, ARGO, and other new technology systems;
- Facilitate the access, in real/quasi-real time, to observations required for WMO and WMO co-sponsored programmes and relevant international conventions, but which are generated by systems implemented and managed by cooperating agencies, organizations and programmes;
- Ensure required data quality standards are met and sustained for all programme requirements;
- Facilitate archiving and technological innovation.

WIGOS components (surface and space-based):

- the Global Observing System (GOS) of the World Weather Watch;
- the Global Atmosphere Watch (GAW) networks and systems for observations of atmospheric chemical composition and related environmental parameters;
- the various radiation networks both observing solar and net radiation (e.g. the BSRN);

- the marine meteorological observations from ships including the Voluntary Observing Ship (VOS) programmes and the Automatic Shipboard Aerological Programme (ASAP);
- the moored and drifting buoy arrays developed as research arrays during GARP and WCRP related research projects, and which are now operational networks and arrays supporting weather and climate as well as oceanographic objectives;
- the climate component of atmospheric, oceanographic and terrestrial observing systems contributing to GCOS observing requirements (e.g. ARGO floats, sea level observations etc.);
- the Aircraft Meteorological Data Relay (AMDAR) systems initially developed and implemented as a GARP project and then expanded to an operational status including expansions of aircraft measurement capabilities for atmospheric composition constituents;
- the regional, river basin and global hydrological networks;
- space-based observing systems that are currently a major component of virtually all WMO observing programmes;
- the observing component of the Global Cyrosphere Watch recently approved by the fifteenth WMO Congress.

WMO Information System (WIS)

5. As the single coordinated global information infrastructure, the WMO Information System (WIS):

- Will be used for the collection and sharing of information for all WMO and related international programmes;
- Will provide a flexible and extensible structure that will allow the participating centres to enhance their capabilities as their national and international responsibilities grow;
- Implementation will build upon the most successful components of existing WMO information systems in an evolutionary process;
- Development will pay special attention to a smooth and coordinated transition;
- Core communication network will be based on communication links used within the World Weather Watch (WWW) for the high priority real-time data;
- Will utilise international industry standards for protocols, hardware and software.

The fundamental design of WIS was developed by an Inter-Commission Task Team (ITT-WIS) and several key pilot projects were initiated to test and develop some of the principles of WIS. Following recognition of the need for WIS to be implemented, and due to the overarching nature of WIS across all programs, fourteenth Congress set up an Inter Commission Coordination Group on WIS which met for the first time in January 2005. Technical Commissions were instructed to provide resources and support for the development of WIS. Congress XV reinforced the need for WIS and for accelerated implementation and emphasised a requirement for WIS to work closely with and facilitate the communications and information management needs of a WMO Integrated Global Observing System (WIGOS).

Observing and Information Systems Department Function

6. The Observing and Information Systems (OBS) Department will be responsible for all WMO Secretariat activities related to Expected Results 4 and 5, i.e. WIGOS and WIS, and Expected Result 8 related to GCOS. The Department also will be responsible for the activities which ensure that all basic systems providing data, product and services necessary for Expected Results 1, 2, 3, 6, 7, 8, 9 and 10 are accomplished in an efficient, effective and coordinated manner. The key function of the OBS Department is to facilitate WMO Members efforts to meet their national mandates in terms of data acquisition and exchange. It will be responsible for support and coordination activities related to all observing systems that are components of WIGOS as well as to all WIS facilities (including data management) that make available meteorological and related geophysical information needed to provide efficient services within Member countries. In doing so, the Department will support relevant activities carried out by the Weather and Disaster Services, Water and Climate, and Research Departments. The OBS Department will also provide support to all Technical Commissions and Regional Associations with regard to basic systems for observations and information systems as well as the Executive Council Working Group on WIGOS/WIS.

Table Summary of the Structure of the Department

7. To fully meet the decision by Cg-XV for planning and implementation of WIGOS and WIS, the following Divisions/Offices/Units are assigned to the Branches in the OBS Department (see Appendix).

WIGOS-WIS Staff Enhancement

8. There are additional tasks that must be funded through extra-budgetary resources. At present, the tasks are described in terms of duties and responsibilities for WIS and for WIGOS.

With regard to WIS, a dedicated group aligned on the following tasks in four areas is required to manage the overall WIS project for at least the next five years. Area descriptions will include the following:

- WIS Project Manager area - Long term Project Manager area to lead the WIS project, manage and review the implementation of WIS, undertake the necessary liaison within the secretariat and stakeholders and to oversee all the projects within WIS;
- WIS Support area - Support is essential to assist with general duties, such as outreach activities and maintenance of the WIS web pages. This support role will also assist in keeping tasks progressing while the project manager is addressing more urgent issues. An important role of this position will be to maintain the project register on activities in collaboration with other WWW staff and task leaders;
- WIS Technical Documentation area – Support is needed to undertake the preparation of the initial WIS guidelines and to support the expert teams in production of other guidance material such as those needed on the preparation and maintenance of metadata. This officer will also play a key role in the review of technical regulations in coordination with WIGOS;
- WIS Capacity Building area - Although the size of the task has yet to be established, there is a need to have support to assist with capacity building in Member countries and to work with Education and Training (ETR) and Development Cooperation and Regional Activities (DCR) to ensure Members, especially in least developed countries, reap the full benefits of WIS;

A new component led by the WIS Project Manager area and involving all in the WIS Project Group will be the coordination with WIGOS and WIGOS Pilot Projects to ensure WIS is able to provide the collection and information exchange requirements of WIGOS.

Each area in the WIS Project Group would have their own portfolio of projects in which they take the lead. However, each will assist other projects within the office so that if one project's leader is unavailable there will always be another officer who can address any issues and keep the individual projects flowing.

In the longer term, much will depend on changes in the secretariat associated with integration processes. However, there will need to be provision allowed for WIS staffing and support in WMO budgets and especially in the Strategic Plan 2012-2015 and beyond as WIS and WIGOS will still be major projects throughout this period.

With regard to WIGOS, a dedicated group in four areas is also required to manage the overall WIGOS project for at least the next five years. Area descriptions will include the following:

- WIGOS Project Manager area – The WIGOS Pilot Projects were designed to evaluate important component observing systems that must be integrated into the system of observing systems. Lessons learned from the Pilot Projects will be both technical as well as involve higher-level governance. Since WIGOS is a new project unlike WIS, a long term Project Manager area is required to lead the WIGOS project office taking into consideration lessons learned. It will also manage and review the implementation of WIGOS, undertake the necessary liaison within the secretariat and stakeholders and to oversee all the projects within WIGOS ;
 - WIGOS Support area – Support is essential to assist with general duties, such as outreach activities and maintenance of the WIGOS web pages. This support role will also assist in keeping tasks progressing while the project manager is addressing more urgent issues. An important role of this position will be to maintain the project register on activities in collaboration with other observing system staffs and task leaders including those not resident in the WMO Secretariat, e.g. AMDAR Panel;
 - WIGOS Technical Documentation area – Support is needed to review existing Technical Documentation and Regulations for observing systems in order to prepare appropriate updates as well as initial WIGOS guidelines and to support the expert teams in production of other guidance material such as those needed on the preparation and maintenance of metadata. This officer will also play a key role in the review of technical regulations in coordination with WIS;
 - WIGOS Capacity Building area - Although the size of the task has yet to be established, there is a need to have support to assist with capacity building in Member countries and to work with Education and Training (ETR) and Development Cooperation and Regional Activities (DCR) to ensure Members, especially in least developed countries, reap the full benefits of WIGOS.
-

**Summary of the
Observing and Information Systems (OBS) Department**

<i>Component</i>	<i>Abbr</i>	<i>Responsibilities</i>
WIGOS Branch	WIGOS	WMO Integrated Global Observing Systems
WIGOS Planning Office	PO WIGOS	
WMO Observing System Division	OSD	WWW Global Observing System Programme
<ul style="list-style-type: none"> ▪ Instruments and Methods of Observations Unit ▪ Ocean (Marine) Observation Unit ▪ Aircraft Observation Unit 	IMO MAR AIR	Instruments and Methods of Observations Programme Marine Observations Systems Programme Aeronautical observations
Space Programme Office	SAT	WMO Space Programme
<ul style="list-style-type: none"> ▪ Space Based Observing Division 	SBOS	Satellite Systems
JPO Global Climate Observing System	JPO GCOS	Global Climate Observing System Programme
WIS Branch	WIS	WMO Information System
Global Telecommunications System Division	ISS	Global Telecommunication System Programme
WIS Data Management Division	WIS DM	WWW Data Management Programme Climate Data Monitoring Programme
<ul style="list-style-type: none"> ▪ System Support Activities Unit 	OIS	Operational Information Service Programme