CGMS

CGMS-40 WMO-WP-12
V2, 30 October 2012

Prepared by WMO
Agenda Item: II.2
Discussed in: Plenary

WMO INTEGRATED GLOBAL OBSERVING SYSTEM (WIGOS)

Submitted by the WMO Secretariat

The decision to implement a WMO Integrated Global Observing System (WIGOS) was taken by the 16th World Meteorological Congress in 2011. Integrating observing systems, and information systems, across WMO Programmes and relevant co-sponsored programmes, is one of the five priority goals of the 2012-2015 WMO Strategic Plan.

Although the main challenge of WIGOS is to integrate surface-based observations, because of the diversity and poor interoperability of national or local surface-based networks, improved integration of the space-based observing systems is also required in many respects:

- Improving global coordination of planning, to ensure a robust and comprehensive observing system fulfilling the needs of WMO, as identified in the Rolling Review of Requirements (RRR) and its associated database (See WMO-WP-07 and WMO-WP-08) including for the monitoring of climate (architecture for climate monitoring from space), for weather forecasting, air quality monitoring, hydrology, and disaster risk reduction;
- Improved interoperability of instruments through calibration and traceability (e.g. through GSICS, see WMO-WP-23), as needed to ensure consistency of satellite data records from different instruments over time;
- Improved interoperability of products, through fostering best practices towards developing, validating, evaluating, documenting the quality of products, in an harmonized fashion (See e.g. WMO-WP-04);
- Improved interoperability of datasets through standardized discovery and description metadata and formats (See WMO-WP-10);
- Improved integration of surface- and space-based observing systems.

The WMO Executive Council approved the first version of the WIGOS Framework Implementation Plan (WIP v1.0), which includes tasks related to each of the issues above.

Action/Recommendation proposed:

Recommendation: The actions related to the Architecture for Climate Monitoring from Space, CGMS baseline, RRR database, calibration, best practices, product harmonization, and data/metadata standards, and integration of surface and space-based systems, which contribute to advance WIGOS from the space-based observing systems perspective, should be further supported.

WMO Integrated Global Observing System (WIGOS)

1 BACKGROUND

Decision of Cg-XVI and EC on WIGOS Implementation

In May-June 2011, the sixteenth WMO Congress (Cg-XVI) through its Resolution 50 (Cg-XVI) - Implementation of the WMO Integrated Global Observing system (WIGOS), decided to implement the WMO Integrated Global Observing System 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. The WIGOS implementation will focus on a framework for improved governance, management, integration and optimization of the multiple observing systems coordinated by WMO.

Implementation of WIGOS should build upon and add value to the existing WMO observing systems with emphasis on integration of surface- and space-based observations in an evolutionary process to satisfy requirements of WMO and WMO co-sponsored Programmes. Since all WMO Programmes would benefit, each should actively participate and contribute its own expertise and resources in implementing WIGOS.

WIS plays an important role in WIGOS implementation, in relation to data exchange and discovery, and the provision of effective standards and practices for data management, therefore WIGOS and WIS implementation activities should be closely coordinated.

There is a need to develop 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.

Implementation of WIGOS must be reflected in the revised WMO Technical Regulations, documenting the WIGOS concept of operations and contributions of all observing components.

Cg-XVI provided an overall guidance and determined responsibilities of all WMO constituent bodies during the implementation process; in particular, technical commissions were requested to:

a) Guide the technical aspects of WIGOS implementation;

b) Incorporate WIGOS implementation activities in their operating plans and work programmes;

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).

Following the decision by Cg-XVI, EC-LXIII (June 2011) established the Inter-Commission Coordination Group on WIGOS (ICG-WIGOS) under the chairmanship of the President of the Commission for Basic Systems (CBS), with representatives of regional associations and international partner organizations during the implementation process. ICG-WIGOS was specifically tasked to develop and submit the WIGOS Implementation Plan (WIP) for approval by the EC-64.

EC-64

The Council (June-July 2012) noted that in the light of Resolution 50 (Cg-XVI) – Implementation of the WMO Integrated Global Observing System (WIGOS), the ICG-WIGOS had started activities to coordinate the implementation of WIGOS. The Council noted with appreciation that the WIGOS Framework Implementation Plan (WIP) developed by ICG-WIGOS and its Task Team addresses the key implementation activities which are expected to be accomplished in the financial period.

The Council underlined the importance of close linkages between the WIP and resources needed for the realization of its various elements. It stressed that WMO Programmes should be properly aligned with the WIP to ensure its effective implementation and achievement of the desired outcomes. The Council accordingly adopted Resolution 10 (EC-64) - WIGOS Framework Implementation Plan (WIP).

The Plan states that “WIGOS will be an integrated, comprehensive, and coordinated system primarily comprising the surface-based and space-based observing components of the GOS, GAW, GCW, and WHYCOS, plus all WMO contributions to GCOS, GOOS and GTOS.”

Architecture for Climate Monitoring from Space

Congress agreed that the Architecture for Climate Monitoring from Space should be defined as an end-to-end system, involving the different stakeholders including operational satellite operators and R&D space agencies, the

Coordination Group for Meteorological Satellites (CGMS), the Committee on Earth Observation Satellites (CEOS), the Global Climate Observing System (GCOS), the World Climate Research Programme (WCRP) and the Group on Earth Observations (GEO). Within the WMO context, the Architecture shall be part of the space-based component of WIGOS. Therefore, particular emphasis will be placed on their coordinated contribution to WIGOS, building on existing coordination mechanisms stated above.

2 SPACE-BASED PERSPECTIVE ON WIGOS

It is generally acknowledged that the main challenge of WIGOS is to integrate surface-based observations, because of the diversity and poor interoperability of national or local surface-based networks. However, an improved integration of the space-based observing systems is also required in many respects:

Improving global coordination of planning, to ensure a robust and comprehensive observing system fulfilling the needs of WMO, as identified in the Rolling Review of Requirements (RRR) and its associated database (See WMO-WP-07 and WMO-WP-08) including for the monitoring of climate (See the initiative towards an architecture for climate monitoring from space), for weather forecasting, air quality monitoring, hydrology, and disaster risk reduction;

Improved interoperability of instruments through calibration and traceability (e.g. through GSICS, see WMO-WP-23), as needed to ensure consistency of satellite data records from different instruments over time;

Improved interoperability of products, through fostering best practices towards developing, validating, evaluating, documenting the quality of products, in an harmonized fashion (See e.g. WMO-WP-04);

Improved interoperability of datasets through standardized discovery and description metadata and formats (See WMO-WP-10);

Improved integration of surface- and space-based observing systems.

The first version of the WIGOS Framework Implementation Plan (WIP v1.0) includes tasks related to each of the issues above, with explicit references to the Architecture, the CGMS baseline, the RRR database, calibration, best practices, product harmonization, data/metadata standards, and surface-space integration.

CGMS Members are invited to provide their continuing support to these actions.