

## STATUS OF WIGOS DEMONSTRATION PROJECTS

*(Submitted by the WMO Secretariat)*

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### Summary and Purpose of Document

This document provides information on the implementation of WIGOS Demonstration Projects as identified by EC-LX.

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### ***ACTION PROPOSED***

The meeting is invited to note the information on activities and status of Demonstration Projects contained in this document when considering further implementation of WIGOS and the relevant update of the WIGOS Development and Implementation Plan.

- References:**
1. Abridged final report of the EC-LX (WMO-No. 1032)
  2. Final report of the first session of the EC WG WIGOS-WIS

- Annexes:**
1. Draft Demonstration Project of Morocco (RA I)
  2. Draft Demonstration Project of the Republic of Korea (RA II)
  3. Draft Demonstration Project of Brazil (RA III)
  4. Draft Demonstration Project of the United States (RA IV)
  5. Draft Demonstration Project of Australia (RA V)
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## STATUS OF WIGOS DEMONSTRATION PROJECTS

### Background

1. Cg-XV emphasized that support and involvement of NMHSs and regional associations in the implementation of WIGOS concept is a crucial factor for ensuring important benefits for all Members. Helping Members to more fully understand WIGOS and keeping them informed on its practical development should be considered as an essential component of WIGOS implementation.
  2. The EC Working Group on the WMO Integrated Global Observing System and the WMO Information System (EC WG WIGOS-WIS) at its first session (Geneva, Switzerland, 4-7 December 2007) reviewed the guidance and recommendations given by Cg-XV and EC-LIX towards implementation of the WIGOS concept and agreed to include Demonstration Projects on the Development and Implementation of WIGOS at NMHSs into the WIGOS Development and Implementation Plan (WDIP).
  3. Recognizing different conditions and possibilities in WMO Regions, the EC-LX supported the involvement of NMHSs and regional associations in the implementation of the WIGOS concept as crucial to ensure important benefits for all Members. The Council agreed to launch Demonstration Projects in selected NMHSs.
  4. These NMHSs will be at the operational end of the WIGOS implementation demonstrating to all concerned how to initiate and keep WIGOS together with WIS components running at the required levels of performance. Feedback and lessons learnt from these NMHSs will be extremely beneficial in understanding expectations of WIGOS/WIS concept implementation. These projects will also have a high profile impact since they would include all observing systems, i.e. in addition to WWW/GOS, the Demonstration Projects would involve functions of other observing networks that provide the delivery of time critical data and products, as well as other information, underlying the basic operations of NMHS.
  5. The Council accepted the willingness of Kenya, Morocco and Namibia (RA I), the Republic of Korea (RA II), Brazil (RA III), the United States (RA IV), Australia (RA V) and the Russian Federation (RA VI) to carry out Demonstration Projects in their countries and requested the Secretary-General to provide the necessary support for the efficient implementation of their activities and keeping other Members informed. The Council also recognized that the experience gained by the EUMETNET Composite Observing System in the integration of various observing systems should be taken into account in the implementation of the WIGOS concept.
  6. The Demonstration Projects would complement the already agreed-upon WIGOS Pilot Projects which focused on Technical Commission involvement while Demonstration Projects will be focused on NMHSs in regional associations.
  7. The letter with Draft Outline for WIGOS Demonstration Project and template was sent to the PR of relevant WMO Members in February 2008. By October 2008, the WMO Secretariat has received five of eight draft Demonstration Projects which are reproduced in Annexes I – V.
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**WIGOS Demonstration Project of Morocco**

**Kingdom of Morocco  
Ministry of Energy, Mining, Water and Environment  
Secretariat of State in Charge of Water  
National Meteorological Department**

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***WIGOS Demonstration Project in Morocco***

**Introduction**

In order to support the important and ambitious project of WMO WIGOS, The Kingdom of Morocco wishes to make available to the EC-WG / WIGOS-WIS all technical means and human resources necessary for the project success. Within this framework comes the intention, expressed by the Moroccan National Meteorological Service, to implement a demonstration project on the WIGOS-WIS.

In this regard, the National Meteorological Department has studied the description of the demonstration project, according to the outline made by the EC-WG on the WIGOS, and proposes to carry out the demonstration project in Morocco in the basis of the approach and vision detailed in the following table.

By implementing the project in Morocco, important conclusions will help to test, verify and build confidence in recommended procedures and technologies for WIGOS/WIS. The results obtained will constitute the basis experience for other countries of the CR I in implementing the WIGOS/WIS.

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<b>Project Name</b>	WIGOS Demonstration Project in Morocco
<b>Acronym</b>	WDP Morocco
<b>Project Type</b>	Demonstration Project
<b>Project Status</b>	In preparation
<b>Project Overview</b>	<p>The WMO Integrated Global Observing Systems (WIGOS) is considered as one of the most important projects of the Organization for the foreseeable future. As underlined by the EC-WG/ WIGOS on its first session in Geneva, the project has to results on a comprehensive, coordinated and sustainable system of the observing systems, which would comprise policy as well as technical issues, stretch over several years, and require the full support of all Members to be successful. In this perspective, Morocco, throughout its meteorological, hydrological and environmental observing networks, telecommunications, human experiences and capabilities, and all related logistic support, kindly offered a very appropriate site for a WIGOS Demonstration Project in RA I. The Project, as perceived by Moroccan Meteorological Department will involves other related national institutions, and will consists in standardization of instruments and methods of observations used in the existing national meteorological, hydrologic and environmental observing systems, establishment of a common information infrastructure for the dispatching, quality control and archiving of data and products generated by the all networks. Other important actions will be considered to the benefit of Moroccan and foreign meteorological staff, especially training and knowledge transfer. Demonstration Project will be a constituent part of the WMO WIGOS Development and Implementation Plan. It is estimated that Demonstration Project will be terminated prior to Cg-XVI.</p>
<b>Project Aim</b>	<p>The aim of this Project is to demonstrate the feasibility of development, testing, deployment and maintenance of comprehensive, sustainable and integrated meteorological, hydrologic and environmental networks. Experiences and lessons learnt from the implementation of the Project will be extremely beneficial to WMO Members in understanding expectations of WIGOS/WIS concept implementation. With Demonstration Projects carried out in other selected Member countries in all WMO Regions, it will contribute to an efficient implementation of the WIGOS concept globally.</p>
<b>Partners/Participants</b>	Moroccan Meteorological Department, Secretary of State in charge of water, Hydrologic Agencies, Universities, Private sector.
<b>Funding Sources</b>	<p>The implementation of the Project has to be cost-effective, by minimizing staff and material costs and maximizing the profit. The idea for this is to use, to the maximum possible extent, all national available human, financial and technical infrastructures. In addition, it is possible to use other government and international grants, private sector support, and a support through WMO VCP and WGOS&amp;WIS Trust Fund.</p>
<b>Overall Project Costs</b>	Estimated at being around US\$ *****
<b>Project Timescale</b>	2008 – 2011
<b>Expected Key Deliverables</b>	<p><b>Operationally available :</b></p> <ol style="list-style-type: none"> <li>(1) homogeneity, interoperability and compatibility of observations from related observation networks;</li> <li>(2) conformity of data and information generated by observation networks with a comprehensive, standardized set of WIS data</li> </ol>

	<p>presentation and exchange requirements;</p> <p>(3) conformity of various end-products generated on the basis of networks observations/measurements with Quality Management Framework requirements to ensure best possible products to be delivered to end users</p>
<b>Project Links</b>	<a href="http://www.*****">http://www.*****</a>
<b>Project Summary</b>	The project summary and progress status reports are to be provided on yearly basis, or in case of need.
<b>Date Last Updated</b>	28/03/2008
<b>Contact Person 1</b> <b>Name</b> <b>Organization</b> <b>Address</b> <b>Telephone</b> <b>Fax</b> <b>E-Mail</b>	<p>To be appointed by the Head of the Meteorological Service, to oversee activities of this Demonstration Project.</p> <p><b>NBOU MOHAMED</b></p> <p>Direction de la Météorologie Nationale</p> <p>Direction de la Météorologie Nationale BP 80106 casa oasis Casablanca Maroc</p> <p>00 212 22 911137</p> <p>0021222908593</p> <p>nboudrm@yahoo.com</p>
<b>Contact Person 2</b>	
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**WIGOS Demonstration Project of the Republic of Korea**

<b>Project Name</b>	<b>Establishment of a Common Information Infrastructure for Meteorological Observation Data</b>
<b>Acronym</b>	KMA-WIGOS
<b>Project Type</b>	Demonstration Project
<b>Project Status</b>	Active
<b>Project Overview</b>	<p>Goal: Integration and co-use of meteorological observation data produced by diverse domestic agencies</p> <p>Strategy: To achieve the goal through implementing the following three tasks in phases:</p> <ul style="list-style-type: none"> <li>• Standardization of observation environment: to implement the standards for data acquisition process;</li> <li>• Quality control of observation data: to implement QA/QC procedures recommended by WMO Technical Regulations; and</li> <li>• Co-use of observation data: to use commonly the data via internet site.</li> </ul> <p>Contents of Implementation</p> <p><u><i>Standardization of Observation Environment</i></u> To enforce the Meteorological Observation Standardization Law Role of the Korea Meteorological Administration (KMA):</p> <ul style="list-style-type: none"> <li>• technological support to other observation institutes</li> <li>• enforcement of standardization policies</li> <li>• optimization of meteorological observation network</li> <li>• establishment of common use of data via WIS</li> </ul> <p>Role of observation institutions:</p> <ul style="list-style-type: none"> <li>• standardization of observation equipment</li> <li>• production of observation data and transmitting them to KMA</li> <li>• purchase, installation and maintenance of meteorological observation equipment</li> <li>• training of observation workforce</li> <li>• regular maintenance and calibration of observation equipment</li> </ul> <p><u><i>Quality Control of Observation Data</i></u> To establish quality assurance system implementing Quality Management System for Meteorological Observational Data (QMSMOD) Target data from: AWSs; radiosondes and wind profilers; marine data buoys and light beacons; and PM10 for Asian sand and dust storms</p> <p><u><i>Co-use of Observation Data</i></u> Establishment of a Common Information Infrastructure for Meteorological Observation Data To establish a common data service system</p>

	<p>Types of infrastructure for data service: Web portal, Web to web, FTP</p> <p>Function: collection, data management and distribution of meteorological data and metadata</p> <p>Purpose: to support national disaster prevention such as prevention, protection, response, and rehabilitation of disaster by providing meteorological data and products including forecasts and early warnings</p> <p>web portal - <a href="http://metsky.kma.go.kr">http://metsky.kma.go.kr</a></p> <p>web-to-web : selective data service using XML</p> <p>data transmission via FTP</p> <p>Expected results</p> <p>To perform a Role Model for WIGOS via demonstrating to countries in Region II the integration and joint usage system of meteorological observation data produced by various domestic institutions</p>
<b>Project Aim(s)</b>	To maximize common usage of meteorological observation data and support integrated meteorological information
<b>Partners/Participants</b>	KMA, local governments, public sector, etc.
<b>Funding Source(s)</b>	Current budget of KMA and the participating institutions.
<b>Overall Project Costs</b>	Estimated around US\$3,800,000
<b>Project Timescale</b>	2008-2011 (ongoing project)
<b>Expected Key deliverables</b>	Efficient and cost-effective national observing network. National early warning and natural disaster prevention system.
<b>Project Links</b>	<a href="http://www.kma.go.kr/WIGOS/index.html">http://www.kma.go.kr/WIGOS/index.html</a> (tentative)
<b>Project Summary</b>	KMA is to provide and update the procedure of this Project implementation on yearly basis
<b>Date Last Updated</b>	07/05/2008
<b>Contact Person 1</b>	<p>Mr. Byunghyun Song</p> <p>Technology and System Policy Division</p> <p>Korea Meteorological Administration</p> <p>45, Gisangcheong-gil, Dongjak-gu, Seoul 156-720, Republic of Korea</p> <p>+82-2-2181-0694</p> <p>+82-2-836-2386</p> <p><a href="mailto:mt_pol@kma.go.kr">mt_pol@kma.go.kr</a></p>
<b>Contact Person 2</b>	<p>Mr. Se-Won Kim</p> <p>International Cooperation Division</p> <p>Korea Meteorological Administration</p> <p>45, Gisangcheong-gil, Dongjak-gu, Seoul 156-720, Republic of Korea</p> <p>+82-2-836-2385</p> <p>+82-2-836-2386</p> <p><a href="mailto:ksw@kma.go.kr">ksw@kma.go.kr</a></p>

**WIGOS Demonstration Project of Brazil**

<b>Project Name</b>	<b>System for Meteorological Information and Quality Control</b> Centro de Controle da Informação Meteorológica
<b>Acronym</b>	CCIM – II
<b>Project Type</b>	Demonstration Project in RA-III, Brazil
<b>Project Status</b>	Phase I of the system implemented and functioning. Review the specification for the second phase to meet WIGOS requirements
<b>Project Overview</b>	The project started as a tool to control the status of INMET's observing network, including communication links, installation and maintenance teams. The idea is to include in phase II of the system additional specifications to meet WMO developments and guidance, such as standard catalog of products, availability of metadata to server DAR requirements. New types of data will be included on the data bank.
<b>Project Aim(s)</b>	Review the specifications with the view of the WMO future developments of WIGOS and WIS.
<b>Partners/Participants</b>	National Meteorological Institute (INMET) and a partner private company
<b>Funding Source(s)</b>	Government budget allocated to INMET
<b>Overall Project</b>	Estimated at US\$ 1.5 million
<b>Project Timescale</b>	2009 – 2011
<b>Expected key Deliverables</b>	Operationally available by 2011  (1) Control the status of the observational network (2) control the status of the communication links (3) data bank synchronization (4) standard metadata (5) automatic meteorological product generation (6) monitoring tools (7) development under free software solution (8)
<b>Project Links</b>	Not available at the moment
<b>Project Summary</b>	To be translated from Portuguese
<b>Date Last Updated</b>	May 2008
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## **WIGOS Demonstration Project of the United States of America (USA)**

### **PROJECT NAME**

United States of America/RA IV-WIGOS Demonstration Project for an Integrated Atmosphere Observing System

### **ACRONYM**

WDP-IAOS

### **PROJECT TYPE**

Demonstration Project, Regional

### **PROJECT STATUS**

Development/Active

### **PROJECT OVERVIEW**

The WMO Integrated Global Observing Systems (WIGOS) is a comprehensive, coordinated and sustainable system of observing systems. WIGOS is based on all WMO Program's observational requirements and ensures availability of required information and facilitates access by the WMO Information System (WIS). WIGOS includes four broad objectives: i) improve management and governance of component systems; ii) increase interoperability between the various systems; iii) address atmospheric, oceanic and terrestrial/hydrological domains; and, iv) ensure that broader governance frameworks and relationships with other international initiatives are sustained and strengthened.

The proposed US/RA IV WIGOS Demonstration Project (WDP) endeavors to build an Integrated Atmosphere Observing System (IAOS) with enhanced interoperability features through the integration of various component systems representing surface-based upper-air observations such as rawinsondes, airborne observations including AMDAR from RA IV Member countries, and space-based observations derived from satellite soundings. Interoperability will be facilitated through metadata catalogues and archival sites consistent with evolving WIS architecture. The Project will be developed in an incremental manner. The goal of the WDP-IAOS is to provide the means to access and integrate, in a relatively transparent manner, data from a variety of atmosphere observing platforms to provide a volumetrically consistent set of basic kinematic and thermodynamic variables of the atmosphere over both terrestrial and marine environments with ensuing improvements to Numerical Weather Prediction. The Project can also be considered a step towards implementing GEOSS.

Important aspects of the WDP-IAOS include development of metadata catalogues across RA IV, ensuring a common information infrastructure consistent with WIS plans for data (and products) generated by the IAOS, and quality assurance. To steer and monitor integration activities, a Rolling Review of Requirements mechanism, as stipulated in the Manual on the GOS (WMO-No. 544) will be applied. Further, the WDP will be a constituent component of the WIGOS Development and Implementation Plan. NOAA's National Weather Service (NWS) will take the lead and work with RA IV Members to further develop the WDP-IAOS concept recognizing specific needs of the Region, but also considering the broader Regional interests.

### **PROJECT AIMS**

The proposed WDP-IAOS will assess issues appropriate to the development of a regional capacity to integrate observations from various atmosphere observing platforms such as rawinsonde, AMDAR, wind profilers, Doppler radar, satellite (vertical profile and occultation), RF attenuation (GPS-Met) and other emerging sensing systems. The Project will consider national and regional requirements in the design of enhanced interoperability features through the integration of the various component observing systems and the establishment of appropriate information management architecture consistent with WIS goals. The proposed WDP-IAOS will consider the results of the assessments and feasibility studies to commence a phased

implementation of the demonstration project within the scope of current and planned WIGOS and WIS-related programs and available national budgets.

### **PARTNERS/PARTICIPANTS**

The NOAA National Weather Service is the lead partner for the proposed WDP-IAOS. We will work with Member NMHSs of WMO's Regional Association IV (North America, Central America and the Caribbean) to accomplish this Regional WDP. We will engage various national and regional institutions and the private sector as appropriate.

### **FUNDING SOURCES**

The Regional WDP will rely on current and planned budget allocations at the national level to implement the WIGOS framework and WIS infrastructure. The Project will build on existing national and regional observing systems and information management infrastructure. Extraordinary budget resources will be considered and sought when and where necessary to advance the implementation of specified aspects of the WDP, particularly at the regional level.

### **OVERALL PROJECT COSTS**

To Be Determined

### **PROJECT TIMESCALE**

We envision an approach involving assessments and feasibility studies followed by a phased implementation. The availability of the basic elements of the WDP-IAOS will be determined as the project's implementation plan is developed.

### **EXPECTED KEY DELIVERABLES**

Key deliverables and timelines will be defined upon completion of the phased implementation plan. The intent of the Demonstration Project is improved use of atmospheric sensing resources throughout the Region (WIGOS component) and to improved access to atmospheric data for both operational and research purposes (WIS component). The defining characteristics include:

- (1) homogeneity, interoperability and compatibility of observations from related atmosphere observation platforms;
- (2) conformity of data and information generated by the atmosphere observing systems with comprehensive, standardized set of WIS data presentation and exchange requirements;
- (3) conformity of various end-products generated on the basis of the atmosphere observations/measurements with Quality Management Framework requirements to ensure best possible products available to users.

### **PROJECT LINKS**

Not established at this time

### **PROJECT SUMMARY**

Not available

### **CONTACTS**

US, Members of RA IV, Secretariat

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**Demonstration Project: Implementing a Composite Observing System**

<b>Project Name</b>	WIGOS Demonstration Project – Australia / RA V – Implementing a Composite Observing System
<b>Acronym</b>	WDP ImpCOS
<b>Project Type</b>	Demonstration Project (within Regional Association V)
<b>Project Status</b>	In progress
<b>Project Overview</b>	<p>The implementation of a Composite Observing System model is currently underway in the Australian Bureau of Meteorology. In earlier approaches, new technologies and new sources of observations tended to be adopted as supplementary and additional to existing core observing methods. The new model requires a genuinely integrated and balanced mix of surface based and space based observations with an emphasis on automation, new technology and access to observations from external sources. This integration must be tackled at each of the three WIGOS integration levels to ensure standardisation of instruments and methods of observation, common information infrastructure, and end-product quality assurance. Similarly, it is important to achieve an integrated approach at what may be considered a fourth level and that is the assessment of requirements leading to national network planning and design.</p> <p>This project will document the processes followed in pursuit of an integrated Composite Observing System and the experiences gained to date and over the coming three years as implementation progresses. It may be possible, through collaboration with other NMHS, to provide a comparative assessment of experiences with those of other Member countries.</p>
<b>Project Aim(s)</b>	<p>The aims of the project are to:</p> <ol style="list-style-type: none"> <li>1. document the process and experiences of the Australian Bureau of Meteorology in developing and planning for the implementation of a Composite Observing System. This includes working with users to assess requirements, a review of the existing national Observing System, assessment of its adequacy in meeting current and future requirements, identifying future opportunities, prioritizing, then deciding a strategy matched to available resources;</li> <li>2. review and document the implementation of a Composite Observing System strategy, including the translation from plan to reality, the extent to which the strategy provides a robust basis for tackling budget compromises and system/output/methodology/user decision points, and the effectiveness and sustainability of the outcomes;</li> <li>3. resulting from the above, to demonstrate to Member countries of WMO the feasibility of sustaining a highly integrated Composite Observing System including an integrated view of user requirements, an integration of observations from many sources inside and outside the NMHS, and an integration of observations from different technologies with a range of characteristics.</li> </ol>
<b>Partners/Participants</b>	Australian Bureau of Meteorology; collaborating NMHS (TBA)
<b>Funding Source(s)</b>	This project will rely on existing budget allocations at the national level. Additional funding may need to be sought to facilitate some elements such as collaboration with other NMHS.
<b>Overall Project Costs</b>	To be determined

<b>Project Timescale</b>	2008 – 2011
<b>Expected Key Deliverables</b>	<p>ImpCOS will produce an initial report on process and experiences in early 2009, followed by a number of progressive status reports up until late 2011. Further details to be developed in an implementation plan for ImpCOS.</p> <p>The deliverables resulting from the implementation of the Bureau's Composite Observing System (BCOS) include:</p> <ol style="list-style-type: none"> <li>(1) homogeneity, interoperability and compatibility of observations from related components;</li> <li>(2) conformity of data and information generated by BCOS with a comprehensive, standardized set of WIS data presentation and exchange requirements;</li> <li>(3) conformity of various end-products generated on the basis of BCOS observations/measurements with Quality Management Framework requirements to ensure best possible products to be delivered to end users.</li> </ol>
<b>Project Links</b>	To be advised
<b>Project Summary</b>	To be advised
<b>Date Last Updated</b>	05/Nov/2008
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