

WORLD METEOROLOGICAL ORGANIZATION

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EXECUTIVE COUNCIL WORKING GROUP ON

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THE WMO INTEGRATED GLOBAL OBSERVING SYSTEM (WIGOS)
AND
THE WMO INFORMATION SYSTEM (WIS)

FIRST SESSION

ITEM: 3.4

GENEVA, 4– 7 DECEMBER 2007

Notes on a Global Hydrological Network

(Submitted by the President of Commission for Hydrology)

Summary and Purpose of Document

The document presents background information and explains some specific features of Hydrological network integration into WIGOS. It contains information on major planned CHy events where Integration aspects will be further discussed and current CHy recommendations on the adoption and implementation of a candidate Pilot Project under the over-arching WIGOS Development and Implementation Plan.

ACTION PROPOSED

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

Reference: Cg-XV, PINK 7.4(3), Evolution of NMHSs and WMO, Towards Enhanced Integration between the WMO Observing Systems.

TOWARDS ENHANCED INTEGRATION BETWEEN THE WMO OBSERVING SYSTEMS

Commission for Hydrology Notes on a Global Hydrological Network

Background

1. This note has been developed in response to the recommendations contained in Cg-XV, PINK 7.4(3), Evolution of NMHSs and WMO, Towards Enhanced Integration between the WMO Observing Systems.

2. In discussing this topic, Congress envisaged that the integration process should encompass four broad objectives:

- (a) Improving management and governance (use of resources, planning, institutional and programme structures, and monitoring);
- (b) Increasing interoperability between the various systems with particular attention given to the complementarity between the space-based and *in-situ* components of the systems;
- (c) Addressing the domains (atmospheric, oceanic and terrestrial including hydrological) as a comprehensive total system;
- (d) Ensuring that broader governance frameworks (e.g. inter-agency co-sponsorship of systems) and relationships with other international initiatives (e.g. GEO) are respected, sustained and strengthened.

3. The Commission notes that Congress appreciated that integration would offer the opportunity for including hydrological networks in that process, thus allowing WMO to more effectively respond to climatological requirements, as expressed, for example, through the GCOS implementation plan, and to contribute to the broader environmental concerns regarding global fresh water resources.

4. The Commission also notes that Congress agreed further that the integration process would centre initially upon the preparation of an over-arching Development and Implementation Plan. The plan should be kept up-to-date through a "rolling review" mechanism. It should also serve as the source of information on the integration initiative for all Members and in particular the developing countries. 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. 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.

Discussion

5. The Commission for Hydrology (CHy) supports this initiative and believes that the focus in the initial stages should be on objectives (a) and (b), with (c) and (d) taken into consideration as we progress forward. In any specific case, it is essential that activities and studies be needs driven and involve consultation amongst all stakeholders.

6. With respect to GCOS, CHy notes that there is an existing process for the involvement of NHSs through the GCOS Implementation Plan. While the Integration of WMO Observation Systems activities also provide an opportunity to address such issues, care needs to be taken not to introduce duplication of efforts and a clear and concise understanding of the benefits to be achieved and linkages must be established. Therefore as suggested above, all related activities should be taken into consideration when establishing initiatives aimed at improving management and governance of observational systems and increasing interoperability between the various systems (need certain clarification).

7. In this regard, it must be recognised that there have been numerous attempts to establish international hydrological networks in the past which have in large been unsuccessful. This has been primarily because, unlike meteorological networks, hydrological networks are decentralised, have largely been operated at the local/regional level and meet local and regional needs for water resources management. Therefore, the information collected is not directly relevant beyond basin boundaries and often not even national issues or to global issues. Accordingly, the results of setting such networks have been dismal due to lack of national support for such efforts. Furthermore, the proponents for a "global system" have in the main been unable to either convince the data suppliers/providers of the need for/benefits of such information and also been unable to define their requirements in terms that the suppliers/providers can address.

8. One specific example of this is the WHYCOS program, which from 1992 to 2004 failed to gain the internal support of the countries themselves and also failed to convince the financial institutions of the benefits of such an initiative. As such, after a review undertaken under the direction of Cg-XIV, the focus of WHYCOS projects has now moved from supporting an international data collection effort to improving data and information at regional/national levels (that is the focus of Objectives (a) and (b) above). If a global hydrological observing system is required, it will be essential that we garner the support of the NHSs and are able to clearly elucidate our requirements.

9. One key aspect is the fact that hydrological data, while collected at a point, are the result of processes that have occurred upstream and are not necessarily representative of the other areas around them, nor necessarily of the information that may be collected further downstream. They may or may not have been influenced by various other factors over time, including land-use change, river regulation, and of course climate variability and change. They are likely to be subjected to larger changes through river regulation, including major storages, irrigation schemes and river diversions. The above conditions make the concept of global/spatially consistent hydrological data a difficult concept or objective to achieve in a realistic and sensible manner.

10. In order to engage the NHSs, we need to get them onboard from the beginning and be able to convince them of the benefits of contributing their information. The same challenge exists for many national groups who rely on state/regional groups for hydrological information. Therefore, it will be essential for any proposal to be examined, reviewed and supported firstly by the CHy AWG and then secondly by CHy to get all of the Member countries supportive and keen to contribute. We have perfect opportunities to do this over the next twelve months with the AWG meeting in February 2008 and then CHy in late 2008.

11. The above said, there is a current project that is also attempting to identify a global hydrological network. The Hydrological Applications and Run-Off Network (HARON) Project has been developed jointly between the HWRD and GEO Secretariat over the past six months. This project, if successful, will address the GCOS requirements.

12. The HARON project will be introduced to the CHy AWG in February 2008 and, if approved, form an important element of the planned Program of Work to be taken to CHy-XIII in late 2008. However, it must be stressed that the priority to be placed on this activity and the availability of resources to be allocated to activities involved will be up to the members of CHy.

Recommendations

13. CHy recommends that EC Working Group on WIGOS:

- (a) Notes the support of CHy for the WIGOS Initiative and in particular the Congress endorsed broad objectives (a) and (b);
 - (b) Notes the fundamental requirement to both justify the need for a global hydrological network and to adequately define the purposes for which it is to be used and the specific characteristics for the hydrological information required;
 - (c) Notes that the full support of the NHSs will be essential for any pilot project to be successful;
 - (d) Notes that past attempts to establish global hydrological networks have, in large, met with failure; and
 - (e) Notes that in order to meet the above broad objectives, test the integration concept and identify the problem areas so that a correct assessment of the feasibility of hydrological networks in the Integrated WMO Observing Systems can be made, it would be useful to adopt a project that is developed jointly and not separately by various programs.
 - (f) Agrees to the HWRD progressing the HARON proposal through the CHy AWG and CHy-XIII as the response to the request for a "possible candidate Pilot Project" under the over-arching Development and Implementation Plan; and
 - (g) Agrees to assist with the mobilisation of resources to support the initiatives planned under the over-arching Development and Implementation Plan.
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