



COMMISSION D'HYDROLOGIE

BUREAU DU PRESIDENT

COMMISSION FOR HYDROLOGY

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Our ref.: CLW/HWR/CHy

GENEVA, 17 December 2008

Annex: 1

First Circular Letter

Dear member of the Commission for Hydrology (CHy),

The thirteenth session of the Commission for Hydrology was held in Geneva from 4-12 November 2008. The session was attended by 117 delegates from 52 countries representing National Hydrological and Meteorological services along with representatives of 14 International Organizations.

Several items from the agenda were released for pre-session discussion and these attracted some additional 78 participants and provided valuable input to the discussions at CHy-XIII. Also, a new approach to the documentation was put in place and this included keeping the reports on past activities as information papers and having the documents focus on decision required associated with the activities to be undertaken in the next intersessional period. This meant that discussion was more focused and all delegates contributed significantly to the decisions made.

1. Report on Past Activities

The report on Past Activities can be found at:

http://www.wmo.int/pages/prog/hwrp/chy/documents/Report_past_activities.pdf

2. Election of Officers

The Commission for Hydrology unanimously re-elected Mr Bruce Stewart (Australia) president and Mr Julius Wellens-Mensah (Ghana) vice-president for the next intersessional period.

3. Voluntarism

As a result of the discussions on the report by the president of CHy and the reports of the AWG members, the session considered the issue of volunteerism in the work of the Commission. It was stressed that voluntary contributions from experts form the mainstay of its success and encouraged Members to facilitate their participation in the activities of CHy. The Commission expressed its gratitude to the experts who had provided their valuable inputs in completing various activities during the intersessional period.

To: Members of the Commission for Hydrology (CHy-190)

4. Adoption of Quality Management Framework for Hydrology

The Commission through Resolution 1 (CHy-XIII) adopted the Quality Management Framework - Hydrology under Annex 1/2 and included the relevant activities required to be undertaken in its work programme (Resolution 7 (CHy-XIII)). It emphasized that the WMO QMF-Hydrology when formulating Best Technical Practices (BTPs) should make use of approaches that have been developed by other organizations, including the International Organization for Standardization (ISO). To facilitate the development of TGDs, WMO signed an agreement with the ISO, which included the subject of hydrometry, for the development of common standards. Furthermore, the Commission recommended that the AWG consider the establishment of a policy for the systematic review of the Technical Guidance Documents (TGDs).

The Commission expressed the desire that its members be periodically updated on the advances made in the relationship with ISO and the development of common TGDs. The Commission also urged its Members to become engaged with ISO national counterpart agencies for the development of standards of importance to NHSs. It also requested that members should be periodically updated on the progress made in the development of QMF-Hydrology.

Peer Review Process

With the adoption of a QMF-Hydrology, the Commission decided that the publications brought out as technical guidance to the members should undergo a comprehensive peer review process before they were recommended for adoption as tools for the QMS. Therefore, the Commission adopted an updated peer review process for these publications as given in Annex 2/2 of Resolution 1 (CHy-XIII). It expressed the need for assigning one of its AWG members to deal with publications and to review the required standard reporting form and notes for reviewers in line with this new resolution.

Concept of mandatory publications

According to the Resolution 26 (Cg-XV) on the Publications Programme for the fifteenth financial period, the publications of the Organization generally fell into two broad categories:

- (a) Mandatory publications, defined by the Convention of the World Meteorological Organization, the General Regulations or by specific decisions of Congress, for which funds were provided directly under the Publications Programme; and
- (b) Programme-supporting publications, such as WMO technical notes, World Weather Watch planning reports, operational hydrology reports, marine science affairs reports, special environmental reports and the WMO blue training series, for which funds were provided under the relevant scientific and technical programmes.

The Commission deliberated on the issue in view of the WMO QMF and considered it necessary to review this classification, which was made primarily on the basis of funding for the publication and made recommendations accordingly.

Preparation of standards

The Commission agreed that NMHSs should participate in ISO activities through their appropriate national channels and assist WMO in the development of common standards with ISO.

Adopt an uncertainty analysis

Recognizing that there are uncertainties associated with the hydrological processes and the impossibility to completely eliminate these uncertainties in relation to both data and products, the Commission requested the AWG to follow through on the evaluation of uncertainty analysis

frameworks and compilation of papers which provide information on the limitations/uncertainties associated with products, such as hydrological forecasts.

5. Assessment of the Performance of Flow Measurement Equipment

A project targeted at the assessment of the performance of flow measurement equipment would encourage and solicit testing by contributing NHSs of new instrumentation and methodologies. The project, endorsed by the Commission through Resolution 2 (CHy-XIII), would seek loans of instrumentation and/or funding from instrumentation manufacturers and contributions from NHSs of personnel, equipment and test facilities in order to test newer instrumentation and methodologies identified by the contributing NHSs. Contributing NHSs would participate in writing and reviewing test plans, and contributing manufacturers would participate in reviews of test plans. In special cases, the WMO may consider providing supplementary funding for testing by a NHS of new methodologies for discharge measurement. Contributing NHSs would provide their written test results. Manufacturers and NHSs would contribute to an independent-peer review of results. Test results, including uncertainty analyses, would be disseminated on the project Website and would be used to help develop WMO measurement standards for existing and newer technologies and methodologies.

6. ICTT (CHy, CBS, CCI, CIMO) to implement FFI

Through Resolution 3 (CHy-XIII), the Commission decided to supplement the Strategy and Action Plan on the Flood Forecasting Initiative with a detailed activity plan that will assist Members in establishing flood forecasting systems and to explore the possibility of establishing an Inter-Commission Task Team comprised of representatives of CHy, CBS, CCI and CIMO for the implementation of FFI.

7. Assist setting up a HelpDesk for flood management

The Commission also decided through Resolution 3 (CHy-XIII) to assist in the setting up of a HelpDesk for Integrated Flood Management for the benefit of Members in the areas of flood management policy and strategy, and capacity building in support thereof.

8. Hydrological drought prediction (CAgM, CCI, CHy)

The Commission expressed the need for developing seasonal to annual hydrological predictions for monitoring droughts and establishing best practice guidelines for drought monitoring. It noted that the Commission for Agrometeorology (CAgM) which is charged with the activities of drought management and prediction has established a group on Drought Management. The Commission saw merit in closely collaborating with CAgM and CCI to work towards developing tools and best practices guidance for hydrological drought monitoring and prediction.

9. Strengthen GTN-H to provide climate related hydrological data

Through Resolution 4 (CHy-XIII), the Commission recommended to further strengthen activities undertaken by GTN-H and other relevant CHy initiatives in support of the adequate provision of climate-relevant hydrologic data and information for climate research and applications, and in support of adaptation to climate variability and change in the water sector.

10. Hydrological information in support of hydrology and climate research

The Commission decided that it should actively participate in the development of the WMO Initiative to encourage provision and dissemination of climate and hydrological information in support of hydrology and climate research, adaptation to climate change and climate variability and in providing feedback from the water community.

11. RAs incorporate point of view of WMO by community in development of Strategic Plan

Through Recommendation 1 (CHy-XIII), the Commission encouraged the WMO hydrological community to take every opportunity to provide prioritized proposals and suggestions to the formulation of the Strategic Plan for the period 2012-2015, for example through the deliberations of other WMO bodies such as Regional Working Groups on Hydrology and regional associations.

12. Appreciated progress on WHYCOS

The Commission expressed satisfaction with the significant advances made in the establishment of new and delivering of existing HYCOS projects in the various regions and the impact on strengthening NHSs capacities. The Commission noted that the approach adopted, that is focusing not only on the strengthening of the networks but on the needs of the basin or the region, combined with the overall capacity development of NHSs in various hydrological aspects has played a major role in attracting financial partners. It noted also that WMO should continue collaboration and cooperation with potential stakeholders and donors to develop new HYCOS projects and support the existing ones in order to contribute to the improvement of water resources assessment, hydrological forecasting, adaptation to climate variability and change and water resources management capabilities in the various basins.

13. INFOHYDRO

The Commission urged Members to make special efforts to complete the information required in the INFOHYDRO, as only the comparison of a reasonably wide spectrum of responses covering NHSs from all WMO Regions and at different levels of development will contribute to a correct assessment of the status of hydrological networks around the world. This in turn will help the Commission and the Secretariat to draw a strategy and advocacy for strengthening the hydrological networks.

14. Review of the Strategy on Education and Training in Hydrology and Water Resources

The Commission decided that the revised WMO Strategy on Education and Training in Hydrology and Water Resources, contained in Annex 1 to Resolution 5 (CHy-XIII), should guide the activities of the Organization in education and training on hydrology and water resources for the period 2009-2012. The wish expressed by the AWG was to move to a more integrated, focused and proactive approach in education and training in HWR.

15. Delegated to AWG to develop future of HOMS

The Commission also decided through Resolution 5 (CHy-XIII) to ask the AWG to develop, by December 2009, a Course of Action, with timelines, for the proposed changes to HOMS, taking into consideration the Alternative Approaches to the future of HOMS.

16. Position papers on blended learning techniques

The Commission also requested the AWG to prepare a position paper on distance and blended learning techniques applied to Hydrology and Water Resources that would draw on the experience gained thus far in the HWRP to propose a future course of action in this area.

17. Pilot project on "Initiation of Global Network addressing GCOS requirements"

The Commission considered the request of the EC Task Team on Integration of the WMO Observing Systems to undertake the pilot project on "Initiation of Global Network addressing a

GCOS requirement". Through Resolution 6 (CHy-XIII), it decided to identify a package of approaches to address this requirement, and directed the AWG to develop components of such a package. This package would include a clear articulation of scientific questions and purposes, to include other related initiatives such as Prediction in Ungauged Basins (PUB) and WRCP/GEWEX, and WHYCOS. In addition, it would include or explore other approaches such as geostatistical approaches to provide relevant data and information to address these scientific questions and purposes. The Commission stressed that data and information resulting from this package or activities should be shared with all the interested parties.

18. AWGs and GCOS review the data exchange requirements at regional and global levels

The Commission also encouraged Members to regularly exchange data at regional and global levels to support regional and global research, under conditions such as those specified by Resolution 25 (Cg-XIII).

19. WIS pilot project

Through Resolution 6 (CHy-XIII), the Commission decided to take advantage of the WMO Information System (WIS) for the information flows and associated metadata under the Flash Flood Guidance System and to develop a WIS Pilot Project with the Pacific-HYCOS project and/or any other HYCOS projects.

20. OPACHEs

Through Resolution 7 (CHy-XIII), the Commission re-established its Open Panels of CHy Experts (OPACHEs) and urged Members to nominate additional experts to OPACHEs and to facilitate the voluntary contribution of all members of the OPACHEs to the activities of the Commission.

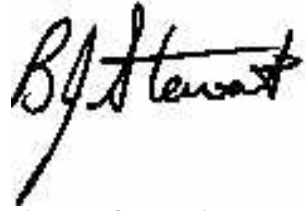
21. Composition of the AWG

The Commission also, through Resolution 7 (CHy-XIII), established its Advisory Working Group and adopted its programme of work for the period 2009-2012 (see Annex). The Advisory Working Group includes:

Position	Name	Country
President	Mr Bruce Stewart	Australia
Vice-president	Mr Julius Wellens-Mensah	Ghana
Member responsible for		
Water Resources Assessment	Ms Jeanne Balonishnikova	Russian Federation
Hydrological forecasting and prediction	Mr Zhiyu Liu	China
Hydrological forecasting and prediction	Mr Guido Van Langenhove	Namibia
Water, Climate and Risk Management	Ms Ann Calver	UK

Quality Management Framework – Hydrology	Mr Harry Lins	USA
Quality Management Framework - Hydrology	Ms Zsuzsanna Buzás	Hungary
WIGOS and WIS	Mr Antonio Cardoso Neto	Brazil

Yours sincerely,

A handwritten signature in black ink, appearing to read "Bruce Stewart". The signature is written in a cursive style with a long, sweeping underline.

(Bruce Stewart)
President
Commission for Hydrology

CHy DRAFT PROGRAMME OF WORK 2009-2012

Theme Areas

The Programme of Work of the Commission for Hydrology will focus on the following four theme areas that fall under the mandate of WMO:

- 1. Quality Management Framework – Hydrology (QMF-Hydrology);**
- 2. Water Resources Assessment;**
- 3. Hydrological Forecasting and Prediction;**
- 4. Water, Climate and Risk Management.**

The activities under each of the Theme Areas are listed below in the order of priority. While developing these activities the cross-cutting issues mentioned at the end of this Annex shall be taken into account. Contribution of the outcomes within each theme area to WMO's Expected Results (ERs) is also identified.

Theme Area 1: Quality Management Framework – Hydrology (QMF-Hydrology)

List of activities

- (a) Finalize the preparation of the Manual on Water Quality Monitoring (ensuring that guidance on relevant data transmission technology is included);
- (b) Preparation and publication of guidance material on the definition and implementation of a Quality Management System (QMS) for NHSs;
- (c) Review of material for the *Technical Regulations* (WMO-No. 49);
- (d) Undertake a project to assess the performance of flow measurement instruments and techniques against WMO standards based on the project proposal developed during the previous intersessional period;
- (e) Develop standards, formats and protocols for data transfer;
- (f) Monitoring advances and assist in the development of new technologies for Hydrometric Monitoring;
- (g) Prepare a Manual on Design Flood Estimation;
- (h) Prepare guidance material on the effect of weed growth and ice effects on flow measurement and rating curves;
- (i) Prepare a Manual on monitoring of glacier and snowfields;
- (j) Preparations for an International Conference on Hydrometry.

Expected outputs/outcomes – Contribution to ERs 3, 4

- (a) An agreed QMS for NHSs;
- (b) CHy *Technical Regulations* that are up to date and relevant to the roles and responsibilities of NHSs;
- (c) Improved understanding of the quality and performance of flow measurement instruments and techniques;
- (d) Additional guidance material for NHSs in the areas of water quality monitoring, discharge measurement and design flood estimation;
- (e) Identification (hardware) and development (software) of technology to support the required needs of NHSs in hydrometry, including discharge measurement and estimation;
- (f) Standards, formats and protocols for the transfer of hydrological data and information.

Theme Area 2: Water Resources Assessment

List of activities

- (a) Finalize the preparation of the Manual on Water Resources Assessment (ensuring that it addresses the Groundwater/Surface Water interface, use of remote sensing and modelling, application to protected areas, other available relevant material and is cross-referenced to the UNESCO/WMO Manual) (a contribution to the QMF-Hydrology);
- (b) Provide input to the development of improved aeral estimation of evaporation and evapo-transpiration (in cooperation with CCI) and soil moisture;
- (c) Prepare guidance material on the current status of network design and optimization, including the use of modelling;
- (d) Prepare an Information Note on ecological flow requirements and ecological assessment, taking into account the activities of other groups;
- (e) Prepare guidance material on the current status of estimation of snow water equivalent.

Expected outputs/outcomes – Contribution to ER 3

- (a) Provision of NMHSs with tools and techniques for the assessment of their water resources (both surface and groundwater) in support of sustainable management of the resource;
- (b) A Manual on Water Resources Assessment;
- (c) Increased effectiveness of CHy activities through appropriate cooperation and coordination of activities with other relevant groups and agencies;
- (d) Improved estimates of evaporation and evapo-transpiration, soil moisture and snow water content;
- (e) Improved guidance for Network Design.

Theme Area 3: Hydrological Forecasting and Prediction

List of activities

- (a) Finalize the preparation of the Manual on Flood Forecasting (a contribution to the QMF-Hydrology);
- (b) Promote capacity building in the use of Manual on Low Flows
- (c) Provide advice and support to the projects related to the Flash Flood Guidance System (FFGS) and PROHIMET taking account of other initiatives in the area;
- (d) Provide advice on and monitor the development and application of the Global Flood Alert System;
- (e) Assess the use of Advanced Numerical Weather Prediction (NWP) to improve flood forecasting (e.g. through case studies);
- (f) Prepare guidance material on seasonal flow forecasting – including quantifying uncertainties (in association with Water, Climate and Risk Management theme);
- (g) Review the current status of and provide guidance material on Quantitative Precipitation Estimation (QPE), Quantitative Precipitation Forecasting (QPF) and probabilistic Quantitative Precipitation Forecasting (pQPF);
- (h) Prepare guidance to undertake an inter-comparison related to the use of operational flood forecasting models (taking account of previous exercises);
- (i) Provide advice and guidance on relevant hydrological risk management issues.

Expected outputs/outcomes – Contribution to ERs 3, 6

- (a) Improved flood forecasting and low flow forecasting capabilities for NMHSs through new techniques and better assimilation of available data into hydrological models;
- (b) A coordinated and cooperative effort amongst modellers (in NMSs and NHSs) to work together in the interests of developing an effective and technologically sound and robust flood forecasting methodology (incorporating QPE and QPF);

- (c) Assistance to, and guidance in, disaster mitigation and risk management in support of the role and responsibilities of NMHSs;
- (d) Increased effectiveness of CHy activities through appropriate cooperation and coordination of activities with other relevant groups and agencies.

Theme Area 4: Water, Climate and Risk Management

List of activities

- (a) Complete the identification of climate sensitive stations and analysis of their data (including obtaining the data (with the assistance of the GRDC) and undertaking the trend detection studies);
- (b) Prepare guidance material on the potential use of the current capabilities in regional climate modelling (RCM) for water resources assessment and management;
- (c) Promote data rescue activities;
- (d) Contribute to the guidance material on seasonal flow forecasting (liaise with hydrological forecasting and prediction theme) – including quantifying uncertainties;
- (e) Prepare guidance material on the climate information requirements of water resources managers for operations, long-term planning and design;
- (f) Prepare guidance material on drought forecasting and indices – including quantifying uncertainties;
- (g) Prepare guidance material for factoring transient climates, non-stationary nature of data sets and uncertainty analysis in the estimation of design floods.

Expected outputs/outcomes: Contribution to ER 7

- (a) An agreed international network of climate sensitive river basins;
- (b) Statistically sound and relevant studies of trends in hydroclimatological data for input to decision-making activities associated with sustainable water resources management and disaster mitigation;
- (c) Improvements in the guidance available to both the climatological and hydrological communities in regard to both the potential capabilities of climate modelling (seasonal and decadal) and the hydrological requirements for climatological information;
- (d) Improved guidance material and inputs to drought monitoring and management;
- (e) Increased effectiveness of CHy activities through appropriate cooperation and coordination of activities with other relevant groups and agencies.

Cross-cutting Issues

While developing the Programme of Work, a number of cross-cutting issues will be taken into account. While implementing the programme activities these cross-cutting issues would have to be kept in view:

- (a) *Transboundary River Basins/Aquifers*
Transboundary River Basins and/Aquifers were identified as a key applications area for many of the activities proposed. For example, Water Resources Assessment methodologies must be able to address the Groundwater/Surface Water Interface, monitoring systems must be designed with transboundary issues in mind and flood forecasting systems must be able to operate in transboundary river basins.
- (b) *Methods for data-sparse areas*
Methodologies that will be applicable in data-sparse area must be identified and included under many of the theme areas, for example water resources assessment, flood forecasting, seasonal flow forecasting etc.

- (c) *WHYCOS*
WHYCOS addresses cross-cutting topics as all HYCOS projects cover activities related to data collection and transmission, development of information systems that provide specific services/products and knowledge on Water Resources Assessment, hydrological forecasting, flood management and IWRM. Activities under each of the theme areas assist in general in the development of material in support of the WHYCOS projects. They form the main vehicle for both human and infrastructure capacity development in NHSs.

 - (d) *Capacity Building*
Capacity Building is a key Expected Result of all activities in the CHy Programme of Work and as such all activities would contribute to Capacity Building initiatives across all theme areas.

 - (e) *Socio-Economic and Ecological Benefits of Hydrological Services*
Each of the theme areas will have different economic benefits and members should look for opportunities to contribute to the identification of relevant material for valuation of the economic benefits of the hydrological services in these areas.
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