

COMMISSION D'HYDROLOGIE

COMMISSION FOR HYDROLOGY

BUREAU DU PRESIDENT

OFFICE OF THE PRESIDENT

Téléphone: Int'l + (613) 9669 4179
Facsimilé: Int'l + (613) 9669 70 71
E-mail: b.stewart@bom.gov.au

Climate, Consultative and Hydrological services Branch
Bureau of Meteorology
GPO Box 1289K
MELBOURNE, Vic. 3001
Australia

7263-05/HWR/C

GENEVA, 5 August 2005

PROGRAMME OF WORK OF THE COMMISSION FOR HYDROLOGY

Dear OPACHE member,

Firstly, let me thank you for your nomination to be involved in the work of the World Meteorological Organization Commission for Hydrology for the next intersessional period 2005-2008.

At the twelfth meeting of the Commission for Hydrology, held in Geneva, 20-29 October, the Commission, through Resolution 1, established an Advisory Working Group (AWG) comprising nine members. The Commission also agreed to the establishment of five Open Panels of CHy Experts (OPACHEs). You can see the Terms of Reference of each individual OPACHE in the CHy website <http://www.wmo.int/web/homs/chy.html>, where you can also find the CHy-XII final report, which contains all the pertinent details.

The five agreed OPACHE groups (with the AWG member responsible) are:

Basic systems (hydrometry and hydraulics) – Paul Pilon
Water resources assessment and water use – Ann Calver
Hydrological forecasting and prediction – Jian-Yun Zhang
Disaster mitigation – floods and droughts (hydrological aspects) – Siegfried Demuth
Analysis of hydroclimatological data for variability and trends – Harry Lins

Attachment A to this letter contains the contact details of the five AWG members responsible for an OPACHE.

In March 2005, the AWG held its first session in Geneva and each of the members of the AWG compiled a work plan outlining the activities they will be undertaking over the next four years to perform the work of the Commission. In undertaking these activities, the AWG members with OPACHEs specifically related to their topics will seek input and support from the members of the OPACHEs. Attachment B contains the list of members of each OPACHE.

The purpose of this letter is twofold:

- To inform you that you have been appointed to the OPACHE group/s as per Attachment B and to invite you to identify particular activities to which you would be able to contribute.

To: Members of the Commission for Hydrology Open Panels of CHy Experts (OPACHEs)

- If your name appears in Attachment B with an asterisk, this indicates that the WMO Secretariat has not yet received the concurrence of the Permanent Representative of your country with your nomination as CHy expert, and I remind you that in order to make your membership in the OPACHEs official, this is a necessary prerequisite.

While addressing all of the activities requested by the Commission, the AWG members will be, over the next 6-12 months, focussing on the following activities:

Basic systems (hydrometry and hydraulics) – Paul Pilon

- a) An intercomparison of Hydrological Information Systems (HISs)
- b) Compilation of a Manual on Streamgauging
- c) Further development of the Automated Hydrometric Data Production software

Water resources assessment and water use – Ann Calver

- d) Scoping the purpose and content of guidance for Water Resources Assessment

Hydrological forecasting and prediction – Jian-Yun Zhang

- e) Compilation of a Manual on Flood Forecasting

Disaster mitigation – floods and droughts (hydrological aspects) – Siegfried Demuth

- f) Compilation of a Manual on the Estimation of Design Floods
- g) Compilation of a Manual on the Estimation and Prediction of Low Flows

Analysis of hydroclimatological data for variability and trends – Harry Lins

- h) Identification of a global network of Pristine River Basins

Attachment C contains a series of brief descriptions of each of the activities listed above.

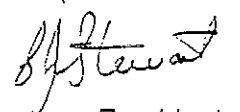
Marcos Freitas (member of the AWG leading activities associated with WHYCOS and international data access and exchange) and Enefiok Udoeka (member of the AWG leading activities associated with capacity building and technology transfer) will be involved in internal WMO meetings associated with their specific areas of activity.

As the development of the work programme progresses further, we will follow up this request with periodic requests regarding involvement in different OPACHE activities. For up-to-date information, I suggest that you look at the CHy website regularly, as this will contain additional material on our activities as they unfold and also copies of reports on relevant meetings, etc.

Action Requested:

Please indicate by email to the AWG member responsible for your OPACHE, with copy to the WMO Secretariat (dhwr@wmo.int), the particular activities among those listed above to which you would be willing to contribute.

(Bruce Stewart)



President
Commission for Hydrology

LIST OF AWG MEMBERS RESPONSIBLE FOR AN OPACHE

Basic systems (hydrometry and hydraulics)

Dr Paul J. Pilon
Manager, Boundary Water Issues Division
Meteorological Service of Canada –
Ontario Region
Canada Centre for Inland Waters
867 Lakeshore Road
P.O. Box 5050
BURLINGTON, ON
L7R 4A6 Canada

Tel: (1 905) 336 60 07 (office)
(1 519) 643 95 96 (home)
Fax: (1 905) 336 89 01
E-mail: paul.pilon@ec.gc.ca

Water resources assessment and water use

Dr Ann Calver
Head of Site & Head of Hydrological Risks
and Resources Section
Centre for Ecology and Hydrology (CEH)
Maclean Building
Crowmarsh Gifford
WALLINGFORD
Oxfordshire OX10 8BB
United Kingdom of Great Britain and Northern Ireland

Tel: (44) 1491 692 261(direct line) or
838 800
Fax: (44) 1491 692 216
E-mail: anc@ceh.ac.uk

Hydrological forecasting and prediction

Dr Jian-Yun Zhang
Deputy Director-General
Bureau of Meteorology
Ministry of Water Resources
BEIJING 100053
China

Tel: (86) 10 632 024 80
Fax: (86) 10 632 024 63
E-mail: jy Zhang@mwr.gov.cn

Disaster mitigation – floods and droughts (hydrological aspects)

Mr Siegfried Demuth
Director IHP/HWRP Secretariat
Federal Institute of Hydrology
Mainzer Tor 1
56068 KOBLENZ
Germany

Tel: (49) 261 1306 5313/ 1306 5435 (sec.)
Fax: (49) 261 306 5422
E-mail: demuth@bafg.de

Analysis of hydroclimatological data for variability and trends

Mr Harry Lins
US Geological Survey
415 National Center
RESTON VA 20192
United States of America

Tel: (1 703) 648 5712
Fax: (1 703) 648 5722
E-mail: hlins@usgs.gov

THEME 1: Basics systems (hydrometry and hydraulics)		
Country	Surname	First name
Togo	Agouda	Kpadja
Kazakhstan	Baimagambetov	Berik
Canada	Bouchard	Andre
Canada	Cantin	Jean-François
Germany	Dittrich	Andreas
Canada	Frigon	Michel
Romania	Ghinescu*	Ionel
France	Givone	Pierrick
Canada	Hamilton	Stuart
Denmark	Havnoe*	Karsten
Philippines	Hernando	Hilton
Mexico	Javier	Aparicio
United States of America	Kenneth M.*	Nolan
Togo	Konlani	Gninpale
Kazakhstan	Lebedev	Aleksey
Philippines	Liongson	Leonardo
Germany	Maurer	Thomas
Germany	Meon	Günter
Egypt	Metawie	Abdel Fattah
Kenya	Mwathi	Kennedy Waweru
Nigeria	Odumosu	Olufemi
Canada	Pessah	Brian
Czech Republic	Polcar	Pavel
Philippines	Rongavilla	Luis
United States of America	Schneider*	Verne
Kyrgyzstan	Solovieva	Tatiana
Australia	Sooriyakumaran	Ponnuswami (Soori)
Czech Republic	Spatka	Jan
France	Tanguy	Jean-Michel
France	Thebe	Bernard

THEME 2: Water resources assessment and water use		
Country	Surname	First name
Tajikistan	Abdumamdov	Sultonmamad
Oman	Al-Barwani	Ahmed
United Republic of Tanzania	Aliba	Joseph
Côte d'Ivoire	Srohorou*	Bernard
Philippines	Billones	Ferdie
Denmark	Butts*	Michael
Belarus	Chekan*	Ryhor
Tajikistan	Djamaiva	Gulbuta
United Kingdom of Great Britain and Northern Ireland	Farquharson	Frank
United Kingdom of Great Britain and Northern Ireland	Gustard	Alan
Denmark	Havnoe*	Karsten
United States of America	Hutson*	Susan
Republic of Korea	Kim	Sung

THEME 2: Water resources assessment and water use		
Country	Surname	First name
Algeria	Lazreg	Benaïchata
Philippines	Liongson	Leonardo
Ukraine	Manukalo	Viacheslav
Germany	Meon	Günter
Egypt	Metawie	Abdel Fattah
Kenya	Mugah	Charles
Mauritius	Mungra	Rajan
Rwanda	Mushimzimana*	Jean-Marie Vianney
Nigeria	Odumosu	Olufemi
Nigeria	Okpara	J.N.
Romania	Pasoi*	Ion
Trinidad and Tobago	Radgman	John
United Kingdom of Great Britain and Northern Ireland	Rees*	Gwyn
China	Ren	Li Liang
Slovakia	Roncak	Peter
Australia	Ross	James
Russian Federation	Shiklomanov	Igor
United States of America	Sorooshian*	Soroosh
Germany	Teltscher	Helmut
Netherlands	Uhlenbrook*	Stefan
Japan	Yoshitani	Junichi

THEME 3: Hydrological forecasting and prediction		
Country	Surname	First name
Pakistan	Awan	Shaukat
United States of America	Barrett*	Curt
China	Bi	Baogui
Russian Federation	Borsch	Sergei
Denmark	Butts*	Michael
United States of America	Cabrera Garza*	Reggina
Brazil	Cardoso Neto	Antônio
Australia	Catchlove	Robert
Belarus	Chekan*	Ryhor
France	Coudrain	Anne
India	Das*	S.K
Turkey	Erol	Denizhan
Philippines	Espinueva	Susan
United Kingdom of Great Britain and Northern Ireland	Farquharson	Frank
United States of America	Georgakakos*	Konstantine
France	Givone	Pierrick
Denmark	Havnoe*	Karsten
Philippines	Hemando	Hilton
Dominican Republic	Holguin Castillo	Francisco
Indonesia	Ibrahim	Agung
Kenya	Kivuva	James
Germany	Krahe	Peter
Philippines	Liongson	Leonardo
France	Martini	Frédérique
Germany	Meon	Günter

THEME 3: Hydrological forecasting and prediction		
Country	Surname	First name
Egypt	Metawie	Abdel Fattah
Kenya	Munah*	P.D
United Kingdom of Great Britain and Northern Ireland	Murray	Dale
Kazakhstan	Nikiforova	Lidiya
Turkey	Ozguler	Hamza
China	Ren	Li Liang
Australia	Ross	James
Germany	Schumann	Andreas
Australia	Sooriyakumaran	Ponnuswami (Soori)
United States of America	Sorooshian*	Soroosh
Romania	Stanciu*	P
Republic of Korea	Suh	Ae-Sook
France	Tanguy	Jean-Michel
Netherlands	Uhlenbrook*	Stefan
Myanmar	Yi	Tin
Japan	Yoshitani	Junichi

THEME 4: Disaster Mitigation - floods and droughts (hydrological aspects)		
Country	Surname	First name
United Republic of Tanzania	Aliba	Joseph
United Kingdom of Great Britain and Northern Ireland	Andersen	Toff
United States of America	Austin*	Michael
Philippines	Billones	Ferdie
Russian Federation	Borsch	Sergei
Denmark	Butts*	Michael
United Kingdom of Great Britain and Northern Ireland	Calver	Ann
Turkey	Ceylan	Abdullah
United States of America	Cohn*	Tim
France	Coudrain	Anne
Argentina	Damboriana	Carlos A.
Germany	Demuth	Siegfried
United States of America	Ernst*	Michael
Philippines	Espinueva	Susan
United Kingdom of Great Britain and Northern Ireland	Farquharson	Frank
Romania	Ghioca*	Maria-Monica
France	Givone	Pierrick
United Kingdom of Great Britain and Northern Ireland	Gustard	Alan
Philippines	Hernando	Hilton
Dominican Republic	Holguin Castillo	Francisco
Republic of Korea	Hong	Ilpyo
Kazakhstan	Kondratyev	Vladimir
Togo	Konlani	Gninpale
Algeria	Lazreg	Benaïchata
Philippines	Liongson	Leonardo
Kenya	Maina	Johnson Muturi
France	Martini	Frédérique
Germany	Meon	Günter
United Kingdom of Great Britain and Northern Ireland	Murray	Dale
Turkey	Ozguler	Hamza

THEME 4: Disaster Mitigation - floods and droughts (hydrological aspects)		
Country	Surname	First name
Serbia and Montenegro	Petkovic*	Toslav
Romania	Radu*	Simona
Tajikistan	Rajabov	Ilhomjon
United Kingdom of Great Britain and Northern Ireland	Rees*	Gwyn
Germany	Schumann	Andreas
Indonesia	Siwamura	Djojo
Australia	Sooriyakumaran	Ponnuswami (Soori)
France	Tanguy	Jean-Michel
Myanmar	Thiam	Hrin Nei
Croatia	Trinic*	Dusan
Netherlands	Uhlenbrook*	Stefan
Japan	Yoshitani	Junichi

THEME 5: Analysis of hydroclimatological data for variability and trends		
Country	Surname	First name
Côte d'Ivoire	Srohorou*	Bernard
Algeria	Djamel	Boucherf
Philippines	Espinueva	Susan
Kenya	Gachuri	Simon
United Kingdom of Great Britain and Northern Ireland	Gustard	Alan
Dominican Republic	Holguin Castillo	Francisco
Tajikistan	Kayumov	Abdulhamid
Turkey	Kesim	Abdulkadir
Germany	Krahe	Peter
Algeria	Lazreg	Benaïchata
United States of America	Legates*	David
Philippines	Liongson	Leonardo
Romania	Marin*	Andreea - Gabriela
United States of America	McCabe*	Gregory
United Kingdom of Great Britain and Northern Ireland	Svensson	Cecilia
Canada	Whitfield	Paul
United States of America	Wolock*	David
Japan	Yoshitani	Junichi

No theme selected		
Country	Surname	First name
Canada	Bum*	Donald
China	Cheng	Haiyun
Bangladesh	Chowdhury*	Sazed
Singapore	Lim	Meng Check
Burundi	Ntungumburanye	Gérard
Nigeria	Olayanju	Shehu Oyebanji
Poland	Ozga-Zielinski	Bogdan
Switzerland	Spreafico	Manfred

Project XII.1: Inter-comparison of Hydrological Information Systems

OPACHE Theme Area:

"Basic systems (Hydrometry and Hydraulics)"

AWG Member Responsible:

Dr. Paul Pilon (Canada)

One of the major activities under OPACHE theme "Basic systems (Hydrometry and Hydraulics)" in 2005 is to perform an assessment or inter-comparison of available Hydrological Information Systems (HISs) against required functionality of a generic HIS.

Task Leader: Michel Frigon, Canada and member of the OPACHE

Objectives:

The objective of this activity is to carry out an assessment of existing Information Systems in order to make an inter-comparison and produce a report to assist NHSs in identifying the most suitable system for their use and according to the available resources. In essence, the activity is seen as an outline of a system's main functionality against which currently available HISs' capabilities would be described.

The endeavour would be to carryout a survey of available off-the shelf HISs, documenting their features, using a functionality matrix and assessment criteria. The activity would cover functionality from data acquisition through mass storage, qa/qc processes, discharge estimation, rating quantification, and publication (dissemination). An overall evaluation of each system would be performed using the information from the completed functionality matrix and assessment

The exercise will be carried out by conducting a first screening via the review of the software documentation from the developers, including information from Internet. Exchange of experiences from NHS pertaining to certain software may also be considered as input to the evaluation process. After a preliminary study of the available HIS software, the developers of systems passing initial screening criteria would be invited to demonstrate the performance of their products to WMO, possibly concurrent with or preceding a WHYCOS International Advisory Group meeting. This latter aspect allows for an evaluation of the "look and feel" of the system and provides an opportunity to assess the system against stated capabilities.

One possible outcome would be the assessment of system functionalities, with each element summarised in a one page or less description of a particular system's capability. Overall strengths and weaknesses of available systems could be assessed from this comparative study with recommendations being given for preferred system functionality. This might lead to the description of standard required capabilities or functionality of HISs and a valuable product for use during the implementation of World Hydrological Cycle Observation System (WHYCOS) initiatives as well as for hydrometric services wishing to upgrade or adopt available software for hydrometric data acquisition, storage, and analysis.

Steps Forward:

- Seek participation in the activity from experts as members of the evaluation team and for providing information on potential HISs to be considered within the exercise.
- Development of the functionality matrix and assessment criteria for comparison

- Complete the survey; analyze the information and data collected.
- Seek expressions of interest from screened System proponents to contribute to the exercise.
- Demonstration of the screened software to the evaluation team and contribution to WIAG meeting.
- Prepare and publish inter-comparison report.

Members of OPACHE are requested to express their willingness to participate in this exercise, and how they would like to contribute to this activity of CHy. The inputs from members of OPACHE are particularly solicited on the professional (off-the-shelf) HIS they have used and would like to have considered for possible inclusion in the assessment. It would be very much appreciated if an indication on possible contributions could be communicated to the WMO secretariat, the AWG member and the Task Leader.

Project XII.2: Manual on Stream Gauging

OPACHE Theme Area:

"Basic systems (Hydrometry and Hydraulics)"

AWG Member Responsible:

Dr. Paul Pilon (Canada)

One of the major activities under OPACHE theme "Basic systems (Hydrometry and Hydraulics)" in 2005 is the revision and update of the Manual on Stream Gauging (WMO-No. 519).

Task Leader:

Vernon Sauer, Georgia, USA, and member of the OPACHE.

Objectives:

The objective of the project is to produce an updated version of WMO "Manual on Stream Gauging". This is the Operational Hydrology Report No. 13, published by WMO in 1980. The revised version of volumes I and II will include the latest methods and technology currently being used.

The revision to Volume I will update field methods and equipment used for measuring and computing stream flow in open channels. These revisions will incorporate the latest field equipment and field procedures used for the measurement and recording of stream stage, stream velocity, and stream discharge.

The revision to Volume II will update the latest methods for analyzing the field data, preparing rating curves, and computing discharge records. The description of automatic computer methods will result in a new and significant addition to the existing manual. The basic outline of the existing publication will be retained. However it is expected that some reorganization of the existing Chapters may be required.

Essentials:

The Manual would be published in the series of WMO Quality Management Framework in Hydrology publications. This Manual will complement the information available in the Guide to Hydrological Practices and in the WMO Technical Regulations. Reference to HOMS, the WMO system of technology transfer in the area of hydrology and water resources, will be made whenever appropriate. The terminology will also be consistent with the UNESCO/WMO International Glossary of Hydrology.

Steps Forward:

- Preparing electronic version of the existing Manual.
- Formation of the project team, which will include OPACHE members.
- Seek expressions of interest for contributing to the revision process from experts.
- Preparation of the draft revised material.
- Complete the draft revised Manual in all respects by mid 2006.
- Incorporate all review comments and finalize the revised manual by the end of December 2006.

Members of OPACHE are requested to express their willingness to send their comments on the existing manual and their opinion on the new material to be included in the revised version and how they would like to contribute to this project

activity of CHy. The inputs from members of OPACHE are also solicited on the experiences in their countries in this direction and their likely contribution, both in terms of the area of their expertise and the time that they could provide over the next 10 months for the preparation of this revised Manual. Contributions are also solicited in terms of providing documentation of the current practices being followed in different parts of the world on the subject. It would be very much appreciated if an indication on possible contributions could be communicated to the WMO secretariat, the AWG member and the Task Leader.

Project XII-3: Decision Support Systems

OPACHE Theme Area:

Basic Systems (Hydrometry and Hydraulics)

AWG Member Responsible:

Dr Paul Pilon (Canada)

One of the major activities under OPACHE theme 'Basic Systems (Hydrometry and Hydraulics)' in 2005 is to continue the development of automated hydrometric data-production procedures and to finalize the development of software for Decision Support System (DSS).

Task Leader: To be identified.

Objectives:

The goal of the project is to develop a decision-support system for establishing rating curves for systems with stable control and for providing estimates of discharge for systems with unstable control based on ongoing national initiatives in Canada.

To develop a software package and associated training manual which will enable the application of the stage-discharge calculations in real time. This includes the development of a decision-support system that:

- (i) Incorporates a framework for applying quality assurance/quality control procedures in automated systems;
- (ii) Provides a methodology for establishing rating curves based on hydraulic modelling;
- (iii) Provides an estimate of discharge and/or velocity for systems with an unstable control that has no stable rating curve;

Outcomes:

The expected outcomes of the project are:

- Preparation of documentation of approaches to automating hydrometric data production
 - A draft concept document for automation of hydrometric data production including Quality Assurance/Quality Control aspects for potential publication.
 - Development of methodologies for estimating discharge when no unique rating curve exists for the given site.
- Development of a stand alone software with documentation to facilitate the develop and verification of rating curves

Essentials:

This activity had been started during the previous inter-session period under the lead of Mr N. Crookshank, and will be further developed during the present inter-session period, through finalization of software and related manuals on hydraulic modelling for establishing estimates of discharge for sites with stable and unstable rating curves.

Steps Forward:

Software is to be distributed to selected National Hydrological Services (NHSS), to be tested under different hydrologic regimes and environmental conditions. NHSSs

involved in this phase will provide comments and advice to the developers for the finalization of the software. In view of comments received from NHSs possible inclusion of the software as an HOMS component will be considered.

Members of OPACHE are requested to express their willingness to contribute to this project activity of CHy. The solicited inputs from members of the OPACHE is in terms of volunteering for undertaking a test period of the software using national data and to provide appropriate feed back to the developers. Contributions are also solicited in terms of informing on similar existing practices being followed in different parts of the world on the subject.

Project XII.4: Manual on Assessment of Water Resources

OPACHE Theme Area:

Water Resources Assessment and Water Use

AWG Member Responsible:

Ms. Ann Calver (United Kingdom)

One of the major activities under OPACHE theme "Water Resources Assessment and Water Use" is development of a Manual on Assessment of Water Resources. UNESCO is expected to be a partner in developing this manual.

Task Leader: Mr Frank Farquharson, Head of Water Resources at CEH Wallingford, UK and member of the OPACHE

Objectives:

The objective of the project is to develop a state of the art manual for Water Resources Assessment with and without observational data. The manual will be used by operational agencies for assessing the water resources potential for a wide range of applications including national and regional water resource planning, in support of Integrated Water Resources Management. It is anticipated that this overview manual will treat both surface water and groundwater resources and include transboundary issues. Focus will be on water quantity issues: it is recognised that water quality is also important but this will be the possible subject of later documentation. It may be possible to develop a flow chart mechanism to direct users to appropriate methods given geographical location (in the sense of hydro-meteorological conditions), major geological types, level and pattern of demand, and – very importantly – level of data availability and data quality in terms of spatial and temporal density. The endeavour would be to survey the available practises and adopt the most suitable practices for various hydro-climatic and hydro-geological conditions. The Manual will address issues such as the scarcity of data including ungauged basins and the implication of climate change. Contents may include major methodologies, sources of detailed information and some examples of practical application and experience of use. The manual is also expected to include an inventory of existing methodologies.

However, decision on the scope of the manual will be part of the project for which a scoping workshop is planned. The workshop is proposed to be held at WMO, Geneva in autumn 2005 to scope the remit of the project, to assign writing tasks to participants and others and to plan the timetable for advancing this writing. At the Joint UNESCO/WMO Liaison Committee on Hydrology meeting in Geneva in May 2005 UNESCO expressed interest in participating in this initiative.

Essentials:

The Manual would be published in a new series of WMO publications consisting of various manuals and guidelines within the WMO Quality Management Framework in Hydrology. The manuals will have a practical approach and will address the practical aspects as opposed to an academic or theoretical approach and are targeted to meet the needs of NMHSs. These Manuals will include theoretical information only when it is needed for a better understanding of the related subject. These manuals will include: the Manual on Flood Forecasting, the Manual on Probable Maximum Precipitation/Probable Maximum Flood, the Manual on Low Flow Estimation and Prediction and the Manual/Guide on Water Resources Assessment. These Manuals will complement the information available in the Guide to Hydrological Practices and in the WMO Technical Regulations. Reference to HOMS, the WMO system of technology transfer in the area of hydrology and water resources will be made

whenever appropriate. The terminology will also be consistent with the UNESCO/WMO International Glossary of Hydrology.

Steps Forward:

- Organise a scoping workshop
- Formation of the project team, which will include regional team leaders
- Process of the drafting the manual.
- Seek expressions of interest for contributing to the manual from experts from OPACHE, UNESCO FRIEND and the US Drought Mitigation Centre and the European Drought Centre and other international experts in the field.
- Complete the Manual in all respects by end of 2007.

Members of OPACHE are requested to express their willingness to send their opinion on the scope of such a manual and how they would like to contribute to this project activity of CHy. The inputs from members of OPACHE are solicited on the experiences in their countries in this direction and their likely contribution, both in terms of the area of their expertise and the time that they could provide over the next one and a half year for the preparation of this Manual. Contributions are also solicited in terms of sharing the existing practices being followed in different parts of the world on the subject. It would be very much appreciated if an indication on possible contributions could be communicated to the AWG member and the Task Leader.

Project XII.5: Manual on Flood Forecasting and Warning

OPACHE Theme Area:
Hydrological Forecasting and Prediction

AWG Member Responsible:
Mr. Jian Zhang (China)

One of the major activities under 'Hydrological Forecasting and Prediction' is the development of the Manual on Flood Forecasting and Warning.

Task Leader:
Yet to be identified

Objectives:

It has been proposed to prepare a practical Manual that would allow the reader to develop a flood forecasting system in his/her country right from scratch making use of the most appropriate technology and systems. At the same time the Manual should be able to address the use of the latest technological advances made in hydrological and meteorological predictions. The Manual would focus on the subject of the design of a flood forecasting and warning system (including the dissemination of the forecasts) and the implementation of the system. As the name suggests the manual will also address the issue of outreach of the flood forecasts.

Steps Forward:

With a view to outline the scope of the Manual, decide on the contents, identify the likely contributors an expert meeting is being planned in Beijing most probably by end October. The participants will all be members of the OPACHE. A draft table of content was prepared by the WMO Secretariat and sent to Mr. Zhang. It is planned that Mr. Zhang, in consultation with members of the OPACHE and the WMO Secretariat will prepare by the end of August the agenda and the documents.

It is planned that the drafts chapters would be completed by the contributors (OPACHE members) by end March 2006. Draft Manual will be subjected to the review process according to the CHy procedures. The reviewers will be selected from among the members of the OPACHE. It is proposed to involve the two experts that had prepared a chapter (related to this Manual) of the WMO Guide to Hydrological Practices. Other experts will be identified on the basis of their response and contacted.

- Organization of the scoping workshop
- Formation of the expert team which will be selected on the basis of expression of interest
- Drafting of the material for the Manual (by March 2006)
- Review of the Material (by December 2006)

Essentials:

The Manual would be published in a new series of WMO publications consisting of various manuals, which have all a practical approach in opposition to an academic or theoretical approach. These manuals will include theoretical information only when it is needed for a better understanding of the subject. Among these Manuals it is foreseen to include the Manual on Estimation of Design Flood, the Manual on Probable Maximum Precipitation/Probable Maximum Flood, the Manual on Low Flow Estimation and Prediction and the Manual/Guide on Water Resources Assessment.

All these manuals will complement the information available in the Guide to Hydrological Practices and in the WMO Technical Regulations. The terminology will also be consistent with the UNESCO/WMO International Glossary of Hydrology. Reference to HOMS, the WMO system of technology transfer in the area of hydrology and water resources will be made whenever appropriate. The terminology will also be consistent with the UNESCO/WMO International Glossary of Hydrology.

Members of this OPACHE are requested to express their willingness to contribute to this project activity of CHy. The inputs from members of the OPACHE are solicited as to the extent of contribution, both in terms of the area of their expertise and the time that they could provide over the next year for the preparation of this Manual. OPACHE members are requested to provide comments on the proposed table of contents and the chapters that they would be willing to contribute to. Contributions are also solicited in terms of sharing the existing practices being followed in different countries on the subject. It would be very much appreciated if an indication on possible contributions could be communicated to Mr. Zhang.

Project XII.7: Manual on Estimation of Design Flood

OPACHE on Disaster mitigation – Floods and Droughts (hydrological aspects)

AWG Member Responsible: Prof. Siegfried Demuth (Germany)

Task Leader: Prof. Günter Meon, University of Braunschweig, Germany and member of the OPACHE.

One of the two major activities under 'Disaster mitigation – Floods and droughts (hydrological aspects)' in 2005 is the scoping of a Manual on the Estimation of Design Flood.

Objectives:

Design flood information is needed for flood protection measures in a river basin and for the design of water related structures against failure by overtopping (hydrologic failure). Design floods are required for planned measures or structures as well as for safety checks of existing structures. Depending on the project, design floods are provided as a peak discharge value or as a flood hydrograph corresponding to a fixed safety degree or return period of a few years (urban storm water drainage) up to 10,000 years (and longer) (spillway of a large dam). In many dam projects the probable maximum flood (PMF) is used as a design flood against dam overtopping.

Standards and guidelines define safety criteria, which often differ from country to country. Furthermore so-called risk based procedures combining the quantified probability of overtopping failure with its adverse consequences are under progress. These procedures supplement or even substitute the traditional design based on fixed design flood values. Definitely design floods and advanced design procedures provide a decisive input into a comprehensive flood risk management, which includes flood damage prevention and disaster mitigation.

Regarding the immense losses of life and property caused by worldwide flood catastrophes, the selection of appropriate design criteria and, consequently, suitable procedures to determine the corresponding design flood are essential for a functioning flood risk management.

Based on above reasons, a state-of-the-art "Manual on the Estimation of Design Floods" will be developed. This Manual is expected to present information on design flood estimation for various types of hydraulic structures such as spillways, flood protection works and other purposes. Different approaches to flood estimation such as PMP and frequency analysis would be incorporated. The Manual will provide the necessary information to allow the reader to define the design flood according to its needs, economic considerations (including the necessary socio-economic information), risk perceptions and to present the procedures to compute the design flood.

The manual will include a worldwide inventory of existing regional guidelines and legal frameworks on flood risk management, safety criteria and methods of design flood determination. The endeavour would be to survey the available practises and adopt the most suitable practices for various hydro-climatic conditions. New methodologies will be identified and evaluated. The Manual will address issues such as the scarcity of data including ungauged basins and the implication of climate change on the design criteria and design flood determination.

Essentials:

The Manual would be published in a new series of WMO publications consisting of various Manuals and guidelines within the WMO Quality Management Framework in Hydrology. The manuals will have a practical approach and will address the practical aspects as opposed to an academic or theoretical approach and are targeted to meet the needs of NMHSs. These manuals will include theoretical information only when it is needed for a better understanding of the subject. Among these manuals the following will be included: the Manual on Flood Forecasting, the Manual on Probable Maximum Precipitation/Probable Maximum Flood (a topic which will also be addressed in this Manual with cross-references), the Manual on Low Flow Estimation and Prediction and the Manual/Guide on Water Resources Assessment. These manuals will complement the information available in the Guide to Hydrological Practices and in the WMO Technical Regulations. Reference to HOMS, the WMO system of technology transfer in the area of hydrology and water resources will be made whenever appropriate. The terminology will also be consistent with the UNESCO/WMO International Glossary of Hydrology.

Steps Forward:

- Formation of the project team, which will include regional representatives.
- Establishment of a detailed table of contents, determination of scope of work specified by main tasks and elaboration of the working plan.
- Identification of the contributors to the sections of the Manual
- Process of drafting the Manual.
- Continuous interaction and exchange with the OPACHE, scientific, administrative and public experts, organisations and institutions and with engineering practitioners.
- Review of the draft material
- Complete the Manual in all respects by end of 2007.

As a first step it is foreseen that the scope of the manual is defined along with its Table of Contents and a group of contributors/authors is identified for various chapters.

Members of this OPACHE are requested to express their willingness to contribute to this project activity of CHy. The inputs from members of the OPACHE are solicited as to the extent of contribution, both in terms of the area of their expertise and the time that they could provide over the next one and a half year for the preparation of this Manual. Contributions are also solicited in terms of sharing the existing practices being followed in different parts of the world on the subject. It would be very much appreciated if an indication on possible contributions could be communicated to Prof. Demuth or the Task Leader.

Project XII.8: Manual on Estimation and Prediction of Low Flows

OPACHE on Theme Area:

Disaster mitigation – Floods and Droughts (hydrological aspects)

AWG Member Responsible: Prof. Siegfried Demuth (Germany)

Task Leader: Dr. Allan Gustard, Lowbury, Downend Lane, Chieveley, Newbury UK and member of the OPACHE

One of the two major activities under 'Disaster mitigation – Floods and droughts (hydrological aspects)' is development of a Manual on the Estimation and Prediction of Low Flows.

Objectives:

Publication of a state-of-the-art manual for estimating, predicting and forecasting low river flows at sites with and without observational data. The manual will be used by operational agencies for predicting and forecasting low flows for a wide range of applications including national and regional water resource planning, abstraction management, public water supply design, setting in-stream flows, estimating the dilution of effluents, navigation, design of run of river hydropower schemes, design of irrigation schemes and operation of water resources during low flow conditions. The report will enable the hydrological impacts of low flows to be mitigated and will facilitate the design of flow monitoring facilities.

The manual will include a worldwide inventory of existing methodologies and legal frameworks on low flow management under drought like conditions and methods of low flow estimation prediction and forecasting. The endeavour would be to survey available practises and adopt the most suitable practices for various hydro-climatic and hydro-geological conditions. New methodologies will be identified and evaluated. The Manual will address issues such as the scarcity of data including ungauged basins and the implications of climate change.

Essentials:

The Manual would be published in a new series of WMO publications consisting of various manuals and guidelines within the WMO Quality Management Framework in Hydrology. The manuals will have a practical approach and will address practical aspects as opposed to an academic or theoretical approach and are targeted to meet the needs of NMHSs. These manuals will include theoretical information only when it is needed for a better understanding of the subject. Among these manuals it is foreseen that the following will be included: the Manual on Flood Forecasting, the Manual on Probable Maximum Precipitation/Probable Maximum Flood, the Manual on Low Flow Estimation and Prediction and the Manual/Guide on Water Resources Assessment. These manuals will complement the information available in the Guide to Hydrological Practices and in the WMO Technical Regulations. Reference to HOMS, the WMO system of technology transfer in the area of hydrology and water resources will be made whenever appropriate. The terminology will also be consistent with the UNESCO/WMO International Glossary of Hydrology.

Steps Forward:

- Prepare draft purpose, scope and annotated table of contents. Clarify what is not included in the Manual. Completion 30.9.05
- Identify contents requiring development of new material.
- Formation of the project team, which will include regional team leaders

- Seek expressions of interest for contributing to the Manual from experts from OPACHE, UNESCO FRIEND and the US Drought Mitigation Centre and the European Drought Centre and other international experts in the field.
- Process of the drafting the Manual.
- Review of the draft material.
- Complete the Manual in all respects by end of 2007.

Members of this OPACHE are requested to express their willingness to contribute to this project activity of CHy. The inputs from members of the OPACHE are solicited as to the extent of contribution, both in terms of the area of their expertise and the time that they could provide over the next one and a half years for the preparation of this Manual. Contributions are also solicited in terms of sharing the existing practices being followed in different parts of the world on the subject. It would be very much appreciated if an indication on possible contributions could be communicated to Prof. Demuth.