NEWSLETTER OF THE WMO COMMISSION FOR HYDROLOGY (CHy)

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FROM THE PRESIDENT OF THE COMMISSION FOR HYDROLOGY

Historically, members of the Commission for Hydrology were informed of activities related to the Commission's programme of work via a series of circular letters from the president, typically issued once a year. Between 2005 and 2010, these letters were also published online (http://www.wmo.int/pages/prog/hwrp/chy/communicationsfrompresident.php). More recently, the workload on the Advisory Working Group (AWG), the vice-president, and the president has increased to the point where the traditional circular letter no longer seemed to be the most informative or effective means of communicating CHy's ongoing activities and accomplishments.

To provide a more meaningful overview of its programmes, projects and coordination functions, members of the AWG suggested developing a Newsletter similar to those being disseminated by other WMO entities, such a WIGOS. Accordingly, I am pleased to announce the release of this inaugural edition of the CHy Newsletter for the fifteenth intersessional period (CHy-15, No. 1). The Newsletter is designed to highlight progress on those activities approved by the Commission at its Fifteenth Session in Rome in December 2016, as well as to update CHy members and others within the discipline on broader issues within WMO that the AWG and the Secretariat are actively contributing to. Its format will facilitate the use of graphics and links to related resources that we expect will enhance its information content and utility.

In this issue several of the more prominent aspects of the Commission's current programme of work are described that, over the past year, have preoccupied the time of a number of AWG members. These include the Global Hydrological Status and Outlook System (HydroSOS), the WMO Hydrological Observing System (WHOS), the Global Data Processing and Forecasting System (GDPFS), the Global Hydrometry Support Facility (HydroHub), and the Global Multi-Hazard Alarm System (GMAS).

Future issues will address other aspects of our programme, as well as updating these major elements. Initially we envision issuing the Newsletter annually, although occasions may arise that justify a semi-annual release. The hope is that CHy members will be better informed about the many activities underway that are designed to assist the National Hydrological Services in delivering high quality data, information, and services to their clients and partners. Finally, I welcome your feedback on the CHy Newsletter and encourage you to engage the Advisory Working Group on issues of concern to you and your Service via the CHy e-Board at http://www.whycos.org/wordpress/.

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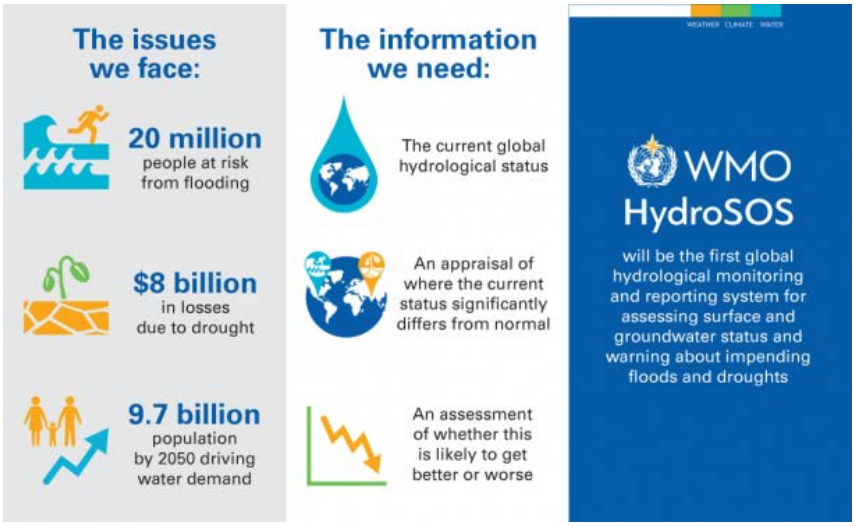
ANNOUNCEMENTS

- Regional Association IV Working Group on Hydrology, 23-25 January 2018, Kingston, Jamaica
- WMO Global Conference on "Prosperity through Hydrological Services", 07-09 May 2018, Geneva, Switzerland

BUILDING THE FIRST GLOBAL HYDROLOGICAL STATUS AND OUTLOOK SYSTEM

Following approval at the Commission's 15th Session in Rome (Resolution 8) efforts have been progressing to take forward the pilot WMO Global Hydrological Status and Outlook System, now referred to as HydroSOS. It is envisaged that the system will build upon other WMO activities, particularly those related to WHOS and WIGOS to deliver on operation system run by NMHSs with the capability of assessing hydrological variability on a global scale having granularity at the river basin scale. The initiative will capitalise on existing initiatives recently developed by some WMO Members to assess the current hydrological status within their countries and predict how this might be changing over coming weeks to months. Technical work underpinning the HydroSOS will also leverage scientific methods and verification systems developed through various international initiatives, including the WMO Commission for Hydrology guidelines on seasonal hydrological predictions currently under review.



In September 2017 an initial planning meeting for the HydroSOS was convened in Entebbe in the Republic of Uganda. The meeting brought together Hydrological Advisers, Commission experts, stakeholders and leading scientists from around the globe to consider how the initiative could be taken forward. After three days of fruitful discussions it was concluded that, while there was no mistaking the scale of the challenge, the potential benefits of such a system to WMO Members and the wider hydrological community were significant. There was widespread enthusiasm and commitment to taking forward the project and many good ideas about how to progress. The presentation and report of the workshop, along with more information about HydroSOS, can be found here.

As requested by the Commission, an expert Task Team will now be formed to take forward HydroSOS with the next meeting likely to be held in early 2018. A draft work plan has been developed and individuals are now been sought to help lead and contribute to the initiative. Volunteers interested in becoming involved in the development of HydroSOS would be very much welcomed and anyone who would like to find out more is invited to contact Alan Jenkins (Chair of the HydroSOS Task Team and Hydrological Advisor for the UK) or the responsible Advisory Working Group Members (Narendra Tuteja, Tom Kanyike or Harry Dixon).

PROGRESS ON WMO HYDROLOGICAL OBSERVING SYSTEM

The WMO Hydrological Observing System (**WHOS)** is a multi-scale (local, national, regional and global) registry of hydrological data and information services catalogued using the standards and procedures of the Open Geospatial Consortium and the World Meteorological Organization. This registry is a specialized hydrological component of the WMO Information System (WIS) that is open to all users and institutions from any country or level of government. It also is applicable to any type of hydrological information.

WHOS is being implemented in two phases: Phase 1, implemented in July, 2015, provides a map interface with links to those NHSs that make their real-time and historical stage and discharge data available online (see here). Phase 2 provides a fully WIS/WIGOS compliant services-oriented framework linking hydrologic data providers and users through a hydrologic information system enabling data registration, data discovery, and data access. The plan is to have an initial implementation of Phase 2 during the current CHy intersessional period (2016-2020).

Within WHOS, data providers are the primary repositories for hydrologic data, while the registry is the primary repository for hydrologic data services. The registry provides an interface where users can search registered data services by specifying keywords and metadata that describe the hydrologic data of interest. The registry functions like a Google search for discovering hydrologic time series information. Data publishers can register their data on the registry and provide brief descriptions of the datasets they want to share. This is an important aspect of WHOS because it allows for data to be organized and discovered in an efficient, structured and methodical process.

THE REGISTRY IS LIKE A GOOGLE FOR DISCOVERING HYDROLOGIC TIME SERIES INFORMATION.

In 2015, during its 17th session, the WMO Congress urged the president of CHy to continue guiding WHOS to full implementation. In December 2016, with Resolution 4.1(3)/1, CHy-15 approved the further implementation WHOS Phase I as well as the initial concept of WHOS Phase II, and requested the AWG, with the support of the WMO Secretariat, to develop an initial implementation plan, covering issues such as governance, architecture, relationships with the WIGOS and WIS centres, provision of metadata into OSCAR and a clear definition of the roles of CHy, the Secretariat, the global data centres, and the NMHSs.

The WHOS Architecture and Implementation document has been drafted and is currently undergoing review by the AWG. It will be submitted to EC-70 in May 2018 for its endorsement.

GLOBAL DATA-PROCESSING AND FORECASTING SYSTEM

The Commission for Hydrology (CHy), through Resolution 7 (CHy-15), requested that the President and the Advisory Working Group (AWG):
(1) Ensure that all hydrological aspects and specifics and in particular the needs and concerns of National Hydrological Services are properly reflected in the development of the new seamless Global Data-processing and Forecasting System (GDPFS);
(2) Develop a proposal of a comprehensive structure for hydrology within the new seamless Global Data-processing and Forecasting System that would encompass hydrological data, analysis and forecasting and could include new entities such as world, regional and national hydrological centres, with clearly defined roles and responsibilities; and
(3) Develop documentation describing the procedures for the designation, mandatory functions and activities of new centres, taking into account the principle that world and regional centres shall respect the

primary roles and responsibilities of National Meteorological and Hydrological Services in the delivery of flood forecasting and warning services.

In response to these requests, an initial proposal has been developed and posted for comment by the hydrological community on the CHy e-Board.

Meanwhile, activities on the development of the Seamless Data-Processing and Forecasting System are continuing with the establishment of a drafting team that includes experts in the field of hydrology from ECCC, Canada and ECMWF. The drafting team will compile the first draft version of a detailed implementation plan for the Seamless Data-Processing and Forecasting System that will provide a basis for discussion at the next meeting of the EC Steering Group on the Future GDPFS that is expected to occur in early 2018.

WMO HYDROHUB

At its Sixty-Eighth Session (EC-68), the Executive Council of the World Meteorological Organization endorsed a proposal made by the President of CHy to establish a Global Hydrometry Support Facility (WMO HydroHub). The HydroHub is designed to facilitate the provision of sustainable and efficient hydrological data, information and knowledge in support of decision-making in water resources management and related environmental applications.

The WMO HydroHub consists of five main components: the World Hydrological Cycle Observing System (WHYCOS), the Global Innovation Hub, the WMO Hydrological Observing System (WHOS), a technical Help Desk and an Information Platform. While the WMO HydroHub will support WHYCOS by increasing the sustainability of the projects through building operational systems and capacity in water monitoring and information systems, the Global Innovation Hub – the driver of innovation – will facilitate the free and open exchange of observation data and information to support informed decisions and policy-making.

The WMO HydroHub has three main objectives: 1) To develop an efficient, innovative and sustainable framework to support operational systems in hydrometry around the world; 2) To enhance and sustain global integration of national and regional monitoring systems in support of data sharing; and 3) To facilitate the operational uptake of innovative technologies by national services.

Through its various activities, the WMO HydroHub will contribute to projects that have identified a hydrological observation data challenge by making the full WMO portfolio of expertise – from science to technology to services – accessible to end-users of hydrological data and services from various economic sectors, as a tailored service. Bringing these different communities together will increase the base of hydrological data – particularly as catalyzed by innovative technologies and approaches. The WMO HydroHub will also contribute to related WMO activities such as the Global Hydrological Status and Outlook System (HydroSOS).

The WMO HydroHub team is embedded within WMO's Climate and Water Department, and the initial four- year operational period is being financed by the Swiss Agency for Development and Cooperation (SDC). The WMO HydroHub will gradually increase its functionality in 2018 after a one year preparation phase that is being used to establish procedures, test new approaches and most importantly, weave the network of partners.

Key highlights for 2017 include initial discussions with potential partners, contributions to the proposed Senegal-HYCOS project, and the co-organization of an innovation workshop together with the IAHS Measurements and Observations in the XXI Century (MOXXI) activity. The workshop aims to stimulate discussion for future integration and implementation of innovative measurement approaches in operational hydrology. Also, the WMO HydroHub is governed by an Advisory Council, chaired by Harry Lins, President of CHy, and the Innovation Committee led by Harry Dixon, CHy-AWG Member. Both groups were established, and held their first meetings in 2017.

The WMO HydroHub team can be reached at hydrohub@wmo.int and would be delighted to answer any questions and receive feedback on its activities.

GLOBAL MULTI-HAZARD ALARM SYSTEM (GMAS)

The WMO Executive Council endorsed the vision for building a Global Multi-Hazard Alarm System (GMAS) that would serve as a resource for authoritative warnings from NMHSs on a global level. In this way, GMAS is intended to support activities of various UN organizations as well as other users. GMAS will include flood and water related hazards, so the role of National Hydrological Services in implementing GMAS is of critical importance. If you are interested in learning more about GMAS, visit the CHy e-Board.

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