WEATHER CLIMATE WATER

WORLD METEOROLOGICAL ORGANIZATION

WMO HydroHub

CONCEPT NOTE AND AGENDA

Webinar: WMO Hydrological Observing System (WHOS)

BACKGROUND

The critical need for hydrological observations in support of water resources management, particularly during extreme events, has transformed traditional methods of hydrological data management. This transformation has given rise to a framework of e-monitoring the hydrological cycle, the aim of which is to improve understanding of the nature of water.

New trends in data science, coupled with increasing technological evolution, make the new generation of data systems more agile and responsive to the needs and expectations for efficient and effective data sharing and service delivery.

The WMO Hydrological Observing System (WHOS) was designed around the integration of observations, data exchange, research, data processing, modelling and forecasting, in such a way that societal needs for disaster risk reduction, improved sustainability of environmental resources, climate resilience and economic growth can be effectively met. With its implementation of conceptual functionalities for sustainable data management, the WHOS operational architecture is hydrology's system for the future.

Two regional WHOS prototypes located in the La Plata Basin in South America (WHOS-Plata) and in the Arctic Region (WHOS-Arctic) are now operational.

This webinar is organized in frame of the WMO HydroHub End-of-Phase communication and will present some of the highlights and achievements of the WHOS development and implementation. More specifically, the webinar will allow participants to learn more about importance of data interoperability, WHOS concept and objectives, WHOS brokering approach, WHOS regional prototypes as well as WHOS data use cases.

WHOS Community site is accessible here.

Day and time: 6 September 2021, 13:30-15:30 (UTC)

Zoom meeting details: https://wmo-int.zoom.us/j/89015398603

AGENDA

Time (UTC)	Agenda Item
13:30 – 13:35	**Webinar kick-off** Harry Lins *Chair of the WMO HydroHub Advisory Council*
13:35 – 13:40	**Welcome** Elena Manaenkova *WMO Deputy Secretary-General*
13:40 – 13:45	**WMO HydroHub** Sophia Sandström *WMO HydroHub Project Coordinator*
13:45 – 13:55	**Importance of data interoperability** Stefano Nativi *Big Data Lead Scientist, European Commission Joint Research Centre*
13:55 – 14:05	**Introduction – WHOS as hydrological contribution to WIS/WIGOS** Silvano Pecora *Vice-president of the WMO Infrastructure Commission*
14:05 – 14:15	**Discovery and Access Broker technology** Enrico Boldrini *Computer Scientist, National Research Council of Italy*
14:15 – 14:25	**WHOS Community site and Web Portals** Igor Chernov *WMO HydroHub Project Officer*
14:25 – 14:40	**WHOS implementation in the La Plata and Arctic basins** • Juan Bianchi *Researcher in Water Information Systems, National Water Institute (Argentina)* • Jeffrey Karn *Arctic-HYCOS Secretariat, Environment and Climate Change Canada*
14:40 – 14:55	**WHOS data use cases (Panel discussion)** • Cristopher Spencer *Computer Programmer/Analyst, Hydrologic Research Center (USA)* • David Gustafsson *Senior scientist, Swedish Meteorological and Hydrological Institute*
14:55 – 15:25	**Questions & Answers**
15:25 – 15:30	**Closing** Johannes Cullmann *Director, Water & Cryosphere, WMO*

Elena Manaenkova

Dr Elena Manaenkova has been serving as Deputy Secretary-General since 2016. Previously to being appointed, she had served as Assistant Secretary-General at WMO since 2010 and before that as Director of Cabinet of the Secretary-General and External Relations Department from 2006. She is a geographer with a specialization in hydrology and meteorology. She holds a Doctorate degree (PhD) in physics and mathematics from the Doctorate of Hydrometeorological Centre of Russia (1993) with specialization in meteorology, climatology, satellite meteorology and remote sensing from satellites. Before joining WMO Dr Manaenkova devoted her career to the Russian Federal Service for Hydrometeorology and Environmental Monitoring starting as scientific officer in the Hydrometeorological Centre of Russia, and then worked in the Scientific Research Centre on Space Hydrometeorology "Planeta" in positions with increasing responsibility, ultimately attaining the title Scientific Secretary and Director of Department of Science and International Cooperation.

Harry Lins

Harry Lins is the past-president of the WMO Commission for Hydrology (CHy), and led the initial development of the WMO Hydrological Observing System (WHOS). Prior to becoming CHy president, he spent 42 years as a hydrologist with the U.S. Geological Survey specializing in stochastic hydrology and hydroclimatology. In 2021, he was awarded the International Hydrology Prize – Volker Medal by the International Association of Hydrological Sciences, UNESCO, and WMO.

Silvano Pecora

Dr. Eng. Silvano Pecora is a civil engineer, specialized in hydrology and hydraulics, with a PhD in hydrological engineering. He is Vice-President of the WMO Commission for Observation, Infrastructure and Information Systems. He is Head of Strategic and International Projects Sector at the national Po River Basin District Authority in Italy, where he is also technical responsible of the Permanent Observatory on water uses. He is co-leader of the WMO\OGC Hydrology Domain Working Group, whose purpose is to provide a venue and mechanism for seeking technical and institutional solutions to the challenge of describing and exchanging data describing the state and location of water resources, both above and below the ground surface. He is Chair of the Joint Expert Team on Hydrological Monitoring of the WMO Infrastructure Commission. He has a vast experience in hydrological monitoring, flood forecasting and water resources management using numerical and stochastic models.

Stefano Nativi

Stefano Nativi is the Big Data Lead Scientist of the Joint Research Centre of the European Commission. He is co-chair of the GEOSS Development Task Team (GIDTT) and of the Data Ethics-Law-Policy Subgroup of the Data WG. He funded and chaired the Earth and Space Sciences Informatics (ESSI) Division of the European Geosciences Union (EGU). He is member of the Council of the International Society for Digital Earth (ISDE), associate editor of the "Big Earth Data" journal (T&F), and co-editor of the 'AI section" of the "Remote Sensing" journal (MDPI). He is the JRC contact point with the ISO JTC1 –Information Technology and co-chairs the ITU-T Focus Group on "Environmental Efficiency for Artificial Intelligence and other Emerging Technologies" (FG-AI4EE). He is also co-chair of the OGC ESS (Earth Systems Science) Domain WG and of the netCDF Standard WG. He was Head of Unit for the National Research Council of Italy and professor at the Universities of: Padua, Florence, and Friedrich Schiller in Jena. He received the EGU Ian McHarg medal (2019), the Geospatial Innovation Award of the Geospatial World Forum (2014); and the Meritorious Service Medal of the IEEE Committee on Earth Observation (2009).

Enrico Boldrini

Enrico Boldrini is a researcher at the Florence Division of the Institute of Atmospheric Pollution Research of the National Research Council of Italy (CNR-IIA). He is collaborating to the activities of the Earth and Space Science Informatics Laboratory (ESSI-Lab) since 2007, participating to several projects by different bodies (e.g. WMO and GEO intergovernmental organizations, European Union H2020/FP7/EASME programmes, US NSF, Italy MIUR/ARPA-ER). His work focuses on enabling information sharing and systems interoperability in the multidisciplinary context of Earth Sciences. He coordinates the development and management of the Discovery and Access Broker framework (DAB), which is a key technology in the architecture of both the Global Earth Observation System of Systems (GEOSS) and the WMO Hydrological Observing System (WHOS).

Juan Bianchi

Juan Bianchi is a researcher in hydrometeorological information systems at the Hydrological Information and Alert Systems Division of the National Water Institute, Argentina (SSIyAH-INA). His areas of expertise include operational hydrology, hydrological modelling, data management, web development and remote sensing. He holds a Master's in integrated Hydrological Watershed Management (University of La Plata, Argentina).

Jeffrey Karn

Jeffrey Karn is the Secretariat of the Arctic-HYCOS project and works for the National Hydrologic Service of Environment and Climate Change Canada as a hydrometric network design and WMO analyst. Jeff is also the secretariat for the new Canadian Hydrology Working Group which aims to integrate Canadian hydrology across stakeholders and disciplines.

Cristopher Spencer

Cristopher Spencer joined the Hydrologic Research Center (HRC) in March 2007 as a member of the Information Technology department. Since joining HRC, he has participated in the collaborative efforts of HRC researchers and engineers in the development and distribution of real-time operational hydrometeorological modeling systems. With a background in Computer Science, his primary contributions to the development of these decision support systems is in the areas of system software design, implementation and administration as well as ongoing end-user training and support.

David Gustafsson

David Gustafsson is a senior scientist in the Hydrology Research Unit at the Swedish Meteorological and Hydrological Institute (SMHI), and an expert in modelling cold climate hydrological processes, hydrological data assimilation and application of earth observation data in hydrological model forecasting and analysis. He is Swedish PI in the WMO Arctic-HYCOS project where the national hydrological institutes of the Arctic Council member states cooperate for sustaining hydrological monitoring programs to provide open data for studies of Arctic river flow to the ocean and changes in the hydrological regime.

Johannes Cullmann

Mr Cullmann has joined the World Meteorological Organization (WMO) in 2015 as the Director of the Climate and Water Department. From 1 January 2020, he is the Director for Water and Cryosphere. He holds a Master in Hydrology, a PhD in Flood Forecasting as well as a Habilitation in Hydrology. Mr Cullmann was Director of the IHP/HWRP division (science and international cooperation) of the German Federal Institute of Hydrology from 2007 to 2015. From 2012 to 2014, he was President of the Intergovernmental Council of UNESCO's water programme. Mr Cullmann also coordinated German support for UNEP's water quality related activities, and he is familiar with data sharing arrangements in support of creating political trust in disputed situations. He was the Hydrological Advisor of German Permanent Representatives to WMO from 2007 to 2015.

Sophia Sandström

Sophia Sandström is a water professional and strategist with a track record in facilitating high-level dialogues and partnership building to advance the water agenda. As the Coordinator of the Global Hydrometry Support Facility (WMO HydroHub) at the World Meteorology Organization (WMO), Sophia engages national hydrological services, financing institutions and the private sector in order to enhance and innovate hydrological monitoring systems, build human capacity and facilitate the free and unrestricted sharing of water data. Prior to joining WMO in 2017, Sophia worked on a public-private partnership on water at the World Economic Forum in Geneva, on a water supply and sanitation project at the UNESCO Office in Jakarta and on international relations at the Japan Water Forum in Tokyo. Sophia holds a master's degree in Hydrology from the University of Freiburg in Breisgau, Germany.

Igor Chernov

Igor Chernov is an environment professional with in-depth experience in implementing projects that advance international hydrological data sharing. As HydroHub Project Officer, Igor is also responsible for the development and completion of the WMO Global Hydrology Survey and Distance Learning course on data sharing. Prior to joining WMO in 2017, Igor graduated as an engineer in Russia in 2010 and worked in the field of thermodynamics research. In 2016, he also graduated as an opera singer in Geneva and performed in Lyon's Opera House. After this experience, Igor turned his professional career towards environmental protection by graduating from the University of Geneva with a master's degree in environmental sciences and working as a consultant for the Global Water Partnership (GWP).