THE WORLD WATER QUALITY ALLIANCE NEWSLETTER

November 2023

The World Water Quality Alliance is convened by the United Nations Environment Programme and supported by the Swiss Confederation. It proudly presents its monthly newsletter, YEMAYA, named after the ancient African goddess of the ocean and motherhood. She is associated with fertility, femininity, protection, healing, and childbirth. Her domains are symbolized as water creatures: the seas, rivers, and lakes. She is honoured and revered in the African diaspora, particularly in Cuba, Haiti, Brazil, and the United States.

We, the World Water Quality Alliance Coordination Team, welcome articles about water quality. Tell us about your experiences. Describe the challenges you and your people face. Talk to our global community; talk to people from around the World. Send your articles to wwqa-coordination@un.org.

IN THIS ISSUE

Water at COP 28

In a landmark move, the 28th Conference of Parties of the United Nations Framework Convention on Climate Change (commonly referred to as COP28, taking place 30 November to 12 December 2023) UAE Presidency has set the stage to thrust water into the heart of climate discussions. With an unwavering commitment to amplify progress and elevate ambition, COP28 pledges to recalibrate the global focus on water within the climate agenda.

Outlined within the comprehensive COP28 Water Agenda are three pivotal areas earmarked for concentrated action during Water Day: the restoration and conservation of freshwater ecosystems, enhancing urban water resilience, and fortifying water-resilient food systems. These strategic priorities form the bedrock for COP28's two-week thematic program, reinforcing the critical role water plays in climate resilience and sustainability.

An instrumental step in this initiative is the collaborative partnership between the COP28 Presidency and the co-hosts of the UN 2023 Water Conference, the Netherlands and Tajikistan. Together, they will champion the COP28 Water Agenda, steering its direction and impact. Additionally, the thematic program includes a dedicated day to explore climate action across food, agriculture, and water, fostering dialogue essential for holistic climate strategies.

Central to the COP28 agenda is the inaugural UNFCCC high-level dialogue on water-resilient food systems, pivotal in shaping policies that intertwine food security with water resilience.

The Water Pavilion serves not only as an information hub but also as a catalyst to infuse these solutions into formal COP28 outcomes under the Paris Agreement instruments. Notably, the Pavilion also aims to assist governments in crafting impactful Nationally Determined Contributions (NDCs) and National Adaptation Plans (NAPs) by sharing crucial insights and knowledge.

Events hosting UNEP speakers throughout COP28 further underscore the commitment to water-related discussions. From climate-forward conservation strategies to ministerial roundtables on freshwater

ecosystems, each session reflects the concerted effort to integrate water into the broader climate narrative. Below is a list, with dates, of engagements that UNEP will be organizing/speaking at:

- ***1 Dec: Climate-Forward Conservation Strategies to Deliver on Global Targets***
- ***1 Dec: Solutions Toolbox to Save Coral Reefs session***
- ***2 Dec: Measuring progress in addressing drought risk and impact: the role of ecosystem-based approaches***
- ***2 Dec: High-Level Launch of the Coral Reef Breakthrough***
- ***4 Dec: Water targets, metrics and the path forward***
- ***5 Dec: Water Transversality & Climate Risk: Adaptation, Mitigation & Resilience Building***
- ***10 Dec: Wastewater and Nutrient Management: A Key for Climate, Water, Food and Energy Security***
- ***10 Dec: Ministerial roundtable on the protection and restoration of freshwater ecosystems***

A few WMO events at COP:

1 Dec: EW4All AI innovations to scale impact

2 Dec: Partners Roundtable Forum for the Implementation of EW4All in Africa Action Plan

10 Dec: WMO Coordination Mechanism authoritative knowledge supporting humanitarian action

As COP28 approaches, the stage is set for a pivotal moment in global climate discourse. With water taking its deserved place at the forefront, the world braces for comprehensive, inclusive, and transformative action to secure our planet's future.

Sulagna Mishra, Scientific Officer at the World Meteorological Organization.

Please tell us some more about your background and your journey into the field of water resources management, climate change, and your current work with WMO.

My academic journey commenced with a focus on civil engineering in India, which evolved into a broader scope encompassing civil and environmental engineering. During my undergraduate studies, I delved into hydrology and environmental courses, sparking an interest in water-related projects. I developed a portable water purification system to address water scarcity in villages prone to frequent power cuts.

Motivated by the tangible impact of this initiative on people's lives, I redirected my academic focus towards environmental aspects. This transition led me to pursue a master's degree in hydrology and environmental management, followed by a PhD in hydrological modeling, explicitly focusing on water quality. My doctoral research delved into studying antibiotic-resistant genes as critical variables in water quality, exploring their impact on the environment and devising methods to minimize environmental impact through natural processes.

Armed with a commitment to devising cost-effective and applicable solutions, I joined the World Meteorological Organization (WMO) about 2 years ago as a scientific officer after my Ph.D . In this role, I coordinate the Hydro SOS program, which stands for the Hydrological Status and Outlook System. This program serves as a platform for countries to assess the status of their water resources, considering both quality and quantity. It facilitates comparisons with historical averages, aiding in understanding the impact of climate change, overuse, or precipitation variations.

Hydro SOS also offers predictive insights for the upcoming months, empowering policymakers and water managers to plan resources effectively. Though yet to be globally operational, the program aims to generate a comprehensive 'state of the water resources' report when fully implemented. The report will highlight global hotspots, areas requiring investment, and data deficiencies, contributing to improved forecasting and monitoring of floods and droughts worldwide.

As Hydro SOS is in its early stages, we currently manually compile water resources reports by collecting data from various sources, including data centres and repositories, international networks, and partners

such as NASA and Copernicus. This data synthesis allows us to assess the current year's performance against historical averages for i.e. stream flow, groundwater, soil moisture, evapotranspiration, total precipitation, storage, and snow compartments.

Furthermore, we identify and analyze the most impactful floods and droughts globally, emphasizing the need for improved forecasting and monitoring to enhance preparedness. My work at WMO involves leading Hydro SOS, a program with the vision of providing real-time, globally accessible information on water resources fostering sustainable water management practices across diverse regions and countries.

1 - Image provided by Sulagna Mishra, Scientific Officer at the World Meteorological Organization.

The link between climate change and water is often portrayed through the lens of climate impacts on water quantity, be it too little water or too much water. There is obviously a linkage between water quality and climate change; Can you tell us more

about how projected changes in the climate have a direct or indirect impact on water quality in different areas?

Addressing the intricate relationship between climate change and water quality requires understanding the diverse impacts that climate change exerts on water resources. While it may be challenging to provide precise quantitative answers, it is evident that climate change significantly influences water quantity and, subsequently, water quality.

One notable consequence of climate change is the accelerated melting of glaciers, increasing water availability during specific periods. However, this abundance is temporary, as the loss of glaciers over time results in water scarcity. A pertinent example is observed in Central Asia, where the last 50 years witnessed the loss of over 1000 glaciers. This surplus water may initially benefit the region. Still, it will inevitably become a water deficit once the glaciers disappear, prompting the need for alternative and potentially unsustainable solutions, such as desalination.

Desalination, while a potential remedy, introduces its challenges, including environmental repercussions such as brine disposal. The decision on whether to reintroduce brine into aquatic environments or find alternative disposal methods poses complex dilemmas. Climate change exacerbates these challenges by disrupting traditional hydrological cycles and altering the balance of water distribution globally.

A direct impact of climate change on water quality stems from alterations in the hydrological cycle. The reshuffling of water resources manifests in unprecedented patterns, transforming previously dry areas into lakes and vice versa. Such transformations directly affect communities, particularly in regions where water scarcity was not historically an issue. For instance, a reduced river discharge may intensify pollutant concentrations from wastewater treatment plants as there is less water to dilute them, jeopardizing water quality.

Moreover, excessive groundwater extraction, a consequence of water deficit driven by climate change, can compromise aquifer quality. Over-pumping may lead to infiltration issues, further affecting the integrity of aquifers. While pinpointing specific areas vulnerable to these changes is challenging, regions experiencing water deficits due to climate change will inevitably encounter elevated concentrations of pollutants. The dilution capacity of water bodies diminishes, intensifying the impact of pollutants.

Overall, climate change exacerbates existing water quality challenges, necessitating holistic, sustainable strategies for water resource management. This includes understanding the evolving dynamics of water availability, anticipating shifts in pollution patterns, and implementing adaptive measures to safeguard water quality amidst changing climate patterns.

What are some of the solutions to resolve existing climate change and water quality issues?

I would like to introduce a fresh perspective on the relationship between climate change and hydrology, challenging the conventional notion that water is impacted by climate change and on the 'receiving end' of these impacts. I suggest reframing the narrative to consider how understanding water quantity and quality can be crucial in mitigating and managing climate change. Contrary to the common belief that climate change is an uncontrollable force requiring adaptation, I contend that water can be viewed as a a potential solution instead of always being a victim.

This knowledge can be instrumental in developing effective mitigation strategies by emphasizing the need to proactively gather information about water resources, especially in changing climate patterns. The idea is to forecast water availability over subsequent seasons and years, enabling strategic planning and utilization of water resources for mitigation purposes. The example of re-wetting wetlands is presented as a potential mitigation solution that could result in the absorption of carbon dioxide and other greenhouse gases.

I express my concerns about the underutilization of water resources for mitigation efforts due to a need for more information. Despite having adequate water in certain regions, the absence of data prevents exploring these resources for addressing climate change challenges. I underscore the scientific evidence supporting the positive impact of a healthy aquatic environment on mitigation efforts.

In conclusion, there is a call for a holistic perspective that acknowledges the interplay between climate change and water resources. Instead of viewing water as a passive victim, it should be recognized as a potential actor in mitigating the broader challenges of climate change. By leveraging scientific insights into water quantity and quality, society can tap into the potential of water resources to actively contribute to addressing the complexities of climate change.

WMO State of Water Global Resource Report

WMO's State of Global Water Resources report for 2022 has been launched, following the success of the first pilot report launched last year in response to calls made at various global forums for an independent and consistent assessment of global water resources to guide policy discussions. The State of Global Water Resources report is one among the 3 commitments of WMO made the UN 2023 Water Conference Water Action Agenda. This WMO flagship report gives a concise presentation of the status of water resources in large basins in comparison to the long-term average, for various variables characterizing the water cycle. In comparison to the first edition that reported conditions of streamflow, terrestrial water storage and selected cryosphere parameters only, the present 2022 WMO State of Global Water Resources report is extended to include variables describing, groundwater, evapotranspiration, soil

moisture, reservoirs along with an overview of the major extreme hydrological disasters around the globe in 2022. The 2022 report has also improved compared to the pilot report in terms of spatial disaggregation of the basins thanks to the contribution from WMO Members and other experts with respect to in-situ and modelled data. I would also like to comment on increased engagement in the various rounds of review of the content.

Full report can be found at: https://library.wmo.int/idurl/4/68473

2 - Video by WMO - Full report can be found at: https://library.wmo.int/idurl/4/68473

Gamification as a way of Educating the Youth on Water Use

The Adala team played Downstream, the H20 Game, at Watoto Library and at the WWQA conference. Downstream is a Kenyan board game that aims to educate and challenge perceptions on water use. DownStream focuses on teaching the players about the water cycle, climate change, water conservation, and sanitation through question cards and chance cards.

There were about fifty children at the library, ranging from four years old to sixteen years old, both boys and girls. I started by introducing the game and sharing the inspiration behind making the game. The game is inspired by a drought in Kenya in 2016 when we needed to buy water weekly since the dams providing water to Nairobi were dry. I was living with my parents at the time and noticed that at times I used double and sometimes triple the amount of water they used in tasks such as bathing. This challenged me to use water wisely and to teach others to do so too so that future generations can also have clean water.

After playing the game, we had a brief discussion with the children, and they mentioned how the conserved and used water:

- *They reuse all the water they use for washing clothes and utensils to mop the house, clean their compound, wash their shoes, and clean their toilets.*

- *They all use water-filled cups to brush their teeth and wash their faces.*

- *They collect rainwater for laundry, flushing toilets, and mopping floors*

I learned a lot from this group of children and was challenged about how I use water at home. It was interesting to observe that children from less privileged backgrounds with little to no access to water, were more conscious about the use of water than people (both children and adults) from more affluent neighborhoods.

Here are some of the questions the children asked me:

- *They were interested to know where they could report broken pipes and how long it took to repair them.*

- *They were curious about how the sewage system works, and where the feces and urine go whenever they use the toilet or a pit latrine.*

- *They asked about the details involved in the use of an exhauster truck, how it works, and where it takes the waste.*

- *They were interested to know where the water they get from taps comes from.*

At the WWQA conference, we played the game with an older age group during the tea and lunch breaks, the youngest being university students. When I followed up with one of the participants, they told me that because of the game they now use a bucket to reduce their shower time. It was an honor to participate in both WWQA events. Our quest to save water one drop at a time continues. To many more water adventures!

Article Contributed by Grace Kinya co-founder and creative director of Adala Studios, a Kenyan game company that creates educational games.

3 - Image Contributed by Grace Kinya co-founder and creative director of Adala Studios, a Kenyan game company that creates educational games.

4 - Image Contributed by Grace Kinya co-founder and creative director of Adala Studios, a Kenyan game company that creates educational games.

World Toilet Day

Sunday, November 19, marked World Toilet Day, shedding light on the pressing issue of global access to safely managed sanitation. With 3.5 billion people still lacking safe toilets and 419 million practicing open defecation, the dire situation not only poses environmental risks but also threatens public health, particularly for women, girls, and vulnerable groups.

The Global Sanitation Crisis: The stark reality is that 3.5 billion people around the world are living without access to safe toilets, and 419 million individuals still resort to open defecation. Tragically, this has led to the spread of diseases, claiming the lives of 1,000 children under the age of five each day.

Impact on Conflict-Affected Areas: The situation is exacerbated in regions affected by armed conflict or violence, creating a global crisis that jeopardizes both the environment and the health of entire populations, with women, girls, and vulnerable groups facing heightened risks.

Call to Action on World Toilet Day 2023: World Toilet Day 2023 served as a crucial opportunity for individuals and organizations to drive change. The UN-Water 2023 World Water Day and World Toilet

Day Task Force, along with UN-Water colleagues, provided actionable ideas to make a meaningful impact.

World Toilet Day 2023 was a call to action for everyone to address the global sanitation crisis. By taking individual and collective steps, we can contribute to improving access to safe sanitation, protecting the environment, and safeguarding the health and well-being of communities worldwide.

The WWQA BULLETIN BOARD

International Conference- Towards a Global Wastewater Surveillance System for Public Health

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UNEP attended the International Conference "Towards a Global Wastewater Surveillance System for Public Health", which was organized by the European Commission's DG HERA and Joint Research Centre (JRC) from 15-17 Nov 2023. This conference, the first of its kind, was organised with the aim to create the basis for a Global Wastewater Consortium to ensure the integration of wastewater-based surveillance into core public health functions. With a lot of fruitful engagements and interesting country perspectives, a key outcome of this conference was the development of a roadmap outlining future activities that would contribute to enhancing ongoing work on wastewater-based surveillance for public health and one health, also recognising the important role that the environment plays. UNEP will actively contribute towards the development of this global consortium.

The World Water Quality Hub - Please share your views!

The World Water Quality Alliance (WWQA) has its beginnings at the third session of the UN Environment Assembly in 2017 when solution 3/10 "Addressing water pollution to protect and restore water-related ecosystems" was adopted, which requested the UN Environment Programme (UNEP) to develop a Word Water Quality Assessment. With support from the World Meteorological Organisation (WMO), UNEP organized a workshop in December 2018, bringing together different stakeholders to design an action plan with regard to emerging issues in water quality. This marked the founding of the WWQA.

The WWQA has identified 10 areas of focus for the World Water Quality Assessment, and the World Water Quality Hub was developed to support this initiative and gather information on these focus areas.

The World Water Quality Hub provides access to freshwater quality datasets and products contributed by members of the World Water Quality Alliance and other partners to support the development of a World Water Quality Assessment. More information on current contributors can be found here.

We value your feedback regarding the hub. Please click on the link below to be directed to the survey

Feedback form :World water Quality Hub

Additional Resources for World Water

Citizen science and UN Sustainable Development Goals 6.3.2 Knowledge sharing workshop

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Global Environment Monitoring for Freshwater (GEMS/Water) and the World Water Quality Alliance Citizen Science Workstream in collaboration with Earthwatch Europe will be holding a workshop on Citizen Science and UN Sustainable Development Goals 6.3.2.

The workshop aims to:

- *provide insights from the field*
- *delve into related experiences on citizen science support for regulatory water resource monitoring*
- *discuss site selection, citizen scientist recruitment, exploring lessons learned, best practices, and new perspectives*

This workshop goes beyond boundaries, fosters collaboration, and innovation. Let's work together for a water-secure future.

Call for Nominations GEO AquaWatch Management Team

AquaWatch, the Group on Earth Observations (GEO) water quality initiative is developing and building the global capacity and utility of EO-derived water quality data, products and information to support effective monitoring, management and decision making. GEO AquaWatch seeks nominations of individuals to serve on our Management Team for the 2023-2026 triennium. Early Career Scientists are encouraged to apply. These roles are unpaid and voluntary.

This call seeks individuals from diverse backgrounds and expertise within the water quality community including governmental agencies; academia; industry representatives; and non-governmental-, non-

profit-, and intergovernmental-organizations. A variety of stakeholder perspectives is sought for this role – from the data production to the end users. Self-nominations are welcome.

The call seeks candidates with any of the following expertise:

- *Operational Forecasting*
- *Research Interest in the Earth Observation and Water Quality realm*
- *Responsibility for protection and stewardship of inland and coastal waters;*
- *Public administration supporting conservation planning, habitat restoration, ecosystem services, sustainable management practices;*
- *Environmental law and standards, or policy and diplomacy of water quality uses;*
- *Science communication, education, and outreach;*
- *Hazard mitigation and disaster response management.*

For more information click on the link: Call for Nominations GEO AquaWatch Management Team – AquaWatch

UNESCO Webinar

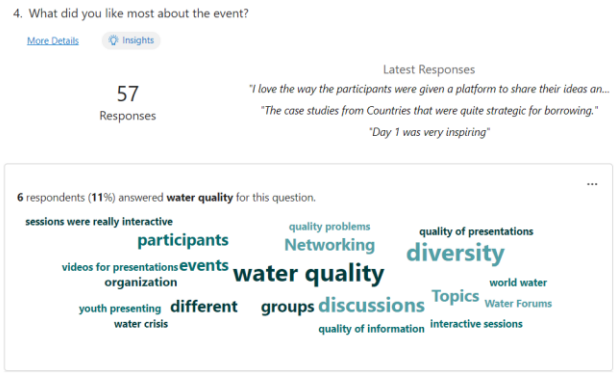
UNESCO is organizing a webinar "Recent development and implementations of Ecohydrology for SDG acceleration in the framework of the UNESCO Intergovernmental Hydrological Programme" that will take place on 05.12.2023 at 10 am CET.

Link on the link to register: Registration Form

The WWQA Annual Conference Feedback Report Summary

What did you like most about the event

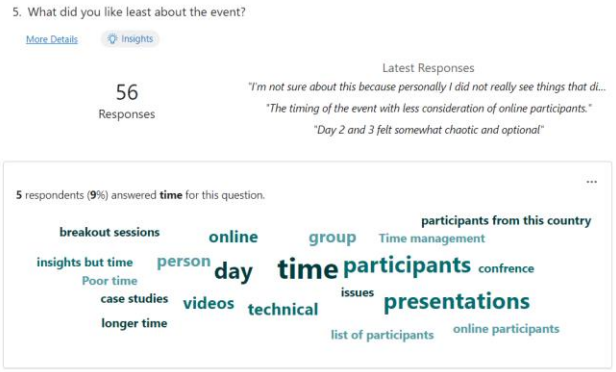
The conference received high praise from attendees for its diverse themes, exceptional speakers, and informative sessions that engaged participants. Discussions were open and engaging, involving stakeholders like local water forums and youth-led initiatives. Interactive sessions facilitated meaningful networking and knowledge exchange among diverse participants. The event showcased innovative approaches, emphasized environmental consciousness, and encouraged partnerships to address water crises. Sustainability, capacity building, and actionable steps for community water quality resonated strongly. Overall, the conference's inclusivity, engaging presentations, and networking opportunities made it a valuable and inspiring experience, emphasizing collaboration and solutions for water quality issues.



What did you like least about the event?

While the conference received overall positive feedback, constructive criticisms were noted.There was an emphasis on the importance of including policymakers in the discussions to enhance decision-making

impact. Additionally, ensuring good internet connections for online participants was highlighted as a crucial improvement. Attendees also stressed the need for simplifying complex video presentations for better understanding. The demand for increased networking opportunities was emphasized, recognizing the value of fostering connections among participants. Lastly, there was a call for enhanced time management strategies to optimize the efficiency and flow of the conference proceedings.



What are your suggestions for Improvement for the WWQA annual conference?

Participants further contributed to the conference's improvement through insightful suggestions which included streamlining the registration process, extending the conference duration for comprehensive discussions, providing certificates for online participants, planning more physical events, collaborative committee preparation, breakout sessions with actionable plans, increasing community participation, showcasing workstream synergies, creating funding opportunities for young scientists, involving government officials, and promoting structured integration and knowledge sharing among different groups. These suggestions aimed at addressing various aspects, including logistics, representation, engagement, and the overall conference experience.

Job Openings

We are happy to share with you the vacancy announcement for the Resource Mobilisation and Partnership Officer (P4) position in the UN-Water Technical Advisory Unit (deadline for applications 28 November 2023)

In the December Issue of YEMAYA

- *Water and Food nexus*
- *December Interview: Marc Watum*
- *Results from COP 28*

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WWQA
World Water Quality Alliance

*Unless otherwise indicated, all contributions are by the WWQA coordination team.

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YEMAYA welcomes articles, opinions and audio-visual material related to the issue of water quality. Please send any contribution to wwqa-coordination@un.org with a short 100-word biography, the name of your organisation and a phone number where you can be contacted.