Policy and Technical Solutions for Water Data Diplomacy and Exchange: Part 1

Africa Hydrological Conference Program Session

Cairo Water Week | Africa Water Week

October 15, 2024 | Part 1 9:30 – 11:00 | Cairo and Online
| Part 2 11:30 - 13:00 | Cairo and Online

In partnership with:

Part 1: A New Era for Water Data Diplomacy?

Welcome and Introduction

Dr. Faith Sternlieb
Associate Director, Internet of Water
Center for Geospatial Solutions
Lincoln Institute of Land Policy

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Session Agenda:

- **PART 1**
  - Ignite Speech: Good Practices and Lessons Learned in Data-sharing in Transboundary Basins
  - Experience Exchange Panel Discussion: Integrating Data into Diplomacy and Diplomacy into Data

Networking Break!

- **PART 2**
  - Setting the Context: Current state of WMO Hydrological Observation System and future plans
  - Introduction: Mapping Water Data Management and Exchange
  - Engagement Exercise
  - Closing Remarks and Exit poll

Session Objectives:

- Engage experts and key stakeholders on a dialogue about experiences and opportunities in water data diplomacy.
- Explore data diplomacy from a variety of perspectives and at multiple scales.
- Consider how innovative water diplomacy approaches can enhance water data management systems.
- Foster and expand existing and new partnerships to further develop the field of water data diplomacy.

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Logistical Notes

- This session is being recorded and livestreamed to enable online participation.
- French and Arabic Interpretation channels are available.
- We plan to take a group picture at the close of the program – all welcome!
- Take advantage of the Networking Break to connect with others!
- Please complete the session exit poll at the close of the workshop.
- All participants are encouraged to actively participate, share their expertise and experience throughout the session!

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OUR MISSION

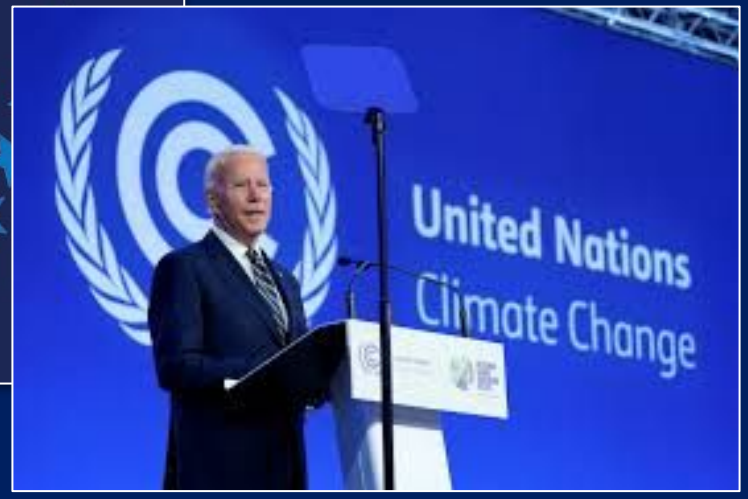
To enable data-driven decisions for the greater good of land, water, and people.

Better Water Data for Better Water Management

CENTER FOR GEOSPATIAL SOLUTIONS + Internet of Water COALITION

Leading the charge to modernize water data systems and infrastructure and make information about water easier to find, access, and use

PRESIDENT'S EMERGENCY PLAN FOR ADAPTATION AND RESILIENCE (PREPARE)



Over $3 billion annually to help countries strengthen their resilience, especially to climate shocks.

Data access, enabled by open-source software, is essential to meeting these goals.

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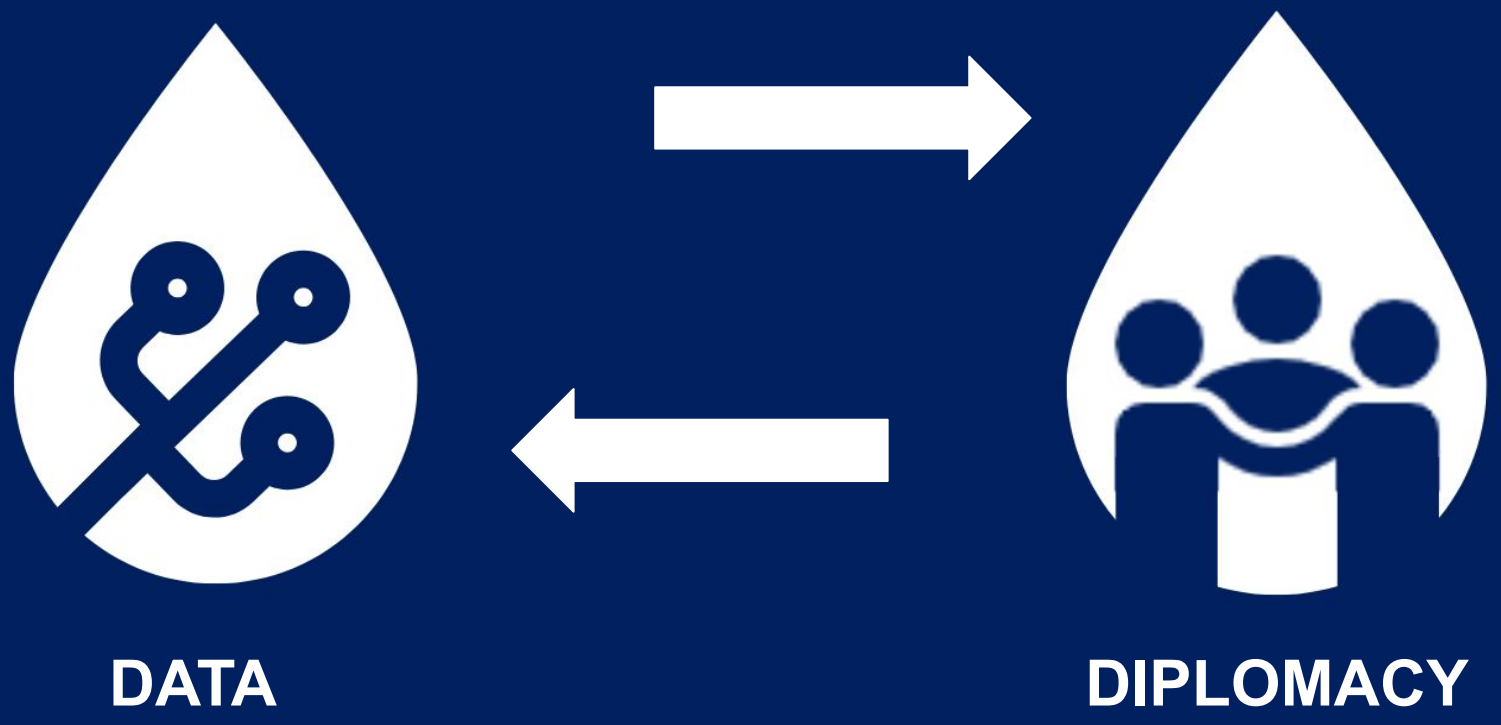
Data Access for Urban Climate Resilience in Africa for Early Warning Systems

LEARNING Conduct listening sessions on water data use, practices, and preferences OCTOBER 2024 - OCTOBER 2025	**DEVELOPMENT** Organize code springs to build free, open source software APRIL 2025 - MAY 2026	**TRAINING** Launch the software with Agencies in three pilot African countries APRIL 2025 - DECEMBER 2027

Why do we need Water Data Diplomacy?



What does Water Data Diplomacy Look Like?





SAFE SPACE FOR OPEN DIALOGUE	BRINGING TOGETHER DIVERSE STAKEHOLDERS	BUILDING LONG-TERM RELATIONSHIPS	RESPONSIBLE, CONSENSUAL DATA SHARING	GOING BEYOND DATA SHARING

Ignite Speech: Good Practices and Lessons Learned in Data-sharing in Transboundary Basins

Dr. Komlan Sangbana
Legal Officer,
United Nations Economic Commission for Europe

Good Practices and Lessons Learned in Data-sharing in Transboundary Basins

Komlan Sangbana

Legal Officer, Water Convention Secretariat

United Nations Economic Commission for Europe

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More than **3 billion people** worldwide depend on water that crosses national borders.

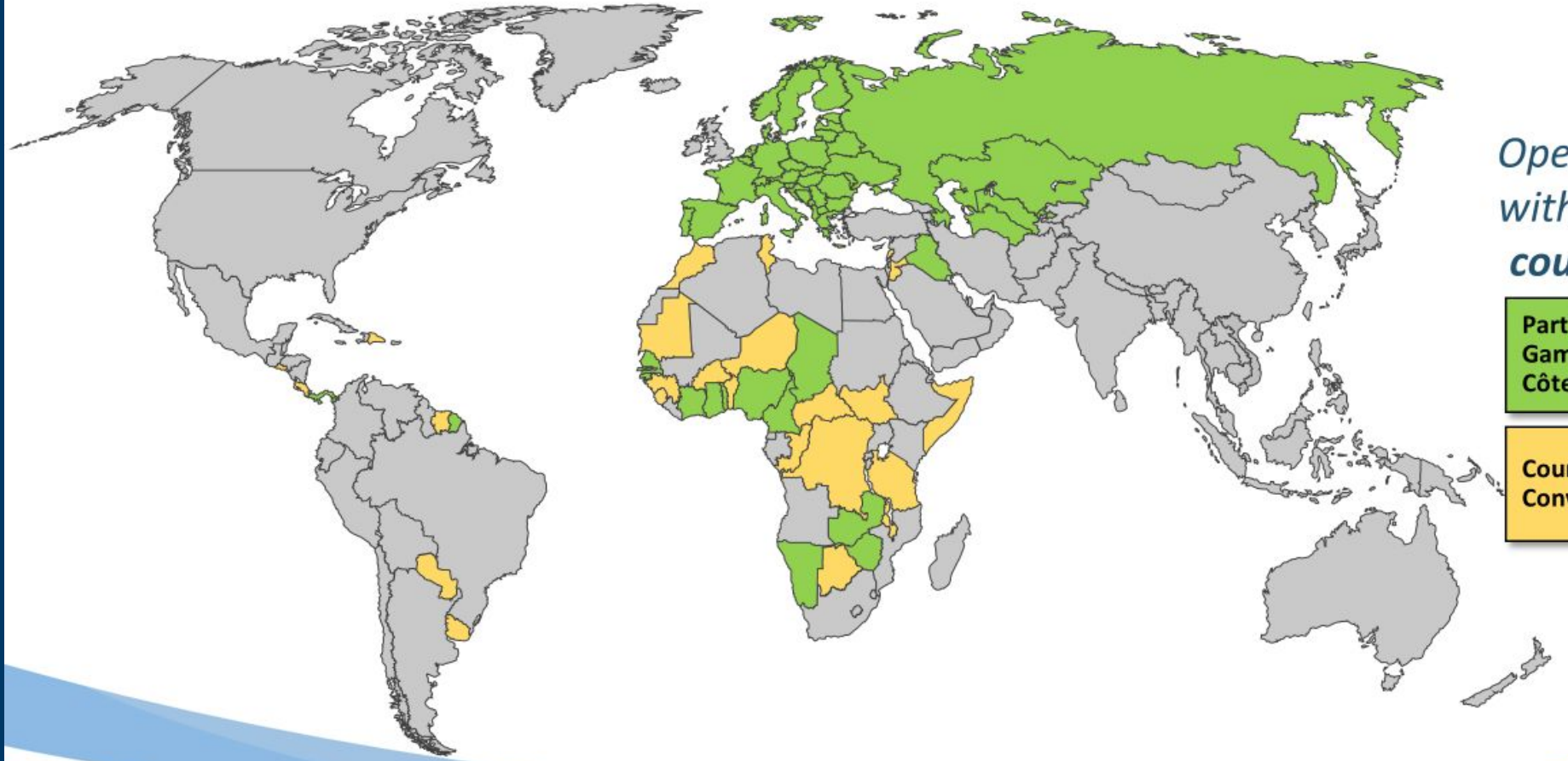
Yet **only 43 countries** (out of 153 countries sharing water) report having **operational cooperation agreements** for 90% or more of their shared water.

Main challenges related to data exchange include **comparability** of data and information, **inadequate resources, limited spatial coverage** and **frequency of exchanges**.

Source: Report of the 3rd monitoring exercise of SDG 6.5.2 (2023), image: Adobe Stock

1992 UN Water Convention

*A global **legal and institutional framework** for transboundary water cooperation contributing to **sustainable development, international peace and security**.*



*Opened to **all interested countries**, with **55 Parties** and more than **130 countries** exchanging experiences*

Parties to the Convention (55) – newest: The Gambia, Panama, Namibia, Nigeria and Iraq (2023), Côte d'Ivoire, Zambia and Zimbabwe (2024)

Countries in the process of accession to the Convention (>20)

Last update: 6 September 2024

Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations

Monitoring, Assessment and Data-sharing under the Water Convention

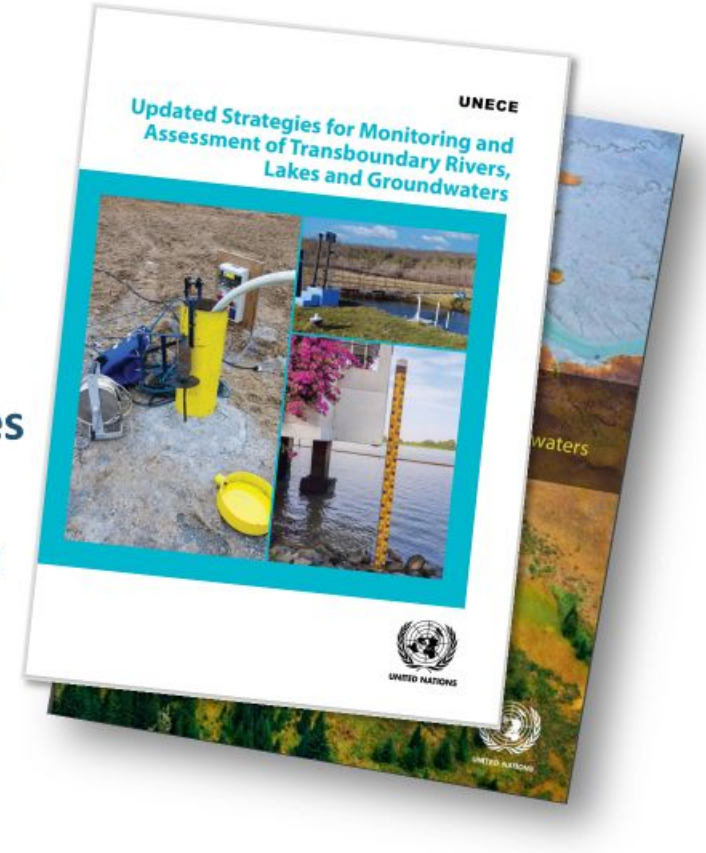
Article 4: Parties shall **establish programmes for monitoring** the conditions of transboundary water

Article 6: Parties shall provide the **widest exchange of information as early as possible**, on issues covered by the provisions of the Convention

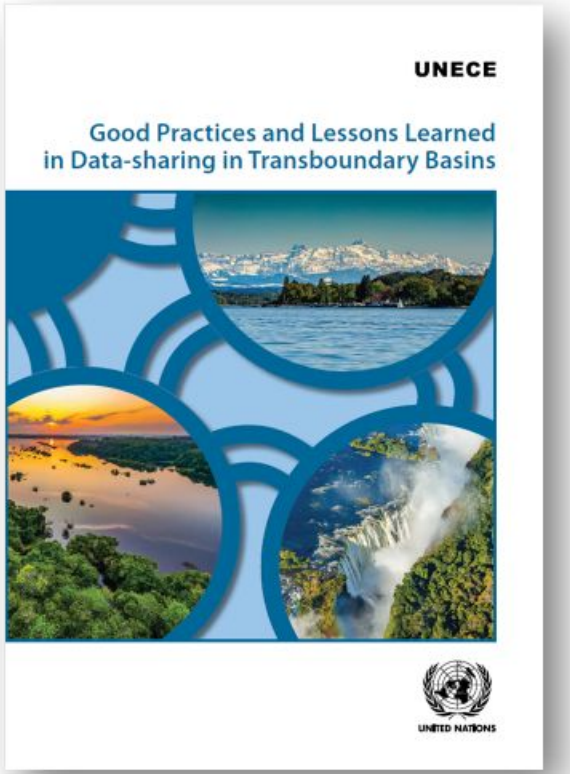
Article 11: Riparian Parties shall **establish and implement joint programmes** for monitoring the conditions of transboundary waters

Article 13: Riparian Parties shall **exchange reasonably available data** within the framework of **relevant agreements or other arrangements**

The **Working Group on Monitoring and Assessment** implements related work. Recent focus on updating and developing guidance materials.



Good Practices and Lessons Learned in Data-sharing in Transboundary Basins



43 lessons learned supported by **78 case studies** from around the world, highlighting the **importance of data-sharing in transboundary waters globally.**

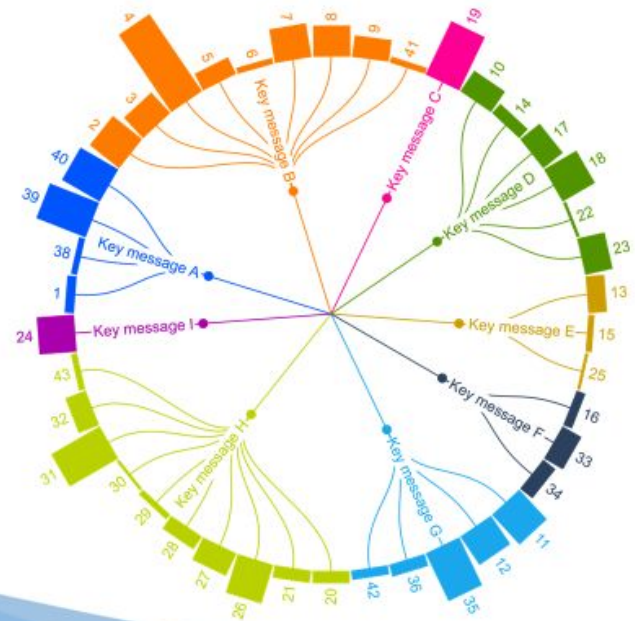
The case studies were collected through open call, expert meetings and regional workshops. They illustrate **real life examples**, including **both difficulties and challenges** faced and **solutions and ways of organization** that countries and joint bodies have found useful. Includes **innovative approaches** such as **machine learning** and **citizen science**.

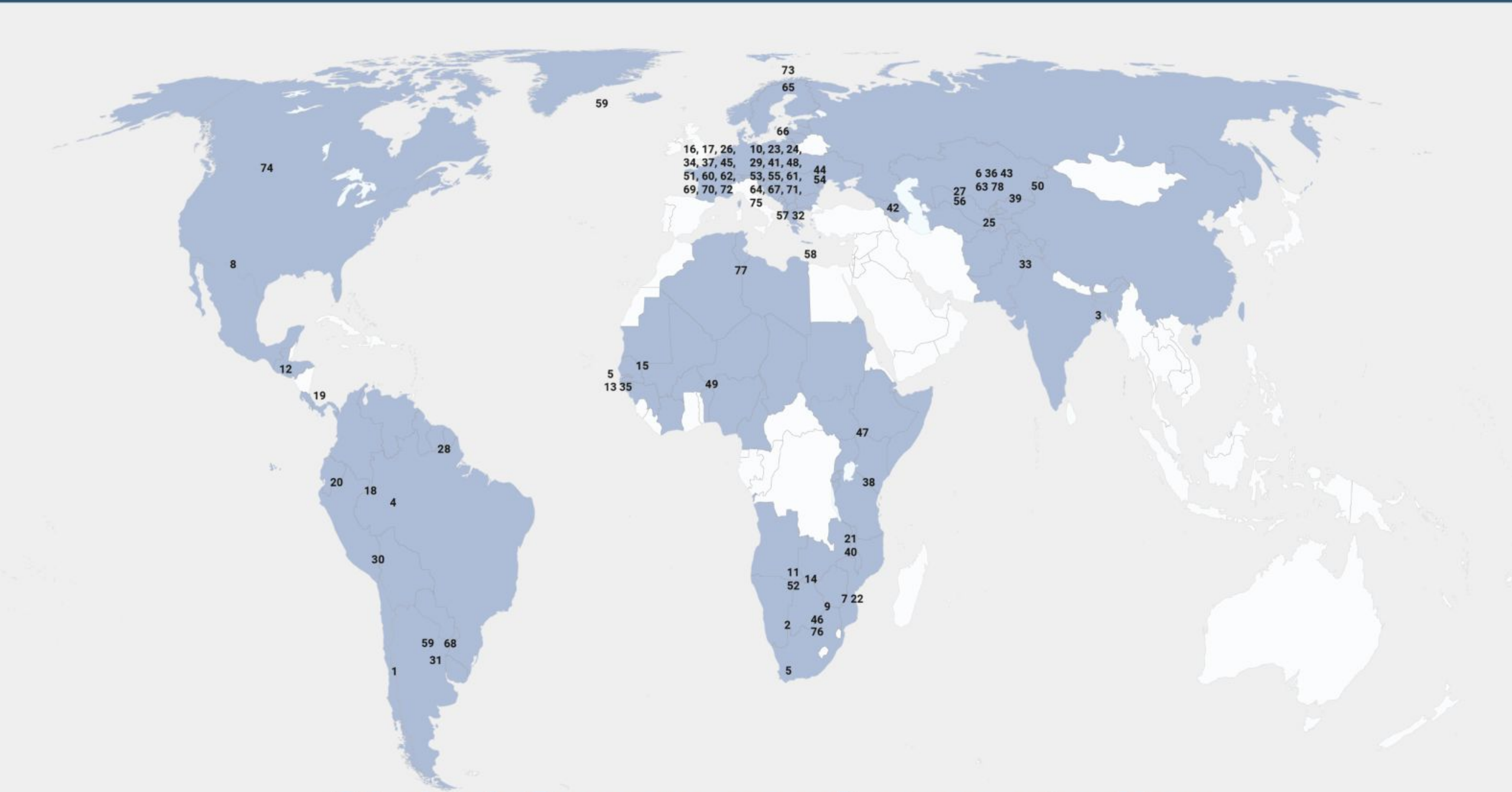
Supports **all actors working on monitoring programmes and data- and information-sharing** in transboundary basins at both national and transboundary levels, including joint bodies, decision-makers and NGOs.

Complements existing guidance, such as the **Updated Strategies for Monitoring and Assessment of Transboundary Rivers, Lakes and Groundwaters (2023)**

Key Messages

"Data- and information-sharing forms a **common basis for transboundary cooperation**, enables **informed decision-making, builds trust between stakeholders** and helps to **maximize the benefits of cooperation** over shared waters."





Global Coverage of case studies

Case studies provided by Loreen Katiyo, GWP-SA

Save River in Mozambique (Adobe Stock)

Case study 7 and 22: Data-sharing in the Buzi, Pungwe and Save basins

Mozambique and Zimbabwe, with support from the Buzi-Pungwe-Save (BuPuSa) project of the Global Environment Facility (GEF), have developed a Data-sharing Protocol, under which the two countries agreed to share information on the best available technologies as well as the results of relevant research and development. Emission data relating to pollutants and wastewater is limited to water quality and pollution threats. Potential planned measures have been identified and are included in the signed water sharing agreements, which require member states to notify each other of new planned measures well in advance. The Protocol also requires states to share national regulations relating to water sharing as well as data related to critical situations such as emerging floods or droughts, and accidental spills.

The Data-sharing Protocol promotes the harmonization of data collection, processing and storage. Each country has its own database, but plans have been made to establish a central repository of information – the Buzi Pungwe, Save Water Resources Information System (BuPuSaWIS). Both countries have agreed on different levels of access to data.

Currently, data are shared through weekly e-bulletins shared by email. Information is also shared daily through the BuPuSa WhatsApp group, particularly during the rainy season due to the high risk of flooding. Some key hydrological stations on the three transboundary rivers in both countries are being upgraded to transmit data in real time, with Data-sharing frequency ranging from 15 min to 1-hour intervals. Decision makers also receive weekly reports. In addition, relevant information is published on the websites of the water authorities – a weekly bulletin in Mozambique and dam levels in Zimbabwe. In both countries, information is also shared via TV and radio.

In July 2023, the Buzi, Pungwe, and Save Watercourses Commission (BUPUSACOM) was launched and tasked with planning, development, and management of the water resources within the three river basins.

Case studies provided by Phera Ramoeli, OKACOM

Okavango River in Botswana (Adobe Stock)

Case study 11 and 52: The OKACOM Decision Support System

The Okavango River basin is shared between Angola, Botswana and Namibia. Each country has a statistical agency which functions as the primary national institution mandated with documenting, storing and distributing national data.

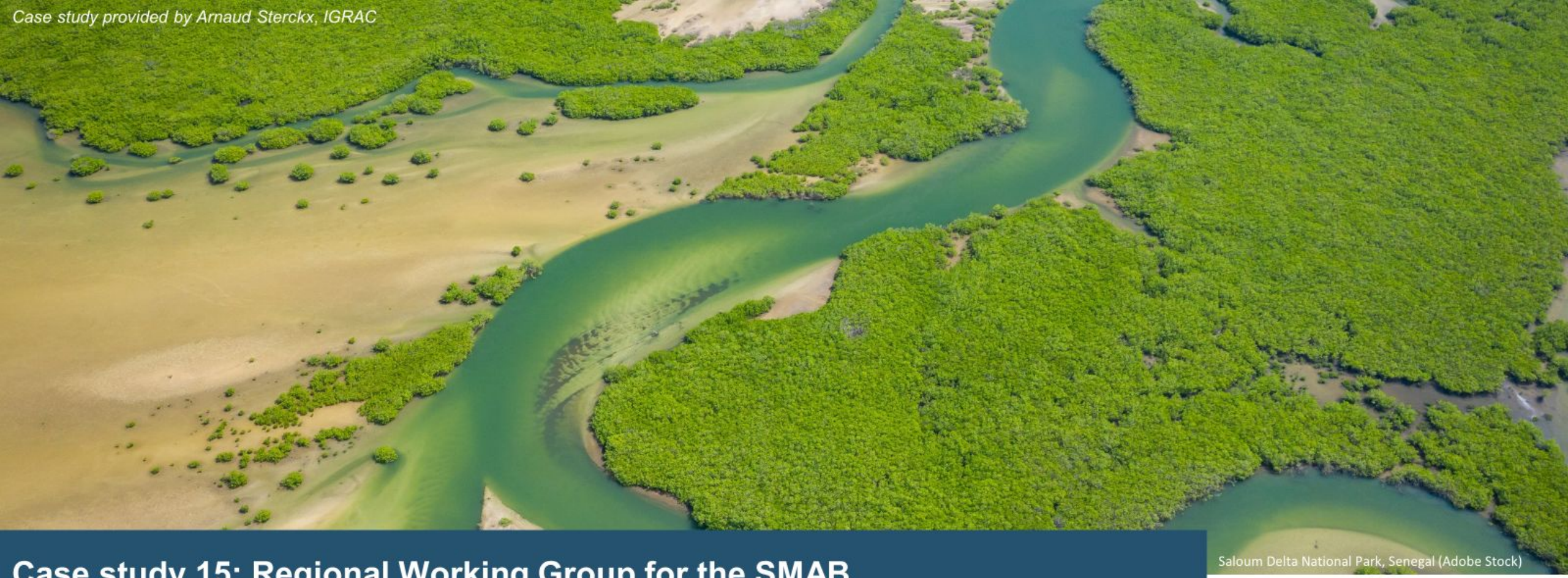
The development of the OKACOM Data Sharing Protocol, or DSP, started with member state visits to identify and compile the various legal instruments and procedures governing data-sharing. Following national consultations, a regional workshop on the DSP was held in October 2019 in Gaborone, Botswana. The workshop brought together members of the Okavango Basin Steering Committee (OBSC), the Water Resources Technical Committee (WRTC) and representatives from the three member states. At the workshop, the draft DSP was discussed, and a decision taken to adopt a one-part structure comprising general rules and procedures and relevant annexes.

The regional workshop paved the way for OKACOM to finalize and endorse the DSP as the jointly agreed guidelines and instrument for data-sharing among member states. Since 2020, data-sharing has been carried out based on this agreement. The DSP also describes the broader categories of water resources data and information required for responsible basin management. This approach facilitated the establishment of the OKACOM Environmental Monitoring Framework, a compendium of procedures and standards for monitoring and data collection.

The data-sharing procedures also specify some quality assurance principles. The OKACOM Decision Support System (DSS) ensures that data from all Member States will be stored in a consistent format, and, at the same time, provides a platform for the harmonization of national databases in terms of data format, technology and systems used for hydrometeorological gauging and data storage. To fill data gaps and augment data availability at strategic management points in the basin, OKACOM, with financial assistance from the European Union, has installed eight hydromet stations.

The data from the hydromet stations is fed into the flood early warning system and used for basin assessment through modelling. Decision makers are informed of the results through direct information sharing and at twice-yearly OKACOM statutory meetings. Essential information is posted on the OKACOM website. However, detailed analytics of the water resources situation in the basin are accessible through the DSS dashboard section, which provides similar information to the public through the Web. In addition, key information is shared with local basin communities through visits and awareness programmes.

Case study provided by Arnaud Sterckx, IGRAC



Saloum Delta National Park, Senegal (Adobe Stock)

Case study 15: Regional Working Group for the SMAB

The Senegalo-Mauritanian Aquifer Basin (SMAB) is shared between the Gambia, Guinea Bissau, Mauritania and Senegal. As part of its accession process to the Water Convention, Senegal requested support to develop a cooperation initiative for the aquifer and deepen its knowledge of the aquifer. In April 2020, the Regional Working Group for Transboundary Cooperation on the SMAB was established with support from the Water Convention Secretariat, bringing together four governments, OMVG and the Organization for the Development of the Senegal River (OMVS).

Data- and information-sharing is the responsibility of the Department of Water Resources (DWR) in the Gambia, the General Directorate of Water Resources (Direção Geral de Recursos Hídricos, DGRH) in Guinea-Bissau, the National Centre of Water Resources (Centre National des Ressources en Eau, CNRE) in Mauritania, and the Directorate of Water Resources Management and Planning (Direction de Gestion et de Planification des Ressources en Eau, DGPRE) in Senegal. Focal persons from these four institutions form part of the Regional Working Group, a body mandated to sharing data and advance cooperation in groundwater management among the four countries of the SMAB.

Cooperation through the Regional Working Group strengthened understanding of the aquifer's characteristics and led to the development of a joint vision. In September 2021, ministers in charge of water in the four states signed a declaration committing the countries to establish a legal and institutional framework for cooperation on sustainable management of the SMAB. They also charged the Regional Working Group with enabling the sharing of data on the SMAB. The two transboundary basin organizations (OMVS and OMVG) will jointly provide the Secretariat for the Regional Working Group, which will elaborate the future intergovernmental mechanism for concerted management of the SMAB. External funding is being sought to finance activities planned by the Regional Working Group, including the sharing of data.

Key takeaways

Effective and sustainable data-sharing needs an **enabling environment**, including policy, legal and financial arrangements as well as continuous communication channels.

A **technical basin-wide approach** to data- and information-sharing needs to be backed by **political will** to make the necessary policy decisions and conclude agreements in transboundary settings.

The **UN Water Convention** has a unique role as an **inter-governmental platform**, bringing countries and organizations together to discuss transboundary water cooperation, including data- and information-sharing practices.

10th session of the Meeting of the Parties to the Water Convention

10th session
Meeting of the Parties to the Water Convention
23-25 OCTOBER 2024 | LJUBLJANA | SLOVENIA

The **Meeting of the Parties to Water Convention**, takes place **every three years** and represents **the largest international event** driving the **transboundary water cooperation agenda** at the **global** level.

The **10th session** of the Meeting of the Parties is a **crucial milestone** as it will provide the opportunity to **engage with leaders from governments** and other organizations working in the field of transboundary water cooperation and management.

For countries, this represents a unique occasion to **contribute to shaping the international water agenda**.

#WaterConvention #MOP10

Thank you!

For more information, see:
www.unece.org/env/water and
www.unece.org/environment-policy/water/monitoring-assessment-and-information-sharing-transboundary-basins

For any questions, contact Erik Aarnos:
erik.aarnos@un.org

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Experience Exchange Panel: Integrating Data Into Diplomacy and Diplomacy Into Data

Ms. Jessica Troell
Senior Attorney
Director, International Water Program
Environmental Law Institute

Experience Exchange Panel:

Integrating Data into Diplomacy and Diplomacy into Data

Facilitated by:
Jessica Troell, Senior Attorney and Director, International Water Program, Environmental Law Institute; *with*:

Expert Panelists:

- **Dr. Tahani Sileet**, AMCOW Technical Advisory Committee Chairperson and Minister Assistant for International Cooperation at Ministry of Water Resources and Irrigation, Egypt
- **Harriette Okal**, Research Fellow/Associate Scientist (Water Systems), Stockholm Environment Institute Africa
- **Eng. Abdelrahman Saghayroon Elzein**, Director General for Nile Waters Affairs of Sudan's Ministry of Irrigation and Water Resources and the executive director of PJTC in Sudan
- **Betty Nangira**, National Meteorological Authority, Uganda

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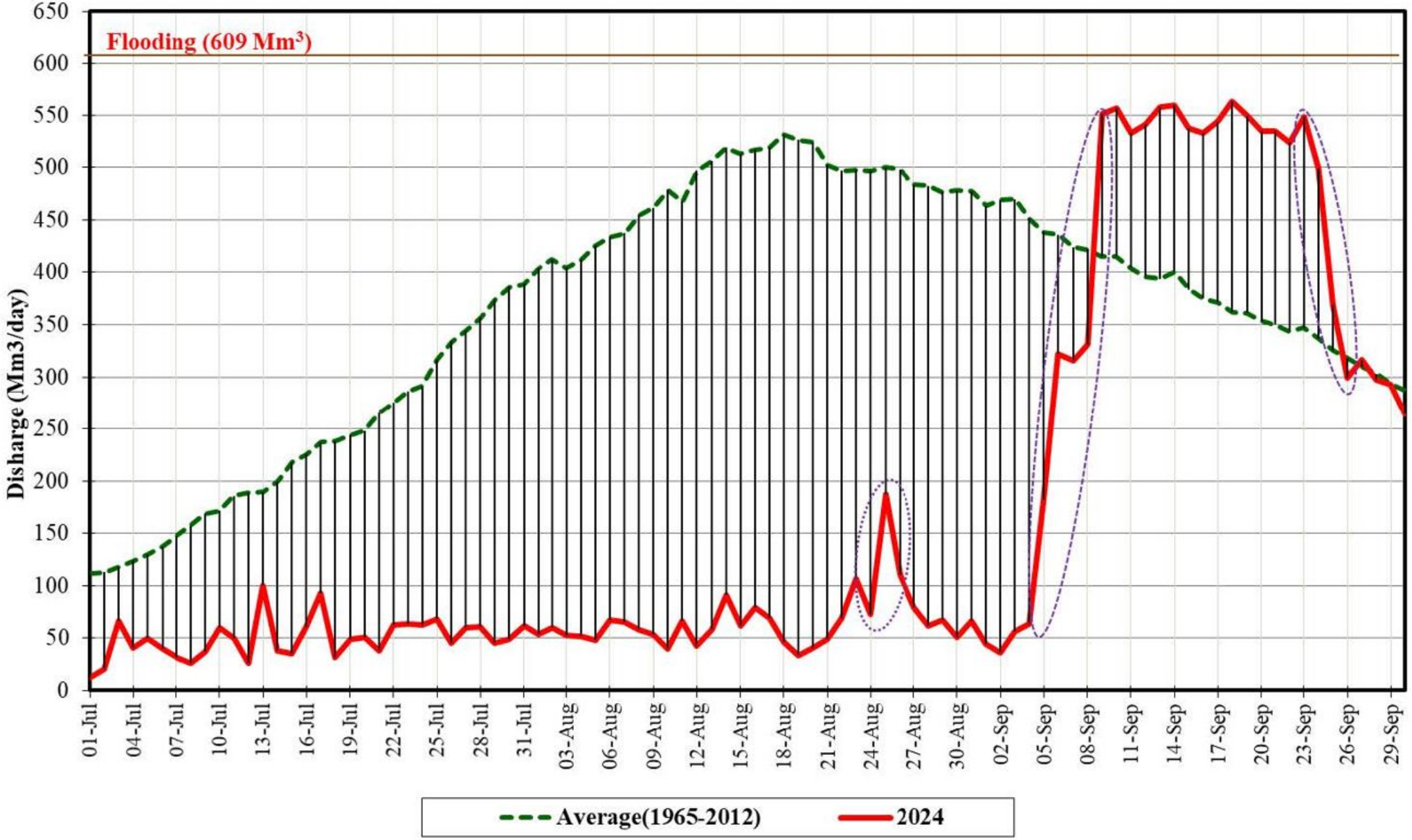
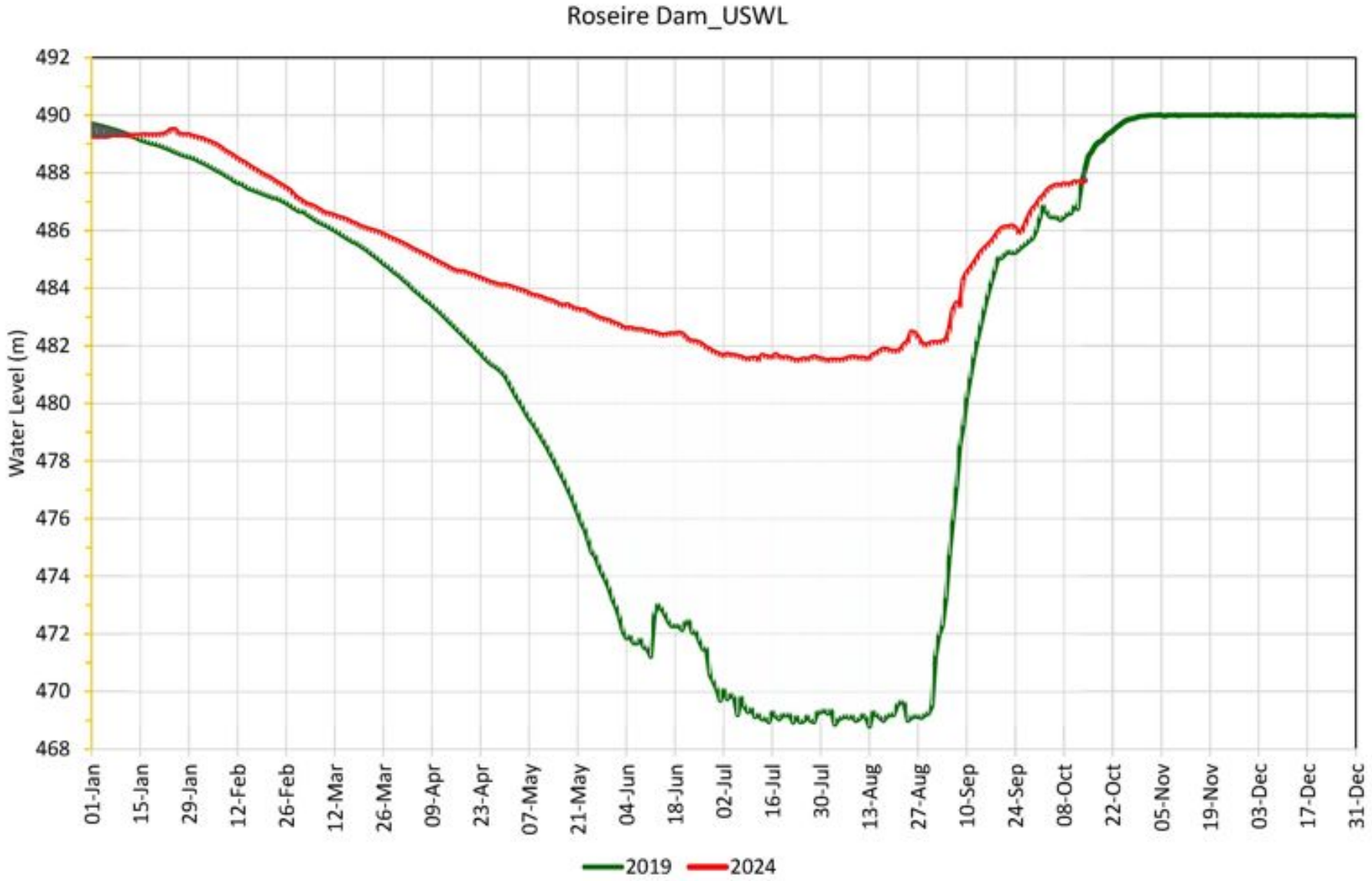
Blue Nile at Ed Deim




Roseire Dam_USWL
Water Level (m)
492
490
488
486
484
482
480
478
476
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472
470
468
01-Jan
15-Jan
29-Jan
12-Feb
26-Feb
12-Mar
26-Mar
09-Apr
23-Apr
07-May
21-May
04-Jun
18-Jun
02-Jul
16-Jul
30-Jul
13-Aug
27-Aug
10-Sep
24-Sep
08-Oct
22-Oct
05-Nov
19-Nov
03-Dec
17-Dec
31-Dec
2019
2024

Exit Poll & Concluding Remarks

Dr. Faith Sternlieb
Associate Director, Internet of Water
Center for Geospatial Solutions
Lincoln Institute of Land Policy

October 15, 2024 Exit Poll

Please fill out this exit poll for Part 1 before we take our break

Networking Break & Group Picture!

We will resume the session at 11:30!

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Policy and Technical Solutions for Water Data Diplomacy and Exchange: Part 2

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Welcome

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Session Agenda (11:30-13:00)

- Setting the Context: Current state of WMO Hydrological Observation System and future plans
- Introduction: Mapping Water Data Management and Exchange
- Engagement Exercise
- Closing Remarks and Exit poll

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Setting the Context:
Mapping Water Data Management and Exchange

Dr. Dominique Bérod,
Head, Earth System Monitoring Division at World Meteorological Organization

Philipp Saile
Head of GEMS/ Water Data Center at the International Centre for Water Resources and Global Change

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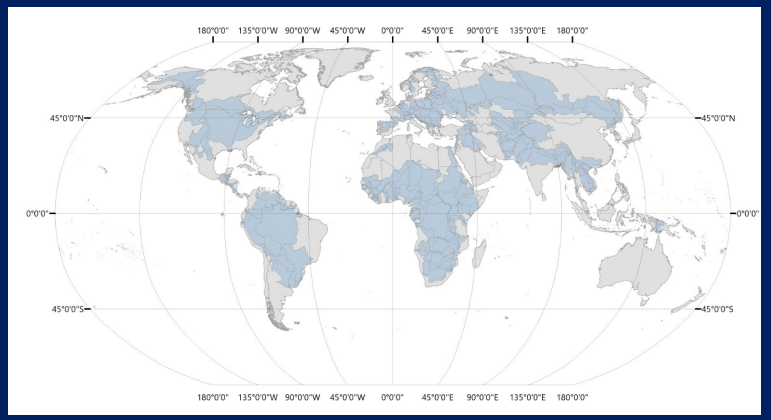
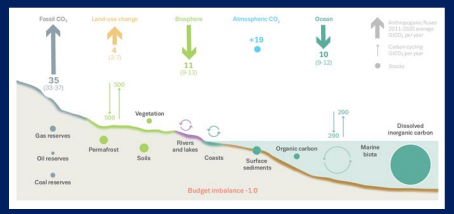
Hydromet data most wanted!

Meteorological forecasts

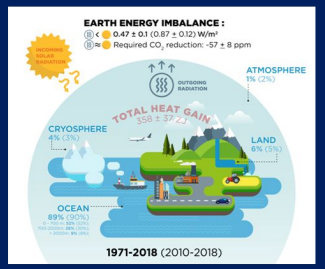


Transboundary basins (Source: Oregon State University): 313 rivers, 456 aquifers, 153 countries, 60% of freshwater flows



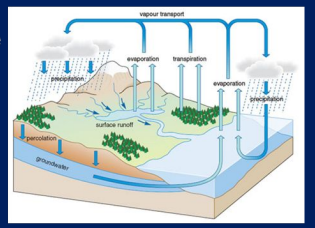
Radiative Forcing

Oceanic Circulation



Hydrological Cycle

Photosynthesis/respiration
Plant transpiration



Evaporation
Condensation

From Pierre Friedlingstein, WCRP JSC

Understanding global cycles

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What's needed for sharing hydrological data

1. …Data
2. Financial and human resources
3. Governmental and intergovernmental policy
4. Technical solutions
5. Incentives

WMO Congress decision in 2021: global network, global funding, unified data policy

WMO Unified Data Policy

- Increased international exchange of observations by all Members (**Core and Recommended data**)
- Return of high quality model outputs to all Members

GBON expansion to hydro and ocean to be explored

List of data to be identified, including for water quality

Global Basic Observing Network (GBON)

- Example of regulatory implementation of data policy
- Increased exchange of observations by all Members, facilitated by both **Data Policy and SOFF**

Systematic Observations Financing Facility (SOFF)

- Technical and financial support for GBON implementation where it is most needed
- Building on GBON regulations

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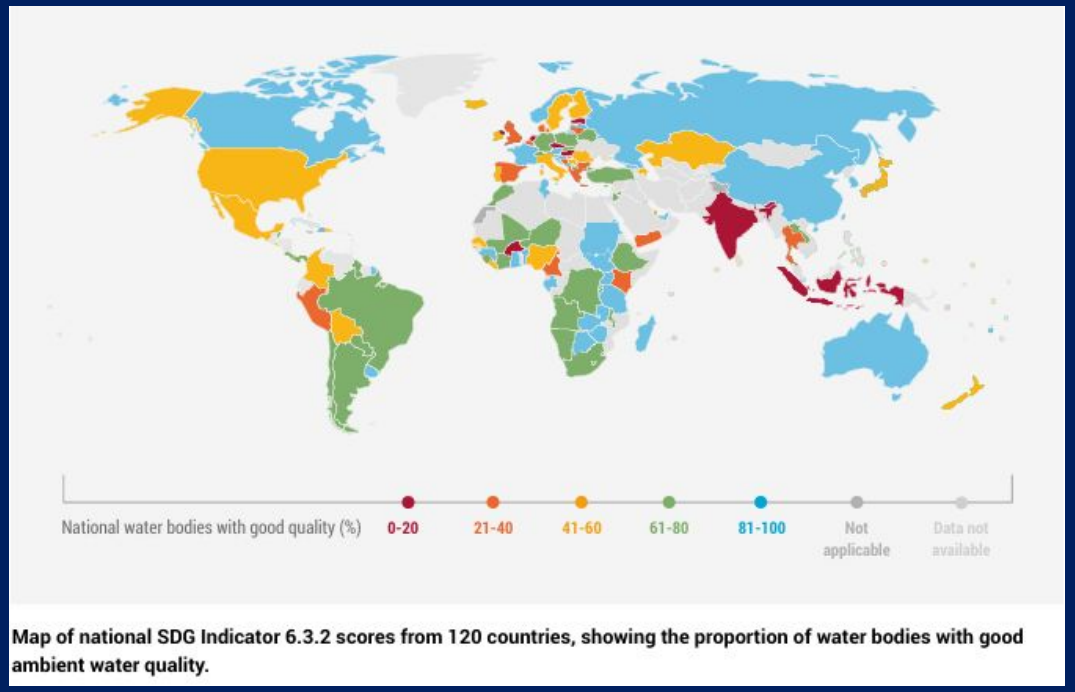
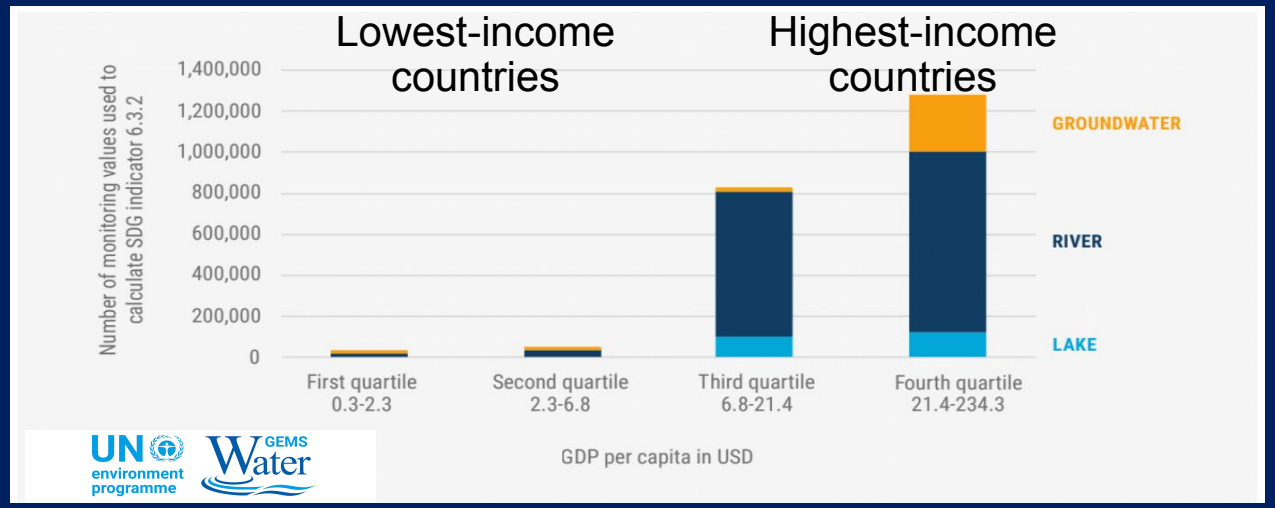
Why do we need data sharing?
From water data to informed decision-making

SDG Target 6.3: By 2030, **improve water quality …**
SDG Indicator 6.3.2: Proportion of water bodies with good ambient water quality



Map of national SDG Indicator 6.3.2 scores from 120 countries, showing the proportion of water bodies with good ambient water quality.



https://www.unwater.org/publications/progress-ambient-water-quality-2024-update

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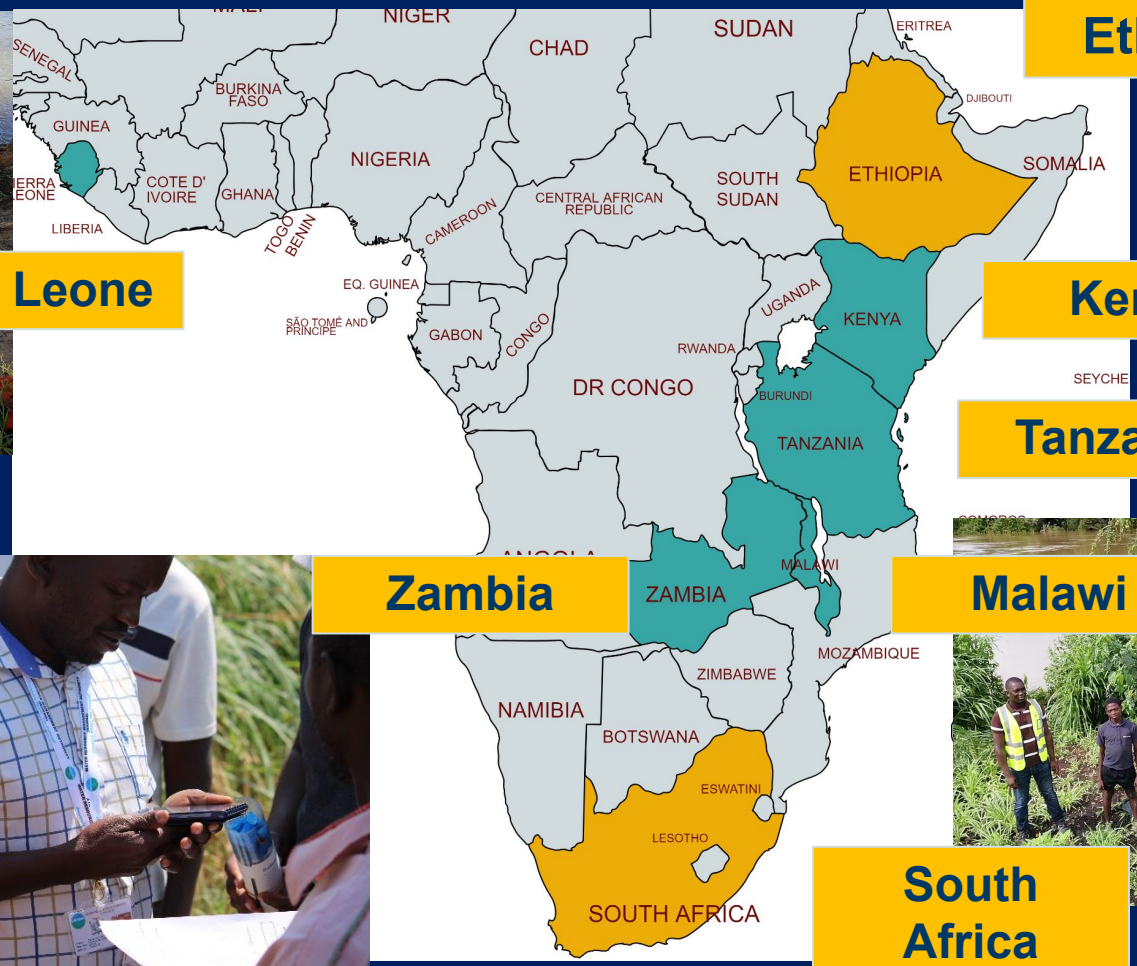
From water data to informed decision-making … through engagement

earthwatch EUROPE

Sierra Leone



Ethiopia

Kenya

Tanzania

Zambia

Malawi

South Africa

UN environment programme | GEMS Water

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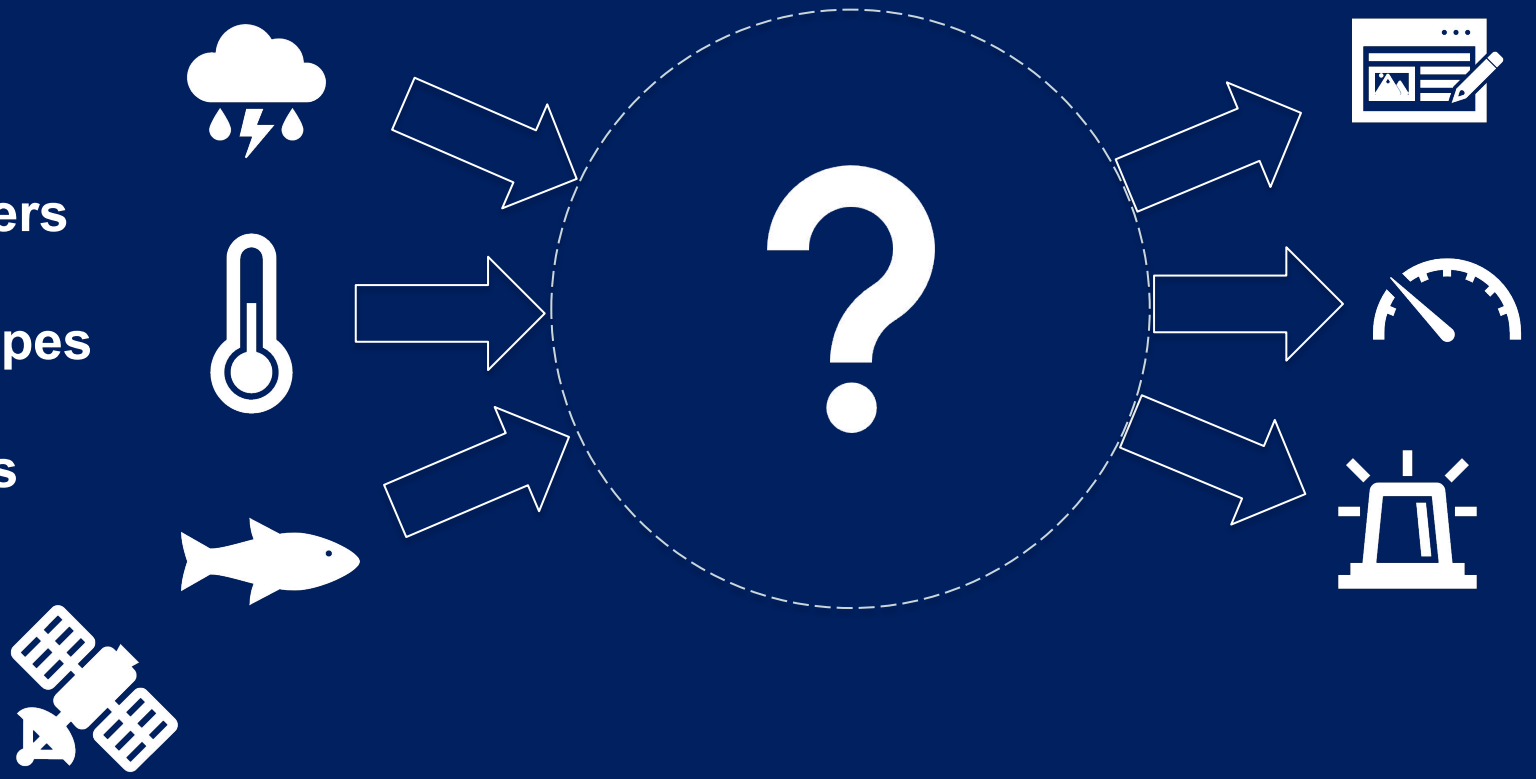
How do we share freshwater data?

Data Providers

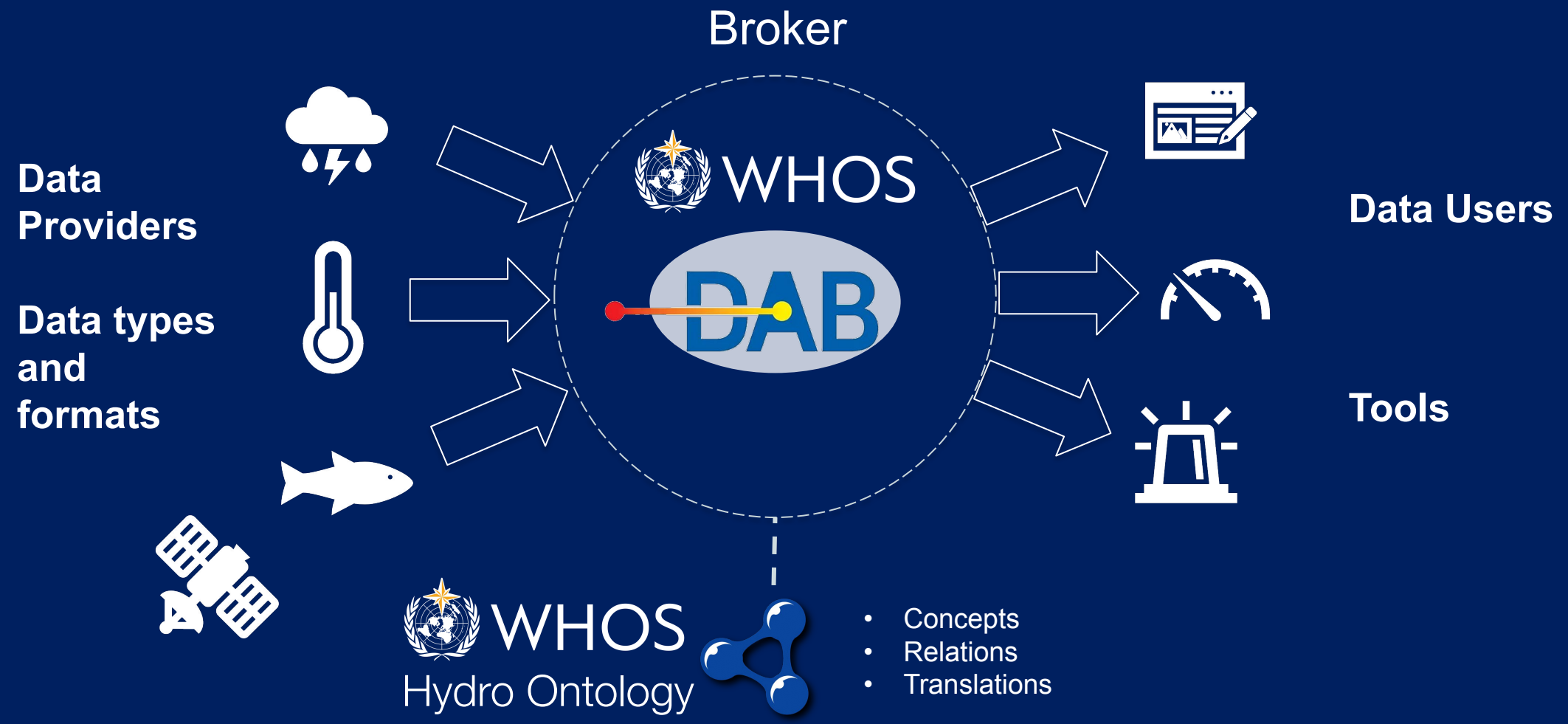
Data types and formats



Data Users

Tools

How do we share freshwater data?



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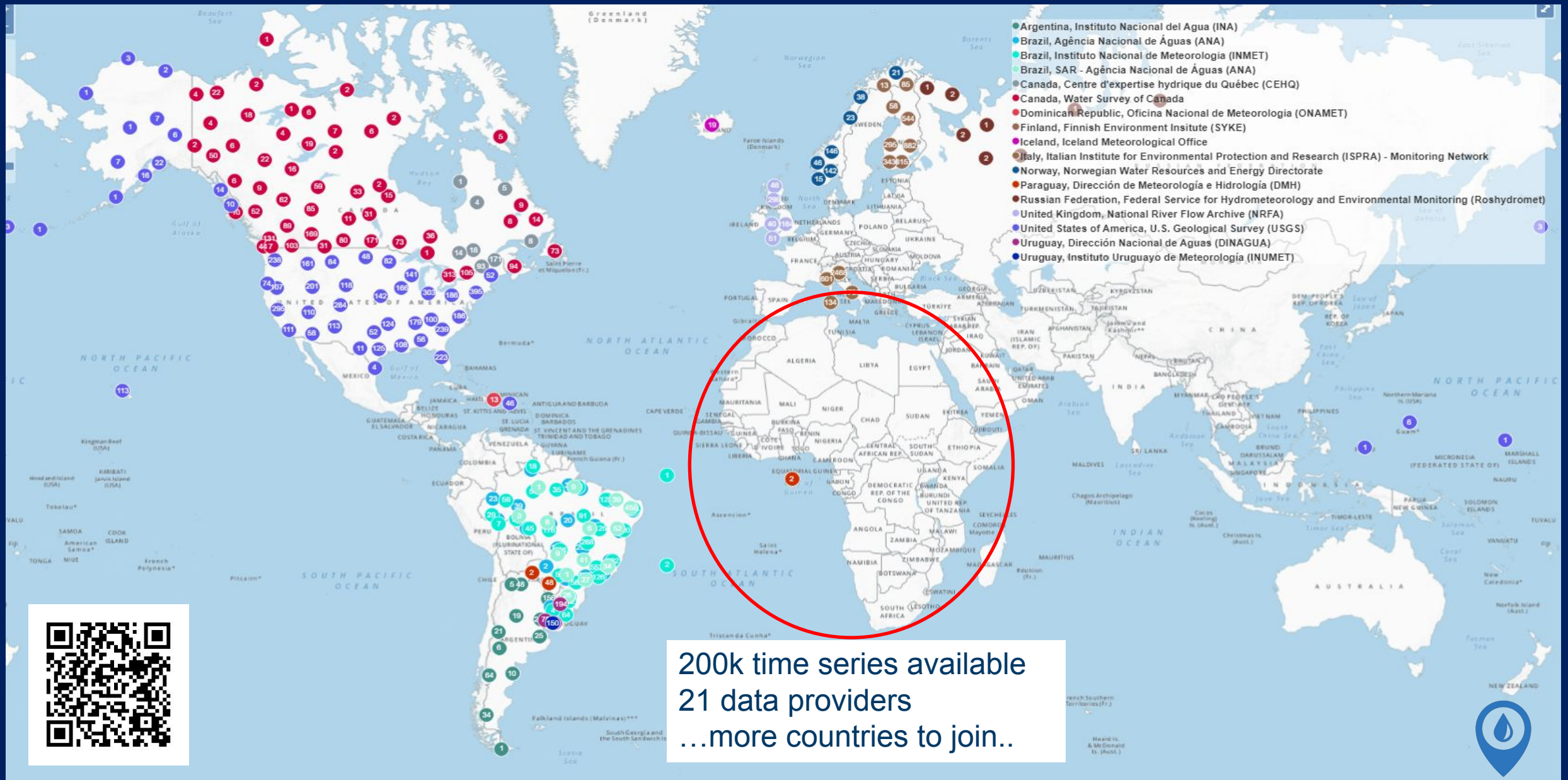

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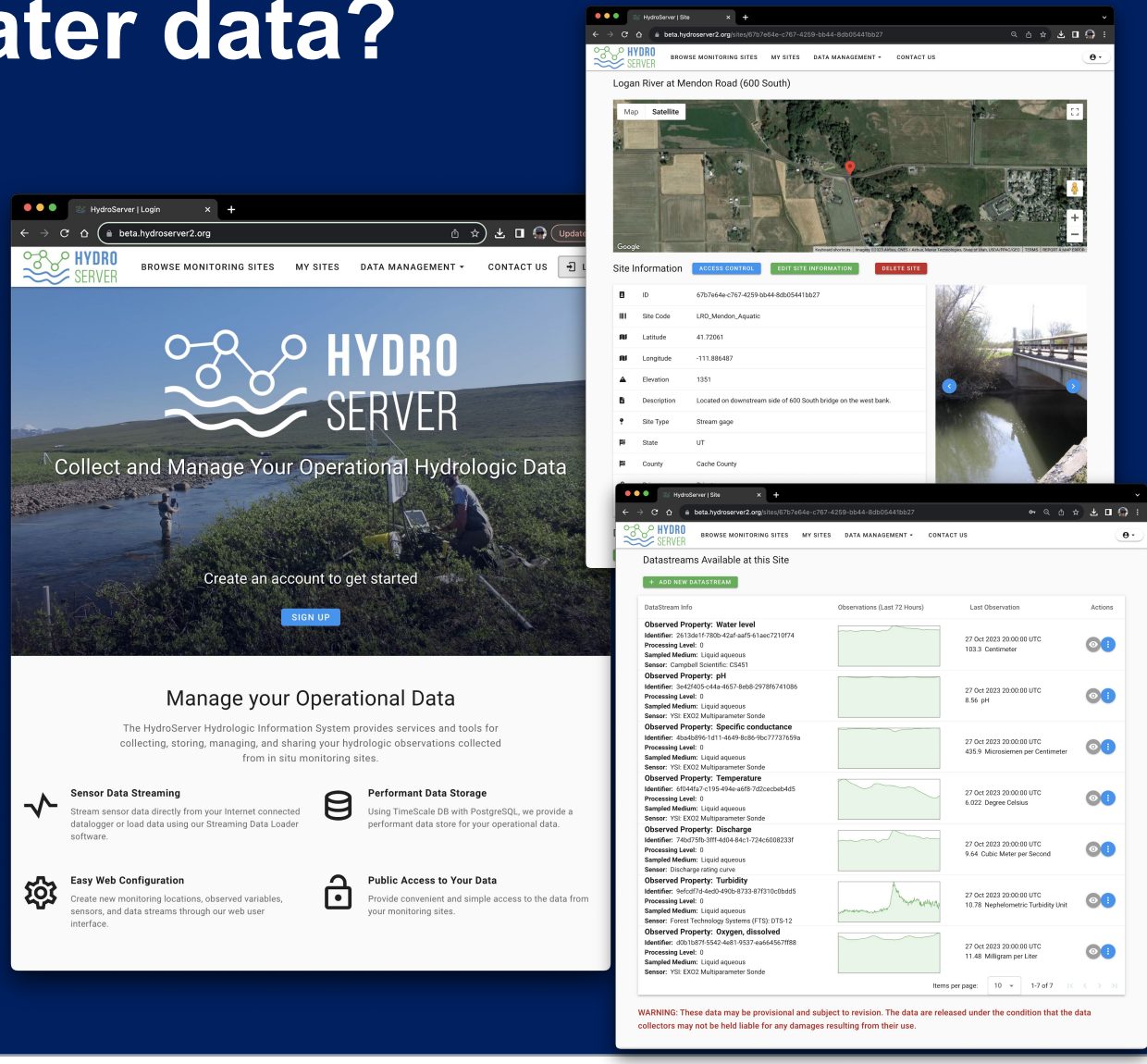
How do we share freshwater data?

HYDRO SERVER

- Software cyberinfrastructure platform supporting:
  - Collection
  - Management
  - Standards-based sharing
- Focused on time series of observations at hydrologic and environmental monitoring sites



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Introduction to Engagement Exercise

Moderator

Dr. Faith Sternlieb
Associate Director, Internet of Water,
Center for Geospatial Solutions
Lincoln Institute of Land Policy

Introduction

Dr. Stephan Dietrich,
Deputy Director,
International Centre for Water Resources and Global Change

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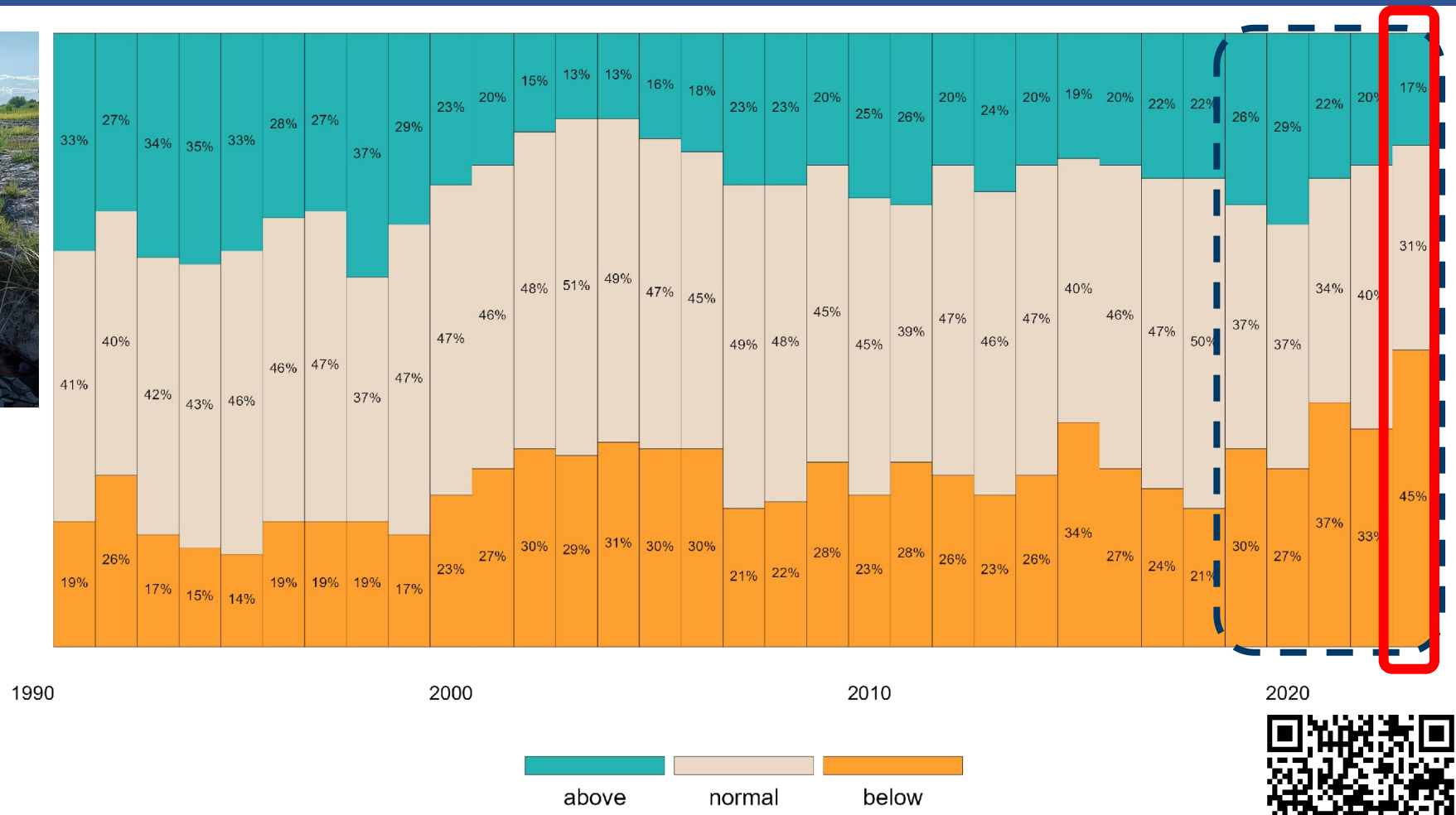
#StateOfWater

#StateOfClimate

2023 DRIEST YEAR FOR GLOBAL RIVERS IN OVER THREE DECADES



2023 STATE OF GLOBAL WATER RESOURCES REPORT

LAUNCH EVENT

07 October 2024, Monday 14:00

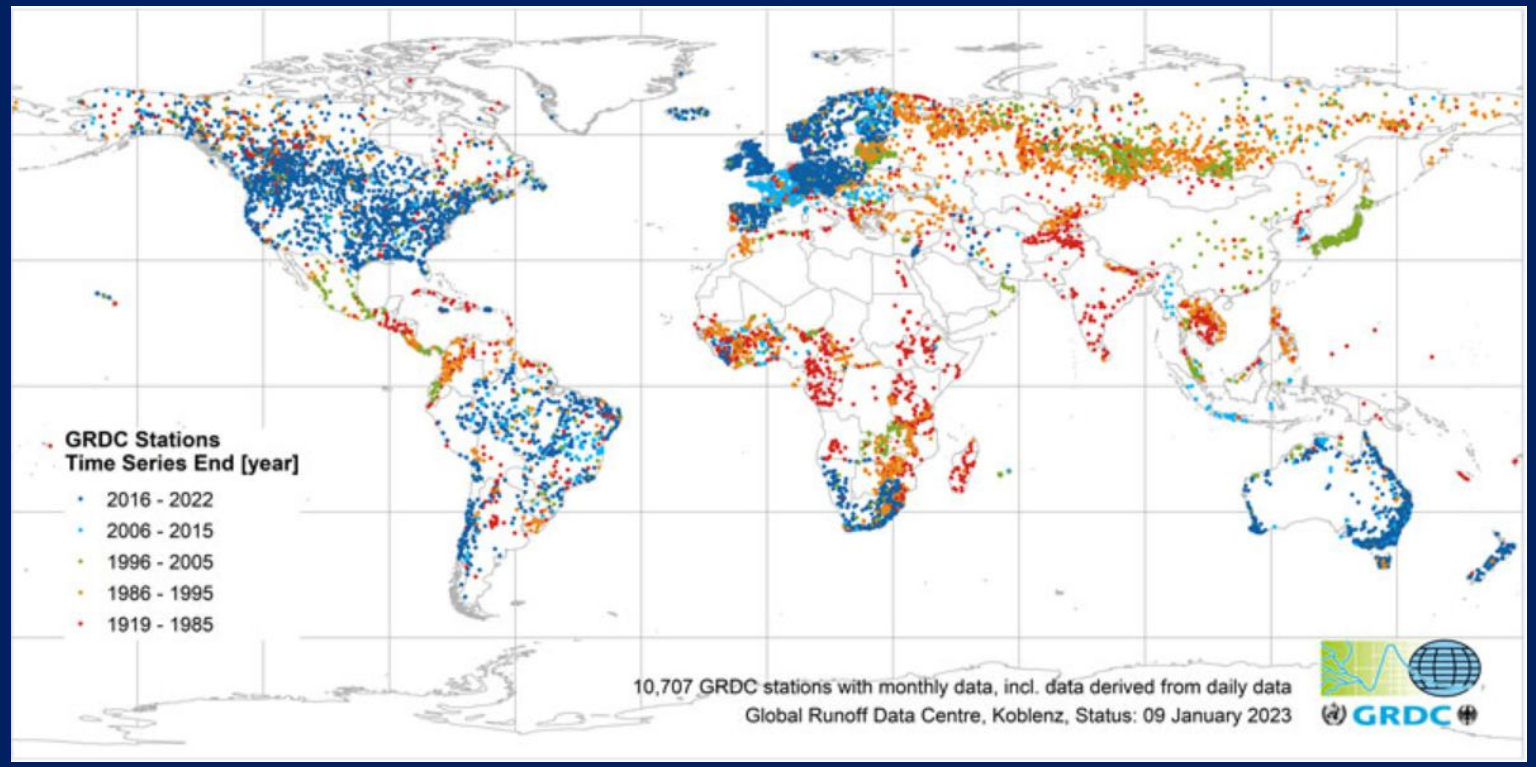
WORLD METEOROLOGICAL ORGANIZATION

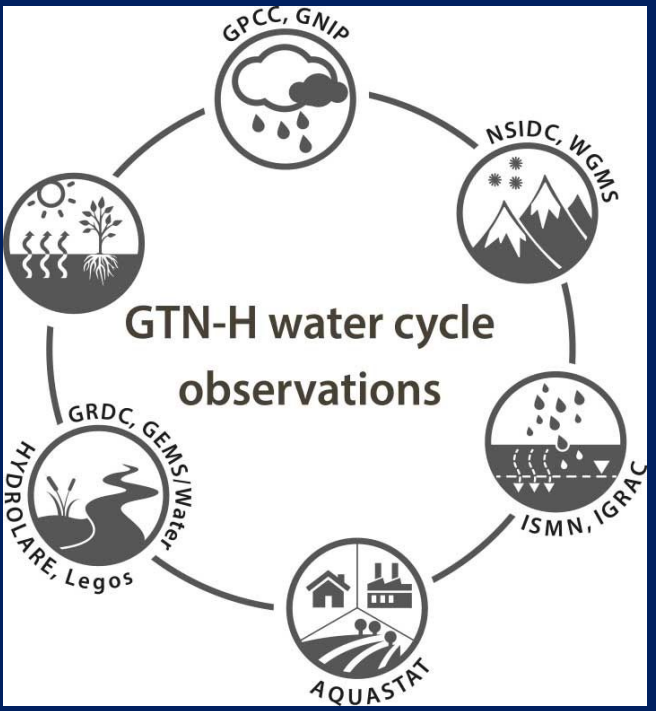
Hydrological data: most wanted but often not available nor openly shared

Main challenges – more and more serious:

- lack of timely availability and accessibility of verified hydrological data
- 2/3 of national water monitoring networks in decline

similar picture for all global data products





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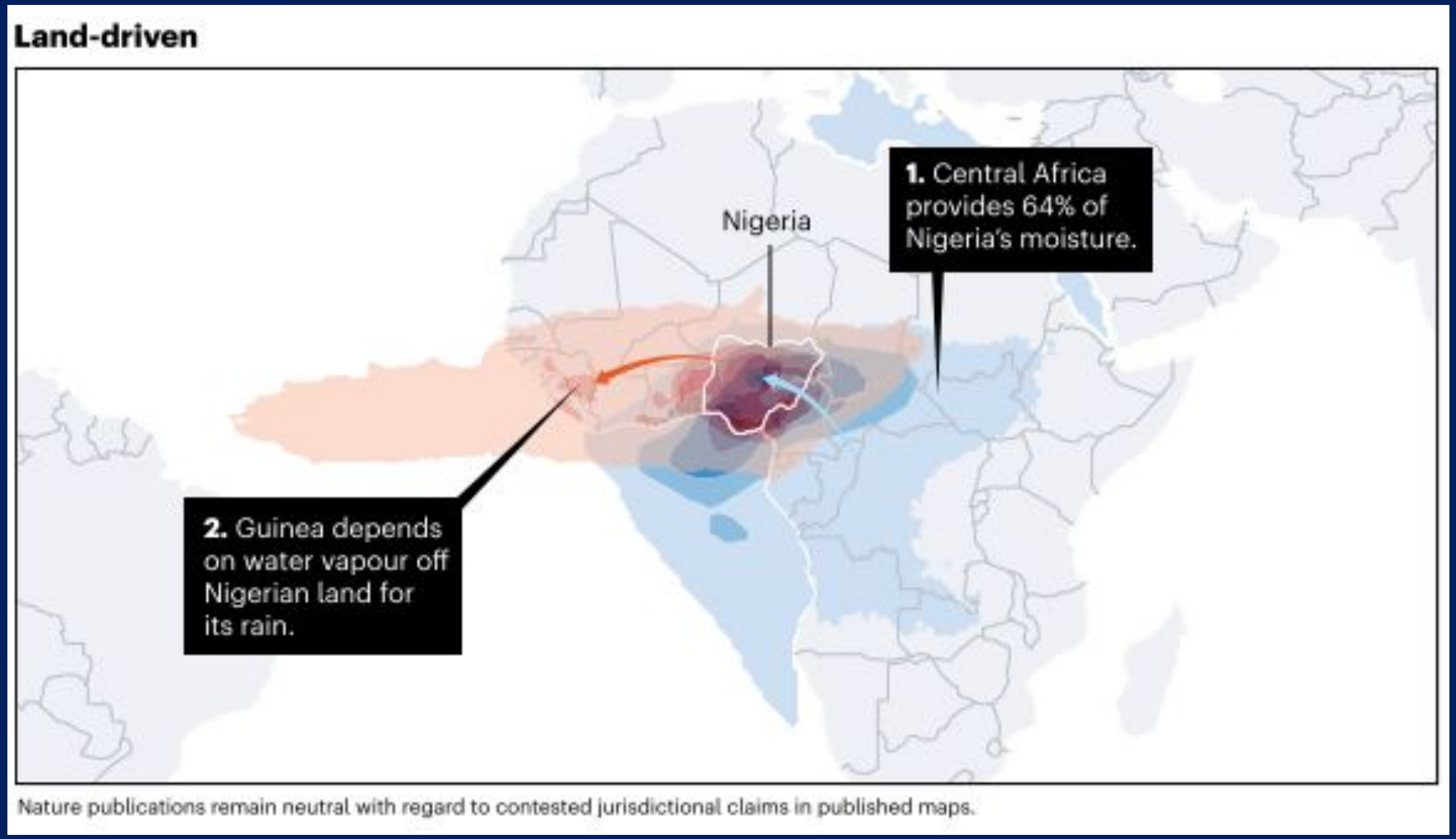
You can't manage, what you don't measure

- The water cycle is driven by moisture from evapotranspiration from terrestrial land
- Land cover changes in one country can effect another's rainfall (e.g. deforestation).

"Even the largest countries rely on evaporation from other areas to sustain their precipitation."



Rockström et al. (2023). Nature, Vol 615

Engagement Exercise

In this 30-minute exercise, session participants will work in small groups to share their experiences and perspectives on data diplomacy.

Discussion Questions

1. *Based on your experience, what are the information needs:*
   - *At different scales (country to catchment to global)?*
   - *For different applications (observational data, aggregated or indicators based on observations) ?*
2. *Which data sharing efforts respond to those needs?*
3. *What types of diplomatic processes and tools can be leveraged to support improved information sharing?*

Guidance

URL: https://forms.gle/s1SaoBJ5LvyqReyw5

- Please break into groups based on language preference.
- 1 facilitator per group will record the group's answers (using the Google form accessible via URL/QR code or the paper at your tables) Go through each question and take notes on what is discussed.
- Choose 1 rapporteur who will report back to the group.
- Discuss for 20 minutes.
- In the last 5 minutes, choose your top 2 answers for each question for the rapporteur to share with the group.

Closing Reflection:

Dr. Aref Gharib
Chairman, Nile Water Sector-MoWRI,
Permanent Joint Technical Commission (PJTC) and
Egypt's hydrological advisor to the WMO

Please complete the exit poll before departing!

Thank you for joining us today!

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