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UNESCO Work on Early Warning Systems

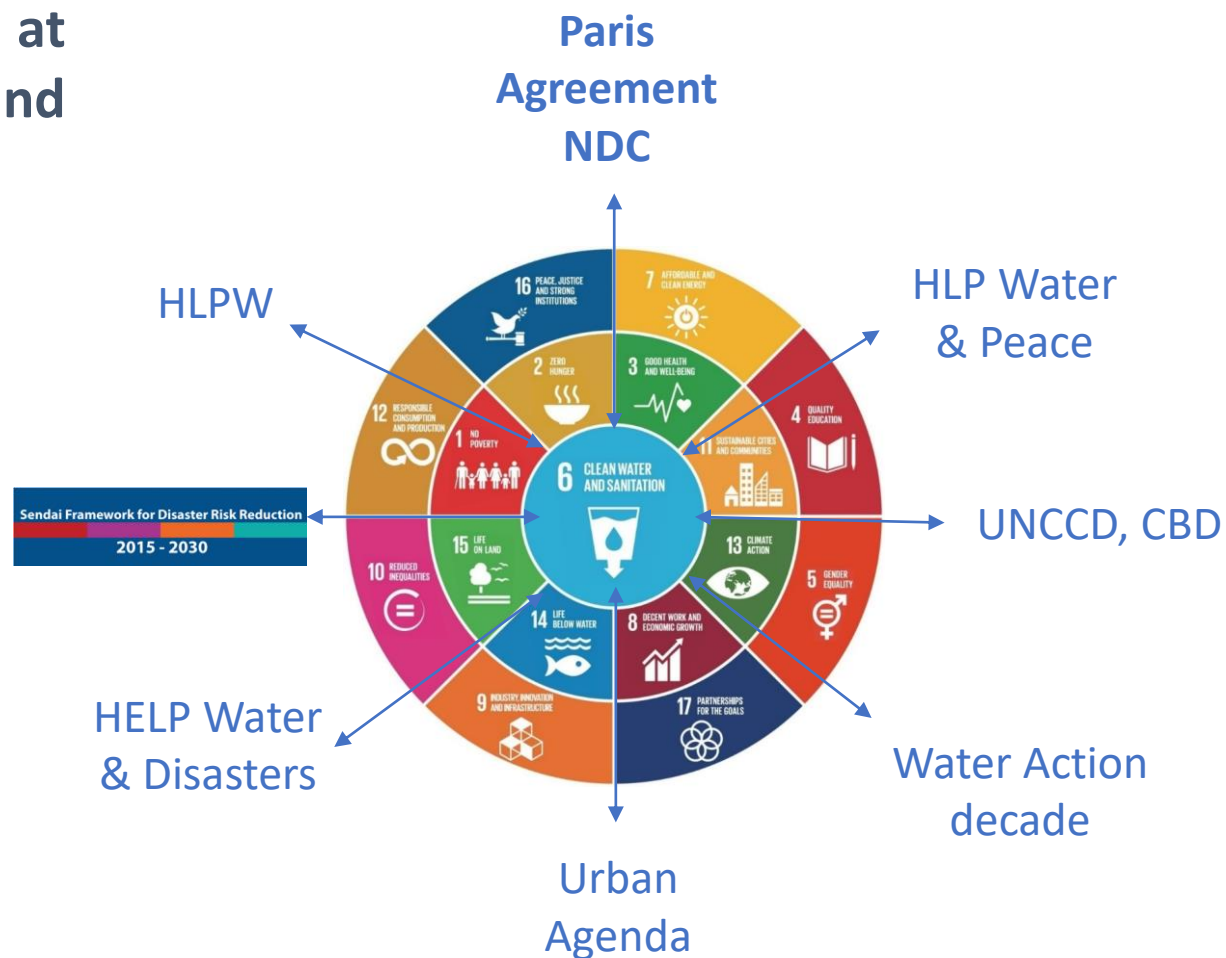
AWCI Session for the 15th AOGEO Symposium

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Water, SDGs and other related agendas

Water connects and is at the centre of SDGs and other related agendas:



Water &
Climate Coalition
WMO, UN system

IHP-IX “Science for a Water Secure World in a Changing Environment” (2022-2029)



Five priority areas:

- Scientific research and innovation
- **Water Education** in the Fourth Industrial Revolution including Sustainability
- Bridging the **data-knowledge gap**
- Integrated **water resources management** under conditions of global change
- Water Governance based on science for mitigation, **adaptation and resilience**

34 expected outputs

150 Key activities (draft implementation Plan)

Mobilizing UNESCO Water Family

Aims to advance hydrological knowledge by supporting scientific research programmes

36 Category 2
Centres

71 Chairs

169
National
Committees

WWAP



Mobilizing UNESCO Water Initiatives

As a programme at the global level, IHP covers a wide spectrum of initiatives:



Flow Regimes from International
Experimental and Network Data



Hydrology for the Environment, Life
and Policy



World's Large
Rivers Initiative



WATER
MUSEUMS
GLOBAL NETWORK



IWRM

Integrated Water Resources
Management

MAR

Managing Aquifer Recharge

UWMP

Urban Water Management
Programme

G-WADI

Global Network on Water and
Development Information in Arid
Lands



Internationally Shared Aquifer Resources
Management



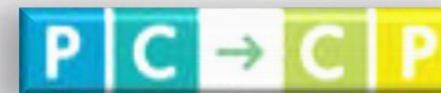
Water Information Network
System

WHYMAP

World Hydrogeological Map



IIWQ
International Initiative on
Water Quality



From Potential Conflict to
Cooperation Potential

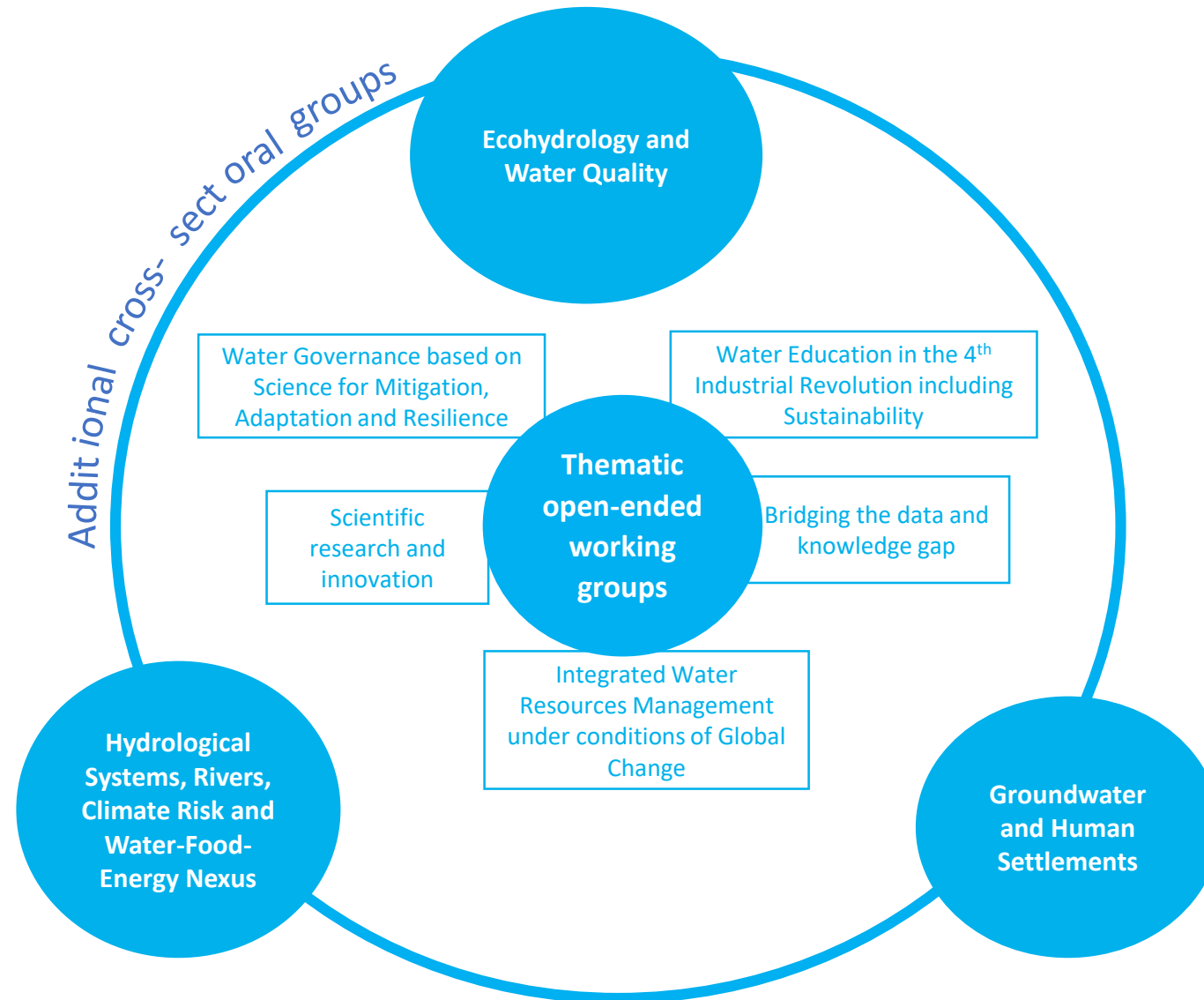


Groundwater Resources Assessment
under the Pressures of Humanity and Climate Change



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IHP-IX thematic working groups for operational implementation



Thematic OEWG

1. Scientific Research and Innovation
2. Water Education in the Fourth Industrial Revolution including Sustainability
3. Bridging the data and knowledge gap
4. Integrated Water Resources Management under conditions of Global Change
5. Water Governance based on Science for Mitigation, Adaptation and Resilience

Additional cross-sectoral groups:

1. Hydrological Systems, Rivers, Climate Risk and Water-Food-Energy Nexus
2. Groundwater and Human Settlements
3. Ecohydrology and Water Quality;

IHP-IX “Science for a Water Secure World in a Changing Environment” (2022-2029)

- **1.6 Scientific knowledge, methodologies and tools in addressing water-related disasters**, such as flood and drought elaborated and/or enhanced towards timely forecasting
- **4.2 Research on upstream-downstream river uses** for hydropower, navigation, fishery, leisure activities, water supply, drought risk management and **flood risk management** conducted and shared by the scientific community and UNESCO Water Family to **minimize socio-economic and ecological consequences**
- **5.1 Awareness raising of decision makers at all levels on the importance of science-based water governance** by the UNESCO Water Family supported, to **enhance the overall resilience** of communities to effects of global change
- **5.5 Capacities** of the scientific community and decision makers **strengthened on new frameworks and tools**, to underpin water governance and build resilience



UNESCO has expanded its work in EWS initiatives through **IHP** and the **IFI**, **G-WADI** and **IDI Flagship Initiatives**.

Some milestones are:

- Drought Monitor for Africa (2010)
- Indus-Integrated Flood Analysis System (IFAS) (2010)
- Global near-real-time rainfall estimates (iRain) (2011)
- Flood and Drought Monitor for Latin America and the Caribbean (2014)
- Chilean Flood and Drought Monitor (2016)
- Implementation of National Flood and Drought EWS in southern African countries (2019 onwards)
- Transboundary Flood EWS in Western Africa and Zimbabwe/Mozambique (2020 onwards)



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Intergovernmental
Hydrological Programme

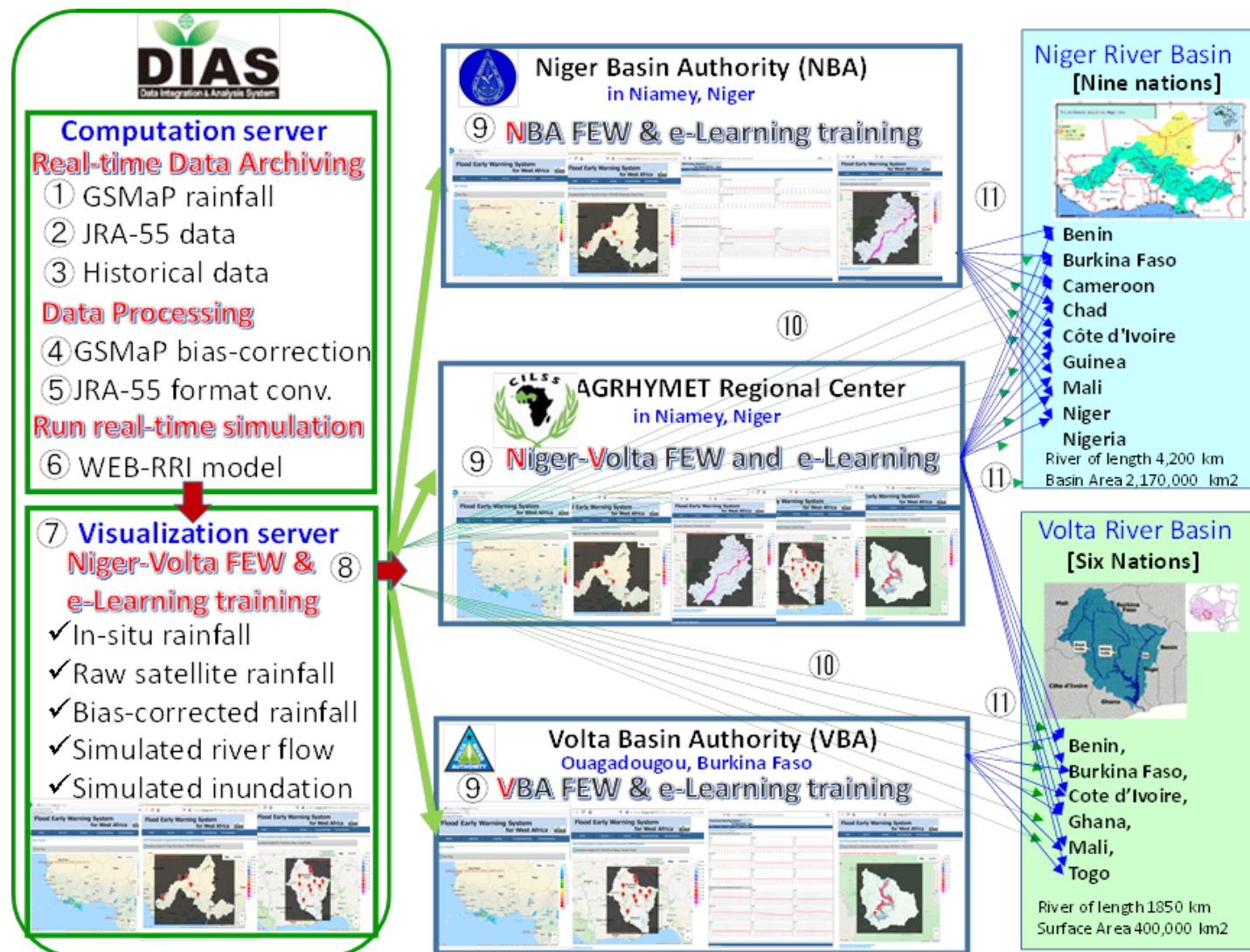


G-WADI

UNESCO: Early Warning Systems (Africa)

Regional Flood Early Warning System (FEWS) prototype for Niger and Volta River Basin on Data Integration and Analysis System (DIAS)

- AGRHYMET, NBA, VBA and 11 countries of the Niger and Volta River basins
- E-Learning: Training of Experts (ToE)
- E-Learning: Training of Trainers (ToT)



Flood and Drought Monitor Platforms

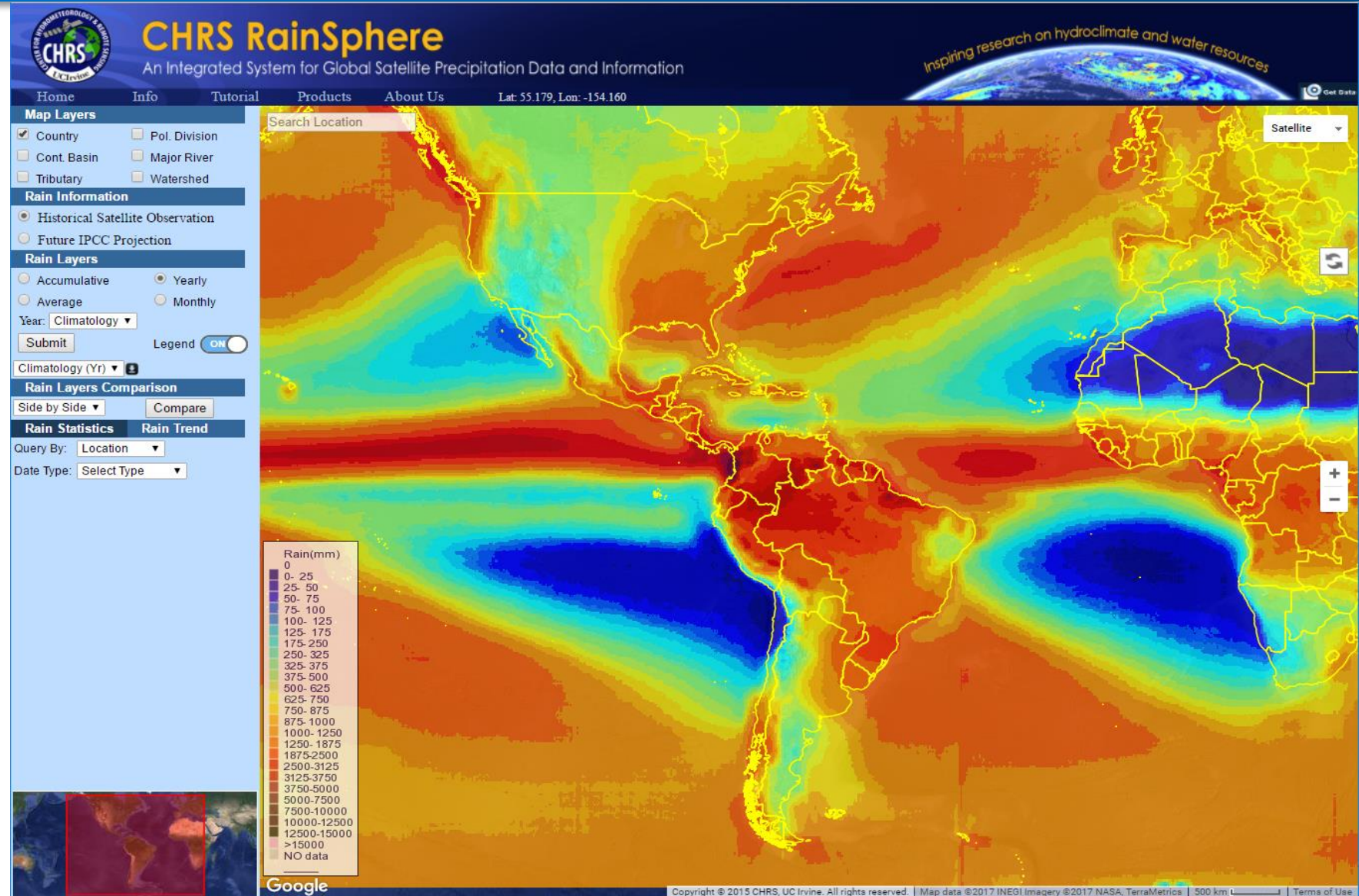
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- The collage displays the ICIWaRM web application interface for drought and flood monitoring. Key elements include:
- Top Left:** A text box stating "Data are available for the current date and the past 1 months."
 - 24 August 2022:** A date selector and a summary of drought and extreme wet conditions for the selected date.
 - Soil Moisture Index:** A line graph showing the index over time, with a legend for "Soil Moist. Index (z)".
 - Streamflow:** A line graph showing streamflow over time, with a legend for "Streamflow (%)".
 - Maps:** Multiple maps of African countries (Zimbabwe, Namibia, Mozambique, South Africa, Malawi) showing soil moisture indices, streamflow, and drought/flood status. The maps are color-coded and include a legend for "Soil Moist. Index (z)".
 - Map Selection:** A "Select mapping date" dropdown menu and a "Select mapping date" button.
 - Bottom Left:** Logos for the United Nations Educational, Scientific and Cultural Organisation (UNESCO) and the ICIWaRM program.



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UNESCO: Early Warning Systems (Worldwide)

- <https://rainsphere.eng.uci.edu/>
- An integrated system for global satellite precipitation data and information developed by CHRS and UNESCO



Outreach and Capacity Building

- Framework to identify potential water security risks in hydrological systems providing a stepwise planning process to identify and address the challenges for sustainable water resources management through a five-step approach
- Online course on UNESCO Open Learning
- 814 participants in the English version
- 369 participants in the Spanish version
- 11 case studies from around the world (Sri Lanka, Thailand, Philippines, Colombia, Chile, Mexico, Ecuador, Zambia, Sweden, Germany and United States of America)
- COP27: launching of English, Spanish, French and Arabic manuals and online courses



Interactive themes of the Water Conference

- 1. Water for Health: Access to safe drinking water, hygiene and sanitation (SDG 6.1, 6.2, 6.3 and SDGs 1, 3, 4, 5, 17);**
- 2. Water for Development: Valuing Water, Water-Energy-Food Nexus and Sustainable Economic and Urban Development (SDG 6.3, 6.4, 6.5 and SDGs 2, 11, 12);**
- 3. Water for Climate, Resilience and Environment: Source to Sea, Biodiversity, Climate, Resilience and DRR (SDGs 6.5, 6.6, 7, 11.5, 13, 14, 15);**
- 4. Water for Cooperation: Transboundary and International Water Cooperation, Cross Sectoral Cooperation and Water Across the 2030 Agenda (SDG 6.5, 6.b and SDG 16, 17);**
- 5. Water Action Decade: Accelerating the implementation of the objectives of the Decade including through the UN SG's Action Plan.**



UN
**2023 WATER
CONFERENCE**



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Thank you

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