

Overcoming water quality data gaps for improved water resources management

Wednesday 13th September 2023, 11:00-12:30 (CST)

IWRA XVIII World Water Congress, Beijing, China

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World Water Quality Alliance (WWQA)

- A **global multi-stakeholder network** that **explores, analyses and communicates** water quality and related risks at **global, regional, national and local levels**
- Focused on **assessment, innovation, data uptake for action through** solution co-creation based on cross-societal consensus which involves all concerned stakeholders; the public, private, research, cultural and citizen sectors, known collectively in socio-political circles as the **‘Quintuple Helix’**
- Convenes **diverse expertise** through its workstreams – technical workstreams as well as social engagement and youth

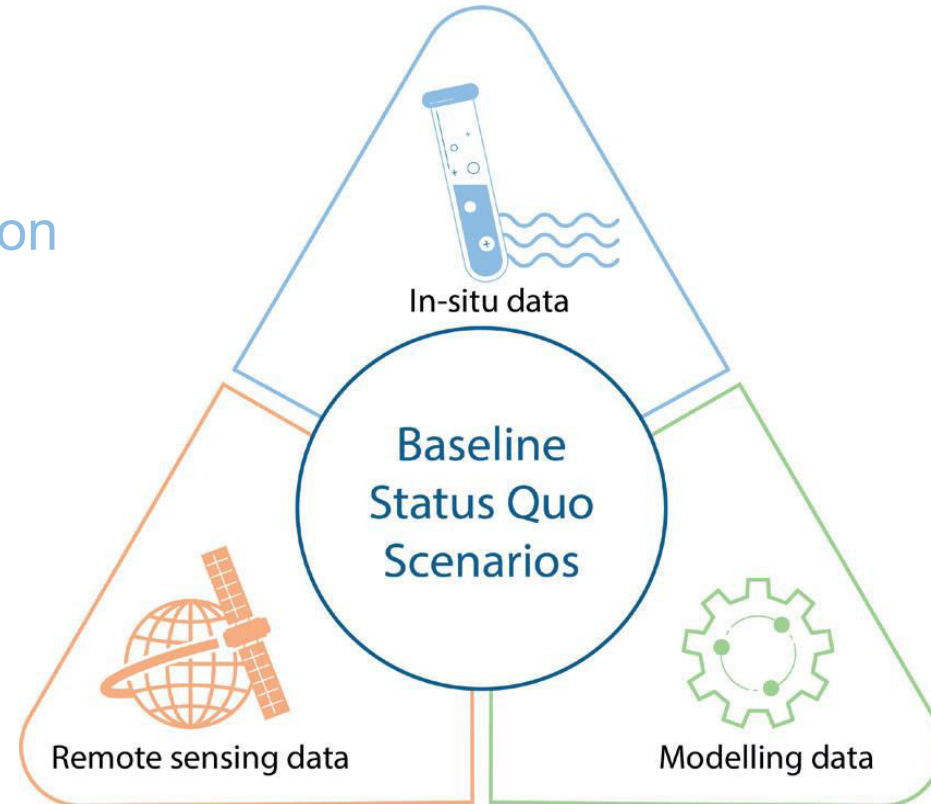


Schweizerische Eidgenossenschaft
Confédération suisse
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Swiss Agency for Development
and Cooperation SDC

Towards Data integration (Triangulation approach)

- "Unlimited" parameters
- Long time series
- Ground truthing
- Basis for model calibration



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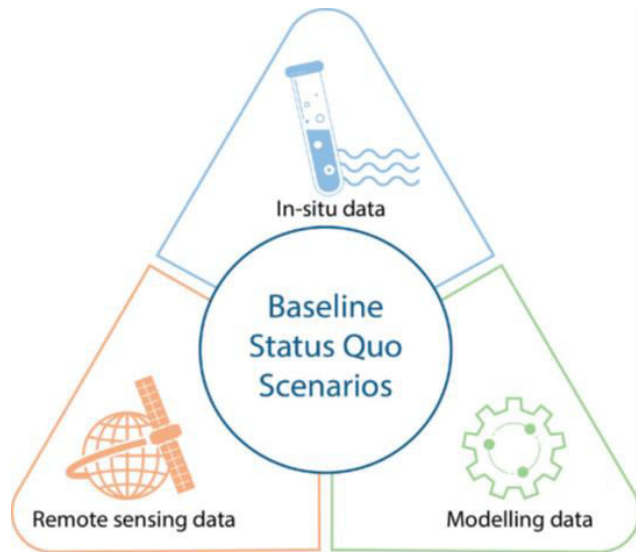
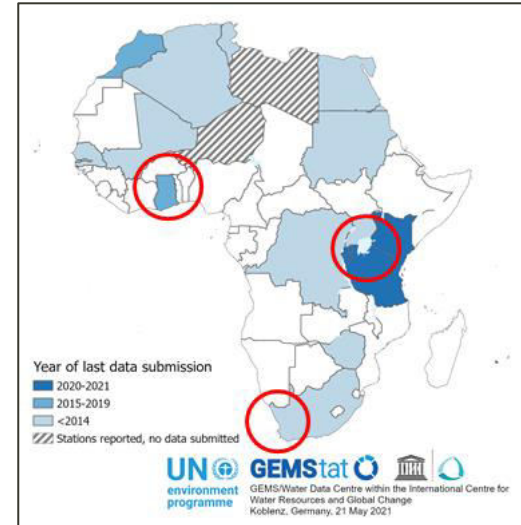
- Near realtime information
- Spatially unconstrained
- Limited parameters

- Predictions and scenarios
- Spatially and temporally continuous information

Background – WWQA Africa Use Cases

WWQA Africa Use Cases: A pilot to bridge from data to solutions.

Study Areas: Lake Victoria transboundary basin, the transboundary Volta River basin and Cape Town Aquifers



Aims:

- Integration of Triangle to derive current state of water quality.
- Multi-stakeholder driven process defining demand for water quality services (“using experience in global challenges to support local solutions”)
- Provide evidence base that links water quality hotspots to solutions and investment

Lake Victoria Basin – Stakeholder Engagement

Use Case concept presented to local stakeholders in Kenya and Uganda (2019).

Virtual workshops (due to the Covid-19) organized with riparian fisheries institutes (2020).

Aim: To discuss water quality data and information products & services to be co-developed.

Water quality products and services agreed to co-design:

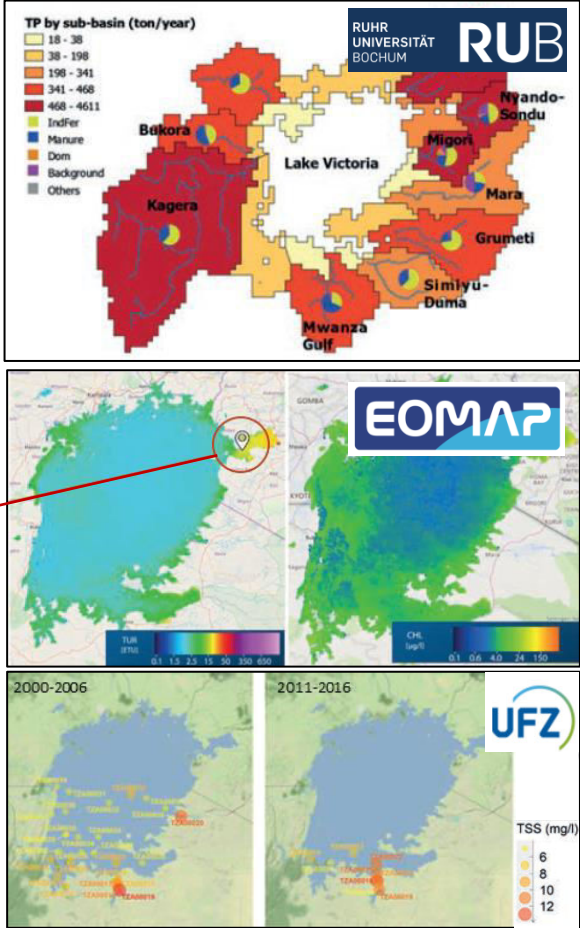
- Potential for coastal eutrophication (with EOMAP & RUB).
- Simulation of Lake temperature dynamics (with UFZ).
- Sediment release of nutrients (with UFZ).



Hotspots based on loadings from modelling:
It's estimated that the sub-basins Kagera, Nzoia, Nyando-Sondu, and Migori, together with the Lakeshore; contribute more than 70 % of the riverine annual Total Phosphorous loadings into the lake.

Hotspots based on concentrations from remote sensing:
Areas of increased Turbidity (TUR) and Chlorophyll-a (CHL) concentrations in bays (e.g. Nyanza/Winam Gulf) and along the coastline.

Hotspots based on concentrations from in-situ data:
Gauging stations with e.g. the highest measured Total suspended sediment (TSS) concentration (Mwanza Gulf).



Baseline Status Quo Scenarios

- In-situ data
- Remote sensing data
- Modelling data

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GlobeWQ Interface:

- Layer list: GEMStat, data, Modelled Total Phosphorus Loadings, Remote Sensing
- Available Products:
 - monthly
 - daily
 - Total Absorption (1/m)
 - Chlorophyll (µg/l) [checked]
- Transparency: [slider]
- Color scale: 0.1, 0.3, 1, 4, 15, 45, 150

Linear Trend Graph:

Y-axis: µg/l (0.0 to 8.0)

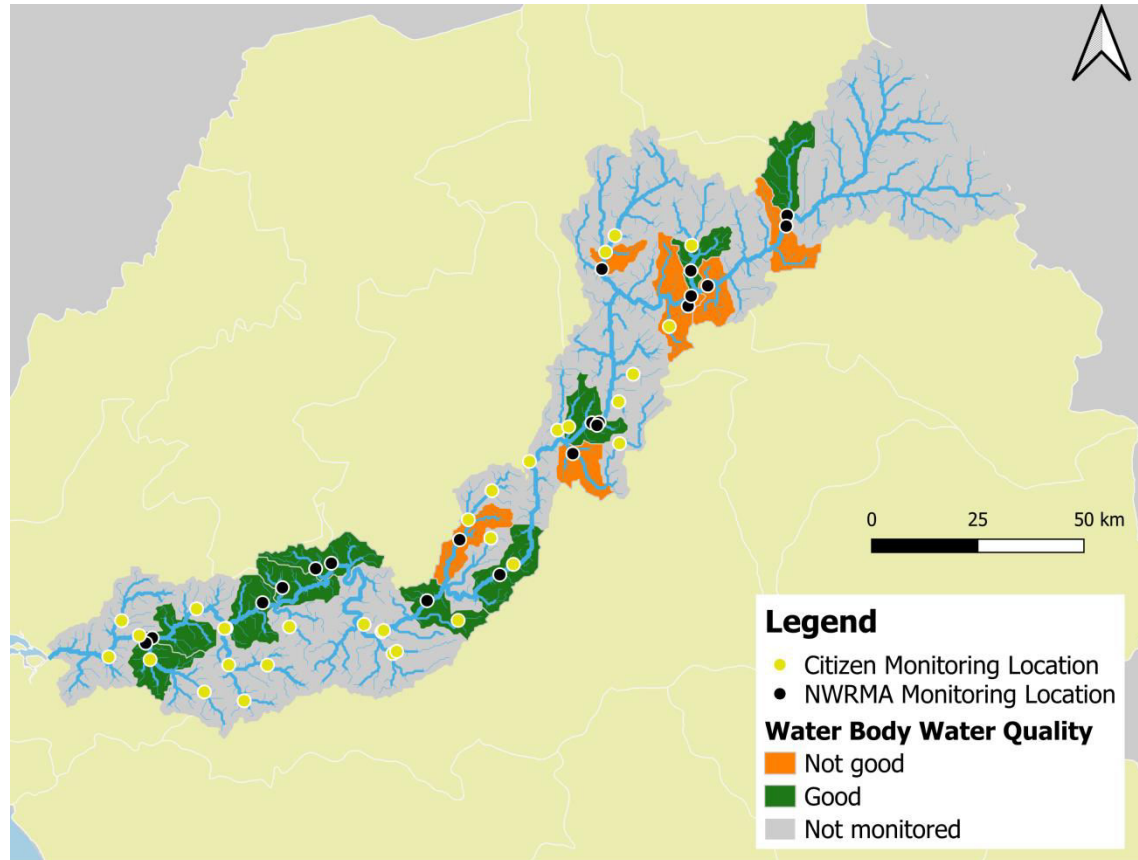
X-axis: July, October, 2021, April, July, October, 2022, April, July, October, 2023, April, July, October

Lake Victoria Basin – Challenges and Opportunities

Challenge	Opportunities
Reliance on in-situ data (limited temporal/spatial detail)	Alternative data sources (Triangle)
Innovations/solutions not aligned with stakeholder needs	Bottom-up approach
Lack of shared databases	Common (transboundary) data-management system
Project-specific databases	Databases owned/operated by data providers
Data/information sharing protocols	Ensure data ownership/ recognition. Data sharing trust building
Capacity building	In-country capacity building in the data collection, data analysis, & data management
“North-south” divide	Develop trusted collaboration
Research impact	More effective science-policy interface (<i>solving real-world problems for real impact</i>)
Funding	Long-term sustainable investment

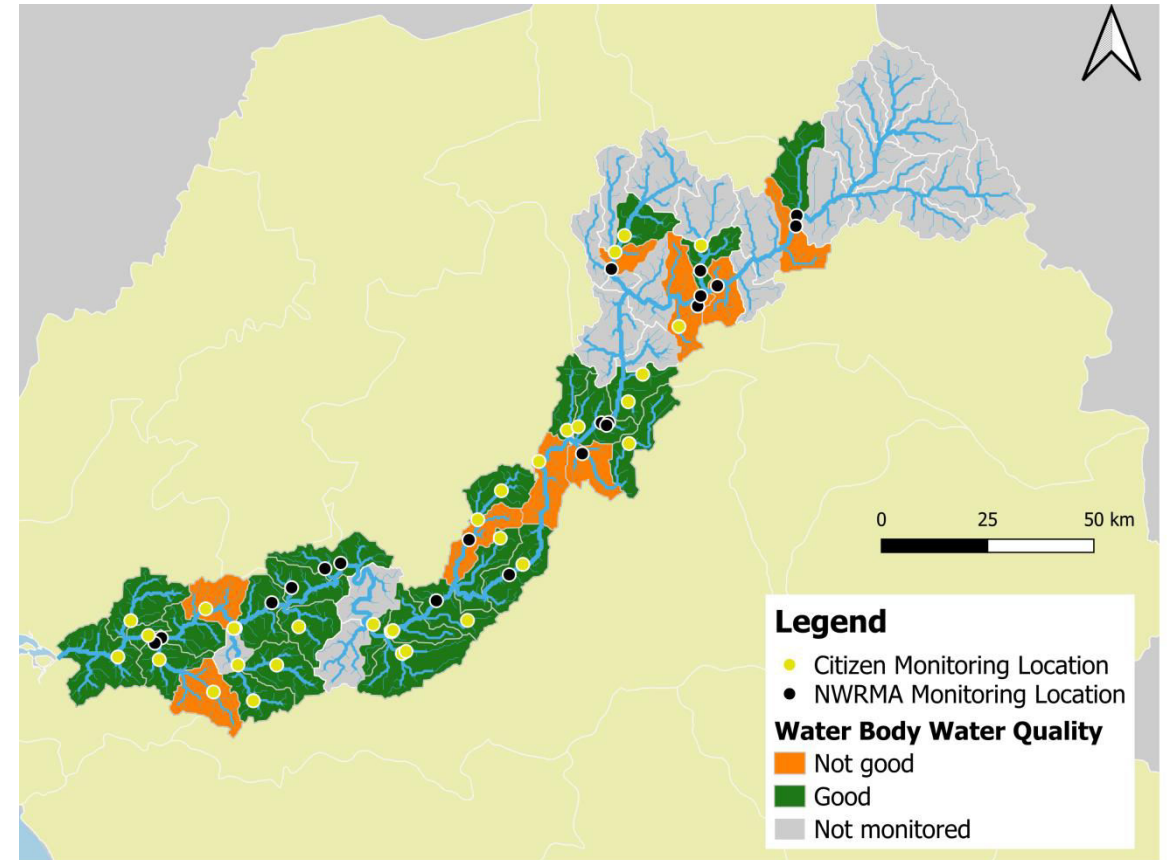
Citizen science: Rokel River Basin Sierra Leone

- Led by National Water Resource Management Agency, with support from UNEP GEMS/Water and EarthWatch



National Agency Data Alone

- 18 water bodies assessed
- 354 water quality measurements per year



National Agency plus citizen data

- 34 water bodies assessed
- 694 water quality measurements per year

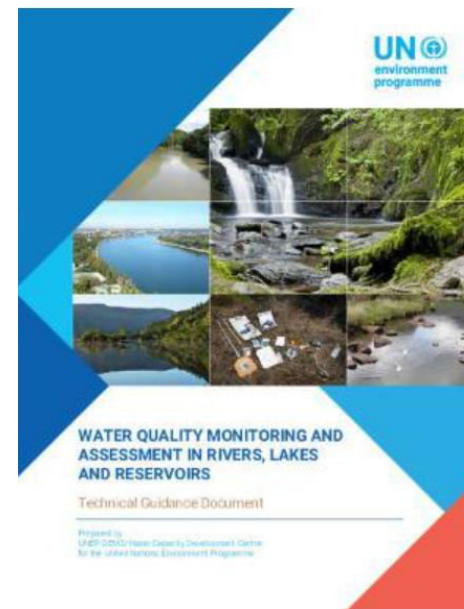
Recently launched training and education resources around ambient water quality monitoring

1. **Series of free courses** on Ambient Freshwater Quality Monitoring and Assessment:

<https://www.ucc.ie/en/gemscdc/onlinecourses/unep-elearning/>

2. **Technical guidance documents series** focused on critical aspects of water quality monitoring and assessment:

<https://www.ucc.ie/en/gemscdc/onlinecourses/handbooks/>



WORLD WATER QUALITY ALLIANCE Conference

18 Sep - 20 Sep 2023

 UNEP Headquarters, Nairobi, Kenya

 <https://bit.ly/wwqa2023>

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