GlobeWQ STI Platform Development

GlobeWQ is embedded in the World Water Quality Alliance led by the UN Environment Programme with the challenging task to compile a World Water Quality Assessment by 2023 on current and future freshwater quality. The GlobeWQ project is a direct continuation of the pre-study that resulted in a snapshot of world's water quality and a road map for a worldwide assessment.

WWQA
World Water Quality Alliance

GlobeWQ STI Platform development

ABSTRACT

The GlobeWQ workstream relates to the workstream "Modeling and Earth Observation; the "Magic Triangle" – a key innovation component of the World Water Quality Assessment" as GlobeWQ develops an operational, web-based platform which integrates in-situ measured, modelled and remote sensing data. In other words, GlobeWQ technically implements the concept of the "Magic triangle". The GlobeWQ workstream will operate this web-based service platform for the visualization and analysis of water quality data and its drivers. Data products will include global scale water quality models, global in situ monitoring data contributed by the GEMStat data base.

There are two overarching objectives of the GlobeWQ workstream:

1. Facilitate the integration of in-situ measured, modelled and remote sensing-based information
2. Develop and operate a web-based service platform for the visualization and analysis of WQ quality issues and its drivers.

For the first objective the ambition is to provide data integration at different spatial scales: at the global scale to provide a consistent baseline regarding the state of water quality and to identify the water bodies being under risk; at the water body to river basin scale with addition high resolution data (e.g., from remote sensing) to provide the data needed for regional stakeholders for making informed decisions. The second objective is related to the technical aspects of the platform and the development of the user interface. The user interface will provide capabilities for the aggregation, analysis and visualization of the data, tailored to the user needs.

CONTACT

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SUMMARY UPDATE ON PROGRESS

The GlobeWQ platform (www.globewq.info) is continuously updated to provide updated water quality data products

Some highlights:

- Global Water Quality Model results (WorldQual) available from 1990- 2017
- Integration of GEMStat data base
- New use case implemented on the GlobeWQ platform: Lake Sevan, Armenia
- Use case for central Europe under preparation: Elbe catchment
  - Virtual Workshop in Nov. 21: Discussion and evaluation of data product requirements
- New functionalities: User upload of point data implemented

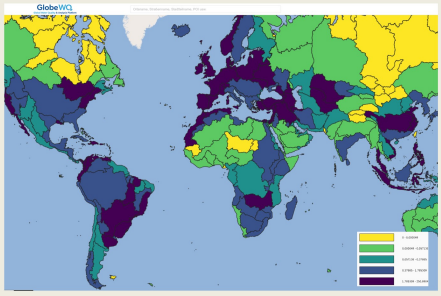

Figure 1. Global, catchment-based results from the WorldQual Model (Loading of fecal coliforms bacteria resulting from manure application)

ACHIEVEMENTS 2021

- Lake Victoria use case: Data products finalized:
  - Monthly model-based estimates of loadings into the lake
  - Automatically updated, near real time information for the lake surface for optical water quality parameters such as chlorophyll, turbidity and absorption
  - Satellite data products are now available for every overpass and as monthly aggregates
- Lake Sevan use case:
  - Collaboration agreement between GIZ and the SEVAMOD Project and the GlobeWQ project
  - Coordination of data products between GlobeWQ and the national Armenian environmental information portal

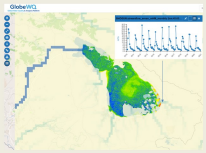

Figure 2. Example of monthly modeled inflows to Lake Sevan at one tributary and chlorophyll concentrations from satellite remote sensing as available on the GlobeWQ platform

Figure 3. The teams of the SEVAMOD2 project and GlobeWQ meet with the Deputy Minister of Environment of Armenia in Oct. 2021 to coordinate activities at Lake Sevan.

FUTURE OUTLOOK 2022

- Complete the ingestion of water quality data products to support the full world water quality assessment
- Scope the ingestion of data products not yet associated with the GlobeWQ Workstream
- Implementation the Elbe use case
- Further update the Lake Sevan use case: monthly updated in and outflow of surface runoff into Lake Sevan
- Develop the Mongolian use case (Selenge Catchment)

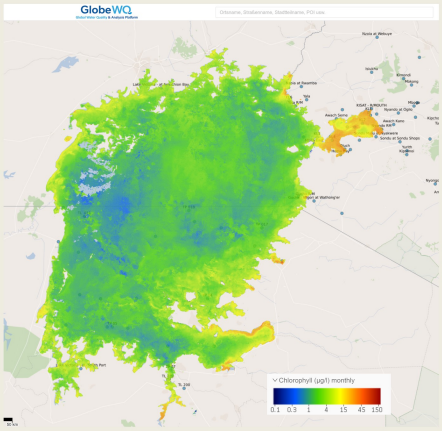

Figure 4. Monthly aggregates of chlorophyll concentrations (Dec. 2021) at Lake Victoria. Also displayed are the stations of the GEMStat data base in the Lake Victoria region

Interoperability of GlobeWQ platform

The GlobeWQ platform is based on open-source software and standards. This guarantees interoperability with other platforms such as WESR. GlobeWQ data products can be provided as Web Map Service (WMS) for simple integration in other web-platforms and GIS solutions.

GlobeWQ
Global Water Quality & Analysis Platform

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