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für Bildung und Forschung
GRoW
GLOBALE RESSOURCE WASSER

GlobeWQ – Pilot Project to create a 'Global Water Quality Analysis and Service Platform'

GRoW – Global Resource Water

The provision of good quality water is indispensible for both mankind and nature, and yet all over the world our rivers, lakes and groundwater are contaminated to some degree from the excessive use of nutrients and chemicals from untreated wastewater. Easily accessible, up-to-date and reliable data are essential for assessing water quality and adopting the appropriate countermeasures. It is the goal of the cooperative project GlobeWQ together with the United Nations Environment Programme (UNEP) to ensure that measurement data on water quality all over the world are recorded and analyzed more reliably than before by using standardized procedures. To this end, in-situ measurement data is linked with remote-sensing data and computer models. The worldwide information on water quality should be processed on a web-based platform in such a way that it can be used for decisions and measures down to the regional level.

Recording data globally and using it regionally

Nearly all over the world water quality is not its best. Maintaining and improving water quality is thus one of the Sustainable Development Goals on the UN 2030 Agenda for Sustainable Development. Sustainability Goal 6 'Ensure availability and sustainable management of water and sanitation for all' aims to reduce the input of untreated industrial and household wastewater as well as to increase the protection of water-related ecosystems e.g. lakes, rivers and wetlands. The basis for this is reliable data that is available worldwide on the state of water bodies and knowledge about the most important factors influencing this state.

Existing measurement data collected by individual countries often have gaps, are outdated or are not compatible with one another. Measurements alone are therefore insufficient to get an accurate picture of the global water quality. As a result, critical conditions are often not recognized and cannot be remedied. The partners of the cooperative project GlobeWQ want to change this situation: together with the United Nations Environment Programme (UNEP) und the World Water Quality Alliance that was launched by UNEP, their goal is to develop a standardized method for recording data on global water quality. This will take place on a web-based platform, which enables the analysis, representation and implementation of this data from a global to a regional level.

In this way, GlobeWQ is directly contributing to the United Nations Environment Programme by providing the scientific foundations for a World Water Quality Assessment, which is to be compiled by the World Water Quality Alliance by 2023.

Advantages from combining measurements and models

The analysis and service platform developed within the project GlobeWQ combines in-situ measurement data with data from remote sensing and computer models that simulate water quality. This combination minimizes the weaknesses from individual methods, enabling a more accurate and more reliable picture of water quality. It is not only the state of surface and groundwater that is analyzed, but also other influential factors such as land use or connectedness to sewer systems and sewage treatment plants. This outlines the causes and effects of water quality to decision makers, enabling them to adopt appropriate mitigation measures.

Researchers taking water samples in the River Kharaa (Mongolia)

GlobeWQ
Global Water Quality & Analysis Platform

FONA
Forschung für Nachhaltige Entwicklung
BMBF

Before the prototype of the platform is implemented, it will first be tested for lakes, rivers and the groundwater in ten case studies around the world. The regional data from these case studies will complement the information available in national, European and global databases. In this way researchers can demonstrate the significance of water quality for sustainable development using concrete examples and thus support regional solutions. In Germany for example data are collected in the catchments of the River Elbe and the Bodensee. Another case study will be conducted for Lake Victoria in Africa, which has been battling with the impacts of increasing nutrient inputs from the catchment area.

A platform aligned with management practices

The project GlobeWQ will complement the currently available database on global water quality and enable interfaces with data systems of the Helmholtz Centre for Environmental Research (UFZ) as well as the existing services of various UN organizations like the World Meteorological Organization (WMO), the Food and Agricultural Organization of the United Nations (FAO)as well as UNEP. The latter together with the UFZ and the International Centre for Water Resources and Global Change (ICWRGC) will carry on the GlobeWQ-platform after a successful testing phase. The platform can then be used directly for management practices and enable decision making that supports water security for mankind and the environment under different use scenarios.

The satellite image shows the Winam Gulf in Lake Victoria. This shallow area of the lake is particularly prone to algal blooms.

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