Monitoring Water Quality using Earth Observation

UNESCO World Water Quality Portal

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Monitoring Water Quality using Earth Observation

A new frontier in water resources management and SDGs monitoring
Water quality monitoring for the SDGs implementation and progress evaluation

Lack of global water quality data and information

Lack of human and technical capacity for water quality monitoring

Need to evaluate and monitor progress towards SDGs achievement

There is a need to enhancing global water quality data and information, supported by capacity building on water quality monitoring
UNESCO-IHP IIWQ

World Water Quality Portal

An innovative tool to monitor water quality, using Earth Observation (satellite data), to support the SDG 6 implementation and monitoring at the global and national levels

www.worldwaterquality.org
Water quality parameters

- Turbidity (sedimentation)
- Chlorophyll-a
- HAB indicator
- Total absorption
- Surface temperature

www.worldwaterquality.org
Global layer (90-meter/mixed resolution)

Regional layers/demonstration basins
(30-meter resolution, time series):

- Lake Sevan in the Caucasus highlands
  Armenia, Azerbaijan
- Itaipu and Parana River Basins
  Argentina, Brazil, Paraguay
- The Mecklenburg Lake Plateau - Germany
- River Nile and Aswan Reservoir - Egypt, Sudan
- The Mekong Delta - Vietnam
- Florida Lakes - USA
- Zambezi River - Zambia, Zimbabwe

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WATER QUALITY REPORT

Generated at: 2018-01-21 Time 17:41:40
Parameter: Chlorophyll-a
Unit: µg/l
Product: eoWater (satellite based)

Region: AM/AZ - Caucasus highlands, timeseries - [30m]
Station lat/lon: 40.41433 / 45.26688
Year: 2016
Median: 2.24
Mean: 3.97
Minimum value: 0.62
Bottom quintile: 1.38
Top quintile: 6.46
Maximum value: 15.09

Trophic State Index (according to Carlson 1977): Oligotrophic
Oligotrophic: 54.17%
Mesotrophic: 33.33%
Eutrophic: 12.50%

www.worldwaterquality.org
Lake Sevan in the Caucasus highlands: Armenia, Azerbaijan

Water quality (Chlorophyll-a) (26 August & 04 September 2016)

www.worldwaterquality.org
Paraná River Basin: Brazil, Paraguay, and Argentina
Sedimentation distribution in Itaipu reservoir zone (08 June & 11 August 2016)
www.worldwaterquality.org
Nile River Basin and Aswan Reservoir: Egypt, Sudan

Turbidity distribution (17 January & 20 August 2016)

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A tool for monitoring of SDG Indicators 6.3.2 and 6.6.1

6.3.2 Indicator: *Proportion of bodies of water with good ambient water quality*

Indicator 6.6.1: *Change in the extent of water-related ecosystems over time (spatial extent, quantity and quality of water)*

- Supports national efforts for the implementation of water quality related SDG targets as well as for monitoring progress towards their realization.

- Promotes science-based, informed decision-making and policy development on water quality, leading to sustainable water resources management towards the SDGs achievement.
  - A decision-support tool, helping countries identify the most pressing water quality problems such as pollution hotspots and consequently the action needed.
Thank you!

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International Initiative on Water Quality (IIWQ)
International Hydrological Programme
UNESCO
UNESCO
International Initiative on Water Quality - IIWQ
International Initiative on Water Quality - IIWQ

Unique international initiative aims to address water quality issues in a holistic manner towards ensuring water security for sustainable development:

- Promoting research and scientific cooperation
- Facilitating knowledge generation and dissemination
- Promoting effective technological solutions, science-based policy-making, innovative approaches and best practices

IIWQ implements activities and projects of interdisciplinary and trans-sectoral scopes, focusing on specific water quality and wastewater issues

- in a participatory and cooperative manner, engaging researchers, water professionals, and policy-makers, as well as other stakeholders (NGOs, the private sector, the general public)
- in both developing and developed countries

IIWQ was established by the endorsement of the UNESCO IHP Intergovernmental Council in its 20th session in 2012.
Key thematic areas:
- Safe drinking water and sanitation
- Water quality management
- Wastewater management and reuse

Objectives:
- Promoting scientific research, innovation and technologies
- Building the knowledge base and capacity
- Bridging the science-policy interface
- Creating awareness
- Fostering scientific cooperation and exchange
IIWQ Expert Advisory Group

A network of experts and specialists on water quality and in other areas related water quality, representing governmental and non-governmental organizations, research institutions and the academia from different regions.

The IIWQ Expert Advisory Group aims to:

• Provide state-of-the-art technical and expert advice on water quality challenges, priorities, and emerging issues, as well as on future directions of IIWQ

• Facilitate scientific exchange and promote collaboration to support IIWQ activities
International Initiative on Water Quality

Partners

• **A large network of experts** in fields related to water quality, wastewater and other specialized areas with strong links to water quality

• **An expanding network of collaborative research institutions and governmental organizations** in both developing and developed countries

• **Strategic collaboration with UN, intergovernmental and international organizations**
  - OECD, UNEP, HELCOM etc.

• **Active in all regions**: Africa, Asia, Arab States, Europe, Latin America and the Caribbean, North America.
For more information:

http://en.unesco.org/waterquality-IIWQ

http://en.unesco.org/emergingpollutants