



Science for Solutions decade: **HELPING**  
**Hydrology Engaging Local People IN** one **Global** world  
IAHS Scientific Decade 2023-2032  
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### **Details of the Working Group – Water Quality Under Global Changes**

**Describe the work and how your suggested working group will contribute to the goal(s):** The primary goal of the working group (WG) is to investigate how global changes, including climate change, land use changes, and socio-economic growth affects water quality in different regions worldwide. The scope includes surface water bodies (rivers, lakes, and reservoirs), groundwater, and coastal areas. Water quality under global changes can have significant socioeconomic implications. The WG will also assess the effects on human health and agriculture. They will also analyse the economic costs of water pollution and identify potential strategies for mitigating negative impacts.

**Describe the methods you will use to achieve the goal(s):** The initial step is to gather extensive datasets related to water quality parameters by collaborating with governments, research institutions, and non-governmental organizations to access existing data especially for regions lacking sufficient open-access water quality data. The WG will employ advanced data analysis techniques, including statistical models, process-based models, and machine learning algorithms, to analyse historical and future trends and patterns in water quality data over time. Based on their findings, the working group will develop recommendations and strategies to mitigate the negative impacts of global changes on water quality. To ensure that the research findings have real-world impacts, the working group will engage with policymakers, local communities, and relevant stakeholders.

**Describe the (a) short-term, (b) the long-term and (c) the ultimate results you hope to achieve:**

(a) Establish a diverse, collaborative working group. Gather extensive water quality datasets (observational and model datasets). Start the analysis of water quality trends and the impacts of global changes. (b) Understand the intricate relationships between global changes and water quality at different spatial scales. Predict future impacts on water quality under global change factors from local to global scales. Study socioeconomic implications and impacts on ecosystems and biodiversity. (c) Develop effective mitigation and adaptation strategies for sustainable water quality management under global changes. Influence policymaking and community practices through effective outreach. Promote international collaboration and knowledge sharing to address global water quality challenges.

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