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Remote Sensing Data for large lakes to asses Water Availability for accelerating SDG 6 implementation and enhance human wellbeing

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Freshwater is one of our most precious resources, essential for drinking water, agriculture, inland fisheries, and recreation. However, both its availability and quality face significant challenges from human activities, with these pressures potentially intensifying due to environmental changes.

Large lakes, while covering only 3% of Earth's surface, hold approximately 87% of surface freshwater, making them crucial water reservoirs. The urgency to understand and protect these water bodies is immediate: an estimated 4.4 billion people globally depend on unmonitored water sources. This knowledge is vital for mitigating risks associated with the planetary crisis of climate change, pollution, and biodiversity loss. The United Nations' 2030 Agenda, endorsed by 193 member states, includes 17 Sustainable Development Goals, with SDG 6 specifically targeting sustainable water and sanitation for all. The water sector's significance is further emphasized by the fact that 60% of climate adaptation strategies involve water management, establishing it as a global priority.

Achieving SDG 6 requires innovative strategies to overcome major data gaps, especially in vulnerable regions. The latest reports (2024) highlight insufficient water quality data where it is most needed. Earth Observation (EO) technologies, including satellite remote sensing, combined with smart in situ networks, modelling and forecasting tools, offer effective solutions to bridge these gaps. When used together, they enable a proactive, data-driven approach to global water management—allowing for informed decision-making

We focus our work is on 2 large lakes in Africa (Tanganyika and Turkana). We will highlight the power of available remote sensing (RS) data to tackle the gaps in data collected for water resources management and SDG6 monitoring and the potential of the synergy between RS and other data streams to asses, and predict water availability and improve this through decision making. The main focus is on proving the potential for improving the SDG 6 implementation, as well as improving social safety in regard to water availability.

We will describe how data/knowledge tools can be the missing link to increase social engagement and how they can be used in favour of water quality management, peace and security. Through the results of 2 projects based in Lake Turkana and Lake Tanganyika we will describe the design of a new water quality indicator based on EO data; tools for water and conflict mapping, and the development of a dashboard for planning and policymaking process.

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