

Assessment of Potentials and Limitations of Citizen Science Approaches in Monitoring Hydrological Parameters with Special Emphasis on Soil Moisture Monitoring: A Systematic Review

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Abstract

Knowledge about soil moisture and other hydrological parameters is required for many environmental applications. Citizen science helps to collect hydrological data, thereby improving the understanding of the dynamics of the water cycle. The adoption of citizen science in scientific fields led to a surge in the popularity of utilizing citizen-generated data for monitoring hydrological parameters. This practice comes with its potentials and limitations. Here, a systematic analysis was conducted to assess the potentials and limitations of citizen science in monitoring hydrological parameters. 31 relevant studies were identified through a search of databases. Further review resulted in grouping the potentials and limitations into six categories with the topics of engagement, governance, and technology being the most highlighted. Several recommendations were shared including the call for conducting more qualitative studies on soil moisture and creating a consolidated standard systematic review guideline in the context of citizen science in hydrology.

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