

Using a crowdsourced approach for monitoring water level in a remote Kenyan catchment

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Hydrological models or effective water management strategies only succeed if they are based on reliable data. Decreasing costs of technical equipment lower the barrier to create comprehensive monitoring networks and allow both spatial and temporal high-resolution measurements. However, these networks depend on specialised equipment, supervision, and maintenance producing high running expenses. This becomes particularly challenging for remote areas. Low income countries often do not have the capacity to run such networks. Delegating simple measurements to citizens living close to relevant monitoring points may reduce costs and increase the public awareness.

Here we present our experiences of using a crowdsourced approach for monitoring water levels in remote catchments in Kenya. We established a low-cost system consisting of thirteen simple water level gauges and a Raspberry Pi based SMS-Server for data handling. Volunteers determine the water level and transmit their records using a simple text message. These messages are automatically processed and real-time feedback on the data quality is given. During the first year, more than 1200 valid records with high quality have been collected. In summary, the simple techniques for data collecting, transmitting and processing created an open platform that has the potential for reaching volunteers without the need for special equipment. Even though the temporal resolution of measurements cannot be controlled and peak flows might be missed, this data can still be considered as a valuable enhancement for developing management strategies or for hydrological modelling.