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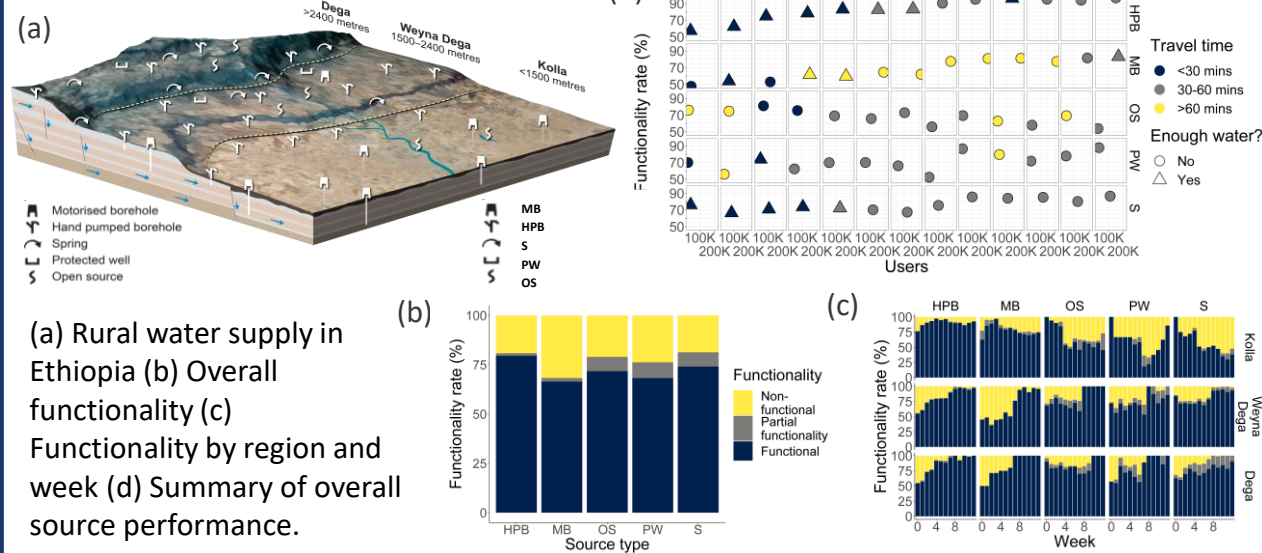
Abstract

During the El Nino drought in Ethiopia in 2015-16 significant efforts were made to monitor the performance of rural water points. Using data from 5196 water points we demonstrate that with adequate monitoring and maintenance, groundwater sources deliver reliable water supply during drought. Our results have implications for resilient water supply across rural sub-Saharan Africa.

Project Description

Droughts, expected to increase in frequency and magnitude in sub-Saharan Africa, affect water supply performance and reliability, undermining recent gains in water access and making it difficult to extend services. Few studies have compared the performance of rural water sources during drought. Drawing on the results of a monitoring programme conducted during the 2015-16 drought we compare the performance of 5196 water points (hand-pumps, motorised boreholes, springs, open-sources) which were monitored every week for 12 weeks in early 2016. Quantitative and qualitative data about water point performance (functionality, usage and access) were gathered in real time using mobile phones.

Performance of rural water points



Conclusions

- Functionality of rural water sources was low at the onset of drought.
- Real-time monitoring allowed targeted maintenance and repair.
- External support for maintenance led to high levels of functionality of groundwater sources, particularly hand-pumps and motorised boreholes.
- Hand-pumps had highest functionality and were most accessible.
- Motorised boreholes had lowest functionality but were crucial for large numbers of people, particularly in lowland (Kolla) areas.
- Prioritising access to groundwater via multiple sources and technologies, supported by responsive and proactive maintenance, increases rural water supply resilience.

Ref: MacAllister, D.J., MacDonald, A.M., Kebede, S. et al. Comparative performance of rural water supplies during drought. *Nat Commun* 11, 1099 (2020). <https://doi.org/10.1038/s41467-020-14839-3>