

Interactive comment on “Shallow groundwater in sub-Saharan Africa: neglected opportunity for sustainable intensification of small-scale agriculture?” by J. Gowing et al.

Anonymous Referee #1

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I agree with the authors that shallow groundwater used for small-scale irrigated agriculture in sub-Saharan Africa has the potential to be an important factor for improving the living conditions of subsistence farmers and, if well managed, can be a sustainable option. It is good to see members of the academic community engaging with work in SSA related to subsistence farming and the technical aspects of water supply. However, I am recommending that this manuscript be rejected from HESS.

I am struggling to see this manuscript as a research article; in my view, it is not sufficiently novel in approach, methods, or results to be considered original research. As a case study, it is detailed, but this is not sufficient.

- The methods and approach are not novel; with the exception of the fact that the au-

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thors undertook community-based monitoring to collect data and they used a Schlumberger Array in the resistivity survey (as opposed to dipole) the approach is the same as that which is undertaken for every hydrogeological survey in many countries in SSA (e.g., Kenya, Tanzania, Uganda) - these surveys are done whenever a drilling permit is sought.

- In much of SSA, fluvial unconsolidated aquifers are well known as a consistent source of groundwater in the dry season(s); in fact they are often used for both domestic purposes and agricultural activities in many other SSA countries. What limits their use for irrigated agriculture (in cases where they are as reliable as the one studied by the authors) is not that they are an unknown resource, it is that the communities do not have the economic resources to invest in the infrastructure. The pump options mentioned by the authors exist in SSA (as do drilling rigs, hydrogeologists, etc.) but most of these items are out of reach financially by many rural SSA communities; this is an issue of government/NGO resources rather than a knowledge gap.

- The discussion section of this manuscript felt much like a rehash of the intro/literature review. It didn't move the narrative forward. This may be more of a stylistic critique, but much of the intro and discussion felt like an op-ed rather than the basis for original research.

Recommendations

- Incorporate more study locations so that a more generalized understanding of alluvial groundwater availability can be developed

- Pursue the community-based monitoring aspect: if the authors can demonstrate that this can be maintained in SSA for the long-term, it could be published as an alternative method for gathering hydrological data in remote areas with little available information

- Incorporate some modeling aspect to the study (some possibilities include: impacts of climatic variability, drought vs flood conditions) so that the results and interpretations

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can go beyond where they are right now.

- With some additional data (longer-term monitoring, comparison to surrounding catchments), this may be publishable as a case study in another journal

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