Response to reviewer's comments **(R. Clarke)**

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Comment 1

….. much field hydrology would be impossible with the approval, tacit or otherwise, of people who live and work the land where the research is to be sited, and securing that approval can be vital.

The authors agree that it is impossible to do field hydrological studies without the approval of the people who live and work on the land. However, it is acknowledged that the approach used to get the approval from the people differs as highlighted in the paper. One can easily approach and entice some specific members of the target community to spearhead the task of winning the approval of the community while another could be the researchers taking the lead in engaging the local community as was the case in this study. We have witnessed many cases where most of the local community members are not aware of hydrological measurements/studies taking place in their midst due to the fact that they were or are not well informed of the ongoings and potential benefits of such studies. However, this study highlights of a proactive engagement of the local community, from the beginning of the study, and the benefits of such a process. This has been captured in the revised manuscript.

Comment 2

In their study of the Potshini catchment, the authors appear to have paid nothing (apart from their time spent gaining the consent and support of those who live there). It would be interesting to learn whether any other payment, perhaps in kind if not in cash, is given to people in the Potshini catchments on whose land instruments are sited, and who in some cases monitor them. In other field studies with which this reviewer has been associated, different kinds of informal payment were given to participating local people, perhaps in the use of tools, or gifts of superfluous construction and fencing materials. So one question to the authors would be: what payments, whether formal or informal, were made to those who participated? And if none were made, is it fair that local people should be satisfied merely with the act of participating in a scientific project, even one which may benefit them in the longer term, when field technicians and scientists receive their salaries?

The community members who took part in the instrumentation exercise were paid according to the South Africa labour laws, where the minimal wage for unskilled labour by then was R75 per day (approx. USD10). However, the researcher's motive was not "buying" the labour per se, but as an appreciation of their time and efforts. Paying for services was not the norm. This was made clear from the initial stages and all who participated in the installation exercise appreciated this approach. Only the community facilitator was compensated for his continuous monitoring efforts. Otherwise all the other community members participated in the monitoring activities out of their interest and goodwill. This has been elaborated in the revised version of the manuscript accordingly. However, in most cases, when working in the field, the researchers either organized packed lunch for all i.e the members of community working with them and themselves, or arranged for food to be prepared for all in a house of one of the community members.

Comment 3

And a broader question is, what is the value (worth) of hydrological data? Texts on decision theory (e.g., D V Lindley, 1985: Making Decisions, John Wiley & Sons Ltd) show how the value of information can be calculated when data are used to make decisions whose consequences can be measured in terms of money or utility. But the reader of the paper does not get a sense that the authors have yet reached the stage at which the possible decisions, and their consequences according to what natural events might occur, can be listed

The authors note that there is need to determine the value of hydrological data. This is a research question that is pertinent to the current decay of the willpower to establish or maintain monitoring networks especially in developing countries. As far as the Potshini catchment is concerned, we could use the simple example of the consequence of a crop failure in the smallholder's farm due to inappropriate planting dates as a result of not knowing the received amount of rainfall. Studies on the onset and cessation of rainfall in the catchment (Kosgei, 2009) has clearly indicated the importance of planting early of the main maize crop of which is determined by monitoring the amount of rainfall received. This has been discussed in detail in the revised manuscript.

Comment 4

A further question concerns the involvement of local people over the longer term. The Potshini study has only recently begun; the paper says it was initiated in 2004, and the authors' paper was sent for publication in September 2007, so the period reported in the paper may be about two years, or three at most. It would be interesting to learn whether the level of co-operation and interest of local people is being maintained, and whether there have been instances of vandalism or theft, and reluctance to record instrument readings every day at the same time: are there gaps in the records? If not, how did the authors manage to instill attitudes of scientific discipline in local people?

The reviewer comments are timely and interesting. The first phase of the Smallholder System Innovations (SSI) research programme started in 2004 and ended in 2008, with fulltime 2 PhD and 2 MSc students actively engaged in the programme. The second phase started in 2009 and is ongoing although on a lower scale, with only 1 MSc student. Thus, the intensity of engaging the local community has gone down. It is interesting to note that the permanent structures (automated recording) that form part of the the Potshini catchment monitoring network are still operational. All the plastic manual raingauges that were given to the smallholder farmers have aged out due to harsh weather conditions but some farmers have bought their own at a cost of R40 (approx. USD5.4) and installed in their homes and continue to take records even though not as diligently as during the first phase of SSI programme. Thus, there is still goodwill from the Potshini community on supporting and appreciating research studies in their midst. However, there have been some cases of vandalism of some of the equipment that were installed on the upper parts of the catchment that is not inhabited. These are the grazing areas for the community during the dry winter season. These cases were reported to the community leadership and who swiftly took appropriate measures by calling an urgent community meeting to discuss the matter. It was then realised that the culprits were school going children looking after their cattle on the upper slopes of the catchment. Later on, it was then established that the motive of the children was not "to vandalise" but rather mischief. Thus, we can conclusively state that most of the Potshini community members, including the leadership, have appreciated the research ongoings of the

agro-hydrological studies in their midst. Some of the smallholder farmers who participated in the SSI programme have since been using the knowledge they gained, notably determining the appropriate planting dates from their rain gauge measurements.

Reference:

Kosgei, J.R. PhD thesis. Rainwater harvesing systems and their influences on fieldscale soil hydraulic properties, water fluxes and crop production. School of Bioresources Engineering & Environmental Hydrology, University of KwaZulu-Natal, South Africa. 2009.