

Interactive comment on “Groundwater as an emergency source for drought mitigation in the Crocodile River catchment, South Africa” by F. E. F. Mussá et al.

Anonymous Referee #1

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General comments:

This manuscript investigates the use of groundwater as an emergency source for drought mitigation in a specific area (river catchment) in South Africa. Water scarcity & drought are often exacerbated by the lack of understanding of groundwater. Most data are incomplete, fragmented or outdated, and scientists in Africa lack the tools to assess groundwater to rapidly improve water supplies. Hence, actors in this continent lack the policies and skills necessary to manage groundwater that would help build long-term preparedness to drought. The current study is a good case study showing how conjunctive water management of groundwater and surface water resources is necessary

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to mitigate droughts impacts. The use by the authors of a multi-approach taking into account coupled modelling of surface water and groundwater fluxes with sufficient time series data of groundwater levels were very efficient for a good calibration of the model.

The paper is quite correct and precise regarding its English, structure, methodology and presentation.

On the other hand, the authors give proper credit to related work and clearly indicate their own contribution. I would only suggest mentioning as well some related works such as: Groundwater Resources Investigation for Drought Mitigation in Africa Programme (GRIDMAP), a scientific consortium of regional partners that aims to assess groundwater potential and build drought management capacities across the Horn of Africa and other parts of Africa, and which contributed to provide precise understanding of where safe groundwater resources exist and how much can be used for emergency and long-term development needs in Africa. Southern African Development Community - SADC - Groundwater and Drought Management Project: which aims at developing cooperatively a strategic regional approach to support and enhance the capacity of its member States in the definition of drought management policies, specifically in relation to the role, availability (magnitude and recharge) and supply potential of groundwater resources.

Principal Criteria Excellent (1) Good (2) Fair (3) Poor (4) Scientific Significance: Does the manuscript represent a substantial contribution to scientific progress within the scope of Hydrology and Earth System Sciences (substantial new concepts, ideas, methods, or data)? X Scientific Quality: Are the scientific approach and applied methods valid? Are the results discussed in an appropriate and balanced way (consideration of related work, including appropriate references)? X Presentation Quality: Are the scientific results and conclusions presented in a clear, concise, and well-structured way (number and quality of figures/tables, appropriate use of English language)? X

The current work may be very helpful in future works studying drought and water

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scarcity in that specific study area and in similar river catchments by means of the use of groundwater resources data and modelling.

There are no specific further comments.

Therefore, I would recommend accepting that paper.

Please also note the supplement to this comment:

<http://www.hydrol-earth-syst-sci-discuss.net/11/C1034/2014/hessd-11-C1034-2014-supplement.pdf>

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 11, 2719, 2014.