Water Research Group
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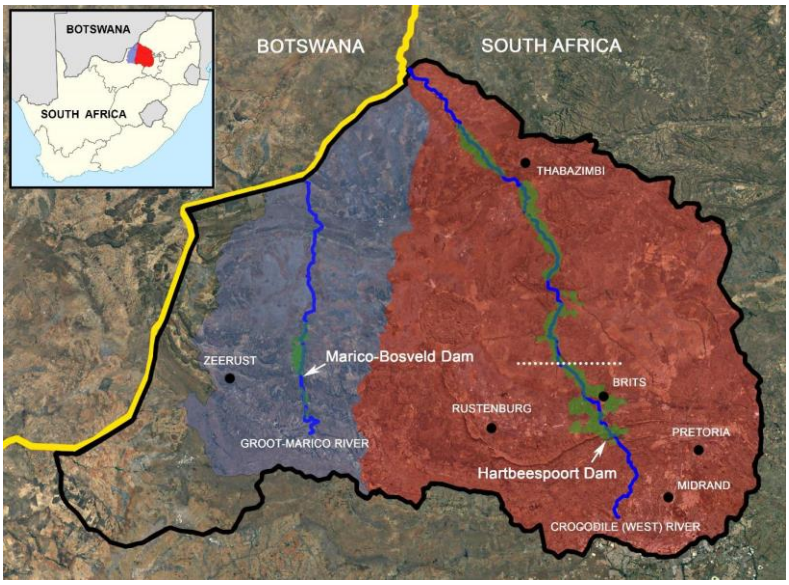
9 Questions with WRG authors*

Title of the paper: Irrigation water quality and the threat it poses to crop production: evaluating the status of the Crocodile (West) and Marico catchments, South Africa

Journal: Environmental Monitoring and Assessment

Authors: G.C. du Preez, V. Wepener, H. Fourie, M.S. Daneel

Read the article: https://doi.org/10.1007/s10661-018-6512-y



The reference (Marico) and impacted (Crocodile-West) river systems with associated irrigation schemes (in green).

Gerhard du Preez, M.Sc.*
*G. du Preez is a PhD candidate at the Unit for Environmental Sciences and Management, NWU, co-supervised by Prof. Victor Wepener from the WRG, NWU

1. What previous work was integral to the new study?

This work represents the groundwork that was required to determine the historical and current status of the water quality parameters related to irrigation in the study area. The data were obtained from different water quality sources and forms the first chapter of my PhD.

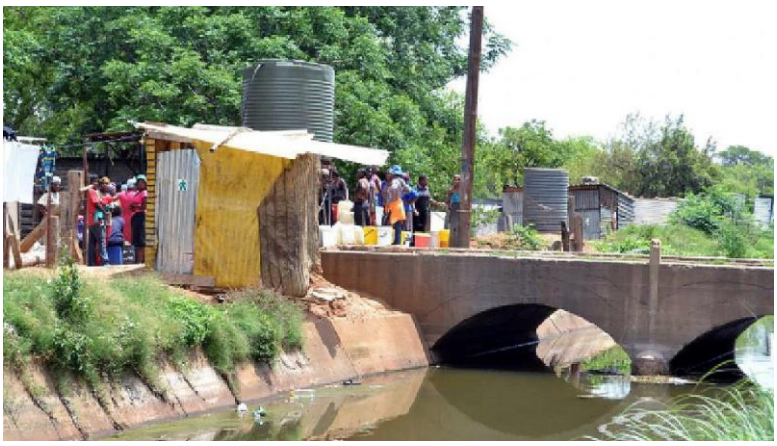
Q&A WITH AUTHORS

2. Why do you care about this particular subject?

Water quality is a very relevant topic in agricultural sciences as anthropogenic pollution threatens irrigated soil health and thus food security. The Crocodile (West) catchment is severely impacted and the Crocodile (West) Irrigation system below the Hartbeespoort Dam is extensive and entirely reliant on this water sources.

3. Did any of the findings surprise you?

The findings confirmed our hypothesis that irrigation water quality was deteriorating over a temporal scale. It was not only in the impacted Crocodile (West) system but also in the reference Marico River system. This reference system is widely regarded as one of the least impacted river catchments in South Africa.



Informal settlements and pit latrines on the banks of the Crocodile (West) Irrigation Scheme below Hartbeespoort Dam.

4. What are some of the limitations of this study?

Some important water quality parameters (e.g. metal- and organic toxicants, and bacterial concentrations) are not routinely measured by the Department of Water and Sanitation and could therefore not be included in the water compliance considerations.

5. Do you expect these findings to be controversial in your field?

No. The poor water quality of the Crocodile (West) River system has been well documented.

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6. What are the broader implications of these findings?

These findings suggest that the water quality (in especially nutrient concentrations) of the Crocodile (West) River system deteriorated during the studied period (2005 – 2015). The data furthermore suggest that nutrient concentrations are likely to continue to rise unless substantial management interventions are applied.

7. What do people usually get wrong about this subject?

The potential long term and future implications of deteriorating freshwater resources. The data sources (i.e. DWS databases) are essential to monitor these trends but the data availability is decreasing from extensive sampling sites and frequencies to less frequently monitored sites and the delay in the availability of the results.

8. Looking back on the study, what were some of the most memorable moments for you and your colleagues?

The data revealed clear temporal (short and long term) patterns that provided additional insight into the cause of water quality deterioration.

9. What are you working on next?

Studying the potential effect of irrigation with low quality irrigation water on soil ecosystem health.

Thank you for your time, Gerhard!

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