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Discussions

Interactive comment on "Applying SWAT to predict orthophosphate loads and trophic status in four reservoirs in the upper Olifants catchment, South Africa" *by* J. M. Dabrowski

Anonymous Referee #3

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A novel approach of using SWAT to predict ortho-phosphorus concentrations from non-point and point source pollution and how proposed water quality standards can influence downstream water bodies. A few questions that I would like to see addressed, both for increased technical presentation and applicability for other users:

The hydrology model results are very good. However, I would like to see a brief description of system hydrology-precipitation, and streamflow. What is the contribution of streamflow from STWs versus natural streamflow? Are the reservoirs regulated? How many storm generating precipitation events per year on average? What is the relationship between OP concentrations and stream flow? Do storm events unduly influence

nonpoint source or point source loading?

Figure 5. What happened in summer of 2008 through the end of 2010– as the OP concentrations all decrease, but the model predicts increased OP concentrations.

Figure 8 should have the same scales for each plot for easier comparisons. The calculated flux (or load) into the reservoirs is given from the OP concentration. This appears to be a serial correlation? This is based on DWA work, however to increase international applicability, it would be better to express the loading as mg per square meter per year (i.e. Vollenweider), thus normalize by the lake surface area to determine the trophic status. What is the necessary load for hyper-eutrophic status?

Is the 'seasonal' variation shown a result of streamflow changes or the result of in-lake processing? I suspect from streamflow changes. What is the accommodation or recommendation of the model to address in-lake processing of OP?

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 10, 13635, 2013.