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Interactive comment on "Hydromorphological restoration stimulates river ecosystem metabolism" *by* Benjamin Kupilas et al.

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Hello

Interesting and relevant study. Great to see a stream metabolism study specifically focused on restoration. I also like the discussion of the importance of macrophytes and autochthonous production to stream respiration.

One point I would like to see more complete discussion of is how the aeration rates were calculated. It would be nice to see a plot of dDO/dt = ER + K(DO_deficit) for a few nights that were considered significant. Adding confusion to the aeration rate discussion is the reported units of appendix S2 in g O2/(m3*s). Is this a typo? Why not use the same units as the text in 1/day (line 215) ?

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Also, given the relatively low aeration rate and high productivity, why not use a parameter fitting approach to model metabolism and aeration rate? It seems a more robust approach than the night time regression method.

example: Holtgrieve, Gordon W., Daniel E. Schindler, Trevor A. Branch, and Z. Teresa A'mar. "Simultaneous Quantification of Aquatic Ecosystem Metabolism and Reaeration Using a Bayesian Statistical Model of Oxygen Dynamics." Limnology and Oceanography 55, no. 3 (May 1, 2010): 1047–63. doi:10.4319/lo.2010.55.3.1047.

Your study finds very high GPP and ER estimates compared to others. This could be a direct result of an overestimate of the aeration rate. I find that a more robust method, or convincing discussion of the aeration rate, is necessary to support these findings. If an entirely new analysis applying a parameter fitting model is perhaps infeasible, empirical values from hydrodynamics and morphology would be helpful.

Also, would it be possible to apply the two station method if you combined reaches? My rough calculations indicate a reach length of about 3000 meters would be appropriate from your hydraulics and aeration rate.

Nice work,

Robert

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