

February 9, 2015

*To:*

Dr. Paul F. Kemp

Editor-in-Chief

Limnology and Oceanography: Methods, ASLO

*From:*

Dr. Marcus W. Beck

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Enclosed please find our manuscript, entitled ‘Improving estimates of ecosystem metabolism by reducing effects of tidal advection on dissolved oxygen time series’, to be considered as a new method submitted to Limnology and Oceanography: Methods. Dissolved oxygen time series are commonly used to estimate whole ecosystem metabolism using the ‘open-water’ method. Application to coastal waters has been problematic because DO time series often reflect variation from biological processes and tidal advection. Our manuscript describes a statistical model that can greatly reduce the effects of tidal advection on dissolved oxygen time series to improve estimates of ecosystem metabolism. We describe the theory behind the method and show its application using both simulated and actual DO time series. Overall, we are confident that this method can effectively reduce the influence of physical advection on metabolism estimates in many cases. The implications are such that metabolic estimates are more interpretable and there may be increased potential to empirically relate metabolic variation to causal factors at different scales.

All authors have contributed equally to the content of the manuscript and have approved the submitted product. The manuscript contains only original data and the authors agree to pay publication charges if accepted. Please note that Dr. Jane Caffrey (University of West Florida) and Dr. Erik Smith (NOAA) have reviewed earlier drafts of the manuscript. Additionally, we have compiled the manuscript using a  $\text{\LaTeX}$  document preparation system and can provide source files if needed. We greatly appreciate the opportunity to publish our work in Limnology and Oceanography: Methods.

Respectfully,

Marcus W. Beck