

Interactive comment on “Evaluating primary productivity, ripple effect and resilience of fluvial ecosystems: a new approach to assessing environmental flow requirement” by Yui Shinozaki and Naoki Shirakawa

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This ambitious manuscript attempts to develop a global model for environmental flow requirements built on a key ecosystem function: primary production. This is a very interesting idea, and I appreciate the authors' efforts, but I do not find the proposed model at all convincing. The authors have almost completely ignored the relevant literature on ecology in general and river metabolism in particular that should serve as a foundation of this effort; in fact, they never even mention ecosystem metabolism in the manuscript. They rely on a few classic studies to set the stage, but seem unaware

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of the many empirical and theoretical contributions that have come in recent decades (though some studies are mentioned in passing). Consequently, they coin new terms for concepts that already exist, and propose indices and relationships in an almost complete scientific vacuum. The section on the “trophic level index”, for example, should be built on the rich existing literature on trophic ecology, metabolic theory, food chain length, energetics, etc; it cites only an Ecology textbook.

I don't want to discount the hard work of the authors, and there's sometimes a role for blue-sky thinking unencumbered by others' ideas, but this is not the way to move science forward. I think the authors should consider convening a group of colleagues with diverse knowledge in the relevant scientific fields to develop an interdisciplinary solution to the problem informed by the relevant literature.

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