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Hydrology and Earth System Sciences
Discussions

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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The authors brought new insights into the global eco-hydrology field by considering NPP, resilience and trophic levels. These last ideas are necessary to improve eco-hydrology relationships at global scale. However, these last deserve more investigation, monitoring and testing before being upscaled to global EF methods.

I recommend to test their method with empirical case study first and second to acknowledge worked developed by (Gerten, Hoff et al. 2013, Pastor, Ludwig et al. 2014) with the development of which the VMF method which was not mentioned in this re-

view, neither the Q90_Q50 and Tessman methods which shown better results than the Smakthin and Hanasaki and Tennant methods (Pastor, Ludwig et al. 2014). The VMF method was acknowledged by other global assessments including: (Gerten, Hoff et al. 2013, Boulay, Bare et al. 2015, Gaupp, Hall et al. 2015, Sadoff 2015, Steffen, Richardson et al. 2015) and was used to defined freshwater planetary boundaries in science (see references). This study is based on the Tennant method which was created for temperate case studies and which showed low performances for intermittent rivers Ppastor et al. 2014). Moreover, an explanation on the choice of method (Tennant over Smakhtin, parametric vs. non-parametric methods) is required and why the latest methods were ignored (Hoekstra and Mekonnen 2011, Pastor, Ludwig et al. 2014).

I recommend the authors to test their parameters and methods with different case studies and other global global EF methods worldwide before validation and global upscaling. It is also necessary to compare these last EF methods in different contexts (different ecoregions, flow regime types). Overall, this study has the merit to extend knowledge on the eco-hydrology field but to my point of view it should be first described the use of NPP, resilience and trophic levels for all freshwater ecoregions (Abell, Thieme et al. 2008) including the acknowledgement of the latest global eco-hydrological studies (Oberdorff, Tedesco et al. 2011, Tisseuil, Cornu et al. 2013).

I wish good luck to the authors to develop further their study,

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