

AUTHORS' RESPONSE TO EDITOR COMMENTS

We wish to thank the editor for his thoughtful comments and suggestions to improve the quality and clarity of the manuscript. Individual responses are included below. Changes in the manuscript are highlighted in blue.

p.7 line 8: what is the unit/dimension of the DOR value? Does it have a physical meaning related to the unit/dimension?

AR: We updated section 3.1.2. to clarify the terms and units of eq. 1. See updated manuscript, P.7.

p.7 line 12: you write “DORw provides a better estimate...” How do you know? Is there evidence for this?

We updated section 3.1.2 to explain in more detail the differences between DORw and DOR, and argue that a weighting factor that accounts for basin runoff not affected by artificial regulation can improve the capacity of the index to differentiate the effect of proximity of upstream reservoirs to the reach of interest.

p.7 line 18: “32-year” or is it 33 –year (see p. 6 line 30, above). Please be consistent.

We corrected the text. Now reads “33-year”

p. 14 line 33/p.15 line 1: “As shown, in some cases simple restrictions result in expansion pathways consistently better in most analyzed impacts and benefit metrics.” Was this really shown?

Figure 9 was updated to include boxplots comparing sampling strategies across the basin level metrics. The new graphs show that some sampling strategies perform consistently better.

p.21 lines17-18: You state: “Our analysis of possible scenarios, however, indicates that other scenarios would result in much lower differential changes.” Are there principled lessons to be learned from this – what type of scenarios (i.e. which types of interventions) have lower negative impacts and higher positive impacts?

We updated the discussion section 4.2 to enumerate the relevant characteristics of hydropower configurations that performed better across the selected metrics.