

**Second review of “Water Column Respiration in the Yakima River Basin is Explained by Temperature, Nutrients and Suspended Solids” by Laan et al.**

The revision addresses the main points that I raised in my review of the first submission of this paper and I appreciate the work the authors have put in to clarify and improve the manuscript. I have only one more concern:

I do not agree with line 374 and 376 where the authors state that the correlation between  $ER_{WC}$  and total drainage area is too weak to confirm their hypothesis, i.e.  $ER_{WC}$  fastens downstream. Because I actually see a descent relationship of  $ER_{WC}$  with total drainage area (Figure 3b). This is underlined by a Pearson correlation coefficient of -0.39 and a p-value below 0.05 (Figure S5). In fact, the relationship seems to be curvilinear saturating and therefore the Pearson correlation coefficient, which specifically measures linear correlation and does not capture non-linear relationships such as those represented in Figure 3b, might even underestimate the strength of the relationship. Such non-linear relationships are also visible in Figure 4d and to some extent in Figure 4a. A log transformation of the predictors instead of a cube root transformation might “linearize” those relationships. I apologize for not pointing this out already in the first review. Having said that, I agree with the authors’ general conclusion “that localized factors, not upstream conditions or drainage area, provide primary controls over  $ER_{WC}$ ”, as well as I appreciate the added more detailed discussion starting in line 414, still, I think in general  $ER_{WC}$  seems to accelerate towards downstream locations, despite strong local controls.