

Interactive comment on “Inter-annual variability of dissolved inorganic nitrogen in the Biobío River, Central Chile: an analysis base on a decadal database along with 1-D reactive transport modeling” by M. Yévenes et al.

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The authors would like to thank the reviewer for his valuable comment. We agree to address it in our preliminary reply. We address his comment below: Thank you for your interesting comment on the manuscript. Regarding to your question we can say dams in general enrich waters and retain nutrients. Dams generally tend to behave almost as eutrophic ecosystems (increased nutrients), mainly because of its operation range where the water is held for a long time. Therefore there is neither the time

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nor the conditions to evolve to (low nutrient) oligotrophic systems. In our study, there are not sampling sites within artificial reservoirs. The two dams are the Ralco and Pangué built in 2004 and 1996 respectively. Both supply hydroelectrical power to the main national stream (10%). The first sampling station (ABBO) is located between the Ralco and Pangué dams, in this site relatively higher nitrate readings were recorded, 0.6 mg / L, although nitrates levels are not as high as in the estuary. Contrary, the stations downstream of the dam drastically reduce their concentration (<0.1 mg / L). To illustrate more this behavior, unpublished phosphates data, > 0.15 mg / L, for the same site shows similar trend compared to nitrate. Moreover, a cyclic seasonal pattern was revealed, higher concentrations in winter and lower in summer. The reason of these variations may be either higher nutrient derived from large water volumes (winter) as well as water consumption in the period of greatest photosynthetic activity (spring - summer).

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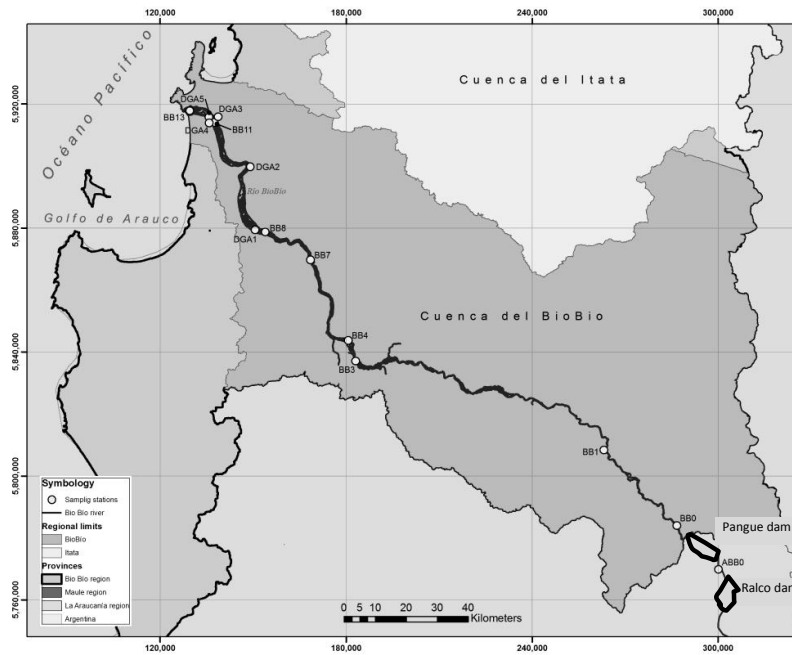


Figure 1. Study area located in the Biobío River basin in Biobío region.

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