

General comments:

The manuscript *Riverine biogeochemistry from the Andes to the ocean: longitudinal patterns along a Mediterranean Andean catchment in central Chile* by Derrien et al. presents important and timely findings on riverine biogeochemical dynamics in a Mediterranean Andean system. The authors provide a comprehensive longitudinal assessment across the Rapel catchment, integrating dissolved organic matter (DOM) optical properties, nutrient chemistry, dissolved metals, and microbial community composition. The dataset is extensive, the spatial coverage is strong, and the multi-compartment biogeochemical approach represents a major strength of the study. The work is highly relevant for understanding hydrological regulation and land-use pressures in Andean watersheds.

While the scientific foundation of the manuscript is solid, several issues require attention before final publication. These include editorial inconsistencies, missing values, formatting errors, and areas where methodological or interpretive clarity could be improved. Addressing these points will enhance readability, coherence, and overall professionalism. In its current form, the manuscript warrants moderate revision.

Specific comments

- Line 65 and 83: The Rapel catchment area should be consistent. You have got two different numbers/significant figures.
- Line 108-114: Clarify the naming conventions, they are not very clear especially for Tinguiririca and Cachapoal subcatchment. They were described in results, but given the number of samples, a short description in the methods would be helpful for the flow.
- Line 133: Maybe specify the maximum storage duration before extraction in this sentence “Sterivex filters were frozen at -20°C.”
- Line 134: Sample Analysis? “Samples collection” Section title appears twice (2.2 and 2.3).
- Line 169: “retained XX% of the raw reads.” Place the missing value here.

- Line 191: “C1mh, C2th, C3p, C4trp” Component naming inconsistent across manuscript Please Standardize them. Also, the component names could also be included in section 2.3 to avoid confusion.
- Line 196: catchment levels?
- Line 220: a better way might be to reference figures as- (Fig. 2a) instead of (Fig. 2 (a)) here and in the rest of the manuscript.
- Figure 2: revise the following sentence “Dots and lines represent the main rivers; single empty dots represent the tributaries.” with something like “line and scatter plots (with filled symbols) represent the main rivers while void symbols represent the tributaries.” Also, Given the importance of Rapel reservoir in this study, highlighting it using a different color or symbol in the figures would improve readability.
- Figure 3: revise the caption following the comment for Figure 2.
- Line 244-252: Consider adding specific excitation/emission maxima at their first appearance and check for consistency in the terms used to represent the components (i.e., C4trp vs C4p) throughout the manuscript and figures.
- Acknowledgements: If Financial Supports section is a requirement, consider removing the same information from Acknowledgements.