

Interactive comment on “Diapycnal dissolved organic matter supply into the upper Peruvian oxycline” by Alexandra N. Loginova et al.

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The authors present compelling physical and biogeochemical data indicating microbial utilization of DOM plays an important role in shaping the upper oxycline in the Peruvian upwelling system. Diapycnal fluxes of O₂ and DOM from productive surface waters are estimated, and analyses of DOM concentrations and compositions indicate the microbial utilization of bioavailable components (e.g. amino acids and carbohydrates) occurs mostly in the upper 50 m of the water column.

In addition to the mol% compositional data presented for carbohydrates and amino acids, the DOC-normalized yields of neutral sugars and amino acids can provide insights about the bioavailability of DOC. These data should be presented in a table (e.g.

C1

Table 1) or figure (e.g. Fig. 4). It appears carbohydrate and amino acid yields (%DOC) decline rapidly in the upper 50 m of the water column, indicating the preferential utilization of these bioavailable DOM components. The yields and bioavailability of DOC at 100 m can be compared to those at HOT and BATS to provide a more definitive indicator of the relative bioavailability and diagenetic state of DOM at these sites.

Observations of the low bioavailability and highly altered chemical composition of DOM at relatively shallow depths (<120 m) is likely due to upwelling of aged and altered DOM as well as active microbial utilization in surface waters (e.g. Steinfeldt et al. 2015). It appears upwelling compresses the vertical profiles of DOM concentration and composition. The manuscript would benefit from a discussion of the role of upwelling in shaping the observed biogeochemical distributions.

Specific comment:

The reported concentrations of the amino sugar, GalN, are very low in comparison to values in the north Pacific (HOT). The resulting GlcN:GalN ratios are extremely high (40-70). It appears there is a problem with the GalN measurements.

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C2