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Dear PLOS ONE editor,

Please consider our manuscript titled “Environmental Gradients Drive Shifts in Phytoplankton

Community Structure” by Jordan Winter, Annette Hynes, Chris Berthiaume, Kelsy Cain, E Virginia Armbrust and François Ribalet as a Research Article in PLOS ONE. Our work investigates how nutrient availability and temperature shape phytoplankton communities across the Northeast Pacific Ocean, with a focus on the dynamic transition zone at the boundary of the North Pacific Subtropical Gyre (NPSG).

Using high-resolution flow cytometry data collected during eight oceanographic cruises, we observed dramatic shifts in phytoplankton community structure and size distribution across the NPSG boundary. Within the gyre, *Prochlorococcus* dominated, while larger phytoplankton, particularly nanoeukaryotes, thrived in nutrient-rich regions outside the gyre. Our findings highlight the complex interplay of nutrient availability, temperature, and grazing pressure in driving these shifts.

This work provides valuable insights into the factors controlling phytoplankton community structure in a key oceanic region, with implications for understanding how these communities will respond to future oceanographic changes. Data and code used for the analysis have been deposited in the Zenodo public data repository (DOI: [10.5281/zenodo.14182976](https://doi.org/10.5281/zenodo.14182976)). The manuscript contains original data not previously published or under consideration elsewhere.

Sincerely,

A close-up of a sign

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François Ribalet