

Review of “Modelling polar marine ecosystem functions guided by bacterial physiological and taxonomic traits” by Hyewon Heather Kim et al.

General

The authors have made substantial modifications to the modeling configuration and substantial revisions that have significantly improved the manuscript and addressed my previous comments.

I have included additional minor comments on specific sections of the text below. Overall, this manuscript makes a valuable contribution to the community’s understanding of bacteria dynamics and to the modeling of the WAP ecosystem and I look forward to seeing the final manuscript published after these final issues are addressed.

Minor comments / technical corrections

Line 252 “with relatively high correlations” and line 255 “with lower correlations”: Specify if the correlations are significant.

Lines 261, 264, 371, caption of Table 3: The references to the tables in the text and caption appear incorrect. Consider changing “Tables 1-2” to “Tables 2-3” in line 261, and “Table 2” to “Table 3” in lines 264 and 371. In the caption of Table 3, consider changing “Table 1” in “Table 2”.

Line 264: Uniform the portability index between Table 3 and the text for 2011-2012.

Lines 266-267: Change “Figure S6” to “Figure S8”

Figure S8: The time evolution for February and March is missing. The time series should cover the whole growth season, i.e. until March 31 as in Figure 4. The multiplication factor is hidden under the title for 2 sub-figures and parentheses are missing in titles.

Line 333: Change “HHA” to “HNA”

Line 373: Change “wth similar” to “with similar”

Lines 383-384: “Assimilating each bacterial group’s biomass allows for the partitioning of [...] that were never measured in this study.” The sentence is unclear. Do you mean “in this study area”?

Lines 399-400: “The WAP typically exhibits strong interannual variability (Ducklow et al. 2007)” Could you be more specific? Do you mean the WAP meteorological or hydrodynamic conditions, or ecosystem?

Line 476: Change “export” to “sinking flux”

Figure 5: Add arrows for flows 8 and 9 “nutrient uptake’ and “regeneration” or remove arrows for the other nutrient flows on the 4 sub-figures.