Comment on bg-2022-68
Anonymous Referee #1

Referee comment on "Physiological control on carbon isotope fractionation in marine phytoplankton" by Karen M. Brandenburg et al., Biogeosciences Discuss., https://doi.org/10.5194/bg-2022-68-RC1, 2022

Brandenburg et al. synthesize the available data on stable carbon isotope fractionation in phytoplankton to test how this parameter (Ep) is controlled by CO2 and other environmental parameters. This is a very well written and interesting paper and the data collection/analysis/interpretation seem very sound. I have hardly any comments, although I must admit that my knowledge on isotope fractionation is a bit rusted as I haven’t followed the literature for a couple of years.

The key message of the paper is almost frustrating, nevertheless important. From my stand-point this paper requires only very minor revisions (but I hope the other Reviewer is more up to date on the topic than I am).

Minor comments:

Figure 2: I found the unit of the C-demand/C-supply a bit strange. Wouldn’t it be easier to keep the unit as for the individual components and put them in brackets i.e. (C-demand unit)/ (C-supply unit)? Just a suggestion to facilitate understanding what this parameter means.
Line 165: “...prevents diffusion of CO2 but is permeable for HCO3-...” This surprised me. Are is CO2 or HCO3 mixed up, perhaps? Just double-checking.

The supplementary material could be moved to the main text. I don’t see a reason to bury it there.

The figures are very well designed and informative.