

Comment on bg-2021-306

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Community comment on "The onset of the spring phytoplankton bloom in the coastal North Sea supports the Disturbance Recovery Hypothesis" by Ricardo González-Gil et al., Biogeosciences Discuss., <https://doi.org/10.5194/bg-2021-306-CC1>, 2021

This is a well written and interesting manuscript evaluating annual cycles in phytoplankton biomass for a near-shore region with a long time series of high temporal resolution measurements. Results of the analysis show early onset of the annual blooming period, with initiation occurring at annual minimum light levels and accumulation rates for biomass being well explained (given uncertainties in the data) by rates of change in phytoplankton division. This latter finding is a particularly noteworthy demonstration of a fundamental element of the Disturbance-Recovery Hypothesis. The authors clearly have a thorough grasp of the recent literature on phytoplankton blooms and I have only a few minor comments to convey.

- On line 31, the citation for the CDH should include Gran & Braarud, T. (1935) "A quantitative study on the phytoplankton of the Bay of Fundy and the Gulf of Maine (including observations on hydrography, chemistry and morbidity). Journal of the Biological Board of Canada, 1, 219–467", as this is the origin of the hypothesis.
- Remove 'the' in line 36 so it now reads, "...possible if mixed layer..."
- Lines 54-56: as 1 – 3 are written as a list following a colon, do not capitalize the first word following each number, add a comma after each of the first two questions, and don't capitalize 'and' before the third question
- In the first paragraph of Materials and Methods, it might be worth noting that measured time series of phytoplankton and environmental conditions are inevitably influenced by advective processes and that no attempt has been made to correct for advection, with some discussion of this issue provided in the Discussion section.
- In the third paragraph of Materials and Methods, I was curious why the authors chose to estimate incident PAR from records of sunshine duration from a station 27 km away from the sampling site rather than using satellite PAR data? I doubt the two approaches would yield any significant difference in results, but I was curious.
- Line 83: delete 'occurs' at the end of the sentence.
- Line 104: rather than just saying 'other variables', why not explicitly state the variables?
- Lines 187-188: Can you reword this to be more clear? In particular, I found "...at same time distance..." confusing.
- Line 196: Change to, "Such a relationship..."
- Lines 214-217: Here the authors are commenting on potential explanations for phytoplankton group successions within the overall bulk properties of the community. Might I recommend taking a look at the following two recent manuscripts that discuss

this issue in detail: "Behrenfeld, M.J., Halsey, K.H., Boss, E.S., Karp-Boss, L., Milligan, A.J., Peers, G. Thoughts on the evolution and ecological niche of diatoms. Ecol. Monogr. e01457, 2021" and "Behrenfeld, M.J., Boss, E.S., Halsey, K.H. Phytoplankton community structuring and succession in a competition-neutral resource landscape. ISME Comm. 1(1), pp.1-8, 2021"

- Line 229: change "incorporates" to "incorporate"
- Supplemental Note 1, line 16: Change "phytoplankton was sampled" to "phytoplankton were sampled"