

Biogeosciences Discuss., referee comment RC3
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Comment on bg-2021-181

Anonymous Referee #3

Referee comment on "Regional-scale phytoplankton dynamics and their association with glacier meltwater runoff in Svalbard" by Thorben Dunse et al., Biogeosciences Discuss., <https://doi.org/10.5194/bg-2021-181-RC3>, 2021

General comments:

It has been several years now that the subject of glacial run-off enhancing primary production in adjacent fjords has been a "hot topic" in Arctic marine research. In recent years, there have been many research papers investigating the subject, most of them featuring *in situ* observations. However, *in situ* observations are often lacking spatial and temporal resolution which is needed to extrapolate observed patterns. Further, many prior studies on the subject left the question of how far reaching these effects of enhanced primary productivity would be. Would they extend outside of fjord and onto the shelves? Or would the effects be more local? This manuscript is the first I am aware of to address both of those knowledge gaps. While there are many limitations of using satellite data, which the authors have discussed and acknowledged, their effort is truly a first step in resolving the multiple drivers for enhanced primary production in glacially influenced coastal regions and the first to empirically show the limits of run-off derived productivity enhancement. Furthermore, the paper is well written and their conclusions are well reasoned and supported by their analyses and results. This article is an appropriate fit for *Biogeosciences*, where many of the prior research on the same topic has been published and it will likely be highly cited in the discipline. I recommend this manuscript to be published with minor revisions. See attached document for further comments.

Please also note the supplement to this comment:

<https://bg.copernicus.org/preprints/bg-2021-181/bg-2021-181-RC3-supplement.pdf>