We thank referee #2 for their constructive review of the manuscript which has helped improve the manuscript. Here we include responses to all of the comments as follows: (1) Reviewer's comment, (2) Author's comment and (3) Suggested changes to the manuscript.

(1). While I feel all the visualizations (both in-text and supplementary plots) to be appealing, uncluttered, and informative, the opposite is true for the text presented in the manuscript. Most of the sentences and sections are unnecessarily cluttered and difficult to read. English usage and grammar need a major overhaul throughout the manuscript in my opinion.

(2). **Response**: We agree with the reviewer.

(3). **Action**: We have attempted to improve the text and its flow and have streamlined various parts of the text.

(1). Get rid of the equations in section 1.1. You may include them as a supplementary note. Reduce the number of sentences and also words within a sentence to better convey these ideas.

(2). **Response**: We agree with the reviewer.

(3). **Action**: We have carried this out and the equations have been moved to a new appendix.

(1). A1 is very good as it contains all the information/ideas (of section 1.1) one needs to follow the rest of the manuscript. The authors may move this inside the main text and move the equations to the supplementary file. This will enhance the reading experience.

(2). **Response**: We agree with the reviewer.

(3). **Action**: We have carried out this change. This will be new figure 2

(1). Why a particular water-mass classification scheme was adopted? Why not widely used Cottier et al., 2005?

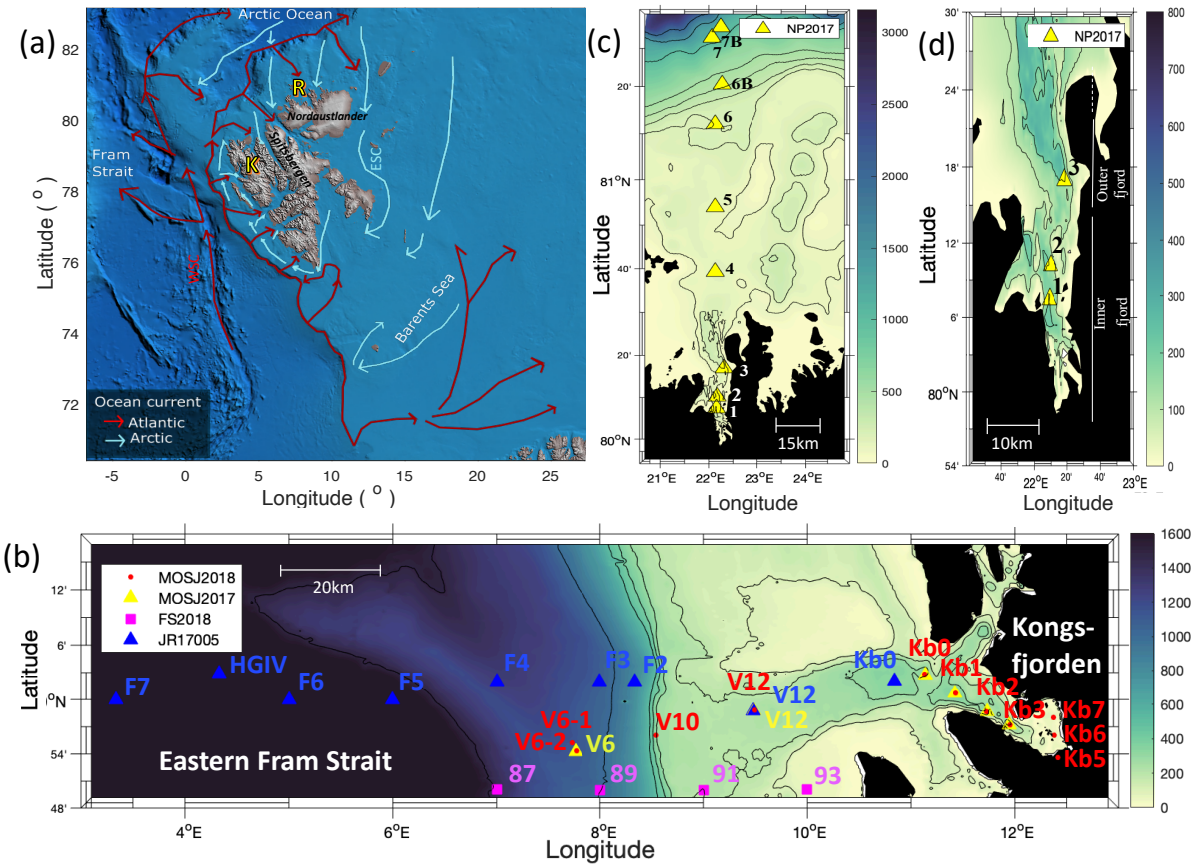
(2). **Response**: The water-mass classification in Pérez-Hernández et al (2017) was adopted instead of that in Cottier et al (2005) because it provides definitions for the different varieties of PSW, and thus enabled a better idea of the proportions of the different freshwater inputs to the fjord. Recent studies have used the classification from Pérez-Hernández et al (2017) (e.g. Hop et al (2019)) for this reason and we have followed this to facilitate cross comparison. Nevertheless, the classification in Cottier et al (2005) was indeed used for a particular water mass, the Winter Cooled Waters, as this definition was essential for this study and it was not included in Pérez-Hernandez et al (2017).

(3). **Action**: No action taken.

(1). The x-axis of Fig 8 and several others (distance) is not clear. Please mark this distance as a line in Fig 2.

(2). **Response**: We agree with the reviewer.

(3). **Action**: We have carried out this change. Distance lines have now been included in new figure 1 (b)-(d) as shown below.



However, please note that distance as portrayed in figure 8 is cumulative distance (from one station to the next), and not just distance from land. This will be added to the figure caption.

(1). Lines (260-265): Water mass structures are dynamic. You may like to add the sampling period in parenthesis. This approach may be followed throughout the text.

(2). **Response**: We agree with the reviewer.

(3). **Action**: We have now included the sampling times 3- 5 August 2017 for Rijpfjorden and 13-15 July for Kongsfjorden on lines 260-265. However, we decided not to include the sampling period throughout the text to avoid cluttering.

(1). Lines (321-323): Why incomplete nutrient utilization? Wouldn't stratification enhance relative nutrient utilization?

(2). **Response**: Indeed, stratification generally enhances relative nutrient utilisation, however, if there is light limitation as we suggest to be the case in Rijpfjorden, this would retard nutrient utilisation. This is mentioned in the discussion section 4.4 (lines 516- 529, 540-560).

(3). **Action**: No action taken.

(1). Lines (349-353): What about low nutrient uptake close to glacier front and inner fjord in general. Instead of solely attributing the cause to plume discharge, I would also see the prevailing axial productivity gradient (see Kumar et al., 2016) as a potential reason. Perhaps it's a combination of both these factors.

(2). **Response**: The axial productivity gradient in Kumar et al (2016) was explained by "nutrient laden Atlantic water influx in the outer fjord region" leading to "better nutrient utilisation away from the glacier". Our results do not necessarily contradict this as we show that 12-37 percent of recycled nitrate in the deep waters is marine. However, during the study the nutrients in Kongsfjorden are completely depleted (with the exception of glacial fronts) and thus we are unable to identify any gradients.

(3). **Action**: No action taken.

(1). Line 474: You may check a modified form of this equation, which uses more representative sampling (Tiwari et al., 2018, doi: 10.1016/j.gsf.2017.12.007).

(2). **Response**: We agree with the reviewer.

(3). **Action**: We agree that Tiwari et al (2018) uses more representative sampling. The equation in MacLachlan has now been replaced by that in Tiwari et al (2018), i.e., $\delta^{18}O_{H2O}$ = 0.54S-18.42, which also results in the $\delta^{18}O_{H2O}$ value of 0.3.