We would like to thank this anonymous reviewer for their time and detailed review of this manuscript – please find responses to each below.

Methods:

1) The analytical methods, as presented, are relatively sparse, especially in relation to the analytical procedure for SRP, TDN and TDP. It would be useful to include a description of the digests performed and the recovery. It would also be useful to understand if any reference material or standards were used and the outcome of this.

Response: SRP was measured directly as PO_4^{3-} while TDP was digested with potassium persulfate to convert all dissolved P to PO_4^{3-}.TDN was digested with potassium persulfate and sodium hydroxide to convert all dissolved N to NO_3^-/NO_2^-. Analyses were conducted in an ISO17025 accredited laboratory and reference material and standards were applied according to those standards. These details have been added to Methods/Analytical Methods.

Findings:

2) The concentrations reported for DOC in Table 1 appear to be less than the LoD, in numerous cases. Additionally, there is a discrepancy between the LoD cited in text and in the table. Naturally, it is highly problematic if the concentrations reported are lower than the LoD. The statistical differences and comparison between basal and overlying ice, referred to in the results and discussion, would have to be amended. If authors wish to keep DOC data included in this exercise, they need to make it clear to the reader that their DOC data is of good quality, by providing transparent details on the methodology, as well as appropriate use of CRMs.

Response: DOC detection limits were incorrectly reported and have been revised to 0.06 ppm throughout. Five standards between 0 ppm and 2 ppm were used for calibration (R^2=1.0) and the LoD was calculated based on instrument blanks according to methods outlined by Shrivastava and Gupta (2011). These details were added to the Analytical Methods/DOC concentrations.

Writing Style/ Formatting:

3) The abstract and introduction's wording should be tightened to maintain clarity and flow. There is a considerable number of lists. Often lists of factors, studies or processes are lengthy and the point can become lost. Amending this will help the research aim (in line 46) to be stated more clearly. Currently, the importance of this line is lost. The meaning is lost elsewhere, for example in lines 28 through to 31.

Response: The abstract and introduction have been revised and tightened and detailed lists were removed.

4) Additional reference to important literature, especially that relating to microbially mediated chemical weathering, could be made in the introduction. Similarly, the discussion is sparsely referenced, particularly in the first paragraph.

Response: We added Wadham et al (2004) as another example of microbial mediated redox reactions at the bed of glaciers in the Introduction. We also added Price and Sowers (2004) and Hubbard et al (2009) references to the first paragraph of the Discussion/Basal ice formation and a few other references throughout the Discussion including: O'Donnel et al (2016) in reference to subglacial DOM, Cameron et al (2012), Christner et al. (2005), Harding et al., (2001), Yde et al., (2010), Stibal et al (2012)., Rondon et al. (2016) and Tuorto et al. (2014) in reference to microbial assemblages, and Cameron et al (2016) and Zarsky et al (2018) in reference to geographic influence on microbial assemblages. An effort was made to reference review papers and initial seminal research throughout the presentation of high-level interdisciplinary concepts to maintain readability.

5) In the introduction, it would be useful to include a few additional lines on the importance of this study. Why should the broad readership of BG care about this study? I know that the majority of this study may be lost on the readership, due to the intricacy of the comparison specifically relating to glacial systems. As such, the importance of this work for the BG's audience needs to be clarified.
Response: The first and second paragraphs of the introduction were revised to more clearly articulate the importance of this study to the BG community:
"Glaciers form by the compression and metamorphism of snow and slowly deform and flow under their own weight. A considerable portion of a glacier's ice is of meteoric origin and receives chemical and biological inputs primarily from the atmosphere. However, subglacial processes, including melt-freeze events and erosion can result in the production of basal ice near the bed. This basal ice is typically characterized by relatively high concentrations of solutes that are dominated by Ca^{2+}, Mg^{2+}, HCO_3^- and SO_4^{2-} (Tranter, 2007). These solutes are often produced from reactions that involve carbonate and sulphide minerals (Tranter, 2007), which are trace components in most types of bedrock (Holland, 1978). Basal ice can also contain organic matter, nutrients (e.g. phosphorus, silica, potassium) and microbes from the underlying substrate (Montross et al., 2014; Sharp et al., 1999). Both basal ice and subglacial water are known to host populations of microbes that mediate redox reactions (e.g. Sharp et al., 1999; Wadham et al., 2004), play an active role in bedrock weathering (e.g. Tranter et al., 2002), and produce and/or consume ecologically important nutrients (e.g. Bottrell and Tranter, 2002; Boyd et al., 2011; Hodson, 2007; Statham et al., 2008; Tranter et al., 2002; Wadham et al., 2012)

Subglacial processes and the composition of basal ice can dramatically impact the biogeochemistry of meltwater and sediments exported from glaciers in a warming world. For example, in glaciers where surface-derived meltwater drains through the subglacial environment and comes into contact with basal ice, subglacial water and sediments, its geochemistry (Tranter et al., 2002), nutrient content (Hawkings et al., 2014; Wadham et al., 2016) and microbial community composition (Dubnick et al., 2017) are dramatically altered. Direct links have recently been established between subglacial biogeochemical signatures and impacts on downstream environments including downstream freshwater (Sheik et al., 2015) and fjord ecosystem (Gutiérrez et al., 2015). Similarly, during glacial retreat, the biogeochemical material contained in basal ice are released to the terrestrial landscape. These materials have been directly linked to the nutrient dynamics of glacier forefields (Kazemi et al., 2016; Mindl et al., 2007; Sattin et al., 2010) and form the basis of the soils from which many postglacial landscapes evolve (Kastovská et al., 2005)."

6) There is some repetition in the methodology and introduction– especially in relation to the field sampling and the definition of warm/cold basal ice.
Response: Agreed, so repetition regarding field sampling and the definition of warm/cold basal ice was removed from the methods section.

7) Table 1 is rather lengthy and unclear, it may be useful to split the table up into its component parts (chemistry, in/organic nutrients and microbes) or to reformat the table.
Response: The table has been split into its component parts (chemistry, inorganic nutrients, organic nutrients and microbial assemblages):

Table 1: Number, mean and standard deviation of measures of major ions, inorganic nutrients and DOM components in glacier ice, warm basal ice, and cold basal ice and sstatistical tests between warm basal ice/cold basal and glacier ice. P-values that represent significant differences ($p<0.05$) are red.

	Units	Detection limit	Number			Mean			Standard Deviation			p-value			
			Glacier ice	Warm Basal Ice	Cold Basal Ice	Glacier ice	Warm Basal Ice	Cold Basal Ice	Glacier ice	Warm Basal Ice	Cold Basal Ice	Warm BI vs glacier ice		Cold BI vs glacier ice	
												T-test	F-test	T-test	F-test
Chemistry															
Ionic strength	µeq/L	N/A	11	12	5	15.6	241	22.0	7.13	265	10.4	0.00	0.00	0.17	0.30
SiO_2	ppm	0.02	11	12	5	0.04	0.24	0.04	0.01	0.31	0.00	0.01	0.00	0.75	0.00
Cl^-	µeq/L	0.85	11	12	5	2.92	9.10	5.25	1.14	16.5	2.30	0.17	0.00	0.02	0.07
SO_4^{2-}	µeq/L	0.83	11	12	5	3.60	19.6	4.33	3.09	25.8	3.69	0.33	0.17	0.68	0.59
Na^+	µeq/L	0.87	11	12	5	2.97	45.9	3.57	1.94	101	1.72	0.01	0.37	0.56	0.88
K^+	µeq/L	0.26	11	12	5	0.34	9.04	0.50	0.24	7.60	0.45	0.00	0.00	0.81	0.39
Ca^{2+}	µeq/L	0.50	11	12	5	2.31	43.3	2.49	1.36	53.0	2.39	0.00	0.00	0.85	0.14
Mg^{2+}	µeq/L	0.82	11	12	5	1.43	22.3	2.97	0.83	18.3	2.57	0.00	0.00	0.09	0.00
HCO_3^-	µeq/L	0.87	11	12	5	0.52	91.8	-0.05	4.61	104	7.68	0.00	0.00	0.85	0.17
Inorganic Nutrients															
TDP	P µg/L	0.2	11	12	5	1.82	13.7	3.80	0.06	35.5	3.03	0.08	0.00	0.03	0.00
SRP	P µg/L	0.9	11	12	5	1.00	11.9	3.20	0.33	32.6	2.77	0.27	0.26	0.00	0.03
TDN	N µg/L	7	11	12	5	44.8	44.3	134	16.0	24.9	138	0.96	0.17	0.03	0.11
$NO_2^- + NO_3^-$	N µg/L	2	11	12	5	11.9	9.08	6.00	5.99	10.7	3.67	0.00	0.00	0.06	0.36
NH_4^+	N µg/L	3	11	12	5	24.6	23.6	90.2	8.81	17.4	110	0.86	0.04	0.03	0.04
Organic Nutrients															
DOC	ppm	0.06	11	12	5	0.15	0.49	0.40	0.06	0.59	0.25	0.12	0.61	0.00	0.68
DOM C1	FI	N/A	10	9	5	3.24	3.72	3.22	2.94	3.71	2.24	0.76	0.50	0.99	0.63
DOM C2	FI	N/A	10	9	5	5.27	6.40	3.28	4.27	4.41	1.25	0.58	0.91	0.33	0.03
DOM C3	FI	N/A	10	9	5	1.63	6.44	21.2	1.46	6.48	28.5	0.04	0.00	0.00	0.00
DOM C4	FI	N/A	10	9	5	2.96	4.69	2.74	2.39	3.49	0.94	0.22	0.28	0.85	0.09
DOM C5	FI	N/A	10	9	5	1.95	4.78	6.77	2.25	5.48	5.29	0.15	0.02	0.03	0.03
Microbial Assemblages															
Acidobacteria	%	N/A	5	11	3	1.1	3.2	1.5	0.84	3.6	1.2	0.73	0.70	0.54	0.53
Actinobacteria	%	N/A	5	11	3	17	30	15	6.4	22	21	0.81	0.75	0.86	0.05
Bacteroidetes	%	N/A	5	11	3	14	9.2	16	5.2	15	18	0.00	0.03	0.82	0.04
Chloroflexi	%	N/A	5	11	3	0.7	8.1	6.1	0.51	5.6	9.1	0.01	0.00	0.20	0.00
Cyanobacteria	%	N/A	5	11	3	16	0.07	7.8	17	0.11	7.5	0.04	0.00	0.47	0.34
Firmicutes	%	N/A	5	11	3	1.0	10	0.06	1.9	15	0.10	0.10	0.24	0.54	0.22
Gemmatimonadetes	%	N/A	5	11	3	0.39	3.9	0.02	0.23	4.9	0.02	0.01	0.01	0.04	0.01
Proteobacteria	%	N/A	5	11	3	43	30	42	16	17	9.1	0.17	0.99	0.92	0.52

Technical corrections/comments:

1) Is the use of ‘warm’ and ‘cold’ in quotations necessary throughout? I feel it is not, as long as you state early on that these are the terms you are going to use.
Response: Quotations on ‘warm’ and ‘cold’ basal ice were removed, except for the last paragraph of the introduction when they are first introduced and defined.

2) The definition of cold based and warm based glaciers is repeated throughout the paper – it is only really necessary to define these terms once.
Response: Definitions were removed after the initial description of these terms

3) Consider revising the word ‘parent’ in ‘parent ice’ - this could lead to inference that the basal ice is always of younger age, which is not necessarily true. As such, this phrase may be slightly misleading. Consider revising throughout. If you choose to use parent ice – this should be defined and used consistently.
Response: Changed ‘parent ice’ to ‘meteoric glacier ice’ throughout.

4) There are many sentences which are poorly constructed, with use of multiple ‘and/s’, ‘and/or’ and ‘also/s’. Often, this disrupts clarity and flow. Please consider revising.
Response: Several sentences were revised to remove ‘and/or’ (x8) and ‘also’ (x7). Lists were condensed where appropriate, for example: the last sentence of the first paragraph was changed to “Both basal ice and subglacial water are known to host populations of microbes that mediate redox reactions (e.g. Sharp et al., 1999; Wadham et al., 2004), play an active role in bedrock weathering (e.g. Tranter et al., 2002), and produce and/or consume ecologically important nutrients (e.g. Bottrell and Tranter, 2002; Boyd et al., 2011; Hodson, 2007; Statham et al., 2008; Tranter et al., 2002; Wadham et al., 2012)”).

5) Line 32 - are you missing a reference related to subglacial microbial mediated chemical weathering?
Response: Tranter et al (2007) reference was added since the sentence is referring to weathering. Microbial mediated chemical weathering is discussed two sentences later and relevant references are included there.

6) Consider rephrasing line 39 for clarity – the first sentence is a little unclear, I think you may be missing a word.
Response: This sentence was rewritten: “Subglacial processes and the composition of basal ice can dramatically impact the biogeochemistry of meltwater and sediments exported from glaciers in a warming world. For example […]”,

7) Line 44 274 - too many spaces.
Response: Removed space

8) Line 259, this would be an appropriate place to reference the Wadham (2016) study.
Response: The sentence was restructured to highlight and reference O’Donnell et al (2016) which we assume is the one you’re referring to: “Excess NH_4^+ would be particularly prevalent during the

degradation of nitrogen-rich organic matter as has been identified in basal ice from other sites (O'Donnell et al., 2016), and observed in this study (protein-like DOM described by PARAFAC C1 and C2)"

9) Line 274 - consider rephrasing the sentence starting with 'Because: : :'.
Response: Sentence was rephrased and split into two: "The sedimentary rocks near/underlying the Western Margin support well-developed soils and vegetation. Therefore, even limited interaction with the substrate could have resulted in the acquisition of significant humic-like DOM in this cold-based system if this material was abundant in the substrate."

10) Line 289, although production and consumption of autochthonous OM are mentioned in Wadham (2016), I think there are other more appropriate references for this point.
Response: That should have been O'Donnell et al (2016) rather than Wadham et al (2016) so has been revised accordingly.

11) The font size of the figure captions vary.
Response: Original figure files can be provided for publishing to ensure consistent formatting.

12) Please, standardized units throughout. For example, currently, there is a mixing of DOC units mg L-1 and ppm.
Response: revised to consistently use ppm throughout