

1 **Rebuttal report**

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12 13 **# Editor**

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15 **Comment:** In general the authors addressed the concerns and suggestions of the 3 reviewers. The
16 manuscript still has a number of phrases that need correcting to improve understanding or grammar.
17 Here are a few"

18
19 **Response:** We thank the editor for pointing out these errors and we have taken this opportunity to go
20 through the manuscript, correcting these errors and other typographical and grammatical mistakes

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22 **Comment:** Line 27 - what does "emerges sooner than independently from natural variability" imply?
23 There needs to be another word inserted.

24 **Response:** We corrected this sentence, here is the revised version.

25 Line 27: "Further, the joint temperature-oxygen anthropogenic signal emerges sooner than
26 temperature and oxygen independently from natural variability."

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28 **Comment:** Line 74 - insert "future" after "will"

29 **Respond:** Executed as suggested

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31 **Comment:** Line 156 Change "Account" to "Accounting"

32 **Respond:** Executed as suggested

33
34 Line 499- Change to "Sea-ice melting supports"

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36 **Respond:** We could not find this sentence at the suggested line number, but we corrected a similar
37 error in lines 396 to 397. We presume the editor may have made a reference mistake.

38 **line 396 – 398:** "Additionally, sea ice melt support an increase in pO_2 , as gas exchange becomes more
39 effective at restoring equilibrium oxygen concentrations."

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41 **Comment:** Line 569 - insert "of" before metabolic resilience

42 **Respond:** Executed as suggested

43
44 **Comment:** Lines 543-544 - While the warmer tropics support only 10-20 of the 61 ecotypes - it

45 should be noted that marine species diversity is well established to be: Tropics>Temperate>Polar
46 waters.””””

47

48 **Response:** Unfortunately, we could not find this sentence or a related sentence close to this line
49 reference. We found a similar sentence in lines 511 - 513. However, we could not understand how the
50 suggested correction related to the text as it would change the meaning of the sentence. Nevertheless,
51 we validate that lines 511-513 is grammatically correct, and we agree with the meaning of the
52 sentence.

53 **Line 511-513:** “The warmest parts of the surface ocean, the tropical oceans, can only support about
54 10-20 (~ 30%) of the 61 ecotypes while cooler regions in the extra tropics have nearly 100%
55 viability.”

56

57 In addition to these changes, we also went through the manuscript and clean up other minor errors as
58 shown in the track changes document