

Response to Referee Comments for egusphere-2026-044:

Towards Constraining the Drivers of Variability and Trends in Subantarctic Productivity

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Response to reviewer #1 (received 18 Aug 2026).

Referee 1 is thanked for their positive feedback – the suggested minor revisions have been incorporated into the revised manuscript for publication.

Reviewer 1 comments:

Minor Comments:

Line 233: “Higher NPP for VGPM/eVGPM was associated with deeper MLDs through winter and shallower MLDs in spring (October-November), although not statistically significant”.

If the relationship is not statistically proven then it cannot be correct to say that higher NPP was associated with deeper MLDs, otherwise it is a contradiction. It would be more accurate to say that Higher NPP co-occurred with deeper MLD’s, but the direct association between the two was not statistically significant.

The text has been re-phrased following the reviewer’s suggestion.

Lines 233-235: “Higher NPP in VGPM/eVGPM algorithms co-occurred with deeper MLDs through winter and shallower MLDs in spring (October-November), however the direct association between NPP and MLD not statistically significant (Figure 2b).”

Line 315: “we found lower temperatures are unlikely to dominate reduced growth rates”. I’m not sure “dominate” is the correct word here, maybe “be the dominant driver of”.

Replaced ‘dominate’ with ‘be the dominant driver of’.

Lines 315-316: “In determining why decreases in spring division rates emerge in high NPP periods, we found lower temperatures are unlikely to be the dominant driver of reduced growth rates.”

Line 383: “In the highest NPP years, increased SSTs and more southern STF position”. Here, SST’s are plural and STF position is singular.

Corrected STF position singular to plural.

Lines 383-384: “In the highest NPP years, increased SSTs and more southern STF positions were generally consistent across the whole year for ACCESS-ESM1.5, CanESM5-CanOE, CanESM5-CMOC, CESM2 and CMCC-ESM2 models...”

Line 389: “The highest differences in NPP between highest and lowest NPP year groups were in CESM2 and lowest differences in ACCESS-ESM1.5, CanESM5-CMOC, GFDL-ESM4 and CMCC-ESM2 models”. This sentence is quite confusing. It would be better to say, “The largest differences in NPP between highest and lowest NPP year groups were in CESM2 and the smallest differences in...”

Sentence re-phrased for clarity.

Lines 389-390: “The largest differences in NPP between highest and lowest NPP year groups were in CESM2 and the smallest differences in ACCESS-ESM1.5, CanESM5-CMOC, GFDL-ESM4 and CMCC-ESM2 models (Figure 8a). ”

Line 394: “during high NPP years (Figure 8b), Deeper”. Capitalisation

Corrected ‘during’ to ‘During’ and ‘Deeper’ to ‘deeper’.

Line 394: “During high NPP years (Figure 8b), deeper MLDs ...”

Figures: Biomass axes units should be mmol C m⁻² ?

Biomass units have been corrected on Figures 6, 7, A3, A4 and A5 to align with Table 1.

Line 574: “in the SOuthern Ocean”. Capitalisation

Corrected sentence spelling and grammar.

Lines 573 – 575: “While incorporating improved productivity system mechanisms into models is needed, concurrent improvement of our understanding of changes in seasonal grazing pressures and multi-resource limitation in the Southern Ocean are both critical components in ground truthing our mechanistic understanding. ”