

## General Comments

I think the authors have offered an interesting, thorough, and generally well-presented manuscript. The manuscript adds a valuable contribution to the growing body of research around modelling gelatinous zooplankton, further supporting the importance of gelatinous zooplankton in global carbon export while also highlighting key areas for future research.

## Specific Comments

Consider using 'Crustacean Macrozooplankton (CM)', instead of 'Generic Macrozooplankton (GM)'.

As the generic macrozooplankton group is based entirely on crustacean macrozooplankton I think this would aid in the clarity and precision of the manuscript. Generic implies that the group represents organisms across the macrozooplankton i.e. more than just crustaceans.

Line 151

Include an explanation on why the decision was made to have 'feeding with identical preferences on both phytoplankton groups... as well as on microzooplankton'.

Section 2.3 Sensitivity experiments

Adding an introductory sentence to this section would help the flow and to guide the reader, i.e. 'Five sensitivity experiments were carried out to...'

Rainbow colour palette for figures (fig. 3a, fig. 4, fig. 8, fig. A2e,f, fig. A3, fig. A4, fig. A5)

I strongly recommend changing from a rainbow colour palette for figures, to a "perceptually uniform" palette which provides the same perceived colour change over the same change in value.

Line 286

Include a brief mention of why 0-300m was chosen for analysis.

Line 324-325

It is interesting that doubling the complexity of the zooplankton (from 2 to 4 compartments) has minimal effect on chlorophyll. It would be interesting to have a short discussion on why this is and how it compares to other biogeochemical models.

Section 3.1.2

What is the reasoning behind using  $0.5 \text{ mg C m}^{-3}$  as the cut off for high/low biomass (Table 4 etc).

Figure 5

Red/green is not a good choice for distinguishing between the two model runs, as red/green is the most common type of colour-blindness. This should be changed to a colour-blind friendly palette.

Table 6

Include a description of the difference between the two Luo et al. (2020) columns.

## Technical Corrections

Line 2

'...that feed on preys' should be '...that feed on prey'

Line 29

'...biological carbon cycling through "jelly-falls" events'

The word 'events' is unnecessary in this sentence and should be removed.

Line 73

'...the PLANKTOM model' should be '...the PlankTOM model'

Line 323

It feels odd to start a new section with 'Then', perhaps change for 'Next'.

Table 4

Capitalise 'Comparison' in column one

Line 380

'sensitivity experiment' should be 'sensitivity experiments'

Figures A3, A4, A5

Labelling is incorrect on the model map for each of these figures. A3 should be PISCES-HGR, A4 should be PISCES-HGM, A5 should be PISCES-CLG.

Figure A8

Panels are not labelled with the a, b, c, d indicated in the figure description.