

***Interactive comment on “Seasonal dynamics of
Pseudocalanus minutus elongatus and *Acartia*
spp. in the southern Baltic Sea (Gdańsk Deep) –
numerical simulations” by
L. Dzierzbicka-Głowacka et al.***

Anonymous Referee #2

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The manuscript proposes a coupled 1-dimensional physical-biological model to simulate the behaviour of two zooplankton species: *Pseudocalanus elongatus* and *Acartia spp.* The paper is focused on how population dynamics of such dominant zooplankton species are influenced by the environmental variables.

-General comments:

The results of the paper are challenging and help to better understand the ecological behaviour of zooplankton in the Southern Baltic Sea. Although the results presented

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in the paper are obtained from a particular model it seems that the behaviour of the system is well represented. Such results not only justify the choice of the particular functional forms in the model but help to calibrate the model for the parameters selected. However, some changes must be addressed in order to highlight some of the results and help the reader to follow the ideas developed in the manuscript.

Some analysis (range of variability of the model in function of the range of values chosen) of the main new parameters used should be made and commented in the manuscript.

In general, the first part of the discussion section reports comparisons between sampling and numerical experiments, these may be addressed properly in the results section. These changes will allow the reader to focus in the discussion, avoiding digressive comments.

Section 4 should be eliminated as independent section and these contents should be written in the section 3.

Section 6 should be reorganised. I propose that subsections 6.2.1 and 6.2.3 follow directly 6.1 (in this case must be renamed as subsections 6.2 and 6.3) avoiding the lines 4 to 6 in pag. 1173 and writing these lines in the section 3.

Discussion section, page 1176 from line 27 to page 1177 line 10. These lines are results comparing sampled values with the model, the presentation of the results must be in the results section.

The English must be revised and improved.

-Specific comments:

Although is not strictly necessary, a short paragraph at the end of the introduction (page 1160 lines 13 to 16) introducing the following sections and their content may be helpful to follow the development of the paper.

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Page 1160, lines 25-26: I agree not to discuss the physical and meteorological models but some lines devoted to essential properties and behaviour of physical and meteorological models should be addressed.

Page 1162, line 24 to page 1163 lines 1-4. I can not understand that paragraph.

Page 1179, lines 6 to 8. I can not understand that paragraph.

Page 1165 from lines 10 to 15: 'Some authors found...' These ideas should be expanded. The authors should explain the main reasons for the two positions about this key point. The point of view of the authors about the correlations between egg production and standing stocks must be clarified in order to understand what their contribution is.

Page 1177 lines 24 to 26 a short explanation about the range of variability of the chlorophyll depending on the conversion factor should be addressed.

Table 1. there is an error in the equation of evolution of detritus concentration. The diffusive term must have a partial derivative respect the z variable instead the partial derivative respect the time. Figure 5. The different subfigures must be labeled and resized to allow the reader to see the different plots.

-Typing errors:

Page 1161, line 9: 'possible'

Page 1162, line 3: 'protest'

Page 1163, line 12: 'a secondly'

Page 1177, line 11: 'forphytoplankton'

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