

Interactive comment on “Modelling survival and connectivity of *Mnemiopsis leidyi* in the southern North Sea and Scheldt estuaries” by J. van der Molen et al.

Anonymous Referee #2

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The manuscript by van der Molen et al focuses on understanding the spread dynamics of *M. leidyi* in the North Sea from source locations. The manuscript has potential to relate to a broad, international readership, and the content is appropriate for the journal. Manuscript presents concrete conclusions and suggestions. I suggest publication in Ocean Science after minor revision.

General comments: Some parts of the manuscript are hard to follow mainly because the reader loses track of details of different models. For example application of particle tracking model and particle tracking IBM (one without and one with biology) gets mixed up. It can be useful to have a table illustrating the models that are applied to each region and which physical models are used with which biological model. It should be

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justified/explained why both Delft 3D and GETM are used as hydrodynamics models.

Specific comments: Page 1565: why Southern North Sea is not defined in Fig 1?

Page 1566: which model (Delft 3D and or only Getm ERSEM) is run with GITM and DEB?

Page 1568: what is the justification that the particle tracking model is run without any biology (IBM)?

Page 1575, line 10: particle tracking model or particle tracking with IBM?

Page 1578 (part 3.1): these are the results of a simulation from which time period?

Page 1578 (line 18): I don't think both Table 2 and Fi. 4 are necessary as Fig 4 repeats the information from Table 2.

Page 1579 (line 1): Same comment as above about Table 3 and Fig. 6

Page 1579 (line 24): some statistical analyses (this can be a simple mismatch percentile, RMSD etc) should be given, what is reasonably well?

Page 1580: which model is used here?

Page 1584 (lines 12-17): if these are the models results the exact reason should be know, if salinity is the reason of low production this can be easily verified with a model sensitivity test.

Figures Fig 8: which figs correspond to a, b, c,d?

Fig 12: Hard to follow, which fig corresponds to a, b,c d?

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