

AUTHORS' REPLY TO THE REVIEWERS' COMMENTS AND THE LIST OF CHANGES MADE IN THE REVISED MANUSCRIPT OS-2017-1

We appreciate the reviewers' comments that served to improve the article. The following changes were made in the manuscript in response to the suggestions made by the referees.

Comments:

The main issue I have concerning the manuscript is the language and style, the English. This is the weakest part of the paper. It is often awkwardly written and needs to be improved. I understand that English is not the first language of the authors. However, the good news is it can be improved. The authors would need to go through the paper thoroughly, preferably with a scientist whose first language is English. This will constitute technical corrections and minor revision.

Thank you for this comment. The revised manuscript was proofread by an expert English speaker, which significantly improved its language and style.

Section 5 p11 The INMOM model was initialized from climatology. Is this satisfactory? Was there any spin-up involved or considered? Please discuss.

Thank you for this point. Usage of climatological values of temperature and salinity from databases and assuming the zero velocity field at the start is a common approach for initializing numerical models of ocean. We believe that the climatological temperature and salinity fields used in this study model are one of the best available datasets for the Black Sea. In this work we considered the upper ocean dynamics for a regional model of the Black Sea with daily SST and monthly SSS data assimilation. As a result, the model reached a statistically steady state after a relatively short spin-up period of 5 months (January – May 2011). The related discussion was added to the manuscript.

P11 line 17- 24 please provide references

We added references about tidal currents in the Black Sea, as well as for surface salinity and temperature data sets used for initialization and correction of the INMOM model.

From p.10 on: the INMOM module should be the INMOM model, same for STRiPE module and Sediment Transport module

Corrected

Section 6.1 please provide references for model validation, e.g. for general Black Sea circulation and smaller eddies.

We added additional references about large scale and mesoscale circulation features of the Black Sea reproduced by the INMOM model.

p.13, line 4-5 units incorrect

Fig. 7 – 10 captions and text. Please clarify/state what is top and bottom.

From p.18 on stripe(s) should be strip(s)

Corrected