

We would like to thank the Editor and the Reviewers for their useful insights and suggestions that have helped to improve the clarity of the manuscript. We provide here a point-by-point answer to all the suggestions. The number of figures and tables and the number of lines where text has been modified are referred to the updated version of the manuscript with track changes and our answers to comments are given blue text.

Comment on essd-2021-461

Giuseppe M.R. Manzella (Editor)

Editor comment on "First SMOS Sea Surface Salinity dedicated products over the Baltic Sea" by Verónica González-Gambau et al., Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2021-461-EC1>, 2022

Please read carefully the comments of the referee n.2 especially in its two essential points: in some parts the article is overflowing with contents that are not always useful and clear (see comment 2), in other parts it does not clarify the physics to be investigated.

The article is part of a series on SMOS and has already been criticized by referees of other articles for the adaptation of the approach to the various basins. Referee 2 highlights this aspect in comment 1). Even in a relatively small basin differences in physical properties can be very significant.

From the beginning (before the acceptance of the manuscript for discussion), we have made an important effort to highlight the particular limitations and geophysical conditions of the Baltic Sea that lead to the main differences in the algorithm developments with respect to other regional products we have developed before. With this in mind, we have reviewed again the manuscript for minimizing repetition of concepts that were previously published and/or detailed in other papers under review, while maintaining the paper self-contained.

Besides, in the new version of the manuscript we have included a flow diagram of the Baltic+SSS processor (Figure 1) that we think can be helpful in understanding the different processing steps and algorithms and applied corrections. See answers to comments 1-5 of Reviewer 2.

Another essential point is in comment 11. The use of climatology and reanalysis is absolutely unclear. The authors read the referee's comments very well and carefully evaluate the required change.

We have made an effort to clarify that we are referring to SMOS-based climatological data and not to climatology, as suggested by the reviewer and to clarify the role of the reanalysis in this processing (it is only used to compute the mean salinity value in the basin, so we can correct temporal biases in the SMOS L3 SSS maps). See answer to comment 11 of Reviewer 2.