

Author's response to the reviewers

Response to reviewer RC1

One issue requires clarification before publication. Figure 2 has changed substantially compared with the previous version of the manuscript. In particular, the monthly climatology of ZSD for the Atlantic region and the standard deviation. The seasonal cycle for the Atlantic differs substantially from the one shown in the original submission. It appears to be nearly in opposite phase, which is a significant change. In addition, the standard deviation for all curves has decreased significantly. The authors should clarify the reason for these modifications and indicate whether it results from a correction in the analysis, or a revision of the methodology.

We thank the reviewer for this careful observation, and we apologize for not explicitly mentioning these modifications in our response to the reviewers.

The changes in the Atlantic climatology result from a revision of the analysis rather than a change in the underlying methodology. In the previous version of the manuscript, the Atlantic climatology was computed using all pixels within the study region throughout the entire time series. In the revised version, we applied an additional validity mask, retaining only pixels that contained valid observations for at least 30% of the study period. This filtering removes sparsely sampled pixels that were introducing biases into the monthly averages, resulting in a seasonal cycle that is more representative of the actual climatology of the Atlantic region.

Regarding the shaded envelope around the climatological curves, we thank the reviewer for drawing attention to this point. In the previous version, despite what was stated in the figure caption, the shaded area did not represent the standard deviation of the climatology. Instead, it corresponded to the mean measurement uncertainty associated with the monthly estimates. We took the opportunity of this revision to correct this inconsistency by replacing the uncertainty envelope with the actual standard deviation of the climatological values, as indicated in the updated figure caption.

We appreciate the reviewer's comment, which allowed us to clarify these important modifications and improve the transparency of the manuscript.