

*We thank the reviewers and the referees for their comments. We report our answers below*

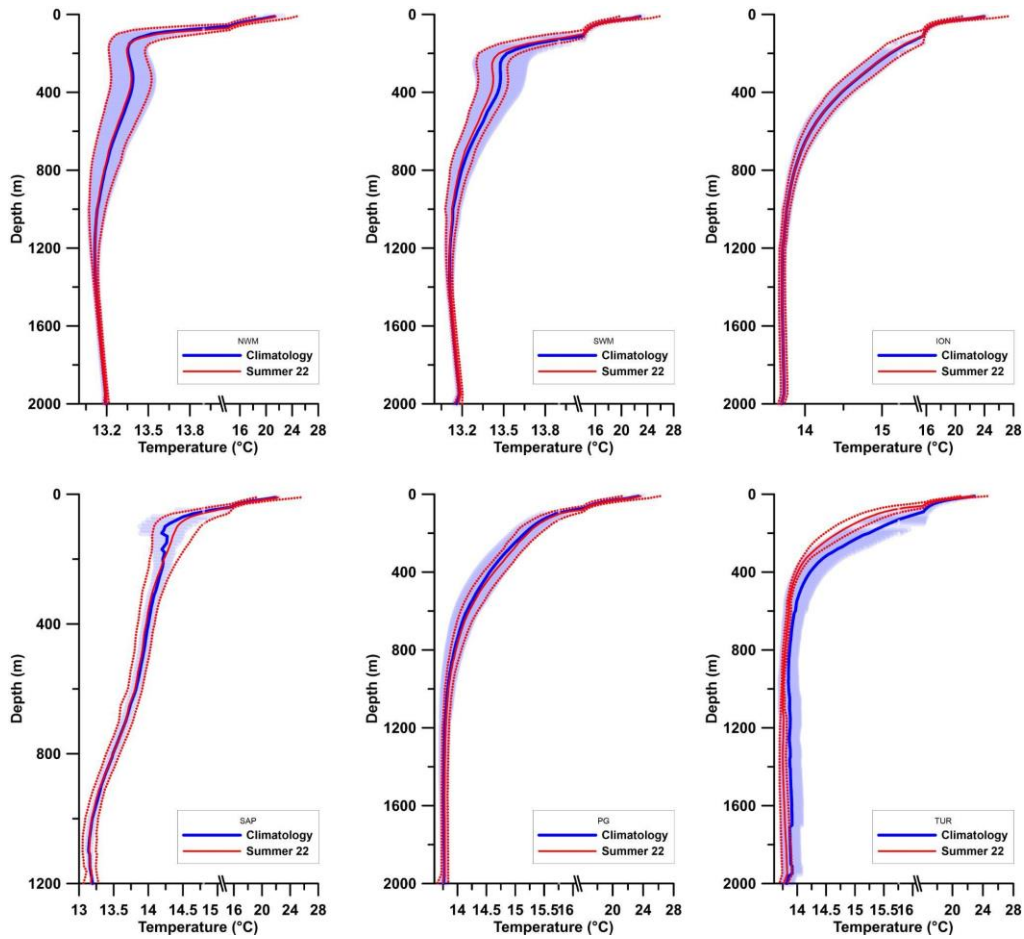
1) A second review is required.

As noted by reviewer 2, the region centered on 28E 36N shows strong anomalies (Fig 1c and d), perhaps in contradiction with the results of Marullo et al. (2023). A well-argued explanation should be provided.

*As already explained in the revised text and in the comments to the reviewers, our study areas were selected using the results of Marullo et al. (2023) and considering the availability of float data in summer (May-Sep 2022) and fall (Oct-Dec 2022). Even if we assume that the results from Marullo fail to detect all areas affected by the MHWs and want to compute the analysis for the area south of Turkey, this is not possible because the paucity of float data does not allow it. We find a total of 18 profiles in summer (10 in category C1, 0 in category C2 and 8 in category C3) and 3 in fall, all located in the pit southeast of Rhodes. The profiles are therefore few in number, do not cover the entire study period and are not representative of the overall dynamics of the area (see Figure R1 bottom right panel).*

2) A discussion on potential uncertainties related to the number of profiles has not been added.

*As already mentioned during the first round of review to reviewer 2 comments, the number of profiles used for the present study is reported in Table 2. Regarding the uncertainties, here we report the mean profile for each study area with the associated STD both, for the floats (May-Sept 2022) and the climatology data. The figure below shows that for each area investigated (NWM, SWM, SAP, ION, PG) the mean profile from floats (red line) is well within the climatology STD (blue area) therefore, it can be considered representative of the area investigated. Please, note that the float STD is represented by the dashed red lines. The same analysis was carried out in the sector south of Turkey, as proposed by reviewer 2, and it shows that the float data available in summer 2022 are not representative of the area (Figure R1 bottom right panel). This result definitely excludes the use of the sector south of Turkey in the present study.*



*Figure R1: Mean temperature profiles derived from the SDC climatology (blue) and the Argo float (red) with the associated standard deviations (blue shaded area for the SDC climatology and dashed red profiles for the Argo float) for the sectors used in this study and for the Turkish sector (TUR).*

3) Many of the relevant technical corrections suggested by reviewer 2 have not been taken into account.

*We take into account the comment, but have a different view. In the first round of review, we thoroughly addressed all comments of the Reviewer 2 in a point by point way, and edited the text accordingly. We apologize for any confusion caused by the absence of the tracked changes document in our initial submission. To clarify it, we have included the tracked document in this second round of revisions.*

4) A tracked version has to be provided to better assess the changes made.

*As stated above, we have provided it now.*