To Reviewer#1: thank you for all your instructive suggestions that made this version of the manuscript much better. Smaller remarks were all incorporated in the updated version of the manuscript (see changes tracked in **blue**), whereas detailed answers to specific questions are addressed below.

Introduction
While the article investigates SSL characteristics, the introduction begins with general physical background and then shifts focus to thermohaline circulation. Although SSLs and deep-water formation are indeed intertwined, introducing SSLs (Line 63) in the final paragraph of the introduction may be inappropriate. A more SSL-focused introduction is recommended.

We rewrote the Introduction by taking into consideration this recommendation, which was suggested also by Reviewer#2.

L70: Gulf of Gabes
Mark the geographic location in Fig. 1. Additional locations mentioned in the text could also be included in Fig. 1 or another figure to aid readers unfamiliar with the region.

We added the Gulf of Gabes and other geographic locations in the new Fig.1.

L77-78: QC=1, QC=2
How reliable is Argo profiling data labeled with QC=2, and how is this category of data typically treated? What proportion of the total dataset falls under QC=2? Would limiting analysis to only QC=1 data significantly influence conclusions, such as those related to seasonal patterns or long-term trends?

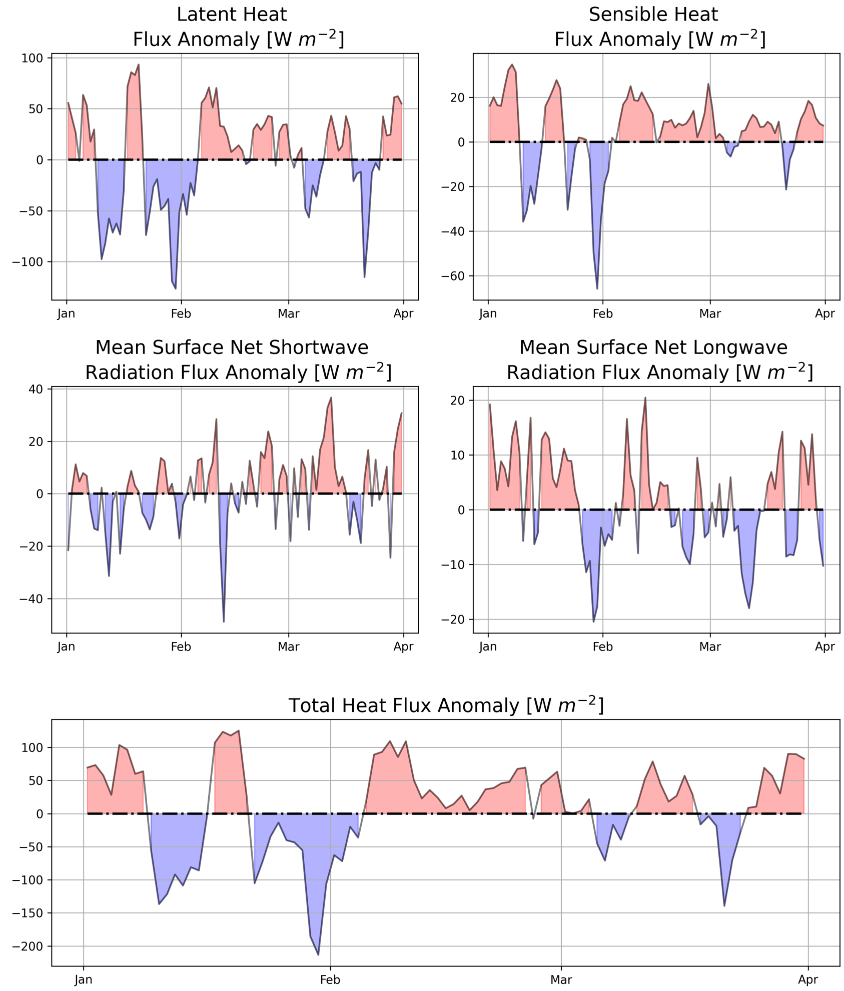
We checked the used data and out of 67.554 profiles in total, 64.809 profiles have a QC=1 (good) and only 2.745 are with QC=2 (probably good), which is around 4% of the entire data set.
Therefore, removing QC=2 data doesn't significantly impact results, any of the seasonal or long-term trends and conclusions, as the percentage is rather low. We put this information and further clarifications in the revised manuscript.

L96-98: 1%-2%
These two criteria were applied to ensure a minimum level of data coverage for each month of each year. Is there any justification provided for selecting these specific thresholds, or has any sensitivity analysis been performed to test their impact?

This percentage was taken by a choice which is based on balancing the length of the time series and the availability of enough data for analyses in a particular year or month. For example, from 2002 to 2024, the time span is 23 years. Putting a threshold on 2% instead of 1% would have meant discarding a larger number of data from the beginning of the time series, given its temporal distribution which has much less data in the first few years (as shown in Fig.1 - bottom). However, if we reduce it to less than 1%, that would have affected the quality of our calculations, as resulting in a disballance in available data between different years. 1% was therefore taken as a fair compromise. Similarly seasonal computations - having 12 months every year, which is a half of the number of years (23), we doubled the threshold percentage from 1 to 2%. We put the appropriate clarification in the revised manuscript.

L133-135: intensified mixing
More explanation of the intensified mixing and its penetration into deeper layers in late winter and early spring 2024 would be beneficial.

Thank you for having raised this point, which is important to discuss when talking about SSLs trends.
We downloaded ERA5 hourly reanalysis data between 2002 and 2024 for the Levantine region (latitudes between 33 and 36 degrees and longitudes between 22 and 33 degrees).
We obtained winter (January-February-March) daily anomalies for 2024, subtracting the 2002-2024 baseline, for 4 components: latent, sensible, shortwave and longwave fluxes, as well as calculated their sum.
This resulted in negative total anomalies in January and beginning of February, implying surface cooling that in turn causes vertical convection to occur.
We added this figure and also an explanation in the text.



In addition, consider moving the WMO=6903269 float case (Hovmöller diagram) to Section 3.2, as the title of Section 3.1 focuses on climatology.

We moved the Hovmöller diagram and its comment to Section 3.2.

L159: "lowest values in the Adriatic Sea"
zSG values are indeed low during most months in the Adriatic Sea, but they peak in March. Are you referring to the annual mean of the monthly climatology? Please clarify.

We corrected this sentence, thank you for pointing this out. We meant overall, but overlooked the values in March. For this reason, we made a modification to the plot in order to enhance its clarity - grid lines were moved in such way that each group of points per month is between two vertical grid lines.

L165-170: "SSI"
The author attributes the higher SSI during winter in the Western Mediterranean to low surface PDA values caused by fresher Atlantic Water, and in the Levantine and Aegean Seas (not mentioned) to deeper zSG. However, although an increase in zSG from September to December is evident, it is not reflected in the SSI.

Indeed, SSI is dependent on both the density, as well as on the zSG range.

$$SSI = g \sum_{i=z_0}^{z_{SG}} (z_i - z_g)(\rho_z - \rho_i)\Delta z_i$$

Hence, even though an increase in zSG could be present, the density decrease and changes within a surface saline lake could be the prevailing mechanism for these particular months, which could be due to a higher precipitation rate, riverine discharge, advection of water masses, as written in the draft. We added an explanation in the updated version of the manuscript.

L184-185:
The SSI peak in the Adriatic Sea appears visually higher than in the Ionian Sea. Additionally, the conclusion that the Adriatic and Ionian Seas exhibit the most similar curves seems somewhat arbitrary.

This is also a good point which was missed due to varying plot limits and was mentioned also by Reviewer #2. We rephrased this sentence accordingly and modified Figure 7, which now exhibits much clearer and varying shapes.

L195-197:
Since the significance of the linear trend depends on the data distribution, you should state your assumption or show the distribution.

When computing the linear regression, we used Python's *scipy.stats.linregress* through which we obtained also the p-value using Wald Test with t-distribution of the test statistics. The latter assesses constraints on statistical parameters, so we consider it appropriate for yearly data distributions of our surface saline lakes variables. In our analysis, p-values were below 0.05 for all variables considered, but slightly above 0.01 for SSI, as already mentioned in the manuscript.

L216-217:
The sharp rise in zSG is unlikely from sampling, as discussed by the author. Atmospheric forcing is mentioned but not well explained

See a more detailed reply above for L133-135. We added more details regarding the atmospheric forcing in the updated version of the manuscript.

L237: "…the case in subtropical gyres in the Atlantic and Pacific Oceans" Any reference?

We added a reference.

Consider increasing the font size in Figure 4 for better readability.

We followed this suggestion and enlarged the font size, thank you.