I very much appreciate the opportunity to review this manuscript. My major comment is about the threshold used to define marine heatwaves, which is the "90th percentile of climatological temperature on each day in the baseline period of 1990-2009 using an 11-day window centered on each day". This is a fixed baseline method. For future projections with distinct long-term warming trends, authors may consider using shifting baseline as well, e.g., Amaya et al. (2023), to separate the long-term warming signal, especially for the sea surface temperature. Amaya, D. J., Jacox, M. G., Fewings, M. R., Saba, V. S., Stuecker, M. F., Rykaczewski, R. R., ... & Powell, B. S. (2023). Marine heatwaves need clear definitions so coastal communities can adapt. Nature, 616(7955), 29-32.

We agree that a shifting baseline is of increasing interest as shown by the paper linked and the recent Smith et al. (2025) paper

https://www.sciencedirect.com/science/article/pii/S0079661124002106

For this paper we choose to focus purely on a fixed baseline for the purposes of clarity. It would be challenging to include shifting baselines without ending up with a paper that is very cumbersome. Secondly, this would result in a paper with an unclear focus, as it would move from being about the surface vs. Seafloor to being a paper that some might see as contributing to the fixed vs. Shifting baseline debate. Finally, and perhaps, most important, it is not quite clear if the shifting baseline approach can be applied to the surface and seafloor in the same way. The shifting baseline approach assumes that marine ecosystems have "adapted", for example via intraspecific changes or changes in species composition to the temperature conditions over a recent baseline period, say the last 30 years. However, benthic species are understood to adapt more slowly to climate change, primarily due to their slower movement and often their slower growth. A shifting heatwave baseline should therefore be defined differently for the sea surface and seafloor. However, to date no work has been carried out to identify how this can be done, and carrying out this work is beyond this paper as it is largely an applied, not conceptual paper.

Other comments are listed below:

The model ability to reproduce historical SST variation has been assessed, but its ability to reproduce bottom temperature variation is not included or mentioned at all.

It is probably not possible for the paper to evaluate the ability of models to reproduce variation in seabed temperature due to the lack of high resolution bottom temperature data. The use of reanalysis datasets, such as the CMEMS NWS product which combines models and in-situ data via data assimilation: (https://data.marine.copernicus.eu/product/NWSHELF_MULTIYEAR_PHY_004_009/description) could get you part of the way to an answer. However, problematically this reanalysis

uses NEMO as its ocean model. This is the same model as we have used, and therefore structural biases will carry over.

However, the ability of the model to reproduce bottom temperature variation is likely to track that of the surface. Holt et al. 2022 showed that the model can reproduce seasonal stratification successfully, and it should therefore reproduce the patterns of temperature variation at the sea floor in a similar way to the surface.

Figure 4a colorbar label suggests “percentage of summer in a marine heatwave at the sea surface in 2080-99” but this figure includes all four seasons, which is confusing.

There was a mistake in the figure legend. This is now corrected.

Figure 4b and Figure 3 seem to provide duplicate info about marine heatwave frequency at the sea surface for annual and each season. Figure 4b seems to just plot those lines together instead of separating them in each panel.

Figure 4b has now been removed.

Minor comments:

Line 100: IThe -> The

This typo has been corrected.

Line 103: “which used global models which” -> “which used global models that”

This is now corrected.

Lines 124-125: degree Celsius symbol error

The degree symbol is now fixed.

Figure S1 caption: “north west” -> “northwest”

This has been corrected.

Figure 2 caption: “heat waves” -> “heatwaves”

The term “heat wave” has been changed to heatwave throughout, for consistency.

Figure 3 caption: “North West” -> “Northwest”

This has been corrected.