Review of "Response of the sea surface temperature to heatwaves during the France 2022 meteorological summer"

General comments

In this manuscript the authors address an interesting, and not extensively studied, question, the response of SST to atmospheric forcings under atmospheric heatwaves. One of the reasons why this work is of interest is its immediacy, as it deals with the situation in the summer of 2022. However, this may also be a weakness as it uses data from near-real-time operational systems that may suffer from some validation or availability problems.

The authors state that their intention is "*to determine the ability of satellite measurements 5 to track the response of surface waters to these events*" right from the abstract but, across the manuscript I can't see if such ability has been validated or if this improves the results that could be achieved using historical (non-operational data). And more importantly, I can't see the need to track the SST response to atmospheric forcing in an operational environment as SST itself is routinely measured and/or modelled.

Two different SST data sets are used, to my understanding, for building SST climatology and as operational SST. If they are to be compared, some explanations are needed in the text for the need to use different data sets and how they are correlated/validated against each other. I know about these products and absolutely rely on their quality, just asking to include some more information on the data and methodology used.

I find that the authors have done an interesting job that is worth to be published with major revision. I am especially concerned about the final objective, or question to be answered, in the manuscript. I could not find if the most important results come from the analysis of SST response to atmospheric forcings (which I find quite interesting results) or from the "ability" of operational SST data to track such forcings. If you think the operational interest of such tracking is important, please try to reinforce your findings and justify the need for this tracking, I don't clearly see the interest but it is just my opinion.

Please, try to get more focus in the points you are interested in and fully rethink the manuscript structure and final objective. There is a lot of work beneath that would be good for publishing but maybe the paper does not actually reflect that but a mix of questions/objectives so the reader does not get a clear conclusion.

Looking forward to receive the revised manuscript.

Please, think about paper structure and writing. I found parts of the discussion that would fit better in the introduction section. See comments below. I don't like to find so many references in the conclusions. Conclusion section is just for you, to explain your findings.

Minor comments

Please, carefully check the English grammar and spelling. And then check again.

Across the manuscript, please clearly state how do you calculate anomalies. Are you comparing daily OSI/SAF SST values with monthly climatology? I couldn't get the point.

Figures are too small. Please, make bigger figures.

Other comments

Lines 45-54 should not be included in the Introduction Section. A “Synoptic description/atmospheric characterization/…” section is needed and should go into greater detail.

Figures 1-2: I assume they are monthly anomalies although not stated. Maps are too small.

Figure 3: Please, improve caption by stating the subdivisions are stated for the SST analysis

Lines 69-71. Please, rewrite this sentence to improve the English language (missing verbs, concordance,…).

Lines 76-77: Change “Both hourly and monthly were used” to “Both hourly and monthly **data/values** were used” (general remark: please, carefully check English grammar and spelling)

Line 142: Please change “3°CC”

Line 153: Reference to “Table 4” but this one does not exist. Maybe A1?

Lines 160-164: Do these sentences refer to single point values? The 7.9ºC anomaly, is referred to local or mean climatology? This is not clear for me. If this is compared to mean areal climatology this would not be the right way to compare daily values to climatology.

Line 179: Which is the “whole domain”?

Figure 7: Not stated but I understand that the maps show anomalies for the days in August 22 heatwave days, respect to 1991-2020 august monthly values? To the same period (31/07-13/08) for the 1991-2020? Please add this information in the figure caption and text

Line 209: *in response to the atmospheric heatwaves that affected France during the 2022 summer.* Results and analysis are mostly centred in the August event, maybe not valid for the rest of summer

Lines 209-213: *“The strongest response was found 210 on the NWM basin (with a maximum average SST anomaly of 4.3°C) which is in line with observations (Bensoussan et al., 2019) and modeled evolution (Darmaraki et al., 2019b) confirming the Mediterranean Sea is a "hotspot" for climate change (Giorgi, 2006)”*. A single extreme event does not confirm the hotspot, although I agree with the sense of your assumption and that it is in line with the cited references. Please, rewrite this sentence.

Lines 227-244: These lines are not a discussion/conclusion but should be part of the introduction section. No work has been done regarding MHWs across the manuscript.

Line 246 *“To prevent the detection of anomalously warm SSTs”*. To prevent?

Lines 250-256: Rephrase to improve reader understanding