Climate of the Past Discussions

Clim. Past Discuss., author comment AC2
https://doi.org/10.5194/cp-2021-24-AC2, 2021

Reply on RC2

Aleix Cortina-Guerra et al.

Author comment on "Northern Hemisphere atmospheric pattern enhancing Eastern Mediterranean Transient-type events during the past 1000 years" by Aleix Cortina-Guerra et al., Clim. Past Discuss., https://doi.org/10.5194/cp-2021-24-AC2, 2021

Dear reviewer,

thank you very much for your comments, below is our response one by one:

1. The ms is well organized, clearly written, with a logical structure that guides the reader through the author's reasoning. However, you should also say that for the identification of the past EMT-like events, you rely on a strong assumption, i.e. that every time an EMT event occurred this is seen in the difference of heat fluxes between the GoL and the Aegean. Of course, you cannot know that this is always the signature, and you cannot know that strong differences might occur, even if no EMT event occur. This is the basic assumption you do, and you should be clear about its limitations. In addition, I found that you did not mention other studies that have for instance reported an EMT-like event during the 70s, which does not appear in your study. You should mention this discrepancy, and if possible explain it (some references are at the end, see *).

We agree with the reviewer that we have not take into consideration the limitations of our study. We are going to add some explanations about these limitations and explain whether there is a discrepancy with 70s event.

2. Some more detailed comments are:

L28 should be Strait, not Straits

We are going to change

L29 why for the Sicily channel you indicate an average depth, and not the sill depth (which is about 500m), as you did for Gibraltar?

We are going to change average by depth

L34 the term MAW is no longer used, given that all Mediterranean water masses are a modification product of the water coming from the Atlantic. Use simply AW and rewrite the sentence accordingly

We are going to change

L34 should be surface, instead of surficial

We are going to change

L35 "AW is the source"

We are going to change

L37 should be "where Eastern Mediterranean Deep Water, EMDW, forms" and "where Western Mediterranean Deep Water, WMDW, forms". It is "Gulf of Lion" not "Lions". At the end of the sentence, add "through deep convection" for more clarity

We are going to change

L41 "additional" or substitute, since it mostly replaced the Aegean?

We are going to delete additional.

L42 should be "Transient"

We are going to change

L44 should be "Mixed Layer Depth (MLD)", not MDL

We are going to change

L44-45 do not capitalize Winter Heat Flux

We are going to change

L48 salinity minima at which layer? Please specify

We are going to change by sea surface salinity minima.

L58 announce the aim more clearer, by saying that it is to identify past EMT-type events and to define the timing and the global atmospheric….

We are going to rewrite the sentence

L93 write "the standardized heat fluxes…", and remove "after standardization" in L94

We are going to change

L94 which months?

We are going to add the months, although it is stated in line 80-83

L139-140 it is not clear to me, what this sentence should say in relation to the EMT like events

This sentence stablishes that the box before and after the minimum solar used to calculate average SST has the same length than the time for Maunder, Dalton, y Geisenberg minima

L165 replace “should” with “need”

We are going to change

L221 “studies based on PCA”….you should give the references to these studies

We will add references about this statement.

L226-239 Conclusions are too short

We are going to add the assumptions of our study that the reviewer stated in the first point

L229 is it correct to use the verb “predict” while speaking about past events=

We are going to change by assessed

L230 replace “eastern basin” with “Aegean” because also the Adriatic is in the eastern basin, but I guess you are talking about the EMT like events.

We are going to replace

Figure 1 the names located near the stars, are not mentioned anywhere in the text

These are the names of the cores selected in order to calculate averaged SST in both basins. In order to make more clear these calculations we are going to add Table S1

Figure 4, the authors should briefly evidence and explain the fact the EMT during the 80s-90s is the shortest one they detected

We are going to clarify this fact on the main text following the main suggestion of the reviewer about EMT in the 70’s

Best regards,

Aleix