

Clim. Past Discuss., author comment AC1  
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## Reply on RC1

Robin Fentimen et al.

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Author comment on "A 300–1000-year record of cold-water coral mound build-up at the East Melilla Coral Province (SE Alboran Sea, western Mediterranean)" by Robin Fentimen et al., *Clim. Past Discuss.*, <https://doi.org/10.5194/cp-2021-162-AC1>, 2022

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We thank the reviewer for his comments and suggestions and his constructive and positive feedback! We further agree to most points made by the reviewer and we will prepare a revised version including a better graphic display allowing the easier comparison of paleoenvironmental parameters with the abundance of CWCs supporting our discussion and conclusions. We will further avoid over-interpretations and over-simplifications of proxy data and the discussed processes by adding statistical methods as proposed by the reviewer (correlation matrix and/or PCA).

However, this submitted version had already been considerably revised from the first submission including additional Th/U age dates performed to improve the stratigraphy (which did not change considerably confirming the robustness of the previous stratigraphic discussion). Therefore, we do not share entirely these echoing concerns of the reviewer from the earlier version.

1 and 2). With respect to the first two main comments, it is indeed a very good idea to plot the data next to the CWC data. We will change accordingly the figures and the scale to better visualize the variability and their correlation. The relation to precession cycles and their relation to the African Monsoon are a very good point and will be included into the discussion. We certainly will check the stable oxygen and carbon isotope gradients between surface and bottom water and add them to better discuss the vertical mixing in relation to the grain size and CWC data.

3). Indeed, the statement made in lines 465-467 are not very well corroborated by the data. With the new way of illustration (as mentioned above) and the correlation matrix (see statistical treatment next point) the discussion on the aspects of vertical mixing, influence of different water masses during glacial/interglacial sea level changes will be better constrained and discussed.

4). Yes, thank you! Indeed, we will apply the statistical treatment, which will help tackling the factors influencing CWC presence more objectively.

5). Yes, we are well aware of the PhD thesis of Thomas Krenzel, who came independently to similar conclusions as the first author did in his PhD thesis at the same time (Fentimen, 2020). Both approaches based on independent strategies are complementary and have a right to stand by themselves. We have now cited Krenzel (2020) to make the different

strategy available, but it is not our intentions to discuss the findings of Kregel in much detail as this is issue of further publications by the author.

6). We may have been unclear why we compare our data also to the Northeast Atlantic CWC mound occurrences. We do so as the studied core taken from Brittlestar Ridge I CWC mounds specifically record both fully glacial and interglacial sediments, as discussed in section 5.3.2 and stated in conclusion two (lines 652-654). Moreover, it has been suggested that Mediterranean and NE Atlantic cold-water coral development is tightly linked (e.g., De Mol et al., 2002; Kano et al., 2007). Thus, comparing mound build-up over glacial-interglacial cycles can help to check the hypothesis made by the previously cited authors. However, we will check these passages (from aim of study to discussions and conclusions) carefully to better describe and explain our motivation here. Thanks for this remark!

#### References:

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