

Dear Editor, we would like to thank you and Prof. Brückner for the helpful and constructive advices you provided us on our MS. These allowed us to greatly improve the MS, and to include sites that we had previously missed. Hereafter, we answer the main points raised. Please also find attached a word document containing track changes from the previous version, as well as replies to the comments made directly in the submitted PDF by Prof. Brückner. We do hope that we answered in a complete and satisfactory way, please do not hesitate to ask for further clarifications if anything is unclear or if you think our answers are not appropriate.

The main changes to the MS include:

- The addition of new sites, most of them stemming from the papers suggested by Prof. Brückner, that were sent to us privately by both him and Prof. Ulrick Radtke, who we acknowledge for the help.
- The review of previously inserted sites, with minor corrections concerning, for example, spelling errors or imprecise site coordinates. We found some sites that were ranked inconsistently with our own guidelines, so we edited their quality rankings. A new version of the database was uploaded to Zenodo.
- Update of figures to reflect the changes in the database, and stylistic changes requested by the reviewers.
- A new supplementary file summarizing the sites, their ages, paleo RSL, quality ranking and references.

#### **Referee#1 (Helmut Brückner)**

*You seem to have made use only of texts in English, French and Italian. Unfortunately, the important PhD theses of Brückner (1980)\* and Radtke (1983)\*\* - in German - are missing. Please see also more references I added to the bibliography.*

We would like to thank Prof. Brückner and Radtke for sending us both published papers and unpublished theses, that allowed us to insert new data points for Lazio, Tuscany, Spain, Morocco and the area of Taranto Gulf. During the revision process we added the missing references pointed out by Prof. Brückner.

*You rightly replaced *Strombus bubonius* by *Persistrombus latus*. Why not also replace MIS 5e by MIS 5.5.? This makes more sense than the combination of numbers and letters (also: MIS 5c = MIS 5.3; MIS 5a = MIS 5.1). First time you mention MIS 5.5 is in line 777, next time in line 1039.*

For the text of the MS, we preferred to use the terms MIS 5e, 5c and 5a in order to be coherent with the WALIS interface. Anyway, we homogenized the text with the same labels avoiding the use of MIS 5.5.

*You could mention in this text that the MIS 5.5 terrace or MIS 5.5 deposits are excellent indicators for neotectonic movements - even if this has already been mentioned elsewhere. This makes your research even more valuable. When the MIS 5.5 terrace is at an elevation higher than 10 meters, this definitely indicates a long-term uplift trend of the region (e.g., southern Calabria). When the MIS 5.5 terrace is missing it may have been eroded or it is submerged (e.g., Dalmatian coast).*

We accepted the advice, and we added some more general information regarding the meaning to find MIS 5e sea level indicators at elevation not in line with the expected from stable area. Moreover, we now discuss the use of MIS 5e shorelines to assess neotectonics in the final remarks of the paper, where we feel it belongs. While it is very tempting to obtain subsidence rates for the Northeastern

coast of Italy, we refrained from doing so, as we think that this goes beyond the purpose of the paper and would require a careful evaluation of GIA and eustatic sea level scenarios.

*The transgression peak is a sea level indicator, not a good one, but it shows the farthest inland expansion and the uppermost limit of the 5.5 terrace.*

True, and particularly true for the areas where MIS 5 is found in cores. We did not use the “maximum transgression” as sea level indicator, but it is shown in the figures describing the data for the Italian coastal plains.

*You systematically combine maps with location of the sites with a lower panel in which the altitudes of the MIS 5 terraces are visualized (starting with figures 8, 9, 11 etc.). You should repeat the numbers of the sites in the map also in the lower panel, so that the link between map and panel is clear (in cases, where sites cluster, the assignment is unclear).*

We accepted the advice, now the maps and graphs show the same numbers, and the same numbers are also reported in the text. We hope this makes it easier for the reader to connect text and maps.

*Table 1: These descriptions/definitions should definitely (!) be supported by cartoons visualizing what you mean. A good cartoon/figure says more than many words!*

We discussed among the co-authors how to do this, but we feel that this would require at least 2-3 different cartoons and, ultimately, confuse the reader. Cartoons for pretty much all of these are already published in Rovere et al., 2016. Besides, the paper is already very long and rich in figures describing the data. We feel that adding this is not strictly necessary.

*Since this is so fundamental for your article you should dedicate a paragraph to what is understood by MIS 5e = MIS 5.5 (definition; time span; a graph showing the MIS 5.5 peak and the subpeaks of MIS 5.3 and MIS 5.1), show a curve with the MIS 5 record and the MIS 5 sea-level fluctuations*

Following this suggestion, we added a new graph showing the MIS 5 sea level curve from Spratt and Lisiecky (2016), with the identification of the substages 5e, 5c and 5a. The same figure also shows a rendering of the radiometric ages obtained for the Western Mediterranean.

Referee #2 (Collin V. Murray-Wallace)

*“While the review presents a comprehensive overview of field sites, it would be good if more could be said about the nature of the preserved shelly faunas within the successions, and their relation to palaeosea level. Obviously some species may be tolerant to a range of water depths, while some species may actually be very useful sea level indicators. In a similar manner, can more be written about the taphonomic context of the fossil molluscan faunas?”*

While some information about faunas has been specified mainly for core sea-level index points, it is difficult to discuss water depths when it comes to faunas in beachrock outcrops. The depth ranges of the so-called “Senegalese fauna” are pretty wide, and do not really matter much as the faunal remains are very often found not *in situ*, eroded and transported. We added a few sentences to discuss this aspect when we first introduce the “Senegalese fauna”.

*“Line 146 We also note”*

Done

*“Line 150 gastropods”*

Done

*“Lines 206-207 is it still possible to access any of these hard to get references?”*

Thanks to the help of Prof. Brückner we are able to get some of the missing references. There are many which are still very hard to get, but we believe we did everything we could to be have a very complete database.

*“Line 667 please amend and refine the wording to avoid the use of the word 'Anyhow' (there are numerous examples of this within the manuscript)”*

We accepted the advice and we have corrected the text

*Line 669 Please use formal English and avoid contractions - 'did not' for didn't*

Done

*Line 696 perhaps 'flooded' rather than invested*

Done

*Line 702 needs to be reworded as molluscan faunal associations are not chronological markers per se, but biostratigraphic markers if there are distinctive species present (e.g. index fossils).*

Done

*Section 7 seems to be the synthesis section, which I feel can be improved. A conclusions sections, perhaps with each conclusion numbered would also enhance the document.*

While we felt not too appropriate to end with a point-by-point conclusions section, we edited the “final remarks” section in order to make it more complete and give some perspectives for future works. We hope this answers the comment.