

Response to the comments of Reviewer #1

We thank Referee #1 for his/her careful reading, insightful and constructive comments that helped to improve the manuscript. As described below, we followed the reviewer's advices and modify and clarify some statements, correct typos and grammars, and removed some paragraphs. The original comments of the reviewer and our replies are highlighted in italic and bold, respectively.

Anonymous Referee #1.

This is an ambitious and very interesting paper on the Holocene mudbelt in the Atlantic Ocean off the south-west African coast. Dating of forams from core GeoB8332-4 is an improvement on previous problems with dating of organics in these deposits. The study includes a variety of techniques that measure the sediment sources from nearby rivers, continental dust and marine upwelling. The results of the different proxies seem to corroborate each other and are used to interpret Holocene climate change in the coastal region in relation to the rest of the sub-continent and the globe. The detailed description of methods could be tough to digest for laymen. Therefore the table summarizing the proxies and their applications is useful. The paper further provides an exhaustive overview of data and issues in the literature in connection with the history of palaeoclimate in Southern Africa and attempts to reconcile them in explanations of processes driving environmental change in the region, especially shifts in the winter-rainfall zone and changes in strength of the Benguela upwelling system.

Although future predictions about the effect of weakening in upwelling on fishing potential and plant life in Namaqualand may be relevant, I am not sure it belongs in the abstract without more discussion in the text.

Following the reviewer's recommendation, we remove the statement on fishing potential and plant life in Namaqualand from the abstract into the discussion section

P 2324, line 23: In connection with $\delta^{13}C$ values, it may be asked if the estimate of strength of upwelling is based on the assumption that river input of C4/C3 plant organics is constant over time. This is hardly likely considering some terrestrial isotope records, e.g., from Cango Caves (Talma and Vogel 1992) or Wonderwerk Cave (Brook et al. 2010) and a Namibian stalagmite (Sletten et al. 1913).

The reviewer is correct. There is a need for a clarification. In fact, we do not assume that the ratio of organic matter input of C4 and C3 plants is constant over time. However, due to the oceanographic setting of core site we assume that the amount of riverine organic matter is low relative to the marine sourced DIC.

In page 13 (line 26 and 32), we clarify this by stating that we do not assume a temporal constancy of input of C4/C3 plant organic matters and estimate changes in C4/C3 plant organic matter remain difficult.

Where the focus is on the Western Cape, I am not sure if all the long-distance global correlations of possible common causes for climatic events, add much to the paper. It is

not that they are not relevant but they are difficult to understand without more detailed formulation of the processes involved. These are not easy to describe briefly in a paper like this, in which the discussion already seems to be too long.

Following the reviewer's advise, we constrain our discussion to the climate regimes in southern Africa, and remove discussion about Patagonian and New Zealand climate record (page 20, line: 23).

In the abstract it is mentioned that the 700-100 yr period is the wettest phase reflected by the proxy data. It is, however, not clear from the text why more humid conditions occurred during this phase than during the middle Holocene period.

We agree with reviewer. We add a brief statement pertaining the possible mechanisms (see abstract in the revised version).

Since the radiocarbon dates were calibrated, and the figures are given in cal year BP chronologies, it is strange that yr BP, which usually indicates an un-calibrated scale, is used in the text instead of cal yr BP.

Thank you for this note. All age statements are now referred as "cal yr BP"

P 2310, 11 (Abstract): When mentioning the Antarctic, to avoid confusion it could be clarified that the data are from previous work and not from this paper. 14: In connection with enhanced leakage of warm Agulhas water into the south-eastern Atlantic, is it necessary to say again (see previous sentence)?

We clarified that the information pertaining the Agulhas leakage and changes in dust deposition over Antarctic dust are based from previous studies (see abstract)

P 2312, 13, P 2314, 6 and P 2328, 11: I think it is customary to say Namaqualand and not the Namaqualand.

P 2320, 16: The Karoo Supergroup is not Tertiary. On P 2313, 12 it is given as LateTriassic. In fact the Karoo deposits cover Palaeozoic to Mesozoic deposits.

Thanks! Correction done.

P 2332, 9: owning or owing. Caption Fig. 3 (B): buld or bulk?

It should read "bulk". We corrected these typos