

Interactive comment on “A standardized database of MIS 5e sea-level proxies in southern Africa (Angola, Namibia and South Africa)” by J. Andrew G. Cooper and Andrew N. Green

Hayley C. Cawthra (Referee)

cawthra.h@gmail.com

Received and published: 3 October 2020

Specific comments/suggested edits:

Abstract Line 7: Marine Isotopic Stage (MIS) Line 17: dating Line 23: expand LIG on first use – but I noted that throughout the paper, Last Interglacial is used, so perhaps just write it in full in the abstract Line 24: expand relative sea level on first use I suggest stating in the abstract that there is a focus on cemented beach deposits and beachrock, more than on dunes. Although dunes are not good indicators of former sea level, much of the geochronological work has been carried out on dunes and these were included in the database. This is a little confusing to track between the manuscript and the

C1

database.

1. Introduction Line 49: sea-level indicators
2. Literature review Line 55: this citation list can include the recently published Hearty et al. (2020) paper: Hearty, P.J., Rovere, A., Sandstrom, M.R., O’Leary, M.J., Roberts, D. and Raymo, M.E., 2020. Pliocene–Pleistocene stratigraphy and sea-level estimates, Republic of South Africa with implications for a 400 ppmv CO₂ world. Pale-oceanography and Paleoclimatology 35(7). Line 109: Roberts et al (2009) later dated that sequence, and although the focus was mainly on aeolianites, the logged section does include beach deposits. Line 113: see also Morrissey et al. (2020) to supplement Nahoon interpretations. *although dune-related, Roberts et al. (2013) provided an overview and database of aeolianites that includes MIS 5e. Even if not relevant here where dunes as standalone geomorphic features are not being considered, there are ages in that database that are relevant to stacked MIS 5e sequences considered in this WALIS review that may be helpful. **in an MIS 11-focused paper, Roberts et al. (2012) document a MIS 5e sequence that abuts the older deposits at Danabaai [Roberts, D.L., Karkanas, P., Jacobs, Z., Marean, C.W. and Roberts, R.G., 2012. Melting ice sheets 400,000 yr ago raised sea level by 13 m: Past analogue for future trends. Earth and Planetary Science Letters 357, 226-237.] Line 143: a summary of more dates from Mossel Bay (onshore and offshore) is provided in figure 3 of Cawthra et al. (2020): Cawthra, H.C., Frenzel, P., Hahn, A., Compton, J.S., Gander, L. and Zabel, M., 2020. Seismic stratigraphy of the inner to mid Agulhas bank, South Africa. Quaternary Science Reviews 235, 105979. Line 185: For neotectonics in Namaqualand, see de Beer (2012): De Beer, C.H., 2012. Evidence of Neogene to Quaternary faulting and seismogenic deformation along the Namaqualand coast, South Africa. South African Journal of Geology 115(2), 117-136.
3. Sea-level indicators Line 205: Roberts et al. (2012) and Cawthra et al. (2018) also use the contact between upper shoreface and foreshore deposits as a geologic indicator of former sea level, approximating Mean Sea Level. This differs slightly to

C2

the facies themselves, and in the South African Cape this is a relatively well-preserved indicator of MIS 5e sequences.

4. Elevation measurements In Table 2, 'echo sounder' should specifically be a 'multi-beam echosounder'. This provides decimetre accuracy and the resolution allows for clear identification of contacts. The same is not possible using a singlebeam echosounder.

5.1 Western Cape Line 270 and entire paragraph: please link this chronology to the 2009 publication that provides chronology of that sequence. 5.2 Eastern Cape Line 280 and entire paragraph: please link to Morrissey et al. (2020) If dunes and palaeosols are included, please refer to Fisher et al. (2013) which provides a chronology of 'red dunes' at Msikaba. 5.3 KwaZulu-Natal The MIS 5e highstand is also documented geologically in Cawthra (2012): Cawthra, H.C., Uken, R. and Ovechkina, M.N., 2012. New insights into the geological evolution of the Durban Bluff and adjacent Blood Reef, South Africa. South African Journal of Geology 115(3), 291-308. but this was not dated.

Congratulations on assimilating the information that is published up to now and I look forward to seeing this paper and database published pending revision. The entire WALIS resource will be highly beneficial to Pleistocene researchers.

From responses to my broad comments, I see that Mozambique is not part of this specific review, but it too, has MIS 5e deposits and sequences worth reporting in the paper of relevance to that region.

Kind regards,

Interactive comment on Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2020-166>, 2020.

C3