

Earth Syst. Sci. Data Discuss., referee comment RC1
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Comment on essd-2021-14

Colin V. Murray-Wallace (Referee)

Referee comment on "A global database of marine isotope substage 5a and 5c marine terraces and paleoshoreline indicators" by Schmitty B. Thompson and Jessica R. Creveling, Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2021-14-RC1>, 2021

This is a very valuable contribution in presenting in one article, and in a global context, information about the spatial distribution and elevation of sedimentary successions correlating with the Late Pleistocene warm interstadials MIS 5c and 5a. In this synthesis, it is noted that one of the difficulties in reviewing the literature, is the veracity of some of the palaeosea-level indicators.

The manuscript would be enhanced by perhaps adopting a more critical analysis of some of the data and field relationships of the landforms and sediments described. The manuscript would also be improved by a stronger and perhaps more critical synthesis section at the end of the work, with more commentary on the role of GIA in explaining the inferred relative sea level observations, particularly for the US Atlantic Coastal Plain and some sectors of the Caribbean. While it is important to present the data and honour the data of our predecessors, it would be nice to see what the authors make of all the information (i.e. to put their 'stamp' on things in a synthesis/discussion section).

It would also be nice to have some brief commentary on why many of the sites are so important - many of the names resonate in the history of Quaternary Science and the understanding of Quaternary sea-level changes, and for that matter neotectonics.

Some references that have been overlooked could be included, such as;

Schellmann & Radtke (2004) Earth-Science Reviews, 64, 157-187 (for Barbados)

Blakemore et al. (2015) Marine Geology, 335, 377-383 (for Robe Range)

Schwebel, D. A. (1984) Quaternary stratigraphy and sea-level variation in the southeast of South Australia. In, B. G. Thom (Ed), Coastal Geomorphology in Australia (pp. 291-311), Academic Press, Sydney. (Outlines the stratigraphical nomenclature and numerical system for the ages of the interstadial barrier successions for Robe Range).

In a similar manner, and perhaps appallingly self-serving, the following reference may be of value about Robe Range in the context of the Coorong Coastal Plain;

Murray-Wallace, C. V. (2018) Quaternary history of the Coorong Coastal Plain, Southern Australia: An archive of environmental and global sea-level changes, Springer, Cham, 229 pp.

Some minor editorial comments:

Please avoid the term 'absolute' when applied in a geochronological context - nothing is absolute, apart from death and taxes. I would suggest the term 'numeric'. Although 'aged' the following reference is of value in this regard;

Colman et al. (1987) Suggested terminology for Quaternary dating methods. Quaternary Research, 28, 314-319.

I would suggest in the title and all subsequent instances using the expression Sub-stage 5a abnd 5c

Line 8 document instead of detail

Line 17 Earth's

Line 20 and all subsequent instances 'highstand' or 'highstands' (as recognised by Sequence Stratigraphy)

Figure 4 caption, line 2; 'geochronological'

'Ages' instead of 'dates', the latter being unique calendar events or 'hot nights out'

I wondered about the terminology of 'wave-cut platforms' as there has been much controversy on the use of this term in view of the processes that shape platforms - perhaps use the non-genetic term 'shore platform'

Line 142 with the Whiskey (on that matter - correct spelling of Whisky or Whiskey? and in subsequent instances)

Line 166 with the MIS 5c Pioneer

Line 271 perhaps changed 'posited' to 'argued' or 'suggested'

It might be worth having some commentary on the reliability of the U-series ages in the context of the reported ages and $\delta^{234}\text{U}$ values, where this is possible.

Line 315 delete second instance of 'overall' - on the same line, I am not sure what 'have very good chronologies' means? In what sense? Please clarify.

Line 429 species in italics

In terms of the Huon Peninsula, I personally feel that it is critical to include the 'Reconciliation' paper by Chappell et al. (1996) *Earth and Planetary Science Letters*, 141, 227-236.

Line 445 delete second instance of reference

Line 480 luminescence has more commonly been used in these regions as the method determines the timing (age) of the depositional event, and also because of the paucity of corals in these successions, that would otherwise have been appropriate for U-series dating.

Line 505 word choice in terms of 'densely' - is this really true?

I don't know if it is possible, however, some photographs of some classic field sites would aid the visual appeal of the paper.

Colin Murray-Wallace

11th February 2021