

Response to Paula Reimer's Community Comments

The presentation of marine reservoir ages for the west coast of Africa by Soulet et al. provides much needed data for calibrating radiocarbon ages of carbonates from marine organisms for this region. While the main results are not unexpected, they will give confidence to archaeologists and geoscientists using radiocarbon dates of shells or foraminifera for age models. It is interesting that two shells from near the discharge of the nutrient-rich Ogooué and Congo Rivers had lower reservoir ages than nearby shells but having been collected in the 1930s and 1940s fit the global decline in R. It would be worth mentioning that this global decline is due to fossil fuel input to the atmosphere (e.g. Druffel & Suess 1983). The manuscript is well-written and contains important details on the samples used that are often omitted in publications. I would definitely recommend publishing this paper with minor corrections.

We thank Paula Reimer for her positive comments.

- i) Indeed, the main results are not surprising but are useful for the ^{14}C dating community;
- ii) We will mention that the most recent R values are in line with the global R decline due to fossil fuel input to the atmosphere. This comment is actually related to one of the major comments of Anonymous Reviewer. It will be fully addressed in our response to her/him. The revised manuscript has been modified accordingly (Please, see L22, L534-538, L565);
- iii) We thank the reviewer for acknowledging that the information regarding the studied shells is important while often omitted in publications.

Below we address Paula Reimer's specific comments. "LXX" refers to the lines in the revised manuscript with tracks. Note that the version of the revised manuscript will be checked for English by a native speaker.

Specific comments.

Line 41: 'Larger ΔR values are located at high-latitudes'. I would suggest qualifying this as 'Most larger ΔR values' as there are low-latitude locations where ΔR values are higher due to groundwater carbonates being leached into coastal water (e.g. Hadden & Cherkinsky 2015) or where upwelling increases the ΔR values (e.g. Gulf of California, Goodfriend & Flessa 1997).

Thanks for comment and references. We modified the text accordingly. Please, see L46 in the revised manuscript (with tracks version).

Line 501-504: 'The fact that species living in very different ecological habitats (e.g., *Senilia senilis* in lagoons/semi-enclosed bays and *Donax rugosus* on beaches exposed to heavy surf; see also section material) show similar reservoir age values (R or ΔR) suggests that the habitat only exerts a minor influence on measured reservoir age.' There are many examples where habitat does exert a major influence on R so please clarify that this conclusion is for the regions studied.

We modified the manuscript to clarify this point. We now clearly state that for most species presented here, the habitat seems to exert only a minor influence for the regions studied. Please, see the revised version of our manuscript: L19, L515, L575 and L622.

Line 561-562: 'It is thus possible that these outlier samples were transported subfossil samples that died a century or more before collection date'. Two of these outlier samples were listed as having ligaments attached so it seems very unlikely that they had been dead for very long before collection.

Right. Two of these samples had very small remains of the hinge ligament. It may be possible that the hinge ligament could be preserved in case of very favourable environmental conditions (Forman et al., 2004; Huntley et al. 2021). Alternatively, it may be also possible that unlike the other studied species here, the habitat exerts an influence on R and ΔR values measured in *B. ringens*. We balanced the discussion regarding *B. cardium* in order to mention this possibility. [Please, see L580-586.](#)

Forman et al 2004 QSR

Figure 1 caption: please specify what PG, LO, PN and Ca stand for on the map.

Indeed, we forgot to specify the information in Figure 1 caption. We modified this accordingly in the revised version. Here, just for information: Port-Gentil (PG), Loango (Lo), Pointe-Noire (PN), Cabinda (Ca).

[See, L867-869 in the revised manuscript with tracks.](#)

There are also some grammatical errors that need to be corrected by a fluent English speaker. Also the word 'specie' is not correct as 'species' is both singular and plural.

We thank Paula Reimer who emailed us an annotated pdf file of our original submission with the grammatical and typos she spotted in. We modified the manuscript accordingly. The revised version of our manuscript being substantially amended, it will be checked by a native English speaker before resubmission.

DRUFFEL, E. M. & SUESS, H. E. 1983. On the Radiocarbon Record in Banded Corals - Exchange Parameters and Net Transport of (Co2)-C-14 between Atmosphere and Surface Ocean. *Journal of Geophysical Research-Oceans and Atmospheres*, 88, 1271-1280.

GOODFRIEND, G. A. & FLESSA, K. W. 1997. Radiocarbon reservoir ages in the Gulf of California: Roles of upwelling and flow from the Colorado River. *Radiocarbon*, 39, 139-148.

HADDEN, C. S. & CHERKINSKY, A. 2015. 14C variations in pre-bomb nearshore habitats of the Florida Panhandle, USA. *Radiocarbon*, 57, 469-479.