

Dear Thorsten Kiefer,

First of all, on behalf of all the authors I would like to thank you for your comments and requests, as they helped the manuscript significantly. In this sense a latest marked-up manuscript version with all the changes has been uploaded on your journal web site.

The text of the manuscript was modified by taking into account your comments and requests as shown below.

**1. Spell out AMO at first use.**

It was done.

**2. Have a proof read, in particular of the new text passages, where some oddities crept in, such as missing words. I recommend to do so for better clarity for the referees, even though there will be general language-editing by Copernicus after final acceptance.**

The manuscript has been revised and corrected by the native English speaker Vivienne Pettman, British, [Vivienne.Pettman@sabre.com](mailto:Vivienne.Pettman@sabre.com).

**3. Reduce the (in my opinion) excessive use of "could" and "would" by using firmer formulations. Formulations as they are appear overly cautious and give the impression that you are not confident about your results or inferences.**

We have corrected the MS throughout.

**4. The discussion with Referee #3 mentions the 14C-reservoir ages with a reference to "general practice". However, I can't find any information on reservoir age in the manuscript. Unless I missed it, I suggest that you include that, even if just briefly.**

We added now the following sentence: *"The standard reservoir age of 405 years was applied during calibration due to a lack of regional data, although intense water mixing in shallow*

*waters might lead to a significantly smaller reservoir age (Reimer et al. 2013)*”, to clarified this aspect.

**5. In addition, please provide the in-press manuscript of Perez et al. (upload in the "supplement" field).**

Upon our request the editor of the DPER volume did not allow us to provide you with the MS. However, you may of course contact her directly: Kaarina Weckström: [kaarina.weckstrom@helsinki.fi](mailto:kaarina.weckstrom@helsinki.fi).

**6. With regard to the discussion of the benefits of log-ratios of XRF data, I encourage you to either prepare a plot of the rations on log-scale, as proposed by Referee #2, or provide the referees with access to the respective data.**

The plots on ln scales were added as supplementary information.

**7. Likewise, you can provide a plot of the elemental raw data to Referee #3 for internal discussion or, preferentially, provide the referees access to the data (as you announced to do anyways for the public together with final publication).**

Same as above, the elemental raw data for each element used is added as supplementary information.

I look forward to hearing from you. Please, if you have any further queries please do not hesitate to contact me.

Yours sincerely,

Laura Perez