Dear Referee #2,

Thank you very much for your review which will improve the manuscript. We corrected the document according to your suggestions and you'll find below all the modifications we propose.

Antoine Grisart et al.

The authors applied a multi resolution analysis (MRA) to identify the contribution of the decadal to multi-millennial signal variabilities to the overall isotopic variability. The MRA method needs to be applied on time intervals with a uniform resolution. Therefore, the authors should provide more details how they handled the fixed 11cm points into a uniform resolution within each of the 6 intervals. Certainly the 11cm covers a different temporal coverage along depth, given thinning, as well as change in accumulation rate.

>>> We transformed the fixed 11 cm points resolution depth scale into the AICC2012 age scale which is not constant neither. But then we interpolated at a fixed time interval according to the maximum resolution allowed. For example, we took the first 900 m of the EPICA ice core which corresponds to 0-56 ka. The maximum time resolution at 56 ka is 10 years. So we uniformly interpolated the 0-56 ka to 10 years resolution. At 144 ka, the time resolution is 20 years so we interpolated the 56-144 ka to 20 years resolution. And so on.

We have rewritten the text to better explain this point which was probably not clear enough:
"As the wavelet analysis needs to be applied on time intervals with a uniform sample resolution, we divide the EDC isotopic record on the AICC2012 age scale (add reference here) into six intervals. These include the youngest interval between 0 and 56 ka (where the longest time span covered by 11 cm is 10 yr) to the bottom of the core with the oldest interval between 651 and 800 ka (where the longest time span covered by 11 cm is 320 yr) on the AICC2012 age scale (Bazin et al., 2013) (Table 3). Over each interval, we performed an interpolation with a uniform resolution corresponding to the longest time span covered by 11 cm of ice (i.e. interpolation at 10 yr between 0 and 56 ka, 20 yr between 56 and 144 ka, see details for all periods on Table 3)."

I agree with the authors that the old and new δ18O and δD EDC datasets are coherent, just wonder if a more objective test can be applied to confirm their conherence?

>>> This is a good question and we have indeed searched what were the best statistical tests adapted to our purpose. Here, we used both the Pearson-test and the Welch test to compare our different set of data. Note also that we did several kinds of comparisons to address the coherence between the different sets of data as explained on section 3 which has been reorganized following the comments of reviewer 1. In particular, we now explain our strategy at the beginning:

"To determine the coherency of the different datasets, two different comparisons are performed; (1) comparison of the isotopic values from the same samples measured by different analytical

techniques; and (2) comparison of the 55 cm sample resolution data with the 11 cm sample resolution data using a 5-point average."

Line 304: BE-OI stands for Beyond EPICA-Oldest Ice?

>>> Yes, it is. We replaced the acronym with the full name in the text.