



EGUsphere, referee comment RC2  
<https://doi.org/10.5194/egusphere-2022-168-RC2>, 2022  
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## Comment on egusphere-2022-168

Anonymous Referee #2

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Referee comment on "Sub-millennial climate variability from high-resolution water isotopes in the EPICA Dome C ice core" by Antoine Grisart et al., EGUsphere,  
<https://doi.org/10.5194/egusphere-2022-168-RC2>, 2022

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This contribution presents so far the longest continuous climatic record covering the last 800 kyr deduced from the EPICA Dome C (EDC) ice core. Although there are many works available regarding the EDC stable isotopic records, the most important merit of the current work lies in its objective compilation of the most comprehensive stable isotopic dataset of the EDC ice core, hence providing a better resolution water isotopic record than before. Consequently, the authors studied the sub-millennial climate variability after diffusion correction and concluded that the variability during glacial periods at multi decadal to multi centennial timescale is higher than variability of the Holocene. This idea is not new, but the conclusion is based on a better resolution continuous record, thus more solid and convincing. The manuscript is well prepared and deserved its merit for publication.

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.

I agree with the authors that the old and new  $\delta^{18}\text{O}$  and  $\delta\text{D}$  EDC datasets are coherent, just wonder if a more objective test can be applied to confirm their coherence?

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