Climate of the Past Discussions

Clim. Past Discuss., community comment CC1
https://doi.org/10.5194/cp-2021-97-CC1, 2021


# Comment on cp-2021-97

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Community comment on "Reorganization of Atlantic Waters at sub-polar latitudes linked to deep-water overflow in both glacial and interglacial climate states" by Dakota E. Holmes et al., Clim. Past Discuss., https://doi.org/10.5194/cp-2021-97-CC1, 2021

Very interesting manuscript. I just wanted to give some quick feedback from an ice core gas scientist's perspective.

1) I think you might be interested in the discussion and data of this publication:

https://science.sciencemag.org/content/369/6506/1000

Data (both ice core and marine sediment) available here:

https://science.sciencemag.org/content/suppl/2020/08/19/369.6506.1000.DC1

or here:

https://doi.pangaea.de/10.1594/PANGAEA.915146

2) I would recommend the use of $CO_2$ and $CH_4$ in units of ppm and ppb, respectively, and avoid *p*CO2 in units of ppmv (or likewise) if referring to atmospheric $CO_2$ or$CH_4$ concentrations (e.g. line 92, 104, 105, and Figs. 5+6). See also: https://gml.noaa.gov/ccl/co2report.html

3) It is unclear to me what point in time you are referring to if you only use "kilo annum", e.g. line 93, what reference point does this relate to? Do you mean 407.5 ka BP (before present where present is defined as 1950 CE)? Later in the manuscript "BP" is used without a definition (first used in line 281). Please make consistent.

4) Reference to ice core publications:

4a) line 93: EPICA 2004 did not publish CO2 data, please refer to either of these publications for 1850 CE:

https://agupubs.onlinelibrary.wiley.com/doi/10.1029/95JD03410

https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2006GL026152

and for 407 ka BP:

https://science.sciencemag.org/content/369/6506/1000

4b) line 304: Bazin et al. 2013 is an age scale paper. The reference for the methane data is either:

https://science.sciencemag.org/content/369/6506/1000 (CH4 data were mostly published by the below reference, this reference added new data to improve the exiting dataset)

or

https://www.nature.com/articles/nature06950 (in case you choose to cite the original dataset)

4c) line 473-474: following Bereiter et al. 2015 (https://agupubs.onlinelibrary.wiley.com/doi/full/10.1002/2014GL061957) the correct CO2 data citation for 390 ka BP would be:

https://www.nature.com/articles/20859

unless you use the new high-res data, in which case it would be:

https://science.sciencemag.org/content/369/6506/1000

4d) line 574: https://science.sciencemag.org/content/317/5839/793 for Antarctic temperature derived from the EPICA Dome C ice core

Please apply the above points also to Figures 5 and 6 (captions and y-axes).