

## ***Interactive comment on “Historical porosity data in polar firn” by Kévin Fourteau et al.***

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Fourteau et al present historical porosity data of firn from three polar sites originally measured by J.-M. Barnola with the means of gas pycnometry several years ago. These data were the base of the important closed porosity-density parametrization widely used in firn gas models. Fourteau et al. provide the raw data and give insight into the original data processing. They confirm the use of the dataset for the closed-porosity parametrization first introduced in Goujon et al. (2003) and highlight its limitation. I appreciate the reworking of this fundamental data set.

The manuscript is well written with an appropriate introduction and description of the method. The data processing is described in required detail to enable the reader to follow the analysis. The data set is accessible via the given identifier and complete.

I highly recommend the manuscript for publication. In my opinion the data set will

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encourage further methodological improvements and investigations on the cut-bubble-effect. Maybe it would be worthwhile to set up a future study where different methods like X-ray tomography and pycnometry are applied on the same set of samples?

Specific comments: 1) The names of the columns in the data set are a little bit misleading. The pore volumes are named by "Poros\_xx" like "Poros\_closed\_cm\_3\_" which might be interpreted as abbreviation for porosity (no units) instead of pore volumes (unit in cm<sub>3</sub>). I would suggest names like "Pore\_vol\_xx". 2) The column "Pores\_frac" should be renamed to "ClosedPorosRatio" as it is defined in the manuscript. 3) In the data sets there are some non-physical values like negative pore volumina or closed pore ratios larger than 1. I would prefer to assign them to the physical limits (0 or 1).

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