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The Cryosphere Discussions

Interactive comment on "Investigating cold based summit glaciers through direct access to basal ice: A case study constraining the maximum age of Chli Titlis glacier, Switzerland" *by* Pascal Bohleber et al.

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The manuscript describes a useful and important study of basal-ice in Chli Titlis glacier. The methods are described well and represent a preliminary investigation that the authors have already extended to other such glaciers. The manuscript is interesting and suitable for The Cryosphere. I believe it can be improved by addressing the comments provided below, which would constitute a minor revision.

Two items of importance are summarized here; the remaining comments are minor.

1. Please provide a location map of the Chli Titlis glacier and the neighboring glaciers described in the study. This will be useful for the readership that is less familiar with the study area and the regional glaciers.

2. The authors seem to waiver on the reliability of the del-D data for basal ice, citing some concerns about the quality of the measurement. The data are described as a regression with del18O, but are not illustrated. The authors should decide whether to include the data; based on the information given in version 1, the inclusion of the del-D data may not be necessary.

Minor comments:

Page 1, Line 16: the term "sedimentary glaciers" is unconventional. Consider using a different term to characterize such glaciers. Perhaps you mean "stratified glacier ice"?

Page 1, Line 19: including an altitude range for "uppermost summit" glaciers?

Page 2, Line 19: change "arrive just-in-time" to "are now available"

Page 2, Line 23: change "offers constraining" to "limits"

Page 2, Line 33: final sentence of paragraph is not necessary.

Top of Page 3: a location map of the study area and the glacier would be useful here.

Page 3, Line 7: reword to clarify meaning of the phrase, "with an increase towards its back end".

Page 3, Line 17: insert sentence describing the "clear signs" of negative mass balance

Page 4, Line 7: change "a" to "an"

Page 5, Line 10: change "that stem from" to "caused by"

Top of Page 5: seems that radiocarbon dates appear too early. Move this table to a position after the "Radiocarbon dating" section.

Page 5, Line 13: the ïĄď'D data are not shown in Figure 2 and are perhaps not necessary to discuss here.

Page 6, Line 1: seems that a reference for the "systematic investigations" should be provided here, or described further if they were done in this study. In either case, please provide more information beyond that given at line 3.

Page 7, Line 32: here the ïĄď'D data are implied to be more reliable than stated on page 5 (in Methods). Some statement of potential error in the ïĄď'D should be included here, as should a figure showing the regression of the ïĄď'D and ïĄď'18O data.

Figure 2 caption: the statement "no distinct basal isotope was found in profile 3" is unclear. Reword the statement to clarify it.

Page 9, Line 2: define CPO and expand on the last sentence to explain its significance.

Page 10, Lines 1-5: here, the reader would benefit greatly from a location map showing the study area relative to the nearby glaciers with mass balance measurements.

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