

Interactive comment on “VARDA (VARved sediments DAtabase) – providing and connecting proxy data from annually laminated lake sediments” by Arne Ramisch et al.

Pierre Francus (Referee)

pierre.francus@ete.inrs.ca

Received and published: 24 April 2020

A publically available and web accessible varve database was much awaited by the varve community. Indeed, the specificity of varved records makes current paleoclimate databases unpractical and unfit to exploit the full potential of varved records for paleoclimate reconstructions. Hence VARDA has the potential to fill a big need for the varve community but also to make varved records more easily accessible for the entire paleoclimate community. This paper outlines a VARDA 1.0 version and advertises that new versions are in the making. I have a few comments about version 1.0 and suggestions for upcoming versions.

C1

COMMENTS ON VARDA 1.0.

A few minor comments can be found directly in the author's pdf manuscript attached to this Short Comment. The most important comments are outlined below:

Years are expressed as “yr” in the database but as “a” in the tables of the paper. I do not want to enter into the debate of “yr” versus “a” (see for instance Christie-Blick 2012), but I much prefer “a” (for “annum”), and I think it would be a lot more pertinent for a database reporting dates and not durations. Nevertheless, I think that the paper and the database should use the same abbreviation.

It is not clear how varve depths are reported. In table 7, a required information is the “Composite Depth” as well as the “Section depth”. But what is the “depth” of each varve? This should be specified. There was a long discussion about that topic within the PAGES community (see Khider et al. 2019). In the case of varved records that are established from composite profiles, it is critical, in my view, to report the upper and the lower depths of each varve. This information is indeed needed when making the link between two sections that are used to build up a composite profile.

I also think that the distinction between “core section” and “sediment profile” should be clearer. I suggest to systematically write “sediment composite profile”.

Finally, it would be nice having some information about how and how frequently the data included in the database will be updated. Moreover, I suggest authors to outline how VARDA will be maintained in the long term. Is there some commitment from GFZ about this, or another strategy exists?

SUGGESTIONS FOR UPCOMING VERSIONS

Information about the quality of varve counts should be included in upcoming versions. It was already discussed in Ojala et al (2012) by the varve working Group of PAGES. Among others, the following informations were called for: the number of persons counting varves, the number of varve counts, the quality of varve preservation, the media on

C2

which the counting were performed (and its resolution), evidences that laminations are annual, . . .

There is a nice table for radiocarbon information. Would it be possible to include a 210-Pb and 137-Cs table as well?

Create an interface to allow potential contributors to submit new or updated records. Of course, there should be a control by a database manager, but this can help to expand this database.

It would be nice to have an entry for IGSN numbers (see <http://www.geosamples.org/igsabout/>)?

Include marine varved records.

I'm not sure this is possible, but it would be nice including the lake Suigetsu record as another landmark record such as the NGRIP record.

Make the database codes available to allow researchers that are building new varve records to immediately and locally collect their data in a format that will be easily sent to VARDA once the publication is accepted and the data transferred to data repositories.

CONCLUSION In summary, VARDA has the potential to put varved records as prominent climate archives in major paleoclimate reconstructions by making varved records more accessible and easily comparable. I'm looking forward to see version 2.0 and the next ones. Thank you for this helpful contribution.

REFERENCES Christie-Blick N. (2012). Geological Time Conventions and Symbols, *GSA today*, 22,2: 28-29. <https://www.geosociety.org/gsatoday/archive/22/2/article/i1052-5173-22-2-28.htm>

Khider et al (2019) PaCTS 1.0: A Crowdsourced Reporting Standard for Paleoclimate Data. *Paleoceanogr. Paleoclimatol.*, 34 (10): 1570-1596.

Ojala, A.E.K., Francus, P., Zolitschka, B., Besonen, M. and Lamoureux, S.F. (2012)

C3

Characteristics of sedimentary varve chronologies – A review. *Quaternary Science Reviews*, 43, 45-60.

Please also note the supplement to this comment:

<https://www.earth-syst-sci-data-discuss.net/essd-2020-55/essd-2020-55-RC1-supplement.pdf>

Interactive comment on Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2020-55>, 2020.

C4