The case of a southern European glacier disappearing under recent warming that survived Roman and Medieval warm periods

Electronic Supplementary Material

The depth age model was created using the package CLAM 2.2 (Blaauw, 2010; Blaauw et al., 2019) run in R (R Development Core, 2018). CLAM creates depth-age models that can be based on linear interpolation, linear or polynomial regression and cubic, smooth or locally weighted splines. CLAM enables that for each date the probability of a calendar year being sampled is proportionate to its calibrated probability (Blaauw, 2010). Uncertainty ranges as well as a most-likely age-model are produced as a CLAM output.
In order to reproduce the presented age model we provide here details on the chosen parameters.

The dataset to build this age model is available in the file *paleoice.csv* and a summary of the parameter used are in *paleoice_polyn_regr_settings.txt*. We chose to perform a linear regression (polynomial of order 1) as the more realistic option to enhance the goodness of fit of our model,with a confidence interval of 0.95 where 1000 iterations were run. The regression was weighted according to the calibrated probabilities of the dates and the age-depth model derived ages averages were weighted too. We set a hiatus at 2700 cm as explained in the text (equivalent to 73 m depth following a bottom-up sampling strategy).
The following R code lines enable creating the current age-depth model. We encourage the reader to read Blaauw (2010) and the online version of CLAM 2.2 before running this code.

```
install.packages("clam")
library(clam)
clam(core = "paleoice", type = 2, smooth =1, prob = 0.95,
    its = 1000, coredir = c(), wghts = 1, cc = 1,
    BCAD = TRUE, decimals = 0, hiatus = c(2700), revd = TRUE, revyr = TRUE, plotname=FALSE)
```

References

Blaauw, M., 2010. Methods and code for 'classical' age-modelling of radiocarbon sequences. Quaternary Geochronology 5, 512–518. https://doi.org/10.1016/j.quageo.2010.01.002

Blaauw, M., Christen, J.A., Vazquez, J.E., Goring, S., 2019. clam: Classical Age-Depth Modelling of Cores from Deposits. CRAN 2019 https://CRAN.R-project.org/package=clam