

Response to the Editor Comments

We thank the editor for her comments on our manuscript. Please find the detailed answers to the comments below.

The data presented in the paper is very interesting but deserves a better presentation also emphasized by ref 2. Please consider in particular the division of chapters and sections for the “Results and Discussion” part. I am afraid that the main message gets lost in the way it is presented now.

The “Results and Discussion” section has been restructured, see also answer to reviewer 2.

p. 5 line 9. This is high resolution proxy-aerosol data. This should be used throughout the paper.

Thanks to the editor for the clarification of the terminology. The terminology has been adjusted throughout the entire manuscript where appropriate.

p. 8 line 4-8. Regarding flux calculations. Can you say something more about how the accumulation was modelled and in what time resolution? Since you are using flux this is very important for the reader to know. The model for the age scale and accumulation rate is now mentioned in the manuscript (incl. reference), depth resolution of the modelled accumulation rates have been added:

“All age scales, and thus accumulation rates, use the inverse model by Lemieux-Dudon et al. (2012). The accumulation rates are typically given in 1–3 meter resolution, corresponding to a few years or a few hundred years depending on the depth range.”

Fig. 2. It would be easier for the reader to read the figure if the different panels/curves had labels on them, in the figure. Again, I don’t think you should label the Ca^{2+} and Na^+ as “aerosol records”.

In addition to the labels at the axis we have introduced labels to the individual curves in the figure for a better readability. The Ca^{2+} and Na^+ records are no longer labelled as “aerosol records” in the figure caption.

Fig. 4. I don’t think it is so evident that the fluxes are anti-correlated from the figure. The data series are not continuous and trends the easily confuses the eye. Can it be plotted differently? What about error bars- is that possible to include? You mention 30% uncertainties in chapter 2.

The figure has been slightly changed, we now show the 500 yr means only for a better readability and included a 30% error band for the TALDICE records in addition. The wording has been modified; we now say that the two records show opposite trends instead of anticorrelation during the period 13-6 ka BP (was 13-8 ka BP before).

Additional comment from the authors:

During the revision of this manuscript we have realised that parts of the EDML data presented in this study have not been published before as we had thought. While the CFA Ca^{2+} record has been published in Kaufmann et al., 2010, as cited in the manuscript, the Na^+ they showed are no new data but the IC data from Fischer et al. 2007. We changed the manuscript accordingly and added P. Kaufmann to the autor list, since he was the main responsible scientist for the EDML CFA sodium analyses.

We discovered a little inconsistency with the description of the calculation of the composite nssCa flux record. The EDML record is not normalised as described in the original manuscript, but offset corrected. The text has been changed accordingly (see p.9 of the revised version), numbers in Fig. 5 have been adjusted (fit parameters). These small changes do not affect the conclusion about the CO_2 sensitivity described in this section of the paper.