

## ***Interactive comment on “Synchronisation of the EDML and EDC ice cores for the last 52 kyr by volcanic signature matching” by M. Severi et al.***

**M. Severi et al.**

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### **Authors' response to reviewer in bold.**

Firstly, this is a useful piece of work and should be published, however, I recommend the manuscript should be rewritten before it is accepted for publication. It was difficult to read with bad English expression, and therefore difficult to review (see below for examples). I suggest it should be reworded by an English speaking co-author or other (and this comment is not directed specifically at the first author). I suspect some of the co-authors did not read this paper prior to submission. I fully understand that there are often very good reasons for this, but I think large groups, such as EPICA, should have a publications policy to ensure a minimum submission standard. My initial thoughts were that synchronisation should be straightforward, however the plot of delta age ratio R (Figure 8) shows that producing a common timescale is difficult and modelling alone

would result in a 20% error in synchrony (if I have that correct? I'm not a modeller).

**Yes, you have it correct. Modelling alone would give errors up to 20% in the duration of time intervals between pairs of following volcanic events.**

Another interesting observation is that there are not many volcanic signals during the transition (Figure 4).

**As reported in the text, only few weak signals are recorded in this section of the ice cores, especially in the EDC core.**

A similar synchronisation should now be done for all Antarctic cores - it could reveal more about accumulation histories. As I mentioned upfront, there is bad expression throughout the manuscript - I'll just point out the occurrence in the abstract and a few examples elsewhere, however the manuscript needs a full reword: Abstract Line 4 ('was carried on by', 'between this core and the one drilled at'), Line 6 ('was build'), Line 9 ('was turned into'), Line 12 ('within 20Another couple of examples of bad expression: Page 2 Introduction Line 6. 'The possibility . . . in the ice'. Page 3 Line 12. 'Despite these efforts . . . . Presented in this issue' Page 3 6th Line from end 'This implied . . . ' Page 3 4th Line from end 'Volcanic signatures . . . spikes' Page 4 Line 5 'On the other hand . . . Wolff et al., 2005)' Page 5 Lines 2-6 Figure caption for Figure 6. There are a lot more examples of bad expression throughout but I must also mention the entire Page 10 - I cannot follow what you are saying - please clear up your message.

**The manuscript has been thoroughly checked and revised as necessary by an English-speaking author. Most of the examples of bad expression pointed out by the reviewer were corrected or changed.**

Other comments on the paper: Page 2 4th line from bottom of abstract - you don't make an assumption 'correct', you make the assumption then present your interpretation based on this assumption.

**We have changed this sentence to clear-up our statement.**

Be careful when referring to 'ice cores' - be specific. There are many examples where it is not clear which core you are referring to - eg Abstract Page 2 Line 4, Page 3 Line 16, Page 5 Line 19 'both the EPICA cores' and 'Both cores' - which ones be specific? (You mentioned 4 cores in the para above). Page 6 Line 1. Page 6, 8th line from end.

**We specified the name of the core in the text where necessary.**

Consistency with dates - eg you use both kyr B.P. (e.g. Figure 3) and A.D. (Figure 2) - be consistent throughout the manuscript.

**We have changed figure 2 to be consistent throughout the figures, but the well dated eruptions mentioned in the text are reported as A.D. since these markers are often used as reference horizons and mentioned using the "A.D." form.**

Page 7 Line 4. I'm not sure what you mean by problems finding markers in the brittle ice?

**The sulphate records in the EDC and EDML ice cores have been obtained by FIC semi-continuous measurements. This method requires a preliminary decontamination of the ice-core sections to be analysed. In the brittle ice there are several breaks which need decontamination and as a result of this procedure, many centimetres of ice are removed and not analysed. A sentence was added in the text to clarify this point.**

**We hope to have fully answered the questions raised by the referee and we thank him/her for his/her useful comments that improved the scientific quality of the paper.**

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Interactive comment on Clim. Past Discuss., 3, 409, 2007.

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