

**Important Remark: All pages and line numbers refer to the annotated manuscript version provided in the last "Authors comment" file**

Page	Line	Comment
2	36-39	Drop these lines. This remains a weakness of the paper. I would like you to delete it. See further
5	12 and 13	..and in related figure: I would choose another color of these inversions in nthe graph to make these pop up clearly
6	25	delete "." at end of sentence
7	2	blank missing before "provide"
	4	change to: "the new method shows clear improvments at various levels"
	8	Change to: "For example, in the year 2005..."
	16	delete "etc."
	31	replace "pollen dating" by "pollen analysis"
	34	delete sign before "This"
	36	delete sign before "the modelling"
36 and 37		Change to: "the modelling approach appears globally robust following validation..."
37 to 39		This is important. It deserves another insert plot in Figure 3, of Eismodel vs. Field validation
8	3	Change to: "Such efficiency, however, cannot.."
4 and 5		This is making the "depth-to-date" application more problematic then.. I think it should be mentioned
11 and 12		change to: "helps in the interpretation...inversions ( <i>specific</i> color dots in Figure 2b).
	13	Change to: " can potentially be of two origins: a) there might be...artefact.."
	15	Change to: "accuracy; b) on the other hand, "
	17	Change to: ".. and snow: redistribution of..., and mixing..."
	20	Change to: "..in section 5.3"
	36	There are discordances between the depths of "ice lenses" in figure 2d and "meltlayers" in Figure 3! Needs consistency!
	41	delete "completely"
9	7	Also discordances between depths of "ice lenses" and "meltlayers" Figure 2 and 3
	7	delete "-" in front of "A further.."
	14	change to: "..where these authors.."
	19	Change to: "However, in the same study, no evidnece.."
	23	delete "-" in front of "These"
	27	Change to: "..2010) similar values being reported.."
	28	Change to: "could show..."
	29	replace "dislocation" by "transport"
10	3	spelling: "recognized"
	22	change to: "..in order to support it."
36 and 37		But then, if that is the case, one can wonder how far down in the deep ice core you will be able to decipher "sub-seasonal" behaviour?...Also, changes between glacials and interglacials are likely to involve more drastic changes than some 10 days of shift in the flowering timing!.. The whole speciation could change!...This is not convincing and I would delete lines 32 to 37... I would also add in the previous sentence that the feasibility of the approach in deep ice cores also relies on potential regional shifts in pollen speciation.
10 and 11	All 5.5	This remains a very weak section of the paper!.. The T°/deltaD relationship is really blurred and has nothing to do with what would be expected of a clean GMWL!.. It is therefore very difficult to interpret, and, to me, brings no added value. It is simply pushing your application too far!.. That section is not convincing and should be dropped.
11	23	Change to: "..source, with negligible source-sink lag, the existence.."
	29	Change to: "...and can also take place ...Alternatively, data from the closest.."
	32	Change to: ".. As witnessed by the recent launch..."
	33	Change to: "..Theoretically, our approach could be applied to deeper ice cores, if the sampling resolution...high and if no significant shift occurred in the pollen specification. In such cases our method could ... model by documenting the loss of seasonal signal with depth in the core."
	41	replace: "types" by "conditions"
12	1 to 3	Too weak. Drop this.
	8	Change to: ".. In this paleo-climatic archive under "borderline" environmental conditions for proxies reliability."
Figure 2	caption	"Number and thickness of ice lenses": it is not clear if this is total thickness or individual thickness.. Surely not all ice lenses at a given depth have the same thickness (?)
Figure 4	axes	Change to: "Mass balance from modelling" and "Mass balance from Pollen"
Figure 5		Delete