Hereafter we give answers to the comments of the Editor and report the modifications made in the manuscript.

Page 4, line 5. "This assumption is supported..". Please explain how the accumulation rate in Yiou et al was derived, if not by ^{10}Be (otherwise this statement is a circular argument).

Sentence changed: "This assumption was suggested by the anti-correlation observed between ^{10}Be concentrations in ice and accumulation rate derived from oxygen isotopes at the drilling site (Yiou et al., 1985).".

Page 4, line 7. "framework of the Ph D of Cauquoin". I don't feel this statement is appropriate, unless the Ph D is published in which case give the reference.

The PhD is published and is already cited in the bibliography (Cauquoin, A.: Flux de ^{10}Be en Antarctique durant les 800 000 dernières années et interprétation, Ph.D. thesis, Université Paris-Sud 11, 2013.) and so is linked to this statement.

Page 12, line 5. The discussion here is a little confusing. The SD is 8.8% and that is useful to know, but this doesn't address the question whether the constant flux assumption is correct or not. For example if there is a higher flux when the snow accumulation is higher (because there is some limited wet deposition) then your calculation cannot address that. Please revise the wording a little to acknowledge the potential for this to be a problem.

Any inadequacy in the constant flux assumption (including that resulting from a variable fraction of wet deposition) will result in an increase in the standard deviation of the calculated flux using equation 6. This is why we believe the standard deviation is a reasonable measure of the upper limit to the uncertainty in the assumption.

Page 14, line 15. The names you use for the models are different to those on the figures (here you use the institute name rather than the model name in fact), making it hard for the reader to follow. Please standardise on one set of names.

Taking into account this comment and the following ones, we have removed the references to the model simulations everywhere except in the description of Fig. 3, in which we now use the names of the models rather than the names of the institutes: "We observe a relatively good agreement between the slope of accumulation vs. temperature over a glacial-interglacial transition of several models (MPI-ESM-P, CCSM4, FGOALS-g2), with an average slope of 0.23 cm ie yr^{-1} °C^{-1} (bold black line in Fig. 3a). Other models are clearly outside the range of reconstructed accumulation-temperature relationship, either because they overestimate it (MRI-GCM3, GISS-E2-R), underestimate it (IPSL-CM5-LR) or because they simulate very weak changes (CNRM-CM5). Indeed, one can notice a large spread between the different model outputs…".

Page 15. You note that ECHAM acc-delD agrees with your data; however ECHAM is way off the line for acc vs T_s. This implies that either there are two compensating errors in ECHAM *(in which case the agreement is luck) or that T_S is estimated badly in the data. Please be clearer on this point.*

See below.

Also page 15. Since ECHAM gives a good acc-delD relationship, you can't then say that the models that track it closely in acc-T_s space (MIROC, IPSL) "are not yet accurate at simulating changes in pptn". If that is so then ECHAM is also bad, but actually (as per last para) ECHAM is good at reproducing the actual data. An equally likely statement is that the models that track ECHAM are good at accumulation (but that there is either a problem with derived T_s or the models are bad at temperature). This would equally imply that the other models (which match the black line) are not necessarily good at accumulation. As written the discussion is quite misleading.

We have modified the paragraphs on page 14-15: "We observe a relatively good agreement between the slope of accumulation vs. temperature over a glacial-interglacial transition of several models (MPI-ESM-P, CCSM4, FGOALS-g2), with an average slope of 0.23 cm ie yr^{-1} $°C^{-1}$ (bold black line in Fig. 3a). Other models are clearly outside the range of reconstructed accumulation-temperature relationship, either because they overestimate it (MRI-GCM3, GISS-E2-R), underestimate it (IPSL-CM5-LR) or because they simulate very weak changes (CNRM-CM5). Indeed, one can notice a large spread between the different model outputs. The difference in the accumulation rate vs. temperature relationship between different GCM simulations is much larger (100%) than for the different reconstructions based on ^{10}Be flux and/or chronological constraints. The slope based on the relationship between accumulation rate and saturation pressure over ice is 28% lower (brown line on Fig. 3a). We conclude that generally the CMIP5-PMIP3 models have more or less difficulties to accurately simulate the temperature-accumulation relationship on the Antarctic plateau between glacial and interglacial conditions and need to be improved in the future.

To avoid any assumption on the relationship between water isotopes and temperature, we have directly compared the accumulation rate with water isotope variations for both ice core data and model outputs (Fig. 3b). In our study, only one model (ECHAM5) is equipped with water isotopes diagnostics. As it was also observed for the temperature change, the δD increase during the deglaciation is smaller in the ECHAM5 simulations than in ice core records. However the slope of accumulation rate vs. δD given by ECHAM5 compares very well with our different accumulation rate vs. δD slope inferred from both water isotopes and ^{10}Be. Only the slope deduced from the saturation vapour pressure formulation is lower by ~30 % compared to EDC3. We observe however that the accumulation rate vs. temperature changes slope of ECHAM5 is smaller than the one reconstructed from water isotopes or ^{10}Be in ice core, and so that the modelled Antarctic δD-temperature gradient in ECHAM5 for LGM-PI climate changes at EDC is much lower than the local geographical gradient as already shown in previous studies (Schmidt et al., 2007; Lee et al., 2008; Sime et al., 2008, 2009). This could imply a problem in the estimation of the surface temperature with measured δD, or also indicate that the δD-temperature slope is under-evaluated in the model compared to the hypothesis of the spatial relationship between precipitation isotopic composition and local temperature (Lorius et al., 1969). But given the uncertainties and the lack of models equipped with water isotope diagnostics, it is difficult to conclude on this point.

Finally, this implies that the models matching the accumulation vs. temperature relationship of EDC3 for the last glacial–interglacial change would not necessarily reproduce accurately the associated accumulation rate vs. δD slope."

Same comment for page 16, line 24.

"Finally, the relationship between temperature and accumulation rate is comparable when using the different reconstructions and several CMIP5-PMIP3 simulations for LGM-PI climate changes. However, we have noticed a large spread in the model outputs. We conclude that the CMIP5-PMIP3 models can encounter some difficulties to simulate precipitation changes linked with temperature or water isotope content on the Antarctic plateau during large climatic shifts and need to be improved in the future."

Same comment for abstract, page 2, line 25.

"We compare these reconstructions to the available model results from CMIP5-PMIP3 for a glacial and an interglacial state, i.e. for the Last Glacial Maximum and pre-industrial climates. While 3 out of 7 models show relatively good agreement with the reconstructions of the accumulation-temperature relationships based on ^{10}Be and water isotopes, the others models either underestimate or overestimate it, resulting in a range of model results much larger than the range of the reconstructions. Indeed, the models can encounter some difficulties to simulate precipitation changes linked with temperature or water isotope content on the East Antarctic plateau during glacial-interglacial transitions and need to be improved in the future."

Fig 2 caption needs some work to explain the different panels (especially I don't follow what panel b is).

We have changed the caption: "Figure 2. Several accumulation rate reconstructions (left column) and the corresponding ^{10}Be flux corrected by PISO-1500 (right column) discussed in Sect. 3 (colored curves). The EDC3 reconstruction from Parrenin et al. (2007a, b) is shown in grey for comparison. (a) Saturation vapour pressure formulation (b) Application of the AICC2012 chronology on the ^{10}Be record (c) Optimization of the interglacial-glacial amplitude coefficient (β) by minimization of the variance of the ^{10}Be flux corrected for past variations of geomagnetic field intensity (red curves) (d) Accumulation rate assuming a constant ^{10}Be flux (fixed at 53.44 at.m^{-2}.s^{-1} over the whole period)."