

Interactive comment on “Ice flow modelling at EPICA Dome C and Dome Fuji, East Antarctica” by F. Parrenin et al.

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Answers to referee’s comments are in bold.

General comments This paper describes very interesting attempts to obtain a better ice core chronology. By the method developed in the present study, the authors made reconstructions of past accumulation rates and past elevation changes, and calculations of basal melting rates for both the Dome C and Dome Fuji coring sites. This paper includes new ideas and new formulations to persuade us that the developed method provides a powerful tool for not only the ice core chronology but also the paleoclimate and/or paleoenvironment reconstructions. Therefore, I do recommend publishing this paper in *Climate of the Past*. Specific comments 1. Tables 3 and 4: The most important merit of this paper is the ice-core dating in the deeper parts, and this merit is brought mainly by the new age markers such as air content and O₂/N₂. However, those data

are brought from the other unpublished papers. To better understand the text, some explanations on these new age markers should be given in the text.

We briefly described the new age markers in the text. However, we think it is out of the scope of this manuscript to go into too much details. The corresponding papers are now submitted and we hope they will be published soon.

2. Section 4: Another merit of this paper is brought by taking the basal melting effect into the formulation. Since this effect was neglected in the previous papers, the difference in the results between the present paper and other previous papers should be described more explicitly. To see the merit, for example, a difference in ages of deeper ice-cores and a difference in geothermal heat flux should be described.

Basal melting was already taken into account in some previous studies. It is basal sliding which was not. The age scale for the bottom part of the Dome C drilling is described in more details in the companion paper Dreyfus et al. (also submitted to Climate of the Past). It is why we did not go into details in the current manuscript.

3. P38, L21: Note the incorrect refer to the paper by Hondoh et al. 2002. This paper also says the ice-bedrock interface temperature of Dome Fuji reaches a pressure melting (but with zero melting rate).

Now corrected.

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