

Interactive comment on “Direct evidence for radar reflector originating from changes in crystal-orientation fabric” by O. Eisen et al.

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Received and published: 16 August 2007

Dear author,

I have now read the referees' comments and your replies. I am happy to accept a revised manuscript for publication in TC with the following set of conditions and recommendations. The referees have done a very thorough job and have made a number of suggestions for improving the m/s. Please follow their suggestions and indicate in a separate document how you have addressed these comments (as described on the TC submission web page). Much of this has already been done in the discussion phase but it is important that the requested changes carry through to the final m/s. In particular, I would like you to pay attention to the following points raised by the referees:

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1) Your response to Jacobel's first comment (looking at the bigger picture) is not quite what is required. It is not adequate to cite or reference previous work, which readers may or may not have access to. The bigger picture needs to be a "stand alone" component of this paper. The point, I believe, that Bob is trying to make here is: what is the significance of your results? This can be (partly) answered by providing some sort of indication of how easy/difficult COF layers might be to identify, their glaciological provenance, significance, prevalence and so on. Without this sort of background information it is hard to place your results and their significance into a wider context or how they may lead to future insights into ice sheet rheology. Please include one to two paragraphs covering these points, which can refer, of course, to other studies and references as necessary.

2) I agree with Bob Jacobel's comments about technical issues that have arisen during review. It is important that these are adequately addressed and that the m/s is error free and unambiguous but it is not necessary to include all of these points and discussions in the m/s and it is also important that the m/s remains succinct and understandable to the wider cryospheric community so please ensure that this balance is maintained.

3) COF layers and isochrones. This is, perhaps, a subtle but important point. COF induced reflections are due to effects of stress and strain history first and foremost. It may be that a climatic event (such as a dust layer as you suggest) predisposes the ice but this then needs to be acted on by forces that create the COF. There is no evidence in your analysis that the COF layer is isochronous and suggesting that is also suggests that it has a depositional origin, which again, there is no evidence for. Whether it the layer identified is an isochrone or not is of no real significance to the results or conclusions of this paper so I suggest you refrain from referring to it as such.

With the inclusion of the new figure and addressing the comments of the referees this paper should not need further review. Congratulations.

Jonathan.

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