

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

K. Matsuoka (Referee)

matsuoka@ess.washington.edu

Received and published: 4 August 2007

New analysis of radar data with various polarization planes (SC S76) certainly strengthens this manuscript. Also, their detail response to my comment clarified many issues. I understand that that clarification will be incorporated into the revision.

I appreciate that the authors fully took my comment on the further analysis of the radar data and show quite interesting results. I agree that both results 1 and 2 in the authors response, SC576, are indeed evidence to support that reflection is COF origin. The authors derived Fresnel reflectivity along a single polarization in the original manuscript. Their new analysis now allows them to compare azimuthal pattern of the echo intensity vs. azimuthal pattern of the reflectivity. Such analysis can be done easily and support the author's arguments quite strongly.

More specific points about the author's response.

[KM4] My point is, if a more quantitative comparison between azimuthal patterns of the reflectivity and echo is made, it is necessary to pin down a possible range of error associated with the reflectivity estimate. I do not mean that the anisotropy magnitude is frequency and temperature dependent.

[KM11] O key, now I understand your point. Why don't you write something like: A sharp echo-intensity decrease at about 2100 m (Figure 2) suggests that there is the echo-free zone below it for about 500 - 800 m to the bed.

[KM17] Sorry, I wanted to say Section 2.2.

[KM22] - Now I have better understanding about author's arguments. It must be stated in the manuscript more clearly, for instance "this paper firstly reports a continuous radar layer which depth is consistent with a large COF contrast over about a 10-m-depth range found in the ice core."

[KM23] - I agree the author's point. I thought that authors want to say that COF reflectors are isochrones implicitly with that single statement ("The spatial variation of the COF-reflector in depth is parallel to other isochronous reflectors").

[KM25] - Figure 3 abscissa shows just 10^0 . It is tough to imagine that it is log scale.

[KM30] - yes.

I am in favor to accept this manuscript in the revised form.

Kenny Matsuoka

Interactive comment on The Cryosphere Discuss., 1, 1, 2007.

[Full Screen / Esc](#)[Printer-friendly Version](#)[Interactive Discussion](#)[Discussion Paper](#)