

Interactive comment on “Radio-frequency probes of Antarctic ice birefringence at South Pole vs. East Antarctica; evidence for a changing ice fabric” by D. Besson et al.

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We thank Dr. Arcone for taking the time to read the manuscript and give his input. In response, we note:

1) To be exact, our data indicate there is no birefringent effect in the upper half of the ice sheet for horizontally polarized, vertically propagating signals. For similar signals, birefringence is observed in the lower half of the ice sheet. Perhaps an additional line in the abstract: "Combined with other radio echo sounding data taken at South Pole, we conclude that observed birefringent asymmetries at that locale are generated entirely in the lower half of the ice sheet." might emphasize that point.

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2) Exposing our collective lack of experience in the field, we had assumed that the East Antarctic ice sheet was monolithic, which is why that observation was promoted to the abstract.

3) Such a paragraph has been added. I believe the usual rationale is that a strain profile results in an elongation of the crystal orientation along the direction of flow. Interestingly (as now included in the draft), recent measurements at the South Pole do indicate a strain profile increasing with depth. And yes, the original motivation for this study was to quantify ice properties' effects on cosmic ray detection.

4) We have added a paragraph commenting on the prospects for additional high-frequency, short-duration probes of the ice sheet.

Once again, we thank Dr. Arcone for offering his instructive input.

Interactive comment on The Cryosphere Discuss., 6, 4695, 2012.

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