



Supplement of

Rapid and accurate polarimetric radar measurements of ice crystal fabric orientation at the Western Antarctic Ice Sheet (WAIS) Divide ice core site

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Figure S1. Polarimetric power and coherence measured using ApRES at Site A near WAIS Divide identifying the orientations of the E_1 (green) and E_2 (yellow) eigenvectors. (a) Co-polarised and (b) cross-polarised power anomaly. (c) Co-polarised phase difference. (d) Quadpolarised (*hhvv*) coherence, (e) phase angle, and (f) phase difference. The two eigenvector orientations (dark lines) were calculated using a Gaussian-weighted moving average of the azimuthal minima (bright dots). The depth-dependent gradient along the orientation of the E_1 eigenvector represents $E_2 - E_1$, the fabric asymmetry of the measured vertical ice column. Site A is one of 10 ApRES measurement sites shown in Fig. 2.



Figure S2. Polarimetric power and coherence measured using ApRES at Site B near WAIS Divide, one of 10 ApRES measurement sites shown in Fig. 2. Legends are identical with those for Figure S1.



Figure S3. Polarimetric power and coherence measured using ApRES at Site C near WAIS Divide, one of 10 ApRES measurement sites shown in Fig. 2. Legends are identical with those for Figure S1.



Figure S4. Polarimetric power and coherence measured using ApRES at Site D near WAIS Divide, one of 10 ApRES measurement sites shown in Fig. 2. Legends are identical with those for Figure S1.



Figure S5. Polarimetric power and coherence measured using ApRES at Site E near WAIS Divide, one of 10 ApRES measurement sites shown in Fig. 2. Legends are identical with those for Figure S1.



Figure S6. Polarimetric power and coherence measured using ApRES at Site F near WAIS Divide, one of 10 ApRES measurement sites shown in Fig. 2. Legends are identical with those for Figure S1.



Figure S7. Polarimetric power and coherence measured using ApRES at Site G near WAIS Divide, one of 10 ApRES measurement sites shown in Fig. 2. Legends are identical with those for Figure S1.



Figure S8. Polarimetric power and coherence measured using ApRES at Site H near WAIS Divide, one of 10 ApRES measurement sites shown in Fig. 2. Legends are identical with those for Figure S1.



Figure S9. Polarimetric power and coherence measured using ApRES at Site I near WAIS Divide, one of 10 ApRES measurement sites shown in Fig. 2. Legends are identical with those for Figure S1. Panels (a) to (e) are identical to equivalent panels in Figure 4.



Figure S10. Polarimetric power and coherence measured using ApRES at Site J near WAIS Divide, one of 10 ApRES measurement sites shown in Fig. 2. Legends are identical with those for Figure S1.



Figure S11. $E_2 - E_1$ values derived from ApRES experiments at Sites A–J (orange squares, with associated standard deviations), together with measurements from the WAIS Divide ice core (black dots, Fitzpatrick et al. 2014; Voigt et al., 2015). Smoothing curves were automatically generated through a low pass filter on each dataset and shown in their respective colour scheme. $E_2 - E_1$ values with associated $|c_{hhvv}|$ thresholds below 0.3 are not shown. The data shown in panel (I) is equivalent to Figure 6.

Site	Latitude	Longitude	E_1 orientation (std) [°] ^a	E_2 orientation (std) [°] ^a	E_1 orientation (std) [°] ^b	E_2 orientation (std) [°] ^b
Α	79° 22′ 56′′ S	111° 53′ 24′′ W	82.7 (5.79)	-6.1 (6.22)	27.3 (5.79)	116.1 (6.22)
В	79° 24′ 10′′ S	111° 55′ 52′′ W	92.5 (3.99)	0.1 (2.71)	17.5 (3.99)	109.9 (2.71)
U	79° 24' 24'' S	111° 56′ 18′′ W	89.1 (6.07)	-1.7 (6.91)	20.9 (6.07)	111.7 (6.91)
D	79° 24′ 38′′ S	111° 56′ 47′′ W	101.6 (5.96)	7.4 (4.43)	8.4 (5.96)	102.6 (4.43)
Щ	79° 24' 53'' S	111° 57′ 16′′ W	98.7 (6.28)	5.4 (5.28)	11.3 (6.28)	104.6 (5.28)
Ц	79° 25′ 08′′ S	111° 57′ 46′′ W	101.1 (7.57)	4.8 (3.01)	8.9 (7.57)	4.8(3.01)
U	79° 25′ 23′′ S	111° 58′ 15″ W	100.7 (4.83)	11.0 (4.36)	9.3 (4.83)	99.0 (4.36)
Η	79° 25′ 38′′ S	111° 58′ 45′′ W	92.7 (6.37)	-0.9 (6.57)	17.3 (6.37)	110.9 (6.57)
Ι	79° 25′ 53′′ S	111° 59′ 14″ W	90.6 (6.06)	-2.7 (5.99)	19.4 (6.06)	112.7 (5.99)
J	79° 26' 05'' S	111° 59′ 40′′ W	82.2 (7.05)	-8.8 (7.70)	27.8 (7.05)	118.8 (7.70)
^a Ori	entations given related	tive to the antenna plar tive to true North	ne (110°; ESE).			
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; and results from polarimetric acquisitions at 10 sites along a 6 km transect	de. The locations of the 10 sites are given in Fig. 2.
Table S1. Locations and results fr	near the WAIS Divide. The locati