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Ice fabrics and textures in coastal East Antarctica reveal seasonal variations

Veronica Tsibulskaya and Jean-Louis Tison

Laboratoire de Glaciologie, Université Libre de Bruxelles, Belgium (veronica.tsibulskaya@ulb.be)

The fabric and texture evolution with depth was investigated on several firn/ice cores from ice rises on Princess Ragnhild Coast, East Antarctica. Results at 5 m sampling resolution show important variations in the crystal orientation fabrics as well as in the grain size, on centimetric to decimetric scale. Further analysis on continuous sections spanning several meters of firn core brings to light periodic variations in the fabric clustering. The fabric's decimetre-scale periodicity displays a clear correlation with the seasonal variability of $\delta^{18}\text{O}$ and ECM conductivity in the ice. It also reveals a previously unobserved fabric shape. This constitutes an opportunity for a close-up look of the climatic signal burial through the transition from firn to ice.