



## **Thermally induced icequakes detected on blue ice areas of the East Antarctic Ice Sheet**

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Over one year-long observations, about 5000 short duration icequakes were detected by a permanent seismic station installed at the Princess Elisabeth base, located 200 km inland in eastern Dronning Maud Land, East-Antarctica. The icequake detection procedure via seismic waveform pattern recognition indicates two event clusters, gathering about 1500 icequakes, dominate the dataset. The icequake locations point towards two distinct zones of outcropping blue ice areas located respectively about 4 km and 1 km from the seismic station, both on the leeward side of an imposing nunatak protruding from the ice sheet surface. The temporal occurrence of these icequakes suggests a close genetic link with thermal contraction of ice entailed by significant surface cooling taking place, in summer during diurnal solar radiation variations and in winter during episodes of cold katabatic regimes. Further analysis demonstrates the dependence of these icequakes and related ice cracks on both the absolute surface temperature and the thermal stress. Investigations of thermal icequakes may be regarded as a ground-based proxy for the monitoring of blue ice areas, therefore characterizing the ice sheet ablation zones.