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The (c)oldest place on Earth

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Low-temperature thermochronology indicates the central Baltica land surface is a strong contender for the world's oldest. There, many supergene 40Ar/39Ar feldspar ages surpass 1.0 Ga and many Paleozoic to Precambrian apatite fission track (AFT) data appear to have undergone extensive to complete radiation enhanced annealing, implying no significant vertical motion or other deformation has occurred since at least 1250 Ma. The craton interior is characterized by very old thermal and very thick effective elastic (Te) lithospheres. A steep Te strength gradient occurs concordant with the Gulf of Bothnia topographic depression; west of this gradient, active tectonic uplift is occurring, land surfaces are much younger, and AFT data retain much more (though perhaps still not complete) thermal information. The increasing strength of the lithosphere beneath the Gulf of Bothnia has acted as a barrier to eastward propagation of tectonic deformation. Today it functions as a flexural hinge zone, east of which Scandinavian Cenozoic uplift is abruptly terminated. Lithospheric properties – particularly Te – have fundamentally controlled rock-column uplift, the development and preservation of paleo-surfaces, and the overall shape of the Fennoscandian continent.