The drainage of the Baltic Ice Lake and a new Scandinavian reference ^{10}Be production rate

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An important constraint on the reliability of cosmogenic nuclide exposure dating is the derivation of tightly controlled production rates. We present a new dataset for ^{10}Be production rate calibration from Mount Billingen, southern Sweden, the site of the final drainage of the Baltic Ice Lake, an event dated to $11,620 \pm 100$ cal yr BP. Nine samples of flood-scoured bedrock surfaces and depositional boulders and cobbles unambiguously connected to the drainage event yield a reference ^{10}Be production rate of 4.09 ± 0.22 atoms g^{-1} yr^{-1} for the CRONUS Lm scaling and 3.93 ± 0.21 atoms g^{-1} yr^{-1} for the LSD general spallation scaling. We also recalibrate the reference ^{10}Be production rates for four sites in Norway and combine these with the Billingen results to derive a tightly clustered Scandinavian reference ^{10}Be production rate of 4.12 ± 0.10 (4.12 ± 0.25 for altitude scaling) atoms g^{-1} yr^{-1} for the Lm scaling scheme and 3.96 ± 0.10 (3.96 ± 0.24 for altitude scaling) atoms g^{-1} yr^{-1} for the LSD scaling scheme.