

The drainage of the Baltic Ice Lake and a new Scandinavian reference ¹⁰Be 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 ¹⁰Be 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 ¹⁰Be 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 ¹⁰Be production rate of 4.12 ± 0.10 (4.12 ± 0.25 for altitude scaling) atoms g^{-1} yr⁻¹ for the LSD scaling scheme and 3.96 ± 0.10 (3.96 ± 0.24 for altitude scaling) atoms g^{-1} yr⁻¹ for the LSD scaling scheme.