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Dating a flood: the first attempt to determine the age of the outburst megadune deposits in NE Poland

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Large volumes of water were suddenly released from glacial lakes during the last glaciation leaving geomorphic signatures in the formerly glaciated areas. Large glacial lake outburst floods occurred in the Suwałki Lakeland, NE Poland possibly during two events at ca. 19 ka and shortly after 16 ka (Weckwerth et al., 2019). To chronologically frame the megaflood events, sediments from giant current dunes (megadunes) were sampled for optically stimulated luminescence (OSL) dating. 180-250 µm quartz grains from 22 samples were analysed as small (2-mm) single aliquots. Only one sample revealed relatively pure quartz extracts, whereas others suffered from significant feldspar contamination. The dating yielded a wide time span between ca. 17 ka and ca. 83 ka when applying the central age model (CAM). The minimum age model (MAM-3) was used for three samples providing a slightly younger age. All SAR-OSL inbuilt rigour checks for SAR-OSL dating was fulfilled by the data set, thus making all results methodologically reliable. Several samples fall in the preliminarily expected 19–16 ka time span, giving the ages between ca. 17 ka and ca. 18.8 ka. Large part of the samples is older than ca. 20 ka, which likely results from partial or incomplete bleaching, a phenomenon common in sediments of aqueous origin (Lang et al., 2018; Herget et al., 2020).

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References:

Herget, J., Agatova, A.R., Carling, P.A., Nepop, R.K., 2020. Altai megafloods—The temporal context. *Earth-Science Reviews* 200. doi:10.1016/j.earscirev.2019.102995

Lang, J., Lauer, T., Winsemann, J., 2018. New age constraints for the Saalian glaciation in northern central Europe: Implications for the extent of ice sheets and related proglacial lake systems. *Quaternary Science Reviews* 180, 240–259. doi:10.1016/j.quascirev.2017.11.029

Weckwerth, P., Wysota, W., Piotrowski, J.A., Adamczyk, A., Krawiec, A., Dąbrowski, M., 2019. Late Weichselian glacier outburst floods in North-Eastern Poland: Landform evidence and palaeohydraulic

significance. *Earth-Science Reviews* 194, 216–233. doi:10.1016/j.earscirev.2019.05.006