



## Deciphering the evolution of the last Eurasian ice sheets

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Glacial geologists need ice sheet-scale chronological reconstructions of former ice extent to set individual records in a wider context and compare interpretations of ice sheet response to records of past environmental changes. Ice sheet modellers require empirical reconstructions on size and volume of past ice sheets that are fully documented, specified in time and include uncertainty estimates for model validation or constraints. Motivated by these demands, in 2005 we started a project (Database of the Eurasian Deglaciation, DATED) to compile and archive all published dates relevant to constraining the build-up and retreat of the last Eurasian ice sheets, including the British-Irish, Scandinavian and Svalbard-Barents-Kara Seas ice sheets (BIIS, SIS and SBKIS respectively). Over 5000 dates were assessed for reliability and used together with published ice-sheet margin positions to reconstruct time-slice maps of the ice sheets' extent, with uncertainty bounds, every 1000 years between 25-10 kyr ago and at four additional periods back to 40 kyr ago. Ten years after the idea for a database was conceived, the first version of results (DATED-1) has now been released (Hughes et al. 2016). We observe that: i) both the BIIS and SBKIS achieve maximum extent, and commence retreat earlier than the larger SIS; ii) the eastern terrestrial margin of the SIS reached its maximum extent up to 7000 years later than the westernmost marine margin; iii) the combined maximum ice volume (~24 m sea-level equivalent) was reached c. 21 ka; iv) large uncertainties exist; predominantly across marine sectors (e.g. the timing of coalescence and separation of the SIS and BKIS) but also in well-studied areas due to conflicting yet equally robust data. In just three years since the DATED-1 census (1 January 2013), the volume of new information (from both dates and mapped glacial geomorphology) has grown significantly (~1000 new dates). Here, we present the DATED-1 results in the context of the climatic changes of the last glacial, discuss the implications of emerging post-census data, and describe plans for the next version of the database, DATED-2.

Hughes, A. L. C., Gyllencreutz, R., Lohne, Ø. S., Mangerud, J., Svendsen, J. I. 2016: The last Eurasian ice sheets – a chronological database and time-slice reconstruction, DATED-1. *Boreas*, 45, 1–45. 10.1111/bor.12142