

## The Scandinavian Ice Sheet – History and dynamics

E. LARSEN<sup>1,2\*</sup>

<sup>1</sup>*Geological Survey of Norway, P.O.Box 6315 Sluppen, 7491 Trondheim, NORWAY*  
(\*correspondence: [eliv.larsen@ngu.no](mailto:eliv.larsen@ngu.no))

<sup>2</sup>*The National Laboratory for Age Determination, NTNU University Museum, 7491 Trondheim, NORWAY*

The Scandinavian mountains have repeatedly been the inception center for large ice sheets throughout the Quaternary. At full scale glaciations such as the Last Glacial Maximum, the distance to the western ice margin on the continental shelf was about one-fourth of the distance to its eastern counterpart in NW Russia. Asymmetric build-up and eastwards migration of the main ice-divide was suggested more than 60 years ago (Ljungner 1949). It follows that the maximum ice margin is not a synchronous line. In fact, it may be as much as 10,000 years between oldest and youngest maxima in different ice-sheet sectors (Hughes et al. 2015). Warm based, subglacially formed and cold based, relict landforms group systematically in the area of the former ice sheet (Ottesen et al. 2002; Kleman et al. 2008). The subglacial thermal regime and ice-bed interactions associated with these landforms hold information about ice-flow mechanisms from which relative velocity distribution can be deduced (Larsen et al. 2014). All this adds to the explanation of the asynchronous glacial maxima.

### References:

- Hughes, A. L. C. et al. 2015. The last Eurasian ice sheets – a chronological database and time-slice reconstruction, DATED-1. *Boreas*. 10.1111/bor.12142.
- Kleman, J. et al. 2008. Patterns of Quaternary ice sheet erosion and deposition in Fennoscandia and a theoretical framework for explanation. *Geomorphology* 97, 73-90.
- Larsen, E. et al. 2014: Subglacial sediment, proglacial lake level and topographic controls on ice extent and lobe geometries during the Last Glacial Maximum in NW Russia. *Quaternary Science Reviews* 92, 369-387.
- Ljungner, E., 1949. East-west balance of the Quaternary ice caps in Patagonia and Scandinavia. *Bulletin of the Geological Institution of the University of Uppsala* 33, 11-96.
- Ottesen, D. et al. 2002. Large-scale morphological evidence for past icestream flow on the mid-Norwegian continental margin. *Geological Society, London, Special Publications* 203, 245–258.